GOING SOLO

THE ROYAL AUSTRALIAN AIR FORCE 1946–1971

ALAN STEPHENS

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FOREWORD

The Royal Australian Air Force has in recent years undergone significant change. Change is, of course, not new, as the RAAF's size, structure and effectiveness has ebbed and flowed between peace and war, and in response to new technologies. Where the recent change differs from the past is that, for the first time, the RAAF has been able to reduce its number of uniformed personnel while preserving, and in some cases improving, its operational capability. The RAAF is now a more potent and professional fighting force than it has ever been before in peacetime.

Achieving the current level of effectiveness has been a long and tortuous business. Too often, the lessons of the past have had to be relearned because our history has been inadequately recorded. In particular, until recently, there has been little historical analysis of the RAAF's evolution. Recording and analysing institutional progress is essential, firstly to acknowledge great achievements and to establish proud traditions; and secondly, to ensure that the many hard-won lessons can be used to guide the future.

Chris Coulthard-Clark's *The Third Brother*, which details the RAAF's evolution from 1921 to 1939, was the start of redressing the gaps in the RAAF's history outside the world wars. Alan Stephens has now closed the gap further with this superbly researched, comprehensive and readable account of the Air Force from the end of World War II to our Golden Anniversary in 1971. By adopting a holistic approach, Dr Stephens has explained how the Air Force of today is the product of many and varied forces in the past.

The successful application of air power involves a number of essential elements, including people and their training, platforms and their associated weapons, bases and their supporting infrastructure, and guiding principles. Many books on military aviation focus predominantly on the aircrew and their machines at the expense of those other vital elements. That is not the case here. Alan Stephens thoroughly examines each of the components of RAAF air power, but at all times ensures that his emphasis is placed firmly on the people. He shows that while operations may be an air force's lifeblood, the flow, direction and sustenance of that lifeblood are determined by many individuals.

Going Solo analyses the difficult decisions which had to be made after World War II regarding which capabilities should be retained, the level of force required and the number of people needed. The impact of many of those decisions is still with us today, one notable example being the development of the strategic air bases in the north. Also examined is the professionalism of the people. For much of the period under review, standards varied, ranging from the determination to succeed which won David Evans the right to stay in the post-war RAAF, eventually to rise to become chief of the air staff, through to the casual attitude which permeated too many units. From my own experience at my first maritime squadron in 1960, I would never wish to see any return to the so-called 'good old days', a myth which still mistakenly persists in RAAF lore.

The book consistently highlights one of the most important aspects of air power, and one which is often overlooked by authors—the need to invest in people. The RAAF today is the beneficiary of the many far-sighted decisions made immediately after the war to develop a highly professional workforce based on an extraordinarily extensive, diverse and high-quality system of in-service training and education.

Also acknowledged is the contribution made by women, and the slow recognition of their right to professionally rewarding careers.

Particular attention is paid to the men who commanded Australian air operations between 1946 and 1971. As the author notes, it seems that too many of those commanders tended to regard flying as an end in itself rather than as a means to achieve a military objective. This is a vital observation which military aviators cannot afford to ignore.

Nor should present and future Air Force commanders ignore the lessons which emerge on inter-service cooperation. Alan Stephens carefully shows that, notwithstanding the generally exemplary support provided by the RAAF for the Army, misunderstandings caused by a few poor decisions and unfounded prejudice on both sides regrettably were allowed to sour the relationship on several critical occasions. Given the importance of air power to Australian defence, we must not allow any similar disharmony in the future.

These and many more stories are presented with insight and an underlying affection for the RAAF. The end result should satisfy all readers, from the casual to the serious. To use the author's apt metaphor, by 1971 the RAAF had 'gone solo' and had 'done it well'.

This book will be essential reading for anyone who wants to understand the development of military aviation in Australia and the influences which shaped the RAAF. I commend Dr Stephens for providing us with this thoroughly enjoyable, authoritative and comprehensive account of the RAAF's development from the end of World War II to 1971. I believe that *Going Solo* will become the yardstick against which future books on the RAAF will be measured.

L.B. Fisher
Air Marshal
Chief of the Air Staff
Canberra
August 1995

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PREFACE

Going Solo was written as an official RAAF history. In a sense, it constitutes the third in a series. Chris Coulthard-Clark's *The Third Brother* addressed the period from 1921 to 1939; while the volumes by Douglas Gillison, John Herington and George Odgers, written under the auspices of the Australian War Memorial, covered the epic events of World War II. I am honoured to have been given the privilege of continuing that process by writing the history of the RAAF from 1946 to 1971.

I am grateful to a number of people who made generous contributions of their knowledge and time.

Archival and photographic staff were invariably helpful and courteous, with particular thanks due to David Wilson, Moira Smythe, David Pullen, Wendy Southern, Pauline Szoldra, Monica Walsh, Wing Commander Graham Walton and Corporal Karen Hellmuth.

My sincere thanks go to all those Air Force men and women and Defence officials who, by giving me their time to discuss particular issues, helped me place the information acquired from archival records into a personal perspective.

I am indebted to Steve Eather for the access he gave me to some of his own research; while in the concluding stages of writing, Leading Aircraftman Gerald McEwan gave sterling service checking facts and figures.

A number of individuals made thoughtful and constructive comments on sections of the drafts. I am particularly grateful to Wing Commander Mark Lax; as well as Air Vice-Marshal Peter Scully, Air Vice-Marshal Bill Collins, Air Vice-Marshal Ray Trebilco, Air Commodore John Jacobs, Air Commodore John Macnaughtan, Air Commodore Bob Laing, Colin Spitzkowsky and Jim Noble. In combination they saved me from myself on numerous occasions, as did Elizabeth Van Der Hor's meticulous and thoughtful editing. Any remaining errors or omissions are, of course, entirely mine.

Group Captain Phil Morrall attended to the difficult task of arranging contracts and providing general administrative support. Without Phil's contribution, the study of RAAF history would not have prospered to the extent it has in recent years.

Finally, I would like to thank my wife Lyn for her encouragement and patience.

A Note on Style and Sources

Many of the individuals, units and places mentioned in this book underwent changes of rank or name between 1946 and 1971. Titles used are those held at the time of the event being described.

Because the book was written as an official RAAF history, a number of the references held by the Australian Archives may not be available to other researchers.

Alan Stephens
Canberra
July 1995

ABBREVIATIONS

AA	Australian Archives
AAF	Allied Air Forces
ABC	Australian Broadcasting Corporation
AC	aircraftman
ACS	airfield construction squadron
AD	aircraft depot
ADF	Australian Defence Force
ADG	Airfield Defence Guard
AEO	air electronics officer
AFC	Australian Flying Corps
AFEF	Air Force Emergency Force
AFTS	Applied Flying Training School
AFV	Australian Forces Vietnam
AHB	Air Historical Branch (RAF)
AirCdre	air commodore
AJASS	Australian Joint Anti-Submarine School
ALA	Army Light Aircraft (squadron)
AM	air marshal
AMDA	Anglo-Malaysian Defence Agreement
AMEM	air member for engineering and maintenance
AMF	Australian Military Forces
AMP	air member for personnel
AMSE	air member for supply and equipment
AMTDU	Air Movement and Trials Development Unit
AMTS	air member for technical services
Anare	Australian National Antarctic Research Expedition
Anzac	Australia and New Zealand Army Corps
Anzam	Australia New Zealand and Malaya (arrangement)
Anzus	Australia New Zealand and United States (treaty)
AOC	air officer commanding
AOP	air observation post
AP	air publication
APSC	Air Power Studies Centre
APU	aircraft performance unit
ARDU	Aircraft Research and Development Unit
ARL	Aeronautical Research Laboratories
ASCO	Australian Services Canteens Organisation
ASV	anti-surface vessel (radar)
ASW	anti-submarine warfare
ATC	Air Training Corps
ATF	Australian Task Force
ATU	Air Trials Unit
AVM	air vice-marshal
AvP	aviation publication
BABS	Beam Approach Beacon System
BBC	British Broadcasting Corporation
Bcair	British Commonwealth Air Group
Bcof	British Commonwealth Occupation Force (in Japan)
BFTS	Basic Flying Training School
C-in-C	commander-in-chief
CAC	Commonwealth Aircraft Corporation
CAF	Citizen Air Force
CAP	combat air patrol
CAS	chief of the air staff
CB	Companion of the Order of the Bath
CBE	Commander of the Order of the British Empire
CDFS	chief of the defence force staff
CEP	circular error probable
CFS	Central Flying School
CGS	chief of the general staff
CH	Companion of Honour

CNS	chief of naval staff
COSC	Chiefs of Staff Committee
CPD	Commonwealth Parliamentary Debates
Cpl	corporal
CRU	control and reporting unit
CTs	communist terrorists
DAP	Department of Aircraft Production
DCAS	deputy chief of the air staff
DCS	diploma cadet squadron
DFC	Distinguished Flying Cross
DFRB	Defence Forces Retirement Benefits (fund)
DMZ	demilitarised zone
DSC	Distinguished Service Cross
DSO	Distinguished Service Order
DTS	director of technical services
DWRAAF	director of WRAAF
EATS	Empire Air Training Scheme
EDP	electronic data processing
ELDO	European Launcher Development Organisation
EVT	educational and vocational training (scheme)
FAC	forward air controller
FCI	fighter combat instructor
FEAF	Far East Air Forces
FIC	flying instructors course
FlgOff	flying officer
FltLt	flight lieutenant
FPDA	Five Power Defence Arrangements
FSgt	flight sergeant
FTS	flying training school
GAF	Government Aircraft Factory
GCA	ground controlled approach
GCI	ground controlled intercept
GD	general duties
GEMS	ground equipment maintenance squadron
GpCapt	group captain
GR	general reconnaissance
HMAS	Her Majesty's Australian Ship
HMS	Her Majesty's Ship
IADS	Integrated Air Defence System
IDC	Imperial Defence College
IT	instructional technique
Jeats	junior equipment and administrative trainee (scheme)
JPC	Joint Planning Committee
JSSC	Joint Services Staff College
KBE	Knight Commander of the Order of the British Empire
KCMG	Knight Commander of the Order of Saint Michael and Saint George
kph	kilometres per hour
LAC	leading aircraftman
MAD	magnetic anomaly detector
MBE	Member of the Order of the British Empire
MEAF	Middle East Air Force
MP	member of parliament
MR	maritime reconnaissance
MTC	Melbourne Technical College
MV	Motor Vessel
NASA	National Aeronautical and Space Administration
Nato	North Atlantic Treaty Organisation
NCO	non-commissioned officer
OBE	Officer of the Order of the British Empire
OCU	operational conversion unit
OJT	on-the-job training
OTS	Officer Training School
OTU	operational training unit
PAF	Permanent Air Force
PltOff	pilot officer
PRO	Public Record Office (London)
QFI	qualified flying instructor
RAAF	Royal Australian Air Force
RAAFNS	Royal Australian Air Force Nursing Service
RAF	Royal Air Force
RAN	Royal Australian Navy
RAR	Royal Australian Regiment
RECTRANU	Recruit Training Unit
RFC	Royal Flying Corps
RHS	RAAF Historical Section
RIAF	Royal Indian Air Force
RMAF	Royal Malaysian Air Force
RMIT	Royal Melbourne Institute of Technology
RMTC	Royal Melbourne Technical College
RNAS	Royal Naval Air Service
RNZAF	Royal New Zealand Air Force
RSAF	Republic of Singapore Air Force
RSTT	RAAF School of Technical Training
RTAF	Royal Thai Air Force
RTFV	RAAF Transport Flight Vietnam
RTU	Recruit Training Unit
SAM	surface-to-air missile
SAN	School of Air Navigation
SAR	search and rescue
SAS	Special Air Service
SD	stores depot
Seato	Southeast Asia Treaty Organisation
SFTS	service flying training school
SGCE	Services General Certificate of Education
Sgt	sergeant
SqnLdr	squadron leader
SVETS	Services Vocational and Educational Training Scheme
SWPA	Southwest Pacific Area
TECSCL	technical school
UK	United Kingdom
USAAF	United States Army Air Forces
USAF	United States Air Force
USN	United States Navy
VD	Volunteer Officer's Decoration
VIP	very important person
WAAAF	Women's Auxiliary Australian Air Force
WAG	wireless/air gunner
WgCdr	wing commander
WOff	warrant officer
WRAAF	Women's Royal Australian Air Force
WRESAT	Weapons Research Establishment Satellite

CHAPTER 1

Flying Dual

As the Royal Australian Air Force celebrated its Golden Anniversary in March 1971, everything was changing. From the time of its establishment in 1921 the RAAF had, to all intents and purposes, fought and functioned as the Pacific branch of either the Royal Air Force or the United States Air Force. While at the individual and unit level the RAAF had excelled in wartime operations and peacetime exercises, institutionally it had been flying dual. Now it was going to have to go solo.

The catalyst for change was the end of Western dominance in Asia, a region in which the RAAF had been at war for twenty-five of the fifty years of its existence, invariably fighting alongside its British or American mentors. Several events marked the end of that era. The most symbolic was Britain's decision to withdraw its defence forces from east of Suez, announced in 1967 and to be completed by the early 1970s. Further evidence that the relationship between the mother country and the dominion was changing irrevocably came in the form of Britain's successful application to join the European Community in 1971. It was inevitable that economic separation would be accompanied by weakening ties in other fields, including defence.

Great Britain was not alone in realising that it could no longer avoid redefining its place in the world for, at the same time, President Richard Nixon's Guam Doctrine of July 1969 informed the United States' allies that in future they would have to assume more responsibility for their own defence, a decision strongly influenced by the trauma of Vietnam. Nixon soon provided an example of his new doctrine in action when in November he announced the 'Vietnamisation' of the war in Indochina, a decision which meant the West and its allies were in effect going to abandon South Vietnam. When the RAAF and the other Australian services withdrew from Vietnam in 1971–72 the war was not close to a conclusion and defeat in the South seemed just as likely as victory. Self-help apparently was going to become the modus operandi for regional conflict, which meant Australian foreign and defence policies were going to have to assume a degree of independence which had been notably absent in the past. As far as the RAAF was concerned there was no doubt that the special relationships which had developed with the RAF and the USAF over the past fifty years would continue, to the benefit of all concerned; but by the same token it was clear that Australian attitudes and doctrines would have to change fundamentally.

There were good reasons why the RAAF had depended so much on its association with the British and American air forces. In the first instance, maintaining an alliance with a 'great and powerful friend' had been the foundation of Australian security policy for governments of all political persuasions since Federation, and the RAAF existed to serve government policy. At an institutional level, if the government believed strong external support was essential to national security, then for many years the RAAF's leaders had believed perhaps even more fervently that the Air

Force's very survival had depended on the intellectual and material strength it drew from the RAF and the USAF.

For over a decade after it was formed on 31 March 1921 the RAAF had to endure open hostility to its existence from the Army and Navy. Australian air power had achieved independence against the express wishes of the nation's generals and admirals who believed two air arms should have been established, one for each of their services. Once the RAAF existed, independence had to be accepted as a matter of law, but equality did not. During its early years the Air Force was explicitly subordinated to the Army and Navy, and until World War II its prime purpose was to support land and sea forces. In 1925 Chief of the General Staff Sir Harry Chauvel insisted that the Air Force could never be 'co-equal to the other two services' and that he could not envisage any situation in which the RAAF would be employed independently in the event of a seaborne attack against Australia; continuing that theme, in 1929 Generals Sir John Monash and Sir Brudenell White asserted that 'the Air Force was an arm and not a separate service'.[1] That year saw a particularly strong anti-RAAF move emerge and there was a genuine possibility that the new service would be dismembered. According to the first chief of the air staff, Air Commodore (later Air Marshal Sir) Richard Williams, it was not until the early 1930s that threats to the RAAF's existence ceased.[2]

Other pressures arose from the meagre resources allocated. The initial strength of the new service was a mere one hundred and fifty-one, of whom twenty-one were officers, while all of the aircraft were obsolescent. After seven years the RAAF's total flying strength consisted of only two squadrons, one flight and a training school. Further, each of the squadrons contained two-thirds citizen force (that is, non-professional) personnel. Financial allocations were equally mean, as for the first ten years of its existence the Air Force received less than nine per cent of total defence appropriations. Even when the manifest threat of German and Japanese aggression provoked a scramble to expand the armed services in the late 1930s progress was modest. At the outbreak of war the RAAF comprised twelve squadrons, of which two existed in nucleus only and four were citizen force. Those squadrons were armed with two hundred and forty-six aircraft, every one of which was obsolescent. Three hundred and ten officers and 3179 airmen operated those aircraft, mainly from six bases in Australia. It was not an impressive order of battle.

Because of those pressures, between 1921 and 1939 the RAAF's leaders were largely preoccupied with their service's survival, and it was both natural and sensible that they should have looked to the RAF for support. As well as the obvious links of kinship between Australia and Britain, all of the RAAF's senior airmen had flown alongside the Royal Flying Corps and the RAF in World War I as members of the Australian Flying Corps or, indeed, of the British air services. Men like Williams, S.J. Goble, W.H. Anderson, A.T. Cole, H.N. Wrigley, F.H. McNamara and A.H. Cobby were thoroughly inculcated with the British way of fighting in the air.

The RAAF benefited greatly from the intellectual, material and fraternal support of the world's first air force. When the RAAF achieved independence most of its aircraft

came as a gift from the RAF. Williams enjoyed a personal correspondence with the RAF's chief of staff, Sir Hugh Trenchard, and was able to draw on the wise counsel and enormous experience of Britain's greatest airman. Because of its small size the RAAF conducted only basic training, relying totally on the RAF for access to courses which raised professional standards. All RAAF staff, post-graduate flying and weapons training was conducted in the United Kingdom. Until 1940 the RAAF was equipped exclusively with British aircraft. So complete was the reliance on the RAF that on the two occasions between the wars when the Australian Government wanted the RAAF's capabilities reviewed, it turned to British officers rather than its own, inviting Air Marshal Sir John Salmond to report in 1928 and Marshal of the RAF Sir Edward Ellington ten years later. Salmond's report, incidentally, was endorsed in principle by the government but not acted upon because of the expense involved; seven years later, however, it served as the blueprint for the expansion of the RAAF in response to the threats from Germany and Japan.

As noted previously, even that expansion did not amount to much, as by September 1939 Australia did not have a single modern fighter, bomber or transport aeroplane, a situation which typified the RAAF's first two decades. The fact was that for most of the inter-war period the RAAF was continually at risk of slipping below the minimum size and level of activity needed to be self-sustaining. Indeed, just how professional the organisation was remains a moot point. A disturbingly high flying accident rate was one of the reasons the government invited Sir Edward Ellington to Australia to review the RAAF in 1938, and Ellington's critical findings on that score gave the Air Force no comfort.[3] Questions might also be asked about the quality of leadership. The very small selection base limited the options for senior appointments, while the fact that no outstanding RAAF high commander emerged during World War II (a point which is discussed in more detail shortly) might seem to indicate that the Air Force was poorly led. Hasty judgments would, however, be ill-placed, as the pre-1939 RAAF was well-served by a number of men: for example, the sharply intelligent and determined Williams, whose success in keeping his service alive more than outweighed a waspish and pedantic manner; the highly original Lawrence Wackett, who provided the technical innovation without which an air force cannot prosper; and the unobtrusively scholarly Henry Wrigley, whose busy and inquiring mind encouraged those around him to strive to improve themselves. Perhaps in a less stifling inter-service environment Williams and his colleagues might have achieved more.

Regardless of the quality of the individuals and the institution as a whole, the point to be made at this stage is that, in the circumstances, without the support of the RAF, the RAAF probably could not have survived.

British support was repaid with interest between 1939 and 1945. Despite the institutional barriers which had been placed in its way during the past eighteen years, the RAAF's contribution to the defence of the United Kingdom was immediate and substantial. For some years the RAF had been unable to produce enough pilots to staff its squadrons. The RAAF had assisted by training Australians who on graduation

were sent to England and appointed to a short-service commission with the RAF. In September 1939 there were about four hundred and fifty Australians serving as operational pilots in the RAF, more than there were in the permanent RAAF. That was only the beginning of an exceptionally close wartime relationship between the RAAF and the RAF in Europe. So completely was the RAAF's effort integrated into that of the RAF that it is difficult to identify a distinctive Australian air contribution in the European theatre. The mechanism for that integration was the Empire Air Training Scheme (EATS).

Air Staff planners in the United Kingdom had known for some years that while their country had the industrial capacity quickly to increase aircraft production in the event of war, the aircrew training system was woefully inadequate. Agreement therefore was reached that Australia and the other dominions would participate in a massive training program, subsequently known as the EATS, to resolve the problem. The mother country would provide the machines, the dominions the men. Under the scheme Australia eventually trained 27,387 aircrew for all theatres. Of those, 15,746 were allocated to the RAF, some 4000 more than the 11,641 allocated to the RAAF.[4] In January 1945 Australian aircrew were serving in over two-thirds of all RAF squadrons. Even the formation of seventeen so-called 'Australian' squadrons in Europe could not prevent the diminution of national identity which resulted, as RAAF membership of those squadrons rarely totalled much more than half.[5]

While the loss of national identity was deeply disappointing, it should not be allowed to obscure the RAAF's significant contribution to the victory in Europe. Australian airmen flew with all RAF commands and participated in almost every operation of note over the entire duration of the war, from the Battle of Britain through to the bombing of Germany, the Battle of the Atlantic, the defence of Malta, the Normandy invasion, and the repatriation of prisoners-of-war.

Japan's co-ordinated attacks against Pearl Harbor, the Philippines and Malaya on 7/8 December 1941 abruptly shifted the focus of Australia's attention towards its own part of the world. The Japanese victories signalled the utter failure of the Singapore strategy, under which Great Britain was supposed to come to Australia's defence in the event of war in the Far East, and prompted Prime Minister John Curtin to declare only weeks later that Australia now looked to America as the cornerstone of its security. RAAF leaders had reached that conclusion well before Curtin's public statement. For some years Air Vice-Marshal Williams and his colleagues had feared that in the event of simultaneous wars in Europe and Asia, Britain would be unable to keep its pledge, and that consequently adequate numbers of front-line warplanes would not be available from the traditional source. The acquisition of Lockheed Hudson medium bombers in 1940 was a milestone in Australian military history, as for the first time RAAF airmen flew American aircraft. By 1942 other types from the United States—the Catalina, Kittyhawk, Boston and Mitchell—had been rushed into RAAF service to counter the initial dominance of Japanese air power.

That was only the beginning of American influence. Also by 1942 all RAAF operational units in the Southwest Pacific Area (SWPA) had been integrated with the

United States Army Air Forces to form the Allied Air Forces, under the overall command of Douglas MacArthur's senior airman, General George C. Kenney.[6] In contrast to the arrangements in Europe, while Australians had again been placed under a foreign commander, the RAAF remained a discrete organisation within the Allied Air Forces, with its own leaders, structure and national identity. Nevertheless, the sheer size and material power of the USAAF inevitably made it the dominant air force in the theatre, a position which was reinforced by the brilliant and decisive leadership of General Kenney and his American lieutenants.

As was the case in Europe, the RAAF's contribution in the Southwest Pacific was both substantial and significant. Notable early successes included the defence of Port Moresby and the shared victory with the Australian Army at Milne Bay, both in 1942; and the combined attack with the United States Army Air Forces against a Japanese convoy in the Bismarck Sea in March 1943, perhaps the most devastating assault against naval surface forces during the entire war. Those set-piece actions were complemented by the on-going operations which are more characteristic of air warfare. From about 1944 onwards allied fighters controlled the skies in the SWPA, to the extent that friendly land and sea forces fought almost without fear of attack from enemy aircraft.[7] Control of the air facilitated the RAAF's success in other operations: Liberator heavy bombers striking strategic targets; Catalinas laying mines from Port Moresby to the coast of China; Beaufighters, Mitchells and Bostons interdicting land and sea targets; and Dakotas lifting supplies throughout the theatre. Air aces like Clive Caldwell and Keith Truscott became national heroes.

The RAAF's success in operations was tempered to some extent by its disappointing experience at the higher levels of command. In Europe the arrangements under which RAAF aircrew were absorbed into the RAF greatly reduced command opportunities; while in the SWPA the Americans held sway. The RAAF's cause was not helped in the Pacific by an unedifying fight between its two most senior leaders in the theatre, Air Vice-Marshals George Jones and William Bostock.[8] There is no doubt that their dispute over the control of the RAAF damaged their service's standing.

Despite that disappointment some RAAF commanders emerged from the war with their reputations enhanced. They also emerged with a fundamentally changed perspective of their service's future. In the course of operations in the SWPA senior Australian airmen had been exposed for the first time to the extraordinary abundance of the world's greatest economy, the high quality of much of its military equipment, and the hard professionalism of many of its leaders. RAAF commanders like Air Commodores J.P.J. McCauley, F.R.W. Scherger, J.E. Hewitt and F.M. Bladin, who were to play major roles in shaping the post-war RAAF, had become familiar with the American way of thinking, planning and war-fighting. A dramatically different dimension had been added to the RAAF's view of the world.

Even without the American connection it was axiomatic that the RAAF of 1945 was going to be a profoundly different organisation from the one which had been pitched into a world war five and a half years ago. In contrast to its pitiful pre-war condition the RAAF now mustered fifty-three operational squadrons sustained by a vast

infrastructure.[9] Those squadrons operated 3187 aircraft, including over 1100 front-line fighters, four hundred and thirty-nine attack planes and two hundred and fifty-four heavy bombers; and were supported by an additional 2400 or so trainer and liaison aircraft. There were 171,095 personnel including the WAAAF and the RAAF Nursing Service. No longer could the accusation be levelled, as it sometimes was before 1939, that the RAAF was little more than an aero club in which everyone knew everyone else and a casual approach to operations was condoned. Great feats had been performed. The expansion by itself represented a remarkable achievement of organisation, administration and training; and it had been matched by a degree of fighting proficiency the equal of any other air force. The RAAF had become an immensely powerful and successful organisation.

Ideas, too, had changed. Immediately after World War I a school of strategic thought had developed in Europe and North America which argued that future wars might be won by air power alone, through the use of heavy bombers against which defence would be futile and which would devastate an enemy's vital centres. The reality of geography made such theories irrelevant for Australia, as the distances to strategic targets were simply too great for the existing aircraft; and in any case the RAAF's subordinate status and meagre resources ensured that the little air power the country did possess was confined to its designated roles of army and navy support. But by August 1945 the RAAF had acquired a fleet of two hundred and fifty-four highly capable, long-range B-24 Liberator bombers, and had in its ranks commanders who had planned strategic bombing raids and crews who had attacked most major targets in Germany and the Southwest Pacific. Notwithstanding lingering doubts about the effectiveness of the strategic bombing offensive against Germany, the spectre of the atomic weapons dropped on Hiroshima and Nagasaki had given the bomber unrivalled strategic status. Additionally, armies and navies no longer questioned the importance of control of the air, which was accepted as a necessary condition for success in most operations, both on the surface and in the air. Nor did change end there. The ambit of air power had also been extended. In 1939 the RAAF had not possessed a single specialist transport squadron; by 1945 it had eleven. Similarly, maritime patrol aircraft were acknowledged as an essential component of an effective anti-submarine warfare force; while battlefield commanders wanted more aerial reconnaissance, more close support, more medical evacuation aircraft, and so on. Many objective observers believed the aeroplane had been the decisive weapon of the war.[10] In short, the circumstances in which the RAAF's post-war leaders found themselves could scarcely have been more different to those which Williams and his colleagues had faced in 1921.

There were, however, less reassuring post-war legacies to manage. As tens of thousands of men and women were demobilised, the critical task became the preservation of new-found skills. Retention, recruitment and education were the key: the Air Force had to retain and attract the right people; and then institutionalise the lessons and practices which had been learned the hard way. Over the course of six years of war a somewhat casual and ad hoc approach to training had been replaced by

an exhaustive, relatively disciplined system. During the inevitable dismantling of much of that system those gains had to be protected. Yet if the post-1918 years were any guide, war-weary voters and politicians were likely to demand such drastic levels of disarmament that the services might find themselves struggling to retain their basic functions, let alone promote institutional growth.

Chief of the Air Staff Air Vice-Marshal George Jones had, to his credit, developed a plan for the peacetime Air Force before Japan surrendered unconditionally on 14 August 1945, but his proposed strength of thirty-four operational squadrons and 34,592 personnel was some ten times larger than the RAAF of 1939 and was unrealistically ambitious.[11] Within a year Jones' plan was redundant, as in the atmosphere of post-war optimism the RAAF's establishment was slashed from its wartime high of more than 170,000 to just over 12,000. When by the early 1950s the RAAF had stabilised at a strength of about 15,000 people and twelve squadrons, it was clear that any notions of developing a force with a reasonably potent independent capability were misplaced.

Consequently Australia's modest indigenous military capability was again propped up by foreign and defence policies which, like the pre-war Singapore strategy, were based on the expectation that a powerful ally would come to the rescue in an extreme emergency. A series of alliances—Anzam, Anzus and Seato—formalised that expectation, to the extent that any alliance can assure security. Premiums had to be paid on the policy, and it was the defence forces who were sent the bill. For most of the period covered by this book the RAAF and the other Australian services implemented the politicians' grand strategy of forward defence under an umbrella of alliances by fighting in Asia as part of combined forces dominated by Britain and the United States. None of those conflicts in Malaya, Korea or Vietnam represented a direct threat to Australian security, although the belief that they were part of a world-wide communist movement was plausible enough at the time given the abysmal understanding in the West of conditions in the region.

Australia's grand strategy did not mean that at the tactical level of war (the level at which armed conflict is fought) RAAF commanders would neither set their own standards nor follow their own practices. On the contrary, they almost invariably did. Nor did it mean that those standards were inferior: as the brief history presented above has described, at the tactical level the RAAF has consistently been the equal of any air force in the world. What the grand strategy did mean, though, was that at the operational level of war (the level at which campaigns are planned and commanded) the RAAF's involvement inevitably would be circumscribed. In that sense the RAAF would again be flying dual, as it had been under the captaincy of the RAF from 1921 to 1938 and of the RAF and the USAAF from 1939 to 1945.

That leads back to the title of this book and to 1946. The RAAF might have been about to fly dual again, but sooner or later that would have to change. In the event, the quarter-century following World War II was to be a period of unrivalled opportunity for the Air Force. The successive overseas conflicts placed constant pressure on the RAAF to succeed, as people, ideas and equipment were continually

tested without the nation itself ever being at risk. From the late 1950s onwards those demands were acknowledged by increasing spending on defence and unprecedented peacetime expansion and modernisation. Air Marshal Jones and his successors responded to those challenges and opportunities in the first instance as they had to, namely, by trying to ensure that the RAAF's day-to-day activities were conducted effectively. But at the same time they had to lay the foundations for the future. It would be their success or otherwise in meeting that more elusive responsibility which would in turn determine how the RAAF would fare when, in the year of its Golden Anniversary, it was sent solo.

CHAPTER 2

DEMOBILISATION AND THE INTERIM AIR FORCE

The day the war in the Pacific ended on 14 August 1945, Flight Sergeant Pilot Selwyn David Evans was part-way through a Beaufort conversion with No. 1 Operational Training Unit at East Sale. All training ceased immediately and course members were advised they would be discharged within weeks. A former Air Training Corps cadet who had received his wings only a year before, Evans was dismayed by the news. Flying with the RAAF was the only career he wanted and now everything had come to an abrupt halt. The war was over and hundreds of thousands of men and women who were no longer needed by the armed services were to be released as soon as possible, regardless of whether or not they wanted to stay in uniform.

Senior officers at East Sale could do nothing to help an obscure junior pilot avoid the mass demobilisation about to get under way. Not the person to accept defeat easily, Flight Sergeant Evans walked from the RAAF Station into Sale township and caught a train to Melbourne, some two hundred kilometres away. On arrival at Flinders Street Station he had to ask for directions to RAAF Headquarters, never having been there before. Reaching Victoria Barracks he wandered around the rabbit warren of offices for some time before eventually coming across an area designated 'Personnel—Postings'. An office marked 'Squadron Leader Law-Smith, Discharges' seemed to be the place he had been looking for.

Law-Smith was amused and impressed by the twenty-year-old pilot's initiative and eagerness to stay in the Air Force and told him to wait in his office. After fifteen minutes Law-Smith reappeared and told Evans that his discharge, along with thousands more, had been processed and was due to be released the next day. He then asked, 'Would you like to fly Gooney Birds?' 'Yes' came the immediate reply. Squadron Leader Law-Smith made no promises and left Evans to make his way back to East Sale. Several days later a message arrived at No. 1 OTU discharging all aircrew under training—except Flight Sergeant Pilot S.D. Evans who, inexplicably it seemed, was posted to No. 38 Squadron to fly C-47 Dakotas. The episode partly illustrates why, thirty-seven years later, Evans was an air marshal and chief of the air staff. It also marked the beginning of an extraordinary period of demobilisation as the RAAF reorganised for peace.

Before discussing the process of demobilisation, the actual composition of the RAAF in August 1945 is worth recording, for it stands as testimony to the remarkable administrative and organisational achievement of Air Vice-Marshal Jones and his colleagues during World War II. In September 1939 the Air Force had comprised 3489 personnel, twelve squadrons (of which half existed only in nucleus or were citizen force units) and two hundred and forty-six aircraft, every one of which was obsolescent. By 29 August 1945 the RAAF had grown about fifty-fold and consisted of

hundreds of units in hundreds of locations, with thousands of aircraft, being operated by tens of thousands of people, as table 2.1 illustrates.

2.1 RAAF order of battle, August 1945

Total Personnel (1)	173,622
Total Aircraft	5585
Type of Unit	*Numbers of Unit Type*
Flying Squadrons (2)	75
Flying Flights and Special Units	25
Headquarters	42
Maintenance Units	33
Local Air Supply Units	3
Airfield Construction Units	12
Radar and Signals Units	143
Airfield Defence Squadrons	2
Operational Base Units	47
Training Units	62
Stores and Equipment Units	37
Medical Units	40
Personnel Units	18
Miscellaneous Units	31

Notes: (1) Includes 17,243 WAAAF and 472 RAAFNS.
(2) Includes 17 EATS Article XV Squadrons in Europe and squadrons which were partly formed or existed only on paper.

Source: Reduction of RAAF in SWPA from 53 Squadrons, Organisation and Planning, 1945–46, 29-8-45, CRS A1196, 36/501/589, AA; RAAF, *Australian War Effort* (10th edn), 31-8-45, APSC.

The Air Force's immediate post-war priority was to look after its people. While there may have been many young men eager to make the RAAF their career, the majority of wartime enlistees were desperately keen to put the past six years behind them and resume their normal lives. In October 1945 the total strength of the RAAF and the Women's Auxiliary Australian Air Force was 160,808, of whom 148,426 were in the Southwest Pacific Area (which included Australia) and 12,382 in other theatres, primarily Europe. Getting those people back home from the other side of the world or from remote islands scattered throughout the Pacific and out of the Air Force would be an enormous, complex task.

Three days after the Japanese surrender the Australian War Cabinet directed the services to implement their demobilisation plans as soon as practicable but no later than 1 October.[1] Because the shape of the post-war world was far from clear, the plan which had been endorsed by Air Vice-Marshal Jones six weeks before the war ended was cautious. While all personnel would be withdrawn from Europe, demobilisation

in the Pacific would be controlled. By gradually increasing the discharge rate from 9000 a month in October to 18,000 by January 1946, the RAAF would reach its planned strength of about 35,000 by June.[2]

Following a conference convened by the CAS on the day the War Cabinet directive was issued, the plan to reduce the Air Force to the equivalent of thirty-four flying squadrons was put into effect. It contained two main features: all recruiting was to cease immediately, and all surplus personnel were to be released as soon as possible. Implementation of the plan was facilitated by the addition of Demobilisation Wings to the personnel depots which had been established during the war to manage the vast intake of recruits and which were now being used to reverse the process. The order in which individuals were demobilised was not left to accidents of location or the nature of their service, but instead was decided by 'predetermined considerations'. A points system was devised in which an individual's score mounted depending on his or her length of service, marital status, number of dependants, deferred education courses, and so on.[3] The larger the score, the quicker the discharge.

Once points scores had been calculated, individuals were designated as either 'surplus' or 'essential', the latter category applying only to a small number of officers whose expertise would be critical to the new Air Force. 'Surplus' staff were posted to a personnel depot and transported to the mainland on an opportunity basis, with priority going to those with the highest scores.[4] Individuals were permitted to bring only 'indispensable personal belongings' back to Australia, with the kits of all ranks being searched to ensure that firearms, explosives and other dangerous goods, or any government property, were not imported. On arrival at the personnel depot they were re-posted 'to the best advantage of the Service as a whole', which meant that if at all possible they were discharged.

Attempts were made to short-circuit the system. One of the officers involved with demobilisation, Group Captain Valston Hancock, received an impassioned plea from a father to release his son as soon as possible. As it happened, the particular individual was already due to be discharged within days. Hancock, however, was credited by the grateful parents for the RAAF's apparently rapid response and was startled when shortly afterwards he received a case of whisky.[5] The gesture was not only embarrassing and foolish, it was wasted—Hancock was a teetotaller.

Like people, equipment was also categorised as 'surplus' or 'essential', modern fighters and bombers being the most prized items for the post-war RAAF. Once a unit's people and essential equipment had been identified and, in the one case discharged and the other stored for future use, that unit was categorised as existing in 'nucleus' form only. It then became the responsibility of the nucleus organisation to arrange the redirection or disposal of the remaining stores and equipment, and to finalise administrative and equipment records.

As people were discharged in their thousands and equipment was written off or sold, units disappeared almost overnight. The reduction in flying training which had threatened to curtail Flight Sergeant Evans' career saw the rapid, widespread disbandment of service flying training schools, operational training units, advanced

flying and refresher units, air observers schools, the Air Armament and Gas School and the Central Gunnery School. No further intakes were accepted into the Central Flying School at Point Cook, and the General Reconnaissance School at Bairnsdale was reduced to a nucleus staff.[6] Reductions were equally severe for ground training establishments. The Staff School at Mount Martha was reduced to a nucleus; the School of Administration at Victor Harbour was closed; and the Schools of Technical Training, Engineering, Signals and Radar, together with the Medical and Works Training Units, were closed immediately their current courses finished. At least the recruits at those institutions graduated. Other courses which had a lower priority, such as Aerodrome Defence and Intelligence, ceased forthwith. Recruiting centres were disbanded, as were (male) recruit depots and WAAAF depots.

The axe fell on the flying squadrons in five stages. Under Stage I, which was scheduled for completion by 30 September 1945, those units which were of least relevance to the post-war RAAF were either released from service or disbanded: this category included the three RAF squadrons still in the Southwest Pacific (Nos 54, 548 and 549); several RAAF reserve squadrons; and other units which were just being raised or existed only on paper. Stage II was to be implemented by 31 December and involved the disbandment of a number of general reconnaissance/bomber and flying boat squadrons, and the phased reduction of several fighter squadrons from a unit establishment of eighteen aircraft down to twelve. Under Stage III, the fighter squadrons were to be further reduced to eight aircraft by 31 March 1946 and redesignated as 'flights'; groups of three flights were then reformed as squadrons. Stages IV and V, to be effected by 30 June and 30 September 1946 respectively, involved the disbandment of additional fighter/bomber and bomber wings and squadrons.[7]

Disposing of the aircraft was no less challenging than demobilising the people. Contingency plans had rather optimistically identified a need for six hundred and sixty-one aircraft in the post-war Air Force, leaving the Air Board with the daunting task of getting rid of about 5000 machines.[8] Pending firm advice from the government on the RAAF's eventual shape, the Air Board instituted a 'care and maintenance' program under which all aircraft not needed to meet immediate tasks were placed in storage at one of scores of locations throughout Australia. The surplus machines were assigned one of five categories. Category 'A' aircraft constituted the reinforcement pool and were to be kept fully serviceable; category 'B' were placed in short-term storage and had to be ready for use within fourteen days; categories 'C' and 'D' were long-term storage, with the former receiving some maintenance and the latter none; and category 'E' aircraft were stripped of equipment before being placed in long-term storage or disposed of. By far the majority were categorised as 'D' or 'E' as the RAAF could afford neither the manpower nor the material to keep them in a reasonable condition, let alone airworthy.

The list of aircraft was, quite simply, astonishing and, as was the case with the number and types of units, warrants recording here in table 2.2 in acknowledgment of an exceptional organisational achievement, both during and after the war.

2.2 Aircraft storage plan, 1946

Aircraft type	*Total Held June 1946*	*RAAF Post-war Requirements* (1)	*Aircraft type*	*Total Held June 1946*	*RAAF Post-war Requirements* (1)
Liberator	249	59	Ventura	58	—
Mosquito	280	103	DC-2	3	—
Mustang	378	117	DH-84	44	—
Dakota	109	53	Fox Moth	2	—
Auster	37	24	Hudson	44	—
Tiger Moth	646	40	Lodestar	9	—
Oxford	303	25	Battle	107	—
Anson	761	43	Wackett	98	—
Wirraway	437	106	Lancaster	2	—
Catalina	109	21	Seagull	15	—
Beaufort	389	28	Sikorsky	13	—
Mitchell	34	16	Mariner	12	—
Beaufighter	328	15	Norseman	12	—
Vengeance	235	2	Sunderland	5	4
Boomerang	129	1			
Kittyhawk	370	3	**Totals**	**5585**	**661**
Spitfire	367	1			

Note: (1) These figures include Unit Aircraft Establishment (how many aircraft each active unit had) and aircraft in short-term storage of fourteen days, as per category 'B'.

Source: CRS A1196/36/501/589, AA.

Aircraft identified for storage were to be spread over an extraordinarily wide geographic area, at one of forty different locations: Amberley, Bairnsdale, Ballarat, Benalla, Boulder, Bundaberg, Canberra, Cootamundra, Cunderdin, Deniliquin, Evans Head, Geraldton, Lake Boga, Laverton, Lowood, Kingaroy, Mallala, Maryborough, Mildura, Mount Gambier, Narrandera, Narromine, Nhill, Oakey, Parkes, Pearce, Point Cook, Port Pirie, Rathmines, Richmond, Sale East, Sale West, Tamworth, Temora, Tocumwal, Uranquinty, Wagga, Werribee, Western Junction and Williamtown. Simply storing the aircraft on a care and maintenance basis would require four hundred and thirty-six technical personnel.[9]

Ultimately the government decided that the RAAF did not need the great majority of stored aircraft, and with the approval of the Commonwealth Disposals Commission those machines were sold to other government departments, civil aircraft operators and private individuals. As the Department of Civil Aviation was not prepared to issue a certificate of airworthiness for many of the aircraft, large numbers were stripped of accessories, broken down, and sold as scrap metal or dumped, a process during which an irreplaceable part of Australia's aviation and wartime heritage was lost.

Disposing of aircraft was the most symbolic act in dismantling the wartime Air Force, but aeroplanes were only one item in a staggeringly large and diverse amount of surplus equipment which ranged from radars and real estate through to pencils and paper clips. Authority was vested in the Air Board to designate aircraft, equipment and stores as surplus. Air Member for Supply and Equipment (AMSE) Air Vice-Marshal G.J.W. Mackinolty was authorised to dispose of items up to an original value of £500, while the AMSE, the Business Member and the Finance Member together could deal with those worth more than £500 but less than £10,000. Items valued at more than £10,000 needed the joint approval of the Air Board and Board of Business Administration.[10]

The principle for getting rid of unwanted equipment was encapsulated in Air Board Minute 6615 of 7 June 1945 and was simplicity itself. Retaining excess items would, the board stated, involve the Department of Air in unnecessary commitments and responsibilities for guardianship, while the continued deterioration of equipment and buildings would preclude 'optimum financial recovery' and immobilise the availability of materials which might be in short supply. Consequently, if at all possible, surplus equipment was to be sold and the receipts paid into an account titled 'Credits arising from War Expenditure'. In the circumstances the approach was both sensible and practical.

The disposal of equipment which was categorised as 'surplus to requirements' was nothing short of phenomenal. It took the RAAF about a year to get fully into the swing of the task as the initial priority was to demobilise people. By mid-1946, however, a vast amount of equipment was being sold, transferred or destroyed as a 'garage sale' of enormous proportions gathered momentum. In August alone the Air Board made sixty-six separate recommendations to the minister to write off equipment which included Spitfires, Liberators, Beaufighters and Catalinas, and earth-moving equipment, medical supplies and buildings.[11] Among the more interesting or exotic items declared 'surplus to requirements' were ten kilometres of fur fabric (used to line flying suits), three hundred kilometres of hessian, four hundred kilometres of canvas, 53,539 mosquito nets, 3,800,000 razor blades and 20,711 pairs of corsets.[12]

While all of those necessary reductions to the wartime Air Force were being made, the members of the Air Board never lost sight of their responsibility to preserve the foundations of a peacetime force which, in their judgment, would have to be sufficiently powerful and flexible to confront the uncertainties of a new international order. Thus, notwithstanding the magnitude of the cuts which were being made, the eventual structure of thirty-four squadrons and 34,592 personnel they envisaged was not going to leave the RAAF destitute. But events were moving much faster than the Air Board had anticipated when it developed the thirty-four squadron plan. On 21 August 1945—only four days after the RAAF's contingency plan for mass demobilisation was activated—Air Vice-Marshal Jones was told by Minister for Air Arthur Drakeford that far deeper cuts were to be made at a much faster pace.[13] The government's priority was to rebuild the nation, and to do that it needed people,

resources and money, all of which logically were going to come in great measure from the apparently now largely irrelevant armed forces. Drakeford informed Jones that the precise force structure for the peacetime RAAF would not be determined for some months; in the meantime, the Air Board was to base its forward projections on two major determinants: Australia's 'general security needs' (whatever that meant) and the requirement to contribute to occupation forces in Japan and other territories outside the Australian mainland.

By the end of October the RAAF had lowered its sights to an establishment of thirty-one squadrons and 29,711 people, concessions which seemed unlikely to impress Drakeford. That proved to be the case. The revised figure was unacceptable and prompted Drakeford to instruct the Air Board in January 1946 to re-examine fully its planning and to submit 'without delay' a detailed organisation for the RAAF based on 20,000 personnel.

Arthur S. Drakeford, Minister for Air and Civil Aviation from 1941 to 1949. RAAF

Drakeford's instruction was accompanied by some pointed directions from Prime Minister J.B. Chifley. In formulating those directions the prime minister demonstrated a keen appreciation of air power doctrine and strategic realities. Airmen believe that their prime respon-
sibility in war is to gain control of the air, as by doing so they facilitate all other friendly operations, both in the air and on the surface. In the prevailing circumstances, however, the classic dichotomy between theory and practice negated that belief. As Chifley pointed out, following Japan's capitulation the RAAF was extremely unlikely to face any threat in the air for some time, and that consequently resources would not have to be expended on the air defence of Australia during the next two years. The RAAF's attention was instead to be directed towards five objectives: demobilisation, which included providing air transport to repatriate members of the armed forces serving overseas; raising a force for the occupation of Japan; helping the Army to control Japanese prisoners-of-war in the islands pending their repatriation (a commitment which was expected to end in December 1946); storing and disposing the equipment from disbanded units; and maintaining surplus aircraft and equipment pending disposal.[14]

Those priorities offered the Air Force little comfort for its future development. Following on so quickly from the prestige and glory of the RAAF's contribution to victory in a world war, this was not what its leaders had expected. Their understandably high hopes for the future of the Air Force had been harshly dispelled. In an environment of crisis and disappointment it was evident that a quite

different approach to the future than the one which had been anticipated was needed.

The man who grasped the nettle was the air member for personnel, Air Commodore J.E. Hewitt. Hewitt was one of the more interesting officers of his generation. A small, dark, dapper man, punctilious and aggressive in his manner, sometimes to the point of abrasiveness, he was capable of generating extremes of loyalty and dislike among his subordinates. In 1943 Hewitt had been sacked by Air Vice-Marshal Jones under controversial circumstances as the commander of the RAAF's premier force in the Southwest Pacific, No. 9 Operational Group; but since then he had resurrected his career to become one of the Air Force's most promising younger senior officers.[15] Regardless of the reactions to his personality, few questioned his intellect.

AVM J.E. Hewitt, who as AMP from May 1945 to November 1948 played a major role in shaping the post-war Air Force. RAAF

By November 1945 Hewitt had concluded that a substantial period would elapse before the final size and composition of the post-war Air Force was decided and approved by the government. He was also concerned by the rate at which people were being discharged and the lack of guidance on the kinds of skills the RAAF needed to retain. There was a danger, he advised Air Vice-Marshal Jones, that the Air Force could end up with an unbalanced work force, and that if quick action were not taken major long-term difficulties would be created.

Hewitt saw three options. First, mobilisation could continue unsystematically at a headlong pace without any consideration for future needs. The likely consequences of that approach were self-evident. Second, demobilisation legally could be stopped in each branch (that is, each skill group) when the minimum numbers for the RAAF's thirty-one squadron plan were reached. While that would resolve the problem of work force balance, it would entail extending the engagements of thousands of people who had joined only to serve in the war and would certainly cause considerable discontent. It would also raise administrative difficulties. As Hewitt noted, a state of 'war service' was still in force under the Defence Act, the Air Force Act and Air Force Regulations, and as long as that remained the case, every serviceman was technically bound to remain in uniform. However, once a proclamation was issued declaring that a state of war no longer existed, all personnel

recruited for the war would immediately be released from their engagements, regardless of any demobilisation plan.

Hewitt's preference therefore was for the final option which was, in effect, to place the entire Air Force on a 'care and maintenance' basis. The RAAF should mark time, he suggested, meeting its immediate demands while preserving essential capabilities until the government had worked out precisely what it wanted to do. The RAF and the Royal Canadian Air Force, facing similar difficulties, had already adopted that approach as the most practical response to uncertain circumstances. Hewitt advised Air Vice-Marshal Jones to seek Drakeford's approval to establish and maintain a 20,000-man 'Interim Force' for two years, at the expiry of which it should be possible to determine the final size and composition of the post-war RAAF.[16] In addition to meeting the immediate priorities set by the government, the Interim Air Force would protect the RAAF's future by preserving three key building blocks on which future capabilities would depend: the maintenance of equipment and retention of techniques which would be required for the post-war force, regardless of its final shape; a nucleus organisation to keep abreast of modern developments in aircraft and associated equipment; and a training organisation to provide both air and ground personnel for those commitments.

The Air Board accepted the logic of Hewitt's argument and recast its development plan. In order to satisfy the government's immediate objectives while protecting the RAAF's future, the board proposed an operational structure for the Interim Air Force comprising two fighter wings, with one staffed only to twenty-five per cent; one mobile fighter control unit; one attack wing, with the flying units staffed at twenty-five per cent and the support units on a care and maintenance basis; one army co-operation wing staffed to fifty per cent; one heavy bomber wing limited to a fifty per cent flying rate; three land transport squadrons; three air/sea rescue flights; a communications unit; a survey flight; an aircraft performance unit; a general reconnaissance/bomber squadron; and the Governor-General's Flight.[17] That force structure would need 19,950 personnel, of whom 2466 would be officers. Over one hundred and ten distinct work categories were identified: in addition to the obvious ones such as pilots and fitters, some of the more exotic included shoemakers, sawyers and powder monkeys.[18]

The balancing act the board was trying to perform was evident in the priorities assigned to the Interim Air Force's activities.[19] First place understandably went to raising, equipping, training and maintaining the forces for the occupation of Japan. Next came the survey flight and communications unit, each of which had a vital contribution to make to national development. However, bracketed with survey and communications was the Governor-General's Flight, a priority which upset the logic of the board's plan as it was based on nothing more than a protocol which presumably could not be avoided. More productive was the weighting then placed on preserving flying standards and operational techniques by allocating resources to the instrument flying check flight at the Central Flying School, training units generally, heavy bomber wings and army co-operation wings. Those units were followed by attack and fighter

squadrons which, in accordance with Prime Minister Chifley's stricture, were to be staffed at the minimum level. Then came stores units, aircraft depots and care and maintenance units; command headquarters; and finally, the distribution of 'residual' or surplus personnel to units in accordance with the precedence listed above.

Meeting those objectives depended squarely on the RAAF's ability to retain the right people. Here, the conditions approved by the government were not necessarily in the RAAF's best interests. Policy for service for the Interim Air Force was promulgated by Air Vice-Marshal Jones in February 1946.[20] Officers who had held a permanent commission before the war and who wished to remain in the Interim Force could expect to continue their careers regardless of developments, but would have to relinquish any temporary or acting higher rank they held. All other personnel had to agree to serve for a period of two years, in effect as members of the Citizen Air Force, and when a decision was eventually reached on the RAAF's roles and size they would have to apply to transfer to the Permanent Air Force, with no guarantee their services would be required.

Officers holding short service commissions who wished to serve with the Interim Force could only do so at a reduced rank. Nor were things much better for airmen and non-commissioned officers (NCOs). Airmen with previous service who had reached the rank of leading aircraftman (LAC) were reappointed at that rank, while new recruits had to start at the lowest level of aircraftman 1 (AC1). Deciding how many NCOs and warrant officers should retain their status was a more complex business because of the need to maintain a graduated hierarchy of ranks; that is, it would have been unacceptable if, say, half of the enlisted ranks had been sergeants. Eventually it was decided to reserve twenty per cent of all NCO and warrant officer posts in the approved establishment as an avenue for future promotions and to protect the hierarchy, a decision which meant that twenty per cent of those positions in the Interim Air Force were in the first instance filled by LACs and AC1s.[21]

Those stringent conditions were leavened somewhat by two general provisions: no member of the Permanent Air Force enlisting in the Interim Air Force was to be reduced to a rank below that which he had held in the PAF; and, wherever possible, serving members were to be given preference over those who had already been discharged for vacancies at the NCO level. Nevertheless, the government's proscription on recruiting and offering permanent commissions beyond the RAAF's pre-war establishment severely circumscribed the Air Board's ability to keep the people it wanted. Looking back on the decision years later, Air Marshal Sir Valston Hancock blamed the government for the loss of many very experienced and talented people.[22]

Applications from within the RAAF to join the Interim Force were required by 28 February 1946. Three weeks after the closing date only 7597 people had applied against a forecast establishment of 19,156. Despite the expenditure of large sums of money on advertising campaigns, the RAAF found it very hard to attract technical airmen. While 2342 officers and NCO aircrew had applied for 2164 positions, only 5255 airmen had expressed interest, compared to the 16,992 the Air Board believed

were needed. Competition from other prospective employers was strong because of a widespread shortage of both skilled and unskilled labour, while the community generally was uninterested in military service after a long war.[23] Many seemed to think that armed forces were now redundant. Val Hancock remembered the immediate post-war years one of the most disappointing periods of his RAAF career as 'no-one wanted to know about us', an attitude he believed stemmed from the politicians.[24]

Hancock was right. The services were an easy target for a government determined to divert money to other endeavours. In May 1946 the RAAF's proposed staff ceiling of 20,000 was referred to the War Establishments Investigating Committee for review; in response, that committee recommended reducing the Interim establishment to 15,000.[25] By now the Air Board was deeply perturbed. An extremely detailed response to the committee's recommendation argued that insufficient allowance had been made for the dual tasks of demobilisation and retaining a core structure on which the post-war RAAF could eventually be built. The board also suggested that some of the committee's conclusions had been based on false premises and could not be accepted. The real issue, though, was not the committee's competence but money, as Drakeford had already made clear. Taking full advantage of the committee's report, Drakeford rescinded the ceiling of 20,000 he had set in January and informed the Air Board it could now have an 'absolute maximum' of 15,000 people, a total which included the units on duty with the British Commonwealth Occupation Force in Japan; additionally, all establishments were to be kept under close scrutiny with the objective of making further reductions whenever possible.[26]

The Air Board was being placed in an increasingly awkward position. On the one hand the prime minister and minister for air seemed interested only in reducing numbers as quickly as possible and were giving firm instructions to that effect; on the other hand, board members were keenly aware of the need to retain hard-won skills and core capabilities against the near certainty that the RAAF would one day again have to fight for its country.

Because of the mass exodus, by April 1946 staffing levels were critical in thirty-five separate skill categories.[27] Hewitt told Drakeford that unless recruiting prohibitions were eased the RAAF might not be able to meet its authorised tasks of supporting the occupation force in Japan, operating transport services for repatriation, and completing minimum levels of aircraft maintenance. Drakeford remained unmoved, refusing to raise the establishment ceiling and instead directing that should the 'essential Interim commitments' be jeopardised, each case was to be referred to him for 'urgent consideration'. The overriding consideration was money, with the government determined 'to greatly reduce' the costs of defence.[28]

In the atmosphere of uncertainty the Air Force's numbers plummeted. By 31 October 1946 the RAAF's strength had fallen to 13,238, almost 160,000 fewer than had been wearing the blue uniform only a year before (see table 2.3).

Demonstrating praiseworthy conviction and tenacity, the Air Board kept up the fight to preserve the RAAF's skill base, advising Drakeford in January 1947 that the

continuing proscription on long-term engagements had the potential to cause lasting damage.[29] After the uncertainty of the war years, prospective employees wanted more than the offer of two years' work. The board believed that if it were allowed to offer six-year enlistments, all former members of the Permanent Air Force would re-engage, all Interim personnel would sign on for the extended period, and additional new volunteers would be attracted. Paying gratuities to selected musterings was also suggested as a short-term remedy. Yet again Drakeford rejected the board's proposals 'pending a final decision on the size and organisation of the permanent post-war forces'. Numbers continued to decline, with the Interim Air Force reduced to just 11,638 people by mid-1947 and 7897 by the end of 1948.[30] The RAAF's senior wartime operational commander, retired Air Vice-Marshal Bill Bostock—now a special aviation correspondent for the Melbourne *Herald*—attacked the government for allowing the Air Force to fall into what he claimed was a ruinous state.

2.3 Actual strength of the RAAF, 31 October 1946

Permanent and Interim Force Personnel (2070 officers; 6257 airmen)	8327
Deferred Bcof	1659
Deferred RAAF in Australia	1067
Deferred WAAAF in Australia	585
Compulsory deferments (medical officers, etc.)	100
Missing personnel not yet presumed dead	325
Personnel awaiting, and in the process of being, demobilised	1175
Total	**13,238**

Source: Air Board Agendum 7489, 8-11-46, RHS.

Bostock's venture into journalism was not his preferred career path. Along with a number of other notable pre-war and wartime senior officers, he had been forced out of the Air Force in 1946 against his wishes. The circumstances surrounding those dismissals warrant examination because of the light they throw on the quality of leadership and the nature of politics in the post-war Air Force. Four men were at the centre of the affair: Bostock; Chief of the Air Staff Air Vice-Marshal George Jones; and the two men who had alternated as CAS in the pre-war Air Force, Air Marshal Richard Williams and Air Vice-Marshal S.J. Goble.

Williams had been the first CAS in 1921 and is properly regarded as the father of the RAAF. Throughout the inter-war period he alternated as chief with Goble, each man holding the office on three separate occasions, Williams for about fourteen and a half years compared to Goble's four and a half. That unconventional arrangement seems to have been the result of Army and Navy interference in the administration of the Air Force, the intention being to curb Williams' independence and give the Navy an equal voice in RAAF affairs (Williams had served in the Australian Army in World War I and Goble in the Royal Naval Air Service). Whether or not that objective was

achieved is questionable; what is clear, however, is that the arrangement inevitably fostered an unproductive rivalry between the two men which was not in the RAAF's best interests. Following an unfavourable report on the RAAF submitted to the Australian Government by the British airman, Marshal of the RAF Sir Edward Ellington, Williams was effectively banished overseas in 1939. Goble suffered a similar fate the following year when he disagreed with the government over the command of the RAAF and was despatched to Canada for the rest of the war to supervise Australia's contribution to the Empire Air Training Scheme.

With the two most senior Australians removed from the scene, the government of Prime Minister R.G. Menzies had turned to the RAF for its next CAS, appointing Air Chief Marshal Sir Charles Burnett in 1940. Burnett's undistinguished tenure expired early in 1942 and it was expected that Bostock, who by then was widely regarded as the RAAF's most capable senior commander, would succeed him. If for some reason Bostock was not acceptable to the politicians, the recall of Williams from exile in London seemed likely. In the event both were rejected by the recently elected Australian Labor Party government, Bostock because of his links to conservative politics and Williams because of the legacy of the Ellington report. Within the space of two years history had repeated itself: the two leading candidates for the post of CAS had again been rejected by the politicians, only this time by the other major party. Prime Minister John Curtin then surprised everyone and shocked the RAAF by elevating acting Air Commodore George Jones three ranks into the post. A substantive wing commander, Jones himself was 'stunned' by the appointment.[31]

There are good reasons to believe that the selection of the diligent but uninspiring Victorian was based on a misunderstanding. Having rejected the obvious choices, Curtin and Minister for Air Arthur Drakeford were uncertain where to turn, knowing little of the RAAF's remaining senior officers. In what appears to have been an astonishingly inept performance, in their ignorance they apparently consulted an incorrect RAAF seniority list. Mistakenly believing Jones to be the RAAF's most senior eligible officer after Williams and Bostock, they chose him almost by default.[32] Williams was sent off out of the way again, this time to Washington, where he remained until 1945; and several months later Bostock was appointed RAAF commander in the Southwest Pacific Area.

For the rest of the war in the Southwest Pacific, Air Vice-Marshal Jones as CAS was effectively responsible for raising, training and equipping the RAAF, and Air Vice-Marshal Bostock as AOC RAAF Command was responsible for operations. While that division of command was not an ideal arrangement it could have worked with two men of goodwill. Regrettably Jones and Bostock were not of that mind. Revisiting the Williams/Goble rivalry but on an epic scale, the two men chose to work against rather than with each other and in the process frustrated the government and their colleagues and damaged the Air Force.

At the end of the war the Labor government which had rejected Bostock and Williams in 1942 was still in power; indeed, Arthur Drakeford was still minister for air, having held the post since October 1941. As part of the process of mass

demobilisation the officer corps had to be reduced from the wartime establishment of about 20,000 to less than one-tenth of that number. The review of who would stay and who would go was carried out by Air Member for Personnel Air Commodore Joe Hewitt, whose progress was keenly followed by Jones and Drakeford. Although Jones later inferred in his autobiography that he took little interest in the process, it is clear from official documents that the opposite was the case. Since at least September 1944 Jones had been sending Drakeford confidential lists of officers 'recommended for retirement'.[33] If Bostock was not worried he should have been. In his position as the RAAF's senior operational commander and holding an equivalent rank to the CAS, Bostock had been in a strong position to ignore or even openly oppose Jones' authority during the war and had not missed the opportunity to do so. Suddenly, however, circumstances had changed. Administration, not war-fighting, was now the currency in the Air Force, which meant Jones held all the cards. Bostock's vulnerability was aggravated by the fact that he was not on the Air Board, a handicap which also affected Williams and Goble.

Williams, Goble and Bostock had been the dominant figures in the RAAF from 1921 to 1946. At fifty-six, fifty-five and fifty-four respectively, they were comfortably below their maximum retiring age of sixty, and on the grounds of experience and ability seemed still to have a good deal to offer the post-war Air Force. Instead they were given their marching orders. The reasons presented for their dismissals were riven by inconsistencies, and it seems probable that the minister and the Air Board had simply decided that the three men had outlived their usefulness, that there was no place for them in the new Air Force.

AM Sir Richard Williams, CAS for most of the period from 1921 to 1939, and the RAAF's dominant pre-war personality. RAAF

The case used to justify Williams' dismissal seemed contrived. Williams had been a temporary air marshal since 1940, placing him in the curious position of being senior to Jones when the latter became CAS in 1942. The board noted that Williams, although holding the senior rank in the RAAF during the war, had 'been employed in posts other than the most senior which has been occupied by an officer of less seniority', and argued that it was 'impossible' to imagine that Williams could now be employed in posts 'senior to those under whom he has been employed in wartime'.[34] The implication that officers cannot supersede each other was plainly at odds with standard promotion practices: Jones himself, after all, had been promoted over eight officers when

his unexpected elevation to CAS had occurred. A similar reversal of fortune would not have worried the confident Williams, who still considered himself the person most suited to lead the RAAF. Even if he could not again become chief, it is clear Williams did not want to be forced into an early retirement from the service he had done so much to sustain during the difficult early years.[35] He rejected the board's reasons for his dismissal as 'specious' and years later described the affair as 'the meanest piece of service administration in my experience'.

The rationale for dispensing with Goble was ostensibly based on seniority and age and was equally flimsy. After presenting a case against Goble, board members simply recorded that his retirement was 'considered to be necessary'.

Because of his acrimonious feud with Air Vice-Marshal Jones and his prominence as the commander of RAAF operations in the Southwest Pacific, Air Vice-Marshal Bostock's case was the most significant. The retrenchment of a number of other senior officers had been justified by the allegation that they had not gained sufficient operational command experience during the war, an excuse which clearly could not be used in this instance.[36] Bostock was far and away the RAAF's most knowledgable operational commander and had attracted generous praise from Generals Douglas MacArthur and George Kenney. However, just as there was no longer any room for Williams and Goble, nor was there for Bostock. In what was an extraordinary accusation to make against an officer who had been left in command of RAAF operations for three years, Bostock was said to have demonstrated a 'lack of balance and appreciation of responsibility' which made his continued employment 'undesirable'.[37] Bostock's appeal against his dismissal was supported by a personal letter from MacArthur in which the Australian was described as 'one of the world's most successful airmen'.[38] Drakeford was unmoved and the appeal was dismissed.

AVM W.D. Bostock, AOC RAAF Command, 1942–45. RAAF

Once those hard decisions had been taken and the strength of the officer corps reduced to about 2000, Hewitt and his staff were able to turn their attention to the less political but equally sensitive issues of seniority and substantive rank. Because of wartime exigencies, the substantive promotion of Permanent Air Force officers had been allowed to lapse between 1943 and 1947. And not only had all

promotions been temporary, but hundreds more than might have been expected had been made to accommodate the RAAF's expansion. As a consequence, instead of the largely predictable and ordered progress typical of the peacetime Air Force, by 1947 many 'irregularities' had arisen in the *Air Force List*, the RAAF's traditional chronicle of seniority and status which catalogues all officers by rank, seniority, branch and qualification. It was Hewitt's thankless task to restore order to the *List*.

Hewitt selected four criteria which would determine an individual's status in the post-war Air Force. The first three were age, merit, and the needs of the service, with the element of subjectivity inherent in the latter two a source of some controversy by itself. The final criterion of seniority and rank was, however, even more controversial. The question was, which seniority and rank? Hewitt decided that because of the lapse in substantive promotions, the only practicable course he could follow was to ignore an individual's substantive seniority and rank and instead accept his temporary seniority and temporary wartime rank.[39] When the four criteria were combined to establish a new order of merit, many officers found themselves 'demoted' one or two ranks, an outcome which was only to be expected given the enormously reduced size of the Interim Air Force and the very large number of temporary and acting promotions which had been made during the war and which could no longer be retained. The fact that a 'demotion' was expected did not, of course, always lessen the disappointment. That disappointment was bitter indeed for some individuals who as temporary group captains found themselves reduced to flight lieutenant rank, while some of their contemporaries were promoted to wing commander rank. Whether Hewitt and his staff could have done any better is questionable, as any formula they adopted was bound to produce winners and losers. At least by emphasising merit, age and temporary rank, which in combination could reasonably be taken as an indicator of success as a wartime commander, they seemed to be acting in the RAAF's best long-term interests.

The release by the Air Board of an *Air Force List* in June 1947 effectively marked the end of the period of mass demobilisation and signified stability in the officer corps. The *List* also marked the end of an era, as for the first time since 1921 great names from RAAF history like Williams, Goble, Wrigley and McNamara were missing.

Because the Interim regulations were still in force the great majority of the 2000 or so officers on the *List* held temporary rank, the only exceptions being the handful of flying officers and pilot officers whose junior status made such measures pointless. Determining how many should be given substantive rank was Hewitt's final major task in shaping the new officer corps. At the same time as the *List* was published, the government approved in principle a staff ceiling of about 15,000. Hewitt proposed granting substantive rank to seventy-five per cent of squadron leaders and above: if that were not acceptable, he argued that senior officers should at least be allowed to retain the temporary higher rank the *List* had given them.[40] Under that proposal all ten air officers from the General Duties Branch would have been awarded substantive rank: Air Marshal Jones, Air Vice-Marshals J.E. Hewitt and F.M. Bladin, and Air

Commodores J.P.J. McCauley, A.M. Charlesworth, F.R.W. Scherger, U.E. Ewart, E.G. Knox-Knight, A.L. Walters and V.E. Hancock. Drakeford did not agree and only the first six retained their substantive status, with the latter four reverting to group captain rank. Other senior officers fared even worse, with only four of twenty-three temporary group captains and twenty-seven of fifty-four temporary wing commanders retaining their higher rank. Because of the downwards push those 'demotions' created, all fifty-three of the temporary General Duties squadron leaders had to relinquish their rank.

Concurrent with the decision on substantive rank, a guide to 'appropriate ranks by age' was issued, the objective being to ensure that officers with the potential to fill the highest appointments progressed through the system at a satisfactory rate (see table 2.4). Lower ages were stipulated for the General Duties Branch which, as the fighting arm of the RAAF, was required to remain relatively young.

2.4 Appropriate ranks by age, 1948

	Age	
Rank	*General Duties Branch*	*Other Branches*
Squadron Leader	30	34
Wing Commander	36	41
Group Captain	40	47
Air Commodore	44	51
Air Vice-Marshal	48	N/A

Source: Air Board Agendum 8525, 15-3-48, RHS.

Retention of temporary rank was much more favourable for airmen, simply because most did not want to stay in the RAAF. When airmen serving on Interim engagements were invited to join the Permanent Air Force in May 1948, only about 4000 applied, a figure well below the proposed establishment of about 10,000.[41] Consequently, most airmen from the Interim Air Force who joined the PAF were able to retain their rank.

The Air Force's painfully emerging structure had to be paid for. During the war the total expenditure on the RAAF, including cash and lend-lease, had increased almost twenty-fold, from £9.211 million in 1939/40 to £168.620 million in 1944/45.[42] Lend-lease had ceased at the end of the war, reducing the estimated cash expenditure for 1945/46 to £93,156,000. That figure did not, however, provide any useful guidance for the peacetime Air Force, as it included large, unique payments for demobilisation and deferred pay, rehabilitation, and the clearance of numerous outstanding wartime accounts. Special provision also had to be made for the modernisation of airfields as the widespread introduction of jet aircraft was imminent.

Financial estimates prepared by the RAAF for 1946/47 were the first for a complete year under peacetime conditions and totalled £22.9 million, with the major allocations going on pay and allowances (£6.375 million), aircraft acquisition (£6.604 million) and capital works (£1.460 million).[43] The exercise was perhaps more difficult than usual, as provision had to be made for the enormous stocks of equipment which had been acquired for the war and which were now being kept in storage for use at the greatly reduced peacetime rates of effort. Even so, Air Vice-Marshal Jones and his colleagues seem to have been insensitive to political realities, as their bid for £22.9 million was far in advance of the £12.5 million the government had indicated it would spend on each of the services annually from 1947/48 to 1951/52 inclusive.[44] It mattered less that the government's proposed allocation had been arrived at entirely arbitrarily (in itself an indication of the vacuum into which defence had fallen) than that the Air Board frequently irritated the government with submissions described by Minister Drakeford as 'quite unsound'. Perhaps the board thought that persistently submitting bids which almost doubled official guidance was the way to secure extra funding, when in fact all it seemed to secure were periodic rebukes from the minister and admonitions to comply with guidelines.[45] That was not the way to convince the politicians that the Air Force was ready to take the leading role in the defence of Australia.

AM Sir George Jones, CAS from May 1942 to January 1952. RAAF

Leadership is a good subject on which to end a chapter concerned with the immediate influences on the shape of the post-war Air Force. Air Marshal Jones had become the RAAF's leader in 1942 and was to remain CAS until 1952, the longest continuous appointment in the RAAF's history and a tenure which gave him a unique opportunity to influence the development of Australian air power. Jones was a good and decent man who had overcome considerable personal hardships as a youth to achieve remarkable professional success. He had fought as a private soldier at Gallipoli in 1915, an achievement which placed him at the pinnacle of Australian military mythology; and by the end of that war was flying Sopwith Camels over the Western Front, qualifying as an 'ace' by shooting down seven German aircraft and winning the Distinguished Flying Cross.[46] Between the wars he was a solid, somewhat dour, reliable performer whose name was rarely put forward during speculation on high office. His unexpected appointment as chief

thrust him into rivalry with men like Williams and Bostock, a situation he neither sought nor enjoyed. But once in the top job Jones fought doggedly to receive his due. Unlike his rivals Jones did not rock the political boat and got along well with Drakeford, with whom he shared a working-class background. (Following his retirement from the RAAF Jones stood unsuccessfully for election to federal parliament as a Labor Party candidate.)

The central point about Jones' tenure is that the uncertainty which made the Interim period so difficult also made it a time of great opportunity. While the immediate direction defence forces were going to take may have been unclear, governments and strategists were looking for ideas. The years immediately following World War II were the Air Force's best chance since 1921 to promote air power in the defence of Australia in an innovative and constructive way. Jones, however, was neither an inspiring leader nor a notable conceptual thinker, being regarded as mediocre on both counts by numerous senior RAAF officers, including two of his successors as chief.[47] He gained no operational leadership experience during World War II, instead specialising in administration and organisation, functions which were, by his own admission, his forte.[48] In contrast to younger senior officers like Scherger and Hancock he was out of touch with flying and managed only to embarrass himself and those responsible for authorising his flights during his infrequent appearances at RAAF bases for a turn in the cockpit.[49] By the time Jones was eventually retired in 1952, Prime Minister Robert Menzies and Minister for Air T.W. White were both privately expressing dismay over the performance of their CAS.[50] In short, for all his admirable personal qualities, Air Marshal Jones was not the man to lead the RAAF into a new era.

The other senior officers who survived the purge of 1946 to become the new hierarchy were at worst sound and in most cases much better than that. Air Vice-Marshal Bladin and Air Commodores McCauley, Walters and Scherger had distinguished themselves as operational commanders and staff officers during the war; and Hewitt, for all the controversy surrounding his tour as AOC No. 9 Operational Group, had demonstrated political acumen and intellectual toughness as air member for personnel. Air Commodores E.C. Wackett and G.J.W. Mackinolty were highly capable and respected as the air members for engineering and maintenance and supply and equipment respectively; and at the more junior level, men like Group Captains A.M. Murdoch, I.D. McLachlan and V.E. Hancock were representative of an encouraging pool of potential.

A final point regarding the nature of the leadership in the 'new' Air Force must be made. Of the one hundred and sixteen members of the General Duties Branch—the RAAF's ruling class—who held the rank of squadron leader or above in March 1948, fifty-five held at least one award for courage or operational command.[51] The possession of an operational award had been an important consideration during the deliberations on who should and who should not be offered a place in the post-war RAAF.[52] Yet, as CAS Air Marshal I.B. Gration observed almost fifty years later, the skills needed to guide an Air Force in war and those needed in peace are not necessarily the same.[53]

Whether or not the right people had been retained in 1948 would soon become apparent as the period of the Interim Air Force came to an end and the men of the RAAF began to develop strategies to guide their service through the complexities of a world increasingly dominated by the Cold War.

CHAPTER 3

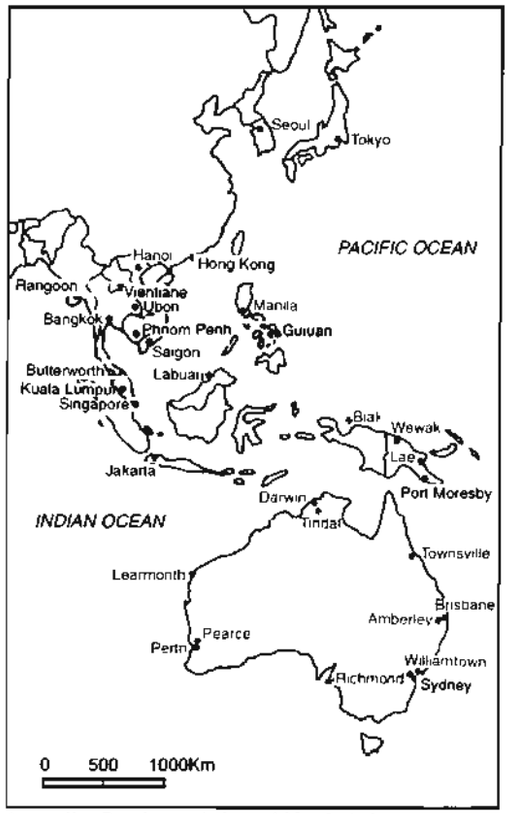
POLICY, PLANS AND DOCTRINE

Australian defence policy between the wars had been based on a dual approach. First, the defence forces were supposed to provide local protection against small-scale raids, a role which implied a certain level of self-sufficiency. The parlous state of the Australian services in September 1939 suggests that level was not achieved. Second, premiums were to be paid on collective security by having expeditionary forces ready for duty overseas with the Empire should the call come. If a major threat to Australia materialised, the insurance policy would be redeemed by the arrival in the Antipodes of Imperial forces. Epitomised by the Singapore strategy, the second component of the dual approach had proven no less flawed in practice than the first.

Still, in view of Australia's size, geography and limited economic base, the theory was sound, even if Great Britain had been incapable of keeping its side of the bargain in 1941. The dual approach was again adopted after the war and was to remain the basis of Australian security planning for the duration of the period examined in this book. Once the strategy had been endorsed two major policy issues had to be addressed: which 'great and powerful' friend should Australia seek to secure as its guarantor; and where overseas should Australian forces be sent to pay the national security premiums? The answers to those questions were to see the RAAF deployed to wars in Asia for almost the entire quarter-century from 1946 to 1971.

Before 1939 the forces the RAAF might have deployed overseas would have been determined solely by what was available rather than by strategic circumstances, so thin was the order of battle. The material gains and planning experience of a world war made a much more systematic approach possible. Worst-case planning reasonably assumed that the maximum force the RAAF could raise and maintain in a future global conflict would be the same as that achieved during World War II.[1] Outside that extreme contingency, the RAAF would have to be shaped to meet the most likely defence emergencies.

The RAAF's first post-war development proposal was titled Plan 'A' and was characterised by the same unjustified optimism which had prompted the excessive claims for the size of the Interim Air Force. A strength of thirty-four squadrons was envisaged, operating one hundred and thirty-four Liberators, two hundred and fifty Mosquitos, four hundred and fifty-five Mustangs, one hundred and five Dakotas, fifty-six Catalinas and a 'certain' number of other 'lesser operational types and essential training aircraft'.[2] By any standards other than those of World War II, that would have amounted to a very powerful air force. Notwithstanding the perceived threat to the West from the Soviet Union, the need for the RAAF to retain 1000 front-line combat aircraft, supported by many more, was not readily apparent. Prime Minister J.B. Chifley gave the proposal short shrift.



Australia, Southeast Asia and North Asia

While the size of the organisation proposed in Plan 'A' was unrealistic, the structure based on an expeditionary force and a home defence force was sound. Negotiations over the final size of the RAAF saw Plans 'B' and 'C' also rejected even though their common premise was accepted. It was Plan 'D' with its total of sixteen operational squadrons which finally won government endorsement in July 1947 as the blueprint for the development of post-war air power in Australia. Plan 'D' was preceded by a foreword by Air Vice-Marshal Jones which defined Australia's strategic setting. It was the RAAF's assessment, the CAS wrote, that notwithstanding the development of devastating weapons during World War II, any future conflict was likely to be a long, drawn-out struggle in which all the resources of the nations involved would be used.[3] Strategic circumstances indicated that if Australian forces became engaged, the most probable locations were the mainland of Asia or the Middle East. The Australian armed services would not, however, be used in those or other theatres until national security against invasion or raids was assured, a role which remained the defence force's prime responsibility.

Jones discussed the size and composition of the RAAF in relation to the other two services and suggested that Australia's misfortunes in the early years of World War II were attributable primarily to the paucity of air power, arguing that in particular allied army and navy commanders (including Australians) had been slow to appreciate that control of the air was now a prerequisite for victory in any form of warfare. Because of that failing, allied forces had been unbalanced; and as a consequence, when manpower-intensive land and sea actions which lacked protection from air attack had been mounted in the early months of the war, a succession of defeats had followed. 'It is universally accepted', the CAS asserted, 'that air superiority is the first requirement for success, and this is accepted by the other services'.[4]

Air Vice-Marshal Jones then emphasised some of the characteristics of air power, especially its potential to apply pressure directly against an enemy's 'vital centres' such as production, infrastructure and morale. In future, he continued, it would be essential to use offensive air power against those kinds of targets before any land

operations were started; indeed, under some circumstances an air attack might be decisive and the army would only have to act as an occupation force. Those kinds of possibilities were likely to be reinforced by the further development of air-released weapons, including rockets. Research and development accordingly would be an integral component of any modern air force. All of those factors, Jones stated, had been taken into consideration during the development of Plan 'D'.

Plan 'D' represented a great deal of hard work. It was an enormously detailed set of papers which presented strategic assessments, estimates of the influence of air power on future conflict, force structure deliberations, costings, and organisational arrangements. Scores of establishment tables covering all elements of a modern air force, from people and aeroplanes through to buses and buildings, were attached.[5] Five fundamental objectives for the RAAF's development were listed.[6] First and most important, a permanent air force consisting of sixteen operational squadrons trained in the techniques of modern warfare and capable of rapid expansion in an emergency was to be established and maintained. That operational force would be supported by training and maintenance organisations, including citizen force and reserve personnel, which would be adequate for peacetime and capable of rapid expansion during mobilisation. The operational force, training organisation and maintenance services would all be dependent to some extent on a modern aircraft industry, which again had to be capable of quick growth. Finally, a system of air bases to enable strategic deployment and tactical operations was essential.

An Air Force comprising four main components would meet those objectives.[7] The main operational organisation was to be a mobile task force consisting of Permanent Air Force fighter, heavy bomber and transport wings; a tactical reconnaissance squadron; and supporting units (see table 3.1). The mobile task force was to be capable of rapid deployment to 'any part of the British Commonwealth which may be threatened', while RAAF planners also envisaged supporting the activities of the Security Council of the United Nations Organisation. In the event of a major defence emergency in Australia or its immediate region the task force would be rapidly deployed from its home bases on the east coast. Strategically important local areas in which it was thought the force might be used were identified as New Guinea, Cape York Peninsula, Darwin, Perth/Albany and Sydney/Brisbane.[8]

The concept of the mobile task force was a good one as it exploited the inherent ability of an air force to move rapidly to a trouble spot. Moreover, by giving each component its own wing headquarters and maintenance support, Air Vice-Marshal Jones and his staff had extended that operational flexibility, as by adding or subtracting the amount of support necessary to meet a particular contingency, units could quickly be deployed either independently or as part of a wing or the complete task force. The concept of the mobile task force also resolved a sensitive political issue. During the war in Europe the dispersal of RAAF personnel throughout scores of British squadrons had both disguised the magnitude of the overall contribution and denied Australian airmen senior command opportunities. In its endorsement of Plan 'D', the Defence Committee[9] stated that RAAF expeditionary forces should in future

be employed as Australian formations and not be dispersed into British or allied forces as smaller formations or units, and noted that the Mobile Task Force provided the framework to achieve that objective.[10]

3.1 Structure of the Mobile Task Force, April 1947

Fighter Wing
- Two Long-range Fighter Squadrons
- Mobile Fighter Control Unit
- Headquarters
- Maintenance Squadron
- Base (Support) Squadron

Heavy Bomber Wing
- Three Heavy Bomber Squadrons
- Maintenance Squadron
- Headquarters

Transport Wing
- Two Transport/Lift Squadrons
- Maintenance Squadron
- Headquarters

Tactical Reconnaissance
- One Tactical Reconnaissance Squadron

Source: CRS A5954, Box 1842, Defence Policy, Post-War RAAF—Nature, Organisation and Strength, April 1947, AA.

Underpinning the mobile force would be a 'static' home defence force which would be responsible for the air defence of Australia, and which would comprise area and command headquarters, fighter and reconnaissance squadrons, and airfield construction, telecommunications, photographic and hospital units. Home Defence Force units would be based permanently in one of five geographic area commands according to role and function, with the fighter aircraft which constituted the main operational element of the air defence system being operated by five Citizen Air Force (CAF) squadrons located near each of the mainland state capital cities. During peacetime the CAF squadrons were to function essentially as training units so their staffing was based on seventy-five per cent citizen force and twenty-five per cent permanent personnel, with the latter responsible for supervision and standards. Also allocated to the Home Defence Force were two general reconnaissance/bomber squadrons, one each at Townsville and Perth.

The Mobile Task Force and the Home Defence Force were to be supported by a training organisation—which was to establish 'the highest possible standards'—and a

maintenance organisation. Plan 'D' also stressed the RAAF's responsibilities to the Army and Navy, especially with regard to reconnaissance and air transport; and the need to support the local aircraft industry.

Substantial difficulties were encountered by the Air Board when it tried to implement Plan 'D', primarily because of the uncertainty associated with conditions of service in the Interim Air Force. In particular, technical airmen of the required quality and numbers were reluctant to commit themselves to the RAAF until their prospects were clear. On top of that, the general indifference of politicians to defence suffocated decision making and restricted funding. Under those rather depressing circumstances the Air Board battled on and, to its credit, had at least formed all of the Plan 'D' units at their permanent locations by April 1949, even if those units were neither fully staffed nor properly equipped.[11]

The Air Board, June 1946. L–R: W.L. Brown (financial member), AVM E.C. Wackett (AMEM), AVM J.E. Hewitt (AMP), AM G. Jones (CAS), F.J. Mulrooney (secretary), R.H. Nesbitt (business member), AVM G.J.W. Mackinolty (AMSE). RAAF

Government indifference did not deter the Air Board. Following the replacement of the Chifley Labor government by the Menzies Liberal government in 1949, Air Marshal Jones presented an expanded development plan to Minister for Air T.W. White, in which he made the extraordinary claim that Plan 'D' had *not* (his emphasis) been designed to meet Australia's strategic needs, but rather to satisfy the 'arbitrary [annual] financial limit of £12.5 million' imposed by the previous Labor government.[12] Perhaps Jones thought he might be able to take advantage of a different government and a new minister—particularly one who was a former Australian

Flying Corps pilot—to expand the RAAF from the sixteen squadron structure to the twenty-five he now argued was necessary. If so, he was wrong. His 'Twenty-five Squadron' plan was passed to White on 15 February 1951, after which, according to an Air Force file note, 'no trace of it' was ever found again.[13] The minister and his staff had demonstrated classic bureaucratic skills, and the general strategic outlook of Plan 'D' and the sixteen squadron structure provided the RAAF's basic guidance for the next twenty-five years.

The rationale behind the Mobile Task Force was to organise the RAAF so that it could be despatched overseas to help pay the premiums on Australia's collective security policy. For the first five years after the war that policy was lodged with the United Kingdom. Notwithstanding the important links which had been established with the United States during the fighting in the Pacific, the ties that bind remained strong. As early as 1944 concern over growing American influence in Asia had prompted Australian Prime Minister John Curtin to write to his British counterpart, Winston Churchill, regarding the need to restore British prestige in 'our Far Eastern Empire'.[14] Curtin's Imperial outlook (a curious view of the world for a socialist politician) was reiterated by his successor, Ben Chifley, who argued that all British nations had a vital interest in maintaining the Empire and that their defence responsibilities had to extend beyond their own territories.

At least Chifley believed that any Australian contribution to the defence of the Empire should be focused in the Asia-Pacific region, identifying the Imperial interests of immediate concern as the security of Australia, New Zealand and Western Canada; the defence of possessions and dependencies in the Pacific and Indian Oceans (for example, Ceylon, Malaya, Borneo and Manus Island); and the sources of raw materials in the Netherlands East Indies (shortly to become Indonesia), India, Persia, Malaya, New Guinea and various Pacific islands.[15] British officials endorsed Australia's renewed commitment to forward defence but suggested Chifley's emphasis on the Asia-Pacific region was short-sighted and that Commonwealth countries should look beyond their own backyards. For Australia, that meant focusing on the Middle East, which Whitehall saw as 'an indispensable bridge which joins East to West ... [it] ... is the link which should join [Commonwealth] strategic policy to our own'.[16] The British chiefs of staff therefore argued that Australia's priority in any global conflict should be the deployment of the RAAF's Mobile Task Force to the Middle East, where the key areas to protect would be the Suez Canal, Alexandria, Cyprus, Israel, Malta, the Straits of Hormuz and the Southwest Persian Gulf oil fields.[17]

Australia's military leaders agreed with that assessment. While they identified the defence of Australia and its territories as their first duty (it would have been cause for grave disquiet had they thought otherwise!), when the relative importance of Europe and Asia was debated in the Defence Committee, precedence was given to reinforcing

the Middle East over Malaya.[18] Precisely how the Middle East could be more vital to Australian security than the neighbouring land masses of Southeast Asia, which only recently had almost provided a bridgehead for a Japanese invasion, with all of its horrific possibilities, was not explained.

Contingency plans were drawn up in February 1951 for the deployment of the Mobile Task Force to either the Middle East or Malaya. For Malaya only, the composition of the force listed at table 3.1 would be supplemented by a squadron of eight Lincoln reconnaissance aircraft to patrol the maritime approaches.[19] Five thousand personnel were to be in place in either theatre by D+60 days, after which the build-up to an eventual total of 12,000 would continue at the rate of 1000 per month. All units were to start operations within two weeks of D-Day and reach maximum rates of effort within two months.

The perceived importance of the Middle East justified the deployment of the RAAF's No. 78 (Fighter) Wing to Malta from 1952 to 1954, an episode which is discussed later in this book. But even before then the imperatives of geography, bolstered by shifting patterns of power and concern over communist uprisings in Southeast and North Asia, had turned Australian attention more towards its own part of the world. Participation in the Malayan Emergency and the Korean War was complemented by a series of alliances intended to strengthen regional security, the first of which was the Australia, New Zealand and Malaya arrangement. Anzam was replaced by the Anglo-Malayan Defence Agreement after Malaya achieved independence in 1957, and then by the Five Power Defence Arrangements in 1971. Australia was not a member of the Anglo-Malayan agreement but became a major partner in the Five Power pact, whose other members were Malaysia, Singapore, New Zealand and the United Kingdom. Underpinning all of those alliances was the Commonwealth Strategic Reserve, a force raised under British sponsorship for the defence of Malaya and Singapore, and under which RAAF units were based permanently in Malaya from the mid-1950s.

Strengthening Australia's engagement in Asia by using the established ties of the colonial past was one component of a dual approach to security adopted by successive governments. The other was to involve the United States in the region. From the end of World War II it had been an Australian foreign policy objective to secure the commitment of American forces to the defence of Southeast Asia against the perceived threat of international communism. The conclusion of the Australia, New Zealand and United States (Anzus) pact in September 1951 was seen to have achieved that objective. It is not widely known that the RAAF's No. 77 Squadron played a small but important part in persuading the Americans to conclude the treaty. During the time negotiations were taking place between Australian and American diplomats, United Nations forces fighting in Korea were under severe pressure. No. 77 Squadron's ground attack Mustang aircraft made a vital contribution in the fight to prevent American forces from being overrun. The squadron's efforts not only drew praise from senior United States commanders in Korea but were also recognised in Washington, where they helped predispose the administration of President Harry

S. Truman towards concluding a pact with Australia.[20] Since its ratification over forty years ago the Anzus treaty has dominated Australian foreign policy.

Those regionally focused agreements were supplemented by broader security pacts. As part of its strategy to combat world communism, the Western Alliance, and especially the United States, arranged a series of encircling pacts which were intended to contain and geographically isolate the USSR and the People's Republic of China. By the end of the 1950s the West had in place the North Atlantic Treaty Organisation, the Central Treaty Organisation and the South East Asia Treaty Organisation, which stretched from Europe through the Middle East, South Asia, Southeast Asia and North Asia.[21] Australia again paid its security dues through its membership of Seato, a commitment which saw RAAF Sabres deployed to Thailand in 1962 and paved the way for the much larger Australian involvement in the Second Indochina War during the 1960s.

Constructing and successfully implementing foreign and defence policies constitutes the high ground of a national government's intellectual endeavour, together with economic management. For a defence force, a comparable organisational and intellectual challenge is associated with the development of doctrine. Doctrine is at the heart of military activity. As the central body of beliefs about the conduct of war it provides the guiding force for action, structure, organisation and development. Its influence should be evident to some extent in all practical activities. More than that, doctrine represents the highest expression of a defence force's intellectual foundations. The continuing process of considering, endorsing and revising doctrinal beliefs is fundamental to an organisation's intellectual vigour. By presenting an orderly and endorsed interpretation of theory and accumulated experience, doctrine should make clear why the organisation is structured the way it is, what its objectives are, and, in broad terms, how those objectives should be achieved.

Before the war the RAAF had not developed any Australian air doctrine, primarily for the good reason that its leaders were preoccupied with institutional survival in the face of persistent Army and Navy hostility.[22] Circumstances after the war were enormously more favourable: the RAAF had grown some fifty-fold in size, participated in the full range of air warfare operations and shared in a great victory. Further, in the atmosphere of uncertainty which accompanied the onset of the Cold War and the emergence of nuclear and missile technologies, governments were looking for direction. The years immediately following World War II were the RAAF's best chance since 1921 to promote air power in the defence of Australia in an innovative and constructive fashion.

The RAAF was not up to the challenge. It lacked either the will or the capability to prepare its own fundamental guidance, instead formally endorsing the concepts presented in a journal article titled 'Air Power and the Future' written by the Commander of the United States Army Air Forces, General H.H. 'Hap' Arnold. The

circumstances surrounding the RAAF's endorsement of General Arnold's work seem curious. Air Vice-Marshal Jones sent two copies of the article, removed from the journal in which it appeared, to the secretary of the Defence Department, Sir Frederick Shedden, and asked Shedden to forward the item to the prime minister and the minister for defence. Jones told Shedden in his covering letter that although written for the United States, Arnold's paper contained 'conclusions and proposals [which] are in most instances equally applicable to Australia, and I may say they are in close agreement with the policies which we are endeavouring to follow in the RAAF'.[23] That was the extent of the CAS's professional comment on the paper.

Arnold's work was a masterful examination of air power doctrine, in both its existing and likely future forms. However, notwithstanding Jones' assertion that the paper's content was 'equally' relevant to Australia, the fact remained that it had been written by an American to meet American strategic goals. Thus, among other things, Arnold focused on global influence and nuclear arms, neither of which concerned the RAAF. Those issues alone would seem to make the CAS's sweeping endorsement of Arnold's paper questionable. Perhaps more disappointing, though, was the missed opportunity to establish an independent, indigenous, intellectual foundation for the RAAF, based on Australian ideas and developed to meet Australian conditions. The capacity was there: at the time, Jones had at his disposal scores of officers who had just experienced the full range of air power strengths and weaknesses in a world war. What was missing was the vision.

The RAAF's inability to seize the unique opportunity offered by post-war strategic uncertainty to develop and publicly articulate Australian air power doctrine was a major institutional failure. That failure adversely affected the Air Force in two different spheres. First, the promotion of doctrine within the RAAF itself was severely circumscribed.[24] New recruits at all levels received almost no formal education on the fundamental business of the organisation they had joined. Second, that dearth of corporate knowledge naturally carried over into the political arena. Given the intensely competitive nature of defence procurement—the process to decide who gets what—there can be few more important activities for the services than fully understanding the intellectual rationale for their existence and explaining that rationale to the widest possible audience. There is little evidence that that was done.

That is not to say the basics of air power doctrine were not well understood in the RAAF; on the contrary, there is no doubt that at the highest levels they were. But for any doctrine to make sense to the politicians and the Defence bureaucrats, let alone the rank and file of the Air Force, it needed to be set in an Australian context. It might have been convenient for Air Vice-Marshal Jones to endorse General Arnold's argument that control of the air is the prime task of air power, that aircraft are inherently offensive, that the control of ground attack aircraft should be centralised, and so on, but how did those concepts apply to a small air force which did not possess hundreds of fighters and a chain of defensive radars, which could not mount 1000 bomber raids, and which in any case was structured to deploy overseas at the first sign of hostilities and become a subsidiary unit of either the RAF or the USAF?

Ironically, a thoughtful discussion of doctrine in an Australian context was presented by the RAAF's British chief of the air staff from 1952 to 1954, Air Marshal Sir Donald Hardman, in a classified paper Hardman prepared on local aircraft production in mid-1953.[25] A protege of the distinguished British strategist, Marshal of the RAF Sir John Slessor, Hardman was a student of military history who enjoyed quoting the classical air power theorists, especially Alexander de Seversky. The setting for Hardman's discourse was a review of the kinds of aircraft which might be built in Australia, given the limitations of local manufacturers and government finances. Hardman started, properly, with the prime campaign of control of the air. In his opinion, 'true and enduring air superiority' could only be won by air striking forces which, by attacking an enemy's 'vitals', would not only deprive him of the means of conducting air warfare but also would drive him onto the defensive so that the war would be fought over his country. Fighter aircraft might be the symbol of air defence, but as Hardman pointed out they were only likely to gain a degree of local and temporary superiority. For example, Spitfires and Hurricanes may have won the Battle of Britain, but it took until 1944 to make the United Kingdom secure against air attack, and that security was achieved not by Fighter Command but by the combined bomber offensive which took the war to the axis powers.

But that offensive doctrine applied to Great Britain in World War II, not to Australia in the post-war years. Applying the kind of logic absent from Air Vice-Marshal Jones' uncritical endorsement of the Arnold doctrine, Hardman argued that as the RAAF could never expect to mount the scale of effort the bombing of Germany had required, Australian air doctrine had to emphasise the defensive. The RAAF's most important task therefore would be to establish local air superiority over key areas with its fighter force, with the objective of holding a defensive line until reinforcements arrived from England or America.

Hardman's advice doubtless was well intentioned, but it did seek to reinforce persistent British pressure for the RAAF to regard itself only as an adjunct to the RAF, an attitude which not only served the United Kingdom's strategic interests but also those of its aircraft industry.[26] Despite the RAAF's history of subservience to the RAF, Hardman's advice was ignored by his successor, Air Marshal J.P.J. McCauley, when in 1954 a team was assembled to travel overseas to examine new types of fighter, bomber, transport and training aircraft. Headed by the AOC Home Command, Air Vice-Marshal Alister Murdoch, the team was in effect going to revise the RAAF's basic force structure. The outcome of the Murdoch mission is discussed in detail elsewhere in this book. Of interest here is the doctrine implicit in the strategic requirement and priorities Murdoch was given before his departure.

Murdoch was instructed to look only at aircraft which were directly relevant to the RAAF's broad tasks under endorsed strategic guidance, namely, the defence of Australia, national commitments under the Cold War, and the defence of Malaya.[27] The Hardman doctrine notwithstanding, the RAAF accorded first priority to its bomber force, which would act as a deterrent in the Cold War and take the offensive in the fight for air superiority when operating from either Australia or Malaya in a

'hot war'. Bomber crews, not fighter pilots, were regarded as the cutting edge of national air defence, with a bomber offensive constituting 'the first line of air defence' and the only method by which general air superiority could be gained.[28] Any bomber Murdoch recommended therefore had to be nuclear-capable and able to fly from Darwin to Singapore, and Singapore to Bangkok, with a maximum bomb load. The acquisition of nuclear weapons would overcome the problems of scale inherent in the RAAF's small size. Fighters were accorded second priority for their role in the air defence of Malaya and Australia. 'As and when the air situation permit[ted]', fighters might also be used to provide tactical support for land forces. Transport aircraft came third in the RAAF's doctrinal priorities, a judgment which might have disturbed those Army and Navy units which depended on airlift to meet their Cold War and Malayan commitments. Finally, Murdoch's brief noted the need for 'other aircraft' for 'maritime operations, communications, training, etc'.

Air Vice-Marshal Murdoch was being despatched overseas to rearm the Air Force because of a major shift in policy initiated by Defence Minister Sir Philip McBride. After three years in the job McBride had concluded that an imbalance existed between endorsed strategic guidance and the respective strengths of the armed services. In particular he believed Australia could not afford two air forces, one operated by the RAAF and the other by the RAN, and had therefore decided that the RAAF should have the sole responsibility for protecting the fleet from air attack whenever ships were within range of land-based aircraft. McBride's decision had profound implications for the Air Force and the Navy, for as RAAF air defence and maritime strike and reconnaissance capabilities were built up, those of the RAN would be disbanded.

For those changes to be effected a dramatic shift in the allocation of defence funding in the RAAF's favour had to be made. In January 1954 McBride presented Cabinet with a paper titled 'Defence Policy, the Vote and the Programme', which proposed weighting defence spending towards the Air Force during the three years from 1954/55 to 1956/57. Under McBride's proposal the RAAF was to receive £269.952 million, the Army £211.381 million and the Navy £165.114 million,[29] numbers which must have made happy reading for survivors of the pre-war Air Force like Richard Williams, George Jones, Bill Bostock and Henry Wrigley, who could remember struggling along with less than nine per cent of defence appropriations for their first ten years while the RAN received about sixty per cent.

McBride's policy decision was given form by Minister for Air Athol Townley. The three-year program prepared by the RAAF for Townley to present to Cabinet in mid-1954 was a watershed in the Air Force's post-war development.[30] First, the program defined a force structure which, with due allowance for new technologies, remained in place for the next three decades. And second, it precipitated a re-equipment program which not only was the largest in the RAAF's peacetime history, but which also led eventually to the acquisition of the F-111 bomber and the C-130 transport, the two most important aircraft operated by the RAAF between 1946 and 1971.

Townley's program restated the RAAF's objectives in war as the air defence of Australia and its territories; the defence of sea communications in the Australia, New Zealand and Malaya region in conjunction with the Navy; and the provision of forces for overseas deployments. Cold War objectives, like those of the other services, were simply to resist communist aggression 'whenever and wherever it occurs'. This responsibility was, according to Townley, being 'readily executed' because of the Air Force's 'exceptional mobility'. As there was no foreseeable requirement for the direct defence of the Australian mainland or regional sea lines of communication, a large RAAF commitment had been made to Cold War operations. No. 77 Squadron was still on a war footing in Japan and its pilots were ready to resume ground attack operations in Korea with their Meteors if needed; the Dakotas of No. 36 Squadron continued to provide logistic support in Korea and Japan; Lincoln bombers from No. 1 Squadron were the mainstay of the Commonwealth's offensive air operations against communist terrorists in Malaya; and Vampire fighters from No. 78 Wing were stationed in Malta under the operational command of RAF Middle East.

That impressive level of commitment would be sustained, Townley told Cabinet, by rearming the RAAF, for which an ambitious program had been prepared. During the period covered by Townley's plan the intention was to place orders for ninety-seven jet fighters, thirty-nine medium jet bombers, twelve four-engined transports and seventy-three jet trainers. The fighters would replace the Sabre and would be built in Australia, with deliveries starting in 1958. One of the British V-Bombers—the Vulcan, Victor or Valiant—was the preferred replacement for the Canberra and would be fully imported, as would the four-engined transports. Additional work for the local industry would, however, be created by building the new jet trainers in Australia. Also listed for acquisition were three VIP transport aircraft for the use of the governor-general, the prime minister and 'visiting international figures', an order considered by Cabinet to be of 'great importance' to the 'prestige and efficiency of the Commonwealth of Australia'.

The new aircraft were to be supported by an extensive range of ancillary services, such as air defence and air traffic control radars and ground test equipment. Underpinning the purchase of hardware was a commitment to remain at the leading edge of aviation technology through an extensive research and development program, with special reference being made to funding for the Aircraft Research and Development Unit at Laverton and the Long Range Weapons Project at Woomera; and for a number of trials associated with aeronautical engineering, armaments, telecommunications and aviation medicine. In sum, the three-year program from 1954/55 to 1956/57 was an impressive and visionary document which became the blueprint for the greatest modernisation program in the RAAF's peacetime history.

When the new aircraft eventually began to appear on the RAAF's order of battle (the C-130A was the first in 1958) it was notable that none of the three operational types

was from the United Kingdom. Despite the continuing strong emotional ties to the 'old country', geostrategic imperatives were continuing to impel the shift towards the United States. The lessons of World War II were reinforced by France's defeat at Dien Bien Phu in May 1954, an event which alarmed the Australian Government as the French Army in Indochina had been regarded as an outer bastion of Australian security. Further, the United Kingdom's influence and presence in Asia was waning as British politicians increasingly diverted their defence resources towards their more immediate concerns in Europe. Only the Americans could fill the vacuum in Asia for the West. Following months of discussions with Whitehall and Washington, the Australian Government took a decision of the first moment when it decided in October 1956 formally to align its defence system as closely as possible with that of the United States.[31] Defence and foreign policies would seek to accommodate American preferences regarding the role Australia should play in Seato; while where possible only military equipment which was fully compatible with that of the Americans would be acquired.

Wartime Prime Minister John Curtin had signalled Australia's shift towards the United States in December 1941 when fears of a Japanese invasion were palpable. Ten years later the Anzus pact was considered by Australians at least to have formalised that security relationship. Prime Minister R.G. Menzies added another important plank to the structure at a meeting in Canberra on 10 October 1956 attended by Minister for External Affairs R.G. Casey, Minister for Defence Sir Philip McBride, Minister for the Navy Senator N. O'Sullivan, Minister for Air Athol Townley, and the three service chiefs of staff, Vice-Admiral Sir Roy Dowling, Lieutenant General Sir Henry Wells and Air Marshal Sir John McCauley.[32]

Menzies had recently returned from an overseas trip during which he had attended a Prime Ministers' Conference in London and held discussions with President Eisenhower in Washington. He told the meeting in Canberra that the acceptance of the nuclear stalemate by both East and West was likely to change the face of war.[33] The 'mass' conflicts typified by World Wars I and II had become much less likely, a development which increased the probability of local and limited wars as communist insurgents tried to gain influence. Highly mobile, flexible forces thus had to become the West's priority. Translating that outlook to the home front, Menzies suggested that the task of the armed forces was not the territorial defence of Australia: if that became necessary it would mean things had been left too late. The only sensible approach, he argued, was to possess forces which were organised and ready to move rapidly to oppose the spread of communism in Southeast Asia; and which also were equipped and trained to be compatible with the emerging major regional Western power, the Americans.

The chiefs of staff concurred with the prime minister's assessment. Each was then invited to comment on his service's broad approach to national defence. 'Black Jack' McCauley (so named for his swarthy appearance in his younger days) had been the RAAF's chief of staff since January 1954 following Sir Donald Hardman's return to the United Kingdom. Like many of his senior colleagues, McCauley had been deeply

angered by the implied insult of Hardman's appointment that no Australian was suitable to lead the RAAF. There should be no doubt that McCauley, at least, was just as ready to become CAS in 1952 as he was in 1954. A graduate of the Royal Military College, Duntroon, McCauley had spent four years in the Army before transferring to the RAAF in 1924. His shaky reputation as a pilot was occasionally an issue among those of his contemporaries whose own limited horizons led them to value little beyond flying ability. The fact remained, though, that McCauley had qualified as a flying instructor at the RAF's prestigious Central Flying School and later commanded the RAAF's No. 1 Service Flying Training School. More to the point for an officer of his seniority and responsibility, he was a thoughtful and intelligent man in a service which did not always appreciate those qualities. He had attended the RAF Staff College at Andover in 1933, and was one of the few pre-war RAAF officers to hold a degree, having graduated from Melbourne University as a Bachelor of Commerce in 1936. During the war McCauley was again in a distinguished minority, as one of a handful of senior RAAF officers who succeeded both in operational command and staff duties. Post-war experience as the deputy chief of the air staff, chief of staff of the British Commonwealth Occupation Force in Japan, AOC Eastern Area and AOC Home Command had rounded out his preparation for the RAAF's highest position.

AM Sir John McCauley, CAS from January 1954 to March 1957. RAAF

McCauley presented the prime minister's meeting with two concepts for the air defence for Australia, both involving operations from Southeast Asia, the first from Indochina and the second from the Malay Peninsula. Time would be critical in the case of Indochina, as RAAF squadrons would have to deploy to the region—and here McCauley specifically mentioned Vietnam as the most likely location—and be ready to fight immediately on arrival. The CAS believed the second concept was the more practicable and relevant to Australia. His experience as the commander of RAAF forces during the disastrous Malayan campaign of late 1941 and early 1942—when the rapid Japanese advance down the Malay Peninsula through Sumatra and Java had seemed likely to threaten Australia with invasion—had left him with a strong and lasting appreciation of the importance of the northwestern approaches to his country's security. In McCauley's opinion the protection of that land mass was the key to the air defence of Australia, and the RAAF's established presence in Singapore represented an important step in pursuit of that objective.

McCauley concluded his statement by outlining some of the more critical issues affecting the RAAF's ability to defend the north. Until the arrival of the C-130 Hercules recommended by the Murdoch mission, the Air Force lacked the long-range transport aircraft essential for rapid deployment, reinforcement and resupply. Offsetting that deficiency to some extent was the strategic air route to Malaya via the Cocos Islands which the Canberras and Sabres could use. Neither of those aircraft, however, was entirely suitable for the most likely operations. Citing the Viet Minh as representative of the kind of enemy the RAAF might have to attack, McCauley suggested that the obsolescent Canberras should be replaced by a supersonic light bomber which could accurately strike hostile bases and supply lines. Australia's F-86 Sabre fighters would also be obsolescent by 1960, but in the meantime the planned acquisition of Sidewinder air-to-air missiles would enhance their effectiveness against the most probable opposition, Russian-built MiG-17s. McCauley then assured the meeting that the RAAF was standardising its equipment as far as possible with the United States. At that point an interesting comment was made by External Affairs Minister Richard Casey, who informed the meeting that a year or two ago he had been told by the Chairman of the United States Joint Chiefs of Staff, Admiral Arthur W. Radford, that American equipment would be readily available for Australian forces as long as its use was not confined to Malaya.[34]

A professional foundation was placed under Air Marshal McCauley's brief strategic review when shortly afterwards the RAAF adopted the RAF manual, AP1300 *Operations*, as its first authoritative reference on air power doctrine.[35] As had been the case with Air Vice-Marshal Jones' adoption of General Arnold's American doctrine in 1946, the British outlook contained in *Operations* was not entirely suited to Australian circumstances: for example, the manual's content related to a nuclear air force, a point the British CAS, Sir Dermot Boyle, made plain in his foreword. Still, *Operations* was a fine piece of work, clearly written and presented and containing a great deal of information on the full range of air power activities. The AP1300 was to serve as the RAAF's air power 'bible' for a quarter of a century, and for a generation of officers some knowledge of its content was essential for success in a variety of promotion exams.

The manual's contention that the primary agent of air power is a weapons system capable of delivering enormous firepower over great distances reaffirmed a fundamental belief of airmen. That belief aside, the major point to emerge from the AP1300 as far as the RAAF was concerned was the notion of a 'balanced' air force, that is, an air force capable of conducting or supporting any air, land or maritime operation. 'Balance' is a concept which does not have universal relevance: it is unlikely, for example, that the air force of a land-locked country like Switzerland would need too much in the way of an air/sea warfare capability; while few countries have ever possessed a truly potent bomber fleet. In general, and especially during peacetime, air forces have been structured to meet their nation's most pressing security needs.

The argument might therefore be made that to some extent 'balance' as a concept is indicative of intellectual laziness, of an unwillingness to analyse a particular set of

conditions and then select the most appropriate force structure. There is also a danger that by trying to maintain a little bit of everything, a small air force may dangerously dilute its essential capabilities. While acknowledging those points, several former RAAF chiefs of staff have stated that 'balance' was not an idea which was accepted in Australia by default, but rather was adopted after careful consideration. They have argued that, given Australia's overriding strategic imperatives of geography, population and economy, it is very difficult, if not impossible, to ignore any of the possible air campaigns of control of the air, air strike, and air support for combat forces.[36] The concept of 'balance' would have been foremost in McCauley's mind as he briefed the prime minister and his colleagues on the RAAF's role in the defence of Australia.

The attitudes and beliefs indicated by Australia's defence strategy represented a response to broader world events. Four decades on, it is sometimes difficult to appreciate the intensity of the ideological confrontation between the West and communism which dominated international relations during the 1950s. British Defence Minister Duncan Sandys reflected that intensity when, during discussions in Australia with Prime Minister Menzies in 1957, he asserted that American nuclear weapons alone stood between the free world and war, a dramatic pronouncement which made it much easier for the Australian Government to send the RAAF to conflicts in places like Vietnam about which it knew very little. Sandys used the same visit to restate his belief, first widely publicised in a British Defence White Paper earlier that year, that developments in offensive and defensive ballistic missile systems would reduce the need for manned strike and fighter aircraft.[37]

Sandys' provocative opinion was taken into account in 1958 when the RAAF conducted a long-term review intended to provide the strategic justification for a major expansion based on the Murdoch mission and the Townley program.[38] Air Staff planners started by confirming the existing broad strategic judgments along which the lines of the Cold War had been drawn; also noted were Sandys' comments, and recent developments in the military capabilities of China and Indonesia, which were believed to have been 'rapid and considerable'. A conceptual basis for the role of air power in the defence of Australia which was then presented placed considerable emphasis on the notion of 'deterrence'. According to the air staff, military strength was the most important deterrent to war, and in turn air power was the 'primary deterrent'. If an air force were to generate a deterrent effect it needed a credible strike force ready for immediate action. An air defence/fighter force was also essential, not only to achieve control of the air but also to support surface forces. In peacetime, the argument continued, those air power capabilities provided a valuable prop to diplomacy. The review concluded by claiming that aircraft had become the pre-eminent expression of military force, both for deterrence and war-fighting. It seemed to the RAAF, however, that that conclusion had not been accepted in Australia, where

only thirty-six per cent of the services' vote was going to the Air Force, compared to forty-two to fifty-four per cent in the United Kingdom, Canada, New Zealand and the United States.

Having dealt with the theory (at least to the RAAF's satisfaction), the air staff turned its attention to the practical by preparing a list of existing deficiencies. The list was a long one as most of the RAAF's main force elements were obsolescent. Four years after the Murdoch mission only C-130A transports had been ordered. Little progress had been made towards modernising the strike and fighter forces, and maritime patrol and reconnaissance capabilities needed to be improved, as did search and rescue and support for the Army. Finally, if the defence of Australia as a strategy was to be taken seriously, adequate bases in the north of the country were needed.

Growing government concern over Southeast Asia generally and China and Indonesia in particular ensured that the modernisation of the RAAF in accordance with the Murdoch and Townley initiatives would finally proceed. Following a series of meetings between 29 October and 24 November 1959, Cabinet endorsed the latest review and set in train the greatest rearmament program in the Air Force's peacetime history.[39] Four major equipment purchases were approved, including two—helicopters and an air defence surface-to-air missile system—which had never before featured in the RAAF's operational inventory. The helicopter type was not specified, but eight were to be acquired for search and rescue and army support. One complete 'fire unit' of Bristol Bloodhound Mk I surface-to-air guided missiles was ordered, incorporating twenty missiles, sixteen launchers and all associated equipment, spares, works and buildings. The question of where the system would be located was left open. Also boosting the air defence system would be thirty new fighter aircraft, which would constitute the first step towards eventually replacing the entire fleet of Sabres. Four years before Murdoch had recommended the Lockheed F-104 Starfighter, but because the RAAF was having second thoughts the new type was not specified. Finally, twelve Lockheed P2V7 Neptune maritime patrol aircraft were to be brought into service to supplement the P2V5s and replace the wartime-vintage Lincolns.

Two important infrastructure and organisational decisions were also announced. Since the end of the war the Air Force had been urging the construction of a second major airfield in the Darwin region, which it believed was the most likely mainland area for air operations. Funds were at last allocated for that development. Second, the five Citizen Air Force (CAF) squadrons were to lose their flying role, with the permanent personnel from those units being used to form a fourth Permanent Air Force fighter squadron. Philosophically and symbolically, the decision to downgrade the role of the CAF was more important than the order for new aircraft and missiles. Since 1921 the RAAF's peacetime organisation had included a substantial percentage of citizen forces. By definition, those units were part time and, therefore, non-professional. A succession of chiefs of the air staff and operational commanders had opposed the priority accorded to the CAF on the grounds that it was inconsistent with the demands of professional aviation, and that with the best will in the world, part-time crews were a luxury a small force could not afford. That fundamental point had finally been accepted.

Subsequent official strategic guidance confirmed the judgments on which the RAAF's planned expansion was predicated. The 1959 Strategic Basis of Australian Defence Policy paper concluded that limited war was more likely than global war and that the Cold War would continue; it also reasserted the need to develop armed forces which could either make a prompt contribution to the defence of Southeast Asia as part of an allied coalition or take independent action against aggression in Australia's northwest approaches, a contingency which above all would demand control of the air and sea approaches.[40] Australia's Chiefs of Staff Committee (COSC) was conscious of the need to achieve a fine balance in the overall structure of the three armed services, as a force shaped primarily to participate with allies in combined operations might not necessarily be capable of independent action in the defence of Australia. In that context, it was significant that the prime task for the Army was viewed as forward operations with allies in Southeast Asia, while the Air Force priorities of strike and air defence were equally relevant to either contingency.

The COSC's assessment of the air threat to Australia in the event of limited war was confined to China and Indonesia, which were regarded as the region's most probable aggressors.[41] Neither seemed especially dangerous. Communist China had no aircraft capable of conducting two-way bombing missions against Australia; furthermore, the chiefs did not believe that the Soviet Union would supply the Chinese with long-range Bear or Bison aircraft in the near future. By 1964 China's existing fleet of obsolescent Tu-4 Bull piston-engined bombers was expected to be augmented by about fifty Tu-16 jet Badgers, but without inflight refuelling those aircraft still would not be able to mount a round trip attack. The possibility of one or two Badgers conducting non-return attacks with nuclear weapons to dissuade Australia from becoming involved in conflicts in Southeast Asia was also considered remote. Nor did the chiefs think Australia would become a retaliatory target if the Chinese themselves came under attack or threat of attack from America or Jiang Kaishek's Nationalists. Indonesia's strike aircraft were equally unimpressive, consisting of twenty Il-28 Beagle light jet bombers and seventeen obsolescent B-25 Mitchells. At worst, in a limited war, small-scale attacks could be expected against military installations in the Darwin area and shipping in the northwestern waters.[42] If, however, any Indonesian aggression were supported by major communist bloc countries, the air threat to Australia would increase significantly.

Notwithstanding the obsolescence of the Chinese and Indonesian Air Forces, the mere fact of their proximity to Malaya and Singapore constituted some sort of threat to Australia's interests in Southeast Asia. The Anzam Defence Committee believed that any danger to the Malay Peninsula would come primarily from China's Il-28 Beagles supplemented by a small number of Tu-4 Bulls, with the latter capable of striking targets from mainland China or North Vietnam with a 9000 kilogram load.[43] The Bulls might be supported by Soviet Badger medium jet bombers which could reach Malaya and Singapore with a 4500 kilogram bomb load from well inside China. Any air threat from China was considered likely to increase should the United Kingdom deploy RAF V-Bombers to Butterworth or Tengah. As Indonesia was

rearming with Badgers, it too might present a threat after 1962. However, Anzam planners were confident that the air forces of the Commonwealth Strategic Reserve based in Malaya and Singapore would defeat any such threat. The Commonwealth's radar network was capable of detecting and tracking any intruders flying at medium and high altitudes (the expected level of any attack) before they were within range of major targets. By day the RAAF's Butterworth-based Sabre fighters could be scrambled to deal with intruders, while by night the RAF's Javelins and Hunters would do the job. The high speed and rate-of-climb of the Commonwealth fighters was regarded as a crucial advantage for intercepting and destroying hostile bombers, as were the Sidewinder air-to-air missiles recently fitted to the Sabres.

President Sukarno's policy of 'Confrontation' towards the proposed state of Malaysia, combined with apprehension over his intentions towards Dutch-controlled West New Guinea, sharpened fears of Indonesia in the early 1960s. As far as any air threat was concerned those fears were misplaced. The Indonesian Air Force's ability to mount attacks against eastern New Guinea (over which Australia held a United Nations mandate) was severely constrained by the lack of airfields, as only Borokoe and Mokmer on the south side of Biak Island were suitable for sustained jet operations, and Indonesia's capacity for developing other bases was limited.[44] However, those major limitations and the generally dilapidated condition of the Indonesian Air Force were not well known. Tensions peaked in 1963 following the politically motivated and mischievous claim by Australia's leader of the opposition, Arthur Calwell, that the Indonesian Air Force could destroy any Australian city. It was in direct response to the subsequent public alarm and, with an election looming, the need to be seen to be doing something, that in October the Menzies government ordered twenty-four 'TFX' bombers because they had the range to attack Jakarta.[45] Menzies' announcement that the RAAF would be equipped with the revolutionary 'swing wing' bomber which was later renamed the F-111 quelled public concern and helped him win the election.

In the event the F-111s never had to bomb Indonesia; nor did Bulls, Badgers or Beagles ever attack eastern New Guinea or Australia from Biak Island. The United Nations brokered an agreement for the peaceful transfer of West New Guinea from the Netherlands to Indonesia in August 1963 and, in one of those perverse ironies which characterise international relations, just over ten years later RAAF Canberra bombers, converted to the photographic survey role, were flying out of Biak on mapping operations as part of the Australia/Indonesia defence co-operation program.

That was in the future. Responding to pressure from its American ally to do more to oppose the spread of an apparently monolithic communist movement in Southeast Asia, in September 1962 the Menzies government initiated the second phase of the rearmament program it had started in 1959. This time Cabinet's strategic thinking was directed towards air defence and battlefield mobility. Forty French Dassault Mirage fighters had been ordered in 1960 to replace the Sabres, and a follow-on order for another thirty was now placed. Simultaneously the RAAF was instructed to make an 'urgent evaluation' of short take-off and landing fixed-wing transports and heavy

lift helicopters to provide tactical mobility for the Army.[46] Within weeks the RAAF had recommended the Caribou and Chinook and orders had been placed for twelve and eight respectively; however, because of production delays, the Chinooks were replaced by increasing an existing order for Iroquois utility helicopters from eight to sixteen. An 'accelerated' review of the Defence program conducted in 1963 maintained the momentum. In May authorisation was given to buy eight more Iroquois, bringing their total to twenty-four, and the Caribou order was increased to eighteen. A third batch of Mirages, this time forty, was also approved. The one hundred new fighters were to be complemented by two new control and reporting radar systems and increased war reserves of weapons.[47] More equipment meant more people. Forward projections showed the RAAF's personnel establishment growing from about 16,000 to 21,000 over the next five years, an increase of twenty-five per cent.[48]

Those planned acquisitions were all related to deteriorating conditions in Indochina and an impending major Australian commitment to the war in Vietnam. Responding to communist successes and pressure from the United States, in 1962 the Australian Government had sent a small number of Army advisers to South Vietnam and a squadron of RAAF Sabres to Ubon in Thailand. Since then the possibility of increasing the Army contingent had been raised periodically. If that increase occurred, it seemed probable that the RAAF would have to provide tactical air support. That air support in fact began to arrive in Vietnam well before the army build-up, with the first three of what was later to become a squadron of Caribou transports touching down at Vung Tau on 8 August 1964. When No. 1 Australian Task Force was established in Phuoc Tuy Province in May/June 1966, its two Army battalions were accompanied by No. 9 Iroquois helicopter squadron, which was to provide battlefield mobility. The arrival of No. 2 Squadron's Canberra bombers at Phan Rang in April 1967 completed the RAAF's contribution towards what had become a major expression, first, of Australia's strategy of forward defence, and second, of its policy of paying a collective security insurance premium by supporting its American ally.

The assessments justifying Australia's substantial commitment to the war in Vietnam were reaffirmed by the 1967 Strategic Basis of Australian Defence Policy paper, and again by the 1969 Chiefs of Staff Committee's review of Australia's strategic concept and military capabilities.[49] Direct attacks against Australia were still considered unlikely, with any military pressure against the West instead continuing to come from insurgencies in Southeast Asia. In the chiefs' opinion the correct response to that pressure was already being made through the presence of Australian forces in Vietnam, Malaysia, Singapore and New Guinea; and through the nation's membership of Seato and Anzam. The chiefs noted with satisfaction that in the preceding six years there had been a marked increase in the size and capability of Australia's regular forces, a development consistent with the strategic aims they had defined. The modernisation of the Air Force which was underway was considered especially pleasing; in particular, the strike capability which the F-111s would confer was regarded as crucial to deterring aggression.[50]

By the early 1970s Australian threat assessments had eased significantly. Contrary to earlier fears, China had not become directly involved in the war in Vietnam and, despite increasing signs of a communist victory, there were few indications that the pro-Western states of Thailand and Malaysia would also fall should South Vietnam capitulate. Closer to home, General Suharto had assumed the full powers of president of Indonesia in place of the volatile Sukarno. Under the pragmatic Suharto, Indonesia had not developed a long-range strike capability, preferring instead to construct an air defence system for Java and Sumatra and strengthen its airlift and counter-insurgency capabilities.[51] It was evident that Indonesia's new leadership was concerned primarily with internal security, a sensible priority for an administration which had suppressed a major uprising, allegedly initiated by local communists, only five years previously.

The withdrawal of all Australian forces from Vietnam which was well underway by the end of 1971 constituted clear evidence that the national defence strategy was changing. While some degree of forward presence would continue, it was apparent that in future Australia's armed forces were likely to be organised primarily to defend their own country. Acknowledging that change, in 1970 the chiefs of staff issued a memorandum which redefined the common functions of the services as deterring aggression, ensuring the security of Australia and its territories, and upholding Australia's interests by military means.[52] The single-service roles assigned to the RAAF in pursuit of those objectives are listed at table 3.2.

3.2 Roles of the RAAF, 1970

1. To organise, train and equip air forces for timely and sustained combat operations:
   —to defend Australia, its territories and Australian forces against air attack;
   —for offensive air strikes against enemy forces and installations;
   —to control vital air areas and establish local air superiority when required;
   —for air reconnaissance; and
   —for maritime air warfare and ocean surveillance.
2. To provide close offensive and tactical air transport and air support for the Army.
3. To provide strategic and other military air transport support for the Australian Armed Forces.

Source: COSC Memorandum 5/1970, Functions and Roles of the Australian Armed Forces, CRS A7941/2, F17, AA.

The modernisation program of the 1960s and the extensive experience gained in Asia over the past two decades had given the RAAF the operational capabilities to conduct those roles successfully. But possessing capabilities was only part of the equation. The RAAF had also to develop strategies and doctrines which reflected the shift from forward defence to the defence of Australia, and from fighting as a junior partner in an alliance to contributing as an equal partner in an Australian joint force.

CHAPTER 4

STRATEGIC AIRFIELDS

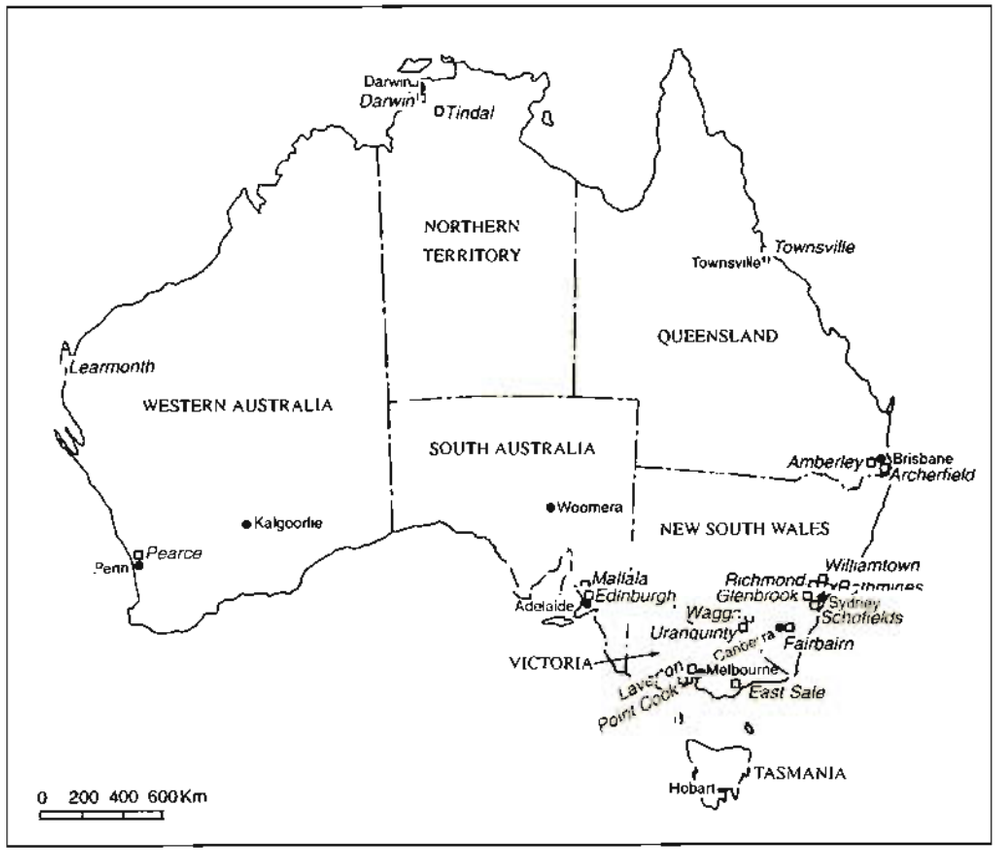
If the concept of operations for the Mobile Task Force and the Home Defence Force were to succeed, an extensive system of airfields and bases was essential. That system would have to satisfy three main criteria. First, it would have to support the RAAF's full order of battle in each of five separate 'strategic' areas: New Guinea; Cape York Peninsula–Townsville; Darwin–Fenton; Perth–Albany; and Sydney–Brisbane. Second, strategic air route bases were needed to allow the force to deploy rapidly and to take full advantage of the inherent flexibility of air power. And finally, training and maintenance needs had to be accommodated.[1]

In October 1945 there were three hundred and seventeen mainland and regional airfields under RAAF control. Plan 'D' on which the Air Force's post-war development was founded claimed that one hundred and thirty-three of those airfields were still needed: forty-two for the Mobile Task Force, twenty-six for the Home Defence Force, thirty-five for 'miscellaneous' use such as training and test flying, and thirty which were to be kept but not maintained. The remaining one hundred and eighty-four were listed for disposal or return to the Department of Civil Aviation.[2]

Air staff planners had set minimum standards for major airfields, which required at least one runway 2500 metres long and fifty metres wide and which was strong enough to withstand intensive use by jet aircraft weighing up to 45,000 kilograms with tyre pressures of six hundred and ninety kilopascals.[3] Taxiways, tarmac areas, hardstanding and operational readiness platforms built to the same standards were also considered essential. Most of the airfields in Plan 'D' did not meet those criteria and, as the estimated cost of completing the work ranged from £100,000 to £500,000 at each location, upgrading all one hundred and thirty-three was out of the question. When priorities were re-examined, the far more modest total of twelve bases was designated as critical. These were the so-called 'strategic' bases at Butterworth, Cocos Island, Momote, Darwin and Learmonth; and the major mainland bases at Williamtown, Townsville, Pearce, Darwin, East Sale, Richmond and Amberley. The airfields at Port Moresby, Canberra, Laverton and Schofields were also earmarked for improvement but did not have the same operational priority. If the remaining one hundred and seventeen stayed on the RAAF's real estate register they would be maintained to lesser standards.

The history of the 'strategic' airfields is the more interesting of the two groups, but before turning to that story the rationale behind the choice of the mainland bases should be mentioned. Most sites had been chosen in response to previous strategic, demographic and political pressures. Townsville was the major air base on the northeast coast, Richmond on the east, Laverton on the southeast and Pearce on the west. Williamtown, Amberley and Schofields were the peacetime bases for the RAAF's fighter, bomber and transport wings respectively; Canberra was the site of the

national capital; and East Sale was the home of the Air Force's most important peacetime unit, the Central Flying School, which was responsible for setting and maintaining flying standards. Later, Schofields was taken off the list when first Canberra and then Richmond became the major transport base; and Edinburgh was added in the mid-1960s when it began to replace Richmond and Townsville as the hub of maritime operations. Upgrading all of those mainland bases was not a job which could be completed overnight. Many of the RAAF's airfields had been developed in haste during World War II and, despite a steady and co-ordinated post-war works program, as late as 1971 several were still 'plagued' with temporary wartime buildings.[4] Most aircraft movement and technical facilities had, however, been brought up to the necessary standard for a 'jet' air force by 1950.



Major RAAF bases

Those mainland air bases were the focus of the RAAF's peacetime training and exercise flying, and they also provided an Air Force presence in each state. Geography and the experience of World War II indicated, however, that if the RAAF went to war again it would not be from those bases but from the 'strategic' airfields in the north or overseas.

The strategic airfields had been chosen because of their relationship to the two axes along which the Japanese advance on Australia had been made, the first via the Malay Peninsula and the second through New Guinea. Post-war planning assumed that any communist threat would follow the same paths. The long-standing British presence in Malaya and Singapore meant that facilities on the Malay Peninsula generally were very good. Concern was, however, periodically expressed over access to the region from the south. If for some reason the new state of Indonesia (which had achieved independence in 1949) decided to withdraw overflight rights, aircraft might be prevented from transiting to Singapore and points further north and west. The logical option, in the RAAF's opinion, was to develop the RAF airstrip on the Cocos Islands, which the air staff saw as an important strategic asset and a vital alternative air route between Darwin and Perth and Southeast Asia.[5]

The Cocos Islands were administered by the United Kingdom as part of the Colony of Singapore, but day-to-day management was in the hands of a Scottish family, the Clunies-Ross, who had been granted a lease in perpetuity in 1886. In response to official British suggestions that the entire operation and administration of the airstrip at Cocos might be ceded to Australia, in 1949 the RAAF had prepared costings for upgrading and maintaining the airstrip to international standards. An estimated initial outlay of £500,000 followed by £50,000 annually seemed a sound investment, especially when British officials hinted that sovereignty over the islands might also be transferred to Australia. When the rapidly deteriorating political situation in Southeast Asia in the early 1950s and the war in Korea confirmed the importance of the Cocos Islands both as a staging post for strike, fighter and transport aircraft, and as a base for maritime aircraft, upgrading the airstrip became a Commonwealth strategic priority.[6] In June 1951 the British Government announced that Australia would take over the administration of the islands. Following negotiations between the Australian Government and the Clunies-Ross family, an RAAF team led by the highly regarded airfield construction engineer, Group Captain W.A.C. Dale, visited Cocos to conduct a final survey before work began. The main body of No. 2 Airfield Construction Squadron (2 ACS), comprising four hundred and four officers

Group Captain W.A.C. Dale, whose capable leadership contributed substantially to the achievements of the RAAF's airfield construction squadrons in the late 1940s and during the 1950s. E. DALE

and airmen, arrived in the Motor Vessel *Cheshire* on 19 December 1951, joining an advance party of sixty, and by July the following year had completed a 2500 metre-long airstrip, taxiways, hardstanding, navigation aids, lighting and refuelling facilities.

Australia continued to expand its holdings of strategic real estate when the former RAF base at Butterworth on the northwest coast of Malaya was handed over to the RAAF. Butterworth was released by the British Government on an indefinite free loan, but before sustained jet operations could be conducted major works were needed.[7] No. 2 Airfield Construction Squadron started the RAAF's biggest overseas engineering job in August 1955 when it turned the first sod for the 'Butterworth Reconstruction Project'. By the time Butterworth officially became an RAAF base on 1 July 1958, it could house three front-line squadrons and their supporting units, as well as substantial numbers of transient aircraft. As the most forward Commonwealth air base in Southeast Asia, Butterworth sat astride a vital point on one of the two main axes of approach to Australia, as well as making possible the rapid deployment of RAAF units to other areas in Southeast Asia. Butterworth was to be a key link in Australia's strategy of forward defence for three decades.

Momote, Rabaul and Port Moresby were to be the main forward bastions along the second axis of approach to Australia, through New Guinea from the north. Intelligence reports indicated that direct threats to Australia were slight, consisting of no more than a few submarines in the northern waters and an occasional long-distance submarine reaching further south and east. But if China became aggressive the scale of the threat could increase rapidly, with one assessment suggesting that an enemy who obtained bases on the islands along the axis might deliver 'moderate' bombing attacks against Australia's main cities, possibly using atomic weapons.[8] Setting aside the observation that the consequences of an atomic attack surely would have been greater than 'moderate', clearly it was in Australia's interests to control the northern axis of approach and deny others the use of any bases.

Port Moresby was regarded as by far the most important of the three sites because of its crucial defensive position in relation to the Australian mainland. That proximity to Australia also meant Moresby would be relatively easy to upgrade quickly should the need arise, so the RAAF decided that one of the more remote bases should be modernised first. Momote on Manus Island was chosen in preference to Rabaul because its existing facilities were better. The airstrip in particular was suitable for redevelopment as it was already 2200 metres long, had clear approaches, and was constructed from coral which needed little maintenance. With relatively little work the runway could take any of the RAAF's long-range reconnaissance or heavy bomber aircraft, the types most likely to deploy forward in the early stages of an emergency. Adding to Momote's appeal were the hangars, fuel storage tanks, communications facilities and accommodation buildings which had been left behind by the Americans after the war and which were handed over to the RAAF at no cost. Working three shifts a day, No. 2 ACS brought Momote up to standard as an 'advanced operational base' which was occupied by a base squadron and used for deployments by elements

of the Mobile Task Force. In yet another concession to financial realities, Port Moresby and Rabaul were left with small care and maintenance parties only.[9]

Sadly for those members of the Air Force who enjoyed postings which consisted in the main of fishing and swimming in a tropical climate, Momote's strategic significance diminished over the years. The RAAF's withdrawal from Japan and Korea in the mid-1950s reduced the utility of a staging post between Australia and North Asia; while Butterworth eventually filled the need for operations into Southeast Asia.[10] In 1958 Base Squadron Momote was disbanded and the airfield handed over to the Department of Civil Aviation.

Other strategic routes to Southeast Asia were occasionally used or at least surveyed for emergency deployments, particularly during periods when it seemed possible Indonesia might refuse overflight rights. For example, when two squadrons of Sabre fighters were deployed to Butterworth in the late 1950s, consideration was given to using the route Maralinga–Kalgoorlie–Pearce–Learmonth–Cocos Island–Singapore, before Darwin–Biak (which remained under the authority of the Netherlands until 1963)–Guiuan (Philippines)–Labuan–Butterworth was selected.[11] Those kinds of options were generally available, albeit at some inconvenience and increased expense.

During most of the RAAF's peacetime years there has never been a flying squadron stationed permanently at Darwin: it has been as a transit and exercise post that the airfield has earned its keep. Yet Darwin arguably is the most important base for the air defence of Australia, its location at the northern gateway making it not only the first port of call but also the link between the mainland and overseas strategic airfields. Darwin's significance was never more obvious than on 19 February 1942, when heavy Japanese air raids devastated the RAAF and exposed Australia's vulnerability. Continuing raids over the subsequent months marked the low point of the RAAF's history.

Immediately after the war Darwin resumed its role as a transit post. In order to facilitate that task, the major objective of base development was to clean up the war damage and improve living conditions for the permanent staff who looked after the continual succession of VIP, ferry and training flights.[12] It was almost a decade after the war before the first serious attempt was made to make something more of Darwin. Air Marshal J.P.J. McCauley provided the driving force. During a tour of all USAF Far East Air Forces bases, the CAS had been impressed by the high standard of facilities, which enabled those bases to handle any aircraft in the USAF's inventory, current and planned. They were, McCauley observed, 'true strategic airfields'. The RAAF needed to follow that example and, as the only base in the north from which major operations could be mounted, Darwin was the logical place to start. McCauley wanted Darwin to become the 'main Australian base for war', both for operations on the mainland and deployments to Southeast Asia.[13]

No. 5 Airfield Construction Squadron had started work on a new main runway at Darwin in 1955 but not to the 'strategic' standards the CAS wanted. On his return to Australia McCauley convinced the government to spend the additional money needed to upgrade the runway.[14] Eventually 3350 metres long and sixty metres wide, with associated taxiways and hardstanding, the runway could accept the most advanced heavy aircraft, including the RAF's nuclear armed V-Bombers. With that work close to completion by the end of 1961, Cabinet approved the expenditure of a further £2.57 million on works which would enable the RAAF to deploy to and operate from the north in strength.[15] Operational readiness platforms and arming areas were added for the RAAF's strike force of Canberras and Sabres, while extra technical and domestic buildings allowed an additional 1500 people to deploy to Darwin during major exercises.

The Commander of No. 78 Wing, GpCapt G.A. Cooper (3rd from left) is shown being greeted on his arrival at the newly redeveloped Butterworth base by the AOC No. 224 Group, AVM V.E. Hancock (2nd from left), WgCdr H.W. Connolly (left) and the OC RAAF Butterworth, AirCdre K.R.J. Parsons, November 1958. RAAF

Still that did not meet the RAAF's definition of a 'strategic' facility. Air Force commanders wanted the flexibility to divert forces and avoid overcrowding, two deficiencies which had contributed to the disaster of February 1942; further, in a major war the capacity of a single airfield might not be adequate. Only a second airfield would provide the answer.

McCauley was succeeded as CAS in March 1957 by Air Marshal F.R.W. Scherger. More than anyone else, Scherger appreciated the need for a system of modern, flexible and robust bases in the north, for in February 1942, as a group captain, he had been in

command at Darwin. While Scherger had emerged from the subsequent commission of inquiry with his reputation intact, the experience was salutary and chastening in the extreme. From then on he was committed to establishing a second major base in the Darwin area. His appointment as CAS gave him the authority to pursue the cause, while his promotion to air chief marshal and chairman of the Chiefs of Staff Committee in May 1961 enabled him to sustain the pressure at the highest levels for an unusually long period.

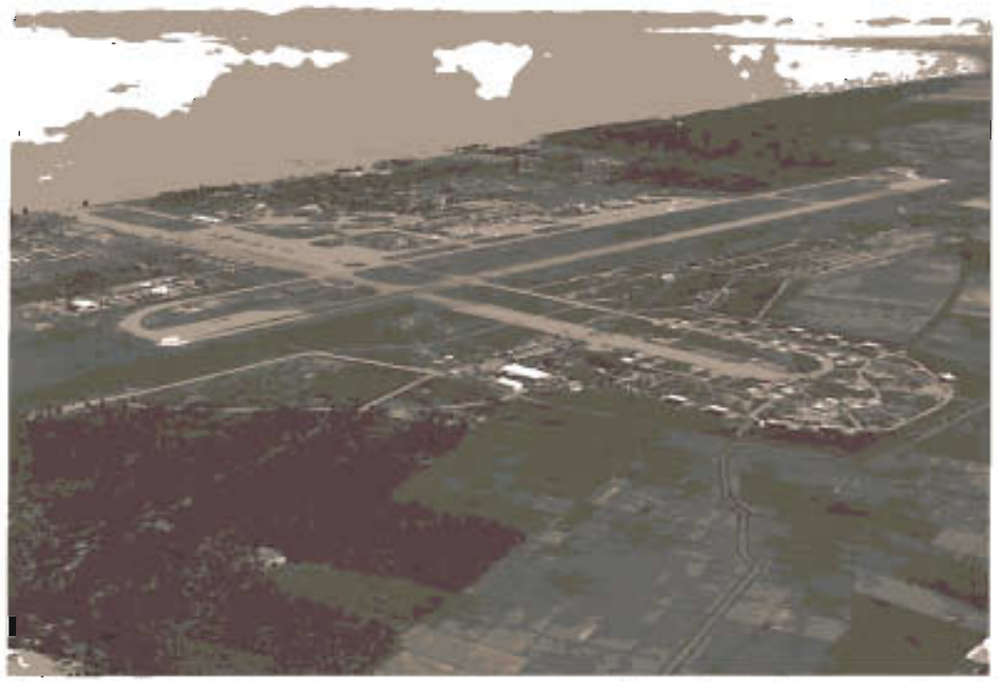
Scherger began pressing the government for a second major airfield in the Darwin area in 1959, and even before receiving a reply instructed No. 5 Airfield Construction Squadron to start stockpiling materials for the job.[16] His lobbying was successful and provision was made in the 1959/62 Defence Program for work to start on the new base. After the usual delays, the survey of possible sites was completed in May 1963 when the former wartime airfield of Tindal was selected.[17] Located eleven kilometres south of the town of Katherine and two hundred and fifty kilometres from Darwin, Tindal met the RAAF's main geographic and strategic criteria. It was sufficiently far inland to make enemy incursions difficult and reduce the worst effects of the tropical cyclones which often lashed the coast, while being sufficiently close to Darwin to establish a mutually reinforcing connection.

Scherger's concept for Tindal was to establish an 'Un-Manned Operational Base', later known as a 'bare base'. Permanent facilities would be kept to a minimum and would consist of high-quality movement surfaces—a 2750 metre-long runway, taxiways and hardstanding—supported only by essential infrastructure such as electricity and water. There would be almost no permanent buildings. In times of defence emergencies or exercises all other facilities and services would be moved in by air or truck. It was a concept ideally suited to a relatively small air force with a vast, largely underpopulated and underserviced continent to defend.

But despite the obvious merits of both the concept and Tindal's location, the project was delayed yet again, this time by competing strategic considerations. Limited resources meant that at the start of the 1960s only one airfield could be built, and priority had gone to the Australian-mandated Territory of Papua New Guinea, where the Air Board believed the RAAF's new Mirage fighters would need a transit airstrip for their deployments to and from Southeast Asia.[18] Sites on the mainland at Nadzab and Wewak were under consideration, as was the possibility of rehabilitating Momote. Pending that decision (which eventually favoured Nadzab), work at Tindal was deferred. The delay worried Air Member for Supply and Equipment Air Vice-Marshal D.A. Creal. Any construction work in Papua New Guinea was likely to go to civilian contractors rather than the RAAF, and Creal was concerned for the future of No. 5 Airfield Construction Squadron, which had already been pared back and needed the job at Tindal to maintain continuity of employment and, to some extent, to justify its existence. Under pressure from Creal the Air Board agreed that Tindal should proceed, and by 1967 the job had been completed at a cost of about $7 million. Over the following thirty years Tindal was to provide the model for three more bare

base airfields across the north of Australia, the last of which fittingly has been named RAAF Scherger.

The first of those additional bases was sited in the northwest of the country, where there was no airfield suitable for sustained operations by jet fighters and bombers between the existing RAAF bases at Darwin and Pearce, a distance of some 3200 kilometres. Until that gap was plugged, such concepts as the mobile task force and rapid deployments either internally or to Southeast Asia were problematical. The location selected by the Air Force was Learmonth on the Exmouth Gulf, 1100 kilometres north of Perth.



Butterworth in its hey-day of RAAF operations, supporting a Sabre wing, a Canberra squadron and a transport flight, with full maintenance and administrative services, May 1965. RAAF

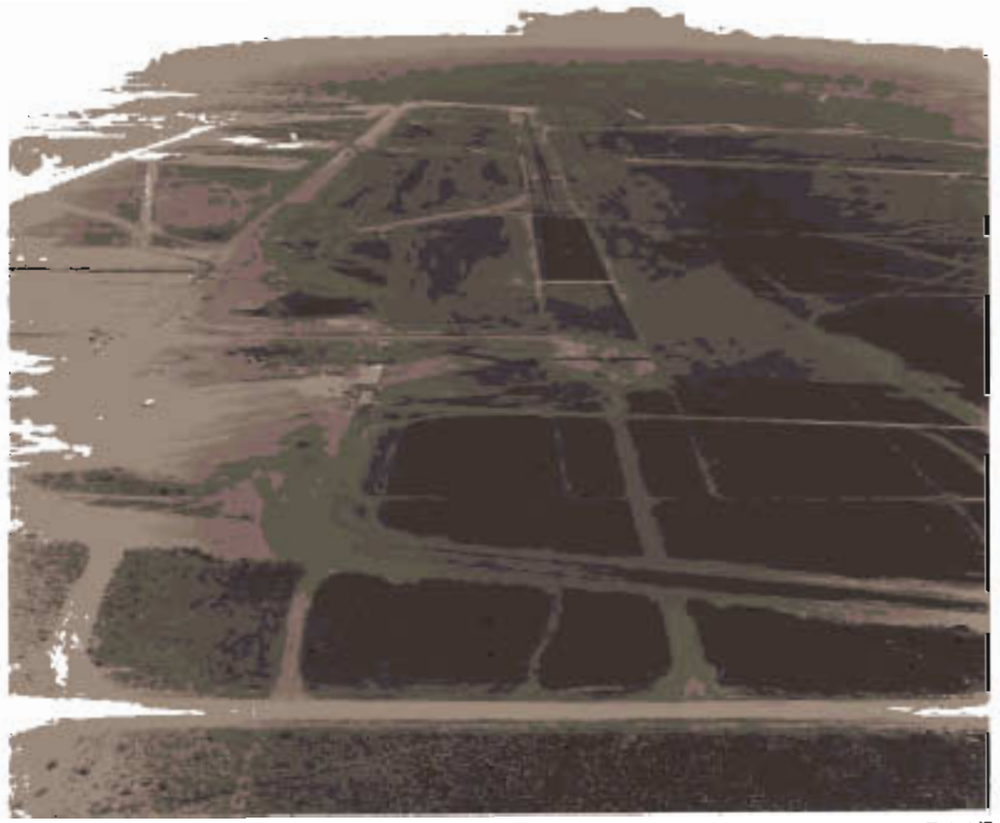
As far back as December 1945 funds had been allocated to buy about four hundred and fifty hectares of land at Learmonth to construct a new airfield and signals facilities on the site of a wartime strip. Finalising the sale took five years, by which time the priority for airfield construction had turned to the Cocos Islands and Momote.[19] The 1954 tour of American bases which had stimulated Air Marshal McCauley's interest in Darwin also prompted him to turn the RAAF's attention towards the northwest again; while by 1957 the impending deployment of Canberras and Sabres to Malaya as part of the Commonwealth Strategic Reserve added extra urgency to the need to develop alternative strategic routes.[20] Cabinet allocated £450,000 for the development of

Learmonth to the minimum standard necessary for ferry flights and the occasional operational deployment.

In the early 1960s rising tensions with Indonesia and the selection of the F-111 to replace the Canberra indicated a need for further works at Learmonth. As long as the Canberra was the Air Force's main strike weapon there was little point in spending more money on Learmonth, since no amount of infrastructure could overcome the obsolescent bomber's limited range. The F-111, though, was a different matter. Chief of the Air Staff Sir Valston Hancock informed Minister for Air David Fairbairn in April 1964 that with its radius of action of 2700 kilometres, an F-111 operating from Darwin could attack all major Indonesian targets in West New Guinea and Java with a 2700 kilogram bomb load. Strikes against Jakarta, however, would be at the limit of the aircraft's range, an operational handicap which would adversely affect planning, route flexibility and manoeuvrability. Because the F-111s would be operating at their maximum range, they would have to attack Jakarta along predictable lines of approach, which in turn meant that detection by Indonesian radar warning stations sited on the island chain between Timor and Java would be likely.[21]

But if Learmonth were available the F-111s would be about seven hundred and twenty kilometres closer to key targets in Java, enabling the RAAF crews to vary their attack directions and make a greater portion of their run-in at low altitude to stay underneath the radar defences. Hancock told Fairbairn that once the F-111s were in service, Learmonth would assume great importance as a forward base 'for mounting operations against Indonesia's vital centres in Java'. The CAS concluded by giving the minister a short lesson in deterrence theory. There is no point in adopting a strategy of deterrence, he suggested, if the object of the strategy does not know he is supposed to be deterred. Air Marshal Hancock defined the significance of Learmonth in precisely those terms. Indonesia's leaders would base their assessment of the RAAF's effectiveness on the ability of Australia's bomber aircraft to attack vital areas in Java, and any airfield extensions at Learmonth would not go unnoticed.

By itself that seemed sufficient reason for further development. Other reasons strengthened the argument. Better facilities would give the RAAF the option of filling part of the gap in Australia's air defences, as fighter aircraft and mobile control and reporting units could be deployed at short notice; while Learmonth's location also made its utility for maritime patrol and transport operations self-evident. Cabinet agreed and in April 1966 approved additional works to bring Learmonth up to a standard suitable for unrestricted operations by F-111, Mirage, Hercules, Canberra, Neptune and Orion aircraft.[22] The runway was to be extended from 2140 to 2600 metres (later increased to 3000 metres), taxiways and aircraft hardstanding constructed, and existing buildings and services upgraded. While improving relations with Indonesia and delays in the arrival of the F-111s saw the project suspended shortly afterwards, No. 5 Airfield Construction Squadron eventually started work at Learmonth in strength in 1971 and, under the leadership of Wing Commander J.D.G. Lessels, had finished the job by 1973.



