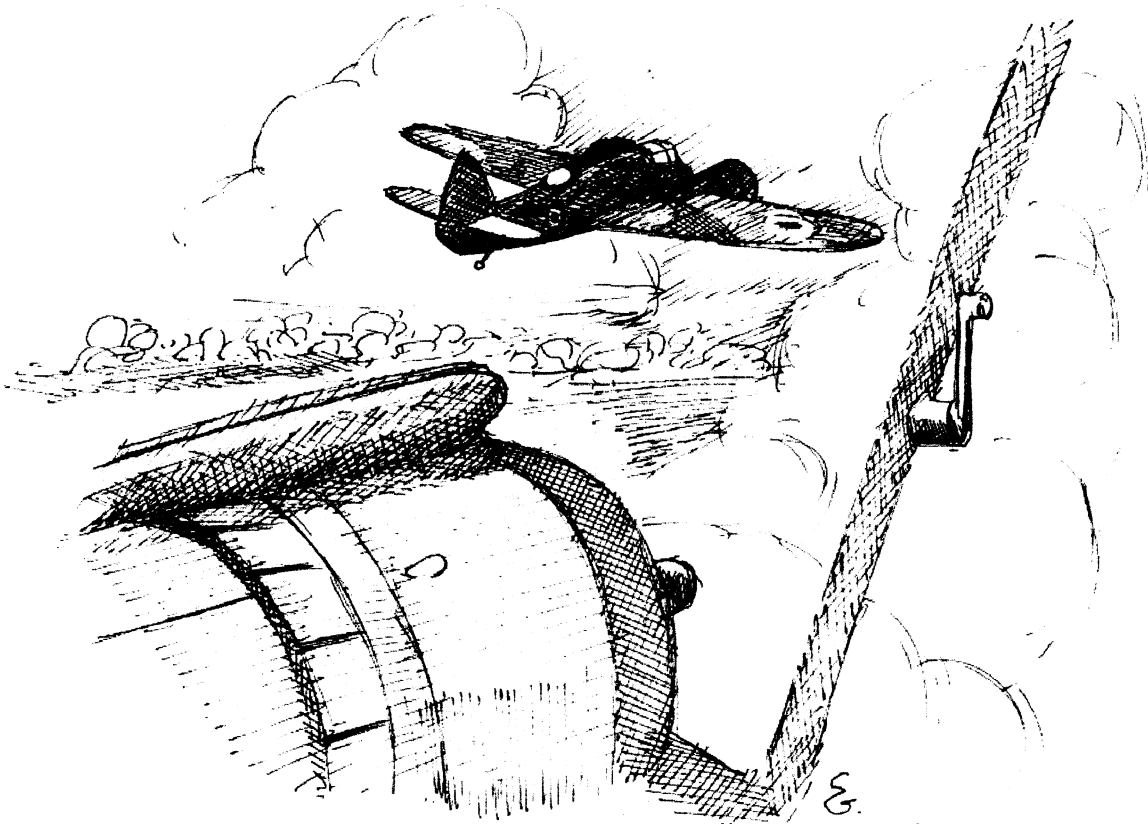


AIR INTERCEPTION RADAR
IN WORLD WAR II
NIGHT FIGHTER AIRCRAFT

Prepared by Horace R. (Red) Macaulay

Air Radar



A PAIR OF BEAUFIGHTERS DOING A.I. (AIRCRAFT INTERCEPTION)
TEST RUNS.

Drawing by Sidney C. Goldsmith

Air Radar

CONTENTS

<u>Items</u>	<u>Page(s)</u>
Selection and Training for the Secrets of Radar.....	X-5 to X-6
Telecommunications Flying Unit (Hurn, Hants., England).....	X-7 to X-9
Telecommunications Flying Unit (Defford, Worcs., England).....	X-9 to X-12
Radar Equipment on Night Fighter Aircraft.....	X-13 to X-14
Air/Ground Radar Systems involved in Interception of Intruders... ..	X-15
Life on a Night Fighter Squadron.....	X-16 to X-26
WW2 Locations of No. 406 RCAF Night Fighter Squadron.....	X-17
Radar Technical Personnel on No. 406 Squadron.....	X-24 to X-25
The Story of Two RCAF Technical Radar Officers.....	X-27 to X-30
Radar Experiences by other Technicians.....	X-31 to X-42
Commemorative to Bernard Richard Minson.....	X-43

Appendices

Appendix A (pages 44 to 51) - WWII Diary of Frank E. Smith.

Appendix B (page 52) - 406 Squadron Daily Routine Orders (11 July 42).

Appendix C (page 53) - RCAF Night Fighters get “Bag of Five”

Air Radar
PREFACE & ACKNOWLEDGEMENTS

This started from a request to prepare an article on air interception radar (AI) as used by night fighter aircraft in World War II. Having spent three and a half years in the United Kingdom as a technician on AI radar, the experience was there but it took awhile to recall happenings of nearly 60 years ago. The credits below will also acknowledge the assistance received from other personnel.

During the war a good exposure was first obtained in operational and experimental AI equipment with the Telecommunications Flying Unit (TFU) at RAF Stations Hurn and Defford in the United Kingdom. This unit supported the Telecommunications Research Establishment (TRE) located near the TFU. I was then fortunate to spend the next three years with the top RCAF night fighter squadron - No. 406. This squadron saw success with the early Mk 4 AI equipment, upgraded to the British Mk 8 centimeter radar, the American MK 10 equipment and finally new systems to support intruder flights over Europe following the D-Day invasion.

Recalling operational details of 406 Squadron was assisted by an article in the Roundel magazine (April 1951) as prepared by the Air Historian. I must also thank Raymond McLean of Ottawa for providing information from his collection of memorabilia. Raymond was one of the early radar technicians on 406 Squadron and I am most grateful for his support.

Frank E. Smith, one of the 'direct entry' RDF mechanics, was with the first group of radar personnel posted to 406 Squadron. His WWII diary is contained in this essay as Appendix "A". Readers will find that Frank's AI radar work included a number of special design activities. We are most grateful for his contribution, including identification of the first radar personnel on 406 Squadron.

AI experiences are also included by Canadian radar technicians, Milt Brooker and Donald Munro, who were with No. 219 Night Fighter Squadron (RAF), and Howard Wolverton who was with No. 151 Night Fighter Squadron (RAF).

Information is included to explain how the ground and airborne radar systems worked