Learmonth under construction by No. 5 ACS, 1972. RAAF

The term 'unsung hero' is so over-used as to be a cliché. That is a shame, as the term is descriptive and apt when applied in genuine cases. No better case could be found than the RAAF's airfield construction squadrons. Throughout the process of developing Australia's system of strategic airfields, planning meetings in the Department of Air were primarily concerned with concepts of operations, war-fighting strategies and weapons systems. Yet the decisions reached during those meetings would not have been worth the paper they were written on had not the RAAF's airfield construction squadrons been capable of consistently completing major civil engineering projects in harsh conditions, at remote and diverse locations, working almost invariably to demanding deadlines.

Not surprisingly, the RAAF had found it impossible to rely on civilian contractors for major works in forward areas during World War II. Starting with no existing civil engineering capability whatsoever, by the end of the war the Air Force had raised ten airfield construction squadrons to build runways, taxiways, hardstandings, buildings and other facilities throughout the Southwest Pacific. Those units often began

bulldozing airstrips out of jungle or rehabilitating battle-damaged runways only hours after the fight for the particular piece of ground had started, sometimes while it was still in progress.

Resource limitations saw only one unit, No. 5 Airfield Construction Squadron, retained after the war, but an urgent requirement for works associated with the Long Range Weapons Project at Woomera compelled the reactivation of No. 2 ACS in 1947. Curiously, while the newly raised No. 2 ACS laboured on the rocket range in the South Australian desert, No. 5 ACS was disbanded after completing its tour with the British Commonwealth Occupation Force in Japan in 1949. Disbandment was short lived. By the early 1950s a 'huge amount' of civil construction work was on the Air Force's books, with ten airfields and bases requiring major redevelopment.[23] Only two years after it had been paid off, No. 5 ACS was reformed and immediately began work at numerous locations in New South Wales and, in March 1952, on the Monte Bello Islands off Western Australia in support of British nuclear weapons testing; at the same time, No. 2 ACS had moved from Woomera to the Cocos Islands.

The decades of the 1950s and 1960s represented the pinnacle for the two airfield construction squadrons. RAAF engineers earned a reputation for completing the highest quality work under the most difficult conditions, ranging from the extreme humidity, torrential rain, mud and heat of the tropics to the even greater heat but suffocating dryness and dust of the Australian outback. During work at Darwin, Tindal and Learmonth in the Northern Territory, temperatures sometimes were so hot that the water used to mix cement had to be cooled by refrigeration. Often the squadrons worked three shifts a day to meet exacting schedules, or under lights at night-time to escape the brutal day-time heat. Both squadrons were regarded as elite units, with the commander of the British Commonwealth Air Group in Japan, the RAF officer Air Vice-Marshal C.A. Bouchier, describing No. 5 ACS as one of the finest outfits he had ever been associated with. That reputation continued to grow as the squadrons worked their way through Japan, Woomera, the Cocos Islands, New Guinea, Darwin, Butterworth, Tindal, Learmonth and Vietnam, as well as completing an extensive works program at the more established RAAF bases in southern Australia.

However, shortly after the reconstruction of Butterworth was completed, the airfield construction squadrons found themselves the subject of financial scrutiny as the Air Board sought to divert resources to the many new aircraft entering service. A review of the armed services in 1959 concluded that the Air Force could no longer afford, nor indeed needed, two airfield construction squadrons. Ironically, the airfield construction squadrons had helped dig their own grave as, having successfully modernised and extended the RAAF's infrastructure, they had reduced the demand for their skills. Growth in the civil construction sector also meant that more engineering tasks could be contracted out, even in areas which previously had been considered remote. Consequently the decision was made to disband No. 2 ACS by April 1961 and to reduce No. 5 ACS's establishment to three hundred men by the end of 1962.[24]

No. 5 ACS's major activities during the 1960s were concentrated in the north: Darwin, Ubon, Tindal, Vietnam, Amberley (in anticipation of the F-111's arrival) and

Learmonth. For most of the decade the unit was led by Wing Commander J.F. Dawson, whose casual approach to formalities was not always appreciated by senior staff officers, but whose drive, no-nonsense manner and ability to achieve goals won him the respect and affection of his men and the gratitude of the RAAF's operational component. Partly because of the results achieved under Dawson's command, No. 5 ACS continued to work its way out of a job. By 1968 the squadron's approved roles made no mention of airfield construction, even though it was regarded as 'probably the best equipped, trained and most proficient civil engineering force for airfield construction in [Australia]'.[25] Instead, the priority roles were to repair and rehabilitate existing RAAF advanced bases; to extend, strengthen, rehabilitate and maintain airfields in support of joint operations; and to convert 'bare bases' to full operational status in the minimum time. Those were all wartime roles, and that was the nub of the squadron's problem. It had become increasingly difficult in peacetime for the Air Force to justify the expense of maintaining extremely expensive heavy construction machinery and skilled workers who spent much of their time building domestic facilities (Ubon, Vietnam, and so on) rather than airfields. Additionally, as the bare bases across Australia's north were completed, the requirement for strategic airfields was disappearing. When Learmonth was finished, No. 5 ACS was disbanded at the end of 1974.

Once air bases had been built, the people and equipment stationed there had to be protected. Ground defence has generally been an unglamorous and unpopular task in the RAAF. Under joint service agreements reached in the late 1940s, responsibility for the larger scale ground defence of air force installations, which essentially meant defence outside the perimeter of bases, rested with the Army.[26] Inside the perimeter it was up to individual RAAF commanding officers to safeguard their assets and personnel; specifically, they had to apply active measures to protect their buildings and equipment from sabotage and pilfering, and passive measures to protect those assets from enemy attack. The RAAF was also responsible for light anti-aircraft artillery protection, and the disposal of unexploded enemy and allied bombs, land mines and booby traps.

Because of that division of responsibilities the RAAF (like the Navy) was not authorised to maintain specialist ground defence forces. Nevertheless, experts were needed to develop airfield defence policy and training programs. But even after a world war, apparently there was not a single officer in the RAAF with the necessary knowledge and experience, as the Air Board had to borrow a squadron leader from the RAF's specialist ground defence unit, the RAF Regiment, and task him with preparing the overall RAAF ground defence plan. This job involved organising and supervising ground combat training; advising the board on equipment like anti-aircraft guns and searchlights; and drafting plans for the defence of each airfield.[27] In truth, though, even when those tasks had been completed, the RAAF paid only lip service to ground defence. As a highly technical organisation, the Air Force tended to

regard the role as a nuisance, as an unwelcome intrusion on the 'real' jobs of flying and fixing aircraft. Many commanding officers and supervisors turned a blind eye to mandatory training requirements such as skill-at-arms and passive defence.

Ground defence received a boost of sorts following the introduction of national service in 1951, although the RAAF's motives could be questioned. The Air Force was no more enthusiastic about national service than it was about ground defence, an attitude again arising from its nature as a technocracy, as very little could be done to make a young man useful as an aircraft technician during his six months of national service unless he had existing skills. Consequently the Air Force elected to train many 'nashos' as airfield guards, as the least troublesome way of filling in their period of compulsory service. While cynical, the practice at least introduced more professionalism into ground defence, as the RAAF found it necessary to employ two specialist aerodrome defence instructors, both of whom were former army officers with extensive experience in land warfare.[28]

Policy for the defence of RAAF bases and Navy shore establishments was reviewed by the chiefs of staff in 1960.[29] Against RAAF opposition, the arrangement which had been endorsed in 1949 was confirmed. The Army was directed to 'provide for the defence' of RAAF and RAN installations against attack by 'formed bodies of enemy troops'; and within the limits of their resources and consistent with their primary roles, the two more technical services were required to train and equip their personnel for the 'emergency role of local ground defence', a definition intended to describe attacks by irregular units or small numbers of raiders, or threats to installations arising from the unexpected appearance of regular enemy ground forces. Air Marshal Scherger argued that the policy was inconsistent with wartime realities. Scherger's experience with No. 10 Operational Group and the 1st Tactical Air Force in the Southwest Pacific had given him considerable first-hand knowledge of what happens when air bases are attacked. The CAS was speaking from experience when he told the chairman of the Chiefs of Staff Committee, Vice-Admiral Sir Roy Dowling, that there was always a threat to any forward airfield until the enemy had been pushed back 'quite a long way'; that is, there was rarely an immediate and readily definable threat which enabled technicians to 'down tools and up arms'.[30] The answer to protecting RAAF establishments was not, Scherger stated, to raise special Air Force ground defence units, which he contended would be wasteful of manpower, but rather for Army to accept responsibility for the whole problem.

Vice-Admiral Dowling replied that he had never suggested that the RAAF and RAN should maintain specialist ground defence units, but rather that airmen and sailors should be capable of defending themselves should the need suddenly arise. Dowling's response was not very helpful because, as Scherger pointed out, the existing policy did not clarify who would be responsible for protecting important technical installations within an airfield's perimeter. The RAAF was organised and established to deploy overseas and to fly and maintain aircraft at intensive rates of effort. Scherger believed his forces simply would not be capable of doing that job and fighting a ground war at the same time, especially in a theatre like Southeast Asia,

where probable guerilla and insurgent infiltration would place all personnel at constant risk and could make any defensive effort debilitating. The discussion ended there and the issue was swept under the carpet for several years as the Army did not wish to have large numbers of its infantry designated for airfield defence duties, and the Air Force either maintained the pretence that its technical staff could protect key areas unaided or ignored the problem.

A start towards resolving what was in fact a very serious matter was made in 1962 when the RAAF introduced the category of 'Security Guard'.[31] Progress continued in June 1965 when the Air Board finally admitted that protecting lives and equipment was not a job for semi-trained, part-time guards; and that as the Army showed no interest in meeting its responsibilities, the RAAF would have to do the job itself.[32] A specialist corps was needed to take the lead in ground defence operations and raise the standard of training across the entire Air Force. The Air Board decided to introduce a new mustering known as Airfield Defence Guard (ADG), whose members would specialise in protecting people and equipment on RAAF bases, that is, *inside* the airfield perimeter. Assets to be defended other than people were divided into nine groups: domestic areas; administrative areas; equipment stores; fuel farms; bomb

Airfield defence guards training at Amberley, 1972. RAAF

dumps; aircraft dispersals; technical areas; aircraft movement areas; and communications. Two hundred and twenty new positions were established, in addition to which all drill instructors and aerodrome defence instructors had to remuster as ADGs. After completing the standard ten-week course for all new male recruits, ADGs underwent a twelve-week specialist course which emphasised many infantry skills.

In 1969 the Chiefs of Staff Committee endorsed a revised policy on inter-service responsibilities for airfield defence which largely resolved the concerns expressed by Air Marshal Scherger nine years previously.[33] Under the new arrangements the Army retained responsibility for security outside an airfield's perimeter, while the RAAF accepted responsibility inside the wire for all passive defence measures, and for the protection and security of personnel (including dependants) and equipment against 'smaller scale' threats, such as partisans, guerillas, sabotage, pilfering, subversion, espionage and civil dissidents. Should an emergency within the perimeter either escalate or exceed those parameters from the outset, it was expected the Army would be called in to take over.

Defence inside the wire did not fall solely to the men and women of the Air Force. One of the most effective contributions to base security was made by RAAF guard dogs. Originally known as watch dogs, the animals had been introduced in 1943 when a number were transferred from the Army. Those first dogs were trained solely to raise an alarm if necessary, but after their transfer additional training by the Air Force made them into 'war dogs', described as 'beasts of considerable ferocity' which would attack everyone but their master and which required great care in handling.[34] Guard dogs became a feature of RAAF airfield security, their acute senses and speed making them especially useful for protecting large areas at night.

It was perhaps indicative of the progress the RAAF was making that by the 1970s airfield construction squadrons were going out of business and ground defence was, in relative terms, flourishing. In other words, the need to protect rather than build suggested that the essential form of the RAAF's network of strategic airfields was largely in place.

CHAPTER 5

COMMAND AND ORGANISATION

To facilitate combined operations with the United States Army Air Forces (USAAF) following the Americans' arrival in the Southwest Pacific Area in 1942, operational control of all RAAF squadrons was assigned to the senior American airman, General George C. Kenney. Kenney grouped the three air forces under his control (the USAAF, the RAAF and the Royal Netherlands East Indies Army Air Force) into the Allied Air Forces, which he commanded for General Douglas MacArthur.[1] The RAAF accommodated Kenney's sensible arrangement by, in effect, dividing itself into two distinct components. From Air Force Headquarters in Melbourne, Chief of the Air Staff Air Vice-Marshal George Jones was occupied primarily with raising, equipping and training the RAAF; leaving the AOC of RAAF Command, Air Vice-Marshal Bill Bostock, in charge of operations, which he controlled from forward headquarters in Brisbane or one of the advanced bases in the islands to the north.

As chief of the air staff, Jones was the RAAF's leader and Bostock's superior officer, even though the two held the same rank. But because the Australian Government had placed RAAF Command under General Kenney's operational control, Bostock could reasonably claim that his first responsibility was to the American and the Allied Air Forces. While the arrangement may not have been ideal, it could have worked had Jones and Bostock been of that mind. Regrettably motivated as much by ego as by their service's best interests, they instead indulged in an epic rivalry which split the RAAF and damaged its war effort.

Resolution of that unhappy situation was an unspoken but primary consideration in the debate over the organisation of the post-war Air Force, which started well before the Japanese surrender. Strong vested interests were evident in the various proposals advocated by, among others, Jones and Bostock, as it was clear that the new arrangements could make or break careers. The central issue was the extent to which the wartime organisation should be retained.

Before the war the RAAF's organisation had been simplicity itself. The sixteen units then in existence were responsible to one of the Air Force's five stations, with the stations in turn answering to Air Force Headquarters. The arrangement was highly centralised but perfectly adequate given the RAAF's modest size and capabilities. Once the war started a more flexible, decentralised system was needed to deal with mass mobilisation and the possibility of rapidly emerging threats across the full expanse of the theatre. In response to those imperatives, four geographic area commands were established in 1939–40, each with an AOC whose main responsibility was the conduct of operations. By the end of the war a fifth area and two maintenance and two training groups had been added. In general the system worked well, primarily because it facilitated the delegation of authority to distant points.

Expansion also occurred on the political front. Prior to the war, Air Force, Army and Navy activities had been controlled by a single Department of Defence. In

anticipation of a vastly increased workload, at the outbreak of war the Menzies government had established separate service departments of Air, Army and Navy, each with its own minister. The activities of those departments and of the associated Department of Supply and Development were regulated by the minister for defence co-ordination, who in practice was the prime minister himself. Former Royal Flying Corps pilot J.V. Fairbairn was appointed first minister for air in November 1939, and under his leadership the Department of Air and RAAF Headquarters worked together to develop policies and to staff, train and equip the Air Force, leaving the area commands to get on with the job of fighting the war. Those changes did not substantially alter the RAAF's higher management process, under which the Air Board continued to consider all policy matters before passing recommendations to the minister for decision. Placing RAAF Command—that is, the war-fighting units—under General MacArthur did, however, mean that the Air Board had limited direct authority over operations.

Vested interests emerged as soon as the debate over the RAAF's peacetime organisation started. Air Vice-Marshal Jones favoured retaining RAAF Headquarters and the area commands, complemented by a highly mobile striking force, an arrangement which would emphasise his authority. Air Vice-Marshal Bostock, on the other hand, argued that it would be operationally unsound to divide the RAAF's capabilities along 'arbitrary' area boundaries and proposed a 'functional' rather than a 'geographic' organisation, based on the core activities of operations, maintenance and training.[2] As the RAAF's most experienced operational commander, Bostock presumably saw himself heading his proposed 'Operations Command', a position from which, also presumably, he could continue to ignore Jones and Air Force Headquarters.

While there was a war to win Bostock's position had been strong, but everything changed the day Japan surrendered. The priority no longer was with operations but administration, and that was not only the CAS's responsibility but also his forte.[3] The initiative had passed to Jones as overnight the RAAF's attention turned from war-fighting to demobilisation and thousands of other matters of administrative minutiae. Within weeks of the war's end the government had rescinded the delegation giving operational control of the RAAF to MacArthur and had restored unquestioned command over all Air Force activities to the traditional authority, the Air Board.[4] RAAF Command's sudden loss of identity was apparent when, instead of conducting strikes against the enemy, its long-range B-24 and Catalina bombers were instead tasked by Air Force Headquarters to bring former prisoners-of-war home to Australia.[5] On 2 September 1945 RAAF Command was disbanded and on 19 April 1946 Bostock was sacked.

Jones now got on with organising the Air Force in accordance with his preferences. RAAF Headquarters at Victoria Barracks in Melbourne remained the central authority for major policy and overall direction, under the collegiate leadership of the Air Board. The Air Board's authority within the RAAF was undisputed. Less clear, however, was the division of responsibility between, and relative status of, the

military and civilian staffs in RAAF Headquarters and the Department of Air, an issue which had remained unresolved during the war but which, given the growing importance of the department in peacetime, had to be addressed. In 1949 Air Marshal Jones and the secretary of the Department of Air, M.C. Langslow, agreed on several principles which determined whether a position would be filled by a serviceman or a public servant. RAAF staff were to be employed where any one of the following three criteria applied: professional Air Force knowledge was required; there would be regular direct contact with RAAF units and the observation of military discipline was essential; and tangible advantage would be derived if the incumbent held Air Force rank.[6] Civilians would be appointed when those conditions did not apply, and when administrative continuity was necessary.

Several years after Jones and Langslow had moved on, their successors, Air Marshal Sir Donald Hardman and Sir Edwin Hicks, attempted to define authority within the integrated organisation by endorsing a list of the 'relative status' of servicemen and civilians, as shown at table 5.1.

5.1 Relative status of service and civilian staffs, Department of Air

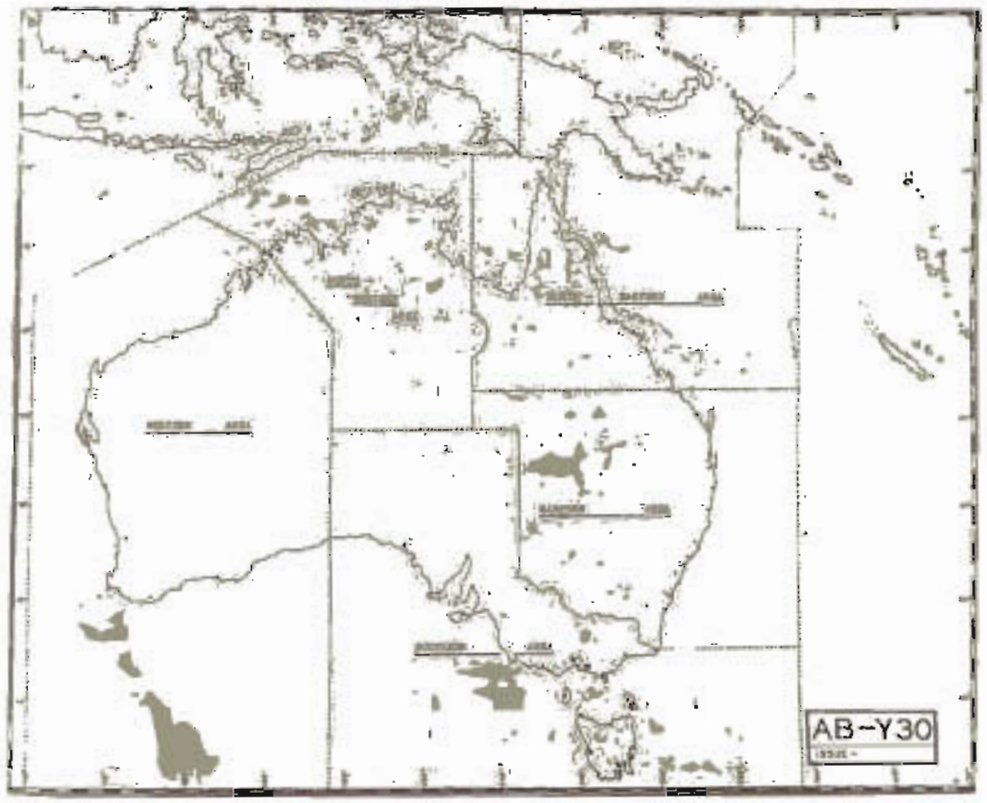
RAAF Appointment	*Civilian Appointment*
Member of Air Board	Secretary
	First Assistant Secretary
Air Commodore	Assistant Secretary
Group Captain	Chief Administrative Assistant
Wing Commander	Senior Administrative Assistant
Squadron Leader	Administrative Assistant
Flight Lieutenant	Senior Executive Officer

Source: Air Board Agendum 12386, 20-7-53, RHS.

A feeble attempt at humour was added to the agreement by Minister for Air William McMahon, who in a marginal note to Hicks wrote 'I hope this doesn't involve you in Command operations in SE Asia!'[7] McMahon unwittingly had touched a tender Air Force (and for that matter Army and Navy) nerve, for it was precisely because Defence civilians neither exercised military command nor were exposed to the dangers and vicissitudes of military life that many service officers resented the proposition that a group whose general career and work experiences were in no way comparable to their own somehow shared 'relative status'. The issue was one which assumed particularly strong proportions seventeen years later, following the appointment of Sir Arthur Tange as Secretary of Defence in July 1970. Highly capable and intelligent but also highly abrasive and peremptory, Tange was believed by many to dislike servicemen. Whatever the truth of that may have been, under his stewardship, military/civilian relations in the Defence group of departments deteriorated to the point of open hostility,[8] and the doubtless well-intentioned notion

of 'relative status' initiated by Hardman and Hicks became something of an object of contempt for those in uniform.

Air Vice-Marshal Jones' integrated headquarters at Victoria Barracks managed the RAAF through an organisation of five mainland area commands. Eastern Area had its headquarters at Bradfield Park in Sydney; Southern Area at Albert Park in Melbourne; Western Area at RAAF Station Pearce; Northwestern Area at RAAF Station Darwin; and Northeastern Area at Sturt Street in Townsville.[9] A concession was made to the concept of functional organisation by retaining a maintenance headquarters in Melbourne.



The post-war area commands, which were superseded by Air Marshal Hardman's functional system in 1953/54. RAAF

Before commenting on the system of wings, stations and squadrons through which the area commands conducted their activities, the theme of Air Force 'real estate' should be briefly pursued, as the reasons particular locations were chosen tell a good deal about the nature of the organisation. Eastern Area Headquarters provides the most interesting case study.

The requirement of flying operations for large, open, relatively featureless terrain often consigns the RAAF to locations which many consider unattractive. For example, while the emotional appeal of Point Cook, the home of Australian military aviation, should never be underestimated, it is difficult to describe the setting as aesthetically pleasing. The same observation could be made about much RAAF real estate, particularly when compared to the magnificent settings of Navy bases like those on Sydney Harbour and Jervis Bay.

The most notable exception for the RAAF has been the property acquired as Eastern Area's headquarters in 1949 and which has since accommodated the Air Force's operational headquarters, known successively as Home Command, Operational Command and Air Headquarters. Previously the Lapstone Hotel, the property originally consisted of a handsome building set in forty hectares of land at Glenbrook in the Blue Mountains, west of Sydney. From its position on the eastern escarpment of the mountains at an elevation of two hundred metres, the property offers sweeping views across the Nepean and Hawkesbury Rivers and the historic Macquarie towns to Sydney and the coast, some fifty kilometres distant. On a crystal clear day there are few more pleasant diversions for a staff officer than to take morning tea on the balcony and enjoy the scenery, which is also likely to include RAAF transport aircraft from the base at Richmond droning around the airfield, close enough to see and enjoy as a benign reminder of air power and the purpose of air forces, but sufficiently distant not to be heard.

The Lapstone Hotel was bought by the RAAF to replace the inadequate Eastern Area Headquarters at Bradfield Park in Sydney. Established during the war as a personnel centre, Bradfield Park consisted almost entirely of sub-standard timber-framed buildings with corrugated iron wall sheeting and asbestos cement roofing. The complex did not come close to meeting the standards set by the Air Board in 1948 for area headquarters. Ideally, the board stated, an area headquarters should be close to an airfield and an air operations room, have good communications, and offer protection from air attack.[10] In particular, headquarters should afford operational staff 'full protection against the atom bomb' ('suitable' protection for administrative staff was to be 'readily available'), which meant the site had to be a minimum of eight kilometres outside the perimeter of possible target zones.[11] Bradfield Park was assessed as deficient on all counts, particularly the latter, as it was considered to be in the 'centre of [Sydney's] target area' for any atomic attack. Added pressure on the RAAF to vacate Bradfield Park came from the New South Wales Government's wish to use the site as a camp for 'displaced persons'.

When the Lapstone Hotel came on the market it was recognised by the AOC Eastern Area, Air Vice-Marshal F.M. Bladin, as potentially an excellent headquarters. The building and grounds were suitable and were only five kilometres from the major town of Penrith and thirty kilometres from RAAF Station Richmond. Road access was satisfactory and the grounds were large enough for use by communications aircraft. Within three hundred metres of the hotel there was a disused railway tunnel about seven hundred metres long which could accommodate

an operations room, the air staff and extensive telecommunications facilities. Covered by seventy metres of rock, the tunnel afforded 'complete protection from Atom bomb attack' for operational staff (the report did not say whether there would be room for administrative staff).[12] £65,000 was allocated to purchase the hotel and land in mid-1949, with an additional £40,000 for refurbishment. The move from Bradfield Park started in August and was sufficiently advanced for the new site to be operational by the end of the year.

Two views from the magnificent former Lapstone Hotel, since 1949 the site successively of the RAAF's Eastern Area Headquarters, Home and Operational Commands, and Air Headquarters. These photographs are dated c. 1950. K. DROVER

A second property known as 'Briarcliffe' was added to Eastern Area under entertaining circumstances at the end of 1951. 'Briarcliffe' was a thirty-two-square building set on three hectares which adjoined the new headquarters. Eastern Area's personnel establishment included forty-nine members of the WRAAF. The intention had been to accommodate the females in off-base quarters but Glenbrook's isolation made that impracticable. Unsatisfactory interim arrangements consequently had to be made, with the WRAAF taking over the sergeants' quarters. When 'Briarcliffe' came on the market the RAAF saw an opportunity both to resolve the accommodation crisis and provide for further development of Eastern Area.

At a price of £16,100, 'Briarcliffe' represented a real estate bargain. Cabinet approved the expenditure without comment after reading the briefing note attached to Minister for Air McMahon's submission:

> This proposal is to buy a property at Glenbrook for the RAAF. Glenbrook is up towards Katoomba — somewhere near Lapstone. It is apparently the site of the future Eastern Area Headquarters of the RAAF. The headquarters run to a WRAAF establishment of 49.

> The present situation is delicate in the extreme. It seems to have been organised by P.G. Wodehouse. At present the women are accommodated in the Sergeants' Quarters, the Sergeants are living in the Airmen's Quarters and the Airmen are crowded into the huts. It is only going to need a Sergeant to come home late and go into his accustomed rooms by mistake and there will be a terrible scandal.
>
> I think you had better buy 'Briarcliffe' and with it, the honour of the RAAF and the WRAAF—£16,100 the lot.[13]

Returning to the organisational arrangements made by Air Vice-Marshal Jones at the end of the war, beneath the five area commands came a system of 'stations' (the title 'station' was changed to 'base' in 1952), wings and squadrons. Stations were simply a piece of real estate on which units were located. A station almost invariably was placed under the command of the appropriate area headquarters. As Air Vice-Marshal Bostock had argued, the size and location of areas tended to be somewhat arbitrary, conforming essentially to existing state boundaries. The same general criticism could be made of stations, most of which were clustered around capital cities.

More important organisationally than either areas or stations was the system by which the RAAF's units were arranged for war. Mention has already been made of the concept of the mobile task force, into which selected wings and squadrons would be grouped should the RAAF need to deploy in strength. It was the wings which were the basic element of the RAAF's operational organisation.

Prior to 1939 the largest mobile operational units in the RAAF were squadrons, which were collocated for training, maintenance and administrative purposes on four stations.[14] Wartime expansion and the need to concentrate force prompted the introduction of wings. A wing was a mobile formation consisting of a number of operational squadrons and their supporting maintenance and administrative units, grouped under one commander. Minor changes were made during the war but in general the wing system proved highly suitable.

Peacetime wings inevitably were going to have fewer squadrons, which meant their ancillary units would be correspondingly smaller. Nevertheless, the wing organisation remained the RAAF's preferred tactical organisation. Post-war wings typically consisted of a headquarters, several flying squadrons, a maintenance squadron and a base (administrative support) squadron.[15] A standard numbering system was used, with blocks of numbers allocated to units by function. Flying squadrons were given the block 1–300, base squadrons 300–400, and maintenance squadrons 400–500. Base and maintenance squadron numbers were then related to their wing's number. For example, when No. 81 Wing deployed to Japan as part of the British Commonwealth Occupation Force in 1946, it consisted of Nos 76, 77 and 82 Fighter Squadrons, No. 381 (Base) Squadron and No. 481 (Maintenance) Squadron.

Occasionally the effectiveness of the wing system was questioned, as happened in 1959 following a review of Australia's strategic outlook. Titled the 'Strategic Basis of Australian Defence Policy', the review postulated two scenarios which might involve the armed forces in the near future. One envisaged limited war in Australia's

northwest approaches, and the other either insurgency or limited war initiated by communist China on the mainland of Southeast Asia, and in which Chinese participation might be covert or overt.[16] In response to precisely those kinds of threats in the recent past, RAAF squadrons had fought in Malaya and Korea not as wings but as independent units, notwithstanding their organisational subordination to higher wing or group headquarters.

Because of those experiences and the assessment presented in the 'Strategic Basis', the AOC Home Command, Air Vice-Marshal C.D. Candy, suggested that all RAAF squadrons should be reorganised as self-supporting, independent units. Candy's idea was to give squadrons the maximum possible flexibility to deploy rapidly and individually. The Department of Air acknowledged the rationale behind the proposal but felt that on balance there were better reasons for retaining the traditional wing organisation. First, the system of grouping squadrons with common roles into wings had served the RAAF well for many years. It was a proven method through which the concentration of force—a key principle of war—under a single specialised directing authority could be achieved. Second, it would be an expensive proposition to make all squadrons self-supporting, as centralisation in wings generated substantial maintenance and administrative savings; and anyway, it did not necessarily follow that the wing organisation automatically inhibited the mobility of its component parts. The Air Board lent emphasis to its rejection of Home Command's proposal and concluded the debate by directing the formation of a wing organisation at Williamtown, where a number of Home Command air defence and supporting units had been functioning independently. At the same time, however, the board acknowledged the merit of Candy's proposal by approving the purchase of additional support equipment for the bomber wing at Amberley and the fighter wing at Butterworth, with the objective of improving the mobility of individual Canberra and Sabre squadrons.[17]

While the wing organisation continued to serve the RAAF satisfactorily, the same could not be said for the area commands. The area system had worked adequately during the war and seemed well-suited to Australia's vast distances and small population, as well as ensuring an Air Force presence in most states. The fact was, however, that the area commands were an organisational chimera. Notwithstanding the formal arrangements, in practice RAAF operations were being conducted under the functional system which had been advocated by Air Vice-Marshal Bostock and rejected by Air Vice-Marshal Jones.

As discussed in Chapter 3, following the post-war reorganisation, the RAAF's operational units were allocated to one of two forces: the Mobile Task Force, which was to be deployed as necessary to trouble spots in Australia or around the world; and a Home Defence Force, which was responsible for the air defence of Australia. The Home Defence Force was organised around the area command system, with each area being responsible for its own air defence, seaward reconnaissance and search and rescue.[18] That was the theory. In practice, most operational units were assigned to the Mobile Task Force and were located at airfields in New South Wales and Queensland,

an arrangement which placed them under the command of Eastern Area Headquarters and gave Eastern Area the status of a de facto operational headquarters. Similarly, the need to exploit the existing national infrastructure and population base meant that most training units had gravitated to the east and southeast, giving Southern Area Headquarters the status of a training command.[19] Finally, Maintenance Headquarters was, by definition, already a functional command.

Air Marshal Jones' geographic organisational structure lasted only as long as his tenure as CAS. When Jones retired in January 1952 he was replaced by a British officer, Air Marshal Sir Donald Hardman, whose major legacy to the RAAF was the formal introduction of a functional command system.

Before discussing that change, the circumstances surrounding the appointment of another British officer to head the RAAF warrants comment on three counts. First, Hardman was appointed at the instigation of Prime Minister Menzies and Minister for Air T.W. White, both of whom had privately criticised the poor quality of the RAAF's senior officers in general and Air Marshal Jones in particular.[20] Second, many senior Australian officers were incensed by the decision to import another British CAS, a decision which Menzies justified to Parliament by asserting that 'there [was] no RAAF officer of sufficient age, or operational experience, to take the post of Chief of the Air Staff'.[21]

The prime minister's assertion was not supported by the facts. Only six years previously, many of those allegedly inadequate officers had successfully commanded units far bigger than the peacetime RAAF. At the time of Hardman's appointment there were numerous Australian air rank officers aged in their late forties and early fifties with excellent records as operational commanders: for example, J.P.J. McCauley, F.R.W. Scherger, F.M. Bladin and A.L. Walters; while others like E.C. Wackett enjoyed justifiably fine reputations for their wise leadership in demanding staff posts. Following Hardman's return to England, McCauley and Scherger were to become two of the RAAF's better chiefs. It is most doubtful whether, given their age and experience, the extra wait made the slightest difference to their subsequent performance. An editorial in the *Daily Mirror* reflected the widespread disappointment with Menzies' action when it recorded a 'stern protest' over the choice of a foreigner as CAS 'a mere six years after a war in which ... the RAAF succeeded in every sphere'.[22] Some observers could only explain the appointment in terms of the intensely Anglophile Menzies and White seeking to curry favour with Whitehall.

The final comment concerns Air Marshal Hardman and the man who selected him for the RAAF job, his CAS in the RAF, Sir John Slessor. Both emerged from the affair with their reputations enhanced. On different occasions throughout 1950 and 1951, Slessor was subjected to some pressure from Menzies, White, Defence Minister Sir Philip McBride and Defence Secretary Sir Frederick Shedden to nominate an officer to head the RAAF.[23] Slessor was unhappy with the approaches but reluctantly accepted that he would have to accede to the Australian Government. His selection of Hardman wrote an interesting footnote to RAAF/RAF relations. For some years there had been

AM Sir Donald Hardman, CAS from January 1952 to January 1954. RAAF

a residue of bitterness in the RAAF over Sir Charles Burnett's indifferent performance as CAS from 1940 to 1942. Slessor was aware of that, and appreciated the need to avoid 'the follies of some years ago' when appointing British officers to the RAAF. This time, one of the RAF's best would have to be chosen. Hardman met that criterion, being described by Slessor as 'the outstanding candidate' for the job.[24] Hardman did not let his chief down. When he sailed for England in January 1954 after relinquishing office, Sir Donald was described by the *Age* as 'the outstanding CAS in the RAAF's history', a 'brilliant organiser' and a 'master of the theory of air power'.

Menzies was aware that another outside appointment would be resented by the RAAF, and before announcing his choice had discussed with the British high commissioner in Australia the possibility of justifying the decision on the basis of reorganising the RAAF into functional commands, an arrangement with which an RAF officer would be more familiar than his Australian counterparts.[25] The prospect of fundamentally changing the RAAF's organisation appealed to Hardman, who had a reputation as an innovative manager. Hardman believed that if the RAAF were to adopt a functional system of command, it would become more efficient in all aspects of operations and administration. The devolution of activities from Air Force Headquarters to functional commands would establish closer contact between commanders and their units, while station commanders would have more authority and thus would be better prepared for wartime duties. Further, the RAF's long experience with functional commands (Bomber Command, Fighter Command, and so on) had shown that the system facilitated the concentration of force which is so critical in battle. As well as introducing those new organisational strengths to the RAAF, by abolishing the area commands the functional system would also abolish several inherent organisational weaknesses. First, the autonomy of the area commanders often made it difficult to get the different components of the one functional system to work together, the air defence force being the most notable example. Second, the smaller areas frequently could not manage major activities from within their existing limited resources. And finally, there was the problem which had plagued the RAAF's war effort in the Southwest Pacific from 1942 to 1945, namely, divided command.

Under the area organisation the RAAF's operational forces were not unified under one commander.

It took Hardman a year to lay the groundwork for his proposed reorganisation, during which time some Air Board members questioned the value of a functional system for Australia, pointing to the problems of distance, isolation and limited communications services; additionally, they felt that the RAAF's small fleet of aircraft would make the formation of a number of specialist commands a dubious proposition. Neither Hardman nor White's successor as minister for air, William McMahon, agreed, McMahon drawing the board's attention to the evolution of Eastern and Southern Areas into de facto operational and training commands respectively. 'We should make up our minds one way or the other which system we wish to adopt', he told his board.[26]

The CAS agreed and pressed on. Hardman identified four basic requirements for the RAAF's organisation: it had to provide for the higher direction of the Air Force; manage the air defence of Australia and any overseas commitments; successfully recruit and train personnel; and supply high-quality logistics support.[27] Under Hardman's skilful and knowledgeable leadership the Air Board endorsed the introduction of a new organisation intended to meet those objectives. There would be two major components: a headquarters responsible for policy and financial control; and a number of functional commands directly responsible to that headquarters for implementing policy, and for the detailed operational and administrative control of all RAAF units.

The functional commands were the easier of the two major components to arrange. Three were to be formed. Home Command would be responsible for all operational units and the conduct of operations within Australia and its territories; Training Command for all recruitment and individual training, as well as the activities of training units; and Maintenance Command for supply and technical services throughout the RAAF.[28]

Reorganising the central headquarters was more complex. On his arrival in 1952, Air Marshal Hardman had found the precise responsibilities of the Department of Air and Air Force Headquarters poorly defined, a legacy of the haste with which the department had been established in 1939. He had also noted that the titles 'Air Board' and 'Air Force Headquarters' were used interchangeably to designate the RAAF's central controlling authority.[29] As a result the central administration of the RAAF had become divided between three separate but related authorities: the Department of Air, the Air Board and RAAF Headquarters. Hardman considered that the title 'RAAF Headquarters' did not correctly describe the scope of the functions of the central authority. His view was that the Department of Air should be the authority from which governmental, ministerial and Air Board decisions were issued to the RAAF, and to which all correspondence from commands and units should be addressed. Consequently he abolished RAAF Headquarters. The Air Board, which remained responsible for policy and the control and direction of all Air Force administration, now exercised its authority through the Department of Air.

In its mature form the Air Board typically comprised the CAS and the air members for personnel, supply and equipment, and technical services. Also adding his voice to the board's deliberations after 1939 (when the Department of Air was formed) was the secretary of the department, who was made a full voting member in place of the finance member, and who was responsible for business management, financial administration, co-ordination of departmental administration, and civilian staff. Those duties were additional to his normal responsibilities as permanent head of the department under the provisions of the Commonwealth Public Service Act.[30] The deputy chief of the air staff was never a member of the board, although like others he could be invited to attend meetings. Adequate authority was delegated to board members to make them responsible for the administration of their branches.

The Air Board's relationship with the minister was organisationally interesting. Ministers pleased themselves whether or not they chaired meetings, but regardless of that they were obliged to approve every board decision, an arrangement which drew them into trifling administration.[31] Thus, Arthur Drakeford, who during World War II held the momentous responsibility of oversighting the RAAF's efforts when the invasion of Australia by Japan seemed likely, also found himself reviewing such trivial recommendations as the disposal of obsolete spark plugs and laying linoleum on floors of barracks occupied by cadets.[32] Drakeford in fact thrived on that kind of trivia, regularly chiding his board of one air marshal, three air vice-marshals and one senior public servant over such matters as the cost of furniture for barracks accommodation ('the Minister is surprised to note the seemingly high prices quoted for certain items of furniture ...'). Ministerial involvement in trivia perhaps reached its most absurd point in January 1951 when T.W. White's signature was necessary for the purchase of 5666 kilograms of dehydrated onions, the average quantity consumed by RAAF personnel in the eastern states each sixty days.[33]

1 October 1953 was selected as the date for the integration of RAAF Headquarters into the Department of Air, the establishment of the three functional commands, and the disbandment of Eastern and Southern Areas and Maintenance Group. The second phase of the reorganisation occurred on 1 February 1954 when Home Command assumed the responsibilities previously held by Northeastern, Northwestern and Western Areas. Between 1 July and 30 September the functional reorganisation was completed by delegating 'additional responsibilities' from the department to the commands.

Because of a need to reduce overheads and increase efficiency, the functional command system was reviewed in 1959 by a committee headed by Air Vice-Marshal I.D. McLachlan. Concluding that the functional system had resulted in 'the improved efficiency of the Air Force as a whole', McLachlan recommended taking the process a step further by rationalising the three commands to two. Home Command, located at Glenbrook in New South Wales, was renamed Operational Command, and continued to exercise direct command and control of all operational squadrons and units. Training and Maintenance Commands in Melbourne were amalgamated as Support Command, a change McLachlan believed would facilitate the conduct of all support

functions. Because the government had previously decided to relocate the three service departments to Canberra, McLachlan's review also examined which responsibilities could be transferred to Support Command, which would remain in Melbourne when the Department of Air moved to the national capital.[34]

The decision to transfer the Defence group of departments from Melbourne to Canberra as a matter of priority had been taken by Cabinet in September 1954, with the intention of making the policy function more responsive to ministerial authority.[35] The transfer was also intended to boost the development of the national capital, in anticipation of which Cabinet authorised a major housing construction program for Canberra in May 1955. First to move would be the 'most important and active'

The Defence complex at Russell Hill, 1971. RAAF

elements of the higher policy process, the service boards. Air Force estimated that in the first instance, five hundred and fifty-three positions would have to be transferred to support the Air Board, comprising members of the CAS, AMTS, AMSE and AMP branches, and the departmental secretariat.[36] The remaining eight hundred and one people would either transfer to Canberra at a later date or remain in Melbourne, depending on the final shape of the reorganisation. When the move started in 1959 most people were accommodated in the Administrative Building in the suburb of Parkes, pending the completion of a purpose-built Defence complex at Russell Hill. By

August 1961 the transfer was complete and all members of the Air Board had settled into Russell, where the new buildings were regarded as a major improvement over Victoria Barracks, as every office had an outside window and special facilities were available for filing and vault storage on all floors.

In order to prevent confusion between the relocated Department of Air and nearby RAAF Base Canberra—the home of No. 34 (VIP) Squadron, the RAAF Staff College and, from 1962, No. 9 Squadron—the base was renamed RAAF Fairbairn.

The relationship between the reorganised Department of Air and the two functional commands was defined by the Air Board with commendable clarity: the department was responsible for policy, and the commands for putting policies into practice.[37] However, enunciating a policy can be one thing, making it happen another. Despite the considerable powers of discipline which the rank structure naturally imposes on a military organisation, the fact remains that in peacetime the organisation functions essentially as a bureaucracy, and like any bureaucracy unpopular directions from above can be met by passive resistance or even ignored. If the Air Board's broad plans and objectives for the RAAF's development were not to be deflected, authoritative management tools were needed; additionally, the application of those tools had to strike the right balance, as too much use could undermine the command structure and too little could make the department irrelevant.

AVM I.D. McLachlan, whose reviews of the RAAF College (1957) and the functional command system (1959) had a significant effect on the Air Force of the 1960s. *RAAF*

Other than the authority of rank, the most effective mechanism employed by the department was its ultimate control of financial delegations, particularly through its primacy in the process of developing and justifying budget estimates and programs. Under a distinctively Air Force accounting procedure, flying hours were also used as a means of controlling the activities of subordinate units. Flying hours can be used as the unit of measurement through which an air force manages its entire range of activities; they are, in a sense, a unique form of currency. A pilot's proficiency can to a reasonable extent be related to the number of hours he or she is allowed to fly in a given period. For many years an aircraft's life was defined primarily by the maximum number of hours it could fly before a safe level of airframe fatigue was exceeded. Resources allocated to a unit can be related to the annual flying effort, expressed in hours. A transport squadron, for example, might

be tasked to fly 8000 hours annually, based on bids made by users, past experience and training commitments. That number of hours governs the maintenance commitment, as scheduled servicings are related to hours flown; and in turn, the maintenance commitment determines the establishment of technical staff. Similarly, the flying rate also determines a unit's aircrew establishment.

Thus, by controlling the allocation of hours, the Department of Air to a large extent also controlled the RAAF. Each unit's authorised annual flying rate, expressed in hours, was published in a classified document titled ACD 171, *Data for the Calculation of Peace Consumption and Wastage*, which also provided estimates for the succeeding four years to assist forward planning. The whole process was kept firmly under the control of the Department of Air, especially after 1965 when Minister for Air Peter Howson, appreciating the importance of flying hours as a management tool, insisted that critical examinations of allocations were to be conducted regularly under the personal supervision of the deputy chief of the air staff and any variations reported to the Air Board.[38]

As well as controlling money and flying hours, departmental officers retained responsibility for providing staff guidance to the commands; evaluating command performance and, where appropriate, prescribing corrective action for deficiencies; and establishing priorities and schedules for many major activities. It was also the central office's duty to liaise with other government departments and external organisations, a particularly influential task given that the RAAF's endorsed roles included rapid deployment in Australia and overseas.

In general the relationship between the Department of Air and Support Command was sound, perhaps because the inherently low profile of support activities only captured the attention of the pilots who ran the Air Force when something went wrong. As long as people were trained, aeroplanes fixed and spare parts ordered, no-one interfered. The relationship between the department and Operational Command was less satisfactory for precisely the opposite reason. Operational Command was where the aeroplanes were, where the Air Force completed its mission. Throughout the 1950s and 1960s there were notable examples of the department intruding upon the day-to-day management of RAAF operations, especially those conducted overseas.[39] The Air Board's insistence that the RAAF headquarters in Butterworth and Saigon reported direct to the Department of Air, rather than to Operational Command, undermined the RAAF's organisational logic and diminished Operational Command's status, to the extent that the command gradually acquired a reputation for being little more than a 'post office' through which instructions from the department to operational units passed without comment.

Still, the traffic was not all one way. For all the authority exercised by the Department of Air, Operational and Support Commands retained considerable influence and independence. Operational Command, for example, controlled the day-to-day activities of most of the RAAF's fleet, a prerogative which gave its AOC great leverage, if he wished, over all would-be users, which included the Army, the Navy, other government departments and the rest of the Air Force. Further, the creation of

the functional commands concentrated the authority and wherewithal to conduct activities to an extent not previously possible under the area command system. At least one chief of the air staff, Air Marshal Sir Neville McNamara, perceived a tendency for some AOCs to behave like regional war lords, who believed that the CAS should look after the bureaucratic business of paperwork, politicians and public servants, and leave the AOCs to get on with the real Air Force work.[40]

Air Marshal McNamara's observation raises the question of the CAS's ability to command the RAAF. Under Air Force Regulations the members of the Air Board were collectively responsible for administering and controlling the RAAF.[41] Decisions were taken on a collegiate basis and any member who disagreed had the right to take his case directly to the minister. The CAS thus did not command his service in the full sense of the word, but rather was the first among equals. It would, however, be simplistic to expect that legal arrangements alone defined the command of the Air Force. The fact was that the Air Board was an organisation in which those qualities which cannot be legislated into the notion of 'command'—personality, leadership, professional knowledge, political deftness, and debating and committee skills—were likely to be just as important as formal authority. Additionally, the CAS enjoyed organisational advantages that should have allowed him to exert a dominant influence. In the first instance, his day-to-day duties gave him almost total authority over the development of the RAAF as a fighting force. Under the Air Board's division of tasks the CAS looked after fighting efficiency, organisation, collective training, and operational policy and planning responsibilities which in combination ensured he held the policy high ground. He also ultimately exercised command of operations.[42] Those crucial operational responsibilities were augmented by powerful administrative authority. As chairman of the Air Board the CAS convened meetings, approved agenda items and controlled the recording of minutes.[43] Those were more than adequate powers for a strong-minded individual to exert his will. For example, during the inter-war years, it was clear that Air Vice-Marshal Richard Williams, with his forceful manner and mastery of his brief derived from long tenure, dominated the board. In 1939 Air Commodore Goble wrote to Williams and accused him of acting as though he were an AOC commanding the RAAF, rather than first among equals, and of producing Air Board minutes which were not always an accurate record of collective decisions reached at meetings.[44]

Perhaps that was an exception. Many air members found the board's collegiate decision-making process productive, with former chiefs Air Marshals Sir Valston Hancock, Sir Charles Read and Sir James Rowland all expressing satisfaction with the collective wisdom it fostered.[45] Debate apparently proceeded on a civilised basis, with decisions being reached through discussion and an emerging consensus rather than a show of hands. Among the thousands of decisions taken by the Air Board between 1921 and 1976 (when the board was abolished), there is no more than a handful with formal dissenting minority reports attached.

One issue which did occasionally cause concern, and which was implicit in Goble's criticism of Williams, was the period of an individual's tenure as a member of the board. The duration of senior appointments was reviewed by the ministers for defence and air in 1946 when the Air Force's post-war organisation was being decided. Two general principles were endorsed. Appointments to the Air Board or as an AOC of an area were not to exceed four years, and the officers serving as air member for personnel, deputy chief of the air staff, and AOCs Eastern and Southern Areas were to be 'interchangeable'; that is, they had to be able to move between those positions without affecting the approved establishment of air vice-marshals.[46] The consequence of the latter principle was to restrict appointments to those four posts to general duties officers, as theirs was the only branch with four air vice-marshals.

Those general principles were not always observed to the satisfaction of the CAS of the day. It was in an attempt to limit the influence a determined and battle-hardened individual might have in the board room that Air Marshal McCauley in 1956 recommended restricting the tenure of air members to three years, with a possible extension of two years should a suitable replacement not be immediately available.[47] Minister for Air Athol Townley agreed, except for the appointment of CAS, whose tenure was decided by the government on a case-by-case basis.

McCauley's action was not aimed at any one individual but it might well have been taken personally by his air member for technical services (AMTS), Air Vice-Marshal Ellis Wackett, who had held his post since 1942. Wackett was no Williams: whereas the RAAF's first CAS had been prickly and high-handed, its first AMTS was calm and approachable. Wackett was also a wise and skilful leader, talents which, when combined with his record tenure, made him singularly adept at bringing a committee around to his point of view. And that was the issue. Notwithstanding Wackett's reasonable manner, there is no doubt that on occasions his mastery of the process and politics of the board frustrated some of his less experienced general duties colleagues, who believed that they, rather than an engineer (albeit one qualified as a pilot), should have been the dominant voice.[48] Wackett was eventually succeeded in 1960 by Air Vice-Marshal Ernie Hey, who then proceeded to hold his place on the board for twelve years, a term which, together with his forceful personality, once again gave the engineers influence beyond their numbers, to the extent that some technical officers fondly recall the period from 1960 to 1972 as their 'Hey Days'.

Perhaps Air Vice-Marshals Wackett and Hey did enjoy disproportionate influence in the Air Board. The fact remained, though, that the command of the RAAF was firmly in the hands of its pilots. As Sergeant Jake Newham was told by a senior officer in the bar at Williamtown one night shortly after getting his wings, 'You're in the pilots' club now mate, and don't you forget it!'[49]

Since the RAAF's formation in 1921 its senior executive—the chief of the air staff—has always been a pilot, a practice established by the RAF's first CAS, Sir Hugh Trenchard. It is a practice which, in the RAAF, was given legal status from 1927 to 1976 through Air Force Regulation 25. During the life of the RAAF College/Academy from 1948 to 1985, the overwhelming majority of those who entered to be trained as

the Air Force's future leaders were expected to graduate as pilots. It is difficult to dispute that domination. An air force is fundamentally different to armies and navies as its warrior class is restricted to a very small group, namely those who fly. Combat and operational experience is almost exclusively the preserve of that small group, which is why operational units almost invariably have been commanded by pilots. However, whether the extension of that operational-level domination through to most other activities has served the RAAF well is another matter.

Because of the accepted dominance of pilots, no policy on career prospects within the General Duties Branch (the aircrew branch) was developed between 1921 and 1968.[50] Even though there had been other aircrew categories since World War II, for some twenty years after the war little thought was given to exploiting the capabilities of those men to the full. Career prospects for the non-pilot flying categories such as observers, gunners, signallers, air electronics officers and navigators were modest, with few reaching wing commander rank. However, as the RAAF became more professional during the 1950s and 1960s, the realisation that this narrow outlook was almost certainly denying the Air Force valuable senior management skills prompted a change of attitude, and the development in 1968 of a career prospects policy for the General Duties Branch as a whole, rather than just its pilots.

Under that policy, an individual's promotion prospects were directly related to category establishments; that is, to the number of positions in the branch he was eligible to fill. With the best will in the world, the pilots who drafted the policy for the pilots who ran the Air Force were not about to close off too many future promotions for themselves by allowing the mass promotion of navigators and others to air rank. All air vice-marshal posts in the General Duties Branch were restricted to pilots, as was the sole air marshal's position. Still, some openings were made. Previously navigators had been restricted to group captain rank. Now they could fill up to ten per cent of the air commodore posts, as long as pilots maintained ratios of 3:1 for air commodores to air vice-marshals (to ensure selectivity for promotion), 2:1 for group captains to air commodores, and 2.5:1 for wing commanders to group captains. At wing commander rank, once the pilot quotient had been filled, navigators could compete for the remaining posts on merit.[51] The policy may have been cautious but it was an important step in opening up the Air Force's senior management to the widest range of talent.

Regardless of whether the RAAF was run by pilots or engineers or members of any other category, they were all wearing blue uniforms and their organisational manoeuvring was under the RAAF's control. That was not the case in the joint service arena. Responding to increasing concern over a perceived lack of cohesion in the Defence organisation, in 1957 the Menzies government appointed a committee headed by Lieutenant General Sir Leslie Morshead to examine the matter.[52] Morshead subsequently recommended integrating the three single service departments into the

Department of Defence, a change which in his opinion would produce four main benefits: the minister for defence's authority over both policy and administration would be strengthened; specialist services could be rationalised; general efficiency would improve; and the responsibilities of the service chiefs of staff would be clarified. While Prime Minister Menzies rejected the recommendation, he did issue a directive establishing the unquestioned authority of the Department of Defence for matters of policy, and authorised the department to create, wherever possible, combined services and standards.[53]

Another of Morshead's proposals, to establish the position of chairman of the Chiefs of Staff Committee (COSC), was accepted. The chairman of the COSC would not be one of the serving chiefs of staff but had to be a 'military man of eminence'. When Lieutenant General Sir Henry Wells became the first incumbent in March 1958, his functions were to convene meetings of the committee and arrange its business, tender the collective advice of the committee to the minister for defence, co-ordinate the military activities of the defence forces through the individual chiefs of staff, and act as Australia's principal representative on Anzus and Seato councils.[54] Notwithstanding the establishment of that position, the independence of the service chiefs remained an issue. The chairman of the COSC may have been the country's senior military officer, but because he did not command the defence force his ability to exert a cohesive influence over its activities was restricted. The three service boards were still legally responsible for the control and administration of the armed forces, and the individual chiefs were still entitled to make separate representations to the minister for defence and to Cabinet.[55] Nevertheless, Morshead's report seemed to be a clear signal for what lay ahead.

Improvements in the co-ordination of defence management continued throughout the 1960s, particularly in the areas of joint planning and programming. However, dissatisfaction remained with the single service's capacity for independent action; for example, as Chapter 16 of this book recounts, the Army's leaders became increasingly frustrated with what they believed was the Air Force's unwillingness to give sufficient priority to helicopter and battlefield support activities.

The far-reaching command and organisational changes Morshead had wanted were to come in December 1972 when the newly elected Whitlam Labor government announced its intention to reorganise the Defence group of departments. The then secretary of the Department of Defence, Sir Arthur Tange, was directed to prepare plans for government consideration. Without waiting for Tange to report, Defence Minister L.H. Barnard placed the five separate departments of Defence, Navy, Army, Air and Supply directly under his control and abolished the portfolios of Air, Army and Navy. When Tange's report was submitted, Barnard also acted on its recommendation to replace the position of chairman of the Chiefs of Staff Committee with that of chief of the defence force staff (CDFS). Unlike the chairman of COSC, the CDFS was a statutory officer within the Department of Defence and was directly responsible to the minister for defence for the command of the defence force.[56] The first CDFS, General F.G. Hassett, assumed office on 9 February 1976.

That fundamental change in the command arrangements for the defence forces was extended to the single services. Chiefs of staff were made responsible to the minister, through CDFS, for the operational command and control, fighting efficiency and training of their services. It followed from those changes that the service boards had to be abolished. The Air Board met for the last time on 30 January 1976. For the first time since the RAAF was established in 1921, the CAS legally commanded the Air Force. He alone, rather than a board, was responsible for the effectiveness and welfare of the RAAF.

CHAPTER 6

CONDITIONS OF SERVICE

The men and women of the RAAF are of course the subject of every chapter of this book. This chapter is expressly concerned with how the Air Force looked after its people, from recruitment through to discharge. If a military force is to prosper it must first attract the right people. If it wants to retain those people it must then feed and house them, pay them, promote them, keep them healthy, tend to innumerable wants—in short, protect their interests across a wide range of needs collectively known as 'conditions of service'. Training to defend the nation and operating high-performance aircraft may provide the springboard for high morale and organisational excellence, but those essential qualities will be placed at risk if the more prosaic aspects of service administration are ignored.

Once the uncertainty of the Interim period had been resolved, Australian males could join the RAAF through numerous avenues. A fifteen-year-old youth might enter via the apprentice training scheme, a more mature young man as an adult entry. Those seeking an immediate commission on graduation might choose the elite RAAF College or sign on direct from university. Regardless of how an individual joined up, progress was governed by one cardinal principle. Even for those entering at the lowest rank of aircraftman 1, advancement to the highest ranks, commensurate with potential, was possible. A recruit could join the RAAF at the age of fifteen, attain a high level of trade skill, and after a period of service in that trade be selected for aircrew training. He might then be commissioned as a member of either the General Duties or Technical Branches. If he possessed outstanding potential he might be selected for the RAAF College or sent to university.[1] In other words, any young man could enter the Air Force at the lowest level and still aspire to become chief of the air staff. That principle was not mere words. Air Marshal Sir George Jones, the man with the longest continuous tenure as CAS in the RAAF's history, had fought at Gallipoli as a private soldier.

Before an individual could aspire to become CAS, he had to join up. Applicants for enlistment as an airman (or, after 1951, an airwoman) were given a range of psychological aptitude and suitability tests. There was no general educational test, as in the RAAF's experience a trained, skilled individual who could pass the trade test for a particular mustering did not require a formal, minimum educational qualification.[2] Consequently, with the exception of education assistants and radio trainees, education to the sub-Intermediate level or lower was acceptable provided the recruit demonstrated an aptitude for his preferred trade. Applicants for unskilled musterings needed only to be reasonably literate, as most RAAF training courses started with a revision of elementary subjects in an endeavour to compensate for inadequate schooling and bring all students up to about the same educational level. In short, as long as an individual had the basic ability and motivation, the Air Force would look after him.

In 1947, recruits had a choice of eleven trade groups, as listed in table 6.1. Within each trade group there were different musterings: for example, in the aircraft maintenance trade an airman could qualify in one of seventeen musterings, ranging from airframe or engine fitter to instrument fitter and blacksmith; while the miscellaneous group encompassed such skills as linguist and cinema operator. Altogether there were eighty-three musterings.

6.1 Post-war trade groups

Aircraft Maintenance	Equipment and Messing
Motor Transport	Accounting
Marine Craft	Armament
Medical and Dental	Works
Barracks and General Administrative	Miscellaneous
Radio and Telecommunications	

Source: Air Board Agendum 8238, 3-7-47, RHS.

But to fill all those musterings and give the admirable ideal that 'every airman can be CAS' a chance to work, enough suitable people had to enlist. For several years after the war there were genuine concerns that minimum staffing targets would not be met as numbers dwindled rapidly. Technical airmen were the problem. By mid-1948 Minister for Air Arthur Drakeford was describing the strength of 3479 technicians against the establishment of 8043 as 'extremely serious', especially as projected recruitment data indicated a probable net gain of only four hundred and forty-nine by 1949.[3] With a wing already deployed in Japan as part of the British Commonwealth Occupation Force, the United Kingdom pressing for units to be stationed in the Middle East and Southeast Asia, and the air staff eager to move strongly into the jet age, the RAAF's technical staffing levels were close to crisis point.

An urgent Air Board inquiry identified numerous factors contributing to the problem. There was the uncertainty of the Interim period; interest in the armed services had declined following a major war; conditions of service (especially separations from families) were considered unappealing; national housing shortages made people reluctant to move if they already had a home; the disparities between service and civilian pay rates were excessive; and an overall manpower shortage had created 'severe' competition for labour.[4] Those findings were useful and revealed problems which would have to be addressed at some stage, but as most could be fixed only by an infusion of money, little could be done to achieve quick results at a time when official interest in the services was low. One of the survey's findings which the Air Board could deal with quickly concerned the Personnel Branch's unsatisfactory recruiting practices. From the 13,502 expressions of interest received by RAAF recruitment centres during the first half of 1948, only 2163 applications for enlistment had resulted, of which a mere five hundred and thirty-four had been accepted. Properly regarding that return of just under four per cent as unacceptable, the Air

Board introduced special training for personnel staff, relocated recruitment centres to prime locations in the capital cities, and adopted more modern advertising techniques.

While staff from the Department of Air and RAAF Headquarters began the long haul of bureaucratic trench warfare usually needed to win improvements in conditions of service from government and thus rectify the root cause of the problem, more immediate action was needed if the Air Force were not to stall. Where possible, civilians were substituted for airmen, particularly in support areas such as explosives storage, messes, warehouses, domestic works, caretaking, clerical work, and recruit and trade training.[5] The pressing demand, though, was for technicians. With the support of Immigration Minister A.A. Calwell, the RAAF launched a campaign to recruit up to 1000 former RAF personnel from the United Kingdom. Only skilled tradesmen were wanted, with preference going to electrical and mechanical fitters and radar and wireless mechanics who were unmarried and under the age of forty. Costs of passages for successful applicants and their families would be met. Between 1948 and 1953 a recruiting campaign conducted by Overseas Headquarters in London attracted eight hundred and three former members of the RAF and the Royal Navy Fleet Air Arm from twenty-three different musterings. The program was most successful as by May 1957 five hundred and thirty of those men were still serving with the RAAF and in the main were highly regarded.[6]

British migration was, in principle at least, to be supplemented by broadening the RAAF's ethnic recruitment base. Under the authority of Air Force Order 8/A/5, anyone applying to join the RAAF had to be 'the son of natural born or naturalised British subjects of pure European descent', although that requirement could be waived in time of war at the Air Board's discretion.[7] In peacetime, however, the order excluded all British subjects who were not of 'pure' European descent and all Australian Aboriginals. By contrast, there were no conditions relating to nationality or the racial origins of parents for applicants for the Army, who needed only to be British subjects. In 1950 the Air Board advised Minister for Air T.W. White that it wished to change the offending order. White concurred and the regulations were amended to permit applications for enlistment from anyone who was a British subject and 'of substantially European descent'. Like its predecessor, the new order could be deferred by the Air Board in times of war.

Other regulations were changed, although in some instances too slowly. Also responding to staffing crises, in 1951 the Army and Navy reduced their minimum entry age for general recruits from eighteen to seventeen. The initiative was successful and cost nothing but was not emulated by the Air Force until 1954.[8]

But there is no doubt the Air Board was quickly learning that if the new Air Force were to prosper, innovative and thoughtful personnel management practices were going to be essential, and that the benign indifference to individuals' needs which sometimes characterised the pre-1945 leadership was no longer acceptable. In that spirit, a directive from the board to all commanding officers in February 1949 noted that a large percentage of applications for discharge arose for reasons which, if treated speedily and sympathetically, were capable of resolution.[9] Commanders were

instructed to display those qualities. In cases where there appeared to be legitimate grounds for dissatisfaction, they were to offer airmen a range of alternatives to resignation, which might include remustering to a different employment category, a posting on compassionate grounds, a training course, leave of absence, or a 'local adjustment in working conditions' on the unit. The directive was one of those deceptively simple pieces of paper which superficially may have seemed like just more administrative trivia from above, but which in fact amounted to a major policy statement. In this instance the Air Board was indicating nothing less than its readiness to change organisational attitudes profoundly.

Changes made in response to the Air Board's 1948 inquiry into conditions of service, particularly the more professional approach to recruiting, were credited with significant improvements in ground staff enlistments during the early months of 1949, so with appropriate adjustments the findings were applied in succeeding years to recruitment campaigns for adult-entry airmen, apprentices, the RAAF College, officers other than aircrew, and the Citizen Air Force.[10] Demonstrating a growing sophistication, personnel staff adopted surveys as a standard management tool. One major survey of people who resigned between 1 July 1953 and 30 June 1954 found that eighteen per cent believed they could earn more outside the Air Force, thirty-six per cent were dissatisfied with the accommodation provided, and forty-three per cent wanted more permanency in their home life and living conditions.[11] (The remaining three per cent were dismissed as 'shiftless members' who would probably never settle into any type of employment.) If the Air Force wanted to retain more people, the areas in need of attention were obvious. In the meantime, re-engagement bonuses were introduced in 1955 in an attempt to get immediate results.[12]

The growing use of entry/exit surveys was accompanied by improved forward planning. In the mid-1950s personnel staff estimated that by the end of the decade the RAAF could face yet another crisis, as the first batch of airmen who had enlisted for twelve years in 1947 (after the end of the Interim Air Force) would be eligible for discharge. When other airmen whose engagements would also expire were taken into account, some 3700 technical staff could be lost within three years, a disturbing number which was exacerbated by the high experience level of the airmen concerned. A dual strategy was adopted. First, throughout 1956, officers from the Directorate of Personnel Services visited every unit, sub-formation and detachment in the RAAF to explain the benefits of remaining in the service to all airmen whose engagements were due to expire. An above-average re-engagement rate in the succeeding years suggested that the effort had been rewarded. Second, Cabinet authorised another recruitment drive in the United Kingdom, with assisted passage migration to Australia approved for up to 1250 airmen and sixty-nine officers.

From then until 1971, the major challenge for the Personnel Branch was the RAAF's continual expansion, driven by the growing commitment in Southeast Asia and the biggest peacetime re-equipment program in the Air Force's history. The number of squadrons directly involved in the Vietnam War increased from one in 1964 to three by early 1967. As a tour of duty was only one year the demand for air

and ground crews was unrelenting and placed a constant pressure on the training and support organisations. At the same time the RAAF's inventory changed beyond recognition as aircraft like the Hercules, Iroquois, Mirage, Caribou, Orion, Macchi and F-111 all entered service. The technical challenge was enormous: the Iroquois was the RAAF's first operational helicopter; and the Mirage, Orion and F-111 represented a quantum leap in technology over the aircraft they replaced.

The mean years of the late 1940s were forgotten as the personnel establishment hovered around the 15,000 mark during the 1950s before spiralling upwards in the 1960s. In May 1963 the approved establishment of 16,440 was increased to 18,300, with personnel planners forecasting a further rise of almost 3000 by June 1970 if the Air Force were to meet all its commitments; in the event, the ceiling reached 22,712.[13] Past experience indicated that the upper limit would be difficult to attain, even though between 1960 and 1964 about sixty-five per cent of airmen completing their engagements signed on again, an impressive figure given the competition from the civilian sector.[14] Nevertheless, the deficit between the numbers required and the actual strength hovered at around seven per cent and was considered unlikely to fall below four per cent unless the traditional recruiting base was expanded.[15] Skilled tradesmen remained the critical group, with a shortfall of some seven hundred expected by mid-1966 as expansion peaked. A continuing discrepancy of that size could place the program at risk.

Once again short-term relief was sought from the United Kingdom, where fortuitously for the RAAF the RAF was being subjected to severe reductions.[16] At the initiative of the air member for personnel, Air Vice-Marshal W.L. Hely, and with the concurrence of the RAF, a recruiting office was opened in London. Because the Australian Government's assisted passage migrant scheme was still in force the RAAF was able to bring its British recruits and their families to Australia for only £10 each. As those who signed up were already trained the arrangement represented excellent value for money. When the initial response was a little slow, one planning document laconically suggested that interest could be expected to pick up after the onset of the European winter, and that proved to be the case. About one hundred and fifty former members of the RAF joined up during the first year, and with their experience became a valued addition to RAAF capabilities.

There was an unexpected outcome for some of the British recruits. Because their arrival coincided with Australia's increasing involvement in Vietnam, a number suddenly found themselves fighting a war in Indochina instead of leading a quiet life in Australia. In a display of characteristic English humour, mock travel posters appeared in some RAAF crew rooms advertising package tours for Britons to 'see Vietnam via Australia for £10'.

Just as recruitment and retention practices had to be adjusted for changing times, so too did the structure of the officer corps. At the end of World War II there were four commissioned branches in the Permanent Air Force: General Duties, Equipment,

Medical, and Commissioned Warrant Officer. (The Commissioned Warrant Officer Branch was precisely that: a branch consisting of people who had been commissioned from the ranks, and whose promotion prospects almost invariably were limited to squadron leader level.) Individuals could also be commissioned as accountant or administrative and special duties officers, but only with the Citizen Air Force. The General Duties (GD) Branch dominated the Air Force. Most GD officers were aircrew, mainly pilots; but the branch also included the RAAF's technical officers, who invariably were aircrew-qualified. Notwithstanding its status as the Air Force's 'warrior caste', the GD Branch's stated primary purpose was not aircraft operations but 'the art of management', a distinction which notified all and sundry that its members could expect to control the RAAF.[17]

The immediate post-war years saw a major restructuring of the officer corps, even though the first review conducted during the Interim period found little need for change. Four branches were retained but the Commissioned Warrant Officer Branch was replaced by the Secretarial Branch, whose members assumed responsibility for accounting, catering, code and cipher work, the distribution of publications and keeping official records. The review also noted that the technical members of the General Duties Branch seemed to receive fewer opportunities than the aircrew, an observation the Air Board rejected. The currency of that review was short lived, as in a changing environment more flexibility was needed. Two new branches were introduced in 1946, one for chaplains in July and another for accountants in December.[18] Dissatisfaction was again expressed regarding the general duties technical specialisation, with growing support evident for a separate engineering branch which would be formed by separating technical services from the aircrew branch. Debate on that subject was deferred at the request of Air Vice-Marshal Jones, pending another review of the entire officer corps.

By May 1947 that review had been completed. Its findings presented the Air Board with a quite different picture of the future than had been the case only a year before. Seven branches were proposed within the Permanent Air Force: General Duties, Equipment (incorporating the sub-specialisations of equipment, works, catering and barracks), Medical, Accountant, Chaplains, Technical and Special Duties.[19] The establishment of a technical branch clearly was the major recommendation, while the concept of the 'Special Duties' function was also significant.

The support for a technical branch amounted to formal endorsement of the fundamental importance of technology to air power: RAAF engineering had become a job for specialists, not part-timers. When it was established in September 1948, the Technical Branch assumed responsibility for all aeronautical, mechanical, armament and signals (radio and radar) engineering. By recognising engineering as a specialist RAAF activity, the Air Board hoped to emphasise the importance of theoretical research as a means of remaining at the technological leading edge; additionally, expanded career opportunities seemed likely to attract more and better qualified engineers. Equally, however, in a fighting force, theory could not be allowed to dominate practical action, so as a means of reminding the members of the Technical

Branch of the reason for their service's existence, some engineers were to receive flying training.

The reorganised Special Duties Branch was intended to group those functions for which a flying or technical background was not essential. In fact it ended up as something of a grab bag as it threw together specialisations which in most cases had little in common: administration, intelligence, ground defence, welfare, aircraft control, education, cipher, meteorology, operations, legal, public relations and provost. The disparate nature of those activities made it difficult for an individual to transfer from one role to another, while the relatively small number of positions in each category (with the exception of administration) meant there were few senior jobs, few promotions and few career prospects.

Fine-tuning of the officer corps continued, with the Equipment and Special Duties Branches the most affected. Because both branches contained numerous sub-specialisations, and transfers between those different functions were rare, people found themselves stranded in small groups with limited career opportunities. A reduction in the number of sub-specialisations seemed to be the obvious solution, so in 1955 the Equipment Branch was reduced to two functions, 'equipment' and 'works'. 'Equipment' described an officer employed on stores, supplies, barracks or catering duties; while 'works' officers were usually involved in civil engineering tasks with one of the airfield construction squadrons. Similarly, the number of categories in the Special Duties Branch was rationalised to four. The education, legal and meteorology specialisations were retained, and all other roles—which by then were administration, aircraft control, ground defence, intelligence, photographic, provost and public relations—were lumped into the catch-all of 'administrative'.[20] While the change to the Equipment Branch proved satisfactory, the Special Duties (Administrative) category was unworkable. Consequently the Special Duties Branch was again reorganised and by 1963 had expanded from four categories to eight. Meteorology had been omitted, having been reclassified as a civilian task, and education and legal remained unchanged. The significant change was the separation of the all-purpose administrative category into six specialist categories: administrative, air defence, air traffic control, photographic, ground defence and provost. Later that year a ninth category was added with the introduction of intelligence.[21]

At about the same time the possibility of a more radical change to the branch structure was raised when the Air Board examined the concept of a 'general list', under which all officers above a certain rank would no longer belong to a branch but instead would be grouped in a 'general' pool. Under the existing arrangement for filling established posts, every job in the RAAF was defined by rank and category; that is, the incumbent had to be a squadron leader engineer, or a group captain pilot, or a flight lieutenant works officer, and so on. The intention of the general list was to break down that rather narrow approach by opening up more jobs to a wider range of officers, a change which would make better use of the available talent, increase career opportunities for the most capable officers regardless of their branch, and broaden understanding between branches. Group captain rank seemed to be the right level at

which to start the scheme. Until reaching wing commander rank officers would remain in their category, utilising and developing their specialist skills as they worked primarily in 'hands-on' operational posts in the field. At group captain rank and above, however, most officers were employed in senior staff positions, where general management skills were more important than, say, those of an operational pilot, or a unit engineer, or an equipment officer—hence the 'generalist' concept. If the concept were introduced, some senior posts would have to retain their specialist caveat—for example, AOCs had to be pilots, the air member for technical services an engineer, the senior legal officer a lawyer—but many more positions would be opened up to competition than under the prevailing system.

Perhaps the concept of the general list was too extreme for the pilots who dominated the RAAF and who would have been the major losers had most senior positions been placed on the open market. After a preliminary discussion the Air Board decided further action was not warranted. A minor concession was made, however, by making four general duties group captain posts available to officers from other branches.[22]

Reasonable promotion prospects and access to a wide variety of jobs were two of the management tools the Personnel Branch could use to satisfy an officer's career aspirations. Security of tenure was another. Before 1939, whenever possible, officers had been appointed to permanent commissions to give them security and help them make a commitment to an Air Force career. Permanent commissions also were cost-effective, as the alternative of short-service commissions created a rapid turnover of personnel, which was expensive, and two classes of officer, which was undesirable. The extraordinary circumstances of World War II had forced a reversal of that policy, with short-service commissions becoming the norm, but once the wartime recruits had been discharged the pre-war policy was reintroduced. In general, short-service commissions were only used with individuals holding specialist qualifications and whose services the RAAF needed at a particular time and for a specified period, such as dentists.[23]

Aircrew were the main exception to that general policy. Before the war aircraft were usually flown by only one or two people, and the responsibilities of the pilot far exceeded those of other crewmen. Because pilots dominated the RAAF both as its warriors and managers, they were invariably commissioned. However, the advent of large multi-crew aircraft increased the percentage of aircrew in the officer corps; while the skill level and responsibilities demanded from other categories, particularly navigators, demanded entry standards similar to those of pilots. Post-war commissioning policy therefore became more complicated. On the one hand, the special place of flying operations in an air force had to be recognised; on the other hand, there were too many aircrew for everyone to be commissioned. Graduating most aircrew as senior non-commissioned officers (NCOs) was not considered the answer. NCO rank for ground staff carried with it the authority of experience and

supervisory responsibilities, neither of which applied in the case of aircrew; indeed, during the war the rapid promotion of very large numbers of NCO aircrew had been resented by ground staff, who believed their status had been devalued.[24]

At the recommendation of Air Member for Personnel Air Vice-Marshal Joe Hewitt, the Air Board decided to introduce new aircrew 'ranks' based on a post-war scheme developed by the RAF.[25] Aircrew recruits would be known as 'trainee aircrew' until they were streamed into their specialisation, after which they would become a 'trainee pilot', 'trainee navigator', and so on. After graduation 'trainee' would be dropped and an individual's category would become his 'rank', qualified by a number to indicate his professional status and experience. The most junior number was '4'; thus, a newly graduated navigator's rank would be navigator 4 while a pilot's would be pilot 4. Individuals were expected to take about nine years to progress through the levels and become a navigator 1 or a pilot 1, after which the rank/status of 'master' (navigator, pilot, etc.) might be awarded. At any time after graduation airmen aircrew could be considered for commissioning. ('Airman' is the generic title used by the RAAF to denote the non-commissioned ranks.) The scheme was introduced for the first post-war aircrew course in 1948.

By denying airmen aircrew a formal rank, Hewitt's system created a military oddity. Unlike every other group in the RAAF, those aircrew were identified by their profession rather than by a traditional, recognised military rank. Their specialist skill had become the sole justification for their employment, an unwanted distinction which placed them at odds with the military ethos of command and leadership conferred through rank. Doubtless the scheme was well intentioned, but its inherent intellectual untidiness was apparent from the outset. Because airmen aircrew had to live and eat somewhere, it became necessary to give them an 'equivalent' rank status, so category 4 aircrew were deemed 'equal' to corporals and used the airmen's mess, while master aircrew were 'equal' to warrant officers and used the senior NCOs' mess. During the early months of the war in Korea a concession was made to pilot 4s flying Mustangs on operations by accommodating them in the sergeants' mess. But 'equivalence' only went so far. After a day spent in combat, a P4, because of his lack of formal rank and status, could find himself rostered for guard duty! That appalling situation did not last long but it served to emphasise the failings of the scheme.

Fighter pilots performing picket duty in Korea were not the only people unimpressed by the specialist aircrew scheme. Potential recruits signalled their disapproval by looking elsewhere for employment. Despite frequent and costly publicity campaigns, applications to join the RAAF as airmen aircrew fell from a high of six hundred and fifty-two in January 1948 to a low of two hundred and thirty-two in February 1950. Surveys indicated dissatisfaction with the rank system, status, rate of promotion and pay.[26]

A proposal to arrest that declining interest by commissioning all aircrew was rejected because of expense and the imbalance it would create in the officer corps. Additionally, the RAAF preferred to recruit its signallers and flight engineers from serving ground crew with relevant trade qualifications, a practice which saved money,

The 'Meteorites' aerobatic team which formed at Williamtown in 1956 typified the uncertainty of the aircrew rank system in the 1950s. Team leader FltLt J.H. Flemming (centre) had flown in Japan and Korea under the 'pilot rank' designation system; his wingmen were both senior NCOs, Sgts F.P. Riley (left) and O.R.F. Bartrop (right); and the fourth member of the team (who took the photograph) was FlgOff T.J. Withington. RAAF

simplified training and established better links between air and ground staffs; and for that system to operate effectively the individuals concerned had to return to their trade after one or two flying tours, which would not be possible if they were commissioned as aircrew. The end result was that in November 1950 specialist airmen aircrew titles were abolished and the ranks of sergeant, flight sergeant and warrant officer reintroduced. As a further inducement to recruits, all suitable pilots and navigators could expect to be offered a short-service commission several years after graduation, although strict limits were placed on the numbers of engineers and signallers who could be commissioned. Some control over the balance within the officer corps would be achieved by restricting the numbers who were subsequently offered permanent commissions. No such control applied, however, to the rapid increase in the number of 'instant' senior NCOs, with the sensitivities of the ground staff who had taken years to attain that status and authority apparently being quietly ignored.

The new arrangement was an improvement but not the complete answer. By the end of 1954 all executive posts (squadron leader and above) at flying squadrons were filled by officers holding permanent commissions but most of their aircrew were on short-term engagements, a less desirable situation. As the engagements of aircrew who had served in World War II elapsed, experience levels began to fall. That situation was aggravated by the relatively short engagements offered to newly graduated aircrew, four years for officers and six years for airmen, periods which not only were scarcely adequate to allow people to reach their full potential as aviators, but which also created a quick turnover and placed considerable demands on the training system.

In the end it was the complementary needs of meeting the greater demands of high performance aircraft and attracting better educated young men in a competitive market which forced more changes. 'The above average standard of today must become the average standard of tomorrow', the Air Board declared, as it decided to revise its recruitment standards and training system so that all pilots and navigators could be commissioned.[27] From July 1958 onwards, all trainee pilots and navigators entered the RAAF as cadet aircrew and after graduation were appointed to eight-year short-service commissions, initially as pilot officers. Signallers continued to graduate as senior NCOs but their appointments were extended to eight years. Quality control within the General Duties Branch was to be achieved by discharging many of the newly commissioned aircrew at the end of their short-service contracts, a practice also intended to keep the Air Force's fighting arm young and vigorous.[28]

The use of age as a management tool was extended beyond the need to protect the vitality of the RAAF's fighting arm. A controlled turnover of people was necessary to provide career and promotion opportunities within each branch; while in theory at least the management of the entire officer corps was ultimately supposed to produce two or three officers from whom the next CAS could be selected. Too many older staff would also increase the percentage of those with medical limitations and posting restrictions.[29] Retirement ages accordingly were linked to rank.

When retirement ages for officers were reassessed in 1946, the upper limit for most

ranks in the General Duties Branch was reduced by two to three years from the wartime level, presumably because far fewer men were needed. However, over the following decade community health and education standards improved. Better levels of physical fitness enabled aircrew to meet the standards required by front-line squadrons longer, while it was logical and cost effective to extend the service of better educated, experienced staff officers. In addition, as Air Force retiring ages were generally younger than those for the Army and Navy, the Air Board was keen to offer its officers equivalent career opportunities. Retiring ages were raised across the corps in 1958, as shown in table 6.2, with the lower limits stipulated for the General Duties Branch intended to keep the fighting arm vigorous.

6.2 Officers' retiring ages, 1946 and 1958

	1946		*1958*	
Rank	*GD*	*Other*	*GD*	*Other*
Air Marshal	58		60	
Air Vice-Marshal	55	58	57	60
Air Commodore	52	58	55	58
Group Captain	50	55	55	57
Wing Commander	47	52	50	55
Squadron Leader	43	49	47	55
Flight Lieutenant	41	49	45	55

Source: CRS A7942/1, R104, AA; Air Board Agendum 12725, 20-3-58.

Because the requirement to maintain an active combat element and control the progress of an overall corps did not affect the enlisted ranks, their standard retirement age was set at fifty-five; while those for the WRAAF were fifty-five for group officer and wing officer, and fifty for all other commissioned ranks.

Promulgation of those upper limits was accompanied by guidelines for the more ambitious officer with an eye to rapid progress. Promotion to flight lieutenant was automatic as long as routine exams were passed and performance reports were satisfactory, and took somewhere from three and a half to four and a half years after graduation, depending on an individual's qualifications and branch.[30] All subsequent advancement was competitive and was largely determined by the detailed written reports submitted annually on each individual. As a guide, personnel staff suggested nominal age/rank milestones of thirty for promotion to squadron leader and thirty-six for wing commander. Any would-be 'high flier' who fell behind that pace could start to feel worried.

The prospect of individuals progressing through the ranks at the optimum rate clearly would be enhanced if the right people were selected in the first instance, and were then subjected to accurate and informative assessment procedures at various stages of

their careers. The Air Force was the first of the armed services to introduce psychological techniques to select and classify recruits, and led the way in applying statistical research techniques to personnel wastage rates.[31] Australia's first vocational guidance unit was developed by RAAF psychologists and ultimately became a part of the Department of Labour and National Service.[32]

With that record of innovation and achievement, the decision to disband the psychology service in 1947 was ill-considered. It was also short-lived, as it was simply too costly for a technical service not to use the most effective personnel selection methods. Training failures were expensive, and research had shown that trainees who were selected through objective (psychological) testing had a failure rate of only 4.7 per cent compared to 14.7 per cent for those chosen by the older 'impression' method, such as a recommendation from a serving officer. One survey into aircrew selection concluded that it was not possible to obtain any indication of pilot aptitude from the impression method, with no correlation whatsoever existing between a cadet's appearance, bearing, manner and behaviour, and his capacity to learn to fly.[33]

The RAAF psychology service was reactivated in October 1947 and two civilian psychologists were appointed to the Personnel Branch in 1948.[34] Civilians were preferred partly because the service was small and partly because the Air Board did not want military officers to have access to confidential personal information such as promotion ratings and psychological assessments.[35] The psychologists' main tasks were to place testing procedures on a scientific basis, analyse data, correlate selection procedures with subsequent training results, develop an accurate confidential personnel reporting system, and train RAAF staff in personnel assessment procedures.

Having ideally recruited the best people, it was then in the RAAF's interests to keep those people healthy physically and spiritually, and to provide them with a clear code of military behaviour. Those tasks were in the main the responsibility of the physicians, chaplains and lawyers.

The pre-war Medical Branch consisted only of medical and dental officers and offered little more than minor dispensing services. Hospital care was dependent on the Repatriation Commission. By the end of the war the Air Force medical system had expanded in size and quality to include base sick quarters, fixed and mobile hospitals and dental units, rehabilitation units, aviation medicine research, hygiene organisations and malaria control units. The essentials of that system were retained after 1945 when it was decided that the Medical Branch should provide service in clinical, preventive and aviation medicine. Providing a comprehensive, high-grade, free medical service became an important condition of Air Force service. In response to that policy, the Medical Branch was expanded to incorporate pharmacists, hygiene officers and nurses; while as well as attending to general health needs, some Air Force physicians specialised in aviation medicine as the challenges of flight in the jet age subjected aircrew to new and extreme stresses.[36]

From 1945 until 1961 all of those services were managed by Air Vice-Marshal E.A. Daley, who held the post of director-general of medical services for a record sixteen years. A qualified RAAF pilot, Daley specialised in tropical medicine in addition to playing a prominent role in the development of the Institute of Aviation Medicine at Point Cook.

Despite Daley's dedicated leadership, the health services persistently struggled to attract and retain medical practitioners, with limited career prospects constituting an inherent organisational handicap. Short-term remedies included extra pay, gratuities and overseas recruiting drives, while a major branch reorganisation in 1965 was intended to offer more satisfying career development as well as increasing the director-general's role in policy formulation.[37]

Pre-war arrangements for the spiritual well-being of the members of the RAAF were similar to those for their physical health. Religious needs were met primarily by local clergymen acting on a part-time basis.[38] The denominations of those clergy were proportionate to the religions of the total number of people in the RAAF, most of whom were Church of England, Roman Catholic, Methodist or Presbyterian. While the arrangement satisfied the primary objective of providing pastoral services, it denied chaplains a formal category and career progression.

The requirement for chaplains inevitably increased during the war. In general, units of 4000 or more people were entitled to one full-time chaplain for each 1000 members, while those with 3000 or less were served by a combination of full-time and part-time chaplains. All operational flying squadrons were attended by a full-time chaplain, regardless of size. Those arrangements were formalised in July 1946 by the creation of a Chaplains Branch in which there was one full-time and up to three part-time chaplains per thousand personnel. The activities of the branch and its different denominations were co-ordinated through the board of Chaplains, an association almost invariably characterised by a relaxed ecumenical spirit. Pastoral care appeared to have been given a further boost when the Air Board also agreed to provide a church or chapel at every permanent base, where previously religious services often had to make do with theatres, gymnasiums and lecture halls.[39] Unfortunately progress was slow, and in many instances when chapels were provided they were simply converted wartime huts.

Chaplains had not worn rank at the start of the war but started doing so when it was perceived to raise their status in the field. Rank was purely honorary and carried no authority of command or discipline. Whether or not the custom should be retained was debated in 1946, with the Air Force and Army in favour and the Navy against. The RAAF's staff chaplains, 'supported by ecclesiastical authorities', unanimously agreed that wearing (honorary) rank assisted 'in no small measure in promoting and safeguarding the spiritual welfare of the members of the service', so the Air Board decided to continue the practice.[40] For purposes of pay and administration, however, a chaplain's status was technically designated by 'class', ranging from 1st to 4th.

The chaplains' preference to wear rank implicitly acknowledged the value to military personnel management of an effective, formalised disciplinary code. That value apparently was forgotten during the haste to demobilise in 1946, as all legal officers were transferred to the reserve. Within two years several had been reappointed to the Permanent Air Force, followed by the establishment of a Directorate of Legal Services. The military disciplinary code was too complex and important to be managed on a part-time basis, as the evolution of Air Force law over the next two decades illustrated. To understand that evolution, a brief account of developments before 1946 is necessary.

Australian Defence legislation dates from 1903 when the Defence Act was passed. This was 'an act to provide for the Naval and Military Defence and Protection of the Commonwealth and of the several States', and provided for the constitution of the Defence Force and the administration and discipline of the naval and military forces. The Australian Defence Act applied the Imperial (that is, British) Naval Discipline Act and Army Act to the Australian Navy and Army at all times while on active service. That application was later extended to cover peacetime service. During World War I objections arose over the severity of the punishments which could be administered to Australians under the provisions of the Imperial Acts, but the legislation remained in force.

The RAAF was constituted in 1921 under powers contained in the Defence Act. Later that year the government introduced an Air Defence bill based on the Naval Defence Act and which proposed applying the Imperial Air Force Act to the RAAF at all times. After several years the bill was withdrawn because of lingering disquiet over the Army and Navy experience during World War I. Consequently a short enabling Act, the *Air Force Act 1923*, was introduced and passed. This Act constituted the RAAF, made it liable to the Defence Act subject to modifications and adaptations to be made by regulations, and authorised the necessary power to make those regulations for the organisation and administration of the Air Force. The application of the Imperial Army Act, as contained in the Defence Act, was specifically excluded from the *Air Force Act 1923*.

The *Air Force Act 1923* was intended only as a temporary measure. Nevertheless, it worked well as some seven hundred regulations were made under its authority, covering all aspects of RAAF organisation, administration, conditions of service, pay and discipline.

No amendments to the *Air Force Act 1923* were considered necessary until 1939, at which time the RAAF was unique, being the only defence service in the Empire which did not apply the relevant Imperial Act. However, the outbreak of a world war and the certainty that the RAAF would be involved in operations with the Australian Army and Navy and other Commonwealth forces seemed likely to cause administrative and disciplinary problems. Legislative consistency with the other services was considered desirable. Accordingly, in December 1939 the government introduced and passed an amending Air Force Act which applied certain sections of

the Defence Act and the Imperial Air Force Act to the RAAF and which brought it into uniformity with the Army and Navy.

The *Air Force Act 1923* as amended by the 1939 Act remained in force not only for World War II but also for the period covered by this book. Unfortunately the amended Act caused legislative complexities. The RAAF was now administered by a number of separate series of statutory provisions, namely, the *Air Force Act 1923*, the Defence Act, Air Force Regulations, the Imperial Air Force Act, the Rules of Procedure, and certain of the King's Regulations for the RAF. In an attempt to rationalise that untidy and complex situation and similar matters of Defence legislation affecting the other services, a committee of review was established under the chairmanship of the solicitor-general in 1949. Initially the RAAF was represented by Air Vice-Marshal F.M. Bladin and F.J. Mulrooney; later, the entire Defence representation was reduced to only one officer with legal qualifications. Successive drafts of a revised Air Force Act were, however, passed to the Air Board for comment.

By 1958 the proposed Air Force bill had reached its sixth draft and represented a 'reasonably firm set of provisions'.[41] It was then overtaken by events as support began to gather for a uniform disciplinary code for the three services; that is, a code contained in one Act of Parliament applying uniformly to the Air Force, Army and Navy. A formal proposal to that effect was made by the Defence Department in 1965, and after comprehensive study by an inter-departmental committee Cabinet decided in February 1970 that legislation should be prepared for a uniform disciplinary code for the Australian Defence Force.[42] The draft code proposed three particularly significant changes. The death penalty was to be removed (life imprisonment was the most severe punishment which could be prescribed; if capital punishment were sought, as, say, in a case involving intentional assistance to an enemy, Section 24 of the Crimes Act could be applied); the criminal code was to be based as far as possible on the laws of the Australian Capital Territory; and arrest and search powers were to be the same as those applying in civil law, which were more favourable to the suspect than the existing military codes.

In addition to the evolution of the disciplinary code, there were two other notable legal developments between 1946 and 1971, the first associated with court-martial procedures and the second with international law.

After two world wars there was considerable dissatisfaction, particularly in the United Kingdom and the United States, with the administration of military justice, and a general desire to equate civil and military standards of justice and legal procedures. Codes were substantially revised and courts-martial appeal courts established in Canada and America in 1950, in Britain in 1951 and in New Zealand in 1953. Australia eventually followed suit in 1955.[43] The Australian Courts-Martial Appeals Tribunal required proceedings to be conducted to the same standards as a superior civil court. Following severe criticism of RAAF procedures in several cases, the Air Board agreed in 1960 to a number of changes which altered the character of courts-martial from that of a military tribunal to a court of law. Those changes included the provision of competent and trained presidents and experienced judge

advocates, and the use of legal officers to prosecute and defend at all courts-martials. Efficient court recording (necessary should an appeal be made) was also introduced.

The RAAF's interest in international law increased in the late 1960s, partly because the growing political independence of a number of Southeast Asian states made the Air Force's involvement in the region more complex, and partly through the wish of some legal officers to increase the scope of their contribution to their service.[44] A detailed knowledge of the law in countries like Papua New Guinea, Malaysia, Singapore, Thailand and Vietnam was considered important if the rights of the large numbers of RAAF personnel stationed overseas were to be protected. If possible, formal agreements on issues such as marriage and liability to local criminal justice had to be reached. For those personnel serving in war zones, the adoption by Australia in 1957 of the Geneva conventions meant that a member of the Australian Armed Forces who committed a serious breach of the conventions could be charged with a criminal offence under Commonwealth law, a realisation which perhaps only started to sink in following a number of highly publicised atrocities committed by Western forces in Vietnam. RAAF legal officers began to address those highly complex issues, which in the case of civil law could vary from country to country.

This chapter to date has been concerned essentially with the institutional management of the RAAF's people—recruitment, employment categories, career progression, discipline and the like. Those practices had to be complemented by attention to more fundamental needs, such as pay, housing and pensions.

Before any rewards for service could be made, individuals had to be unmistakably identifiable. Ranks and names were not enough in an organisation which turned over tens of thousands of people, so the solution introduced in the 1920s was to give every serviceman a distinctive number. Blocks of numbers were allocated to each state of enlistment as required, a system which worked well enough in the early years but which became confusing when the RAAF's strength rose to 180,000 during the war. Because of uncertainty over how many people would enlist in various places, it became necessary to allot states large blocks of numbers, a practice which left gaps in the total list of numbers and broke numerical continuity.

A new system was introduced in 1949 to satisfy three requirements. It had to provide scope for expansion without confusion in the event of mobilisation; permit ready identification of an individual's state of enlistment (because pay records were administered in home states); and ensure a permanent sequence of numbers.[45] The system was pleasingly straightforward. Each state was allocated a 'pay' number which was the first digit for every person enlisting in that state, as follows: Queensland 1, New South Wales 2, Victoria 3, South Australia 4, Western Australia 5, and Tasmania 6 (people from the Northern or Australian Capital Territory had to enlist in a state). Individuals were then simply given a sequential number for their state. Further administrative refinement was added by allocating the prefix 'O' for male officer, 'L' for female officer, 'A' for airman, 'N' for nursing service or 'W' for

airwoman, where previously no distinction had been made. Thus, for example, the 1000th airman to enlist in New South Wales was A21000; and the 3976th officer in South Australia O43976.

As mentioned, service numbers facilitated the administration of pay and allowances. The financial conditions of service which applied in the RAAF before World War II were based on RAF rates, with some adjustments to reflect rates in the Australian Army and Navy. With the eventual addition of an automatic cost of living variation, that system remained unchanged up to the outbreak of war. After the war the Air Board again examined the system of pay and allowances for the RAF and the pay structures of the other Australian services before proposing its own set of conditions, which for airmen was based on four 'elements' and a number of principles.[46]

The first and most fundamental element was the establishment of a basic wage applicable to every airman, regardless of his mustering. A margin for skill was then added, as were special loadings for the 'peculiarities' of service life. Finally, deductions were made for rations and quarters.[47] An airman's skill margin was recognised by placing his mustering into one of four pay groups, with Group 1 being the most skilled and Group 4 the least. The margin for skill was the determining factor when allocating a mustering to its pay group.

Turning to the principles, the most important (and perhaps obvious) was that all members of the RAAF were to be paid, with rates determined on a daily basis. Attention was given to the special needs of particular skill groups. For example, in setting the pay scales for officers, the Air Board was mindful of the competition it faced for its pilots from the local commercial carriers, Australian National Airlines and Trans Australian Airlines, who paid their captains in the order of £1000 to £1300 per annum. The post-war rates of pay which were introduced on 1 July 1947 are listed at table 6.3.

6.3 Rates of pay, 1947

Rank	*Salary Range*
Aircraftman	£255
Corporal	Up to £500
Flight Lieutenant	£501–750
Squadron Leader	£751–1000
Wing Commander	£1001–1300
Senior Ranks	Over £1300

Source: Air Board Agendum 9783, 22-9-49, RHS.

Basic pay was supplemented by a number of allowances, some general, others discrete. Everyone received the service allowance (a payment made to compensate for the peculiar disadvantages of military life) and a uniform maintenance allowance.

Selective allowances ranged from those paid for service in difficult or remote locations to one for being married. The marriage allowance varied with rank but not the number of dependent children; and reflecting the benign institutional paternalism of the post-war era, the RAAF insisted on paying a percentage direct to the wife. Automatic cost-of-living adjustments were applied to pay and some allowances.

Payment in cash was complemented by payment in kind through numerous 'conditions of service'. Rations at a prescribed level were supplied free to all personnel, as was medical and dental care, and uniforms and other clothing such as sports wear, flying gear and work overalls. Single members received free accommodation and annual free home leave travel. Where possible families were provided with married quarters for which they paid a maximum of ten per cent of their total active pay and allowances.[48] The costs of moving families, furniture and effects on posting were met from the public purse. Long service was rewarded by a system of fixed gratuities for airmen (£120 after six years, £360 after twelve years) and deferred pay for officers, the latter being determined by the number of years served and an individual's rank. And it was the government's intention eventually to replace gratuities and deferred pay with a superannuation scheme, a condition of service the Army already enjoyed.

Competition for labour throughout the 1950s was strong as the economy grew and commercial enterprises expanded. By 1958 the total strength of the armed services was only 46,000 against a target of 57,000. At the request of Minister for Defence Sir Philip McBride, the government appointed a committee chaired by the prominent businessman and public figure Sir John Allison to review conditions of service, not because the forces were necessarily disadvantaged compared to the civilian community—on the contrary, many observers felt they were better off—but because there was a pressing need to attract more people into uniform if the forward presence in Southeast Asia were to be sustained.[49] Two of Allison's eleven-person committee represented the RAAF, Secretary of the Department of Air A.B. McFarlane and acting Air Member for Personnel Air Commodore F. Headlam.

The Allison Committee was given five broad issues to address: the disabilities of service life; pay and allowances; retirement benefits and resettlement; housing; and the machinery for adjusting conditions of service. Opposition to the committee's brief was expressed by senior Public Service advisers to Cabinet. The nature of those objections is worth recording as an indication of the difficulties proposed improvements to conditions of service can face within the bureaucracy. Displaying a vagueness that suggested his opinion was less than objective, the secretary of the Defence Preparations Committee, K.H. Herde, informed Cabinet of his 'general impression' that service personnel were 'fairly satisfactorily treated'. Herde supported his impression by quoting as 'evidence' a conversation he had overheard between RAAF wives who had just returned from a posting to Malaya, and who were talking about the 'magnificent holiday [they had enjoyed] at government expense'. Herde also

presented Cabinet with a comparison of pay rates for civilian and service tradesmen which alleged that servicemen were about thirty per cent better off. When Sir John Allison learnt of the incident he was sufficiently perturbed to write to Prime Minister Menzies to inform him that Herde's figures were wrong and that the rates of pay were almost the same.[50]

Because the prime minister strongly supported Australia's forward presence in Southeast Asia and that presence depended on a constant flow of suitable people, he was far more receptive to the Allison Committee's endeavours than some of his senior public servants. After the usual bureaucratic infighting, most of Allison's recommendations were endorsed. The service allowance was doubled, as was flying pay; and marriage and clothing allowances were increased. Perhaps more important in the long term was the restructuring of the RAAF's trade groups. A closer alignment of skill margins with tradesmen in industry was achieved by expanding the pay structure from four groups to seven, as a result of which a high proportion of the Air Force's skilled tradesmen received a salary increase.[51] With an eye to future changes, the system for identifying skill levels was reversed, with Group 7 becoming the most skilled and Group 1 the least, the thinking being that as community work skills expanded, as they inevitably would, it would be easiest to create a new, higher pay group by simply moving up to the next number.

Allison's concept of expanding the airmen's pay structure was taken much further in 1969 when the number of groups was increased from seven to twenty-one.[52] Typical allocations of work skills to groups were general hand (Group 1), airframe mechanic (Group 6), electrical fitter (Group 10), radio technician (Group 15) and air traffic control NCO (Group 21).

Aircrew and flying pay received special attention from the Allison Committee. Flying pay was introduced for all members of the General Duties Branch in 1950 and since then has commonly been regarded as financial compensation for the particular skills and risks associated with military aviation. That belief is wrong. While the reasons for introducing flying pay into the peacetime Air Force were not well explained at the time of its inception, it is clear that the need to offer pilots a career inducement and compensate them for the disadvantages of military aviation were the central considerations.[53] Recruiting standards for RAAF aircrew stipulated 'high physical, mental and educational' qualifications, attributes which were sought by many employers. Competing in a tight market, the Air Force needed to offer attractive conditions. Additionally, a military flying career was likely to be relatively short, as aircrew were compulsorily retired at young ages to keep the combat force vigorous. Flying pay was thus conceived primarily as an inducement and as compensation. By 1957, however, the RAAF was arguing for a substantial increase in flying pay for *all* aircrew primarily on the grounds of skill, seeking equity with the proficiency loadings paid to civilian pilots within the Department of Aviation. In the circumstances, the extension of the RAAF's claim to non-pilot aircrew seemed illogical.

The Allison Committee believed it was inappropriate to confine any comparisons to the 'unrelated fields of military and civil flying' and broadened its

view to include other air forces. Noting that flying pay in the RAF had quadrupled in the past decade, the committee recommended an increase for the RAAF of two hundred and fifty per cent.[54] Allison also introduced for the first time flying pay for flight engineers, loadmasters and helicopter winch operators (later renamed crewmen), albeit at lesser rates than those for pilots, navigators and signallers. Factors taken into consideration, especially in relation to pilots, were skill, responsibility, hazard, employment insecurity, and the need to attract and retain suitable men. Those same factors were cited when another substantial increase was approved in 1968, with most emphasis placed on the need to attract and hold pilots in the face of strong competition from civil airlines and the Department of Civil Aviation.[55]

The next major review of conditions of service after the Allison Committee was conducted in 1964 at a time when the armed forces were still struggling to attract sufficient numbers: the RAAF's strength, for example, had hovered between four to seven per cent below its approved ceiling for some years. While the maximum re-engagement rate for airmen of about sixty-five per cent had been regarded as satisfactory in the past, the figure was no longer considered acceptable for highly skilled tradesmen who cost a great deal to train. Because personnel staff believed they could improve the re-engagement rate, the 1964 review focused more on retaining valued people than attracting new ones. Special attention was paid to matters affecting married personnel, such as sub-standard living quarters, continual interstate postings, interrupted education for children, home ownership problems, and disrupted community life for dependants. In response to those inherent inconveniences of life in the armed forces, increases were made to the allowances paid for temporary accommodation, disturbance (moving from one location to another), marriage, clothing maintenance, education, and disability (general inconvenience).[56] Pay rates were also increased by about one and a half per cent for most ranks, to the levels shown at table 6.4.

6.4 Rates of pay, 1964

Rank	*Active Pay (Excluding Allowances)*
Leading Aircraftman (Group One–Group Seven)	£766–£1018
Warrant Officer (Group One–Group Seven)	£1254-£1507
Flying Officer	£1417-£1580
Flight Lieutenant	£1832-£2372
Squadron Leader	£2522- £2972
Wing Commander	£3122-£3392
Group Captain	£3542-£3812
Air Commodore	£4758

Source: CRS A4940, C3970, 2-6-64, AA.

Adjusting the term of an airman's engagement was another lever the RAAF could pull in its efforts to make military service more appealing. When recruiting for the Permanent Air Force was reintroduced at the end of the Interim period in 1947, the initial engagement for airmen was set at twelve years and re-engagement periods at six years. A six-year initial engagement option was introduced in 1950 and was preferred by the majority of enlistees. It was not until 1964 that the same logic was applied to re-engagements, when a choice of either three or six years was offered.[57]

The Defence Forces Retirement Benefits (DFRB) Act of 1948 introduced superannuation benefits for the first time for all members of the permanent forces. Participants paid about three and a half per cent of their salary into a government-managed fund, which meant that by the time they retired they had contributed about fifteen per cent of their eventual pension and the government about eighty-five per cent.[58] An individual became eligible for a pension after reaching retiring age with at least twenty years service. Because officers were appointed to permanent commissions, they had to serve to the maximum age for their rank to qualify, whereas airmen, who served on a series of fixed-term engagements, became eligible any time after twenty years continuous service as long as they were aged over forty.[59] That provision unfortunately ensured that few airmen stayed in the RAAF for a full working career, even though the pension payable increased with years of service to a maximum at age fifty-five. Reduced pensions were paid to individuals who reached retirement age with more than fifteen but less than twenty years service; while those reaching retiring age with less than fifteen years service in the case of officers or twenty years for airmen were refunded their contributions, plus a gratuity if eligible.[60]

Pensions varied greatly, depending on an individual's contributions, and salary—in other words, rank—on retirement. Broadly, though, in early 1950s figures, an annual pension might range from £130 to £845.[61] Up to fifty per cent of the entitled pension could be commuted (that is, taken as a lump sum) as long as an individual retired before reaching the age of sixty.

The DFRB scheme was reviewed by the Allison Committee in 1959 and a number of significant changes implemented when the revised Act came into force on 14 December. For the first time members of the WRAAF were included, the Nursing Service having been eligible since 1950. Members' payments were increased to five per cent of salary, which boosted their eventual contribution over a twenty-year career to about twenty-two and a half per cent of their final pension, leaving the government to contribute seventy-seven and a half per cent. Pensions, however, were also increased, and ranged from a maximum of 40.9 per cent of final salary for those on the highest rates to seventy per cent for the lower earners. The annual pension for an air marshal retiring at age sixty rose from £1638 to £2457, and that of a sergeant in the highest pay group retiring after twenty years service from £250 to £410.[62] Commutation rights were reduced from fifty per cent under the 1948 Act to one-third. Those who had joined the services before the DFRB legislation had been enacted in 1948 were allowed

the option of retaining deferred pay as a retirement payment instead of joining the new scheme.

People who did not qualify for a pension were refunded their contributions, less any amounts they might owe the Commonwealth. Because that provision primarily affected enlisted personnel (who were not given permanent appointments and generally did not serve twenty years), provision was made to pay them a gratuity on resignation or retirement, related to years of service. Allison believed that too large a gratuity might encourage airmen to resign rather than re-engage and, taking into account the need to improve the re-enlistment rate at the six-year point in particular, recommended payments of £120 for those leaving after that period (£20 a year), and £600 for those leaving after twelve years (£50 a year). Gratuities were reduced by twenty-five per cent for females. An advance of £300 could be paid from the twelve-year gratuity for those re-engaging at the six-year point.

A minor public controversy blew up over DFRB in 1964 when an anomaly which affected a small number of pre-1959 contributors was exposed. The irregularity became apparent following a pay rise, when several senior officers who were close to retirement and were making large fortnightly contributions realised that, given the structure of the scheme and the new levels of pay, they were making disproportionate payments in relation both to other members of the scheme and their eventual pension.[63] When Group Captain D.R. 'Dixie' Chapman circulated a paper titled 'DFRB is a Racket', he struck a responsive chord amongst his peers but sounded a flat note with Cabinet and the Air Board.[64] Chapman was censured by Minister for Air David Fairbairn, who also tried unsuccessfully to have the outspoken officer posted away from the Department of Air to deny him access to information which he could use 'to undermine the morale and good discipline of the Force'. Chapman's paper would not have helped his promotion prospects, but he did have the satisfaction of forcing an amendment to the DFRB bill in 1965, which addressed the anomaly by allowing pre-1959 entrants to elect a 'freezing' provision under which they avoided contribution increases following a salary rise, but at the cost of slightly lower benefit entitlements. Chapman's courageous stance received further vindication in 1972 when a parliamentary committee headed by government back-bencher John Jess found the post-1959 DFRB scheme 'quite unsuited to the needs of the services' and recommended that a 'complete new scheme [was] required'.[65]

Notwithstanding the Jess Committee's subsequent criticism, the introduction of a universal pension scheme was one of the most important developments in conditions of service in the RAAF's history. The provision and standard of married quarters and single accommodation was in general far less satisfactory. Sub-standard or, at some bases, non-existent, married quarters adversely affected recruiting and re-engagement rates throughout the period examined in this book.[66]

The RAAF's long-term objective was to provide quarters for sixty per cent of its married people, which in 1950 meant 4371 homes were needed.[67] As the Air Force had

only seven hundred and ninety-nine quarters either available or under construction, the shortfall was 3572. At the major bases, five hundred and ninety-one homes were required at Laverton, four hundred and thirty-one at Richmond, four hundred and twenty-eight at Amberley and one hundred and eighty-nine at Pearce. An entirely satisfactory short-term remedy was not possible, but arrangements were made for the Department of Works and Housing to construct 4000 homes near Air Force stations over a ten-year period. Some interim relief was achieved by converting wartime huts into temporary married quarters and by purchasing about two hundred three-bedroom prefabricated homes.

A major effort was made to upgrade existing sub-standard married and living-in quarters for all ranks, with the objective of providing accommodation consistent with rising community expectations. Buildings were lined and partitioned and painted with light colours inside and out; ceilings were installed; bathrooms (including showers) and lavatory fixtures were added inside where possible; and sitting and visitors' rooms provided for single quarters. Mirrors, fans, wash basins, multiple power points, built-in wardrobes and ample storage space became standard features. Each married quarter was given a definite boundary and its own garden, and an attempt was made to acquire some three- and four-bedroom quarters (most were two-bedroom) for larger families.[68]

Seeking to formalise the quality of married quarters, the three services endorsed a set of 'scales and standards' for new homes which included built-in furniture, satisfactory storage space, hot water systems and reasonable-sized bedrooms. Maximum overall areas varied according to rank: nine and three-quarters squares for corporals, ten and a half squares for flight lieutenants, twelve for squadron leaders, thirteen for wing commanders and fifteen for all higher ranks. Those scales and standards rose with community expectations, so that by the start of the 1960s officers of air rank could in theory expect a brick home of sixteen to eighteen squares, wing commanders fourteen squares and junior officers eleven and a half squares.[69] In practice the majority of service homes remained below standard both in finish and size.

Rental charges for married quarters were initially set at ten per cent of an individual's active pay. Since active pay comprised salary plus a daily allowance but excluded additional amounts such as marriage, separation and clothing allowances, rent was in fact markedly less than ten per cent of total remuneration. Further, servicemen and women received other benefits such as taxation concessions, an initial free issue of clothing, free medical and dental treatment, and so on. Consequently, when in 1951 the government decided to charge 'economic rent' for married quarters, there was not a lot of sympathy for the numerous complaints which ensued. Economic rent was based on the capital cost to the Commonwealth of the house concerned and in many cases increased the charge to twenty per cent of active pay. While that was a large rise, it was reportedly consistent with the rents being paid by occupants of state-owned public housing.[70]

Sub-standard married quarters were a persistent problem from 1946 to 1971. One of the exceptions was Butterworth, where good standards usually prevailed, as this picture of a typical quarter on Penang Island illustrates. RAAF

Eventually Cabinet decided to charge service personnel whichever was the smaller of either the economic rent or fifteen per cent of their total (as distinct from active) pay, a system which created major anomalies. At Point Cook, for example, where quarters ranged from houses built in the 1920s to new prefabricated homes, economic rents could vary from £1 to £5 a week, and junior ranks could pay much more than their seniors, depending on which home they had been allocated. A better system for allocating homes offered a partial solution to the problem, as at the time the decision of who got which house was the sole prerogative of the officer commanding a base. However, it was not until 1961 that a formal method for allocating quarters was adopted. At the direction of the Air Board a standard points system was introduced, with a member's score—and, therefore, his place on the waiting list—depending on his length of service, number of children, length of married life, separation from family because of RAAF duties, and time spent waiting for quarters.[71]

Most of the measures outlined so far were short term. A long-term solution was sought through the Commonwealth/States Housing Agreement of 1956, under which each state agreed to spend five per cent of the Commonwealth allocation to its Housing Authority on Defence homes, an amount which was then matched by the Commonwealth. But while the agreement increased the numbers of quarters available, the quality remained indifferent as there was no provision to comply with

the Services' Scales and Standards of Accommodation.[72] Further, there were major discrepancies in rents: at Tottenham in Melbourne, for example, an RAAF aircraftman had to pay almost twice as much for a State Housing Commission home as neighbouring railway workers.[73]

Scales and standards, inconsistent rental charges and apparently capricious allocation practices were not always an issue. Patches of married quarters occasionally acquired a distinctive character which compensated for their other shortcomings. One such notable 'married patch' was the resumed Navy buildings on the beach front at Townsville which came to be known as 'Camp Magnetic'. Acquired from the Navy in August 1948, the unimposing wartime huts were subdivided into two self-contained quarters, each consisting of two bedrooms, a kitchen, dining room, lounge and combination bathroom/laundry. Notwithstanding their dilapidated appearance, the quarters at Camp Magnetic were highly prized for their private beach and tropical sea breezes and became a social centre for the Air Force in Townsville.

In the 1960s the Menzies government approved a so-called 'crash' program of married quarter construction in an attempt to attract the recruits it needed to support the defence force's expansion. But even after 3700 homes had been built at a cost of $30 million, by 1971 the services were still deficient some 2700 homes, and of the 7434 married quarters occupied by the RAAF, fifty-four per cent were considered sub-standard.[74] The problem was not confined to families, as of the 9100 people in single accommodation, thirty-three per cent were living in unsatisfactory conditions.[75] The statistics for single accommodation were, however, improving rapidly, as an extensive works program was being implemented. Nevertheless, as Air Member for Supply and Equipment Air Vice-Marshal C.G. Cleary stated, accommodation remained 'a serious problem of long standing'.

The domestic stress which frequent moves into poor housing could cause was alleviated to some extent by the assistance provided by voluntary 'good neighbour' family information services, the best example of which was formed at Butterworth in 1963 under the leadership of Mrs Ruth Bishop, the wife of an equipment officer. Arriving in Malaya hot, tired and hungry, families were met and taken to their new home which had been cleaned, aired and stocked with immediate needs. Pamphlets on local conditions and services were available, while an information desk was open for inquiries each weekday morning in the Australian Hostel in Penang. Similar support groups were particularly active at the bases in Australia most affected by postings to the war in Vietnam between 1964 and 1972.

For those servicemen and women who lived on bases, messes and canteens were important adjuncts to their accommodation. Air Force messes were organised on the general principle that there would be separate, well-defined areas for the three rank groups of officers, warrant officers and senior NCOs, and airmen; and that all messes would provide sleeping, dining and recreation facilities.[76] Standards varied, in the case of officers' messes from the handsome pre-war buildings at Point Cook, Laverton

Leading Aircraftman P.G. Roach and his family arrive on posting to Butterworth on a Qantas charter, May 1958. RAAF

and Richmond to the shabby wooden huts at Amberley which were eventually replaced by a modern, award-winning design in July 1970. For airmen, the quality, style and nature of their messes changed for the better from about 1960 onwards as wartime-vintage, utilitarian buildings designed to do little more than feed large numbers of people in the shortest possible time were replaced by modern clubs incorporating spacious wet and dry canteens with landscaped outdoor areas, libraries,

and games and television rooms. While officers' and sergeants' messes enjoyed steward service, it was not until 1962 that airmen and women, who queued for their meals, were at least able to sit down to a set table, having until then received a personal issue of crockery and cutlery which they brought to each meal.

Messes were complemented by canteens, which had been operated by the RAAF since its formation in 1921 to provide 'goods, services, entertainment, recreation and other amenities' for Air Force personnel. Canteens were managed by a board which answered to the air member for supply and equipment, and in effect operated as airmen's co-operative stores, returning profits to the customers through improved services, cheaper prices and so on. In April 1959 the Air Force and Army canteen services were integrated to achieve economies of scale, with the new organisation known as the Australian Services Canteens Organisation (ASCO).[77] ASCO's early days were not without drama. An alleged drop in the range of services and standards accompanied by a rise in some prices got the new organisation off to a bad start with the Air Force. When a sharp and inadequately explained increase in the price of beer followed, tempers rose. Dissatisfaction was particularly strong at Richmond, where local and state trading practices combined to exaggerate the price rises. For several months ASCO at Richmond was virtually boycotted, a reaction which precipitated discussions between the Air Board and ASCO's board of management, and eventual agreement that local conditions should be factored into pricing policies. ASCO's reputation began to recover as its services improved and trading profits were used in part to finance interest-free housing and furniture loans.

Apart from the Richmond boycott, the most contentious topic associated with canteens was the sale of alcohol to junior NCOs and airmen. While officers and senior NCOs had access to alcohol through their messes, junior NCOs and airmen were denied the opportunity to drink legally on RAAF stations. On several occasions during World War II the Air Board had recommended to Minister for Air Drakeford that 'wet' canteens should be established for airmen but their proposals had been rejected, a response which represented a considerable double standard as alcohol was already legally available to all Army and Navy junior enlisted ranks.[78] The upshot was that RAAF morale was lowered, illegal drinking with its consequent disciplinary problems was widespread, and 'undesirable persons' selling liquor tended to 'establish themselves' in the vicinity of Air Force bases. Air Board members also believed that forcing junior airmen to drink off base greatly increased their chances of contracting venereal disease.

There was an active temperance movement opposing the extension of wet canteen services in the defence forces, so when the Air Board raised this 'vexed question' once more with Minister T.W. White in 1950, general approval was again denied. White did, however, make an exception for 'certain remote' localities like Woomera and Darwin, where apparently people's thirsts were stronger than the temperance movement.

Two years later the Air Board resubmitted the proposal and this time Minister William McMahon agreed, with conditions. Wet canteens for corporals and below were to open only after normal working hours; service was limited to males who were

aged eighteen or over, or twenty-one in the case of apprentices and National Service Trainees; and only beer was to be sold and had to be consumed in the canteen.[79] The prohibition on wines and spirits was not lifted until 1960. Airwomen were excluded from wet canteens except under special circumstances as the facilities were not considered suitable for females, a ruling which was eventually relaxed in 1962. In the meantime, young airmen and airwomen left each other notes hidden in sugar bowls in the dining room and met outside the canteen.

Getting a drink may have been the priority for some people but eating was a more basic need for most. Air Force catering policy was based on providing balanced, nutritional menus, an objective which demanded expertise in establishing ration scales, training and supervising mess staff, and planning kitchens, dining halls and food storage areas. Catering for the RAAF after the war was initially done by the Army, a task the soldiers found increasingly onerous. When the Army advised in November 1946 that it was no longer able to feed the Air Force masses, the mustering of 'caterer' was reintroduced into the RAAF.[80] Fifteen posts were established and courses arranged with the William Angliss Food Trade School, which had trained messing staffs during the war. Peacetime ration scales were set by the air member for supply and equipment, Air Vice-Marshal G.J.W. Mackinolty, in May 1947. The approved daily entitlement shown at table 6.5 provides an interesting snapshot of one aspect of Air Force life in the early post-war years.

6.5 Standard daily ration scale for the mainland, 1947

Beverages		*Meat and Protein*	
Coffee	1/5 oz	Fresh Meat	16 oz
Tea	1/4 oz	Bacon	1 1/2 oz
Cereals		Cheese	6/7 oz
Bread	10 oz	Eggs	2/7
Flour	2 oz	*Milk*	
Oatmeal	3/4 oz	Fresh Milk	14 fl. oz
Rice	1/2 oz	*Risings*	
Condiments		Baking Powder	1/28 oz
Curry Powder	1/56 oz	*Sugars*	
Mustard	1/100 oz	Jams	2 oz
Pepper	1/100 oz	Sugar	3 oz
Salt	1/2 oz	*Vegetables*	
Fats		Fresh	12 oz
Butter	1 1/2 oz	Onions	2 oz
Fruit		Potatoes	10 oz
Dried	1 1/2 oz	Lentils	1 oz
Fresh	2 6/7 oz		

Source: Air Board Agendum 8106, 1-5-47, RHS.

It was clear that whatever else happened in the Air Force, no-one was going to starve.

Grilled steak and sausages were by far the RAAF's most popular main course, followed by roasts, while apple pie and ice-cream was the favourite desert. However, inroads into the popularity of traditional Australian fare were being made by dishes like nasi goreng, chow mein and tjap tjae, which had been unheard of in the pre-Korea and Malaya days but which by the 1960s featured regularly on most menus. By contrast, turnip, pumpkin, silver-beet, tripe and brains were 'invariably greeted with the thumbs-down sign, regardless of the stratagems of the cooks to [disguise] them'.[81]

Good messing was regarded as vital to good morale. Further attention to morale was evident with the introduction of *RAAF News* in a modern, newspaper-style format in January 1960. First issued as a newsletter in 1941, the updated paper was intended to provide an avenue for shared interests within the Air Force by publishing information on postings, promotions, exam results, changes to units, sports and social events, and personal opinions, all illustrated with photographs. Reader contributions were encouraged. Lead stories in the January 1960 edition covered the introduction of Sidewinder missiles for the Sabre fighters, and a summary of defence policy by the chief of the air staff, Air Marshal Scherger; other items in the eight-page paper addressed WRAAF resignations ('Cupid Causes Most Losses in WRAAF Ranks'), the deployment of the most recent RAAF Antarctic Flight, airmen's promotions, and inter-service sport. The intention was to deliver a free copy of the paper to every member of the RAAF.

If the written word did not raise morale, there was always music and exercise. For almost thirty years following their inception in 1921, the RAAF bands at Laverton and Richmond had been raised and maintained on a volunteer basis from serving airmen with musical skills. Bandmasters usually came from the local civilian community and were given honorary commissioned status. While the bands gave sterling service, it was not surprising that difficulties were regularly experienced in sustaining membership and quality. Those problems increased in parallel with the growing demands on the time of technical airmen after World War II.

'It is a well-known fact', the Air Board trumpeted in 1950, 'that music has a powerful effect on the community generally', to the extent that a high-quality service band would 'stimulate a beneficial interest' in the RAAF.[82] For those reasons, the formation of two full-time bands was approved, as was the introduction of the new mustering of 'musician'.

The Air Board's intention was to retain the pre-war establishment of twenty-nine instrumentalists, a drum-major and a bandmaster; while the artistic emphasis was to be on 'brass' as opposed to 'military' music, the main difference being that 'brass' did not have the woodwind instruments featured in 'military'. Both of those intentions changed following the appointment of L.H. Hicks as the RAAF's director of music. A bandmaster with the Black Watch Band of the Royal Highlands Regiment in the

United Kingdom, Hicks advocated the formation of a military band, pointing to its numerous advantages over a brass band: a wider scope; the capability to play concert as well as parade music; and a full complement of woodwind instruments. Because a military band would need twelve additional musicians, Hicks suggested that the RAAF initially should form one military and one brass brand, with the brass unit to be upgraded later if possible. Because of funding restrictions, only the military band was formed, in 1952. Based at Laverton, this became the RAAF Central Band. A part-time band continued to function at Richmond and was eventually upgraded to full-time status in 1970 as No. 1 RAAF Regional Band.

The selection of Squadron Leader (as he became) Hicks as commanding officer of the RAAF Central Band and director of music was a happy one for the RAAF. Highly regarded within his profession, Hicks brought a level of experience, expertise and commitment to quality which within several years made the RAAF Central Band the best military band in Australia. That achievement was due in no small measure to Hicks' dedicated effort in the period from April to August 1952 immediately following his appointment when, working almost single-handed, he recruited, auditioned, equipped and trained the RAAF's new musicians. An early highlight for the Central Band was its performance at the Olympic Games in Melbourne in 1956; while recitals with the Australian Broadcasting Corporation also attracted enthusiastic reviews.

The RAAF's first Director of Music, SqnLdr L.H. Hicks. RAAF

The men and women who marched to the music of the Central Band did so behind a distinctively RAAF ensign. In 1922 the RAAF had adopted the RAF ensign without change. After discovering in 1948 that the Royal Canadian and Royal Indian Air Forces had introduced ensigns of their own, Air Marshal Jones decided that the RAAF should also show a little independence. A new design which 'exemplified the Australian national character of the RAAF' while at the same time retained those features which signified the close association between the RAAF and RAF was designed and eventually approved by the Chester Herald and King George VI.[83] The new flag featured the Union Jack in the top left-hand corner, with a six-point star representing the Commonwealth of the six Australian states in the bottom left-hand corner, the Southern Cross in the centre and the Air Force roundel in the bottom right-hand corner, all set against a light blue background.

Marching to the music of the Central Band provided one form of exercise for Air Force people, physical training—'PT'—another. Physical and recreational training was given formal status in April 1951 when the Air Board decided that all members of the RAAF should be allowed two sessions of forty-five minutes each week for exercise.[84] Physical training instructors were required to develop programs which related broadly to age. Younger people were to compete in athletics, gymnastics, unarmed combat, games, obstacle courses, swimming and life saving; and higher age groups were to participate in lighter exercises and games. All PT was to be conducted under the supervision of an instructor, who for the members of the WRAAF had to be female.

It is evident from the preceding sections of this chapter that over the years conditions of service in the RAAF varied from indifferent to very good. For many people the quality of married quarters was a persistent problem. Pay rates also caused concern periodically, particularly for junior airmen and for the RAAF as an employer when airlines were recruiting pilots. On the other hand, excellent conditions such as free medical and dental treatment, heavily subsidised messes, a range of allowances, tax concessions, generous annual and long-service leave, free initial clothing, a genuine commitment to personal welfare and morale and, after 1948, a comparatively generous superannuation scheme, were perhaps not always acknowledged to the extent they might have been. Overall, the Air Force might be regarded as a benevolent employer.

When the superb training people received was added to those conditions, the Air Board not unreasonably believed it was entitled to a return of service for various courses, postings or special duties. The return of service for an airman completing an expensive course like an apprenticeship was catered for by his twelve-year engagement. Officers could be retained under Air Force Regulation 73, which empowered the Air Board to refuse the resignation of a member of the Permanent Air Force who had not given an adequate return of productive service after completing a course of training, a period of overseas service or a term of special duties. As long as the RAAF had formally specified the return of service applying to a particular course or posting, the Regulation was legally enforceable.[85] Return of service varied over the years but generally was in the order of ten years for a college/academy graduate, six years for a diploma cadet, pilot or navigator, and one tour (normally three years) for a post-graduate flying course.

The RAAF's men and women started 1971 on a high note following the release of a series of reports on conditions of service prepared by a committee chaired by a judge from the Commonwealth Industrial Court, Mr Justice John R. Kerr (later governor-general).[86] The Kerr Committee was established as an impartial and independent body and encouraged military personnel to make submissions as individuals. Conditions

which were reviewed, and on which significant improvements to existing entitlements were recommended, included pay, removals, and allowances relating to rent, accommodation, disturbance and education. Throughout its deliberations the Kerr Committee acknowledged the specialised nature of the defence forces, drawing a distinction between service in the forces and civilian employment. By doing so, Kerr believed he had formally acknowledged the notion of a defence force 'industry'.[87] In other words, for the first time official recognition had been given to the notion of the profession of arms. While that acknowledgment in this instance was restricted to conditions of service, its implications for the status of the members of the defence forces were profound.

CHAPTER 7

EDUCATION AND TRAINING

In combination, a number of factors gave the pre-war Air Force a somewhat amateurish ambience: the reliance on part-time citizen forces, an at times disturbing accident rate, and an apparent indifference to higher education.[1] There were reasons for some organisational deficiencies, not least being the amount of effort diverted into simply surviving in the face of persistent Army and Navy opposition to an independent air service. Great progress was made during the war, as it should have been given the enormous investment of resources. But in desperate times speed was often an overriding consideration, and some of the measures which were introduced were not necessarily the optimum solution to a particular challenge, but rather the best that could be achieved without delay. In 1946 the Air Force was still a long way from establishing a satisfactory level of institutionalised professionalism.

More than any other endeavour, education and training was the key to that process. It is to the lasting credit of the first post-war Air Board, and in particular the first air member for personnel, Air Commodore J.E. Hewitt, that the RAAF experienced what was nothing less than an educational revolution between 1945 and 1953. Others may have had the ideas, developed the plans and organised the courses, but it was Joe Hewitt who, as the man in charge, marshalled the support and resources needed to make things happen, and then signed the approvals. Hewitt had already demonstrated his intellectual astuteness and toughness when he guided the RAAF's Personnel Branch through the shoals of demobilisation, the Interim period, and Air Vice-Marshal Jones' purge of the pre-1939 officers. Those same qualities were again in evidence as he charted the RAAF's post-war education transformation. When Hewitt moved on in 1948 his groundwork was consolidated by his successor, Air Vice-Marshal F.M. 'Dad' Bladin.

However, before Hewitt and Bladin could restructure the education and training system, the RAAF had to attend to the needs of the tens of thousands of men and women who were returning to civilian life, as providing educational and vocational training for those people was one of the government's major post-war promises.

The services offered three types of post-armistice, pre-discharge educational and vocational training. Resettlement training included films, music, lectures, discussion groups and access to libraries; educational courses provided tuition at the primary, secondary and higher levels in subjects designed to improve an individual's educational standards and qualifications for civilian employment; and vocational (trade) training offered courses leading to recognised trade qualifications.[2] The Air Force grouped those three activities under the common title of the Educational and Vocational Training (EVT) Scheme and used a combination of service and civilian institutions to conduct the courses.

By July 1949 the EVT had served its purpose, but it was retained in a modified form as part of a general move to enhance conditions of service. Renamed the Services

Vocational and Educational Training Scheme (SVETS), the program sponsored people to attend a very broad range of civilian educational institutions, ranging from craft shops to universities.[3] The Services General Certificate of Education (SGCE) was another important educational condition of service which benefited both the individual and the organisation. Conducted jointly by the three services and principally by correspondence, the SGCE was intended primarily to help enlisted ranks gain the necessary educational qualifications for commissioning, although its application was wider than that. Because the Victorian Universities and Schools Examination Board accepted the SGCE as the equivalent of their School Leaving Examination, the certificate gave servicemen and women the opportunity either to advance their careers with the RAAF or prepare themselves for eventual re-entry into the civilian work force.

That formal approach to individual development was complemented in the RAAF by the promotion of a broader, general-interest education program which encouraged servicemen and women to participate in activities such as musical appreciation, reading groups, crafts, plays and 'practical leisure-time activities'. Air Vice-Marshal Hewitt, himself an avid reader, strongly supported the general-interest program, believing it enhanced an individual's personal and organisational worth and raised morale.

For the Air Force's training program to succeed, qualified educators were needed to develop policy, provide specialist advice and skills, and establish links with the civilian system. The RAAF's first education officers had been civilians seconded from the Department of Air at the start of the war. As their duties were confined to policy advice and classroom instruction, education officers were granted honorary commissions only. That approach did not work.[4] Holders of honorary commissions had no authority under Air Force Regulations to enforce obedience to their instructions, a handicap which apparently made some classrooms difficult to control. Trainees tended to regard education officers as 'mere schoolmasters' who had no powers of command or authority to discipline, an attitude which diminished the educators' effectiveness. The problem was resolved by granting formal commissions in the Administrative and Special Duties Branch to all education officers who met the prescribed standards of physical fitness.

Presumably all post-war recruits were going to be well behaved, as at the end of the war the Air Board reverted to using civilian education officers with the honorary rank of flight lieutenant. For precisely the same reason as before the system did not work. Twice bitten, the board decided to form an Education Service in the Permanent Air Force. Forty-two positions were established in the Special Duties Branch, the most senior being the principal education officer at the rank of wing commander. All education officers had to be graduates of a recognised university and have teaching experience, although not necessarily teaching qualifications. Most appointments were made from applicants with 'substantial qualifications' in mathematics and physics but a few were selected from the arts, especially those qualified in English, history or economics.[5] All serving education officers who were permanent members of the

Commonwealth Public Service and who met the necessary age, medical and personal standards were offered permanent commissions. When Australian state education authorities agreed in 1951 that anyone appointed as a secondary school teacher should both be a university graduate and hold formal teaching qualifications, Air Vice-Marshal Bladin decided that the RAAF should also aspire to that standard. Because of a shortage of trained teachers, the Air Force started sponsoring selected education officers who held a degree but not a teaching certificate to undertake Diploma of Education courses, an action which illustrated the significance attached to upgrading the whole training system.

An important point on the nature of RAAF training needs to be made here. While the professional educators were the backbone of the system, they did not do most of the teaching. Out at the training schools and units the overwhelming majority of Air Force teachers were not education officers, but men and women who had become skilled in their profession—engineering, equipment, navigation, administration, aircraft maintenance, catering, piloting, and scores of other work categories—by first gaining practical experience as an operator and then becoming an instructor. In that context, no training provided by the education officers was more valuable than the ubiquitous Instructional Technique (IT) course, which seemed to appear on most RAAF post-graduate syllabuses, and which over the years helped thousands of professional practitioners to become professional instructors.

Initiatives like SVETS, the SGCE and the widespread use of 'operators' as instructors provided the broad base of RAAF training and education. It was certain specific initiatives, however, which most clearly defined the fundamental change which was taking place. In the 1920s the 'father' of the RAF, Lord Trenchard, had put in place the essential building blocks of a modern air force: a central flying school to set and maintain standards; research and development units for the technological edge; a cadet college to provide the future leaders; a staff college to give those leaders the finishing touches; and an apprentice scheme to train the mechanics. Only the first two were present in the pre-war RAAF. Of all the additions made to the RAAF's education and training system after World War II, the establishment in 1948 of the RAAF College and an apprentice training scheme were the most significant.

Before World War II most RAAF officers came from one of four sources. They might have been former members of the Australian Flying Corps; seconded officers from the Army and Navy; short-service entrants and university graduates who were commissioned after completing flying training; or commissioned airman pilots. Consequently few if any had received training which was intrinsically 'air force'. Air Commodore Hewitt and his director of training, Group Captain P.G. Heffernan,

believed it was essential for the RAAF to establish its own professional corps of officers. In proposing the formation of an RAAF College, Hewitt referred to Lord Trenchard, who in 1918 had stated that fostering a proper air force spirit would not be possible until a college existed. If the RAAF were to continue to prosper, Hewitt wrote in 1947, it was essential to 'sow the seeds of service' as early as practicable, paying heed to the special technical requirements of an air force.[6] 'It is almost a truism', he concluded, 'that the future RAAF can be no better than the Air Force College'. Planning proceeded with firm government support.

The RAAF's needs would be met by recruiting twenty-four air cadets annually, twenty of whom would go into the General Duties Branch and two into each of the Technical and Equipment Branches.[7] Applicants had to be aged seventeen; educated to the Junior or Intermediate Certificate standard; unmarried; medically fit; of British nationality; and permanently resident in Australia.[8] Candidates who satisfied those standards were then judged against three criteria and given a score out of one hundred.[9] Up to fifteen points could be awarded for education, with the level reached being the main determinant. Thirty-five points were allocated for 'intellectual capacity', which was assessed through a series of intelligence and aptitude tests chosen on the advice of the professor of psychology at Melbourne University, and which included non-verbal intelligence, high-level verbal skills, mechanical comprehension, routine clerical aptitude, and the analysis of form and design. The remaining fifty points were awarded for 'personal characteristics' which were assessed during an interview with a selection board, with some allowance being made for referee's reports and other written information provided by the candidate. Separate reports from a psychologist and a psychiatrist were available to the selection board. Table 7.1 lists the points each board member could allocate during an interview.

7.1 Selection for the RAAF College, 1947, personal characteristics

Characteristic	*Maximum Score*
Appearance and Bearing	5
Mental Alertness	8
Self-confidence	5
Leadership	9
Initiative	6
Power of Expression	4
Emotional Stability	4
Tolerance	3
Energy	3
Dependability	3
Total	50

Source: Air Board Agendum 8446, 7-11-47, RHS.

Those weightings indicated that in the traditional tug-of-war between intellect and character which typifies recruiting for military academies, the RAAF was favouring the latter.

Air Commodore Valston Hancock was appointed the college's first commandant, with the responsibility of realising the Air Board's ambitions for what was to be the RAAF's premier training institution. Through the medium of the college's graduates the board aspired to shape the RAAF into a single fighting service capable of applying air power in its fullest sense. Hancock personally drafted the college's charter:

> The Charter of the College is to provide instruction, experience and incentive to each cadet, so that he will graduate with the knowledge and qualities of leadership required of a junior officer in the RAAF, and with a basis for continual development throughout a lifetime of service to his country, leading to readiness for responsibilities as a future Air Commander. To this end the curriculum will be designed to impart a thorough knowledge of the elements on which air power is based, and to develop character, physical and mental fitness and an understanding of men.[10]

Personal qualities may have been the decisive factor in a cadet's selection but a certain level of academic competence was essential. From the outset it was anticipated that the college would eventually award degrees through Melbourne University, of which it was an annex. Initially, however, only engineering cadets were to undertake formal tertiary studies. After completing the first year at the college with the rest of their intake, the engineers would go to Sydney University to study for a Bachelor of Engineering degree, majoring in either aeronautical or mechanical and electrical engineering. During university vacations they would rejoin their colleagues at Point Cook for general service training. A four-year course was developed for the general duties cadets, the first two occupied mainly with academic studies and the final two devoted wholly to military subjects. Flying training was scheduled to start in the second term of the third year and would be conducted separately from the direct-entrant pilot courses run by No. 1 Flying Training School at Point Cook.

The college's syllabus (table 7.2) provides a useful insight into the Air Board's view of the nature of their service. Some courses clearly were essential for all students; for example, airmanship, navigation, aerodynamics, law and drill. There was also an obvious need for the future leaders of a technical service to study mathematics and physics and for some to specialise in those subjects. Accepting that, the syllabus was extremely unbalanced. During the four-year course, 1955 hours of classroom time were to be spent on physics, pure mathematics, calculus and applied mathematics, chemistry, electricity and radio, and practical applied physics. By contrast, only two hundred and thirty hours were allocated to history, the history of war, war studies and Imperial defence. It seems extraordinary that there was no formal, discrete course on the history of air power: apparently any knowledge of the RAAF's fundamental business was to be acquired by intensive study of its technical components rather than its history and ideas. The RAAF was identifying itself as a narrow technocracy.

7.2 RAAF College syllabus, 1949, allocation of hours to subjects

Totals are for the whole of the four-year course

Subject	*Hours*	*Subject*	*Hours*
English	446	Physics	468
Pure Maths	481	Chemistry	468
Calculus & Applied Maths	351	Aero Engines & Airframes	86
Geography	63	History	78
History of War	39	War Studies	55
Imperial Defence	58	Teaching	35
The Services	30	Aerodynamics	109
Engineering Drawing	52	Electricity and Radio	109
Meteorology	86	Psychology	91
Law & Administration	178	Workshop	222
Airmanship	90	Armament	139
Navigation	138	Intelligence	50
Practical Applied Physics	78	Medical & Physiology	29
Service Customs	15	Drill & Combat	474
Flying Basic	221	Flying Applied	374
Free Study	359		

Source: Air Board Agendum 8379, Appendix 'A', 13-7-49

Sites at Wagga, Mildura, Albury, Canberra and Point Cook were considered before the home of the RAAF was chosen, partly for sentimental reasons and partly because the existing buildings were considered 'largely suitable', although how suitable was a matter of opinion, as cadets attended classes in converted wartime buildings until new instructional and administrative buildings, research laboratories, and accommodation and study blocks were built seventeen years later.[11] Key staff were appointed, and included in addition to Air Commodore Hancock, Mr Alex Black as director of studies, Squadron Leader L.T. Spence as senior administrator and Wing Commander A.B. McFarlane as assistant commandant.[12] By the end of 1947 everything was in place and the college was ready for the first of a new era of RAAF officers.

Despite a publicity campaign costing £700, Hancock was disappointed to learn that the RAAF had been unable to attract its maximum quota of twenty-four students for the first course; indeed, at one stage he was concerned that the college might collapse before it had even started if sufficient suitable students could not be recruited.[13] In order to redress the immediate problem the upper age limit for the first course only was raised to twenty, an artifice which extracted eight more acceptable candidates. Eventually twenty-two students marched in for No. 1 Course in February 1948, distinguished by the white bands on their caps and white flashes on their shirts. They might have been dismayed had they known that in their commandant's opinion many of them 'were not outstanding students at all'.

Difficulties with recruitment continued, particularly after the approved annual intake was raised to thirty, a target which could not always be met. After four years, student numbers were seventy-three against an establishment of ninety-six.[14] But at least the passage of four years also saw the first graduates, when thirteen members of No. 1 Course were commissioned as pilot officers. The two major prizes were the Sword of Honour, engraved with the inscription 'For Merit and Devotion to Duty', which was awarded to the cadet who had displayed the most outstanding qualities of conduct and leadership; and the King's (later the Queen's) Medal, presented for the highest academic results. Both were won by D.N. Robertson, who only six months later was killed on operations in Korea when his Meteor was hit by ground fire.

Prime Minister R.G. Menzies presents the Sword of Honour to Cadet D.N. Robertson of No. 1 Course, RAAF College, at the end of 1951. Robertson was posted missing, believed killed in action, in Korea on 15 May 1952. RAAF

A review of the college's performance was conducted in 1955 following the graduation of No. 5 Course. Of the one hundred and eleven Australian cadets who had entered the college since 1948, sixty-seven had passed and forty-three failed (the 'missing' cadet had been back-coursed). Forty of the graduates had become pilots, thirteen navigators, seven technical officers, six equipment officers and one an administrative officer. The pass rate of sixty-one per cent was not especially pleasing, nor apparently was the general quality of the graduates. An attempt to assess the standard of the college's product was made by comparing the cadets with graduates from airmen aircrew schools. Results were analysed from courses which both groups had completed, including basic flying training, navigation, flying instruction, bombing instruction, operational conversions, weapons, fighter combat instruction and test flying. Performance in promotion exams was also reviewed. Disappointingly, the study concluded that the effort being put into the RAAF College was not justified by the overall results, as too many graduates performed below the average and displayed an 'unsatisfactory attitude' once they left Point Cook.[15] A graduate of No. 2 College Course, Air Vice-Marshal R.E. Frost, has argued with some justification that the review was less than objective and that there was little difference between the two groups.[16] Still, given the investment the cadets represented, the Air Board was surely entitled to expect more for their money than a standard of achievement equal to that of airmen aircrew.

Following that worrying review, and against the background of the widely held belief that missiles would increasingly replace manned aircraft over the coming decades, in 1957 the air member for personnel, Air Vice-Marshal Scherger, suggested it was time for the RAAF to re-examine the education of its future leaders. Scherger felt that while manned aircraft were unlikely ever to disappear from air forces, there would be a growing need for officers who understood both aircraft and guided missiles. His proposed solution was to give all RAAF College cadets a university education in technical disciplines.

An unimpressive collection of buildings. The RAAF College, 1958. RAAF

A committee chaired by the AOC Training Command, Air Vice-Marshal I.D. McLachlan, and which included the head of the physics department and the dean of the faculty of education from the University of Melbourne, Professors Sir Leslie Martin and W.H. Frederick, examined Scherger's proposal.[17] In a far-reaching judgment the McLachlan Committee asserted that within twenty to thirty years the RAAF would be primarily a missile service, which meant its managers would need an advanced education in the sciences. McLachlan concluded that the syllabus for the RAAF cadets should consist of three main streams: a course of study leading to a degree in science and embracing a broad general education; flying; and physical,

military and leadership training. With the support of Professors Martin and Frederick, Melbourne University agreed to establish facilities at Point Cook and to become the conferring authority for degrees. A small number of students would continue to study aeronautical engineering off-campus at Sydney University. Reflecting the institution's new status, the college was renamed the RAAF Academy.

When the first Academy course started with twenty-eight students in 1961, graduation as a pilot took four and a half years. During the first three years cadets completed a science course, majoring in physics, which was similar in all respects to the course taken by civilians at Melbourne University. There the similarity ended, as cadets were required to attend formal studies for forty-nine weeks of the year compared to the thirty-six or so of other university students, the extra weeks allowing the RAAF to superimpose training in arts, military studies and physical eduction onto the science degree. During the first half of the fourth year an applied science course was taught, the intention being to relate the pure science education of the first three years to specific air force technologies. Non-degree arts and military studies subjects were also included in the syllabus for the fourth year, as was flying training. The final six months of the four and a half years were spent exclusively on flying.

The syllabus developed by the McLachlan Committee did not work. Even though the time spent at Point Cook had been extended by six months and the cadets selected for the first academy course were assessed as having high scholastic qualities, eleven of the twenty-eight were suspended for academic failure during the first year. The work load was simply too great. It was only by reducing the time allocated to applied science and arts by sixty-one per cent and to military studies by forty-four per cent that academy staff were able to ease the load on cadets and lift the pass rate.[18] That result, though, came at a cost, one which itself was unacceptable: academy students were not receiving the broad professional education which was one of the institution's prime objectives. The Air Board accordingly decided to extend the course by another six months, with the extra time allocated primarily to arts, military studies and applied science. Academic work now occupied a cadet's first four years, after which he spent the fifth and final year solely on flying training. In order to help cadets retain a 'durable image of [their] career goal as an Air Force officer' during the hard grind of the academic years, between twenty-five to fifty hours motivational flying was provided using No. 1 Basic Flying Training School's Winjeels.

Even after the academic syllabus was extended to four years the failure rate remained high, averaging forty-eight per cent by 1968 and reaching a peak of seventy per cent for No. 17 Course in 1967. By 1970 it was costing the Air Force $1,000,000 annually in maintenance costs alone at Point Cook to graduate a mere thirteen cadets.[19]

The decision to extend the course showed only that the Air Board had failed to grasp the fundamental problem, which was the highly specialised nature of the degree studies. The McLachlan Committee had shown some vision and courage in proposing a syllabus which would train the RAAF's future leaders to command an air force which they expected to be based on missiles and nuclear weapons. Whether that

vision was correct and the courage well-placed was, however, another matter. When British Defence Minister Duncan Sandys attracted world-wide attention in 1957 with his prediction of the imminent dominance of missiles accompanied by the demise of manned aircraft, his logic was reasonable. But by the turn of the decade Sandys' prognosis seemed much less prescient, and by the time the academy's syllabus was modified in 1963 it was clear that manned aircraft were not about to fade away. No better example of the fallacy of Sandys' prediction could be found than the RAAF itself, which was embarking on its greatest ever peacetime rearmament—with manned aircraft. In the decade from 1958 onwards, the Hercules, P2V7 Neptune, Iroquois, Mirage, Caribou, Macchi and Orion all entered service in rapid succession and the F-111 was on order.

The RAAF Academy, foreground, 1972. The complex in the top left hand corner contains some of the original Australian Flying Corps buildings. RAAF

What the academy needed was not an adjustment at the margins to make room in the syllabus for a bit of military history while leaving the core degree untouched, but a rethink of the entire course. Minister for Air Peter Howson could see the fundamental problem only a month after his appointment in 1964, noting in his diary that 'the university course at Point Cook needs a lot of revision. We don't need every General Duties officer to be a research physicist'.[20] That revision was never conducted and the RAAF Academy continued to offer only a single, highly specialised degree intended to train young men to command a missile air force. In other words, the

RAAF's future executives were being educated to lead an air force which did not exist. That extraordinary situation continued until 1986, when the tri-service Australian Defence Force Academy opened and offered cadets an education in a range of disciplines.

How, then, should the college/academy system be judged? While a definitive conclusion would be extremely difficult to reach—the graduation of, say, one Donald Bennett might justify the resources spent on scores of honest toilers—some useful observations can be made. First, by definition, the RAAF's premier officer training establishment should produce chiefs of the air staff. The graduates of No. 1 College Course (1951) became sufficiently senior to compete for the RAAF's top position in 1985; in the event, a direct-entry airman pilot, Air Marshal J.W. Newham, was appointed. Of the three chiefs since then, two (Air Marshals R.G. Funnell and I.B. Gration) have been college graduates and the other (Air Marshal L.B. Fisher) a direct entrant. The college has managed to provide only half of the chiefs, albeit over a small sample.

No. 6 Course produced the RAAF College's only two chiefs of the air staff, Air Marshals R.G. Funnell and I.B. Gration. Pictured L–R: (back) J.S. Hamilton, P.W. Mahood, M. Robinson, C.C. McAllister, I.R. Gordon, T.A. Morton, D. Patston, I.F. Andrew, R.S. Fisher; (front) M.J.C. MacKenzie, P.A. Bolin, P.A.D. Hilson, E.A. Radford, Gration, Funnell, R.E. Offord, R.J.W. Bailey, B. Squires. RAAF

Second, at the time this book was written in 1995, the most senior college graduate still in the RAAF was Air Vice-Marshal T.W. O'Brien from No. 10 Course in 1960, while the most recent course to have produced an air rank officer (Air Commodore C.McK. Hingston) was No. 20 in 1970.[21] A total of one hundred and thirty-nine cadets graduated from Nos 10 to 20 Courses inclusive. Again at the time this book was

written, thirty-one of those one hundred and thirty-nine were still in the RAAF; that is, only twenty-two per cent of the original graduates were serving at the senior level which ultimately must be the objective of any elite military academy. And with three air vice-marshals and thirteen air commodores, only eleven and a half per cent had reached air rank. On the other hand, also since 1985, five of the seven AOCs of Air Headquarters and Logistics Command have been college graduates;[22] while a glance at the graduation lists since 1951 indicates that many who, contrary to Air Commodore Hancock's charter, did not make the RAAF a 'lifetime' career, nevertheless gave valuable service as squadron and formation commanders.

The final observation concerns the notion of an 'elite' establishment, the interesting point here being the lack of consensus among graduates. Air Marshal R.G. Funnell and Air Vice-Marshals R.E. Frost, P.J. Scully and A.E. Heggen, for example, had no doubts that they had joined an elite institution; others like Air Marshal Gration, Air Vice-Marshal O'Brien and Air Commodores I.M. Westmore and S.T. James were much less certain.[23]

Notwithstanding the difficulties the RAAF College/Academy system experienced, the institution's significance to the Air Force should not be discounted. At the least it generated a guaranteed supply of thoroughly trained officers with a long return of service, even if the numbers were less than expected; and symbolically the institution placed the RAAF on a level footing with the Army and Navy, for whom the status of being a graduate of a military college is paramount.

An air force is an intensely technical business: all things being equal the organisation with a technological advantage is likely to prevail in combat. If the value of the RAAF College/Academy system appears questionable, no such uncertainty exists regarding the apprentice training scheme. No other single initiative was more important to the technical competence of the post-war Air Force.

Between 1921 and 1938 the RAAF recruited its technical tradesmen from two sources. Men with previous service in the Australian Flying Corps, the Royal Flying Corps or another of the armed services were the preferred supply; failing that, shortfalls were made up by recruiting civilians. Standards among qualified civilian recruits were found to vary widely because of differences in their pre-service education, and extensive in-service remedial training was often necessary, an experience which was repeated on a far greater scale during World War II.

Air Commodore Hewitt's examination of the RAAF's post-1945 requirements drew several conclusions from that past experience. In addition to the obvious (but important) observation that aviation maintenance demanded a high standard of technical skill, Hewitt noted that, in general, the educational standard of technical recruits had been below the required level and there was no reason to believe the situation would be any better after the war, given the competition for skilled labour. The Air Force therefore would have to take the initiative. Once again Hewitt referred to Lord Trenchard, this time pointing out that the RAF had started its own apprentice

training scheme at the direction of its first and greatest CAS. Supported by his director of training, Group Captain 'Paddy' Heffernan, and the air member for engineering and maintenance, Air Commodore E.C. Wackett, Hewitt recommended that the RAAF should follow suit.[24] An Air Force training college for technical airmen was needed. Three major benefits were perceived: the 'air-mindedness' of the country as a whole would be increased, resulting in better military–civilian relations; the nation's general education standards would be raised; and the professional standards of the RAAF would improve. At the time Hewitt presented his recommendation to the Air Board and Minister Drakeford the Interim period was still in force and, because of the uncertainty surrounding the eventual size of the post-war forces, the government was generally unsympathetic to requests which would increase personnel establishments. However, because the merits of the Apprentice Training Scheme (as it became known) were obvious, Drakeford agreed to its introduction at the earliest date.[25]

A team under Heffernan's direction was set to work and had finalised the details by July 1947. The broad aim was to provide educational and technical training for boys aged between fifteen and seventeen, with academic and trade instruction being complemented by sporting and recreational activities, social events and visits to industry. High standards of personal discipline and morality would be inculcated. The end result, it was hoped, would be a dedicated and highly skilled military tradesman.

Recruits would enter one of the two broad trade groups of 'engineer' and 'radio', within which there were nine specialisations: engine fitter, airframe fitter, electrical fitter, armament fitter, motor transport driver/fitter, instrument maker, radio fitter (air), radio fitter (ground) and telegraphist mechanic. Applicants could nominate a preferred trade but the final allocation was the Air Force's prerogative and there were no guarantees that first choices would be available. Education standards were set at sub-Intermediate for engineering trades and Intermediate (including mathematics and science) for radio trades; additionally recruits had to be fit for military service and of British 'or substantially European' origin. An apprenticeship would normally consist of three years full-time training followed by two years productive employment under supervision.[26] On the completion of his training and having passed a trade test an apprentice would be reclassified as an aircraftman, and after another year upgraded to leading aircraftman. All graduates would incur a twelve-year return of service obligation, in addition to their three-year apprenticeship. Two hundred entrants would be sought each year, and when fully developed the scheme was expected to provide up to sixty per cent of the RAAF's technical tradesmen.

A nation-wide publicity campaign was conducted to introduce the scheme. Advertisements were placed with newspapers and radio shows as the RAAF sought to impress on 'suitably qualified youths', their parents, school organisations and other interested bodies the advantages of RAAF technical training.

The initial intake of engineer apprentices who marched into the Ground Training School at Forest Hill ten kilometres east of Wagga Wagga at the beginning of 1948 consisted of thirty-three young men (it was to be nearly forty years before females

were accepted); later, another twenty arrived. Those fifty-three youths were the first to wear the light blue cap bands and triangular flashes on their sleeves which distinguished RAAF apprentices. Before No. 1 Course graduated the Ground Training School had been renamed the RAAF Technical College; two years later in 1952 the name changed again to the RAAF School of Technical Training (RSTT).

While the apprentice training scheme was to become one of the great success stories of the post-war Air Force, the fact that only thirty-three youths arrived at Forest Hill in February 1948 was a great disappointment given the expected annual intake of about one hundred and seventy (the other thirty were to be radio apprentices, whose progress is discussed shortly). Air Board members personally reviewed the selection procedures and examined in detail a report prepared by the first selection board which had been chaired by the AOC Maintenance Group, Air Commodore H.A. Austin, and included Group Captain J.W.C. Black, Wing Commander J.E. Reynolds and Squadron Leader J.S. Needham.[27]

A group of apprentices and friends, October 1951. RAAF

The selection process had consisted of an interview and written tests, with points being awarded for intellectual capacity, personal characteristics, and education and trade qualifications.[28] Air Commodore Austin's board had interviewed three hundred and seventy-three applicants and rejected three hundred and sixteen. One hundred

and sixty-nine youths had been rejected on the grounds of unsuitable aptitude or education, while unsatisfactory personal qualities accounted for another seventy-nine. Board members justified the exceptionally high rejection rate with some harsh generalisations. 'Immaturity' was cited as a major 'personal qualities' failing, an ingenuous criticism to make of a group of fifteen- to seventeen-year old youths. Another generalisation that the 'type of youth' interviewed 'more often than not ... already showed signs of being one of Life's failures' was nothing less than offensive and perhaps indicated that not all of the problems lay with the applicants.

A more useful analysis of the experience was made by the Air Board, whose members isolated two main problems. First, given that forty-seven per cent of those interviewed had not met the aptitude and/or educational standards, the recruiting advice issued beforehand clearly had not been sufficiently informative. Second, the RAAF had gone into the scheme with unrealistic expectations, as at the time there was great competition for 'suitable youths'. Organisations like Broken Hill Pty. Ltd., the Victorian Railways and the Postmaster-General's Department had also failed to attract their target numbers of apprentices despite, in the case of the railways, having conducted an intensive recruiting campaign.[29]

The Air Board was reluctant to drop its standards but appreciated that if the scheme were to work changes had to be made. In order to rectify the immediate shortage of numbers, the board decided to recruit a supplementary course for 1948 only. Standards were not to be compromised so educational requirements were unaltered, but the selection board was instructed to modify its interpretation of the guidelines for the aptitude test and interview. The potential pool of recruits was widened by raising the minimum age limit to eighteen, while increased efforts were made to reach the audience, with letters describing the scheme being sent to every secondary school principal in Australia. Time proved the wisdom of the Air Board's actions. The eighty-six youths who were inducted into No. 2 Course in July lifted the number of apprentices at Forest Hill to one hundred and thirty-nine, and in the following years the annual intake averaged one hundred and fifty-two, with the largest being one hundred and ninety in 1966.

While the engineering apprentices were making their way at Forest Hill, their radio counterparts were following a somewhat different path in Melbourne. About 5500 radio tradesmen had been trained at the Melbourne Technical College (MTC) during the war and, because of the proven quality of the product and the cost savings the arrangement offered, the Air Force decided to use MTC for the first two years of the radio apprenticeship course, with the third and final year being completed at the RAAF Air and Ground Radio School at Ballarat (which in 1952 was renamed the 'RAAF School of Radio', and in 1961 moved to Laverton following Ballarat's closure). Apparently because their educational entry standard was higher than that of the engineering apprentices, all radio apprentices were to study for MTC's Associate Diploma in Radio Engineering. Following the three years formal study, a year's on-the-job training at 'selected RAAF units' would complete their education.[30]

Accommodation for the radio apprentices was arranged in the wartime WAAAF barracks of the Melbourne Telecommunications Unit, Canterbury, on a 2.8 hectare property known as 'Frognall'. Frognall's main feature was a gracious two-story mansion which had been built as a private home in 1870 and was set amongst trees and flower beds. Purchased by the Commonwealth Government for £20,000 in 1943, the mansion was in fact something of a facade, as it tended to divert attention from the sub-standard 'temporary' wartime buildings which occupied most of the property.

No. 1 Radio Apprentice Course started at Melbourne Technical College on 9 February 1948, a week after the engineers at Forest Hill. Similar teething troubles were encountered. A poorly conducted recruiting campaign had made it difficult to attract enough qualified candidates and education standards on entry were variable.[31] Only sixteen of the thirty-eight applicants had been assessed as suitable, and of those a mere five passed their half-year exams. Ten of the remaining eleven failed at least one subject and were considered incapable of progressing to more difficult work without remedial training, while the remaining apprentice failed so comprehensively his appointment was terminated. The deficiencies in recruiting practices had already been identified and action taken. National education standards were, however, beyond the RAAF's control, so it was decided to give future intakes a three-month preparatory course in mathematics and physics before they started at MTC. Because the ten students who had failed subjects on No. 1 Course had applied themselves well and were essentially casualties of an immature system, they were permitted to repeat the first six months of their course, a decision which was subsequently vindicated by their satisfactory results.[32]

From 1949 onwards the courses were retitled 'Radio Apprentice Diploma' to describe more accurately the precise nature of the training. But more fine-tuning was needed, as too many recruits continued to struggle with the diploma-level studies. Consequently, after six months at MTC the youths were streamed. Those with satisfactory academic results—usually about the top thirty per cent—continued with diploma studies, while the remainder were transferred to a less demanding technician's course.[33]

Because of the apprentices' immaturity particular attention was paid to their health and welfare. The Air Force in effect became the boys' 'absent parents': as Wagga's best known warrant officer disciplinary, Warrant Officer P.W.A. 'Dexter' Dutton, used to tell each new group of youths, very loudly, on their arrival, 'For the next three years, I'm your Dad!' Some apprentices felt Warrant Officer Dutton was being unduly modest describing himself as a mere parent, believing a god would have been closer to the mark. Apprentices were accommodated separately from adult airmen and their weekly routine was regimented and busy. Only one hour was allowed each day for dressing, undressing and bathing, as in addition to classes time had to be found for compulsory sport and religious instruction. Alcohol was prohibited and apprentices over the age of eighteen who wished to smoke off-duty had to apply for permission. Weekends involved more compulsory organised games and church services.

If the highly organised lifestyle did not keep the apprentices out of trouble their rates of pay should have. Pay was deliberately set low and amounted only to 'pocket money' for incidental expenses, rising from five shillings a week in the first year to fifteen shillings by the third. Those rates were set partly because full board, medical care and clothing was provided, and partly because the RAAF did not believe the 'boys' would need or have the opportunity to spend much. The Air Force's motives may have been well intentioned but they were misplaced. Early surveys showed that the pay was 'completely inadequate' and was a factor in the disappointing response to the scheme. Even allowing for the free board and care, RAAF apprentices could earn less than one-eighth the wage of their civilian counterparts.[34] Substantial increases were introduced at the end of 1949.

Members of No. 12 Apprentice Course—the 'Wombats'—in their quarters at Wagga, early 1958. Included in the back row are (2nd from left) the later AVM E.Mc. Weller, and (far right) GpCapt E.B. Watson. RAAF

Despite the scheme's growing reputation, competition from civilian employers and the RAAF's high recruiting standards generally made it difficult to attract a full quota. Numbers became particularly tight during the expansion of the 1960s, when the annual requirement rose from two hundred to two hundred and seventy-eight.[35] Changes had to be made to attract more applicants and increase the output. Generally improving community education standards allowed full-time training to be reduced by six months to two and a half years in 1963; while two years later the return of service was reduced from twelve years to nine when RAAF personnel planners found out that the Army and Navy, both of which offered shorter terms of enlistment than the Air Force, were drawing more recruits.

Overall, the Apprentice Training Scheme had a profound effect on the RAAF. While it never achieved the hoped-for sixty per cent output of all technical tradesmen the numbers were substantial, and the importance of the professional excellence it generated in the most technological of the armed services is difficult to overstate. In the opinion of Air Vice-Marshal E. Hey, the head of the RAAF's technical services from 1960 to 1972, the apprentice scheme was 'one of the best things the [Air Force] ever did' and its graduates 'absolutely outstanding', an assessment which was shared by his three

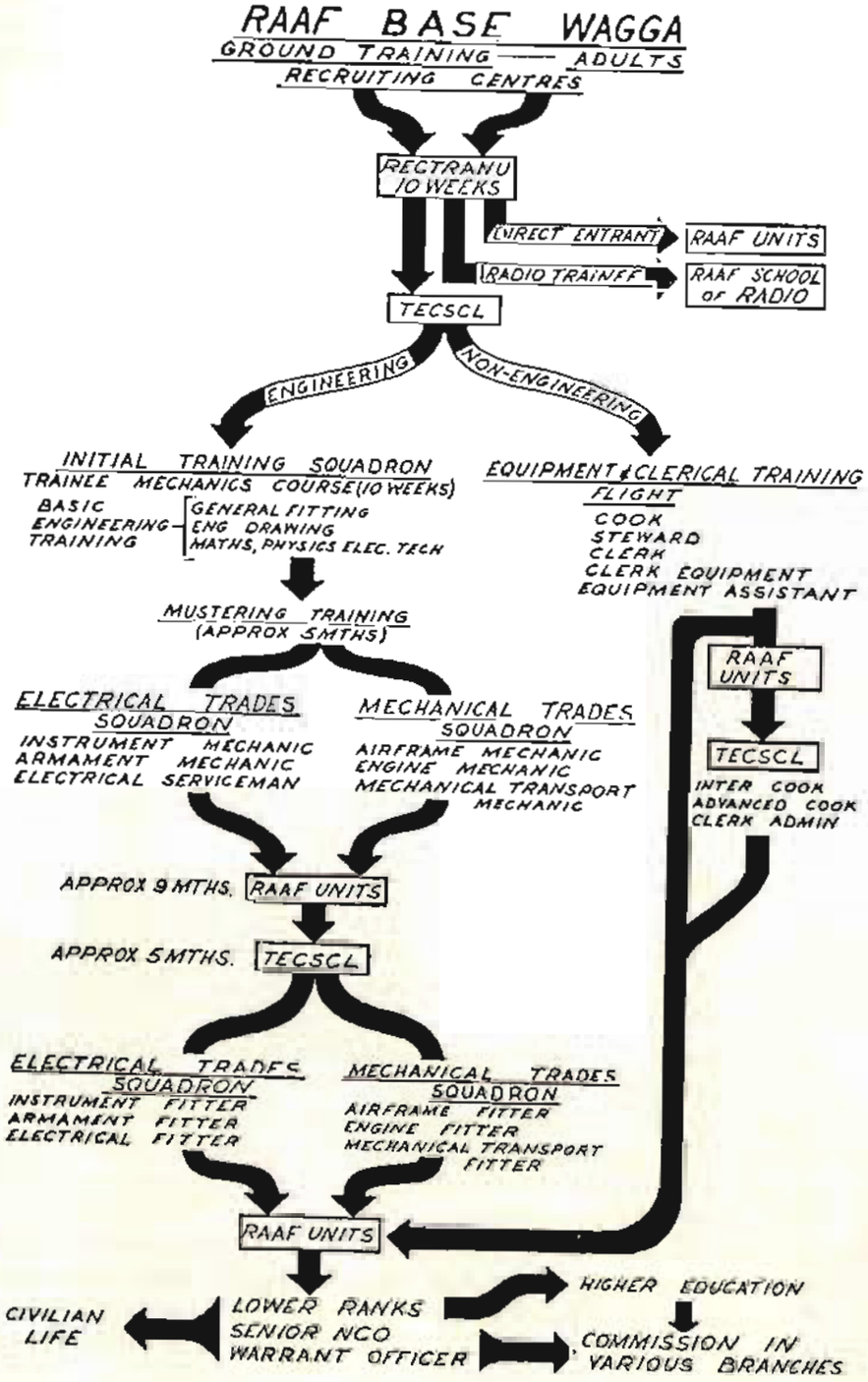
immediate successors, Air Vice-Marshals J.A. Rowland, L.S. Compton and R. Noble.[36] By the time the scheme was finally superseded in 1993 it had produced 4668 engineer and about eight hundred and ten radio graduates.[37]

The scheme's success cannot, however, be measured simply by the number of graduates it produced. Three years was a long time for young men to spend together in close contact, striving to succeed, often under trying circumstances. It was inevitable that courses would develop group identities and shared values. Sometimes that collective spirit was strongest in adversity, as was the case when the entire apprentice population at Wagga went on strike over conditions and their treatment by disciplinary staff in 1950.[38] More frequently, though, the camaraderie which came to typify RSTT courses was expressed through group friendships, shared activities, loyalty to the RAAF, and life-long associations, developments which are described with perceptiveness, humour and affection in Group Captain George Homer's book about his experiences on No. 1 Course, *Indentured in Blue*.[39] One special and important feature of the group spirit at RSTT was the adoption of a course name, a tradition started when members of No. 1 Course called themselves, aptly, the 'Anzacs', and were followed by the 'Rainbows', the 'Sunbeams', and ultimately forty-three more. Many graduates of those courses had an influence on the Air Force which extended well beyond the central task of maintaining aircraft. From the fifty-three members of the Anzacs alone, seven were eventually commissioned into the Technical Branch and five into the General Duties Branch, with three becoming air commodores, one a group captain and three wing commanders. Eleven others became warrant officer engineers, the senior enlisted technical rank in the RAAF. As George Homer has observed, it was 'not a bad effort for a bunch of [immature] young fellows'.[40]

The success of the Apprentice Training Scheme encouraged the Air Board to extend the concept to clerical recruits. A Junior Equipment and Administrative Trainee educational scheme was introduced in 1952 to produce 'skilled administrators'. 'Jeats' as they were known completed a one-year course, the first intake at Rathmines and all others at Wagga, followed by six months on-the-job training at a unit. The Jeats wore the same distinguishing blue triangle on their uniforms as the apprentices and were employed under the same conditions of service. Eight courses were conducted before the scheme was discontinued in 1960, with the largest intake being the fifty-one trainees of No. 4 Course in 1955.[41]

While the apprentice system became the flagship of RAAF ground staff training it never satisfied the total requirement. The balance was made up by adult recruits aged between seventeen and thirty-four whom the RAAF enlisted in large numbers and educated in an enormously wide range of skills at a wide range of locations, the most important of which were the School of Technical Training at Forest Hill and the School of Radio at Laverton. Figure 7.3 is a flow-chart of the RAAF's adult entry training system in 1964. The mid-1960s in fact marked the high point of ground staff training as the Air Force's re-equipment program and involvement in Malaya and Vietnam trebled the demand for technical staff. By 1966 there were some 1800 trainees of varying musterings at Wagga. Accommodation blocks had to be fitted with double

7.3 Adult trainee career streaming flow chart



bunks and some staff found themselves rostered for thirty-seven lecture periods a week.[42]

Regardless of their mustering, all adult entrants had to complete the ten-week 'rookies' training course at the Recruit Training Unit, a tough period of traditional military socialisation based on general service knowledge, discipline, drill, physical training, field work, orientation lectures and, sometimes, apparently arbitrary punishment. Despite the course's rigour, most emerged with a feeling of accomplishment and of having become part of a team.[43]

RAAF engineering management was adversely affected in the early 1950s by a serious shortage of tertiary-qualified technical officers which at times exceeded twenty per cent of the authorised establishment.[44] The answer was not more university graduates—an air force has a limited requirement for theoretical engineers—but rather greater numbers of professionally qualified technical managers who could bridge the gap between the 'practical' men who had come up through the ranks (the 'tarmac terriers') and the university-educated theoreticians. Diploma-level studies seemed the best option.

Air Vice-Marshal Wackett decided to make greater use of Melbourne Technical College by offering about twenty-five airmen advanced diploma training each year. A good pool of potential radio officers already existed in the steady stream of graduate apprentices now entering the system with associate diplomas from MTC. Ten of those ex-apprentices were selected for No. 1 Fellowship Diploma Course in Communications Engineering in 1953. After a year at Frognall course members were granted the status of cadet officers, and on graduation at the end of 1954 were commissioned into the Technical Branch as pilot officers. Although former apprentices were particularly well placed to further their careers through the fellowship course, any qualified airman could apply.

As far as the aeronautical and mechanical engineering stream was concerned, MTC offered an Associate Diploma of Aeronautical Engineering. Again, all qualified airmen were eligible to apply, but in this instance ex-apprentices did not have a head-start as, unlike their radio counterparts, the Forest Hill graduates' trade training had not been to diploma standard. However, apprentices who were still under training at RSTT were encouraged to proceed immediately from their apprenticeship to the diploma course by completing additional diploma-entry studies at night school. Despite the heavy workload a number met the challenge, thus qualifying for the nickname 'boffin' from their course-mates.

Although Technical Branch staff were generally satisfied with the expanded diploma training the scheme suffered from numerous anomalies. Some diploma-entry course students were apprentices on apprentice rates of pay, whereas others were adult airmen on adult pay; minimum educational standards on entry varied; officer potential was not always a prerequisite for selection although graduates could expect to be commissioned; and there appeared to be room for improvement in the pass rate

The handsome mansion at 'Frognall'. RAAF

of sixty per cent, even though that was better than the rate achieved by MTC's civilian students.[45] Those anomalies and the continuing demand for diploma-qualified engineers suggested a different approach was needed. Before that approach could be determined the Royal Melbourne Institute of Technology (as MTC was now known) forced the RAAF's hand by deciding that from 1960 onwards matriculation would be

a prerequisite for entry to diploma training and that the standard of its courses would be raised accordingly.

RMIT's new regulations meant that diploma students would have to satisfy the same education standards as RAAF College cadets, a condition which virtually answered the question the Air Force was asking itself. The need for an engineer cadet scheme which recruited its own young men had become self-evident. In effect, the Technical Branch needed to set up its equivalent of the aircrew training system. A committee which considered the question quickly agreed that a diploma cadet squadron was indeed the answer, with entrance criteria similar to those for the RAAF College. Applicants would have to be aged from sixteen to nineteen; have passed the Victorian Leaving Certificate or its equivalent with mathematics, physics and English essential and chemistry desirable; and be medically fit. Associate diplomas would be offered in mechanical, electrical or radio engineering:[46] for reasons of equity between the radio and engineer streams, the Fellowship Diploma in Communications Engineering was dropped. Most courses would take four years and graduates would be appointed to permanent commissions as pilot officers in the Technical Branch, with their category determined by their diploma.

Point Cook was the preferred location as officer training could then be conducted by the Officer Training School (OTS) and the diploma cadets easily integrated into the social, sporting, general service and cultural activities of other students at the RAAF Academy, the Basic Flying Training School and OTS.[47] There was, however, insufficient suitable accommodation at Point Cook and Laverton, which left little choice other than Frognall. Frognall was unsatisfactory in some respects as the cadets had to live four to a room and share study facilities in sub-standard buildings. But it was close to the RMIT campus, and its separation from the other cadet units at Point Cook helped foster a distinctive 'Frognall' culture shaped more by concepts of developing and managing an air force than by the limited vision often held by aircrew of flying as an end in itself.

Without waiting for finalisation of the administrative and organisational arrangements necessary to establish the Diploma Cadet Squadron, the Technical Branch began to build up student numbers at Frognall. In 1961 apprentices from No. 12 Course (the 'Wombats') became the first from Forest Hill to start their tertiary studies as cadets when they joined No. 7 Diploma Entry Course. Other airmen and apprentices on preceding diploma courses who had been living at other bases began to relocate to Frognall, and direct-entry civilians were recruited. On 1 October 1962 those various streams were formally brought together as the Diploma Cadet Squadron. Seven months later Air Vice-Marshal C.D. Candy, AOC Support Command, reviewed the first prize-awarding parade, at which the winners of academic trophies included Air Cadet Under Officer C.E. Bradford and Senior Air Cadet E.McL. Weller, both of whom later reached air rank.

Like the Apprentice Training Scheme, the Diploma Cadet Squadron (DCS) became a major success. The original estimated annual output of eighteen officers was rapidly exceeded as DCS expanded with the RAAF. By 1964 the student population had

grown to seventy-five and by 1968 to one hundred and twenty-one.[48] Again like the apprentice system there were teething troubles, perhaps the most frustrating for the cadets being the 5:30 a.m. get-up for compulsory physical training followed by drill, a routine which saw students falling asleep in class or even missing classes to sleep in the canteen. Still, enough survived and prospered so that, some thirty years after the scheme started, almost twenty per cent of the RAAF's total number of air commodores were DCS graduates.[49]

The Equipment Branch also appreciated the need for more highly skilled managerial staff. Observing the success of the Diploma Cadet Squadron, Air Member for Supply and Equipment Air Vice-Marshal I.D. McLachlan instructed his branch to follow the engineers' lead, with the objective of eventually increasing the branch's proportion of tertiary-qualified officers to thirty-three per cent.[50] Six equipment cadets were recruited into DCS in 1965 to complete an Associate Diploma in Commerce, effectively a course in accounting; subsequent intakes enrolled in the Fellowship Diploma in Business Studies course which also emphasised accounting. However, RMIT was unable to duplicate its success with the engineers for the suppliers. Classes were too big (up to one hundred students), while the Equipment Branch was unhappy with 'militant student political activity' at RMIT which was believed to inhibit training. Further, the culture at Frognall was believed to be biased towards engineers. Alternative arrangements were made. After 1971 equipment cadets were educated at the Queensland Institute of Technology in Toowoomba where the 'change in environment' was expected to generate an improved graduation rate. In part, that environmental change came from accommodating cadets at the nearby No. 7 Stores Depot where equipment officers, rather than engineers, predominated.

Tertiary education in the RAAF was not confined to the academy, Frognall or Toowoomba. Almost a decade before the latter two organisations were formed, sponsored university education was an established feature of the Air Force's training strategy. Generous allowance was made for part-time degree and diploma studies in engineering, science, electronics, accountancy, commerce, economics, public administration, industrial management and town planning.[51] The Air Force paid the fees for approved students as well as providing material and psychological support; in the first instance, books, library facilities and stationery; and in the second, time off for study and expert tuition when available from base resources. The program added to the RAAF's contribution as one of the nation's great training institutions.

Not all officers entered the RAAF through one of the units mentioned so far. Members of the smaller categories almost invariably had to complete specialist training which was conducted independently, but for instruction in general service subjects such as drill, law and basic administration, they all attended the Officers' Training Squadron

which was established at RAAF Station Rathmines in 1950 before relocating to Point Cook in 1961 and undergoing a name change from 'Squadron' to 'School'. Four twelve-week courses were scheduled annually as per the syllabus at table 7.4.

7.4 **Syllabus of training, Officers' Training Squadron, 1950**

Subject	*Instructional Hours*
General Procedures	14
Drill and Discipline	130
Organisation of the RAAF	4
Organisation of the Navy and Army	2
Basic Administration	28
Correspondence	21
General Administration	42
Law—Common and Air Force	22
Physical and Recreational Training	58
Defence Training	28
Airmanship	18
Fieldcraft	14
Miscellaneous	28
Communications and Signals Procedures	7
Custody and Security of Information, Documents, Buildings, etc.	4

Source: Air Board Agendum 10115, 15-3-50, RHS.

In addition to the officers' initial course the OTS conducted advanced administration training; law courses; and the warrant officers' course, a mandatory qualification for promotion to the RAAF's senior enlisted rank during which selected senior NCOs studied administration, law, drill, ceremonial procedures and leadership for eleven weeks.

Regardless of whether enlistment was through the RAAF College, the direct-entry aircrew scheme, Frognall or OTS, no officer who sought advancement could avoid promotion exams. Those exams had been waived during the war, other aspects of military service being considered more important. After the war a perception developed that general service knowledge among officers was poor, so in 1948 promotion exams were reintroduced. A pass in exam 'B' was mandatory for promotion to flight lieutenant rank and in exam 'C' for squadron leader. Only those achieving a high pass in the 'C' were—in theory at least—considered for attendance at the RAAF Staff College course, completion of which was—again in theory—a prerequisite for promotion to wing commander rank and above.[52] Syllabuses for the 'B' and 'C' were concerned primarily with law, administration and specialist knowledge. Later a staff college qualifying examination known as the 'Q' was added,

with the 'Q' in turn being replaced by a two-year external studies course in 1969 which examined students progressively through the submission of essays on service knowledge, national and global strategy and the employment of defence forces, and current affairs.[53]

Airmen did not escape the drive towards a better educated air force, with their promotion exams resuming in May 1952. Early experiences were not happy as the syllabus seemed to have been developed by someone who was both foolish and zealous, always a dangerous combination. In order to qualify for the highest enlisted rank of warrant officer, an airman had to pass at least nineteen promotion exams and two trade tests. For those who were fully occupied at work and had young families this was, in the Air Board's words, a 'dismaying prospect' which, in combination with sub-standard housing and frequent postings, became a major cause of dissatisfaction with Air Force life.[54] Frustration levels were aggravated by the fact that parts of the syllabus had not been updated since World War II. Large numbers of airmen boycotted the exams, a response which resulted in the promotion of individuals who normally would not have been considered, simply because no-one else was qualified. If allowed to continue unchecked the issue could have created severe long-term problems. Subjects such as drill, methods of instruction and English expression were substantially modified and the promotion exam for warrant officer rank abolished, changes which restored the process's credibility.

A staff college is usually a military service's senior training institution. The peacetime Permanent Air Force was viewed by its commanders essentially as a nucleus force around which rapid expansion could take place in time of major emergencies, as had happened during World War II. In those circumstances many PAF officers would be employed in planning, administration and organising, which in turn implied a need for professional staff training. Prior to the war RAAF staff training had been limited to two places a year with the RAF in the United Kingdom. As post-war forward planning indicated that about twenty-four places were required annually, overseas training was no longer sufficient. The only reasonable solution was to establish an RAAF course.

The RAAF Staff College opened at Point Cook in June 1949 offering a six-month course based on the RAF syllabus and pitched at the squadron leader/wing commander level.[55] Its aim was to 'provide an advanced service education to selected officers, thereby fitting them for command and staff appointments'. That aim was to be achieved by pursuing six main objectives: assisting officers to think clearly, express themselves concisely and logically, and to read widely; increasing initiative, resourcefulness, mental flexibility and professional capabilities; teaching the capabilities, limitations and operating methods of all arms of the defence forces, and their inter-dependability; showing the inter-relationship between the armed forces and all the other elements of the national war machine; acquainting officers with world affairs which may influence military events; and stimulating constructive

thought about trends that might affect future wars.[56] Ten core subjects were taught: staff duties and procedures; the higher defence machinery; Air Force organisation; training; intelligence; imperial geography; fighter and bomber operations; army support; maritime operations; and combined operations (a 'brief examination only'). Ideally, all permanently commissioned officers with the exception of medical officers and chaplains were to attend the college. Student numbers varied from fifteen to twenty RAAF and up to six more from other services for the first twenty years before being increased to twenty-six RAAF and five others in 1969 to accommodate the Air Force's growing establishment.

Because of the course's importance and the need for continuity of instruction a permanent directing staff was established, headed variously by an air commodore or a group captain and with a number of wing commanders as syndicate leaders. Other lecturers were enlisted from Air Force Headquarters, universities, government departments and the like. When the first members of the directing staff were being selected in 1948, Air Marshal Jones displayed a worrying inferiority complex by advising the Air Board and Minister Drakeford that it was 'essential' to obtain the services of an experienced RAF wing commander to set the college's standards.[57] Not everyone shared the CAS's view of the world: the exchange officer duly arrived and was laconically dismissed by some members of No. 1 Course as a 'dill'.[58]

Those kinds of diversions aside, most students regarded the college and the education they received favourably. The six-month course was, however, too compressed: for example, during 'War Room' exercises decisions had to be made with unrealistic haste as artificially speeded-up clocks were used to hasten matters along; and insufficient time was allowed for written exercises. In 1954 the course was extended to a full year, and in 1961 the college moved to Canberra to be closer to the centre of government, the Department of Air and other service and government departments which together provided many of the college's specialist lecturers and presentations. The college's major award, the E.L. Heymanson prize for a 3000-word essay, was introduced in 1963, Squadron Leader L.P. Bek being the inaugural winner for his paper titled 'Some Aspects of Air Defence and their Application to the RAAF'.

From 1970 onwards higher staff training was provided for a smaller number of officers at the Joint Services Staff College in Canberra, which was established at the initiative of the chairman of the Chiefs of Staff Committee, Air Chief Marshal Sir Frederick Scherger, and Defence Minister Athol Townley, both of whom wanted 'to see Australians learn more about each others' services against the background of the [geographic] area in which we have military responsibilities', rather than continuing to send them overseas to study European issues.[59] At a higher level again, it was RAAF policy for all air rank officers from the General Duties, Technical and Equipment Branches to attend the year-long course at the Imperial Defence College in London.[60]

The Imperial Defence College was not the only overseas institution attended by RAAF officers. Under the direction of Air Vice-Marshals Hewitt and Bladin, the RAAF's comprehensive, progressive in-house education and training system was

increasingly complemented by many international courses, most of which were accessible because of the close relationships which existed with the RAF and the USAF. Institutions which added immeasurably to the RAAF's professionalism at some stage included the RAF Flying College, which replaced the Empire Flying School and offered a comprehensive post-graduate flying education; the Central Navigation and Control School, which conducted specialist navigation courses; the RAF Technical College, where RAAF armament, signals and aeronautical engineers completed specialist courses; the Empire Test Pilots School; and various staff colleges.[61]

Many more courses were conducted by the RAAF between 1946 and 1971 than this chapter could hope to describe. It is not well understood by the wider community what a remarkable training institution the Air Force is. An air vice-marshal pilot with thirty-three years service, for example, could reasonably be expected to have spent at least nine of those years as a full-time student.[62] And that quantity invariably is complemented by quality. Like most of the other chapter topics, education and training could occupy a book by itself. The intention here has simply been to comment on those courses and schools which were the most important in the evolution of Air Force education, and which more than any other single activity helped determine what kind of organisation the post-war RAAF would be.

CHAPTER 8

FLYING TRAINING

An air force's fundamental training responsibility is to produce pilots. At its peak the wartime Empire Air Training Scheme (EATS) in Australia had operated twelve elementary flying training schools and eight service flying training schools, and had graduated 10,882 pilots compared to the hundred or so who would have been required under normal circumstances.[1] It was indicative of the difficulties associated with the Interim period that no pilots were trained between 1946 and 1947. Instead, the objective was to reduce numbers. A very few pilots were offered continuing employment with the RAAF, some transferred to airlines and other areas of civil aviation, and some returned to their old jobs with no great wish ever to fly again. Only one basic training establishment was kept open, No. 1 Service Flying Training School at Uranquinty in western New South Wales, which operated almost on a care and maintenance basis preserving stored aircraft, equipment and installations. Flying training was confined to refresher courses for qualified pilots posted for duty with the occupation force in Japan.

Also operating at a reduced level of activity was the single most important flying unit in the RAAF, the Central Flying School (CFS), which had been Australia's original military aviation unit when it was formed in 1912. CFS's pre-eminence derived from its role as the Air Force's arbiter of pure flying standards, a responsibility it met by training instructors, examining and rating squadron instructors, conducting quality control tests at flying training schools, and auditing flying practices generally across the RAAF. Any fall in standards at CFS could in time be expected adversely to affect standards across the entire Air Force. CFS's role had been assumed by No. 1 Flying Training School at Point Cook between 1921 and 1940 because the RAAF's small size justified compressing all flying training tasks into one unit. But in 1940 it was obvious that many more flying instructors were going to be needed than the mere twenty-seven then serving if the wartime demand for operational crews was to be met. CFS was reformed and after brief stays at Camden, Tamworth and Parkes finished the war at Point Cook, in the process training some 3600 instructors. Pending a decision on the future of post-war training, the instructors at CFS were employed preparing performance data and handling notes for a variety of aircraft.

While the Flying Training School and CFS were marking time the air staff was developing a revised approach to flying training. Before the war the methods and scope of aircrew training had been governed largely by finances and the types of aircraft available, rather than by a coherent, strategic plan.[2] Of the many changes introduced by the Empire Air Training Scheme there were two which the air staff believed had been especially valuable and which were retained as the start point for post-war training.[3] First, aircrew applicants would not be allocated a category on enlistment but instead would complete common initial training before being streamed as pilots or navigators, an approach which permitted a better assessment of

individuals. Second, each aircrew stream was to have its own school to facilitate specialist training.

Other aspects of the EATS were modified: for example, the flying training syllabus was expanded, as during the war subjects such as engines, airframes, the theory of flight and air force history had been abbreviated to the essentials to expedite the flow of qualified aircrew. Those short-cuts had been entirely justified in a time of national emergency but were unacceptable for a peacetime professional organisation.

Aircrew candidates had to complete a series of tests with points being awarded in five categories. A maximum score of one hundred was theoretically possible. For those without previous RAAF aircrew experience, forty points were allotted for intellectual capacity (derived from tests which emphasised numeracy, practical aptitude, reasoning, and speed and accuracy); thirty-two for personal characteristics (assessed during an interview and from references, and based on appearance and bearing, mental alertness, self-confidence, leadership, initiative, power of expression, and emotional stability); twenty for educational qualifications (three points for completing the Intermediate Certificate, twenty for a 1st year university course including physics and mathematics); three for age (three points if aged eighteen, none if twenty-three); and five for former service with the Air Training Corps or RAAF. For former members of RAAF aircrew, emphasis was placed on previous experience rather than educational qualifications.[4]

Once the shape of the post-war force was reasonably clear CFS moved from Point Cook to East Sale in 1947 and resumed its primary role, with the first full Flying Instructors Course starting that year and graduating in June 1948.[5] Simultaneously, No. 1 Service Flying Training School relocated from Uranquinty to Point Cook and changed its name to the Flying Training School and then to No. 1 Flying Training School (No. 1 FTS) as it prepared for the first post-war basic aircrew course. Also getting itself into working order was the School of Air Navigation at East Sale, which relocated from Bairnsdale in March 1946 and subsumed the remnants of wartime air observers, astro-navigation, bombing and gunnery schools.

The forty-two trainee aircrew selected for No. 1 Aircrew Course who assembled at Point Cook on 23 February 1948 were the RAAF's first group of flying trainees for almost four years; their status (or lack thereof) as ab initio aviators was denoted by the laurel wreath badges on their uniforms.[6] Training started with six months of drill, physical conditioning, general service education and aptitude testing. The latter activity was the most important as it included twelve hours flight grading on Tiger Moths. Following tests at the six and ten-hour marks recruits were categorised as either trainee pilots or trainee navigators, after which they went their separate ways, the pilots to complete their flying training from ab initio through to wings standard with No. 1 FTS at Point Cook, and the navigators to the School of Air Navigation at East Sale. (The two hours after the ten-hour test were included to give instructors the opportunity to send their pupils solo.) Individuals from the first intake who were later to achieve some prominence in the RAAF included Air Vice-Marshals R.E. Trebilco and B.J. Connaughton (navigator), Air Commodore L.R. Klaffer, Group Captains

M.J. Cottee, R.P. Joske and H.J. Hurley (navigator), and Squadron Leaders J.C. Sandercock and R.W. Wittman.[7]

Difficulties were encountered as the system dusted off the cobwebs which unavoidably had formed during a lapse of four years. A number of older wartime senior NCO flying instructors—that is, those with few career prospects—showed little enthusiasm for their job and got by with the minimum contribution; as a consequence, within two years some pilots arrived on posting to the war in Korea with manifestly deficient instrument flying skills.[8] But while there were problems, they were not endemic. Half of the pilots from No. 1 Aircrew Course were sent to CFS at East Sale for the advanced phase of their training, where Ray Trebilco found the quality of tuition 'very good'.[9] And it is important to note that when the problems in Korea came to light, follow-up action was taken to rectify matters at the source—the basic flying training system.[10]

The anticipation and sheer exhilaration of learning to fly. Swinging the prop. on a Tiger Moth, Point Cook, mid-1950s. S. CLARK

Several features of RAAF pilot training which have remained constant since No. 1 Aircrew Course's arrival at Point Cook are worth mentioning. Most RAAF pilots tend to specialise in one role, such as airlift, fighters, rotary-wing, maritime patrol and so on. Nonetheless, from 1948 onwards, all trainees have completed essentially the same flying training syllabus from the basic phase through to the advanced phase and graduation. That philosophy differs from the approach used by some other air forces in which trainees are 'streamed' onto their designated role at about the end of the basic phase. In the RAAF's judgment the common system produces a better trained, more flexible pilot; additionally, by giving all trainees the full course, potentially good

strike and fighter pilots who may be a little slow to develop have more time to display their skill. The merit of that approach has been evident in the historically low failure rates at fighter and bomber operational conversions units, which have consistently remained below four per cent.[11] Further, if operational circumstances necessitate bolstering one role quickly, all pilots at least have a thorough and common background which facilitates conversion from one type of aircraft to another. A good demonstration of that theory in practice came during the Vietnam War when the greatly increased demand for pilots saw a degree of role changing not experienced since 1945, as pilots were posted from Hercules to Iroquois, Iroquois to Mirage, Caribou to Canberra and so on, with very few problems.

A second feature has been the structure of the training. Courses consist of a number of phases which build on each other as a student's competence grows. Depending on the phase of the course, emphasis is placed on one of five main activities: general flying; instrument flying; night flying; navigation; and formation. The purposes of the latter four are self-evident, while general flying teaches skills such as take-off and landing, circuit procedures, climb and descent, turning, performance limits, practice in forced landings and aerobatics. Attention during the early phases of the course concentrates on general flying sequences, with the more advanced sequences being introduced as a student progresses.

The method of motivation is the final noteworthy feature of RAAF pilot training. The RAAF approach has been to provide students with excellent facilities, first-class tuition and high-quality support services, and then challenge them to make the grade. Students are keenly aware of the very high historical failure rate (the 'scrub' rate) of about fifty per cent, and of the fact that it is up to them to make the grade. About twenty-five per cent of all students failed the twelve-hour flight assessment phase when it was used between 1948 and 1958, and again when it was reintroduced in 1970;[12] once over that hurdle, suspension rates for the basic and advanced phases averaged another twenty-four per cent.[13] In the intervening years from 1959 to 1969 when there was no flight grading—that is, when students went straight on to the basic phase—a wastage rate of thirty-five per cent was expected during the basic phase, and then another fifteen per cent during the advanced phase.[14] And above that, trainees could be suspended for reasons other than unsatisfactory pilot skills: for example, they could fail ground school or demonstrate unacceptable personal qualities.

Consequently pressure can be intense as a course proceeds at rapid pace towards a fixed graduation date. Trainees who start to falter may be given assistance in the form of additional flights, a more experienced instructor, or psychological counselling.[15] Those responses can of course increase the pressure, as the recipient will have witnessed other struggling students go through the same experience before finding themselves programmed for a 'scrub' ride with the commanding officer or a senior instructor before departing the scene permanently within days. Despite that somewhat negative approach to motivation, by and large the system's designers could claim it has worked. Coping with extreme pressure is a prerequisite in military

aviation and, based on institutional achievements in numerous wars and major exercises, the RAAF's pilots have been the equal of any.

Three years after No. 1 Aircrew Course arrived at Point Cook the pilot training structure was altered significantly although the approach and syllabus remained intact. The impetus for change came from Prime Minister Menzies. Australian forces were fighting in the Korean War and the Malayan Emergency, and there was pressure from the United Kingdom for the RAAF to send a wing to the Middle East to help oppose Soviet agitation. Those circumstances were sufficient for Menzies to inform his chiefs of staff in 1951 that Australia had three years to prepare for a major war.[16]

Aircrew training plans were recalculated to allow for wartime loss rates, which for strike operations were estimated as nine bomber crews (one pilot and one navigator) and twelve fighter pilots each month. Projecting those rates forward against the existing training rates, by the end of 1953 the RAAF would be deficient one hundred and twenty-two pilots, forty navigators, thirty-four signallers and twenty-five gunners. A modified war training plan was developed to address the problem. Flying training establishments were rationalised to achieve a more efficient overall system; the content of syllabuses was reduced; and provision made for higher recruiting rates. Those changes were to be implemented without an unacceptable drop in standards.

In 1951/52 the pilot training functions which had been concentrated in No. 1 FTS at Point Cook were divided amongst three units at separate locations, a move intended to provide the additional airspace needed for a greatly increased training rate. An Initial Flying Training School was established at Archerfield near Brisbane and a Basic Flying Training School at Uranquinty, leaving only the Applied Flying Training School at Point Cook. Archerfield and Uranquinty were chosen for their ready availability and cheapness. More real estate was added to the RAAF's register through the acquisition of land at Bacchus Marsh to use as a satellite airfield for Point Cook.

No. 1 Initial Flying Training School at Archerfield was concerned primarily with teaching students ground subjects including aerodynamics, physics, mathematics, engines, meteorology, radio, armament and general service knowledge; and conducting the twelve-hour flight grading on Tiger Moths to 'weed out' at an early stage trainees who were unlikely to reach military flying standards economically. Those who passed flight grading went to No. 1 Basic Flying Training School (BFTS) at Uranquinty, where they flew a further forty hours on the Tiger Moth followed by fifty on the Wirraway. By the time students left BFTS for No. 1 Applied Flying Training School at Point Cook, the major flight sequences of general, instrument and night flying; formation; and navigation had been covered, all accompanied by endless and demanding simulated emergencies. Competence in those sequences was consolidated during an additional one hundred hours on the Wirraway at No. 1 AFTS, while operational skills such as weapons work and combat formations were also introduced. After fifty-two weeks, about 1000 fifty-minute lectures and briefings, and a grand total of some two hundred flying hours, students graduated with their wings.

A Wirraway (foreground) and Winjeel over Point Cook, 1958. RAAF

That restructured approach did not affect the remainder of the RAAF's flying training system. Post-graduate training and the supervision of standards across the Air Force remained the responsibility of the Central Flying School at East Sale; navigators were still trained at the School of Air Navigation, also at East Sale; and the Air and Ground Radio School at Ballarat continued to produce signallers. When they flew their aircraft all of those aircrew operated under the guidance of RAAF air traffic controllers, who were trained by the Flying Training School at Point Cook until December 1956, and then by the Central Flying School at East Sale.[17]

The system based on the Empire Air Training Scheme under which aircrew recruits completed their initial training together before being categorised as pilots or navigators remained in place for ten years, during which time Nos 1 to 30 Pilots Courses were conducted. In 1958 the introduction of jet aircraft and the perceived need to commission all pilots and navigators led to a major change.

Before commenting on those two issues, mention should be made of flying training at the RAAF College, which also changed at the end of 1958. The much longer academic syllabus which college cadets had to complete and their elite status were considered justification for a separate flying training system. Two flights were

established at the college, 'X' for flight grading and basic flying and 'Y' for applied flying. While the flights used the aircraft belonging to No. 1 FTS, collocated at Point Cook, they had their own staff and operated independently. College cadets completed flight grading on Tiger Moths during their first year and then had to wait until halfway through their third year before formal, intensive training through to wings standard commenced. Some motivational flying was provided in the intervening period but was often ad hoc or repetitious.[18] Standards within 'X' and 'Y' Flights were regularly checked by instructors from CFS.

The separate college flying training system was abolished following the introduction of the Vampire for advanced flying training in 1958, as Point Cook was unsuitable for sustained jet operations, and a mix of slow piston-engined aircraft and high-speed jets at the one airfield would have been difficult in a training environment. 'X' and 'Y' Flights were disbanded and from then on college cadets simply joined the FTS system after completing their academic studies.

That change coincided with a decision to commission all pilots and navigators. When the RAAF was reshaped after the war the Air Board had decided that only twenty per cent of direct-entry aircrew would be commissioned, with the remaining eighty per cent serving either as NCOs or specialist aircrew. The newly formed RAAF College was expected to be a major source of commissioned aircrew, with supplementary numbers coming from ex-airmen and the twenty per cent of direct entrants. In practice, by the mid-1950s seventy-five per cent of all pilots and navigators and forty per cent of signallers were receiving commissions and those who were assessed as unsuitable were not being re-engaged.[19] The trend was clear enough and circumstances forced the RAAF to go the extra step. By the late 1950s the Air Board had concluded that all pilots and navigators had to be commissioned in order to attract better educated, high-quality young men in a competitive market.[20]

Starting with No. 34 Pilots Course in July 1958, all recruits were identified as student pilots or navigators at the time of their enlistment, a change which largely removed the need for common initial training and entirely removed the need for flight grading prior to streaming. Trainee pilots and navigators entered the RAAF as cadet aircrew and after graduation were appointed to an eight-year short-service commission, initially as pilot officers. Navigator training was conducted wholly at East Sale, while the pilots' system was divided between two locations. Because of a diminishing need for aircrew, the Initial Flying Training School at Archerfield had been closed in 1955 and its functions absorbed by No. 1 Basic Flying Training School at Uranquinty. Following the decision to abandon flight grading, in 1958 No. 1 BFTS was moved from Uranquinty (which was closed down) to Point Cook, in the process replacing its Tiger Moths and Wirraways with the Australian-designed and built Winjeel basic trainer; while No. 1 Applied Flying Training School moved from Point Cook to Pearce near Perth and re-equipped with Vampires. After some initial problems caused by delays in deliveries of the Vampire, pilot training settled down to about eighty-five hours on Winjeels and one hundred and twenty-five on Vampires, the introduction of jets increasing the cost of bringing a pilot to wings standard from £12,500 to about £30,000.

The flying instructor's lament. A cartoon painted on the crewroom wall at No. 1 Applied Flying Training School, Pearce, c. 1963. P.J. SCULLY

A rather curious experiment with so-called 'ad hoc' flying training warrants mention before moving on to discuss the all-through jet syllabus which was briefly introduced in 1968. Authorised by the Air Board and conducted between 1953 and 1957, the 'ad hoc' scheme was conceived to give officers from non-flying branches an opportunity to experience first hand the problems confronting aircrews, with medical and technical officers particularly in mind.[21] 'Ad hoc' was an excellent choice of name. Entirely dependent on the casual availability of aircraft, instructors and students, and with no formal entry standards, the scheme inevitably lacked coherence. Not surprisingly, those participating found it very difficult to achieve high standards, although each flew an average of forty hours and went solo. Because most flying was on Tiger Moths rather than jets the exposure to representative aircrew problems was questionable. So too was value for money, as eight of the ten medical officers trained left the RAAF during the brief life of the scheme. When it was scrapped, engineers and doctors were encouraged to apply instead for formal pilot training.

The concept of an all-through jet syllabus was also to encounter problems, but unlike the ad hoc system the proposal was at least based on a logical assessment of developments in flying training. From the early 1950s it had been an air staff ambition to introduce all-through pilot training—that is, a system based on only one aircraft

type—in the belief that it would be just as effective as the established half piston/half jet syllabus and substantially cheaper. However, because the RAAF already owned large numbers of suitable, airworthy trainers (Tiger Moths, Winjeels, Wirraways and Vampires) which could not simply be retired at will, the concept was deferred for many years.[22]

The opportunity finally arose in the late 1960s when the demand for more pilots generated by the Vietnam War more or less coincided with the planned phasing-out of the Winjeel and the Vampire. The aircraft which had been selected to replace the Vampire, the Aermacchi MB-326H, was assessed as a good type for all-through training; further, planners believed that giving trainees about two hundred and ten hours on the Macchi would produce better pilots more rapidly than the existing arrangement.[23] Pearce was chosen as the 'all-through' base in preference to Point Cook, Edinburgh and East Sale because of its superior weather, cheapness and the ready availability of sites for a satellite airfield. The RAAF also knew that it needed to make more use of Pearce to justify the base's existence.[24] About $6 million was spent bringing facilities up to standard, including the construction of a satellite airfield at Gin Gin, twenty-seven kilometres north of Pearce, which opened in October 1968.

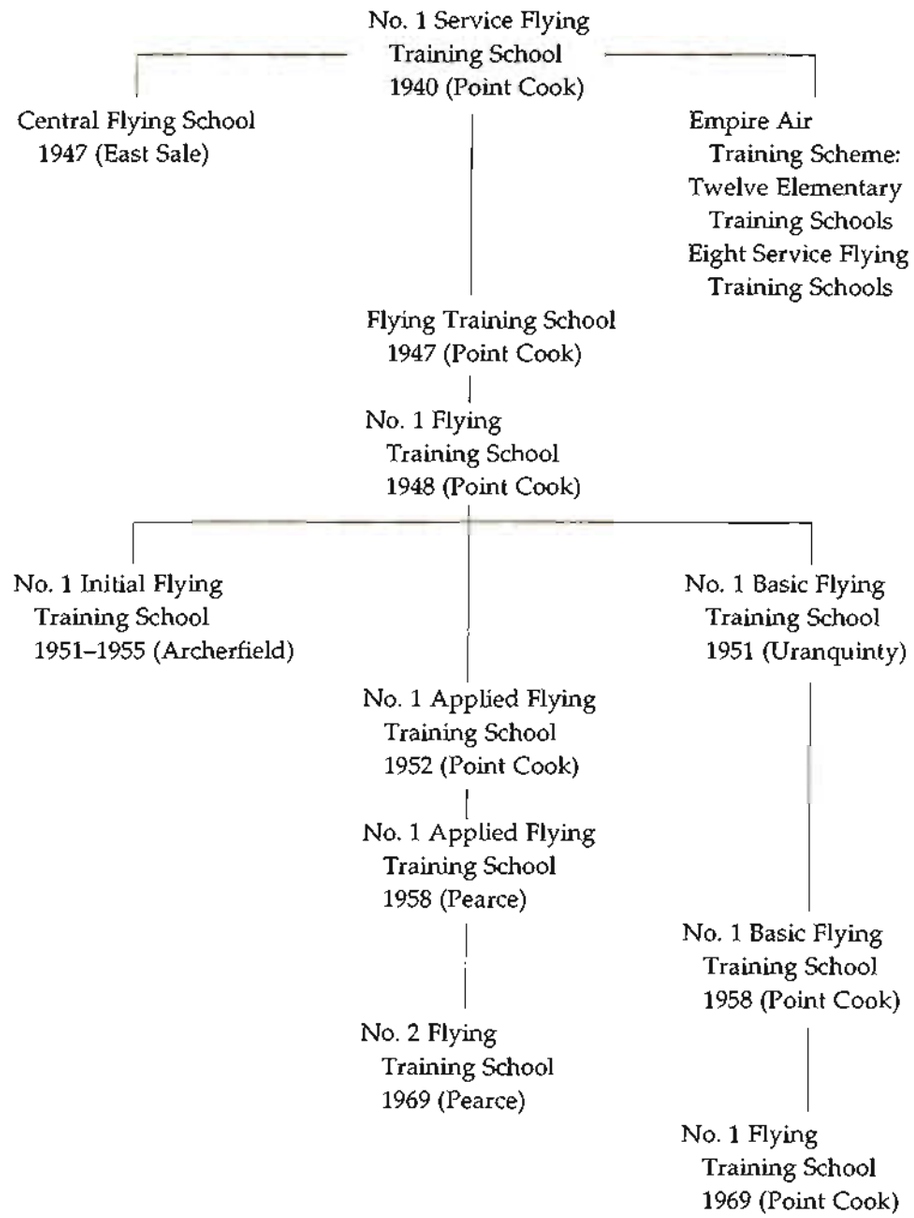
No. 70 Pilots Course became the first to undergo all-through training when it arrived at Pearce in 1968 to start the fifty-nine week, two hundred-hour, Macchi-only syllabus. The anticipation of all-through training quickly proved better than the event. Flying the Macchi was an expensive way to find out that some students, no matter how well they may have been screened by pre-recruitment testing, lacked the necessary aptitude to become military pilots, a process which generally consumed about twenty hours. Consequently, after only two Macchi courses, a fifteen-hour flight grading test on Winjeels at Point Cook was introduced, starting with No. 72 Pilots Course in January 1969. RAAF Academy cadets were excluded from the screening process as they flew some twenty-five 'motivational' hours on the Winjeel during their three years at Point Cook.

Also at the start of 1969, No. 1 BFTS at Point Cook was renamed No. 1 FTS and No. 2 AFTS at Pearce No. 2 FTS. Table 8.1 traces the many changes of name, role and location in the flying training system between 1940 and 1971.

The introduction of flight grading on Winjeels did not fully resolve the problems with the all-through concept. Jet-only flying proved to be much more expensive than expected, while the high training rates and concentration of flying at No. 2 FTS exceeded the capacity of Pearce and Gin Gin airfields.[25] Further, the RAAF was still operating single-pilot aircraft like the Canberra and the Sabre which had far superior performance to the Macchi but far inferior flight instruments, a combination which saw numerous Macchi-trained pilots struggle with the instrument flying phase of their operational conversion. In response to those difficulties, starting with No. 81 Course in April 1971, a basic phase of sixty hours on the Winjeel was introduced at Point Cook, followed by about one hundred and fifty hours on the Macchi at Pearce, a sequence which eased the traffic load at Pearce, enabled sub-standard students to be identified at less cost, and exposed trainees to a less precise instrument flying

platform. Making greater use of the Winjeel also obviated the need to buy another dozen or so Macchis which would have been needed had all-through training been retained.

8.1 The RAAF flying training system, 1940–1971



Some flying instructors believed the Macchi was too easy to fly on instruments, an undesirable characteristic for an organisation which wanted to test its students to their limits. While that may have been true in relation to the comparatively primitive instrumentation of the Canberra and Sabre, it was a dubious proposition with respect to aircraft like the Mirage, Hercules and Orion which, like the Macchi, were fitted with modern, reliable flight instruments. Indeed, the accuracy of the Macchi's flight instruments effectively brought to an end one of the flying training system's longest standing vexed questions.

The issue was the technique used for instrument flying. Since at least 1946, there seemed to have been a degree of ambivalence in the RAAF whether pilots should use the 'attitude' or the 'performance' technique. Regardless of which technique was used, the objective was for the pilot to manipulate his aircraft to achieve the desired and predictable performance: rate-of-climb or descent, speed, rate-of-turn, and so on. Attitude flying relied primarily on the gyro-stabilised artificial horizon, which gave a direct indication of the aircraft's attitude relative to the horizon; that is, the pilot did not have to interpret the information. By contrast, the performance technique required the pilot to interpret and mentally collate indirect information from a number of instruments, including the turn and slip indicator, the compass, the airspeed indicator, altimeter, and vertical speed indicator. In theory the attitude technique was easier, required less attention and produced smoother flying, but many pilots considered the artificial horizons of the era too unpredictable and inaccurate. The performance technique, on the other hand, could produce very accurate flying, but the rapid, continuous instrument scan it demanded created a very high workload, thus limiting the pilot's capacity to do anything other than fly the aeroplane.

Whichever technique was used, it is clear that instrument flying standards which were sometimes marginal restricted the effectiveness of a number of RAAF units through the 1950s at least.[26]

The deficiencies of the artificial horizons of the period notwithstanding, in the long term attitude flying as a concept promised to produce better results generally and reduce the pilot's workload, thus releasing his attention for operational activities. At the Central Flying School in the early 1960s, staff instructor Flight Lieutenant D.E.N. 'Ace' Hampton, influenced by the USAF's strong emphasis on attitude flying, began to urge students on the Flying Instructors Course to adopt the technique; influenced in turn by Hampton, younger instructors like Flight Lieutenants Ray Funnell and Barry Gration began to promote the method with students flying Vampires at the Applied Flying Training School at Pearce. However, in Air Vice-Marshal Tom O'Brien's opinion, while progress was made, it was not until the introduction into the flying training system of the Macchi, with its excellent flight instruments, that attitude flying 'really started'.[27]

Whether or not the attitude technique could be used with complete confidence before then was a matter of opinion: given the inherent inaccuracies of the older artificial horizons, many pilots believed a combination of attitude and performance flying was necessary. That, however, was not the point. It was the attitude of the

institution, rather than of individual aeroplanes, that was the real target of Hampton's 'reform' group. Looking back on the subject from a distance of thirty years, and relating that particular change to increased professionalism generally, Air Marshal Barry Gration suggested that it was only when RAAF pilots started to regard instrument flying as a medium for professional advancement, rather than simply as a skill for getting an aeroplane back on the ground in poor weather, that they were able fully to exploit the concept of *using* their aircraft as a weapons system in day and night and all weather.[28] In short, attitude flying offered the potential to expand capabilities generally, while performance flying was locked in the past.

Changes to the structure of the flying training system generally represented a response to shifting standards or new equipment, or sometimes to new concepts such as the 'all-through' syllabus. The rate at which the system worked was no less difficult to manage but much simpler in origin, being driven solely by the numbers required.

Notwithstanding the flurry of activity initiated by Prime Minister Menzies in 1951, for most of the 1950s the number of pilots produced annually by the flying training system remained fairly constant in the mid-thirties, an output which strained neither the system nor the instructors. That comfortable situation collapsed in the early 1960s as the RAAF embarked on a major expansion and the commitment to Vietnam grew. In response to those pressures the total number of established positions for pilots increased from six hundred and twenty-eight to seven hundred and two. The demands placed on the training system by that increase were exacerbated when the airlines began a vigorous recruiting campaign. Pilot numbers suddenly became the most critical staffing limitation on the RAAF's growth. In January 1964 all established pilot flying posts were filled and there was a reserve of seventy-four pilots below the rank of squadron leader.[29] By mid-1965 nine flying posts were vacant, the reserve had fallen to twenty-three, and a deficit of one hundred and thirty-one was predicted by 1968. Because it was RAAF policy to hold a surplus of some fifty pilots over the established number of flying posts as a safeguard against unforeseen contingencies, the situation was disturbing.[30] In January 1964 the required annual graduation rate of pilots was raised from thirty-eight to forty-six, in May to fifty, in January 1965 to fifty-four, and in July to sixty-six.[31] By 1968 the requirement had reached one hundred.

Simply increasing the number of pilots being trained was not the answer. Standards had to be maintained, while expanding the training system—instructors, aircraft, facilities, and so on—could not be done overnight. About two years would elapse between any decision to increase the training rate and the end product reaching the squadrons.[32] Immediate actions taken to try to hold the line included withdrawing pilots from ground duties, borrowing six qualified flying instructors from the RAF for two years, and recruiting experienced pilots from Britain, Canada and New Zealand. Efforts were also made to reduce the loss of qualified RAAF pilots. Standards for granting permanent commissions or renewing short-service commissions were

'relaxed to the minimum acceptable level of performance', and extensions of service beyond normal retirement ages were offered.

If some of those actions seemed rather extreme, others had an air of panic about them. The recruitment of civil pilots 'even if partly trained by RAAF standards' was suggested, as was the acceptance of 'graduates' from No. 1 AFTS who were qualified on piston-engined aircraft (having passed the BFTS stage of training) but who had failed on jet aircraft. Implementation of either of those suggestions would have jeopardised the commitment to the highest standards which for fifty years had been the hallmark of RAAF pilot training. The Air Board properly directed that any civil pilots who were recruited had to achieve AFTS graduation standards before being employed operationally, a condition which negated the rationale behind that particular proposal; and simply ignored the suggestion that AFTS failures should somehow become 'graduates'. The Air Board did, however, consider such extreme measures (which were rejected) as refusing to accept resignations, and retrospectively increasing the return of service on pilot training.

Concurrent with the acceptable short-term fixes, longer term action to raise the output from the flying training system was initiated. By increasing the numbers of qualified flying instructors at the flying training schools and raising the instructor to student ratio at the AFTS from 1:2 to 1:2.5 (at BFTS it remained at 1:3), the planned output of pilots from Pearce rose to eighty-two a year, starting with No. 62 Course which arrived at Point Cook in May 1966.[33] Additionally, the Royal Canadian Air Force, USAF and RAF were asked to train RAAF pilots, an approach which saw the RAF agree to take twelve a year at a cost of $104,407 each.[34] The RAAF itself was inducting four courses a year of direct-entry student pilots for flight assessment, with each course containing an average of twenty-nine RAAF students and eight RAN,[35] while an additional twelve or so graduates of the RAAF Academy joined the pilot training program annually. When the small number of qualified pilots recruited from other air forces was added, the RAAF was getting close to the one hundred it needed each year to resolve its crisis. In the space of three years the number of new pilots entering the RAAF had been trebled, a significant achievement for a small force which was not on a war footing, even though it was fighting a major war.

One aspect of the pilot crisis which was handled far less satisfactorily concerned the Air Force's obligation to Army and Navy aviation. As the prime provider of air power for the defence forces, the RAAF was responsible for training pilots for the other two services. By the 1960s that amounted to graduating twelve pilots annually for the RAN from Pearce, and training four intakes each of seven cadets for the Army at Point Cook (Army pilots did not complete the jet phase of flying training). When the pilot crisis was at its peak, the Air Force at one stage proposed suspending all Army and Navy training or contracting the Army task out to a civilian flying school.[36] As it happened the actions taken to increase the output enabled the RAAF to honour its commitments, but the proposal to dump the other services did not enhance the Air Force's reputation as a reliable partner.

The effect of what was a dramatic increase in the RAAF's rate of pilot training is worth reviewing. Most obviously, the flying rate was hectic. In the mid-1960s a junior category 'C' instructor on Winjeels at Point Cook could expect to fly four sorties a day, week in and week out, with the total rising to six if night flying were programmed. Flight Lieutenant I.M. Westmore was one of the pace-setters in 1965–66 but his yearly total of seven hundred and seventy hours (six hundred and sixty of which were instructional) was not exceptional for No. 1 BFTS at the time, nor was Flight Lieutenant T.W. O'Brien's rate of sixty-five hours a month on Vampires at No. 1 AFTS.[37] Those rates were exceptional, though, by any other standards, amounting to more than double the workload generally considered reasonable at a flying training school. And before and after every sortie students had to be briefed and debriefed; while each assessable flight also required a formal written report (known with characteristic sardonic humour as the 'Hate Sheet'). The hectic pace was reflected in the airfield circuit and training areas at No. 1 BFTS, where as many as four parallel runways might be operating concurrently at Point Cook, two or three at Laverton and two at Bacchus Marsh. It was not uncommon for thirteen aircraft, some flown by inexperienced solo students, to be in the circuit simultaneously at Point Cook, creating something of a 'sink or swim' environment for the trainees.

There is little immediate evidence that standards were compromised. Flying instructional staff continued to assess students against the same criteria they had always applied, without interference or directions to the contrary from senior supervisors, and the suspension rate for air work (that is, excluding ground school and personal qualities) remained close to the historical average.[38] On occasions, however, marginal students who in less hectic times probably would have been suspended were pushed through at the direction of the commanding officer; interestingly, several of those fortunate graduates subsequently enjoyed highly successful flying careers.[39]

There are few greater moments in a pilot's career than going solo for the first time, and the aircraft on which that milestone is achieved is generally remembered with particular affection. That aircraft by definition will be a trainer. Five aircraft types formed the backbone of RAAF pilot training from 1946 to 1971: the Tiger Moth, Wirraway, Winjeel, Vampire and Macchi.

The Tiger Moth and the Wirraway were both introduced into the RAAF in 1939 and were both eventually replaced by the Australian-designed and built Winjeel, which was developed partly to generate employment for the local industry and partly to address a deficiency in the RAAF's flying training system. Between 1939 and 1945 the local industry's capacity to build modern aircraft or improve existing types had been directed almost entirely towards operational machines, which meant the quality of trainers had remained static. When the RAAF started to recruit aircrew again in 1948 the Tiger Moth was still the basic trainer, even though it had been the subject of considerable dissatisfaction for some time. During the war, operational squadrons had

persistently complained about the unsatisfactory standard of newly graduated pilots, for which the Tiger Moth's shortcomings were often blamed. Squadrons wanted pilots who could quickly achieve high standards of general and instrument flying in fast, long-range, complex aircraft, with special importance attached to accurate instrument flying. No-one disputed the Tiger Moth's delightful handling characteristics but it was not capable of cultivating those skills.

Operational training units had been formed to bridge the gap between the training system and the squadrons and had worked well, but they were manpower intensive and, in the cost-conscious post-war environment, considered too expensive.[40] The air staff looked at using the Wirraway as an all-through trainer but that too was an expensive option, while there were concerns that ab initio students would not be able to cope with what was a fairly powerful machine. The most cost-effective solution, the air staff believed, would be to build an intermediate trainer. The Tiger Moth would then be used for flight grading, the new aircraft for basic flying, and the Wirraway for advanced flying. That approach would also give the local industry an opportunity to design, develop, test and produce a new trainer.

The aircraft the RAAF wanted was a single-engined, two-place, low-wing monoplane with side-by-side seating. Features were to include a fixed landing gear with a tail wheel (as opposed to a tricycle undercarriage), radio and full instrument flying equipment, a closed cockpit, flaps, brakes, a constant-speed propeller and a supercharged engine; while performance criteria were specified as a full aerobatic capability at acceleration loadings of –3.4 'g' to +6.7 'g', a cruise speed of at least one hundred and ninety kilometres per hour, a maximum speed of four hundred kph, a stalling speed with flaps down of about eighty-five kph, a service ceiling not less than 4575 metres, a 'reasonable' rate-of-climb, and an endurance of at least three and a half hours.

Those were precisely the capabilities listed by the Commonwealth Aircraft Corporation for its proposed CA-22 trainer when it responded to the RAAF's invitation for expressions of interest.[41] With the RAAF's endorsement CAC built two prototypes powered by the Pratt and Whitney Wasp Junior engine. When Air Force flight testing confirmed the CA-22 as a 'very satisfactory' machine, the government agreed in November 1951 for sixty-two to be manufactured at an estimated cost of £780,000, including spare engines and components. Approximately half of the aircraft were to be powered by the Wasp engine and associated propellers from the United States, and the remainder by the CAC-designed and built 'Cicada' engine and de Havilland propellers designed and built in Australia.

Unfortunately not all RAAF pilots shared the belief that the CA-22 was 'very satisfactory'. Some who flew the prototypes claimed the aircraft would not spin properly, an allegation which created a minor controversy since spin recovery was an essential sequence in the RAAF pilot training syllabus, and if an aircraft would not spin then obviously the recovery could not be taught. The RAAF's two most authoritative pure flying units, Central Flying School and the Aircraft Research and Development Unit, entered the fray and did not always agree. Because the CA-22 had

been made in Australia the issue was politically sensitive: the project represented an investment not only in the nation's industrial infrastructure but also jobs. The RAAF's most prominent pre-war test pilot, Air Vice-Marshal Scherger (at the time the air member for personnel), reportedly called the warring pilots into his office, dismissed their complaints about the CA-22, and told them to get on with the job of bringing the aircraft into service. Changes were, however, made to the fin and rudder configuration on the production model.

That sort of incident lengthened the test and development program, to the extent that by July 1953 the estimated cost of the project had blown out to £3.25 million.[42] Expenditure was contained by cancelling the Cicada engine and the Australian propeller, but the final cost of £2,429,500 still represented an enormous increase over the original estimate and was the kind of experience which made the RAAF and the government increasingly wary of buying locally.

Redesignated the CA-25 and named the Winjeel—Aboriginal for 'young eagle'—the aircraft entered service in 1955. Originally destined for retirement in 1968, the Winjeel soldiered on until 1975, during which time hundreds of trainee pilots performed thousands of spin recoveries and generally found the aircraft to be an excellent basic trainer.[43] Few considered its replacement, the New Zealand Aerospace Industries CT-4 Airtrainer, to be as good.

Complementing the Winjeel for over a decade was the de Havilland Vampire, a rather unusual looking aircraft with a twin-boom tailplane. Vampires were originally built in Australia in 1949 as single-seat fighters and fighter-bombers known respectively as the F.30 and FB.31. As the need to convert operational pilots onto the Canberra and Sabre developed, so too did the need for a jet trainer. In 1951 thirty-six dual-seat T.33 Vampires were ordered primarily for No. 2 Operational Training Unit at Williamtown.[44] Within several years it was clear that if the RAAF wished to remain at the forefront of technology all pilots would have to be trained on jets, not just those posted to fighters and bombers.

When Air Vice-Marshal Alister Murdoch led an aircraft acquisition team overseas in 1954 his shopping list included a jet trainer to replace the piston-engined Wirraway still being used by No. 1 Applied Flying Training School. Murdoch saw nothing better than the locally produced Vampire. Although the Vampire's instrument layout was ergonomically poor (a common feature in British aircraft of the period) the jet was a delight to fly and had already proven itself in service. RAAF flying instructors strongly favoured the aircraft's side-by-side seating which they believed was a 'great advantage' over tandem seating for all forms of flying and operational instruction.[45] A decision in favour of the Vampire would also support the local industry. The subsequent order for sixty-nine T.35s to be built by the de Havilland factory at Bankstown at a total cost of £6,568,000 was a satisfactory outcome for all parties.[46] Most of the T.35s were destined for No. 1 AFTS at Pearce, where they replaced the Wirraway in 1958, but a number found their way to other bases to be used for conversion, staff training and liaison flying.

For a generation of RAAF pilots the Vampire was their first jet. One of the most distinguished of those pilots was Air Marshal Sir Valston Hancock, CAS from 1961 to 1965. Raised on piston-engined tail draggers, Sir Valston found his first Vampire flight an exhilarating experience:

> After careful briefing I started out on the runway, and the technique is to [run] the engine up to 8000 revs with the brakes on, then release the brakes and off you go. And it really is an amazing experience because you're hit in the back with this great acceleration, and you're screaming down the runway, and you hold it down to get full climbing power, and also to build up the pressure to increase the output of the engine, and you feel as though you're in charge of something with power unbounded. Then you race towards the heavens ...[47]

From 1958 onwards the RAAF flying training syllabus was based on one hundred and twenty hours instruction on the Winjeel and one hundred and ten on the Vampire. By the early 1960s, however, the imminent arrival of the supersonic Mirage and the planned introduction of the even more advanced F-111 later that decade suggested that changes might be needed. Experience (which was limited) in the RAF and the USAF had indicated that the sooner a trainee was introduced to jet aircraft, the better his graduation standard would be.[48] As noted above, the RAAF had been inclined since 1953 to make the change to an all-through jet training scheme but had been prevented from doing so by various circumstances. A study of pilot training in 1964 reconfirmed the belief that all-through jet training should be introduced as soon as possible.[49] That study also validated the philosophy of training all pilots to the same graduation standard; that is, streaming onto, say, multi-engined or fast jet types would occur only after a pilot had been awarded his wings. It seemed unlikely, however, that any aircraft selected as an all-through trainer would also be suitable for a fast jet operational conversion unit, which meant that newly graduated pilots progressing to a Mach 2.0 aircraft would need a further two hundred or so hours experience on an intermediate 'trainer' with at least transonic performance, such as the Sabre.

Working to that philosophy, the air staff developed the parameters a single aircraft type would need to conduct the full range of elementary and advanced flying sequences, of which there were seven: pure flying; instrument flying; aerobatics; night flying; navigation; formation flying; and weapons training. Those sequences would require an aircraft with a speed of Mach 0.7 at 9150 metres and not less than six hundred and fifty kilometres per hour at sea level, a service ceiling of at least 12,200 metres, a rate-of-climb of 1220 metres per minute at sea level, and a minimum still air range of 1150 kilometres. A landing speed of about one hundred and eighty kilometres an hour with flaps extended was stipulated, some forty kilometres an hour above the desired stall speed.[50] Excellent low and high-speed handling characteristics were essential while all aerobatic manoeuvres, including spinning, had to be possible at any weight.

Six aircraft were selected for detailed examination: the British BAC-167; the Canadian CL-41; the Italian Macchi MB-326H; the Swedish SAAB 105; the Japanese

TIF-3; and the French Potez 94. A proposal by the Government Aircraft Factory to design and build an Australian jet trainer, nominally titled the GAF-F2, received a sympathetic hearing from the RAAF but lacked substance; while another Australian proposal from de Havilland to re-engine the Vampire was rejected at the outset as the airframe fatigue life of 4000 hours quoted by the company was 1000 less than required.

Three generations of RAAF trainers: Winjeel, Macchi, Vampire. RAAF

An acquisition team led by Air Commodore B.A. Eaton and Group Captain D.R. Cuming unanimously recommended the Italian Aermacchi MB-326H, a tandem seat trainer powered by the Bristol Siddeley Viper II engine.[51] The Macchi was one of the few aircraft inspected which met the RAAF's requirements in all important respects and, as a bonus, was the cheapest. Manufacture in Australia would not present any technical difficulties as the airframe and Viper engine were uncomplicated compared to the Mirage and Atar currently in production. Facing a serious decline in its workload in the second half of 1966, the Australian aircraft industry welcomed the decision.

Before construction started, Australian test pilots and engineers inspected the Macchi in detail, as a result of which the RAAF ended up with a 'greatly improved aircraft' featuring better placement of controls, a superior cockpit layout, improved reliability of electrical components and significant improvements in maintenance accessibility.[52] Those inspections were made easier by the tuition in Italian which

some members of the team had received at the RAAF School of Languages. The first of ninety-seven Australian-built Macchis, nine of which were for the Navy, rolled off the line at the Commonwealth Aircraft Corporation in 1967.

Winjeels, Vampires and Macchis carried only two pilots, normally an instructor and a student. When those students graduated, most flew multi-crew aircraft which in addition to pilots might include one or a number of navigators, signallers, air electronic officers, flight engineers, loadmasters and crewmen.

Navigators were the most numerous and significant non-pilot members of aircrew. Requiring the same entry standards as pilots, they enjoyed good career prospects, especially after 1958 when all graduates from the School of Air Navigation (SAN) at East Sale were commissioned. SAN had been formed at Sale in 1946 by combining

Cadet navigators receive tuition on a compass system at the School of Air Navigation, East Sale, 1963. L–R: Cadets R.J. Waring, R.P. Vaux, P.V. Duhs, M. Glajnaric, FltLt K. Courage, Cadet M.A. Lahy. RAAF

wartime air navigation, air observer, and bombing and gunnery schools.[53] Under the wise and diligent guidance of its first commanding officer, Wing Commander J.B. Jewell, SAN became a centre of excellence. While the school's activities varied over the years, its essential purpose of training squadron and instructor navigators by conducting basic and advanced navigation courses remained unchanged. Like pilot training, basic navigator training resumed in 1948, after which two intakes a year were

generally accepted, each of about twelve students. During the year-long course trainees were taught the main navigation techniques: dead-reckoning, maritime, airways, astro, automatic systems, and high-speed low-level. Aerial photography was also covered, as was bombing and gunnery in the early years. Advanced navigation courses lasted about five months and concentrated on leading-edge systems and techniques.

Trainee navigators flew about two hundred hours during their year at East Sale in a variety of aircraft which included the Avro Anson—in which they received physical as well as intellectual development by having to wind-up the landing gear—the Lincoln, Dakota and Hawker Siddeley HS-748. Limited high speed experience was provided in Vampires and, later, Macchis from the Central Flying School. As had been the case for so many other units and roles, the Dakota was the backbone of RAAF navigation training, remaining on-line at SAN from 1950 to 1969, during which time Nos 5 to 36 basic courses graduated. No. 37 Course, which started in January 1969, was the first to use the HS-748. Also arriving at East Sale in 1969 was the first group of RAN midshipmen to undergo training with SAN as observers before joining the Fleet Air Arm.

The HS-748 was not a particularly noteworthy aircraft, although it proved to be a solid performer. Nevertheless, its arrival indicated a change in the role of RAAF navigators, away from the dead-reckoning, air plotting, sextant wielding image of the 1940s and 1950s towards the systems operator of the 1960s and 1970s. That change had in fact been underway in the operational squadrons for over a decade as aircraft like the SP2H Neptune, C-130 Hercules and P-3 Orion were all fitted with advanced navigation systems featuring some degree of automation and ground mapping radars. Unlike the Dakota, the HS-748 at least provided an introduction to those systems, as did the computerised synthetic navigation trainer—in effect, the navigators' equivalent of a flight simulator—which was introduced in 1970.

Changes in the wireless/air gunners' (WAG) role were even more pronounced than the navigators'. Air gunners were a relic of World War II, when large, slow, ponderous bombers had to defend themselves against small, fast, manoeuvrable fighters. Classic wartime bombers like the Lancaster and the B-29 remained in service for some years after 1945, but the advent of jet aircraft and air-to-air missiles irrevocably altered the defensive problem. Slow strategic bombers were on borrowed time, and so too were their gunners. WAGs were retained after the war but in diminishing numbers, and no more were trained. Increasingly navigators were used as part-time gunners; for example, when Lincoln bombers strafed undefended enemy positions during the Malayan Emergency. Once the Lincolns were decommissioned, aerial gunnery in the RAAF became the sole preserve of pilots, a change which forced wireless/air gunners to concentrate on the first component of their profession. Reflecting that change, when post-war training resumed at the Air and Ground Radio School in Ballarat in 1950, the category was renamed 'signaller'.

Signallers were essentially wireless operators who on maritime reconnaissance aircraft also monitored submarine detection equipments such as acoustic listening systems and radars. But there, too, priorities were shifting. As radio sets which

eliminated the need for Morse code became available most communications work was taken over by pilots and navigators, a development which also eliminated the need for full-time radio operators. Concurrently, greatly improved acoustic and electronic detection equipments started to swing the balance in anti-submarine warfare (ASW) towards the aeroplane, an evolution which increased the importance of signallers as sensor operators.

If full advantage were to be taken of the shift in ASW, better qualified and trained signallers were needed. Trainee signallers required an Intermediate Certificate and graduated as sergeants after completing a forty-two week course which concentrated on radio communications and theory and included between forty-five and eighty hours flying in Dakotas. Despite the thoroughly professional instruction,[54] that approach not surprisingly resulted in a rather narrow product: while graduates were competent wireless operators, they were below par as ASW sensor operators who, a RAAF study into the subject found, required a skill level equivalent to that of navigators.[55] The maritime units, and in particular No. 10 Squadron once it re-equipped with the advanced SP2H Neptune in 1962, found themselves increasingly burdened by the large amount of on-the-job training signallers needed. There was also something of a status problem, which became a recruiting problem, as many potential signallers refused to enlist without the guarantee of a commission on graduation.[56]

The category of air electronics officer (AEO) accordingly was introduced to replace signaller, with the first course starting in January 1965. Educational qualifications were raised to the Victorian Leaving Certificate or its equivalent (that is, the same as pilots and navigators), with recruits entering as cadet aircrew and graduating as pilot officers after a year's training. One annual intake of about twelve cadets was scheduled. Training initially was divided between the School of Air Navigation at East Sale and the School of Radio at Laverton, with SAN assuming full responsibility after 1968. The AEO syllabus was much broader than the signallers', and included navigation, meteorology, airmanship, instruments, general service knowledge and officer training, as well as the core radio and electronic warfare systems subjects. Flying exercises were conducted in the Dakota and later the HS-748. Pilot Officer S.J. Fenton, subsequently an F-111 pilot and squadron commanding officer, graduated as dux of No. 1 AEO Course.

Concurrent with the recruitment of trainee AEOs, serving signallers with Neptune experience were transferred to the AEO category; those without Neptune experience were given training at the School of Radio and then transferred; while those who could not qualify for the AEO category or a commission were retained as signallers until the expiry of their current engagement. 'Following the disposal of the last such member', the Air Board ordered, 'the Signaller category [is] to become redundant in a similar manner to the former Gunner category'.

The arrival of the C-130A Hercules in 1958 necessitated the introduction of one non-pilot aircrew category and the reintroduction of another.[57] USAF squadrons operated

the Hercules with a crew of two pilots, one navigator, a flight engineer and a loadmaster, a combination the RAAF decided to adopt. Flight engineers had been employed previously—for example, on Catalinas during World War II—but, like the 'Cats', had since faded away. 'Loadmaster' was a new category. Although aerial dispatchers had also been previously employed, notably on the wartime Dakota 'biscuit bombers', they generally flew on an ad hoc basis. Most dispatchers were equipment or stores clerks who were trained in air portability and air dispatch and who worked as part-time flight crew with none of the special benefits. The C-130 was simply too big and complex for that approach.

Rather than formally establish the two categories, the RAAF decided in the first instance to draw its flight engineers from serving engine or airframe fitters, and its loadmasters from equipment clerks and assistants and excess signallers and gunners. Unlike pilots and navigators, both groups received flying pay only while employed on flying duties, and on completing a tour could be posted back to a ground job. Flight engineers were awarded a brevet, the 'half-wing' similar to those worn by other non-pilot aircrew but with the letter 'E' in the middle; while loadmasters had to be satisfied with a scarlet armlet which denoted their authority in the aircraft to passengers. The question of authority was also a factor in setting the minimum rank for both groups at sergeant, which meant applicants had to be eligible for promotion to senior NCO status at the end of their specialist training.

After several years the loadmasters' considerable responsibilities had become more widely appreciated. Brevets with the letter 'L' were approved in 1963, primarily on the grounds that loadmasters were a 'working and essential member of an operational aircrew' and had to be carried on all C-130 flights; and individuals were permitted to retain their flying badge permanently provided they had completed a year-long flying tour. The first loadmaster brevets were presented by the commanding officer of No. 36 Squadron, Wing Commander D.W. Hitchins, to Flight Sergeant K.W. Muldowney and Sergeant P.J. Flori. The category expanded when the Caribou joined the airlift fleet in 1964: although the aircraft itself was fairly rudimentary, it utilised complex airdropping systems and needed a professional loadmaster. Eventually Caribou loadmasters were renamed 'crewman technical' as their duties included extensive pre-flight and after-flight maintenance checks.

The flight engineer category also expanded following the introduction of the C-130E and P-3B in the late 1960s.

Another new airman aircrew category became necessary when the Air Force acquired the Iroquois as its first operational helicopter in 1962. Helicopter crewmen were introduced primarily to carry out before- and after-flight maintenance in the field during frequent deployments on army exercises. Airborne responsibilities were added when crewmen were assigned the tasks of operating the hoist and all rescue equipment, supervising passengers, securing cargo, and assisting the pilot with navigation. From 1966 onwards qualified crewmen were awarded a brevet with the letter 'C' in the middle.[58] 1966 was also the year the Iroquois deployed to Vietnam, where wartime operations demanded an assistant crewman to act as a second door

gunner and help the senior crewman. Formal recognition of that role saw the reintroduction in 1968 of the flying brevet with the letter 'G'.

Senior NCO rank was not a prerequisite for airman aircrew employed on the Caribou and Iroquois, and no specialist schools were established for any of the categories. Because all candidates were drawn from serving airmen with relevant qualifications, and little airborne instruction was involved, training was left to the squadrons.

Graduation from an aircrew course marks only the first stage of RAAF flying training. After leaving the Advanced Flying Training School or the School of Air Navigation, or wherever else he earned his flying brevet, a graduate must complete an operational conversion. Pure flying ability by itself means little in an air force: it is the capacity to translate that ability into war-fighting skills that counts. The need to bridge the gap between pure flying and war-fighting had been recognised during World War II by the establishment of numerous operational training units (OTUs), where newly graduated aircrew learnt to fly operational as opposed to training aircraft, and were taught tactics, weapons application, supply dropping and so on. The OTUs had gone the way of many other units after the war and for the following seven years most operational conversion training was conducted within the squadrons. But 'in-house', on-the-job conversions tended to divert squadrons from their primary task and reduce their efficiency, a problem which was especially pronounced for the fighter squadrons, with their single-pilot aircraft, and for No. 82 (Bomber) Wing once the Canberra, with its crew of one pilot and one navigator/bomb aimer, replaced the multi-crew Lincoln.[59] The introduction of jet aircraft in the late 1940s further compounded the conversion task for operational squadrons as, until 1958 when Vampires replaced Wirraways at the Applied Flying Training School, pilots graduated without any jet experience.

In response to the growing need for a more systematic approach to jet conversions and the demand for fighter pilots created by the Korean War, No. 2 Operational Training Unit, which had been disbanded in 1946, was reformed at Williamtown on 1 March 1952. Equipped primarily with Vampires and Mustangs, No. 2 OTU conducted all jet training and fighter conversions. When the Sabre began to enter operational service in 1956, pilots posted to fighters still went to No. 2 OTU for jet and basic fighter training, but completed their Sabre conversion at squadron level. Conversions onto the Sabre were assisted by the eventual acquisition of two flight simulators, which represented a new technology for the RAAF and were useful for practising cockpit drills, emergency procedures and instrument flying techniques. The fact that a pilot's first flight in a Sabre was also his first solo—there was no dual controlled version—made the simulator experience especially valuable.

Once pilots from No. 1 AFTS started graduating off the jet Vampire at the end of 1958, No. 2 OTU's original purpose had become partly redundant. A modified role had, however, evolved. By mid-1957 there were three Sabre squadrons, Nos 3, 75 and

77. The requirement to support those squadrons with a steady flow of Sabre-qualified pilots justified the existence of a specialised conversion unit. Renamed No. 2 (Fighter) Operational Conversion Unit on 1 September 1958, the OCU assumed responsibility for training all fighter pilots to the minimum operational standard, with the Sabre as the main aircraft until October 1964 when it was replaced by the Mirage.

A similar path was followed at Amberley's No. 82 (Bomber) Wing, where No. 1 (Bomber) OCU was formed in 1958 to train operationally ready Canberra pilots and navigators for Nos 1, 2 and 6 Squadrons.[60]

Regardless of changes to aircraft types, course syllabuses, training philosophies and aircrew categories, the basic objective of flying training did not alter. That objective was to teach young men to fly or operate an aeroplane to the best standard possible within a fixed time. That standard was, on the whole, very good indeed. There is some evidence that when flying training was resumed in 1948 there was a residue of instructors who were neither especially competent nor interested; and it is clear that between 1950 and 1953 some pilots were sent to war in Korea with inadequate instrument flying skills. Those problems did not endure much past Korea.

The critical element in placing the RAAF's flying training system on a wholly professional basis was the Flying Instructors Course (FIC) conducted by the Central Flying School from late 1947 onwards. The quality of the FIC was directly related to the quality of CFS. Like most units, CFS had its problems as the post-war Air Force settled down. Standards could vary as some staff were patchy and supervision inadequate. During the annual check flights CFS conducted at every RAAF unit, some instructors exceeded not only their authority but also their ability, creating potentially hazardous situations by simulating reckless and ill-considered emergencies.[61] And as noted previously, for a number of years insufficient attention was paid to instrument flying. There was also an unprofitable rivalry with the Aircraft Research and Development Unit for a short period. But those teething troubles arrived at their natural solution and CFS settled into its vital role as arbiter of the RAAF's pure flying standards.

Many RAAF pilots believe the Flying Instructor's Course was *the* experience which taught them to fly properly; that it imparted a rigour and attitude which was less likely to be acquired through squadron operations alone.[62] The five and a half month FIC emphasised style and technique, fault finding and fault correction, rather than simply the manipulation of an aircraft and its systems.[63] Through learning how to teach others, the teacher himself became better equipped to analyse his own performance and test his limits, a philosophy encapsulated in the school's motto, 'Qui Docet Discit'—he who teaches learns. The course also brought together the different streams of operational flying. As a staff member at CFS, fighter pilot Flight Lieutenant Peter Scully found he had a good deal to learn from his transport, maritime and bomber colleagues, noting among other things, with his tongue only slightly in his cheek, that fighter pilots on the FIC could talk when they flew—an essential attribute

for an instructor—but could not fly very well, and that transport pilots could fly very accurately but could not talk at the same time. Doubtless the benefit was mutual. The environment at CFS afforded a unique opportunity for a group of experienced, above-average pilots from a diversity of backgrounds to discuss and practise in fine detail the intricacies of their profession.

In short, the FIC made pilots professionals. That professionalism was not confined to CFS and the flying training schools, as from about the mid-1950s onwards every operational squadron had its own qualified flying instructor. Regardless of his rank the squadron QFI was one of a unit's three or four most influential personalities, being immediately responsible for annual tests (instrument ratings, categorisation and so on) and flying standards generally. While the QFI was primarily concerned with pilot proficiency, the standards he set flowed through to the other aircrew categories.

Acquiring and fostering professionalism was not just a matter of studying the manuals and practising the flying sequences, although expertise in both areas was essential. Equally as essential were those qualities of attitude and leadership which inculcate professionalism throughout a unit, as the commanding officer of CFS in 1962–63, Wing Commander H.C. Plenty, demonstrated.

During Plenty's tour four instructors from CFS were working up an aerobatic team known as the Red Sales. While practising their routine thirteen kilometres from East Sale on 15 August 1962, the team flew their Vampires into the ground, killing all four pilots and two passengers. The accident was a devastating event for the RAAF generally and CFS in particular—the kind of tragedy which can insidiously affect an organisation for years. To prevent that happening confidence had to be restored, which meant operations had to be resumed and aircraft flown to their limits. As soon as the immediate shock had eased Wing Commander Plenty announced that CFS was going to form a new aerobatic team which he would lead. The decision surprised some of the staff, for while Plenty was a highly experienced and respected instructor on single-engined aircraft, he was regarded basically as a multi-engined man. He was also both older and more senior in rank than was usual for a member of a formation aerobatic team. He believed, however, that it was his job to show the way, which is exactly what he did.

Plenty started by flying solo aerobatics at medium altitude, practising assiduously until he was satisfied with each manoeuvre and the transition between them. As he became smoother and more capable he was joined by a wingman and the routine was repeated. Practice continued, altitudes were lowered, and gradually No. 3 and finally No. 4 were added to the formation. Throughout the process Plenty remained self-critical, always insisting on flying extra sorties if he or any wingman was not completely satisfied. This was more than working-up a new formation team: it was a demonstration of professionalism intended to put the disaster of the Red Sales behind CFS and to motivate the unit's staff to get on with the business of setting and maintaining RAAF flying at the highest standards.

Six months after the Red Sales had crashed Wing Commander Plenty led his new team, the 'Telstars', on their first official display, at low level. His job done, he

immediately passed the leadership to CFS's chief flying instructor, Squadron Leader Lyall Klaffer, an experienced fighter pilot. Reflecting on the episode thirty years later, Flight Lieutenant Peter Scully (Plenty's first wingman) described the rebuilding process as a 'very impressive piece of leadership'.[64] It was a demonstration of precisely the kind of attitude on which the professionalism of the RAAF's flying training system rested and prospered.

The first 'Telstars' aerobatic team, 1963. L–R: FltLts J.F. Mayne, P.J. Scully, R.R. Croft, WgCdr H.C. Plenty. P.J. SCULLY

CHAPTER 9
LOGISTICS

If there is one principle central to the RAAF's Technical Branch, it is the concept of 'airworthiness'. At the most fundamental level an aircraft is airworthy if it is fit to fly. But while that is an obvious and necessary engineering goal, in the RAAF the term 'airworthiness' has a much wider meaning, representing a philosophy and an attitude which encompasses such values as professional standards and quality. During the period covered by this book those standards were, like every other RAAF activity, ultimately the responsibility of the Air Board. Developing policy, setting and supervising standards and managing the safety of the RAAF's increasingly complex fleet on a day-to-day basis was, however, the task of the engineers.

The original submission to government regarding the formation of an Australian Air Force in 1920 had suggested that 'too much importance cannot be attached to the provision of technical officers'. Between 1921 and 1939 the RAAF obtained its technical specialists by training general duties pilots as aeronautical, armament and signals engineers and categorising them as members of the General Duties Branch (Technical List). That part-time approach was acceptable when aircraft were simple and the Air Force was small, but it came under pressure as the demands of aircraft operations grew. The management of a large, complex fleet and the need to remain at the forefront of research and development indicated the need for highly qualified specialists. Immediately before the start of World War II the Air Board had in fact been examining ways in which the RAAF could best manage its increasingly complicated technical needs, but had put the matter aside under the pressures of combat.[1]

Once hostilities ceased the air member for engineering and maintenance, Air Commodore E.C. Wackett, revived the question of whether or not the RAAF needed a specialist technical branch. There was little doubt the Air Board's answer would be 'yes', for if the war had not intervened the branch probably would have been in existence already; additionally, the RAF had recently considered the same question and had concluded that an engineering branch was essential. Drawing heavily on the RAF report prepared by Air Marshal Sir Roderick Hill, Wackett's submission rested on the argument that air forces were becoming increasingly dependent for their offensive power on technical skill and imagination, qualities which could only be achieved by the professional management of technical, scientific and engineering resources.[2]

In-principle approval to form a technical branch was given by the Air Board in March 1946 and the precise responsibilities refined over the next eighteen months by two of Wackett's more capable staff officers, Group Captain H.B. Seekamp and Wing Commander C.R. Taylor. Those responsibilities were defined as the control and implementation of all RAAF aeronautical, armament and signals engineering functions, including maintenance, inspection, specification of standards, and

development. Works engineering (buildings, runways and facilities) was excluded, coming instead under the authority of the air member for supply and equipment. The Technical Branch officially came into existence on 23 September 1948, when all general duties (technical) officers transferred across and officers at each of the area headquarters were reorganised into three groups 'of equal status', namely, the air, administrative and technical staffs. Air Commodore Wackett defined two objectives for his branch: to support the operational power of the RAAF by providing the most efficient technical organisation possible; and to increase the effectiveness of air power through technical development.[3]

AVM E.C. Wackett, the RAAF's senior engineer from May 1935 to December 1959.
S. WACKETT

A technical officer could be appointed in one of three categories, each of which was aligned with a major engineering function: aeronautical, signals (radio and radar) and armament; and within those categories there were seven 'minor' specialisations: electrical engineering, instruments, photography, mechanical transport, marine craft, bomb disposal and inspection. Because Wackett wanted his branch to be flexible it was mandatory for all officers to be competent in more than one specialisation. Partly for that reason, everyone joining the Technical Branch had to complete a common, general aeronautical engineering course of about one year before taking up an operational appointment. Wackett also wanted to give as many technical officers as possible aircrew training, just as he supported the continued employment of a small number of general duties officers on engineering tasks, the idea in both cases being to inculcate an appreciation of air force operations in the non-flying branches.

Three main sources of recruits were envisaged. 'Limited' career officers were to be drawn from serving technical tradesmen, who ideally were to be commissioned at around the age of twenty-eight. 'Higher grade' officers would be recruited from universities or, following appointment by the RAAF, would be sent to university to complete a suitable degree. Finally, when the RAAF opened its own cadet college a small percentage of entrants would be streamed as engineers.[4]

Wackett was made a temporary air vice-marshal on 1 January 1947 and given substantive rank when the Technical Branch was formed. On 31 October 1949 his title was changed from air member for engineering and maintenance to air member for technical services (AMTS).

While the establishment of a technical branch was personally satisfying for Wackett, he was unhappy with the career opportunities initially available. He believed that if his branch were to attract the very best people, then engineers had to be offered prospects equal to those of pilots. That was not the case; indeed, according to Wackett, 'even Equipment officers' enjoyed better career prospects at the higher ranks. There was undoubtedly a major imbalance in the most senior posts open to aircrew and engineers. Under the establishment tables prepared for Plan 'D' (the blueprint for the post-war Air Force), the General Duties Branch was to have thirty-seven positions at the rank of group captain and above for three hundred and eighty-five permanent officers; while with a strength of three hundred and ninety-nine officers the Technical Branch scored only fourteen such posts.[5] Wackett felt compelled to add a dissenting report to the Air Board minutes approving the establishment tables, one of the very few occasions on which a board member ever took that action. His dissent was noted by his colleagues but remained no more than a minority report.

Wackett's challenge to the Air Force's ruling class set the stage for what was to become a persistent tension in the relationship between the engineers and the pilots. It was never a tension which threatened to get out of hand, nor was the pilots' ultimate control over the RAAF ever seriously questioned. Both parties were too aware of their wider organisational responsibilities to let a little professional rivalry undermine their relationship. But there is no doubt that the new branch's insistence on applying the highest standards of aeronautical engineering to the RAAF's fleet, epitomised in the concept of 'airworthiness', at times frustrated pilots who found their aircraft were being put into hangars for scheduled servicings or precautionary checks when they wanted to fly them. Pilots were not the only category who found the Technical Branch a little worrying. Air Marshal Sir James Rowland, the only officer to have been both air member for technical services and CAS, and who was also a distinguished wartime and test pilot, suspected that most other officers initially were wary of the threatened influx of university graduates.[6] Equipment officers, he thought, believed they might be 'outshone', General Duties officers 'didn't really understand it', and the old school technical officers—the 'black-handed gang' who had come up through the ranks—disliked the idea of 'silly young blokes with degrees'. If that were the case, those groups had all missed the point. World War II had compressed a generation of aeronautical engineering development into six years as tremendous progress was made in understanding aerodynamics, aero-elasticity, propulsion systems, weapons, instruments and so on. Only air forces which could deal with those technologies from a position of strength would prosper.

Ellis Charles Wackett emerges from this episode, and the ensuing years until he retired on 31 December 1959, as a great figure in RAAF history. He and Air Chief Marshal Sir Frederick Scherger were the outstanding officers of the post-war era to 1971; and while Scherger was the more forceful and better known personality, Wackett's contribution to the RAAF's professionalism through his commitment to the notion of airworthiness, with all the changes to practices and attitudes that engendered, was possibly the more valuable.

'Wack' or 'Punch' as he was known (the latter because his distinctive nose and chin reminded some humorist of the puppet in the Punch and Judy show) had displayed talents well above the ordinary from the start of his career. A former RAN officer who transferred to the Air Force in 1922, Wackett was a qualified pilot, a graduate of the Imperial College of Science and Technology in London, and the RAAF's first trained parachute instructor, on 26 May 1926 becoming the first person in Australia to make a free-fall jump from a service aircraft.[7] A member of the General Duties (Technical) Branch, before the war he combined a successful flying career with an equally successful series of engineering jobs, culminating in his appointment as director of technical services (DTS) in May 1935. As DTS, Wackett was able to draw on the skills and support of his brother, Australia's best known aircraft designer, the entrepreneurial and innovative L.J. Wackett. A former RAAF officer himself, in 1922 'L.J.' had in fact established the RAAF's technical department which 'E.C.' now headed. A large, shambling man, deceptively sleepy looking, Ellis Wackett tended to disguise his quiet determination and fine intellect with an unassuming modesty. Often described as 'very intelligent' and 'sharp as a tack', the other common description of 'wise' perhaps best captures his personality.[8]

Wackett was a squadron leader when appointed director of technical services in 1935. He was to remain the RAAF's senior engineer for twenty-four continuous years and through five ranks. From 1942 onwards he was a member of the Air Board, his record tenure of seventeen years allowing him to add unrivalled corporate knowledge and committee skills to his considerable intellectual talents. This was a combination which on occasions frustrated less experienced and less capable general duties officers who thought their 'natural' leading role was sometimes usurped. A different attitude existed amongst Wackett's staff, from whom he received great loyalty and affection.[9] There were rumours Wackett was considered as a replacement for Air Marshal Jones as CAS in 1952. If not, he should have been; and if he was, the good job done by the RAF officer eventually appointed, Air Marshal Sir Donald Hardman, should not be allowed to obscure the fact that Prime Minister Robert Menzies' preference for an Englishman over an Australian denied the RAAF the leadership of one of its major figures.

The concept of airworthiness which Air Vice-Marshal Wackett inculcated into the RAAF was supported by two separate but complementary activities. The first involved establishing a section of aeronautical and mechanical engineers ('boffins') in Air Force Headquarters to monitor the condition of every RAAF aircraft, a task conducted by analysing structural fatigue data, carrying out occasional on-site inspections, and liaising with other specialist aeronautical engineering groups in Australia and overseas. In meeting those responsibilities, the RAAF's boffins for many years drew heavily on two splendid British publications which together translated the notion of airworthiness into practical detail: the Aviation Publication (AvP) 25,

Technical Procedure Requirements for Service Aircraft and their Equipment; and the three-volume AvP 970, *Design Requirements for Service Aircraft*.

The circumstances under which the Australian-built Lincoln aircraft were withdrawn from service in 1961 provide an instructive example of the boffins' work. RAAF airworthiness policy was based, among other things, on limiting the probability of an inflight fatigue failure to one in 1000 for all aircraft. Through their close contacts with the British designers of the Lincoln, RAAF airworthiness engineers learnt that the wing structure of the Shackleton maritime reconnaissance aircraft had a safe fatigue life of 2000 flying hours.[10] Because the Shackleton's material specifications and wing structure were similar to those of the RAAF's Lincolns, it seemed reasonable to assume that the same fatigue life might apply. Analysis by RAAF engineers confirmed that assumption, with further calculations indicating that while the possibility of a catastrophic failure was negligible at 2000 hours, the risk factor rose to one in two hundred for aircraft with 2500 hours and to one in eighty for those with 3000 hours. When a check of the records showed that eight of No. 10 Squadron's Lincolns had flown more than 2000 hours and that the totals ranged from 2246 to 2985 hours, the aircraft were immediately withdrawn from service.[11] That 'safe life' method of aircraft fatigue monitoring was applied to all RAAF aircraft.

The boffins' work was complemented by the second major airworthiness activity: maintenance policy. Maintenance policy in the RAAF was based on the need to preserve the fleet during peacetime so that it could be used at the maximum rate during national emergencies. In other words, the priority was to look after the aircraft so they would be available when needed. Given the traditional difficulty of securing generous levels of funding during peacetime, it also was in the RAAF's interests to keep its aircraft intact and in service as long as operational requirements were not undermined by obsolescence.

Those considerations logically resulted in conservative servicing schedules, under which it might have seemed that aircraft were, in a sense, 'over' serviced. Superficially that appeared to be the case in comparison to commercial aircraft, whose owners had a diametrically opposed philosophy: the longer they could keep their aircraft in the air each day, the greater their profits; thus, a civil airliner might fly 2000 hours a year compared to two hundred for an RAAF fighter. That different approach naturally generated different maintenance philosophies, with airlines seeking to complete as many routine checks as possible during stopovers, that is, to minimise an aircraft's (unproductive) time on the ground; whereas Air Force engineers preferred to apply rigorously programmed schedules which involved withdrawing aircraft from operations for extended periods. Each approach was shaped for a particular purpose and neither was necessarily inherently safer than the other. The RAAF approach did, however, tend to frustrate some of its pilots, who short-sightedly believed aircraft should always be on the tarmac ready to fly rather than in the hangar being serviced.

Air Force maintenance schedules were organised around limits defined by both the calendar and flying hours. Pre- and after-flight, weekly and monthly inspections ensured a certain standard of care was observed regardless of how often an aircraft

might have flown; while servicings scheduled after a fixed number of flying hours—say two hundred and fifty, a commonly applied figure—accommodated the *rate* at which a machine was being worked. For most of the period discussed in this book, weekly and monthly inspections were known respectively as 'A' and 'C' servicings.[12] Generally speaking, flying squadrons were established with sufficient resources to conduct at least those two levels of maintenance themselves, an arrangement which gave the squadrons the flexibility to deploy quickly for up to a month without substantial external support.

The scheduled maintenance cycle was completed by 'D' and 'E' servicings, which were usually performed after each 200–250 and 1000–1250 flying hours respectively. Taking the example of the Canberra bomber, two hundred and fifty hours amounted to about a year's flying. The 'D' servicing which then became due was fairly extensive and could take up to a month to complete, during which time the aircraft would not be available for operations. A 'D' servicing might be completed at the squadron or an aircraft depot, depending on the capabilities of a squadron's technical staff. Assuming a consistent rate of flying, after five years an 'E' servicing would be needed. 'E' servicings involved 'deep' or 'depot' maintenance and were exhaustive. Almost invariably they were performed by one of the RAAF's aircraft depots or a civilian contractor like Qantas. Canberra 'E' servicings, for example, were completed by No. 3 Aircraft Depot at Amberley and might keep an aircraft in the hangar for a year as components were stripped back to the basics in keeping with the philosophy of preserving the asset.

A shift in maintenance policy to 'extended' servicing was introduced in the early 1960s when the Mirage and SP2H Neptune were acquired. By the prevailing standards those aircraft were technologically advanced, far more so than their predecessors, the Sabre and P2V5 Neptune. Whereas the daily and weekly inspections performed at squadron level had been relatively straightforward for the superseded aircraft, now expensive test equipment was needed. Having spent the money to buy that equipment, it made sense to get more value from the investment by extending the squadrons' maintenance responsibilities. The SP2Hs, for example, were operated by No. 10 Squadron at Townsville but their depot level maintenance was done by No. 2 Aircraft Depot at Richmond. Under 'extended' servicing No. 10 Squadron assumed responsibility for testing and repairing many major assemblies and defective components which previously would have been sent to the depot, an organisational change which minimised duplication of support equipment and enhanced the squadron's capacity to control its fleet.[13] As a second thread to the change, efforts were made to concentrate the major maintenance facilities for each aircraft type at one base, within reason. For example, No. 3 AD at Amberley had been the 'fighter' depot while the Sabre was in service, but when the Mirage was introduced that role was transferred to No. 481 (Maintenance) Squadron at Williamtown, the major mainland base for fighter operations. That kind of consolidation reduced the amount of test and repair equipment needed and increased the expertise of technical staff by exposing them to the full range of maintenance activities associated with their aircraft.

The rationalisation between squadron and depot maintenance was mirrored in a sense in the continuing debate over the division of work between the RAAF and civilian contractors. During the war years some Air Force maintenance activities (as distinct from the manufacture of airframes and engines, which was a wholly civilian enterprise) had been conducted by civilian organisations. The work fell into two main categories: reconditioning; and 'jobbing manufacture', which meant making spares for other than locally built aircraft.[14] RAAF engineers were happy enough with that arrangement up to a point as it was one way of fostering the local industry. At the same time, the Air Board believed it was essential to retain a certain amount and depth of maintenance within the RAAF to ensure the service remained capable of independent action. Who got how much work overhauling aircraft and systems was the critical question.

During the war the Department of Aircraft Production (DAP) regularly took at least twice as long as the RAAF to complete a job. Whenever disputes arose over contract servicings, RAAF engineers were quick to cite the example of a major inspection on a Dakota, for which RAAF technicians took 2000 man-hours, DAP Parafield 4500 and DAP Fishermen's Bend 14,000; similarly, Qantas's Rose Bay workshops once quoted 40,000 man-hours to recondition a Catalina, twice the amount estimated by the RAAF.[15] Consequently, when maintenance policy came under review in 1948, the Air Board wanted to keep as much overhaul work as possible under its direct control, contending that major reconditioning and repairs should be carried out at RAAF aircraft depots and day-to-day servicing at operational units.

Relative efficiency was, however, only one consideration. Pressure on the government from the civilian industry and the need for the RAAF to support local construction meant that exclusive Air Force maintenance was an unrealistic objective, and in any case the recruiting difficulties of the Interim period had left the Air Force with too few people to do all its own work. The board therefore accepted as a matter of principle that reconditioning work should be allocated to contractors who had been associated with the construction of the particular equipment; additionally, at Minister Drakeford's insistence, the Department of Aircraft Production had to be consulted whenever contract work was being allocated At the same time, the importance of retaining the nucleus of an expert and broadly based engineering capability in the RAAF was recognised as an overriding requirement; accordingly, aircraft, engines and ancillary equipments manufactured overseas were, in general, allocated to the Air Force for major servicing.

That latter agreement was evident in practice most notably through the RAAF's aircraft depots, with the planned acquisition of the F-111 in the 1960s providing the best single example. When the F-111 was ordered the government agreed that all major maintenance would be conducted by No. 3 Aircraft Depot at Amberley. Given the complexity of the aircraft, that was an enormous challenge, but it was one the Air Force's leaders believed had to be tackled if the organisation's technical skills were to be kept at the highest possible level. The job was so much more demanding than any previous RAAF engineering undertaking that many of the facilities at No. 3 AD

required major modernisation, including the engine, electronic, instrument, electroplating, and paint workshops, the engine test house, the power supply, and aircraft pavements.[16] A less spectacular but similar works program was completed at No. 2 AD at Richmond during the 1950s and 1960s as that unit progressively assumed responsibility for major repair and modification work on the Hercules C-130A and C-130E, the Neptune SP2H and the Orion P-3B.

If the Technical Branch's airworthiness philosophy and maintenance policy were to be successfully implemented, the correct quotas of 'theoretical' and 'practical' officers—unofficial classifications determined by an individual's educational qualifications—had to be recruited. Notwithstanding the rather sudden importance of aeronautical engineers for structural analysis and the like, few 'pure' engineers were needed. Rather, the emphasis increasingly was on managers who could bridge the gap between the 'boffins' and the 'black-handers', a need E.C. Wackett had recognised as early as 1947 when he sent eighteen of his officers to the Victorian and Sydney Institutes of Industrial Management to study 'scientific management', also described as personnel and quality control.[17]

By the early 1960s the Technical Branch's directors agreed that the bulk of their officers needed formal training as managers and therefore should hold a recognised engineering diploma. Smaller percentages of university graduates were required, while there was also room for technically experienced officers without a higher education. Estimates of exactly how many tertiary qualified engineers (diploma or degree) were needed varied over the years, but once the Diploma Cadet Squadron was established at Frognall in 1962 exact numbers were needed for recruiting purposes, so a target of fifty-five per cent by 1973 was set.[18] The objective of having over half of all technical officers tertiary qualified enhanced the branch's professional standing, in recognition of which Air Vice-Marshal Wackett's successor, Air Vice-Marshal Ernie Hey, secured Air Board approval to change the branch's name from 'Technical' to 'Engineer' in 1966. Simultaneously, the specialisation of marine engineer was dropped, the role having become redundant. The renamed branch thus contained six categories. The first four of aeronautical, electrical, instrument and transport were prefixed by the qualification 'engineer', a distinction which was eventually extended to the other two, armament and radio, in 1969.[19]

Air Vice-Marshal Hey, incidentally, emulated Wackett by remaining on the Air Board for an exceptionally long period, in his case twelve years. Strong-minded, independent and intelligent, Hey shared his predecessor's commitment to the concept of airworthiness and through his insistence on thorough, accurate paperwork completed the essential task of formalising a number of Wackett's initiatives, particularly the publication of technical orders.[20]

An ironic footnote can be added to the end of the Wackett/Hey era, which spanned the entire period from 1946 to 1971. When Air Vice-Marshal Hey retired in November 1972 he was replaced by Air Vice-Marshal J.A. Rowland. As it was unlikely

anyone would be allowed to hold one of the RAAF's top jobs for so long again, the general duties air vice-marshals might have been excused for thinking that the engineers' prominence in the highest decision making circles was about to end. If so, they could not have been wider of the mark. In March 1975 Rowland was to go one better than Wackett and Hey by being appointed CAS in a decision which recognised merit but ran counter to the tradition that the RAAF's chief always came from the General Duties Branch. Rowland had to transfer branches before he assumed office but that did not lessen the shock for a number of senior pilots, at least one of whom sought formal redress; those with a sense of history, however, might have appreciated the appointment.

Engineering is the first of the two main elements of RAAF logistics; the equipment or supply function is the second. Unlike engineering, supply was represented discretely on the Air Board for most of the pre-1939 period, with the appointment of air member for supply alternating between two general duties officers, Air Commodore W.H. Anderson and Group Captain A.T. Cole. Precisely how much Anderson and Cole contributed to the development of the Equipment Branch is uncertain as neither had any relevant qualifications; nor were they noted for their intellectual achievements. By contrast, there can be no doubts about the enormous contribution made by the man who was their understudy for most of that period and who became air member for supply and equipment (AMSE) in his own right in June 1942, Air Vice-Marshal G.J.W. Mackinolty.

George Mackinolty had served in the Royal Flying Corps as an airman in World War I before being commissioned into the Australian Flying Corps in Mesopotamia. He joined the RAAF soon after it was established in 1921 and from then on specialised in the Stores and Accounting Branch, developing an exceptional knowledge not only of his branch's two core roles but also of ammunition handling, barracks management, mechanical transport and technical equipment. In a career which resembled E.C. Wackett's for longevity in the one post, Mackinolty was appointed director of transport and equipment in 1929 as a flight lieutenant and continued in that and similar positions before assuming his branch's senior post in 1942.[21] He then remained as air member for supply and equipment until his sudden death in office in February 1951, having reached the rank of air vice-marshal and served continuously at Air Force Headquarters for twenty-two years. As the right-hand man to Anderson and Cole for nearly thirteen years, Mackinolty apparently provided the specialist advice the two pilots needed: in 1930, for example, his confidential report noted that he had carried 'the bulk of the supply work for the RAAF for over a year'. Other reports recorded his 'conspicuous ability' across the full range of supply tasks and his calm performance under pressure. Air Vice-Marshal Richard Williams' complaint that Mackinolty paid insufficient attention to his personal appearance might almost have been taken as another mark of distinction, given the first chief of the air staff's

legendary fussiness in such matters. At least Williams also acknowledged Mackinolty's professional excellence.

Of all the tasks for which a supply and equipment branch (or whatever else the function may be called) is responsible, preparing stockholding and spares assessing policies is possibly the most complex. The job has certainly been among the most controversial as far as the RAAF's preparedness for combat has been concerned. The term 'war reserves' is used to describe the supplies needed for a military force to operate at a defined rate of activity for a defined period. Determining levels of war reserves is always a difficult business. While a certain level of stockpiled supplies is an essential safeguard against a short-warning conflict, those same supplies in peacetime represent, in a sense, 'wasted' resources: for example, a stockpile of, say, special purpose bombs which may never be used might have to be acquired at the expense of new aircraft, or additional staff, or a valuable training course, and so on. Stockholding policy assumes even greater significance in an organisation which generally operates under tight financial restrictions.

In the 1950s RAAF stockholding policy was based on storing a year's supply of items acquired from overseas sources and six months for those from local firms, with the exact quantities dependent on the estimated usage rate in wartime.[22] Aircraft and aero engines were excluded, not only because they were so expensive but also because it was assumed that in the event of a defence emergency rapid replacements would be obtained from overseas, and local production would move into high gear. Given the experience of World War II when Australia was unable to acquire sufficient front-line aircraft for several years, that seemed unduly optimistic. In general, however, the RAAF was able to implement the policy, although reduced holdings were common in the case of expensive items which would only used be used in wartime, such as guided missiles; again, if necessary, rapid resupply from American or British sources was assumed.[23] It is noteworthy that priority for war reserves was given to airlift squadrons on the premise that in the first weeks of any conflict positioning people and equipment to confront the threat would be the RAAF's critical task. That assessment, together with the government's preference to fight any war in Southeast Asia rather than Australia, was also used to justify storing strategic stocks of fuel and oil at Darwin, Momote, Learmonth and Cocos Island.

Following a revision of the Strategic Basis of Australian Defence Policy in the 1960s, the level of war reserve stores was halved to six months for overseas items and three months for locally produced equipment. Later that was refined to four months supplies for half of the total number of operational aircraft, flying at wartime rates of effort.[24]

Weapons were the most difficult item to assess for stockpiling, as they were essential for war but not peace, and the quantities needed and costs involved created storage and budgetary headaches. In contrast to the extremely modest pre-1939 requirements, the war against Japan had demanded enormous quantities of explosives, so vast bomb dumps had been established throughout the country.

Post-war rationalisation of those dumps was conducted with the long-term weapons stockholding policy in mind. Two types of storage were envisaged: base areas to meet operational and training requirements; and strategic areas for deployed operations. In 1951 base areas were established in Victoria and New South Wales; and strategic areas in Western Australia, the Northern Territory, Queensland and Momote.[25] Among the existing sites selected for further development was Kingswood, located between Eastern Area Headquarters at Glenbrook and the western suburbs of Sydney. Later that year Kingswood was nominated as the RAAF's major explosives depot, a status the base has retained ever since. No. 1 Central Reserve moved to Kingswood in 1956 and assumed prime responsibility for storing, servicing, inspecting and issuing the RAAF's explosive stores, including bombs, ammunition, pyrotechnics, ejection seat cartridges and guided missiles.

High explosive bombs were the Air Force's basic weapon. In 1951 the air staff proposed stockpiling 13,242 tonnes of bombs in each of New South Wales and Victoria and 731 tonnes in each strategic area, a grand total of 29,408 tonnes.[26] Using an average weight of two hundred and twenty-seven kilograms for each bomb, that amounted to some 130,000 bombs, a stockpile considered sufficient to sustain eighteen squadrons at wartime rates of effort for six months. The order of battle on which those calculations were based included three squadrons each of the RAAF's latest strike aircraft, the Canberra and the Sabre, which were still to enter service. In the event the whole business turned out to be an exercise in wishful thinking, as at the end of the decade the reserves of 450-kilogram bombs, described as a 'fundamental weapon', were sufficient for only one month of war.[27]

Determining how many and what kinds of technical spares (usually parts for aircraft) should be ordered, kept in the pipeline or stockpiled presented a similar policy challenge for the engineering and equipment staffs. Their approach during the late 1940s and early 1950s was less than scientific.

As a new aircraft type entered service a 'blanket order' would be placed for an unspecified range of spares but with a specified financial limit.[28] In other words, the RAAF would simply notify the manufacturer how much money was available to spend on spares and the manufacturer would decide which items would be provided within that budget. Schedules of the spares which the manufacturer actually delivered were compiled later and titled somewhat euphemistically the 'initial range'. Once the aircraft was in service and trends of actual spares usage rates had emerged, an assessment of the requirements for the next two-year period (or two and a half years for aircraft based overseas) was made and orders placed. Regular six-month reviews of those assessments were then conducted and adjustments made where necessary. The six-monthly reviews and the resultant piecemeal orders would continue for some years, until a 'life-of-type' for the aircraft was determined, based on the aircraft's rate of flying, fatigue life and usefulness, at which point a spares assessment for the aircraft's total remaining in-service life could be made and orders placed.

Several significant problems were associated with that approach. Orders tended to be small—a function of the RAAF's size and the initial two-year cycle—and therefore expensive for both the Air Force and the manufacturer. Further, the manufacturer was obliged to keep a large number of production lines open for years solely to satisfy the RAAF's occasional modest orders. That too was an expensive practice; and it also meant that orders often were not satisfied in an acceptable time because the range of items was simply too great for small companies to cope with. By March 1953 the RAAF was waiting for 'some hundreds' of orders for aircraft spare parts as a direct consequence of its spares assessing and provisioning system.

In an attempt to reduce those inefficiencies, Air Vice-Marshals Hewitt and Wackett, respectively the air members for supply and equipment and technical services, proposed the introduction of a 'life-of-type' system for spares assessing and acquisition.[29] Under that system, the total estimated spares requirements for an aircraft's in-service life would be provisioned at the inception of the acquisition program, an approach which would achieve more economical production runs, more efficient tooling and fewer in-service demands, consequently lowering the costs of both initial spares and repetition spares (noting that with the existing assessment system, repetition costs could be twice that of initial purchases).

The new system would not be without its problems, the most obvious being the difficulty of determining the 'life-of-type' requirements for a complex aircraft which was yet to fly. Procedures to minimise that problem included drawing as much as possible on previous experiences with similar aircraft types, and completing an in-service review of spares requirements as quickly as possible and then adjusting existing orders. Because of the long lead-time often associated with manufacturing spares, in fact there was frequently time to cancel or modify the initial 'life-of-type' order. While acknowledging the difficulties associated with the Hewitt/Wackett proposal, the Air Board agreed that on balance, the 'life-of-type' approach to spares assessment should be introduced as it would serve the needs of the RAAF better, make life easier for the manufacturers and cost less for all concerned.

Technical spares assessing procedures were next reviewed in 1963, a decision prompted by the introduction of complex and expensive aircraft like the SP2H Neptune and the Mirage, and by the desire of the RAAF's growing number of tertiary qualified engineers and equipment officers to put their management theories into practice. Secretary of the Department of Air A.B. McFarlane got the review off to an interesting start by asking the RAAF's scientific adviser to examine thoroughly the way in which the Air Force provided logistic support.[30] In response a team of three officers from the Aeronautical Research Laboratories (ARL) made what was apparently the first scientific analysis of the RAAF's logistics system. Applying operational research techniques, the team sought first to develop a concept of a 'complete' system and then to isolate partial problems within the existing system which compromised efficiency. ARL identified deficiencies in almost every component of the system: the parameters used for logistics costings; the policies relating to initial buys of spares and stockholding procedures; quality control; the location of spares; and

the contents of squadron deployment kits. The team had no hesitation in recommending to McFarlane that an exhaustive program of logistic research should be undertaken with the objective of developing a far more scientific approach to support in the RAAF. That program appears not to have been completed before 1971. *RAAF News* may have put its finger on the reason for the delay in an article titled 'Tech. Spares Assessing' which noted that the task could involve 'tedious detail'.[31]

Ordering the right amount and types of spares was only half of the basic task facing RAAF logisticians; they then had to distribute those supplies to the users. Every RAAF unit has 'specialised' and 'general' supply requirements. The need for, and usage rate of, specialised (that is, technical) items is governed primarily by a unit's number and type of aircraft, the depth of servicings undertaken, and flying rates and roles; while the demand for general items (pens, pencils, light bulbs and so on) depends essentially on the number of people in the unit. Like the stockholding policy, the way in which items were distributed provides a good indicator of the RAAF's effectiveness. An excessively centralised storage and distribution system can become unwieldy, while too much decentralisation can be unnecessarily expensive. The challenge was to develop a distribution system which kept all units supplied at an acceptable cost. Stores depots were the key to that outcome.

Many of the items used by the RAAF were common to numerous bases and units. It was that commonality which established the need for a system of bulk holding depots, which Air Force logisticians likened to a retail store's warehouses. Without depots the RAAF would be faced with an enormous task buying and distributing thousands of items to individual units. By centralising specific items at a particular depot, the user could, in effect, come to the item. For example, if all Sabre parts were held at a single depot, it was a straightforward matter for Sabre squadrons to place their replenishment orders with that depot. Bulk depots also curbed transportation costs as suppliers only had to deliver goods to one location, an important consideration in view of the RAAF's extreme geographic dispersion.

RAAF storage policy and facilities evolved over time in response to those factors. Bulk supplies were held at a number of stores depots and immediate needs at bases and units. When unit holdings fell below the minimum approved level replenishment would be made from the applicable depot. In general, stockholdings at units did not exceed three months' supplies, although if a unit was the only user of a particular item it might hold the entire stock. Holdings at the stores depots fluctuated according to consumption and delivery from suppliers but averaged six months at peacetime rates of effort.

In 1968 there were about sixty units authorised to hold stores for their own immediate use and for collocated users.[32] Those units were supported by three major 'warehouses': No. 1 Stores Depot (SD) at Tottenham in Victoria; No. 2 SD at Regents Park in New South Wales; and No. 7 SD at Toowoomba in Queensland.

No. 1 Stores Depot was responsible for the receipt, storage and distribution throughout the RAAF of all spares for Sabre, Viscount, Winjeel, Macchi and HS-748 aircraft, the Atar engine, and the Mystere 20 airframe, and was scheduled to become the major warehouse for P-3B Orion and BAC-111 spares when those aircraft entered service. It was also the primary depot for medical equipment not provided by the Army and all photographic equipment. Additionally, the depot had a regional responsibility to support RAAF units in Victoria, Tasmania, South Australia and Western Australia. In addition to its stores role, No. 1 SD conducted training courses for equipment and catering officers, service police, security guards and police dogs; and provided domestic accommodation for people living in the Melbourne area.[33]

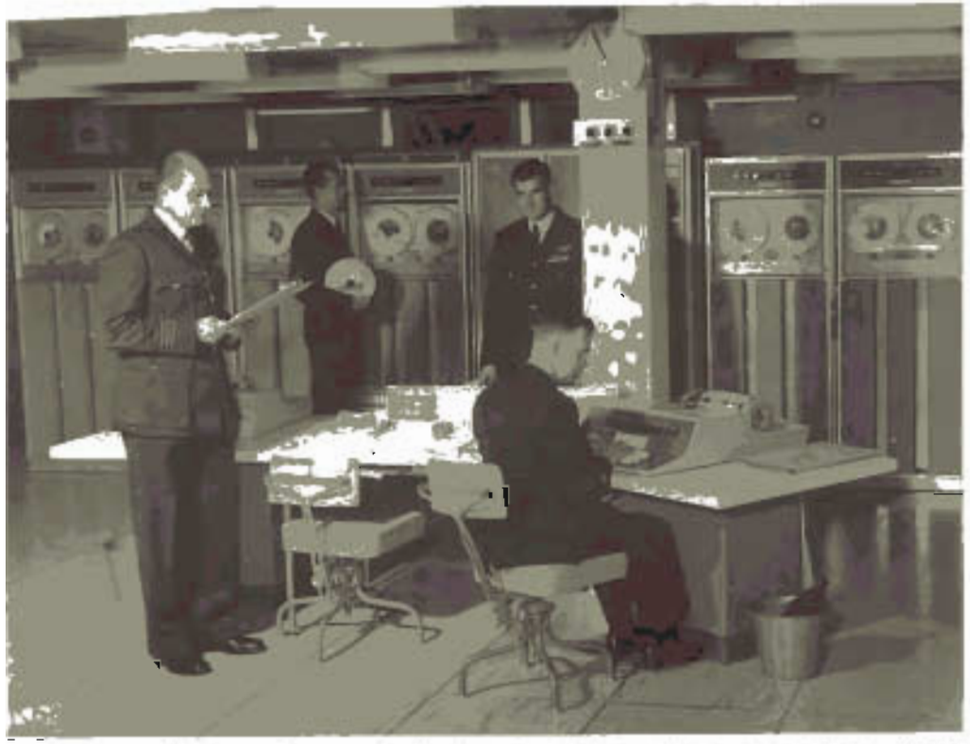
Established in 1940 to hold the RAAF's rapidly expanding stocks of materials in the Sydney area, No. 2 Stores Depot originally consisted of six old factory premises in the inner-city suburb of Waterloo. The depot was transferred to a former United States Army site at Regents Park in 1946, although domestic facilities were located at Bankstown. With its easy access to interstate road services, military and civilian airfields, railways and docks, Regents Park was an excellent location for an organisation which spent its time receiving and distributing large amounts of supplies. Over the years No. 2 SD spread out to encompass three additional locations. A ground equipment maintenance squadron at Villawood, five kilometres from Regents Park, was placed under the depot's command in 1963 and was responsible for the overhaul of fire vehicles and aircraft ground power generators, as well as various other aircraft ground support equipment.[34] A new domestic complex to provide messing and similar support for the depot and other Sydney units was developed in the mid-1960s at nearby Chester Hill, replacing the shabby facilities at Bankstown. The third location, Detachment 'D' at Dubbo, was possibly the most significant. Formerly the wartime No. 6 Stores Depot, the detachment was formed in 1953 to maintain long-term bulk storage and mobility reserves to support exercises and operational contingencies.

By July 1970 No. 2 Stores Depot had about seven hundred staff and was a central receiving point for equipment and stores delivered from suppliers in Australia and overseas. It maintained RAAF units in New South Wales with their authorised short-term (up to three months) level of general and non-specialist stores and was the specialist depot for all RAAF units and servicing contractors across an enormous range of equipment, including spares for Mirage, Hercules, Caribou, Iroquois and Vampire aircraft, and engines for Orion and Mystere 20 aircraft. No. 2 SD was in addition the main depot for electronics, radio and radar equipment, and for works (construction and maintenance) plant.[35]

Regents Park received a major boost in July 1970 when extensions costing $3 million were approved by Cabinet. The centrepiece of the redevelopment was an 18,500 square metre warehouse to replace the 'temporary' storage facilities which had been in use since World War II and which had covered 57,400 square metres of floor space. By using gantry cranes, conveyor systems and other modern storage and handling equipment, the new building, while providing less floor space, was far more efficient.

The third of the major depots, No. 7 SD, was formed at Drayton in Toowoomba in 1943, and over the years served as the major repository for the RAAF's bombers, from the Liberator, Lincoln and Canberra through to the F-111, as well as for the maritime version of the Lincoln, the SP2H Neptune, and the Iroquois, Chinook and Blackhawk helicopters. In 1969 the Police Dog Training Section arrived on transfer from No. 1 SD at Tottenham, after which No. 7 SD provided security training for Navy and Army police, prison wardens, Australian Federal Police, and RAAF guards; while two years later Equipment Branch business studies cadets followed suit, moving from Frognall to Toowoomba to pursue their studies at the Queensland Institute of Technology.

All logistics functions were enhanced by the introduction of electronic data processing (EDP) at the start of the 1960s. When the subject of computer-based data storage was first raised by the Cabinet Committee on Public Service Functions in June



The electronic data processing centre in the Department of Air, Canberra, early 1960s, WgCdr H.A.H. Pickering on the left. RAAF

1958, Air Force leaders endorsed the great potential of 'modern' computers to handle large-scale complex processes very quickly, a capability which would in turn improve the planning activities of all branches.[36] As befits a highly technical organisation, the RAAF led the services into the computer age when it established an EDP centre in Canberra in 1961. A Honeywell twin H800 computer which stored and retrieved the

equivalent of about seven hundred novels on magnetic and paper tapes was acquired in 1964, and was upgraded with fifty per cent more capacity in 1967.

The scope of the computer-based information system the RAAF intended establishing covered eight distinct functions: supply, technical services, military personnel administration, pay, civil personnel, finance, planning, and systems integration. Confidence was high that a mature system would bring with it dramatic efficiencies in time management, stockholding, planning and management practices, and staffing (about six hundred positions were expected to be saved). The logisticians also believed that unnecessarily large and expensive inventories were more likely to be identified and trimmed. Ultimately, those kinds of efficiencies were expected to be reflected in the quality of decision making.

Early progress was a little disappointing as by 1966 less than half of the functions had been converted to the EDP system. That EDP would be a success was, however, never in doubt. Despite the initial frustrations, comprehensive personnel, pay and supply systems were in place by 1968, and by 1971 technical services and financial systems support were in limited routine operation. Less than three years after EDP's introduction, claims were made that it had saved about $11.5 million in Headquarters Support Command's supply system alone.[37]

Overshadowing all other logistics challenges was aircraft acquisition. There were two perennial questions: who should be the major overseas source; and to what extent should the RAAF seek to foster local production?

While Australian aircraft manufacturing companies had performed splendidly during World War II, government and Air Force leaders harboured no illusions that local production by itself could ever meet the RAAF's needs. The infrastructure, economic base and market simply were not there to support the necessary breadth and depth of design, development and production. An overseas source would always be essential, with the United Kingdom and the United States the obvious candidates.

Notwithstanding the fervour with which pre-war Australians embraced the concept of Empire and Imperial defence and regarded the United Kingdom as 'home', it had been the Americans who had fought alongside Australians in the war against Japan, and who had supplied the RAAF with aircraft when they were most needed, the Hudsons and Kittyhawks in particular playing an important role in the early months of the Pacific War. Yet once the Japanese threat had passed, comfortable habits and social conditioning saw a reversion to the old order. Through the late 1940s and into the early 1950s the RAAF's aircraft acquisition program was dominated by British types as the Lincoln, Meteor, Vampire and Canberra entered service in quick succession; and it seems probable that without L.J. Wackett's strong personal intervention on behalf of the North American F-86 Sabre, another British fighter would have replaced the Meteor.

Geopolitical realities could not, however, be ignored forever, as the acquisition in 1951 of the American Lockheed P2V5 Neptune indicated. That indication became a

trend in 1954 when Air Marshal Sir John McCauley replaced the RAF officer Sir Donald Hardman as the RAAF's chief of staff. During McCauley's tenure the overseas aircraft mission led by Air Vice-Marshal Alister Murdoch recommended only one new British type (either the Vulcan or Victor) as compared to two American types (the C-130 and F-104). When McCauley was succeeded in 1957 by Air Marshal Scherger—like McCauley, a veteran of the campaign in the Southwest Pacific—the trend became accepted practice. This crucial policy and attitudinal change was formalised in a deceptively prosaic sounding air staff policy memorandum titled 'Equipment Holdings', in which the RAAF officially turned its back on thirty-six years' dependency on the RAF. In future, Scherger directed, the 'first consideration' when purchasing new or replacement equipment was to be 'standardisation with the United States', and where that was not possible then 'compatibility' at least was to be sought.[38] From Scherger's time on, the RAAF has never ordered a British aircraft for the strike, maritime patrol, fighter, tactical transport or battlefield support roles. With the exception of the French Mirage fighter and Canadian Caribou transport, only American aircraft have been used by Australia's operational squadrons.

The decline of British power in the Pacific and the rise of the United States probably made the RAAF's switch to American aircraft inevitable. Deciding what percentage and types of aircraft should then be built in Australia was a far more difficult decision. A local industry of any substance had not been established until just before the war, when the threat of Japan and Germany led directly to the formation of the Commonwealth Aircraft Corporation (CAC) and, later, the Government Aircraft Factory (GAF), both of which relied exclusively on Defence orders.[39] Those two companies in Melbourne supplemented the de Havilland factory in Sydney, which had begun to manufacture and maintain the Moth light trainer in the 1930s.

The local industry performed manfully in its attempt to supply front-line aircraft, and by the end of the war was producing such outstanding types as the Mustang, Mosquito and Beaufighter. Nevertheless, the nation's sheer distance from the main centres of aeronautical research, its small technical base, and the modest requirements of the peacetime Air Force were major obstacles to developing, sustaining and paying for the expertise needed to remain competitive in an aggressive market. The Australian-designed CA-15 fighter and CA-4/CA-11 strike/reconnaissance bomber exemplify the point, which is made here not to denigrate the industry but to highlight the perennial problem the RAAF has faced with local production.

The CA-15 has achieved folklore status in Australian aviation circles, where it is often referred to as the 'fastest/best, etc.' piston-engined fighter developed anywhere during the war. However, no matter how good the CA-15 may have been, the qualification 'piston-engined' undoes its reputation. The fact was that when the CA-15 first flew in March 1946 it was already obsolescent because it was not a jet. To add insult to injury, the CA-15 was not the 'fastest/best etc'. Performance figures given to the Air Board showed that the Spitfire Mk 21 and Mustang P-51D were both faster, while the Spitfire had the same rate-of-climb and the Mustang a superior range.[40] Similar folklore has grown up around the ashes of the CA-11 'Woomera' which, like

the CA-15, never got past the prototype stage. Looking back on the CA-11 years after it was scrapped, several authoritative commentators described it as 'exceptional' and as a potential 'world leader' when it emerged from CAC's factory in April 1942.[41] A far less flattering assessment was made by the RAAF's most prominent test pilot, Flight Lieutenant D.R. Cuming, who, unlike most other commentators, had the advantage of having flown the Woomera. On his return to Australia in 1946 after becoming the first RAAF pilot to complete the full Empire Test Pilots Course, Cuming tried to convince Air Force Headquarters to keep the sole CA-11 at No. 1 Aircraft Performance Unit so he could use it to demonstrate to future test pilots everything that could be wrong with an aircraft's design and handling characteristics.[42]

The inference in the preceding paragraphs that it was beyond Australia's capacity to support a fully developed aircraft industry would have been rejected by Air Vice-Marshal E.C. Wackett, who wanted the RAAF to foster a local sector which continually completed the entire production cycle, from design through to manufacture for operational service. Perhaps Wackett was influenced by his brother Lawrence, Australia's self-styled 'aircraft pioneer' who had founded CAC and designed numerous types (including the CA-11). E.C.'s position was endorsed by the Air Board in Plan 'D', which advocated a vigorous research and development program and local production of the 'latest types' of aircraft in sufficient numbers to make Australia as independent as possible.[43]

Air Marshal Jones shared Ellis Wackett's view, advising the government in 1951 that no country which relied totally on external supplies of aircraft could ever become a strong air power. Jones suggested that indigenous efforts should be directed firstly towards designing and constructing a relatively simple trainer, and then on building proven bombers and fighters under licence. RAAF force structure planning supported that approach by assuming the introduction into service of one new aircraft type every five years, a timetable which would both keep the Air Force equipped with modern machines and promote the local industry.[44] The development of the Winjeel trainer and the construction of the Canberra bomber and Sabre fighter in the early 1950s gave substance to the concept.

As the RAAF and the government continued to struggle with the problem of just how much money a small country could spend on indigenous production, another review of the local aircraft industry was conducted in 1953. Few involved in the process would have doubted that the costs were exorbitant, but none could forget that Australia's national survival had been placed at risk by the inability of the United Kingdom and the United States to supply sufficient numbers of modern warplanes at the right time during World War II. The commitment to a minimum level of local capability was driven by emotion as well as military logic. The question remained, what was the minimum level?

Air Marshal Jones' successor, Sir Donald Hardman, believed Australia should not attempt to produce a variety of aircraft types, but rather should set priorities

according to the strategic outlook. While there was no cause for complacency in the face of perceived Soviet-led communist global aggression, Australia was not in danger of serious attack, nor would it be unless the Southeast Asian barrier fell. For that to occur a major conflict almost certainly would be in progress, in which case Australia could expect support from the allied powers. In what amounted to a restatement of the Singapore strategy but with air power substituted for sea power, Hardman argued that Australia should manufacture only the numbers and types of aircraft 'required to hold an enemy at bay' until help arrived.[45] Hardman's assessment was based on the assumption that there would be sufficient warning of any major crisis for the RAAF to prepare. He therefore nominated as first priority a basic jet aircraft so that the pilots needed for the RAAF's wartime expansion could be trained, and as second priority an advanced fighter which would be used to implement the 'holding' strategy. As the local industry's capabilities grew, consideration could be given to expanding production into the other types necessary to fight a modern war, namely, bomber, maritime patrol, reconnaissance, transport and other trainers; in the meantime, they would have to be bought overseas.

Air Marshal Hardman's review was based essentially on a military assessment. Money, however, influenced decision making just as much as any strategic outlook. At the time of Hardman's critique, for example, three major projects were underway in Australia and each had experienced massive cost increases. The estimate for building forty-eight Canberras had risen from £10.6 million to £19.6 million; for seventy-two Sabres from £7 million to £20 million; and for sixty-two Winjeels from £780,000 to £3.25 million, increases which Cabinet not unreasonably viewed with alarm.[46] An Air Force proposal to contain costs by insisting on contracts which stipulated the delivery of fixed numbers of aircraft at fixed prices by specified dates proved simply too hard for the Department of Aircraft Production. Throughout the 1950s the department fought a losing battle against cost increases associated with questionable work practices (which were criticised by the Air Board for their inefficiency), wage and salary increases, infrastructure inefficiencies (such as transport) and rising prices for production equipment and supplies.[47] The inevitable delays arising from those impediments drove costs even higher as factories had to pay overseas firms for extensions to the technical agreements under which their aircraft were built in Australia.

Questions were also raised about the quality and timeliness of the local product, with the Sabre and the Canberra both cited by critics as being obsolescent by the time they entered RAAF service. Refuting those accusations, Minister for Defence Production Howard Beale noted that Cabinet had approved the manufacture of the Avon-powered Sabre in April 1951 and the first aircraft had flown in August 1953. The end product was, he stated, an 'ingenious conception' by Australian engineers, marrying the best available airframe, proved in combat in Korea, with the best available engine 'just off the test bed'.[48] When the CAC Sabre first flew it was, Beale continued, 'at least equal to any fighter aircraft in the non-Soviet world for height, speed and manoeuvrability', and even after genuinely supersonic aircraft began to

enter the inventories of the world's air forces the Australian Sabres remained combat effective. Beale argued a similar case for the Canberra, pointing out that Australia and the American company Glenn Martin had both decided at about the same time in 1950 to build the aircraft under licence, and that GAF's version had flown in May 1953, two months before Martin's. In Beale's opinion, as late as 1957 there was not a better light bomber flying with Western air forces. Concluding the case for the local factories, Beale noted that the Murdoch mission had failed to identify any advanced jet trainer superior to the RAAF's Vampires, and suggested that the Australian-designed and built Winjeel was as good as any basic trainer in the world. As a result of Beale's lobbying, Cabinet endorsed the principle that Australia should maintain an aircraft manufacturing industry and that a new, modern fighter to replace the Sabre should be built locally.[49]

Air Marshals Jones, Hardman and McCauley had supported the local industry almost as an article of faith. Curiously the next chief, Scherger, was far more sceptical: curious because before World War II Scherger had been the Air Force's leading test pilot. Perhaps his experience with sub-standard 'fighters' like the Wirraway had led him to oppose conventional wisdom, or perhaps the forceful Scherger simply wanted to demonstrate his independence of thought. Whatever the reason, in 1960 he directed one of his senior engineering staff officers, Group Captain J.W.C. Black, to prepare a paper on the future of the Australian aircraft industry which was, by Scherger's admission, provocative, and which seems to have reflected the view that the RAAF could no longer afford to subsidise local manufacture.[50]

Group Captain Black observed that historically the industry had been largely dependent on the RAAF for its existence. In his opinion that was unhealthy, as each time an Air Force project finished the factory concerned faced a crisis, to which it invariably responded by trying to push the government into a new project. That was not, Black correctly pointed out, a rational way for the RAAF to develop—aircraft should be brought into service to meet operational demands, not the needs of the local industry. The problems of scale were also evident in excessive costs, as Black illustrated with some damning comparative figures (see table 9.1).

9.1 Aircraft construction, comparison of costs (£ Australian)

Aircraft	*Australian-built*	*Overseas-built*	
Canberra	451,770	300,000	
Sabre	250,730	140,250	
Winjeel	55,110	29,100	(T1 Provost)
Vampire	80,920	69,566	

Source: CRS A7938/1, 105, 14-4-60, AA.

Those cost differentials seemed likely to increase as aircraft became more complex. Further, the premium Australia was paying for a local capability was, to some extent,

a chimera, as the nation was nowhere near achieving genuine self-sufficiency. Many of the major components in so-called 'Australian-built' aircraft were fully imported: the Sabre's guns, hydraulics, radar, radio, ejection seat, eighty per cent of electrical fittings and fifty per cent of the plumbing; and the Canberra's instruments, radios, electrical fittings, ejection seats, hydraulics and landing gear (less wheels, tyres and brakes).

Australian-designed and built CAC Winjeels on the tarmac at Point Cook, 1967. RAAF

Nor would the problems of scale and specialisation become any easier. During the current five-year plan the RAAF was scheduled to acquire twelve maritime reconnaissance aircraft, eight helicopters, three VIP transports, fifty fighters and thirty strike/reconnaissance aircraft. The decision had already been made to buy Lockheed Neptunes direct from the United States, and the numbers of helicopters and transports were insufficient to warrant local manufacture. As far as the fighters and strike aircraft were concerned, Group Captain Black argued that Australia simply could not afford any of the possible manufacturing options, which ranged from fully self-sufficient design and construction through to building or assembling an imported design under licence. He referred to recent foreign projects like the F-105, which had needed three hundred design engineers; the Mirage IV, which had consumed £25 million on development alone; and the extraordinarily complex fuselage frames on aircraft like the F-104 (which the RAAF had wanted at one stage) and the A-3J Vigilante (which the RAAF was to recommend three years later). Of the A-3J, he reported that its airframe 'incorporate[d] almost every conceivable type of modern production process'. Black advised Scherger to tell the government that those kinds of projects were beyond Australia's means.

The issues Black had raised were important and warranted the Air Force's critical attention. But it also seems likely Black was working to an agenda set by Scherger, which was to try to put as much maintenance and engineering as possible under the

RAAF's direct control in its own aircraft depots and maintenance squadrons. That agenda was exposed in the paper's conclusion. Black observed that in the past, local manufacture had been a strategic necessity to ensure adequate supplies of aircraft in peace, and to replace the fleet and provide engineering support in war. In what amounted to a radical departure from received wisdom, Black dismissed those considerations, suggesting that while they might have been valid in the recent past, they had been made redundant by the speed and lethality of modern warfare. The next major conflict would not be a six-year war of attrition, he argued, but would be decided within months by the forces-in-being; thus, the only significant wartime engineering task would be to modify existing aircraft for the particular contingency, and it would be far more cost-effective to transfer that responsibility to the RAAF. Black accordingly concluded that if the Australian aircraft industry were to survive it should do so on the basis of civil requirements. Scherger endorsed the paper and sought comment from Defence officials and the government.

Group Captain Black's prescient work generated a heartfelt note to Scherger from the secretary of the Department of Air, World War II pilot A.B. McFarlane, urging the RAAF's continuing support for the local industry. 'Has all the struggling of the past been useless', McFarlane asked, 'have our predecessors been quite wrong? ... [Your] document ... contemplates not a continuing air force, but one more in the nature of an air force designed to be ready to strike at a particular time'.[51] Cabinet, too, could not fully accept Scherger's radical proposal and, while acknowledging the paper's merit, reaffirmed the place of civilian contractors in RAAF engineering, albeit rather vaguely.

The issues highlighted by Black's paper continued to surface throughout the 1960s following the selection of the French Mirage as the 'locally built' fighter to replace the Sabre. Only about fifteen per cent of the Mirage's airframe was manufactured in Australia, and while that figure rose to about eighty per cent for the Atar engine, critical accessories such as fuel control units, regulators, pumps and check valves were all fully imported.[52] Unless large stockpiles of those components were acquired along with the special materials and skills needed to manufacture short shelf-life items such as seals, the RAAF would remain totally dependent on France for the maintenance of its fighter fleet. 'While there are avenues to reduce dependence', Air Member for Technical Services Air Vice-Marshal Ernie Hey told his colleagues, 'it is difficult to visualise a practicable, acceptable means of complete self-sufficiency'.[53]

Some Defence officials became alarmed when, as a result of the Six Day War between Arab nations and Israel in June 1967, the French Government suspended delivery of all Mirage parts to Israel, even though a contract guaranteeing supply for seven years was in force. RAAF planners were more sanguine, foreseeing little likelihood of circumstances which would provoke French sanctions against Australia. Nevertheless, the affair prompted some inconclusive talks with Israeli officials over possible co-operation to support both nations' Mirage fleets in the event of further French intransigence.[54]

Several proposals were made by the local factories to try to sustain the aircraft design skills which are at the heart of an indigenous industry.[55] Suggestions ranged from designing and constructing a light aircraft to replace the Army's Cessna 172s in the utility/observation role, and which might also be used as a crop-duster, to a Mach 2.0 advanced trainer, the latter prompting the RAAF's director-general of operational requirements, Air Commodore Brian Eaton, to point out that the American Northrop Company had recently invested 3.5 million work-hours and $80 million to produce the supersonic T-38 trainer, an investment far beyond Australia's resources. Eaton was supported by the director-general of plans and policy, Air Commodore K.S. Hennock, who once more reminded all concerned that as long as the local industry depended essentially on one customer—the Air Force—their problems would not go away.[56] Still the proposals continued: light helicopters and fixed-wing reconnaissance aircraft, a basic jet trainer and an advanced jet trainer. Broad preliminary estimates prepared by the RAAF for the first two types indicated a premium on local production of between eleven to twenty-one per cent, and even then Air Vice-Marshal Hey expressed doubts about the claimed performance.[57] It was unfortunate that the sole major design project from the period which was pursued through to production, the Government Aircraft Factory's Nomad twin-engined light utility transport, was possibly the most disliked aircraft in the RAAF's history, a reputation earned by allegedly poor design and flying characteristics and its irrelevance to the Air Force's defined roles.

The final word on the relationship between the RAAF and the local aircraft industry came from Defence Minister John Gorton at a meeting in Canberra in July 1971. Throughout the 1960s the industry, and especially the Commonwealth Aircraft Corporation, had been largely sustained by construction programs for the Mirage fighter and Macchi trainer. With the workload from those projects falling, Gorton was told that in the past four years CAC's work force had been reduced by about thirty per cent, a figure which would increase to about forty per cent within the next six months.[58] According to R.L. Abbott, the General Manager of CAC, the Australian aircraft industry was in a 'parlous' state. Abbott suggested that Australia's traditional policy of manufacturing foreign-designed aircraft under licence was economically unsound and a prime cause of the workload fluctuations which were damaging local companies, and proposed that in future Australia should seek involvement in projects from the outset on a co-operative basis, sharing in design, development, production and marketing activities.

Gorton was non-committal but he did provide an unambiguous statement on the purpose of the Australian industry. He acknowledged the value of production as a means of sustaining a balance of skills in the industry. However, he then pointed out that the primary purpose of the industry was to provide *support* for military aircraft through maintenance and the supply of high-usage spare parts.[59] It was a policy which would have disheartened E.C. and L.J. Wackett but which sat comfortably enough with the plan proposed by Air Marshal Scherger and Group Captain Black ten years previously.

Not that 'E.C.' should have been too disheartened. The local industry may have had some difficult questions to answer, but the RAAF had recently acquired the Mirage, Iroquois, C-130E and P-3B, and the F-111's arrival was imminent. Where twenty-five years before there had not even been a specialist engineering branch to deal with the leading-edge technologies those aircraft represented, now there was a well-educated, well-organised, highly capable logistics organisation. Managing the RAAF's fleet was unlikely to be easy, but the challenge was one the logisticians had every reason to face with confidence.

CHAPTER 10

COLD WAR INTERLUDES: BERLIN AND MALTA

The Cold War dominated international relations from the late 1940s onwards as the wartime alliance of convenience between the West and the Soviet Union disintegrated into open hostility. Berlin provided the setting for the first major test of wills. At the Yalta and Potsdam Conferences it had been agreed that once Germany had surrendered, Berlin would be occupied jointly by British, American, Russian and French forces, each with its own sector. That arrangement also allowed the Soviets to occupy German territory to the west of Berlin and consequently control surface access to the city. As relations between the ideological opponents degenerated, the Soviet and Western sectors of Berlin became virtually two separate cities. Moscow began to make surface entry to the city increasingly difficult. During the first six months of 1948, road, rail and water traffic between Berlin and the Western Zones was progressively obstructed, until finally in June surface movement was brought to a standstill. Berlin had become a besieged city, an island cut off from the rest of the world except for three, thirty-kilometre-wide air corridors. If the challenge were left unanswered the communists not only would win an important psychological victory but also might gain permanent control of all of Berlin.

Staff at Headquarters British Air Forces of Occupation were first alerted to the possibility of 'building' an 'air bridge'—a *Luftbrucke*—to Berlin on 4 April 1948, when they were asked to calculate the effort needed to supply their garrison solely by air. Based on the need to feed 10,000 servicemen, a daily lift of sixty-nine tonnes was calculated. Two C-47 Dakota squadrons were earmarked for the operation which was code-named 'Knicker'. At that stage, however, Soviet obstruction was only partial. Once the full blockade was imposed it became apparent that the problem was far greater than simply feeding servicemen. Because the air corridors alone remained open, a massive airlift to sustain the entire city seemed the only alternative to armed confrontation.

Prior to the blockade, about 12,000 tonnes of supplies had been shipped daily to Berlin by rail, barge and truck. At a conference at RAF Station Buckeburg in West Germany on 27 June, the British military governor estimated that 2016 tonnes of food would be required daily to feed the population of Berlin's three Western Zones. Other essential commodities such as coal increased the demand, and eventually the three Western Zone commandants settled on a minimum daily figure of 4374 tonnes, while agreeing that an interim daily figure of 2149 tonnes could be accepted until September 1948.

In the early stages of the operation airlift requirements were based on the expectation that each nation would look after its own sector. It was soon evident, however, that the sheer scale of the operation demanded a combined United States/British effort. The task was divided in the ratio of sixty per cent USAF and

forty per cent RAF up to the daily requirement of 4374 tonnes, above which each air force simply moved as much as it could with the units at its disposal. A co-ordinated airlift plan was developed, titled 'Plainfare' by the British and 'Vittles' by the Americans.[1]

Aircrew were the immediate problem for the RAF. Most of Transport Command's operational conversion units had been disbanded after the war. In order to ensure a long-term supply of aircrews it was essential to reactivate those units, but doing so caused short-term problems, as experienced crews had to be withdrawn from front-line squadrons to act as instructors. Consequently, when on 3 August 1948 the Chifley government offered ten RAAF Dakota aircraft and aircrews to assist in the Berlin Airlift, 'or any other purpose the [British] government may require' as a demonstration of Australia's opposition to Soviet policies, the 'generous offer of assistance' was accepted,[2] as were similar offers for ten South African Air Force and three Royal New Zealand Air Force crews.

Although rumours about the operation had been circulating at the RAAF's No. 86 (Transport) Wing at Schofields for nearly two months, most of the forty-one aircrew received only a fortnight's notice, arriving in the United Kingdom on 29 August, just over three weeks after the offer had been made. Only the men were needed as the RAF had sufficient aircraft. Commanded by Squadron Leader C.A. Greenwood, the ten crews each consisted of two pilots, a navigator and a signaller. Notwithstanding the short notice, the Australians were pleased with the opportunity to participate in a challenging operation at a time when tensions in Europe were high. They expected to spend two to three months on the airlift before returning home.

On arrival in the United Kingdom the crews split up for about a week. The pilots completed general and instrument flying training on Ansons and Dakotas at RAF Stations Bassingbourn and Bircham Newton, concentrating on two relatively new instrument approach landing systems, the Ground Controlled Approach (GCA) and the Beam Approach Beacon System (BABS); while the navigators went to Bircham Newton for a check-out on the Rebecca/Eureka distance measuring and homing equipment, the Gee hyperbolic fixing and homing system, and BABS. Each of those precision approach and navigation aids was a vital component of the air traffic control system developed to regulate the intensive flow of aircraft into Berlin. The crews then flew together at Bassingbourn for four days practising Eureka homings and BABS let-downs, during which time all pilots were awarded 'Green Card' instrument ratings by the RAF, a senior grading indicative of high standards.

Their training completed, the Australians were sent as the 'RAAF Squadron Berlin Airlift' to join the RAF's No. 46 Group at Lubeck in northern Germany, where they flew British C-47s maintained by British ground crew, and which were controlled and tasked by British operations staff. The first RAAF sortie in Operation Plainfare was flown on 15 September when a Dakota captained by Squadron Leader Greenwood carried 3300 kilograms of flour from Lubeck to the RAF's airhead in Berlin, Gatow. The RAAF crews had become part of a large and varied allied air transport force. As the operation settled into a routine the RAF maintained an average of just over one

hundred aircraft in Germany, comprising twenty-six Hastings (9.5 tonne load), thirty-five Yorks (8.5 tonnes) and forty Dakotas (3.5 tonnes).[3] The military fleet was supplemented by up to fifty-two chartered civil aircraft which were capable of lifting a daily average of seven hundred and fifty tonnes. While the RAF operated a mixed fleet, the USAF replaced its C-47s early in the operation and relied solely on a much more effective force of two hundred and twenty-five four-engined Douglas C-54 Skymasters, each of which could carry ten tonnes of supplies.

An RAAF pilot flying with an RAF squadron, FltLt J.G. Cornish, is thanked by a Berliner during the airlift. RAAF

By the time the Australians arrived the airlift was running smoothly. That had not always been the case. The early months had involved some trial and error as allied commanders came to grips with several unique circumstances. First, there was the sheer scale of the operation. The allies wanted to keep the air bridge open twenty-four hours a day, seven days a week, three hundred and sixty-five days of the year, a rate which would both sustain Berlin and demonstrate political will to the Soviets. Second, there were at first only two airheads in Berlin into which the stream of aircraft

originating from numerous bases in the west could deliver their loads, Gatow in the British sector and Tempelhof in the American sector. Later, Tegel was opened in the French sector, but even with three airfields flight scheduling had to be precise if the whole system were not to collapse into chaos. Those airfields were critical bottlenecks. Finally there was the weather, especially during winter. While the official RAF report on the airlift stated that the weather was better than expected, everything is relative. Flying conditions often were extremely demanding and occasionally hazardous.

Initial flight scheduling did not allow for those critical factors as well as it might have. In the first weeks of the *Luftbrucke* units were relatively free to organise their own programs. Consequently scheduling and maintenance were haphazard, loading and unloading was poorly co-ordinated, and air traffic control procedures casual. Because of the desperate shortage of loading areas, Yorks and Dakotas had to be parked on grass surfaces which rapidly became churned up into unusable mud. The supplies may have been flowing but there was room for enormous improvement.

A turning point came on Friday 13 August 1948 when the recently appointed commander of the airlift, USAF Major General William H. Tunner, became trapped in a stack of aircraft circling over Tempelhof in marginal weather. A veteran of the wartime resupply of China over 'The Hump', Tunner already suspected that the airlift was 'a real cowboy operation',[4] an impression which was confirmed at Tempelhof. With planes arriving every few minutes and chaos on the ground following a couple of landing accidents, Tunner found himself in the middle of an ever-increasing stack packed over the airfield from nine hundred to 3660 metres. Radio discipline broke down as scores of anxious pilots sought information. Air traffic controllers became reluctant to approve take-offs for fear of more accidents: Tunner later remarked 'God only knows why there were no collisions'. In an unexpected but astute reaction, Tunner ordered Tempelhof Tower to send every aircraft in the stack back to its home base. The day's effort was curtailed but order was restored.

General Tunner immediately implemented a number of procedures to resolve the various problems. First, he rationalised the deployment of his air and ground forces to optimise their effectiveness, moving as many aircraft as possible to bases close to Berlin and matching locations with the utility of the different aircraft types. He then designated all air corridors to Berlin as either inbound or outbound routes. Every aircraft using the corridors had to fly under Instrument Flight Rules regardless of weather conditions, a procedure which forced all traffic to comply with strict navigation procedures. Aircraft were separated by three minutes flight time and had to make specified check points at specified times, altitudes and speeds. Finally, only one approach into Berlin was allowed. If that approach was missed the crew had to over-shoot, return to their home base in the Western Zone, and start again. The integrity of the traffic flow thus was preserved. The standard arrival rate at the Berlin airfields was one landing every three minutes in good weather, reducing to two minutes if a second runway was available for take-off. In bad weather the landing rate was governed by the ability of the Ground Controlled Approach radar to bring aircraft in, with the original rate of one every fifteen minutes cut to one every five

minutes as operator competence improved. Other issues addressed by Tunner included crew rosters, loading and unloading practices, and the number of airheads in Berlin.

Those arrangements placed an organisational discipline on the airlift. Staff from planners to despatchers to loading parties to aircrews knew exactly what they had to do to keep the operation working. General Tunner's splendid plan and exemplary leadership established the basis of the operation's success and eased many of the pressures on the aircrews. Nevertheless, the task remained demanding.

For the greater part of the operation RAAF crews flew the Lubeck–Gatow–Lubeck route, following the 'Hamburg' corridor to Berlin at an altitude of 1680 metres and the 'Hanover' corridor back to Lubeck at 1525 metres. Operations staff allocated every aircraft a precise departure time so that a precise arrival time could be made over the non-directional and Rebecca/Eureka beacons at Frohnau, twenty-five kilometres north of Berlin, from where ground radar controllers directed all traffic into the besieged city. Any aircraft which did not make its time over Frohnau within plus or minus thirty seconds could be ordered by ground control not to descend, but simply to overfly Gatow and return to Lubeck without landing. Arriving over Frohnau on time was not simply a matter of flying a pre-calculated heading and standard airspeed, as the forecast wind velocity on which the schedule was based might be incorrect. Early detection of any error was essential, which placed the onus on the navigator to fix his aircraft's position perhaps as often as every three minutes.[5] Having calculated the actual wind velocity as soon as possible after take-off, the navigator passed revised directions to the pilot, sometimes applying airspeed variations as little as four knots.

The Berlin Airlift

Assuming each crew in the stream followed that procedure and applied the same calculated wind velocity to their aircraft's heading and timing, the standard three minutes spacing between aircraft would be maintained. Mistakes were occasionally made. Late one night Flying Officer David Evans departed Lubeck, entering cloud at one hundred and twenty metres on the climb and not breaking out again until passing through the same altitude on descent into Gatow. Taxying in to the dispersal area at Gatow, Evans was unimpressed to see the RAAF Dakota which had departed three minutes after him already on the ground and unloading. Somewhere in cloud in the narrow corridor between Lubeck and Gatow, at the same height of 1680 metres, his squadron colleagues had somehow managed to pass him. Lively discussion ensued.

Discussion of a different kind took place on another evening when Evans and his crew arrived at their aircraft to discover that their cargo consisted mainly of large boxes of condoms. As they took off into a bleak, snow-filled night they found themselves questioning the worth of the sortie, an attitude which doubtless was not shared by the eventual recipients.[6]

Weather problems were not confined to variable wind velocities. Low cloud, snow storms, fog, poor visibility generally, and thunderstorms were common dangers. The severe turbulence associated with thunderstorms could make a heavily laden aircraft difficult to fly. Above all, however, icing was a persistent threat. It was not uncommon for the build-up of ice on a Dakota's airframe gradually to affect flying speed. Once the pilot had applied full power nothing more could be done as the speed slowly bled off. Grim comfort could be derived from the knowledge that the aircraft in front and behind would be experiencing the same problem so no-one in the stream was likely to make up or lose excessive ground; additionally, the Australians knew the robust Dakota could cope with extreme conditions. It was nevertheless always a relief to start the descent into Berlin and see the ice on the airframe dissipate as the air became warmer. Even then, however, the tension might not be over, especially on the return to Lubeck where the landing approach aid, BABS, was inferior to the GCA at Gatow. In conditions of unusually poor visibility pilots might have to rely on Very flares fired by an airman standing near the runway threshold to find the airstrip.[7] The one RAAF casualty during the airlift, Flight Lieutenant M.J. Quinn, a pilot serving on exchange with an RAF squadron, was killed trying to land at Lubeck in adverse weather.

Unlike the weather the Soviets did not cause the airmen too many problems. Even though one end of the runway at Lubeck was only 1500 metres from the Russian Zone and the air corridors to Berlin passed through Soviet-controlled territory, there was no direct interference. Most if not all RAAF crews regularly saw Soviet fighter aircraft which might approach to a relatively close distance but were rarely dangerous.

Aircrew worked to a demanding schedule which was based on a twenty-hour duty period. During that period a crew would be rostered for two Lubeck–Gatow–Lubeck trips, each of three hours. About forty-five minutes were spent on the ground at Berlin each time, and the same between sorties from Lubeck. After allowing for flight planning before the first of the two daily trips and travel to and from their living quarters, the crews were left with about ten hours to sleep and have one full meal in the mess before the schedule started again. After three of those 'twenty-hour' duties a thirty-six hour break was scheduled; while after four duties, a three to six day break was scheduled, often in the United Kingdom. The cycle then resumed.[8] Of the hundreds of crews who participated in Operation Plainfare, only the Australians, South Africans and New Zealanders stayed on duty completing that cycle for the duration of the airlift. RAF crews were entitled to return to the United Kingdom for a rest after three months in Germany, although they were encouraged to extend for at least another three months. Under no circumstances, however, was any extension permitted beyond three hundred and fifty sorties or one year, whichever came first.

Fatigue could be a problem as domestic accommodation initially was very tight, leading to severe overcrowding for sleeping, messing and recreation. But as the organisation settled down messing and domestic arrangements improved. The RAAF crews were able to take occasional leave at the British Forces ski resort in the Hartz Mountains and the officers' club at Travemunde; while an overnight train to Copenhagen and Paris was another option.

Despite the very large numbers of aircrew available in Australia at the time, Air Force Headquarters in distant Melbourne did not officially inquire about replacing its Berlin contingent until July 1949, by which time the RAAF crews had been overseas for eleven months and there were indications that the Soviets were about to lift the blockade.[9] The last RAAF sortie for 'Plainfare' was flown on 26 August 1949, with Squadron Leader Greenwood again claiming the distinction. Most of the crews had logged about two hundred and forty round trips, so technically they had not exceeded the RAF's maximum duty limits. However, the fact that they had originally expected a six to eight week tour and were never given the option of a rotation after three months spoiled the experience for some, as the unexpectedly long absence disrupted their family life. The RAAF's thoughtlessness did not end there. Following the end of the airlift the Australians arrived in England in the middle of September, and then had to wait six weeks before arrangements were finalised for their return home, a delay which added greatly to the dissatisfaction among the family men. The whole business was unhappily reminiscent of the way in which the RAAF had abandoned its responsibility to protect the welfare of the thousands of Australian aircrew who served with the RAF in Europe during World War II.

When the men of the RAAF Squadron Berlin Airlift finally arrived in Darwin on 30 October 1949 in an RAF York transport aircraft, they were all given a copy of a message from Air Marshal Jones congratulating them on their unit's fine performance. In what from the distance of over forty years seems like a rather bizarre gesture, they were also told that anyone going on to Melbourne could have free tickets to the Melbourne Cup race meeting scheduled for the following Tuesday.[10]

No discussion of the Berlin Airlift is complete without a host of statistics. In the fifteen months between 26 June 1948 and 30 September 1949 the Western sectors of Berlin were sustained by air power alone as the *Luftbrucke* carried 2.33 million tonnes of supplies to the city's 2.2 million inhabitants in 277,569 flights.[11] By mid-1949 the allied transport fleet was flying an average of eight hundred and eighteen sorties and uplifting 6511 tonnes of goods each day, an amount almost fifty per cent more than the minimum daily requirement of 4374 tonnes. The single biggest lift for one day came on 16 April 1949 when the combined force managed to carry 12,940.9 tonnes, a bigger load than all modes of surface transport had ever managed prior to the blockade. More than half of that tonnage was landed at Gatow, which had become the world's busiest airport. Food and coal were the most important commodities, amounting to sixty per cent and twenty-five per cent respectively of the total lift; the remaining fifteen per cent was primarily liquid fuel, newsprint, supplies for industry, medical goods, and American, British and French military stores.[12]

The RAAF Squadron Berlin Airlift's share of that remarkable effort came to 7968 tonnes of freight and 6964 passengers, carried during 2062 sorties and 6041 flying hours. Not once during all those sorties and hours was an RAAF crew turned back from the approach into Berlin for not being on time.[13] Those were impressive statistics for a small force of just ten crews, and the political contribution was probably even more valuable. Overall, it was a highly professional achievement.

* * *

Almost three years after Squadron Leader Greenwood and his team left Berlin, Cold War pressures brought the RAAF back to Europe in strength, this time to Malta.

The idea that Australia might contribute to the West's military presence in the Middle East was first raised formally by the headquarters of the RAF's Middle East Air Force in February 1951 following a visit to the region by an RAAF planning team headed by the director of air staff plans and policy, Group Captain A.M. Murdoch. Subsequently the topic reappeared on the agenda of several other forums, notably the Commonwealth Air Forces Conference held in London in December, at which the RAAF was represented by Air Vice-Marshal V.E. Hancock, assisted by Air Commodore A.L. Walters and Group Captain C.D. Candy; while the British contingent was led by the CAS, Marshal of the Royal Air Force Sir John Slessor, and for some sessions included the chief of the Imperial general staff, Field Marshal Sir William Slim.

Imperial global strategy still identified the Middle East as a higher priority for Australian forces than the Far East, and in the event of world war the RAAF's Mobile Task Force was expected to reinforce the RAF in key areas like the Suez Canal, Alexandria, Cyprus, Israel, Turkey, Malta, the Straits of Hormuz and the Southwest Persian Gulf oil fields.[14] Perhaps the Middle East was Australia's main strategic priority, although that was questionable, but the fact remained that at the time communism was being actively opposed by force of arms in Asia. There were three RAAF squadrons fighting communists in Malaya and Korea and none in the Middle East. The Australian Cabinet was loath to withdraw its forces from Asia and had instructed Hancock that any RAAF contribution to the Middle East would have to be shaped to meet the prevailing circumstances.[15]

British officials appreciated Australia's position and spelled out clearly the nature of the contribution they were seeking at the start of the conference. All that was sought, Field Marshal Slim said, was a presence. Some of the 'local populations' in the Middle East were still unsure which side to support in the Cold War, and a representative Commonwealth force would be seen as tangible evidence of Western commitment and solidarity. The size of any Australian peacetime contribution was not important—all that was needed was 'a token force'.[16] Instead of something the size of the Mobile Task Force, Slim and Slessor proposed a formation consisting only of those units which were surplus to the requirements of Southeast Asia. A wing comprising two squadrons, each equipped with only half of its wartime establishment

(eight aircraft instead of the normal sixteen) was suggested, a proposal which, as it happened, accorded precisely with the preferences of the Australian Cabinet.[17]

The mutually convenient nature of the arrangement did not end there. The RAF was currently in the middle of a reorganisation which had left it with too many aircraft; Commonwealth air forces, by contrast, were sometimes short of modern machines. Sir John Slessor accordingly suggested that surplus British aircraft could be released for the RAAF to purchase and operate in the Middle East.[18] The suggestion was not entirely altruistic, as RAF internal planning papers sometimes seemed to view the proposed RAAF deployment more as an opportunity to promote the British aircraft industry than as a contribution to Western global strategy, with one document stating rather boorishly that 'anything we can do to persuade these Dominions to buy [British aircraft] ... would be very definitely to our financial benefit'.[19] Nevertheless, Slessor's offer was practical.

Prime Minister Menzies confirmed the commitment on 5 March 1952 following a visit to London by announcing that No. 78 (Fighter) Wing was to be reformed specifically for the task with two half-strength squadrons, and would be sent to the Middle East sometime during the year.[20]

Behind the scenes negotiations to equip the wing had already been in progress for several weeks. Air Commodore Walters had started proceedings by asking the RAF to use its influence with the Americans to acquire F-86 Sabres, a proposal unlikely to receive much support in London given the RAF's private 'buy British' agenda.[21] Having been informed that in the RAF's view the USAF would supply F-86s only to North Atlantic Treaty Organisation air forces, Walters accepted the British offer of eighteen single-seat Vampire FB.9 fighters, which would become available in the March quarter of 1952. The Vampires were to be supplemented by one dual-controlled Meteor Mk VII for each squadron for pilot training and testing, an unusual arrangement made necessary by the lack of dual Vampires. After originally considering buying the aircraft, Walters arranged to hire them on 'normal repayment terms'. That was a sensible arrangement, as the Australian Government's long-term commitment to the Middle East was uncertain and if an early withdrawal from the region eventuated it would be easier simply to hand the aircraft back to the RAF. And in any case the RAAF had Australia's own aircraft industry to consider, with the de Havilland factory in Sydney already manufacturing Vampires. As far as maintenance was concerned, the RAAF would be responsible for all first and second line servicings, performed to RAF specifications, and the (British) Middle East Air Force would complete third and fourth line (deep) servicing.[22]

The token nature of the deployment inferred by those arrangements was even more evident during the deliberations to select a home base for No. 78 Wing. Musical chairs rather than strategic necessity seemed to be the guiding principle as locations were examined in Egypt, Iraq, Jordan, Libya, Cyprus, Aden and Malta. First Nicosia in Cyprus and then Abu Sueir in the Canal Zone in Egypt were chosen, before the Royal Navy base at Hal Far in Malta was finally selected.

A fighter pilot with service in the Middle East and southern Europe during World War II, Wing Commander B.A. Eaton, was chosen to lead No. 78 Wing to Malta. Eaton had under his command Nos 75 and 76 Fighter Squadrons, No. 378 Base Squadron and No. 478 Maintenance Squadron, comprising in all some two hundred and sixty personnel. An advance party flew out of Sydney on 5 July 1952 and arrived at Luqa in Malta on the 9th, while the bulk of the wing sailed from Sydney on 4 July on the SS *Asturias*, to be welcomed in Valetta's spectacular Grand Harbour on the 28th by a flypast of RAF Vampires forming the number '78' and a band playing 'Waltzing Matilda'.

The Mediterranean

From the time it arrived in Malta No. 78 Wing technically came under the authority of the Royal Air Force, being subject to the orders of the Air Council in London rather than those of the Air Board in Melbourne.[23] The council was, however, bound to consult the Air Board on all matters of major policy, except during an emergency. Operational command was exercised by the (British) commander-in-chief Middle East, through Headquarters Middle East Air Force and the AOC of No. 205 Group, to which No. 78 Wing belonged. A warrant was issued by the governor-general of Australia, Sir William McKell, enabling the commander of the Middle East Air Force to convene and execute the findings of courts-martial for RAAF personnel, with the proviso that in the event of a death penalty being imposed, the sentence was not to be effected until confirmed by McKell. Subsequently the authority relating to courts-martial was delegated to Wing Commander Eaton.[24] Modest provision for the Australians to monitor day-to-day decision making at the higher command levels was made by establishing posts for an RAAF wing commander on the air staff of Headquarters Middle East Air Force and a squadron leader on the personnel staff of No. 205 Group.

No. 78 Wing was to contribute to the air defence of the Middle East. The wing was not, however, to be used in any operations which might require the use of force until the 'whole circumstances' had been presented to the Australian Government and its consent received. An exception to that firm expression of independence could be made if British lives and property were at risk, in which case the RAAF could be tasked by the Middle East Air Force without reference to higher authority, a condition which caused some unease in Australia but not enough for a change to be requested. In the circumstances the RAAF had every reason to be satisfied with the arrangements. Doubtless remembering the way in which thousands of Australian aircrew had been absorbed into the RAF during the war in Europe, the Air Board nevertheless recorded its 'determination' that the deployment should retain its national identity.[25]


No. 78 Wing Vampire FB.9 pilots, 1954. L–R: FlgOffs L.B. Weymouth and R. Jones, and Sgt B. Millis. The photograph was taken during a six-week deployment to Nicosia in Cyprus for a weapons camp. RAAF

Flying operations started on 11 August, with the RAAF pilots quickly learning to allow for the substantially reduced thrust of 1400 kilograms produced by the FB.9's Goblin engine compared to the 2270 they were used to from the Nene engine in the Australian-built Vampires. Once the cobwebs had been dusted off the wing enjoyed a breadth of experiences which would never have been possible in Australia. Training varied from international weapons competitions, to the royal review in England for Queen Elizabeth II's coronation, to one of the biggest and most realistic North Atlantic Treaty Organisation (Nato) air exercises ever staged in Europe, Operation Coronet, conducted with 2000 aircraft and 40,000 personnel in West Germany. On different occasions exercises were held with air forces from France, Belgium, the United Kingdom, the United States, Turkey, Greece, Italy and New Zealand (whose No. 14 Squadron was also deployed to the Middle East). Regular air-to-air and air-to-ground weapons practices were held at ranges throughout the Mediterranean, in addition to those in several Nato countries. Variety from air defence training was provided by army support and fleet co-operation exercises, as the wing visited or staged through bases like El Adem, Nicosia, Habbaniyah, Castel Benito (Tripoli) and Fayid. The value of that training was evident early in 1953 when Squadron Leaders J.I. 'Bay' Adams and W.C. Horsman won an air-to-air gunnery contest against all fighter units of RAF Middle East Command, a performance which enhanced the wing's reputation. So too

did a flypast of the liner *Himalaya*, which steamed passed Malta in February 1954, carrying among its passengers the RAAF's retiring CAS, Air Marshal Sir Donald Hardman, on his way home to England. After eight Vampires had saluted the ship, Hardman sent the wing a message advising that everyone on board the *Himalaya* had been delighted with the formation display, and thanked the pilots 'for leaving the ship's funnel intact'.[26] Throughout those activities the staff of the maintenance squadron consistently achieved a seventy per cent serviceability rate.

Because of the existing commitments in Korea and Malaya, the RAAF did not have enough people to permit an annual turnover in the Middle East. Consequently, Cabinet decided that a tour in Malta should be two years, which meant that families could be taken.[27] Living conditions were comfortable, in some respects even exotic. There were good restaurants and numerous nightclubs, both something of a rarity back home. A wonderful Mediterranean climate was complemented by brilliantly clear seas for swimming, diving and snorkelling.[28] Opportunities arose to visit tourist destinations like Luxor, Alexandria and the pyramids which were inaccessible to most Australians in those years. Beirut, known at the time as the Paris of the Middle East, was easily reached; while other great cities like Rome, Paris and London were all relatively close. For the pilots, smoke from Mount Etna one hundred kilometres away on Sicily was often visible after take-off; while deployments to Tripoli for weapons training meant a luxurious stay in old Italian villas with their gracious rooms, deep verandahs and cool baths. People drank wine in tavernas instead of beer in pubs, and Italians and Greeks were the inheritors of great civilisations rather than second-class 'New Australian' migrants. In short, Malta was a long way from the isolated, narrow and conservative Anglo-Saxon culture which typified the Australia of the 1950s. For most of the RAAF men and their families the experience opened a window to the world.

In June 1953 No. 78 Wing relocated from Hal Far to the RAF Station at Ta'Kali some sixteen kilometres northwest. Hal Far had never been entirely satisfactory, with the Australian airmen in particular finding the Royal Navy accommodation, discipline, rations and pretentiousness disagreeable. Ta'Kali offered more room, better facilities and familiar air force customs and standards. Group Captain Eaton (who had been promoted on 1 January) was offered command of the station, a gesture the RAAF appreciated.

Coincident with the move to Ta'Kali, pressure was applied by the RAF for the Australians to replace their Vampires with Venoms, a change the RAF argued would improve the RAAF's war potential in the Middle East, but which seems to have been motivated equally by the continuing campaign to sell British aircraft.[29] Late in 1953 RAAF Headquarters in Melbourne agreed in principle to the proposal, but even then it seemed unlikely the sale would ever happen. Plans to re-equip all RAAF fighter squadrons with the Australian-built F-86 Sabre were already well advanced (the

prototype flew in August 1953), while No. 78 Wing's continued presence in Malta was by no means certain.

Developments in Southeast Asia in fact made it certain that No. 78 Wing would not stay in the Middle East. Australia's attention, which was ambivalent enough when the commitment to Malta had first been made, was now well and truly fixed on Southeast Asia. In June 1953 British Defence Minister Lord Alexander had written to Prime Minister Menzies noting the need to guard against any new aggression in the Far East in general and Southeast Asia in particular.[30] As a counter to that aggression, Alexander suggested that the Commonwealth should form a Far East Strategic Reserve, located in Malaya. The British chiefs of staff wanted Australia eventually to assume prime responsibility for defence of the Malaya area and accepted that the garrison in Malta might have to be part of the price.[31] At the start of 1954 the Air Ministry advised Headquarters Middle East Air Force that No. 78 Wing was on strength for training purposes only; that is, it was no longer under command for war, a condition which prompted the MEAF to suggest that in that case there was no point in retaining the wing in peace.[32] In July 1954 the Australian Government formalised the decision everyone had been expecting for almost a year by announcing that, in view of possible additional commitments in Southeast Asia, No. 78 Wing would be withdrawn when its two-year period of service expired in July/August.[33]

Flying operations ceased on 1 December 1954 and the wing's departure was marked by a parade at RAF Station Ta'Kali the same day. Most people returned to Australia by sea shortly after Christmas, sailing on the *Stratheden*, *Strathaird* and *New Australia*. No. 78 Wing's final commander, Wing Commander G.T. Newstead, stated on departure that the unit had benefited greatly from its involvement with the Middle East Air Force, noting in particular the value of exercises with large and varied units, and the opportunity the tour had provided for the Australians to demonstrate their high professional standards to a large number of European air forces. For what was never more than a token force, those were very satisfactory outcomes.

CHAPTER 11

THE BRITISH COMMONWEALTH OCCUPATION FORCE IN JAPAN

Air Vice-Marshals Jones and Bostock represented the RAAF at Japan's formal surrender on the USS *Missouri* in Tokyo Bay on 2 September 1945. Surrender documents and statements issued by the allies at that and other ceremonies were severe and uncompromising, as might be expected following unconditional victory over a most cruel and brutal enemy. Japanese warriors were told they were neither honourable nor gallant foes, but rather would be remembered only for their treachery and atrocities, sentiments which would have been shared by the great majority of allied servicemen who fought against them. Sentiments, however, counted for little in the pragmatic world of post-war power politics. Well before the ceremony on the *Missouri*, American and British politicians had decided that a strong, rehabilitated Japan would be an essential bulwark against the Soviet Union and, most probably, China, where it seemed likely that Mao Zedong's communists would gain power in their civil war against Jiang Kaishek's nationalists. At the Potsdam Conference in July 1945, Prime Minister Churchill, President Truman and Marshal Stalin had agreed that while Japan's military forces were to be completely disarmed and stern justice meted out to all war criminals, the Japanese were not to be destroyed as a race or a nation. The Potsdam Declaration placed direct responsibility on the Japanese Government for removing all obstacles to the revival and strengthening of democratic tendencies among the Japanese people, an objective which was to be pursued under the supervision of an allied occupation force.

General Douglas MacArthur was appointed supreme commander for the allied powers in Japan, in effect becoming the country's proconsul during its early rehabilitation, a task he was to perform with characteristic imperious intellect and skill. Australia's politicians were eager to participate in the occupation, believing it would promote their diplomatic, military and economic ambitions in the Pacific.[1] Consequently, in October 1945 an Australian mission headed by Lieutenant General John Northcott visited Japan to examine conditions and report on the possibility of Commonwealth participation. During a 'very frank and cordial' interview, General MacArthur expressed his pleasure to Northcott at the prospect of again being associated with British Commonwealth Forces, 'especially Australian'.[2] As a result of subsequent discussions between the Australian, British, New Zealand and Indian Governments, it was agreed that Australia should formally approach the United States and propose the organisation of a force to participate in the occupation of Japan.[3] Following representations in Washington by the Australian minister for external affairs, Dr H.V. Evatt, the United States Government accepted the proposal.[4] The establishment of the British Commonwealth Occupation Force (Bcof) would be the first occasion on which forces of all arms from Great Britain, the Dominions and India had been integrated for a joint enterprise.

The ultimate objective of the allied occupation force which Bcof was to join went far beyond the narrow goal of serving parochial interests in the region. As MacArthur understood so well, in its broadest sense the force was embarking on what amounted to a benevolent missionary undertaking as it sought to achieve nothing less than the re-education and rebuilding of the Japanese nation. As far as Bcof was concerned, that ideal was translated into three roles to give the average serviceman and woman something more tangible to work with. Bcof was to represent the British Commonwealth in the occupation of Japan; maintain and enhance British Commonwealth prestige and influence in the eyes of the Japanese and the allies; and illustrate to, and impress on, the Japanese people, as far as possible, the democratic way and purpose in life.[5] Those objectives were broken down further into a broad military role which, under MacArthur's direction and within the geographic area allotted to Bcof, was to enforce military control (which did not mean military government), safeguard allied installations, and supervise the demilitarisation and disposal of Japanese installations and armaments. Overall the job would demand the highest standards of behaviour and example.[6]

By common agreement the total Bcof contingent of some 40,000 airmen, soldiers and sailors was commanded by Lieutenant General Northcott, who was entirely responsible for the maintenance and administration of the force as a whole, while retaining direct access to General MacArthur on matters of major policy affecting the operational capabilities of the force. In practice MacArthur allowed Bcof its independence, so to all intents and purposes Northcott and his successor, another Australian Army officer, Lieutenant General H.C.H. Robertson, enjoyed complete freedom of command within the scope of MacArthur's Allied Powers' directives.[7] For policy and administrative matters affecting Bcof Northcott was responsible to the participating governments through a body in Melbourne known as the 'Joint Chiefs of Staff in Australia', comprising the Australian chiefs of staff, and representatives of the chief of the Imperial general staff, the chief of the air staff (UK), the chief of the naval staff (UK), the commander-in-chief India, and the chiefs of staff (New Zealand).[8] Northcott's headquarters was fully integrated with representatives from each service and Commonwealth country. His first chief of staff was an RAAF officer, Air Commodore F.M. Bladin, who was chosen by Northcott because of his experience in higher command and staff appointments with both the RAAF and the RAF during the war, and because of his background as a graduate of the Royal Military College, Duntroon, as opposed to a purely Air Force upbringing, the latter point providing an interesting commentary on the Army's opinion of the Air Force.[9] Bladin was succeeded in June 1947 by Air Vice-Marshal J.P.J. McCauley and in June 1949 by Air Commodore A.M. Charlesworth, both of whom were also Duntroon graduates.

Australia's contribution was to comprise a fighter wing, a brigade group and two warships.[10] The region initially allotted to Bcof was the Hiroshima prefecture (state), a largely rural area which nevertheless incorporated the cities of Kure, Fukuyama and Hiroshima, the latter having been devastated by the first atomic bomb only months

before the Australians arrived. The prefecture was small and insignificant, a consequence of the Americans' wish to exert as much authority as possible themselves in order to block any claim from the Soviets and the Chinese to participate in the occupation. By July 1946 that possibility seemed remote so Bcof's area was extended considerably to include the prefectures of Shimane, Yamaguchi, Okayama and Tottori, all of which adjoined Hiroshima; and the island of Shikoku. Bcof was then responsible for an area of about 52,000 square kilometres occupied by 13,000,000 Japanese.

The air contingent of Bcof was known as the British Commonwealth Air Group (Bcair), which was organised into a tactical group under an integrated headquarters and consisted of No. 81 Wing, RAAF (three Mustang fighter squadrons); Nos 11 and 17 Spitfire squadrons, RAF; No. 96 Dakota Medium Transport Squadron, RAF; No. 4 Spitfire Squadron, Royal Indian Air Force; and No. 14 Corsair Squadron, Royal New Zealand Air Force. Supporting units included an RAAF airfield construction squadron and one squadron of the RAF Regiment (airfield guards).[11] While the airfield construction squadron was a vital element of the force it was never formally placed under the command of Bcof, instead remaining answerable to RAAF Headquarters in Melbourne. Each squadron and unit of Bcair retained its national identity but the whole worked together as an integrated force.[12]

Bcair's first chief was an RAF officer, Air Vice-Marshal C.A. Bouchier, a former allied fighter commander for the D-Day operations. Bouchier commanded his group through an Air Priorities Board, which comprised members of each participating air force who remained responsive to the demands of their respective air boards. Bouchier was responsible for the administration of his group and for meeting the requirements set by General Northcott. As those were routine matters, perhaps his most important task was maintaining training standards.[13] Reflecting Australia's major role in Bcof, Bouchier's senior air staff officer was the RAAF's Air Commodore I.D. McLachlan.

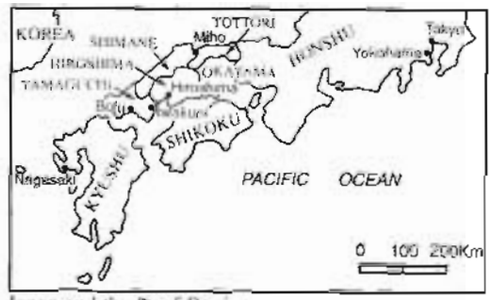
Operational control over Bcair was exercised by the commanding general of the Fifth United States Army Air Force, of which Bcair formed a separate air group; the Fifth Air Force itself came under the commanding general, Pacific Air Command, United States Army. In practice, Bcair's activities were controlled by General MacArthur's air chief for occupation assignments, General Ennis C. Whitehead, one of the outstanding air commanders of the war in the Pacific. In matters of policy or major operational importance, Whitehead exercised his control through General Northcott. Bcair's primary mission was security and surveillance in the area occupied by Bcof's ground forces.[14]

The RAAF component of Bcair was led by a highly regarded wartime fighter pilot, now the commanding officer of No. 81 Wing, Wing Commander G.A. Cooper. Cooper was responsible to Lieutenant General Northcott through Air Vice-Marshal Bouchier for operations, training and administration affecting Bcair, but was authorised to dealt direct with Air Force Headquarters in Melbourne on matters of

domestic administration such as pay, permanent promotions, and the repatriation of all RAAF personnel.[15]

Anticipating the decision to form the occupation force, the RAAF had sent a survey party headed by Air Commodore Scherger to Japan in October 1945, and the School of Languages had begun training servicemen from Australia and New Zealand as Japanese linguists.[16] Scherger's investigation indicated that the airfields in Bcof's area would need a good deal of preparatory work before they could be used for sustained operations, especially in winter. Runways would have to be extended, hardstands and taxiways constructed, and roads improved. Accommodation was also a problem as most living quarters required rehabilitation.[17]

Bofu airfield in the Yamaguchi prefecture was selected as the first home for the RAAF contingent. The former Japanese Naval Air Force kamikaze base at Iwakuni, thirty-two kilometres south-west of Hiroshima, would have been preferred because it had better facilities, was close to several large centres and was the site of Headquarters Bcair, but its 1200 metre-long concrete runway had deteriorated and required extensive work before it could accept sustained operations. Iwakuni's long-term potential was good, however, and upgrading the base became a priority task for the RAAF's airfield construction squadron.[18] Miho on the northern coast of Shimane prefecture became Bcair's third major airfield, providing a pleasant climatic change in summertime from the sultry conditions prevalent at the other bases near the Inland Sea. A temporary landing field was also established on the island of Shikoku once it was added to Bcof's area.[19] All three main bases were outside the Hiroshima prefecture, which meant Bcof's air and army components were separated.



Japan and the Bcof Region

While the politicking over the command and control and organisation of the occupation force was occurring, the RAAF had been getting on with the business of arranging No. 81 Wing's deployment. Under the initial plans the wing was to consist of a headquarters, Nos 76, 77 and 82 Interceptor/Fighter Squadrons, No. 381 Base Squadron and No. 481 Maintenance Squadron (which included a C-47 Dakota for transport support), totalling about 1500 people, but when No. 5 Airfield Construction Squadron was added in response to Air Commodore Scherger's survey the establishment rose to 2000, most of whom were volunteers.[20] Towards the end of 1945 the three fighter squadrons, which were still at their wartime base of Labuan, replaced their Kittyhawks with Mustangs in preparation for their role in Japan. By November the pilots and ground staff had been converted onto the new aircraft.

Most members of the RAAF advance party which left Labuan by troop ship and arrived at the port of Kure in the Hiroshima prefecture just before Christmas were from No. 5 Airfield Construction Squadron. United States Army Air Force bombers had devastated Japan with conventional weapons before the atomic attacks against Hiroshima and Nagasaki, and Kure and Iwakuni were 'an absolute shambles ... smashed to smithereens'.[21] Buildings were in ruins, transport systems shattered, electricity and water supplies cut, airfields and hangars bombed out, people traumatised.

No. 5 ACS's primary task was to restore Bcair's three main airfields at Bofu, Iwakuni and Miho to full operational standards, but before that could be done domestic facilities had to be repaired. It was the middle of winter when the advance party arrived and many of the men found themselves shivering in flimsy wooden huts which often lacked windows, heating, lighting and sanitation, and in some cases even roofs. Ice and snow provided a dramatic contrast to the heat and humidity of the Pacific islands they had recently left. A fire which destroyed four two-storey RAAF accommodation blocks at Bofu only days after the contingent moved in worsened matters, with many airmen losing their personal possessions and being left with only pyjamas and greatcoats.

Extraordinarily, those members of the party who had remained behind in Iwakuni as part of Bcair's headquarters staff after the others had gone to Bofu were affected by a second natural disaster. On 21 December, only days after the Australians' arrival, the island of Shikoku, just across the Inland Sea from Iwakuni, was hit by a massive earthquake, followed by a tidal wave and fires. Bcair was drawn into the rescue effort, using its transport aircraft to ferry emergency supplies and evacuate casualties. Wing Commander A.D.J. 'Garry' Garrisson spent Christmas on Shikoku as Bcair's chief liaison officer for the rescue, and could have been excused if he had allowed himself momentarily to wonder where he was and what was happening, so dramatic was the contrast to his circumstances of only weeks ago, and so severe was the damage. In characteristic Air Force fashion, however, Garrisson simply got on with the job. Shikoku was an appalling mess, the earthquake the last thing the Japanese needed after the devastation of war. Many of the Australians were impressed by the stoic courage with which the local residents tackled the challenge of rebuilding their homes, their country, and their lives.

By mid-February No. 5 ACS had restored Bofu sufficiently for the remainder of the RAAF component to move in: as Lieutenant General Northcott observed, the unit 'literally paved the way' for No. 81 Wing's aircraft.

The first Mustang fighters from No. 76 Squadron left Labuan on 28 February 1946, led by Wing Commander Cooper. Elaborate arrangements had been made for the flight. Two hours before the Mustangs took off a Catalina search and rescue flying boat had departed, planning to be halfway to the first port of call, Clark Field in the Philippines, when overtaken by the fighters. Also preceding the Mustangs were two Beaufighters,

sent ahead to relay weather information. A third Beaufighter accompanied the Mustangs to provide navigation assistance, while a Mosquito trailed behind as 'ringmaster' to support any stragglers and help with unforeseen problems.

Taking off from Labuan's crushed coral runway in quick succession, all sixteen aircraft were airborne within two minutes. As the formation assembled overhead in two flights of eight, it was watched dolefully by Japanese prisoners-of-war who wished that they, rather than Australian pilots, were departing for their homeland.[22]

The Mustangs swept over expanses of jungle and open sea, following a route which was intimidating and challenging. From Labuan they flew over Palwan and then along the west coast of Mindoro and Luzon, covering 1600 kilometres on the first day. One thousand two hundred kilometres were flown on the second stage, which included the longest over-water flight of five hundred and fifty kilometres from Bataan to the destination, Okinawa. Labuan's sultry tropical climate seemed years rather than days ago, as the final 1140 kilometre leg from Okinawa to Iwakuni was flown partly at low level, with the formation wedged between a blanket of cloud and the cold choppy seas of the north Pacific Ocean. Severe icing conditions persisted in cloud down to three hundred metres above sea level and temperature gauges fell to zero.

No. 77 Squadron Mustangs over Kure, 1949. RAAF

Wing Commander Cooper's flight of eight Mustangs became Bcair's first operational aircraft to reach Japan when they touched down at Iwakuni on 9 March. For those pilots who were veterans of the campaign in the Southwest Pacific, it was a profoundly satisfying moment to step onto the soil of the country Australia had been

fighting for the past five years, and to be part of the force formed to finish the job which had taken the lives of so many of their countrymen.

After two days at Iwakuni the Mustangs made the brief seventy kilometre flight to their new home at Bofu, followed shortly afterwards by the second group of eight which flew in direct from Okinawa. Between 13 and 18 March, No. 76 Squadron's aircraft were joined by twenty-five more from No. 82 Squadron. Unhappily this total was less than it should have been as three Mustangs and an escorting Mosquito had crashed only one hundred and ten kilometres from Bofu on Shikoku Island in extremely poor weather, all crew being killed. The arrival of No. 77 Squadron's Mustangs on 21 March completed the deployment.

Air Vice-Marshal Bouchier's description of the deployment as 'one of the epic feats in the history of aviation' may have been an overstatement,[23] but the flight of so many single-engined aircraft over more than 3700 kilometres of some of the most remote parts of the globe was nevertheless a considerable achievement of organisation and airmanship, marred in the very last stages by the crashes on Shikoku. In a report to the joint chiefs of staff in Australia, Lieutenant General Northcott praised the 'great flexibility of modern air forces' which had enabled No. 81 Wing to deploy its Mustangs along a route which suffered from 'notoriously treacherous and hazardous flying conditions'.[24]

The majority of No. 481 (Maintenance) Squadron arrived at Kure on HMS *Glengyle* on 1 April, disembarking that same day and moving on to Bofu. Technical staff were inconvenienced initially by a lack of workshops and had to do much of their work in the open until a damaged hangar was repaired. Several months later No. 81 Wing was supplemented by RAAF early warning and ground control intercept radar units, grouped together as No. 111 Mobile Fighter Control Unit, which had been sent to Japan primarily for training reasons.[25]

The arrival of the RAAF's operational units increased the demands on No. 5 Airfield Construction Squadron. By the middle of the year the squadron was constructing camp sites and rehabilitating the airfields at Iwakuni, Bofu and Miho; drawing up plans for the construction of an airfield and encampment at Hiroshima; constructing forward airstrips for army reconnaissance and communications aircraft; and maintaining four other airfields in the Bcof area.[26] Airfield work included extending runways, constructing all-weather taxiways, and renovating hardstanding and apron areas; while domestic tasks involved repairing hangars and other technical buildings, restoring and modifying fuel installations, reconstructing major access roads, erecting semi-permanent barrack accommodation and related facilities, designing and installing water-borne sewerage systems for each of Iwakuni, Bofu and Miho, surveying and extending heating systems, and rehabilitating water supply systems. Squadron executives also planned and supervised the design and construction of accommodation for one hundred and four dependent families although, in accordance with General MacArthur's policies, the homes were built entirely by Japanese

workmen. And if all that were not enough, the unit's commanding officer, Wing Commander A.M. Harrison, drew up the plans for Air Vice-Marshal Bouchier's official residence at Iwakuni, a story which appeared in the *Australian Women's Weekly* and drew a rebuke from Prime Minister J.B. Chifley that the RAAF was not to be employed on such jobs.[27]

Wing Commander Cooper's Mustang squadrons may have been the centrepiece of the RAAF contingent, but there should be no doubt that Wing Commander Harrison's construction workers made the major contribution to Bcof; indeed, No. 5 ACS's achievements were probably the most significant of any Australian unit—land, sea or air. That significance was underscored when attempts were made to withdraw the squadron. Under the original agreement No. 5 ACS was to have been withdrawn as soon as the works at Iwakuni, Bofu and Miho were completed, a task expected to take only a few months. Instead, work kept mounting up. No. 5 ACS was the only airfield construction squadron in Japan and, as General Northcott's chief of staff, Air Vice-Marshal Bladin, pointed out in a letter to RAAF Headquarters, if the unit were recalled precipitately it was doubtful whether Bcof's full air force component could continue to operate. The RAAF's airfield at Bofu would immediately become unserviceable; Iwakuni and Miho would follow suit within a few weeks; and the rehabilitation of barracks would be delayed, a serious concern given the severe Japanese winter. There was, Bladin wrote, literally no Japanese heavy equipment available for airfield construction; additionally, it would take at least another twelve to eighteen months to finish repairing airfields which were needed for communications and air ambulance operations. When Lieutenant General Robertson succeeded Northcott in mid-1946, one of his first official reports endorsed Bladin's argument by describing No. 5 ACS's presence in Japan as 'essential'.[28]

WgCdr A.M. Harrison, Commanding Officer of No. 5 ACS with the British Commonwealth Occupation Force in Japan. RAAF

Money was the problem for the Australian Government, which was finding the annual cost of £1,000,000 (excluding pay and allowances) to keep the RAAF in Japan a burden; but yielding to the pressure from Bcair, Prime Minister Chifley and Defence Minister J.J. Dedman agreed they had little option other than to leave the squadron there until the end of 1947, while at the same time gradually reducing its size.[29]

Beyond that reluctant extension, the government seemed regrettably unwilling to recognise No. 5 ACS's achievements. Unlike their counterparts in the United Kingdom

and New Zealand, Chifley and his ministers decided there would be no special commendation for service with the occupation force, a policy Air Vice-Marshal Bouchier criticised as unfair. Above all, Bouchier wanted formal recognition for Wing Commander Harrison, a man who 'achieved[d] great things with a minimum of fuss'.[30] During a visit to Japan by Australian Minister for the Army Cyril Chambers, Bouchier drew attention to No. 5 ACS's 'grand work', adding that Harrison had earned an award 'more than any man he had seen'.[31] Harrison's belated investiture with the OBE in 1953 in part acknowledged his service in Japan.

The RAAF continued to assume wider responsibilities within Bcof in addition to those accepted by No. 5 ACS. Following a visit in October 1946 by the air member for supply and equipment, Air Commodore Mackinolty, the RAAF became Bcair's main source of technical spares.[32] Stores could be sent from Australia on the troop ships *Westralia*, *Manora* and *Duntroon*, while Japanese vessels were often used for large items. Personnel changeovers, mail and urgently needed spares could utilise the scheduled 21,000 kilometre round-trip courier service, operated initially by No. 86 Wing's C-47s from Schofields and then by Australia's international airline, Qantas.

The circumstances which made No. 5 ACS's contribution to the rehabilitation of Japan so useful made No. 81 Wing's operations less so. Because there was no genuine resistance to the occupation forces, the role considered most likely for the wing during pre-deployment planning—close support for ground forces—never eventuated.[33] On the contrary, the Japanese were almost invariably obedient and courteous, to the extent that Emperor Hirohito personally inspected the Bcof prefectures. That did not mean the force had nothing to do. During the first two years, Bcof catalogued all enemy war equipment in its area and destroyed well over 100,000 tonnes of weapons and explosives, including more than 30,000 tonnes of poisonous gas, a considerable task as many of the weapons were hidden in caches. But those jobs were in the main the province of soldiers, not airmen, although RAAF linguists were an essential part of any team liaising with the Japanese population. Only one air force role had some operational relevance. Surveillance patrols were flown to monitor the movement of vessels in the Inland Sea and prevent the possible infiltration of aliens, and did in fact lead to the capture of large numbers of Koreans trying to enter Japan illegally.[34] Bcof's air forces also repatriated many Japanese soldiers from overseas theatres of war. Other than that, the RAAF squadrons found themselves working to what was, in effect, a peacetime training schedule.

That training cycle may not have meant anything to the citizens of Japan but it meant a great deal to the RAAF. Back in Australia the Air Force was still gripped by the uncertainty of the Interim period, with many units suffering from inadequate funding and a lack of direction. No. 81 Wing was an exception to government indifference, receiving sufficient resources for at least some of the Air Force's pilots and technicians to enjoy a relatively intensive and coherent training regimen. After a frustrating settling-in period during which the squadrons were not allocated sufficient

flying hours,[35] the wing was able to institute a formal training cycle in which most pilots flew about twenty-one hours each month and maintained reasonable proficiency in air-to-air and air-to-ground operations, the latter using bombs, guns and rockets and often involving deployments to the off-coast weapons range near Miho. Pilots became particularly accomplished in air-to-ground rocketry, achieving a squadron average of about ten metres. Weapons training was complemented by regular formation, instrument flying and navigation exercises.[36] Variations to the routine came from escort duties for visiting VIPs (a public relations exercise rather than a response to any air threat), and flypasts for ceremonial parades and other public events. One display by sixteen Mustangs over Kure on Anzac Day 1949 was reported as a 'Spectacular Show': led by Group Captain B.A. Eaton, who had succeeded Wing Commander Cooper in September 1947, No. 77 Squadron flew low over Kure and Iwakuni, after which three aircraft led by Flying Officer T.D. Fitzsummons performed low-level aerobatics.[37]

The experience with Bcof was to prove invaluable when No. 77 Squadron was sent at very short notice to fight in Korea in July 1950, as the following chapter describes. But in the context of trying to assess what kind of organisation the RAAF was immediately after World War II, it seems that in some respects the flying in Japan reflected the same patchy, even slap-dash, approach which was also evident back in Australia. Notwithstanding the expertise demonstrated in air-to-ground weapons work, there were too many instances of senior pilots taking a casual approach to airmanship, in the course of which people and aircraft were unnecessarily placed at risk. The following incident was extreme but by no means atypical.

Brian Eaton, whose post-war commands included No. 78 Wing in Malta, RAAF units in Japan, and No. 224 Group in Malaysia. Pictured here as an AVM in 1973. RAAF

While leading a mass flypast of thirty-six Mustangs over Tokyo, Group Captain Eaton took the formation into a substantial cloud mass, in itself a questionable action for such a large and unmanoeuvrable group of aircraft. Eaton compounded that poor airmanship by failing to ensure his Mustang's artificial horizon (the most important direct-reading reference instrument for flight in bad weather) was operating correctly before entering cloud. The instrument had in fact 'toppled' and was indicating a false horizon. Eaton consequently was unable to maintain the smooth and predictable control of his aircraft which is essential from a formation leader,

causing many of those following him temporarily to lose control. The formation fell apart in cloud as many aircraft entered 'unusual attitudes'. Fortunately there were no collisions but the incident could have been an enormous disaster.

Brian Eaton was without question one of the outstanding pilots of his era, a skilled 'stick and rudder' man who had excelled during the war and who was also a dashing and respected leader.[38] Yet even to contemplate entering cloud with a huge formation for what was nothing more than a ceremonial flypast, let alone doing so without first checking the status of his primary flight instrument, was at best indicative of a casualness which was out of place in a professional air force. That observation is raised here not in relation to Eaton in particular but, as other sections of this book have shown, about the RAAF in general. The issue seems to centre on the attitude of the World War II pilots who were running the Air Force.

Many of those pilots had 'done it all' during the war. They had met and overcome the most severe challenges with physical and moral courage and had earned the high status and respect they were accorded. At the same time, it does seem there was a tendency for some of that generation to coast on their achievements. Too few were prepared to provide the necessary level of supervision and guidance the junior pilots needed. For example, as the fiasco over Tokyo showed, instrument flying throughout the fighter force was abysmal. During his time with Bcof, recent pilots' course graduate Ray Trebilco was not programmed for a single instrument or night flying training sortie for more than six months, an experience shared by his more experienced colleagues, Fred Barnes and Jim Flemming.[39] On the other hand, low-flying, beat-ups and a generally laissez-faire attitude were common.

The point must be emphasised: this is not a personal criticism of the individuals concerned but simply a record of how things were. RAAF standards were no worse than those of most other air forces; indeed, as wartime and exercise results showed, they were generally better. But that does not mean those standards were necessarily moving with the expectations of the times. At least young men like Barnes, Flemming and Trebilco were watching and learning; in the meantime, a number of the wartime pilots regrettably lost some of their gloss in the eyes of their juniors.

Routine training at No. 81 Wing was complemented by large-scale combined exercises with other elements of the occupation force, during which the RAAF might provide close air support for Australian battalions, firing high explosive rockets and guns; or defend Bcof airfields against 'enemy' formations of up to one hundred and forty aircraft from the USAF's Fifth Air Force, including F-80 jets.[40] Almost without exception the RAAF squadrons performed well. Following a visit to Bcair in mid-1946, the RAF's chief of personnel reported unfavourably to London on the standards of his own service and those of the Indian Air Force compared to the RAAF and the RNZAF.[41] During the Far East Air Forces (FEAF) Gunnery Meet at Yokota Air Base in December 1949, No. 77 Squadron's Flight Lieutenant 'Bay' Adams defeated all comers, a demonstration of skill which drew a letter of commendation from FEAF's commander, Lieutenant General George E. Stratemeyer.[42] Stratemeyer described No. 77 Squadron as the best fighter unit in Japan, a reputation which subsequently was to

play a part in the Americans' request for RAAF forces in Korea.[43] Air Vice-Marshal Bouchier recorded with pride the high standards achieved at the annual Bcair Air Power Demonstration, describing his command as the 'best manned, best equipped ... and best fighting machine of its size to be found anywhere in the world', asserting that the force could have 'shot the USAF [in Japan] out of the sky'.[44] A less excited judgment came from Air Vice-Marshal McCauley, who simply noted the great benefit the Australian pilots derived from their regular flying exercises with the USAF.[45]

FltLt 'Bay' Adams, described by USAF LtGen George E. Stratemeyer as the best shot in the entire Far East Air Forces, December 1949. RAAF

High standards within the Air Force contingent were not limited to aerial weapons exercises. During his visit to Bcof in December 1946, Minister for the Army Cyril Chambers examined the conditions under which Australian servicemen were living, as a number of complaints had been reported in the press back home. Chambers found the general attitude and living standards in a number of Army units left much to be desired. He was disturbed to discover that many Army officers were diverting funds and facilities for their own comfort at the expense of their troops, and became even more disturbed when told by Lieutenant General Robertson that about sixty per cent of the Army's officers 'could not be regarded as efficient and were not up to their jobs'.[46] The exception to this unhappy state, Chambers later reported, was the RAAF at

Bofu, where good leadership and an active program of self-help had 'considerably improved' living and work conditions.

The Australians contributed a good deal more to the rehabilitation of Japan than the positive effects of their air operations. Members of Bcair repaired buildings and airfields and constructed sea walls. Trees and flowers were planted and vegetable gardens and chicken runs cultivated. Cinemas, mess halls, churches, playing fields, swimming pools and gymnasiums were built, as were about 1800 houses for Australian and British families, all of which were eventually handed over to local authorities. Before full democratic institutions were established, RAAF officers occasionally sat on courts hearing charges against Japanese civilians charged with minor civil offences; later, when the Japanese went to the polls for the first time to elect a democratic government, the RAAF helped supervise the process, with the linguists again playing a prominent role.[47] At the higher political and social level, reforms put into effect under General MacArthur's guidance included the transfer of sovereignty from the emperor to the people; the separation of state and religion; the introduction of universal suffrage and freedom of political activity; the freedom of labour to organise; and the liberalisation of the police system. All of those profound reforms depended on the presence of the occupation force.

For those RAAF members who were able to take their families to Japan a tour with Bcof could be extremely enjoyable. Once living conditions improved—particularly after No. 81 Wing relocated to Iwakuni in March 1948—and routines were established, life became very pleasant. Social activities flourished among what was, in some respects, a privileged expatriate community. In addition to mess life and the round of parties and dinners, there were bridge and music clubs and a dramatic society. Romance was not uncommon, with the wedding in April 1949 between Flight Lieutenant C.R. Noble and Sister C. McDonald being reported in the local newspaper, *Bcon*, as 'yet another Bcof wedding'.[48] Most sports were catered for. The RAAF's rugby team developed a 'formidable' reputation in the Bcof League and its squash team won the Challenge Cup in Kure in 1949. No. 77 Squadron's cricket team also distinguished itself, as did those players selected to represent Bcof in the All-Japan Tennis Championships. Other organised sports included basketball, badminton, swimming, soccer, Australian Rules football, table tennis, boxing and billiards.

Recreational education programs complemented those sporting activities. Standard RAAF and civil correspondence courses were available, as were attendance courses at the Education Section where subjects included English, mathematics, Japanese language, photography, woodwork, leather work, wool rug making and art. And reminders of home came from the Forces Radio stations broadcasting from Kure and Iwakuni, which featured a short 'RAAF Diary' as well as shows like 'News from

Australia', the 'Jack Davey Show', 'Hit Tunes of Yesterday', 'Kindergarten of the Air', the 'Hospital Hour' and a 'serial'.

Notwithstanding those attractions, many unaccompanied personnel found the experience less rewarding. During the early months accommodation and food were often poor.[49] Some members of the occupation force did not share General MacArthur's conciliatory attitude towards the Japanese. No. 81 Wing's newsletter, *Simbun* (Japanese for 'newspaper'), frequently printed letters to the editor which referred disparagingly to 'Nips' and their inferior behaviour; while stories were occasionally carried describing illegal beatings given to Japanese youths by Bcof troops. But those and similar problems were usually resolved quickly and were unlikely to cause major difficulties. The real social issue was the perennial concern of a large group of isolated men, the absence of female company. Headlines about 'another Bcof wedding' were all very well for the officer corps, but the fact was there were very few single European women with the force, and marriage with 'enemy Asiatics [and] Allied Asiatics' was strongly discouraged, as was any form of fraternisation with the Japanese.[50]

Lieutenant General Northcott considered fraternisation one of the most difficult problems facing his force. He believed each member of Bcof had a dual responsibility, firstly as an airman, sailor or soldier, and secondly as a representative of the British Commonwealth of Nations with 'all that stands for in the world'.[51] What that stood for, at least according to Northcott, was dealing with a conquered enemy who had caused deep suffering and loss throughout the British Empire. Consequently Northcott issued a stringent policy based on social formality and correctness. Members of Bcof were ordered neither to enter Japanese homes nor take part in their family life, and to keep unofficial contacts to a minimum, an order which was vigorously enforced. Such an unrealistic attitude was, however, always likely to come under intolerable pressure. A more sensible approach was taken by the Americans, who promulgated strict orders against fraternisation but allowed their troops flagrantly to ignore them. Senior Australian Army officers realised the differing policies put their men to a 'great test' when they visited American-occupied areas but clung to Northcott's policy.[52] Those same officers presumably were not surprised by the high rates of venereal disease which affected the Australians, who consistently contracted over two-thirds of all cases reported within Bcof. The response of forming indoctrination teams to brief 'young and inexperienced troops' on the pitfalls which might await them in Japan seemed a little ingenuous. Many single men were pleased to leave at the end of their tour, which was supposed to be nine months for aircrew and twelve to fifteen months for ground crew but could extend beyond a year and a half.

Under the conditions established by the Commonwealth and United States Governments, Bcof could be withdrawn either wholly or in part by mutual consent, or upon six months notice by either party. In any case, progressive reductions were expected as the force's objectives were met. Negotiations for the withdrawal of the

British element of Bcof began in late 1947, the reasons being the success of the operation and the United Kingdom's 'grave manpower and financial difficulties'.[53] In December 1946 the strengths of the Bcair components were RAAF 2006, RAF 2478, RNZAF 266 and RIAF 269; by 1 April 1948 those figures had fallen to RAAF 1281, RAF 738, RNZAF 252 and RIAF nil.[54]

Responsibility for the control and administration of Bcof was assigned to the Australian Government from January 1948 as the British withdrawal gathered momentum. The Joint Chiefs of Staff Committee in Australia was dissolved and its roles delegated to the Department of Defence for joint service matters and to the Departments of Air, Army and Navy within their respective spheres of expertise.[55] In April the Chifley government decided to reduce Australia's contribution to one Air Force squadron, one Army battalion and a Navy support unit by the end of the year.[56] No. 77 Squadron was chosen to stay: with two hundred and ninety-nine personnel, forty Mustangs, three Wirraways, two Austers and two Dakotas, it became the RAAF's largest flying unit.[57]

By the middle of 1949 all national contingents other than the Australians had departed and Bcof's area of responsibility had been reduced to the Hiroshima prefecture and one district of the Yamaguchi prefecture. The senior Australian officer retained the title of commander-in-chief of Bcof but Headquarters Bcair was disbanded and air operations placed under the authority of the commander of the renamed 'RAAF Component', Group Captain Eaton. No changes were made to the force's objectives, which were still to represent 'worthily' the Commonwealth in Japan, to maintain and enhance British prestige and influence, and to impress on the Japanese people the 'democratic way and purpose in life'. A year later that objective had been achieved to the satisfaction of Australia's politicians and No. 77 Squadron was ordered home.

The squadron's final flight took place at Iwakuni on Friday 23 June 1950, after which packing and disbandment preparations began. Several functions intended to give the RAAF and its friends a memorable farewell from Japan were planned for the weekend. The Officers' Mess invited senior USAF and civilian guests from all over Japan; the Sergeants' Mess was decorated as a pirates' lair for a shipwreck party; and the hangar set up for the enlisted men's celebrations. These were to be serious parties. At the shipwreck, guests had to drink a variety of cocktails before 'walking the plank' to board a model pirate ship outside the mess, and then as they came to the door they were confronted by Mustang pilot Jim Flemming who 'was dressed as a pirate and had a canister of scotch and a water pistol. Everyone who came in to the door would open their mouth and I'd squirt scotch into them. That was about seven o'clock, so imagine what the party was like'.[58]

But the party was not to run the intended distance. At 11.00 a.m. on Sunday 25th, Ray Trebilco received a call in his orderly sergeant's room from the headquarters of the Fifth Air Force. South Korea had been invaded by the North, and No. 77 Squadron had been placed on standby.[59] Initial incredulity was quickly replaced by urgent action as the squadron's commanding officer, Wing Commander L.T. Spence,

prepared his unit for war. An aircrew briefing was arranged for 1.30 p.m., maintenance crews were organised for around-the-clock work, and Mustangs which had been inhibited for the sea voyage back to Australia were fitted out for battle.

In an ironic ending to the RAAF's involvement with Bcof—a force which had succeeded splendidly in its objective of bringing peace and stability to one country—just a week later, instead of being on the high seas bound for home, No. 77 Squadron was fighting a war in another country.

CHAPTER 12

KOREA

On Sunday 25 June 1950, North Korean forces made a series of attacks against the Republic of Korea, including aerial bombing strikes against the unprotected capital of Seoul. Korea was a long way from Australia, and Malaya and the Middle East were the Australian Government's primary areas of strategic concern, but the new crisis was immediately acknowledged as a matter for serious attention. Prime Minister Menzies issued a statement on 27 June describing North Korea's action as communist 'inspired and directed ... expansion'. In response to that expansion in Asia generally, Menzies announced his government's intention to send a squadron of heavy bombers to Malaya, where another communist-inspired war was gaining momentum.[1]

The timing of the invasion of South Korea was critical for Australian foreign policy. Since the end of World War II, Foreign Ministers Dr H.V. Evatt and Sir Percy Spender had both pursued the conclusion of a 'Pacific pact' with the United States as the centrepiece of Australia's national security. The fact that Evatt and Spender were ideological opponents, respectively representing the Australian Labor Party and the Liberal Party, indicated the importance attached to the initiative. At the time of the North Korean invasion the American response to the proposed pact had been guarded. The onus was on Australia to prove itself a worthwhile partner.

No. 77 Squadron's Mustangs had been in Japan with the British Commonwealth Occupation Force since March 1946 and were within days of returning home. The commander of the (American) Far East Air Forces, Lieutenant General George E. Stratemeyer, had only recently described the Australian fighter squadron as the best in his command and Flight Lieutenant 'Bay' Adams as his best shot. With the South Korean Army being overrun, long-range ground attack aircraft were desperately needed. Only four days after the invasion Stratemeyer began to urge the American supreme commander in Tokyo, General Douglas MacArthur, to approach the Australian Government and have No. 77 Squadron assigned for combat duties.[2] MacArthur agreed and, despite some reluctance from sections of the government back in Canberra, Spender, appreciating that this was a rare opportunity to promote the Pacific pact, carried the day. Menzies publicly announced the commitment on 30 June. No. 77 Squadron would conduct combat operations in Korea and would be supported by the RAAF maintenance and air transport units which also were already in Japan.

No. 77 Squadron was allocated to the United Nations Air Command for active service in Korea, an arrangement which in practice placed the Australians under the operational control of the USAF's Fifth Air Force, a subordinate headquarters of the Far East Air Forces. General Stratemeyer defined three main roles for his forces in Korea. They were to maintain air superiority, isolate the battlefield, and provide close support for land forces.[3] As a minor player the RAAF could not expect to have much say in how tasks were planned, but No. 77 Squadron would be involved in all three roles.

Korea

The mainstay of the USAF's tactical fighter force in the theatre was the Lockheed F-80 Shooting Star jet. Circumstances, however, had conspired against the F-80. Many airfields in Korea were unsuitable for jet operations, and some that were had been captured by the communists during their rapid push south. Forced to fly from Japan, the F-80 lacked both the endurance and the firepower to conduct fully effective ground attack missions. Under the prevailing conditions the ideal aircraft seemed to be the machine the F-80 had replaced in USAF front-line squadrons, the P-51 Mustang. A robust, versatile fighter capable of operating from rough airstrips and with an exceptional range and endurance, the Mustang was armed with six .50 calibre machine guns and a combination of 227-kilogram bombs, 27-kilogram high-explosive rockets, 118-kilogram fragmentation bombs, 455-litre napalm tanks and armour-piercing high-velocity rockets. The Mustang had been one of the great combat aircraft of World War II. When the communists crossed the 38th parallel which divided the two Koreas, the only formed unit of Mustangs ready for combat was No. 77 Squadron. It took the USAF until mid-July to deploy two squadrons of the vintage fighter to the theatre, and an additional month to re-equip six F-80 squadrons with the P-51. In the meantime, during what was for the air forces essentially a ground attack campaign, No. 77 Squadron exerted an influence on the war out of all proportion to its modest size.[4]

The RAAF's war in Korea started relatively quietly. Three missions were flown on Sunday 2 July. The first involved a pre-dawn take-off from Iwakuni to meet and escort four USAF C-47s, which never arrived at the rendezvous point; the second was another escort sortie, this time with USAF B-26 Invaders which did arrive and bombed rail bridges near Seoul; and the last a patrol north of the 38th parallel. For the first few weeks a number of the pilots struggled with the pre-dawn departures because of their degraded instrument flying skills; indeed, until practice restored those skills, on some of the early missions the Australians simply ignored their scheduled departure time and waited for first light before taking off, an approach several found embarrassing.[5]

On 3 July the squadron was tasked for its first strike when eight aircraft led by Wing Commander L.T. Spence attacked road and rail traffic between Osan and

Suwon. From the outset Spence had misgivings about the target, doubting that the North Koreans would be so far south. Reassured several times by USAF operations staff, the Australians attacked the target area vigorously with rockets and guns, blowing a locomotive off the rail tracks and destroying numerous trucks. Later that evening, relaxing in the mess and buoyant after their first offensive mission, Spence and his pilots were stunned to learn that they had indeed struck South Korean and American forces. Although the blame for the disaster was placed squarely on the USAF Fifth Air Force operations staff who had tasked the mission and confirmed the target when questioned by Spence, and the RAAF was completely absolved by General Stratemeyer, it was a dreadful experience for the squadron. As a result of the tragedy the Americans introduced an improved system for establishing bomb-lines, and instructed the South Koreans to mark their vehicles with distinguishing white stars on the tops and sides, similar to those on United States Army transport.[6]

United Nations ground forces came under desperate pressure during July and August as the North Koreans continued to push southwards. By August they had fallen back almost to the southern tip of the peninsula and their commander, Lieutenant General Walton H. Walker, established his final defensive line behind the Naktong River only one hundred and fifty kilometres from the town of Pusan. One more successful thrust by the communists would drive the United Nations forces out of Korea. In the event, Walker's 'Pusan Perimeter' held and became famous as the line where the communists were first stopped, and then driven back. No. 77 Squadron made a notable contribution to the victory, in the process earning recognition not only for the RAAF but also Australia at the highest political levels in the United States.

While the battle to hold the southern tip of the peninsula was in the balance, No. 77 Squadron maintained a punishing daily routine. Four flights each of four Mustangs would make a pre-dawn take-off from Iwakuni and then fly up to six combat missions in Korea. Refuelling and rearming between sorties was carried out at Taegu (known as 'K2' in the American code system), a forward airstrip just inside the Pusan Perimeter. At the end of the day, usually after dark, the squadron returned to Iwakuni, where it was not uncommon for the ground staff to work all night repairing battle-damaged aircraft for the next day's fighting. The Australians' skill in air-to-ground weapons application proved invaluable as they attacked enemy troop concentrations, motor vehicles and armour with bombs, rockets, guns and napalm, on occasions rolling onto a target almost as soon as they had taken off from the eight hundred metre-long pierced steel planking runway at Taegu.[7] Ground forces in trouble quickly learned to call 'Drop-kick'—No. 77 Squadron's distinctively Australian radio call-sign—whenever accurate air delivered firepower was urgently needed.[8]

Flying conditions were exacting as stifling summer heat could be accompanied by heavy rain and low cloud, hazards which were increased by mountainous terrain and the Mustang's lack of radio navigation equipment. Pilots became adept at flying the length and breadth of the country solely by map reading and with only four short-range radio channels for all communications. Targets had to be positively identified before an attack could be made, a difficult task made more so by ground fire and the

smog and haze (or, in winter, snow white-outs) which often reduced visibility to hundreds of metres. After five or more hours flying strapped into their aircraft under almost continuous pressure and danger, pilots were exhausted when they landed back at Iwakuni. Overnight stays with the USAF at Taegu were occasionally used to generate more sorties and ease the strain a little.

While there was no air threat in the early months, ground fire was heavy and dangerous, especially during napalm attacks when pilots had to fly straight and level at low altitudes to ensure accuracy, leaving them vulnerable to anti-aircraft guns. Aircraft were hit regularly and damage was often severe. Less than a week from the start of operations the squadron suffered its first combat fatality. Squadron Leader Graham Strout was Wing Commander Spence's deputy and had led the first mission on 2 July. On 7 July while leading four aircraft on a strike against rail yards at Samchok, Strout's aircraft was seen suddenly to dive towards the ground trailing black smoke before breaking up in the air.[9] From then on casualties occurred regularly. Possibly the most difficult for the squadron to accept was Wing Commander Lou Spence's death on 9 September. The commanding officer's aircraft entered an unusually steep dive from the low altitude of two hundred metres to make a napalm attack, and crashed into the town of Angang-ni while apparently attempting to pull up sharply. Described by General Stratemeyer as 'one of the most capable field commanders I have been associated with', Spence had provided No. 77 Squadron with exemplary leadership and appeared destined for the highest levels of the RAAF.[10] Squadron Leader R.C. Cresswell, who had commanded No. 77 Squadron previously during World War II, arrived on 17 September to lead the unit again in war. Cresswell was respected and popular, an excellent pilot who was regarded as a good organiser and a 'goer' who led from the front.

The intense tempo of operations, the high casualty rate and the importance of the Mustangs to ground operations necessitated rapid reinforcements. During the first week of combat twelve pilots and twenty-eight ground crew were rushed to Japan having received less than twenty-four hours' notice to farewell their families and get their affairs in order.[11] Pilots found themselves flying combat missions only days after learning they were posted to Korea. Given the unexpectedness and intensity of the war, it was understandable that the RAAF found itself caught a little short with its replacement crews, especially as the conflict came so soon after the neglect of the Interim years. There was less excuse, though, for the poor standard of flying clothing issued to pilots who were exposed to heavy ground fire most days, and for whom the possibility of being shot down and having to evade enemy troops in hostile terrain was a constant danger. Had it not been for USAF 'hand-outs' of fur hats, jackets, all-weather boots and warm socks and gloves, RAAF pilots who had to abandon their aircraft might well have frozen to death.[12]

The battle for the Pusan Perimeter was one of those occasions where, in the words of General Walker's successor, General Matthew Ridgway, air power saved the ground forces from disaster.[13] The successful defence of the perimeter was accompanied by an adventurous amphibious landing conceived by General

MacArthur and carried out at Inchon, some two hundred and forty kilometres to the communists' rear on the west coast, on 15 September. Out-flanked and with their supply lines cut, the North Koreans now retreated up the peninsula as quickly as they had advanced down it. On 7 October forward elements of the United Nations command crossed the 38th parallel on their way north.

The communists' retreat did not diminish the almost frantic rate of air activity but it did alter the nature of No. 77 Squadron's missions as targets moved further from Iwakuni. Five-hour flights covering 1800 kilometres for perhaps a few minutes action were exhausting and expensive. As soon as possible the Fifth Air Force moved its tactical fighter units into Korea, with No. 77 Squadron joining the 35th Fighter-Interceptor Group at Pohang ('K3') on 12 October 1950. A month later, as MacArthur's forces continued to stream northwards, No. 77 Squadron and the 35th Group again moved forward, this time from Pohang to the former communist airfield at Hamhung ('K27', also known as Yonpo) on the northeast coast. The merit of operating the same aircraft as their main ally was obvious as access to American spare parts, weapons, and the like facilitated the Australians' deployment and operations.

The charge north coincided with the start of Korea's savage winter, with the debilitating heat, dust and haze of summer being replaced by snow, ice, cruel winds and sub-zero temperatures. Ground crew laboured under the most demanding conditions. No. 77 Squadron's aircraft frequently were parked in the open in two feet of snow. Ice had to be scraped off wings and windscreens before servicings could be started or sorties flown, and the extreme cold sometimes made it painful to touch an aircraft's metal surfaces. Despite the severe environment, aircraft were always available. Yet while most pilots and ground staff performed admirably, administrative support from Australia was sometimes shameful. Just as the pilots had had to rely on American hand-outs for adequate flying clothing, now there was no winter clothing generally available, and the tents in which people lived could be desperately cold. It took the deaths of two squadron members in a burning tent at night to hasten the issue of extreme weather garments, an appalling occurrence which remains a blight on the record of those immediately responsible and, ultimately, on Air Marshal Jones and the Air Board.

A week after the move to Pohang all RAAF units supporting the United Nations in Korea were regrouped into the newly formed No. 91 (Composite) Wing, which in addition to No. 77 Squadron included No. 30 Communications Flight with two C-47s and two Austers, No. 491 (Maintenance) Squadron and No. 391 (Base) Squadron. With the exception of the Mustangs the wing remained at Iwakuni under the command of Group Captain A.D. Charlton. No. 30 Flight was later given the status of an independent unit and its establishment increased by two more C-47s; later again, the unit was renamed No. 36 (Transport) Squadron following the transfer of an additional four Dakotas from No. 38 Squadron in Malaya.[14] Commanded at the outbreak of the war by the energetic and distinctive Flight Lieutenant D.W. Hitchins, the Dakotas supported all Australian forces in Korea, a task which included medevacs, as well as

attending to the air transport needs of the remnants of the Australian contingent of the British Commonwealth Occupation Force in Japan.

By late October 1950 General MacArthur's spectacular tactics had taken his forces almost to the border between Korea and China, the Yalu River, and it seemed the war would soon be won. MacArthur's expectations of a quick victory were not, however, shared by all of his commanders, a number of whom feared Chinese intervention. Those fears were justified. Chinese involvement had in fact been underway since halfway through October, when eighteen of Mao Zedong's divisions had crossed undetected into Korea. On 1 November No. 77 Squadron attacked Chinese troops for the first time; on the same day the appearance of Chinese Air Force MiG-15 jet fighters over the Yalu provided another indication that the war had entered a new and more dangerous phase.

The MiG-15 was an advanced technology fighter, its swept-wing aerodynamics and 2470 kilogram thrust engine—based on the Rolls Royce Nene which the British Government had sold to the Russians—giving it a rate-of-climb, service ceiling and maximum speed superior to any aircraft in the Far East Air Forces' inventory. As long as the only air threat had come from North Korea's obsolescent Yak fighters, the Mustang's excellent ground attack capabilities had made it a worthwhile proposition. Now, No. 77 Squadron's piston-engined fighters were on borrowed time. Australian government and Air Force officials became apprehensive for the safety of their pilots. The MiG-15 outclassed the Mustang to the extent that Air Marshal Jones claimed it would be 'suicidal' to pit No. 77 Squadron against the Chinese jets in air-to-air combat.[15] Little argument was needed to convince the government, and consensus was quickly reached to replace the Mustangs with jets as soon as possible.

The RAAF first approached Lieutenant General Stratemeyer, hoping to acquire the United States' best fighter, the swept-wing North American F-86 Sabre. Stratemeyer told the Australians there was no possibility the American fighter would be available before 1954 as there were not enough to equip USAF squadrons; indeed, a similar request from the South African squadron in Korea had just been rejected.[16] Acknowledging that the change to jets was essential, he advised the RAAF to approach the United Kingdom for a squadron of twin-engined Meteor fighters, a suggestion which was endorsed by the RAF's senior airman with the occupation force in Japan, Air Vice-Marshal C.A. Bouchier. Although the Meteor was also in short supply, Stratemeyer and Bouchier thought the opportunity to have the aircraft tested in combat might induce the British Government and the RAF to give the RAAF priority.

With the Sabre unavailable the British route was the obvious one to follow. Vampire fighters were being built in Australia for the RAAF but production was slow, and in any case the Vampire's performance was inferior to the Meteor's. Brief consideration was given to the developmental Hawker P1081 but that project also was affected by delays. The de Havilland company tried to secure the order by offering twenty Venom fighters, to be delivered by June 1952, but neither the quantity nor the

time frame was acceptable. Consequently the Australian Government officially approached the RAF for some 'modern types of jet propelled fighters'. Within weeks the British Government had agreed to provide thirty-six Gloster Meteor Mk VIIIs, a twin-engined, straight-wing interceptor. The order would be met by diverting aircraft intended for an RAF squadron and would include four dual-seat Mk VII trainers. Delivery was to be completed by June 1951, at an estimated cost of £2.5 million including spares. Subsequently another twenty-two Meteors were bought as reserves for anticipated combat losses, followed later by yet another batch of thirty-six.[17] It is noteworthy that while the Meteors were being bought, the chairman of the Commonwealth Aircraft Corporation, L.J. Wackett, was finalising arrangements to build the Sabre under licence in Australia.

The Meteor acquisition was commended by General Stratemeyer, who described the aircraft as the best British jet fighter available, considerably superior to the Vampire. Announcing the order in December 1950, Prime Minister Menzies claimed the Meteor was a 'military aircraft of the most powerful and most modern type', with a 'striking power, speed and manoeuvrability [which would] add enormously to [the RAAF's] air strength'. The prime minister's description was not entirely accurate. While the Meteor unquestionably was superior to the Mustang in the air-to-air role, it was not a 'most modern type'. The prototype had flown eight years before the RAAF received its first consignment and the production model had seen brief service at the end of World War II. Speed was a critical factor in air combat, and the advantage there was with the swept wing of the MiG-15 and the F-86, not the straight wing of the Meteor. Given that the Sabre was unavailable the Meteor was, however, the best the RAAF could do. Whether or not that best was good enough was soon to become a controversial subject.

At the same time as the negotiations to rearm No. 77 Squadron were taking place, critical developments were occurring on the ground in Korea. The revelation that United Nations forces were now facing about 500,000 Chinese troops compelled a sober re-evaluation of General MacArthur's previously unrestrained optimism. Back in Washington political and military chiefs feared that any extension of the war might result in a level of casualties which would leave the United States seriously weakened should a separate conflict break out with the major enemy, the Soviet Union; there were even concerns that MacArthur's offensive might precipitate Soviet intervention.[18] The Western powers concluded they should do as little as possible to aggravate the situation, and that the best outcome they could expect was a negotiated settlement.

That pragmatic decision carried important implications for air operations. MacArthur was forbidden to take the air war across the Yalu, a constraint which turned Manchuria, on the border with North Korea, into a sanctuary for the Chinese Air Force. As the Chinese pilots started to exploit that critical tactical advantage and the number of MiG-15s increased, Stratemeyer's air forces could no longer guarantee air superiority over the north. By early 1951 the area between the Yalu and Chongchon Rivers had become a dangerous place for United Nations aircraft, acquiring the sobriquet of 'MiG Alley'.

That worrying development was accompanied by reverses on the ground as Chinese troops gained the upper hand and started retaking territory. Enemy guerilla and then main force activity began to threaten No. 77 Squadron's base at Hamhung, causing panic in some USAF units whose members abandoned their posts. Squadron Leader Dick Cresswell kept No. 77 Squadron firmly under control, earning praise from the commander of the Fifth Air Force, Lieutenant General Earle E. Partridge, for his strong, sensible leadership.[19] As the United Nations ground forces gave way, No. 77 Squadron withdrew to Pusan East ('K9') on 3 December, assisted by a concerted airlift by the Dakotas of No. 30 Communications Unit.

One of the more distressing aspects of the war was brought home to the Australians for the first time on 19 January 1951. A strike by the entire squadron against a suspected Chinese headquarters building in the Northern capital of Pyongyang encountered heavy anti-aircraft fire which brought down Flight Lieutenant Gordon Harvey's aircraft. Harvey was seen by his colleagues escaping from his Mustang's cockpit on the ground but the proximity of large numbers of enemy troops frustrated rescue attempts. Harvey became a prisoner-of-war, although the squadron was not to learn that until the end of the year, by which time he had been joined by three others; and by the armistice in 1953 by three more again. At a time when the ideological tension between East and West was at its peak and prisoners could expect to be subjected to extreme physical and psychological abuse, capture was a chilling prospect all pilots had to be prepared for.[20]

From about March 1951 onwards the war on the ground reached something of a stalemate, at least territorially, with the 38th parallel once again becoming the dividing line between North and South. Fighting, however, remained heavy. While the Sabres and MiGs battled to control the air, No. 77 Squadron's Mustangs continued to strike ground targets, focusing in particular on trucks and supply dumps.

While the Mustangs sustained their intensive rate of ground attack operations, preparations to introduce the Meteor continued. On Christmas Day 1950 a pilot-qualified engineer, Flight Lieutenant L.S. Compton, and a team of technical staff had flown to England for training on the aircraft; while in Korea Squadron Leader Cresswell and Flight Lieutenant C.D. Murphy were attached to USAF units for combat experience in jet fighters. At about the same time four RAF officers with experience on the Meteor were attached to No. 91 Wing at Iwakuni to help train the Australians. Fifteen single-seat Meteor Mk VIIIs and two dual Mk VIIs arrived in Japan on the Royal Navy aircraft carrier HMS *Warrior* on 24 February, and twenty-two more Mk VIIIs on 23 March. Even though the air war was at its peak, the decision was made to withdraw No. 77 Squadron entirely from Korea while the transition was effected. The squadron ceased operations in April and began conversion training at Iwakuni.

The central question facing the RAAF was the Meteor's role. Notwithstanding the Mustang's splendid performance as a ground attack aircraft, under Australian defence policy No. 77 Squadron's prime task was air defence, and if possible the RAAF

wanted the squadron to assume that role in Korea. The Meteor had been conceived and designed as an interceptor-fighter; that is, as an aircraft which would be 'scrambled' to intercept high-flying bombers under the guidance of ground radar. Air defence in Korea, however, was more likely to involve combat against the MiG-15 in the classic 'dog-fight', in which speed, manoeuvrability and acceleration were more important qualities than those needed for a radar-controlled intercept. Very little information was available from the RAF regarding the Meteor's capabilities as a fighter as compared to an interceptor. But doubts about the British aircraft's ability to compete against faster swept-wing aircraft were eased a little when it performed reasonably well against an American F-86 during brief trials at Iwakuni; in particular, the Meteor demonstrated a faster rate-of-climb at low altitudes and a tighter turning radius below about 7600 metres. Above that altitude the Sabre was markedly superior. Lieutenant General Partridge visited Iwakuni to fly the Meteor himself and, while concerned by its slowness, relative lack of manoeuvrability at height and restricted rear vision, concluded that the aircraft's overall performance was adequate to warrant a trial in the air-to-air role.[21]

On balance that was probably a fair decision. It was, however, a decision which assumed No. 77 Squadron's experience and tactics in air-to-air combat would match the standards already demonstrated in air-to-ground operations. Unfortunately that was not the case. Only Cresswell and one other pilot had previously flown air-to-air combat, and that had been in World War II against comparatively unmanoeuvrable bombers rather than highly manoeuvrable fighters.[22] No-one, including the squadron's RAF instructors, had any experience flying against MiGs in Korea. Those worrying shortcomings seemed to have escaped official attention in the Department of Air, as no fighter instructors were sent up from Australia to provide the kind of specialist tuition in tactics and weapons employment which had become a standard feature of operational conversions during World War II. Alternatively, given No. 77 Squadron's high standing with the USAF, it seems probable that one or two American pilots with current experience in MiG Alley would have been made available for the Meteor's first few months had a request been made. The whole approach to the change of roles and aircraft—a major undertaking by any measure—was indicative once again of the curious inability back in Australia to understand what was happening in Korea, and of the continuing failure to give a combat squadron the support it needed.

There was further evidence of that reprehensible attitude when some of the replacement pilots sent to join No. 77 Squadron arrived without a White Card rating, the minimum qualification needed to fly an aircraft solely by reference to instruments.[23] How commanders in Australia could send pilots who did not meet the RAAF's minimum instrument flying standards to a country with the topographical and weather hazards of Korea, let alone one where a war was being fought, defies understanding. The best that can be said is that at least by exposing the problem, Korea provided an invaluable mechanism, albeit an extreme one, for helping to pull flying training in Australia back onto course.

Against that somewhat uncertain background the conversions continued at Iwakuni, marred by a series of disturbing accidents. By the middle of July the Australian pilots were considered fully trained on the Meteor and, in preparation for operations, No. 77 Squadron deployed twenty-two aircraft to Kimpo airfield ('K14') twenty-one kilometres northwest of Seoul, where it was attached to the USAF's Fourth Fighter-Interceptor Wing. Kimpo provided good facilities, with a 2000-metre-long runway, dispersed and blast-proof tarmac and maintenance areas, and Quonset huts for crew quarters and most domestic buildings. Conditions were, however, made difficult by the wet season, with much of Kimpo and its surrounds a quagmire of foul-smelling mud.

Squadron Leader R.C. Cresswell briefing No. 77 Squadron Meteor pilots before a mission in Korea, mid-1951. RAAF

By the time the Australians were ready to return to the fight a major Chinese air offensive was in progress over MiG Alley. The Americans had only two squadrons of Sabres in Korea, so the arrival of a third squadron of jet fighters was keenly anticipated by Fifth Air Force commanders. Squadron Leader Cresswell was confident

the Meteor would be effective as an air-to-air fighter, an opinion shared by a number of his pilots. The challenge would be to employ tactics which maximised the Meteor's performance advantages and minimised those of the MiG-15.

On 29 July Cresswell led the entire squadron of sixteen aircraft on the RAAF's first jet fighter mission, a sweep up to the Yalu River. The purpose of the 'fighter sweep' was to take the initiative in the air war; to achieve control of the air by seeking out and destroying enemy fighters. Given the preceding debate over the effectiveness or otherwise of the Meteor, and the brief trials at Iwakuni which had shown that the straight-winged jet fought best below 7600 metres, it was odd that the Australians patrolled between 9150 and 10,700 metres, providing top cover for USAF F-86s at 6100 to 7600 metres;[24] the reverse would have been preferable. In the absence of substantial performance data on the Meteor, those operating heights were apparently chosen on the basis of information provided by the RAF.[25] MiGs were seen on the ground in their sanctuary north of the Yalu, but none in the air. No. 77 Squadron settled into a routine of flying fighter sweeps up towards the border, occasionally breaking the pattern by flying cover over downed pilots while rescues were effected, or escorting bombers.

Three weeks later Cresswell's tour finished. Before leaving for Australia he completed a Sabre conversion with the USAF and flew the aircraft on ten combat missions, valuable experience which also reflected the respect he and his unit had earned. Cresswell had taken over No. 77 Squadron only two months after operations had started, in difficult circumstances following Lou Spence's death, and at the height of the desperate battle at Pusan to save the war. By any measure his leadership had been outstanding. Cresswell was awarded the Distinguished Flying Cross for his service in Korea; many who were familiar with his performance thought the higher Distinguished Service Order would have been more appropriate. There were suggestions that his occasional flamboyance, confidence and impressive combat experience were resented by more pedestrian senior RAAF officers, who were sometimes said to have 'reached high rank but not high altitudes'. Cresswell was succeeded on 16 August by Wing Commander G.H. Steege, a man with an illustrious record as a fighter pilot and wing leader during World War II.

No. 77 Squadron's first contact with the MiG-15 did not occur for a month and was inconclusive. But four days later, on 29 August 1951, a clash with twelve MiGs occurred at about 10,700 metres. As the eight Meteors and their accompanying sixteen Sabres broke formation to pursue individual combat with the Chinese pilots, Warrant Officer R.D. Guthrie was shot down. Guthrie made the first successful combat ejection using a Martin Baker seat and became a prisoner-of-war for the next two years. Squadron Leader D.L. Wilson's Meteor also sustained major damage. A week later the second clash took place, and again one Meteor was badly damaged while the enemy escaped unscathed.

Wing Commander Steege, who rarely flew on operations, immediately took action to change the squadron's role, believing the results demonstrated the Meteor's inferiority. His reaction came at an awkward time as the Chinese were actively pursuing air superiority over the northern areas of Korea and the American F-86

squadrons were under considerable pressure. Nevertheless, after discussions with the Fifth Air Force, agreement was reached on 6 September to confine the Meteors' operations in the air-to-air role to areas away from MiG Alley, south of the Chongchon River, a decision which shortly afterwards was endorsed by Air Marshal Jones during a visit to Kimpo.

The change to No. 77 Squadron's operations after such a brief encounter with the enemy was, as Robert O'Neill's official history has recorded, 'a blow to both the pride of (the squadron) and the prestige of Australia in the air war over Korea'.[26] A number of RAAF pilots considered the decision hasty at best, believing that with a little more time and experience tactics would have been developed to maximise the Meteor's positive qualities, and that unrestricted air combat operations could have been successfully flown. Air Vice-Marshal W.H. Simmonds, one of only four RAAF pilots to shoot down a MiG-15, believes the Meteor was a much underrated aeroplane, and that the problems the Australians encountered were related primarily to inadequate training and poor tactics. Simmonds has argued that more use should have been made of the Meteor's good climb rate, acceleration and manoeuvrability at its optimum fighting altitude of around 4600 to 6100 metres.[27]

Simmonds' opinion was shared with considerable fervour by the RAF's senior representative in Korea, Air Vice-Marshal Bouchier, who reacted to Steege's haste with annoyance and alarm. In a telegram to the British chiefs of staff, Bouchier criticised the RAAF for making its decision after only two 'short sharp ... inconclusive engagements'.[28] Britain's chiefs agreed, concerned that the Australian action might adversely affect the morale of RAF Meteor pilots, not to mention overseas sales of the aircraft. Bouchier expanded his case in further correspondence with London, suggesting that the RAAF's judgment was clouded by its inexperience in air-to-air combat and the fact that Wing Commander Steege did not fly regularly 'if at all' on operations. He cited the senior RAF pilot attached to No. 77 Squadron, Flight Lieutenant Max Scannell, who believed no Meteor pilot should ever be shot down by a MiG-15 below 9150 metres unless he made a mistake, because the Meteor was more manoeuvrable.[29] Significantly, Bouchier's assessment of the Meteor's potential as a 'dog-fighter' against MiG-15s was shared by Lieutenant General O.P. Weyland, the commander of the USAF's Far East Air Forces, who considered the British aircraft's 'good rate-of-turn ... excellent climb and excellent armament' had not been used to full effect by the Australians.[30] Bouchier urged the RAF to send about a dozen of its 'very best hand picked Jet fighter pilots' to Korea to give the Australian squadron the experience and leadership he believed it lacked.

British judgments were coloured by their vested interest in the Meteor, but in the circumstances Bouchier's recommendation had a good deal of merit: if implemented, it would have resolved doubts about the aircraft's air fighting capabilities once and for all. However, the RAF's chief, Sir John Slessor, decided that on balance his service was better off staying out of what had become a rather unpleasant argument, instead accepting his staff's advice that the RAAF's problems were attributable to 'inferior [pilot] performance, inexperience of the pilots in air fighting (as opposed to ground

attack) and a non-flying Squadron Commander'.[31] Regardless of the Meteor's performance in dogfights, the RAF remained confident the aircraft could carry out its role in Europe as a bomber interceptor; in Slessor's opinion it was still a 'jolly good Bomber Destroyer which is what it was designed for'. In a personal letter to Air Marshal Jones Sir John did, however, suggest that the Meteor could be a valuable ground attack aircraft.

While all that was going on No. 77 Squadron had to keep fighting the war. Tactics were developed to try to compensate for the Meteor's apparent shortcomings. The Australians were taken off the aggressive fighter sweep operations and were generally tasked on combat air patrol (CAP) sorties, protecting light bombers and ground attack aircraft. For that role the Meteors generally flew at an altitude of 7000 to 7620 metres. If attacked they immediately descended to their optimum fighting altitude of 5500 metres and jettisoned any external stores (fuel and weapons). At that height and in a clean configuration, the inferior thrust of the Meteor's engines was less pronounced, while its superior turning qualities were enhanced. Neither factor improved the aircraft's flying qualities sufficiently for it to out-perform a capably handled MiG-15 but the gap was narrowed. There was, however, a limit to how competitive the Meteor could be made, which was defined by the speed differential. The MiG-15 was capable of Mach .9 in level flight, well above the Meteor's Mach .82. That differential almost invariably allowed the Chinese pilots to decide when a dogfight would start and when it would end, a critical tactical advantage which they optimised by their skilful use of their sanctuary across the Yalu. The Fifth Air Force therefore provided the Meteors with insurance. Whenever No. 77 Squadron was used on combat air patrol, USAF F-86s were programmed to scout the same area but at a greater altitude and closer to the Yalu River, between the Meteors and the threat.[32]

Revised formation tactics were also developed for the combat air patrols. Rendezvous with the strike aircraft would normally take place about ten minutes before reaching the target. No. 77 Squadron employed sixteen aircraft, in two formations of eight, which were further sub-divided into two sections of four to achieve tactical freedom. The first formation of eight Meteors would fly a patrol line about fifty kilometres ahead of the bombers. On reaching the target the Meteors would continue to patrol, but now only slightly ahead of the bombers and at an altitude of about 5200 metres. In the meantime, the second formation of eight stayed overhead the bombers, weaving back and forward. If the bombers were attacked the Meteor flight leaders were under instructions to 'act aggressively', but under no circumstances were they to leave the bomber formation. In theory, the advance escort was intended to deter aggressors while the rear escort acted as a second line of defence. Both groups of fighters remained with the bombers until they crossed the bomb-line on their way home.

Further clashes with the MiGs were inevitable as the Chinese pilots became more confident and aggressive. No. 77 Squadron's pilots found themselves in the middle of a major campaign as the communists actively sought air superiority.

Almost without exception the RAAF and USAF fighters were outnumbered. On 24 October, for example, eight B-29 Superfortress bombers sent to attack a railway bridge at Sunchon, south of MiG Alley, were given an escort of sixteen Meteors and ten USAF F-84 Thunderjets. The bomber formation was relentlessly attacked almost all the way to Wonsan by between forty to seventy MiG-15s. Three days later, sixteen Meteors and thirty-two F-84s flying cover for eight B-29s on a strike against a rail bridge at Sinanju were 'overwhelmed' by some ninety-five MiGs.[33] During October alone United Nations pilots reported over 2500 sightings of MiG-15s, almost all of which were seeking air combat. Notwithstanding the intensity of those attacks, one of No. 77 Squadron's senior pilots, Squadron Leader D.L. Wilson, could not recall the protective screen established by the Meteors ever being penetrated.[34]

No RAAF pilot had been shot down since Warrant Officer Guthrie at the end of August. The intensity of the communists' campaign changed that dramatically on 1 December when about fifty MiGs made a 'vicious' and determined attack on fourteen Meteors, shooting down three of the Australians. Those losses were partly offset by the unit's first victories over the MiGs, one to Flying Officer Bruce Gogerly and another shared by the squadron. In view of the respective numbers of the combatants No. 77 Squadron's performance was highly creditable. The next day, however, the squadron was told the unpalatable news that it was no longer to fly fighter sweeps or combat air patrols over North Korea. For the remainder of the month the pilots had to accept the mortifying role of 'airfield defence', sitting in their Meteors on alert for most of the day and occasionally being scrambled by ground control to intercept an unidentified aircraft which invariably turned out to be friendly. Morale plummeted as No. 77 became a squadron in search of a role.

That role was identified by Wing Commander R.T. Susans when he arrived to take over from Wing Commander Steege at the end of the year. By the time of Susans' arrival the squadron's reputation had slumped alarmingly, to the extent that the USAF was threatening to evict the Australians from Kimpo to make room for a more effective unit. Like Cresswell, a former wartime leader of No. 77 Squadron, Susans had the advantage of having flown the Meteor in the ground attack role during a specialist fighter course he had completed with the RAF about a year previously. Following discussions with his pilots and the Americans, Susans proposed shifting the Meteors onto ground attack operations. His proposal was accepted by the commander of the Fifth Air Force, Major General Frank F. Everest, so the ground staff began to modify the aircraft for the task, primarily by installing eight rocket rails. Susans knew the role would place heavy demands on the logistics support system and was reassured to learn from RAAF suppliers in Iwakuni that a rate of 1000 sorties a month could be sustained.[35]

Ground attack was unlikely to be less hazardous than air-to-air combat; on the contrary, the intensity of the communists' anti-aircraft defences indicated that losses

might be higher if anything. Susans was aware of that possibility from his experience in North Africa in World War II, but felt it was crucial to place the squadron back on a full operational footing.

Wing Commander Susans personally led the first Meteor ground attack mission on 8 January 1952, only two weeks after arriving in Korea. Each of the four aircraft was armed with eight high-explosive rockets and a full load of ammunition for its four 20-millimetre cannons. The sortie was a success, and while teething troubles occasionally arose over the next few months, the pattern of No. 77 Squadron's operations for the remainder of the war had been set. Ground attack dominated the ten different tasks the squadron could be called on to conduct: fighter sweep, combat air patrol, air defence, bomber escort, night interdiction, armed reconnaissance, strike, weather reconnaissance, close support, and search and rescue.[36] In practice, during a six-month operational tour most pilots flew an average of one hundred and forty missions, of which one hundred were ground attack. Table 12.1 shows the change in emphasis which occurred in tasking from 1952 onwards.

12.1 No. 77 Squadron combat effort, 1952–53

Role	*1952*	*1953 (Jan.–May only)*
Fighter Sweep	88	—
CAP	438	108 (96) in Jan.
Air Defence	3109	4
Escort	626	345
Armed Recce	2169	1053
Strike	4123	934
Weather Recce	36	6
Familiarisation	94	104
Search and Rescue	168	52
Close Support	8	16
Night Interdiction	—	20

Source: No. 77 Squadron, Report by Wing Commander R.C. Cresswell, 5-6-53, CRS AA1969/100/76, Box 313, AA.

Within weeks No. 77 Squadron's reputation had been restored. The goal of seven hundred and fifty sorties a month which USAF commanders wanted was not only reached but extended to 1000. The Meteor was a satisfactory ground attack platform and its results with rockets and cannon were good, although its inability to carry bombs inhibited its effectiveness against hard targets. Striking power was improved late in the war when double rocket rails were fitted, allowing the aircraft to carry sixteen instead of eight rockets.

Essentially the Meteor was, however, performing the same role as the Mustang it had replaced; and the process of achieving that outcome had caused the RAAF a great deal of anguish and cost the Australian Government a great deal of money. The

question which arises is: was the aircraft change worth the trouble? The Meteor, after all, was acquired for air defence, not ground attack; and it might be argued that the RAAF should have kept the Mustangs and continued their highly successful ground attack operations until modern, swept-wing fighters were available. Informed opinion indicates that the change to the Meteor was well advised.[37] Korea was a hostile environment for ground attack aircraft, with the dangers posed by powerful, accurate and widespread anti-aircraft weapons intensified by demanding terrain and weather. The Meteor could climb more steeply than the Mustang, which enabled it to cope better with difficult natural conditions. It was quieter and much faster, which increased the chance of approaching a target undetected. And finally, the Mustang's liquid cooled engine was extremely vulnerable to ground fire, only one shot being needed to sever a coolant line and cause the engine to seize from overheating. In the month of April 1951 alone, the Americans lost thirty Mustangs to ground fire; by contrast, in the two years from mid-1951 to mid-1953, twenty-three Meteors were shot down by ground fire. It is probable that No. 77 Squadron would have lost many more aircraft had the Mustangs been retained.

Under Susans' leadership No. 77 Squadron resumed the well-organised and professional routine previously established by Spence and Cresswell. Each day at about 4.30 p.m. the following day's tasks were received from the Fifth Air Force's Joint Operations Centre. Tasking orders listed targets, timings, numbers of aircraft required, code words, associated missions by other units, and search and rescue arrangements. No. 77 Squadron's officer-in-charge of flying and the flight commanders allocated pilots to tasks while operations staff prepared briefing material. Maintenance crews were given aircraft numbers, take-off times and weapons loads.

On the day of the mission a comprehensive briefing was conducted by the operations, weather and intelligence officers, and the formation leader. The operations officer briefed on the aim and type of the mission; weapons load; communications; numbers of friendly aircraft involved; callsigns; Identification Friend or Foe codes and procedures;[38] description and location of emergency airstrips; emergency and search and rescue procedures; the serviceability state of navigation and homing aids and airfields; weather recall procedures; and finally gave a time check. In addition to meteorological forecasts for the route and the target and recovery areas, the weather officer briefed on the 'bail out' winds, which could be critical for a pilot who had to abandon his aircraft and was trying to drift towards friendly territory. The intelligence officer followed, with information on expected flak activity en route and in the target area; suggested entry and exit lanes for the target; bail out details (for example, the position of friendly forces); enemy dispositions, especially near the target; escape and evasion procedures; and the latest details on the ground war. Finally, the flight leader covered the tactics the formation would use. The total briefing lasted about thirty minutes, after which the pilots had time to study target photographs and complete their pre-flight planning.

The fact that No. 77 Squadron had settled into a routine neither reduced the rate of effort nor made operations less dangerous. One of the squadron's

'specialities', 'truck busting', could be a high-risk activity, as the enemy became adept at setting up decoys which were in fact 'flak traps'. Having been drawn in to an attack by an apparently easy target, a pilot would find the tables reversed as he became the subject of withering ground fire from camouflaged anti-aircraft guns.

Wing Commanders R.T. Susans (left) and G.H. Steege with two USAF officers in Korea, late 1951. M.R. SUSANS

Ron Susans relinquished command to Wing Commander J.R. Kinninmont on 26 May, having personally led his squadron on one hundred and ten operational sorties, one hundred of which were rocket and strafing attacks against heavily defended enemy targets in North Korea. He had also taken the lead in test firings of an Australian-developed 'Flaming Onion' napalm rocket, a program not without risk for the pilots. Susans was not always popular with his RAAF contemporaries, some of whom regarded him as a glory seeker concerned primarily with his own reputation and advancement. To his pilots, however, Susans was an 'inspiring leader' who got the squadron 'out of a rut' and boosted morale 'no end'.[39] No. 77 Squadron had been in turmoil when Susans arrived. He had seized a rapidly deteriorating situation by the scruff of the neck and by leading from the front with determination and courage had single-handedly turned things around. The award of an immediate DSO for outstanding leadership which he received at the end of his tour was thoroughly deserved.

By about mid-1952 it had become apparent to the commanders of the Fifth Air Force that two massive air interdiction campaigns known as Operations Strangle and Saturate had not succeeded to the extent hoped for. Consequently a new strategy known as 'Air Pressure' was adopted, the objective being to apply air power more as a political than a military weapon. Where possible, targets were chosen for their political value and cost-effectiveness, and the pressure their destruction would place on the communists.

Operations continued at an exacting pace. It was not uncommon for the entire squadron of sixteen Meteors to be tasked for a single mission, with all the complexities of organisation, tactics and flying skill that demanded. In July the squadron participated in the largest single air operation of the war, a four hundred and twenty aircraft attack against airfields, power stations, factories and anti-aircraft installations in and around Pyongyang. While that particular mission was led by Wing Commander Kinninmont, it was to the squadron's credit that formation leaders were usually chosen for their individual skill rather than their rank. For example, at the end of 1950, Squadron Leader Cresswell assessed Pilot-1 G. Thornton as the squadron's most capable leader and operational pilot; while in 1953 Sergeant H.E. 'Ted' Jones was often programmed to lead large formations which included the unit's senior officers.[40]

Casualties were high. Thirteen Mustangs were destroyed in the ten months between July 1950 and April 1951, while in the thirty-nine months between July 1951 and October 1954, forty-six Meteors were lost in Korea and Japan to enemy action and accidents. Despite the predominance of ground attack missions, the squadron still flew the occasional combat air patrol. It is noteworthy that only four Meteors in total were shot down by MiG-15s, every one of them on or before 1 December 1951, the date on which the squadron was removed from unrestricted air combat; by contrast, the Australians scored five confirmed MiG kills, all on or after 1 December. Two of those successes were particularly notable as they were achieved by recent graduates of No. 1 RAAF College Course, Pilot Officers J.L. Surman and W.H. Simmonds, in May 1952; regrettably, Surman was killed on an armed reconnaissance mission only a month later. Three weeks before Surman's death the dux of No. 1 College Course, Pilot Officer D.N. Robertson, had also been killed, apparently the victim of ground fire. Pilot Officers Robertson and Surman were two of the forty members of No. 77 Squadron to die on service in Korea, thirty of whom were killed in action, eight in flying accidents and two in ground accidents.[41] Five of the pilots were RAF officers on loan, a high percentage given their low overall representation. After eighteen months combat, twenty-five per cent of No. 77 Squadron's pilots had been killed or captured, an extraordinarily high figure.[42]

Because of the high casualty rate and the financial cost of keeping the RAAF in Korea, Minister for Air William McMahon had suggested withdrawing No. 77 Squadron as early as April 1952. Prime Minister Menzies, however, appreciated better than most of his ministers the importance of the squadron's contribution to wider security issues and the damaging effect any precipitate withdrawal would have on Australia's crucial and developing relationship with the United States.[43] Although

armistice negotiations had started in June 1951, it was not until 27 July 1953 that an agreement was signed in Panmunjom, to take effect at 10.00 p.m. Far East Air Forces aircraft conducted full-scale operations to within thirty minutes of the cease-fire, by which time No. 77 Squadron had flown 15,071 operational sorties and destroyed 3700 enemy buildings, 1408 vehicles, ninety-eight railway trains and carriages, sixteen bridges and five MiG-15s.[44]

Meteor Mk 8s of No. 77 Squadron lined up on the runway at Kimpo for a squadron strike, early 1953. RAAF

No. 77 Squadron remained in Korea for over a year after the cease-fire, at Kimpo until March 1954 and then at Kunsan ('K8') until 12 October, when the Meteors were flown back to Iwakuni. Some consideration was given to shifting the squadron from Japan direct to Malaya as part of the proposed Commonwealth Far East Strategic Reserve Force, but the timing was wrong as the first fighter squadron was not due to deploy to Malaya until 1958; and in any case the RAAF wanted to use its newly acquired Sabres in Southeast Asia. This time No. 77 Squadron's preparations to return home were not interrupted by a telephone call directing the men to go to war instead. On 14 November the squadron left Kure on the aircraft carrier HMAS *Vengeance*. The other RAAF units gradually followed, in an order determined by their role with what was left of the British Commonwealth Forces Korea (previously Bcof). Two Dakotas from No. 36 Squadron were the last to leave in July 1956.

The United Nations action in Korea prevented the communist occupation of the South, in itself sufficient reward and justification for the commitment. On a more parochial note, No. 77 Squadron's involvement marked a turning point for the post-war RAAF. The conflict placed defence squarely back in front of Australia's politicians and population, who since World War II had largely ignored the military. Now, when the Air Force's leaders argued for front-line equipment—a topic which had assumed a particular edge in view of the Meteor experience—those in power listened. Invaluable operational lessons had been learned. Wing Commander Cresswell returned to Korea in April 1953 to assess No. 77 Squadron's progress since his tour as commanding officer two years earlier. In a report to the RAAF's hierarchy, Cresswell drew attention to deficiencies in both instrument flying and air-to-air combat skills.[45] Measures had already been taken to redress the first problem by raising standards at the flying

training schools. As far as air combat was concerned, it would not be sufficient, Cresswell reported, simply to re-equip the RAAF with F-86 Sabres: pilots would have to be sent to RAF and USAF squadrons to bring themselves up to date with the latest techniques. While it was disappointing that those deficiencies had developed, they had at least been recognised; and there was nothing that hard work and a more reasonable allocation of resources could not fix. On the positive side of the ledger, the RAAF had acquired a pool of fighter and transport pilots with a wealth of combat experience.

A number of important air power lessons emerged. First, No. 77 Squadron profited from its pilots' versatility, which enabled them to perform effectively in a number of roles. Second, during a visit to Korea, the AOC Eastern Area, Air Vice-Marshal J.P.J. McCauley, noted that the South Africans enjoyed a constant supply of spares and replacements for their American aircraft, whereas the RAAF, with its British-made Meteors, was sometimes short of essential items.[46] The significance of 'interoperability' was not lost on McCauley. During his tenure as CAS from 1954 to 1957, the RAAF began to re-equip almost totally with American aircraft. Third, major difficulties were experienced with the massive air interdiction campaign because Fifth Air Force planners never really came to grips with the fact that it is enormously more difficult to interdict a supply system based on peasant labour rather than mechanised transport. Finally, the grand notions of victory through air power alone which had been promoted since Hiroshima and Nagasaki meant little if airmen were prevented from using the full force at their disposal. That was the case in Korea, where political considerations and the problem of target discrimination combined to debar the use of nuclear weapons and inhibit the choice of targets for conventional attack. A vicious war on the Korean Peninsula was bad enough; no-one wanted it to escalate into World War III through the peremptory use of nuclear weapons or inflammatory massive conventional attacks on China. Given the nature of the air war in Vietnam a decade later, it seems those last two lessons were not fully understood by the USAF and the RAAF.

One other unsatisfactory outcome should be mentioned before concluding on a positive note. During World War II circumstances had denied the RAAF its fair share of senior command appointments.[47] Unfortunately the same thing happened in Korea, where no officer above the rank of wing commander served on a United Nations Command headquarters staff, even though the size and quality of the RAAF's contribution gave it a strong claim to several posts with the Fifth Air Force Headquarters. Robert O'Neill has described the RAAF's failure to take advantage of that valuable planning experience as 'perhaps the most serious defect' of Australia's involvement in the air war.[48]

Notwithstanding No. 77 Squadron's fine combat record during the three years of the Korean War, the RAAF's greatest contribution to Australian security came during a meeting in the White House only three months after the war started. Since the end of World War II both the Chifley and Menzies governments had worked assiduously to convince the United States to conclude a 'Pacific pact' with Australia, convinced that

the proposed treaty was critical to national security. The American response had, however, been cautious. Washington did not consider the matter a priority; further, the proposed pact fairly clearly was aimed at Japan, a country the United States wanted to rebuild as quickly as possible as a bulwark in the East against communism. No. 77 Squadron's early success in Korea proved to be the key to overcoming American diffidence.

Australian Minister for External Affairs Sir Percy Spender visited Washington in September 1950 where he was received by President Harry S. Truman. Only days before Spender's visit, United States Assistant Secretary of State Dean Rusk had expressed his 'warmest thanks and admiration' to Australian officials for 'the work of the RAAF over Korea', about which he was receiving 'day after day most excellent reports'. In addition to that official recognition, No. 77 Squadron had made a major impact on American public opinion.[49] President Truman reflected that goodwill. Spender was supposed to make only a brief formal call, but with the president's encouragement he took the opportunity to raise the subject of the proposed Pacific pact. Robert O'Neill has concluded that 'there can be no doubt' that the Truman/Spender meeting was the critical event leading to the Anzus Treaty, which since 1951 has been the centrepiece of Australian foreign and defence policy. In particular, O'Neill credited 'the high proficiency shown by No. 77 Squadron' as the main reason for the excellent reputation Australia enjoyed in Washington.

The RAAF had gone into Korea in many respects run down and poorly equipped. Expertise which had been gained at great cost during World War II was rapidly eroding. Korea changed all of that, albeit once again at a high cost. By mid-1953 the RAAF was one of the few air forces in the world with combat experience in air-to-air and ground attack operations using jet aircraft. And if there were ever any doubts after World War II that the RAAF eventually would establish its main links with the USAF rather than the RAF, they had been laid to rest. The RAAF still had a long way to go before it could consider itself safe solo, but a great deal of progress had been made.

CHAPTER 13

MALAYSIA AND SINGAPORE

The assassination of three British estate managers on 16 June 1948 at the tin-mining town of Sungei Siput, twenty-nine kilometres north of Ipoh, signalled the start of the Malayan Emergency. Encouraged by the humiliation of European colonialists by Japanese troops during World War II and the success of communist revolutionaries in China and Greece against apparently stronger opponents, the Chinese-dominated Malayan Communist Party, under the charismatic leadership of Chin Peng, a 'strange, courteous, bookish ... individualistic' man, believed the time was right to seize power through armed action.[1] The backbone of the insurgency would be the 5000 or so members of the Malayan People's Anti-Japanese Army who had fought alongside Commonwealth forces during the war but who had now become the Malayan People's Anti-British Army. Chin Peng developed a three-phase plan which would start with a campaign of terror in remote areas, progress to the 'liberation' of those areas, and conclude with large-scale attacks against major urban centres, the infrastructure and the economy. As the campaign evolved, the communists expected to attract growing support from the 2,000,000 Chinese who comprised twenty per cent of the population, and many of the Malay peasants from the rural kampongs (villages).

Known by the polite British euphemism of 'emergency', the armed struggle in Malaya from 1948 to 1960 was in fact a war. The resort to semantics was necessary to protect the colonists from financial and property losses: insurance policies commonly in force at the time became void in the event of a civil 'war' but remained valid during a civil 'emergency'. The use of the title 'emergency' also gave a clue to another distinctive aspect of the conflict. Following his appointment in September 1948 as high commissioner of the Federation of Malaya—in effect, as the country's ruler—the British diplomat Sir Henry Gurney decided the armed forces were not going to control the war. Because the conflict was motivated by ideological differences, Gurney believed British strategy would have to emphasise 'armed support for a political war, not political support for an army war'.[2] The armed forces' role would be to help the government restore law and order, an important distinction from the more common role of defeating the enemy militarily.

The British administration struggled to turn Gurney's astute analysis of the nature of the conflict into action until the arrival in April 1950 of Lieutenant General Sir Harold Briggs. As Director of Operations, Briggs co-coordinated the activities of all security forces, civil and military, on behalf of the high commissioner. It was Briggs who conceived the two-part strategy on which the eventual victory was based. In the first instance, the security forces would have to separate the communist terrorists (the 'CTs') from the population and undermine their support, a task which would rely heavily on the police, civilian informers and secret agents. When that had been done,

it would be the job of the military and police forces to seek out and destroy Chin Peng's armed bands.

When Briggs took over, Chin Peng's forces were still in phase one of their insurgency, the campaign of terror in remote areas. The success of the Malayan Peoples' Anti-Japanese Army during World War II had shown how difficult it was to find, track and destroy small bands of guerillas in the dense jungle which covered about eighty per cent of the Malay peninsula. Operating in groups usually no larger than a dozen, often less, the CTs would be equally difficult to find and, when they were, the application of massive firepower was unlikely to be necessary. Briggs decided that the use of air forces in Malaya would be governed by those circumstances.

Australia's strategic interest in Malaya had been obvious during World War II when for some months it seemed possible the peninsula might provide a bridgehead for a Japanese invasion. That interest was reflected in Australia's post-war policy of forward defence and the establishment in 1949 of the Australia–New Zealand–Malaya defence arrangements, under which contingency plans were developed for the defence of the region by the two Anzac countries and Great Britain.[3] As the CTs became more active, pressure from Britain for an Australian presence in Malaya increased, culminating in a formal request for armed forces in April 1950. When Britain had made a similar request in response to growing Japanese aggression in 1940, the Australian Government had turned first to the RAAF, despatching four squadrons to Singapore. Ten years later the government once again turned first to the Air Force. Unlike the members of the regular Army, whose terms of enlistment confined their employment to Australia, the RAAF (and the RAN) could be sent overseas as required. On 27 April 1950 the Defence Committee agreed that a squadron of eight C-47 Dakota transports and a flight of four, perhaps six, Lincoln heavy bombers could be provided at short notice, a decision facilitated in part by the return to Australia in late 1949 of ten experienced C-47 crews from the Berlin Airlift.[4] Shortly afterwards Prime Minister Menzies announced his government's decision to send the C-47s to Singapore but made no mention of the Lincolns. No further action was taken until 27 June when, rather curiously, in response to the North Korean invasion of South Korea two days previously, Menzies announced Cabinet's decision to supplement the C-47s in Malaya with six Lincolns.[5]

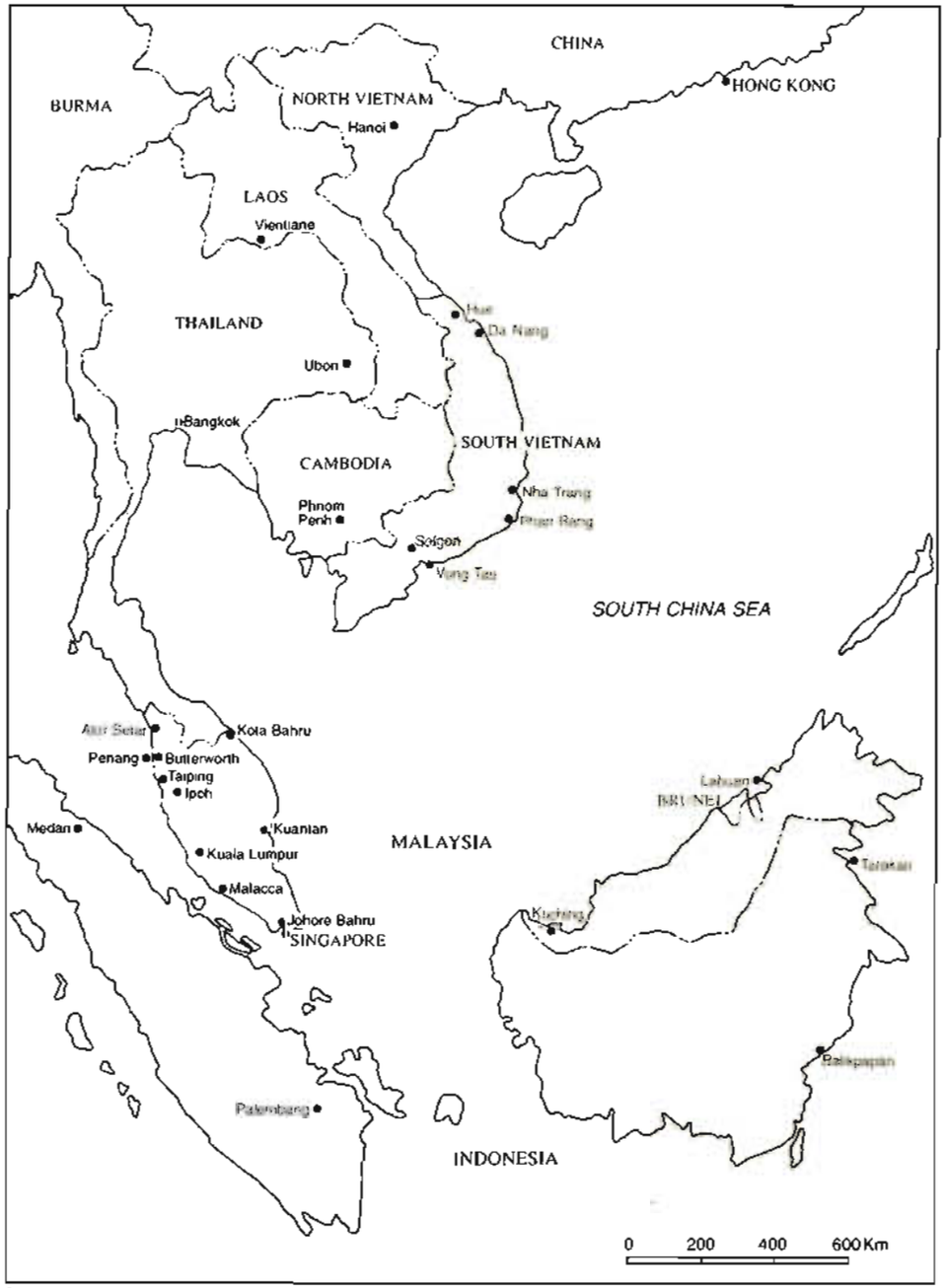
Negotiations for the deployment of the aircraft were conducted by the AOC Eastern Area, Air Vice-Marshal J.P.J. McCauley.[6] No. 1 Squadron's Lincolns were to be based at Tengah on the western side of Singapore and conduct offensive operations against the CTs; while No. 38 Squadron's Dakotas would move cargo, troops and VIPs, and carry out supply drops and casualty evacuations, from Changi airfield on the eastern side of the island. Tours of duty were set at nine months for aircrew and a year for ground staff. Both squadrons would come under the operational control of the RAF's Air Headquarters Malaya (renamed No. 224 Group in September 1957),

which itself was subordinate to the RAF's Far East Air Force. Concern that the RAAF would lose control of its units, as had happened in the United Kingdom during World War II, prompted the establishment of a superior RAAF Headquarters in Singapore, No. 90 (Composite) Wing, commanded by the well-known identity Group Captain 'Paddy' Heffernan.

No. 38 Squadron arrived in Singapore on 19 June 1950 under the command of Wing Commander J.F. 'Ginty' Lush, with No. 1 Squadron following on 16 July led by Squadron Leader L.H. Williamson. Notwithstanding frequent dissatisfaction with the poor standard of food provided by the RAF, living conditions were generally pleasant at Tengah and Changi. Messes and living quarters were large gracious buildings featuring open spaces and high ceilings to create cooling breezes, and furnished with the cane chairs, bamboo blinds and slow overhead fans which had come to characterise one aspect of colonial life in the Orient. The point of Chin Peng's insurrection was, of course, to put an end to that life. Servants were another luxury most of the Australians were not accustomed to. When the shopping and night-life associated with Singapore's position at the crossroads of the East were added, service in the Malayan Emergency acquired something of an exotic reputation within the RAAF.

No. 38 Squadron's first mission in support of Operation Firedog, as the air campaign in Malaya was known, was flown on 21 July when a Dakota captained by Squadron Leader J.B. Fitzgerald completed a routine courier run to Kuala Lumpur, Ipoh and Taiping. From then on the squadron's missions generally consisted of either moving troops, passengers and cargo on scheduled or special flights; or supply dropping. Transport aircraft were an essential element of the Briggs Plan, which required police and army patrols to occupy the jungle and kampong areas throughout the Malay peninsula on a semi-permanent basis. It was the transport crews who positioned the patrols and their equipment, and then resupplied them. Troops operating deep in the jungle on search and destroy operations for weeks at a time were entirely dependent on aerial resupply, which often had to be made into remote areas and very small drop zones, conditions which tested flying, navigation and dropping skills. RAAF airlift crews also participated in psychological operations, dropping leaflets urging the CTs to surrender, a tactic which reportedly was very successful.[7]

No. 38 Squadron's activities were not confined to Malaya. With Australian forces fighting in North Asia and diplomatic activity flourishing throughout Southeast Asia, medevac, VIP and courier flights could range as far as Ceylon to the west and Borneo, the Philippines, Japan and Korea to the east. Consequently the flying rate also flourished, reaching three hundred and fifty hours a month, a figure considerably more than the Air Board had anticipated, and one which the RAAF's limited resources could not sustain, especially when the demand for airlift started to increase in the far more intense and worrying war in Korea.[8] Responding to that demand, in November the Air Board redeployed four of No. 38 Squadron's Dakotas and their crews to Iwakuni for medevac and other air transport tasks.



Southeast Asia

The majority of British transport aircraft supporting Operation Firedog were based in or around Kuala Lumpur as the central location afforded a degree of flexibility Singapore lacked. No. 38 Squadron's four remaining C-47s moved forward to Kuala Lumpur in April 1951, assuming prime responsibility with the RNZAF's No. 41 Squadron for supply dropping.[9] Each unit delivered about two hundred tonnes of stores a month to the soldiers and police in the jungles, usually in 90-kilogram bags suspended from parachutes. During Operation Helsby close to the Thai border in late 1951 and early 1952, RAAF and RNZAF Dakotas and RAF Valettas completed a major paradrop and aerial resupply task over a period of five weeks. About one hundred and twenty-five tonnes of stores were dropped, of which less than one per cent was lost, an exceptional achievement since many drop zones were small and surrounded by high trees, and the weather was often poor and the terrain hostile. The Australians redeployed to Changi in July following a decline in the requirement for aerial resupply along the border.[10]

By the end of 1952 the RAAF's transport fleet could no longer meet its commitments in Australia and overseas, the demand having risen to about twice the available effort. Cutbacks had to be made, and when the Australian chiefs of staff accorded the lowest airlift priority to Malaya, the remainder of No. 38 Squadron was withdrawn in November to rejoin No. 86 Transport Wing at Richmond. During the Emergency the squadron had flown more than two million kilometres throughout Southeast Asia, carried over 17,000 passengers and about 2000 tonnes of freight, dropped about eight hundred tonnes of stores, and evacuated 326 wounded troops.[11]

The transport force's contribution to the insurgents' eventual defeat attracted universal approval. No such consensus attended the offensive operations, which drew strong criticism from politicians and soldiers, and even from some of the aircrew who flew the missions. In the opinion of the noted counter-revolutionary warfare expert Richard Clutterbuck, air strikes in Malaya were almost 'wholly unsuccessful', probably doing more harm than good by killing innocent people and destroying their crops and homes.[12] The results did seem damning when measured against the grim yardstick of the body count. From 1950 to 1958 No. 1 Squadron's Lincolns were the mainstay of Commonwealth offensive air operations, dropping eighty-five per cent of the 35,000 tonnes of bombs used during the campaign. The return on that effort does not read impressively. From its almost 4000 sorties the squadron killed only twenty-three terrorists, sixteen of whom could consider themselves particularly unfortunate, having been accounted for in a single strike. Clutterbuck concluded that such 'senseless' bombing only induced a feeling of 'contempt' for modern weapons among the CTs and the Malayan peasantry, thus undermining the government's campaign.

The thinking behind the bombing campaign was more complex than General Clutterbuck's judgment suggests. The original intention of the air strikes was to kill as many terrorists as possible.[13] As the bombing campaign unfolded and its limitations were exposed, changes were made to the tactics used in pursuit of that objective. Two types of bombing attacks were carried out, the first against pinpoint targets such as

camps or other reported enemy troop concentrations, and the second against areas reliably reported to harbour terrorists. Area targets generally were about 1000 metres square or 6000 metres long. Before No. 1 Squadron arrived pinpoint attacks were the preferred option and had been relatively successful, as the terrorists had not come to appreciate the dangers of bombing and were commonly caught in the open in groups of two or three hundred. But by the time the Australian Lincolns flew their first operation on 26 July 1950, the CTs had reacted to their early losses and were utilising elaborate camouflage as well as the natural cover of secondary jungle. Area bombing raids therefore became the favoured technique, the idea being not so much to kill the terrorists directly as to drive them out of base areas or sanctuaries into ambushes, where ground forces would finish them off. Thus, direct kills from bombing were considered a bonus.

Lincolns from No. 1 Squadron rain bombs on the Malayan jungle, 1950s. The loose formation indicates that a large area was being attacked. RAAF

In addition to the area and pinpoint strikes, the Lincolns were employed on night-time 'harassment' raids, spending some five or six hours droning between various 'targets', dropping a single bomb every half hour allegedly to disturb the enemy, a role which, far more than the area attacks, seemed to corroborate Clutterbuck's discouraging assessment.

Putting aside for the moment the effectiveness of the offensive air operations, No. 1 Squadron's Lincolns were particularly well suited to the task. The Lincoln had the range to cover the entire Malay peninsula from Tengah, and carried specialist navigators who could get the aircraft to the right place at the right time, not always an easy job. The Lincoln was powerfully armed with up to fourteen 450-kilogram bombs, four .5 calibre machine guns and two 20-millimetre cannons. Unlike the jet bombers which replaced it in the final years of the Emergency, the Lincoln flew best at slow speeds, a characteristic which suited low-altitude operations in a hot, hilly country where targets were often hard to find and there was no anti-aircraft fire.

Several techniques were used to conduct strikes. Crews might simply navigate to a briefed target and release their bombs without ever contacting other air or ground forces. Navigation skills were high, with experienced crews sometimes finding their way by reference to subtle differences in the colour of the jungle they had come to recognise. Occasionally a forward air control (FAC) aircraft flown by a pilot familiar with the area might provide final run-in directions and mark the target with smoke; alternatively, the FAC might mark a run-in 'gate' with smoke or flares, which the Lincolns would overfly on a precise heading and drop their bombs after a precise time, a technique intended to retain surprise by removing any need for the bombers to circle in the area looking for their target. The same principle could be used with friendly ground forces, who could mark a 'gate' with smoke signals, balloons, flares, a radio beacon or, at night, searchlights. From 1956 onwards a mobile ground radar unit known as a target director post was sometimes used to provide more sophisticated radio guidance by vectoring aircraft to the bomb release point, a technique which not only made bombing possible in any weather but also preserved the element of surprise. Regardless of the technique used the bombing was, according to ground reports, extremely accurate. The RAAF's expertise was appreciated by planners in the Far East Air Force as No. 1 Squadron was the only bomber unit tasked for night operations.

A strike might involve one aircraft or as many as ten if the Australians were joined by RAF bombers, with the larger formations often flying in Vics (a 'Vee' formation) of three or five aircraft at altitudes between nine hundred and 2440 metres above ground level and dropping their bombs simultaneously on the leader's call. If there was a camp to destroy or troops to flush out beneath the dense jungle canopy which almost invariably obscured targets from the air, the instantaneous detonation of up to 63,000 kilograms of high explosive—a massive load which made the jungle erupt in smoke, flame and dust—was likely to do the job. Having dropped their bombs the Lincoln crews would descend and strafe the area with gunfire: if there was some doubt over the worth of the bombing, there should have been none regarding the gunnery which, when no target was visible, was unquestionably an exercise in futility.

Not all missions needed the Lincoln's long range. During 1953 the CTs were active in the Johore Province, almost immediately off the end of the runway at Tengah across the Johore Strait. The Australians occasionally found themselves tasked for missions in which they barely had time to retract the landing gear and level out after take-off before they were over their target. Fourteen 450-kilogram bombs would be dropped, a 180° turn left or right made, and the aerodrome circuit rejoined for landing after an operational mission which might have lasted no more than ten or fifteen minutes.[14]

Regardless of the way in which offensive air operations were conducted, there was one inviolable rule. Every strike had to be authorised by the Joint (military/police/civilian) Operations Centre in Kuala Lumpur to minimise the possibility of attacking civilians or non-military targets. An absolute embargo was placed on inhabited and cultivated areas, unless designated as enemy areas by the operations centre, and crews could be court-martialled for damaging rubber plantations. Those inhibitions

frequently caused delays while targets were cleared, seriously prejudicing the element of surprise and, as a consequence, the effectiveness of many strikes. During a visit to the operations centre while he was CAS, Air Marshal Sir John McCauley was disturbed when he overheard the details of a proposed RAAF strike against a CT camp being passed to various groups for clearance over an open telephone line. McCauley was not surprised when the soldiers who followed up the RAAF attack found the camp deserted.[15] A war can, however, only be fought in accordance with the prevailing political ethos and, given the enemy's small numbers, the difficulty of distinguishing friend from foe and the importance of not alienating the population in what was essentially a psychological struggle, those constraints were essential.

The Lincolns were relieved in mid-1958 by the Canberra jet bombers of No. 2 Squadron which had deployed to Butterworth as part of the Commonwealth Strategic Reserve, a subject which is discussed later in this chapter. By then the insurgency was all but over. The success of the civil/military action against the CTs had reduced the strength of the Malayan Communist Party from a peak of about 12,000 in 1947 to less than 1000, the majority of whom, still under Chin Peng's leadership, were confined to areas around the Thai border which they used as a sanctuary.[16] Armed success had been parallelled by political and civic progress, the highlight being Malaya's declaration of independence from Great Britain in 1957. No. 2 Squadron's Canberras consequently did not have a lot to do although some missions were flown, including several large formation strikes. Later still RAAF Sabre fighters from the strategic reserve also flew a number of missions against the CTs. In addition to bombing and strafing suspected enemy positions, the Sabres used their supersonic speed to generate sonic booms in an attempt to simulate artillery fire and panic the terrorists into breaking cover, a tactic which suggests the use of offensive air capabilities in Malaya was moving into the realms of the ridiculous. Further escapades were avoided when Britain officially declared the Emergency over on 31 July 1960, an event marked by a Commonwealth air forces flypast over Kuala Lumpur.

The question of the effectiveness of the bombing operations remains. General Clutterbuck's authoritative comments have already been noted. His assessment was endorsed by No. 1 Squadron's commanding officer from 1955, Air Commodore C.H. Spurgeon. Speaking at an RAAF conference forty years later, Spurgeon criticised Operation Firedog as an exercise which did little more than destroy Malayan foliage and kill jungle animals. Illustrating the divisions which the subject generates, the next speaker at that conference, Air Commodore A.D.J. Garrisson, who flew with No. 1 Squadron as a wing commander in 1952–53, described the unit's bombing as a considerable success.[17]

Statistical and official military analyses have been equally inconclusive. In 1950 the AOC of RAF Malaya, Air Vice-Marshal G.H. Mills, was challenged by his DCAS in London, Air Chief Marshal Sir Ralph Cochrane, over the Lincoln's results. Taking those results on their face value, Cochrane suggested they did not seem to justify the effort involved. While Mills was preparing his reply, the man who had conceived the plan which led to the eventual victory, Lieutenant General Sir Harold Briggs, took the

opportunity to make several points in a message to London. Briggs argued that while the bombing campaign was expensive, it kept the insurgents on the move and enabled the ground forces to make more frequent contact than would otherwise have been possible.[18] He also stated that air strikes were being used because no other effective way of attacking the terrorists had been discovered.

Briggs' military analysis of air operations was followed by Air Vice-Marshal Mills' statistical analysis. Because of the unique circumstances, Mills believed the use of conventional statistical yardsticks to measure the effectiveness of the air force's contribution was unfair and misleading. He accordingly had introduced a system of recording all CT casualties within designated distances and times of all air bombing and resupply missions, his logic being to attribute those casualties not only to ground force action but also to the disruptive effect on the enemy of bombing, and the positive effect on the Commonwealth forces of aerial resupply. The morale of both sides on the ground was the key factor in Mills' approach. Using parameters drawn up in consultation with Army Headquarters, Mills concluded that air action contributed to 30.5 per cent of all insurgent casualties, 26.3 per cent from offensive action and the remainder from supply drops.[19] Perhaps Mills was gilding the lily; on the other hand, there was widespread official support in Malaya for the value of the air force's harassment and resupply role. A more recent review of the data provided conclusions which validated Mills' position while adding some confusion. In summary that review presented four main findings: those Commonwealth battalions which eliminated the most insurgents made the most use of air power; but those which eliminated the fewest insurgents used a disproportionately large amount of available air strikes; air support assisted in about fifty per cent of total guerilla eliminations, with strikes accounting for thirty-three per cent and air supply seventeen per cent; and thirty-six per cent of offensive strikes contributed to the elimination of at least one terrorist.[20]

Neither set of statistics is especially conclusive, although it seems fair to say that air operations played a valuable part in defeating the insurgents. What can be said with complete confidence is that the overall campaign was an unqualified success. The British plan was masterfully conceived and brilliantly executed, and if its originator, Lieutenant General Briggs, was convinced of the importance of his air forces to that plan, then perhaps further speculation is both unwarranted and unnecessary.

As far as the RAAF was concerned, Operation Firedog added to the invaluable operational experience accumulated in Japan, Korea and Malta, and which in sum helped the Air Force pull itself out of the slough of the Interim years. While flying in Malaya was not intrinsically more dangerous than routine training in Australia—no aircraft was lost to enemy action in eight years, and the Australian press tended to describe No. 1 Squadron's operations as a 'milk run affair'—conditions nevertheless were demanding, there was plenty of work, and the job was satisfying.[21] At the political level, the deployment paved the way for what was to become a most

beneficial and important engagement for Australia, as well as the RAAF, in Southeast Asia.

Those benefits extended to higher command experience when the RAF offered their senior operational post in the country, AOC Malaya, to the RAAF.[22] Air Vice-Marshal F.R.W. Scherger took up the two-year appointment on 1 January 1953, becoming the first RAAF officer to hold an RAF command since World War II. Before the war the Duntroon-educated Scherger had been perhaps the RAAF's outstanding aviator, specialising as an instructor and test pilot. A disastrous experience as a senior commander at Darwin when that station was bombed by the Japanese on 19 February 1942 was put behind him with successful tours as AOC of No. 10 Operational Group and the 1st Tactical Air Force in the Southwest Pacific. Attendance at the Imperial Defence College and appointments as DCAS and Head of the Australian Joint Services Staff in Washington suggested that the shrewd and extroverted Scherger was in line for the RAAF's top job.

During his time in Malaya Scherger earned high praise from senior officials for the improved co-operation he fostered with the Army, and for the progress made in most air operations, particularly bombing accuracy by day and night, supply and leaflet dropping, the use of helicopters, and 'sky shouting'.[23] His forthright, gregarious manner seems to have stood him in good stead with his Army and police contemporaries and the equally blunt High Commissioner Sir Gerald Templer,[24] but his readiness to criticise things British and penchant for barracks room humour and language appears to have endeared him less well to some of the RAF members of his staff who 'did not take to him as an individual'.[25]

Following Scherger's tour the RAF and RAAF agreed to share the two air vice-marshal posts in the Far East Air Force, AOC Malaya and senior air staff officer, Far East Air Force, on a rotational basis. Scherger was succeeded in January 1955 by the Australian-born RAF officer, Air Vice-Marshal Wallace Kyle, before Air Vice-Marshal V.E. Hancock took over in June 1957. The contrast between the very proper Hancock, always meticulous in meeting his perceived duties and impeccable in his appearance and bearing, and the informal Scherger, could scarcely have been more pronounced. A 'good thinker' who was another graduate of Duntroon and the Imperial Defence College, and an immensely enthusiastic pilot with a successful war record, Hancock had made a valuable contribution to the reconstruction of the post-war Air Force in a number of posts: director of personnel services during demobilisation; first commandant of the RAAF College; and air member for personnel.

Hancock threw himself into the job in Malaya with characteristic energy. Like Scherger, he made a point of getting out to as many of his units as possible to see for himself what was happening in the field. A teetotaller who nevertheless was an indefatigable participant in mess functions and games, Hancock set a cracking pace. At the end of a day in the office in Kuala Lumpur, it was not uncommon for him to fly himself in a Pembroke to Singapore for a function, land back at Kuala Lumpur at 2.30 a.m., thank his staff, and tell them he would see them in the office at 8.00 a.m. When the headquarters of No. 224 Group (as Air Headquarters Malaya was renamed

during Hancock's tour) was relocated to Seletar in Singapore in 1959, Hancock continued to live in Kuala Lumpur, an arrangement which involved much commuting in the Pembroke. Characteristically, the AOC was undeterred by violent tropical weather, flying through thunderstorms 'without batting an eyelid'.[26] Air Vice-Marshal Hancock's drive, determination to get out and see his command and innate courtesy made him a popular and effective leader; a respected, hard taskmaster who set the standard. Again like Scherger he was to become the RAAF's CAS, and it is clear that he too benefited from his time in Malaya.[27]

The AOC of RAF Malaya, the RAAF's AVM V.E. Hancock, listens to a speech by the Sultan of Penang, c. 1957. V.E. HANCOCK

The last Australian AOC of No. 224 Group, Air Vice-Marshal Brian Eaton, benefited less. By the time Eaton took over in March 1967 the Far East Air Force was suffering from the world-wide defence cuts which were being applied across the British armed forces. No. 224 Group had become a 'shadow' organisation without any squadrons under permanent command, and Eaton's day-to-day job had diminished from operational commander of a powerful air group to chief of staff of the FEAF.[28]

The RAAF's involvement in the Malayan Emergency was indicative of a much broader Australian and Commonwealth interest in Southeast Asian security. It was that broader interest which in 1953 led to proposals for the formation of a

Commonwealth strategic reserve in the Far East. As hopes began to rise of an armistice in Korea, strategic planners started to contemplate redeploying the forces which would be released directly to Malaya to oppose Chin Peng's uprising. In June 1953 the United Kingdom minister for defence, Lord Alexander, wrote to Prime Minister Menzies noting the need to guard against any new aggression in the Far East in general and Southeast Asia in particular.[29] Alexander floated the idea of a Far East strategic reserve comprising forces from the United Kingdom, Australia and New Zealand, which would be based in Malaya and which he believed would be capable of safeguarding Commonwealth interests in the Cold War. Lord Alexander's proposal sat comfortably with Australia's most authoritative security planning document, the Strategic Basis of Australian Defence Policy, which had recently concluded that Southeast Asia was more vulnerable to communist aggression than the Middle East. The document stressed the importance of Malaya, especially if Indochina were lost.[30] For those reasons, Australia's Joint Planning Committee, which included Group Captain G.C. Hartnell, strongly favoured the proposed establishment of a Commonwealth strategic reserve.[31]

The primary role of the planned reserve would be to deter or, if that failed, counter further communist aggression, which meant the major contribution would come from air and ground forces. Citing No. 77 Squadron's experience with the Meteor in Korea as an example of what can happen when a military force is not armed with the most modern weapons, the committee stated that the reserve's training and equipment would have to be at a level at least sufficient to make it effective at short notice against the forces of a 'first class Asian power'. Malaya was endorsed as the force's preferred location because of its good strategic position and sound infrastructure, particularly the access it offered to airfield, communications and port facilities. None of the possible alternative sites of Australia, New Zealand, Hong Kong or Borneo adequately met those requirements.

A major problem for the RAAF was the shortage of people and units, as in mid-1953 five flying squadrons were already serving overseas. Nos 77 and 36 Squadrons were operating in Japan and Korea; No. 1 Squadron was the mainstay of the Commonwealth bombing activities in Malaya; and Nos 75 and 76 Squadrons were based in Malta under the operational command of the RAF's Middle East Air Force. In the circumstances, the RAAF believed it might be able to contribute one bomber squadron to a Commonwealth strategic reserve, with the size of the force to be reviewed if the units from the Middle East and Korea were withdrawn.[32] That was precisely what happened when all three fighter squadrons in Malta and Korea returned to Australia at the end of 1954, a change of circumstances which encouraged RAAF planners to think more along the lines of a composite wing for Malaya, including a headquarters, one bomber squadron, one fighter squadron, a base squadron (administrative and logistical support) and a maintenance squadron.

Prime Minister Menzies announced the decision to commit Australian forces to a Commonwealth strategic reserve on 1 April 1955, stating that in accordance with the purposes of the South East Asia Collective Defence Treaty (Seato), the force was

intended to deter and counter at short notice further communist aggression in Southeast Asia.[33] The commander-in-chief of British forces in the Far East was given the authority to employ Australian units in defensive operations in the event of armed attack against Malaya or Singapore and in offensive operations associated with the Malayan Emergency. Those units were not, however, to be used in civil disturbances without the prior consent of the Australian Government.[34] In addition to their duties with the Commonwealth Strategic Reserve, the RAAF squadrons might be quickly diverted onto Seato operations should, for example, conditions deteriorate in Thailand.

Menzies' decision to base the RAAF in Malaya was criticised by the deputy leader of the opposition, the Australian Labor Party's Arthur Calwell, as a 'colonial expedition', an attitude which in turn was described by External Affairs Minister Richard Casey as 'very wicked'.[35] Notwithstanding those parochial broadsides, when the Commonwealth Strategic Reserve was formally established in 1955, Australia's decision to participate was warmly welcomed by the *Malay Mail* in Kuala Lumpur and the *Straits Times* in Singapore under the headline of 'Allies from Down Under'.

The RAAF's operational contribution to the reserve was fixed as one day-fighter wing of two squadrons, each with sixteen Sabres, and one bomber squadron of eight Canberras. Support would come from a headquarters, maintenance and base squadrons, an airfield construction squadron and a mobile control and reporting unit. All units would be based at the RAF airfield at Butterworth on Malaya's northwest coast, directly opposite the island of Penang. Command of the RAAF would be exercised by the (RAF) commander-in-chief, Far East Air Force, through the AOC of No. 224 Group, an arrangement which included the issue of a general court-martial warrant to the commander-in-chief FEAF for RAAF personnel under his command.[36] Eight RAAF officers would be integrated into the staff of FEAF and No. 224 Group, with the highest post being that of senior air staff officer at FEAF. In a decision which undermined the RAAF's formal chain of command, the Air Board decided that Headquarters RAAF Butterworth would deal directly with the Department of Air on discrete RAAF matters, thus bypassing the nominal operational headquarters, Home Command at Glenbrook.

Initially the RAAF hoped to locate only the supporting units permanently at Butterworth, with the flying squadrons rotating from Australia every three months.[37] That was the cheapest option, reducing by about two-thirds the need for family removals, married quarters, medical services and schooling. As Malaya was an 'operational' zone, albeit a fairly benign one, there were also perceived advantages in keeping families out of the area. However, Defence Minister Sir Philip McBride rejected the Air Force's proposal. During ministerial discussions on the formation of the reserve, the Australian Government had indicated it would base three operational squadrons permanently in Malaya and McBride did not want to go back on that undertaking. According to one Cabinet briefing, Australian ministers had put British Defence Minister Duncan Sandys through the 'third degree' regarding the strength of the United Kingdom's commitment to the region during discussions in Canberra.[38]

It would leave Cabinet open to a charge of 'gross breach of faith' if Australia's own commitment was then based on semi-permanent operational forces.

In the interests of Australia's longer term national security, keeping the United Kingdom involved in Southeast Asia was considered far more important than worrying about the costs associated with developing Butterworth and paying for several hundred RAAF dependants to live in Malaya, so McBride's position carried the day. Cabinet decided that the Canberra squadron should deploy permanently to Butterworth in July 1958 and the Sabres between November 1958 and February 1959.[39] When the Canberras arrived, the Lincolns of No. 1 Squadron would return to Amberley after eight years in Singapore.

The development of regional airfields was central to the deployment of the reserve, with great strategic importance being attached by British Joint Planning Staff to the bases at Penang, Kuala Lumpur, Alor Setar, Kuantan and Butterworth in Malaya; and to Changi, Tengah, Seletar and Paya Lebar in Singapore.[40] Development of the RAF Station at Butterworth was to become the RAAF's responsibility. Butterworth was made available on free loan by the United Kingdom Government, although as compensation for the existing facilities constructed by the RAF, the Australian Government agreed to pay five years rent in advance, on the basis of an annual rent equal to ten per cent of the capital cost of those facilities. Further improvements would have to be made by the RAAF, with the Australian Government accepting full costs.

As had been the case so often, an airfield construction squadron had to prepare the way for the RAAF's flying units. Some work had been done by the RAF to bring Butterworth up to jet standards but a great deal more was needed. Before sustained operations could be conducted by modern aircraft the north–south runway would have to be extended to 2400 metres and strengthened sufficiently to handle aircraft weighing up to 68,000 kilograms with tyre pressures of 1380 kilopascals. Also needed were new and/or refurbished hardstands and taxiways, a control tower, an operations building, underground fuel and oil storage, power and water supplies, arming and bomb storage areas, headquarters, hangars, domestic facilities and accommodation, works which in total would cost £stg2,305,100.[41] Only when that work had been completed could the flying squadrons deploy permanently and Butterworth become an RAAF base. No. 2 Airfield Construction Squadron was given the task.

RAAF works officers visited Singapore in June 1955 to discuss arrangements and later that year No. 2 ACS arrived in Butterworth to start what was a typically arduous and difficult construction job in tropical conditions. The main north–south runway could only be extended into swamp and rice paddy fields, an engineering task made more challenging by frequent monsoonal downpours. Those were, however, conditions which the squadron had encountered and overcome on numerous occasions previously throughout the Southwest Pacific and Asia. Supported by a force of about six hundred Malay, Chinese and Indian labourers, the three hundred men of

No. 2 ACS rebuilt the base to a standard suitable for any aircraft in any Commonwealth air force, including the RAF's nuclear-armed V-Bombers.[42]

On 1 July 1958 eight Canberra bombers from No. 2 Squadron arrived overhead Butterworth in formation, led by the commanding officer, Wing Commander C. Steley. With the concurrence of the governments of the Federation of Malaya and the United Kingdom, the RAAF assumed control of the base as the aircraft touched down. Butterworth had become the most forward Commonwealth air base in Southeast Asia, providing the RAAF with permanent facilities for three front-line squadrons and ancillary units. The infrastructure could also support substantial numbers of visiting aircraft for extended periods, an important feature should either the Commonwealth Strategic Reserve or the Southeast Asian area generally need rapid reinforcement.

Deploying the Canberras from Australia to Malaya was a straightforward exercise as the aircraft had two engines, a ferry range of about 4000 kilometres, and modern self-contained navigation systems, and carried a specialist navigator. Moving the Sabres of Nos 3 and 77 Squadrons was more difficult as the fighter had none of those features. Selecting a satisfactory route was the major issue as the Sabre was constrained by its range and the need to avoid overflying Indonesia, which was not a member of Seato. The route chosen took the Sabres to Townsville (1850 kilometres), Darwin (2100), Biak in Netherlands New Guinea (1700), Guiuan in the Philippines (2075), Labuan in Borneo (1520), and Butterworth (1900). Led by Group Captain G.A. Cooper and Wing Commander C.G. Thomas, nineteen aircraft took off from Williamtown to start Operation Sabre Ferry on 27 October 1958. A keen observer might have noticed that a couple of the Sabres were still marked with the traditional RAF roundel—a red centre circle with white then blue outer rings which had been used on RAAF aircraft since 1921—but that most were already sporting the recently approved 'kangaroo in motion' roundel, in which a leaping kangaroo replaced the red circle to create a distinctively Australian emblem.[43]

No. 3 Squadron's route had previously been surveyed by RAAF Dakotas; a Canberra preceded each flight of Sabres to provide en-route navigation assistance; and Neptunes were available for air/sea rescue. The Aircraft Research and Development Unit also made a valuable contribution by providing updated, very accurate performance figures, which for the first time were displayed on easy-to-use graphic charts.[44] Despite those preparations there were still some nervous moments, especially when several aircraft landed at Darwin with only eight minutes fuel remaining after a flight of two hours twenty-two minutes; while rapid build-ups of tropical thunderstorms occasionally placed flight leaders under pressure at the more remote staging posts of Biak and Guiuan. No. 3 Squadron's first flight of four Sabres arrived at Butterworth on 2 November and the last on the 11th.

No. 77 Squadron followed the same route under the leadership of Squadron Leader G.R. Harvey several months later, the last aircraft touching down at Butterworth on 18 February 1959, after which the two squadrons came under the

command of No. 78 Wing. Air transport support for No. 77 Squadron's deployment presented a nice illustration of the RAAF's improving capabilities, as it was provided by two of the newly delivered C-130A Hercules, compared to the seven Dakotas needed for No. 3 Squadron's ferry.

Dedicated transport support for Butterworth's strike units came from 'C' Flight of No. 2 Squadron, equipped with Dakotas, which in addition to the usual airlift tasks operated VIP services throughout Southeast Asia, and conducted supply and leaflet dropping in the fight against the CTs who still gave the occasional flicker of life along the Thai border. When the Canberras left Butterworth permanently for the war in Vietnam in April 1967, 'C' Flight remained behind and assumed independent status as Transport Support Flight. A rotary-wing tactical transport capability was added in 1964 when No. 5 Squadron's Iroquois helicopters arrived at Butterworth, but within two years they too had departed because of the commitment in Vietnam.

The build-up of the operational units at Butterworth and the growth of the base's population to about 1900 servicemen (including the Royal Malayan Air Force) and some 1400 Malayan civilians marked the start of what was to be a very productive and happy association with Malaya for the RAAF. Job satisfaction was high as Butterworth had a clear operational focus, initially on the Emergency and then on Indonesian aggression as President Sukarno began to implement his policy of Confrontation against the proposed federation of Malaysia. Fulfilling work was complemented by living conditions which generally were extremely pleasant, notwithstanding persistent high levels of petty theft and disturbing communal riots in May 1969.

The colonial legacy was strong. In the 1950s and 1960s young RAAF officers and their wives could still take a first-class passage to Malaya on a cruise ship, meeting for cocktails in the late afternoon and dressing formally for dinner at the Captain's table. Many Air Force families lived in tropical bungalows on Penang Island, a fifteen-minute ferry ride from the mainland. Penang was an exotic home, with its stylish mixture of Asian and British colonial architecture, the tropical vegetation and climate, a potpourri of races, spicy Asian food instead of stodgy meat and three vegetables, and a duty-free port invariably crowded with merchant ships from all parts of the world. Married quarters back in Australia occupied by families recently returned from Butterworth were often easily identified by their high-quality teak furniture, Asian *objets*, and state-of-the-art tape recorders, all bought at duty-free prices. The trappings of a privileged lifestyle were enhanced by tax exemptions and generous allowances. Included in those allowances was a payment for servants: three for air commodores, two for other officers (a cook and a housekeeper), and one for airmen.[45] Relieved of most domestic burdens, the Australians could settle into a lifestyle based on work for the men, followed by social activities centred on the service messes, the tennis club, the Penang Swimming and Golf Clubs, and the Runnymede and Eastern and Oriental Hotels.

Australian High Commissioner to Malaya, Mr T.K. Critchley, opens the RAAF School on Penang Island, 1962. RAAF

Excellent conditions extended to dependants' education. The decision to post families to Butterworth and set tours at two to two and a half years meant that once the RAAF contingent had reached its full strength, about three hundred Australian children would be living in the Penang/Butterworth area. As only limited educational facilities were available, the question of schooling had to be addressed. The RAAF School on Penang Island was built in 1962 to cater for a student population of five hundred and fifty, aged from five to thirteen; high school-aged children had to board in Australia or elsewhere on the peninsula. Most teaching staff came from Australia. Within four years student numbers had grown to seven hundred and fifty, creating a degree of overcrowding which initially was addressed by the use of temporary huts. Permanent extensions were made when it was decided in 1966 to deploy Mirage squadrons to Butterworth, a move which not only increased the student population again, but also signalled Australia's intention to remain in the area. Permanent accommodation for eight hundred and fifty children was approved and the syllabus extended to include secondary education. The school enjoyed a fine reputation.

RAAF Radio Butterworth was another highly regarded Australian institution. Authorisation for the Air Force to operate a radio service was given by the Malayan minister of works, posts and telecommunications in June 1960, on the condition the station relayed broadcasts of national importance from Radio Malaya. Using an obsolescent transmitter with a range of one hundred kilometres provided free of charge by the Australian Broadcasting Corporation, RAAF Radio Butterworth went to air for the first time on 1 August 1960. All staff with the exception of the secretary were volunteers and funding came primarily from RAAF Welfare. For a large number

of Air Force personnel and their families the station became an absorbing hobby, many acquiring polished skills as announcers. Program support was given by the ABC, the BBC, the United States Information Service and, to a lesser extent, Radio Malaysia. Initially on air for only two hours a day, the station's popularity soon saw that extended to a maximum of nineteen hours on weekends, a period which exceeded Radio Malaya and the British Forces' Broadcasting Service in Singapore. The quality of the station's programs attracted an estimated audience of 500,000 in addition to the 2000 Australians at Butterworth.

Overall, the congenial lifestyle tended to foster something of an enclave mentality. There was little social contact between RAAF people and the local community other than the occasional official function.[46] On reflection that was unfortunate, but it was perhaps nothing more than typical of European-Asian relations in those years.

The preceding sections are not intended to suggest that life on the Malay peninsula was a sinecure. Conditions undoubtedly were pleasant, but the fact remained that from the time Nos 1 and 38 Squadrons arrived in 1950 until at least the mid-1960s, RAAF squadrons in Singapore and Butterworth were on an operational footing. As late as 1971 Royal Malaysian Air Force Tebuan strike aircraft could be watched taking off from Butterworth to attack the remaining pockets of CT resistance within one hundred or so kilometres of the base. The Australians were not directly involved in those operations after 1960, Britain having officially declared the Emergency 'over'. During the early 1960s the RAAF was, however, engaged in active service of a sort against Indonesia during the episode known as Confrontation.

'Konfrontasi' was an untidy policy directed by Indonesia's mercurial President Sukarno against the proposed federation of Malaysia, which would incorporate Malaya, Singapore and the British territories on Borneo. Sukarno's aggression appears to have been motivated by a combination of political opportunism and genuine anti-colonial sentiment. Some elements of the political forces he had to balance to retain power in Indonesia were strongly opposed to the federation, which they labelled as neo-colonial.[47] Avoiding substantial military conflict, which certainly would have seen his largely ramshackle armed forces crushed, President Sukarno instead embarked on a strategy of political and military aggravation against Malaysia described by his foreign minister Dr Subandrio in January 1963 as 'Confrontation'. Ignoring Indonesia's threats, on 16 September Malayan Prime Minister Tunku Abdul Rahman formally announced Malaysia's existence. Over the next few years Indonesian action against the new federation included paratroop drops near Johore; small unit raids and armed skirmishes throughout the new state, but especially in Borneo; the incitement of riots and civil disturbances; and deliberate illegal intrusions into Malaysian air space. It was the latter irritation which occupied the RAAF's attention.

Air defence forces in Malaysia/Singapore consisted of the RAAF's two squadrons of Sabre day fighters at Butterworth and one RAF squadron of Javelin all-weather fighters at Tengah, while an RAF squadron of ground attack Hunters from Tengah

could also be diverted to the air defence role if necessary. The fighters were supported by air defence radars. On 17 July 1963 RAAF Sabres made two separate sightings of unidentified aircraft—believed to be Indonesian MiG-19s—near the Malayan coast one hundred kilometres south of Penang.[48] One of the intruders was pursued towards the Indonesian town of Medan in Sumatra, two hundred and sixty kilometres across the Strait of Malacca. Immediate cablegrams were sent from the Australian Commission in Singapore to the Departments of Defence, Air, External Affairs and the prime minister. Although Far East Air Force commanders believed intrusions were unlikely to become a regular aspect of Confrontation, radar surveillance at key air bases was extended to twenty-four hours a day in lieu of the previous partial service, and the RAAF continued its standard practice of intercepting all unidentified aircraft detected by Butterworth radar. In the meantime, while the situation in general and rules of engagement in particular were reviewed, Commonwealth fighter aircraft were neither placed on standby nor armed.

The readiness status of the air defence force was changed fundamentally following that review. During daylight hours from October 1963 onwards, No. 78 Wing kept two Sabres armed with live Sidewinder missiles and cannons continuously on 'Alert 5' status, which required the fighters to take off within five minutes of an order to scramble. Similar requirements could be placed on RAF fighters. To meet the new readiness state, No. 78 Wing had to keep three aircraft (one spare), three pilots (one of whom acted as operations officer) and eight ground crew on duty about fourteen hours a day, seven days a week. Two shifts operated daily, changing at noon.

Rules of engagement for the Malaysian peninsula were prepared by the RAF and endorsed by Australian, Malaysian and British authorities.[49] Air space intrusions by the Indonesian Air Force for reconnaissance, probing or psychological purposes were not to be allowed. Four categories of possible intruder aircraft were identified: suspected reconnaissance, psychological warfare, unidentified, and suspected hostile. Great circumspection was to be observed during any interception of the first three categories; if at all possible, Commonwealth pilots were to make a positive identification. Intruder aircraft conducting reconnaissance or psychological warfare missions were to be directed away from Malaysian air space by the use of internationally recognised signals. Warning shots could be fired only after authorisation on a case-by-case basis from the air defence commander of the Far East Air Force, and only from a position 1000 metres to the port and a little ahead of the intruder, on a slightly converging course. Engagements of hostile aircraft fell into one of two classifications. The first was straightforward—Commonwealth pilots could open fire on an aircraft declared hostile by the air defence commander. Second, they could attack on their own initiative an intruder who was over Malaysian territory or territorial waters and had committed one of the following acts: released bombs, or fired missiles, rockets or guns 'other than on a recognised range' (a somewhat cautious caveat); conducted unauthorised minelaying operations; landed troops without a proper clearance, or dropped supplies or paratroops; or fired on the intercepting aircraft. In no other circumstances was a Commonwealth pilot to open fire without orders from the air defence commander.

Modified rules of engagement were issued by the RAF in February 1964 for its Javelin pilots in East Malaysia (Borneo), where the infiltration of Indonesian ground forces was more extensive and warranted stronger action. British fighter pilots who positively identified any Indonesian military aircraft which was definitely operating inside the East Malaysia border or within the five-kilometre (three-mile) limit of the territorial waters were to 'engage and destroy it'.[50] That amendment had been approved by Australian authorities but did not apply to the RAAF Sabres, which at the time were not permitted to operate over Borneo. However, as Indonesian aggression continued to cause concern, the modified rules were made applicable to the Malay peninsula and Singapore in October 1964. With the concurrence of the RAAF's CAS, Air Marshal Sir Valston Hancock, rules which simplified the definition of a 'hostile' aircraft were also adopted. Any Indonesian aircraft which could be positively identified operating inside the territorial air space of Malaya or Singapore was to be destroyed. Under the heading 'Orders to captains of interceptor aircraft', instructions were issued to Commonwealth fighter pilots as follows:

> You are to investigate any aircraft flying inside the territorial air space of Malaya and/or Singapore which has not been notified to you as having full statutory clearance.
>
> If you encounter any Indonesian military aircraft, which you can positively identify as such, operating definitely inside the territorial air space of Malaya and/or Singapore, and if either you cannot establish [radio] contact with the appropriate Master Radar Station or the time spent in this process would in your considered opinion prejudice the chance of a successful engagement, you are to engage and destroy it.[51]

Pilots were not to fly into Indonesian territorial air space, even in hot pursuit of an intruder, but they were permitted to destroy an aircraft over international waters if it had been positively identified inside the territorial air space of Malaya or Singapore. When flights of RAAF Sabres began to deploy to Labuan in Borneo in September 1965, they operated under the same rules for that region as the RAF.[52]

Canberras from No. 2 Squadron lined up at Butterworth for an AOC's inspection, 1963. RAAF

Sabre fighters on defensive alert with aggressive rule of engagement were complemented by Canberra bombers ready to attack Indonesian targets.[53] No. 2 Squadron's crews prepared target folders which included photographs, likely enemy defences, approach and departure routes, and altitudes. Some targets were to be attacked by individual aircraft, others by the whole squadron. Regardless of the size of a formation, all aircraft would carry six 450-kilogram bombs. Crews familiarised themselves thoroughly with their targets, and simulated strikes against Indonesia during training flights over Malaysia.

Methods other than intrusions into Malaysian air space were available to the Indonesians to inconvenience the RAAF and its allies. On 3 July 1964 the Australian Embassy in Jakarta was advised that overflight clearances had been refused for two proposed RAAF C-130 tasks and eight RNZAF transport tasks. A blanket clearance issued for regular C-130 courier flights from Darwin to Butterworth and return had also been withdrawn. Australian diplomats in Jakarta were not surprised by the Indonesian action, having expected it for some time. Ambassador K.C.O. Shann wanted an RAAF aircraft to test the Indonesians by flying from Darwin to Singapore as soon as possible, over waters claimed by Indonesia but which Australia regarded as international.[54] Because of the possibility of interception by an Indonesian Air Force MiG-17 or MiG-21, Shann suggested the RAAF should send a combat rather than a transport aircraft. Air Marshal Hancock endorsed Shann's proposal and urged the government to let him test Indonesian resolve by sending a Canberra over the standard Darwin–Singapore route at night (which would make any attempted interception more difficult), a stratagem which had already been used by RAF V-Bombers on several occasions without any reaction. The Australian Government, however, procrastinated for some months, during which time RAAF aircraft transited to Butterworth and Singapore via Cocos Island, avoiding Indonesian air space.[55]

Tensions associated with Confrontation peaked following a landing by about one hundred Indonesian paratroops in northern Johore on 2 September 1964. Concerned that the Indonesian action might indicate a disturbing escalation of hostilities, the Australian Cabinet ordered sixteen Sabres from No. 76 Squadron at Williamtown to deploy to Darwin within forty-eight hours, to provide air defence should the base be used by long-range RAF bombers for retaliatory attacks against Jakarta.[56] In fact the Johore landings were a shambles. Two of the three Indonesian aircraft involved dropped their paratroops in different locations and the third apparently crashed en-route. Within two months the anxiety caused by the affair had dissipated.

From then on, Confrontation itself began to dissipate as quickly as it had emerged. In September 1965, only days after No. 78 Wing's Sabres commenced regular deployments to Labuan to bolster the RAF's air defence system in Borneo, a failed coup in which the local communists were implicated occurred in Indonesia. The country's political scene changed dramatically. Tens of thousands of communists were killed in retaliation, and aggressive opposition to perceived 'neo-colonialism' became a less fashionable political stance. In August 1966 Confrontation was officially declared over. Approvals for RAAF aircraft en-route from Australia to Malaysia to

overfly Indonesia were again issued on a relatively routine basis, and the alert procedures at Butterworth were relaxed.

By 1970 the Australian military establishment did not believe a revival of the confrontation between Indonesia and Malaysia was likely, and even if it did occur, Australia would not be drawn into a limited war.[57] Nor was Indonesia likely to initiate 'confrontation-type' activities against Papua New Guinea as a deliberate act of policy. So improbable, in fact, had the prospect of conflict become that, in one of those curious events which often characterise the perverse nature of international relations, in December 1971 Prime Minister W. McMahon informed Parliament that Australia would make Indonesia a gift of warplanes.

When the last RAAF Sabres were withdrawn from operations in July 1971, the best twenty-three had been stored at Williamtown in the expectation they might later be donated to neighbouring countries wishing to develop their air forces. Sixteen had already been given to Malaysia in 1969, an important political and defence gesture which nevertheless cost the RAAF a great deal of training and support effort, especially at Butterworth where the Royal Malaysian Air Force Sabre squadron was formed.[58] Now, only five years after Confrontation, a similar gift was to be made to Indonesia. The RAAF was again concerned by the associated costs, but the government considered the political gains would be worth the effort, especially as Indonesia's President Suharto had personally expressed interest in the proposal.[59]

RAAF training staff anticipated the job would be less demanding than had been the case with Malaysia, as the Indonesian Air Force had already operated the supersonic MiG-17, 19 and 21, and was believed to have reached a reasonable level of technical and operational expertise. Instead, a survey team which visited Indonesia in November 1971 found that skill levels were low and the infrastructure in disarray. Because of the high profile the matter had assumed in bilateral relations, Cabinet directed the RAAF to proceed, simply noting that more resources would be needed.[60] By mid-1972 the first of about one hundred and fifty Indonesian Air Force personnel had arrived in Australia for air and ground training on the Sabre, and shortly afterwards RAAF technicians left for Iswahyudi air base in Java to install navigation aids and air traffic control communications.

Australia was able to donate Sabres to Malaysia and Indonesia because the RAAF had been re-equipping its fighter squadrons with the Dassault Mirage since 1964. The Mirage acquisition had forced a review of Australia's commitment to the Commonwealth Strategic Reserve and Seato, for if the Butterworth-based Sabres were to be replaced by the new fighters, considerable infrastructure investment would be necessary. In July 1966 the Australian Chiefs of Staff Committee had reaffirmed the policy of forward defence. In the chiefs' opinion, the end of Confrontation had not

materially changed the outlook in Southeast Asia, and there was no reason to believe that the Australian component of the strategic reserve would not continue to be deployed at bases in Malaysia well beyond 1970.[61] That conclusion made the rearming of the Butterworth squadrons with Mirages a formality. There were also good financial reasons to proceed, as it would be cheaper to establish the necessary infrastructure in Malaysia than Australia.[62] Works to the value of $964,100 were approved to upgrade Butterworth to the minimum standard for Mirages, including new aircraft arrester barriers at each end of the runway, engine test revetments, missile storage and maintenance areas, and minor technical facilities. While there was no suggestion that the RAAF's tenure at Butterworth would be anything other than a long one, the Air Board nevertheless directed that as a matter of principle, where practicable any new facilities were to be built into transportable cabins rather than permanent buildings.[63]

Twenty Mirages from No. 75 Squadron arrived at Butterworth on 18 May 1967, supported by three C-130s, two Canberras and two Neptunes. Significantly, the fighters had flown the final leg direct from the Indonesian base of Djuanda near Surabaya. While the approval to use Djuanda as a staging post between Darwin and Butterworth was a clear sign of improving relations, the Australians were understandably keen to impress the large number of senior Indonesian officers present to observe the Mirage's brief stay. It was a matter of considerable national and unit pride for the squadron's commanding officer, the redoubtable Wing Commander J.H. Flemming, when all twenty Mirages arrived and departed on time, apparently without a hitch, and in immaculate condition.[64] As No. 75 Squadron took up residence at Butterworth No. 3 Squadron departed for Williamtown to exchange its Sabres for Mirages; two years later No. 3 Squadron, returning to Malaysia with its new fighters, crossed over in Darwin with No. 77 Squadron's Sabres, whose turn it was to head south for the last time.

Strike and fighter operations dominate impressions of the RAAF's flying operations in Malaysia, a perception which unfortunately tends to push the activities of the air transport units into the background. Reference has already been made to the significant achievements of the Dakota flights and squadrons both during the Emergency and in support of Australian interests in Southeast Asia generally. Less well known but just as important to Australia's standing in the region was the contribution made to the development of the Royal Malaysian Air Force (RMAF) by a number of experienced RAAF transport pilots serving on loan during the 1960s.

The program originated with a request from the RMAF in February 1963 for six officers to assist with planning and operational duties. A wing commander was needed to serve as the RMAF's principal staff officer, a squadron leader to command a transport squadron, and two flight lieutenants and two flying officers to fly as senior pilots with that squadron. The request touched some diplomatic sensitivities for the RAAF and the Australian Government. On the one hand, the RAAF and the RMAF

enjoyed a particularly good relationship which the RAAF was keen to foster, not least because the air forces of the Commonwealth Strategic Reserve were dependent on Malaya for their forward deployment bases. On the other hand, there was concern that the sight of RAAF officers serving with the RMAF might antagonise Indonesia. Australia's Defence Committee decided on balance that the RMAF's request should be supported.[65] However, because of the sensitivities involved, RAAF officers were not to be used on operational tasks and as far as possible were to be confined to advisory or instructional roles.

Those were awkward conditions, especially the caveat on operations. According to the Australian High Commission in Kuala Lumpur, the RAAF pilots would form the backbone of the RMAF's air transport wing.[66] Transport support was crucial to the ground operations which were the prime concern of Malayan security forces, and unless the Australians could be employed as line pilots their utility would be questionable. The high commission suggested the Australians should be allowed to fly on operations in Malayan territory or territorial waters, with any activities outside those boundaries requiring approval from the Australian Government. An exception to those proposed conditions would be necessary in the case of routine Thai border security operations, which often involved an overflight and for which the Thai Government had given standing approval.

Australian officials agonised over the matter as it was widely thought the RMAF might become involved in active service, supporting ground forces against insurgents. While the intensity of any fighting was unlikely to be high, hostilities could always escalate. The possibility that Australian servicemen might have to fight a war in which their country was not officially involved was not a subject to be taken lightly. More than a year after the Malayans had lodged their request no operational pilots had arrived in Kuala Lumpur, although Wing Commander I.R. 'Pip' Olorenshaw had taken up the post of principal staff officer, in effect becoming the RMAF's deputy chief of the air staff. It was not until June 1964 that Minister for Air Peter Howson approved the use of the RAAF crews 'on transport support tasks within and between the borders of Malaysia and within Malaysian territorial waters'.[67] Those tasks were defined as scheduled flights between the states of Malaya and Borneo; special flights carrying troops and police; air dropping supplies to troops in the forward areas of the Malay/Thailand border and the Borneo/Indonesia border; and maritime reconnaissance and anti-piracy patrols in the coastal waters of Malaya, Singapore and Borneo. Perhaps more important than those formally agreed roles, though, was the unwritten understanding with the Malaysian Government that seconded Australian pilots would not be used in roles which would be unacceptable to the Australian Government.[68]

Additional officers started to arrive. Olorenshaw was replaced as DCAS in 1966 by Berlin Airlift veteran Group Captain J.G. Cornish, while in 1967 Wing Commander A.D.J. Garrisson assumed command of the Tactical Air Force. Other officers took a leading role in the flying squadrons: for example, Flight Lieutenants A. Pappin and S. Clark served as VIP captains on de Havilland Doves and Herons; and Flight

Lieutenant D. Melvin made a major contribution as a flying instructor during the introduction of the Caribou. For the last year of his tour with the Caribou squadron at Labuan, Don Melvin was the sole seconded officer serving with the Malaysian forces in the region, and he and his wife two of only a dozen Europeans in the entire community.

Where possible, the Australian pilots completed a three-month abbreviated Malay course at the RAAF School of Languages at Point Cook before taking up their appointments. They were fully integrated into the RMAF, wearing the local uniform, including the distinctive *songkok* cap, without any emblems to distinguish them as seconded Australians, and observing standard military disciplinary practices. Some aspects of service were difficult, especially those caused by the RAAF's indifference to their welfare. Several officers were forced to take out substantial bank overdrafts following their arrival in Kuala Lumpur because pay arrangements had not been finalised; while others had to pay income tax to both Australia and Malaysia, an arrangement which was extremely costly and which took several years to resolve, with little assistance from the Department of Air. Difficulties could also occasionally arise in the cockpit, where the seniority and status of inexperienced local pilots was sometimes a more important consideration than competence. Overall, however, the experience was a happy one for those concerned, with the flying often challenging and rewarding and Malaysia a delightful home.[69]

FltLt Don Melvin in Royal Malaysian Air Force uniform, including the distinctive songkok *cap, Malaysia, 1966.* D. MELVIN

Assistance with flying operations in Malaysia was complemented from 1964 onwards by technical training for RMAF airmen at Wagga.

In September 1971 Defence Minister David Fairbairn signalled an important shift in the nature of the RAAF's association with regional air forces by announcing that the Australian Government had agreed in principle to provide access to training expertise and facilities in Australia for the armed forces of Singapore and Malaysia.[70] Early

proposals included basing Republic of Singapore Air Force (RSAF) fighters at Darwin for up to three months at a time (an initiative which eventually was to lead to almost continuous deployments of RSAF strike aircraft at Williamtown, Amberley and Darwin); and the establishment of a permanent RSAF flight training facility at Pearce.

Those evolving training arrangements were indicative of the growing maturity of Malaysia and Singapore as independent states. Further evidence of that evolution came on 31 March 1970 when RAAF Base Butterworth was handed over to the Malaysian Government as part of a broader arrangement covering all British military bases. Renamed Air Base Butterworth, the facility remained home to the RAAF's Mirage fighter and support units as well as a number of RMAF squadrons, with each national contingent commanded by a senior officer from its own service.

Butterworth's change of ownership was also related to the British Government's decision to withdraw its armed forces from east of Suez by 1971, one consequence of which was the demise of the Far East Air Force that same year. In place of FEAF, the United Kingdom had given an undertaking to provide maximum assistance to Singapore and Malaysia by forming an 'integrated air defence system' for the area 'with possible Australian and New Zealand participation'.[71] Given the timetable for the British withdrawal, the nucleus of a new air defence system had to be in place by mid-1971. Australia's chiefs of staff had previously agreed that a continuing strong presence in the region was highly desirable, and that the most effective and convenient form of that presence would be the RAAF fighter squadrons already at Butterworth.[72]

In what was to prove a most important decision for Australia's future engagement in the region, Malaysia and Singapore requested the appointment of an RAAF officer as the first commander of the proposed air defence system.[73] Friction between the two Asian countries made it difficult for them to work together, but they could not ignore the realities of geography which gave them strong shared security interests. Appointing a 'neutral' Australian would allow the RSAF and the RMAF diplomatically to overlook their differences and get on with the mutually beneficial task of protecting themselves. While perhaps not fully appreciated by the Australian Government of the time, or several which followed, the leading role about to be assumed by the RAAF in the new air defence system was to provide an invaluable entree into the region as Australia set off on the complex journey of changing from an outpost of Empire into a constituent of Asia.

In April 1971 a 'Five Power' ministerial meeting attended by representatives of Australia, Malaysia, Singapore, New Zealand and the United Kingdom selected 1 November as the date on which new defence arrangements would come into effect and the Anglo-Malaysian Defence Agreement would be terminated. The military organisation conceived somewhat hastily to replace the old system of British hegemony was named the Five Power Defence Arrangements, the major component of which would be the air defence system. Butterworth was chosen as the site for the air defence system's headquarters. Anticipating developments and with the concurrence of the other 'Five Power' countries, in November 1970 the RAAF had

appointed one of its most experienced fighter pilots, Air Commodore Ron Susans, as joint air defence commander Malaysia/Singapore, with responsibility for the 'maintenance of the integrity of the airspace over Malaysia and Singapore'. Three months later Susans' position was renamed commander Integrated Air Defence System.

Other changes began to reflect the more prominent leadership role the RAAF was assuming in regional engagement and the defence of Southeast Asia. When the RAF Lightning fighter squadron which had been based at Tengah in Singapore returned to England in late 1971, it was replaced at the request of the Singaporean Government by a permanent detachment of Australian Mirages from Butterworth. Nos 3 and 75 Squadrons shared those detachments, with crews generally spending about six weeks on each deployment.

The Department of Air remained sensibly cautious about the new arrangements. During meetings to determine the functions and capabilities of the Integrated Air Defence System, RAAF planners stressed that the two squadrons of Mirages could only provide localised control of the air for short periods. They also warned against the illusion that Australia was taking over the British role 'or anything remotely resembling it'.[74] That was wise counsel. Nevertheless, the fact remained that the RAAF's role was politically, militarily and symbolically significant. The Malaysians and Singaporeans were being given breathing space while they built up their own defence forces. It would be the RAAF, not the RAF, or the air force of any other major power, which would give the lead by providing access to almost sixty years of Australian air power experience and a highly professional training system, and by offering the necessary guidance and support.

CHAPTER 14
UBON

The arrangement under which RAAF squadrons had been based permanently at Butterworth as part of the Commonwealth Strategic Reserve since 1958 was politically and militarily complex. In addition to fighting Chin Peng's communist insurgents in Malaya, strategic reserve forces might be deployed to confront communist aggression against the South East Asia Treaty Organisation protocol states of South Vietnam, Laos and Cambodia, a contingency which seemed increasingly likely as the decade progressed.[1]

A series of Seato military plans addressed various contingencies in Indochina and proposed various responses. As early as October 1960, Seato Plan 5 flagged the possibility of deploying an RAAF Sabre squadron to Thailand to help counter the insurgency in Laos.[2] Later plans examined the 'worst case' situation of a major limited war centred on Thailand and South Vietnam. Should that eventuate, the demands would be heavy. The RAAF could expect to deploy two Sabre squadrons and a mobile control and reporting unit to Thailand, two Canberra squadrons to South Vietnam, and a squadron each of Caribou and Iroquois to Thailand to support the Australian Army. Simultaneously, two maritime reconnaissance squadrons would be committed to convoy protection and anti-submarine operations in the Gulf of Siam and South China Sea area and the single C-130 squadron to airlift support for all deployed forces.[3] Only two Sabre squadrons, one Canberra squadron and a handful of Caribou and Iroquois would be left in Australia, and those residual units would be fully occupied training crews for the operational forces. At the estimated combat attrition rates for a major limited war which might involve nuclear weapons, it was expected that one bomber squadron and two fighter squadrons 'would [have ceased] to exist ... on the RAAF order of battle' after three and six months respectively.

That, however, was the extreme. More likely contingencies, any one of which could require a response from Butterworth-based units, were a communist insurgency in Laos, overt Viet Minh aggression against one or more of the protocol states, and Chinese communist and Viet Minh overt aggression against the general treaty area.[4]

Conditions in Laos were perceived to decline throughout 1960–61 as the communist Pathet Lao forces strengthened their position. When in August 1961 an RAAF party surveyed the Royal Thai Air Force base at Ubon in southeast Thailand, the possibility that a Sabre squadron would be deployed had become a probability. In May 1962 Australian Minister for External Affairs Sir Garfield Barwick announced that, following consultation with the Thai Government, Australian 'forces' would be stationed in Thailand to help maintain territorial integrity. On 28 May Defence Minister Athol Townley identified those forces as a squadron of RAAF Sabre fighters.

Townley did not, however, announce Australia's intention to draw that squadron from the Commonwealth Strategic Reserve at Butterworth, as protocol had to be observed. While the Malayan Government had permitted Butterworth-based strategic

reserve units to participate in Seato training, the squadrons had to stage through Singapore en route to and from exercise areas, a condition which caused the RAAF some inconvenience, as to satisfy appearances aircraft were required to remain in Singapore for a week.[5] When the internal situation in Laos had begun to deteriorate, Malayan Defence Minister Tun Abdul Razak had stated that Commonwealth forces would not be permitted to use Malayan bases for operations in Laos; on the other hand, Razak advised there would be no objections if the strategic reserve air forces wished to use Malayan airfields to transport troops to Thailand in the event of hostilities there.[6] Because of those sensitivities, when eight aircraft drawn from No. 78 Wing at Butterworth and retitled No. 79 Squadron flew to Ubon four days after Townley's announcement, they went via Singapore and Bangkok to give the appearance they were not part of the strategic reserve, a subterfuge which deceived no-one but satisfied diplomatic niceties.[7]

The Sabres' flight via Singapore was not the only subterfuge associated with the deployment. Defence Minister Townley's claim that the aircraft had been despatched at the direct and personal invitation of the Thai Government was not strictly accurate.[8] It was true that the Thais had informed the ambassadors of Australia, New Zealand and the United Kingdom that they would welcome the presence of their forces, but the statement almost certainly had been made as a result of pressure applied by the United States.[9] Australia's Department of External Affairs believed the Thais did not want the squadron of Sabres and would have preferred a smaller contribution.[10] Significantly, the Thais were not prepared to issue an invitation, preferring instead simply to make a public announcement that the arrival of Commonwealth forces in their country had arisen from 'joint consultation'.

The RAAF area at Ubon, mid-1962. RAAF

Nine months after the RAAF contingent arrived in Ubon, Australia's Defence Committee recommended it should be withdrawn, firstly to facilitate the rearmament of the RAAF's fighter force with Mirages, but more importantly because the detachment's military value was marginal. The proposal was rejected by Cabinet for two reasons, both largely symbolic.[11] Ministers were concerned any withdrawal might

encourage the communists in neighbouring Laos, where the situation was already bad. The real issue, though, was that the deployment to Thailand was Australia's first bilateral involvement in Southeast Asia with the United States. Because of the area's strategic importance, the manner in which Australia conducted itself with the Americans warranted the most careful attention. There were, Cabinet believed, 'good broad political reasons' for Australia not to opt out of 'this joint deployment with the United States'; on the contrary, circumstances permitting, the RAAF should stay in Thailand as long as the Americans were there. In the event, No. 79 Squadron was to remain at Ubon for another five years, a presence which owed more to the politicians' perception of Australia's relationship with the United States than to any lofty commitment to the security of Thailand under the terms of the Seato Pact.

None of that was the Air Force's concern. As is often the case with military commitments, while the politicians plotted the RAAF got on with the job.

The Royal Thai Air Force base at Ubon is located only fifty kilometres from the Laotian border, eighty kilometres from the Cambodian border, and two hundred kilometres from the Ho Chi Minh trail, the supply lifeline for the communists during the Vietnam War. About half the border with Laos is defined by the Mekong River, which appears in view, brown and sluggish, almost as soon as an aircraft has settled into its climb after take-off.

A former commanding officer of No. 77 Squadron in Korea, Wing Commander J.W. Hubble, led the first flight of Sabres into Ubon. The fighter force had made splendid progress since the depressing days of the late 1940s, having benefited from the experiences of Japan, Korea and Malta, and from the post-war association with the USAF. There was, however, still a lot of work to be done. The deployment to Ubon from Butterworth via Singapore and Bangkok provided yet another example of the curious mixture of amateurism and skill which was not uncommon in the RAAF even in the 1960s.

Because of the political significance of the commitment, a large official welcome attended by numerous civil and military dignitaries was planned for No. 79 Squadron's arrival on 31 May 1962. While the job of getting eight Sabres from Bangkok to Ubon on time and in formation was not particularly demanding, the occasion warranted careful preparation.

As the aircraft taxied at Bangkok's Don Muang air base for the final leg, Wing Commander Hubble's radio failed. Hubble passed the leadership of the formation to his deputy, Squadron Leader S.C. Fisher, and dropped back to fly as number eight, where his inability to communicate with air traffic control and the other pilots would not cause any difficulties. Shortly after the Sabres had taken off from Don Muang, Fisher's radio also failed. Fisher dropped back to number four and handed the lead to Squadron Leader R.E. Trebilco. While the radio failures were frustrating, there still should not have been any cause for undue concern. But in one of those incidents which gives rise to fighter pilot jokes, matters started to go seriously off the rails. Of

the eight pilots, only Hubble and Fisher had maps of the route from Bangkok to Ubon, and they could no longer talk to anyone. Trebilco unexpectedly found himself leading a large formation of aircraft, to a destination where VIP's were waiting expectantly, on a voyage without maps.[12]

Fortunately Trebilco had flown over the route in a Dakota several weeks previously and was confident he could find Ubon by maintaining an accurate heading and recognising a few features. Then, contrary to the favourable pre-flight forecast, the weather started to deteriorate badly. Forced to descend and divert from the planned heading to remain clear of storms, Trebilco and the seven pilots following him suddenly found themselves flying low over the jungle with their aircraft using fuel at a disturbing rate. About ten minutes before the planned arrival time at Ubon, not quite sure of his position, surrounded by rain and cloud and very worried by his low fuel state, Trebilco was contemplating the appalling prospect of the entire formation having to eject from their aircraft when they ran out of fuel. Thanks to Trebilco's coolness under pressure, and to everyone's immense relief, Ubon appeared on the horizon and the Sabres landed safely, but with no fuel reserves. To the VIP's who applauded the squadron's arrival everything appeared calm and professional, although some may have been concerned by John Hubble's pale, drawn appearance.

In addition to No. 79 Squadron, the RAAF contingent comprised a small headquarters and a base squadron staffed from Australia—in all a total of about twenty officers and two hundred airmen. All postings were unaccompanied. Tour lengths for air and technical crews were initially set at three months but later increased to six, while base squadron and administrative staff served for a year. In practice the pilots stayed for shorter periods but completed multiple tours by changing over illegally with their colleagues from Butterworth. Two Sabres from Butterworth would fly in close formation with a No. 2 Squadron Canberra towards the Thai border, where they would be intercepted by two Sabres from Ubon; once the five aircraft had joined up and had become indistinguishable to any ground or radar observer, the Sabres from Ubon would return to Butterworth with the Canberra, and the Butterworth Sabres would recover to Ubon. Like the deployment through Singapore it was a subterfuge which probably fooled no-one but again satisfied political proprieties.

The RAAF contingent remained under national control, with the officer commanding answering directly to the Air Board for the operational employment of the force and exercising administrative authority himself, a system which mirrored the arrangements for the strategic reserve in Malaya and which therefore also bypassed the RAAF's nominal operational headquarters, Operational Command.[13]

Facilities at Ubon were basic. There was a good runway and fuel facilities, a United States radar unit known as 'Lion', and little else, although a squadron of Royal Thai Air Force (RTAF) TR6 reconnaissance aircraft arrived five weeks later. The Australians lived in tents, with all supplies and equipment flown in by C-130 as road transport

was impracticable. It was always hot and the heat was accompanied either by choking red dust in the dry season or oppressive humidity and deep red mud during the monsoon. Ubon city itself was ramshackle and isolated and initially offered few attractive diversions. Conditions did, however, improve. By September 1962 the construction of permanent accommodation and recreational facilities was underway and, in time, a protective system of extensive barbed wire fences and sandbagged bunkers was added, in addition to concrete revetments for the aircraft. Ubon effectively became an Australian base, controlled, operated and administered by the RAAF.

Under Seato Plans 4 and 6 the Australians' prime responsibility was to help preserve Thailand's territorial integrity by defending the nation's air space.[14] Because the Sabres were not to be used for ground attack they did not carry bombs and were armed only with Sidewinder air-to-air missiles and 30-millimetre cannon; that is, with air defence weapons. Pilots were given three conditions under which 'the use of force' against hostile aircraft was permissible: self-defence; in the air defence of Thailand when instructed by the Air Board; and if requested by Thai authorities in the event of an attack without warning and prior reference to the board was not practicable.[15]

No air threat materialised so the RAAF contingent settled into a schedule of routine training which lasted for three years until the growing American involvement in Vietnam transformed Ubon into a major base for the offensive air campaign against the communists. Although the USAF presence at Ubon was minimal during that period, the Americans were already present in force in other parts of Southeast Asia, a reality which had to be recognised in the overall command arrangements. By agreement between Australia, Thailand and the United States, the commander of the United States Military Assistance Command Thailand was appointed co-ordinating authority for the operational activities of all foreign forces in Thailand, including the RAAF contingent.[16] Under that agreement the American commander technically did not control the Australian Sabres but he could—and did—insist on being consulted regarding their activities, a condition which gave the USAF a good deal of de facto authority, regardless of any conditions stipulated by the Air Board in Canberra. That authority was strengthened by the broader command arrangements for Seato generally and the war in Vietnam specifically. All USAF aircraft in Thailand and South Vietnam came under the authority of the commanding general of the 2nd Air Division of the Thirteenth Air Force in Saigon, who was himself responsible to the commander of the United States Military Assistance Command Vietnam for offensive and defensive air operations.[17] A 2nd Air Division Task Operations Centre at Don Muang in Bangkok controlled the activities of all USAF forces in Thailand and co-ordinated those of No. 79 Squadron. The RAAF was represented at that centre by a flight lieutenant, a junior rank unlikely to hold much sway with the senior decision makers.

American dominance increased as the Vietnam War escalated. Late in 1964 Seato planning staff in Bangkok met to review the employment of all allied air forces in Thailand against the background of a growing Chinese air presence in North Vietnam.

The move of MiG-17s to Hanoi had caused particular concern as it allegedly gave the communists some capacity to attack targets as far south as Bangkok.[18] As a result of the Seato meeting a fully integrated RTAF/USAF Air Defence System was established for Thailand. While overall control of the system nominally was exercised by the RTAF, in practice the USAF, which overwhelmingly provided most of the expertise, aircraft and combat crews, dominated the partnership. The USAF asked No. 79 Squadron to join the system and, following negotiations which initially excluded the Thais, the Australian Government agreed, with three provisos.[19] Australia reserved the right to withdraw the squadron should a more serious threat emerge elsewhere; no extra resources would be provided; and RAAF aircraft were to be employed on operations only within Thailand's national boundaries. The latter proviso was spelled out in detail: the Sabres were not to be used on hot pursuit outside Thailand, nor in retaliatory actions against an aggressor nation without the approval of the Australian Government. Having issued the invitation, the RTAF/USAF then let the matter drop, perhaps because the air threat to Thailand had decreased during the negotiating period, or perhaps because the constraints placed on No. 79 Squadron seemed excessively bothersome.

In the meantime, the situation at Ubon became more complex. In February 1965 the RAAF's senior officer at the base was asked 'by the USAF in Thailand' whether the Sabres would fly top-cover for American aircraft engaged in search and rescue missions in Laos, a request which was rejected. The following month the officer commanding Butterworth, Air Commodore N.P. Ford, visited Ubon and was asked by an American 'brigadier general from the Thirteenth Air Force' about the likely RAAF reaction to the USAF's intention to deploy twelve ground attack F-4 Phantoms and about five hundred personnel to Ubon, a proposal about which, at the time, the Thais 'knew nothing'.[20]

The impending arrival of USAF strike aircraft raised a number of questions. Two important organisational matters had to be resolved: would the RAAF still manage Ubon, and who would provide the base support services? Chief of the Air Staff Sir Valston Hancock proposed a partial answer in a personal message to the commander-in-chief of the Pacific Air Forces in April 1965, suggesting that the RAAF should retain control of Ubon with the American squadrons becoming fully independent, self-supporting lodger units. As Hancock elaborated, with the RAAF nominally in command, the base would at least retain the veneer of being a Seato establishment.[21] More complex still was the status of the Sabres, as it seemed the rationale for the RAAF's presence at Ubon would fundamentally change. No. 79 Squadron would be defending not only Thai territorial integrity under the Seato agreement, but also American forces which would be prosecuting an American war against North Vietnam. Back in Canberra, air staff planners concluded that the North Vietnamese could justifiably regard No. 79 Squadron as part of the American bombing campaign, a conclusion which indicated the possibility of limited war with communist China.[22]

Presumably because of the impending changes at Ubon, the RAAF found its offer to join Thailand's integrated air defence system was now accepted. No. 79 Squadron

officially became part of the system from 25 June 1965, after which the Australians maintained two aircraft armed with Sidewinder missiles and 30-millimetre cannons on 'Alert 5 Status' from dawn till dusk, seven days a week.[23] That change in the squadron's role increased substantially the extent of the operational control exercised by the USAF. Notwithstanding any Air Board directives, real authority over what the RAAF did rested with the USAF director of operations at Don Muang, who alone decided whether one of the integrated air defence system's fighters would be scrambled, and who also could declare an intruder aircraft 'hostile' and therefore liable to destruction. RAAF commanders could override the director of operations only when weather conditions at Ubon were marginal and therefore impacted on flight safety.

FlgOff R.V. Richardson with a No. 79 Squadron Sabre 'modified' for air-to-air refuelling at Ubon, 1965. The fake probe was tied to the Sabre's landing gear. Aerial refuelling was a capability the RAAF had wanted since at least 1958 and was not to get until 1990. D.N. ROGERS

If a Sabre was scrambled the pilot immediately assumed a great deal of responsibility as he too was then entitled to categorise a target as 'hostile', in which case it was to be 'engaged and destroyed by the best available weapon'.[24] The difficulty would be to decide whether an enemy aircraft was about to engage in 'hostile' acts. Guidance was provided by Air Marshal A.M. Murdoch, who succeeded Hancock on 1 June 1965. According to the new CAS, his pilots could assume an aircraft was committing a hostile act if it conducted unauthorised aerial reconnaissance or combat tactics within Thailand's national boundaries, examples

being the release of weapons or parachutes (the latter when obviously not in distress), opening fire on a friendly interceptor which was maintaining surveillance, opening bomb doors, or 'other aggressive action which indicates the aircraft may be preparing to attack some target'. In any of those instances the Australian pilots would be justified in engaging the transgressor; that is, in taking action 'to destroy a hostile aircraft [using] air weapons'.[25]

A week after defining those rules of engagement the CAS advised the secretary of Australia's Defence Committee that under '[the agreed] terms, RAAF aircraft [could] only be used to intercept aircraft which [had] actually attacked a target in Thailand',[26] information which was inconsistent with the guidance he had given the squadron. If the CAS in his office found it difficult to interpret the rules consistently, then the task was likely to be far more difficult for the pilot in the cockpit with perhaps only seconds to decide.

The first squadron of Phantoms flew in to Ubon on 7 April 1965. Eventually the base became the home of the USAF's Eighth Tactical Fighter Wing and more than 3500 Americans involved in the massive bombing campaign against North Vietnam known as Operation Rolling Thunder. Missions were flown from Ubon around the clock; on occasions, seventy-five armed Phantoms would take off in just over an hour.[27] While the Phantoms attacked the North, No. 79 Squadron remained responsible for the air defence of Ubon and the surrounding area. In other words, the RAAF's Sabres were defending the USAF at Ubon and had therefore become de facto participants in the Vietnam War.

Other useful contributions were made to the American effort. Because the Sabre's performance was comparable to that of the MiG-17s which the USAF pilots sometimes encountered over North Vietnam, the Australians regularly engaged the F-4s in practice air-to-air combat, an activity which primarily benefited the Americans. At ground level, patrols by RAAF airfield defence guards contributed to the safety of everyone inside the perimeter, not just Australians. Unlike their American counterparts, the RAAF guards were given permission by Thai authorities to patrol well outside the perimeter fence,[28] a concession which made their role potentially more dangerous but also more productive. The role could also be politically touchy. One evening an Australian patrol sighted an unidentified helicopter unloading supplies, possibly infiltrated from Laos, but the aircraft took-off before it could be positively identified or the unloading party captured. When RAAF contingent commander Wing Commander Peter Scully reported the incident at a meeting of senior officials, he had the local Thai civilian governor in one ear insisting that the next helicopter seen should be shot down, and the Australian ambassador from Bangkok in the other insisting that no such thing should happen.[29]

The operational nature of the RAAF's activities should not be overstated, nor should it be lightly dismissed. In the case of the airfield defence guards, terrorist action from the estimated 1200 insurgents in the area was always likely.[30] Guerillas

attacked the American radar unit at Ubon in May 1965; aircraft were fired on while approaching the airfield; a Thai helicopter was shot down in May 1967; a USAF C-130 was hit by ground fire during its landing approach in 1968; and aircraft in Ubon's landing pattern at night did not illuminate their navigation or landing lights to minimise the possibility of becoming targets. The Sabres may not have been involved in the air war over the Red River Valley, but the high alert state No. 79 Squadron was required to maintain and the occasional 'scramble' to intercept an unidentified radar return—always with the possibility that it might be a genuine intruder which would have to be shot down—differentiated the job from peacetime training. In January 1967 two Sabre pilots who had been scrambled to intercept a radar target flying at 10,370 metres and Mach 1.4 reportedly identified the aircraft as a MiG-21 and then watched as it was shot down by a USAF Phantom.[31] In mid-1968, shortly before No. 79 Squadron's withdrawal, Russian-built Il-28 bombers were deployed to bases in North Vietnam which placed them within easy striking distance of Ubon, a development which concerned USAF commanders.[32]

Six years after the RAAF's arrival in Ubon, circumstances in Southeast Asia and at the base itself had changed fundamentally. Immensely powerful American forces had been deployed to the theatre and, if their commanders were to be believed, were making significant progress towards defeating the communists. Ubon had been transformed from an obscure Asian airfield into a major USAF base, from which scores of missions were flown daily against North Vietnam. Excluded from those operations, No. 79 Squadron and its now-obsolescent fighters came under scrutiny. Because the Sabres were not involved in the 'real' war, USAF air traffic controllers routinely gave the RAAF pilots lower priority for take-off and landing clearances, access to air space, radar and communications services, and training generally. Similarly, American radar controllers preferred to use their own fighters to intercept unidentified aircraft because the Sabres were not allowed to make hot pursuits outside Thai air space. No. 79 Squadron's monthly flying report for October 1967 noted that one USAF operations officer had 'deplored' the restrictions on the Sabres, particularly to the east where the border with Laos was only fifty kilometres away. Suggestions were made that the facilities and tarmac space occupied by the RAAF could be put to better use. Inevitably the morale of the Australian crews was affected by their limited role and, most importantly, by the fact that their USAF counterparts were flying wartime operations against a 'common enemy', as indeed were other RAAF crews based in Vietnam.[33]

Reviewing those developments, the Australian Department of Defence's Joint Planning Committee concluded that No. 79 Squadron had in some respects become a hindrance to American operations and advised the Chiefs of Staff Committee that the unit's presence in Ubon had outlived its political and military usefulness.[34] The chiefs agreed, as did the Defence Committee. Some consideration was given to replacing the Sabres with Mirages, but as the same operational limitations would have applied and

money would have had to be spent upgrading facilities, there was not much enthusiasm for the idea. The Defence Committee decided that, after consultation with Thai and American authorities, a convenient opportunity should be sought to withdraw the Sabres without replacement. No. 79 Squadron was released from alert status on 26 July 1968 and had fully withdrawn from Ubon by the end of August.

Notwithstanding the operational constraints on the RAAF's activities, it is important to record the genuine regret expressed by USAF commanders at Ubon when they learnt of the decision.[35] A warm relationship existed between the two air forces, and the Australians were respected for their professionalism. While the deployment ended on something of a flat note and for its duration was of little military consequence, the primary purpose for sending the Sabres to Ubon and then keeping them there for six years—to indicate support for the alliance with the United States—should not be forgotten. At the very least, the RAAF contingent to Ubon was a political success.

CHAPTER 15

VIETNAM

Preventing the spread of communism was the abiding concern of Western governments during the Cold War. It was that concern which led the Australian Government to send forces to Korea, Malaya and Ubon, and which drew the United States into the morass of the Second Indochina War from 1962 to 1975. Because Prime Minister Robert Menzies believed Australia's security interests were best served by keeping the United States engaged in Southeast Asia, once President John F. Kennedy started the American build-up in Vietnam, Australian participation was almost inevitable. Vietnam was to become Australia's most unpopular war by far. The cause was uncertain and the issues often unclear. The succession of South Vietnamese governments the Australians fought for were corrupt, fragile and of dubious legitimacy; and many indigenous military units were incompetent and unwilling to fight. At the time the Australian commitment was made, senior American officials were disgracefully ignorant of the country to which they were about to send tens of thousands of young men to die: its customs, culture, values, history—even its location.[1] As late as 1965, when Australia's involvement was starting to reach substantial proportions, America's leaders still had not developed a coherent, comprehensive strategy for the conflict they were in the process of escalating. Just as he had done at the start of World War II, Menzies handed over control of Australian servicemen to a 'great and powerful' friend ignorant of what he was committing them to and what might happen to them.

Opposition to the war reached a peak in Australia when hundreds of thousands of demonstrators participated in sometimes violent Vietnam moratorium marches throughout the country in May and September 1970. Such was the strength of public feeling that some servicemen and women were treated shamefully on their return from Indochina. The withdrawal of Australian forces started in 1971 and was effectively completed by 1972, but twenty years were to elapse before emotions calmed sufficiently to permit the dedication of a memorial in the national capital to the 50,000 who served and the five hundred who died.

Yet whatever individuals may think about Australia's role in Vietnam, for those members of the armed forces who fought there the issue was crystal clear: they were in Indochina at the lawful direction of their government, and their sole duty was to fight professionally and with honour.

Indochina had been recognised as a possible problem area for Australian security from the time Ho Chi Minh's Liberation Army occupied Hanoi and declared the independence of the Democratic Republic of Vietnam on 2 September 1945. Australia was a fringe player at several desultory meetings convened by the Western powers in

the following years to discuss ways France might re-establish its colonial dominance; one such meeting in 1952 briefly considered transferring No. 1 Squadron's Lincolns and No. 38 Squadron's Dakotas from Malaya, where they were fighting in the Emergency, to Indochina.[2] The fall of Dien Bien Phu in May 1954 exposed the poverty of Western policy and diplomacy, and of French military strategy. In July the Geneva Accords established an uncertain peace by dividing Vietnam into two 'regrouping zones' either side of the 17th parallel. Intended solely as a temporary line of military demarcation, the division into North and South hardened into a political and territorial boundary as plans for further conferences and an election stalled. Viet Minh forces, soon more commonly known as Viet Cong, used the time to consolidate their presence in the South, an action which attracted a growing American involvement. As conditions became more worrying, the Menzies Cabinet agreed early in 1962 that the insurgency in South Vietnam would pose 'the greatest possible threat' to Australia should the Viet Cong overthrow the South's government.[3] Cabinet was 'completely willing' to send Australian forces to the war should they be asked to do so by South Vietnam.

Australia's first significant military commitment came only months later when the Australian Army Training Team Vietnam deployed in July. 'The Team' as it was known conducted high-risk operations, training Vietnamese forces in jungle warfare, village defence and related activities. Its numbers were small, originally thirty and never more than one hundred, and its members all regular soldiers. Within six months United States officials were pressing Australia to do more. During discussions in Saigon in February 1963, Deputy American Ambassador William Truehart hinted to Australian Ambassador B.C. Hill that the United States would like to ask Australia to contribute a small RAAF contingent to participate in joint air operations.[4] Hill's report of the conversation to the Department of External Affairs in Canberra urged sympathetic consideration, as he felt it would be in Australia's interests to co-operate. Ambassador Hill also reported that the United States military effort in South Vietnam was of 'the highest quality' and that 'responsible' Americans believed they were on a 'winning course'. Subsequently, in the course of 'routine' discussions with Truehart's chief, Frederick Nolting, Hill was asked whether Australia would receive sympathetically an American or South Vietnamese request to provide a self-contained RAAF transport squadron consisting of about four or five C-47 Dakotas and sixteen pilots.[5] Six weeks later the request was repeated by South Vietnam's ambassador in Australia, Tran Van Lam, to External Affairs Minister Sir Garfield Barwick. Ambassador Lam asked Barwick whether Australia could provide C-47 pilots as his country had sufficient aircraft but needed experienced crews.

The initial reaction of the Menzies government was guarded. It was clear that any Australian commitment would be token only, and that the real purpose of sending more forces would be to accumulate political capital with the Americans, not to defend South Vietnam. Australia's official preference, therefore, was to send non-combatant advisers. Should a more active role become unavoidable, Chief of the Air Staff Sir Valston Hancock had a 'sneaking idea' Cabinet favoured sending the RAAF.

Whereas land forces might prove very hard to withdraw and suffer heavy casualties, air forces were inherently easier to disengage and less likely to sustain unacceptable losses.[6]

CAS Air Marshal Sir Valston Hancock with the President of South Vietnam, Ngo Dinh Diem, February 1963. V.E. HANCOCK

Hancock's assessment was confirmed when Cabinet resolved on 29 May 1964 to provide additional military assistance to South Vietnam, including the RAAF's first major contribution, a flight of six Caribou tactical transport aircraft. Cabinet's decision was made in haste and with little, if any, knowledge of conditions in Vietnam.[7] Although the first three of eighteen Caribou on order from de Havilland of Canada had arrived in Australia only five weeks before and no on-site survey of facilities in Vietnam had been conducted, Cabinet decided three aircraft should deploy by June and another three by October. As soon as the decision was announced, the Australian military attaché in Saigon suggested a team from Australia should visit South Vietnam immediately to assess flying conditions, and to discuss employment, base location and logistic support with the Americans. After a hurried inspection the team tersely reported that the RAAF contingent would be required to airlift supplies and

troops to about one hundred and fifteen airfields 'of varying surfaces and dimensions in support of ... operations against the Viet Cong'.[8] The survey recommended fitting cockpit seats with armour plating to protect pilots from the expected small arms fire.

The Caribou were being ferried to Australia from Canada in flights of three. By 13 June six aircraft had arrived at Richmond, sufficient to establish the training system which would be needed to support the flight in Vietnam. Because of the short notice, the Department of Air decided to terminate two subsequent ferry flights at Butterworth, where the new unit would form before deploying direct to Vietnam. A veteran of World War II and Korea, Squadron Leader C.J. Sugden, assumed command of the RAAF Transport Flight Vietnam (RTFV) in Butterworth on 21 July. The flight was helped in its hasty preparations by other RAAF units at Butterworth, an arrangement which had the potential to embarrass the Malaysian Government. Consequently, Sugden was instructed not to associate his activities in any way with RAAF Butterworth.[9] The instruction seems to have been concerned more with form than substance, as in the two short weeks available before departure the flight could not have completed the necessary preparation without substantial assistance.

Flying training was especially important. Because the RAAF had only been operating the Caribou for five months, experience on the aircraft was low. Some pilots had accumulated one or two hundred flying hours, much of which was on long-range ferry flights from Canada to Australia rather than on the short-range tactical missions which would be the main role in Vietnam; while others had less than thirty hours. Those were modest totals for taking a new aircraft type to war. As a group the pilots themselves were relatively junior, with the first contingent of eight comprising one squadron leader (Sugden), one flight lieutenant, two flying officers and four pilot officers. All, however, had completed at least one tour on Dakotas and were comfortable with fixed-wing tactical transport operations. Further, the Caribou's systems (engines, hydraulics, and so on) were uncomplicated and reasonably similar to the Dakota's. The major difference came in take-off and landing performance, as the Caribou was able to operate from unprepared airstrips about three hundred metres long, less than half the distance needed by Dakotas. Consequently the two weeks in Malaysia were used to hone short take-off and landing skills.[10] Chris Sugden showed his confidence in his young pilots when he endorsed all seven as captains on the Caribou, a decision regarded as 'bold' in some quarters but one which was repaid when the less-experienced junior officers rose to the challenge.

The first three Caribou of the RAAF Transport Flight Vietnam made the three and a half hour journey from Butterworth across the South China Sea to their new base at Vung Tau on 8 August, with the second group of three arriving in late August and a seventh aircraft in May 1965. In the circumstances the flight's arrival only several weeks after the June target date originally proposed by Cabinet was a fine achievement, although so hasty had the arrangements been that Squadron Leader Sugden had insufficient RAAF funds to draw on and occasionally had to meet essential expenses from his own pocket.

Located seventy kilometres southeast of Saigon, Vung Tau was once a gracious coastal town used by French colonists as a holiday and weekend resort. Many of the elegant villas had become shabby as armies rather than planters and bureaucrats took up residence; nevertheless, Vung Tau retained its reputation for being one of the more pleasant cities in Vietnam, serving as a major leave centre not only for American troops but also, according to rumour, the Viet Cong. More practically, the air base was the site of the United States Army's in-country Caribou operations, an arrangement which facilitated logistic support. The RAAF contingent spent three days settling in before flying to Tan Son Nhut airport at Saigon for an official welcome from senior military and civilian dignitaries, and a group of lissom Vietnamese female university students holding a banner which read 'Vietnamese People Warmly Welcome the Australian Air Detachment' and whose presence was surely not spontaneous. The following day flights to familiarise the crews with local air traffic control procedures and the general geography were completed in USAF C-123 Provider aircraft.

Vung Tau air base and surrounds, c. 1965. K. HENDERSON

Operational control of the Transport Flight was vested in the senior United States officer in Vietnam, General William Westmoreland, who in turn delegated his authority to the USAF's 315th Air Commando Wing.[11] Approved roles included trooping, resupply, paradrops, supply drops, communications, and medical evacuation. Squadron Leader Sugden's directive from the Department of Air informed

him that while he was 'to co-operate fully with the American tasking authorities by participating in the combined Southeast Asia airlift program', he was to obtain prior approval from the Air Board before accepting any plan or operational activity which might commit the RAAF beyond the agreed roles.[12] In practice the flight's activities were fully integrated into the American air transport system.

The first two missions flown by RAAF aircraft formally committed to the Vietnam War took place on 14 August.[13] Captained by Squadron Leader Sugden and Flight Lieutenant D.J. Lancaster, each of whom was supported by the standard crew of a copilot, loadmaster and assistant loadmaster, the Caribou carried freight between Vung Tau, Tan Son Nhut and Pleiku. Other than having to cope with the monsoonal weather, the missions were uneventful. Over the next few weeks as all crews became familiar with the environment, flying procedures were modified to suit the prevailing conditions.[14] Probably the most important variation was the use, if at all possible, of steep departures and approaches to minimise exposure to the small arms fire which was common not only at remote Special Forces camps but also around major airports like Tan Son Nhut and Bien Hoa. As a general rule RTFV pilots flew at a minimum altitude of 1070 metres above ground level before spiralling steeply into or away from their landing area.

Once the second group of aircraft arrived the squadron's operations settled into a pattern. Four aircraft and crews were required Monday to Saturday and one on Sunday. Two would be deployed for a week at a time, one to Da Nang and the other to Nha Trang; while the others flew out of Vung Tau, one on scheduled routes and one in accordance with tasks issued the previous afternoon. Missions for the aircraft operating from Vung Tau were allocated by the USAF Transport Movement Centre in Saigon, while those for the deployed aircraft were generated locally. The aircraft at Da Nang and Nha Trang flew regularly into places which television was to turn into household names: from Da Nang, to the Hue Citadel and the A Shau Valley; and from Nha Trang, to Khe Sanh and Pleiku. There were variations to the routine: for example, one Caribou was used in the unusual role of air 'strike' in March 1967 when, in support of Australian Army clearing operations in Phuoc Tuy Province, drums of fuel were rolled out the back of the aircraft and set alight with tracer fire. That kind of bizarre exploit was, however, the exception, as in the main the Caribou carried freight and passengers and airdropped supplies throughout South Vietnam, from the demilitarised zone in the north down to the furthest reaches of the Mekong Delta in the south. Loads could range from ammunition for an isolated camp besieged by the enemy, to livestock, mail, fuel drums, troops and peasant workers.

RAAF Transport Flight Vietnam aircraft used the radio call-sign 'Wallaby' followed by their task number; thus, an aircraft on task '006' would be 'Wallaby 006'. Within months of the unit's arrival 'Wallaby Airlines' was respected for its competence and reliability, not only at major air transport centres throughout the country but also at scores of remote, dangerous Special Forces camps. On 1 June 1966 RTFV was renamed No. 35 Squadron, the rise in status due at least in part to the unit's

success. At the same time operational control of the squadron's activities was transferred to the 834th Air Division of the USAF's Seventh Air Force.

On the surface No. 35 Squadron's achievements might seem somewhat mundane. The task of shifting supplies and people appeared routine compared to bombing and strafing the enemy. Few aircraft were hit by ground fire and no aircrew died on active service. Only one Caribou was lost to direct enemy action in seven and a half years, when Pilot Officer A.G. Milne's aircraft was destroyed by mortar fire at That Son near the Cambodian border in March 1970. Some aspects of the operations seemed straightforward. Navigation was rarely difficult and the terrain was not especially rugged; and the Caribou was an excellent platform, purpose-built for the many short, rough airstrips and fitted with large rear-opening cargo doors to facilitate rapid loading and unloading. Those bare details can, however, be misleading. It is a matter of record that the Australian air and ground crews consistently performed to higher standards than American units using the same or similar aircraft.[15] The ethos of achievement was strong. Two aircraft were destroyed in landing accidents when the crews felt obliged by operational demands to press on with their approach in poor conditions; while a third which was badly damaged was 'jury-rigged' on-site in the most demanding circumstances and safely recovered. Weather conditions were often atrocious. Incidents of hostile fire, sometimes for sustained periods, were frequent; and several aircrew were wounded by shrapnel or small arms fire. Work routines were demanding, with some aircrew flying 1400 hours during their year-long tour, at least double the rate which might be expected in Australia, and which in turn placed high demands on ground staff.

Caribou A4-171 flew into the sea during an approach to the island of Phu Quoc on 30 August 1967; pilot SqnLdr A.J. Fookes, copilot PltOff A.D. Aiken. RAAF

In the course of seven and a half years, No. 35 Squadron flew 81,500 operational sorties during which it shifted some 42,000 tonnes of freight and 679,984 passengers. With less skilled crews there is little doubt that those figures would have been much lower and losses much higher. First into the theatre in 1964 and

last out in 1972, the Caribou air and ground crews were the Air Force's quiet achievers in Vietnam.

The enduring image of the Vietnam War is of a flight of Iroquois helicopters low over the jungle, the ominous, distinctive beating of their rotors invariably the precursor to television footage of burning villages and terrified peasants. No. 9 Squadron's Iroquois joined No. 35 Squadron at Vung Tau as the second RAAF flying unit in Vietnam on 6 June 1966, their arrival coinciding with the establishment of No. 1 Australian Task Force (ATF) in the scrubby jungle at Nui Dat, thirty kilometres northeast. Under the command of Brigadier O.D. Jackson, No. 1 ATF was to comprise two infantry battalions, an artillery regiment and an armoured squadron, fully supported by engineering, signals, special forces, aviation, survey, intelligence, logistics and provost units. The task force had, in effect, been given independent control over Phuoc Tuy Province, with instructions from General Westmoreland 'to secure and dominate' the area.[16] Particular importance was attached to protecting Route 15, the main road from the port at Vung Tau to Saigon, which ran along the province's western boundary. Unlike No. 35 Squadron which was fully integrated into the overall United States airlift system, No. 9 Squadron was at Vung Tau solely to support the Australian Task Force. An air transport operations centre staffed by the RAAF was established at the task force headquarters to co-ordinate the Army's use of the Iroquois.

A larger, more complex Australian organisation meant larger, more complex command arrangements. Following the formation of the task force, a new organisation titled 'Australian Forces Vietnam' (AFV) was established, with its headquarters in Saigon. Major General K. Mackay was appointed commander AFV with the RAAF's Air Commodore J. Dowling as his deputy. Beneath Dowling but answerable in the first instance to Brigadier Jackson came the RAAF's task force air commander, Group Captain P.F. Raw, who supervised all RAAF activities at Vung Tau and Nui Dat, especially those of the two flying squadrons.

While No. 9 Squadron was to return to Australia after six years with the highest of reputations for its combat record, its experience during the first three months was an inter-service disaster. Friction had existed between the Army and Air Force over the use of rotary-wing aircraft almost from the time the first Iroquois arrived in Australia in 1962. The Iroquois had been acquired for the dual roles of search and rescue and army support, but from the outset some senior Army officers felt their requirements received insufficient attention. When it became apparent in mid-1965 that Australia's commitment of land forces to Vietnam might be increased to task force size—a development which almost certainly would involve RAAF helicopters—Chief of the General Staff Lieutenant General J.G.N. Wilton had written to his RAAF counterpart, Air Marshal A.M. Murdoch, suggesting the Air Force should send two Iroquois to Vietnam as an interim measure so the two services could get some early experience in the environment.[17] Wilton had already decided that any task force would include four

Army aircraft (two Cessnas and two Sioux), but it was the Iroquois which were the key. As he told Murdoch, utility helicopters 'by their very nature' had become essential to the tactical and logistic support of forward elements of combat troops. Appreciating that his request might place some strain on the Air Force's limited rotary-wing resources, Wilton told Murdoch he would be prepared to accept a reduced level of RAAF support for the Army in Australia.

Murdoch was not interested in Wilton's proposal; indeed it is questionable how interested the CAS and some of his senior colleagues were in helicopter operations generally. Two of the Air Force's most experienced rotary-wing pilots, Air Commodores R.A. Scott and B.I. Lane (both of whom deployed to Vietnam with No. 9 Squadron in June 1966, Scott as commanding officer) have separately stated that in matters such as staffing and support equipment, helicopter squadrons were consistently given a lower priority than, for example, strike squadrons. Lane in fact felt that for many years the RAAF's higher echelons 'looked down' on helicopters.[18] Lane's perception is not without substance. In 1953–54, two future chiefs of the air staff, Air Vice-Marshal V.E. Hancock and Group Captain C.T. Hannah, were tasked with writing policy for the employment of RAAF College graduates. Hancock and Hannah argued that the 'hard core' of an air force is its fighters and bombers and that every endeavour should be made to employ the RAAF's future leaders in those roles.[19] Two more recent chiefs of the air staff, Air Chief Marshal Sir Neville McNamara and Air Marshal S.D. Evans, felt that during the late 1950s and early 1960s the RAAF paid only lip service to its army responsibilities.[20]

Against that background, Murdoch dismissed Wilton's request, which he described as 'inadvisable'. The CAS questioned the value of the proposed training and expressed concern that a small RAAF detachment might come under the control of the Americans, whose tactics he believed were suspect. He also claimed that RAAF helicopter crews were already gaining suitable experience in jungle conditions through No. 5 Squadron's operations in Malaysia.[21] Air Commodore Ray Scott has made three important observations regarding Murdoch's attitude. First, even though Scott was at the time the RAAF's senior Iroquois pilot, in a force which had very few experienced rotary-wing pilots, he was never consulted about Wilton's proposal. Second, flying in Malaysia was not entirely equivalent to Vietnam. For example, there was little if any hostile opposition, and there was none of the insertion and extraction of Special Air Service patrols which was to become such an important part of the RAAF's Vietnam operations. Finally, based on a visit to South Vietnam in 1964 when he had flown operations with every United States Army and Marine helicopter unit in-country, Scott shared Murdoch's concern about American tactics, which he described as involving 'guts but no brains'.[22] Scott believed that tactics favoured by the Americans such as mass airborne assaults against strongly defended positions were likely to result in high aircraft loss rates, which a small force like the RAAF could not sustain. In one United States Army Iroquois company he had visited, eleven pilots had been killed and twenty-nine wounded over an eight-month period. If American

procedures were followed, it was quite possible the RAAF could lose an entire squadron of eight aircraft on a single mission.

The RAAF's response to Wilton, though, needed to reflect political as well as operational considerations. While Murdoch's case may have been reasonable, flatly rejecting the CGS was not the way to deal with the matter. Sixteen of the RAAF's twenty-four Iroquois had been acquired primarily to support the Army. If the Army wanted that support in Vietnam, then it was the Air Force's job to provide it. The issue was as simple as that. An apparently unco-operative attitude was only likely to reinforce the long-held Army belief that the sole reliable source of battlefield air power was one which they controlled themselves. In fairness to the RAAF's leaders, at the time they were under considerable pressure as they tried to balance their commitments in Southeast Asia with the greatest 'peacetime' re-equipment program in their service's history. Nevertheless, the fact remained that Australian forces were fighting a war in Vietnam. If necessary, additional resources should have been diverted to the tactical transport force, even if that meant delaying the introduction of the more glamorous Mirage fighters and F-111 bombers. Lieutenant General Wilton had every right to tell Murdoch, as he did, that he found the RAAF's attitude difficult to accept, just as he had every right to tell him that as the Iroquois had been purchased primarily to support the Army, the sooner that happened 'in an operational situation' the better.[23]

Within months Air Marshal Murdoch's attitude was shown to be doubly ill-advised. Not only had he alienated the CGS, and in the process reinforced the Army belief that it was essential for them to control 'battlefield' air assets themselves, but he had done so in vain. Once Cabinet decided in March 1966 that the Australian involvement in Vietnam would be increased to an independent task force, the deployment of RAAF helicopters was inevitable.

No. 9 Squadron was to go to war with eight aircraft and sufficient crews to meet a planned flying rate of 4320 hours a year.[24] Because the RAAF had been operating helicopters at the squadron level for less than four years its experience base was understandably thin. No. 5 Squadron, which had been at Butterworth for two years, was withdrawn to Fairbairn near Canberra to look after the suddenly increased training demand, and to release some of its crews for immediate service in Vietnam. The pilot training rate was immediately trebled to eighteen a year, a decision with substantial follow-on effects for flying rates and, therefore, resources across the board. While urgent preparations continued in Australia, a detachment from No. 5 Airfield Construction Squadron was sent to Vung Tau to construct and improve technical and domestic facilities. On 24 May No. 9 Squadron's helicopters made a flypast over Sydney before landing on the deck of the troopship HMAS *Sydney* at Garden Island. Two weeks later the Iroquois were flown ashore at Vung Tau, where they were joined by the main party who had travelled to Vietnam on a Qantas charter flight.

According to the *RAAF News* of April 1966, No. 9 Squadron had been 'ready for Vietnam' two months before its departure. Crews were familiar with army support work, having been trained in tactical troop movement, resupply, and medical

evacuation. Air Force leaders repeated the claim that the kinds of tasks the Iroquois crews would face in Vietnam were similar to those they had successfully completed in Malaysia.

RAAF News was wrong. No. 9 Squadron was not prepared for war when it arrived in South Vietnam. Only two of the Iroquois were fitted with armoured seats, none had door gun mounts and the aircrew did not have chest protectors. It might be argued that the interval of only three months from the time the deployment of the task force was announced until No. 9 Squadron arrived in Vietnam made thorough preparation difficult. But following his visit to Vietnam in 1964, the then-Wing Commander Scott had submitted a report which described as 'essential' the provision of flak jackets and armour plating;[25] while as noted above, Lieutenant General Wilton had alerted the RAAF to the possibility of active service a year previously. Both warnings had given the Air Force ample time to equip its helicopters for war.

RAAF unpreparedness extended to the appointment of its two most senior officers, Air Commodore Dowling and Group Captain Raw, neither of whom had sufficient experience in air/land warfare. Dowling's appointment as deputy commander of Australian Forces Vietnam (AFV) was made at the RAAF's insistence. Yet as the commander, Major General Mackay, later commented, Dowling knew little of air mobile operations, let alone land warfare.[26] Because the fighting in the South was essentially a ground war, Dowling was placed in an invidious position. Mackay had little faith in his deputy's ability either to make decisions which might affect the safety of the task force or to represent AFV at meetings with senior (or indeed junior) headquarters. As a result, when Mackay was absent from AFV Headquarters, while Air Commodore Dowling nominally was in charge, in practice more junior Army officers made the important decisions, a situation which was personally embarrassing for the thoughtful and courteous Dowling, and humiliating for the Air Force. Air Marshal Murdoch would have done better by his service had he accepted the fact that No. 9 Squadron was acting in support and did not warrant the presence of an air commodore in Saigon, or at least not an air commodore who was also deputy commander AFV. Similarly, Group Captain Raw's background as one of the RAAF's most respected bomber leaders was inappropriate for the job of task force air commander: too often he struggled to make the timely decisions demanded by tactical air/land operations.[27] It is hard to believe the Air Board could not have done better. While there may have been a dearth of helicopter-qualified senior officers, there were many who were current on fixed-wing tactical transport aircraft and who were thoroughly familiar with air/land warfare.

The preceding events almost suggest the air staff did not fully appreciate that a war was being fought in Vietnam. That disturbing conclusion seems to be confirmed by the Department of Air organisational directive issued to No. 9 Squadron before it left Australia. The directive placed constraints on operations which were to become a source of intense dissatisfaction within the Army. Problems arose in particular with troop positioning and extraction missions. No. 9 Squadron was authorised to conduct 'the lift of troops *from a secure staging area* to a landing zone that is *relatively secure* and

[where] *enemy resistance is not expected*', and 'from an operation area to a secure staging area when enemy resistance is anticipated *only on the last lift* from the landing zone'.[28]

The vulnerability of his aircraft and the explicit constraints of the organisational directive—which ironically he had helped draft—forced Wing Commander Scott to make a difficult decision.[29] In one of his first commanding officer's reports from Vietnam, Scott stated that it was necessary for him to review tasks very carefully so that crews with inadequate protection were not exposed to a high risk of close ground fire.[30] Raw found himself in a difficult position with Brigadier Jackson on the one hand demanding the level of support his soldiers were entitled to expect, and the organisational directive on the other hand legally constraining his pilots. Members of the task force walking past the command post at Nui Dat became used to hearing shouting matches between Jackson and Raw.

According to the historian Lex McAulay (a former member of Army Intelligence who served three tours in Vietnam), No. 9 Squadron's perceived unreadiness for war and its reluctance to become exposed to ground fire led the Army to regard the Air Force with contempt.[31] The RAAF's reputation was not helped by the briefing Deputy Chief of the Air Staff Air Vice-Marshal W.E. Townsend gave Lieutenant General Wilton on the problems of helicopter operations in Vietnam. Townsend complained to the CGS that aircrew endurance limits (basically the number of hours aircrew could spend on duty, regardless of whether or not they had been flying) were being 'grossly exceeded'. The RAAF's position on 'crew duty', as presented by Townsend, was based on long-standing and proven peacetime flight safety procedures. However, when applied to pilots who lived in the relative comfort of a villa in Vung Tau and who might have spent fourteen hours on duty, the argument did not impress Army commanders whose soldiers regularly spent a week on patrol in the jungle where their lives were continuously at risk. Wilton was even less impressed when he learnt of allegations that 'diggers [had been] left stranded in the battlefield' by RAAF pilots who had simply 'gone home' because they had exceeded their duty times.[32]

None of the foregoing is to suggest that Army attitudes were beyond reproach. On the contrary, there were very few Army officers with an informed understanding of helicopter operations, while the judgment that No. 9 Squadron was unprepared for war was conveniently selective. The Army's unpreparedness for war in certain vital aspects attracted much less attention. For example, Robert O'Neill's history of the 5th Battalion, the Royal Australian Regiment in Vietnam during 1966–67, fails to mention the fact that the regiment ran critically low on ammunition shortly after its arrival at the task force base camp at Nui Dat, which at the time was considered an insecure area.[33] In a nice irony, one of No. 9 Squadron's first tasks was to fly almost all of the RAAF's machine gun, rifle, sub-machine gun and pistol ammunition to the regiment to help rectify that extremely dangerous logistic failure. The squadron managed to shift four tonnes of ammunition to Nui Dat the day after arriving in Vietnam even though aircraft were still being assembled and equipment unpacked.[34] It is, however, the RAAF's unpreparedness which has been remembered most critically and which has become conventional Army wisdom.[35]

It also seems that some Army commanders either had little understanding of, or were not interested in, the doctrinal differences which would inevitably arise between air support provided by Americans, with their hundreds of helicopters, and by Australians, with their several dozen. Wing Commander Scott's attempts to explain to senior Army officers that tactics such as mass airborne assaults simply were not acceptable as Australia could not sustain the loss rates sometimes associated with those operations fell on deaf ears. The fact that more soldiers than airmen would die if those tactics were used seemed to elude Army commanders, some of whom, according to their Air Force counterparts, simply did not want to listen.[36]

The Army's attitude towards RAAF helicopter doctrine represented a considerable double standard. Australia's first substantial commitment of ground forces to Vietnam, made in 1965, had consisted of one battalion, which was amalgamated with an American brigade. The decision to increase the commitment from battalion to task force size was taken primarily because General Wilton and his senior Army advisers believed United States doctrine was unsuitable. By deploying an independent task force, including RAAF helicopters, Australian troops would be able to 'employ their own operational concepts and procedures, which were regarded by Australian strategists as superior to United States doctrine in Vietnam'.[37] It seems curious that the Australian generals rejected American Army doctrine for ground operations yet endorsed it for air operations, about which they knew comparatively little. Presumably they were also unaware that the United States Army was experiencing worrying problems with its helicopter operations. At the same time as the Australian Army was criticising the RAAF and citing the Americans as the epitome of rotary-wing expertise, a United States Army team was visiting Vung Tau to try to determine why No. 9 Squadron's aircraft availability rate was so high, its mission success rate so good, and its loss rate so low.[38]

Army intransigence extended to joint planning. Air Commodore Dowling's knowledge of army operations and their associated air support activities may have been sparse, but he was still a senior officer with a great deal of experience. The day Dowling arrived in Saigon he reported to Mackay and suggested they should do some joint planning, only to be brusquely dismissed with the retort that 'the Army had done all the planning that was necessary'.[39] Dowling subsequently noted privately that his and Group Captain Raw's jobs were made 'most difficult' because of the uncooperative attitude of Army officers, 'both senior and junior'.[40] Group Captain Raw's successor as task force air commander, Group Captain H.D. Marsh, was subjected to the same treatment even though by the time he took over in April 1967 No. 9 Squadron had been operating very successfully for nine months. Along with other senior Air Force officers, Marsh found himself routinely excluded from task force planning conferences.[41]

The friction between the RAAF and the Army peaked in July 1966 when Brigadier Jackson attempted to dictate No. 9 Squadron's crew composition for certain missions, an action properly described by Scott as 'ridiculous'.[42] Scott advised his superiors in Canberra that unless the command and control system and the methods of operating

and tasking the Iroquois were clearly understood, 'operations will be inefficient, and bitterness and distrust between the services will develop'. In the event that was precisely what happened. When Air Marshal Murdoch visited Vietnam in August he was told by Brigadier Jackson that No. 9 Squadron was not providing the support the Army wanted.[43] It must have been a chastening experience for the CAS, given his rejection of General Wilton's request to send a couple of Iroquois to Vietnam to gain experience less than a year ago. Had the Air Force been more understanding of the Army's position then, perhaps the Army might have been more disposed to try to accommodate the RAAF's viewpoint a year later.

As it was, the damaging myths grew. It has been reported that Major General Mackay grounded No. 9 Squadron for a brief period during the first few unhappy months—a humiliating action to take against a squadron at any time, let alone during a war.[44] That report is not supported by official records. Most of No. 9 Squadron arrived in Vietnam on 12–13 June 1966. Several days were needed to settle in, although, as was mentioned above, the squadron did interrupt its preparations to fly urgently needed ammunition to 5 RAR. From then on the squadron flew operations every day in June, July, August and September—that is, throughout the troublesome period when they allegedly were grounded.[45]

FltLt Bruce Lane, having just flown Iroquois A2-1024 onto HMAS Sydney in Sydney Harbour prior to No. 9 Squadron's deployment to Vietnam, 24 May 1966. B.I. LANE

A major factor in the eventual improvement of RAAF/Army relations was the resupply of ammunition to soldiers of 'D' Company, 6 RAR, by two of No. 9 Squadron's aircraft during the battle of Long Tan on 18 August. By any standards the resupply was a brave and skillful achievement, and one which helped the one hundred and twenty Australians hold out against 2000 or so enemy troops until reinforcements arrived. But still the RAAF seemed unable to escape Army prejudice, as a harmful rumour was circulated in some circles that No. 9 Squadron had refused to fly to 'D' Company's aid until threatened with dire consequences. It was the case that when initially advised of the task, Group Captain Raw and one of the two aircraft captains had demurred because of the appalling weather, drawing the angry reaction from Brigadier Jackson that he 'was about to lose a company [to enemy action], what the hell's a few more choppers and a few more pilots!'[46] Prompted by the most experienced of the four helicopter pilots present, Flight Lieutenant Bruce Lane, who believed the mission had

to be flown regardless of the conditions and the likely cost, Raw authorised the task. The mission was flown close to last light in dreadful weather and in the face of expected intense enemy action; Lane felt sure that at least one aircraft would be lost. Flight Lieutenant F.P. Riley was subsequently awarded a Distinguished Flying Cross for his role in the resupply; perhaps Lane's admirable moral leadership might also have been officially recognised.

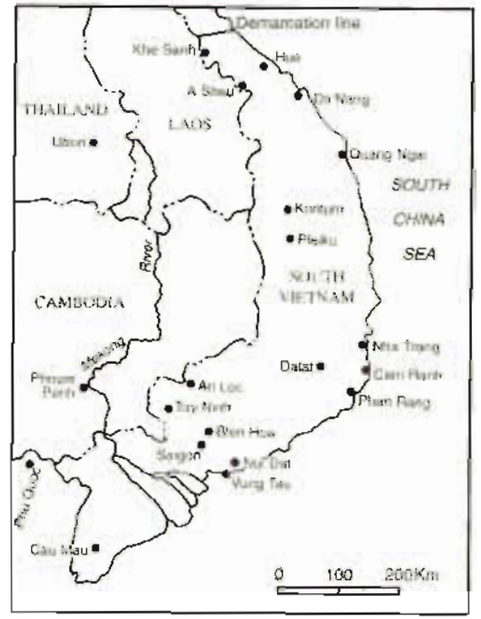
In the section of his book on the battle of Long Tan titled 'myths and memories', Lex McAulay exposed the fallacy of the Army rumour.[47] But in conjunction with the previous difficulties the long-term damage had probably already been done.

Twenty years later Defence Minister K.C. Beazley announced his intention to transfer ownership of the 'battlefield' helicopters from the RAAF to the Army. It is not an overstatement to say that Beazley's decision traumatised some senior levels of the Air Force. It seems probable that the seeds of his decision were sown in Vietnam in 1966 when, as a consequence of the RAAF's perceived reluctance to provide the service they wanted, a group of Army officers resolved eventually to gain control of the Defence Force's helicopters. It is questionable whether those officers understood either the full implications of their subsequent campaign or the proper use of air power, and an argument could be made that they were motivated primarily by prejudice and ignorance.

A sorry footnote can be added to the affair. In 1995, nine years after the transfer of the battlefield helicopters to the Army, twenty-four of the twenty-seven aircraft reportedly were unserviceable and likely to remain so for many months, apparently because of Army misuse and mismanagement.[48] Thus, as things stand, both sides have emerged as losers from this unedifying inter-service dispute.

The most unfortunate aspect of the whole business was that from Long Tan onwards, No. 9 Squadron provided the task force with exemplary support, unquestionably flying to higher standards and achieving better results than any comparable unit in the country. Teething troubles with equipment were resolved as protective armour and two door guns were fitted to all aircraft, and flak jackets procured. A door gunner was added to the standard crew complement, which became two pilots, a crewman and the gunner. Most importantly, excellent relations were established at the working level as the soldiers who were actually doing the fighting came to appreciate No. 9 Squadron's expertise. An exceptionally close professional relationship was established with the Army's elite Special Air Service (SAS), whose small reconnaissance patrols of about five men operated independently for days at a time in enemy-dominated areas. The rapid and precise insertion and extraction of SAS patrols into the jungle was essential to their success, in the first case to conceal their presence from the Viet Cong; and in the second often to save a patrol which had been detected and was under hot pursuit. No. 9 Squadron developed navigational and tactical procedures which were demanding but highly successful, in which the aircraft inserting or extracting the patrol flew at tree-top level and was directed to the rendezvous point by a second aircraft flying about five hundred metres above and behind. Such was No. 9 Squadron's skill the SAS would not work with other (American) Iroquois units.

Of the three RAAF squadrons which fought in South Vietnam, No. 9 had the most dangerous role. Iroquois aircrew were regularly exposed to intense ground fire from close range, while their operations frequently involved hazardous flying conditions such as appalling weather and night medevacs, and dangerously small landing zones surrounded by tall trees and perhaps booby-trapped with land mines. Seven aircraft were destroyed during operations, a number which would have been considerably higher had the air and ground staff been less skillful. The comparatively large number of gallantry awards squadron members received was an acknowledgment of the unit's achievements. Particular mention should be made of Corporal J.M. 'Snow' Coughlan's Conspicuous Gallantry Medal, the highest decoration other than the Victoria Cross presented to non-commissioned members of the RAAF; and Sergeant G.D. Buttriss's George Medal, awarded following the squadron's first major accident on 18 October 1966. Given the inherent danger of wartime helicopter operations, it was perhaps a combination of professionalism and good fortune that No. 9 Squadron did not suffer an operational fatality until July 1970 when Leading Aircraftman D.G. McNair died in hospital following a crash; eight months later Pilot Officer R.W. Betts was the first pilot to die in action when he was shot while flying as copilot on a gunship mission.



South Vietnam

As the Australian Task Force consolidated its control over Phuoc Tuy Province the Army's dependence on No. 9 Squadron grew. That dependence and the arrival of a third battalion at Nui Dat compelled the RAAF in July 1968 to double the squadron's aircraft establishment to sixteen, an increase which required an additional eight air crews and forty-three ground staff. The pressures that placed on No. 5 Squadron's training commitment back in Australia were eased somewhat when the RNZAF and RAN started to attach pilots to No. 9 Squadron. While the amount of work in Vietnam increased the job remained the same. The helicopters continued to transport troops, and resupply units in the field with their essentials—ammunition, water and food. When occasionally the Viet Cong cut the road from Vung Tau to Nui Dat and interrupted the ATF's main surface supply line, No. 9 Squadron extended its resupply service to include the main base camp, sometimes assisted by No. 35 Squadron's Caribou. Inserting and extracting SAS patrols continued to be an important and specialised task, as did the medical evacuation ('medevac' or 'Dustoff') of wounded troops and the occasional airborne assault. The squadron supported every ATF action

of note, including the sustained operations in the Long Hai Hills area, an enemy stronghold south of Nui Dat; and the particularly heavy fighting at Fire Support Base 'Coral' in May 1968, shortly after the Tet Offensive.

DFC winner, PltOff M.J. Haxell, Vietnam, 1967. RAAF

The fixed tour length of one year and the increased squadron establishment led to a much larger turnover of helicopter pilots within the RAAF than had previously been the case. Consequently, No. 9 Squadron's composition started to change markedly in late 1967. The circumstances surrounding that change deserve comment. When No. 35 Squadron's Caribou arrived in Vietnam in 1964, three-quarters of the pilots were pilot officers and flying officers, the RAAF's most junior commissioned ranks. By comparison, of the fifteen pilots from No. 9 Squadron's first deployment in June 1966, one was a wing commander (Scott) and the other fourteen flight lieutenants. Flight lieutenant is the most senior rank for a 'line' pilot, that is, a squadron pilot who does not hold an executive position. Further, a number of No. 9 Squadron's pilots were unusually senior flight lieutenants; indeed, it is likely that when the squadron arrived in Vietnam, it had the oldest and most senior 'line' pilots of any operational flying unit in the RAAF's history. Two possible explanations for that curious arrangement present themselves. Because the Iroquois was the RAAF's first operational helicopter, perhaps a conscious decision was taken to train only experienced pilots, thereby minimising the likelihood of accidents with an entirely new aircraft type. But given the otherwise low priority accorded to helicopters in an organisation dominated by fighter and bomber pilots, that seems improbable. Against the background of the RAAF/Army friction over the employment of the Iroquois prior to Vietnam, a more plausible explanation may be that the Air Force wanted mature helicopter captains who would resist any attempts by soldiers in the field to direct or 'takeover' their operations. If correct, that was surely a misguided notion. Just as senior flight lieutenants bring important qualities to a squadron, so too do junior officers.

Whatever the reason for the squadron's peculiar rank distribution in June 1966, the composition could not be sustained once the number of pilots was doubled. The arrival of Pilot Officers M.J. Haxell and P.A. Davidson in late 1966 and early 1967 signalled a change which gathered pace, to the extent that young first-tour pilots soon dominated. Setting the standard for the many pilot officers and flying officers to

follow, Davidson distinguished himself when, as a copilot, he took control of his aircraft after the captain had been wounded and recovered safely to base; six months later Haxell was awarded the Distinguished Flying Cross following a series of courageous actions. Not only was there no loss of professionalism, but a positive youthful spirit which perhaps had previously been missing was added.

Helicopters are vulnerable targets when approaching or departing a landing zone, or when hovering. In Vietnam troop-carrying helicopters (known as 'slicks') were usually protected by helicopter gunships which laid down suppressive fire around the landing zone. Initially No. 9 Squadron was supported by United States Army gunships, but the arrangement was never entirely satisfactory. The necessary close co-operation between 'slicks' and gunships was not always achieved as often the Americans were unfamiliar with No. 9 Squadron's techniques. Nor were the American helicopters always available. Pending the possible acquisition of purpose-built gunships, four RAAF Iroquois were modified in Vietnam in 1969 to carry twin fixed forward-firing 7.62 millimetre mini-guns and two seven-tube 2.75 inch rocket launchers, in addition to two twin door-mounted M60 free firing machine guns. The RAAF's 'Bushrangers' (named after their radio call-sign) could be returned to the 'slick' configuration in about one hour.

Gunships were extremely popular with the Army. Impressed by the 'Bushrangers', Chief of the General Staff Lieutenant General Sir Thomas Daly began to urge Air Marshal Murdoch to go a step further and add a purpose-built gunship like the Huey Cobra to the Air Force's 'shopping list'.[49] Daly enjoyed no more success with the CAS than had his predecessor, General Wilton, four years previously. Murdoch persistently deflected Daly's increasingly irritated correspondence, while privately advising his staff that Army's request had a lower priority than 'anything we now have on our "shopping list"'. Rather than spend money on helicopters, the CAS hoped to preserve his limited resources for a fixed-wing aircraft like the Harrier V/STOL fighter which he believed might herald a 'new era in close support aircraft and quickly outdate [helicopter gunships]'.[50] Despite Murdoch's procrastination, funds were approved early in 1970 for the purchase of eleven UH-1H gunships but the acquisition never proceeded, having been overtaken by the decision to withdraw Australian forces from Vietnam.

No. 9 Squadron flew the last of its 237,424 missions in Vietnam on 19 November 1971, after which its sixteen aircraft left the same way the first eight had arrived, on the deck of HMAS *Sydney*. Amberley was to be the squadron's new base, but long-term plans existed to relocate the Iroquois and some of No. 35 Squadron's Caribou to Townsville to support the major Army establishment at Lavarack Barracks. Less than a decade before the RAAF had not owned a single operational helicopter. In the intervening years the Air Force had not only introduced into service an entirely new type, requiring entirely new flying skills, training, maintenance procedures, tactics and standards, but had done so while fighting an especially difficult war. That in the

The urgency of a medevac carried out by a No. 9 Squadron 'Dustoff' crew is captured in this photograph of Australian operations in Phuoc Tuy Province, Vietnam. RAAF

process the squadron became widely regarded as the best Iroquois unit in Vietnam was a remarkable achievement.

No. 2 Squadron's Canberra bombers flew into Phan Rang air base some two hundred and sixty kilometres northeast of Saigon on 19 April 1967 to become the third RAAF squadron in the war. The decision to deploy an aircraft regarded by many as obsolescent was both politic and pragmatic. Politically, the United States was eager for its allies to contribute many and varied forces to the war in Indochina to demonstrate the 'Free World's' united front against international communism. The presence of those forces was more important than their military utility; it seemed, after all, that the Americans had more than enough combat power to win the war without assistance.

Surprisingly, the practical reasoning behind the decision was more devious than the political. The possibility of sending Canberras to Vietnam had first been examined by the Joint Planning Committee (JPC) in July 1965. Neither the JPC nor the RAAF endorsed the proposal. 'In the context of the type of war being waged in Vietnam' the JPC stated, the Canberra was 'an inefficient weapons system', a conclusion supported

by the Air Force which believed loss rates would be high unless the aircraft were restricted to medium-level bombing and soft targets.[51] Opposition also came from Air Marshal Murdoch, who told Minister for Defence Shane Paltridge that the USAF had aircraft it could deploy which were 'much more effective than the Canberra'; further, the Canberra had not been designed for ground attack (by which Murdoch meant close support for the Army) but was suitable only for visual medium and high-level bombing, for which there was a limited requirement in South Vietnam.[52] As had been the case on several other occasions, Murdoch's advice was misleading—RAAF Canberra crews had been practising low-level bombing and army co-operation missions for at least four years.

Six months later the RAAF's liaison officer at the headquarters of the USAF's Pacific Air Force, Wing Commander Vance Drummond, was told the Americans would welcome any strike effort the RAAF might be able to contribute: Sabres and Canberras were mentioned.[53] Quickly reversing the stance taken by their CAS, the air staff at Russell Hill responded to the USAF's invitation by noting that the scale and scope of air operations in South Vietnam had increased and varied since mid-July 1965, to the extent that 'it [was now] considered that the Canberras could perform a useful function'.[54] When the idea had been first raised and rejected, the air staff continued, USAF operations in Indochina were in their infancy and 'their present scale and scope could not [have been] foreseen'. Only a few sorties per day were being flown against targets in Laos; operations against North Vietnam were restricted politically; and close air support missions in the South were limited by inadequate air base facilities. By early 1965 that had all changed. In the latter half of 1965 over 15,000 sorties had been flown against the North and more than 14,000 tonnes of bombs dropped. Close air support in the South had seen some 25,000 sorties deliver over 40,000 tonnes of bombs and a growing use of aircraft like the B-52. Given that wider use of air power, targets were now available in South Vietnam which the Canberras could profitably attack with their maximum load of 2780 kilograms of high explosive bombs.

The government's wish to garner further credit with the United States made a positive response fairly certain, particularly after Ambassador J.K. Waller in Washington informed Prime Minister Menzies that President Lyndon Johnson had personally asked for an increase in the Australian contingent and that some air or naval units should be sent 'mainly for political purposes'.[55] The question for the RAAF was whether to send Canberras, Sabres, or perhaps even Mirages. It was really too soon for the Mirage, which was still being brought into squadron service, and in any case the aircraft was essential to the air defence of Australia and Malaysia. There was some backing for the Sabre, which had a reasonable ground attack capability and could be supported almost completely by the USAF logistic system. However, using the Sabres would affect both the Mirage program, which was already absorbing large numbers of fighter pilots, and the Ubon detachment, which would have to be closed. Notwithstanding the Canberra's 'inefficiency' and a projected combat loss rate of four aircraft a year, the veteran bomber began to emerge as the preferred option almost by default. Two factors settled the issue. First, with the planned introduction of the F-111

only several years away, a tour in Vietnam would give the RAAF's bomber crews valuable combat experience. Second, long-range plans which envisaged the withdrawal of No. 2 Squadron from Butterworth in 1968 to make room for a second squadron of Mirages had already been prepared. While provision had been made to fit the Canberras into Amberley, there was not much enthusiasm for the prospect as the base was being geared up for the expected arrival of the F-111s. Shifting the Canberras to Vietnam would defer the problem of accommodating aircraft and personnel at a time when there was considerable pressure on technical and domestic facilities across the RAAF.[56]

On 22 December 1966 Prime Minister Harold Holt announced the decision to withdraw No. 2 Squadron from the Commonwealth Strategic Reserve in Malaysia for operational service in Vietnam. In Butterworth the squadron aircrew responded with dry humour by attending the New Year's Eve party in the officers' mess dressed as anti-Vietnam war protesters.

It would be naive to regard Australia's decision to send forces to Vietnam as anything other than an exercise in self-interest and tokenism. No amount of Australian military power was going to make any difference to the eventual outcome which, at the time, seemed inevitable as the Americans massed numbers, firepower and technology. Australian forces were in Vietnam for political reasons. In the hard world of international relations the United States needed its allies involved to try to legitimise its own presence, and the Australian Government was eager to make a payment on the Anzus Treaty insurance policy. Nonetheless, and accepting the realities of power politics, sending a squadron to war primarily to resolve an accommodation shortage should by any standards be regarded as an astonishing approach to decision making. The extent of the opportunism behind No. 2 Squadron's deployment becomes even more extraordinary when it is appreciated that plans for the squadron's *withdrawal* from Vietnam were being made at least as early as March 1968, less than a year after the Canberras arrived in-country and at a time when the war manifestly was far from being won.[57] Again, the rationale was domestic, not strategic, as forward planning for the period 1968 to 1973 envisaged bringing No. 2 Squadron home and scaling down Canberra operations in the RAAF generally in mid-1971 to facilitate the expected absorption of the F-111s.

Led by Wing Commander R.B. Aronsen, eight Canberras from No. 2 Squadron arrived at Phan Rang on 19 April 1967. Operational control of the unit had been allocated to the commander of the USAF's Seventh Air Force, Lieutenant General W. Momyer, who was on hand to welcome his new squadron. No. 2 Squadron was integrated into the 35th Tactical Fighter Wing at Phan Rang, becoming one of many strike units in the South which were tasked on a daily basis through a centralised operations centre in Saigon. The first missions were flown on 23 April 1967, after which for the next four years the squadron almost invariably flew eight sorties a day, seven days a week. Because of the potency of North Vietnam's anti-aircraft system and the Canberra's

lack of defensive equipment, and public sensitivity to bombing the North, the Australian Cabinet had insisted on restricting operations to the South.[58] The possibility that aircrew morale might be adversely affected by suggestions they were flying only 'safe' missions was acknowledged but was overridden by the government's greater fear, first, of international disapproval, especially from neutral Asian countries, of the bombing of the North; and, second, of the likely reaction at home should Australian airmen become prisoners-of-war.[59]

For the first few months No. 2 Squadron was employed almost exclusively on 'Combat Sky Spot' missions which had been developed for poor weather and/or night-time when visual bombing was not possible, and in which an aircraft was directed by ground radar to the release point and told when to drop its bombs. Bombing altitudes varied from about 1220 to 9150 metres but were commonly at the higher end of the spectrum. The Canberra was particularly well suited for Sky Spot duties because of its excellent stability at height and good bomb load. However, the task was routine and boring. Some crews were flying ninety per cent of their missions at night, with little required from the pilot and navigator other than accurate flying and correct weapons selection.[60]

In Malaysia the squadron's training had emphasised low-level visual bombing, with the navigator dropping the bombs using the World War II-vintage T4 bombsight in the Canberra's perspex nose. Despite the aiming system's advanced years, an excellent squadron average of fifty metres circular error probable (CEP) had been achieved, which meant that fifty per cent of all bombs dropped fell within a radius of fifty metres of the target. Wing Commander Aronsen and his flight commanders were anxious to employ the technique in Vietnam. Following trials conducted with the assistance of an Australian forward air control pilot serving with a USAF unit, Wing Commander A.W. Powell, the Seventh Air Force approved Aronsen's request.

Low-level daylight bombing at altitudes from three hundred and seventy to nine hundred and fifteen metres started in September, with forward air control aircraft invariably used to mark targets and direct attacks. So good were the results that by November half of the squadron's sorties were visual bombing, even though challenging terrain, poor weather and ground fire often made low-level attacks difficult. Contrary to the expectations of its critics, the Canberra proved to be an excellent close support aircraft in the prevailing conditions. Several aspects of No. 2 Squadron's operations were unique. The Canberra was the only strike aircraft based in South Vietnam which bombed from straight and level flight: all others used the dive-bombing technique. Dive bombers generally needed about 1200 metres clearance between the cloud base and the ground to roll into and pull out of an attack; consequently their operations could be curtailed if the cloud base was dense and below 1200 metres. The Canberra, however, flying straight and level, could bomb with a cloud base as low as three hundred and seventy metres.[61] Other distinctive features which made the allegedly obsolescent Canberra successful were its endurance of about three and a half hours (twice that of most tactical aircraft), its heavy bomb load, and its ability to drop bombs either individually or in a precisely

spaced stick, the latter being particularly useful against line targets like roads and canals. Even more success was achieved under the vigorous leadership of Wing Commander S.D. Evans, who succeeded Wing Commander Aronsen in December. By introducing thorough analysis of all mission results and meticulous maintenance of the aircraft's bombing system, Evans reduced the squadron average error from fifty to twenty metres.

Few variations were made to the routine of visual, low-level daylight strikes supplemented by less frequent Sky Spot missions for the remainder of the squadron's time in Vietnam. Targets were attacked from the demilitarised zone (DMZ) in the north to the Delta in the south, initially using a load of up to eight British-designed 227-kilogram and 454-kilogram high explosive bombs; and later six American Mk 117 340-kilogram bombs. Noteworthy actions included strikes against enemy

FlgOffs D. Smith (pilot) and P. Murphy (navigator) before dropping No. 2 Squadron's 76,389th and last bomb in Vietnam, 31 May 1971. RAAF

concentrations around Hue and at the siege of Khe Sanh during the 1968 Tet Offensive, and during the South Vietnamese Army's thrust into Laos early in 1971. Also noteworthy was the ninety-seven per cent serviceability rate achieved by the maintenance staff, who worked twenty-four hours a day on a two-shift roster to keep their eight aircraft on-line. Two aircraft were lost, one without explanation during a Sky Spot sortie at an altitude of 6700 metres in November 1970; the second to a surface-to-air missile near the DMZ in March 1971, the only RAAF aircraft known to have been destroyed by a SAM. No trace was ever found of the crew or aircraft from the first incident, but the pilot and navigator of the second, Wing Commander F.J.L. Downing and Flight Lieutenant A.J. Pinches, were rescued after spending a tense night in Viet Cong-dominated jungle.

More than twenty years after the event the effectiveness of the bombing campaign in Vietnam remains a controversial subject. As far as the Canberras were concerned, it is clear that No. 2 Squadron consistently dropped its bombs more accurately and achieved better results than any other unit in the 35th Tactical Fighter Wing.[62] On the other hand, it is also clear that bomb damage assessment results were highly suspect, perhaps grossly exaggerated, being based almost solely on the estimates of the airborne forward air controllers who directed the strikes and whose objectivity could be questioned.[63] Additionally, the military utility of expending large amounts of air-delivered high-explosive weapons on targets such as huts, footbridges (perhaps a plank across a waterway), tracks and the like must be questioned. In a sense, though, those were political considerations. They were not considerations which would have occupied the thoughts of the men on the ground like the besieged American infantry company whose lives were saved by the exceptional accuracy achieved by Flight Lieutenant S.J. Fenton and Flying Officer P.V. Murphy on five separate bombing runs on 7 April 1971, during a tense action near the conjunction of Cambodia, Laos and South Vietnam; or those of the hundreds of other soldiers who similarly had cause to be grateful to the 'Magpie' call-sign during many of the 11,994 sorties No. 2 Squadron flew in South Vietnam.

The great majority of RAAF pilots who flew in Vietnam did so with the Caribou, Iroquois and Canberra squadrons. There was a small number, however, who served with the USAF, some as forward air controllers and others on F-4 Phantoms; and all of whom were fully integrated into their American units. A prisoner-of-war in Korea, Wing Commander Vance Drummond was the first RAAF FAC in July 1966. Like all FACs, Drummond's job was to monitor the ground situation, identify and mark targets, co-ordinate and direct air strikes and, finally, assess the results of the strike.[64] Flying a small, slow Cessna 'Bird Dog' aircraft at low level and often immediately overhead enemy positions, the FACs had probably the most hazardous job of any RAAF aircrew in the war. At times there were up to eight Australian FACs in Vietnam, most of whom operated in the tactical zone known as III Corps. More commonly though the number was limited to four, who in the later years of the war flew the purpose-designed OV-10 Bronco, a great improvement over the Cessna. Six pilots flew the F-4, two in the reconnaissance role and four on close support missions. The F-4 experience was to prove particularly useful several years later when, following continuing delays with the delivery of the F-111, the RAAF leased twenty-four Phantoms from the USAF for several years. Notwithstanding official instructions to the contrary, at least two RAAF Phantom pilots flew operations over North Vietnam.

Some 4000 support personnel served with the RAAF in South Vietnam in addition to the five hundred or so aircrew—the combat force—who inevitably have been the focus of this chapter on the RAAF at war. Particular mention should be made of the No. 5 Airfield Construction Squadron teams who built the domestic areas at Vung Tau and Phan Rang; the airfield defence guards who protected both locations and saw sporadic action; the technical airmen who were posted to Australian Army aviation

units; and the photographic interpreters and intelligence officers who in the main worked with the USAF at Tan Son Nhut trying to analyse and predict what was happening. Many other support personnel contributed to the well-intentioned civic action programs which sought to bring improved medical, hygiene and educational services to some South Vietnamese civilians. All Australians in Vietnam benefited from the strategic transport missions, including medevacs, flown by the C-130s of Nos 36 and 37 Squadrons.

The Tet Offensive which started on 31 January 1968 was the defining moment of the Vietnam War. In the light of subsequent developments, and in broad impersonal terms, the fearful losses the North Vietnamese and Viet Cong forces suffered mattered less than the stunning political victory they won in the West. President Lyndon Johnson and his military commanders were unable satisfactorily to explain to their countrymen why an enemy who was supposedly close to defeat could occupy major cities throughout the South and the American Embassy in Saigon. More than any other event, Tet exposed the wilful self-delusion of the American military's conduct of the war. The pressure to get out became intense. Henry Kissinger's Paris peace talks offered a diplomatic contrivance to vindicate withdrawal, while military justification was contained in President Richard Nixon's unconvincing program of 'Vietnamisation', under which South Vietnam allegedly would be given the means to conduct its own defence without any direct military assistance.

In December 1969 Prime Minister John Gorton announced his government's decision to start withdrawing Australian forces 'as soon as the military situation permitted', a euphemism for as soon as they could do so without the appearance of indecent haste. July 1972 was nominated as the tentative date for the complete withdrawal, with the proviso for the RAAF that No. 9 Squadron was to remain as long as any Australian combat ground forces were deployed, and No. 35 Squadron as long as the task force was at Nui Dat.[65] The date was nominated in full recognition of the fact that neither the Australian nor United States Governments could 'reasonably predict a rate of progress towards a tolerable solution in Vietnam'.

American Defence Secretary Melvin Laird advised Gorton in September 1970 that by the middle of 1971 the South Vietnamese would have assumed responsibility for about eighty-five per cent of ground combat operations, but that the transfer of air, logistic and artillery support would take longer.[66] Laird's broad prognosis was used by the Australian chiefs of staff to reassess the options for the complete withdrawal of their forces. The chiefs believed there was no doubt that the allied war effort as a whole and, more recently, cross-border operations and the extension of the war into Cambodia, had significantly reduced the communists' ability to achieve major military successes in Southern Vietnam 'in the short term'. However, the enemy retained the ability for 'early strong action in the north of the country' and for 'stronger action in other areas by mid-1971 if not before'.[67] An even less encouraging assessment was made by the Joint Intelligence Organisation when it concluded that

the South Vietnamese Popular Force units in Phuoc Tuy Province, which would have to assume much of the responsibility for security once the Australians had left, were 'unimpressive', that the Viet Cong political and cadre infrastructure in the province was largely intact and represented a 'serious long-term problem', and that 'a rapid decline could occur in the security of the province'.[68]

Those assessments did not affect the government's decision to cut its losses. No. 2 Squadron's Canberra bombers flew out of South Vietnam on 4 June 1971; No. 9 Squadron's Iroquois sailed out the way they had arrived, on HMAS *Sydney*, in December 1971; and No. 35 Squadron's Caribou, which in July 1964 had been first in, were in February 1972 last out. A postscript was added by the C-130s from Richmond which later helped evacuate the few remaining Australians when the South Vietnamese regime collapsed in 1975.

Any broad analysis of the war in Vietnam raises disturbing conclusions. Australian forces were committed to a conflict about which their government knew little, and were withdrawn when victory was by no means assured. By the time South Vietnam fell the United States and Australia had, in effect, abandoned their Asian allies. In recent years some commentators—most notably Singapore's dominant political figure, Lee Kuan Yew, and former American Secretary of State Dean Rusk—have argued that the West's intervention in Vietnam was a success; that although Saigon fell to the communists in 1975, the intervening years gave the other states of Southeast Asia time to strengthen themselves sufficiently to avoid the same fate.[69] Perhaps that was so, but it is an argument which assumes Cambodia, Laos, Thailand, Malaysia and Singapore would have fallen without those extra ten years, which is by no means certain; and it ignores the consequences for Cambodia, where a case can be made that the West's war in Vietnam made possible the accession of Pol Pot's genocidal regime in 1975.

For the RAAF, the experience in Vietnam was in general professionally rewarding. The men and women who served in the war did so at the lawful direction of their government. Their sole duty was to fight to the best of their ability and with honour, which they did. The three flying squadrons and the smaller units almost invariably performed with distinction. No. 9 Squadron's achievements were particularly praiseworthy, given that the RAAF had been flying helicopters operationally for only four years before the Iroquois were sent to Vietnam. It was both ironic and regrettable, therefore, that the friction between Army and Air Force senior commanders which plagued the squadron's first few months in Vietnam, and for which ultimate blame must be sheeted home to the RAAF, was to sow the seeds for the transfer of 'battlefield' helicopters to the Army fifteen years later, as a consequence of which the Australian Defence Force lost an enormous amount of hard-earned rotary-wing expertise and further fragmented its already disparate air power resources. More lasting benefit for the ADF flowed from the experiences of the transport, bomber, forward air control and Phantom crews, and all of the supporting ground staff, whose operational skills provided the foundation of the RAAF's activities for the following two decades.

CHAPTER 16
JOINT WARFARE

From the RAAF's inception as an independent service in 1921 until the start of World War II, its primary role was army and navy support, with the emphasis on land rather than maritime operations. Yet notwithstanding the complexities of surface/air co-operation, during those years there were no Australian schools to teach joint warfare and training opportunities were fewer than they should have been. The independent status of the three services was consolidated after the war, with each retaining its separate minister and department. Informed airmen, soldiers and sailors were aware, however, that in the majority of conflicts, joint military action was far more likely to be effective than independent operations. Air power was the common denominator: it was the manifest dominance of air forces between 1939 and 1945 which alone drove defence planning towards joint warfare, a development which presented the RAAF with perhaps its most demanding intellectual challenge.

Responding to the experience of World War II, in 1947 the Defence Committee authorised the formation of two joint warfare committees.[1] The Joint Air/Sea Warfare Committee comprised representatives of the RAAF and RAN and was tasked with formulating policy on all matters related to the control of the sea involving the Air Force and Navy. Its members reported to CAS and CNS. Comparable responsibilities were allocated to the Joint Air/Land (later renamed Land/Air) Warfare Committee, which reported to CAS and CGS. Because of the growth of the Fleet Air Arm and its role in army support operations, a naval representative was added to the land/air committee in 1959. Chairmanship of the committees rotated between the services annually.

Policy groups were complemented by training establishments. The School of Army Co-operation which had been formed at RAAF Station Canberra late in 1941 to train Army Air Intelligence liaison officers and RAAF pilots in air/ground procedures provided the foundations for the post-war School of Air Support which was formed at Laverton on 22 January 1947. Subsequently renamed the School of Land/Air Warfare, the unit had an Air Force commandant but its staff of ten officers was drawn from each of the three services.[2] Initially intended to operate for only eighteen months while the principles of joint operations were agreed to and published and a number of officers trained, the school was found to be 'most valuable'. Concerned that the skills of air/land warfare co-operation which had been learned during the war might be lost, Air Vice-Marshal Jones had the school placed on the RAAF's permanent establishment.

In 1948 the school was relocated to RAAF Station Williamtown, which had suitable facilities (buildings, lecture rooms and hangars) and was a good site for 'triphibious' warfare training. Shortly after the move parachute and air portability training wings were added. Courses conducted included air support (army/air force operations), forward air control, ground liaison duties, planning for joint exercises, and

Staff of the School of Land/Air Warfare at Williamtown, 1952. RAAF officers are: Back row (2nd from left) SqnLdr J.G. Cornish, (4th) SqnLdr C.A.V. Bourne, (6th) FltLt J.K. Staunton. Front row (4th) AirCdre E.G. Knox-Knight, (6th) WgCdr G.H. Steege. RAAF

parachuting. On most courses students were drawn about equally from the Air Force and Army. In addition to their instructional duties, the school's staff planned, observed and analysed joint exercises conducted by RAAF and Army operational units.

Air Marshal Jones' early concern proved correct when interest and student numbers both fell in the 1950s, the school's declining status evident in its change of name to the Air Support Unit in 1958. The pre-eminence of joint operations in South Vietnam exposed the short-sightedness of that attitude. A review of the unit conducted by the Land/Air Warfare Committee in 1966 recommended expanding and modernising the core syllabus. Naval operations—until then completely excluded—were to be added to joint doctrine; and special attention paid to joint warfare in Southeast Asia.[3] With strong backing from the RAAF's director-general of operational requirements, Air Commodore R.T. Susans, agreement was reached to reorganise the Air Support Unit as a joint warfare school, with an expanded role in developing doctrine. In the mid-1970s the responsibilities of the Air Support Unit were expanded to prepare for its planned transformation into the Australian Joint Warfare Establishment.[4]

The Air Support Unit's function was more or less mirrored for maritime operations by the establishment in 1951 of the Australian Joint Anti-Submarine School (AJASS) at the Nowra Naval Air Station. Formed at the recommendation of the Air/Sea Warfare Committee in response to the perceived growing threat to trade from submarines, AJASS adopted the model of the British Joint RN/RAF School in Londonderry, Northern Ireland.[5] The RAAF contributed one of the two joint directors (a wing

commander pilot) and other instructional staff, including navigators and signallers. All aircrew from the two maritime reconnaissance squadrons, Nos 10 and 11, attended anti-submarine warfare courses which ranged from basic to advanced. Although friction occasionally arose over the fortunes of the Fleet Air Arm, whose periodic brushes with extinction the RAN liked to blame on the RAAF rather than on the imbalance fixed-wing naval aviation represented between expenditure and effectiveness, AJASS prospered as a centre where the Air Force and the Navy could promote and develop joint expertise.

AJASS was not the only organisation where the debate over ship-based air power sometimes became heated. The future of the Fleet Air Arm was perhaps the Royal Australian Navy's major concern.

'The master weapon of World War II', the RAN had stated in its Post-War Plan, 'has been the aeroplane'.[6] While noting the potential of the rockets which had appeared in the closing stages of the war, the Navy concluded that manned aircraft remained essential for offence and defence, and that consequently the carrier task force had become the primary offensive naval unit. An appreciation prepared by the chiefs of staff in February 1946 recommended the inclusion of aircraft carriers in the post-war RAN, a proposal which won Defence and government endorsement. There was, however, less unanimity over who would operate the Navy's 'Air Branch' aircraft.

In the brief period between 1928 and 1933 when the seaplane carrier HMAS *Albatross* was on Australia's order of battle, its Seagull aircraft were operated by the RAAF. Once it became apparent that the government would be re-equipping the post-war Navy with at least one carrier, the question of who would fly the aeroplanes assumed great significance within both services. Prime Minister J.B. Chifley instructed the air and naval staffs to examine the subject jointly; in fact, the services prepared separate submissions which were then simply tacked together.

The air staff put a great deal of effort into its part of the submission, analysing personnel establishments, organisational structures, maintenance facilities, aircraft types and numbers, costs, spares, ground and air training, domestic and training facilities, and training syllabuses. Hundreds of pages of discussion were supplemented by scores of tables and annexes.[7] Throughout the submission the assumption was made that the RAAF would be responsible for staffing, training, equipping, and maintaining Australian naval aviation.

The 'RAAF Plan for Naval Aviation' proposed the development of an Australian Fleet Air Arm using Australian skills and expertise. Under the plan, two fully trained and equipped carrier air groups and their support infrastructure would be in service within eight years. All RAAF personnel associated with the program would specialise in carrier work and would be employed exclusively on naval aviation, and operational control over embarked units would be 'unreservedly naval'. Those earnest guarantees made no impression whatsoever on the RAN, whose vision of naval aviation had as

one of its objectives the total exclusion of the RAAF. Rejecting the Air Force's submission, the RAN proposed instead to employ large numbers of (British) Royal Naval personnel to fly its aircraft until sufficient Australians had been trained.

Air Marshal Jones drew the government's attention to several disturbing aspects of the RAN's scheme. Because all the necessary air and ground training facilities were already available in the RAAF, adopting the Navy's plan would incur needless expense and duplication of infrastructure. Nor was British support reliable—as World War II had shown, excessive dependence on the United Kingdom could be dangerous as Britain had been patently incapable of meeting its own wartime requirements let alone those of others. The CAS was also puzzled by Navy's criticism that RAAF aircraft technicians would be 'unnecessarily highly skilled personnel', suggesting with mild surprise that well-trained mechanics were preferable to poorly trained ones. As Jones concluded, the RAN plan visualised complete independence for the Navy in air matters and reliance to a very large extent on the United Kingdom for essential equipment and trained personnel, an approach which was, in his opinion, contrary to 'the development of Australian Air Power as a whole'.[8]

Air Force petitions fell on barren ground, an outcome which was always likely once Defence officials in the United Kingdom and the United States who were reviewing the same subject for their own services announced that fleet air arms were an integral part of a navy and should be wholly controlled and staffed by 'navy men'.[9] In Australia a special correspondent for the *Argus* presented that very case for the RAN. While acknowledging that the RAAF would 'undoubtedly do a good job', the *Argus* suggested that only the Navy could provide the necessary specialist training and apply it to naval operational requirements, citing experiences from World War II to support that proposition. Air Vice-Marshal Bostock put the alternative argument for the RAAF and land-based air power through his column in the *Herald*, suggesting it was foolish for the government to contemplate spending £30 million on aircraft carriers while the RAAF remained 'inadequate as a fighting force'.[10] As vigorous debate continued over the alleged vulnerability of aircraft carriers and the superiority of land-based over carrier-based aircraft, the government accepted the RAN's submission and Australian naval air power developed under British guidance.

On 16 December 1948 the first lord of the (British) Admiralty, Viscount Hall, handed over HMS *Terrible* to the RAN, which renamed the vessel HMAS *Sydney*. *Sydney* was equipped with Fairey Firefly fighter/reconnaissance aircraft and Hawker Sea Fury fighters; both were obsolescent even before their introduction into RAN service. A second 'Majestic' class carrier, HMAS *Melbourne*, was on order. Australia was effectively operating two air forces. Whether it could afford to do so was to remain a contentious issue in the defence debate for over thirty years.

The vicissitudes of the Fleet Air Arm is a story in itself and only those few aspects most relevant to the RAAF need be mentioned here. The first is the role of Australian sea-borne air power. It fairly quickly became evident that the small aircraft carriers Australia could afford were incapable of operating modern, high-performance aircraft. As noted, Fireflies and Sea Furies were of limited military utility even before

they arrived in Australia, and none of their successive replacements—Gannets, Trackers, Skyhawks and so on—could compete with front-line land-based aircraft. Recognising that inherent limitation and the growing ability of submarines to threaten Australian trade, in 1954 a government Defence white paper directed the RAN to give priority in its development plans to surface anti-submarine warfare vessels, and assigned responsibility for air protection at sea within the range of land-based aircraft to the RAAF.[11] Where possible, the RAAF's recently acquired P2V5 Neptunes of No. 11 Squadron, rather than carrier-borne anti-submarine aircraft, would protect the fleet. That same policy was used by the RAAF in 1959 partly to justify replacing No. 10 Squadron's Lincoln maritime reconnaissance aircraft with the P2V7 Neptune.

The second aspect concerns attitude. From the late 1950s onwards the Fleet Air Arm remained under continual scrutiny as its cost and limited capabilities seemed to many to outweigh its usefulness. It was during a review seeking to reduce defence costs by rationalising training that in 1962 the RAAF's director-general of plans and policy, Air Commodore G.C. Hartnell (a man regarded as one of the RAAF's best thinkers, with an exceptional ability to analyse issues) recorded a fundamental philosophical difference between the Air Force and the Navy (and for that matter the Army). Hartnell noted that in order to accommodate the fleet's training cycle, each year the Navy conducted two large helicopter pilot conversion courses instead of several smaller courses, a routine which meant the Navy not only needed a disproportionately large number of aircraft, but also that those aircraft were underutilised for much of the year.[12] It was all very well for the Navy to acknowledge the aeroplane as the 'master weapon' of World War II; when it came to the final, emotional level, it was the needs of the fleet and capital ships which mattered. As Hartnell observed, the fact that the RAN's aircraft had practically nothing to do for one-third of the year was of secondary concern to the interests of the fleet itself. 'Perhaps', he suggested, 'this highlights our different approaches to the problem of flying, viz, to them it is of secondary interest whereas to us it is a primary concern'.

The third and final aspect is inter-service politics. The perennial subject of naval air power was broached yet again in March 1970 when Defence Minister J.M. Fraser instructed his department to study the whole question of sea-based aircraft, paying particular attention to the planned retirement of the RAN's one remaining carrier, HMAS *Melbourne*, in about 1980.[13] Chief of Naval Staff Vice-Admiral V.A.T. Smith was to conduct the review, which was not to examine land-based air power except where it affected the Navy's capability to perform the roles and functions for which it was responsible under endorsed military guidance. CAS Air Marshal C.T. Hannah took the opportunity to play some hard politics. Acting on the advice of his deputy, Air Vice-Marshal C.F. Read, Hannah wrote to his colleagues on the Chiefs of Staff Committee claiming that, in drafting the terms of reference for the review, Vice-Admiral Smith had misinterpreted the minister's directions. According to Hannah, Smith's terms presupposed the continuance of naval air power, whereas a rigorous review, the CAS suggested, would start by questioning whether in fact there was any need for naval aircraft to supplement land-based aircraft. By taking that approach,

Hannah was trying to ensure that all land-based aircraft came under Air Force control, a position he claimed to have reached not from a narrow service viewpoint, but from the belief that Australia could not afford to dissipate its air resources between three services. Private air staff papers argued that at all times during the debate, the RAAF should 'avoid giving the Navy the opportunity to establish a land-based air force'.[14]

For a medium-sized economy and military power like Australia, aircraft carriers were always likely to founder under the weight of their expense. In other words, whether or not the RAAF played 'hard' politics over naval fixed-wing aviation was probably irrelevant, as the decision to scrap HMAS *Melbourne* in 1982 showed. The inter-service area where the Air Force did need to show political acumen was in its relations with the Army, for as World War II, Korea and Malaya had shown, battlefield air support had become essential to Western armies. Regrettably, between 1946 and 1971, senior RAAF officers consistently treated the Army's needs with indifference or arrogance, or both; and in doing so demonstrated only political ineptitude. The eventual outcome was to cause the Air Force probably more unhappiness than any single event since the end of World War II.

The RAAF's original *raison d'etre* was to support the other two services, especially the Army, but the rapid evolution of both the fight to command the air and aerial bombardment had led many air strategists in other directions. The tendency for airmen to focus on the 'war winning' components of their business—fighters and bombers—was understandable but short sighted. Notwithstanding the natural appeal of the roles which made air power unique, the demands of modern warfare and the politics of inter-service relations made it vital for the RAAF to give the Army high-quality support, even if its pilots found such tasks as resupply and reconnaissance prosaic. Too often that support was provided grudgingly, sometimes not at all.

In 1950 the RAAF had accepted responsibility for acquiring and maintaining light aircraft for army air observation post (AOP) duties and had formed No. 16 Air Operations Flight at RAAF Station Canberra, equipped with six Austers. The flight was fully supported by the Air Force, with RAAF executives and maintenance facilities, but all line pilots eventually were to come from the Army. Pilot training and AOP co-operation were the prime tasks. However, forming the unit was one thing, doing the job properly another. According to the Army, No. 16 Flight rarely met its commitments. Requests for AOP missions were only occasionally satisfied, the flight was 'hard pressed' to train the four pilots the Army needed annually, and its aircraft were obsolete.[15] Air Force leaders seemed to treat those legitimate grievances with indifference. Following a review by the air staff in 1958 which confirmed the Auster's obsolescence and validated Army's stated peacetime requirement for eighteen AOP aircraft, the Air Board refused to fund more than eight replacement Cessna 180s, even though the total cost for each aircraft, including spares, freight and handling, was a relatively trifling £13,750.[16] Requests from the Army to supplement the Cessnas with helicopters were simply ignored.

Administrative indifference was accompanied by operational insensitivity. In 1958 the RAAF's director of operations, Group Captain W.E. Townsend, berated Army aviators for their allegedly high accident rate,[17] conveniently forgetting that at a similar early stage of development the pre-war Air Force had itself experienced an unhappy series of crashes. Several years later Air Vice-Marshal F. Headlam repeated that performance during a visit to an Army aviation unit, giving an address described by one Army pilot as 'probably the most insulting' he had ever heard.[18] Headlam seemed to represent a generally held Air Force view that unless aeroplanes were fast and loud, they and their pilots were second rate. Army aircraft may have been small and slow, but their operations at tree-top level in hot, turbulent conditions were demanding and inherently far more dangerous than those of some Air Force jet squadrons. What was needed was professional encouragement, not disdain. Misguided attitudes spread to junior ranks. During the 1960s and 1970s many Army officers found it hard to understand why, at the end of a day's joint training in the field, their Air Force Iroquois and Caribou pilots had to fly to the nearest motel for the night rather than stay in an Army tent. The standard response of 'mandatory aircrew rest conditions' further undermined the RAAF's image when some pilots regularly reappeared the next morning clearly suffering the effects of a heavy night out.

A crucial document in the post-war history of the RAAF appeared from the Department of the Army on 30 July 1957. Titled 'Light Aircraft Support for the Army', the paper presented a forceful case for the Army to assume full responsibility for tactical air support.[19] According to the paper, World War II and Korea had shown that light aircraft were essential to the 'proper functioning' of a modern army in both peace and war, and that consequently the Army should be responsible for the 'procurement, operation and maintenance of such fixed- and rotary-wing aircraft as [were] required'.[20] The paper noted that light aircraft had been organic to the United States Army for a number of years, and that only five months previously the British Government had transferred responsibility for AOP and light liaison aircraft from the RAF to the Army. In essence, Army's argument rested on the notion that some air power roles had become so important to land operations that the units which provided those services had to be considered integral to armies. Implicit in that judgment was the belief that air forces (or at least the RAAF) could not always be relied upon to provide the necessary support when, where, and in the quantities required.

The Army suggested that because the RAAF's leadership was focused on what was flatteringly described as 'the formidable problems' associated with acquiring, operating and maintaining high-performance aircraft of advanced design, the needs of low-performance light aircraft inevitably would receive a low priority. Acknowledging the RAAF's past assistance, the paper concluded with the assurance that the Army had no intention of competing with the other services in providing air power for the defence of Australia, any more than the RAAF competed with the Navy by operating its own marine craft (which were used for search and rescue at some flying bases) or with the Army by operating trucks. The overriding issues were the Army's

increasing requirement for light aircraft, and the generals' reasonable ambition to control the means necessary for their force to carry out 'indispensable aspects' of a modern army in peace and war.

Inter-service suspicions cut across the debate from the start. Briefing CAS Air Marshal Scherger on the Army paper, Group Captain W.N. Gibson advised against presenting the matter to the Joint Planning Committee, where the Navy was 'certain to line up with the Army—therefore such action should be avoided'.[21] Whether Gibson's advice represented anything more than a knee-jerk reaction to a perceived attack on the RAAF's status was unclear. What was clear from experience in the United States and Great Britain was that armies could muster a fair case for organic light aircraft support. The big difference in Australia was size. Could a small country afford three air forces? During a previous discussion on Army aviation in 1956, Minister for Air Athol Townley had rhetorically asked the Air Board: 'We now have two air forces, are we to have three? If the Army is to come up to date it will need AOP aircraft, of course, and perhaps odd others. The RAAF is the air arm, and should not agree to any—even the smallest part, going from its control'.[22] Townley's approach was organisationally, economically and doctrinally sound. It did not, however, suggest that the RAAF should ride rough-shod over the Army's legitimate needs. The interests of both the Air Force and Australian defence would be best served if the RAAF made every effort to support the Army in the way the Army wanted, not the way the RAAF found the least troublesome or the least threatening.

Air power doctrine was the issue which should have been occupying the Air Board's collective mind. Air Marshal Scherger and his colleagues should have been concerned that the doctrinal principle of 'unity' was under serious threat, as was the RAAF's position as the prime provider of Australian military air power. It had been an article of faith in Western air forces since World War I that the control of aircraft should be centralised. Only through centralised control could a commander exploit the unique characteristics of the air weapon—flexibility, speed, range and striking power—and be in a position to apply the right amount of force in the right place at the right time. Any attempt to allocate scarce air power assets to individual commanders, to 'penny packet', would undermine the maxim of unity and confound the flexibility which is perhaps air power's greatest asset. Yet 'penny packeting' was precisely what the Army intended doing in response to the RAAF's perceived failure to provide the necessary degree of support. The Air Force's leaders seemed not to have grasped the point.

The belief that the generals had a reasonable case was shared by the Defence Committee when it considered the Army paper in 1960. Approval was given for the Army to own and operate light aircraft up to 1820 kilograms gross weight in the roles of command and control, liaison and communication, air dispatch letter service, message dropping, photograph delivery, reconnaissance and cable laying, freight delivery, supply dropping and artillery observation. By stipulating a weight limit, the committee intended preventing any attempt by the Army to exceed its charter by

branching out into other roles such as troop transport, resupply and armed close air support.[23]

Because the Army had neither the flying supervision nor technical experience to satisfy Defence standards, the generals planned to build their independent aviation skills on the foundations of No. 16 Air Operations Flight, with the Air Force retaining major responsibilities for many years. Thus, when No. 16 Army Light Aircraft Squadron (ALA) was formed at RAAF Base Amberley in December 1960 with fourteen fixed-wing and eleven rotary-wing aircraft, it was an integrated unit with seventy-two Army and sixty-five RAAF personnel. The commanding officer was Wing Commander K.V. Robertson, a graduate of the Empire Test Pilots School, who in 1947 had become the RAAF's first helicopter pilot; all aircraft technicians were RAAF airmen, and all pilots were Air Force-trained. The RAAF was responsible for procuring aircraft, maintenance standards, technical publications, flying safety, accident investigation, meteorological services and air traffic control, an arrangement which continued well into the 1960s.[24]

From the outset the Army appeared determined to demonstrate a fundamentally different approach towards military flying. An air force's pilots are its elite, enjoying a status within their own service much greater than that accorded by an army to its infantrymen and a navy to its seamen. The Australian Army, however, initially did not accept aviation as a career path in itself, instead insisting that their pilots would be drawn from the traditional corps (infantry, artillery, armour and so on) for a limited period before resuming their careers in those 'real' military branches. It is tempting to speculate that in adopting that approach, in dismissing its pilots as just another group of part-time artisans who existed only to serve the combat corps, the Army was deliberately thumbing its nose at the Air Force. The stance was taken against the strong advice of the director of air force policy, Group Captain J.F. Lush, who told the Army that such an ad hoc approach would impede the development of pilots with sufficient worthwhile experience to become good unit executives.[25] The RAAF may have treated its Army support responsibilities casually in the past, but most of its senior officers did know a lot about military aviation. Over time the logic of Lush's argument became apparent and the Army started to recruit officers on short-service commissions solely as pilots.

By September 1964 Army aviation had grown to fifteen fixed-wing and twenty-seven rotary-wing aircraft and three hundred and four personnel (including seventy-eight from the RAAF), and further expansion was certain. At this stage the RAAF began to look for ways to remove itself completely from any operational involvement with No. 16 ALA, an ambition the Army encouraged. Air Marshal Murdoch was eager for the disassociation to happen as quickly as possible so he could 'get [his] technical people back onto RAAF tasks'. The two parties agreed that the RAAF would train sufficient Army tradesmen to permit all Air Force corporals and below to return to their parent service by January 1968.[26] A small number of RAAF senior NCOs would remain, with the timing of their withdrawal dependent on the progress made by junior Army tradesmen. In fairness to Murdoch, while his heart may not have been in

the Army task, the Air Force had consistently staffed No. 16 ALA to one hundred per cent of its approved level, compared to eighty-eight per cent for RAAF operational squadrons.[27]

While the RAAF worked to remove itself from No. 16 ALA's activities as much as possible, organisational changes were ensuring that Army's demand for air support in other areas would continue to grow. Prior to the Vietnam War the regular Army had consisted of about 24,000 personnel structured as a 'Pentropic Division', an organisation intended primarily to fight a limited war. Vietnam prompted not only an increase in numbers to 33,000 but also a reorganisation along divisional lines, with nine infantry battalions backed up by the usual supporting arms and three task force headquarters. As far as practicable the new organisation was to be air transportable, a characteristic which was immediately used to place pressure on the Air Force.[28]

In September 1962 Cabinet had approved the purchase of eight heavy lift (later described as medium lift) helicopters to bolster Army's tactical mobility. Because no suitable aircraft was available the project had been deferred. The adoption of the divisional structure revived Army's requirement but not the RAAF's interest. Frustrated by delays, in 1965 Chief of the General Staff Lieutenant-General Wilton urged the Chiefs of Staff Committee to deal with the matter 'without delay'. However, while large helicopters may have been perceived by the Army as fundamental to land operations, it was the RAAF which was responsible for staffing the proposal, assigning a priority in the air acquisition program, managing the selection and acquisition process, and providing the people, the training, the facilities and the resources to introduce and operate the machines. At the time, the RAAF was bringing into service the Mirage III, the F-111, the C-130E, the P-3 Orion and two radar control and reporting units. The last thing Air Force leaders wanted was another new aircraft type, particularly one which would add nothing to the preferred air power roles of strike and control of the air. Lieutenant-General Wilton's proposal received an unsympathetic hearing from the RAAF's director-general of plans and policy, Air Commodore K.S. Hennock and the CAS, Air Marshal Murdoch, both of whom recommended deferring the project. Their position was supported by the chairman of the COSC, Air Chief Marshal Scherger, who, while acknowledging the Army's changed organisational arrangements, saw no reason to examine the need for changed air support.[29]

Murdoch and his colleagues simply did not seem to realise that they were jeopardising the RAAF's position as the prime source of Australian air power. One senior officer who did appreciate the full import of what was going on was the director-general of operational requirements, Air Commodore Brian Eaton. In the wake of a stream of well-argued and reasonable submissions from the Army, Eaton attempted to draw Murdoch's attention to the central issue.[30] Noting the rapid growth of Army aviation generally, Eaton pointed to two significant recent developments. First, in an apparent challenge to the 1820 kilogram weight limit agreed to in 1960, the Army was now bidding for twelve twin-engined aircraft; and second, General Wilton wanted to conduct a joint examination with the RAAF of close air support systems, a

role traditionally performed by air force fighter/ground attack aircraft. Summarising the total Army bid, Eaton advised Murdoch that it was 'clearly the Army's intention to have complete command and control of these [ground attack] aircraft'. The best response, Eaton believed, was for the Air Force to satisfy the Army's reasonable needs by acquiring the types and numbers of aircraft proposed. He then sounded a caution on close air support. The United States Army had recently introduced the term 'Aerial Fire Support', which Eaton described as 'a new phrase designed to disguise the fact that they are looking for ways and means of taking over, following the USAF's failure to provide a simple close support aircraft'. Close support, Eaton maintained, was an air force function, but if the RAAF did not meet its responsibilities it would not be long before Army would take over the air roles in the entire tactical battle area.[31]

Unfortunately there were insufficient senior officers with Eaton's outlook. Air Force intransigence surfaced again in 1969 when the Army sought to acquire front-line helicopter gunships. Because the RAAF was the operating service, air staff officers were responsible for developing and managing the bid. In the process, the Air Force showed it had learned little from its unhappy experience with No. 9 Squadron in Vietnam three years previously. Army presented a well-argued case for the AH-1G Huey Cobra in preference to the modified UH-1H Iroquois gunships developed by the RAAF, emphasising the Huey Cobra's superior firepower (up to three times greater) and weapons delivery accuracy, and versatility.[32] As the Army pointed out, it had been precisely the limitations of the Iroquois as a gunship which had prompted the Americans to develop a specialised attack helicopter, namely, the Huey Cobra. Air staff planners dogmatically insisted that the modified Iroquois was 'good enough', even though since its earliest years the RAAF had appreciated the importance of the leading edge in air combat, of always acquiring the best available machine. The application of that philosophy since 1946 had seen the RAAF become the region's most advanced air force; Army commanders were entitled to ask why one standard apparently applied for airmen and another for soldiers.

Those commanders would have found part of their answer in the Air Force's assumed mantle of superiority in all matters aviation; in its long-standing condescension towards Army flying. In this instance political factors were also involved. The Army believed that since Korea, the RAAF's capability to provide close air support for troops in contact with the enemy had gradually declined. The Sabre fighters which had replaced the Mustangs and Meteors had only a limited ground attack capability, the Mirage was not much better, and Army was concerned that the Mirage's successor 'could well have less'.[33] There was little doubt among the general staff that the RAAF would be most reluctant to use its F-111s (once they arrived) in the close air support role. A modern gunship was, therefore, 'more than ever' an Army priority.

This was an unpleasant turn of events for the Air Force. On the one hand, RAAF leaders were understandably cautious about committing extremely expensive fighters which were essential for achieving control of the air to high risk ground attack operations which, in the overall context of a battle, might be relatively unimportant

(although not to the soldiers concerned). On the other hand, the air staff invariably cited the RAAF's formal responsibility for the ground attack role as part of the justification for acquiring high-performance fighter aircraft. If that role were transferred to helicopters, the RAAF might find itself struggling the next time it made a bid for a new top-of-the-range fighter/ground attack aircraft. After a good deal of bitterness the dispute lapsed in the wake of the withdrawal from Vietnam, and back in the Australian training environment the modified Iroquois continued to perform the gunship role competently enough. The exchange had, however, undoubtedly hardened Army's determination to get control of a resource which it considered essential to its operations. Matters were not helped when the air staff expressed fleeting interest in the British Harrier and the American developmental A-X ground attack aircraft without first consulting the Army, an omission which angered Chief of the General Staff Lieutenant-General Sir Mervyn Brogan.[34]

General Brogan became even angrier when the subject of mapping survey photography was brought to his attention. High-quality, up-to-date maps are essential to military operations. The responsibility for mapping in the Australian defence forces rested with the Army Survey Corps, assisted by Air Force photographic services. According to Brogan, in the almost twenty years since the disbandment of No. 87 Photographic Reconnaissance Squadron in 1953, RAAF support had varied from 'minimal to zero'.[35] Persistent Army requests for aerial photography had been met with indifference, the RAAF claiming that its cameras were unsatisfactory and that in any case 'only a very small, if any, flying effort could be directed to survey work'. Consequently the Army had chartered civilian Beechcraft B80 Queen Air aircraft to do the job. As a means of supplementing the Queen Airs, in 1970 Army sought approval to fit a survey camera to its Pilatus Porter light fixed-wing reconnaissance aircraft. The Porter's limited performance also limited its survey potential; the intention was to use it simply to fill gaps in existing photography.[36]

Because the RAAF was responsible for airworthiness in the defence force, the proposed modification to the Porters had to be submitted to Air Force Office. Once again the Army found itself frustrated as the RAAF, while having notably failed to show any interest in survey work, questioned and delayed the proposed modification because it seemed to fall outside the 'approved' roles of Army aviation. General Brogan had every justification for castigating the RAAF for its contrary behaviour in the face of the Army's attempt at a bit of 'self-help'. 'Is it any wonder', Brogan wrote, 'that we, the Army, desire to indulge in a little self-help to get our ... work done?'[37] When, under pressure largely of its own making, the Air Force modified a number of Canberra bombers for the aerial survey role in 1972–73 and started to give the Army excellent support (having previously advised that the survey equipment could not be fitted into the Canberra because of weight and airframe configuration problems), it was probably a case of closing the stable door after the horse had bolted.

The incident seemed to be the last straw for the CGS who, in an important policy paper written in 1972, dismissed the RAAF once and for all as a provider of battlefield

air support. Brogan's sentiments were uncompromising, indeed almost contemptuous, in their undisguised rejection of Air Force practices and attitudes:

> [Army aviation's] units are organic to field formations and its personnel are soldiers first and aircrew second. They are required to live and work in intimate association with their Army comrades. They must be on hand for quick response and subject to the same routines and disciplinary codes as the rest of the Army. Their environment conditions their outlook and gives them the necessary appreciation of the problems and the requirements of the arms they are supporting. Only soldiers can do this in full.[38]

General Brogan's statement was stronger in polemic than logic, as No. 9 Squadron's splendid achievements for more than five years in Vietnam had demonstrated. Similarly, throughout the late 1960s, the hours flown by the RAAF's C-130, Caribou and Iroquois fleets on Army support were forty-two per cent, ninety-four per cent and eighty-nine per cent respectively of their total effort;[39] that is, the Caribou and Iroquois squadrons were in effect operating as part of the Army, and the C-130s were making a major contribution to land operations. But flying hours were only part of the equation: it was the RAAF's *attitude* Army objected to, and would no longer accept.

The formation of the 1st Aviation Regiment at Amberley in April 1966 had in fact already signalled Army's determination to take total control at the least of its battlefield air support, a determination which was given important symbolic and substantive form two years later with the formation of the Army Aviation Corps followed by the construction of an Army Aviation Centre at Oakey, about one hundred kilometres from Amberley.[40] Oakey was intended to become the 'hub of Army flying activity', where the soldier-pilots could be trained 'to think and appreciate situations in an Army environment and manner',[41] free from any dependence on and interference from the Air Force. That was a reasonable objective, albeit expressed somewhat self-indulgently given that the Army would continue to rely on the RAAF for airworthiness, engineering standards, supply and flight safety.

The RAAF's failure to come to terms with its responsibilities to the Army represents the low point of the period from 1946 to 1971. Because this was only one episode of many, it would be unfair to be too critical and to characterise the RAAF's performance generally in the same light. On the contrary, in most other respects the Air Force's performance was one of continual improvement as the foundations of a committed and professional organisation were laid. There were also sound intellectual arguments for the priority given to the roles of control of the air and strike. Like the Army and the Navy, the Air Force had limited resources and had to direct its efforts towards those activities it considered were the most important to national security.

There is no reason to doubt that the men who were guiding the RAAF believed they were acting for the greater good. The point nevertheless should be noted that every chief of the air staff from 1954 to 1969 inclusive had been a cadet at the Royal

Military College, Duntroon, with Air Marshal McCauley the first, followed by Scherger, Hancock and Murdoch. All had served in the RAAF before 1939 when it was explicitly subordinated to the Army, and all had observed first-hand the dramatic rise in status and independence enjoyed by air forces during the war. There is no obvious evidence that those experiences sharpened the usual peer and inter-service rivalries, but it is a possibility which should be recorded.

Air Marshal Sir Alister Murdoch's tenure from 1965 to 1969 was the most damaging period. Murdoch was a quiet, pleasant, intelligent and sociable man who had been at Duntroon in 1929. While his flying experience was thin, his staff work at senior levels in both Europe and the Southwest Pacific during World War II had been 'outstandingly efficient' and 'brilliant', a standard which he had maintained in higher posts, including deputy chief of the air staff and AOC Operational Command. During Murdoch's time as CAS, Ministers for Air Peter Howson and Shane Paltridge both commended his flexible and imaginative thinking and his quiet ability to inspire. However, his competence, good mind and attractive personality notwithstanding, Murdoch's comprehension of air power in its fullest sense and handling of inter-service politics were respectively inadequate and disastrous. When it came to dealing with the Army there seemed to be a hierarchy of 'doctrine' under which 'air force' roles were important and the others were not. If in the process of applying that 'doctrine' the opportunity presented itself to pay back the Army for its ill-considered condescension towards the RAAF in the years before World War II, then so much the better.

AM Sir Alister Murdoch, CAS from June 1965 to December 1969. RAAF

In fairness to Murdoch and his contemporaries, the behaviour of post-war senior Army officers was sometimes far from acceptable. The generals' early attempts to demonstrate that military flying was a part-time profession was naive at best, perhaps even childishly self-indulgent, as the eventual establishment of an aviation corps staffed by professional aviators tacitly acknowledged; while in the early days in Vietnam some senior Army commanders displayed an inexcusable ignorance of aircraft operations and the air doctrine on which the success or failure of their endeavours might ultimately rest.

Nevertheless, the inability of the Air Force's leaders to understand what had to be done for the Army was a political failure of the first order, a failure which ultimately was to damage the Air Force institutionally. RAAF senior officers were wrong to treat the Army's legitimate needs peremptorily and they were wrong to treat Army

aviation patronisingly. It was ironic that each time the RAAF reluctantly met its obligations, whether in the field or through staff work, its people did so with characteristic skill. But by about the late 1960s it probably did not matter how competent the men and women at the working level were. A generation of lieutenant-colonels and majors had come to believe that the RAAF did not care about army support, and they were to carry that belief into the 1970s and beyond.

CHAPTER 17
CITIZEN FORCES

Citizen forces were an integral component of Australia's pre-war military organisation. The militia provided most of the commissioned and enlisted ranks in the Army, and for much of the period the RAAF's operational capability rested primarily on Nos 1 and 3 Squadrons, which comprised two-thirds citizen force and one-third permanent personnel. The Navy, which received most of the defence budget, was able to staff its ships entirely with permanent officers and sailors but still incorporated a significant reserve element. At the outbreak of war the RAAF's Citizen Air Force (CAF) squadrons were mobilised and absorbed into the regular order of battle, where they participated fully in the defeat of Japan.

The blueprint for the post-war development of the RAAF known as Plan 'D' signalled a fundamental break from pre-war thinking by proposing a force based primarily on permanent rather than part-time personnel. Nevertheless, the tradition of the citizen soldier which was so strong in the national self-image received suitable deference.

Using Plan 'D' as his guide, Air Member for Personnel Air Commodore Joe Hewitt proposed establishing a diverse citizens' force, consisting of several components. The centrepiece would be a number of CAF squadrons which would have prime responsibility for the home defence of Australian air space, leaving the RAAF's permanent elements to deploy overseas as a mobile task force. Supplementing the CAF would be a reserve which would have three roles: it would provide a pool of men who could be used to bring all existing units up to wartime establishment at short notice, form training units in the initial stages of a war, and form ancillary units to accompany the mobile task force overseas. Subsequently the part-time forces were expanded by the addition of university squadrons; while for the purposes of this history the contributions made to the RAAF by National Servicemen and Air Training Corps cadets can also be considered under the heading of 'citizen forces'.

Turning first to the reserve, two categories were established, 'active' and 'general'. Active reservists, as their name indicated, were to be at a high state of readiness so that in the event of a defence emergency at short notice they could either accompany the mobile task force overseas or contribute to home defence. Hewitt estimated that about 5000 to 8000 officers and airmen would be needed.[1] General or 'inactive' reservists would provide the expansion base for the less urgent, second stage of mobilisation.[2] All volunteers for both components of the reserve had to have completed a period of full-time engagement, been recommended by their commanding officer, have been honourably discharged, and be physically fit.

The basic difference between an active and general reservist was one of training, with the former having an annual commitment intended to assure operational readiness and the latter none. Members of the Active Reserve signed on for five years, with the option of another five, and were required to complete fourteen continuous

days training annually as well as fourteen other days. In practice neither that training regimen nor the concept of the 'active' reserve worked. Wartime aircrew tended to view their reserve duty days with Permanent Air Force squadrons more as a reunion than as time to be used constructively to maintain a 'high state of readiness'. After reaching a peak strength of about 4500 in 1952, the Active Reserve dissipated when flying with PAF squadrons was stopped in 1956/57.[3]

No training requirements were stipulated for members of the General Reserve, whose only obligation in peacetime was to write annually notifying the Air Board of their address and 'any other particulars' which might be useful, a procedure which at least indicated they were still alive. There was no fixed period of enrolment for the General Reserve, nor was there an official limit placed on the size of the list. Although there were no formal training requirements, the Air Board hoped to provide members of the General Reserve with enough exposure to RAAF activities to keep them at a reasonable level of currency.

One avenue through which the board sought to conduct continuation training at no cost to itself was the ex-service clubs which proliferated after the war. Approaches were made to organisations like the Air Force Association to assemble reservists 'at suitable times and locations' so that senior officers and other lecturers from the Permanent Air Force could speak on 'modern trends in air forces, organisational and technical developments and related subjects of interest and value'.[4] Lists of lectures and films were prepared by the RAAF's director of training and educational bulletins and pamphlets distributed to participating associations. The voluntary training initially was well attended as former wartime servicemen took the opportunity to see old friends and relive exciting times. Within a year, however, the novelty had worn off, and by the end of 1949 declining attendances at the evening meetings were causing concern.[5] Dwindling interest and the ad hoc nature of the system eventually saw informal training for the General Reservists lapse. Nevertheless, by 1964 the number of those enrolled had grown to 16,800.[6]

Because of their anticipated central role in the defence of Australia, the CAF squadrons were the most significant element of the RAAF's citizen forces. Plan 'D' included provision for eight fighter squadrons, three PAF and five CAF. The PAF units were designated primarily for Cold War duties and could be expected to accompany any air expeditionary force (such as the Mobile Task Force) overseas in the event of an operational deployment. In the event, that was precisely what happened as those squadrons served from the late 1940s through to the 1970s with the occupation force in Japan, the United Nations Command in Korea, the garrison in Malta and the Commonwealth Strategic Reserve in Southeast Asia. That left the crucial task of attending to Australia's home air defence to the five CAF squadrons, at least in theory.

Four CAF fighter squadrons were formed at Laverton, Schofields, Archerfield and Pearce on 1 April 1948, each with an initial establishment of eight officers and thirty-

two airmen but with plans for expansion to about three times that size.[7] Respectively those squadrons were known as No. 21 (City of Melbourne), No. 22 (City of Sydney), No. 23 (City of Brisbane) and No. 25 (City of Perth); No. 22 Squadron relocated from Schofields to Richmond in 1953. The fifth unit, No. 24 (City of Adelaide) Squadron, was added to the order of battle in 1951. Because it was believed navigators needed more flying time to retain proficiency, only pilots were recruited as active aircrew members of the CAF, and in any case there was no requirement for non-pilot aircrew in fighter squadrons. Members of the CAF were required to serve with their squadron for two years followed by five years on the General Reserve. Annual training requirements were set at either fifty-two weekend days or thirty-six weekend days supplemented by sixteen continuous days.

As had been the case in the pre-war years, each CAF squadron had a cadre of PAF officers, including the commanding officer and most flying executives. There were two categories of CAF pilot. First, there were those who were already qualified, almost invariably with wartime experience, and who were expected to fly ten hours a month, a rate assessed by the air staff as the minimum needed to keep part-time aviators safe on modern aircraft.[8] Typical weekend activities for those pilots included training in the day fighter role (tactics, formation, intercepts, navigation, air-to-air gunnery and the like), navy and army co-operation exercises, aerobatic displays, instrument and night flying, and air-to-ground weapons practice.

CAF Cadet (later AVM) Graham Neil is awarded his wings by AirCdre C.W. Pearce at Richmond in late 1957. Neil completed his flying training with No. 22 (City of Sydney) Squadron. G.W. NEIL

Second, there were cadets who were trained to RAAF wings standard by the PAF cadre. Those cadets joined the CAF already holding a private pilot's licence, often achieved with the Air Training Corps, and then completed a unique CAF syllabus. When Cadet Graham Neil was awarded his wings at No. 22 Squadron in August 1957, for example, he had flown a total of only one hundred and fifty hours compared to the two hundred or so needed to qualify from the PAF flying training system; further, having graduated, Neil immediately began an operational conversion onto the Meteor with No. 22 Squadron.[9]

In theory, the presence of the career airmen was intended to ensure professional standards were maintained by the part-time pilots and technical staff. In practice, that

was not always easy, as in addition to limited training time the CAF squadrons almost invariably were equipped with inferior aircraft. While the PAF fighter squadrons rearmed with jet Vampires and Meteors in the late 1940s and early 1950s, their CAF counterparts had to make do with the piston-engined Mustangs, supplemented by a few Wirraway and Tiger Moth trainers. And as was the case with Active Reserve aircrew, attitudes were often casual and supervision minimal. Despite the cadre of permanent officers it was sometimes difficult to avoid an 'aero club' atmosphere as part-time pilots 'dropped in' on the weekends to enjoy themselves flying a couple of sorties. The fact was, in a small air force with limited resources, flying high-performance military aircraft as a hobby was inconsistent with the professional outlook which the rest of the organisation was gradually adopting.

Arthur Drakeford's eight-year tenure as minister for air finally ended in December 1949 following the election of Robert Menzies' Liberal government. The new minister, Lieutenant Colonel the Hon. Thomas White, DFC, was a graduate of Australia's first military flying course in 1914 and had served with the Australian Flying Corps as a pilot in World War I and with the RAAF as a staff officer in World War II. White was reasonably satisfied with the development plan he inherited for the Permanent Air Force but felt conditions in the CAF fell far short of requirements.[10] At his direction No. 24 (City of Adelaide) Squadron was raised in 1951 at Mallala, north of Adelaide, with an establishment of fifty-one PAF and three hundred and seventy-six CAF personnel; and seven country flights were added to the Sydney, Melbourne and Brisbane squadrons.[11] Also at White's insistence, two hundred and fifty-five members of the General Reserve received fifty hours flying training annually with civil aero clubs, an initiative intended to increase the pool of potential military pilots. The RAAF was not convinced that pilots trained to minimum standards in a civil environment would represent much value in the event of mobilisation, and it seems possible that White's decision was based on his personal experience in the Australian Flying Corps which was, of course, thirty years out of date.

A more constructive initiative was the gradual replacement of Mustangs by Vampire jet fighters. The introduction of the Vampire, incidentally, prompted the relocation in 1955 of No. 23 Squadron from Archerfield's all-over grass airfield to Amberley's sealed surfaces to minimise the risk of damage to jet engines from stones and other loose surface objects. There was also a rumour circulated at No. 23 Squadron that the move was made because a Vampire which landed on the grass at Archerfield set fire to the runway; whether the fire was caused by jet efflux or hot brakes, or was simply a good story, was sensibly left untold. Further modernisation occurred following the return to Australia at the end of 1954 of No. 77 Squadron from Korea and No. 78 Wing from Malta. Because the PAF fighter squadrons were being re-equipped with the Sabre, No. 77 Squadron's fifty Meteor fighters were passed on to the Brisbane and Sydney CAF squadrons; while No. 78 Wing's return provided an influx of maintenance staff with experience on jets.[12]

But regardless of those and similar changes, the predilection of White and other politicians for citizen-soldiers was based on out-dated notions of professional military standards. It was always likely that a small population would not be willing to pay enough to keep both permanent and citizen force flying squadrons at an acceptable standard, and that when the squeeze on resources eventually came it would be the part-timers who would suffer. Tommy White's seven country flights were disbanded in 1953, and by the mid-1950s the gap in capabilities between the CAF and the PAF had widened to an extent which could not be ignored. As long as the PAF was equipped with advanced aircraft like the Sabre, Canberra and Neptune, and the CAF had to make do with left-overs like the Vampire and Meteor which it flew at less than half the PAF's rate, the gap could only continue to widen. The concept of the CAF as the centrepiece of Australia's home air defence was quietly forgotten as PAF fighter squadrons based at Williamtown assumed the role. Revised air staff policy in 1956 identified the PAF as the 'hard core' of the RAAF, the CAF as a supplementary force, and the reserve as an inactive body of 'enrolled members' who would only be mobilised in an emergency.[13]

The competition for resources between the regulars and part-timers reached a crisis point at the end of the 1950s following an air staff assessment that the permanent fighter squadrons were operationally deficient because their Sabres had neither airborne intercept radars nor air-to-air missiles; and that the CAF squadrons were 'unsuitable for use in war' because their Meteors were obsolescent. Compounding the problem of trying to keep the CAF operationally viable was its unpopularity with technical staff. At no stage since the CAF squadrons were reformed in 1948 had there been enough ground staff on the books.[14] In 1956, for example, the five squadrons had only one hundred and ninety-five technical airmen on strength against an establishment of four hundred and thirty-five; worse still, on average, only one hundred and thirty-nine of those one hundred and ninety-five attended each working day. Flying military aircraft on weekends might have been a nice hobby for pilots but fixing them clearly did not appeal to technicians. The Air Board's attention began to turn to ways in which the four hundred and thirty PAF personnel posted to CAF squadrons might be more gainfully employed. Because the CAF plainly was not meeting its nominal role as the home defence force, it seemed logical to transfer some of its resources to new PAF air defence units which were scheduled to be formed in 1960, such as No. 76 (Fighter) Squadron, No. 30 Surface-to-Air Guided Weapons Squadron and No. 2 Control and Reporting Unit.

Noting that 'most other air forces' believed citizen forces generally could not reach any degree of operational effectiveness, in 1959 the air staff recommended stripping the five CAF squadrons of their operational role and reducing them to units in 'name only' within a year.[15] For the practical reasons mentioned above, the air staff would have preferred to disband the CAF entirely, but the Air Board knew such extreme action might cause 'political embarrassment and public indignation'. Seeking to minimise the repercussions, the board and the government agreed to retain the five CAF squadrons as ground training units with a total establishment of six hundred people. The loss of

status was softened by establishing a 'special' affiliation between each CAF squadron and a PAF flying unit: No. 23 (City of Brisbane) Squadron, for example, was affiliated with No. 6 (Bomber) Squadron at Amberley. Announcing the decision, Defence Minister Athol Townley informed the House of Representatives that the technical complexity of modern aircraft required full-time, specialised training, and that it was not possible for pilots to remain combat proficient on a part-time basis.[16] The PAF members of the CAF squadrons were, he said, 'far more effective' than their weekend counterparts, and the government had 'reluctantly' accepted the RAAF's recommendation to cease CAF flying, a decision which would take effect for the Sydney, Brisbane and Adelaide squadrons in March 1960 and for Melbourne and Perth several months later. Permanent Air Force air and ground crews released from the CAF would be used to form a fourth permanent fighter squadron (No. 76) in a move intended to facilitate the rotation of personnel through the two Sabre squadrons in Malaya.

Reflecting the new arrangements, the CAF squadrons' official description was changed from 'fighter' to 'auxiliary'.[17] Each reorganised squadron had a CAF commandant but was commanded by a PAF general duties squadron leader, assisted by a staff of four to eight PAF officers and NCOs. Squadrons remained at their current locations, with the exception of No. 24 which relocated from Mallala to Adelaide. Training was held monthly, usually on weekends.

Although being removed from the flying order of battle represented a loss of status, it seemed the citizens' forces could still make a useful operational contribution to the PAF. The critical factor was their special affiliation. For example, No. 21 Squadron was affiliated firstly with No. 76 (Fighter) Squadron at Williamtown and then from 1965 with No. 10 (Maritime Reconnaissance) Squadron at Townsville. While the association with the fighter squadron was disappointing, the Laverton-based airmen found their annual camps in Townsville professionally rewarding, most working as either technicians on No. 10 Squadron's Neptunes or operations room staff.

But the value of even that reduced level of operational involvement came under scrutiny. During an extensive review of RAAF staffing requirements in 1964, the Department of Air reached an important decision regarding the employment of reservists. Because the time taken to deploy front-line squadrons was now measured in hours, the department believed it was unrealistic to count on reinforcing those units with the CAF. The 'fundamental difficulty' was the delay which could be expected between identifying a need for reinforcements and members of the CAF actually becoming available.[18] Two impediments to the CAF's timely arrival were identified. First, Parliament would have to enact legislation enabling the employment of the CAF in conditions short of war; and second, the citizen airmen would have to leave their civilian tasks and responsibilities in 'an orderly manner'. In view of those probable delays, the department decided the CAF could no longer be regarded as a part of the Air Force's operational component, from which it followed that large numbers of CAF personnel could not be justified.

By 1970 the findings of the department's 1964 review had become policy, and the main function of the five hundred and sixty-two members of the five CAF squadrons

was now to reinforce the RAAF's support, rather than operational, elements. Somewhat incongruously, the General or 'inactive' Reserve was proving to be a more useful source of ready reinforcements. Although down in numbers from its peak of 16,800 in 1964 to 8536, the General Reserve had three hundred and fifty-eight of its members serving with the PAF on either full-time or part-time duty as medical practitioners, chaplains, dentists, lawyers and specialist staff officers.[19]

Legislation covering the Active and General Reserves limited their call-out to times of defence emergency or war. In an attempt to develop a more flexible reserve capability, in 1964 the RAAF established the Air Force Emergency Force (AFEF) under distinctive legislation which allowed call-out at the government's discretion in situations short of a declared emergency. Unlike CAF personnel who were considered to be under training, the emergency force was regarded as 'productive';[20] consequently, in theory at least, its members had to meet Permanent Air Force fitness standards and on enlistment be qualified and experienced to the extent that they did not require any training. Enlistment in the AFEF was for four years and members had to complete fourteen days continuous duty annually. Despite a 'financial inducement' of $350 a year tax free in addition to normal pay and allowances, the AFEF was not popular: by 1970, against an establishment of two hundred and fifty-nine officers and 1079 airmen the force had only six hundred and sixty-eight airmen and no officers on its books, figures which eventually led to its disbandment in 1973.

University squadrons were formed between 1950 and 1951 in each of the six State capital cities as part of the expansion of the RAAF reserve, in this case with the particular objective of attracting and training potential officers.[21] Each squadron was established for one hundred student cadets who ideally were to be drawn from a representative cross-section of the faculties. All cadets were required to serve for two years, during which time they had to complete fifty-six days training, including fourteen continuous days 'in camp' with a PAF unit. The remaining forty-two days were allocated to lectures, bivouacs and home training parades in a routine which sometimes was reminiscent more of an army than an air force. One hundred of the more fortunate cadets did, however, receive fifty hours flight instruction.

Unfortunately for the RAAF, the establishment of its university squadrons coincided with the introduction of universal National Service, under which large numbers of undergraduates who might otherwise have been attracted to the scheme were called up, mostly into the Army. Difficulties arising from the consequent shortage of suitable candidates were exacerbated by organisational frustrations. The Air Board believed the success of the scheme depended on the squadrons 'being woven closely into the life of the universities', an ambition which rested in part on providing high-quality accommodation on campus to foster a 'club' atmosphere. For most squadrons, though, accommodation was neither high quality nor on campus. In combination, the absence of an 'air force' atmosphere and the encroachments of National Service adversely affected RAAF recruiting, to the extent that several

university squadrons were accused of accepting undergraduates of dubious quality simply to fill their quota.[22]

By mid-1955 the scheme was in some trouble as it was unable to meet the Air Board's expectations of quality and quantity. And just when proposals to invigorate the scheme were being considered—for example, increased pay, improved accommodation, and the enlistment of students from institutions other than universities—the government announced National Service would probably be discontinued within a year or so, a prospect which prompted the Air Board to defer any action. Resources remained tight and the university scheme continued to struggle, with two hundred and thirty-seven cadets registered around Australia by 1970 against an authorised establishment of four hundred and eighty. While some cadets like Olympic gold medallist Herb Elliott, who was a member of the Melbourne squadron in the early 1960s, found their experience rewarding,[23] overall the scheme represented questionable value for money. The university squadrons were disbanded along with the AFEF in 1973.

War plans developed by the services in the late 1940s were predicated on staffing levels which could not be sustained during peacetime. As the military skills which had been acquired by the general community during World War II degraded, and Australia became involved in a series of conflicts opposing the expansion of a perceived international communist movement, the government of Prime Minister Robert Menzies decided a form of national military service would have to be introduced.

The National Service Act which took effect on 17 March 1951 required all eighteen-year-old males who were British subjects and resident in Australia to register for compulsory military training.[24] Registrants were allowed to state a preference for one of the services but only those who volunteered for duty overseas could be called up by the RAAF or the RAN. Early estimates envisaged the Army taking about two-thirds of the planned annual intake of 21,000, with about 4000 going to the Air Force and five hundred to the Navy; in fact, when the scheme reached maturity, the RAAF's annual intake was closer to 3300 as about seven hundred students were granted deferments each year.

Two intakes were made annually. Air Force National Servicemen were inducted into the CAF and required to serve for one hundred and seventy-six days (later reduced to one hundred and fifty-four) within a five-year period, but as that service had to be continuous the 'nashos' in fact spent six months full-time in the RAAF. An exception was made for students, who could complete two periods each of seventy-seven days. At the end of their full-time duty all National Servicemen had to transfer to the RAAF General Reserve for their remaining four and a half years but with no further training obligation. They were, however, encouraged to join the Active Reserve.

RAAF National Servicemen started their term with three weeks intensive indoctrination in drill, general service knowledge, physical fitness and small arms practice. They then progressed to basic trade training, which lasted six weeks for

technical trades and three weeks for others, after which they completed on-the-job training, which could be conducted at any one of twenty-seven separate locations spread throughout the states and territories. The overall objective of the six months service was to instil a basic knowledge of the Air Force and of one RAAF mustering, and generally prepare the draftees for a more rapid transition to a wartime force should the need arise.[25] No flying instruction within the PAF was offered, but each year up to one hundred and seventy-five National Servicemen were trained to private pilot licence standard at the RAAF's expense at selected aero clubs.

Just how seriously the RAAF took National Service might be questioned. The Air Force's main demand in a defence emergency was for extra aircrew and technicians, and experience had shown that the required levels of skill were most unlikely to be realised in six months.[26] Further, it was all very well for the government to insist on the system being established and operating by a certain date; it was the RAAF which had to find the instructors and the facilities. Because the Air Force simply did not have the additional eight hundred and fifty people needed to train and administer National Service, some of the instructional work had to be sub-contracted to civilian institutions in Melbourne and Sydney.[27]

The RAAF began to look for easy answers to the question of what to do with its nashos, notwithstanding an admonition from Minister for Air William McMahon that he would not tolerate the 'tenaciously held' practice of treating all National Servicemen as unskilled recruits.[28] Some attempt was made to provide more places on technical courses and to centralise all draftees at a few major bases, but without substantially more resources to pay for the additional training, the scheme was always going to intrude on the Air Force's main business and, therefore, meet passive resistance. Many National Servicemen found themselves employed on the most menial tasks, painting kerbs and fences white or stripping down obsolescent aircraft which almost certainly were never going to fly again. A young Graham Kennedy, later to become a legendary television personality, spent four months at East Sale and two at Laverton as a nasho in 1952, an experience which he 'hated ... passionately' and from which he got 'nothing positive whatsoever'.[29] According to Kennedy the RAAF did not want the nashos and had nothing for them to do except sandpaper silver paint off old aeroplanes and dig fire breaks around officers' quarters. Kennedy's commanding officer, the equally legendary (within the RAAF) and rather eccentric Wing Commander A.J. Abicair, ordered National Servicemen to stencil silver stars on the back of their blue overalls so that from a distance he could 'distinguish between a permanent fellow being idle and one of [the nashos] being idle—the latter, of course, being okay'. The National Servicemen did, however, boost the RAAF's sporting prowess, with the East Sale Australian Football team winning the local premiership in 1952 thanks largely to the presence of a number of nashos who otherwise would have been playing in the country's foremost competition in Melbourne.[30]

Perhaps the most constructive use of National Servicemen was in aerodrome defence squadrons, units which could gainfully employ large numbers of 'cannon fodder' while at the same time not intruding on the business of keeping aircraft flying.

Recruits were trained to defend airfields against ground and low-level air attack, using rifles and bayonets, Bren guns, Owen guns, anti-tank guns, two-inch mortars and grenades. Up until July 1956 about fifteen per cent of each intake was allocated to aerodrome defence, after which the percentage was increased to twenty-five and the kinds of weapons used expanded to include Bofors anti-aircraft guns—described as a 'new type [of weapon] still on the secret list'—three-inch mortars and armoured cars.[31]

After seven years and about 200,000 draftees, significant deficiencies were apparent in the National Service scheme. Most Army nashos had not volunteered for overseas service and few from the RAAF and RAN had joined the permanent forces. The relatively short six-month period of full-time training was insufficient for individuals to reach high standards, and the scheme was expensive in terms of extra direct costs and the 3290 members of the regular services who had been diverted to training.[32] National Service was abolished for the RAAF and the RAN in 1957 and the Army in 1960, in favour of a proposal to increase the size of the regular Army and improve conditions in the Citizen Military Force.

War Cabinet approved the establishment of the Air Training Corps (ATC) in 1941 to provide general education and some service training for youths aged between sixteen and eighteen who hoped eventually to join the RAAF as aircrew.[33] One of the main architects of the scheme was the air member for personnel, Air Commodore H.N. Wrigley, a great pioneering military aviator and Australia's first authoritative air power scholar. Under the plan sponsored by Wrigley, each capital city had an ATC wing comprising metropolitan and country squadrons, with the squadrons in turn consisting of town, country and school flights. By the end of the war more than 12,000 former ATC cadets were serving with the RAAF in all theatres, 7000 as aircrew and 5000 as ground staff. Many were later to reach the highest levels of the RAAF, with one of the first recruits, David Evans, becoming chief of the air staff forty years later.

Because of that contribution the ATC was retained after the war but with a reduced establishment of 3750 cadets. State organisations were based on capital city squadrons instead of wings, the exception being Queensland which had a second squadron in Townsville; and flights were centred on schools rather than towns and country areas, as experience had shown that school populations were more interested in the scheme and easier to maintain. Because of that change the minimum age was lowered to fourteen, with the maximum remaining at eighteen. Girls were excluded. Victoria and New South Wales were authorised to accept up to 1000 cadets, Queensland, South Australia and Western Australia up to five hundred, and Tasmania two hundred and fifty.[34] If a flight's membership fell below twenty it was disbanded. The Air Training Corps was not part of the RAAF reserve.

As was the case with the regular Air Force, difficulties were experienced after the war attracting recruits into the ATC and numbers declined.[35] In contrast, Army cadet units grew by about twenty-five per cent. There seemed to be a simple explanation for the disparity. School teachers who were officers in Army cadet units were paid for

their extra duty while those in the Air Training Corps were not, a circumstance which naturally predisposed teachers to encourage their students to join the Army. Comparable pay scales were introduced for the RAAF; and as a further boost to the ATC's status the position of commandant was established at the rank of wing commander for each squadron, with the incumbents all being former RAAF officers with good war records and high community standing.[36] Commandants were given direct access to their area AOC. The changes worked and by early 1949 the strength of the Air Training Corps had risen to 2411, distributed between fifty-four flights throughout Australia, thirty-five of which were based on schools and nineteen on cities and towns.[37] A pleasing feature was the large number of wartime RAAF personnel who had volunteered their services as instructors, and who brought to the corps a deep commitment to the Air Force.

Changes were also made to the quality of training. Advancement for cadets was made more rigorous by the introduction of promotion exams; previously advancement had depended solely on the recommendations of flight commanders. Cadets were tested on drill, armament (based on the .303 rifle and .5 Browning gun), service knowledge, aircraft recognition, physical training, deployments, signals, and hygiene and first aid.[38]

The corps' appeal was given a major boost in 1951 by the introduction of flying scholarships, with training up to private pilot's licence standard being provided by selected aero clubs at the RAAF's expense. For most scholarship winners that amounted to about fifty hours flight time, of which twenty-five were solo; cadets who remained in the ATC then received four hours continuation flying each month. When the scheme was introduced twelve awards were made annually but its success quickly led to an increase to forty.[39]

Many notable RAAF pilots started their careers with ATC flying scholarships, including Air Marshal R.G. Funnell, chief of the air staff from 1987 to 1992; Air Vice-Marshal K.J. Tuckwell, commander of the Integrated Air Defence System in Malaysia from 1989 to 1992; Air Vice-Marshal G.W. Neil, assistant chief of the defence force—personnel in 1991–92; Air Vice-Marshal T.W. O'Brien, AOC Logistics Command in 1993; Air Vice-Marshal G.J.J. Beck, air commander Australia in 1992; Air Vice-Marshal D.N. Rogers, deputy chief of the air staff in 1995; and Air Commodore I.M. Westmore, one of the Air Force's first F-111 pilots. The scheme was broadened in the late 1960s by the addition of glider flying as a cheaper but equally valuable way to motivate cadets towards a career as a pilot in the Permanent Air Force. In addition to flying scholarships, a few cadets were selected periodically for educational tours of the United States or the United Kingdom.

With the post-war slump in popularity well and truly laid to rest, increases in the establishment of the ATC were approved in 1950 and 1951, first to 4200 and then to 6000;[40] about 1000 youths were awaiting enrolment when the latter increase was made. The ATC was, the Air Board advised Minister McMahon, assisting materially in the development of physique, patriotism and comradeship amongst the youth of Australia. Perhaps more to the point, it was undoubtedly contributing

Cadets Warren and Gary (later AVM) Beck of No. 7 Flight, Innisfail, North Queensland Air Training Corps Squadron, 1956. Both were flying scholarship winners. G.J.J. BECK

to the well-being of the RAAF, as by 1964 half of the entrants to the Air Force's premier officer training establishment, the RAAF College/Academy, were former ATC cadets, as were four Sword of Honour winners and three Queen's Medallists.[41] Those impressive figures continued to apply across the RAAF generally, as in 1970–71 about twenty-five per cent of all entrants to the academy and to diploma, aircrew and apprentice courses were former ATC cadets.

Three useful observations can be made regarding the RAAF's use of its citizen forces in their various guises. The first is that the Air Training Corps was a major success. A high percentage of ATC cadets went on to join the PAF and many reached the most senior levels. Second, other than during the brief period from 1948 to the mid-1950s when the CAF fighter squadrons nominally were responsible for Australia's home air defence, the reserves were used as supplementary rather than complementary forces. By contrast, over the same period, the Army depended heavily on complementing its regular soldiers with a reserve force of up to 30,000 men, all of whom had a significant annual training commitment. In other words, the Air Force reserves were to some extent marginalised. Finally, for either political or administrative reasons, not once between 1946 and 1971 were the reserves called out in mass to augment PAF operations, even though RAAF squadrons saw action in major wars in Korea and Vietnam and in the extended guerilla conflict in Malaya. In fact, in order to meet its commitments arising from those wars, the Air Force had to supplement its operational units in the first instance from within its existing resources, and then by increasing the establishment of the PAF, an action which brought with it an additional recruiting and training burden.[42] Reservists with specialist skills—linguists, lawyers, medical practitioners, operations and planning staff, and the like—who were called up unquestionably assisted the RAAF effort but their numbers were very small. In the circumstances, the worth of the reserves must be questioned.

CHAPTER 18

WOMEN'S SERVICES

The contribution made by women to RAAF operations during World War II was crucial. Most females served with the Women's Auxiliary Australian Air Force (WAAAF), which had its origins in the wartime shortage of servicemen. From uncertain beginnings in February 1941, within only three years members of the WAAAF were working in sixty-one musterings ranging from accounting machine operators to anti-gas instructors, flight mechanics to flight riggers, mess stewards to meteorological assistants, and wireless mechanics to wireless telegraphists.[1] Every airwoman did a job previously performed by a man, thereby releasing the males for combat. In all, 26,245 females served in the WAAAF. A much smaller number made a valuable contribution in the RAAF Nursing Service (RAAFNS), which was formed with just over forty nurses in 1940 and rose to its maximum strength of six hundred and sixteen by 1945. While the RAAFNS was retained after the war the WAAAF was disbanded.

Given the extent and importance of their contribution, Australia's airwomen had every right to be disappointed by the patronising and hasty way they were dismissed by the politicians and the Air Board. Air Member for Personnel Air Commodore J.E. Hewitt's recommendation of August 1945 that 'the WAAAF not be continued as part of the post-war RAAF' was based on a British report into women's services which Hewitt appears to have accepted without question, notwithstanding the social and economic differences between Australia and the United Kingdom.[2] Hewitt did at least record several points in favour of servicewomen: the importance of organising in peace as for war; the need to overcome the 'antagonism and prejudice' against the employment of women (in which case disbanding the WAAAF was scarcely helpful); and the fact that women were 'unquestionably better than men on certain duties' (which were not listed).

Against that, servicewomen were said to cause problems with administration, training and accommodation; they were 'uneconomical' because too many left to get married; their employment overseas was limited by 'climatic' factors and unsatisfactory amenities; and experience had shown that in many cases women could not complete the full range of military tasks, such as guard and station defence duties. There was also the possibility that airmen might resent being commanded by women. On balance, Hewitt believed there was no place in the post-war Air Force for females, an opinion the Air Board shared and which was endorsed in the strongest terms by Minister for Air Arthur Drakeford, whose objective was to release jobs in the RAAF for males and get women back into the home.[3]

War Cabinet agreed that all WAAAFs should be discharged by 30 September 1946. However, while the person primarily responsible for the success of the women's service, Group Officer C.G. Stevenson, retired in March that year, full implementation of the decision encountered difficulties from the start. Because demobilisation was the

RAAF's top priority, those women associated with essential discharge procedures such as medical checks and financial administration had to be retained; consequently, approval was given for a maximum of nine hundred and four females in critical musterings to remain in WAAAF service until 31 March 1947.[4] Even during that brief extension signs began to appear that the decision to disband the WAAAF was a serious mistake. So disappointing was the recruitment of skilled airmen into the Interim Air Force that shortfalls in some musterings created a crisis. By 1948 more airmen were leaving the Air Force than were joining. An alarmed Air Marshal Jones told the Air Board the RAAF would be incapable of meeting the objectives of Plan 'D' and that it would be impossible to build an efficient force through the recruitment of men only. For that less than flattering reason the CAS argued the time was 'now opportune' to review the policy on females.

Such was the depth of the crisis there was no disagreement from his colleagues. The only question was the form the reactivated women's service would take. Twenty-three specific musterings in which the members of a reconstituted WAAAF could make the most useful immediate contribution were identified, and included fabric worker, tailor, telegraphist, motor transport driver, cook's assistant, steward, cook, drill instructor, and a range of clerical posts. While employment limitations would remain—WAAAFs were unlikely to be considered for postings to operational units, remote locations or bases where 'suitable' accommodation was not available—the Air Board's proposed conditions of service indicated significant attitudinal progress. Wartime servicewomen had received only two-thirds the pay of their male counterparts, even when employed on identical duties. Board members now recommended giving WAAAFs the full male rate of pay and gratuities. Enlistment periods of three years were envisaged with the option of a three-year extension.[5] Ministerial approval for the immediate recruitment of five hundred women into a reconstituted WAAAF was sought in September 1948.

Time and circumstances may have changed the Air Board's attitude towards women in the work force but Minister Drakeford remained the creature of his trade union and Depression era background. In Drakeford's world men were the breadwinners and women the home-makers. He strongly urged the board to intensify its efforts to attract male recruits—without providing extra funds to do so—and deferred the proposal.

Deferment until the end of 1949 saw Drakeford and the Australian Labor Party out of office. Six months later the Liberal government of Prime Minister Robert Menzies approved in principle the reintroduction of women's services with the stated role of providing a nucleus of trained personnel which could be rapidly expanded in the event of war. Enlistment began in 1951 and was governed by four guidelines. Females were to be employed in categories requiring only minimum training unless they were fully qualified in a specialist trade prior to recruitment, or where training peculiar to the service was essential. They could be employed in any appropriate post and were to replace men on a rank-for-rank basis. Established posts

for females were not to exceed four per cent of the total. And finally, the number of people administering women's services was to be kept to a minimum, a condition which primarily affected female officers whose main task was to manage the WAAAF.[6]

Those guidelines were expanded by the RAAF into several 'manning principles' for females. Unlike males, women generally would not join the RAAF in the expectation of a full-time career. Because their terms of engagement would be shorter and their wastage rate was expected to be higher (because of marriage), their employment would be restricted to those trades 'in which women may do equal or more productive work than men' and for which they already held the basic skills. The effect of those principles was to exclude women from the technical trades. Other constraints applied. The number of women recruited was to be strictly controlled so that it would not become necessary to substitute females for males in either the Mobile Task Force or remote operational areas. Perhaps more to the point, nor was the reintroduction of women to prejudice 'to an unacceptable extent' the career prospects of males.[7]

Detail was then added to those principles. Nine hundred and ninety women were to be recruited by June 1952. Age limits were set at twenty-three to thirty-five years for officers and eighteen to thirty-three for airwomen, although former WAAAF NCOs could be recruited up to thirty-seven. Officers were appointed to an initial four-year short-service commission, after which limited numbers 'might be offered' permanent commissions; in practice, no WRAAF officer was granted a permanent commission until 1965. Airwomen were engaged for four years followed by a four-year re-engagement where suitable. Retirement ages were set at forty-five for wing officers, forty-three for squadron officers, and forty for all other commissioned ranks and airwomen. Women who married during their service could elect discharge within three months or, 'subject to such other rules as may be prescribed', could continue to serve if they wished. No such rules were prescribed and women who married had to resign. Notwithstanding the Air Board's original recommendation for full male rates of pay, female rates were set at not less than two-thirds of those for males of equivalent rank. Uniforms and accommodation were, however, to be of the highest practicable standards. A token attempt to give the women's force more status and some kind of

An inspection of a flight of WRAAFs in 1952 by the AOC Eastern Area, AVM J.P.J. McCauley RAAF

equivalence was made by dropping the adjective 'Auxiliary' from the title of their service before it was reformed, which by Royal Assent became the 'Women's Royal Australian Air Force' (WRAAF) in November 1950.[8]

The first director of the WRAAF was Doris Jessie Carter, who was appointed with the rank of wing officer in 1951. Originally a school teacher, Carter had served as a squadron officer in administration during World War II, after which she had been seconded to the Ministry of Post-war Reconstruction. She had represented Australia as an athlete in the 1936 Olympic Games and the 1938 Empire Games, and as a hockey player in 1939. At the time of her appointment she was aged thirty-nine and was the officer-in-charge of the Child and Youth Migration Section with the Department of Immigration's London office. Described as intelligent, clear thinking, effective, hard working and a good disciplinarian, Carter was considered ideal for the job. Over the ensuing nine years she proved to be a capable and popular leader. Despite her rank and status, Carter, like other commissioned members of the WRAAF, had no authority over members of the RAAF (that is, males) except those working directly under her command.[9] Nor was Carter ever granted a permanent commission, serving instead on a series of short-service appointments.

DWRAAF WgOff Doris Carter (left) accompanied by SqnOff Lois Pitman on a staff visit, November 1958. RAAF

While the debate over whether or not the RAAF needed a women's service had been going on, there was never any doubt that the all-female RAAF Nursing Service would be retained. Over several centuries the idea of nurses as 'necessary and valuable adjuncts' to the armed forces had become accepted in the Western world,[10] to the extent that, unlike the WAAAF, members of the RAAFNS routinely served overseas, often in combat zones. All RAAF nurses were appointed to four-year

short-service commissions with a maximum extension of three years. At the direction of the Defence Committee the principal matron was the only officer to hold a permanent commission. Pay scales were, like those for the WRAAF, about two-thirds of the male rate.[11] Because of the high turnover—nurses also had to resign if they married—most were on short-service commissions and many never reached the four-year mark.

Of those who did, Group Officer C.J. McRae was the most notable in the period to 1971. After service in World War II, McRae became matron-in-chief in 1951, a post she held until 1967. The first female member of the Air Force to receive a permanent commission (in 1952), McRae worked assiduously to improve conditions for the RAAFNS. Her success in securing approval for nurses to complete post-graduate training at the RAAF's expense was particularly important for her service's development. Also significant was Group Officer B.B. Docker, whose achievements included aero-medevac actions during the Korean War and a tour as matron of No. 4 RAAF Hospital in Butterworth. Appointed director of the RAAFNS in March 1969, Group Officer Docker was awarded the Florence Nightingale Medal for distinguished service to nursing in 1971.[12]

WgOff Joan McRae (left) and FltOff Betty Docker at Seoul Airport, South Korea, 1954. B. DOCKER

18.1 Respective ranks, female officers

WRAAF	*RAAFNS*	*RAAF*
Group Officer	Matron-in-Chief	Group Captain
Wing Officer	Principal Matron	Wing Commander
Squadron Officer	Matron	Squadron Leader
Flight Officer	Senior Sister	Flight Lieutenant
Section Officer	Sister	Flying Officer

The WRAAF, RAAFNS and RAAF were separate services with separate ranks, as table 18.1 illustrates. There were, however, signs of gradual integration, as the nursing service's change to WRAAF ranks in 1955 indicated.

The overriding consideration when employing females was the assumption they would eventually get married and would therefore have to resign. Marriage rates were high. During the WRAAF's first three years (1951 to 1954), 18.4 per cent left to get married.[13] As 8.9 per cent left for other reasons, statistically the Air Force's entire female contingent changed during the standard four-year engagement. Superficially that appeared to make the WRAAF an expensive proposition. There were, however, other considerations. Women were far cheaper to train and maintain than men, something the RAAF's leaders knew and appreciated. WRAAF recruit courses lasted four and a half weeks compared to ten weeks for men, a substantial saving.[14] And in practice the women's annual pay and allowances were considerably less than the nominal two-thirds of the male rate which was often quoted. The two-thirds ratio referred only to basic pay, and conveniently ignored the fact that women were paid the additional components of remuneration such as skill and rank loadings at around fifty per cent. High wastage rates notwithstanding, the Air Board accordingly often preferred to employ females.

Those discriminatory conditions of service should not be interpreted as indicating a specifically Air Force attitude; rather, they were indicative of community standards generally. Indeed, in some respects the RAAF was ahead of the times, as demonstrated by the Air Board's enlightened if unsuccessful recommendation for male rates of pay in 1948, and the steady if slow progress made towards redressing inequalities in conditions of service. By 1957 all WRAAF and RAAFNS officers were eligible for permanent commissions and could serve to the age of forty-nine for squadron officers, fifty-two for wing officers, and fifty-five for group officers, while airwomen could serve to their forty-ninth birthday regardless of rank. Three years later retirement ages for officers were raised again, to fifty for WRAAF officers up to and including the rank of squadron officer and fifty-five for higher ranks; and to fifty-five for all members of the nursing service. In 1959 members of the WRAAF became eligible to contribute to the Defence Forces Retirement Benefits fund and to receive a pension or gratuity under the same terms as males, a condition of service which had

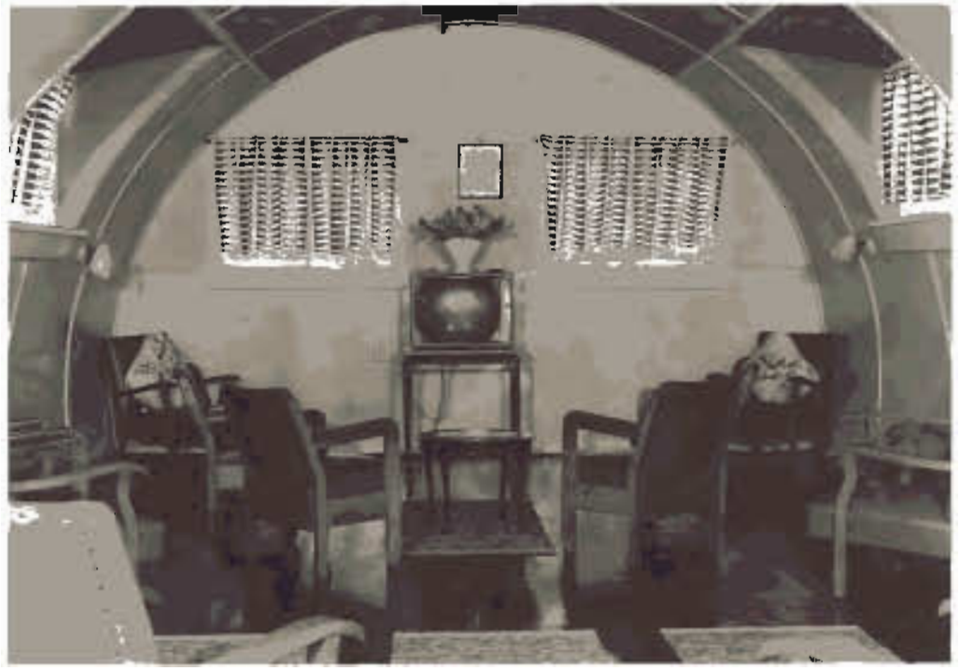
been extended to the nursing service in 1950; additionally, all servicewomen could qualify for a lump sum gratuity on the termination of a short-service appointment.[15] Because pension rights implied long-term careers, initial periods of engagement were extended to six years. (In the event the longer term seemed to deter some potential recruits so a three-year option was added in 1970.)

Other aspects of women's service were less satisfactory. Because the prime duty of female officers was to control and administer airwomen, their numbers were few—rarely more than sixty—and their career experience narrow. A newly commissioned section officer might find herself on an isolated, unfamiliar base with forty or fifty airwomen under her command and no other female officer to discuss problems with first hand; in the circumstances, a telephone network could be a life-line. Prospects were limited and promotion depressingly slow. The original senior rank structure of only one wing officer and two squadron officers consigned some females to spending fourteen years as flight officers. So slow was the turnover of staff and, consequently, career progress, that not one officer was commissioned into the WRAAF from 1957 to 1960.[16] Whereas the chief of the air staff generally spent only three years in the RAAF's top job, Wing Officer Carter was DWRAAF for nine years, a tenure which on the one hand acknowledged her leadership but on the other blocked the promotion system. Subsequent aspirants for the women's top job had to wait even longer as Carter's replacement, Wing Officer L.K. Pitman, held the post for twelve years.

Conditions nevertheless continued to improve. Wing Officer Pitman was among the first group of WRAAF officers to be offered permanent commissions in 1965, and in 1968 was the first to be promoted to group officer; also in 1968 the first warrant officer post for airwomen was established. Career prospects for all WRAAFs were given an important boost in the late 1950s and early 1960s by a series of decisions which saw servicewomen employed in a wider range of duties and their numbers increased.[17] In part the reason for that change was, perhaps disappointingly, once again expediency, as during the expansion of the 1960s the RAAF found it difficult to attract sufficient numbers of qualified men; consequently, the WRAAF's establishment gradually crept up from about eight hundred to 1050 with the objective of 'relieving the manpower problem'.[18] Still, regardless of the reasons for change, as women gained access to more skilled musterings the Air Board came to appreciate that a valuable resource had to be employed as flexibly as possible. In 1960, for example, air defence officers realised that the effectiveness of No. 2 Control and Reporting Unit at Darwin would be jeopardised if female aircraft plotters were excluded from duty in the north. Unlike the nurses, no member of the WAAAF had been posted north of Townsville during World War II, a regulation which had remained in force for the WRAAF. No. 2 CRU's operational demands precipitated the removal of geographic restrictions on the employment of WRAAFs within Australia, which was followed in May 1967 by ministerial approval for the services to post females overseas 'where desirable, in the interests of efficiency and flexibility'.[19]

That left marriage and remuneration as the major unresolved issues. A review of WRAAF marriages found that of the one hundred and ninety-one females who had

been discharged for that reason in 1965, one hundred and twenty-seven had wed servicemen, indicating that the problem of trying to match the employment location of a WRAAF wife with a civilian husband was more apparent than real. The problem would have been non-existent if, as the RAAF recommended to Minister for Defence Allen Fairhall, servicewomen who married were retained on a 'case by case' basis, the idea being to discharge only those who married civilians.[20] The issue would then have been one of trying to collocate service couples, which personnel staff told the minister they would try to do but could not guarantee.



The WRAAF recreation room at the Melbourne Telecommunications Unit, 'Frognall', November 1963. RAAF

In this instance the government's social outlook was ahead of the Air Force's. Fairhall rejected the RAAF's proposed policy, stating that women who wished to stay in the armed forces after marriage would be permitted to do so as long as they continued to meet normal requirements. In other words, the minister had defined service after marriage as an entitlement rather than something which was at the whim of personnel staff.[21] At Fairhall's insistence, conditions of service for married women were as far as possible made the same as those for single females, with the exception that married women were not held to their fixed term of engagement; that is, they could claim discharge at any time. However, the 'contingencies of military life' continued to preclude the retention of pregnant women, and married women were not recruited as there was 'a good availability of single girls'. Nor was a married

woman entitled to married quarters or other housing assistance in her own right, although if her spouse lived in the same location she could 'share' his entitlement to a quarter.

Negotiations over pay and allowances followed the same kind of 'two steps forward—one step back' pattern. The committee chaired by Sir John Allison which reviewed conditions of service in 1958 basically confirmed the 'two-thirds' principle, a decision which was endorsed by the members of No. 112 WRAAF Recruit Course who, during a debate on the subject 'Equal Pay for Men and Women', unanimously agreed that the differential should be retained.[22] The young women believed that if females received equal pay they would lose respect, wives would seek work, and the cost of living would rise.

Even though the review of servicewomen's pay conducted in 1970 as part of the Conciliation and Arbitration Commission's Equal Pay Case extended the 'equal pay' principle to the defence forces, the commission concluded that female officers did not perform the same duties for rank as men, and so limited their award to seventy-five per cent of the notional male basic wage and eighty per cent of the combined margin for skill and rank, a judgment which meant that in extreme cases a woman could receive as little as fifty-two per cent of the overall male rate of pay and allowances.[23] More satisfying was the growing access to jobs, the number of categories available to women increasing from twenty-one in 1951 to thirty-two by 1971; and indications that eventually the WRAAF might be integrated into the RAAF.

CHAPTER 19

FIGHTERS AND AIR DEFENCE

World War II demonstrated the primacy of control of the air. As General Bernard Montgomery observed at the beginning of 1943, 'You must win the air battle before you embark on the land, or sea, battle'.[1] After 1945 official planning documents explicitly defined the RAAF's main role as the air defence of Australia and its territories, in contrast to the pre-war emphasis on army and navy co-operation.[2] The RAAF was charged with providing and operating all fighter aircraft, control and reporting (radar) units, radio defensive warfare units, and medium and high-level surface-to-air missiles other than ship-borne systems. The chief of the air staff was designated national air defence commander, with the day-to-day management of that responsibility delegated to Australia's senior operational airman, the AOC Eastern Area. Although air defence was primarily an Air Force task, the Army and Navy were allocated discrete roles. The Army was responsible for light anti-aircraft artillery; and the Navy had to be able to protect ships at sea using ship- and shore-based radars and naval fighter aircraft, and ships' air defence weapons. Those Navy systems could be integrated into the general air defence organisation if necessary. All three services were responsible for their own passive defence, using measures such as camouflage and deception.

Despite the priority accorded to air defence, little was done to review Australia's post-war needs during the period of the Interim Air Force as Japan was no longer a threat and the country which eventually was to emerge as the main source of regional security fears, China, was still occupied with the civil war between Mao Zedong's communists and Jiang Kaishek's nationalists. That situation changed immediately the tensions of the Cold War spread to Southeast Asia, prompting a review by the air staff in February 1949 of what was needed to defend Australia from air attack.

Sea-borne forces and the islands to the north and northwest were identified as the only conceivable avenues of air attack against Australia.[3] Of the two possibilities, land-based attacks were considered by far the more likely, an assessment which simplified the air defence problem. As Australia's 'vital centres' were located predominantly in the southeast of the continent, any aggressor would have to traverse large distances after crossing the coast before making an attack, which meant there would be ample time to interpose defensive aircraft between an enemy and his target as long as the aggressor was detected crossing the coast.

The development of an extraordinarily extensive ground radar system throughout Australia and the islands to the north had been one of the RAAF's least known but more impressive achievements during World War II. At the start of the war the Air Force did not have any radars; by the end it was operating ninety-eight early warning stations which gave advance notification of aircraft movements, and twenty-three ground controlled intercept (GCI) stations capable of guiding fighters precisely towards enemy aircraft.[4]

Many of the radar sets which were the centrepiece of the wartime control and reporting systems were, however, effective only over short ranges. Information was transferred by landlines and radio telephones, and the tactical plot was constructed manually in the air defence commander's operations centre. The jet age had made that system obsolete. Post-war bombers could be expected to attack from heights of around 15,250 metres at speeds of nine hundred and thirty kilometres an hour, making high-powered radars and automatic information transfer essential.

Seeking a counter to the new threat, in the late 1940s the RAAF tested the British 'Type 70' early warning system which could detect targets flying at 12,200 metres at a range of two hundred and eighty kilometres, and which in theory could provide intercept data for up to ten fighters simultaneously. Successful trials were conducted by automatically transferring data between RAAF Air Defence Headquarters in Sydney and a ground control intercept radar at the Citizen Air Force Squadron in Perth. Following those trials, the RAAF proposed establishing radar stations at nine critical 'detection' locations around the coast: Perth, Broome, Darwin, Higgins (on the tip of Cape York), Townsville, Brisbane, Newcastle, Sydney and Melbourne.[5]

The integrity of the proposed radar barrier included two vital assumptions regarding the fighter aircraft which would have to intercept and destroy any target: they would have to be about seventy-five to one hundred and fifty kilometres an hour faster than the enemy bombers; and they would need an airborne intercept radar to conduct the final phase of an interception and to provide an all-weather capability. During the 1950s the RAAF's five citizen air force squadrons—which were responsible for home defence—were equipped with Vampires and Meteors, neither of which satisfied those criteria, the Meteors in fact having been removed from the air combat role in Korea partly because they were too slow.

Shortcomings were not confined to aircraft. Peacetime budgets could not support the lavish radar chain envisaged by the air staff, a constraint which forced the development of a more modest and realistic plan in 1951. Air Marshal Jones, in his capacity as Australian air defence commander, contributed an interesting analysis of the national air defence challenge. In his opinion, any air attack against Australian cities would be made only for the purpose of diverting men and materials from operations in overseas theatres. Jones therefore reasoned that the resources allocated to air defence should be kept to the minimum level. The CAS defined that level as six modern radars for four critical areas—the Sydney–Newcastle–Port Kembla triangle, and Manus Island, Darwin, and Fremantle–Perth—complemented by the home defence CAF fighter squadrons.[6] Any capability less than that was, in Jones' view, likely to have an adverse affect on public morale. Accordingly the Air Board recommended buying eight American Bendix search radars, six for operational use in Australia, one for training, and one for deployment with the Mobile Task Force, at a total cost of just over £5 million.[7]

Cabinet shared neither Air Marshal Jones' strategic appreciation nor his concern for public morale, at least insofar as air defence was concerned. It took Minister for Air William McMahon two years to convince his colleagues to spend any money on the

project, and then it was only £600,000 to buy one search radar and height finder for training purposes. Although rejecting his junior minister's representations, Defence Minister Philip McBride did endorse the need for a comprehensive radar air defence system as first priority in the Air Force program for 1954/55.[8]

Until additional radars were bought, the situation was that the RAAF had an air defence system which provided a sound training capability and which could, in an emergency, be used to protect point or even small area targets. The single early warning and intercept radar and the data transfer system had been successfully tested over long distances. Korea, however, had shown that the RAAF urgently needed an advanced air superiority fighter. As at least some progress was being made with the control and reporting system, attention focused on a new aircraft.

Air Marshal Jones had visited the United Kingdom in 1949 to look at potential jet fighters and bombers which could be manufactured in Australia. His choice of the Canberra bomber proved to be inspired; of the Hawker P1081 fighter less so.[9] Exactly what was meant by the CAS' advice to Cabinet that the experimental P1081 had the 'best all round performance' for Australian conditions of the ten aircraft types he and his team had inspected was not clear, as only the most basic flight performance information was attached to the submission. Perhaps Jones had been swayed by the RAAF's tradition of buying British. Whatever the reasons, they were accepted by Cabinet, which in 1950 approved the purchase of seventy-two P1081s, fifty-two for air defence and twenty for tactical reconnaissance, with delivery to commence in July 1953.

When the P1081 project started to run up against the kinds of problems common to developmental aircraft, the Australian Government took one of the critical decisions in the RAAF's history. Resisting strong pressure from the British Government and aircraft industry to replace the order for the P1081 with one for the Hawker F3 (later known as the Hunter), and influenced by Australia's self-styled 'aircraft pioneer', L.J. Wackett, Cabinet opted for the North American F-86 Sabre.[10]

The RAAF had operated many American aircraft during World War II but that had been a case of necessity: Australian officials took what they could get. This was different. Since its formation in 1921 the RAAF had to all intents and purposes been the Pacific branch office of the RAF and in peacetime had relied almost exclusively on British aircraft. The decision to acquire and build in Australia an American fighter represented a major symbolic break with the past.

A former RAAF pilot who had been one of the driving forces behind the establishment of an indigenous aircraft industry in the 1930s, the entrepreneurial and dynamic Lawrence Wackett, now the manager of the Commonwealth Aircraft Corporation, had already examined the Hawker F3 and was not convinced it was the right fighter for Australia. The machine was promising but there was still no firm date for its entry into service. Wackett was also unhappy to learn that the 3400 kilogram thrust R47 Avon engine for the F3 would have to be made in Australia, as the local industry was already tooling up to build the 2950 kilogram thrust RA3 Avon for the

Canberra, and he doubted whether another major task could be managed.[11] On his own initiative Wackett arranged discussions in the United States with the USAF's deputy chief of staff, Lieutenant General K.B. Wolfe, and was told there would be full support for Australian production of the Sabre. American engines would not be available but, unlike the Hawker F3, the Sabre could be powered by either the RA3 Avon or the Nene, both of which would be available from Australian resources (the Nene had been used in some of the RAAF's Vampires).

Wackett was impressed by the F-86. The prototype had flown in 1947 and had broken the world speed record for an aircraft carrying a full combat load with a flight of 1080 kilometres an hour, before going on to become the USAF's first operational swept-wing fighter. By the time Wackett met General Wolfe over five hundred Sabres had been delivered to the USAF. A performance comparison between the P1081, the F3 and the F-86 (the latter fitted with an Avon engine) showed the American aircraft would be faster at sea level, have a higher rate-of-climb to 10,675 metres, and have better endurance. Armed with that information, Wackett convinced Minister for Air T.W. White and Minister for Supply O.H. Beale to support local production of the Sabre, powered by the Rolls Royce Nene engine.

Britain's Air Ministry responded to the news by urging the Australian Government to concentrate on constructing the Canberra until arrangements could be made for the Commonwealth Aircraft Corporation to build the Hawker F3.[12] Bombers like the Canberra, the Air Ministry explained somewhat patronisingly, were 'more valuable for Commonwealth defence' than fighters, a judgment which inferred Australia's first duty was to provide expeditionary forces to fight under British leadership in some remote part of the world, meanwhile leaving the air defence of Australia, should an emergency arise, to the RAF Memories in some British circles apparently were short, as it was less than a decade since the collapse of the Singapore strategy. The RAAF needed new fighters urgently, and the three-year wait before the F3 could be built in Australia was unacceptable. Recalling that 'experience in the past has clearly demonstrated we cannot rely on deliveries of aircraft from the United Kingdom or the United States in the early stages of war', Cabinet approved the Sabre project on 22 February 1951.[13]

The first official flight of the CAC Sabre took place at Avalon airfield on 21 August 1953, before an audience including Prime Minister Menzies and Minister for Defence Production E.J. Harrison. (Organisers found it prudent to advise guests that Avalon was reached via the 'first turning to [the] left after the 33-mile post, Melbourne–Geelong Road'.) The Rolls Royce Avon RA7 engine had been substituted for the Nene because of its superior performance, while the two 30-millimetre Aden cannons which replaced six 0.50-inch machine guns were another significant Australian modification. A year later a ceremony at Laverton marked the introduction of the Sabre into RAAF service, with test pilot Wing Commander D.R. Cuming demonstrating the new fighter before an audience which again included the prime minister and members of the Cabinet, as well as the Air Board.

Wing Commander R.C. Cresswell, Commanding Officer of No. 2 OTU, 1956. R.C. CRESSWELL

The Sabre's introduction into operational service was facilitated by the formation in November 1954 of a trials flight as part of No. 2 Operational Training Unit (OTU) at Williamtown, where Wing Commander Dick Cresswell was in charge.[14] With some assistance from the Aircraft Research and Development Unit, the Sabre Trials Flight determined performance data, assessed the physiological effects of high-altitude, high-speed flight, and developed combat tactics.[15] Membership of the Trials Flight was the Air Force's ultimate status symbol. Sabre pilots had the base's only air-conditioned hut, which was strictly off limits to everyone else, even No. 2 OTU administrative staff; ate special meals; and drank at their 'private' section of the officers' mess bar, where lesser mortals were refused service.

Some officers were irritated by what they believed were the Trials Flight's unnecessary affectations, and perhaps their reaction was justified. Nevertheless, the fact remained that regardless of his flamboyance, Cresswell gave No. 2 OTU the kind of confident, aggressive leadership fighter flying thrives on, just as he had done with No. 77 Squadron in Korea.

At the time the demands on the unit were considerable. World War II was almost a decade past and many of the pilots who had flown air combat had either left the Air Force or were in the process of leaving. RAAF fighter pilots may have accumulated comprehensive experience in the air-to-ground role in Korea ('ground pounding') but few had flown air-to-air combat. Too often, pilots appointed to executive positions with fighter squadrons lacked the all-round experience to provide the right kind of leadership. Recognising that potentially dangerous institutional vacuum, Cresswell and one of his flight commanders, Squadron Leader K.A. Martin, developed a post-graduate course designed to give fighter leaders specialist training, especially in air-to-air tactics. Six students started the first fighter combat instructor (FCI) course in November 1955, with Flight Lieutenant J.H. Flemming graduating as dux after twelve weeks. Personnel staff in the Department of Air worked closely with No. 2 OTU executives to select candidates for the FCI, an arrangement which contributed to the high reputation the course soon acquired.

Personnel staff further assisted the introduction of the Sabre into squadron service by appointing Squadron Leader F.W. Barnes commanding officer of the first operational unit, the reformed No. 3 Squadron, which subsumed the Sabre Trials

Flight, in March 1956.[16] Prior to taking over No. 3 Squadron Barnes had spent two years on exchange with the USAF, where he had flown the F-86F and F-100A. Barnes had been impressed by the USAF's high standards and thoroughly professional approach to training. Although a veteran of both the occupation force in Japan and the Korean War, he had found the intensive training in tactics, night and instrument flying, weapons application and cross-country formation navigation exercises 'a big step' and was eager to apply his experience to RAAF operations.[17]

The Sabre was an important technological milestone for the RAAF and the local industry. It was Australia's first swept-wing aircraft, the first with powered flight controls, and the first capable of supersonic speed (in a shallow

No. 7 Sabre Conversion Course, November 1957. L–R: FltLts A.W. Powell and J.W. Newham, FlgOff R.G. Green. RAAF

No. 77 Squadron's Sabre Weapons Team, 1957. L–R: FSgt O.R.F. Bartrop, Sgt M.F. Wittman, FlgOff O.G. Worth, FlgOff P.J. Scully, SqnLdr M. Holdsworth, PltOff C.L. Ackland, FlgOff P.G. Larard, FSgt J.A. Treadwell. RAAF

dive). The Avon engine generated rapid acceleration, an impressive rate-of-climb, and an excellent service ceiling. Whereas the British-designed Vampire and Meteor fighters most Australian pilots had previously flown suffered from poor instrument layout and uncomfortable cockpits, the Sabre was large and roomy with well-arranged, modern instruments and systems, including radar ranging for the gun sight. The 30-millimetre cannon had far more hitting power than the 20-millimetre weapon of earlier fighters, while the addition of two infra-red heat seeking Sidewinder air-to-air missiles in 1960 added a new dimension to RAAF capabilities, a pair of Sidewinders giving the Sabre a kill probability of one hundred per cent against a single target flying at speeds up to Mach .95 and altitudes of 13,725 metres.[18]

But aviation technology has always been distinguished by its remarkable pace of change. During the mid-1950s the USAF alone introduced six new fighters in only three years, all of which were superior to the F-86.[19] Notwithstanding the subsequent acquisition of the Sidewinder, by the time No. 78 Wing deployed to Butterworth as part of the Commonwealth Strategic Reserve in 1958–59 and the remaining units at Williamtown were reorganised as No. 81 Wing in 1961, the Sabre had been superseded as an air superiority fighter by opposition like the Soviet-built MiG-19 and MiG-21.[20]

Deliberations on a replacement for the Sabre took place against the background of a highly public debate over the future of manned aircraft. Australia's RAF chief of the air staff from 1952 to 1954, Air Marshal Sir Donald Hardman, had told the Menzies government that 'the stage is being reached where the fighter as it is now known will be replaced by guided missiles', a judgment which was restated four years later during discussions in Australia between the RAAF's Air Marshal Scherger and the RAF's Air Chief Marshal Sir Dermot Boyle, who both believed 'fighters were on the way out'.[21] Those privately expressed views were given their most prominent public airing in British Defence Minister Duncan Sandys' White Paper of April 1957, which was widely accepted as sounding the death knell for manned fighters. In the meantime, though, strategists believed an integrated system which used surface-to-air missiles for the point defence of specific targets and fighter aircraft for a more flexible 'in-depth' area defence would provide the most effective barrier to nuclear-armed bombers until about the mid-1960s, when missiles were likely to take over completely.

Only days after Sandys' pronouncement the Air Board decided that a surface-to-air missile system should be brought into service in the Newcastle/Sydney/Port Kembla area as soon as possible. Darwin probably had stronger claims strategically but the selected area was Australia's major industrial and population centre; additionally, the SAMs could be integrated into the existing air defence system based on the fighter squadrons at Williamtown and their associated control and reporting units.[22]

A team to select the missile system was formed in January 1959 under the leadership of Group Captain W.E. Townsend; simultaneously, operations and technical staff were sent to the United Kingdom for guided weapons training. Townsend's brief informed him that the advent of nuclear weapons had made the

destruction of enemy strike aircraft before bomb release point 'imperative', and that the growing capabilities of bombers made their destruction by fighters problematical. A ground-launched guided missile which could 'annihilate all high speed, low and high altitude targets' was needed to complement—not replace—the existing fighter aircraft defence system. Townsend was therefore to recommend a missile system which was effective against single and multiple targets, flying at altitudes between 3050 and 18,300 metres and at speeds of 1100 kilometres per hour, in all weather conditions by day and night. The ground range of the selected missile against a target approaching within that performance bracket was to be no less than twenty-seven kilometres. Both single and salvo missile launches were stipulated, with a kill probability of at least ninety per cent required from a salvo of four missiles.[23]

Group Captain Townsend and his team spent four months examining five missile systems: the British Bloodhound and Thunderbird; and the American Nike-Hercules, Hawk and Bomarc. The Nike-Hercules and the Bloodhound emerged as the two main contenders, with the American system apparently superior in almost every respect. When Townsend's team calculated the relative effectiveness of the two weapons based on kill probability and unit cost, they came up with a 'cost per unit lethality' of £648 for the Nike-Hercules and £909 for the Bloodhound.

Townsend's strong recommendation for the Nike-Hercules was endorsed by the Air Board in June 1959.[24] However, before the proposal went to Cabinet, doubts arose over the availability of the Nike-Hercules, and the Australian Department of Defence was subjected to a determined sales campaign by British officials on behalf of the Bloodhound.[25] A feature of that campaign was the suggestion that any Bloodhound Mk Is which the RAAF might buy could later be 'developed' into Mk IIs and IIIs, which would have progressively superior performance. The Air Board rescinded its support for Nike-Hercules and Cabinet approved the acquisition of one fire unit of the Bloodhound Mk I, a semi-active, pulsed radar system in which the target was illuminated by a separate ground radar and the missile homed onto the resulting radar reflection. A new squadron—No. 30—was to be raised at Williamtown in 1961 and equipped with twenty missiles, sixteen launchers and all associated spares, works and buildings at a total estimated cost of £3.581 million.

On the eve of the Bloodhound's introduction, the RAAF's policy on the relative merits of fighters and missile systems changed dramatically. Instead of regarding SAMs as complementary to manned aircraft, the air staff now stated that missiles were the key to air defence, *augmented* by fighter aircraft.[26] RAAF planners did not go as far as Duncan Sandys and suggest that the end of manned combat aircraft was in sight; fighters might be relegated to a secondary status, but their flexibility would ensure their retention in the order of battle. Nevertheless, SAMs were believed to offer 'marked advantages' over manned aircraft in terms of effectiveness and economy. The Sabre could no longer be regarded as an adequate air defence weapon and the acquisition of more Bloodhounds was considered 'essential' immediately the Air Force had become familiar with operating and maintaining SAMs.[27]

The 'Petrified Forest'. No. 30 Squadron's Bloodhound surface-to-air missiles at Williamtown, 1964. RAAF

Rarely has a professional judgment been proven so wrong so quickly. Even before the RAAF's Bloodhounds arrived the RAF reportedly was experiencing 'serious technical difficulties' with the missile.[28] Those difficulties extended to the RAAF system which had been substantially redesigned to meet Australian conditions, to the extent that the fire unit eventually was regarded as unique, not the ideal status for a complex and entirely new weapons system. The real issue, though, was that despite the optimism of the late 1950s, missiles were not the answer to the air defence problem. On the contrary, for a vast country with limited resources and a range of security needs like Australia, that most fundamental characteristic of air power—flexibility—had to be paramount in any weapons system. With its limited intercept envelope of forty-five kilometres range and 3050 to 18,300 metres altitude, No. 30 Squadron's Bloodhound system was obsolescent before it arrived (it was never

'developed' as a Mk II or III system) and, being restricted to one role, represented poor security cost-effectiveness. Scores of batteries would have been needed to provide any reasonable degree of air defence for Australia's major cities, let alone vital infrastructure and military targets, and those batteries would still have been ineffectual against a submarine-based missile threat. And while the RAAF's single missile system technically was mobile, the effort needed to move it was enormous. At best, the RAAF's Bloodhound battery represented a useful training capability.

Token consideration was given to replacing the Bloodhound with the Sea Dart missile in the late 1960s but the RAAF's interest in becoming a major SAM operator had passed. No. 30 Squadron was disbanded in 1968 because of the Bloodhound's obsolescence, logistic support difficulties, the unavailability of a suitable replacement system, and the demands placed on RAAF staffing levels by the Vietnam War.[29] Defence planners saw little reason to retain such an inflexible capability unless a serious change in the air threat to Australia emerged.[30] In the meantime the RAAF was able to retain some currency in air defence SAM practices and technology through the small number of people it had attached as advisers to the Singapore Air Force's Bloodhound squadron.

Following the decision to base Australia's air defence system on fighters and ground radars, it became essential to upgrade the control and reporting units (CRUs). In June 1964 the RAAF was operating three such units: No. 1 CRU at Brookvale in Sydney, No. 2 CRU at Darwin and No. 114 CRU at Butterworth, which was due to be relocated to Amberley in 1965. As well as providing air defence for the Sydney/Newcastle/Port Kembla area by controlling and integrating the fighters and Bloodhound missiles at Williamtown, the Brookvale centre trained air defence officers and aircraft plotters. However, like No. 114 CRU at Butterworth, the Brookvale system was obsolescent.

Two new control and reporting systems known as 'Hub Cap' were ordered in 1965 when the RAAF exchanged contracts with the British firm Plessey Radar. Although Plessey was the prime contractor, the radars were manufactured by Westinghouse in the United States and computer support came from Marconi in the United Kingdom. Five principal features had been stipulated by the RAAF. The new system had to be air transportable by C-130s; suitable for use in any conditions, particularly Australia's tropical north; able to control Mach 2 plus fighters; capable of detecting high flying aircraft at a range of four hundred and eighty kilometres; and able to manage ten intercepts and provide surveillance of up to one hundred targets simultaneously.[31] Hub Cap reportedly met those criteria. The RAAF's intention was to re-equip No. 114 CRU at Amberley following its relocation from Butterworth, and to establish a new unit, No. 3 CRU, at Williamtown.

The acquisition of mobile control and reporting systems formalised a fundamental change in the RAAF's air defence strategy. Instead of continuing to pay lip service to the politically appealing but financially unrealistic notion of unfurling an air defence umbrella over 'vital national centres' such as capital cities, the RAAF was to

concentrate on the point defence of its fleet of F-111 bombers, expected to arrive within two years. The new strategy was more sophisticated than the one it replaced, and more practical. The strike/reconnaissance fleet was Australia's deterrent force. For that deterrent to be credible, the F-111s and their bases had to be protected from air attack. By providing that protection, the RAAF's air defence system would, in theory at least, deter potential aggressors (who would fear retaliation), and would therefore be safeguarding not only the strike force but also, as a consequence, Australia's 'vital national areas'. The re-equipment of the CRU system was predicated on that concept of operations. In the event of a threat to continental Australia from or through a hostile Indonesia, the three advanced bases from which the RAAF could launch retaliatory strikes with its F-111s—and which therefore had to be defended—were Darwin, Tindal and Learmonth.[32] No. 2 CRU at Darwin was the least obsolescent of the RAAF's existing three systems; while once Nos 3 and 114 CRUs were re-equipped with Hub Cap they could be deployed to the north by air from their home sites at Williamtown and Amberley as required.

Unfortunately for that intellectually pleasing theory, serious difficulties arose with Hub Cap when it became apparent that Plessey had grossly underestimated the task of producing the computer programs needed to make the system work.[33] The first casualty was the delivery date, which slipped several years. Of far more concern to the Air Force, however, was the dramatic change to the system's 'airportability'. Under the original specifications, a complete Hub Cap system was to be fully transportable in four C-130As. When increases in the weight of various components necessitated increases in the size of the portable cabins, that number expanded to nine, and of those five had to be C-130Es because of their slightly larger door height. What had been a reasonable airlift task had become a major demand, to the extent that the mobility of the CRUs was at question.

Nevertheless, by the end of 1971 the RAAF's system of four control and reporting units was in place. No. 1 CRU at Brookvale was used only for training but Nos 2, 3 and 114 were all operational, with the latter two in particular representing a modern, computer-assisted capability, having been commissioned only that year. And as tensions with Indonesia had subsided, the problem of moving the Hub Caps to the remote north could be quietly ignored.

Fighters may have been temporarily relegated to secondary status behind missiles as an air defence weapon, but prudent defence planners still appreciated the importance of equipping the RAAF with leading edge technology. The Murdoch aircraft mission of 1954 had recommended replacing the Sabre with the Lockheed F-104 Starfighter two years before the F-86 entered squadron service with the RAAF—advanced planning indeed. CAS Air Marshal Scherger was an outspoken supporter of the Starfighter, telling his fellow service chiefs that in addition to its 'superior' air defence capabilities, the F-104 could be used in the ground attack role, carry nuclear weapons, and had a ferry range of 3700 kilometres without refuelling. Questioned on the F-104's

capability as a ground attack platform in Southeast Asian terrain, Scherger had replied emphatically that 'the aircraft [would] adequately fulfil *all* required roles'.[34]

Notwithstanding the Murdoch mission's recommendation and Scherger's advocacy, doubts persisted about the F-104's flexibility. A visit to the United States in May 1957 convinced Defence Minister Sir Philip McBride that the RAAF would be 'ill-advised' to proceed with the F-104 as it was far too specialised. Doubts had surfaced in the RAAF, too, where senior test pilot and engineer Wing Commander Jim Rowland had learnt during informal discussions with USAF colleagues of the aircraft's considerable limitations in all but the air intercept role.[35] McBride decided Australia's best course would be to keep the Sabres in service until more information was available both on other fighters and the general balance in air defence between aircraft and surface-to-air guided missiles.

Air defence exercises at Darwin were a feature of RAAF operational training and deployments during the 1960s. Here RAAF Mirages and a Canberra and Sabre follow an RAF Vulcan over a favourite landmark, 1966. P.J. SCULLY

A lapse of three years warranted further detailed investigation. The next evaluation team travelled overseas in May 1960, its composition evidence of the importance the RAAF attached to its fighter. Air Marshal Scherger was the leader and was accompanied by the RAAF's most prominent test pilot, Group Captain D.R. Cuming, as well as senior fighter pilot Wing Commander A. Hodges; Messrs I.B. Fleming, L.F. Bott and H.H. Knight added the engineering, industry and financial expertise. Scherger and his team were looking for a Mach 2.0 all-weather interceptor with a rate-of-climb sufficient to reach 16,775 metres within six minutes, and a kill probability of eighty-five per cent against a single target using air-to-air missiles. Because the aircraft would have to be effective in other roles, a combat radius of action of 1400 kilometres with a full tactical weapons load was specified.

Preliminary work by the air and technical staffs prior to the team's departure had produced a shortlist of the F-104 and the Northrop N156 (which later became the F-5 Freedom Fighter) in the United States, and the Dassault Mirage III in France. Scherger was later directed by Minister for Air F.M. Osborne to add the Republic F-105 and the English Electric Lightning to his list, an addendum which indicated little understanding on the minister's part of either the two aircraft or Australia's geography. The F-105, N156 and Lightning were quickly dismissed from serious

consideration. Of Osborne's two additions, the F-105 had already been rejected by Switzerland and Canada for reasons of cost, complexity and inadequate performance, shortcomings confirmed by the Scherger mission.[36] The Lightning was a good interceptor but too specialised for the RAAF; further, its very high tyre pressures and very short range limited its flexibility in the Australian environment. Nor did the N156 create much work for Scherger's team. Its top speed was well below Mach 2.0, and anyway, at the time of the RAAF's evaluation its future was by no means assured.

The fighter evaluation team with Serge Dassault (far right) and the Mirage III in France, 1960. L–R: Ian Fleming (Dept of Supply), AM F.R.W. Scherger, GpCapt D.R. Cuming, Lloyd Bott (Dept of Supply), WgCdr A. Hodges, Serge Dassault. D.R. CUMING

Against a list of nine criteria which the team used as its primary benchmark the Mirage emerged as decisively superior to the F-104. Those criteria were: safety, airfield capability, engine operation, aircraft handling qualities, cruise altitudes for

long range missions, loiter altitude, ferry radius, ease of pilot conversion, and cost. Cabinet endorsed Scherger's choice of the French fighter in November 1960 and authorised an initial buy of thirty.

Few projects better illustrate the RAAF's continually improving organisational, technical and operational competence than the introduction of the Mirage. Previously the design and production cycle for front-line aircraft had been relatively short and the machines reasonably cheap, factors which made it possible to keep a fleet up to date without too much anxiety. The Mirage marked the departure point for the RAAF from that comfortable situation. From the mid-1950s on, the demand for supersonic aerodynamics, after-burning engines, powered controls, radar, air-to-air missiles and automated navigation/attack systems created a sudden increase in the development time and costs of strike aircraft in particular. Where once three years from concept to operational service was common, a decade was now the norm. As a consequence it became critical for air force leaders selecting a new aircraft to choose one with minimum built-in obsolescence; that is, instead of having the luxury of choosing a well-developed and proven type secure in the knowledge it could be replaced in a few years, the imperative was to select a machine at an early stage of its development so that when it entered service years later it would still be one of the best available. In other words, if air force leaders wanted to avoid acquiring a 'new' aircraft which was in danger of being superseded by the time it reached their squadrons, they were almost compelled to order a type which was either still on the drawing board or under development.

Only highly capable organisations can confidently face that kind of decision-making challenge. To the credit of the RAAF's leaders, the philosophy of choosing an aircraft with minimum built-in obsolescence was deliberately followed with the Mirage.[37] When the order was placed many of the aircraft's components had not been designed, were still under development, or had not even been defined; yet such was the Air Board's confidence in the quality of its people that the Australian model of the fighter, the Mirage IIIO, was scheduled to enter service before its French Air Force equivalent, the IIIE. Few air forces could have matched the RAAF's achievement with the Mirage. More than any other post-war activity to that time—including participation in the wars in Malaya and Korea—the Mirage project validated the ethos of education and professionalism which had been pursued since the late 1940s.

The technology which the Mirage brought to the RAAF for the first time was sufficient challenge in itself. On top of that, technical and flight performance manuals were written in a foreign language, and the first air and ground crews who trained in France were taught in a foreign language. Pre-course instruction in French at the RAAF School of Languages at Point Cook helped but the task nevertheless was daunting. In the circumstances the respect with which the French Air Force and the Dassault Company came to regard men like test pilots Squadron Leader B.H. Collings and Group Captain Cuming, and project engineer Wing Commander J.A. Rowland, reflected tremendously well on the RAAF. The Australian airmen, incidentally, generally worked very well with their French colleagues, finding the Gallic relaxed approach to life, openness, pragmatism and sense of humour surprisingly like their

own. The initial project team was delighted, for example, when they found out that the French had designated the Australian version of the Mirage the IIIʻO' because the letter 'A' had already been allocated to a previous model, and to the French ear the RAAF airmen pronounced the name of their country as 'Orstrighlia'.

Once production of the Mirage IIIO started at the Government Aircraft Factory (GAF) and the Commonwealth Aircraft Corporation in Melbourne, an operational training and flight validation process reminiscent of the one developed for the Sabre ten years previously was initiated, with due allowance for the more advanced systems. Air and ground crews trained at Williamtown, and air testing was conducted by Aircraft Research and Development Unit pilots from GAF's airfield at Avalon, with Squadron Leader Bill Collings making the first flight of an Australian-assembled Mirage, A3-3, in December 1963. At Williamtown's No. 2 Operational Conversion Unit, Wing Commander Fred Barnes repeated his experience with the Sabre, this time becoming the first commanding officer of an RAAF Mirage unit. No. 2 OCU's instructors translated French technical manuals into English and added the notes they had taken in France to develop a comprehensive range of air and ground courses, achieving results that were, in Barnes' opinion, 'simply quite magnificent'.[38] Foremost among those most capable and dedicated people was Flight Lieutenant S.S.N. 'Tex' Watson who, in addition to preparing lecture notes and developing inflight procedures and techniques, wrote a tactics manual for pilots and air defence officers which became the standard reference for their operations. The first Mirage pilots course started on 7 October 1964 and the first fighter combat instructors course on 19 August 1968.

As increasing numbers of the Mach 2.0 fighter were delivered to Williamtown, Minister for Air David Fairbairn found it necessary to warn the public not to 'fear' the noise of sonic booms, which were nothing more than 'evidence of the Air Force at work'.[39] No. 75 Squadron's Flying Officer E.J. Walker was apparently hard at work on 27 June 1966 when he flew Mirage A3-37 from Avalon to Williamtown at Mach 1.55 and in the process, according to his commanding officer Wing Commander J.H. Flemming, 'laid a sonic boom from Melbourne to Newcastle'. Walker's track over Canberra and Glenbrook ensured his record-breaking flight was noticed in high political and Air Force places. Lurid newspaper headlines featured the event: 'He Shook up Two States'; 'Record Jet Flight Alarms Hundreds'; and 'Quake was Air Boom Record'. The predictable flurry of post-facto directives prohibiting supersonic flight over populated areas guaranteed that Walker's time of twenty-seven minutes four seconds from abeam Melbourne to abeam Sydney would not be broken. Over a quarter of a century later, Jim Flemming recalled with undisguised pleasure, 'We still hold the record!'[40]

Preparations for the Mirage went beyond the development of air and ground training courses. New facilities were also needed. Williamtown had originally been occupied by the RAAF in 1941. After the war the station's proximity to the east coast's industrial and population centres justified its selection as the main peacetime site for Australia's air defence system. Major works up until 1962 were generally confined to upgrading and maintaining airfield pavements and operational facilities: a new sealed

runway, 2400 metres long and oriented into wind (headings of 120°/300°); jet aprons; taxiways; new aerodrome lighting; and a relocated bomb dump.[41] Substantial improvements to technical and administrative facilities had to be added for the Mirage, so more than £1.5 million was allocated in 1965 to construct and refurbish instrument and missile workshops, aircraft maintenance hangars, wing headquarters, a precision measuring equipment laboratory and an armament workshop.[42]

Early intentions had been to buy only thirty Mirages for use as high-speed, high-altitude interceptors, and to keep three Sabre squadrons for the ground attack role.[43] Accordingly no dual-seat Mirages had been ordered as all pilots progressing onto the French fighter would have extensive Sabre experience. However, the expansion of the 1960s produced funds for seventy more Mirage IIIOs and plans to retire the Sabres, so in 1964 ten dual Mirage IIIDs were ordered, followed later by six more. When the Sabre was phased out in 1971 it was replaced as a lead-in fighter for the Mirage by the Macchi MB-326H, then in service as an advanced trainer with No. 2 Flying Training School at Pearce. Some flying instructors were concerned that pilots progressing from the modest performance of the Macchi onto the supersonic, delta-wing Mirage might struggle, so brief consideration was given to acquiring an intermediate aircraft like the Mirage IIID-M Milan, which was fitted with retractable canard wings, or the Northrop F-5 lightweight fighter, to make the transition from low to high performance aircraft more benign.[44] As it happened, when pilots began converting from the Macchi onto the Mirage in 1970 the task proved fairly comfortable, largely because of the availability of the dual-seat Mirage IIID.

As had been the case with every other front-line aircraft the RAAF had operated, the Mirage was constantly modified to enhance its utility. Tactical reconnaissance capabilities were improved modestly by adapting eight aircraft to carry the Fairchild K56A camera in a detachable nose-cone; and air defence capabilities were improved substantially by the acquisition of the Matra R530 missile, which for the first time gave the RAAF a weapons system theoretically able to lock onto and shoot down a target in all weather, twenty-four hours a day.[45]

By the end of the 1960s the RAAF's fighter squadrons had settled into Mirage operations, Nos 76 and 77 at Williamtown and Nos 3 and 75 deployed permanently to Butterworth with the Commonwealth Strategic Reserve. About thirty per cent of the annual flying training cycle was common to all four squadrons, covering air combat tactics, navigation and some weapons work. For the remaining seventy per cent the squadrons were 'role emphasised', with Nos 75 and 76 specialising in air-to-air operations and Nos 3 and 77 in air-to-surface. In 1973 No. 76 Squadron was disbanded for economic reasons and the remaining three squadrons were shifted from role-emphasised training to multi-role. That shift was to lead to an overall decline in the competence of the fighter force, cause for concern in itself, but in this instance perhaps more interesting for the reflection it cast on classical air power theory.

Air Vice-Marshal R.J. Bomball flew the Mirage for twenty-one years, firstly as an instructor, then as a squadron commander, and finally as the officer commanding

RAAF Base Williamtown, a background which made him one of the RAAF's most experienced pilots on type. In his opinion the Mirage force reached its peak level of proficiency and readiness during the years the squadrons were role-emphasised, after which standards started to decline.[46] The reason for the perceived decline is noteworthy. According to Bomball, when the squadrons followed the 'role-emphasised' policy, those pilots specialising in air-to-air became extremely proficient, as did their ground radar controllers; consequently they were able to handle 'the whole spectrum of intercepts' under most conditions. Similarly, the air-to-surface specialists achieved very high standards in bombing, gunnery and tactical and visual reconnaissance, day and night. By specialising, pilots were able to exploit the Mirage's capabilities to the full. The decline in that level of expertise began, according to Air Vice-Marshal Bomball, with the shift to multi-role operations, which increased the training demands on each pilot but was not accompanied by additional flying hours or resources.

Flexibility and multi-role operations have been articles of faith amongst airmen since World War I. When the Mirage was introduced its good performance, reasonably diverse armament, advanced navigation system, and dual-function radar (capable of both air intercepts and ground mapping) led a number of senior RAAF pilots to believe that for the first time their service had a genuine multi-role weapons system. In practice, however, most of those systems were essentially first generation, and using them efficiently placed a considerable workload on pilots. Because of the restriction on flying hours, multi-roling was beyond the Mirage's capacity: in Bomball's words, the aircraft 'simply didn't have the technology'. Consequently, after 1973 there was a mismatch in the fighter force between capabilities and roles.

Correcting that mismatch was one of the air staff's main objectives when planning to replace the Mirage began in 1971. The possibility of using SAMs to strengthen Australia's air defence system was revisited. While the 1967 Arab-Israeli Six-Day War and the air war over North Vietnam were regarded as having demonstrated a 'definite need' to deploy 'some' SAMs as a last line of defence around vital points such as air defence radars and aircraft readiness platforms, missiles were considered inflexible and ineffective against low flying targets, shortcomings which militated against their widespread adoption by the RAAF.[47] The Soviets' continued reliance on manned fighters as the centrepiece of their air defences, despite a massive investment in SAMs, was also considered significant. Air staff planners were confident that the defence-in-depth provided by the Hub Cap early warning and control system and state-of-the-art manned fighters constituted a better option for Australia. Three points were presented to justify that opinion: an enemy bomber force would be subjected to attack for a much greater portion of its flight into and out of a target area; defending forces would have more time to react; and the presence of human logic in the fighter increased the likelihood of a successful intercept when the enemy used electronic jamming. Not mentioned was Hub Cap's inability to detect low-flying targets until they were within about sixteen kilometres of the radar site, a limitation which made the successful interception of a high speed attacker improbable.[48] But on balance a new SAM system

came into the 'nice to have' category, which was where it stayed as the RAAF directed its limited resources towards acquiring what it hoped would be a genuine multi-role fighter.

Current strategic guidance envisaged four roles for the new 'tactical fighter': air superiority/air defence; interdiction of combat areas; close air support; and tactical reconnaissance/battlefield surveillance.[49] The essential criteria specified by the air staff were directed towards air superiority. Any new aircraft had to have the performance and weapons systems to prevail against contemporary fighter aircraft—the Soviet Fishbed, Fitter and Foxbat were mentioned—and to intercept, identify and destroy or deter enemy strike/reconnaissance aircraft regardless of weather and altitude. Capabilities for interdiction and close support could then be considered but only if they did not prejudice the primary mission. Still, the specifications for ground attack were impressive, as the aircraft had to be able to carry one or a combination of the following loads: at least sixteen Mk 82 227-kilogram bombs, three 1360 kilogram stores, a variety of air-to-ground guided weapons, cluster and napalm bombs, and high velocity rocket projectiles. Regardless of the ground attack load, two air-to-air missiles were always to be fitted for self-defence.

It was that specified air-to-surface capability which justified the description 'tactical fighter'. The term had come into use in Western air forces during the 1960s to describe an aircraft which could perform a number of roles without modification or addition to its basic systems.[50] Any multi-role capability RAAF fighters had possessed in the past had been developed after an aircraft entered service; for example, the Sabre and Mirage had both been bought primarily for the air superiority role and had subsequently been modified for ground attack. Improvements since then in aircraft design and construction and weapons systems had made it possible to include a significant ground attack capability in the specifications for an air superiority fighter, which made the priority given by the Air Force to the air-to-air role less significant than might have seemed the case.

But whether or not the RAAF would be allowed to acquire a multi-role fighter remained uncertain. Despite the Mirage's obvious limitations in the air-to-surface role, if fitted with an improved radar and modern air-to-air weapons it could still perform satisfactorily as an interceptor, in which case, according to lobby groups, the local industry could be tasked with designing and building a 'cheaper' ground attack aircraft suited to the Australian environment. When that proposal was presented to the Defence Force Development Committee it was opposed by the Air Force, which had no reason to believe that an industry which had not designed and produced a strike aircraft since World War II would be capable of achieving the necessary quality, let alone at a reasonable cost.[51] The question of whether the RAAF should operate one multi-role fighter or two specialist aircraft was to be one of the most difficult the tactical fighter force project team would have to consider. As the Defence Force Development Committee noted in November 1970, the objective was not merely to replace the Mirage, but to determine the future development of the tactical capability of the Air Force for the next twenty years.

CHAPTER 20

BOMBERS

'An air force without bombers', Chief of the Air Staff Sir Donald Hardman told the Air Board in 1954, 'isn't an air force', a conviction which was held just as strongly by his successors. The RAAF had ended World War II with two hundred and fifty-four B-24 Liberator heavy bombers, an enormously powerful fleet which was, however, soon retired and replaced by seventy-three Avro Lincolns, built in Australia by the Government Aircraft Factory. A development of the Lancaster bomber, the Lincoln was used primarily by No. 82 (Bomber) Wing's three squadrons, Nos 1, 2 and 6, and gave its most conspicuous service during the Malayan Emergency from 1950 until 1958. As Chapter 13 of this book has discussed, whether or not the Lincoln's contribution in Malaya was worthwhile remains a matter for conjecture. Regardless of conclusions on that subject, the Lincoln was a formidable weapon system when measured against the criteria of World War II. A load of 6400 kilograms of high-explosive bombs was impressive by any standards, and was supplemented by two 20-millimetre cannon and four 0.5-inch machine guns. The question, though, was whether the criteria of World War II mattered in the 1950s. The RAAF's Lincolns were no more capable of precision attacks than had been their wartime predecessors, and while seventy-three aircraft constituted a reasonable force it was nothing like the numbers generally used between 1939 and 1945 to deliver massive, concentrated firepower in an attempt to achieve a decisive effect. If No. 82 Wing's aircraft were to serve a useful purpose in a major war, then it was almost essential for them to deploy with the Mobile Task Force and join with RAF bombers to form a very large strike fleet; otherwise their effectiveness would be limited.

There is little evidence the RAAF's leaders were worried by the kind of operational limitation and doctrinal vacuum suggested by the preceding paragraph. As Sir Donald Hardman had said, air forces had bombers, and that was that. It was also the case that the concept of deterrence was widely accepted, if not always well thought out. From the earliest days of German Zeppelin and Gotha raids on London in World War I, bomber aircraft had been synonymous with 'terror', a perception which had been reinforced by the Luftwaffe's 'blitz' of World War II, the allies' strategic bomber offensive against Germany and the atomic attacks against Japan. Because people generally thought of bombing in apocalyptic terms, the mere presence in an air force of a reasonable bomber fleet might serve as a deterrent. At the least, seventy-three Lincolns served that purpose.

Before moving on to the RAAF's experience with jet bombers, several attitudes from the Lincoln era should be recorded. In common with some of their contemporaries from other operational groups, a number of No. 82 Wing crews were excessively casual in their approach to flying. Conversion training was haphazard, with a newcomer's progress largely dependent on whether or not senior aircrew were interested in teaching him anything; pre-mission briefings involving all seven crew

members were the exception rather than the rule; and inflight checklists were scorned by most crews who regarded them as 'not on'.[1] Conscientious captains like Flight Lieutenant G.A. Ross who insisted on regular and systematic crew training were sometimes regarded as tedious by professionally immature colleagues.

Plans to replace the Lincoln were developed in November 1949, seven months before No. 1 Squadron flew to Tengah to play its part in winning the Malayan Emergency. The RAAF wanted jet aircraft and the local industry wanted work, and in the heightened tensions of the Cold War the government was responsive to both demands. There were few aircraft available, the choices being the Boeing B-47 or the Douglas A-3 Skywarrior from the United States, and the English Electric B5/47 (later named the 'Canberra') from the United Kingdom. On a visit to the United Kingdom to investigate 'all types of jet propelled bombers and fighters', Air Marshal Jones and his accompanying air and technical staff officers were impressed by the Canberra and, as it seemed unlikely that the Americans would agree to either of their aircraft being built in Australia, recommended the twin-engined, straight-wing British bomber.[2] When fitted with the Rolls Royce Avon engine, which could also be built in Australia, the Canberra would have a range of 4000 kilometres, a maximum speed of nine hundred and twenty kilometres an hour, a service ceiling of 15,250 metres, and would be able to take off at average weights and under standard conditions in nine hundred metres. The aircraft reportedly would be able to carry a single 2300- or 4500-kilogram 'special' bomb in addition to a more conventional load of six 450-kilogram high-explosive bombs.[3] 'Special' was, of course, a euphemism for nuclear.

The Canberra's straight-wing aerodynamics limited it to a maximum speed of Mach 0.84 at high altitude at a time when supersonic flight was becoming the norm. By the same token, the high lift wing also conferred exceptional manoeuvrability at low level and good stability at high level, so that contemporary fighters found the Canberra a difficult opponent during air combat training. The RAAF's new bomber brought with it some 'completely new' technical features, including ejection seats, explosive bolts for jettisoning the canopy in the event of an emergency, an adjustable incidence tailplane, dive brakes, high thrust axial flow turbo-jet engines, a cartridge starting mechanism for the engines, a complex fuel system, instruments and radios of advanced design, and a high-surface finish on the airframe. Another technical feature which the RAAF had wanted, and which it had been led to believe would be available, was the H2S Mk 9 radar which could be used for 'blind' bombing at night or in poor weather. When those radars were instead kept by the RAF for its own Valiant bombers, the Australian Government claimed it had been misled.[4] Instead of an all-weather bombing system the RAAF's Canberras came fitted with the T2 visual sight and were therefore restricted to daylight, clear weather operations; that is, their bombing system was significantly less capable than those installed in thousands of aircraft at the end of World War II.

Before Australian production of the Canberra commenced, two British-built aircraft were imported. The first was A84-307, shown here being accepted at the English Electric factory at Warton prior to its delivery flight in August 1951. Included are, L–R, (2nd) FltLt C.G. Harvey, navigator; (3rd) WgCdr D.R. Cuming, pilot; and at the extreme right the legendary British test pilot Roland Beamont. D.R. CUMING

Deliveries of the Australian-built Canberras started in 1953. Many features differed from the original British specifications; some, like the integral wing fuel tanks, the Green Satin Doppler navigation system and the cabin air conditioning involved major design and engineering changes. By 1957, three hundred and sixty modifications had been incorporated by the Government Aircraft Factory, half of which were of local origin.[5] Initially only single-pilot aircraft fitted with one set of flying controls were built. Pilots posted to No. 82 Wing were first given a jet conversion on the single-engined Vampire, but the difference in the performance and handling characteristics of the far more powerful, twin-engined Canberra made that arrangement less than satisfactory. Converting inexperienced pilots caused 'great problems' and came to be regarded as a 'dangerous practice', so a number of dual-control Canberras were built by GAF for flying training.[6] The availability of those trainers contributed to the Canberra's eventual reputation as an exceptionally reliable and safe aircraft.

Early tactics developed by No. 82 Wing for the Canberra were based on the World War II 'bomber stream' in which large numbers of aircraft were concentrated over a target to carry out allegedly 'precision' attacks. Most bombing practice was conducted from medium to high altitudes, between about 6100 to 10,675 metres. On occasions very high altitude attacks would be made from above 12,200 metres, with the strike force being preceded by 'marker' aircraft which would designate the target in a manner similar to that of the RAF's wartime Pathfinders. Perhaps there was some

logic to those tactics if in the event of war the intention was for the RAAF's Canberras to become part of a very large Commonwealth strike force which would resort to the methods of World War II, with hundreds of aircraft carpet bombing an area with high-explosive and incendiary weapons. In other circumstances the RAAF's jet bomber fleet was a dubious proposition. Even after the Canberras were fitted with improved T4 bomb sights in 1954, average bombing errors remained at two hundred and fifty metres for bombs dropped from 13,420 metres and fifty metres for those dropped below nine hundred and fifteen metres.[7] As the RAAF had insufficient aircraft for area bombing, and given the relatively small radius of effect of high-explosive weapons, that was a capability which would not withstand scrutiny.

A study completed in 1957 concluded that the number of sorties required to achieve worthwhile results on likely targets would be well outside No. 82 Wing's capacity.[8] Nevertheless, the size of the RAAF's fleet of forty-eight bombers was impressive by regional standards. As had been the case with the Lincolns, the *appearance* of the bomber force was capable of creating a deterrent effect. That effect was strengthened by mobility demonstrations such as Operation East Bound in September/October 1960 when three Canberras supported by a C-130A flew 48,000 kilometres around the world to attend independence celebrations in Nigeria, and arrived back at Amberley precisely on schedule.

Nuclear weapons were the answer to the Canberra's limited striking power, as the government and the Air Force both knew. In September 1956 Minister for Air Athol Townley wrote to Defence Minister Sir Philip McBride regarding the Air Force's preparations to deploy elements of its bomber and fighter wings to Malaya as part of the Commonwealth Strategic Reserve.[9] Townley told McBride that although the RAAF had recently modernised the Canberra's bombing and navigation systems, the aircraft remained limited by its small bomb load. If it continued to carry only conventional bombs, a 'very large' number of sorties would be needed to destroy a target. One way of increasing the Canberra's effectiveness, Townley suggested, would be to arm it with a tactical nuclear weapon. If the principle of arming the RAAF with nuclear weapons were accepted, Townley continued, then it would be logical also to acquire 'tactical atomic bombs' for the Sabres, which could then be 'gainfully employed' in the ground attack role. Townley unequivocally stated his belief that, if acquired and if necessary, nuclear weapons would be used in the 'north-west approaches' to Australia; that is, in Southeast Asia. Townley's initiative was supported by the Defence Committee.

The problem was how to get hold of the bomb. Because it would be many years before Australia would be in a position to build its own, Townley urged McBride to seek an overseas source. The Defence Minister proceeded with caution, writing first to his External Affairs colleague Richard Casey. McBride reminded Casey of the existence of contingency plans for Seato forces to use nuclear weapons in the event of Chinese communist or Viet Minh aggression which could not be controlled by other means, and suggested that those plans justified any Australian effort to acquire the bomb.[10] Because of the sensitivity of the subject, McBride wanted Casey's advice on

the likely British and American reactions. The Americans had already given their answer. Five days before McBride's letter to Casey, United States Defence Secretary Charles Wilson had publicly announced his country's willingness to supply weapons systems (for example, aircraft) 'capable of firing atomic charges' to its Western allies; all such charges would, however, remain in American hands.[11] With that avenue closed, Casey told McBride there were no political objections to an approach being made to the United Kingdom on an exploratory, non-committal basis.

Casey's invitation was accepted with enthusiasm by the RAAF's chief of the air staff, Air Marshal Scherger. Scherger was already pressing the government to supplement the Canberras with a squadron of genuine strategic bombers, preferably the British Vulcan, and if that were to happen it would seem logical to arm the V-Bombers with nuclear weapons. Scherger wrote a series of personal letters to his British counterpart, Air Chief Marshal Sir Dermot Boyle, seeking his assistance. At a United Kingdom chiefs of staff meeting held in London in September 1957 Boyle told his fellow chiefs that he had been asked informally by Scherger what the likely reaction of the British Government would be to an official request from Australia to 'purchase some atomic bombs in the kiloton range'.[12] Scherger had given Boyle an assurance that if the weapons were provided they would be used only with the joint approval of both governments. The British chiefs agreed that Scherger's request should be investigated, especially as it might lead to an Australian order for V-Bombers.

There were two main threads to Scherger's thinking. First, he believed his initiative could make an important contribution to collective security and local defence. As he told Boyle, he hoped that the RAAF would be able to contribute a small force of twelve to sixteen nuclear-armed Vulcans to an allied 'deterrent force' in Southeast Asia. Second, he wanted the RAAF to stay at the leading edge of air power technology. It is significant that while he was writing to Boyle, Scherger was also changing the syllabus of the RAAF College, placing a heavy emphasis on physics so that his service's future leaders would be intellectually equipped to command a nuclear air force.

Despite Scherger's eagerness, there appeared to be some ambivalence in the government. Australia's official policy on nuclear weapons had been announced by Prime Minister Menzies during a speech to Parliament in September 1957 when he stated that any immediate plans for defence would be in the 'conventional field'. Nevertheless, Menzies did not close off the possibility that atomic bombs might be procured sometime in the future.[13] Menzies, McBride and Casey were able to explore the question during a visit to Australia by British Prime Minister Harold Macmillan early in 1958.[14] The two prime ministers agreed that because of the subject's sensitivity and the limited amount of technical information available, it was preferable for Australia to adopt a 'wait and see' approach, during which time the RAF and RAAF would conduct a joint examination of the 'technical facilities side' of using nuclear weapons in the Southeast Asian area. The general thrust of those developments was confirmed in September when British Minister for Supply Aubrey Jones visited

Australia and told his hosts that any formal request for tactical nuclear weapons would receive a 'very favourable' response. Menzies subsequently wrote to Macmillan seeking an assurance that, if necessary, the United Kingdom would provide Australia with a nuclear capability, either by means of full manufacturing data for the production of operational weapons or the supply of ready-made weapons.[15] Despite the active role he was taking and his belief that Australia's eventual acquisition of some tactical nuclear weapons was 'inescapable', Menzies clearly was unhappy with the prospect, expressing a strong preference for the RAAF to remain 'conventional' for as long as possible and rejecting any suggestion that strategic nuclear weapons might one day be necessary. He was also concerned by the likely costs.

With his government's position more or less established, Menzies authorised Air Marshal Scherger to discuss the matter as fully as possible with British Defence officials during a visit the CAS had scheduled to the United Kingdom in September 1958. Scherger hoped in the first instance to acquire tactical atomic weapons for his service's Canberras and Sabres, but in the longer term his real interest was in 'larger' weapons and V-Bombers. His visit to the United Kingdom showed just how little the RAAF knew about nuclear weapons. Scherger discovered that the only 'tactical' weapon currently in the RAF inventory weighed 1590 kilograms and was four metres long, dimensions which precluded its carriage on the Sabre. Further, the bomb's nominal yield was fifteen to twenty kilotons, placing it in the same category as those dropped on Hiroshima and Nagasaki, which were scarcely 'tactical'. And finally, Australia would have to pay £500,000 for each weapon, an amount which would realise Menzies' fears of excessive cost. Scherger also spoke to USAF Chief of Staff General Thomas White and was told the Americans had a wide range of tactical bombs, varying from about five to fifty kilotons, and that a one kiloton weapon was about to be tested.[16] General White privately informed Scherger he would have no objections if a selection of those bombs were stored in Australia under American control for use by the RAAF with American agreement, but as White's position was strictly personal and contrary to official United States policy it carried no authority.

Western attitudes towards the use of nuclear weapons in Southeast Asia began to shift in 1960. Whereas exploiting superior technology and firepower had previously seemed the only answer to the overwhelming numerical superiority of the communists in general and the Chinese in particular, there were now different considerations and options. In the first instance, analysts believed the Soviet Union had probably agreed to provide China with tactical nuclear weapons in some circumstances, a possibility which would give the West pause for thought before any first use of the bomb.[17] Additionally, with the help of American military aid programs, allegedly 'well trained and well equipped ground forces of native troops' which had been raised in some allied Asian countries were believed to be offsetting to some extent the manpower advantage formerly held by the communists, thus reducing the West's need 'to turn at once in desperation to nuclear weapons'. Summarising the effect of those changes on the military balance, the Australian Embassy in Washington informed Canberra that there had undoubtedly been a

shift in American thinking towards placing greater emphasis on conventional forces and capabilities, and that considerable doubt now existed over the use of tactical nuclear weapons.

Australia's position on the subject was reviewed by the Chiefs of Staff Committee in June 1961, at a meeting attended by Vice-Admiral Sir Henry Burrell, Lieutenant General R.G. Pollard and Air Marshal Hancock. Current intelligence assessments dismissed the possibility of a nuclear attack against Australia except in a global war, and even in that unlikely event Australia would not be an early or primary target. Because of that assessment and the nuclear umbrella under which Australia sheltered through the Anzus alliance, the chiefs agreed there was no immediate requirement for an independent nuclear capability. Nevertheless, they did not want to eliminate the option. Two circumstances which might change the present favourable outlook were identified. First, in time, tactical nuclear weapons might become standard equipment, in which case Australia 'would be obliged to acquire such weapons' to protect its own forces and to make an effective military contribution under collective security arrangements. Second, should Australia have to face Indonesian aggression alone, an independent nuclear capability for the RAAF might be essential to national survival.[18] Throughout the 1960s those two conditions were periodically reaffirmed.[19]

With the nuclear option effectively gone, the RAAF's Canberra force had to adopt more realistic tactics than dropping unguided, high-explosive bombs from great heights. Squadron Leader David Evans was among those who took the lead in that process. Arriving at No. 82 Wing to fly Canberras operationally for the first time in January 1960, Evans was dismayed by the 'futile' exercise of high and medium-altitude bombing.[20] By mid-1961 the wing's operational accent had been shifted from the 'strategic' to the tactical. Low-level bombing between three hundred and nine hundred metres, sometimes directed by an airborne forward air controller, had been introduced, as had tactics suited more to modern army co-operation tasks than re-fighting World War II. Across No. 82 Wing an average bombing error of fifty metres was set as the minimum standard, later reduced to twenty metres for No. 2 Squadron in Vietnam. The war in Vietnam in fact validated the wing's post-1960 operations, as it was precisely the training in low-level bombing and close support operations on which No. 2 Squadron's highly professional achievements in that conflict rested.

For all that, a somewhat mechanistic attitude towards operational training persisted at Amberley throughout the Canberra years. Characterised by the '25-pound practice bomb syndrome', training revolved around following one of half a dozen or so standard routes from Amberley to the weapons range at Evans Head, flying eight race-track patterns to drop eight 25-pound practice bombs individually, almost invariably on the same target and using the same attack heading, and then going home. Simply completing the routine, week in and week out, seemed to be the object of the exercise; little, if any, connection was established between flying and bombing, and war-fighting.[21]

When Air Marshal Scherger lost the nuclear option he had been seeking he also lost any chance of re-equipping his service with V-Bombers, a project he told Sir Dermot Boyle in 1959 the RAAF had dropped 'with the greatest reluctance'.[22] But because a replacement for the Canberra was still needed, Scherger told Boyle that Britain's developmental TSR-2 bomber 'would be attractive' if it were 'many years' closer to operational production. That was the start of an episode which was to cause some friction between Australia and the United Kingdom.

Replacing the Canberra had been the RAAF's top priority for a number of years. 'Rearming the strike force', the air staff stated at the end of the 1950s, 'is of *paramount importance* ... in the RAAF's order of operational priorities for re-equipment, it is accorded *absolute precedence*'.[23] Air Force doctrine was categorical. Military strength was the essence of deterrence and a potent air striking force was the primary expression of military strength. A bomber force alone could give Australia the capacity to 'destroy the enemy's offensive power', to reduce his will to fight. In a reflection of classic air power doctrine, the need for a new strike/reconnaissance aircraft was expressed in terms of taking the initiative in the air by destroying the enemy's air force on the ground, and then turning the RAAF's offensive air power against other targets, both strategically and in direct support of the Army and Navy. The problem was finding the right aircraft for the job.

Australian government and Air Force leaders were keenly interested in the TSR-2. The growing commitment in Southeast Asia and a public perception that Australia's defence forces were underequipped had enabled opposition leader Arthur Calwell to place the Menzies government under pressure by mischievously claiming in January 1963 that the Indonesian Air Force could destroy any Australian city. An early announcement on a new bomber for the RAAF was politically desirable. Scherger wanted a Mach 2.0 aircraft with a 2400 kilometre radius of action to add 'some strength' to Australia's diplomatic exchanges with the Indonesians, and in his opinion the TSR-2 would meet the requirement almost perfectly. In March 1963 Scherger—by this time an air chief marshal and chairman of the Chiefs of Staff Committee—told the RAF liaison officer in Australia, Group Captain F.B. Sutton, that he (Scherger) had been 'twitted' by Defence Minister Townley for not recommending the purchase of the TSR-2 'before now'. Townley's interest in the aircraft may have been more than strategic; following a visit to the United Kingdom, he informed close associates that Queen Elizabeth had raised with him the possibility of Australia acquiring the TSR-2.

The problem, however, was that despite British assurances that an in-service date of 1970 was feasible, Scherger believed 1973 was more likely and he doubted whether the Canberra could be kept on line that long. In Whitehall, Scherger's estimate of 1973 was attacked as 'ridiculous' by senior RAF officers who, under pressure from their own politicians to cancel the TSR-2 because of its cost, were desperate for an Australian order to shore up their position.[24] But in Canberra, British High Commissioner W. Oliver privately agreed with Scherger, criticising the RAF's claims for the TSR-2 as 'sales talk'. Oliver felt compelled to urge the Commonwealth Relations Office in London to give Australia 'a really honest assessment of the future

of the TSR-2' as in his experience the information which was being provided was persistently misleading.[25]

Scherger visited the United Kingdom in April 1963 and was told by the RAF's vice chief of staff, Air Marshal Sir Wallace Kyle, that if necessary Australia would receive the TSR-2 before the RAF's full requirement had been met, an arrangement which would see twelve aircraft in RAAF service by 1970 and a full order of twenty-four by 1972. Scherger, however, left London sceptical that the British chiefs of staff fully supported the TSR-2 project; in particular, he believed Chief of the Defence Forces Lord Louis Mountbatten opposed the aircraft because of the drain it would make on the total defence budget.[26]

ACM Sir Frederick Scherger, photographed as an air commodore in the late 1940s. Scherger was CAS from March 1957 to May 1961, and chairman of the Chiefs of Staff Committee from May 1961 to May 1966. RAAF

From then on the RAAF's interest in the TSR-2 diminished, even though the aircraft officially remained in contention as a Canberra replacement for another six or so months. Scherger's management of the affair was impressive. He used private sources in London to check the RAF's advice on delivery dates and costs, both of which were frequently illusory; while his assessment of the opposition to the TSR-2 within sections of the British defence establishment was astute. When the British Government eventually cancelled the TSR-2 because it was too expensive, some elements in the RAF directed their anger against the RAAF, a response which was not only ill founded but which more properly should have been directed against their own dishonest sales campaign.

None of that helped the Menzies government rebuff Arthur Calwell's criticism, and with an election approaching action was needed. In June Menzies despatched an overseas mission headed by the CAS, Air Marshal Sir Valston Hancock, to conduct on-the-spot evaluations of possible replacements for the Canberra. Hancock's brief was to look for an aircraft which could attack targets by day and night, at considerable distances and in all weather; and which also could conduct reconnaissance tasks using photographic, radar and electronic sensors. Although the new bomber's primary armament would be conventional weapons, the RAAF and the government kept their options open by stipulating a need for 'the carriage and delivery of special [that is, nuclear] stores'.[27] Among the specific targets mentioned were Jakarta, which could be

reached from Learmonth in northwest Australia; and Kunming in southern China, using Saigon as a staging base.

With the benefit of hindsight, Hancock's brief might also have included the 'immutable laws' of aircraft acquisition defined by Wing Commander J.A. Rowland during an address to the Royal Aeronautical Society in Canberra. There were, Rowland suggested, four such laws: whatever you do, it will cost more, and the later you do it the more it will cost; there are never enough wires, and if there are they are in the wrong places; whatever you choose there's now a better one available; and aircraft always get heavier.[28] Rowland's audience enjoyed the light-hearted observation because they knew it contained more than a grain of truth, as the RAAF was about to learn once again.

Five aircraft were examined by Hancock and his team: the Mirage IV, the TSR-2, the F-4C Phantom, the RA-5C Vigilante and the TFX, an experimental American aircraft later renamed the F-111. Hancock concluded that of all the aircraft evaluated the TFX was most likely to satisfy the RAAF's needs, noting in the process that the American bomber would be 'definitely superior' to the TSR-2 in range, short take-off and landing performance, weapon carriage, reconnaissance capability and cost.[29] However, because he wanted an aircraft which could replace the Canberra immediately, Hancock felt compelled to reject the TFX. His compromise choice then became the Vigilante. Hancock's recommendation that the RAAF acquire thirty-six Vigilantes as the 'quickest and most effective means of providing [Australia] with a strike/reconnaissance force' was approved by Minister for Air David Fairbairn on 24 August 1963.[30]

There was considerable dismay within some sections of the RAAF over Hancock's choice. The head of operational requirements in the Department of Air, Air Commodore Brian Eaton, summarised those concerns: the Vigilante would need extensive modification for RAAF operations; it had been designed primarily for nuclear weapons; it was almost obsolescent; and its high tyre pressure meant runways would have to be strengthened.[31] According to some sources Hancock had rushed the process. 'It [was] known', one confidential document reported, that Air Marshal Hancock 'strongly desire[d] to leave the bomber choice as his mark on the future RAAF', just as Air Chief Marshal Scherger had left the Mirage III.[32] There was probably some truth in that but Hancock was in a difficult position. He had been handed a rare opportunity to re-equip the RAAF with a strategic bomber, the aircraft regarded by airmen as the fundamental element of air power. But with the two most promising platforms from the RAAF's perspective—the F-111 and the TSR-2—still on the drawing boards, the rest of the field was not all that good. As the performance of the Mirage IV and the Phantom simply could not be made to comply with the RAAF's air staff requirements, the Vigilante was left as Hancock's choice almost by default. The RA-5C could be made to fit the bill but it was not an especially good strike aircraft as its brief career in that role with the United States Navy indicated. However, it met the major RAAF specifications and, in accordance with Hancock's preference, was 'immediately' available.

Air Commodore Eaton was not the only person disappointed by the CAS's selection. Within a fortnight the British High Commission in Canberra had been given details of Hancock's report by a Mr A.T. Griffith, the assistant secretary (defence) from the Department of Prime Minister and Cabinet, even though at that stage the top secret document had been passed only to Australian ministers in confidence.[33] According to British officials, Griffith distrusted Hancock's objectivity and disbelieved American claims for the TFX. During a meeting on 13 September between Griffith and Mr S.W.F. Martin from the British High Commission, presumably in the former's office, Griffith was reading the Hancock report, which Martin accurately described in a message to London as being 'about an inch thick, in sections numbered A to N, and [which contained] a mass of technical detail'.[34] Griffith told Martin he would be preparing a brief for Prime Minister Menzies on the subject which would stress the advantages of the TSR-2. He also told Martin that Scherger favoured the TFX. In Griffith's opinion it would be 'lamentable' if the RAAF's connection with the RAF, which had already been weakened through the acquisition of the Mirage fighter, were effectively cut by ordering an American bomber. Subsequently, the British High Commission telegrammed London that '[We] can now confirm that advice given to prime minister [Menzies] by his own staff is that TSR-2 should be [the] aircraft chosen'. Griffith was described as 'a good friend of ours ... [he] is most helpful to us in many ways'.

Unfortunately for the British cause Griffith's impropriety had no bearing on the Australian decision. Politics had by now well and truly taken over the search for a Canberra replacement. In what was to be an extraordinary performance, Defence Minister Athol Townley assumed personal control of the bomber program. Air Marshal Hancock and the RAAF were excluded from all negotiations and discussions; having submitted his report in August the CAS was not once consulted by Townley until the decision regarding which aircraft to buy had been made and publicly announced eight weeks later.[35] On 24 October, Menzies informed Parliament of his government's intention to acquire two squadrons of TFX aircraft, now known as the F-111A. Deliveries were expected to begin in 1967 under terms of sale which would require the Australian Government to pay 'approximately £56 million'. To describe as 'odd' the circumstances surrounding the acquisition of what was to become the most important aircraft the RAAF has ever operated would be an understatement.

Precisely why Townley chose the F-111 and excluded the RAAF from deliberations after the Hancock mission had presented its report is not entirely clear, but some informed speculation can be made. Three main factors emerge: the impending federal election, Townley's personality, and the relative urgency with which the key players believed the RAAF's new bombers should be brought into service.

As noted above, opposition leader Arthur Calwell had been making easy political capital through his attacks on the RAAF's obsolescent bomber force and Indonesia's alleged capacity to destroy Australian cities. When on 15 October Menzies announced

an election for 30 November, Calwell promised that, if elected, his government would buy a new 'deterrent' bomber for the RAAF immediately on taking office.[36] Because defence was an issue in the election it was essential for Menzies to match or, better still, surpass Calwell's promise. Only a few weeks were available for the government to act. With political survival possibly at stake, Defence Minister Townley took over.

The situation was made to order for Townley. Ambitious, hyperactive, capable and intelligent, the extroverted former Tasmanian pharmacist delighted in holding centre-stage. A good listener who quickly cut through to the essentials of a brief, he was a man of action who liked to move decisively once he had reached a decision. Four years as minister for air and five in the Defence portfolio had given him a not unwarranted confidence in his knowledge and judgment. That confidence was strengthened by his status as the prime minister's favourite, although that high regard was not shared by some of his colleagues, including one of his successors as minister for air, Peter Howson, who described Townley as a political sycophant.[37] Whatever the truth may be there, it is indisputable that Townley managed the negotiations for the new bomber with flair, confidence and energy, if not always with a full mastery of the details.

Minister for air from July 1954 to October 1956, and for defence from December 1958 to December 1963, Athol Townley is pictured here with his Air Board in July 1955. L–R: AVM F.R.W. Scherger (AMP), AVM J.E. Hewitt (AMSE), AM J.P.J. McCauley (CAS), Townley, F.J. Mulrooney (secretary to the Air Board), E.W. Hicks (secretary Depair), AVM E.C. Wackett (AMTS) and GpCapt R.M. Rechner representing the CAF. RAAF

The final factor in the decision-making process—the timing of any new bomber's arrival in Australia, as opposed to announcing an order—was the most intriguing. Air Marshal Hancock's position has been explained: as the professional head of the RAAF, it was for him a once-in-twenty-years opportunity to rearm his service with its single most important force element. Indonesia's hostility and alleged capabilities could

reasonably be used to justify the quickest possible delivery. For all the Australian Government's posturing on the matter, however, it seems that senior ministers did not share Hancock's sense of urgency. Townley certainly did not, nor did his senior military adviser and close associate, Chairman of the Chiefs of Staff Committee Air Chief Marshal Scherger, and theirs were the critical opinions.

In April 1961 the immensely influential commander of the Indonesian Army, General Abdul Haris Nasution, had visited Australia. Even though there was considerable tension at the time between the two countries over the future of West Irian, Nasution was delighted by the warmth and courtesy he was shown, which included a flypast of thirty-nine Canberras and Sabres during an inspection of RAAF Base Richmond. On returning home Nasution wrote to Townley, who had been his principal host and, while acknowledging the problems between the two countries, told the defence minister that 'you in Australia are among my best friends'.[38] A year later Townley made a return visit, and in a private letter to his wife said that he had never received such courtesy, affection and friendship from people anywhere.[39] 'More than ever', he wrote, 'am I persuaded that [Indonesia] can be our place of destiny'. At about the time Air Marshal Hancock was overseas examining new bombers, an Indonesian military delegation visited Australia and was hosted in Canberra by Townley and Scherger. A late and convivial night further convinced the minister and the chairman of the Chiefs of Staff Committee that the Indonesians 'were not really aggressive [and] were manageable on the military level'.[40]

The end result was that Townley did not share Hancock's urgency to get a bomber on the ground in Australia. While publicly the government might have to express its concern with Indonesia's belligerence (which militarily rarely exceeded the 'nuisance' level), privately the key ministers were much more sanguine. In short, as long as an order for new bombers could be placed in time to achieve maximum political effect, the government believed it could 'hasten slowly'. The luxury of time placed an entirely different perspective on the findings of the Hancock report. No longer was a compromise choice necessary; rather, the aircraft best suited to Australia's long-term needs could be selected, an outcome much more to Townley's preference. Like Air Commodore Eaton and many others, Townley was unimpressed by the prospect of equipping the RAAF with second best.[41] Hancock's near throw-away line that all things being equal the TFX was the aircraft most likely to satisfy the RAAF's needs now assumed significant proportions, as did Scherger's support for the American aircraft. The attraction of the developmental swing-wing bomber became even stronger when, in an attempt to bolster the TFX program against congressional opposition in the United States, America's Secretary of Defence Robert S. McNamara made the Australian Government an offer which seemed exceptionally good.

The F-111 was conceived by McNamara as an all-purpose strike/fighter which would serve both the United States Air Force and Navy, and through its versatility and commonality save an enormous amount of money. The project was controversial from the start. McNamara reportedly rejected military advice that the aircraft should be built by the Boeing company, instead awarding the contract to General Dynamics.[42]

McNamara made his decision without subjecting the proposals from both companies to the scrutiny of the systems analysts in the Pentagon on whom he claimed to depend so much, instead reportedly relying on the same kind of intuitive 'rough judgment' he had used as a successful businessman. Some American critics suggested McNamara's 'rough judgment' was influenced more by General Dynamics' location in a state with three times the electoral strength of Boeing's than by any innate business sense. Neither the USAF nor the USN displayed any great enthusiasm for an aircraft which seemed likely to be a compromise in many respects. An external order for his troubled project was as important to McNamara as one for the TSR-2 had been for the RAF.

Townley flew to Washington in October 1963 to meet McNamara amid rumours he was going to order the almost unknown and revolutionary American bomber, and having told government whip Peter Howson that he was 'off to do a deal'.[43] By this stage the United Kingdom was offering to send teams to Australia to conduct further briefings on the TSR-2, and to equip the RAAF with V-Bombers as an interim strike aircraft, immediately and at a nominal charge, pending delivery of the TSR-2. On 18 October Townley sent a cablegram from Washington to British Minister for Defence Peter Thorneycroft declining an invitation to visit London for TSR-2 briefings on his way back to Australia. Although a decision on the RAAF's new bomber had not been announced, Townley's message was clear.

Formal agreement for Australia to buy the F-111A was reached between Townley and McNamara in Washington on 19 October. Under the Memorandum of Understanding, the United States agreed to sell Australia eighteen strike and six reconnaissance aircraft, plus attrition replacements as necessary.[44] The first delivery was scheduled for July 1968, with all twenty-four to be in Australia by November. Australia was to pay only the average estimated unit cost of development and production based on the total number of aircraft built, which was expected to reach about 1500. The cost of all aircraft, reconnaissance equipment, ground support equipment, training and a year's spares was estimated at $US125 million; by comparison the TSR-2 had been priced at about $US220,000. McNamara personally guaranteed that the maximum amount Australia would have to pay in any one year would not exceed $US20 million.[45]

McNamara's eagerness to secure external vindication of his commitment to the F-111 did not end there. Appreciating the need for the Menzies government to appease Australian voters, McNamara offered to lend the RAAF twenty-four B-47 bombers as an interim strike force. Aircraft 'in the best condition' would be selected and no charge would be made for the fleet, leaving Australia liable only for any out-of-pocket costs the United States might accrue, such as spares, ground handling equipment and training. A maximum sum of about $US24.8 million was indicated, and training on the B-47 could start no later than June 1964. A binding decision on the terms of the memorandum was required from the Australian Government within thirty days.

Menzies did not need that long to make a decision. On receiving a telex from Townley detailing McNamara's offer, the prime minister convened a Cabinet meeting

for 8.00 p.m. on 23 October and gave the secretary of the Department of Air, A.B. McFarlane, three hours to prepare a double-spaced, two-page submission recommending the F-111. Neither Minister for Air David Fairbairn nor Air Marshal Hancock was involved in preparing that submission.[46] Immediately after the Cabinet meeting Menzies telexed Townley, advising that 'the boys' had decided to accept the offer for the two squadrons of F-111As and, if necessary, the loan of some B-47s.[47] Having confirmed the deal, Menzies then congratulated Townley in the most fulsome terms, describing his defence minister's achievement as a 'triumph in the full national sense' as well as for Townley personally. The extreme political importance of Townley's deal was evident in the remainder of Menzies' telex, as was Cabinet's almost total ignorance of the F-111. Menzies asked Townley to send him within a few hours the outline of a public announcement which he (Menzies) could make; in particular, the prime minister requested advice on the extent to which he could release details of the F-111A's performance and the financial arrangements. Menzies concluded by asking Townley to try to get back to Australia before Parliament was dissolved as Cabinet felt that 'much [could] be made' of [his] remarkable achievement'.

The government's decision to buy the F-111 appeared in most daily newspapers the following morning (24 October) and was formally confirmed in Parliament by the prime minister that evening. The belief that an announcement would serve the government's political purposes almost as well as the physical presence in Australia of new bombers proved correct, with the favourable public response to Menzies' speech perhaps even heightened by the mystique of the little-known American aircraft with its 'swing wings'. But for an astute politician like Townley, there was still some mileage to be won by putting on a show, in the form of the B-47s which McNamara had offered. The B-47 was not a great option for the RAAF, having been considered and rejected by the Murdoch mission almost a decade before. It was obsolescent, difficult to operate and, if armed with conventional weapons, a dubious proposition. As long as Australia continued to have access to Malaysian bases, a heavier scale of attack could be mounted against Indonesian targets with the existing Canberra fleet.[48] The RAAF was never seriously interested in taking the aircraft on an interim basis. However, as part of the F-111 deal, the USAF sent three B-47s on a barnstorming tour of Australia in a highly successful public relations exercise, only a week before the election which Menzies duly won. Less than a month later Athol Townley died following a sudden illness.

Not everyone was as euphoric with the outcome of the F-111 deal as Menzies and his Cabinet. In the course of a private conversation, the Australian air attaché in Washington, Air Vice-Marshal I.D. McLachlan, told his British counterpart that he really did not know when or if the RAAF would ever get the F-111, or what the real cost would be.[49] Even for such a shrewd and sardonic man as McLachlan, that was to prove a painfully prescient observation. Australia would eventually get its F-111s, but they would arrive six years late and at a price far in excess of the amount so carelessly accepted by Townley.

The financial arrangements were uncertain from the start. A rumour circulating in the Australian Parliament which was widely believed had it that McNamara and Townley 'had no idea' how much the F-111 would cost, so for expedience they had simply quoted an entirely speculative estimate recently published in an American journal.[50] The requirement for Secretary of the Department of Air A.B. McFarlane to go to the United States a month later to try to 'clean up the mess' lent credence to the rumour, or at least its basic premise.[51]

Cabinet's original approval in October 1963 covered a sum 'of the general order of magnitude' of $US125 million for twenty-four aircraft, one year's spares (including engines), handling equipment, training aids, and crew training in the United States.[52] Australia was to make an initial payment of $US20 million by 31 December, followed by half-yearly instalments of the same amount until full payment was completed. Placing a loose interpretation on the phrase 'general order of magnitude', Townley claimed in a press release on 10 November that the deal would cost only $A112 million. A fortnight later his statement was contradicted by United States Deputy Secretary of Defence Roswell Gilpatric, who told an American senate subcommittee that the Australian agreement had no upper price ceiling.[53] Confusion continued when in June 1965 the 'redoubtable' Robert McNamara (as one of Townley's successors as defence minister, Allen Fairhall, described the American) personally offered a 'fixed price' of $US5.95 million per aircraft, plus the cost of any special modifications the RAAF wanted. Those modifications—wing tips extended by 2.14 metres, heavier landing gear, and the conversion of six aircraft for the reconnaissance role—were estimated at $US10.5 million, making the total fly-away cost about $US153.3 million.

If the program had progressed as hoped perhaps McNamara's ceiling might have held. But that ceiling could not accommodate the delays which plagued testing as the F-111 encountered a series of disturbing aerodynamic and structural problems. The sheer length of the acquisition program drove up costs associated with engineering changes, unanticipated storage and extra training. Australia's bill rose with alarming frequency, to $US205.3 by March 1966, $US223.2 by May 1967, $US300 million by November 1970 and $US344 million by the end of 1971.[54] Following the final rise, Australian Secretary of Defence Sir Arthur Tange felt obliged to warn Defence Minister D.E. Fairbairn in a private file note of the government's 'vulnerability' through its inability to tell Parliament what the F-111s would cost.[55]

The technical difficulties responsible for the price escalation were both demanding and highly publicised. More than that, they taxed the RAAF's capabilities and character severely, and on occasions threatened to terminate the project. The problems stemmed basically from Townley's peremptory decision to order an aircraft which was still on the drawing board. Once test flying started, McNamara's insistence that the F-111 could be designed to operate successfully not only as a strategic and tactical bomber but also as an air superiority fighter, just because he said it could, was

exposed for the vanity it was. In addition to falling well below the performance needed from a specialist air-to-air fighter, the aircraft was not meeting the RAAF's specifications. During discussions between American Defence Secretary Cyrus Vance and his Australian counterpart Sir Edwin Hicks in April 1966, Vance revealed that flight trials had shown the F-111A's range was twenty-three per cent less than originally claimed.[56] Since the RAAF was buying the aircraft as a long-range bomber that was a potentially disastrous deficiency. Three options were offered. Australia could accept the F-111A as it was and worry about how it would attack distant targets later; switch to the Navy's F-111B, which had longer wing tips and a stronger landing gear than the A-model, and therefore could operate at greater weights and had a better range; or modify the F-111A with the B-model wing tips and landing gear. The last option was chosen and, as the changes made the Australian aircraft unique, it was designated the F-111C.

Those most substantial modifications caused furrowed brows over the deal the RAAF found itself in, but they paled into insignificance compared to the safety and structural problems which began to appear when the F-111 entered USAF service.

The first RAAF F-111 crews at Cannon Air Force Base, New Mexico, October 1967. Back row (extreme left) FltLt I.S. Skipworth, (5th from left) FltLt N.Mc. Pollock, (far right) FltLt R.A. Bruce. Front row (centre) FltLt I.M. Westmore, (far right) SqnLdr B.A. Johnson. I.M. WESTMORE

The official roll-out of the F-111 had taken place on 15 October 1964, followed by the first flight on 21 December from Fort Worth, Texas. Group Captain C.H. Spurgeon, the RAAF's F-111 project manager in Washington, became the first foreigner to pilot the aircraft when he flew the fifth developmental model F-111A under supervision on 8 October 1965. With the performance problems identified during the early flight trials apparently in hand, the USAF's Tactical Air Command started operational crew training in July 1967, with the objective of deploying F-111s to the war in Vietnam as soon as possible. Two RAAF instructor crews, each consisting of one pilot and one navigator, joined the USAF program that same month; one of the pilots, the dynamic,

aggressive and uncompromisingly professional Flight Lieutenant Ian Westmore, was to play perhaps the critical role in the RAAF's operational employment of the F-111 over the next twenty years. Following a number of ground courses at various units Westmore and his colleagues were posted to Nellis Air Force Base to complete their flying conversion, after which they became line instructors on the F-111, training USAF crews. A fifth RAAF officer sent over at the same time became a simulator specialist. At the beginning of 1968 RAAF air and ground crews from No. 82 Wing at Amberley arrived in the United States for their conversion courses, with the intention of ferrying the first F-111Cs to Australia in July.

But while that training was in progress adverse publicity arising from customer dissatisfaction and a series of USAF F-111 accidents forced a reappraisal of the program. By June General Dynamics had delivered seventy aircraft, sixty-five F-111As to the USAF and five F-111Bs to the USN. In January, however, the British Government had cancelled an order for fifty F-111Ks for the RAF, and now the USN decided it did not want any more. The withdrawal of two potential operators increased the pressure on the project and the two remaining customers, the USAF and the RAAF. That pressure was intensified by the aircraft's allegedly poor safety record. There had been seven major accidents, while another two aircraft had been lost on operations in Southeast Asia. After the sixth accident at Nellis Air Force Base on 8 May 1968, all F-111s had been temporarily grounded. So serious was the concern in Canberra that recently appointed Minister for Air Gordon Freeth directed the RAAF to send a team to the United States to investigate the status of the program, instructing Air Member for Technical Services Air Vice-Marshal Ernie Hey to head the team personally.[57] In the meantime, amazing scenes were witnessed in the Department of Air as senior public servants, presumably acting under ministerial orders, forcibly impounded files which were critical of the F-111 and ordered RAAF officers to pulp others.

First F-111 flight for FltLt D.N. Rogers, Nellis Air Force Base, July 1968. D.N. ROGERS

Hey had submitted an interim report by the middle of June and a final report by the first week in July.[58] Visits had been made to all major F-111 assembly plants and discussions held with senior officials, including USAF Chief of Staff General John D. McConnell. Several problems had been identified, the most critical concerning the horizontal stabiliser, which had a tendency to malfunction and cause the aircraft to

pitch up violently, leading to loss of control. None of the accidents was attributed to structural failure of the wing carry-through box, the component which supported the aircraft's radical wing-sweep capability. The actuating systems for the horizontal stabiliser and the rudder had been modified; additionally, the USAF had introduced changes to operational techniques associated with weapons delivery and the terrain-following radar. Air Vice-Marshal Hey informed the minister and the Air Board that, on the best available information, all RAAF F-111C aircraft would be airworthy when they were delivered. To permit installation of the latest modifications, the planned hand-over of the first aircraft was slipped from July to September, with all twenty-four aircraft to be delivered by December.

The strong-minded Air Vice-Marshal Ernie Hey stands out from the crowd not only because of his RAAF-blue uniform but also for his individual pose. Pictured as an air commodore, at an RAF senior officers' guided weapons familiarisation course, UK, 1958. E. HEY

But on 27 August, two weeks before the hand-over ceremony, a wing carry-through box failed prematurely and 'catastrophically' during routine fatigue testing. Information passed to the Department of Air in Canberra advised that the fracture had occurred far earlier in the tests than expected and at a low 'g' loading, factors which indicated the F-111 would have a very short airframe life and, in the worst case, might not even be safe.[59] Further testing would be critical. In the meantime, because the wing carry-through boxes fitted to operational aircraft were below the fatigue life of the failed component, the fleet continued to fly.

Given the F-111's troubled history, the hand-over ceremony on 4 September had assumed enormous significance for the Australian Government and the RAAF. Defence Minister Sir Allen Fairhall flew to Fort Worth to preside personally over the

event. A large crowd of dignitaries attended, including the American secretary of defence, the USAF chief of staff, the American ambassador to Australia, the president of General Dynamics, and the RAAF's CAS, Sir Alister Murdoch. Also present were the RAAF F-111 aircrews, flown in for the day from their training at Nellis Air Force Base. Fairhall bemused the Americans during his speech by referring to the aircraft as the 'F-one-double-one', contrary to the common 'F-one-eleven'; in response, USAF General John Ryan commented that he had heard the aircraft called a lot of names—the TFX, the F-hundred-eleven, the F-one-eleven—'and now', he said, 'the F-one-double-one'. 'Whatever you call it' Ryan concluded, 'it's a damn fine aeroplane.' The day was a great success, the press reports favourable, and Australia apparently at last had its strategic bomber. The first aircraft, A8-126, was flown to Edwards Air Force Base for RAAF acceptance inspection and trials. Back in Canberra the Cabinet must have let out a collective sigh of relief.

They should have held their breath. Eight days after the acceptance ceremony at Forth Worth a United States Navy F-111B crashed, followed twelve days later by a USAF F-111A. While the second accident seemed attributable to pilot error, early investigations suggested the F-111B had suffered some kind of 'disconnection or break in the flying controls', a conclusion which might implicate the wing carry-through box. The Department of Air instructed its F-111 project manager in Washington that no Australian aircraft was to fly. Once again the F-111 was a major embarrassment for the government and the RAAF. In Canberra the Labor opposition threatened to call Cabinet members before a senate committee to inquire into the whole affair and demanded the tabling in Parliament of all documents associated with the project.[60]

The public relations disaster was the more immediate and noisy problem, but over the long term the real worry was whether the aircraft would ever enter operational service. RAAF airworthiness engineers became understandably nervous when the Americans suggested Australia should accept the aircraft as it was, but with stringent flight limitations imposed and a short fatigue life, on the understanding the fleet would be returned to General Dynamics for major modifications once a fix had been developed. Wise counsel from Air Vice-Marshal Hey pointed the way ahead in difficult times. Hey recommended that no precipitate action should be taken until more technical information was available in a month or so. No more aircraft should be accepted, nor should any air and ground crews be sent home. After five years waiting for the F-111 a few more weeks would not matter. Most importantly, though, Hey told the Air Board that because there were conflicting opinions in the United States over the problem and the fix, it was essential for the RAAF to assess all available evidence and advice independently, and to reach its own conclusions.

Accepting that responsibility, the board gave the problem its full attention. During the following two months no less than fourteen separate Air Board submissions were concerned with the wing carry-through box, an extraordinarily high number; while the RAAF's most prominent test pilot and engineer, Air Commodore D.R. Cuming, was sent to the United States to monitor the project, acting on behalf of and reporting directly to the Air Board. Throughout his time in the United States Cuming was

assisted by specialists from Australia's Aeronautical Research Laboratories and the Department of Supply, most notably ARL's internationally respected aircraft fatigue specialist, Dr Alf Payne.

The situation was nothing if not sensitive. Under the terms of the technical arrangement concluded four years previously, Australia had contracted to accept the F-111 in accordance with USAF engineering decisions.[61] Yet Air Commodore Cuming quickly learnt that there were major disagreements between the different American interests over what to do, and those disagreements were sharpened by political pressure to make the aeroplane work. Back in Australia, some RAAF engineers favoured rejecting the aircraft entirely until the airworthiness of the wing carry-through box could be assured for the F-111's projected life, not part of it. As Air Vice-Marshal Hey noted, 'the whole matter is heading towards a very controversial state'. While the air staff on occasions seemed to procrastinate under the pressure of that controversy, Hey held the project together, working shrewdly and assiduously, taking hard decisions and making difficult judgments.

Controversy seemed to have been avoided when in early December RAAF staff in the United States were able to notify the Air Board that the USAF and General Dynamics were confident they had a solution to the problem. The proposed fix was, however, still to be validated by another series of tests on the wing carry-through box. Assuming those tests were successful, the first six F-111Cs could be ferried to Australia in June 1969. The premature failure of another wing carry-through box under static testing at Forth Worth on 12 February killed that optimism. Emphasising the seriousness of the situation, Air Vice-Marshal Hey referred to the 'marginal integrity of the box' and recommended that it needed to be 'completely redesigned' before the RAAF could accept its aircraft.[62] Apparently General Dynamics had reached the same conclusion some months previously without informing the RAAF, as two weeks later Hey reported he had just found out that design work on a new box had been underway since October.

With the program's future now more uncertain than at any time, RAAF air and ground crews were brought back to Amberley, where the F-111 simulator was used to maintain some level of proficiency. Not only operational capabilities were suffering. By 1970 about five hundred people were waiting at Amberley for the F-111, and until a final decision could be made one way or the other on the aircraft's future, problems arose with unproductive employment, rank imbalance and posting inflexibility.[63]

Still more testing of a reworked carry-through box started at Forth Worth. The objective this time was to subject the box to the equivalent of 16,000 flying hours of fatigue cycles, a figure four times the planned in-service life of 4000 hours. Assuming the reworked box withstood the testing, the RAAF seemed ready to accept its aircraft and fly them to eighty per cent of the flight manoeuvre envelope for three years, after which entirely new boxes would probably be fitted. Those hopes went the way of all others when the reworked box failed four cycles short of the 8000 hour mark on 23 June 1969. While the USAF made the best of the situation with a positive press release which stated, accurately enough, that the F-111 could now be considered safe

for twice its expected in-service life, the results were not acceptable to the RAAF, whose twenty-four aircraft were going to be the heart of its strike force for at least twenty years, and whose engineers accordingly applied extremely conservative factors to their fatigue calculations. Those engineers were also aware that additional fatigue stresses would be placed on the F-111C by its extended wing tips, something which was not factored into the tests at Fort Worth. Rejecting the USAF's optimism, the Air Board privately told the latest minister for air, Dudley Erwin, that based on the available information they were not confident the wing carry-through box would achieve a safe fatigue life of three years.[64]

The possibility of abandoning the F-111 was seriously considered as the government sent yet another mission to the United States, this time headed by the secretary of the Department of Defence, Sir Henry Bland, who was accompanied by Air Marshal Murdoch and Air Vice-Marshal Hey. Bland and his team were seeking an unequivocal assurance that the F-111C could be fitted with a wing carry-through box which would provide a safe life of 9250 flying hours, sufficient at predicted rates of effort for the RAAF's fleet to last fifteen years. As things stood, the boxes were achieving a 'life' for the F-111A under test conditions of 6800 hours.[65] Bland was not given the absolute assurance the government wanted, but in a heartening turn of events he was able to express considerable confidence that the problem would reach a satisfactory resolution.[66]

Armed with that information, Prime Minister J.G. Gorton (a World War II fighter pilot) announced on 5 December that the RAAF had asked the USAF to re-activate Australia's twenty-four F-111Cs at Fort Worth so that delivery could proceed as soon as possible. Two weeks later the failure of a wing pivot fitting caused the eighteenth crash since the aircraft's introduction, killing both USAF pilots. RAAF engineers in the United States told Canberra that this was a 'new major problem not associated with our previous investigations into the wing carry-through box and other major problems'.[67] The planned delivery of the F-111Cs was suspended as the fleet was grounded for the fifth time since its first flight and the second time in three months. In the *New York Times* the F-111 was described as the 'biggest white elephant in the Pentagon's zoo of horrors'.

A new type of steel known as D6ac was found to be the problem. D6ac was used in both the wing pivot fitting that enabled the F-111's wings to be moved in flight and the wing carry-through box to which the pivot assembly was attached. The investigation team discovered that a panel forged from D6ac steel had split under flight loading 'almost as cleanly as it had been cut with a razor'. The defect which initiated the split should have been detected during routine inspections of critical components.

January 1970 marked the eighth calendar year of the RAAF's involvement with the F-111. After all that time the aircraft were still sitting on the tarmac at Forth Worth, some 17,000 kilometres away from where they should have been at RAAF Base

Amberley. Media attacks continued, with an *Age* editorial suggesting the 'fighter' was unlikely to become airworthy, and that even if it did the RAAF would be left with an immensely costly fleet of limited usefulness and dubious strategic value.[68] Intense pressure was placed on the government to cancel the order and accept a less sophisticated but proven aircraft.

All dressed up with nowhere to go. The RAAF's F-111s grounded and in storage at Forth Worth, Texas, 1969. D.N. ROGERS

Unique problems demanded unique solutions. Doggedly ignoring political and media criticism, the USAF initiated a rigorous and comprehensive test program based on the unique characteristics of D6ac steel to verify the F-111's structural integrity. An innovative procedure known as 'cold proof load testing' which had never previously been applied to the complex loading conditions of an aircraft structure was central to the program. Proof testing involved applying loads to the aircraft in a ground rig at a temperature of minus 40° Fahrenheit, the rationale being that if the structure did not break, it could be assumed that any existing cracks were smaller than the size necessary to cause structural failure at that load. It then followed that the aircraft could be flown for a specified time at lower loads than those which had been applied before any cracks which were present could grow sufficiently to cause catastrophic failure. Extremely cold temperatures were used to make the D6ac steel more brittle: by increasing the steel's fracture sensitivity, small cracks or flaws were more likely to fail than would be the case at normal in-service temperatures. The technique was not at first universally accepted but there was little choice as existing non-destructive inspection techniques (that is, inspections which could be completed without destroying the component) were inadequate by themselves.[69] The sceptics were wrong as practice proved the theory. Cold proof load testing became critical to validating the airworthiness of the F-111, not only for the wing carry-through box but also other structural components incorporating D6ac steel.

While the structural testing sought answers, American Defence Secretary Melvin Laird remained under intense pressure to cancel the program. The Gorton government grew increasingly nervous, as from Washington Ambassador Sir Keith Waller warned there was a 'real chance' the whole program could be dumped at very

short notice.[70] That nervousness increased when Laird publicly announced he had instructed the USAF to examine the alternatives to proceeding with the F-111.

In a crisis atmosphere, Australian Defence Minister Malcolm Fraser presented a Cabinet submission in February 1970 which summarised the current status of the project and canvassed the options. Fraser made two telling points. First, notwithstanding the F-111's considerable problems and disastrous publicity, there was no other aircraft 'in being or in sight' which came close to matching the performance needed by the RAAF; and second, because Australia faced no immediate threat (which was true enough, but was an ironic assessment for a country which at the time had a large proportion of its military forces fighting a war in Vietnam), there was no need for haste. Finally, he rather cautiously raised the possibility of acquiring F-4 Phantoms with air-to-air refuelling tankers as either a short-term or permanent replacement for the F-111s. Fraser proposed visiting the United States personally with a team of RAAF and Defence specialists to 'seek to get to the bottom of the present problem'.[71]

The Defence minister was accompanied to Washington in April by a team of seven officials, including CAS Air Marshal Hannah, AMTS Air Vice-Marshal Hey and the United States-based F-111C project manager, Group Captain M.J. Cottee. Fraser told Secretary Laird that the RAAF considered the F-111 technically unsatisfactory, and that the Gorton government's feelings on the whole affair were much stronger than had been revealed in public.[72] He emphasised Australia's importance to the West's strategy in Southeast Asia, a responsibility he claimed demanded an effective deterrent force to keep Indonesia under control, and implied that if the RAAF could not soon be equipped with either the F-111 or a suitable replacement, Australia's capacity to meet its regional obligations might be compromised.[73] Fraser told the Americans, on the RAAF's advice, that the squadron of Canberras in Vietnam could only continue to operate for a matter of months before the aircraft were 'completely worn out', an odd piece of information given that ten years later most of those aircraft were still flying.

Laird was keen to help the Australians meet their strategic, military and political objectives but he was equally keen to keep the F-111 afloat. If Australia were allowed to cancel its order, Congress might well force the USAF to follow suit. Consequently, Fraser and his team were left in no doubt that they were likely to lose the entire $200 million Australia had already paid on the F-111 if the order was cancelled. But Laird believed that was unlikely, assuring Fraser there were strong grounds for optimism; that the current structural tests were promising; and that the aircraft's difficulties could be overcome to everyone's satisfaction. As a further indication of good faith, Laird told Fraser that F-4E Phantoms would be made available as an interim strike aircraft at very short notice and on generous terms if necessary.[74]

On his return home Fraser advised Cabinet that the RAAF's F-111Cs should be stored in the United States pending the successful modification and testing of a number of USAF-owned aircraft. As that was likely to take about eighteen months and defer the arrival of the F-111Cs in Australia until at least the end of 1972, he further recommended accepting the offer to lease twenty-four F-4Es.[75] Fraser's Cabinet

submission made two pointed observations regarding the deal struck by Athol Townley seven years previously. First, the fundamental weakness in Australia's position was the obligation to accept aircraft which were approved by the USAF no matter how far below the original specifications their performance might be. And second, that weakness was exacerbated by a clause under which Australia would forfeit all monies paid if it refused to take the F-111s, regardless of their actual as compared to promised performance. Those provisions made Australia's position extraordinarily vulnerable.

Fraser had done much better with his negotiations. In addition to the Phantom offer, specific structural requirements for the F-111C developed by Air Vice-Marshal Hey and his staff had been accepted by the Americans. As delivered to the RAAF, the F-111C had to be capable of withstanding flight loads of 6.5 'g' at weights up to 26,800 kilograms and 4 'g' up to 32,700 kilograms. Cracks in the wing spars and deficiencies in the longerons had to be rectified, as did problems with the gun. Most importantly, a new low-stress wing carry-through box with a safe fatigue life of 24,000 flight hours was to be designed, developed, tested, manufactured and fitted, together with the associated fuselage structure, after which all RAAF aircraft were to undergo cold proof load testing prior to delivery.[76] In combination those modifications and tests would indicate a safe fatigue life of at least 4000 hours, which would satisfy the RAAF's minimum requirements. The F-111Cs were put into storage at Carswell Air Force Base while the modification program started on USAF aircraft, and arrangements were made to lease the Phantoms.

Before turning to the RAAF's experience with the Phantom, a comment which says a great deal about the Air Force in 1970 must be made. When Malcolm Fraser renegotiated the F-111C agreement with Secretary Laird, his strong performance and highly satisfactory outcome rested essentially on the RAAF's profound technical expertise. That expertise had not been acquired by chance. In the first instance it was attributable to the far-sighted men who in 1948 had established a technical branch with a core of tertiary-qualified engineers. And in this particular case, it owed a great deal to the determined and intelligent leadership of Air Vice-Marshal Ernie Hey, who held his nerve in hard times, and ensured the RAAF got the right answers by personally selecting his branch's 'best and brightest' to manage the F-111 program in the United States and Australia. Because of the achievements of engineers like Air Commodore Cuming, Group Captain F.A. Cousins, Wing Commanders J.A. Dietz, E.J. Whitehead, I.T. Sutherland, W.E. Sansum, J.K. Henze and C.W. Spitzkowsky, and Squadron Leader W.M. Collins, when Australia's defence minister argued his case with the Americans, he did so from a position of authority.

Deputy Chief of the Air Staff Air Vice-Marshal C.F. Read led a team to the United States in May to examine the F-4E proposal. While the Phantom did not have the range or all-weather attack capabilities of the F-111 it was one of the great combat aircraft of the 1960s. In the strike role it could carry 1800 kilograms of weapons—including

air-to-surface missiles—over a radius of action of eight hundred and forty kilometres; with one air-to-air refuelling it could carry 1360 kilograms over 1650 kilometres. Read assessed the Phantom as superior to the two possible alternatives, the Grumman A-6 Intruder and the British Blackburn Buccaneer.[77] His recommendation to accept the F-4E offer delighted RAAF senior officers and aircrews.

A leasing agreement was concluded in June for twenty-four aircraft which would be delivered new from the McDonnell factory in St Louis. A curious feature of the agreement was that under United States law the return of leased equipment could be demanded on the basis of 'extraordinary contractual actions to facilitate the National defence'; that is, the Americans could take their aircraft back if they wanted to. Secretary Laird wrote to Malcolm Fraser to tell him that the United States did not intend exercising that right. Nevertheless, the fact remained that technically the provision could have been enforced. Exactly where that would have left the RAAF had Australia experienced a national emergency at the same time as the United States was not discussed, and the possibility that the RAAF's strike force could have been repossessed was not publicised. That technicality aside, the total package Fraser and Read had negotiated for the F-111 deferment and possible cancellation and the F-4E lease was described by the Pentagon as 'uniquely favourable', to the extent that the United States Department of the Air Force did not want to publicise the 'bargain' as knowledge of its generosity might upset other potential customers for American aircraft. Under the agreement, Australia was to pay $US33.612 million for the first two years and $US11.413 million for each subsequent year.[78]

'The Complete Air Force' according to No. 82 Wing's cartoonist, who has a Mirage fighter slung from the Phantom's weapons pylon.
D.N. ROGERS

Unfortunately no reconnaissance versions of the Phantom were available, leaving a significant capability shortfall which simply had to be accepted. On the other hand, the Americans' generosity extended to the sensitive question of air-to-air refuelling. Secretary Laird gave Fraser a written assurance that, subject to its own overriding requirements, the USAF would provide tanker support for the RAAF if an urgent need arose, consistent with international agreements between the two countries. Fraser was confident that Laird's assurance, together with the Phantom's ability to deploy to Butterworth without inflight refuelling (using long range fuel tanks or going via Cocos Island if necessary), would give the RAAF's strike force the necessary credibility. If it became necessary to extend the F-4E lease or even acquire the aircraft permanently, the tanker question would have to be reviewed.[79]

Air and ground crews left Australia to train on the Phantom in July. Conversion flying for pilots and navigators included air-to-air combat, air-to-ground weapons application and inflight refuelling; while technical staff studied the aircraft's full range

of systems. Ferry flights to Australia involving a mix of RAAF and USAF aircrews were scheduled for late 1970, and once back at Amberley the wing was expected to reach operational status by May 1971.

If the technical modifications for the F-111s agreed to by Fraser and Laird during their April meeting could not be achieved, the Australian Cabinet was inclined to keep the Phantoms permanently, increasing the numbers to forty strike and eight reconnaissance aircraft, supported by eight tankers to give the necessary range for strategic missions.[80] In the event the F-111 program succeeded, but the Phantom was so highly regarded within the RAAF that in 1972 serious consideration was given to keeping it for other roles, such as air defence or close air support, which at the time were allocated to Air Force Mirages and Navy Skyhawks. The USAF offered to sell the Phantoms and all associated equipment to Australia for $54.2 million, a very generous price. However, as acceptance would have delayed or even ended plans to replace the Mirage with a modern air defence fighter, the RAAF reluctantly rejected the proposal.

The brief period from 1970 to 1973 when the RAAF operated the F-4E was one of the most important in No. 82 Wing's history. For all the Canberra's marvellous performance and reliability, as a weapons system it was nothing more than a jet version of an early World War II capability, constrained by its visual, daytime-only bombing system and lack of electronic warfare equipment. Tactics were correspondingly unsophisticated. While the Phantom was not the most advanced aircraft in the USAF inventory it was still two generations newer than the Canberra and combined impressive performance with a good radar, a wide range of weapons and reasonable electronic/navigation systems. Fighter pilots from Williamtown who were posted into the F-4 program injected an element of urgency and hard-edged professionalism which had not always been present in the bomber wing, as crews took on a demanding regimen of ground attack (visual and radar) and air combat training by day and night. According to the RAAF's senior bomber pilot in 1994, Air Commodore D.N. Rogers, it was during the Phantom years that the RAAF laid the foundations of a modern strike force.[81]

The Phantom program once again illustrated the RAAF's exceptional technical competence. In June 1970 most people in the RAAF had never seen an F-4. In July crews had gone to the United States for training. Within ten weeks the first aircraft were in Australia, and within six months the wing was routinely operating the Phantom in a variety of demanding roles which for the first time included radar bombing and air-to-air refuelling. When one F-4 suffered major damage while engaging an arrester cable at Amberley, it was repaired in-house by No. 3 Aircraft Depot in a demonstration of engineering excellence few air forces could have matched. Air Commodore Rogers reflected years later that the whole Phantom experience 'really reinforced my faith in the [RAAF] system'.[82]

Structural testing of the F-111 required under the Fraser/Laird agreement had been completed by the end of 1971. The new low-stress wing carry-through box had been

successfully tested to 24,000 simulated flight hours and the less critical components to 16,000 hours, an outcome which satisfied the RAAF that the 4000 actual flight hours stipulated for the F-111C would be achieved.[83] USAF F-111s had continued flying while the Australian aircraft were in storage and had reached or exceeded all operational specifications. A Cabinet submission prepared jointly by Defence Minister David Fairbairn and Minister for Air Tom Drake-Brockman on 8 December 1971 recommended accepting the F-111 and costed the total project at $US344 million. The two ministers noted that while the initial design concept of the F-111 as an all-purpose, multi-role aircraft for tactical and strategic use by the USAF and USN had not been realised in many respects, as a long-range, all-weather strike aircraft, the F-111C was unequalled in the West and fully met all the RAAF's requirements.[84] Its value as a deterrent against would-be aggressors was considered to be 'very high indeed'. Cabinet endorsed the submission on 16 December, effectively bringing to an end the saga of the F-111 acquisition.

Arrangements were made for Australia's aircraft to enter the USAF modification program in January 1972, with acceptance of all F-111Cs by the RAAF and their ferry to Amberley scheduled for 1973.[85] As a result of the revised test program and the modifications which had been incorporated, the F-111 was expected to have a flying life with the RAAF of at least twelve to fifteen years; in fact, in 1995, twenty-four years after the Cabinet decision to proceed, the once-controversial bomber seems likely to spend about forty years in front-line service.

A great deal of the controversy which surrounded the first decade of the RAAF's involvement with the F-111 must be attributed to political dishonesty (American as well as Australian), the Australian public's concern with Indonesian aggression, and the extraordinary way in which the Menzies government allowed Athol Townley to choose the aircraft and broker the acquisition arrangements entirely by himself. Any rational examination of the affair cannot lay the blame on the aircraft's performance. By the time the Australian Cabinet finally made the decision to proceed with the purchase in December 1971, three hundred and seventy F-111s were already in service with the USAF's Tactical and Strategic Air Commands. Over 120,000 hours had been flown during more than 46,000 sorties, and the F-111 had a better safety record than every other 'Century' series fighter (the F-101, 102, 104, 105 and 106) and the F-4 Phantom, averaging three accidents per 5000 flying hours compared to the F-4's six, the F-105's eight and the F-104's fourteen.

RAAF F-111 aircrews returned to the United States in February 1972, the first since the initial contingent was withdrawn in 1968. About twenty ground crew who were already undergoing training at various USAF bases were to be joined by another one hundred over the coming six months. The Australians headed off for the United States followed by more of the media misinformation which had been the F-111's constant travelling companion. Only days before their departure the noted journalist and political commentator Maxwell Newton had advised his readers that when the RAAF crews returned with their F-111s in 1973 they would do so 'equipped with atomic bombs', thus making Australia the world's sixth nuclear power.[86] Citing 'top-level'

Washington sources, Newton claimed that Australia would have cancelled its order if the United States had not promised to equip the F-111 with nuclear weapons free of charge.

Newton's interest in the F-111 may have been confined to the level of the tabloid press, but his focus on weapons was central to the aircraft's utility. The RAAF was about to take delivery of a platform which could employ its terrain-following radar and associated systems to fly at 1000 kilometres an hour, sixty metres above the ground, day and night, in all weather. However, getting to a target is only half the job. If the F-111 then dropped an unguided ('dumb') iron bomb with all its inherent inaccuracies, then the whole point of having the world's best strike aircraft would be questionable.

From the outset it had been the RAAF's intention to use the F-111 to attack 'pin-point' targets such as enemy aircraft on the ground, lines of communications, ports and shipping, and vital industries. Because there was 'no intention whatsoever' of employing 'saturation' or 'area' attacks, a huge weight of bombs was not necessary, which explained the relatively modest weapons load of 1800 kilograms stipulated by the air staff for the new aircraft. For the concept of 'precision' strikes to succeed, almost every bomb instead of, say, one in fifty, would have to score a direct hit.[87] Considerable advancements had been made with weapon system components such as bomb sights, radars and release mechanisms; during one series of low-altitude radar bombing trials in the United States, F-111s dropping iron bombs had achieved a circular error probable (CEP) of sixty metres compared to two hundred and forty to three hundred and seventy metres for Phantoms.[88] But even an average of sixty metres was not especially satisfactory for conventional weapons against pin-point targets. A precision platform needed precision munitions.

When the first F-111s arrived in Australia in June 1973, the man who had been CAS when they were ordered in 1963, the now-retired Air Marshal Sir Valston Hancock, was dismayed to learn they were not equipped with advanced guided weapons. During a trip to the USAF base at Clark Field in the Philippines in January 1963, Hancock had been impressed by a demonstration of the Bullpup air-to-surface guided missile, which he described as a 'turning point in [his] professional life'. Precision weapons promised to fulfil the expectations of air power visionaries like Douhet, Mitchell and Trenchard by making obsolete the crude area attacks which had characterised much aerial bombing since World War I.[89] Imbued with the need to acquire a strike aircraft capable of using precision weapons, Hancock obtained a film of a Bullpup firing which he screened in Parliament House.

To Hancock's credit, the development program prepared under his leadership for the period 1965/66 to 1967/68 included provision for the acquisition of guided air-to-surface and anti-radar missiles, the former to arm the F-111 and the Mirage and the latter the F-111 only.[90] Two thousand two hundred air-to-surface missiles were needed, the program stated, for attacks against targets 'demanding very accurate

delivery of high velocity warheads'. Training was scheduled to begin on the Mirage no later than October 1967 and on the F-111 as soon as possible after its arrival in Australia. Anti-radiation missiles were scheduled for introduction in January 1969.

Exactly which weapons Hancock had in mind were not specified in the 1965/68 program, but in the 1968/71 version the television-guided air-to-surface missiles Walleye and Martel AJ168 were mentioned, as was the Martel AS37 anti-radiation missile;[91] while in 1971 reference was made to the probable availability in the near future of laser-guided weapons which would give a 'phenomenal' improvement in accuracy.[92] The fact that Australia's F-111Cs arrived in 1973 capable of dropping only 'dumb' bombs (a deficiency which received little publicity) was one of many consequences of ordering an aircraft off the drawing board, and of the problems which affected the program in the second half of the 1960s. As the development of the aircraft unfolded, the need for better avionics than those specified for the F-111A, and therefore the F-111C, had become apparent. Consequently digital avionics were fitted to the F-111D (a version of the aircraft built only for the USAF) which enabled that model to carry the Walleye and Maverick guided air-to-surface missiles and the Standard anti-radiation missile.[93] By contrast, the F-111A and F-111C were restricted by their analogue avionics to dumb bombs until substantial modifications were made. Preoccupied with the unexpected and enormously demanding structural modifications, RAAF technical and air staff were simply too busy to deal with another major challenge. It was to take more than ten years before the F-111C's debilitating operational limitation was redressed.

Air Marshal Sir Valston Hancock, CAS from May 1961 to May 1965. RAAF

In the meantime the RAAF relied on the 227-kilogram American-designed Mk 82 unguided bomb as its basic weapon. Capable of external carriage at speeds up to Mach 1.2 and of being dropped in both high-drag and low-drag configurations at heights from forty-five to 13,725 metres, the Mk 82 was a standard weapon across the RAAF, the RAN, the USAF and the USN, and could be used against targets ranging from 'soft skinned' parked aircraft and vehicles to 'hard' reinforced concrete structures and industrial complexes.[94] However, notwithstanding those useful general characteristics, the Mk 82 represented the same technology as the

free-fall weapons dropped by the Australian Flying Corps' Handley-Page bomber in 1918.

Reconnaissance was another capability which, like weapons, suffered from the technical difficulties which hindered the F-111 program. Throughout the 1960s the RAAF had had to rely on the Canberra and the Mirage, both of which were fitted only with basic camera arrays. The intention always was to upgrade that capability with the new bomber, which was why Athol Townley's order had comprised eighteen strike and six reconnaissance aircraft. At the time the USAF intended building sixty RF-111s for its own use but that plan was cancelled because of the aircraft's development and budgetary problems. While the USAF had numerous alternatives the RAAF did not, so once the F-111C had settled into squadron service the reconnaissance modification was revived. Yet again the RAAF demonstrated its admirable technical competence. Using initial design work bought from the USAF for $US3 million, and following the development of a prototype by General Dynamics, the RAAF adapted four aircraft to carry a range of sensors including panoramic, oblique and vertical framing cameras, and an infra-red line scanner.[95] With that configuration the RF-111C was able to conduct high, medium and low-level reconnaissance, day and night, in all weather, while still capable of carrying weapons. Specialist support for reconnaissance activities rested largely on the RAAF's intelligence services and the Central Photographic Establishment.[96]

The F-111C's evolving reconnaissance and weapons capabilities underpinned a move by the strike force into a new and most important role. American Defence Secretary Melvin Laird mentioned to Prime Minister William McMahon in November 1971 that the United States intended using its F-111s to support naval operations in the Mediterranean and suggested Australia might consider the general idea.[97] The notion of using RAAF 'bombers' for maritime operations immediately caught the attention of Australia's chairman of the Chiefs of Staff Committee, Admiral Sir Victor Smith, who asked CAS Air Marshal Sir Colin Hannah to look into the matter. The response from the air staff provided the starting point for what was to become a major role for the F-111Cs. Hannah was advised that the F-111's excellent speed and range enabled a small number of aircraft to sweep an extensive area far more effectively than a large number of surface ships, while its radar was particularly good for detecting small vessels. Additionally, the aircraft's all-weather strike capability enabled it to prosecute hostile targets without assistance. Those characteristics made it possible for Australia's defence chiefs to substitute air power for sea power in maritime operations, although the absence of guided weapons was a significant handicap. Until the Harpoon anti-shipping missile was fitted to the F-111Cs in the late 1980s as yet another unique RAAF modification, iron bombs remained the standard maritime strike weapon.

While the F-111 saga was unfolding in Washington, Canberra and Forth Worth, the aircraft's future home base at Amberley was undergoing what was probably the single

most extensive refurbishment program in Air Force history. Amberley had been developed as a permanent RAAF station for fighter and general reconnaissance aircraft in June 1940. But once No. 3 Aircraft Depot was established in 1942 as a major workshop for large aircraft, the emphasis began to shift to bombers. Under the post-war reorganisation, Amberley became the home of the Mobile Task Force's main strike element, No. 82 Bomber Wing. When the Canberra jets entered service considerable airfield improvements were necessary, particularly movement areas, navigation and approach aids, and domestic accommodation.[98] Airfield and domestic works continued throughout the 1950s as Amberley became the Air Force's best appointed base. By the mid-1960s it was home to Headquarters No. 82 Wing, Nos 1 and 6 Squadrons, No. 1 (Bomber) Operational Conversion Unit, No. 482 (Maintenance) Squadron, No. 3 Aircraft Depot, No. 23 (City of Brisbane) (Auxiliary) Squadron, and No. 16 Army Light Aircraft Squadron. Plans had also been made for No. 114 Mobile Control and Reporting Unit to take up residence once it had received its new Hub Cap radar system.

All previous development paled into insignificance, however, when the decision was made to replace Nos 1 and 6 Squadrons' Canberras with the F-111. Once the F-111's continually growing appetite for people was added to the demands of training Canberra crews for service with No. 2 Squadron in Vietnam, the base's establishment grew from 1295 in 1965 to 1875 in 1968 and 2747 by 1970. More people meant more and better facilities, as did the F-111's new technologies. Development plans for the second half of the 1960s listed twenty-five new technical and administrative buildings, including major hangars and workshops; extension of the runway to 3000 metres, with associated taxiways and hardstands; and fifteen new domestic works programs, including accommodation, a formation headquarters building and an officers' mess.[99] In all, the renovations were costed at $10.53 million. The end result was a far cry from the days of the early 1950s when the main road into Brisbane, the Cunningham Highway, crossed Amberley's runway, and traffic had to stop to let aircraft take off and land.

Particular importance was attached to establishing an overhaul facility at No. 3 Aircraft Depot for the F-111's TF-30 engines. The decision to maintain the TF-30 at Amberley reinforced a major RAAF engineering policy, under which critical maintenance tasks were conducted in-house to preserve both technical excellence and operational independence. In order to release the staff needed to service the power plant of its most important aircraft, the RAAF elected to close its engine shops at No. 2 Aircraft Depot (Richmond) and No. 1 Aircraft Depot (Laverton). Once the F-111 arrived, the Air Force would maintain only the one modern engine, with all others going out to civilian contractors.[100]

For much of the period examined in this book the RAAF's Lincoln and Canberra bombers were on active duty in the wars in Malaya and Vietnam. In both cases the squadrons involved—Nos 1 and 2—performed with distinction. At first glance it

might seem surprising, therefore, that this chapter on RAAF bombers has been concerned primarily with the politics of the F-111 acquisition. But even brief reflection suggests otherwise. The F-111 is the most important aircraft the RAAF has ever operated. For over twenty years it has been, and remains, the region's pre-eminent strike aircraft. It alone has given Australia a credible capability to conduct *independent* land and maritime strike/reconnaissance operations, a capability which in turn has facilitated the development of self-reliant national defence strategies.

Apart from the intrinsic interest of the politics behind the F-111 acquisition, no other single event between 1946 and 1971 gives a better indication of the Air Force's professional competence. At times the project nearly brought the RAAF to its knees as extreme political, management and engineering obstacles—many of the latter involving leading-edge technologies—had to be overcome. Very few air forces could have met those challenges with the technical, operational and leadership skills displayed by the RAAF. Cabinet's firm decision of December 1971 to proceed with the acquisition was, in effect, an endorsement of the RAAF's achievement. That achievement represented the high point since World War II in the RAAF's progress towards going solo.

CHAPTER 21
MARITIME PATROL

Few Australians know that twenty allied ships were sunk by Japanese and German submarines in Australian waters during World War II, or that there were forty documented attacks in all. Most of those attacks took place off the east coast, although there were several in the Southern Ocean west of Melbourne and in the Indian Ocean west of Perth. Perhaps slightly better known are the exploits of the RAAF's Catalina flying boat squadrons, whose crews participated in the highly successful interdiction campaign against Japanese shipping in the Pacific theatre, carrying out very long range bombing and mining missions, sometimes ranging as far as China. Those missions started in 1942 and continued almost until the first atomic bomb was dropped on Hiroshima on 6 August 1945. Known collectively as 'maritime patrol', the operations which protected Australia's sea lines of communications were among the RAAF's least glamorous but most important.

Like the rest of the Air Force, the maritime patrol units suffered during the years of the Interim Air Force. After repatriating troops from the Southwest Pacific, the Catalina squadrons were diverted onto courier and search and rescue duties, a significant loss of status from their wartime role. Part of the problem was the aeroplane itself. During the island-hopping campaign in the Pacific the flying boat's ability to take off and land from coastal and river areas without prepared airstrips and to land in the open sea to rescue survivors of maritime and air disasters had offered a flexibility not available from land-based aircraft. However, that flexibility came at a considerable cost. Flight performance was degraded, as the need to overcome the drag associated with taking off from water consumed an excessive amount of engine power, and therefore the aircraft's useful load. And there were complex and expensive procedures unique to flying boat operations: the need for special facilities like slipways; combating the effects of salt water corrosion; and difficult surface handling, especially when water conditions were choppy. As long as land-based maritime patrol aircraft could be located reasonably close to their area of operations, they offered far better performance. Once the end of the war all but removed the need for mid-ocean rescues, the outlook for flying boats was bleak.

The station at Rathmines which had been the hub of RAAF flying boat activity during the war started losing its character as the Catalinas were progressively paid off. In October 1947, with the numbers of aircraft and crews dwindling, Rathmines' remaining maritime patrol units were combined as the RAAF's Search and Rescue Wing, with detachments in Townsville, Port Moresby and Darwin.

Fortune started to turn for the maritime force as the Cold War warmed up and a submarine threat to Australia's trade routes was perceived. In July 1948 the SAR Wing's status was restored when it was renamed No. 11 (General Reconnaissance) Squadron. About a year later a second general reconnaissance squadron, No. 10, was formed from the detachment at RAAF Station Garbutt in Townsville, equipped briefly

with Wirraways and Oxfords before receiving surplus Lincoln Mk 30 bombers from No. 82 Wing at Amberley. (Garbutt was renamed RAAF Townsville in January 1951.)

Rathmines in the mid-1940s, with Catalina flying boats moored in the foreground. RAAF

No. 10 Squadron's Lincolns were not ideal for the anti-submarine warfare role as they were equipped with neither a modern radar nor acoustic detection systems. Because No. 11 Squadron's Catalinas had also outlived their usefulness, RAAF planners began looking for a more capable, land-based maritime reconnaissance aircraft. Early government and industry attention focused on a modified version of the locally built Lincoln. The RAAF was unenthusiastic as the Lincoln was already verging on obsolescence, while any requirement to keep the production line open at the Government Aircraft Factory might interfere with the planned manufacture of the higher priority Canberra bomber. But because something had to be done, and in preference to building an entirely new type in Australia, the RAAF endorsed a proposal to modify twenty existing Lincoln Mk 30 bombers as interim maritime reconnaissance aircraft for No. 10 Squadron, an initiative which would be complemented by purchasing new aircraft for No. 11 Squadron.[1]

Re-equipment plans were complemented by new command and control arrangements for maritime activities. Under the Radford/Collins agreement of February 1951 reached between Vice-Admiral Sir John Collins for Australia and

Admiral Arthur W. Radford for the United States, Australia accepted responsibility for surveillance and reconnaissance of very large expanses of the eastern Indian and southwestern Pacific Oceans.[2] The following year Collins and Chief of the Air Staff Sir Donald Hardman endorsed a set of principles for the employment of shore-based aircraft in maritime operations. Hardman acknowledged that the conduct of maritime warfare was primarily a Navy task but the two chiefs agreed that the formulation of policy was a joint responsibility. Unlike the RAAF's sometimes troubled association with the Army, the relationship with the Navy evolved with quiet efficiency over the years. Operations were controlled through headquarters located in Sydney, Darwin and Perth which were 'in all respects joint'. Headquarters staff were fully integrated, and Air Force and Navy commanders had full access to all information affecting their area.[3] Maritime headquarters in Sydney gradually assumed primacy for operational activities, always under joint RAN/RAAF direction but always with the Navy exercising operational control. Joint maritime warfare procedures were practised and refined by theoretical simulations at the highly successful Australian Joint Anti-Submarine School at Nowra and by joint unit exercises involving aircraft, surface and sub-surface vessels off the Australian east coast.

In the mid-1950s government defence policy began to place more priority on the Air Force. Reflecting that shift and also acknowledging the improving anti-submarine warfare capabilities of land-based aircraft, in April 1954 the Menzies government formally assigned responsibility for air protection at sea within the range of land-based aircraft to the RAAF.[4] Increased responsibilities meant increased resources. Nos 10 and 11 Squadrons received their full complement of people—previously they had been staffed as flights rather than squadrons—to enable each of them to maintain eight aircraft on-line. Ground support services, particularly communications, were upgraded at the RAAF's main deployment bases to facilitate regular detachments. And most importantly, both squadrons received their new aircraft. Those aircraft seemed to set the tone for the way in which the squadrons functioned.

No. 10 Squadron's General Reconnaissance (GR) Mk 31 or 'long-nose' Lincolns were easily distinguished from the Mk 30 bombers they replaced by their 'long nose', a 1.98 metre extension added to the forward fuselage to accommodate a tactical navigator and three sonobuoy operators. Other modifications included an enlarged bomb bay to carry homing torpedoes, and the installation of an ASV (anti-surface vessel) Mk 7 radar and basic sonar equipment to detect 'schnorkelling' and submerged submarines. No. 10 Squadron's first (GR) Mk 31 Lincolns were delivered in March 1953; two years later ten of those aircraft were fitted with upgraded radars and bomb sights and redesignated the Maritime Reconnaissance (MR) Mk 31. Concurrently the squadron's role was redefined from 'general' to 'maritime' reconnaissance.

Regardless of that semantic refinement and the various modifications made to the Lincoln, the aircraft was regarded as a mixed bag by the crews who flew it.

Notwithstanding its anti-submarine warfare radar and acoustic detection equipments, the Mk 31 was a rudimentary system. The performance of the World War II-vintage radar was often consistent with its age: depending on how well, or poorly, a set was tuned, it was possible to fly within five kilometres of ships as big as the aircraft carrier HMAS *Sydney* without detecting them; while the sonobuoys, too, could only be described as basic.[5] Also basic was quality control at the Government Aircraft Factory where the Lincolns had been built and the long-nose extension added. When a Mk 31 flew through heavy weather it was common for so much water to leak into the nose that the navigators and signallers working there wore rain coats.[6] Physical discomfort extended to very high noise levels and cramped and primitive work stations for most crewmen. There were compensations, particularly for the pilots, who enjoyed flying a large aircraft which was pleasant to handle and was fitted with four powerful Rolls Royce Merlin engines. And for the crew as a whole, the technical deficiencies of the anti-submarine warfare equipment did not always matter, as the need for submarines of that era to surface or extend their air-breathing schnorkel to recharge their batteries meant that a keen and systematic visual search could be just as effective as one which relied on radar or acoustic sensors.

A 'long-nose' Lincoln of No. 10 Squadron, mid-1950s. K. GINNANE

If the Mk 31 Lincoln was something of a mixed bag, so was No. 10 Squadron itself. To start with the environment was different. In the 1950s Townsville was a remote place. Air travel from the state capital of Brisbane could take more than half a day, depending on stopovers, and Brisbane in turn was a long way from Home Command near Sydney and Air Force Headquarters in Melbourne. The tropical climate could be enervating, there was no air-conditioning, the RAAF buildings were generally shabby, and supplies of some fresh foods were limited. In combination, those features meant visits from senior commanders were infrequent. When Pilot Officer Barry Gration arrived at No. 10 Squadron on posting as a well-trained and somewhat idealistic

recent graduate of the RAAF College in 1957, he found the contrast between Townsville and the southern bases striking. No. 10 Squadron seemed to operate almost independently as a 'second' air force, and in the main that independence bred indifference. Gration's first squadron briefing established the tone and level. Once the aircrew had assembled, the flight commander arranged the day's activities. There was no published flying program and no systematic development of squadron capabilities. 'Who wants to do gunnery today?' the flight commander asked, and eventually one crew volunteered. 'Who wants to do bombing?', and the process was repeated. 'Okay', the flight commander continued, 'it's "A" crew's turn for search and rescue standby, the rest of you, piss off'. That concluded the day's formal arrangements.[7]

The careless attitude to organisation extended to training. New Lincoln crews received no formal conversion course. There was no program of lectures and no syllabus of flying exercises. The rate at which an individual progressed, and what he was shown in the aeroplane, depended entirely on the whim of his captain, or senior navigator or signaller. One of Barry Gration's fellow copilots had been with the squadron two years and flown nine hundred hours on the Lincoln without receiving any structured training. There were no properly compiled aircraft handling notes and no flight manual, and very little performance data other than the most rudimentary take-off and landing figures. Asymmetric training was usually conducted by shutting down an engine instead of simulating a failure by setting reduced power on the engine and high drag on its propeller; consequently, power could not be restored quickly on that engine if necessary. Because of the tropical heat crews routinely flew without protective clothing, dressed only in shorts, socks and shoes. Pride of place in the crew room went to a photograph of a squadron pilot who had recently crashed a Lincoln standing happily amidst the wreckage. Few people seemed concerned and few seemed interested in analysing the causes of the accident. Squadron pilots were largely uninterested in using the Link trainer—a venerable but nevertheless useful flight simulator— to practise their instrument flying. Training for navigators followed the same ad hoc pattern, with new arrivals being allocated to an experienced crewman who would provide 'on-the-job' supervision for as long as seemed necessary; at least, however, the navigators set each Monday aside for a formal lecture program.[8] To the extent that a squadron ethos existed, it seemed to be dominated by a group of hardened senior NCO aircrew whose main interest was 'lurks and perks'; that is, in exploiting the system to get as much as possible for as little as possible. As was the case in Australian society generally, heavy drinking was encouraged and excessive drinking ignored.

Flight Lieutenant J.A.W. 'Wings' Laming's arrival as the squadron's qualified flying instructor in 1957 signalled the start of a change for the better. Intensely interested in 'pure' flying (performance, technique, handling, systems, and so on), dissatisfied with the ad hoc approach to training, and supported by the enthusiasm of younger pilots like Gration who by education and inclination expected more, Laming introduced a formal conversion course. He was assisted by other disaffected junior pilots, navigators and signallers who started to compile aircraft performance data and

develop more rigorous procedures for conducting, analysing and continually reviewing their activities.

A casual approach to training was also evident at the RAAF's other maritime reconnaissance unit, No. 11 Squadron, for much of the 1950s and 1960s. The southern-based unit did, however, benefit from its re-equipment in 1951 with the Lockheed P2V5 Neptune, while its proximity to the rest of the Air Force militated to some extent against the indifference to professional standards of administration and leadership which apparently prevailed at Townsville in the 1950s.

Following No. 11 Squadron's reactivation in July 1948, neither the Catalinas nor the station at Rathmines lasted long. Once military seaplanes generally had become obsolescent, so too had their bases. Flying operations at Rathmines were discontinued when the Catalinas were withdrawn from service in 1950, although as a precaution against a possible future resurgence of flying boats, the RAAF maintained mooring buoys at Rathmines and Rose Bay in Sydney Harbour for some time. The buoys were not needed. Technology continued to favour the development of land-based maritime reconnaissance aircraft and Rathmines was transformed into an education centre, becoming home to the RAAF School of Ground Training. However, a review of Defence establishments in October 1959 could not justify the expense of keeping the base open, so in the early 1960s the Commonwealth Government sold what had been one of the Air Force's most attractive and distinctive pieces of real estate to the Lake Macquarie Shire Council for $200,000.

Following the disposal of the Catalinas and the end of flying at Rathmines, No. 11 Squadron was briefly equipped with surplus Lincoln bombers from No. 82 Wing and relocated to Pearce in Western Australia, a move intended to provide a national 'two ocean', east and west coast, maritime reconnaissance disposition. The air staff also planned to rearm No. 11 Squadron with modern anti-submarine warfare aircraft, leaving No. 10 Squadron to operate its long-nosed Lincolns for the remainder of the decade. The British Avro Shackleton and the American Lockheed P2V5 Neptune were the contenders, with the RAAF strongly favouring the eventual choice, the Neptune. Because of the priority placed on anti-submarine warfare, the Neptune's superior detection equipment and much larger load of sonobuoys were key considerations, as was its clear-cut performance advantage over the Shackleton, particularly its superior range.[9] Twelve aircraft were ordered at a cost of £6,852,000, including spares and ancillary equipment.[10] A curious provision of the contract between the RAAF and Lockheed was Washington's insistence on receiving an assurance Australia would not use the Neptunes aggressively against the United States, a condition insisted on by Congress for any foreign arms transfer but which in this instance was farcical.[11]

As operated by the RAAF, the P2V5 required a crew of ten, comprising two pilots, three navigators and five signallers. Theoretically the aircraft had a still air range of 8700 kilometres at an airspeed of two hundred and ninety kilometres an hour. Equipment included the APS-20 search radar with a range of three hundred and

seventy kilometres, the APS-31 attack radar with a range of forty-five kilometres, a seventy million candlepower searchlight, and forty sonobuoys (compared to the Shackleton's twenty-four). Armament consisted of nose, tail and upper turret 20-millimetre guns, up to 3250 kilograms of torpedoes, depth charges, mines and bombs in the internal bomb bay, and eight 12.7-centimetre rockets under the wings. After a brief period all gun turrets were removed, making way for a perspex nose which greatly enhanced visual searches and crew comfort, and a magnetic anomaly detector (MAD) tail 'stinger' which could provide a pinpoint fix on a submerged submarine as long as the aircraft flew directly over the target. In combination those features represented an enormous leap forward from the Catalina and Lincoln.

Those important war-fighting modifications were accompanied by an equally important performance modification. The Neptune had only two engines compared to the Shackleton's four, a feature which had been commended by the air staff who asserted that fewer engines would make the American aircraft easier to maintain and operate. In fact, as experience was to show, at high operating weights the P2V5 was seriously underpowered should one engine fail. Performance figures provided by Lockheed for an engine failure immediately after take-off (the most critical phase of flight for that emergency) were based on 'best case' conditions, such as a moderate take-off weight, an experienced pilot at the controls, maximum power from the good engine, the landing gear retracted, the propeller on the failed engine feathered, and favourable atmospheric conditions, all of which lowered the nominal speed at which it was claimed the aircraft could safely climb away on one engine.[12] The reality proved to be far different. No. 11 Squadron routinely operated its Neptunes well above the designed gross weight of 30,650 kilograms, and weather conditions in Australia were consistently hotter than the 'standard' atmosphere and often worsened by turbulence. Further, it took six and seventeen seconds respectively for the propeller to feather and the gear to retract, during which time the aircraft's drag was significantly increased and, therefore, its ability to climb substantially reduced. In summary, given the conditions under which No. 11 Squadron was operating its aircraft, during the 'twilight zone' following an engine failure at a critical phase of flight and at high all-up weights, and especially immediately after take-off, any pilot would be hard-pressed to achieve a positive rate-of-climb. Nor was the likelihood of an engine failure all that remote, No. 11 Squadron experiencing eighteen between 1951 and 1957; fortunately, only one was at a heavy weight. The squadron's first qualified flying instructor, Flight Lieutenant G.G. Michael, had to accept the fact that should a failure occur in the critical envelope there was nothing the pilots could do except try to control the crash.[13] It was not until 1959 that the problem was rectified by fitting each Neptune with two supplementary Westinghouse J-34 turbo-jet engines, a job which was done in the United States at a total cost of £1,591,212.[14]

No Neptune ever crashed because of an engine failure after take-off, but the maritime force did suffer several major accidents during the period under review, and while any fatal accident is a disaster, those involving large crews are especially sombre. Only two months after No. 11 Squadron had been reformed in 1948, one of its

Catalinas developed a fuel leak during a night navigation exercise. Rather than return to Rathmines, aircraft captain Flight Lieutenant M.D. Smith decided to divert to Lord Howe Island. During the approach to the lagoon at Lord Howe one of the Catalina's wing tips struck North Peak and the aircraft crashed in flames, killing seven of the nine crewmen on board and seriously injuring the other two.[15] Similar losses were suffered when a No. 10 Squadron Lincoln captained by Wing Commander J.P. Costello flew into Mount Superbus in southern Queensland in April 1955, resulting in six deaths; and all eight crew on an 11 Squadron Neptune commanded by Squadron Leader G.R. Cullen perished within sight of Richmond in February 1959 while trying to land with an uncontrollable engine fire.

Despite the disturbing performance vacuum which existed until the J-34 turbo-jets were fitted, the Neptune was popular with its crews, who enjoyed the transition from the Lincoln in the same way the fighter pilots at Williamtown enjoyed the change from the Vampire and Meteor to the Sabre. Like the Sabre, the Neptune had a better cockpit and instruments and was much more comfortable than the aircraft it replaced, while for a large machine it was surprisingly light and manoeuvrable to fly, an important characteristic during tactical operations at low level (down to sixty metres) over the ocean. Matching the improved handling and comfort was the APS-31 radar, which was sufficiently precise to allow simulated torpedo and bombing attacks to be made from its fixing information; in other words, a visual sighting of the target was not essential. Over the years No. 11 Squadron developed a number of sophisticated tactics to take maximum advantage of its excellent radar system.[16]

Shortly after the Neptunes entered service No. 11 Squadron was transferred from Pearce back to the east coast, a relocation which was almost inevitable once anti-submarine warfare became the primary role of the RAAF's maritime reconnaissance force. Because there were no RAN submarines based permanently in the west, the squadron's training was severely curtailed. The establishment in 1951 of the Australian Joint Anti-Submarine School (AJASS) at Nowra as the centre for specialist training increased the pressure for No. 11 Squadron to head east. Without regular, easy access to AJASS and the fleet the squadron's proficiency would suffer, an unacceptable situation which saw the unit move permanently to Richmond in mid-1954.

It was from Richmond that in February–April 1957 three P2V5s completed the RAAF's first around-the-world flight in an exercise intended to test mobility and navigation, while at the same time providing an Australian presence at Ghana's independence celebrations. Led by Wing Commander P.J. McMahon, Operation Westbound flew from Richmond to Darwin, Singapore, Colombo, Karachi, Aden, Uganda, Ghana, Dakar, Casablanca, the Azores, Bermuda, Florida, Texas, California, Honolulu, Canton Island, Fiji and, after more than 50,000 kilometres, back to Richmond.

For all the favourable publicity Operation Westbound generated, it was little more than a gimmick. A more accurate indication of No. 11 Squadron's standards emerges from a review of training and supervisory practices. In some respects those practices were no better than No. 10 Squadron's. The first two RAAF Neptune crews were

trained by the United States Navy over a period of almost five months at a variety of locations in America. High-quality, comprehensive tuition on aircraft systems and maritime operations was complemented by equally rigorous flying training.[17] By November 1951 the crews were sufficiently proficient to ferry their P2V5s from California to Australia via Hawaii, Canton Island and Fiji. Inexplicably, however, the RAAF had not sent a qualified flying instructor to the United States. Consequently, at the same time as the P2V5s arrived at Pearce, so too did Flight Lieutenant Geoff Michael, on posting from the Central Flying School and with no background in maritime operations. Michael was given a grand total of nine hours familiarisation flying on the Neptune before taking up his duties as squadron QFI, a critical post in any unit for establishing and supervising day-to-day flying standards. With ten more Neptunes arriving during 1952 Michael was fully occupied teaching crews to fly the new aircraft, with little time left to develop handling notes.

The extraordinary failure to provide No. 11 Squadron with adequate training resources at a critical time in its development was not an isolated occurrence. When Pilot Officer Tom O'Brien arrived at Richmond from the RAAF College as a newly graduated pilot ten years later, once again there was no squadron QFI. Along with the other new pilots, navigators and signallers, O'Brien completed a two-week basic maritime reconnaissance course conducted by the squadron to give him an elementary introduction to the subject, after which he was allocated to a crew as third pilot. There was no conversion, no formal lectures, 'nothing, zero'.[18] For the next three and a half months O'Brien and his contemporaries were effectively banished to the back of the aircraft where they were 'beaten up by sergeant signallers', threw flame floats out the window and sonobuoys through a hole in the floor, and learnt to cook. Occasionally they were allowed up to the cockpit to fly under supervision, but never during anti-submarine warfare exercises or for take-offs and landings. At the end of those three and a half months—a period which seems to have been entirely arbitrary—O'Brien was suddenly given three circuits and landings under the supervision of the operations flight commander and was then endorsed as a copilot, notwithstanding O'Brien's belief that his landings were (understandably) unimpressive. Now that he was legally entitled to occupy the Neptune's cockpit for all phases of flight, O'Brien's 'conversion' onto the aircraft continued through on-the-job training.

When the meticulous and professional Flight Lieutenant G.S.K. Lindeman arrived on posting as No. 11 Squadron's qualified flying instructor late in 1962 he was alarmed by what he found, just as John Laming had been at No. 10 Squadron several years previously. So uncertain had No. 11 Squadron's crews become about some technical aspects of their aircraft that the engines' superchargers (which were operated manually) were never used, and the water methanol system was lock-wired off. No-one could explain how the elevator trimming system known as 'Varicam' worked, a level of ignorance which created a degree of unwarranted caution, even fear, regarding the use of what was a valuable component of the flight control system.[19] Again like Laming, Lindeman introduced a systematic approach to flight training and professional development. The younger, more enthusiastic members of

the squadron were encouraged to investigate the P2V5's systems in detail, a process which improved not only flying standards but also the availability and quality of handling and technical notes. Gradually the loose collections of xeroxed sheets which had until then served as references were replaced by more authoritative documents.

No. 11 Squadron P2E Neptune crewmen, mid-1960s. L–R: FlgOff A.W. Gilbert (navigator), FlgOff R.J. Laing (pilot), PltOff G.J. Wade (AEO), FlgOff E.B. Watson (engineer). The squadron leader's pennant under the aircraft's window indicates it was flown by the flight commander, SqnLdr J.L. Ingate.
R.J. LAING

George Lindeman was succeeded as QFI by Flight Lieutenant C.J. Prior, another methodical and conscientious pilot who built on his predecessor's foundations. Aircrew arriving at No. 11 Squadron now were at least taught the major flying sequences and technical data in an ordered manner and flying instruction was very good. But years of neglect could not be repaired completely in the face of inadequate support from senior levels. Despite Lindeman's and Prior's considerable achievements, as late as 1965—that is, fourteen years after the P2V5 entered RAAF service—checklists were neither compulsory nor standard, technical notes remained poor, and there was no authoritative flight manual.[20] Extraordinarily, each crew had its own set of aircraft range and endurance figures, none of which necessarily agreed. Advancement in one particular crew seemed to depend more on whether an individual remembered to wear the pink scarf insisted on by the captain and whether he smoked

the right brand of cigarettes than on professional competence. It was not uncommon for some aircrew to go straight to their aircraft from the bar having spent all night drinking. With heavy irony, junior pilots assigned to fly with some squadron executives privately referred to themselves as 'supervisory copilots'. No. 11 Squadron perhaps reached its lowest point when, during a serious inflight emergency at low level one night, a senior captain froze under pressure, leaving his inexperienced copilot to extricate the aircraft and its crew from a situation which at one stage seemed likely to end in tragedy. Notwithstanding the efforts of a growing number of disaffected people, matters did not really turn around fully at No. 11 Squadron until the unit deployed again to the United States for another new aircraft, the Lockheed P-3B Orion in 1967.

Oddly enough, in the midst of those deplorable practices, crews from Nos 10 and 11 Squadrons performed well in international exercises, consistently claiming more 'kills' against 'enemy' submarines than their American, British, Canadian and New Zealand colleagues, and regularly winning the premier competition for Commonwealth maritime squadrons, the Fincastle Trophy, following its introduction in 1961.[21] It seems that for all their failings in the broader professional sense, a number of the old guard were very good seat-of-the-pants, stick-and-rudder men, who in many cases could draw on wartime experience which not only helped save them from inflight difficulties caused by their dismal technical knowledge but also gave them a tactical edge in simulated combat. When those manipulative skills and operational shrewdness were overlaid with the systems knowledge and enthusiasm of the new guard, the end result could be highly effective. The pity was that those standards could have been better still had operational experience and technical expertise been combined in individuals rather than different generations.

While No. 11 Squadron struggled through the mid-1960s, No. 10 Squadron had turned the corner, the catalyst for change being the acquisition in 1962 of twelve newer models of the Neptune, the P2V7.

In 1958 the primary roles for the RAAF's maritime reconnaissance squadrons had been redefined to meet two main objectives. The squadrons were required to operate effectively against modern submarines anywhere in the Australian area of the Anzam region north of latitude 57 degrees south; and to reconnoitre, shadow, and direct strikes against enemy surface shipping in the same area.[22] Secondary tasks were listed as search and rescue and minelaying. 'Operating effectively' against submarines was the most important task. Because modern submarines were both quiet and fast—submerged speeds of up to thirty-seven kilometres per hour were possible—a far more capable machine than the Lincoln was needed. The RAAF's case for a new aircraft was strengthened by the government's decision (which was later rescinded) in 1959 to disband RAN fixed-wing aviation by mid-1963, which placed a greater onus on the Air Force to provide fleet protection;[23] and became compelling in June 1961 when all Lincolns were grounded at short notice because of main spar corrosion.

The P2V7 was chosen in preference to the Shackleton, which did not meet the performance criteria and anyway had been rejected ten years previously in favour of the P2V5, and the P-3V Electra and CL-28 Argus, which at $6.8 million and $3.8 million respectively were too expensive. Although the P2V7's speed was at the lower end of the stipulated bracket, the aircraft satisfied all performance requirements, shared a reasonable amount of commonality with the P2V5, and was competitively priced at $1.5 million per copy.

The year the RAAF accepted its new aircraft the United States Navy redesignated the P2V7 the 'SP2H' and the P2V5 the 'P2E'. While the two Neptune variants shared the same engines and basic airframes and externally looked similar, internally they had little in common. The passage of a decade had bought considerable improvements to the SP2H's cockpit and crew station layout and comfort. Far better radios and a good Doppler-based automatic navigation and tactical system greatly enhanced communications, situational awareness and crew co-operation. Most importantly, two acoustic submarine tracking systems—one long range and passive and the other short range and active—gave the SP2H a genuine edge over most conventionally powered (non-nuclear) submarines. Other detection equipments included a 'sniffer' system which was supposed to scent a surfaced or snorting submarine's diesel exhaust, a concept which was better in theory than practice; and a magnetic anomaly detector in the tail boom. Radar was the one area in which the SP2H lagged behind its older brother, as the SP2H disappointingly was not fitted with the P2E's highly effective APS-31 attack radar. Overall, however, No. 10 Squadron's new aircraft was an enormous improvement over the Lincoln and the P2E. Attitudes and standards changed accordingly.

Before selected air and ground crews travelled to the United States to take delivery of the SP2Hs, some of No. 11 Squadron's best people were posted in, a move which did not help matters at Richmond but was appreciated at Townsville. Simultaneously, crews from No. 10 Squadron without any Neptune experience were attached to No. 11 Squadron for some P2E flying. The resultant almost instantaneous rise in standards was bolstered by the typically thorough training provided by the United States Navy. When the challenge presented by what was a modern and highly effective aircraft was added and accepted, No. 10 Squadron was, in effect, transformed.

Following the squadron's return to Townsville in early 1962, systematic air and ground training was introduced. Because of the large number of aircrew—seven crews amounted to about seventy people—a fair degree of on-the-job training had to be used for flying exercises as discrete training would have been prohibitively expensive. As long as key sequences were covered individually and the overall process was structured and carefully supervised there was nothing too much wrong with that approach. The establishment of a training crew which was formally responsible for supervising aircrew conversions and developing anti-submarine warfare tactics represented a notable initiative.

While No. 10 Squadron's new-found professionalism depended largely on the attitude and skills of its aircraft captains, who were always pilots, during

anti-submarine warfare operations the contribution of the lead navigator was also crucial. As tactical co-ordinator the lead navigator was responsible for integrating the information from the various detection equipments and then, working with the captain, determining the crew's actions. Inflight options were many and the task of co-ordinating the efforts of two pilots, three navigators and five signallers complex, a situation which gave SP2H navigators an opportunity to play a decisive intellectual role. The man who took the lead there was a quiet Royal Canadian Air Force exchange officer, Flight Lieutenant Bill O'Gorman, whose expertise and intellect raised RAAF maritime tactics to a new level and also, in the process, demonstrated the importance of the exchange system. O'Gorman was ably supported by an RAAF navigator, Flight Lieutenant E.C. Bloomfield. An excellent systems simulator built within the squadron further contributed to the dramatic turnaround in professional attitudes, while the arrival of the charismatic and able Wing Commander Geoff Michael as commanding officer in 1964 provided a quality of senior leadership which had not always been evident in the past.

Also contributing to the rise in quality was the reorganisation of the signaller mustering in the mid-1960s. Even at that comparatively late date, too many wartime signallers whose best days were perhaps behind them were still serving, content simply to operate radios rather than accept the challenge presented by the SP2H's state-of-the-art anti-submarine warfare systems.[24] Reaching the minimum acceptable standard and then coasting was no longer acceptable if the SP2H's capabilities were to be fully exploited. Signallers needed a wider range of analytical skills which could be acquired only through a good deal of hard work. The transition the maritime world was undergoing was reflected in the fact that at the squadron level the lead in effecting that change came more from capable younger, non-commissioned signallers like Flight Sergeants J.R. Taylor and J.R. Morris than it did from their older commissioned colleagues.

In 1964 the air staff concluded that the skill level required from sensor operators in an SP2H was equivalent to that of navigators, and that consequently those operators should all be commissioned. The category of air electronics officer (AEO) was introduced to supersede 'signaller' in January 1965. Educational qualifications were set at the Victorian Leaving Certificate or its equivalent (the same as pilots and navigators), and recruits graduated as pilot officers after far more comprehensive training than had previously been the case.[25] The AEOs were younger and better educated than the signallers they replaced and, by virtue of their background and RAAF training, had more in common with the pilots and navigators. Given those circumstances it was reasonable to expect that crews would work together better and standards would rise, which was precisely what happened. One of the RAAF's most experienced maritime commanders, Air Vice-Marshal T.W. O'Brien, identified the introduction of the AEO category as an important turning point in anti-submarine

warfare operations.[26] Good crew co-operation and high morale became one of the hallmarks of the RAAF maritime squadrons.

The arrival of the AEOs completed the sequence of changes which enabled maritime aircraft to dominate their environment for a substantial period. During international exercises with Seato and Commonwealth forces and in the course of regular visits to foreign bases at Hawaii, the Philippines, Guam and Malaysia, No. 10 Squadron consistently demonstrated its ability not merely to detect, but also to hold contact with and track submerged submarines for extended periods. From 1962 until about the end of the decade, in the intellectual and technological struggle which characterises anti-submarine warfare, the SP2H held the advantage.[27]

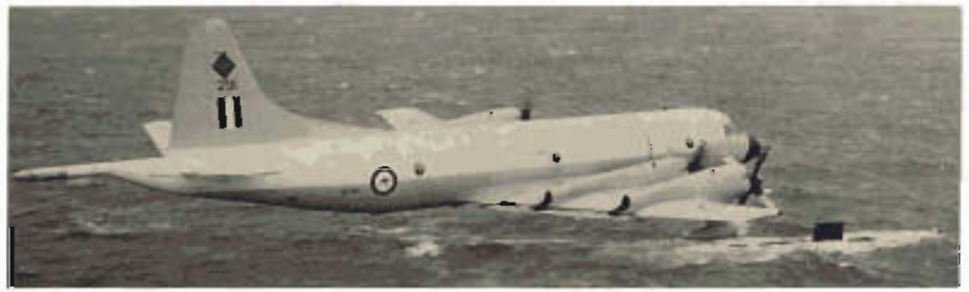
No. 11 Squadron's turn to upgrade its obsolescent aircraft came in 1967. When No. 10 Squadron acquired its SP2Hs the then-Lockheed P-3V Electra had been considered too expensive. Now, in the climate of the massive re-equipment program the RAAF was undergoing, the retitled Lockheed P-3B Orion was selected in preference to the Breguet Atlantic and Hawker Siddeley Nimrod. A few worrying moments were experienced when at the same time the Navy's revitalised Fleet Air Arm made a bid to buy Grumman Trackers and doubts arose whether the government would pay for two types of anti-submarine aircraft, but the mood of largesse then in vogue prevailed and both orders were filled.[28] Although the Orion's anti-submarine warfare equipment was little different to the SP2H's, its speed, range, time-on-task and comfort placed it a quantum level above the Neptune as an anti-submarine and maritime reconnaissance platform.

Only senior crews had been sent to the United States when No. 10 Squadron picked up its SP2Hs, an approach which turned out to be something of a false economy, as when the aircraft arrived at Townsville many months were needed to train those who had been left behind, and to bring the whole squadron up to operational standards. The same mistake was not made with the P-3B. At the end of 1967 the majority of No. 11 Squadron deployed to the United States from Richmond, as a result of which when the unit returned six months later it was almost immediately operational.

During those six months No. 11 Squadron's experience with the P-3B more or less parallelled that of No. 10 Squadron with the SP2H. Thorough and professional tuition from the United States Navy's maritime patrol training squadron, VP-31, at Moffett Field in California swept away No. 11 Squadron's remaining institutional cobwebs. A modern aircraft with modern systems represented an opportunity which the younger aircrew in particular were eager to take, and which was facilitated by the early acquisition of a purpose-built weapons system trainer initially operated by three highly regarded former members of No. 10 Squadron, all with SP2H experience, Flight Lieutenants L.B. Fisher, G.L. Cox and J.R. Taylor. The experience of the 1960s was reversed as No. 11 Squadron's standards leaped ahead while those of No. 10

Squadron remained bound by the limitations of their aeroplane and the escalating performance of submarines.

No. 11 Squadron did not return to Richmond when the crews flew their P-3Bs to Australia in May 1968. While the bulk of its members were in the United States the few remaining support staff had relocated to Edinburgh near Adelaide, ownership of that base having been transferred to the RAAF from the Department of Supply. A couple of factors had prompted the move. Over the past decade Richmond had become the centre of RAAF transport flying activities and, with two Hercules squadrons and one large Caribou squadron in residence, was close to saturation. Simultaneously, activity at Edinburgh had declined as the United Kingdom reduced its involvement in the weapons trials at Woomera which had provided the original rationale for the base's development.



A P-3B Orion from No. 11 Squadron, RAAF Edinburgh, overflying HMAS Otway, September 1968. R.J. LAING

Air Force planners were keen to acquire Edinburgh. The base was underutilised and its existing technical and domestic facilities were good, as was housing; further, the RAAF was underrepresented in South Australia. The key to the relocation, though, was the Orion's performance. The combination of Edinburgh's central location and the P-3B's high cruise speed meant that an aircraft could be on patrol in any of Australia's maritime focal areas within six hours of an alert and much less for the east coast, something which was not possible with the slower Neptune. Once No. 11 Squadron was established at Edinburgh the prospect of eventually re-equipping No. 10 Squadron with Orions and forming a maritime wing at Edinburgh was flagged. The Air Force build-up was enthusiastically supported by the South Australian Government as one way of bolstering the population, economy and social structure of the nearby struggling satellite city of Elizabeth.

As competence and capabilities within the RAAF's long range maritime patrol force continued to improve, operational tasking expanded. At the end of the 1960s the Chiefs of Staff Committee identified five roles for the force: the location and destruction of enemy submarines; gathering tactical intelligence for attacks against

enemy surface forces; providing maritime intelligence in Australia's area of responsibility; locating and destroying lightly armed enemy surface vessels; and mine laying.[29] In mid-1970 the RAAF began surveillance patrols at about monthly intervals within the Australian Area of the Indian Ocean as defined by the Radford/Collins agreement, an area bounded to the north by latitude 10 degrees south and to the west by meridian 78 degrees east. Following a visit to Australia in May 1971 by the United States Navy's chief of operations, Admiral E.E. Zumwalt, and with the approval of Australian Minister for Defence J.G. Gorton, those patrols were extended northwards past the 10 degree boundary, to terminate in either Singapore or Butterworth, on the basis of one flight in three.[30] That extension of operations gave Nos 10 and 11 Squadrons the opportunity regularly to detect and track Soviet nuclear-powered submarines, a task for which the faster P-3B was particularly well suited.

The operations against Soviet nuclear submarines exposed the growing deficiencies of the SP2H, particularly its slowness, which inhibited its ability to reach a search area quickly or to make a high-speed dash to a suspected target. Also compromised by the Neptune's limitations were war plans and the RAAF's ambition to collocate No. 10 Squadron with No. 11 Squadron at Edinburgh. The air staff believed that if limited war with Indonesia were to occur, Australia would have to deploy maritime patrol forces to a number of disparate areas to conduct a variety of tasks and counter a range of threats. Sea-borne infiltration would have to be prevented and off-shore installations protected off the northern New Guinea coastline; surface and sub-surface attacks against shipping were possible along the northern Australian coast between Learmonth and Cape York; the main Australian focal areas of Fremantle, Bass Strait, and Newcastle–Sydney–Wollongong were probable areas of enemy submarine activity; convoys would have to be escorted between Sydney and Papua New Guinea; and, as far as offensive operations were concerned, mining operations might be conducted in selected Indonesian waters.[31] In order to meet that level of commitment during World War II, twelve RAAF maritime reconnaissance squadrons and one United States Navy patrol wing using Catalina flying boats had been employed. Because modern aircraft were far more capable and Indonesia's current military capabilities were assessed as low, the RAAF calculated that the number of maritime patrol aircraft needed on-line during the 1970s would vary from nine for the lowest level of threat to thirty-five for the highest. That determination was, however, based on aircraft with the transit, patrol and dash speeds of the Orion. As long as the Neptunes remained on the order of battle Australia's maritime war plans would rest on flawed assumptions. The P-3B's popularity within the RAAF and the prospect of siting both squadrons at Edinburgh to form a wing made the eventual selection of a more modern version of the Orion highly likely when studies to replace No. 10 Squadron's Neptunes began in 1970.

Conducted in parallel with those studies was one of the most important minor re-equipment programs in the Air Force's history. The shortcomings of the weapons used by the RAAF's bomber force throughout the period reviewed in this book have been discussed in other chapters. No matter how good the platform, the effectiveness

of air strike operations ultimately depends on the effectiveness of the weapons. It made little sense for the RAAF to claim that the F-111s it had on order would be the best bombers in the region if, after flying to their target at 1000 kilometres an hour, skimming tree tops, day or night, in all weather, those aircraft then had to drop unguided, 'dumb' iron bombs, which they did. Action was in hand to avoid the same debilitating handicap in the maritime patrol force. Concurrent with the planning to replace the SP2H, a proposal was developed to arm the Orion with the RAAF's first long-range, precision air-to-surface strike missile.

Justification for the proposal rested on the Chiefs of Staff Committee's judgment that any attempted infiltration of Australia or its territories would probably be conducted by sea and would depend on small craft which would be dispersed over a wide area and would sustain their activities for an extended period.[32] The chiefs were keenly aware of recent successful and highly publicised attacks against Israeli warships by Egyptian fast patrol boats armed with surface-to-surface missiles, and were concerned that those kinds of craft and weapons could find their way into the inventories of Southeast Asian navies. Australia's service chiefs believed that aircraft rather than surface vessels provided the best defence against widely dispersed hostile patrol boats. A radar-equipped aircraft flying at a height of six hundred metres and a speed of four hundred and fifty kilometres an hour could maintain continuous, secure surveillance over an area of 130,000 square kilometres, and within that area detect and attack any surface vessel travelling at speeds of up to seventy-five kilometres an hour. By contrast, a ship sailing at forty-five kilometres an hour could maintain the same level of security over an area of only 1230 square kilometres.

But the surveillance and detection capability had to be backed up by the right weapons, and the RAAF's inventory of depth charges and torpedoes was unsuitable for attacks against lightly armed naval surface craft. Indonesia and China already operated vessels armed with 57-millimetre anti-aircraft guns with a maximum effective horizontal range of 7400 metres, and if short-range surface-to-air systems were added as expected during the 1980s, the envelope of danger could extend out to thirty kilometres and up to a height of 6100 metres. An attack with depth charges required aircraft to overfly the target, with the associated high risk; while torpedoes were limited by short range, which again could expose an aircraft to enemy gunfire, and could not be used in shallow water. A stand-off guided missile was the answer.

The RAAF initially favoured the television-guided Maverick air-to-surface missile, which was light and accurate and had sufficient stand-off range to allow attacks to be launched from outside the range of anti-aircraft guns. However, in addition to the Air Force's requirement, it was clear that the kind of weapon under consideration could be used by other elements of the defence force, such as RAN surface vessels, submarines, armed helicopters, and other RAAF aircraft, and that consequently a more flexible missile might offer better cost-effectiveness. Thus, while the project continued, it assumed a wider scope. The missile eventually introduced ten years later was the Harpoon, more advanced and with a much greater range than the Maverick.

At the beginning of the 1970s the RAAF's long-range maritime patrol force was in extraordinarily good shape by any standards, but especially so considering its condition only a decade previously. New equipment, a new base, a new organisation and, most significantly, a new attitude, had stimulated positive changes. And it was an amusing irony that in an air force dominated by fighter and bomber pilots, until precision weapons were subsequently acquired for the F-111C, once the unglamorous P-3 Orion maritime patrol aircraft was armed with Harpoon missiles, it became arguably the RAAF's most potent offensive weapons system.

CHAPTER 22

TRANSPORT

The growth of airlift during World War II was one of the most significant developments of any period of Australian military aviation. At the start of the war the RAAF did not have a single specialist transport squadron; by the end it had eight, with three more from the RAF under command. During demobilisation three transport squadrons were retained on the RAAF's order of battle—Nos 36, 37 and 38—all located at Schofields on the western outskirts of Sydney and grouped as No. 86 (Transport) Wing under the command of Group Captain R.F.M. 'Red' Green. When No. 37 Squadron was disbanded in 1948, the other two, supported by No. 486 (Maintenance) Squadron, were left to manage a rapidly expanding workload as RAAF airlift sustained Australian defence force operations throughout Southeast and North Asia.

Happily for No. 86 Wing, its workhorse during the demanding years from 1946 to the mid-1950s was one of the greatest aircraft ever built, the Douglas C-47 Dakota. Nothing needs to be said here about the Dakota which has not been said before in hundreds of other publications, other than that as this book was being written in 1995, a handful of 'Gooney Birds' remained in service, fifty-six years after first wearing the RAAF roundel. Most of the fixed-wing transport aircraft the RAAF introduced between 1946 and 1971—the Bristol Freighter, Convair 440, HS-748, C-130, Viscount, Caribou, Mystere and BAC-111—were intended in one way or another to replace the Dakota, but none by itself was able to offer the right combination of capabilities to force the C-47 into final retirement; indeed, all bar the C-130, Caribou and HS-748 had themselves come and gone by 1995. For over half a century the C-47 has been an indispensable element of the RAAF's airlift fleet in roles as diverse as passenger and cargo transport, VIP duties, reconnaissance, search and rescue, supply dropping, paratrooping, trials and development, medical evacuation, civil emergencies (bushfire and flood relief, grasshopper plague eradication), rain making, and as a flying classroom for non-pilot aircrew. Numerous Air Board papers on the composition of the transport fleet during the 1940s and 1950s summed up the situation in one simple sentence: 'A replacement type for the Dakota is not yet in sight'.

Among the thousands of missions the crews of No. 86 Wing flew in their Dakotas supporting such operations as the occupation force in Japan, the Berlin Airlift, the Malayan Emergency, research in the Antarctic, and the wars in Korea and Vietnam, two perhaps deserve special mention and qualify for that over-used adjective, 'epic'. The first, the Berlin Airlift, has already been discussed in some detail. A number of factors placed the ten RAAF crews who flew in that operation under consistent pressure: the importance of the airlift in demonstrating Western resolve during the early years of the Cold War, the strict navigation and instrument flying tolerances which had to be observed, the often adverse weather, and the sheer rate of effort

involved. As Chapter 10 has described, the RAAF Squadron Berlin Airlift performed with distinction.

The second of the epic operations was the courier service from Schofields to Iwakuni and return which supported the British Commonwealth Occupation Force in Japan from 1946 to 1947, a 21,000 kilometre, eighty flying-hours journey completed in ten days over open seas, mountainous land masses and uninhabited jungles; and which sometimes had to contend with typhoons, tropical storms and severe icing without the inflight radar or ground-based assistance which is now taken for granted.[1] According to No. 38 Squadron's commanding officer, Squadron Leader John Balfe, the Japan courier 'tested the skill and confidence of every [crew]' each time they flew the route, and in the process 'established [RAAF transport] flying at world airline standard'. In the two years No. 86 Wing operated the courier, three times a week, not one schedule was missed and ninety-five per cent of all services returned to Schofields on time.[2]

A C-47 from No. 86 Wing overflies Kure during a Japan Courier flight, 1946–47. RAAF

A third mission which borders on the 'epic' status should also be mentioned. This was the remarkable Operation Pig Bristle, flown by three Dakotas from No. 38 Squadron in May 1946.[3] Australia's war effort had left the country without many of the commodities required for the urgent task of national reconstruction. Among the items needed to get the home building industry moving again after a six-year hiatus were quality paint brushes. Oddly enough, the only source at the time was China, where the pioneering trading company Jardine Matheson had managed to obtain twenty-five tonnes of pig bristles for Australia from the foothills of the Tibetan Alps. Led by Squadron Leader Balfe, the three C-47 crews had to fly deep into China, 1100 kilometres from their departure point of Hong Kong, to Chungking on the Yangtse River. Maps were unreliable, navigation aids suspect, and the country in

turmoil as Jiang Kaishek's nationalists disintegrated before the growing tide of Mao Zedong's revolutionaries. While the Australians were completing their ultimately successful two-week, long-range shuttle, foreign legations were fleeing Chungking, which the communists were expected to occupy any day. John Balfe's brief but thrilling account of his team's exotic adventure should be mandatory reading in every RAAF air transport crew room.

The skills acquired in the course of those and similar operations were in some cases further honed at the turn of the 1950s by a tour in the United Kingdom with the RAF's No. 24 (Commonwealth) Squadron, the establishment of which was intended to extend co-operation between Commonwealth air forces, foster the development of common air transport flying techniques, and provide experience of flying conditions in all parts of the world.[4]

Even though a tour on the C-47 provided an ideal introduction to transport flying, and notwithstanding John Balfe's justified praise for post-war airlift operations, during the 1950s and early 1960s No. 38 Squadron was regarded as something of a 'cowboy' outfit in which standards and supervision could be ad hoc or indifferent. There was no approved checklist, and crews did not use the 'challenge and response' system for completing vital cockpit actions, relying instead on a few gnomonics committed to memory. Some inflight procedures were nothing less than dangerous: for example, it was common practice during asymmetric training for the pilot immediately to apply full power on the live engine regardless of the aircraft's speed and configuration, a technique which could increase the likelihood of losing control.[5] Formal conversion courses involving a thorough study of the Dakota and its systems followed by a structured program of flying were not conducted, on-the-job training being the preferred method of instruction. Because the C-47 was a fairly simple, multi-crew aircraft in which experienced operators could supervise newcomers while still completing a scheduled task, that approach would have been reasonable except for the reluctance of some senior pilots and navigators to share their knowledge.[6] The amount of 'hands-on' flying a copilot got depended entirely on his captain, and for some that meant almost none. Apparently the benefits derived from experiences like the Berlin Airlift and the Japan couriers were not always shared, an attitude which suggested that those concerned were either jealously guarding their status or, alternatively, hiding the extent of their ignorance.[7] As the motto of the RAAF's basic flying training school has it, 'Knowledge is Power'.

Nevertheless, by 1960 an enthusiastic recent graduate like Pilot Officer Stan Clark could still acquire a solid grounding in transport operations, as the high flying rate provided sufficient opportunity by itself for newcomers to learn from observation and experience, and there were some able captains willing to share their knowledge.[8] The largely independent nature of transport flying also meant that a crew tasked for, say, a two- or three-week mission away from their home base to a remote and demanding area learnt very quickly.

During the golden years of the Dakota, No. 86 Wing led a nomadic existence. Transport operations were centred on Schofields only until 1949 when they were shifted ten kilometres west to Richmond, leaving Schofields to the Fleet Air Arm. After five years at Richmond the wing then spent the period from 1954 to 1958 at Canberra, a relocation due in part to a growing demand for VIP services. The move back to Richmond in 1958 was to be the wing's last, and was prompted by the re-equipment of No. 36 Squadron with the Lockheed C-130A Hercules. No. 34 (VIP) Flight, which belonged to No. 86 Wing, stayed behind in the national capital to attend to the politicians' needs. At Richmond, while No. 38 Squadron soldiered on with the Dakota, No. 36 Squadron moved into a new and important era with the C-130.

By the early 1950s the Dakota was already fifteen years old, an age which for most aircraft would have meant retirement. RAAF planners had been looking for a replacement for several years but kept encountering two obstacles. First, the Dakota simply would not lie down and die. Its continuing utility was obvious, notwithstanding its relatively small load-carrying capacity. It made little sense to retire an aircraft which clearly had years of effective life left. Second, as air staff examinations of mediocre aircraft like the Fairchild C-119, the Bristol Freighter 170 and the Chase C-123B had repeatedly shown, there was no obvious replacement, even though the RAAF operated several B-170s for some years and placed an order (which was then cancelled) for six C-123s.[9]

The answer was eventually provided by the aircraft acquisition mission led overseas in 1954 by Air Vice-Marshal A.M. Murdoch.[10] Neither the F-104 fighter nor the V-Bombers which Murdoch recommended ever entered RAAF service, an outcome which might raise doubts about the mission's success. But Murdoch's proposal to re-equip one transport squadron with twelve C-130s redeemed matters by itself. From the earliest stages of its development the Hercules had been recognised as an outstanding aircraft which in a number of respects represented a design and capability breakthrough. Its large rear cargo door facilitated loading, off-loading and air dropping; an entire load could be released in one pass; two streams of paratroops could jump simultaneously; there was provision for air-to-air refuelling; short take-off and landing performance was excellent, as was the ability to operate from austere tactical runways; speed, rate- and angle-of-climb, manoeuvrability, and range and endurance were all impressive; and a modern pressurisation system greatly enhanced aeromedical evacuation.[11]

The total cost for the twelve aircraft the RAAF wanted, plus all spares and supporting equipment, was quoted as £14.681 million, an amount which worried some members of Cabinet. Thus, while Murdoch's proposal was accepted in principle his numbers were not. Officials with financial responsibilities argued for only three aircraft, the RAAF continued to insist on twelve. In what was not an uncommon occurrence, Chief of the Air Staff Air Marshal Scherger was criticised by Defence civilians for the unsatisfactory cost estimates he provided (at one stage three different

quotes had been sent to the Prime Minister's Department) and for his inclination to 'press ahead regardless [with the acquisition of twelve aircraft] without any clear understanding of ... our immediate requirements'.[12] That kind of bureaucratic hand-wringing was unlikely to have worried the domineering Scherger. In the final analysis it did not matter whether the CAS's numbers were based on a more detailed analysis than he had bothered to give the Prime Minister's Department, or an airman's intuition, or the desire to get as much for his service as he could. Within a few short years Scherger, like Murdoch, could claim vindication as the squadron of twelve C-130As which started operating from Richmond in early 1959 became indispensable to Australian defence force activities.

If, as this book maintains, the F-111 is the most significant aircraft the RAAF has ever operated, then, since World War II at least, the Hercules follows closely. It is difficult to overstate the importance of the Hercules to national defence. Capable of carrying 12,500 kilograms of cargo, or sixty-four fully armed paratroops, or ninety-two normally dressed passengers, or a combination of those loads, over 3400 kilometres at a speed of five hundred and thirty kilometres an hour, or lesser loads over greater distances, the C-130A was, in simplistic terms, about four times as effective as the C-47. Throughout the 1960s the C-130s were the lifeline for Australian forces serving with the Commonwealth Strategic Reserve in Malaysia and Singapore, with Seato in Ubon, and with the United States-led coalition in Indochina. It was also the C-130 which facilitated Australian defence commitments in Papua New Guinea and the islands of the Southwest Pacific, as well as some of the more remote regions of north Australia. Only after the introduction of the Hercules could the RAAF genuinely claim to possess the necessary scale of strategic airlift which made credible the government's policy of forward defence.[13]

The C-130's impact on attitudes in the transport world was no less profound. By the time RAAF crews started flying the Hercules in 1958 their fighter colleagues were onto their fourth post-war aircraft and thinking about a fifth; and their bomber colleagues were onto their second and eager for a third. Without understating the progress represented by the Sabre and the Canberra, the change for the fighter and bomber crews had been evolutionary and largely confined to aircraft performance rather than systems and weapons; the quantum advance there would come with the Mirage and F-111. The C-130, by comparison, replaced an aircraft which had been the backbone of allied airlift during World War II and had served the RAAF for twenty years. Almost three decades of technology had been leap-frogged in what was probably the biggest step-up in aircraft capabilities for any group of aircrew in the RAAF's history. In other words, the change was revolutionary, not evolutionary.

Nine crews each consisting of two pilots and a navigator, flight engineer and loadmaster deployed to Sewart Air Force Base near Nashville for C-130 training in mid-1958, led by Korean War veteran Wing Commander I.R. Olorenshaw with Squadron Leaders K. Isaacs and W.R. Berriman as flight commanders. Most of the

Australians had scant previous exposure to USAF transport operations and were imbued with the belief that the only way of doing things was the British way. It came as a rude shock when they discovered that, while their pure flying skills were good, they were manifestly inferior to their USAF contemporaries in such matters as professional attitude, flying discipline, use of technology, and knowledge of air traffic and instrument flying procedures.[14] Sewart itself also was an eye-opener. As the home of the USAF's main tactical transport wing and sixty C-130s, the base sustained an impressive scale of operations around the clock. That approach extended to training. The Australian crews were allocated to USAF squadrons where their progress was closely monitored by an instructor pilot. Often a long day's lectures would be followed by a simulator session in the early hours of the morning. The extensive and effective use of the simulator was another surprise, the full C-130 conversion requiring only about fifty hours flight time in the air.

Delivery of the RAAF's first C-130A, A97-205, at Lockheed Georgia. The initial flight with an RAAF crew took place on 8 November 1958. L–R: FltLt Radford (copilot), WgCdr Olorenshaw (captain), Sgt Wilson (flight engineer), WgCdr Thorpe (navigator), WOff Jones (loadmaster), Lockheed representative. J.A. RADFORD

Pilots who had spent years fighting for every bit of performance from the Dakota found themselves flying a machine with abundant power, speed, acceleration, range and rate-of-climb. Managing that leap in performance could be a challenge, as was the

technical complexity of operating the RAAF's first turbo-prop engines and first fully integrated flight instrument system. While the younger crews thrived on the challenge, a few of the older pilots struggled to adapt, relying on the support of capable copilots like Flight Lieutenant J.A. Radford. As a group, the flight engineers were probably the success story of the pick-up, topping their course at Marietta Georgia by a large margin and drawing high praise from Lockheed and USAF officials.

The technical leap the C-130 represented extended to the cargo loading and air dropping systems. The Dakota could carry about three and a half tonnes of cargo, which was usually tied down with nets—one of a new crewman's jobs was to learn the various knots. And aerial dispatch consisted in the main of man-handling boxes up to a maximum size of about sixty kilograms out the side door. By comparison, the C-130 could carry some twenty tonnes of freight which might range from small boxes to armoured personnel carriers, restrained by a combination of palettes, nets, straps and devices which in themselves required specialist training; and an entire load could be dropped from the rear doors in a single pass using one of several complex semi-automatic extraction systems. Planning the load distribution—known as calculating the 'weight and balance'—in a Dakota was a job which required care, as a miscalculation could place the aircraft's inflight performance at risk by upsetting the overall aerodynamic balance, but it paled into insignificance compared to the complexity of the same job on the C-130. As Chapter 8 of this book has noted, it was the introduction of the Hercules which made necessary the new aircrew category of loadmaster.

With their conversion behind them the RAAF crews collected No. 36 Squadron's brand new C-130As from the Lockheed factory at Dobbins Air Force Base and, after only a few hours shake-down flying, ferried them to Australia in December 1958 and January 1959.

The Hercules arrived home to great expectations and ambitious plans. Within weeks No. 36 Squadron had started the east coast, Darwin and Butterworth couriers, scheduled services which for years were to form the framework of RAAF transport support operations. Only a month after returning from the United States, one of the original captains, Flight Lieutenant Paul Choquenot, found himself tasked on a thirteen-day round trip Sabre ferry to Butterworth, with two C-130s doing a job which previously had required seven Dakotas. The immediate success of all of those tasks was an indication of things to come.

Training at No. 86 Wing also profited, through a combination of three factors. The crews who had trained in America had seen the benefits which accompanied the institutionalised professionalism of the USAF; the timing of the Hercules pick-up coincided with a general trend in the RAAF towards a more disciplined and systematic approach to flying; and the C-130's complexity demanded an attention to detail which could not be achieved through informal practices.

For the first few years only second-tour pilots were posted onto the C-130, with No. 38 Squadron providing a 'feeder' service via its Dakotas. In contrast to previous RAAF airlift training, the C-130 conversion started with a series of comprehensive

Beautifully formed vortices spiral back from the propellers of a C-130A as it pulls up sharply during a flying display at Sydney in 1959.
J.A. RADFORD

lectures on the aircraft's performance and technical details, followed by exams with a pass mark of eighty per cent.[15] A flight simulator which arrived in mid-1960 enabled pilots, navigators and flight engineers to improve their skills on the ground and save the RAAF money by substituting simulator hours for flying hours.[16] Supervision was thorough, perhaps on occasions even extreme. Flying instructor Flight Lieutenant F.J. Daniel earned some notoriety with his practice of checking how well a pilot he was examining had 'trimmed' the aircraft—that is, balanced its aerodynamic loads—by suspending a plumb bob from the cockpit roof once the aircraft had settled in the cruise, a habit he reportedly discontinued after one pupil responded by whipping out a pair of scissors and cutting the string. Still, after the widespread nonchalance of the 1950s a painstaking approach was not out of place, as the RAAF acknowledged in 1971 by awarding Daniel an Air Force Cross for his contribution to flying training. Of the other pilots who helped to institutionalise high standards in the C-130 fleet, Wing Commander D.W. Hitchins stands out for his invigorating and colourful leadership between 1964 and 1967.

Standards at the Air Movement and Trials Development Unit also benefited from the C-130's arrival.[17] A joint RAAF/Army organisation established at Richmond to conduct training in all aspects of air loading and dropping and to evolve new techniques in those skills, the unit's activities naturally expanded to accommodate the C-130's capabilities. Ground training was enhanced by the construction of a full-sized Hercules fuselage.

The C-130A's exceptional in-service performance attracted widespread support from the Defence establishment, especially the Army, to expand the capability. When a proposal was presented during the so-called 'accelerated' force structure review of the early 1960s to supplement the twelve C-130As with twelve of the latest model Hercules, the C-130E, little opposition was voiced.[18] No. 37 Squadron was reformed at Richmond in February 1966 to operate the new aircraft, which broadly speaking could carry a payload 4500 kilograms larger than the C-130A's over a longer distance. Once No. 37 Squadron settled down, its C-130Es were used primarily on overseas 'strategic' tasks and the C-130As on domestic 'tactical' tasks.

Wing Commander D.W. Hitchins was a vigorous and popular leader at No. 36 Squadron on C-130As from 1964 to 1967. He is pictured here in a reflective pose with one of No. 77 Squadron's Austers in Japan in the late 1940s.
D.W. HITCHINS

Both C-130 models came under scrutiny at the start of the 1970s. Based on RAAF fatigue data the 'E' model's centre wing section was likely to exceed its safe life before the aircraft's planned retirement date of 1986, a development which necessitated a repair program across the entire fleet. No such reprieve was planned for the 'A' model as RAAF aeronautical engineers had calculated that by the scheduled retirement date of 1978 each C-130A would have flown about 12,000 hours, 2000 more than the operational life assessed by the manufacturer. That kind of life-of-type extension was, incidentally, common for RAAF aircraft, and was testimony not only to the quality of the original product but also the meticulous maintenance of the Air Force's technical staff. There would, however, be no further extensions, and it was accepted that No. 36 Squadron's C-130As would be replaced by the C-130H in 1978. In an apt conclusion to this section, the decision taken in 1994 to replace No. 37 Squadron's C-130Es with the C-130J sometime towards the end of the 1990s means that the fourth variant of the Hercules will still be flying with the RAAF seventy years after the first.[19]

For all its capabilities the Hercules was not a Dakota replacement, a point which was not lost on the Army. At the start of the 1960s all Australian defence plans involving the Army assumed operations in Southeast Asia, where communications were poor, roads often impassable for months on end, bridges incapable of taking heavy traffic, railway systems (where they existed) inadequate, and the terrain often formidable.[20] Because any fighting would be predominantly between land forces, with the communists favouring guerilla and insurgency warfare, the Australian Army needed far better tactical air transport support than that offered by the RAAF in 1960. 'It is a fundamental fact of warfare', the Army stated, 'that enemy possession of superior numerical strength [which was expected to be the case] can best be countered by a superior standard of battlefield and logistic mobility'.

Army contingency plans identified a requirement for 19,000 kilograms of supplies daily, airlifted over a distance of three hundred and twenty kilometres, to support a battle group; twice that amount would be needed for two battle groups in an emergency. Whichever aircraft was chosen would also have to be capable of shifting a company group forward in not more than four lifts. Drawing on previous experience in Southeast Asia and the knowledge that its troops would probably have to prepare some airstrips, the Army's preference was for a fixed-wing aircraft capable of

operating fully loaded from an austere, four hundred metre-long landing field. The Army was not the only service which would need tactical air support in the event of limited war in Southeast Asia, as the RAAF itself would have to move 4000 kilograms of supplies about 1300 kilometres daily should it become necessary to deploy Sabre, Canberra and Hercules squadrons.

The Air Force had neither the fixed- nor rotary-wing aircraft to do the job. Its Dakotas were dismissed as obsolescent; while in the unlikely event that C-130s were released for tactical tasks they would be simply too big for many of the more primitive airstrips. A new aircraft was regarded as essential by the generals who, while acknowledging that the final choice would rest with the RAAF, tried to pre-empt or at least give the apparently reluctant air marshals a kick-start by openly stating their preference for the Canadian de Havilland Caribou 'Flying Three Ton Truck' which they had been able to inspect during a demonstration visit to Australia in 1960.

That was only the beginning of a bout of unedifying inter-service brawling from which the Air Force emerged with little credit. In a trenchant letter to Secretary of Defence Sir Edwin Hicks on the subject of tactical air support, Army Secretary Mr B. White expressed serious reservations regarding the RAAF's willingness to meet its Army responsibilities. The Army believed the Air Force would be 'more than reluctant' to provide resources for tactical transport, White wrote, at the expense of other projects the RAAF considered a higher priority. 'We can no longer regard air transport support as a luxury item or as a bonus', White asserted, 'it is an essential and basic means of Army manoeuvre.'[21]

Having fought most recently in Korea and Malaya free from enemy air attack, Australia's generals had perhaps forgotten how devastating it can be to be bombed, rocketed and strafed, an experience their enemy's soldiers were thoroughly familiar with. Perhaps also the generals were unaware that RAAF doctrine gave priority to gaining control of the air—which meant other roles such as airlift might have to accept a lower priority—precisely to protect land forces from that fate; or perhaps they simply were not interested in air force doctrine. Nevertheless, the generals had a point, as Korea and Malaya had also demonstrated the importance of transport aircraft to Western armies. The issue therefore was one with extreme inter-service political implications. If the RAAF's leaders did not heed the Army's legitimate claims, they would place their service's future in the tactical transport role at risk even before it had properly begun. Some sort of balance had to be reached.

The RAAF accepted that a general purpose aircraft was needed to replace the Dakota but did not want the Caribou, which the air staff believed did not carry a sufficient load far enough quickly enough. Army was unimpressed by what it called the RAAF's preference for a 'Rolls Royce' solution, a pressurised, turbo-prop aircraft with a much higher cruising speed but which would not provide the same short take-off and landing battlefield performance as the Caribou. Flying in pressurised comfort at relatively fast speeds was all very well for a service like the RAAF which only had to support units at established bases. The Army, however, wanted an aircraft which could shift about thirty troops several hundred kilometres into very short, rugged

airstrips; which had a rear cargo door and cabin dimensions large enough to allow a Land Rover and trailer to be driven straight on and off; and which permitted rapid paratrooping and most methods of aerial resupply. The Caribou met those essential criteria and was available almost immediately.

As Army continued to press its very good case, the RAAF regrettably procrastinated. According to some reports, under the leadership of Air Marshal Sir Valston Hancock the Air Force was 'intractable' in its opposition to Army and Navy aviation, to the extent that its good name suffered; in particular, the 'stubborn opposition' to the Caribou apparently caused the RAAF's reputation 'great harm' in government circles.[22] That attitude was shown to be doubly ill-advised when shortly afterwards the logic of the Army's case was acknowledged by the government's decision to order not only the Caribou but also helicopters to support battlefield operations.

Originally the intention was to buy twelve Caribou, complemented by a number of Chinook heavy lift helicopters, but when it became apparent that no Chinooks would be available for years the Caribou order was increased to eighteen and later raised again to twenty-nine. Appreciating that the extra Caribou would not be an ideal substitute for the Chinook, Cabinet tried to bridge the gap by authorising additional purchases of the Iroquois and Sioux helicopters which were already on order.

Under the Caribou contract the de Havilland company provided training for the first crews at its airfield in Toronto, after which No. 38 Squadron at Richmond assumed responsibility. Two pilots and one loadmaster/crewman comprised the standard crew, although subsequently in Vietnam an assistant loadmaster was added. As the pilots almost invariably had substantial Dakota experience their transition to the Caribou was not especially difficult, the main adjustment being the new aircraft's exceptional short take-off and landing capability. The newly created category of loadmaster/crewman combined in the one position a number of tasks previously carried out on a somewhat ad hoc basis by a number of people, and included loading and securing all cargo and passengers, calculating the aircraft's weight and balance, controlling aerial delivery, and supervising and performing technical maintenance. Preference during the early years was given to engine and airframe fitters; later, airmen from other ground crew musterings were accepted.

No. 38 Squadron's commanding officer, Wing Commander T.S. Fairbairn, flew the RAAF's first Caribou familiarisation sortie on 18 February 1964, accompanied by Flying Officer J. McQueen. Five weeks later the first three aircraft departed Toronto for Richmond on a 25,000 kilometre delivery flight via Gander (Newfoundland), Lajes (Portugal), Gibraltar, Luqa (Malta), Al Adem (Libya), Khartoum, Aden, Al Masirah (Trucial Coast), Karachi, Calcutta, Butterworth, Jakarta, Darwin and Alice Springs. Long-range auxiliary fuel tanks were fitted in the cargo compartment and, because of the remoteness of some of the route, the Dakota navigators from No. 38 Squadron who were carried as supplementary crew sometimes had to take astro-navigation fixes

aiming a hand-held sextant through the pilots' windscreen. Some of the aircraft from later ferries never reached their destination, being diverted from Butterworth to Vung Tau when the RAAF Transport Flight Vietnam was formed in July 1964. Others flew to Australia west across the Pacific rather than east through Europe, the Middle East and Asia. Those Caribou crews who subsequently heard fighter pilots describe as 'epic' the deployment in 1967 of No. 75 Squadron's Mirages from Williamtown to Butterworth, a move which took place in two easy stages and which was supported by what at times seemed to be half the Air Force, could have been excused if they had allowed themselves a quiet smile.

SqnLdr C.J. Sugden being presented with a mounted Caribou head by a senior officer of the Royal Canadian Air Force, 1964. RAAF

The Caribou was not a glamorous aircraft in an organisation in which there was a direct correlation between a pilot's status and the noise and speed of his aeroplane. However, it was prized by the Army, who had been the driving force behind its acquisition, and who found it invaluable for operations in difficult, remote areas. And the crews who flew the Caribou into demanding airfields often through hostile weather and across forbidding terrain in Australia, Vietnam, Papua New Guinea, Indonesia, Malaysia and, from 1975 onwards, the Karakoram Mountains in Kashmir, appreciated its exceptional short-field capabilities and reliability, and the flying and operational skills it both fostered and demanded.[23] Those skills were also appreciated by the thousands of farmers and other country people from northwest New South Wales who were assisted by the Caribou, Hercules and Iroquois squadrons during the RAAF's biggest civil emergency task, the flood relief operations of 1973–74.[24]

As far as technical support was concerned, the fact that Caribou detachments operated successfully for extended periods from the diversity of regions mentioned above is sufficient comment by itself. Special mention should, however, be made of the No. 38 Squadron technicians led by Sergeant Allan Elliott who in 1970 built a fully functioning Caribou systems trainer using parts retrieved from aircraft number A4-147 which crashed at Tapini in the Papua New Guinea highlands in 1968. Described by one senior engineer as 'the best technical training aid in the RAAF, including those for the F-111 and the Orion',[25] the mock-up was given the serial number A4-147 ½.

The arrival of the Caribou at Richmond in April 1964 prompted some changes to the organisation of airlift operations. At the time the air transport force was arranged as a wing comprising No. 86 Wing Headquarters, No. 36 Squadron with twelve C-130A

Hercules, No. 38 Squadron with ten Dakotas, Air Movements Training Flight and No. 486 Maintenance Squadron. Although the two flying squadrons operated different types in different roles, servicing and technical needs for both were provided by No. 486 Squadron and all activities co-ordinated by the wing headquarters. Because No. 38 Squadron's Caribou would be committed to Army support for much of the time, a more flexible arrangement better able to respond to short-notice and geographically widespread tasking was needed.[26] That objective was achieved by disbanding No. 86 Wing Headquarters and No. 486 Maintenance Squadron and establishing Nos 36 and 38 Squadrons as independent units with their own technical and operations staff, and making the two squadrons and the Air Movements Training Flight directly responsible to the officer commanding Richmond.

No. 38 Squadron Caribou on the tarmac at Richmond after the first ferry flight across the Pacific, from Toronto via the United States, Honolulu, Canton Island, Fiji and Norfolk Island, a flight time of 62 hours 20 minutes. June 1965. RAAF

Further adjustments to those arrangements became necessary in 1966 when No. 37 Squadron was reformed following the acquisition of twelve C-130Es. Both Hercules squadrons could be tasked with either tactical or strategic heavy lift duties, but the extra range and payload of the C-130E made No. 37 Squadron the preferred unit for strategic tasks, which was why RAAF contingency plans for a conflict in Southeast Asia assumed the C-130Es would perform the bulk of the route flying to and from Australia and the C-130As would support in-theatre operations. In order to foster operational flexibility the squadrons were not grouped as a wing but functioned independently, each having sufficient organic technical support to deploy and carry out a substantial level of maintenance in the field.[27] At the same time, it was clear that the commonality between the two C-130 types would permit worthwhile savings if deeper maintenance were conducted at the one organisation. Consequently No. 486 Maintenance Squadron was resurrected at Richmond for that purpose just over a year after it had been disbanded.

By the end of the 1960s Richmond had become the RAAF's largest base, supporting No. 38 Squadron's Caribou and, less directly, those of No. 35 Squadron in Vietnam,

the two squadrons of Hercules which flew regularly throughout Australia and Southeast Asia, and a number of major ancillary units, including No. 2 Aircraft Depot, No. 486 Maintenance Squadron, and the Air Movements Training and Development Unit. Major works had made the base not only the RAAF's largest but also one of its most effective and attractive. However, one worrying problem remained. Richmond's main runway had been sealed in 1945 and its length extended over the years to 2140 metres. While the runway was satisfactory for the Hercules and Caribou, it seemed likely that in the future, heavier and faster aircraft would need further extensions, ideally to about 3000 metres. But with Windsor township less than two kilometres from one threshold and Richmond just as close at the other end, a satisfactory resolution to the problem seemed unlikely.

No. 86 Wing and Richmond were the focus of RAAF airlift activities but they were by no means the sole source. Many bases and units operated their own transport aircraft for a variety of purposes: for example, No. 34 (VIP) Squadron at Fairbairn, the School of Air Navigation at East Sale, Aircraft Research and Development Unit at Laverton, the RAAF Antarctic Flight, Nos 1 and 2 Air Trials Units at Woomera and Edinburgh, and Transport Support Flight Butterworth. In the main those units relied on the Dakota until it was replaced or supplemented by either the Caribou or the Hawker Siddeley HS-748, although specialised types like the Bristol 170 Freighter and the de Havilland Beaver sometimes appeared on a flight line.

No. 34 Squadron's privileged position as the private airline of the nation's political leaders makes it worthy of special comment. VIP transport after World War II was the responsibility of the Governor-General's Flight, based at Canberra. As the flight's charter expanded to encompass other dignitaries such as visiting foreign officials, senior politicians and service chiefs, its standing continued to rise until it achieved independent status in July 1959 as No. 34 (Special Transport) Squadron.[28]

Possibly because of the rank of its clients, No. 34 Squadron's standards seem to have been better than those in the rest of the transport force, at least until No. 36 Squadron re-equipped with the C-130A. Wing Commander W.R. Fitter was a key figure in that situation, serving as the VIP unit's commanding officer from August 1958 to March 1964. Fitter introduced written exams on the C-47's technical systems, and insisted that his crews complied with civil airways procedures at a time when those procedures were a dark mystery to many RAAF airmen.[29] Squadron Leader Barry Gration later built on Fitter's foundation by developing critical performance data for No. 34 Squadron's aircraft and, equally as important, making the use of that data mandatory.

Unlike some units, No. 34 Squadron rarely had problems modernising its fleet. For the first twelve years after the war VIP transport depended on the Dakota, an arrangement which by the mid-1950s was unacceptable since high-speed, comfortable, pressurised passenger aircraft had become the norm. Notwithstanding the fact that

new aircraft were necessary, the circumstances under which Minister for Air Athol Townley acquired two Convair CV-440 Metropolitans were extraordinary.

During a visit to Washington in May 1955, Townley mentioned his interest in acquiring two pressurised transport aircraft to USAF Chief of Staff General Nathan F. Twining.[30] Twining replied that if a firm proposal were received, he would make two Convairs available. Without referring the matter to the RAAF, Townley reported the discussion to Cabinet, advised his colleagues that the Convair was already operated in Australia by Ansett Airways and could be fitted with 'certain desirable refinements for VIP work', and sought approval to spend up to $1.3 million on the two aircraft. Only then did Townley notify Chief of the Air Staff Sir John McCauley of his intentions. Acting after the event—which was all he could do—the CAS instructed his staff to examine the Convair's performance against existing RAAF standards for VIP and transport aircraft. That examination found the aircraft deficient in a number of respects: asymmetric performance was unsatisfactory, the maximum range was twenty-five per cent less than ideal, and the passenger seats were not stressed to withstand the 'g' loadings (in case of an accident) specified by the Department of Civil Aviation.[31] There were also problems with the crew configuration, avionics and servicing arrangements. After hearing McCauley out Townley simply ignored him and instructed Defence Secretary Sir Edwin Hicks to confirm the order. Despite the RAAF's misgivings the Convairs proved to be a popular aircraft with both passengers and crews and gave No. 34 Squadron good service for twelve years.

Two observations can be drawn from the affair. First, it demonstrated Townley's extreme self-confidence, his almost arrogant belief that it was acceptable for him to ignore the specialist advice of the Air Force and order an aircraft solely on the basis of his own judgment. Second, because in this case he could reasonably argue that his arbitrary behaviour was vindicated by the Convair's good in-service record, he perhaps became even more confident of his ability to take major decisions independently. If that were the case, it would seem to throw some light on his performance several years later when, as described in Chapter 20, he once again ignored the RAAF and ordered an aircraft himself, although this time not an innocuous transport but a strategic bomber, the F-111.

No. 34 Squadron's Dakotas and Convairs were briefly supplemented by two Vickers Viscounts until Townley's successor as minister for air, Peter Howson, working on the basis that there is never a good time to tell taxpayers that a new aircraft has been ordered for politicians, convinced Cabinet to confront the predictable public opprobrium by replacing the entire VIP fleet in one fell swoop. In 1966, three Mystere 20s, two Hawker Siddeley 748s and two BAC-111s were ordered to replace the Dakotas, Convairs and Viscounts.[32]

That sudden rise in the quality of the VIP fleet seemed to generate a period of political turmoil over No. 34 Squadron's employment. During the second half of 1967 a series of questions was raised in Parliament about the squadron's costs and its alleged improper use by members of Cabinet. The 'VIP Affair' as it became known did not affect the RAAF directly but it did cause major problems for the government of

Prime Minister Harold Holt. Allegations made in the Senate that Holt, Howson and Treasurer William McMahon had all lied to the Parliament prompted the leader of the opposition, wartime RAAF navigator E.G. Whitlam, to move an unsuccessful no-confidence motion in the House of Representatives.[33] Three years and numerous allegations regarding the misuse of No. 34 Squadron later, Minister for Air Senator Tom Drake-Brockman announced new guidelines for VIP operations.[34] Only members of the British Royal family, the governor-general and the prime minister could approve flights for themselves and those travelling with them. All other flights had to be authorised by the governor-general, the prime minister or the minister for air. A list of people who qualified as 'VIPs' and were eligible to apply to fly with No. 34 Squadron was issued and included federal ministers, the leader and deputy leader of the federal opposition, individuals of similar status and importance visiting Australia, serving officers of the equivalent rank of air vice-marshal and above, and other persons of 'like status and importance'.

Governor-General Sir Paul Hasluck put those new guidelines into effect with a vengeance when he used a BAC-111 for one of No. 34 Squadron's more exotic tasks in October 1971. As Australia's head of state, Hasluck accepted an invitation from the Shah of Persia to attend the twenty-fifth centenary celebrations of the establishment of the Iranian monarchy during a week's extravagant entertainment at the ruins of the ancient city of Persepolis. Precisely how the RAAF's involvement in that kind of task fostered broader operational capabilities or contributed to the defence of Australia was not always clear, apart from which the use of the BAC-111 incurred public expenses for air travel of about $25,000, when $7500 would have bought first-class airline tickets for Hasluck's entire party.[35]

Before turning to rotary-wing transport operations, the preliminary planning which occurred in 1970 to replace the C-130A warrants attention. Given the proven performance of the Hercules it might have seemed a straightforward matter simply to have ordered the most recent addition to the line, the 'H' model. However, with the F-111 soon to enter service and consideration already being given to a replacement for the Mirage, the air staff wanted to take its transport fleet the extra step the new strike and fighter aircraft would represent. That step would entail fitting out some of the C-130A replacements as air-to-air refuelling tankers, a capability the RAAF had never possessed.

Recognition of the value of air-to-air refuelling was not new. As far back as 1958 the restricted range of the Sabre and the vast distances routinely patrolled by the RAAF had prompted Air Marshal Scherger to authorise the Commonwealth Aircraft Corporation to conduct research into the subject. Among the possibilities CAC examined were 'buddy' refuelling between Sabres, with one fighter taking fuel from another; and modifying the Canberra as an interim tanker for Sabres.[36] Nothing ever came of those suggestions.

Twelve years later the Air Force was ready to try again. Two reasons were put forward for the acquisition of an air-to-air refuelling capability: first, it would improve the effectiveness and tactical flexibility of the strike and fighter forces; and second, the deterrent effect generated by the F-111s would be strengthened.[37] Consequently the air staff recommended replacing the twelve C-130As with six C-130Hs and six second-hand Boeing 707s, the latter to be used for both strategic troop transport and air-to-air refuelling.[38]

A firm decision regarding a replacement for the C-130As did not have to be made until 1976, by which time relations with Indonesia—previously the prime object of deterrence and the F-111—had improved considerably. Political sensibilities accordingly came into play as all thoughts of enhancing the F-111s' ability to strike neighbouring countries by extending their range with air-to-air refuelling were rejected by the civilian bureaucracy in the Department of Defence.[39] A one-for-one Hercules replacement program was approved, with twelve C-130Hs superseding the C-130As in 1978. Several Boeing 707s were acquired in 1979 but were used exclusively in the strategic and VIP transport roles for the following ten years. Even when the B-707s were eventually modified for air-to-air refuelling in 1990 the system they were fitted with was incompatible with the F-111, being suitable only for the F/A-18s which had replaced the Mirages in 1985.

The first serious military interest in rotary-wing aviation in Australia came from an Army proposal in 1943 to acquire helicopters for engineering work in New Guinea. While the idea was sound, Army's suggestion that three aircraft could be built in Australia using specifications and drawings they would provide, and which apparently were based on the work of the American aeronautical design genius Igor Sikorsky, could most kindly be described as naive. Responding to the requirement but adopting a more sensible approach, the RAAF arranged to acquire six Sikorsky R-5 helicopters from the United States under the lend-lease arrangements and sent two pilots to America for training. The war ended before the helicopters were delivered so the order was cancelled.

The potential of rotary-wing operations nevertheless was obvious, so the RAAF moved to enter the field. In October 1946 an American-built Sikorsky S-51 was ordered for £20,000, the intention being to conduct a series of civil emergency trials, including bushfire control, pest destruction and rescue operations.[40] The Air Board was also interested in the military application of helicopters and instructed the Aircraft Performance Unit, which was to operate the S-51, to compare aspects of the helicopter's performance with those of fixed-wing aircraft, and to assess its suitability for 'mobile warfare' in which an air force might support land and sea actions.

At the time the S-51 was ordered Squadron Leader K.V. Robertson was in the United Kingdom completing No. 5 Empire Test Pilots Course. Selected to be the RAAF's first rotary-wing pilot, Robertson was sent to the British Airborne Forces Experimental Establishment at Beaulieu for training, where he went solo on a

Sikorsky R-4 after only one hour forty minutes flying time of dual instruction, a remarkable achievement. He then travelled to the United States for a conversion onto the S-51, in the course of which he became friendly with Igor Sikorsky, who sometimes drove the young Australian to New York in his Ford coupe for an evening at the 'Diamond Horseshoe' nightclub.[41] When the S-51 arrived in Australia in 1947 it was assembled at No. 1 Stores Depot at Laverton and, with Robertson at the controls, made its maiden flight on 9 October. The RAAF's first helicopter soon proved its value in such activities as medical evacuation, bushfire fighting, forestry patrols and search and rescue. Consequently, two more S-51s were bought in 1951, the intention being eventually to equip all five Citizen Air Force squadrons with helicopters to assist with civil emergency work.[42]

The formal handover of the RAAF's first helicopter, Sikorsky S.51 A80-1 at the Sikorsky factory, Bridgeport, Connecticut, 1947. L–R: WOff McMillan, SqnLdr K.V. Robertson, FltLt K. Busby, Igor Sikorsky, Jimmy Viner (Sikorsky's chief test pilot), and two other company pilots. D. O'BRIEN

That good intention never came to fruition; nor does it seem that the RAAF progressed far during the rest of the decade with its plan to trial helicopters as support vehicles for land and sea warfare. When in 1959 the Air Force finally raised a submission to acquire operational helicopters, search and rescue was listed as the primary role, with casualty evacuation and light liaison as secondary tasks. It was only after Cabinet had approved the purchase of eight Bell Iroquois that the stated role was amended to read 'search and rescue *and* Army support'.[43] When No. 9 Squadron was reformed in 1962 to operate the Iroquois it was officially designated as a 'search and rescue' squadron.[44]

The Iroquois had been chosen following a series of evaluations by RAAF staff in London and Washington, who had also looked at the Vertol 107, the Kaman HU-2K-1,

the Wessex Mks I and II, the Whirlwind Mk 10, and the Sikorsky S-58, S-61 and S-62. None of those types was as suitable as the Iroquois, a modern, reliable, easily maintained machine which most closely satisfied the RAAF's air staff requirement and also was reasonably priced, with eight aircraft plus support costing about £1.86 million.

Notwithstanding the input from the RAAF staff overseas, the process by which the Air Force selected the Iroquois and brought it into service was odd. The staff officer in the Department of Air responsible for recommending the type and managing its introduction held the appointment of operational requirements (maritime).[45] While there were specialist operational requirements staff for the bomber, fighter, transport and maritime roles, there was none for helicopters. Apparently the management of the rotary-wing force could be done on a part-time basis by an officer with little knowledge of the machine or its roles.

Once the Iroquois had been selected a procurement team was sent to the United States. Initially that team did not include a pilot, consisting instead of a squadron leader equipment officer as leader, a flight lieutenant equipment officer, a squadron leader engineer and two senior NCO tradesman. Later Squadron Leader R.A. Scott, who was one of the RAAF's most experienced rotary-wing pilots, was added, but only as an 'adviser' with no official status. Scott was the only member of the team who knew anything about army operations, helicopters and gas turbine engines. During numerous briefings by American officials on the Iroquois, the lack of operational knowledge amongst the others was often a source of embarrassment.[46] In contrast to the Iroquois experience, the team which travelled to the United States in mid-1963 to select a new bomber for the RAAF consisted of an air marshal (the CAS), an air commodore engineer, a group captain pilot, two wing commander engineers, a squadron leader engineer, a squadron leader equipment officer and a senior public servant.

The low profile of helicopter operations was also apparent in the arrangements made for pilot training. Six pilots were selected to form No. 9 Squadron at Fairbairn, including Squadron Leader Scott and Flight Lieutenant J.H. Cox, who between them were to play a leading role in bringing the Iroquois into squadron service.[47] Initial training on the UH-1B was completed at the United States Army Aviation School, Fort Rucker, Alabama, in July 1962. Because the RAAF's expectations for its move into helicopter operations were modest, it was thought that only one or two replacement pilots would have to be trained annually for the next five years.[48] However, when eight more Iroquois were ordered for army support in 1963 followed by another eight in 1964, and No. 9 Squadron was sent to Vietnam in June 1966, the RAAF's assumptions regarding rotary-wing tasking had gone well and truly by the board. Army support, not search and rescue, was No. 9 Squadron's main role; and the demand for Iroquois pilots was about twenty a year, not one or two. The RAAF's second Iroquois squadron, No. 5, which had been formed in May 1964 for operations on the Thai/Malaysia border, had to return to Fairbairn from Butterworth to take over the expanded training role.

The RAAF's first Iroquois pilots are awarded US Army wings after graduating from the helicopter instrument flying course at the US Army Aviation School, Fort Rucker, Alabama, in July 1962. L–R: FltLt R.A. MacIntosh, FltLt J.H. Cox, Colonel Phillips (US Army), FltLt K.D. Clark, SqnLdr R.A. Scott, FltLt D.H. White, FltLt L.O. Hindley. R.A. SCOTT

Over the following two decades the RAAF was to operate sixty-six of the 'B', 'D' and 'H' model Iroquois. Helicopter operations reached their greatest intensity and highest level of achievement during the Vietnam War, as the chapter on that conflict has described. Those wartime achievements were complemented by many hazardous peacetime rescue and civil aid missions, Army mapping duties in some of the most remote and geographically hostile regions of Papua New Guinea and Indonesia and, from 1976 onwards, United Nations peacekeeping activities in the Middle East, service which contributed to the ubiquitous 'Huey's' reputation as one of the Australian Defence Force's great aircraft.

Despite the success of the Caribou and the Iroquois, the Army remained firm in its ambition to acquire a heavy lift helicopter to move large weapons and loads around the battlefield in a single lift. A seven-man Air Force team led by the director of operational requirements, Group Captain C.F. Read, spent six weeks in North America late in 1962 looking for an aircraft capable of carrying an internal load of 2270 kilograms over a radius of action of one hundred and fifty kilometres in tropical conditions, parameters which led them to evaluate the Sikorsky S-61R, Vertol 107-II and Boeing CH-47 Chinook.[49] The Chinook emerged as by far the most suitable aircraft and was strongly recommended, a decision which pleased the generals who had wanted the Boeing aircraft from the start.

Unfortunately the planned Chinook acquisition was frustrated by production delays; in the meantime, the RAAF bought additional Caribou and Iroquois to try to fill the gap. When the program was reactivated in 1969 another evaluation team was sent to the United States. This time, team leader Group Captain P.F. Raw had two aircraft to compare: the Chinook and the Sikorsky CH-53. In a decision which pleased neither the Army nor the Air Force, Raw recommended the CH-53.[50] Rejecting Raw's 'somewhat confusing' report, the Air Board instructed the deputy chief of the air staff, Air Vice-Marshal C.F. Read, to review the matter. Read found no reason to change his recommendation from 1962, especially as the Chinook could carry a greater payload than the CH-53 and appeared to offer superior performance in the highlands of Papua New Guinea. A tentative order for twelve CH-47Cs placed in August 1970 was confirmed in March 1972, and work started at Amberley—chosen because of its central position between the main Army users at Singleton and Holsworthy in New South Wales and Townsville in Queensland—to accommodate the new unit, which would be the reformed No. 12 Squadron. Delivery was scheduled for 1974. The finalisation of the order came as something of a relief to the Army, who regarded the Chinook as essential to their tactical mobility and had been concerned by the apparent low priority the RAAF had given the project.[51]

Because there was never enough airlift to satisfy the demand, in 1970 the Chiefs of Staff Committee endorsed a list of priorities for the RAAF's transport fleet.[52] Three tasks shared top position: those which affected the security and capability of Australian forces engaged in war; those which involved the preservation or saving of human life; and special flights with international military or political implications. Second priority went to tasks in direct support of forces in operational areas; routine aero-medical evacuations; search and rescue; priority VIP movements; and aircrew training. Training related to the operational efficiency of the armed forces came third; while last on the list was 'other tasks', which seemed like a fair thing.

The fact that airlift priorities had to be formalised might have caused the RAAF's more thoughtful leaders pause for reflection on at least two counts. First, the importance attached to airlift represented a remarkable turnaround from 1939 when the RAAF had no specialist air transport units. And second, while by 1971 the demand for airlift could never be met and the transport fleet's crews were, in a sense, always operational, and their users got very upset if programmed tasks were not satisfied, there was no similar 'operational' demand for the fighter and bomber squadrons on whose existence Air Force leaders believed so much of their service's status and raison d'etre rested.

CHAPTER 23

TESTING THE LIMITS

The Experimental Station established by Lawrence Wackett at Randwick in 1924 was the RAAF's first research and development unit. Following its closure in 1930 no one organisation was solely responsible for testing and modifying the RAAF's aircraft and their associated systems. An ad hoc approach to that crucial task may have been tolerable during the lean years from 1930 until 1939, but not thereafter. A specialist research and development unit was essential to test and refine the aircraft manufactured by the rapidly growing local industry, and to adapt imported designs to Australian conditions. Aircraft which had fought successfully in other theatres did not necessarily succeed in the Southwest Pacific. For example, Australian engineers and test pilots made significant technical changes to two of the war's best fighters, the Spitfire and the Kittyhawk, following performance problems in the Pacific which had not been evident in Europe. Trials were not confined to allied aircraft, as flight testing of captured Japanese machines could generate data which might be translated into a combat edge for Australian pilots. Rigorous research and development was also critical if the maximum performance were to be extracted from equipment such as radars, bomb sights, weapons, radios, navigation aids, flight instruments and cameras. Starting from a very narrow experience base, the RAAF soon earned an international reputation for testing aircraft and their systems in tropical conditions.[1]

Initially all trials were conducted by the Special Duties and Performance Flight of No. 1 Aircraft Depot at Laverton, but, as the importance of research and development became increasingly apparent, an independent organisation, No. 1 Aircraft Performance Unit (APU), was established in December 1943. Under the command of a notable figure in the history of RAAF test flying, Squadron Leader J.H. Harper, the unit was tasked with testing all aircraft accepted into the Air Force, including flight trials of the aircraft themselves, any modifications, and all ancillary equipment. In meeting his responsibilities, Harper was required to work closely with manufacturers, scientific research institutions, aircraft laboratories and all relevant RAAF units. In September 1947 the APU was renamed the Aircraft Research and Development Unit (ARDU) to describe more precisely the nature and extent of its activities. The unit remained at Laverton apart from a temporary move to Point Cook between 1946 and 1948 while facilities at Laverton were being refurbished, although after 1953 flying increasingly was conducted from the longer runway at the Department of Supply's new airfield at Avalon near Geelong.

While much of the wartime Air Force was closed down or sold off following the victory over Japan, research and development sensibly was marked for continuing growth.[2] Some of that growth was, ironically, based on Japanese expertise. In what was a slightly bizarre episode, Wing Commander Harper and the technical assistant to the air member for engineering and maintenance, Wing Commander G.D. Marshall, travelled to Japan in January 1946 as part of an Australian scientific mission, with

instructions to investigate research and development methods which might be of value to the RAAF, and to examine and select any equipment which might 'become available' from Japanese organisations and which would contribute to Australia's future technical superiority. If possible, such 'tools' and 'methods' were to be obtained either on a reparations 'or some other basis'.[3]

Unfortunately for Marshall and Harper, the Australian team arrived too late to join in the euphemistically titled 'unrestricted sampling' which had occurred in the first heat of occupation. It was obvious to the Australians that a great deal of Japanese equipment had already been sent back to Wright Field in the United States. Conscious of the need for propriety and the danger that 'sampling' could easily become looting, Marshall and Harper carefully adhered to formal reparations procedures. They were able to send No. 1 Aircraft Performance Unit some 'interesting' and 'useful' items, including all of the apparatus, tools and rigs from the Japanese Central Aeronautics Research Institute located at Mitaka near Tokyo, equipment which they believed could be used in existing research centres and which was otherwise expensive and difficult to acquire.[4]

The growing status of research and development in the RAAF was accompanied by growing professionalism. When the Special Duties and Performance Flight was formed the RAAF did not have any pilots who had completed a comprehensive test flying course, an understandable deficiency given the scarcity of such training and the immature state of Australian aviation generally. That deficiency was redressed as soon as access to formal training became available. Only months after No. 1 Aircraft Performance Unit was established an RAAF pilot, Lawrie Brady, was posted to the United Kingdom as a student on the second Empire test pilots course at Farnborough in 1944, a progressive initiative which unfortunately faltered when Brady was killed in an aircraft accident. Jim Harper was sent over to finish what was left of the course. The following year Squadron Leader D.R. Cuming became the first RAAF pilot to complete the full course, setting the standard for those who were to follow by graduating as dux and winning the most prestigious award, the McKenna Trophy.

Those successes and firsts were only two of the many 'Jell' Cuming accumulated during a brilliant career in which he came to be regarded by many of his peers as one of the best pilots and certainly the outstanding test pilot in the RAAF's history.[5] The first fully qualified RAAF test pilot, the first person to fly a jet aircraft in Australia (a Meteor on 5 June 1946), winner in 1953 of the Oswald Watt Gold Medal awarded annually by the Royal Federation of Aero Clubs of Australia 'for the most brilliant performance in the air or the most notable contribution to Australian aviation', chief test pilot and commanding officer of the Aircraft Research and Development Unit, test pilot during the war of captured Japanese aircraft and scores of allied aircraft, and later of the Vampire, Meteor, Canberra, Sabre and Mirage, leader of the RAAF team for the England–New Zealand air race in 1953, awarded the Air Force Cross and Bar and Order of the British Empire for his services to test flying, senior engineer for the

SqnLdr D.R. 'Jeff' Cuming points out features of an RAF Meteor Mk 3 to CAS AVM Jones. The aircraft was brought out to Australia for tropical trials in 1946–47. D.R. CUMING

F-111 project—the record is extraordinary. Cuming's achievements are unique in the RAAF, and given the reduction of aircraft types and flying in modern air forces will remain so.

Like many of his contemporaries—Harper, Marshall, and Flight Lieutenants J.A. Rowland, L.S. Compton and R. Noble—Cuming was an engineer by category rather than a pilot in the General Duties Branch. Until the steady stream of Empire Test Pilots School graduates started to filter into the system, the RAAF tended to employ pilot-qualified engineers on research and development duties in an attempt to achieve the desirable combination of flying skill and technical knowledge. Based on the careers of those mentioned, the practice was highly successful. As might be expected of someone with his record, Cuming was a cool, clear thinker with an exceptional ability to analyse problems. His 'superlative' flying skills and 'most extraordinary sense of what [an] aeroplane [was] going to do' were ideal for test flying, as were his inquiring mind and persistence.[6]

The years from 1942 to 1956 when Cuming was most closely involved with test flying were the high point of the RAAF's research and development activities. Flight testing programs were extensive, diverse and stimulating, as for the first time highly qualified pilots and engineers began to subject the RAAF's aircraft to systematic analysis in an attempt to extract maximum performance and safety. The realisation that operational practices and organisational effectiveness would be substantially enhanced by rigorous testing was sufficient motivation in itself for the comprehensive program of testing. Further motivation came from the introduction of jet propulsion

and advanced aerodynamics, which in combination not only transformed aircraft performance but also exposed structures and materials, and human beings, to dramatically increased levels of stress. For example, within the space of twenty minutes, a Sabre which had been sitting on the ground at Darwin in 40° Celsius heat might have climbed to 12,200 metres and a temperature of minus 40°.

Responding to that kind of challenge, the RAAF played a prominent role in a number of trials which were at the forefront of flight research and development, including boundary layer separation trials on Mustangs and Vampires, boundary layer shock wave inter-action on Sabres, and the physiological effects of supersonic flight and decompression shock.[7] Through their achievements in those and other programs, Cuming and his colleagues earned a respected reputation within the exclusive world of Western test flying.[8]

ARDU was a stimulating environment. For a time there were twenty-six different aircraft types on the tarmac, and it was not uncommon for a pilot to fly most of them in a month. After several tours at the unit a pilot might have one hundred types in his log book, ranging from single-engined trainers through to multi-engined bombers and supersonic fighters.[9]

The standards aspired to by test pilots were not, however, necessarily universal, as one of the unit's secondary functions illustrated. It was an APU/ARDU task to provide aircraft for staff officers from RAAF Headquarters in Melbourne to fly on an ad hoc basis, so they could 'keep their hand in'. An impromptu telephone call would be made to see if 'an' aeroplane was available, the staff officer would then arrive at Laverton and, with no supervision, jump in whichever aircraft was available for what was no more than a glorified joy flight. Problems were inevitable. On one occasion shortly after the war, an officer from RAAF Headquarters grabbed an aircraft which, unbeknown to him, had been fitted with fourteen airspeed indicators for a particular performance trial. It was not until he was halfway down the runway on his take-off roll that the 'ad hoc' pilot noticed the multitude of airspeed indicators, and had to decide very quickly which one to believe. Throughout the 1950s and 1960s it was common for very senior officers to appear and demonstrate little more than their ability to take-off and land, in between which their ignorance of current procedures and aircraft systems, and their general lack of airmanship, could create situations ranging from the embarrassing to the dangerous. That unfortunate practice was still in force at the Department of Air in Canberra in the early 1960s, when No. 34 Squadron at nearby RAAF Base Fairbairn maintained two Vampires and two Winjeels for departmental staff officers who often 'were not current on the aircraft in any real sense of the word'.[10]

From about the mid-1950s onwards the variety of work at the Aircraft Research and Development Unit began to decrease a little as the basic challenges of transonic and supersonic flight had largely been met and a good deal had been learnt about metal fatigue. The intensity remained, however, as complex performance data—speeds, engine parameters, fuel flows, climb and descent profiles, and so on—had to be determined for new aircraft, while occasionally a special challenge arose with a

locally designed machine, as was the case with the spinning characteristics of the Commonwealth Aircraft Corporation's Winjeel in 1951–52. Because the RAAF invariably modified the weapons systems of its strike aircraft to make its small fleet more flexible, weapons trials were another constant source of work for ARDU's aircrews and engineers. At any one time trials might be underway on fighter aircraft guns (stability, harmonisation, barrel temperatures, cartridge ejection, recoil, radar ranging, and sighting); rocket projectiles (carriage, release, harmonisation with guns); bombs (ballistics, carriage, release, fusing); and guided missiles (carriage, release, homing system). For many years the unit's transport aircraft flight tested RAAF ground-based navigation aids, while a permanent detachment of two Dakotas based at Richmond supported the Commonwealth Scientific and Industrial Research Organisation's rain making trials.[11]

A brief summary of three of the hundreds of trials conducted by ARDU may give some idea of the diversity and nature of the unit's activities. The first involves the Glass II Suction Wing Glider which was flown between 1948 and 1951. Conducted under the supervision of the Department of Aircraft Production and the Department of Supply, the project's purpose was to design, build and test fly a 'suction' aerofoil (that is, a wing) as part of a general investigation into boundary layer control (in essence, the physics of airflow over a wing).[12] The objective was to try to devise a system which would alleviate a common problem in aerodynamics, namely, the presence of turbulence in the flow of air across the surface of a wing, a condition which causes friction, decreases lift, and therefore degrades the wing's performance. By applying suction at strategic points along an aerofoil, Australian scientists hoped to control the airflow and to stabilise any tendency towards turbulence. A de Havilland glider was modified for the trials with what was described as a 'suction wing aerofoil', suction being provided by an engine driving a centrifugal fan.

That was the theory. In practice, Squadron Leader Cuming found the glider to be the most dangerous aircraft he ever flew and other test pilots felt they were lucky to escape with their lives.[13] The unconventional aerodynamics made the glider extraordinarily sensitive to the smallest irregularity on the wing's leading edge. Should, for example, a handful of mosquitoes impinge on the wings, a dramatic breakdown in airflow would occur. Worse still, should the mosquitoes impinge on one wing only, the sudden breakdown of airflow over that wing would cause a violent loss of lateral control, and unless the pilot took almost instantaneous remedial action by turning off the suction, the situation became fraught in the extreme. Even after the suction had been removed the pilot still had some hard work to do, as both wings would then be fully stalled. That at least was a more conventional problem, but as the aerodynamic modifications had given the Glass II a glide angle of about 1:3—compared to a modern glider's 1:60—judging the landing was no straightforward matter.

The second episode concerns test flying on the de Havilland Vampire fighter in the early 1950s, a program ARDU shared with the company's pilots. Because the RAAF's

Australian-built Vampires were fitted with the more powerful Rolls Royce Nene engine in place of the standard de Havilland Goblin, bigger air intakes were needed. After a number of experiments the existing bifurcated wing intakes were supplemented by two intakes on top of the fuselage behind the cockpit, known as 'elephant ears'. Those experiments had not shown, however, that the additional intakes could cause serious control difficulties. At high Mach numbers powerful shock waves can form on a transonic aircraft like the Vampire: in an advanced stage known as 'compressibility', those shock waves can severely disrupt the airflow and cause an aircraft to 'snatch' down rapidly into a very steep dive. The designers of the new intake system did not realise that when the Vampire entered compressibility, shock waves caused by the elephant ears blanked the elevator and horizontal tailplane, making the conventional recovery technique of easing back on the control column to pull out of the dive uncertain if not impossible.

A dramatic account of a fatal accident involving a No. 78 Wing Vampire in May 1951 illustrated both the particular problem ARDU's pilots had to solve and the general nature of their business. The incident occurred during a training exercise in which two Vampires flown by Warrant Officer Rivers and Sergeant Booth were attacking another two flown by Flying Officers Gogerly and Wilson:

> Rivers and Booth were making a rear quarter attack on Gogerly's formation when the latter heard one of the pilots call 'I'm in compressibility'. Gogerly, looking down to sight another aeroplane, advised 'dive brakes off, throttle off'. The pilot responded, 'I'm still in compressibility, I'm inverted'. 'Roll out, dive brakes out, throttle off', Gogerly advised. A minute later he saw an aircraft diving steeply and followed. 'I'm still in compressibility. I can't recover. This is it'.
>
> Gogerly, unable to avert the result, saw the aircraft crash.[14]

It is important to appreciate that at the time the Aircraft Research and Development Unit was involved in trials of that nature, compressibility was an almost unknown phenomenon outside a very small circle of test pilots and engineers. Answers to that kind of complex and dangerous challenge were sometimes found only after extensive and demanding flight tests, and the men flying the aircraft often needed an equal amount of courage to match their specialist flying skills.

The third and final snapshot comes from the development program for the Mirage IIIO, started in France and continued in Australia throughout the 1960s. Several aspects of that program took the RAAF's research and development activities to the edge of the envelope: sustained flight at very high altitudes above 15,250 metres and climbs above 21,350, both requiring the pilot to wear a partial pressure 'spaceman' suit and helmet; a spectacular rate-of-climb which could put the aircraft through 11,000 metres three minutes after take-off and which magnified the stresses on man and machine caused by the rapidly changing atmospheric environment; a speed of Mach 2.0; and the particular challenges associated with high-performance, delta-wing aerodynamics. Those challenges were most evident during an engine surge test flight at 11,000 metres on 7 December 1964 when the Mirage flown by Squadron Leader

Tony Svensson, an RAF exchange pilot, entered a spin which became a fast, rolling, vertical dive. With the violence of the manoeuvres exceeding human recovery capabilities, Svensson ejected at a supersonic speed, suffering multiple serious injuries from the wind blast but nevertheless surviving.[15]

Test pilot Billie Hicks Collings, pictured as an AVM in 1984, on the twenty-first anniversary of his first official flight of an Australian-built Mirage IIIO. J. HARVEY

Performance testing was accompanied by the most extensive series of weapons trials the RAAF had ever conducted on one aircraft as the Mirage was modified over a number of years to carry British, American and Australian ordnance in an attempt to maximise its flexibility. Throughout the critical phases of the Mirage research and development program the dominant personality was Squadron Leader Billie Hicks Collings, whose aggressive self-confidence was justified by his exceptional test flying skills, and whose international reputation was second only to Cuming's. According to Collings' peers, he 'saw more things more quickly' in the cockpit than anyone else.[16]

Testing the limits was not the sole prerogative of the men in the cockpit or the technicians on the ground. There were also the 'boffins' who conceived the theories and made the calculations. Under the leadership of Air Vice-Marshal Ellis Wackett the RAAF attended to that side of the equation firstly by recruiting university-qualified engineers into the newly formed Technical Branch, as described in Chapters 7 and 9; and secondly by establishing formal ties with organisations like the Commonwealth Scientific and Industrial Research Organisation, the Council for Aeronautics (of which Wackett was a member); the Aeronautical Research Laboratories; and the three local aircraft manufacturers, de Havilland, the Government Aircraft Factory and the Commonwealth Aircraft Corporation. At Wackett's instigation the RAAF supported the establishment of a chair of aeronautics at the University of Sydney.[17] Through those and similar initiatives the Air Force developed valuable links with some of the country's leading scientists, including Professor L.H. Martin, Sir Ian Clunies Ross and Professor Sir McFarlane Burnett, all of whom at some stage were members of the Defence Research and Development Policy Committee. When Australia hosted the biennial meeting of the Commonwealth Advisory Committee on Defence Science in 1958, Wackett provided an indicative example of the RAAF's research and development activities through the papers presented by four serving officers: 'Flying Aspects of Guided Weapons Testing'; 'Performance Testing of Military Aircraft Under

Tropical Conditions'; 'Introduction of Military Aircraft into Service—Service Trials—Tropical Conditions'; and 'Military Airfield Construction'.

Three years after that meeting and four years after the launch of the Soviet Sputnik satellite had marked the formal beginning of the space age, Wackett's successor as air member for technical services, Air Vice-Marshal Ernie Hey, sponsored the formation of a Department of Air 'Space Technology Committee' to supervise developments which might concern the RAAF.[18] Consisting of staff from the Operational Requirements, Air, Technical and Personnel Branches, the committee met at least quarterly to discuss the use of space for communications, reconnaissance, navigation and attack.

Air Force scientific expertise extended far beyond aeronautical engineering. In 1948 Air Member for Personnel Air Vice-Marshal Joe Hewitt had suggested that the physiological effects of 'supersonics and allied phenomena' upon the human body was 'the outstanding problem engaging the attention of world scientists today'.[19] It was in order to address that problem that in 1944 an aviation medicine section had been formed at the Central Flying School. As the physiological and psychological demands of post-war aviation became more pronounced—sustained flight at great altitudes, high speeds, enormous variations of temperature and pressure, the introduction of ejection seats—the section's work assumed increasing importance.

Training aircrews in the use of ejection seats, for example, became a major responsibility in the early 1950s. The first RAAF aircraft fitted with ejection seats as a matter of routine were the Meteor Mk 8s of No. 77 Squadron in Korea (the seats were not fitted to the Mk 7 trainers), and the first pilot to use an ejection seat in anger was Sergeant A.T. Stoney, although in circumstances not intended by either the seat's manufacturers or Stoney. In what must have been a startling experience, Stoney's seat ejected spontaneously when he was at an altitude of 4575 metres during a post-maintenance test flight at Iwakuni in June 1951. By early 1954 eleven pilots had intentionally abandoned RAAF aircraft using ejection seats. Nine of those pilots were either uninjured or received only minor injuries, and just one was killed, apparently because he ejected too low for his parachute to open. During the same period six pilots had died in Vampire and Meteor Mk 8 accidents in circumstances which the RAAF's director of flying safety believed they might have survived had their aircraft been fitted with ejection seats.[20] The Air Board had already decided to fit all new high-performance combat aircraft with ejection seats, starting with the Canberra and the Sabre, and in response to that compelling evidence board members extended their decision to include all high-performance aircraft, including jet trainers.

The advent of jet aircraft similarly placed greater demands on the quality of flying clothing. An extensive review of the subject in 1947 in which the Aviation Medicine Section took the lead resulted in the introduction of an entirely new range, from boots and goggles to 'gauntlets' and flying suits.[21] Aircrew flying some high-performance aircraft received additional items like anti-gravity 'g' suits and electrically heated

overalls. One item plainly overdue for replacement was the standard issue flying helmet. With its leather exterior and chamois lining the existing helmet may have looked the part, but its inter-communication system was poor, its ear pads ill-fitting and, in what was an extraordinary comment given the helmet's essential purpose, its shape reportedly was 'totally unlike that of a man's head', a feature which not surprisingly made it 'most uncomfortable' and at times 'even painful' to wear. A new British helmet designated type 'E' was chosen as the replacement and was available in leather for temperate climates and a lighter material known as 'aertex' for the tropics.

RAAF aviation medicine specialists continued to support flying operations with their research into such areas as the human nervous system, the effects of high frequency sound and vibration (with special reference to the hearing and balance mechanisms of the inner ear), and the physiological strains associated with changes of environment such as thermal stress, anoxia and low barometric pressure. Often that research was conducted in collaboration with leading biophysicists from Australian universities. Aviation Medicine Section achieved independent unit status in February 1956 when it was renamed the RAAF School of Aviation Medicine before being upgraded again as the RAAF Institute of Aviation Medicine in July 1960, a change which involved incorporation with the Aeromedical Research Laboratory from the University of Adelaide. Throughout those changes Point Cook proved to be a good location because of its proximity to the Aircraft Research and Development Unit, the RAAF Hospital at Laverton and Melbourne University.

The institute's international standing was recognised during project 'Gemini' conducted by the United States National Aeronautical and Space Administration (NASA) in the 1960s when Squadron Leaders L.N. Walsh and M. Murray-Alston were appointed medical monitors for space flights at the Carnarvon tracking station in Western Australia.

Much of the research conducted by ARDU and the Aviation Medicine Section was put to use during the 1953 England to New Zealand Air Race, conducted under the auspices of the Royal Aero Club of London and sponsored by the Canterbury Air Race Council with the objective of furthering the 'interests of international goodwill and understanding by bringing all countries into closer relationship by friendly competition'.[22] There were two sections, the first a handicap for transport aircraft and the second a test of speed. Both sections were open to any individual, organisation or nation as long as the entry fee of one hundred guineas was paid. First prize for each section was £10,000 with lesser prizes for the minor placings. Pilots could follow whichever route they wished between England and Christchurch but had to finish within one hundred and sixty-eight hours from the authorised starting time of the last aircraft.

Most interest centred on the speed section which, once entries had closed, was obviously going to be decided between three RAF Canberras and the RAAF's first two Australian-built Canberras. As well as the prestige involved and the temptation to test

the locally constructed machines in open competition, the RAAF believed the race would generate valuable technical and physiological data on high-speed, high-altitude, long-distance flight.[23] There was also considerable interest amongst observers outside the Commonwealth in the performance of the British and Australian crews, whose skill (or lack thereof) was likely to be indicative of their ability rapidly to reinforce their national interests at the extremes of the globe.[24]

The RAAF formed a long range flight for the event, commanded by Wing Commander Cuming, who was also to pilot the first Canberra, assisted by Flying Officer R.J. Atkinson as second pilot and Squadron Leader C.G. Harvey as navigator; while the crew for the second aircraft was Squadron Leader P.F. Raw, Flying Officer F.N. Davis and Flight Lieutenant W.D. Kerr.

Cuming and his planning staff identified two factors which they believed would be crucial to victory. The first, which involved a painstaking series of 'trial and error' calculations, was to determine the optimum combination of route, altitude, airspeed and engine settings, the objective being to maximise the probable atmospheric conditions, the available en route refuelling points, and the Canberra's inherent capabilities (which, like any aircraft, were decided by its aerodynamic shape and engines). Turnaround time on the ground was the second factor. Several of the possible staging posts were notoriously slow and it would be unwise to rely on the local ground staff.

Appreciating that the British crews were their main rivals, the Australians developed their tactics accordingly. Cruising altitude, true airspeed and refuelling stops were the key variables; and the leg from Ceylon to Australia the critical sector.[25]

The higher a jet aircraft flies the less fuel it uses and the fewer refuelling stops it has to make. Thus, for a long-distance race, at first glance a very high altitude flight—say at about 12,200 metres—might seem the best option. However, because the air is so cold at those heights, an aircraft's true air speed (which is a function of height and temperature) is less than that of an aircraft flying at a medium (warmer) altitude, say 7600 metres. Thus, as long as the winds at each altitude are fairly similar, the aircraft at the lower altitude will cross the ground faster.[26] The cost is that at lower altitudes jet aircraft use more fuel. Balancing all those factors, and knowing that the RAF crews were planning to fly from Colombo direct to Perth for a final refuel before heading for Christchurch, Cuming's crews calculated they would make faster time from Colombo by flying lower, stopping to refuel at Cocos Island, and then again at Woomera, before the final leg to Christchurch. In other words, the Australians believed their faster airspeed at a lower altitude would more than compensate for the extra time they would spend on the ground during their additional refuelling stop.

Having agreed on that approach, it became necessary for the Australians to keep their planned route of London–Bahrein–Ceylon–Cocos Island–Woomera–Christchurch secret and, because they would be using a comparatively large amount of fuel, to carry as much as possible. At Cuming's instigation the bomb doors of the two RAAF Canberras were removed and a large, additional fuel tank installed in the bomb bay, a modification which made the aircraft look 'slightly pregnant'.[27] The alteration

also had the unexpected but beneficial aerodynamic effect of enabling the aircraft to cruise at a speed of Mach .81 compared to the usual Mach .78. Other additions included fuel flow meters to provide more precise performance and fuel consumption data than was normally available, improved radios and navigation aids, and additional oxygen. The oxygen modification was another outcome of the exhaustive pre-race planning, as trials had shown that the most time-consuming task during a turn-around on the ground was not refuelling but topping up the oxygen. Because there would be no time to carry out extensive maintenance—any major problem would leave an aircraft with no chance of catching up—only basic spares were positioned at scheduled landing points. RAAF ground support teams were stationed at Cocos Island and Woomera.

Australian-built Canberras at Cocos Island on their way to England for the air race from London to Christchurch, 1953. A84-202 (WgCdr Cuming) is on the ground as A84-201 (SqnLdr P.F. Raw) approaches to land. D.R. CUMING

As far as personal preparation was concerned, medical advice was sought regarding diet during the race, and electrically heated flying suits were acquired to combat the extreme cold which would be experienced.[28] In the weeks leading up to the race the aircrew tried to follow a work routine and sleeping pattern which would condition them for thirty-five hours continuous duty.

Following take-off from Heathrow the Australians progressed according to plan, flying via Bahrein to Ceylon. The RAAF planning team monitoring the race from an operations room at Air Force Headquarters in Melbourne mounted a twenty-four hour vigil in an atmosphere filled with drama. Because the various entrants followed different routes for much of the race it was difficult to tell who was leading, but as the aircraft approached Australia it was clear that the RAAF's calculations had been right and that Cuming held a good lead. From then on, however, the RAAF challenge stalled.

In a curious incident for an aircraft fitted with anti-skid brakes, Cuming's Canberra blew a tyre landing at Cocos Island, in itself a minor problem but one which also damaged the wheel. Because only minor spares had been pre-positioned Cuming was out of the race. Had a spare wheel had been available the change could have been

made and Cuming could have taken off still in the lead. As it was, he was marooned in the middle of the Indian Ocean and the RAAF's chance of victory rested with Squadron Leader Raw and his crew. As he sat and watched Raw's aircraft turned around, Cuming drew some consolation by observing that a mere six and three-quarter minutes elapsed from the time Raw touched down at Cocos until he lifted off again, a superb achievement by the ground crew.

While the RAF aircraft headed non-stop from Colombo to Perth, Raw's crew set course for Woomera, seemingly in the lead. At Woomera, however, bad luck again struck the Australians. The nose wheel doors on Raw's Canberra apparently froze during the flight from Cocos and would not open, thus preventing the nose wheel from extending for landing. Unaware of the problem, Noel Davis, who was flying that leg, touched down at Woomera on the main wheels, which had lowered normally, and was startled when the nose started scraping along the runway. Several instruments were damaged and a hole about one metre square was worn in the fuselage. Invaluable time was lost as the ground crew jury-rigged repairs. Disappointment was acute when, after such wretched luck, Raw was beaten to Christchurch by the first RAF Canberra by a mere forty-one minutes. That disappointment was slightly alleviated by the knowledge that the Great Air Race had demonstrated the RAAF's growing expertise in performance and trials flying, provided valuable long-range experience, generated some favourable publicity, and boosted the RAAF Welfare Trust Fund by £3000, the amount of the second prize awarded to Squadron Leader Raw and his crew.

In addition to conducting research and development for its own purposes, the RAAF contributed to numerous British trials, the most noteworthy of which were Operation Cumulative, weapons testing at the Woomera 'rocket' range, and atomic detonations at Monte Bello and Maralinga.

Late in 1948 British Prime Minister Clement Attlee advised his Australian counterpart Ben Chifley that should war break out with the Soviet Union, allied strategy would rest on a massive air offensive against Russia and its satellites.[29] Because the bombers being designed for Britain's air strike force were going to fly much higher, faster and further than those used in World War II, trials were necessary to resolve new navigation and target location challenges. When Attlee sought Australian assistance, the RAAF became a willing participant. During the second half of 1949 and early 1950, No. 82 (Bomber) Wing conducted a series of long-range bombing and navigation tests in Australia for the RAF. Code-named Operation Cumulative, those trials explored the limits of strategic navigation and bombing.

Fourteen RAAF Lincoln bombers were modified by the Government Aircraft Factory with special radar, radios, oxygen equipment, cameras and instrumentation. Between September and December 1949, Australian and British crews flew almost 1700 hours on routes from Amberley to Darwin and Kalgoorlie and return, a distance of about 3350 kilometres. Sorties were flown at night, at altitudes of about

6100 metres, with ten aircraft following the same route one minute apart. The bombers normally took off from Amberley at about dusk and arrived over their simulated target before first light the next morning. Whenever possible, bombing runs were made 'blind' using the World War II radar system known as H2S. Aircraft and equipment serviceability and aircrew performance were subjected to intensive operational analysis by British scientists. The results were then interpolated to provide data applicable to European conditions: for example, one attachment to a lengthy report on the operation superimposed a map of Australia, turned upside down for the purposes of the exercise, over a map of Europe, the outcome being that the standard route from Amberley to Kalgoorlie could be seen closely to approximate a flight from East Anglia over Berlin, Minsk, Moscow and Kazan; while the second standard route from Amberley to Darwin corresponded to a flight from East Anglia to Berlin, Budapest, Odessa and Ankara. While official RAAF news releases informed the public that the Lincolns were conducting little more than routine Commonwealth exercises, No. 82 Wing's trials were in fact concerned with nothing less than massive attacks against the Soviet Union with nuclear weapons.[30]

Advanced weapons and the Cold War were again the reason and the United Kingdom again the mentor in the other major series of weapons trials during the 1950s and 1960s, the Long Range Weapons Project at Woomera and the atomic detonations at Monte Bello and Maralinga.

Germany's use of the long range V1 and V2 rockets against London in the concluding stages of World War II seemed to some observers to indicate the future of warfare. As early as October 1945 there were signs that the United Kingdom wished to use Australia's vast, remote spaces to establish a range to test its own missiles. Following a visit by the British Rocket-Bomb Experimental Mission in March 1946, Prime Minister Chifley confirmed that a range would be established in central Australia, allowing missiles to be tested over distances between 1900 and 4800 kilometres. Weapons tests were likely to include bomb ballistics, guided bombs, anti-aircraft missiles and long-range missiles.[31] Australia's defence capabilities and research community both seemed likely to benefit, as under the Long Range Weapons Project agreement reached between the two governments in September 1947, all data would be joint property and either country had the right to produce any weapons which might be developed as a consequence of the project.[32] That prospect was, however, clouded somewhat by the 'shortcomings of Australian security', a failing which made the United States reluctant to share highly classified missile information with Britain, which in turn made British officials cautious about the extent to which Australia could be involved in any trials which relied on American knowledge or technology.[33]

Once Woomera had been selected as the administrative centre and range head (that is, the general location from which launches would be made), the RAAF was drawn into the project. Courier services flown from Mallala by No. 34 (Communications) Squadron's Dakotas provided the main air link between the defence scientific establishment at Salisbury, on the outskirts of Adelaide, and

Woomera, while No. 2 Airfield Construction Squadron was tasked with building runways and aerodrome facilities at the range. Trials began in 1948 when parachute and bomb tests were conducted by aircraft from Mallala, even though at the time Woomera was little more than a tented city.

As activities at Woomera and Salisbury began to gather pace the RAAF's commitment to the Long Range Weapons Project grew. The Air Trials Unit (ATU) jointly staffed and equipped by the RAAF and the RAF was established at Woomera to fly and maintain the wide variety of aircraft which supported the scientific community. Crews from the ATU also operated remotely controlled target aircraft which flew from the satellite airfield of Evett's Field about thirty kilometres northwest of Woomera. In 1955 the RAAF support services relocated from Mallala to the Department of Supply's Edinburgh airfield, as the newly constructed base was both more modern and closer to Salisbury. The RAAF also found it convenient to establish a permanent detachment of the Air Trials Unit at Edinburgh to operate ferry flights to Woomera and to fly some of the trials. When an increasing workload justified the detachment's independence it became No. 2 Air Trials Unit and the parent was renamed No. 1 ATU. Looking further ahead, the RAAF hoped to make Edinburgh the centre of its test flying activities by shifting the Aircraft Research and Development Unit there, a move which eventually occurred in 1977.[34]

During the heydays of the late 1950s and early 1960s, Woomera, Edinburgh and Nos 1 and 2 Air Trials Units provided a stimulating environment for the crews who flew and maintained a wide variety of aircraft on a diverse range of tasks. A guided missile trial or a bomb ballistics test in a Canberra, Sabre, Meteor or Valiant in the morning might be followed by a freight or passenger run in a Dakota, Bristol Freighter or Sycamore helicopter in the afternoon, or by a flight hundreds of kilometres down range to collect a piece of missile debris for post-trial analysis. A day in the office could be even more exciting for pilots like Squadron Leaders F.O. Knudsen, K.V. Robertson and F.W. Barnes, and Flight Lieutenant L.S. Compton, who flew the Pika, the prototype of what eventually became the Jindivik pilotless, high-speed target aircraft, and which in its manned version required very careful handling. When British adventurer Donald Campbell made an attempt on the world land speed record in his jet-powered 'Bluebird' on the salt pans of Lake Eyre near Woomera in mid-1963, RAAF medical officers and a crew from No. 1 ATU stood by about halfway down the course in an Otter. Alerted by radio that Campbell had started his run, the Otter pilot took off and shortly afterwards had the unusual experience of being passed by a 'car' travelling about four times faster than his aeroplane. The generally buoyant atmosphere of the trials world in those years was lifted still further by the active program of missile launches as the Woomera range was used to test, among others, the Skylark and Black Knight high-altitude research vehicles, the Blue Steel stand-off bomb, the Blue Streak satellite launcher, the Bloodhound Mk II surface-to-air missile, the Fireflash and Firestreak air-to-air missiles, the Jabiru high speed rocket, the Rapier (land) and Seaslug (ship) surface-to-air missiles, the European Launcher Development Organisation's (ELDO) Europa satellite launch rockets, and the Australian WRESAT satellite.[35]

In the mid-1960s about fifty per cent of the work in progress was concerned with guided weapons trials; thirty per cent with bombs, upper atmosphere and hypersonic research; and twenty per cent with the British Black Arrow satellite launch vehicle.[36] Trials of particular interest to the RAAF were those associated with the Bloodhound surface-to-air missile, the Ikara torpedo carrying missile, the Red Eye shoulder-launched missile, the Jindivik target drone, cluster bomb scatter patterns, and the acquisition ranges possible with visually and televisually guided stand-off missiles. The workload was, however, declining. Many of the uncertainties which had existed regarding missile technology at the end of World War II had been resolved, rockets clearly were not going to replace manned aircraft, and the major user of the range, Great Britain, was a declining great power, unable any longer to afford extravagant weapons research and development programs. No. 1 Air Trials Unit was privatised in 1967, with the contract for air services at Woomera going to Short Brothers, and No. 2 ATU was disbanded in 1969.

Chapter 20 has described the Australian Government's and the RAAF's interest in acquiring nuclear bombs, and the difficulties encountered in gaining access not only to the weapons but also to the associated technical and operational information. The nuclear testing conducted in Australia by the United Kingdom in the 1950s, which was supported by the RAAF, seemed to offer an opportunity to get a foot in the door.

At the start of the 1950s there was little knowledge in the RAAF of either atomic or chemical and biological warfare.[37] Consequently, arrangements were made in March 1951 to second two RAF specialists in the field for two years, with one filling the senior armament post at the Directorate of Training and the other attached to the Air Armament School.[38] Among other things, the British officers assumed responsibility for teaching RAAF personnel how to protect themselves and their equipment from attacks by weapons of mass destruction.

Perhaps the loan of the RAF specialists was part payment for the RAAF's co-operation in a far more momentous endeavour. In 1951 the British Government requested Australian assistance with atomic tests which were to be conducted in the Monte Bello Islands off the northwest coast of Western Australia. The Menzies government agreed, partly in the belief that its involvement would facilitate acquisition of the atomic bombs it felt the RAAF would eventually need, while opportunities would also arise to train RAAF personnel in radiation detection, a skill regarded as having considerable military value.[39] With the first test set for October 1952, a task force from the Australian services helped prepare the site. Before the test a detachment of Lincolns from No. 82 Wing and No. 10 Squadron under the command of Group Captain G.C. Hartnell flew meteorological, reconnaissance, communications and transport tasks from Broome. What was to prove a far more controversial task came after the detonation, when the Lincolns were used for atomic cloud tracking and 'sampling'. Most aircraft penetrated the mushroom cloud, collecting samples of radioactive dust in underwing canisters and taking readings on geiger counters.[40] Neither air nor ground crews were given any special protective clothing and decontamination procedures were not observed after flight. By contrast, RAF

Canberra crews who flew through the cloud only minutes after detonation were rigorously decontaminated, as were their aircraft.

Over the next five years further atomic trials were conducted at Emu Field, about four hundred kilometres northwest of Woomera (1953), Monte Bello again (1956), and Maralinga, north of the transcontinental railway line on the eastern edge of the Nullarbor Plain (1956 and 1957). Following the two explosions at Emu on 15 and 27 October, the Lincoln captained by Flight Lieutenant Gordon Ross tracked one radioactive cloud directly above the major city of Townsville on Australia's east coast.[41] It was during the 'Emu' trials that Australian officials suddenly started to pay attention to decontamination when a Lincoln was found to be heavily radioactive. Safety precautions and cleansing measures based on those used by the RAF were introduced for RAAF air and ground crews. 'All of a sudden, [officials] appeared ... flying suits and parachutes were taken away and burnt ...'[42] Notwithstanding those belated precautions, at the end of the 'Emu' trials nine of the twelve RAAF Lincolns involved were found to be contaminated, four so heavily that they were parked in a remote corner at Amberley and never flown again.[43] Forty years after the event, a number of people involved in the trials have claims lodged against the Commonwealth for serious illnesses they believe originated from their exposure to excessive radiation.

An infinitely more benign series of trials associated with the Australian National Antarctic Research Expedition (Anare) was supported by the RAAF from 1947 to 1963. The association started in 1947 when long-range weather, photographic and general reconnaissance sorties were flown from southern Australia to the northern edge of the Antarctic region by Liberator and Lincoln bombers. Later that year the RAAF Antarctic Flight was officially formed at Rathmines. With its yellow-painted Kingfisher and Walrus aircraft embarked on HMAS *Wyatt Earp* and *LST 3501* respectively, the flight accompanied Anare's civilian scientists on a planned reconnaissance of Heard and Macquarie Islands and the Antarctic coast, with the objective of eventually establishing a base on the continent.[44] While the expedition achieved its overall aims, the Walrus was wrecked on Heard Island after its sole flight.

As a result of the 1947–48 survey, Anare stations were founded on Heard and Macquarie Islands, but the lack of a ship capable of penetrating pack ice delayed the construction of a permanent base on the Antarctic continent until the summer of 1953–54, when the MV *Kista Dan* was chartered and the major research station at Mawson was established. Most years from 1955 until 1963 the RAAF Antarctic Flight accompanied the annual expedition to Mawson, flying transport, photographic, mapping, liaison, meteorological and general reconnaissance sorties in support of scientific research. The Austers which were initially used were eventually replaced by Beavers and, in 1960, a Dakota fitted with jet-assisted take-off rockets and retractable skis. Although the crews were flying in the world's most inhospitable terrain and had to cope with whiteouts, blizzards, extreme winds and intense cold, for the first five

Beavers of the RAAF Antarctic Flight, late 1950s. RAAF

years operations proceeded relatively smoothly. Subsequently three of the Beavers were destroyed in blizzards, as was the Dakota, which was blown thirteen kilometres from its tie-down point by a two hundred kilometres per hour gale. Squadron Leader J.C. Sandercock, leader of the flight in 1958–59, was awarded an OBE for his stoic but ultimately unsuccessful attempt to save a Beaver which had broken away from its lashings, by holding its nose into the gale by the use of engine power for almost two hours. RAAF support for Anare was phased out after the summer of 1962–63 with civilian crews taking over. Coincidentally, among those pilots was No. 77 Squadron's most successful commander in Korea, Dick Cresswell, who had resigned from the RAAF several years previously. The Anare scientists did not see an RAAF aircraft again until the end of the decade, when in March 1970 an Orion captained by Flight Lieutenant Les Fisher dropped mail to expedition members on Macquarie Island.

The importance of research and development to an air force is not always fully understood by those without a background in professional aviation. Rigorous testing and persistent questioning are fundamental not only to developing the technical skills needed to modify and improve weapons systems, but also to foster the kind of attitude which values excellence and ultimately brings success in combat. In that context, it is difficult to overstate the contribution made to the RAAF as a whole by its test flying community, starting with the intellectual leadership of E.C. Wackett and unfolding through a succession of practitioners like 'Jell' Cuming, Jim Rowland and Bill Collings.

CHAPTER 24

SAFE SOLO: THE GOLDEN ANNIVERSARY

Wednesday 31 March 1971 was probably the second most significant day in the history of the Royal Australian Air Force. The same date fifty years before when the RAAF was formed as an independent service was the most significant; now, half a century and three major wars later, the Air Force had reached its golden anniversary. Given the trials and hardships which had characterised many of those years and which had been met and overcome, the members of the RAAF were entitled to allow themselves a feeling of satisfaction in a job well done. That was the attitude of the Air Board, which well beforehand started preparations to celebrate the occasion.

The obvious event for an air force to stage was a flying display. Because of the importance of the anniversary, numerous displays were planned around Australia, ranging from major events at Fairbairn, Richmond and Laverton to smaller ones at Pearce, Edinburgh, Amberley and Townsville. By any standards the flying program was impressive, with the major shows featuring at least sixteen Mirages, four Phantoms, eight Sabres, three Canberras, four Macchis, three Orions, eight Hercules, three Neptunes, three HS-748s, one Dakota, four Caribou, three Winjeels and eight Iroquois.[1] In addition, two aerobatic teams were formed for the occasion, the 'Deltas' from Williamtown flying Mirages and the 'Roulettes' from Central Flying School flying Macchis. In effect the RAAF became a giant flying air show for a month as the pageant crossed the country from west to east, starting at Pearce on 28 March and concluding at Townsville on 25 April. Stand-out performances during what was a superb series of displays came from Flight Lieutenants D.J.S. Riding and P.J.O. Hackett in a pair of Macchis; and Squadron Leader K.G. Smith, whose 'wing walking' in a Phantom—a manoeuvre in which Smith 'stirred' the control column continuously so that the aircraft oscillated dramatically around its axis as it flew past the crowd at low level—was possibly the best solo display by a RAAF pilot since 1946.

A feature of the shows at Richmond and Fairbairn was the flypast by two USAF F-111s, one with its wings swept fully forward and the other fully aft. At the time, delivery of the RAAF's twenty-four strategic bombers was four years behind schedule, and in the public's mind at least the aircraft was still under a technical cloud, so the flypast was a valuable public relations exercise. The F-111s' appearance had been personally arranged by the CAS, Air Marshal Sir Colin Hannah, in consultation with his USAF counterpart, General John D. Ryan.[2]

Other major events included a reception at the Hotel Canberra hosted by the Air Board and attended by Marshal of the RAAF the Duke of Edinburgh, Governor-General Sir Paul Hasluck, Prime Minister William McMahon, and other dignitaries; and a jubilee dinner, also at the Hotel Canberra, at which the surviving foundation members of the RAAF were among the guests.[3] Numerous smaller civic receptions were held, as were open days, church services, ceremonies, receptions and exhibitions. Numerous newspaper and journal articles were published and many speeches made.

A book titled *The Golden Years* was commissioned from George Odgers, author of one of the official histories of the RAAF in World War II. The RAAF Food Trade School at Wagga baked a one hundred and forty kilogram birthday cake.

Those were all highly successful activities, with more than three-quarters of a million people attending the air shows alone. No major celebration is, however, complete without at least one controversy. The RAAF's came in the shape of the Air Force Memorial, which was organised by the National Capital Development Commission in Canberra on behalf of the Commonwealth Government to commemorate the RAAF's activities over the last fifty years. A site was selected on one of Canberra's most imposing avenues, Anzac Parade, overlooked at one end by the Australian War Memorial and at the other by Parliament House. The nature of the memorial was to be such that it 'symbolised not only the spirit of the RAAF but also a memorable and major achievement in war'; further, it was to be 'of a size and form in scale with the monumental form of Anzac Parade'.[4] The timing was good and so was the concept.

The RAAF Memorial on Anzac Parade, Canberra. RAAF

On the recommendation of the director of the Australian War Memorial, the Air Board requested the noted sculptor Dennis Adams to prepare a design. Adams proposed a sculpture of seven figures, representing air and ground crews from both world wars, set against an abstract design which denoted 'speed, flight, airflow, etc'. The figures would be one and one-third life size and the memorial's overall dimensions 4.3 metres high by 4.3 metres deep and 1.8 metres wide, with the finished work set on a base of suitable dimensions. A total cost of $75,000 was estimated. Adams' concept was considered 'eminently suitable' by the federal president of the Air Force Association, Air Marshal Sir John McCauley, and was endorsed by the Air Board.[5]

The project was widely advertised and Australian sculptors were invited to apply for the commission. From those applicants five finalists would be selected on the basis of their previous work and requested to submit designs, for which they would each be paid $2000. The winning design would then be chosen by a panel of five, comprising Sir William Dargie (chairman, Commonwealth Art Advisory Board), Mr C. Last (member, Commonwealth Art Advisory Board), Mr R. Boyd (member, National Capital Planning Committee), Air Marshal C.T. Hannah (chief of the air staff) and Mr R.K.H. Johnson (National Capital Development Commission).

Somewhere between the endorsement of Dennis Adams' concept and the selection of the five finalists from the forty-six entries, the project lost its way. The winning design by the Victorian sculptor Inge King was neither monumental nor a valedictory to a notable feat of arms. It was instead an abstract interpretation of the concept of 'flight'. While some viewers regarded the sculpture as aesthetically pleasing, many more from the RAAF were bitterly disappointed by its failure to symbolise in any shape or form the service to country and sacrifice made in war by tens of thousands of young men and women. Twenty-five years later as the RAAF celebrates its seventy-fifth anniversary, the sculpture remains on Anzac Parade as little more than regrettable testimony to the selection panel's comprehensive failure to understand the nature of air force service.

Also a source of some controversy was the new uniform the Air Board planned to introduce in 1971. Despite an institutional conservatism towards changing fashions, the history of uniforms in the RAAF had been one of continual improvement. Even if styles remained fairly constant, lighter, neater and more comfortable materials were regularly adopted. Most of the variations made since 1946 were concerned with comfort, utility and material rather than design. For example, the stiff, uncomfortable drill cloth used for summer drabs (khaki) which was almost impossible to keep uncrushed for more than about twenty minutes had been superseded by softer, neater material; detachable shirt collars had been replaced by fixed collars; and the 'Russian Front' greatcoat superseded by a lighter, more stylish overcoat.

As the fiftieth anniversary approached, there was some support for a proposal to mark the occasion by introducing a new uniform which could be used for the whole year in all climates. While data on attitudes towards the existing summer drabs and winter blues had not been formally collected, clothing stores around the RAAF reported widespread anecdotal dissatisfaction with numerous features of Air Force uniforms: the material used for winter uniforms; the pattern of Service Dress (in particular, the waist belt); the poor quality of blue shirts; the discomfort of caps; the inferior quality of airmen's blue twill cloth compared to officers'; and the general 'multiplicity of garments'.[6]

Under the supervision of Air Member for Supply and Equipment Air Vice-Marshal C.G. Cleary, light-weight materials and more modern designs and colours were tested. Proposed changes included removing the waist belt from the dress jacket to give a 'draped' style, shifting rank braid from sleeve cuffs to the shoulders and, most conspicuously, changing the colour. The colour of the existing RAAF winter uniform was somewhere between royal and navy blue. Personally selected by the first chief of the air staff, Sir Richard Williams, 'Air Force' blue was distinctive, traditional and popular. After a series of user trials the Air Board approved the introduction of an 'all-seasons' uniform in a blue-grey shade. Unfortunately production slippages prevented the change from being made during the RAAF's golden anniversary. When the new uniforms did appear for general issue in 1972, there were some who believed that Air Marshal Hannah, who had also been on the selection panel for the RAAF memorial, had made his second major error of judgment within a year.

AM Sir Colin Hannah, CAS from January 1970 to March 1972. RAAF

AM Sir Charles Read, CAS from March 1972 to March 1975. RAAF

A former AOC of both Operational and Support Commands who had also been a senior commander in the Southwest Pacific during World War II, Hannah disguised a cautious approach to decision making behind a brusque, even rude, manner. His growing reputation for poor judgment was reinforced when he abruptly resigned in March 1972 to become governor of Queensland part-way through his tenure, and without any prior consultation with the other members of the Air Board. Hannah's replacement as the man who would lead the RAAF into its third quarter-century was Air Marshal Charles Read, a successful wartime wing leader. Read's reputation as a reluctant chief, his suspicion of the bureaucracy, and his dislike of the social activities associated with high public office sometimes concealed from casual observers his excellent mind, strong character and accomplished staff skills.

The first few years following the end of World War II were a depressing time for the RAAF as government indifference accompanied by severe reductions in resources saw the armed forces fall into some disarray. However, once the pressures of the Cold War had refocused attention on national security, the RAAF prospered as it had never done before. The extraordinary status air power had achieved between 1939 and 1945 enabled the RAAF to shrug off the repressive pre-war influence of the Army and the Navy and assume a dominant role in the defence of Australia. Once the gloom of the Interim period had been left behind, the quarter-century between 1946 and 1971 was characterised by continual expansion, the frequent replacement of old aircraft with new, plentiful flying, a series of challenging overseas deployments, and improving conditions of service.

Also improving was the nature of Air Force leadership. The men who took the RAAF into the 1950s had helped win a world war and had endured hardships and sometimes grievous losses serving their country. As a group they were entitled to be

proud of their achievements. Times, however, were changing, and attitudes had to move forward. The RAAF's casual approach to operations and flying discipline may have been no worse than that of most air forces, but this was a different era. No longer was it sufficient for an Air Force commander to be primarily a great stick-and-rudder man. A turning point for the RAAF's fighter pilots came in Korea through their association with the hard professionalism of the USAF; while for the bomber, maritime and transport crews, new aircraft and, again, their exposure to the Americans' rigorous approach to training and operations were crucial. Not that the Americans held all the answers. On the contrary, as the RAAF's leaders came to realise that it was neither desirable nor acceptable for their service to continue to function as the Pacific outpost of the RAF and the USAF, a more mature and independent organisation evolved.

Above all else, the period saw the RAAF transformed from a marginal organisation whose pre-war standards had been questionable and whose considerable wartime achievements were by no means indicative of permanent improvement, into a more disciplined, more professional and better educated establishment. Nothing was more important in that process than the institutionalisation of a large and diverse range of educational and training measures which became the foundation of the Air Force's professional status and its ability to maintain standards—indeed, to regenerate itself on occasions—following occasional severe reverses such as the closure of facilities, reductions in funding, and high resignation rates among key personnel groups. By 1971 the RAAF was one of the nation's great, high-quality training establishments.

The admirable achievements of the quarter-century were ideally symbolised at the very end of 1971 by Cabinet's firm decision to proceed with the order for the F-111, followed by the arrival in Australia eighteen months later of the most significant aircraft the RAAF has ever operated. For the first time in its history the Air Force had a weapons system genuinely capable of taking the initiative from the Australian mainland, of going solo.

Going solo for the first time is an exhilarating experience and one of the milestones in a flying career. But it is also an experience which occurs very early in that career, on average at about the eight-hour mark of a two-hundred hour flying training course. The arrival of the F-111 can again be used here as a metaphor for the RAAF's progress. Getting an aircraft is one thing, making it operate effectively another. For all the RAAF's fine achievements, it was clear that too many senior officers still viewed flying as an end in itself rather than as a means; there were worrying inter-service tensions; and there was the challenge of responding to the emerging focus on defence self-reliance. The RAAF had gone solo, and done it well, but the challenge of reaching wings standard was still ahead.

NOTES

Chapter 1

1 CRS A5954, Box 787, AA. White was Chauvel's predecessor as CGS and Monash was the Army's most notable commander in World War I.

2 Sir Richard Williams, Foreword, *The Golden Years*, Canberra, 1971, pp x–xi.

3 See C.D. Coulthard-Clark, *The Third Brother*, North Sydney, 1991, pp 114–18.

4 RAAF, *Australian War Effort* (10th edn), 31-8-45, Appendix M.

5 John Herington, *Air Power over Europe 1944–1945*, Canberra, 1963, pp 17–18; see also John McCarthy, *A Last Call of Empire*, Canberra, 1988.

6 The Royal Netherlands East Indies Air Force and the Royal New Zealand Air Force also became part of the Allied Air Forces.

7 Between November 1944 and June 1945 there were only nine recorded Japanese air attacks against allied targets in the SWPA, involving a mere seventeen aircraft. War Cabinet Minutes, Weekly Progress Reports by CNS, the C-in-C of the AMF and the CAS, November 1944–June 1945, RHS.

8 See Alan Stephens, *Power Plus Attitude*, Canberra, 1992, pp 62–8.

9 RAAF, *Australian War Effort* (10th edn), 31-8-45, Appendices G, H, I. The total of fifty-three squadrons excludes the seventeen Article XV so-called 'Australian Squadrons' in Europe, RAAF membership of which rarely totalled more than half.

10 See for example the RAN Post-War Plan, which stated that 'The master weapon of World War II has been the aeroplane'. CRS A5954, Box 1841, AA.

11 War Cabinet Agendum 394/1945, 2-9-45; Air Board Agendum 6795, 27-11-45, RHS; CRS A1196, Item 36/501/616, AA.

Chapter 2

1 War Cabinet Minute 4351, 17-8-45, RHS.

2 Reduction of RAAF in SWPA from 53 Squadrons, Organisation and Planning, 1945–46, 30-7-45, CRS A1196, 36/501/589, AA. Some planning documents refer to thirty-six squadrons but thirty-four was the eventual figure.

3 *ibid*, 4-11-45; ABO 'N' 607/1945.

4 Reduction of RAAF in SWPA from 53 Squadrons, Organisation and Planning, 1945–46, 23-10-45, CRS A1196, 36/501/589, AA.

5 Air Marshal Sir Valston Hancock, Interview, Record No TRC 2841, NLA.

6 Reduction of RAAF in SWPA from 53 Squadrons, Organisation and Planning, 1945–46, 17-8-45, CRS A1196, 36/501/589, AA.

7 *ibid*, 6-8-45.

8 *ibid*, 22-8-46.

9 *loc. cit.*; see also Air Board Agendum 6887, 20-12-45, RHS.

10 Air Board Agendum 6647, 29-6-45, RHS.

11 Air Board Agenda 7401-7484, 1-8-46 to 30-8-46, RHS.

12 Air Board Agenda 7367-7369, 19-7-46; 7388, 25-7-46; 7609, 7-10-46, RHS.

13 Reduction of RAAF in SWPA from 53 Squadrons, Organisation and Planning, 1945–46, 21-8-45, CRS A1196, 36/501/589, AA.

14 Interim Air Force Policy, 1946, CRS A1196, 36/501/613, AA; Air Board Agendum 6795, Supplement 4, 28-2-46, RHS.

15 For detail on Hewitt's dismissal from No. 9 OG, see Stephens, *Power Plus Attitude*, pp 65–7; see also J.E. Hewitt, *Adversity in Success*, South Yarra, 1980.

16 Reduction of RAAF in SWPA from 53 Squadrons, Organisation and Planning, 1945–46, 2-11-45, CRS A1196, 36/501/589, AA.

17 *ibid*, 23-4-46; Air Board Agendum 6795, 28-2-46, RHS.

18 Reduction of RAAF in SWPA from 53 Squadrons, Organisation and Planning, 1945–46, 23-4-46, CRS A1196, 36/501/589, AA.

19 Air Board Agendum 7158, 7-5-46, RHS.

20 Interim Air Force, Policy, 1946, CRS A1196, 36/501/613, AA; Air Board Order N7/46; Air Board Agendum 7157, 8-5-46, RHS.

21 Reduction of RAAF in SWPA from 53 Squadrons, Organisation and Planning, 1945–46, 21-3-46, CRS A1196, 36/501/589, AA.

22 Air Marshal Sir Valston Hancock, Interview, Record No TRC 2841, NLA.

23 Air Board Agendum 7489, 26-2-47, RHS.

24 Air Marshal Sir Valston Hancock, Interview, Record No TRC 2841, NLA.

25 Reduction of RAAF in SWPA from 53 Squadrons, Organisation and Planning, 1945–46, 22-8-46, CRS A1196, 36/501/589, AA.

26 Air Board Agendum 7493, 12-9-46, RHS.

27 Air Board Agendum 7023, 2-4-46, RHS.

28 Air Board Agendum 7023, 21-3-46, RHS.

29 Air Board Agendum 7530, 21-1-47, RHS.

30 Air Board Agendum 8294, 28-7-47, RHS. The number includes eighty-four nurses. The slight variation between those numbers and the figures in Appendix B is attributable to when the data were collected, the inclusion or exclusion of groups like nurses, and so on.

31 Air Marshal Sir George Jones, *From Private to Air Marshal*, Richmond, 1988, p 83.

32 For details on Jones' selection as CAS, see Stephens, *Power Plus Attitude*, pp 62–8.

33 Minute, Jones to Drakeford, 14-9-44, Ministerial File 67, Proposal to Retire Certain Senior Officers of RAAF, 1944–1948, RHS; Hewitt, *op. cit.*, pp 289–93; Jones, *From Private to Air Marshal*, pp 120–1.

34 Air Board Agendum 6731, 21-9-45, RHS.

35 Air Marshal Sir Richard Williams, *These Are Facts*, Canberra, 1977, pp 326–9.

36 That argument was used against Air Commodore F.W. Lukis and Group Captains A.T. Cole and F.H. McNamara: see Stephens, *Power Plus Attitude*, pp 92–4.

37 Air Board Agendum 6731, 21-9-45, RHS.

38 Letter, MacArthur to Bostock, 15-2-46, in Personal File on Bostock, RHS.

39 Air Board Agenda 9845, 19-10-49; 10354, 6-6-50, RHS.

40 Air Board Agendum 8525, 15-3-48, RHS.

41 Air Board Agendum 8754, 24-5-48, RHS; ABO 'N' 300/47. The figure of 10,000 excluded airmen serving with the occupation force in Japan.

42 Air Board Agendum 7171, 10-5-46, RHS.

43 See Appendix C for 'Defence Expenditure by Service, 1945/46 to 1971/72'.

44 Air Board Agendum 8091, 16-10-47, RHS.

45 Air Board Agendum 8586, 24-2-48, RHS.

46 See Jones, *op. cit.*, pp 8–26.

47 Air Marshal Sir Valston Hancock, Interview, 3-4-90; Air Marshal Sir James Rowland, Interview, 14-3-90; Air Vice-Marshal I.D. McLachlan, Interview, 13-3-90; Air Vice-Marshal L.S. Compton, Interview, 13-3-90; Air Commodore C.R. Taylor, Interview, 21-2-90. See also Hewitt, *op. cit.*, *passim*.

48 Air Marshal Sir George Jones, Interview, 31-10-89.

49 Air Commodore D.R. Cuming, Interview, 21-1-94; Air Vice-Marshal R.E. Trebilco, Telecon, 28-7-94.

50 Air 8/1661, 5-7-51, Telegram, Menzies to UK High Commissioner; Telegram, White to UK Secretary of State for Air, PRO; Letter, Minister for Air McMahon to Minister for Defence McBride, 27-7-51, CRS A5954, 1510/3, AA.

51 Air Board Agendum 8525, 15-3-48, RHS. The awards used for that figure were the DSO, DFC, CB, CBE and OBE. Individuals have been counted once in the compilation of those figures; that is, someone with, say, a DFC and an OBE has been included only in the DFC group.

52 Operational experience was also a key factor in deciding which junior officers would be offered a permanent commission. Out of a maximum score of 100 points, 35 were allocated for 'intellectual capacity', 30 for 'personal characteristics', 15 for 'training', and 20 for 'wartime operational experience'. Air Board Agendum 6623, 6-7-45, RHS.

53 Quoted in Alan Stephens, *The RAAF in the Southwest Pacific Area 1942–1945*, Canberra, 1993, p 154.

Chapter 3

1 Reduction of RAAF in SWPA from 53 Squadrons, Organisation and Planning, 1945–46, 18-9-45, CRS A1196, 36/501/589, AA.

2 Air Board Agendum 6795, 28-2-46, RHS.

3 Air Board Agendum 8091, 16-10-47, RHS.

4 *loc. cit.*

5 Air Board Agendum 8091, 10-10-47 to 10-11-50, RHS.

6 Air Board Agendum 8886, 5-5-49, RHS.

7 Air Board Agendum 7314, 5-9-46, RHS.

8 Air Board Agendum 6799, 16-10-45, RHS.

9 The Defence Committee advised the minister for defence on higher policy and strategy. It was chaired by the secretary of the department, and might include the chairman of the Chiefs of Staff Committee, the three service chiefs of staff, and the secretaries of the Treasury, External Affairs, and the Prime Minister's Department.

10 Report on Visit of the RAAF Planning Team to the Air Ministry, Middle East and Far East, January/February 1951, CRS A5954, 1636/3, AA.

11 Air Board Agendum 9497, 28-4-49, RHS.

12 Air Board Agendum 10856, 1-2-51, RHS.

13 *loc. cit.*

14 MP 1217, Box 560, AAVIC; Air 8/997-999, PRO.

15 Air 8/997, PRO.

16 Air 8/999, PRO.

17 Report on Visit of the RAAF Planning Team to the Air Ministry, Middle East and Far East, January/February 1951, CRS A5954, 1636/3, AA.

18 Report on Visit of the RAAF Planning Team to the Air Ministry, Middle East and Far East, January/February 1951, CRS A5954, 1636/3, AA; Air Board Agenda 12295, 12296, RHS.

19 RAAF Purchase of Lockheed P2V5 Aircraft 1951, Policy, 22-10-51, CRS A4940, C265, AA.

20 Robert O'Neill, *Australia in the Korean War 1950–53, Vol. I, Strategy and Diplomacy*, Canberra, 1981, p 111; and *Vol. II, Combat Operations*, 1985, p 316.

21 Nato: the North Atlantic Treaty Organisation founded in 1949; Cento: the Central Treaty Organisation, developed in 1955 and based on the Baghdad Pact; and Seato, the Southeast Asia Treaty Organisation (also known as the Manila Pact) founded in 1954.

22 See Stephens, *Power Plus Attitude*, pp 15–49.

23 Letter, Jones to Shedden, CRS A5954, Box 1634, Future of Air Power—Report by General Arnold, 'Air Power and the Future', November 30, 1945, AA.

24 Stephens, *Power Plus Attitude*, pp 119–56.

25 Australian Aircraft Industry, Review 1953, 15-6-53, CRS A4940, C2796, AA.

26 See for example Cipher Message WX 1482, RAFLIA Melbourne to Air Ministry, 17-1-46, Air 8/1417, PRO.

27 Air Board Agendum 12511, 30-6-55, RHS.

28 Air Board Agenda 12423, 3-5-54; 12511, 30-6-55, RHS.

29 Summary of Objectives for the Re-balancing of the Programme Endorsed by the Defence Preparations Committee in February 1954 on Agendum No 31, CRS A5954, 1337/11, AA.

30 Defence Program 1954/55, Air Force Program, 16-7-54, CRS A4940, C1079, AA.

31 Review of Defence Policy 1956, 10-10-56, CRS A4940, C1615, AA.

32 *loc. cit.*

33 Menzies told the meeting that, during a recent visit to the United Kingdom, Soviet leaders Bulganin and Khrushchev had been left in no doubt that the West would use thermo-nuclear weapons 'immediately' in the event of a global war, a point the Soviets understood 'clearly'. Review of Defence Policy 1956, 10-10-56, CRS A4940, C1615, AA.

34 Extract from Diary Record of R.G. Casey, 10-10-56, CRS A4940, C1615, AA.

35 Royal Air Force Manual, AP1300, *Operations* (4th edn), Air Ministry, 1957.

36 Air Marshal Sir Charles Read, Interview, 19-6-90; Air Marshal Sir James Rowland, Interview, 14-3-90; Air Chief Marshal Sir Neville McNamara, Interview, 13-8-90. The argument for a balanced air force was also put effectively by Air Vice-Marshal F.R.W. Scherger in an article written when he was DCAS: see 'Strategy of the RAAF in War', in *Aircraft*, April 1951, pp 29, 58.

37 Defence Discussions with Mr Duncan Sandys, UK Minister of Defence, 1957, 19-8-57, 26-8-57, CRS A4940, C1917, AA.

38 Composition of the Forces, 2-4-59, CRS A7941/2, A11, Part 1, AA.

39 Composition of Australian Defence Forces, 1-12-59, A7942/1, C151, AA; Air Board Agendum 12787, 2-4-59, RHS.

40 Composition of the Forces, 6-4-59, CRS A7941/2, A11, Pt 1, AA.

41 Assessment of the Air Threat in Limited War, 3-2-60, CRS A7941/2, A23, AA. The chiefs were Vice-Admiral Sir Roy Dowling (CCOSC), Lieutenant General Sir Ragnar Garrett (CGS), Rear Admiral O.H. Belcher (CNS) and Air Vice-Marshal I.D. McLachlan (representing the CAS).

42 Policy for the Active Air Defence of Australia and its Territories, 15-2-63, CRS A7941/2, A4; Assessment of the Air Threat in Limited War, 3-2-60, CRS A7941, A23, AA.

43 Anzam Defence Committee Agendum 5/1961, 11-9-61, CRS A1209/79, 61/800, AA.

44 Threat to Australia and Territories up to end of 1969 from West New Guinea under Indonesian Control, 31-8-59, CRS A7941/2, A22; Joint Intelligence Committee, The Likelihood of War, August 1962, CRS A7941, W6, AA.

45 Stephens, *Power Plus Attitude*, pp 150–4.

46 Cabinet Decision No. 437, 7-9-62, in Air Board Agendum 13000, 3-7-63, RHS.

47 Cabinet Decision No. 768, 7-5-63, in Air Board Agenda 13000, 3-7-63; 13073, 27-9-64, RHS.

48 Construction of Living-in Accommodation at RAAF Bases, 3-5-65, CRS A4940, C4177, AA.

49 Australian Forces, Strategic Concept and Military Capabilities, 1969, 4-3-69, CRS A7941/2, S32, AA. Committee members were Air Marshal Sir Alister Murdoch, CAS; Lieutenant General Sir Thomas Daly, CGS; and Vice-Admiral V.A.T. Smith, CNS. See also F-111 Aircraft, 20-10-67, CRS A7941/2, F14, AA.

50 Australian Forces, Strategic Concepts and Military Capabilities, 1969, 4-3-69, CRS A7941/2, S32; Review of the Tasks, Capabilities and Structure of Australian Defence Forces, 1-12-66, CRS A7941/2, R20, AA.

51 Indonesian Military Capability, October 1971, CRS A7941/2, I10, AA.

52 COSC Memorandum 5/1970, The Functions and Roles of the Australian Armed Forces, CRS A7941, M27, AA.

Chapter 4

1 Air Board Agendum 10907, 29-11-50, RHS.

2 Air Board Agendum 6799, 16-10-45, RHS.

3 RAAF Aerodrome Pearce, WA, Development, 9-2-51, CRS A4940, C288, AA; Air Board Agendum 12688, 8-10-57, RHS.

4 RAAF Williamtown Aerodrome, Development, 15-3-62, CRS A4940, C341, AA.

5 Telegram, for Prime Minister from acting Prime Minister, 24-8-50, Air 8/1500, PRO; Air Board Agendum 10550, 11-8-50, RHS.

6 Telegram, GHQ Far East Land Forces to MinDef London, 3-1-51, Air 8/1500, PRO.

7 File Note to Secretary of State, 26-2-55, Air 8/1860, PRO; Air Board Agendum 13062, 12-6-64, RHS.

8 Air Board Agendum 8511, 16-12-47, RHS.

9 Air Board Agendum 8751, 26-5-48, RHS.

10 Air Board Agendum 12720, 13-2-58, RHS.

11 Defence Letter, 24-8-55, CRS A5954, 1464/7, AA.

12 Brief History of RAAF Station Darwin, RAAF Historical Section, Canberra, May 1990, RHS.

13 Air Board Agendum 12902, 24-3-61, RHS.

14 Air Marshal Sir John McCauley, Interview, 1973, TRC 121/48, NLA.

15 Works for RAAF Darwin, August 1961, CRS A4940, C3385, AA.

16 Air Board Agenda 12814, 10-7-59; 12930, 8-10-62, RHS.

17 Air Board Agendum 12997, 27-5-63, RHS. The base was named after Wing Commander A.R. Tindal, who was killed during the Japanese bombing raid on Darwin on 19 February 1942.

18 Air Board Agendum 12997, 31-5-63, RHS.

19 Air Board Agendum 10105, 10-3-50, RHS.

20 Air Board Agendum 12528, 9-10-57, RHS; RAAF Airfield Requirement 1957/58, 5-11-57, CRS A4940, C1982, AA.

21 Air Board Agenda 13047, 17-4-64; 13073, 27-9-64, RHS.

22 Development of Learmonth, 10-6-69, CRS A7939/1, LI, AA; Air Board Submission 11/6616-2-66, RHS.

23 RAAF, Proposed Additional Airfield Construction Squadron, 6-3-51, CRS A4940, C241, AA; Air Board Agendum 11149, 22-5-51, RHS.

24 Composition of the Forces, 2-4-59, CRS A7941/2, A11, Pt 1, AA; Air Board Agendum 12791, 26-5-59, RHS.

25 Air Board Submission 80/68, 3-10-68, RHS.

26 Air Board Agendum 9770, 19-9-49, RHS; Chiefs of Staff Committee Memorandum 2/1969, Inter-service Responsibilities for Ground Defence of Naval Establishments and Air Force Installations, February 1969, CRS A7941, M27, AA.

27 Air Board Agendum 9770, 10-9-49, RHS.

28 Air Board Agendum 11172, 13-2-51, RHS.

29 Inter-service Air Defence Anti-Aircraft and Ground Defence, 8-6-60, CRS A7941/2, I5, AA.

30 *ibid*, 19-9-60.

31 Air Board Agendum 12942, 9-2-62, RHS.

32 Air Board Agendum 13109, 18-6-65, RHS.

33 Inter-service Air Defence Anti-Aircraft and Ground Defence, 21-2-69, CRS A7941/2, I5, AA.

34 Air Board Agendum 10639, 5-9-50, RHS.

Chapter 5

1 Subsequently elements of the Royal New Zealand Air Force were incorporated into the AAF.

2 Air Board Agendum 6757, 18-9-45, RHS.

3 Air Marshal Sir George Jones, Interview, 31-10-89.

4 Air Board Agendum 6757, 18-9-45, RHS.

5 Reduction of RAAF in SWPA from 53 Squadrons, Organisation and Planning, 1945–46, 17-8-45, CRS A1196, 36/501/589, AA.

6 Air Board Agendum 10110, 14-3-50, RHS.

7 Air Board Agendum 12386, 4-8-53, RHS.

8 See Joint Committee on Foreign Affairs, Defence and Trade, *Personnel Wastage in the Australian Defence Force—Report and Recommendations*, Canberra, 1988, pp 211–16.

9 Location of Headquarters Northeastern Area, Policy, 1949, 18-3-48, CRS A1196/2, 42/501/258, AA; Air Board Agendum 12375, 20-5-53, RHS. Consideration was given to establishing a Northern Area Headquarters in New Guinea, possibly at Finschhafen, but the idea was dropped. Southern Area Headquarters was located at 'Kellow House' in St Kilda Road, Melbourne, early in 1944 but in 1947 was moved to Albert Park Barracks as units were disbanded and the RAAF reduced its large holdings of accommodation. Following the Hardman reorganisation of 1953, Maintenance and Training Commands continued to occupy Albert Park.

10 Location of Headquarters Northeastern Area, Policy, 1949, 18-3-48, CRS A1196/2, 42/501/258, AA.

11 Air Board Agendum 9399, 21-4-49.

12 Location of Headquarters Eastern Area, Lapstone Site, 1949, 5-8-49, CRS A1196/1, 42/501/262, AA.

13 Acquisition of Property 'Briarcliffe', Glenbrook, NSW, for RAAF, 10-12-51, CRS A4940, C2768, AA; Air Board Agendum 11888, 15-8-51, RHS.

14 Air Board Agendum 6869, 29-1-45, RHS.

15 *loc. cit.* Some consideration was given to renaming the wings 'groups' but the idea was rejected.

16 Air Board Agendum 12872, 10-8-60, RHS.

17 *loc. cit.*

18 Air Board Agendum 8091, 16-10-47, RHS.

19 Air Board Agenda 6816, 20-11-45; 8091, 16-10-47, RHS; Reorganisation of the RAAF 1953, 18-11-53, CRS A4940, C2404, AA. Training units from Queensland and New South Wales were placed under the command of Headquarters, Southern Area.

20 Air 8/1661, Telegram, UK High Commissioner to Commonwealth Relations Office, 5-7-51, PRO; Letter, Minister for Air McMahon to Minister for Defence McBride, 27-7-51, CRS A5954, 1510/3, AA.

21 Quoted in Harry Rayner, *Scherger*, Canberra, 1984, pp 110–11.

22 *Daily Mirror*, 11-10-51.

23 Letters from Slessor to British Secretary of State for Air (Henderson), 9-3-51, 29-5-61, Air 8/1661; see also Air 20/9174, PRO.

24 Air 20/9174, PRO.

25 Air 8/1661, PRO.

26 Air Board Agendum 12286, 12-11-51, RHS.

27 Reorganisation of the RAAF 1953, 18-11-53, CRS A4940, C2404, AA.

28 Air Board Agendum 12375, 20-5-53, RHS.

29 Air Board Agendum 12312, 28-3-52, RHS. In mid-1953 the total strength of Air Force Headquarters was 1323, of whom 1183 were located in the Victoria Barracks area.

30 Reorganisation of RAAF, Proposals of Minister for Air, May 1952, CRS A5954, 1509/13, AA; Air Board Agendum 12468, 17-12-54, RHS.

31 See *Air Force Regulation* 27 for the formal relationship between the minister and the Air Board. The first minister, J.V. Fairbairn, frequently attended meetings, a practice which was discontinued by his colleagues and successors, A.W. Fadden and J. McEwen, but which was resumed by Arthur Drakeford when the Labor Party won office at the end of 1941. Air Board Agendum 10110, 14-3-50, RHS.

32 Air Board Agenda 8388, 12-10-47; 8392, 2-10-47, RHS.

33 Air Board Agendum 11100, 31-1-51, RHS.

34 Composition of the Forces, 2-4-59, CRS A7941/2, A11, Pt 1, AA.

35 Transfer of Defence Departments to Canberra, Report of Departmental Committee, 31-8-55, CRS A4940, C1403, AA.

36 Air Board Agendum 12512, 30-6-55, RHS.

37 Air Board Agendum 12788, 12-10-59, RHS.

38 Air Board Submission 6/67, 24-1-67, RHS.

39 Air Board Agendum 12752, 24-6-58, RHS; Australian Force Contribution to Vietnam, 17-7-64, CRS A7940/1, M7, AA.

40 Air Chief Marshal Sir Neville McNamara, Interview, Canberra, 9-4-92.

41 Air Force Regulations Nos. 24-30, as made under the *Air Force Act 1923*.

42 Air Board Agendum 12582, 11-5-56, RHS.

43 Air Force Regulation No. 20.

44 Confidential Letter, Goble to Williams, 21-2-39. My thanks to Dr Chris Coulthard-Clark for this document.

45 Air Marshal Sir Valston Hancock, Interview, 3-4-90; Air Marshal Sir Charles Read, Interview, 19-6-90; Air Marshal Sir James Rowland, Interview, 14-3-90.

46 Defence Note, CRS A5954, 1510/3, 12-10-56, AA.

47 Air Board Agendum 12568, 20-2-56, RHS.

48 Air Commodore C.R. Taylor, Interview, 26-11-93.

49 Air Marshal J.W. Newham, Interview, 11-1-94.

50 Air Board Submission 34/68, 14-5-68, RHS.

51 Three wing commander positions were also reserved for the new category of air electronics officer which was introduced in 1965 to replace signaller.

52 See *The Higher Defence Organisation in Australia*, Final Report of the Defence Review Committee (the Utz Report), AGPS, Canberra, 1982.

53 *Canberra Times*, September 30, 1970.

54 Joint Committee on Foreign Affairs, Defence and Trade, *The Management of Australia's Defence*, Canberra, 1987, p 19.

55 *ibid*, p 20.

56 *Defence Act 1903*, Sections 9 and 9A.

Chapter 6

1 Air Board Agendum 8118, 20-8-47, RHS.

2 Services Recruiting and Manpower, 10-8-64, CRS A7942/1, R103, AA.

3 Air Board Agendum 8717, 22-9-48, RHS.

4 Air Board Agenda 8238, 3-7-47; 8803, 8-7-48, RHS.

5 Air Board Agendum 11698, 20-6-51, RHS. In mid-1951 there were 1905 positions established for civilians across the RAAF, with the majority belonging to Maintenance Group (724), Air Force Headquarters (333), Southern Area (316) and Eastern Area (293). By 1955 the number had risen to 2425.

6 Air Board Agendum 12654, 17-5-57, RHS.

7 Air Board Agendum 10523, 28-7-50, RHS.

8 Air Board Agendum 12432, 12-7-54, RHS.

9 Air Board Agendum 9708, 6-10-49, RHS.

10 Air Board Agendum 9480, 19-5-49, RHS. There were nine hundred and twelve ground staff enlistments for a given period compared to three hundred and forty-five the previous year. (Those figures do not include enlistments from the United Kingdom.)

11 Housing for the Services, Policy, 24-6-55, CRS A4940, C2058, AA. During that year the RAAF recruited eight hundred and twenty-nine people but lost 1422.

12 Air Board Agendum 12508, 1-7-55, RHS. Bonuses were payable as a lump sum at the start of each re-engagement period and gradually reduced for each subsequent period: for example, a member of the Group One pay bracket received £475 for his first re-engagement (six years), £264 for the second and £132 for the third (each of five years).

13 Services Recruiting and Manpower, 10-8-64, CRS A7942/1, R103; Services Manpower Review, 30-9-64, CRS A7941/2, S26; Development of RAAF Base Amberley 1968, 9-9-68, CRS A5882/2, CO385, AA. The figures quoted here are the authorised establishment; those in Appendix B are the actual strength.

14 Services Recruiting and Manpower, 10-8-64, CRS A7942/1, R103, AA.

15 Services Manpower Review, 30-9-64, CRS A7941/2, S26, AA.

16 Services Recruiting and Manpower, 5-12-63, CRS A7942/1, R103, AA.

17 Air Board Agendum 6810, 22-10-45, RHS.

18 Air Board Agendum 8027, 12-3-47, RHS.

19 Air Board Agendum 8084, 8-5-47, RHS.

20 Air Board Agenda 12491, 4-4-55; 12496, 13-5-55, RHS.

21 Air Board Agendum 13019, 9-9-63, RHS.

22 Air Board Agendum 12999, 31-5-63, RHS. The positions were the director of organisation, establishments and personal services in the Department of Air; superintendent Woomera; CO of ARDU; and assistant commandant at RAAF Staff College.

23 Air Board Agendum 8118, 20-8-47, RHS.

24 Air Board Agendum 10762, 13-10-50, RHS.

25 Air Board Agendum 8087, 18-4-47, RHS.

26 Air Board Agendum 10762, 13-10-50, RHS.

27 Air Board Agenda 12464, 15-12-54; 12558, 9-12-55, RHS. Equity within the officers corps had also become an issue as applicants for the Special Duties Branch with the same qualifications as airmen aircrew were already offered permanent commissions on entry.

28 Aircrew discharged after a short-service engagement were paid a gratuity as some compensation for having to find a new job at the awkward age of about thirty: £3200 for offices and £2080 for airmen.

29 In 1964 the average age of the RAAF's male officers was thirty-seven, a figure higher than might be expected for a military service but which was skewed upwards by the non-general duties branches. The average age of airmen was also surprisingly high at 29.2 years. Retiring Ages in the Services, Extension of, 19-8-64, CRS A7942/1, R104, AA.

30 Air Board Agenda 8524, 13-2-50; 8525, 15-3-48, RHS.

31 Air Board Agenda 7938, 24-1-47; 11281, 22-3-51, RHS. Those techniques were also applied to aircraft accident rates.

32 Air Board Agendum 11281, 22-3-51, RHS.

33 Services Recruiting and Manpower, 10-8-64, CRS A7942/1, R103; Air Board Agendum 13004, 21-6-63, RHS.

34 Air Board Agendum 7938, 22-10-47, RHS.

35 Services Recruiting and Manpower, 10-8-64, CRS A7942/1, R103, AA; Air Board Agendum 13004, 21-6-63, RHS.

36 Air Board Agendum 8016, 7-3-47, RHS. See also Chapter 23.

37 Air Board Agendum 13107, 31-5-65, RHS.

38 The RAAF's first full-time chaplain, George McWilliams, was appointed only months before the war, in May 1939. Peter A. Davidson, *Sky Pilots*, Fyshwick, 1990, p 1–8.

39 Air Board Agenda 7348, 16-7-46; 8135, 26-5-47, RHS.

40 Air Board Agendum 8481, 26-11-47, RHS.

41 Air Board Agendum 12719, 31-1-58, RHS.

42 Uniform Disciplinary Legislation for the Australian Defence Force, 11-2-70, CRS A5882/1, CO813, AA.

43 Air Board Agendum 13098, 3-3-65, RHS.

44 Air Board Submission 27/67, 10-5-67, RHS.

45 Air Board Agendum 9385, 11-4-49, RHS.

46 Air Board Agendum 7763, 20-10-46, RHS.

47 Air Board Agendum 12721, 27-2-58, RHS.

48 Active pay comprised salary plus a daily allowance but excluded marriage, separation and clothing allowances.

49 Defence Services Pay, Allowances, etc, Report by Pay Code Review Committee, 1958, 26-5-58, CRS A4940, C2243, AA. Among other appointments, William John Allison was chairman of the Export Development Council, a member of the Commonwealth Consultative Committee on Imports, chairman of the Board of Business Administration for the Department of Defence, and a director of numerous companies.

50 *ibid*, 3-6-58.

51 *ibid*, 2-6-58.

52 *RAAF News*, October 1968, pp 1, 3.

53 Air Board Agenda 12441, 6-2-58; 12660, 28-8-57, RHS.

54 Air Board Submission 17/68, 5-3-68, RHS.

55 Air Board Submission 126/68, 16-12-68, RHS.

56 Defence Forces Pay and Conditions of Service, 1964, 2-6-64, CRS A4940, C3970; Services Manpower Review, 30-9-64, CRS A7941/2, S26; Services Recruiting and Manpower, undated COSC Agendum 67/1963, CRS A7942/1, R103, AA.

57 Services Manpower Review, 30-9-64, CRS A7941/2, S26, AA.

58 Defence Forces Retirements Benefits, Review 1959, 13-7-59, CRS A4940, C2921, AA.

59 Services Recruiting and Manpower, September 1964, CRS A7942/1, R103, AA.

60 Air Board Agenda 8534, 16-1-48; 9196, 25-11-48, RHS.

61 Review of Benefits Payable Under Superannuation and Defence Forces Retirements Scheme 1950, 4-9-50, CRS A4940, C222, AA.

62 Defence Forces Retirements Benefits, Review 1959, 13-7-59, CRS A4940, C2921, AA.

63 Defence Forces Retirement Benefits Scheme, Amendment 1965-67, 7-4-65, CRS A4940, C4159, AA.

64 Document by Group Captain Chapman Attacking DFRB Pensions, 4-3-64, CRS A4940, C3933, AA; Air Board Agendum 13039, 22-4-64, RHS.

65 *RAAF News*, June 1972, pp 1–2.

66 Air Board Agendum 12466, 15-12-54, RHS.

67 Housing for the Services, Policy, undated, CRS A4940, C2058, AA; Air Board Agenda 8717, 8-11-48; 9783, 22-9-49, RHS.

68 Air Board Agendum 8933, 6-8-48.

69 Air Board Agendum 12742, 15-5-58, RHS.

70 Rental Charges for Married Quarters Occupied by Members of the Defence Forces, 25-10-51, CRS A4940, C1140, AA.

71 *RAAF News*, January 1961, p 3.

72 Air Board Submission 82/68, 2-10-68, RHS.

73 Rental Charges for Married Quarters Occupied by Members of the Defence Forces. 10-11-52. CRS A4940, C1140, AA.

74 Defence Vote 1970-71, July 1970, CRS A5882/2, CO992, AA.

75 Air Board Submission 30/71, 19-3-71, RHS.

76 Air Board Agendum 12794, 3-6-59, RHS.

77 Air Board Agenda 12614, 10-10-56; 12769, 22-6-59, RHS; Integration of Canteen Services of Navy, Army and Air Force, 19-6-58, CRS A7942/1, AA; *RAAF News*, June 1960.

78 Air Board Agendum 7730, 26-11-46, RHS.

79 Air Board Agendum 12339, 16-9-52, RHS.

80 Air Board Agenda 8175, 20-6-47; 8285, 4-12-47; 9195, 14-12-48, RHS.

81 *RAAF News*, March 1962, p 8; April 1962, p 3.

82 Air Board Agendum 10822, 3-11-50, RHS.

83 Air Board Agendum 8865, 13-7-48, RHS.

84 Air Board Agendum 11320, 6-4-51, RHS. People on courses were supposed to complete a thirty-minute session of PT each day.

85 Air Board Agendum 13002, 18-6-63, RHS.

86 The other members of the committee were General Sir John Wilton, E.G. Deverall, S. Landau and H.T. Rogers.

87 Air Board Submission 19/72, 8-3-72, RHS.

Chapter 7

1 See Coulthard-Clark, *The Third Brother*, pp 224–33, 315–50, 445–6.

2 Air Board Agendum 6490, 20-4-45, RHS. The policy on educational and vocational training was determined by the Services Educational Co-ordination Committee, which comprised the three personnel members from the services and representatives of the Departments of the Treasury and Post-War Reconstruction; and the Central Reconstruction Committee, which included representatives from the Department of Labour and National Service, the Universities Commission, the Repatriation Commission and the Department of Post-War Reconstruction. Quotas were applied to the vocational training.

3 Air Board Agendum 8371, 8-12-49, RHS.

4 Air Board Agendum 8176, 17-6-47, RHS.

5 Air Board Agenda 8177, 18-6-47; 10224, 12-1-51; 11103, 2-2-51, RHS.

6 Air Board Agendum 6735, 23-8-45, RHS.

7 Air Board Agendum 12378, 10-7-53, RHS. That proposed distribution did not come into effect until 1954 as the initial intakes were limited to the General Duties and Technical Branches. Recruits for the Equipment Branch came in the first instance from general duties cadets who, during flight grading, had shown unsatisfactory aptitude as pilots, and who were willing to stay in the RAAF in non-flying posts.

8 Air Board Agendum 6735, Supplement 1, 8-3-46, RHS.

9 Air Board Agendum 8446, 6-11-47, RHS.

10 Air Marshal Sir Valston Hancock, Interview, Record No TRC 2841, NLA.

11 Air Board Agendum 8902, 12-8-48, RHS; Works for RAAF Academy, Point Cook, 18-6-64, CRS A4940, C3991, AA; Air Marshal Sir Valston Hancock, Interview, Record No TRC 2841, NLA. The total cost was £880,000.

12 McFarlane left the RAAF shortly afterwards and later became the secretary of the Department of Air.

13 Air Marshal Sir Valston Hancock, Interview, Record No TRC 2841, NLA.

14 Air Board Agendum 12220, 1-11-51, RHS.

15 Air Board Agendum 12605, 16-8-56, RHS.

16 R.E. Frost, *RAAF College and Academy 1947–86*, RAAF, 1991, pp 35–8.

17 Report by the Committee on the RAAF Academy, 1957, RHS.

18 Air Board Agendum 13026, 14-10-63, RHS.

19 Tri-service Officer Cadet Academy, 29-5-70, CRS A5882/1, CO931, AA.

20 Peter Howson, *The Life of Politics*, Ringwood, 1984, p 102.

21 The course graduation details are taken from Frost, *op. cit.*, pp 212–14. As a flying officer, Hingston was awarded a Rhodes Scholarship in 1971.

22 At Air Command, Air Vice-Marshals E.A. Radford, I.B. Gration and G.J.J. Beck; and at Logistics Command Air Vice-Marshals P.J. Scully and T.W. O'Brien.

23 Air Marshal R.C. Funnell, Interview, 8-11-95; Air Vice-Marshal P.J. Scully, Interview, 29-10-93; Air Vice-Marshal A. Heggen, Interview, 1-3-94; Air Marshal I.B. Gration, Interview, 26-9-94; Air Vice-Marshal T.W. O'Brien, Interview, 27-10-94; Air Commodore I.M. Westmore, Interview, 14-3-94; Frost, *op. cit.*, pp 102–3.

24 Air Board Agendum 6768, 18-9-45, RHS.

25 *ibid*, 25-10-46, RHS.

26 *ibid*, 28-7-47, RHS.

27 Black was the senior maintenance staff officer at Maintenance Group, Reynolds a radio officer from the Directorate of Training, and Needham an education officer.

28 Air Board Agendum 8445, 6-11-47.

29 Air Board Agendum 8519, 13-1-48, RHS.

30 Air Board Agendum 8322, 20-8-47, RHS; E.R. Hall, *A Saga of Achievement*, Box Hill, 1978, p 271.

31 Air Board Agendum 8947, 17-8-48, RHS.

32 Air Board Agendum 9109, 4-11-48, RHS.

33 Group Captain S.A. Ritchie, Telecon, 28-4-95.

34 Air Board Agendum 9900, 18-11-49, RHS. While the RAAF apprentices were receiving 5 shillings a week, civilian apprentices received in the order of £2-5-11.

35 Air Board Agendum 13101, 31-3-65, RHS.

36 Air Vice-Marshal E. Hey, Interview, 6-10-93; Air Marshal J.R. Rowland, Interview, 17-8-93; Air Vice-Marshal L.S. Compton, Interview, 16-8-93; Air Vice-Marshal R. Noble, Interview, 24-11-93.

37 *RAAF News*, August 1993, pp 16–17, provides the statistics for engineer apprentices. Exact records of the number of radio apprentices are difficult to find. The estimate of eight hundred and ten is based on information from the RAAF Historical Section, where a check of unit histories indicated that an average of eighteen radio apprentices graduated off each of the forty-five courses between 1948 and 1992, with the annual numbers varying from only a handful to about thirty.

38 *RAAF News*, August 1993, pp 16–17.

39 George Homer, *Indentured in Blue*, Belmont, 1992.

40 *ibid*, p 200.

41 Air Board Agendum 8966, 2-5-50, RHS; *RAAF News*, August 1993, pp 16–17.

42 *RAAF News*, September 1966, p 6; Air Vice-Marshal R. Noble, Interview, 24-11-93.

43 The Recruit Training Unit was established at Rathmines after the war before relocating to Wagga in 1961 and then Edinburgh in 1964.

44 Air Board Agendum 12483, 23-3-55, RHS.

45 Air Board Agendum 12911, 1-5-61, RHS.

46 *ibid*, 3-4-63, RHS.

47 The Officers' Training School moved to Point Cook in 1961 when Rathmines was closed.

48 Air Board Submission 8/69, 7-2-69, RHS.

49 *The Air Force List 1993* shows six of thirty-one air commodores as DCS graduates.

50 Air Board Agendum 13069, 7-6-65; Air Board Submission 8/69, 6-2-69, RHS.

51 Air Board Agendum 12446, 22-10-54, RHS.

52 Air Board Agenda 8524, 7-1-48; 9801, 4-10-49, RHS.

53 The course was known as the Officers' Extension Tutorial Course (OETC).

54 Air Board Agendum 12563, 24-12-56, RHS.

55 Air Board Agendum 8103, 2-5-47, RHS.

56 Air Board Agendum 9084, 23-11-48, RHS.

57 Air Board Agenda 9084, 15-10-48; 10234, 4-5-50, RHS.

58 Group Captain H.C. Plenty, Interview, 3-2-94.

59 Australian Joint Services Staff College, 19-12-62, CRS A7941/2, J2, AA.

60 Imperial Defence College, 15-5-58, 22-6-60, CRS A7942/1, 124, AA.

61 Air Board Agenda 10952, 12-12-50; 11345, 10-3-51; 12408, 22-1-54; 12435, 13-7-54, RHS.

62 Four years at the RAAF College, one on basic/advanced flying training, one on numerous flying conversions, half a year on flying instructor's course and other specialist courses, one at Staff College, half a year at JSSC and one at IDC.

Chapter 8

1 The RAAF also had three air navigation schools, two air observers schools, and three bombing and gunnery schools, which between them trained one hundred and fifty-nine air bombardiers, 7158 wireless operators, 3276 air gunners, and 5912 navigators. RAAF, *Australian Air War Effort* (10th edn), 31 August 1945, Appendix 'M'; and J. Fricker, 'The Royal Australian Air Force and Naval Air Service', in *The Air Forces of the World*, London, 1958.

2 Air Board Agendum 6837, 16-11-45, RHS.

3 Air Board Agenda 6837, 16-11-45; 6863, 22-11-45, RHS.

4 Air Board Agendum 8431, 23-10-47, RHS.

5 Mark Lax (ed.), *Always Ready*, Melbourne, 1993, pp 3–5.

6 At about the same time, thirty-one fully trained aircrew—twenty-one pilots and ten navigators—were recruited to undergo general service training and flying refreshers at CFS and SAN respectively; in effect kick-starting the regenerated flying training system.

7 Air Board Agendum, 8521, 16-12-47.

8 Air Marshal J.W. Newham, Interview, 11-1-94; Air Vice-Marshal J.H. Flemming, Interview, 11-5-95; Air Commodore J.A. Jacobs, Up and Away (Unpublished Manuscript), 1993, p 4; Wing Commander R.C. Cresswell, Interview, 5-12-94; David Wilson, *Lion Over Korea*, Belconnen, 1994, p 168.

9 Air Vice-Marshal R.E. Trebilco, Telecon, 28-7-94. That was a one-off expedient necessitated by insufficient facilities at No. 1 FTS at the time. An unusual feature of the first few courses was the inclusion of about twenty hours training on twin-engined aircraft (C-47 or Oxford), a practice which was soon discontinued.

10 No. 77 Squadron, Report by Wing Commander R.C. Cresswell, 5-6-53, CRS AA1969/100/76, Box 313, AA.

11 Air Board Agendum 13115, 9-7-65, RHS.

12 Twenty Light Fixed-wing Trainer Aircraft to replace Winjeel, 20-5-70, CRS A7941/1, A1, AA. Flight grading was extended to fifteen hours when it was reintroduced in 1970.

13 Squadron Leader S.P. Longbottom, An Analysis of RAAF Pilot Training Suspensions, DOA-AF Working Paper RPT1, March 1984, p 9.

14 Air Board Agendum 13115, 9-7-65, RHS.

15 Longbottom, *op. cit.*, p 14.

16 Air Board Agendum 11991, 12-9-51, RHS.

17 An independent school of air traffic control was eventually formed at East Sale in 1981.

18 Air Board Submission 18/68, 5-3-69, RHS.

19 Air Board Agenda 9547, 15-6-49; 12558, 9-12-55, RHS.

20 Air Board Agendum 12558, 9-12-55, RHS. See also Chapter Six.

21 Air Board Agendum 12701, 10-12-57, RHS.

22 Air Board Agenda 12392, 1-6-53; 12950, 1-3-62; 13049, 8-5-64, RHS.

23 Services Manpower Review, 30-9-64, CRS A7941/2, S26; Procurement of Jet Trainer Aircraft for the RAAF, 1965, 5-8-65, CRS A4940, C4262, AA.

24 Air Board Agendum 13115, 9-7-65, RHS.

25 Twenty Light Fixed-wing Trainer Aircraft to replace Winjeel, 12-11-70, CRS A7941/1, A1, AA.; Air Board Submission 156/70, 3-12-70, RHS.

26 Interviews, Air Marshals J.W. Newham, 11-1-94; I.B. Gration, 26-9-94; R.G. Funnell, 8-5-95; Air Vice-Marshals F.W. Barnes, 22-11-94; J.H. Flemming, 11-5-95.

27 Air Vice-Marshal T.W. O'Brien, Interview, 27-10-94.

28 Gration, Interview.

29 Air Board Agendum 13110, 29-6-65, RHS.

30 Air Board Submission 10/67, 14-2-67, RHS.

31 Services Recruiting and Manpower, 17-12-63, CRS A7942/1, R103, AA; Air Board Agendum 13110, 29-6-65, RHS.

32 Air Board Submission 9/66, 10-2-66, RHS.

33 Three Year Defence Programme, Air, 21-2-67, CRS A7941/2, D9, AA; Air Board Agendum 13115, 9-7-65; Air Board Submissions 15/66, 18-3-66; 65/67, 27-10-67, RHS.

34 Defence Vote Requirements 1967/68, 29-3-67, CRS A7941/2, D9, AA. Efforts to gain places with the USAF continued as the RAAF considered the American system superior to the RAF's.

35 Twenty Light Fixed-wing Trainer Aircraft to replace Winjeel, 20-5-70, CRS A7941/1, A1, AA. About twenty-five per cent of those students failed the flight assessment and so did not progress to Pearce.

36 Air Board Agendum 13073, 27-9-64, RHS.

37 Air Commodore I.M. Westmore, Interview, 14-3-94; Air Vice-Marshal T.W. O'Brien, Interview, 27-10-94.

38 Air Commodore G. Dyke, Telecon, 9-9-94 (Dyke was a flight commander at Point Cook in 1967); Westmore, Interview. Longbottom, *op. cit.*, pp 4–9.

39 O'Brien, Interview.

40 Air Board Agendum 9130, 10-11-48.

41 Provision of CA22 Trainer Aircraft for RAAF, Policy, 31-10-51, CRS A4940, C2726, AA; Air Board Agendum 11763, 31-10-51, RHS.

42 Provision of CA22 Trainer Aircraft for RAAF, Policy, 28-4-54, CRS A4940, C2726, AA.

43 A handful of Winjeels remained in service until 1995 in the forward air controller role.

44 Air Board Agendum 12475, 11-2-55, RHS.

45 Vampire Trainer Aircraft for RAAF, Policy, 19-9-51, CRS A4940, C2719, AA.

46 Purchase of Jet Trainer Dual Aircraft 1955, 31-10-55, CRS A4940, C1488, AA; Air Board Agendum 12511, 30-6-55, RHS.

47 Air Marshal Sir Valston Hancock, Interview, Record No TRC 2841, NLA.

48 Procurement of Jet Trainer Aircraft for the RAAF, 1965, 5-8-65, CRS A4940, C4262, AA.

49 Air Board Agendum 13049, 8-5-64, RHS.

50 *loc. cit.*

51 *1965 Trainer Evaluation Mission*, June 1965, RHS.

52 Macchi Jet Trainer Aircraft for the RAAF 1969, 27-3-69, CRS A5882/1, CO553, AA.

53 Air Board Agendum 9312, 21-2-49, RHS; Lax, *op. cit.*, pp 3-5, 47-9. One Air Armament School was retained after the war. Located at East Sale, the school provided specialist weapons instruction for aircrew from 1946 until 1959, when its functions were subsumed by CFS and SAN.

54 Wing Commander J.R. Taylor, Interview, 22-12-94.

55 Air Board Agendum 13067, 11-8-64, RHS.

56 O'Brien, Interview.

57 Air Board Agendum 12673, 9-9-57, RHS.

58 Air Board Submission 8/66, 18-2-66, RHS. Prior to 1966 all Air Board Agendum were numbered sequentially, starting from the first in 1921 and reaching No. 13144 by the end of 1965. From 1966 Air Board papers were titled 'submissions' instead of 'agenda' and were numbered in sequence by years.

59 Air Board Agendum 12755, 27-6-58, RHS.

60 No. 1 OCU was disbanded in mid-1971 when the Canberra fleet was reduced following the withdrawal of No. 2 Squadron from Vietnam.

61 Group Captain H.C. Plenty, Interview, 3-2-94.

62 Interviews, Air Marshals J.W. Newham and I.B. Gration, 11-1-94 and 26-9-94; Air Vice-Marshals P.J. Scully, T.W. O'Brien and J.H. Flemming, 29-10-93, 27-10-94 and 11-5-95; Air Commodore I.M. Westmore, 14-3-94.

63 The duration of the FIC varied over the years. No. 1 FIC took nine months to graduate because of a number of delays, while others were as short as four months. See Lax, *op. cit.* pp 4–6.

64 Scully, Interview. This incident was not discussed with Group Captain Plenty during the interview with him on 3-2-94.

Chapter 9

1 Air Board Agendum 7035, 12-3-46, RHS.

2 Air Board Agendum 7034, 12-3-46, RHS.

3 Air Board Agendum 8118, 13-5-47, RHS.

4 Air Board Agendum 7034, 12-3-46, RHS.

5 Air Board Agendum 8091, 5-1-48, RHS.

6 Air Marshal Sir James Rowland, Interview, 17-8-93.

7 Coulthard-Clark, *The Third Brother*, pp 90–1, 337.

8 A.B. McFarlane, Interview, 13-12-93; Air Vice-Marshal R. Noble, Interview, 24-11-93; Air Commodore C.R. Taylor, Interview, 26-11-93; Rowland, Interview.

9 Noble, Interview; Taylor, Interview.

10 Air Board Agendum 12910, 20-4-61, RHS.

11 Air Board Submission 53/69, 23-4-69, RHS; see also Air Vice-Marshal R. Noble, 'Sixty Years of Engineering in the Royal Australian Air Force', the Sir Lawrence Wackett Lecture, Royal Aeronautical Society, Melbourne, 11-11-80, APSC.

12 The 'B' servicing was a special inspection, conducted when necessary for particular items of equipment. Strictly speaking a 'C' servicing was required every twenty-eight days rather than monthly.

13 Air Board Agendum 13012, 11-7-63, RHS.

14 Air Board Agendum 7009, 21-2-46, RHS.

15 Air Board Agendum 8943, 16-8-48, RHS.

16 Air Board Agendum 13129, 8-10-65, RHS.

17 Air Board Agenda 7877, 10-1-47; 9308, 21-2-49; 10069, 17-2-50, RHS.

18 Air Board Agendum 13014, 2-10-64, RHS.

19 Air Board Submission 62/66, 21-11-66, RHS. Also in 1969 the 'transport' category was renamed 'mechanical'.

20 Noble, Interview.

21 Mackinolty's postings were director of equipment in 1935, director of supply in 1940 and director of equipment in 1941.

22 Air Board Agenda 12723, 24-2-58; 12836, 3-12-59, RHS.

23 Air Board Agendum 12814, 10-7-59, RHS; Mk 82 Bombs, Project Air 5, January 1970, CRS A7941/1, B1, AA.

24 Air Board Agendum 13073, 27-9-64; Air Board Submission 98/68, 4-11-68, RHS.

25 Air Board Agenda 11811, 13-7-51; 12288, 12-12-51, RHS. 'Strategic' storage sites included Snake Creek and Francis Bay in the Northern Territory, Charters Towers and Helidon in Queensland, and Nokanning in Western Australia.

26 Air Board Agendum 11811, 13-7-51, RHS.

27 Air Board Agendum 12814, 10-7-59, RHS. The 227 and 450 kilogram bombs are almost invariably referred to as 500 and 1000 pounders: the conversion here illustrates one of the untidy side effects of trying to conform with metrication and the accepted style of expression.

28 Air Board Agendum 12361, 26-3-53, RHS.

29 *loc. cit.*

30 Air Board Agendum 13025, 11-10-63, RHS.

31 'Tech. Spares Assessing', in *RAAF News*, August 1963, p 4.

32 Air Board Submission 13/70, 2-2-70, RHS.

33 Development of No. 1 Stores Depot, RAAF Tottenham, 18-4-68, CRS A5882/1, CO100, AA; Air Board Agendum 13137, 10-12-65, RHS.

34 The Ground Equipment Maintenance Squadron (GEMS) was originally known as the Motor Transport Repair Squadron and came under the command of No. 2 AD. GEMS was located at Richmond and Mascot before moving to Villawood.

35 Development of No. 2 Stores Depot, RAAF Regents Park, NSW, 29-7-70, CRS A5882/1, CO1006, AA.

36 Air Board Agendum 12863, 10-6-60; Submission 20/66, 24-3-66, RHS.

37 Air Board Submissions 81/68, 4-10-68; 69/71, 26-7-71, RHS.

38 Air Board Agendum 12723, 24-2-58, RHS.

39 Air Board Agendum 10117, 15-3-50, RHS.

40 Air Board Agendum 9530, 2-6-49, RHS. The respective figures for speed, rate-of-climb and range were: CA-15 721 kph, 1490 mpm, 1850 kms; Spitfire 730 kph, 1490 mpm, 1420 kms; Mustang 725 kph, 1290 mpm, 2190 kms.

41 Neville Parnell and Trevor Broughton, *Flypast*, Canberra, 1988, p 184; A.T. Ross, The Design and Production of Military Aircraft 1939–1945 (Unpublished Manuscript), Canberra, University College, UNSW, 1990; War Cabinet Minute 2503, 7-12-42, RHS.

42 Air Commodore D.R. Cuming, Interview, Hawthorn, 24-1-94.

43 Air Board Agenda 6636, 20-6-45; 8069, 11-4-47; 8091, 16-10-47, RHS.

44 RAAF Purchase of Lockheed P2V5 Aircraft 1951, Policy, 22-10-51, CRS A4940, C265, AA; Air Board Agendum 7346, 28-8-46, RHS.

45 Australian Aircraft Industry, Review 1953, 15-6-53, CRS A4940, C2796, AA; Air Board Agendum 12353, 30-1-53, RHS.

46 Australian Aircraft Industry, Review 1953, December 1953, CRS A4940, C2796, AA.

47 Air Board Agenda 8797, 30-3-49; 12657, 13-8-57, RHS.

48 Survey of Australian Aircraft Industry 1957, 27-3-57, CRS A4940, C1735, AA.

49 Cabinet Decision 698, in Survey of Australian Aircraft Industry 1957, 9-4-57, CRS A4940, C1735, AA.

50 Australian Aircraft Industry, 14-4-60, CRS A7938/1, 105, AA.

51 *ibid*, 25-3-60.

52 Mirage Aircraft, Implication of Possible French Embargo, 19-7-68, CRS A7942/1, M128, AA.

53 Spare Parts for Mirage Aircraft for Israel, 5-3-69, CRS A5882/2, CO645, AA; Air Board Submissions 60/67, 6-10-67; 63/67, 12-10-67, RHS.

54 *ibid*, 20-6-68, 15-7-68, 19-7-68.

55 Australian Aircraft Industry, 30-6-66, CRS A7941/2, A44, AA.

56 *ibid*, 5-7-66.

57 *ibid*, 24-8-66, 8-2-67.

58 Australian Aircraft Industry, 29-7-71, CRS A7938/1, 105, AA. At the peak of the Macchi/Mirage program in 1967, CAC had employed 3572 people. By July 1971 that had fallen to 2200 and was forecast to be down to 1900 by February 1972.

59 *ibid*, 29-7-71.

Chapter 10

1 See A Report on Operation 'Plainfare', Air Ministry, April 1950, RAF Air Historical Branch.

2 Cypher Message, UKSLS Melbourne to Air Ministry, 3-8-48, Air 20/7148; Review of Operation 'Plainfare', 13-10-48, Air 20/7148, PRO; Secretary's File 56, Berlin Food Airlift, 1948-49, RHS.

3 A Report on Operation 'Plainfare', p 14. The report uses short tons, which have been converted here to tonnes.

4 William H. Tunner, *Over the Hump*, Washington, 1985, p 167.

5 Letter, Group Captain K.M. Staib to Steve Eather, 20-7-92. My thanks to Steve Eather for access to this and other correspondence.

6 Letter, Air Marshal S.D. Evans to Steve Eather, 11-6-93.

7 *loc. cit.*

8 Letter, Staib to Eather.

9 Cypher, Commonwealth Relations Office to Australian Government, 4-7-49, Air 20/7148, PRO.

10 Letter, Staib to Eather.

11 A Report on Operation 'Plainfare', p 1; Roger D. Launius, 'The Berlin Airlift: Constructive Air Power', in *Air Power History*, Vol. 36, No. 1, Spring 1989, p 19; George Odgers, *Air Force Australia*, Brookvale, 1993, p 133.

12 A Report on Operation 'Plainfare', p 65.

13 Letter, Staib to Eather.

14 Report on Visit of the RAAF Planning Team to the Air Ministry, Middle East and Far East, January/February 1951, CRS A5954, 1636/3, AA.

15 Australian Token Forces for the Middle East in Peace 1952, 4-12-51, CRS A4940, C478, AA.

16 *ibid*, 31-7-51, 4-12-51; Conference of Commonwealth Air Forces, 17-12-51, Air 20/8759, PRO; Air Board Agendum 12411, 23-2-54, RHS.

17 Conference of Commonwealth Air Forces, 17-12-51, Air 20/8759, PRO; Australian Token Forces for the Middle East in Peace 1952, 4-12-51, CRS A4940, C478, AA

18 Commonwealth Air Forces Contributions for Defence of the Middle East in War, November 1951, Air 20/8759, PRO; Australian Token Forces for the Middle East in Peace 1952, August 1951, CRS A4940, C478, AA.

19 DPol Minute by Air Commodore D.W. Lane, 2-9-53, Air 20/8760, PRO.

20 *CPD*, 5-3-52.

21 RAAF Fighter Squadron in the Middle East, 13-2-52, Air 20/8759, PRO.

22 Formation of RAAF Squadrons in MEAF, 10-3-52, Air 20/8760; Commonwealth Squadrons in the Middle East, 4-9-53, Air 20/8760, PRO.

23 RAAF and RNZAF Units for Middle East, 24-7-52, Air 20/8760, PRO.

24 Air Board Agenda 12336, 31-7-52; 12352, 21-1-53, RHS.

25 Air Board Agendum 12319, 28-4-52, RHS.

26 Quoted in David Wilson, 78 Wing (Unpublished Manuscript) RAAF Historical Section, 1993, p 11.

27 RAAF Middle East Fighter Wing, Tour of Duty, 13-5-52, CRS A4940, C557, AA; Air Board Agendum 12319, 16-5-52, RHS.

28 Air Marshal J.W. Newham, Interview, 11-1-94; Air Commodore J.A. Jacobs, Up and Away (Unpublished Memoirs), 1993, pp 14–28.

29 Message, 21-8-53, Air 20/8760; DPol Minute by Air Commodore D.W. Lane, 2-9-53, Air 20/8760. PRO.

30 Formation of a Commonwealth Far East Strategic Reserve, 29-6-53, CRS A816/42, 19/321/26, AA; Air Board Agendum 12503, 3-8-55, RHS.

31 Letter Report by ACAS (Policy), 2-12-52, Air 20/8760, PRO.

32 Minute, 29-9-53, Air 20/8760; Message, HQMEAF to Air Ministry, 14-1-54, PRO.

33 Air Board Agendum 12295, 22-1-54, RHS.

Chapter 11

1 Bcof Policy File No 3, 11-4-47, A816, 52/301/309, AA.

2 British Commonwealth Force for Occupation of Japan, Australian Mission Reports, 17-10-45, CRS A7941/2, B2, AA.

3 Bcof, Occupation of Japan, Policy File No 1, War Cabinet Minute No 4400, 19-9-45, A816, 52/301/222; Bcof, Occupation of Japan, Policy File No 1, December 1945, A816, 52/301/222, AA; Despatch by Lieutenant-General J. Northcott, 5-11-46, Air 20/6586, PRO.

4 British Commonwealth Force for Occupation of Japan, Australia's Mission in Japan Reports. 24-11-45, CRS A7941/2, B2, AA.

5 Bcof, Visit by Minister for Army, Joint Chiefs of Staff in Australia Memorandum, 5-3-47, A816, 19/304/388, AA.

6 Bcof, Directive for National Commanders and AOC Bcair, 5-4-46, A816, 31/301/387, AA; Japan and the Occupation, April 1948, Air 20/6376, PRO.

7 Air Marshal J.P.J. McCauley, Interview, 1973, TRC 121/48, NLA.

8 Bcof, Policy File No 2, 18-1-46, A816, 52/301/223; Bcof, Visits by Members of JCOSA, A816, 37/301/338, AA. In November 1946 those officers were Lieutenant General V.A.H. Sturdee, Air Vice-Marshal G. Jones, Admiral Sir Louis Hamilton, Major General J.C. Haydon, Major General W.J. Cawthorn, Air Commodore T.B. Prickman, Captain A.N. Grey and Colonel H.E. Gilbert.

9 British Commonwealth Force for Occupation of Japan, Australia's Mission in Japan Reports, 18-10-45, CRS A7941/2, B2, AA.

10 The RAN contributed one cruiser and one destroyer to the British Commonwealth Naval Forces which participated in the occupation of Japan, but those units came under the command of the commander-in-chief, British Pacific Fleet. Bcof, Occupation of Japan, Policy File No 1, December 1945, A816, 52/301/222, AA.

11 Bcof, Occupation of Japan, Policy File No 1, December 1945, A816, 52/301/222, AA.

12 Japan and the Occupation, April 1948, Air 20/6376, PRO.

13 Directive to AOC Bcair, 4-3-46, Air 20/7055, PRO.

14 Bcof, Policy File No 2, 5-1-46, A816, 52/301/223; Bcof Policy File No 3, 3-4-46, A816, 52/301/309, AA.

15 Bcof, Directive for National Commanders and AOC Bcair, JCOSA Agendum No 47, 27-3-46 and August 1946, A816, 31/301/387; Directive to the Commander of the RAAF Component of the Australian Contingent of Bcof in Japan, August 1946, A2150, 8, AA.

16 'RAAF Station Point Cook', in *Aircraft*, May 1948; Air Board Agendum 9873, 24-10-49, RHS; RAAF Base Point Cook, Brief History, TP-56, RAAF Museum, May 1969. Japanese language training was initially conducted at a variety of locations, including the Coogee Bay Hotel and Flemington Racecourse. The training moved to Point Cook, the home of the School of Languages, in 1946. AVM R.E. Trebilco, Letter to author, 23-6-95. The RAAF School of Languages expanded its courses in the 1950s to include Russian, Chinese, Indonesian, Vietnamese and French as it developed into one of the leading language training centres in Australia.

17 British Commonwealth Force for Occupation of Japan, Australian Mission in Japan Reports, 29-10-45, CRS A7941/2, B2, AA.

18 Bcof, Policy File No 2, 24-12-45, A816, 52/301/223, AA.

19 Bcof Policy File No 3, 18-3-46, A816, 52/301/309, AA.

20 George Odgers, *Air War Against Japan 1943–1945*, Canberra, 1968, p 496.

21 Air Commodore A.D.J. Garrisson, Interview, 6-9-93.

22 *Herald*, 28-2-46.

23 *Bcon*, May 7, 1949.

24 Despatch by Lieutenant General Northcott, 5-11-46, Air 20/6586, PRO.

25 Air Board Agendum 7327, 4-7-46.

26 Defence Committee Agendum No 152/1946, 1-7-46, A5799; Bcof, Airfield Construction Squadron, RAAF, A816, 52/301/250, AA.

27 Bcof, Airfield Construction Squadron, RAAF, 11-6-46, A816, 52/301/250, AA.

28 *ibid*, 1-7-46, 16-7-46.

29 *ibid*, 21-11-46, 25-5-48; Air Board Agendum 8290, 28-7-47, RHS.

30 Air Vice-Marshal C.A. Bouchier, quoted in Personal Records of Group Captain A.M. Harrison, RAAF Records.

31 Bcof, Visit by Minister for Army, 10-2-47, A816, 19/304/388, AA.

32 Report by JCOSA Representatives on their Visit to the Bcof in Japan, 18-9-46 to 18-10-46, p 20, A816, 37/301/338, AA. The agreement took effect in January 1947.

33 Bcof, Occupation of Japan, Policy File No 1, 24-11-45, Evatt to Chifley, A816, 52/301/222, AA.

34 Despatch by Lieutenant General Northcott, 5-11-46, Air 20/6586, PRO.

35 Air Commodore G.G. Michael, Interview, 18-8-93.

36 Operational Commitments, No. 77 Squadron, 26-10-48, CRS AA1969/100/76, Box 313, AA; Air Vice-Marshal J.H. Flemming, Interview, 27-8-90.

37 *Bcon*, April 26, 1949.

38 Air Vice-Marshal F.W. Barnes, Interview, 22-11-94.

39 Air Vice-Marshal R.E. Trebilco, Telecon, 28-7-94; Barnes, Interview; Flemming, Interview; Michael, Interview. For further comment on the attitude of some wartime pilots, see Air Vice-Marshal P.J. Scully, Interview, 29-10-93.

40 Operational Commitments, No. 77 Squadron, 10-11-49, CRS AA1969/100/76, Box 313, AA.

41 Confidential Cypher Message, AVM Graham to ACAS(P), 22-7-46, Air 20/6586, PRO.

42 Less impressive but just as spectacular was the mid-air collision over the Inland Sea in March 1948 between aircraft flown by Adams and Warrant Officer G. Thornton, which happily both pilots survived.

43 Robert O'Neill, *Australia in the Korean War 1950–53, Vol. I*, p 52.

44 Japan and the Occupation, April 1948, Air 20/6376, PRO.

45 Air Marshal J.P.J. McCauley, Interview, 1973, TRC 121/48, NLA.

46 Bcof, Visit by Minister for Army, 15-1-47, A816, 19/304/388, AA. For a different interpretation of Chambers' observations, see Jeffrey Grey, *Australian Brass*, Cambridge, 1992, pp 141–3.

47 Steve Eather, Odd Jobs: RAAF Operations in Japan, the Berlin Airlift, Korea, Malaya and Malta, 1946–1960 (Unpublished Manuscript) Point Cook, 1994.

48 *Bcon*, 4 April 1949.

49 Report by JCOSA Representatives on their Visit to the Bcof in Japan, 18-9-46 to 18-10-46, p 26. A816, 37/301/338, AA.

50 Cypher Telegram, Defence Headquarters Melbourne to Cabinet Offices, 15-3-46, Air 20/7055, PRO. RAAF linguists were exempted from the proscription on fraternisation because of the nature of their duties.

51 Cypher Message, Australian Government to Dominions Office, 21-3-46, Air 20/7055; Japan and the Occupation, April 1948, Air 20/6376, PRO.

52 Report by JCOSA Representatives on their Visit to the Bcof in Japan, 18-9-46 to 18-10-46, pp 28-9, A816, 37/301/338, AA; Grey, *op. cit.*, p 139.

53 Cypher Message, 27-11-47, Air 8/7059, PRO.

54 Bcof Policy File No 3, A816, 52/301/309, AA.

55 Cypher Message, Australian Government to Commonwealth Relations Office, 1-1-48, Air 20/7059, PRO.

56 Air Board Agendum 8783, 2-6-48, RHS.

57 Eather, *op. cit.*

58 Quoted in David Wilson, *Lion Over Korea*, Belconnen, 1994, p 8.

59 *ibid*, p 9.

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1 Robert O'Neill, *Australia in the Korean War 1950–53, Vol. I*, p 48.

2 *ibid*, p 51.

3 Robert Frank Futrell, *The United States Air Force in Korea 1950–1953*, Washington, 1983, p 46.

4 O'Neill, *op. cit., Vol. II*, p 298.

5 Barnes, Interview; Trebilco, Telecon.

6 George Odgers, *Across the Parallel*, London, 1952, pp 46–50.

7 Air Vice-Marshal R.E. Trebilco, Letter, 1-4-94.

8 O'Neill, *op. cit., Vol. II*, p 313.

9 David Wilson, *Lion Over Korea*, Belconnen, 1994, pp 18–19; Flemming, Interview, 11-5-95.

10 Wilson, *op. cit.*, p 27.

11 *ibid*, pp 19–20.

12 Air Vice-Marshal J.H. Flemming, Interview, 27-8-90; Air Vice-Marshal R.E. Trebilco, Telecon, 28-7-94. Before the war the pilots often had to get their own flying suits made as RAAF issue suits were either unavailable or of poor quality. Some pilots flew into combat in Korea in lightweight cotton suits totally inappropriate for protection had they been shot down.

13 Matthew B. Ridgway, *The Korean War*, New York, 1967, p 244.

14 No. 30 Unit became No. 36 Squadron in March 1953.

15 RAAF Purchase of Meteor Aircraft 1950 to Re-equip No. 77 Squadron Korea, 4-12-50, CRS A4940, C264, AA; Air Board Agendum 10828, 8-11-50, RHS.

16 RAAF Purchase of Meteor Aircraft 1950 to Re-equip No. 77 Squadron Korea, 4-12-50, CRS A4940, C264, AA.

17 *ibid*, 20-8-51; Air Board Agendum 10828, 19-2-52.

18 O'Neill, *op. cit., Vol. II*, p 323.

19 *ibid*, p 327.

20 See P.J. Greville, 'The Australian Prisoners of War', in O'Neill, *op. cit., Vol. II*, pp 533–69.

21 O'Neill, *op. cit., Vol. II*, pp 346–7; Wilson, *op. cit.*, p 74.

22 Wing Commander R.C. Cresswell, Interview, 5-12-94; Wilson, *op. cit.*, p 74.

23 No. 77 Squadron, Report by Wing Commander R.C. Cresswell, 5-6-53, CRS AA1969/100/76, Box 313, AA.

24 G.H. Steege, No. 77 Squadron Monthly Tactical Report No. 3/51; Narrative Report No. 77 Squadron, 29-8-51; Minute VCAS to CAS, 1-10-51; Letter Slessor to Jones, 5-10-51; Air 8/1709, PRO.

25 Air Vice-Marshal R.E. Trebilco, Letter, 1-4-94.

26 O'Neill, *op. cit., Vol. II*, p 358.

27 Air Vice-Marshal W.H. Simmonds, Telecon, 12-5-95; see also Stewart Wilson, *Meteor, Sabre and Mirage in Australian Service*, Weston Creek, 1989, p 25.

28 Telegram, British Embassy Tokyo to Ministry of Defence London, 8-8-51, Air 8/1709, PRO.

29 *ibid*, 19 September 1951.

30 Letter, Lieutenant General O.P. Weyland to Major General Leon W. Johnson, 30-8-51, Air 8/1709, PRO.

31 Telegram, British Embassy Tokyo to Ministry of Defence London, 26-8-51, Air 8/1709, PRO.

32 No. 77 Squadron, Report by Wing Commander R.C. Cresswell, 5-6-53, CRS AA1969/100/76, Box 313, AA.

33 Futrell, *op. cit.*, p 411.

34 Letter, Air Commodore D.L. Wilson to Steve Eather, 1-2-93.

35 O'Neill, *op. cit., Vol. II*, p 373.

36 No. 77 Squadron, Report by Wing Commander R.C. Cresswell, 5-6-53, CRS AA1969/100/76, Box 313, AA.

37 See Richard Hallion in Alan Stephens (ed.), *The War in the Air 1914–1994*, Canberra, 1994, pp 159–60; O'Neill, *op. cit., Vol. II*, p 350.

38 IFF was an airborne equipment which could be interrogated by ground stations to determine whether an aircraft was friend or foe.

39 Flying Officer K.J. Blight, quoted in unidentified newspaper clipping, early 1952, provided by Wing Commander M.R. Susans. Blight flew with No. 77 Squadron in 1952.

40 Report on Air Operational Activities in Japan and Korea, 18 December 1950, Private Papers of Wing Commander R.C. Cresswell; Air Marshal J.W. Newham, Interview, 11-1-94.

41 Wilson, *op. cit.*, p 198.

42 O'Neill, *op, cit., Vol. II*, p 370.

43 *ibid, Vol. I*, pp 282–3.

44 *RAAF News*, December 1960, p 4.

45 No. 77 Squadron, Report by Wing Commander R.C. Cresswell, 5-6-53, CRS AA1969/100/76, Box 313, AA. At the time Cresswell was the Commanding Officer of No. 2 (Fighter) Operational Training Unit.

46 Air Marshal Sir John McCauley, Interview, 1973, TRC 121/48, NLA.

47 See Stephens, *Power Plus Attitude*, pp 53–84.

48 O'Neill, *op. cit., Vol. II*, pp 407–8.

49 Quoted in O'Neill, *op. cit., Vol. I*, pp 111, 403; see also p 316.

Chapter 13

1 Noel Barber, *The War of the Running Dogs*, Glasgow, 1981, pp 26–7.

2 *ibid*, p 57.

3 Peter Edwards, *Crises and Commitments*, North Sydney, 1992, pp 60–2.

4 Robert O'Neill, *Australia in the Korean War 1950–53, Vol. I*, pp 37–8.

5 *ibid*, pp 48–9.

6 Air Marshal Sir John McCauley, Interview, 1973, TRC 121/48, NLA.

7 Richard Clutterbuck, *The Long Long War*, London, 1967, p 160; RAF, *The Malayan Emergency 1948–1960*, London, 1970, pp 114–22. RAAF crews were not involved with the second major psychological activity known as 'sky shouting', in which messages encouraging the terrorists to surrender were broadcast from low-flying aircraft.

8 Air Board Agendum 12337, 19-8-52, RHS.

9 Eather, *op. cit.*

10 RAF, *The Malayan Emergency 1948–1960*, London, 1970, pp 65, 81–2.

11 *RAAF News*, August 1960, p 4.

12 Clutterbuck, *op. cit.*, pp 160–4.

13 RAF, *op. cit.*, p 40.

14 Air Commodore A.D.J. Garrisson, Interview, 6-8-93.

15 Air Marshal Sir John McCauley, Interview, 1973, TRC 121/48, NLA.

16 RAF, *op. cit.*, p 157.

17 See Colonel Dennis M. Drew, 'Air Power in Peripheral Conflict', in Stephens (ed.), *The War in the Air 1914–1994*, pp 268–9.

18 Air 8/1629, PRO.

19 Any air strike or supply drop made within the preceding twenty-eight days and sixteen kms of a kill, capture or surrender was counted as having contributed to the success of ground forces. Air 8/1629, PRO.

20 John Coates, *Suppressing Insurgency: An Analysis of the Malayan Emergency, 1948–1954*, Boulder, 1992, pp 172–3.

21 Air Board Agendum 12402, 27-11-53, RHS.

22 Appointment of RAAF Officer as AOC Malaya, CRS A5954, 2293/1, AA.

23 Chief of the Air Staff, Appointments, 12-12-56, CRS A4940, C396, AA.

24 Templer assumed the dual roles of high commissioner and director of operations in February 1952 following Gurney's assassination and Briggs' return to England.

25 Rayner, *op. cit.*, pp 102–9.

26 Air Vice-Marshal P.J. Scully, Interview, 29-10-93. Scully was Hancock's aide in Malaya.

27 See Valston Hancock, *Challenge*, Northbridge, 1990, pp 155–90.

28 Reorganisation of Far East Air Force, 6-1-67, 10-1-67, CRS A7938/1, 19, AA. Another RAAF officer, Air Vice-Marshal F. Headlam, was AOC No. 224 Group between Hancock and Eaton.

29 Formation of a Commonwealth Far East Strategic Reserve, 29-6-53, CRS A816/42, 19/321/26, AA; Air Board Agendum 12503, 3-8-55, RHS.

30 Formation of a Commonwealth Far East Strategic Reserve, June 1953, CRS A816/42, 19/321/26, AA.

31 *ibid*, 27-7-53. The JPC was chaired by an officer of air vice-marshal rank or equivalent and staffed at air commodore/group captain equivalent. Its function was to advise the Defence Committee and chiefs of staff on operational aspects of defence planning. Other members of the Joint Planning Committee were Brigadier T.J. Daly, Captain O.H. Becher and Mr S. Landau. See also Air Board Agendum 12685, 4-12-57, RHS.

32 Formation of a Commonwealth Far East Strategic Reserve, 11-8-53, CRS A816/42, 19/321/26, AA.

33 The Commonwealth Strategic Reserve, From Submissions for Cabinet Meeting on 15-6-55, CRS A816/57, 14/301/744, AA; *Decisions on Defence*, A Statement by the Prime Minister (Mr R.G. Menzies), 1-4-55, Government Printer, Melbourne.

34 Anzam Defence Committee Agendum 26/1955, 5-10-55, CRS A816/56, 14/301/676, AA.

35 The Commonwealth Strategic Reserve, From Submissions for Cabinet Meeting on 15-6-55, CRS A816/57, 14/301/744, AA.

36 Air Board Agendum 12752, 24-6-58, RHS. The c-in-c FEAF delegated his court-martial authority over the RAAF to the AOC No. 224 Group.

37 RAAF Airfield, Butterworth, Malaya, Policy, October 1957, CRS A4940, C2341, AA.

38 Deployment of RAAF Component of Commonwealth Strategic Reserve, Malaya, 22-10-57, CRS A4940, C1969, AA.

39 RAAF Airfield, Butterworth, Malaya, Policy, 22-10-57, CRS A4940, C2341, AA.

40 Air Ministry Minute, 11-9-53, Air 20/9252; Joint Planning Staff, Requirement for Airfields in Malaya, 3-12-53, Air 20/9252, PRO.

41 Butterworth Airfield Malaya, Policy, CRS A1209/23, 57/4684, 15-7-57; RAAF Airfield, Butterworth, Malaya, Policy, 9-12-57, CRS A4940, C2341, AA; Air Board Agendum 13062, 12-6-64, RHS.

42 The Commonwealth Strategic Reserve, From Submissions for Cabinet Meeting on 15-6-55, CRS A816/57, 14/301/744, AA; George Odgers, *Air Force Australia*, Brookvale, 1993, pp 138–9.

43 Air Board Agenda 12486, 23-3-55; 13128, 16-9-65, RHS. The 'leaping kangaroo' had been chosen after a poll amongst all RAAF units and commands. Other suggested motifs were the Southern Cross, a spray of wattle, and a boomerang, but the kangaroo was overwhelmingly favoured.

44 Air Marshal J.W. Newham, Interview, 11-1-94.

45 Defence Forces Pay and Conditions of Service, 1964, 20-10-65, CRS A4940, C3970, AA; Air Board Submission 61/70, 1-6-70, RHS. During the Emergency RAAF personnel were regarded as being on operational service, a condition which made them exempt from income tax on their pay and allowances. Like their counterparts in Korea, they also accrued operational deferred pay at the rate of 2/6d a day, a benefit which was withdrawn when law and order was officially deemed to have been restored in 1956. After a review in 1970, the basic allowance paid to flight lieutenants and below was sufficient for only one servant.

46 Air Commodore G.H. Steege, Interview, 17-8-93; Air Commodore F.E. Burtt, Interview, 20-7-93.

47 Edwards, *op. cit.*, pp 255–8.

48 Malaya, Control of RAAF Aircraft in Defence of, 19-7-63, CRS A7942/1, M21, AA. Sent 1740 hours.

49 *ibid*, 20-9-63.

50 *ibid*, 27-2-64.

51 *ibid*, 15-9-64, 21-9-64.

52 The British Commonwealth Far East Strategic Reserve, 21-10-65, CRS A7942/1, F43, AA.

53 Burtt, Interview.

54 Service Aircraft Between Australia and Southeast Asia, Routing of to Avoid Overflying Indonesian Territory, 3-7-64, CRS AA7942/1, AA.

55 One positive consequence of that inconvenience was the construction of extra hardstanding at Cocos, allowing four aircraft the size of a C-130 or Neptune to park simultaneously.

56 Sabre aircraft, Use Of, 7-9-64, CRS A7941/2, S27, AA.

57 The Possible Form and Scale of Attack by Indonesia on Australia, 2-2-70, CRS A7941/2, I29, AA.

58 Sabre Aircraft, Use Of, 21-4-69, CRS A7941/2, S27, AA.

59 Gift of Sabre Aircraft to Indonesia, 23-1-72, CRS A5882/2, CO1338, AA.

60 *loc. cit.*

61 Deployment of Mirage Aircraft to Butterworth, 19-10-66, CRS A7941/2, D18, AA.

62 *loc. cit.*

63 Air Board Agendum 13023, 20-9-63, RHS.

64 There were in fact some alarms during the transit through Djuanda but they were solved by either ingenuity or determination. See M.R. Susans, *The RAAF Mirage Story*, Point Cook, 1990, pp 64–74.

65 Malayan Request for Services of RAAF Officers on Secondment, 4-4-63, CRS A7942/1, M119, AA.

66 *ibid*, 10-5-63.

67 Secondment of Australian Service Officers to Malaysian Armed Forces, 16-12-66, CRS A7942/1, S185, AA.

68 *loc. cit.*

69 Air Commodore S. Clark, Interview, 19-8-93; Garrisson, Interview.

70 Australian Defence Aid to Singapore/Malaysia 1968, 7-9-71, CRS A5882/2, CO133, AA.

71 Air Board Submission 19/68, 13-3-68, RHS.

72 Implications of a Possible British Decision to Leave Forces in Malaysia/Singapore after 1971, 8-6-70, CRS A7941/2, M29, AA.

73 Air Defence Commander (Malaysia/Singapore), 1-5-70, CRS A7941/2, AA.

74 Air Defence of Malaysia/Singapore, 9-2-68, CRS A7941/2, A52, AA.

Chapter 14

1 Composition of Australian Defence Forces, 28-3-60, CRS A7942/1, C151, AA.

2 Submission in Support of Recognition of Service by Members of Royal Australian Air Force Contingent Ubon, Thailand, July 1993 (hereafter 'Ubon Report'), pp 3–4.

3 See Seato Plans '4' and '6': Retention of Australian Forces in Malaya, Summary of a Report by the Defence Committee, December 1960, CRS A1209/64, 60/1032; Three Year Defence Programme, Air Aspects, 1962/63 to 1964/65, 24-10-61, CRS A7942/1, D114; Cablegram, External Affairs to Australian High Commission Kuala Lumpur, 24-5-62, CRS A1209/79, 61/800; Possible Australian Force Contributions for Seato Plans 4 and 6, 12-7-63, CRS A7940/1, P5; Services Manpower Review, 30-9-64, CRS A7941/2, S26, AA.

4 Seato MPO Plan 9/1967, 23-1-67, CRS A7940/1, P20, AA.

5 Retention of Australian Forces in Malaya, Summary of Report by the Defence Committee, CRS A1209/64, 60/1032, December 1960, AA.

6 Message from Secretary of State for Commonwealth Relations (Duncan Sandys), 30-3-61, CRS A1209/79, 61/800, AA.

7 Retention of Australian Forces in Malaya, Summary of Report by the Defence Committee, CRS A1209/64, 60/1032, December 1960; Cablegram, Australian High Commission Kuala Lumpur to Canberra, 23-5-62, CRS A1209/79, 61/800, AA.

8 Cablegram, External Affairs to Australian High Commission Kuala Lumpur, 24-5-62, CRS A1209/79, 61/800; Stationing of Seato Forces in Thailand and Employment of No 79 Squadron, 2-9-64, CRS A7942/1, T82, AA.

9 Commonwealth Strategic Reserve, Note to Prime Minister, 2-5-62, CRS A1209/79, 61/800, AA.

10 Cablegram, External Affairs to Australian High Commission Kuala Lumpur, 24-5-62, CRS A1209/79, 61/800, AA.

11 Stationing of Australian Forces in Thailand, 28-3-63, CRS A4940, C3589, AA.

12 Air Vice-Marshal R.E. Trebilco, Telecon, 28-7-94.

13 Stationing of Seato Forces in Thailand and Employment of No 79 Squadron, 2-9-64, CRS A7942/1, T82, AA.

14 Cablegram, External Affairs to Australian High Commission Kuala Lumpur, 24-5-62, CRS A1209/79, 61/800, AA.

15 Stationing of Seato Forces in Thailand and Employment of No. 79 Squadron, 2-9-64, CRS A7942/1, T82, AA.

16 *loc. cit.*, Deployment of Second Mirage Squadron to Malaysia and of Mirages to Thailand, 15-3-68, CRS A7942/1, M126, AA.

17 Stationing of Seato Forces in Thailand and Employment of No. 79 Squadron, 2-9-64, CRS A7942/1, T82, AA.

18 *loc. cit.*

19 *ibid*, 22-3-65.

20 *ibid*, 16-3-65, 23-12-65.

21 *ibid*, 7-4-65.

22 *ibid*, 22-3-65.

23 *ibid*, 23-6-65.

24 *ibid*, 2-9-64, 7-4-65, 23-6-65, 11-8-65.

25 *ibid*, 5-7-65.

26 *ibid*, 13-7-65.

27 Ubon Report, p 10.

28 *ibid*, p 12.

29 Air Vice-Marshal P.J. Scully, Interview, 29-10-93.

30 Ubon Report, pp 10–14.

31 *ibid*, Statutory Declaration, 19-5-93.

32 *ibid*, p 11.

33 Deployment of Second Mirage Squadron to Malaysia and of Mirages to Thailand, 15-3-68, CRS A7942/1, M126, AA.

34 *loc. cit.*

35 Scully, Interview.

Chapter 15

1 See Robert S. McNamara, *In Retrospect*, New York, 1995, p 32; Stanley Karnow, *Vietnam*, New York, 1991; Neil Sheehan, *A Bright Shining Lie*, London, 1989.

2 Robert O'Neill, *Australia in the Korean War 1950–53, Vol. I*, p 332.

3 Cabinet Decision 241, 15-5-62, CRS A4940, C3380, AA.

4 South Vietnam, Australian Contribution, 14-2-63, CRS A7942/1, M13, AA.

5 *ibid*, 2-4-63.

6 Air Marshal Sir Valston Hancock, Interview, Record No TRC 2841, NLA.

7 Australian Force Contribution to Vietnam, 29-5-64, CRS A7940/1, M7, AA.

8 George Odgers, *Mission Vietnam*, Canberra, 1974, p 12.

9 Australian Force Contribution to Vietnam, 17-7-64, CRS A7940/1, M7, AA.

10 Air Commodore K.B. Henderson, Telecon, 31-10-94.

11 Later renamed the 315th Tactical Airlift Wing: Odgers, *Mission Vietnam*, pp 14–15.

12 Australian Force Contribution to Vietnam, 17-7-64, CRS A7940/1, M7, AA.

13 A C-47 from No. 2 Squadron's 'C' Flight in Butterworth carried out tasks in Vietnam during a two-week detachment in May 1963, but that did not constitute a permanent commitment.

14 Henderson, Telecon.

15 Odgers, *Mission Vietnam*, pp 19, 97; Henderson, Telecon; Steve Eather, *Target Charlie*, Weston Creek, 1993, pp 23–4; Stewart Wilson, *Dakota, Hercules and Caribou in Australian Service*, Weston Creek, 1990, pp 187–8.

16 Ian McNeill, *To Long Tan*, St Leonards, 1993, p 238.

17 The Roles of Army Aviation, CRS A7941/2, J6, 16-6-65; Deployment of Helicopters to Vietnam, 23-8-65, CRS A7941/2, V16, AA; Letter, Wilton to Murdoch, AWM 121, DMO&P File 161/A/5, 23-8-65, Australian War Memorial (AWM).

18 Quoted in Stephens, *Power Plus Attitude*, p 130.

19 R.E. Frost, *A History of the Royal Australian Air Force College*, Canberra, 1986, pp 3–16. Hancock was then the air member for personnel and Hannah the director-general of personnel.

20 Stephens, *Power Plus Attitude*, p 129.

21 Letter, Murdoch to Wilton, AWM 121, DMO&P File 161/A/5, 18-9-65, AWM; Deployment of Helicopters to Vietnam, 13-9-65, CRS A7941/2, V16, AA.

22 Letter, Air Commodore R.A. Scott to Minister for Defence K.C. Beazley, 28-11-88, APSC; Air Commodore R.A. Scott, Interview, 21-3-91.

23 Deployment of Helicopters to Vietnam, 30-9-65, CRS A7941/2, V16, AA.

24 *ibid*, 3-6-66.

25 Australian Force Contribution to Vietnam, 1964, CRS A7940/1, M7, AA.

26 McNeill, *op. cit.*, pp 236–7.

27 Air Commodore R. Scott, Letter to author, 7-5-94; McNeill, *op. cit.*, p 322.

28 Department of Air Organisation Directives 9/66, 18-4-66 and 11/66, 6-5-66, RHS. Emphasis added.

29 Air Commodore R.A. Scott, Letter to author, 7-5-94.

30 Commanding Officer's Report, No. 9 Squadron, June 1966, RHS.

31 Lex McAulay, *The Battle of Long Tan*, Milsons Point, 1992, pp 16–17.

32 'Black mark hovering over Blackhawks', in the *Canberra Times*, 22 April 1995, p C5.

33 Robert O'Neill, *Vietnam Task*, Melbourne, 1968. O'Neill was a member of 5 RAR.

34 Commanding Officer's Report, No. 9 Squadron, June 1966, RHS; Odgers, *Mission Vietnam*, p 26.

35 No. 9 Squadron's difficulties are mentioned in McAulay, *op. cit.*, pp 16–20, 159–60; D.M. Horner, *Australian Higher Command in the Vietnam War*, Canberra, 1986, p 19; D.M. Horner, *SAS: Phantoms of the Jungle*, North Sydney, 1989, p 182.

36 Air Commodore H.D. Marsh, Letter to author, 21-5-91; Scott, Interview; Air Commodore B.I. Lane, Interview, 9-11-90.

37 McNeill, *op. cit.*, p 179.

38 Commanding Officer's Report, No. 9 Squadron, November 1966, RHS. The US Army lost twice as many helicopters in accidents as it did in combat.

39 Air Commodore R. Scott, Letter to author, 7 May 1994.

40 Personal File, Group Captain P.F. Raw, Discharged Personnel Records—Air Force.

41 Air Commodore H.D. Marsh, Letter to author, 21-5-91

42 Commanding Officer's Report, No. 9 Squadron, July 1966, RHS. McAulay, *op. cit.*, p 18, describes an incident which justified Scott's comment.

43 Commanding Officer's Report, No. 9 Squadron, August 1966, RHS; McAulay, *op. cit.*, p 17.

44 Horner, *Australian Higher Command in the Vietnam War*, p 19.

45 Commanding Officer's Reports, No. 9 Squadron, June to September 1966, RHS.

46 Quoted in McNeill, *op. cit.*, p 322; see also Scott, Letter to author, 7-5-94.

47 McAulay, *op. cit.*, pp 159–60.

48 'Black mark hovering over Blackhawks', in the *Canberra Times*, 22 April 1995, p C5.

49 Helicopter Pilots for Vietnam, 16-4-69, CRS A7941/2, H5, AA.

50 *ibid*, 17-4-69.

51 Australian Force Contribution to Vietnam, 28-7-65, CRS A7940/1, M7, AA.

52 *ibid*, 9-8-65.

53 *ibid*, 26-1-66. Drummond was on the staff of the 2nd Air Division.

54 *ibid*, 7-2-66.

55 *ibid*, 27-7-65.

56 British Bases in Australia, 14-3-66, CRS A7941/2, B13; Deployment of Mirage Aircraft to Butterworth, 24-8-66, CRS A7941/2, D18, AA; Air Board Agendum 13078, 26-11-64, RHS.

57 Air Board Submissions 20/68, 15-3-68; 9/69, 11-3-69, RHS.

58 Australian Force Contribution to Vietnam, 21-11-67, CRS A7940/1, M7, AA.

59 *ibid*, 11-12-67.

60 Air Commodore F.E. Burtt, Interview, 19-10-93.

61 While the Canberra could release bombs below 370 metres, it then ran the risk of damage from its own shrapnel.

62 C.D. Coulthard-Clark, 'The Air War in Vietnam: Re-evaluating Failure', in Stephens (ed.), *The War in the Air 1914–1994*, pp 169–170, 177–8; Odgers, *Mission Vietnam*, pp 55, 75, 78.

63 For example, for an authoritative first-hand account of the abuse of the 'body count' system, see David H. Hackworth, *About Face*, South Melbourne, 1989, pp 572–3, 778–9.

64 As a result of the Vietnam experience, the RAAF started to train its own FACs at Williamtown in 1968, initially with No. 2 OCU and then from 1970 with the independent No. 4 Flight. Because of the skills involved RAAF FACs invariably were fighter pilots. No. 4 Flight was equipped with four Winjeels with UHF radios (the frequency band used for Army tactical nets) and smoke rockets to mark positions. See Australian Requirement for and Provision of Forward Air Controllers, 23-5-69, CRS A7941/2, F9, AA; Air Board Submission 58/68, 31-7-68, RHS.

65 Air Board Submission 29/70, 11-3-70, RHS.

66 Australian Force Contribution to Vietnam, 15-10-70, CRS A7940/1, M7, AA.

67 *loc. cit.*

68 *ibid*, 27-10-70.

69 See also Greg Sheridan, 'Why the Vietnam War was just and winnable', in the *Australian*, 19 April 1995, p 11.

Chapter 16

1 Land/Air Warfare Committee, CRS A7941, L4, 9-12-58, AA.

2 RAAF School Land/Air Warfare, 2-9-48, CRS A5954/8, 1509/16; Australian Joint Warfare Establishment, 25-11-66, CRS A7941/2, A45, AA.

3 Australian Joint Warfare Establishment, 25-11-66, December 1966, CRS A7941/2, A45, AA.

4 *ibid*, 2-4-71.

5 Air Board Agendum 11223, 8-3-51, RHS.

6 CRS A5954, Box 1841, AA.

7 Air Board Agenda 8058, 27-5-47, RHS.

8 *loc. cit.*

9 'RAN Should Control its Own Air Arm', the *Argus*, 13-6-47. The Navy's case for an independent Fleet Air Arm apparently was strongly supported by Sir Frederick Shedden: see Letter, Vice-Admiral Sir Roy Dowling to Shedden, CRS A5954, 1193/6, 15-4-57, AA.

10 'Land Based Planes Our First Defence', *Herald*, 5-3-47.

11 Control of the Fighter Defence of Her Majesty's Ships and Convoys within Range of Shore Based Fighters, Extract from White Paper, 10-4-54, CRS A7941/2, F3, AA; Air Board Agendum 12433, 15-7-54, RHS.

12 Rationalisation of Helicopter Activities in the Services, November 1962, CRS A7941/2, H2, AA.

13 The Requirement for Naval Air Power, 10-3-70, CRS A7941/2, N25, AA.

14 *ibid*, 3-6-76.

15 Air Support for the Army, 30-7-57, CRS A7942/1, A199, AA.

16 Air Board Agendum 12749, 19-6-58, RHS.

17 Air Support for the Army, 28-11-58, CRS A7942/1, A199, AA.

18 Brian Oxley, Interview, 30-9-93.

19 Air Support for the Army, 30-7-57, CRS A7942/1, A199, AA.

20 *loc. cit.*

21 Air Support for the Army, 14-8-57, CRS A7942/1, A199, AA.

22 Air Board Agenda 12567, 9-10-57, RHS. Townley's note was dated 21-9-65.

23 Air Support for the Army, Light Aircraft Support, 11-4-60, CRS A7941/2, A24, AA. The Defence Committee was E.W. Hicks (secretary, Department of Defence, and chairman); Lieutenant-General Sir Henry Wells; Vice-Admiral Sir Roy Dowling; and Air Marshal F.R.W. Scherger. M.W. O'Donnell, an assistant secretary from the Treasury, was also present.

24 Air Support for the Army, Light Aircraft Support, 2-6-60, CRS A7941/2, A24; The Roles of Army Aviation, 29-9-66, CRS A7941/2, J6, AA.

25 Air Support for the Army, Light Aircraft Support, June 60, CRS A7941/2, A24; Rationalisation of Helicopter Activities in the Services, 17-9-62, CRS A7941/2, H2, AA.

26 Air Support for the Army, Light Aircraft Support, 17-2-66, CRS A7941/2, A24, AA.

27 *loc. cit.*

28 The Roles of Army Aviation, 16-6-65, CRS A7941/2, J6, AA.

29 *ibid*, 30-7-65 and August 1965.

30 *ibid*, 30-5-66.

31 *loc. cit.*; Air Support for the Army, Light Aircraft Support, 29-9-66, CRS A7941/2, A24, AA.

32 Armed Helicopters for Fire Support, 3-12-70, CRS A7941/1, H1, AA.

33 *ibid*, 3-12-70, 10-12-70.

34 *ibid*, 20-10-71. Brogan was CGS from 19-5-71 to 19-11-73.

35 The Roles of Army Aviation, 9-8-72, CRS A7941/2, J6, AA.

36 *ibid*, 13-11-70, 15-3-71.

37 *ibid*, 9-8-72.

38 *loc. cit.*; see also Oxley, Interview.

39 Air Support for the Army, Light Aircraft Support, 18-11-66, CRS A7941/2, A24, AA.

40 Construction of an Army Aviation Centre at Oakey, Queensland, 4-12-68, CRS A5882/1, CO436, AA.

41 *ibid*, 21-11-68.

Chapter 17

1 That estimate was increased to 10,000 following the introduction of National Service in 1951. Air Board Agendum 8405, 6-10-47, RHS.

2 Citizen Air Force Reserve Establishment and Extension of Training, 11-7-50, CRS A4940, C163, AA; Air Board Agendum 10078, 17-2-50, RHS.

3 Quoting Defence statistics is fraught with complexities, especially for the decade after World War II. Personnel figures seem to vary almost between every set: some include reservists and females, others nurses but not WRAAF, others WRAAF but not reservists, others Active but not General Reservists, and so on. The figure suggested here of about 4500 Active Reservists comes from T.B. Millar, *Australia's Defence*, Carlton, 1965, p 176, and assumes that of the 5512 'part-time' members of the CAF Millar lists for 1952, about 1000 were CAF and the remainder Active Reservists.

4 Air Board Agendum 8405, 15-1-48, RHS.

5 Air Board Agendum 10086, 21-4-50, RHS.

6 The Parliament of the Commonwealth of Australia, Joint Committee on Foreign Affairs, Defence and Trade, *The Australian Defence Force Reserves*, Canberra, 1991, p 14.

7 Air Board Agendum 9006, RHS, 17-9-48.

8 Air Board Agendum 8676, 20-4-48, RHS.

9 Air Vice-Marshal G.W. Neil, Telecon, 11-5-95. Neil's total of one hundred and fifty hours included those flown to gain his private pilot's licence.

10 Citizen Air Force Reserve Establishment and Extension of Training, 11-7-50, CRS A4940, C163, AA.

11 Air Board Agendum 10624, 22-8-50, RHS.

12 *Herald*, 30-11-54.

13 Air Board Agendum 12592, 3-7-56, RHS.

14 Air Board Agendum 12628, 13-12-56, RHS.

15 Composition of the Forces, 2-4-59, CRS A7941/2, A11, Pt 1, AA; Air Board Agendum 12784, 24-2-59, RHS.

16 Composition of Australian Defence Forces, 26-11-59, 1-12-59, CRS A7942/1, C151, AA.

17 Citizen Air Force Reserve Establishment and Extension of Training, 2-12-59, CRS A4940, C163, AA.

18 Services Manpower Review, 30-9-64, CRS A7941/2, S26, AA.

19 Air Board Submission 113/70, 11-9-70, RHS; Joint Committee on Foreign Affairs, Defence and Trade, *The Australian Defence Force Reserves*, pp 13–16.

20 Air Board Submission 113/70, 11-9-70, RHS.

21 Air Board Agenda 10168, 11-4-50; 12687, 14-10-57, RHS.

22 Air Board Agendum 12505, 31-5-55, RHS.

23 H.J. Elliott, Letter to author, 22-4-95.

24 National Service Policy, 27-10-50, CRS A4940, C162, AA.

25 Air Board Agendum 11318, 6-4-51, RHS.

26 Air Board Agendum 9983, 22-12-49, RHS.

27 Air Board Agendum 11847, 31-7-51, RHS.

28 Air Board Agendum 12373, 29-5-53, RHS.

29 Graham Kennedy, Letter to author, 30-10-1994.

30 Lax, *Always Ready*, p 92.

31 *Herald*, 7-9-55.

32 Composition of Australian Defence Forces 1957, 22-2-57, CRS A4940, C1755, AA.

33 Air Board Agendum 6687, 29-8-46, RHS.

34 Air Board Agendum 8123, 9-5-47, RHS.

35 Air Board Agendum 7724, 21-11-46, RHS.

36 Air Board Agenda 8580, 20-2-48; 10416, 22-6-50, RHS.

37 Air Board Agendum 9708, 1-9-49, RHS.

38 Air Board Agendum 8662, 13-4-48, RHS. Promotion exams started in 1948.

39 Air Board Agenda 10584, 29-8-50; 12327, 25-3-52, RHS.

40 Air Training Corps, Policy, 15-10-51, CRS A4940, C2713, AA; Air Board Agendum 11404, 25-5-51, RHS.

41 Barry J. Videon, *Air Training Corps: The First Fifty Years*, 1991, p 13. The Sword of Honour was awarded for leadership, the Queen's Medal for dux.

42 Air Board Submission 113/70, 11-9-70, RHS.

Chapter 18

1 See Joyce Thomson, *The WAAAF in Wartime Australia*, Melbourne University Press, Carlton, 1991.

2 Air Board Agendum 6725, 18-8-45, RHS.

3 *loc. cit.*

4 Air Board Agenda 7023, 6-6-46; 7029, 3-12-46, RHS.

5 Air Board Agendum 9004, 13-9-48, RHS.

6 A Working Party Report on Employment of Women in the Australian Defence Force, May 1975, CRS A7942/1, W52, AA.

7 Air Board Agendum 10323, 13-6-50, RHS.

8 Air Board Agendum 10505, 20-11-50, RHS.

9 Group Officer D.D. Parsloe, Telecon, 18-11-94; Wing Commander Beryl Free, Telecon, 18-11-94; Squadron Leader R.L. Hall, 'History of the Women's Royal Australian Air Force', in *RAAF Personnel Journal*, June 1994.

10 Thomson, *op. cit.*, p 3.

11 Air Board Agendum 8524, 30-8-49, RHS.

12 For detail on the RAAFNS, see Gay Halstead, *Story of the RAAF Nursing Service 1940–1990*, Metung, 1994.

13 Air Board Agendum 12500, 18-5-55, RHS.

14 WRAAF recruit training was conducted at Laverton, Richmond, Point Cook and Pearce before being consolidated at Point Cook in 1954 and then moving to Edinburgh in 1965. Recruit courses were extended to five weeks in 1970.

15 Defence Forces Retirement Benefits, Review 1959, 24-11-59, CRS A4940, C2921, AA.

16 *RAAF News*, September 1961, p 7. The exact dates were 12-10-56 to 1-5-61.

17 Air Board Agendum 12762, 19-9-58, RHS.

18 Construction of Living-in Accommodation at RAAF Bases, 3-5-65, CRS A4940, C4177, AA.

19 Women's Services, Employment Outside Australia and Her Territories, 19-5-67, CRS A7942/1, W52, AA.

20 Air Board Submission 26/67, 5-5-67, RHS.

21 Air Board Submission 24/69, 29-1-69, RHS.

22 *RAAF News*, June 1961, pp 1, 6. No. 112 Course was held in 1961.

23 Services Pay, December 1971, CRS A5882/1, CO 1024, Pt 2, AA; Free, Telecon.

Chapter 19

1 B.L. Montgomery, *High Command in War* (a pamphlet produced for the General Officers of the Eighth Army), Tripoli, January 1943, pp 3–4.

2 Policy for the Active Air Defence of Australia and its Territories, 23-1-50, 8-5-70, CRS A7941/2, A4; COSC Memorandum 2/70, Inter-service Responsibilities for Air Defence, 8-5-70, CRS A7941, M27, AA.

3 Air Board Agendum 9275, 1-2-49, RHS.

4 Reduction and Reorganisation of the Ground Radar System, Plans for, Policy, 30-6-45, CRS A705, 201/28/390, AA. At its peak, the radar network comprised one hundred and forty-six stations; twenty-five had been decommissioned before the end of the war. See E.R. Hall, *A Saga of Achievement*, Box Hill, 1978, p 226.

5 A later review proposed replacing Higgins and Broome with Finschhafen and Adelaide. Reduction and Reorganisation of the Ground Radar System, Plans for, Policy, 30-6-45, CRS A705, 201/28/390, AA.

6 Procurement of Modern Air Defence Radar for RAAF, Policy, 9-10-51, CRS A4940, C514, AA; Air Board Agendum 11962, 3-12-51, RHS.

7 *ibid*, 6-12-51; Air Board Agendum 11962, 3-12-51, RHS. Eight height finders were included in the proposal. The radar type was the AN/FPS-3.

8 Defence Preparations Committee (DPC) Agendum 28, 18-12-53, CRS A4933, XM1, Vol 10, AA; Cabinet Decision 274, 12-12-51, attached to Air Board Agendum 11962, RHS.

9 Air Board Agendum 8709, 10-6-49, RHS; RAAF, Purchase of Additional Vampire Jet Fighters 1950, 27-7-50, CRS A4940, C289, AA. Early documents refer to the aircraft as the P1080 rather than 1081, but it was the latter which was allocated an (unused) RAAF serial number. Other fighters the CAS and his team examined included the Hawker F3, N7/46 and P1052; the Gloster Meteor IV and VIII; the Supermarine Swift; the de Havilland F4/48; and two variants of the Vampire, the Mk VII and the 'Thin Wing'.

10 See Lawrence James Wackett, *Aircraft Pioneer*, Sydney, 1972, pp 185–200.

11 RAAF Purchase and Manufacture in Australia of Sabre Fighters 1950, 13-12-50, CRS A4940, C290, AA.

12 *ibid*, 30-1-51.

13 *ibid*, 21-2-51.

14 Air Board Agendum 12302, 15-2-52, RHS. No. 2 OTU had been reformed in March 1952, equipped with Vampires, Mustangs and Wirraways.

15 Wing Commander R.C. Cresswell, Interview, 5-12-94.

16 Several sources have suggested that No. 75 Squadron was the first operational Sabre squadron in April 1955: see Stewart Wilson, *Meteor, Sabre and Mirage in Australian Service*, Weston Creek, 1989, p 103; George Odgers, *The Golden Years*, Canberra, 1971, p 82; The Aviation Society, *RAAF Base Williamtown*, Williamtown, 1991, pp 50, 99. Unit histories clearly indicate that No. 75 Squadron operated only Meteors until at least the end of 1956. The history sheets are less clear regarding the acceptance date of the squadron's own Sabres, as on occasions in early 1957 aircraft were borrowed from No. 3 Squadron. On 6 May 1957 six sergeant pilots were posted in to No. 75 Squadron off Sabre conversion with No. 3 Squadron, but according to the Unit History of 21 May, while No. 75 Squadron's Meteors were 'gone', the Sabres 'had not arrived as scheduled' on 14 May. No. 75 Squadron's Honour Board lists 26 March 1957 as the date the unit changed to Sabres. Unit Histories, No. 3 Squadron, March–April 1956; and No. 75 Squadron, March 1952 and April 1955–May 1957, RHS.

17 Air Vice-Marshal F.W. Barnes, Interview, 22-11-94.

18 Sidewinder Air-to-Air Guided Weapons for RAAF, Policy, 9-9-58, CRS A4940, C2277, AA; Air Board Agenda 12733, 28-4-58, 12874, 7-9-60, RHS. 787 Sidewinders were ordered to provide six months war reserves.

19 Those aircraft were the F-100 to the F-106 (there was no F-103).

20 Composition of Australian Defence Forces, 1-10-59, CRS A7942/1, C151, AA. Nos. 3 and 77 Squadrons were the flying units in No. 78 Wing; while those in No. 81 Wing were Nos. 75 and 76 Squadrons and No. 2 OCU.

21 Australian Aircraft Industry, Review 1953, 15-6-53, CRS A4940, C2796; Survey of Australian Aircraft Industry 1957, 2-4-57, CRS A4940, CI735, AA.

22 Procurement of Nuclear Weapons, Use of by the Australian Forces, 31-7-56, CRS A7942/1, N78; Division of Responsibility between the Australian Services for the Operation, Control and Study of Development of Guided Weapon Systems, 5-12-61, 29-20-62, CRS A7941/2, R8, AA.

23 Townsend Report on Surface-to-Air Guided Weapons for the RAAF 1959, 13-3-57, 27-10-59, CRS A4940, C3014, AA; Air Board Agendum 12772, 7-11-58, RHS. Other team members were Wing Commander R.H. Glassop, Squadron Leader L.P. Bek and Mr T.F.C. Lawrence.

24 Surface-to-Air Guided Weapons Policy, 26-10-59, CRS A4940, C2977; Townsend Report on Surface-to-Air Guided Weapons for the RAAF 1959, 27-10-59, CRS A4940, C3014, AA.

25 Surface-to-Air Guided Weapons Policy, 26-10-59, CRS A4940, C2977, AA; Air Board Agendum 12798, 18-6-59, RHS.

26 Air Board Agendum 12814, 10-7-59 RHS.

27 Composition of the Forces, 2-4-59, CRS A7941/2, A11, Pt 1, AA; Air Board Agenda 12646, 8-4-57, 12745, 12-4-57, RHS.

28 Air Board Agendum 12845, 13-5-60, RHS.

29 Surface-to-Air Missile System for Area Defence, August 1971, CRS A7941/1, M8, AA.

30 Defence Vote Requirements 1967/68, 21-3-67, CRS A7941/2, D9, AA.

31 Procurement of Control and Reporting Units for the RAAF, September 1964, CRS A4940, C4061; Defence Radar and Telecommunications Policy 1954, 23-6-65, CRS A4940, C1103, AA; Air Board Agenda 13064, 3-7-64; 13108, 7-5-65, RHS.

32 Early Warning/Ground Controlled Interception Radar System for the Air Defence of Darwin, September 1971, CRS A7941/1, E3, AA.

33 Air Board Submission 85/68, 8-10-68, RHS.

34 Telegram, UK High Commissioner to Commonwealth Relations Office, 27-2-57, Air 8/2177, PRO; Composition of Australian Defence Forces 1957, 22-2-57, CRS A4940, C1755, AA. Emphasis in original.

35 Australian Defence Equipment Mission to USA 1957, 16-5-57, CRS A4940, C1772, AA; Air Marshal J.A. Rowland, Interview, 17-8-93.

36 Air Board Agendum 12877, 27-9-60, RHS.

37 Air Board Agendum 12957, 21-4-62, RHS.

38 Quoted in Susans, *The RAAF Mirage Story*, p 48.

39 *RAAF News*, June 1964, p 1.

40 See *Herald*, 2-7-66; *Courier Mail*, 28-6-66; *Sydney Morning Herald*, 28-6-66; Flemming, Interview, 11-5-95.

41 RAAF Williamtown Aerodrome, Development, 23-5-51, CRS A4940, C341, AA; Air Board Agendum 10821, 23-5-51, RHS. Those works started in 1951 and cost about £1,000,000.

42 RAAF Williamtown Aerodrome, Development, 22-2-65, CRS A4940, C341, AA.

43 Air Board Agendum 13054, 18-5-64, RHS.

44 Force Structure Committee Minutes, 30-1-70, CRS A7941/2, F18, AA; Air Board Submission 10/67, 14-2-67, RHS.

45 Air Board Agendum 13041, 6-3-64, RHS. One hundred and seventy-six R530s were ordered in 1964 (thirty-six for training, one hundred and forty as operational stocks) to complement the Mirage's two Sidewinders and two Defa 30mm cannon in the air defence role.

46 Quoted in Susans, *op. cit.*, pp 75–7.

47 Air Board Submission 52/71, 20-8-71, RHS.

48 Air Board Submission 27/71, 8-4-71, RHS.

49 Mirage Replacement Aircraft for the Tactical Fighter Force, August 1970, CRS A7941/1, M2, AA; Air Board Submission 52/71, 20-8-71, RHS.

50 CASAC Submissions 52/77, 4-8-77; 53/77, 26-8-77, RHS.

51 Mirage Replacement Aircraft for the Tactical Fighter Force, 27-11-70, CRS A7941/1, M2, AA. The Defence Force Development Committee comprised Sir Arthur Tange (secretary of the Department of Defence), Vice-Admiral Sir Victor Smith (CCOSC), Air Marshal C.T. Hannah (CAS), Vice-Admiral R.I. Peek (CNS) and Major General S.C. Graham (representing CGS). The director of joint staff, Rear Admiral W.J. Dovers, was also present.

Chapter 20

1 Air Vice-Marshal A. Heggen, Interview, 1-3-94; Paul. E. Choquenot, Interview, 12-1-95. The Lincoln crew consisted of two pilots, two navigators, two signallers and a tail-gunner.

2 Purchase of English Electric Canberra Jet Bombers, 1949, 6-4-50, CRS A4940, C293, AA; Air Board Agendum 3-11-49, RHS.

3 Air Board Agendum 8709, 6-10-48, RHS.

4 Briefing Note for CAS [RAF], 28-2-57, Air 8/2177, PRO.

5 Survey of Australian Aircraft Industry 1957, 27-3-57, CRS A4940, C1735, AA.

6 Purchase of Dual Control Jet Bomber Aircraft 1955, 31-10-55, CRS A4940, C1489, AA; Air Board Agendum 12469, 18-11-55, RHS.

7 65/6/Air, Box 158, CRS AA1969/100, AA; see also Stephens, *Power Plus Attitude*, p 151.

8 *loc. cit.*

9 Procurement of Nuclear Weapons, Use of by the Australian Forces, 12-9-65, CRS A7942/1, N78; 65/6/Air, Box 158, CRS AA1969/100, AA.

10 Procurement of Nuclear Weapons, Use of by the Australian Forces, 20-12-56, CRS A7942/1, N78, AA.

11 *Herald*, 15-12-56.

12 Air 8/2188, PRO.

13 Nuclear Capability for the Australian Forces, 7-6-61, CRS A7941/2, N15; Nuclear Weapons for Australian Forces, 13-6-61, CRS A4940, C3380, AA.

14 Procurement of Nuclear Weapons, Use of by the Australian Forces, 11-2-58, CRS A7942/1, N78, AA.

15 *ibid*, 15-9-58; Nuclear Capability for the Australian Forces, 2-6-61, CRS A7941/2, N15, AA.

16 Procurement of Nuclear Weapons, Use of by the Australian Forces, 16-10-58, CRS A7942/1, N78, AA.

17 *ibid*, 4-5-60.

18 *loc. cit.*; Nuclear Weapons for Australian Forces, 1961, CRS A4940, C3380; Nuclear Capability for the Australian Forces, 7-6-61, CRS A7941/2, N15, AA.

19 See, for example, Review of the Tasks, Capabilities and Structure of Australian Defence Forces, 1-12-66, CRS A7941/2, R20, AA.

20 Air Marshal S.D. Evans, Interview, 22-10-91.

21 Air Commodore I.M. Westmore, Interview, 14-3-94; Air Commodore J.A. Jacobs, Up and Away, Unpublished Manuscript, 1993, pp 32, 40.

22 Letter, Scherger to Boyle, 7-4-59, Air 8/2188, PRO.

23 Air Board Agendum 12814, 10-7-59, RHS. Emphasis in original.

24 Minute, Group Captain F.B. Sutton to DCAS (Air Marshal Sir Ronald Lees), 11-3-63, Air 8/2396; Minute, CAS to CDS, 20-3-1963, Air 8/2396; Air Historical Branch (AHB), RAF.

25 Letter, High Commissioner to Permanent Under-Secretary of State, Commonwealth Relations Office, 24-4-63, Air 8/2396, AHB.

26 Air Marshal Sir Valston Hancock, Interview, Record No TRC 2841, NLA; see also Rayner, *op. cit.*, pp 156–7.

27 Department of Air, *Report of the Evaluation Team on a Strike/Reconnaissance Aircraft for the RAAF*, Canberra, 1963 (the Hancock Report).

28 *RAAF News*, January–February 1965, p 6.

29 Air Board Agendum 13017, 22-8-63, RHS.

30 Air Board Agenda 13017, 24-8-63; 13033, 19-10-63, RHS.

31 Letter, British Defence Liaison Staff Canberra (Group Captain Sutton) to Private Secretary to CAS (Mr M.E. Quinlan), 24-9-63, Air 8/2397, AHB.

32 Premature Retirement of Chiefs of Staff, undated, CRS A4940, C3561, AA; Air Marshal Sir Charles Read, Interview, 19-6-90.

33 Message, British Defence Liaison Staff Canberra to Air Ministry London, 12-9-63, Air 8/2396, PRO.

34 Minute to High Commissioner, 13-9-63, Air 8/2396, PRO.

35 Air Marshal Sir Valston Hancock, Letter to author, 11-4-90.

36 Hanno Weisbrod, 'Australia's Decision to Buy the F-111', in *Australian Quarterly*, Vol 41, June 1969, p 11.

37 Peter Howson, *The Life of Politics*, Ringwood, 1984, pp 30, 71. Howson was minister for air from 1964 to 1968.

38 MS 8023, Athol Townley Papers, Box 4, Folder 20, 5 June 1961, NLA.

39 *ibid*, undated private letter.

40 A.B. McFarlane, Interview, 13-12-93. McFarlane was secretary of the Department of Air from 26-10-56 to 31-5-68. See also Rayner, *op. cit.*, pp 157–8.

41 Peter Howson, Telecon, 1-8-94; McFarlane, Interview.

42 F-111 Aircraft for the RAAF, 12-1-70, CRS A5882/2, CO10, AA.

43 Peter Howson, Telecon, 1-8-94.

44 Air Board Agendum 13033, 16-12-63, RHS.

45 *loc. cit.*; Telegram to Commonwealth Relations Office, 9-11-63, Air 8/2398, AHB.

46 McFarlane, Interview.

47 MS 8023, Athol Townley Papers, Box 3, Folder 19, 23 October 1963, NLA.

48 Air Board Agendum 13034, 24-1-64, RHS.

49 Letter, Esplin to Air Ministry, 27-11-63, Air 8/2398, AHB. Air Vice-Marshal Ian Esplin was the RAF attaché.

50 Peter Howson, Telecon.

51 *loc. cit.*; see also McFarlane, Interview.

52 F-111 Aircraft for the RAAF, 12-3-68, CRS A5882/2, CO10, AA.

53 Weisbrod, *op. cit.*, pp 21–2.

54 F-111 Aircraft, 20-9-67, 8-11-71, CRS A7941/2, F14, AA; Air Board Submission 55/69, 28-4-69, RHS. Each of those sums excludes the additional $US34 million quoted for the reconnaissance modification.

55 Australian Defence Aid to Singapore/Malaysia, 22-11-71, CRS A5882/2, CO133, AA.

56 Air Board Submission 55/69, 28-4-69, RHS.

57 Air Board Minute (Without Submission), 14-5-68, RHS.

58 Air Board Submissions 47/68, 18-6-68; 49/68 and 51/68, 5-7-68, RHS.

59 Air Board Submission 86/68, 2-10-68, RHS.

60 F-111 Aircraft for the RAAF, 24-9-68, CRS A5882/2, CO10, AA.

61 Air Board Submissions 115/68, 19-11-68; 55/69, 28-4-69, RHS. The signatories to the arrangement were A.B. McFarlane for the Department of Air and Lieutenant General Gerrity for the USAF.

62 Air Board Submission 14/69, 21-2-69, RHS.

63 F-111 Aircraft for the RAAF, 27-2-70, CRS A5882/2, CO10, AA.

64 Air Board Submission 84/69, 30-6-69, RHS.

65 F-111 Aircraft for the RAAF, 27-8-69, CRS A5882/2, CO10, AA.

66 *CPD*, 23-9-69.

67 Air Board Submission 2/70, 6-1-70, RHS.

68 *Age*, 12-1-70.

69 Air Board Submission 26/70, 23-2-70, RHS.

70 F-111 Aircraft for the RAAF, 3-2-70, CRS A5882/2, CO10, AA.

71 *ibid*, 27-2-70.

72 *ibid*, 8-4-70.

73 *ibid*, 10-4-70.

74 *ibid*, 13-4-70.

75 F-4E Phantom Aircraft for the RAAF, 27-4-70, CRS A5882/2, CO943; F-111 Aircraft for the RAAF, 27-4-70, CRS A5882/2, CO10, AA; *CPD*, 12-5-70.

76 F-111 Aircraft for the RAAF, 14-4-70, CRS A5882/2, CO10, AA.

77 F-4E Phantom Aircraft for the RAAF, 10-6-70, CRS A5882/2, CO943, AA; Air Board Submission 62/70, 3-6-70, RHS.

78 Air Board Minute, 26-6-70, RHS.

79 F-4E Phantom Aircraft for the RAAF, 10-6-70, CRS A5882/2, CO943, AA.

80 F-111 Aircraft for the RAAF, 8-5-70, CRS A5882/2, CO10, AA.

81 Air Commodore D.N. Rogers, quoted in *RAAF News*, 9-10-94.

82 Air Commodore D.N. Rogers, Interview, 10-5-94.

83 F-111 Aircraft, 9-11-71, 10-1-72, CRS A7941/2, F14, AA.

84 F-111 Aircraft for the RAAF, 8-12-71, CRS A5882/2, CO10; F-111 Aircraft, 5-11-71, CRS A7941/2, F14, AA.

85 F-111 Aircraft for the RAAF, 11-2-72, CRS A5882/2, CO10; Composition of Australian Defence Forces, 31-3-72, CRS A7941/2, Pt 5, AA (Cabinet Decision No. 653).

86 Maxwell Newton, 'Australia—the Sixth Nuclear Power', in *Incentive*, 8 February 1972, p 3.

87 F-111 Aircraft, 29-11-71, CRS A7941/2, F14, AA.

88 *ibid*, 22-11-71.

89 Air Marshal Sir Valston Hancock, Interview, Record No TRC 2841, NLA.

90 Air Board Agendum 13073, 27-9-64, RHS.

91 Air Board Submission 10/67, 14-2-67, RHS.

92 F-111 Aircraft, 10-1-72, CRS A7941/2, F14, AA.

93 Air Board Submission 55/69, 28-4-69, RHS.

94 Mk 82 Bombs, Air Project 5, October 1969, CRS A7941/1, B1, AA.

95 F-111 Aircraft, 10-1-72, CRS A7941/2, F14, AA.

96 The Central Photographic Establishment (CPE) was formed at Laverton in 1948 with four major functions: storing all air reconnaissance and survey negatives acquired by or for the armed services and the Joint Intelligence Bureau; maintaining current traces and plots of all air reconnaissance negatives and photographs; providing authorised agencies with photographic reproductions; and keeping a reference and filing system of all data. Most photographers at CPE were graduates of the RAAF School of Photography at East Sale: see Lax, *op. cit.*, pp 117–26.

97 F-111 Aircraft, 10-11-71, CRS A7941/2, F14, AA.

98 RAAF Station Amberley, Queensland, Development, 1952-65, 16-3-65, CRS A4940, C2867, AA.

99 Development of RAAF Base Amberley 1968, 4-11-68, CRS A5882/2, CO385; RAAF Station Amberley, Queensland, Development, 1952-65, 16-3-65, CRS A4940, C2867, AA; *CPD*, 19-11-68.

100 RAAF Station Amberley, Queensland, Development, 1952-65, 16-3-65, CRS A4940, C2867, AA.

Chapter 21

1 Survey of Australian Aircraft Industry 1957, 27-3-57, CRS A4940, C1735, AA.

2 Collins was Australia's chief of naval staff and Radford the commander-in-chief of the United States Pacific Command.

3 COSC Memorandum 1/1967, Policy for Joint Maritime Operations, 1967, CRS A7941, M27, AA; Air Board Agendum 12433, 16-7-54, RHS. RAAF participation in the maritime headquarters was controlled by AOC Home Command.

4 Air Board Agenda 12433, 15-7-54; 12690, 8-10-57, RHS.

5 Air Marshal I.B. Gration, Interview, 26-9-94.

6 Air Vice-Marshal L.B. Fisher, Interview, 7-6-94.

7 Gration, Interview; see also Fisher, Interview.

8 Fisher, Interview.

9 RAAF Purchase of Lockheed P2V5 Aircraft 1951, Policy, 4-12-50, CRS A4940, C265, AA; Air Board Agendum 10689, 19-9-50, RHS.

10 The price later rose by a further £1,077,440 because of increased production costs and additional equipment. Purchase Lockheed P2V5 (Neptune) Aircraft 1955, 8-1-52, CRS A4940, C1174, AA.

11 RAAF Purchase of Lockheed P2V5 Aircraft 1951, Policy, 22-2-51, CRS A4940, C265, AA.

12 Air Board Agendum 12729, 17-4-58, RHS.

13 Air Commodore G.G. Michael, Interview, 18-8-93.

14 Because the J-34 could run on aviation gasoline rather than the Avtur commonly used by jet engines, the considerable problem of having to carry two types of fuel on the one aircraft was avoided.

15 John Newton, *RAAF Rathmines*, RAAF Museum, 1977. Smith had only recently arrived at 11 Squadron after a tour with the RAAF's Antarctic Flight.

16 Air Vice-Marshal T.W. O'Brien, Interview, 27-10-94.

17 Stewart Wilson, *Catalina, Neptune and Orion in Australian Service*, Weston Creek, 1991, pp 93–4.

18 O'Brien, Interview. No. 10 Squadron also conducted its own basic maritime course.

19 *loc. cit.*

20 Air Commodore R.J. Laing, Telecon, 19-12-94.

21 Gration, Interview; O'Brien, Interview; Fisher, Interview; Laing, Telecon.

22 Air Board Agendum 12772, Air Staff Requirement Air/41, 8-5-58, RHS.

23 Composition of Australian Defence Forces, 26-11-59, CRS A7942/1, C151, AA.

24 Gration, Interview; O'Brien, Interview.

25 Air Board Agendum 13067, 11-8-64, RHS.

26 O'Brien, Interview.

27 Fisher, Interview; O'Brien, Interview.

28 Air Board Agendum 13073, 27-9-64, RHS.

29 Long Range Maritime Patrol Aircraft, 4-9-70, CRS A7941/1, N1, AA.

30 Maritime Surveillance in the Indian Ocean, 10-6-71, CRS A7941/2, I31, AA.

31 Long Range Maritime Patrol Aircraft, 4-9-70, CRS A7941/1, N1, AA.

32 Air-to-Surface Missile System for Maritime Aircraft, 10-11-70, CRS A7941/1, M3, AA.

Chapter 22

1 Although the schedule was completed in ten days, an individual could be away for up to three weeks as crews were 'slipped' (changed over) at Darwin and Iwakuni for rest, while the aircraft kept going.

2 John Balfe, *... And Far From Home*, South Melbourne, 1985, pp 126–31; A.J. Somerville, Unpublished wartime memoirs, undated, APSC.

3 Balfe, *op. cit.*, pp 114–25.

4 Air Board Agendum 7978, 12-2-47, RHS.

5 Air Commodore J.A. Radford, Telecon, 3-3-95.

6 Air Commodore S. Clark, Interview, 19-8-93; Air Vice-Marshal L.B. Fisher, Interview, 7-6-94; P.E. Choquenot, Interview, 12-1-95.

7 Air Marshal I.B. Gration, Interview, 26-9-94; Clark, Interview; Choquenot, Interview.

8 Clark, Interview.

9 Air Board Agendum 12359, 24-3-53, RHS.

10 RAAF, *1954 Aircraft Mission, Report on Investigations in the United Kingdom and North America*, Parts 1 and 2, 1955 (The Murdoch Report); 'Looking for Aircraft for RAAF', *Daily Telegraph*, 22-12-54.

11 Composition of Australian Defence Forces 1957, 22-2-57, CRS A4940, C1755, AA; Air Board Agendum 12569, 15-3-56, RHS.

12 RAAF Purchase of C-130 Hercules Transport Aircraft 1957, 15-7-57, CRS A4940, C1826, AA.

13 RAAF Airfield, Butterworth Malaya, Policy, October 1957, CRS A4940, C2341, AA.

14 Choquenot, Interview. Choquenot flew Lincolns in Malaya before becoming a transport pilot. He was one of the original C-130 captains and later director of the Department of Aviation's Bureau of Air Safety Investigation.

15 Clark, Interview.

16 The C-130 simulator was costed at £20 an hour to operate compared to £665 for an aircraft, a differential which was expected to offset the £315,000 paid for the simulator within a year. *RAAF News*, July 1960, p 1.

17 AMTDU was first formed at Canberra as No. 38 Squadron's Air Portability and Air Movements Training Section. After the squadron's shift to Richmond the section was renamed the Air Movements Training Flight and then, on becoming independent, the AMTDU.

18 Air Board Agendum 13073, 27-9-64, RHS.

19 Based on experience to date it is reasonable to expect that the C-130J will still be in service in 2028, that is, seventy years after the C-130A.

20 Air Support for the Army, Light Aircraft Support, 20-12-60, CRS A7941/2, A24, AA.

21 *loc. cit.*

22 Premature Retirement of Chiefs of Staff, undated, CRS A4940, C3561, AA.

23 A permanent detachment from No. 38 Squadron was established in Port Moresby in October 1965, and another in India/Pakistan with the United Nations Military Observer Group for Kashmir in 1975.

24 Important support for the tactical transport squadrons during those operations came from the Air Transportable Telecommunications Unit (ATTU), which was established at Richmond in 1965 to provide tactical communications.

25 *RAAF News*, October 1970, p 3.

26 Air Board Agendum 13008, 3-7-63, RHS.

27 Air Board Agendum 13122, 12-8-65, RHS. Each squadron was able to complete scheduled maintenance up to and including 'C' servicings. Field maintenance capabilities included engine and propeller changes and repairs to airframe structures.

28 *RAAF News*, August 1993, p 10.

29 Clark, Interview; Choquenot, Interview.

30 Purchase of VIP Transport Aircraft by RAAF, 10-5-55, CRS A4940, C2376, AA.

31 Air Board Agendum 12551, 3-11-53, RHS.

32 Purchase of VIP Aircraft by RAAF, 23-11-65, CRS A4940, C2376; Use of VIP Aircraft, 9-10-67, CRS A4940, C4733, AA; Cabinet Decisions 1406, 1407, in Air Board Submission 26/66, 6-5-66, RHS.

33 *CPD*, 24-10-67, 31-10-67, 8-11-67.

34 *CPD*, 30-9-70.

35 BAC-111 Aircraft for Use by Governor-General on Visit to Iran, 7-9-71, CRS A5882/1, CO1261, AA.

36 Air Board Agendum 12750, 5-11-58, RHS.

37 C-130 Replacement Plus Aircraft to Provide an Air-to-Air Refuelling Capability, Air Project 42, 9-9-71, CRS A7941/1, A10, AA.

38 Replacement of 8 x C-130A Aircraft by 6 Boeing 707-320C Aircraft, Project Air 25, September 1970, CRS A7941/1, A5, AA. The Qantas fleet of long-range transport aircraft was regarded by the Department of Defence as a reserve for use in an emergency, particularly a limited war in Southeast Asia, when the maximum air and sea lift of forces would be required.

39 *ibid*, 29-10-70.

40 Air Board Agendum 7661, 24-10-46, RHS.

41 Denis O'Brien, 'Australia's First Helicopter', in *Flightpath*, Vol. 5, No. 2, pp 76–9.

42 Air Board Agendum 9213, 12-4-50.

43 Composition of the Forces, 2-4-59, CRS A7941/2, A11, Pt 1, AA; Air Board Agenda 12814, 10-7-59, 12844, 11-1-61, 12886, 16-11-60, RHS.

44 Concurrent with the order for the Iroquois, plans were made to disband the RAAF 'navy' of marine craft which provided close-to-shore rescue services. At the end of World War II the RAAF had about fifty marine craft, mostly for search and rescue. Plans to replace all of those boats with

helicopters proved unrealistic as the aircraft and their crews were expensive and not always available. Marine craft search and rescue services were still operating after 1963 at Townsville, Williamtown and Point Cook.

45 Air Commodore R.A. Scott, Interview, 21-3-91.

46 *loc. cit.*

47 No. 9 Squadron assembled in June at Williamtown, which originally was intended to be the Iroquois base, but before any of the helicopters arrived in Australia the unit's location was changed to Canberra.

48 Rationalisation of Helicopter Activities in the Services, 21-11-61, CRS A7941/2, H2, AA.

49 Air Board Agendum 12986, 25-1-63, RHS.

50 Air Board Submission 27/70, 4-3-70, RHS.

51 Medium Lift Helicopter, 25-1-72, CRS A7941/1, AA; Air Board Submission 175/70, 14-12-70, RHS.

52 COSC Memorandum 3/1970, Priorities for Employment of the RAAF Air Transport Force, 11-5-70, CRS A7941, M27, AA.

Chapter 23

1 See 'RAAF Experimental Unit', in *Aircraft*, April 1945, pp 16–17.

2 Reduction of RAAF in SWPA from 53 Squadrons, Organisation and Planning, 10-9-45, CRS A1196, 36/501/589, AA.

3 Air Board Agendum 7071, 26-3-46, RHS. Other members of the team were Messrs T.F.C. Lawrence (CSIR), J.B. Dance (CSIR), G. McCorquodale (DAP) and A. West (DAP).

4 Air Board Agendum 7071, 26-3-46, RHS.

5 Interviews, Air Marshal Sir James Rowland, 17-8-93; Air Vice-Marshal R. Noble, 24-11-93; Air Vice-Marshal F.W. Barnes, 22-11-94. Cuming's nickname of 'Jell' was given to him by his parents shortly after he was born because they thought he looked like a piece of jelly.

6 Rowland, Interview.

7 Defence Program 1955/1956 and 1956/1957, Research and Development, 23-3-56, CRS A5854, 1383/6, AA.

8 Rowland, Interview.

9 Air Commodore D.R. Cuming, Interview, 24-1-94; Trials Reports, 1946-49, Air 20/7335-7342, PRO. One month, for example, Cuming flew the Liberator, Zero, Mitchell, Harvard, Swordfish, Spitfire, Boston, Hudson, Lancaster, Oxford, Tempest, Mosquito, Boomerang, Woomera and Anson.

10 Air Commodore S. Clark, Interview, 19-8-93.

11 Air Board Agendum 12852, 3-5-60, RHS. Extended detachments were also made to Wagga and Mallala for cloud seeding trials over the Snowy Mountains and the Barossa Valley.

12 Air Board Agendum 9348, 25-8-50, RHS.

13 Cuming, Interview.

14 Quoted in David Wilson, 78 Wing, Unpublished Manuscript, RAAF Historical Section, 1993.

15 Air Commodore G.W. Talbot, 'The Edge of the Envelope', in M.R. Susans, *The RAAF Mirage Story*, Point Cook, 1990, pp 56–7.

16 Air Marshal J.W. Newham, Interview, 11-1-94.

17 Air Board Agendum 6764, 13-6-47, RHS.

18 Air Board Agendum 12398, 15-12-61, RHS.

19 Air Board Agendum 8537, 19-1-48, RHS.

20 Air Board Agendum 12415, 11-3-54, RHS. In the early years the seats were commonly referred to as 'ejector' rather than 'ejection'.

21 Air Board Agendum 8503, 11-12-47, RHS.

22 Briefing for CAS [RAF], 23-5-52, Air 8/1732, PRO.

23 Air Board Agendum 12348, 12-12-52, RHS.

24 Various Correspondence, 9-10-52 to 11-11-52, Air 8/1732, PRO.

25 Cuming, Interview.

26 This explanation is simplistic but conveys the essentials.

27 Air Marshal Sir Valston Hancock, Interview, Record No TRC 2841, NLA; Bill Kerr, 'In the Last Great Air Race from London to Christchurch', in *Canberra Times*, 9-10-91.

28 Cuming, Interview.

29 Air 2/10278, PRO; Box 1628, CRS A5954, AA.

30 Air 20/7041, Air 8/1564, PRO; Air Board Agendum 9348, 25-8-50, RHS.

31 Long Range Weapons Project, 14-4-59, CRS A7942/1, U7, AA.

32 Australian Aircraft Industry, Review 1953, 15-6-53, CRS A4940, C2796, AA.

33 Washington telegram to Foreign Office, 4-5-49; COS Meeting, Release of US Confidential Information to Australia, 18-8-48, Air 8/1454, PRO.

34 Air Board Agendum 12321, 21-4-52, RHS.

35 Message, Air Ministry London to RAAFHQ, 12-4-56, Air 8/1837, PRO; Long Range Weapons Project, 21-3-61, CRS A7942/1, U7, AA.

36 Joint United Kingdom/Australia Weapons Project, Policy, 1968, 11-3-68, CRS A5882/1, C09, AA.

37 Report on Visit of the RAAF Planning Team to the Air Ministry, Middle East and Far East, January/February 1951, CRS A5954, 1636/3, AA.

38 Air Board Agendum 11248, 21-3-51, RHS.

39 Atomic Weapon Tests in Australia 1952, 26-8-54, CRS A4940, C501; Australian Services Task Force, Maralinga, 14-7-58, CRS A7941/2, M8, AA; Noble, Interview.

40 Atomic Weapon Tests in Australia 1952, 11-8-54, CRS A4940, C501, AA; Air Marshal Sir Valston Hancock, Interview, Record No TRC 2841, NLA; Stewart Wilson, *Lincoln, Canberra and F-111 in Australian Service*, Weston Creek, 1989, pp 55–62.

41 Air Vice-Marshal A. Heggen, Interview, 1-3-94.

42 *loc. cit.*

43 Wilson, *Lincoln, Canberra and F-111 in Australian Service*, p 61.

44 See David Wilson, *Alfresco Flight: The RAAF Antarctic Flight*, Point Cook, 1991; Bob Dalton, 'ANARE Aviation', in *Aurora*, April 1972.

Chapter 24

1 Jubilee Year, 12-2-71, CRS A7938/1, 76, AA.

2 *loc. cit.*

3 Invited foundation members were Air Marshal Sir Richard Williams, Air Vice-Marshal H.N. Wrigley, Air Vice-Marshal W.H. Anderson, Air Commodore F.H. De La Rue, Wing Commander Sir Lawrence Wackett, Wing Commander L.G. Carter, Wing Commander I.G. Walker, Group Captain R.S. Brown, Group Captain J. Pye, Squadron Leader E.E. Lane, Squadron Leader H.O.L. Digby, Flight Lieutenant E.W. Yardley, and Flight Lieutenant N.H. Clutterbuck.

4 Jubilee Year, 11-9-70, CRS A7938/1, 76, AA; Air Board Submission 49/69, 5-5-69, RHS.

5 Air Board Submission 123/69, 5-11-69, RHS.

6 Air Board Submission 45/70, 20-5-70, RHS.

APPENDIX A

SENIOR APPOINTMENTS

Minister for Defence

6 July 1945	Rt. Hon. J.A. Beasley, MP
15 August 1946	Rt. Hon. F.M. Forde, MP
1 November 1946	Hon. J.J. Dedman, MP
19 December 1949	Hon. E.J. Harrison, MP
24 October 1950	Hon. Sir Philip McBride, KCMG, MP
10 December 1958	Hon. A.G. Townley, MP
18 December 1963	Hon. P.M.C. Hasluck, MP
24 April 1964	Senator the Hon. Sir Shane Paltridge, KBE
26 January 1966	Hon. A. Fairhall, MP
12 November 1969	Hon. J.M. Fraser, MP
10 March 1971	Rt. Hon. J.G. Gorton, CH, MP
13 August 1971	Hon. D.E. Fairbairn, DFC, MP

Minister for Air

7 October 1941	Hon. A.S. Drakeford, MP
19 December 1949	Lieutenant-Colonel the Hon. T.W. White, DFC, VD, MP
11 May 1951	Hon. Sir Philip McBride, KCMG, MP
17 July 1951	Hon. W. McMahon, MP
9 July 1954	Hon. A.G. Townley, MP
24 October 1956	Hon. F.M. Osborne, DSC, MP
29 December 1960	Senator the Hon. H.W. Wade
22 December 1961	Hon. L.H.E. Bury, MP
4 August 1962	Hon. D.E. Fairbairn, DFC, MP
10 June 1964	Hon. P. Howson, MP
28 February 1968	Hon. G. Freeth, MP
13 February 1969	Hon. G.D. Erwin, MP
12 November 1969	Senator the Hon. T.C. Drake-Brockman, DFC
5 December 1972	Hon. L.H. Barnard, MP

Chairman, Chiefs of Staff Committee

23 March 1958	Lieutenant General Sir Henry Wells, KBE, CB, DSO
23 March 1959	Vice-Admiral Sir Roy Dowling, KBE, CB, DSO
28 May 1961	Air Chief Marshal Sir Frederick Scherger, KBE, CB, DSO, AFC
19 May 1966	General Sir John Wilton, KBE, CB, DSO
23 November 1970	Admiral Sir Victor Smith, KBE, CB, DSC

Chief of the Air Staff

5 May 1942	Air Marshal Sir George Jones, KBE, CB, DFC
14 January 1952	Air Marshal Sir Donald Hardman, KCB, OBE, DFC (RAF)
18 January 1954	Air Marshal Sir John McCauley, KBE, CB
19 March 1957	Air Marshal Sir Frederick Scherger, KBE, CB, DSO, AFC
29 May 1961	Air Marshal Sir Valston Hancock, KBE, CB, DFC

1 June 1965	Air Marshal Sir Alister Murdoch, KBE, CB
1 January 1970	Air Marshal Sir Colin Hannah, KBE, CB

Air Member for Personnel

9 May 1945	Air Vice-Marshal J.E. Hewitt, OBE
24 November 1948	Air Vice-Marshal F.M. Bladin, CBE
16 October 1953	Air Commodore (acting AVM) V.E. Hancock, CBE, DFC
3 January 1955	Air Commodore (acting AVM) W.L. Hely, CBE, DFC
7 March 1955	Air Vice-Marshal F.R.W. Scherger, CB, CBE, DSO, AFC
19 March 1957	Air Commodore F. Headlam, OBE
21 October 1957	Air Vice-Marshal A.L. Walters, CB, CBE, AFC
24 August 1959	Air Commodore F. Headlam, CBE
28 March 1960	Air Vice-Marshal W.L. Hely, CB, CBE, AFC
25 August 1966	Air Vice-Marshal C.D. Candy, CB, CBE
6 October 1969	Air Vice-Marshal B.A. Eaton, CB, CBE, DSO, DFC
13 January 1973	Air Vice-Marshal K.S. Hennock, CBE, DFC

Air Member for Engineering and Maintenance

4 June 1942	Air Commodore E.C. Wackett

Air Member for Technical Services

31 October 1949	Air Vice-Marshal E.C. Wackett, CB, CBE
1 January 1960	Air Vice-Marshal E. Hey, CB, CBE
30 November 1972	Air Vice-Marshal J.A. Rowland, DFC, AFC

Air Member for Supply and Equipment

4 June 1942	Air Vice-Marshal G.J.W. Mackinolty, OBE
9 April 1951	Air Vice-Marshal J.E. Hewitt, OBE
14 April 1956	Air Vice-Marshal H.G. Acton, CBE
29 November 1960	Air Vice-Marshal D.A.J. Creal, CBE
29 February 1964	Air Vice-Marshal I.D. McLachlan, CBE, DFC
24 July 1968	Air Vice-Marshal C.G. Cleary, CBE

Secretary

15 November 1939	M.C. Langslow, MBE
22 December 1951	Sir Edwin Hicks, CBE
26 October 1956	A.B. McFarlane, CBE, DFC
1 June 1968	F.J. Green

APPENDIX B

PERSONNEL STRENGTH OF THE RAAF

Year	*Permanent Air Force (includes RAAFNS)* (1)	*WRAAF*
1946	12,509	
1947	10,779	
1948	8025	
1949	9286	
1950	9442	
1951	12,884	na
1952	15,527	na
1953	15,557	na
1954	14,853	682
1955	15,359	786
1956	15,734	na
1957	14,546	724
1958	14,826	778
1959	15,455	715
1960	15,743	665
1961	15,592	na
1962	15,815	773
1963	15,840	773
1964	16,564	784
1965	16,501	860
1966	18,497	861
1967	19,506	859
1968	20,612	952
1969	21,814	898
1970	21,785	857
1971 (2)	21,682	857

Notes: (1) The strength of the RAAFNS rose gradually from sixty-seven in 1955 to 101 by the end of the 1960s, by which time the establishment was one hundred and twenty-two.
(2) As at 30 December 1971 the authorised establishment of the Permanent Air Force was 24,963, including 1022 WRAAF.

Sources: Air Board Agenda; *Official Year Book of the Commonwealth of Australia, 1946–1973*; Australian Bureau of Statistics, Canberra; T.B. Millar, *Australia's Defence*, Melbourne University Press, Carlton, 1965, Appendix B.

APPENDIX C

DEFENCE EXPENDITURE BY SERVICE

£ million to 1963/64
$ million to 1971/72

Year	*RAAF*	*Army*	*RAN*
1945/46	£94.1	£177.7	£35.5
1946/47	22.9	65.8	22.3
1947/48	18.5	28.5	18.5
1948/49	16.9	15.3	20.7
1949/50	12.0	15.6	17.0
1950/51	27.7	26.2	24.6
1951/52	48.4	56.0	37.7
1952/53	55.3	91.5	47.3
1953/54	48.7	64.3	45.0
1954/55	49.2	61.5	47.2
1955/56	52.1	61.4	48.0
1956/57	52.9	60.0	38.7
1957/58	55.4	56.9	43.1
1958/59	59.5	65.3	41.4
1959/60	61.8	65.7	42.3
1960/61	63.2	65.7	45.1
1961/62	65.2	65.2	47.7
1962/63	67.5	67.8	49.4
1963/64	89.2	79.0	55.6
1964/65	$185.9	$200.0	$136.0
1965/66	218.1	261.8	170.6
1966/67	227.2	338.0	183.1
1967/68	296.9	364.6	190.7
1968/69	321.5	396.8	216.7
1969/70	280.6	399.6	225.3
1970/71	283.5	408.7	223.2
1971/72	286.6	455.3	254.3

Sources: Official Year Book of the Commonwealth of Australia, 1946–1973; T.B. Millar, *Australia's Defence*, Melbourne University Press, Carlton, 1965, Appendix A.

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Barnes, Air Vice-Marshal F.W., 22-11-94
Burtt, Air Commodore F.E., 20-7-93, 28-10-93
Choquenot, Mr P.E, 12-1-95
Clark, Air Commodore S., 19-8-93
Compton, Air Vice-Marshal L.S., 16-8-93
Cresswell, Wing Commander R.C., 5-12-94
Cuming, Air Commodore D.R., 24-1-94
Evans, Air Marshal S.D., 22-10-91
Fisher, Air Vice-Marshal L.B., 7-6-94
Flemming, Air Vice-Marshal J.H., 11-5-95
Funnell, Air Marshal R.G., 8-5-95
Garrisson, Air Commodore A.D.J., 22-7-93, 6-8-93, 21-10-93
Gration, Air Marshal I.B., 26-9-94
Hancock, Air Marshal Sir Valston, 3-4-90
Heggen, Air Vice-Marshal A., 1-3-94
Hey, Air Vice-Marshal E., 6-10-93
Jacobs, Air Commodore J.A., 2-5-95
Jones, Air Marshal Sir George, 31-10-89
McFarlane, Mr A.B., 13-12-93
McNamara, Air Chief Marshal Sir Neville, 13-8-90
Michael, Air Commodore G.G., 18-8-93
Newham, Air Marshal J.W., 11-1-94
Noble, Air Vice-Marshal R., 24-11-93
O'Brien, Air Vice-Marshal T.W., 27-10-94
Oxley, Mr Brian, 30-9-93
Read, Air Marshal Sir Charles, 19-6-90
Rogers, Air Commodore D.N., 10-5-94
Rowland, Air Marshal Sir James, 17-8-93
Scully, Air Vice-Marshal P.J., 29-10-93
Steege, Air Commodore G.H., 17-8-93
Taylor, Air Commodore C.R., 26-11-93
Taylor, Wing Commander J.R., 22-12-94
Walker, Air Commodore E.J., 28-4-95
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'This is a superbly researched, thoroughly enjoyable, authoritative account of the RAAF's development from the end of World War II to our Golden Anniversary in 1971. I believe that *Going Solo* will become the yardstick against which future books on the RAAF will be measured.'

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'This is a comprehensive and well-researched account of how the RAAF grew in professionalism and maturity during a vital period of its development. Dr Stephens has highlighted the outstanding achievements on operations, in training and in the workshops. But, more importantly, his fearlessness in exposing past shortcomings provides an essential balance to the story. Understanding those shortcomings will be of immense value to the present-day Air Force.'

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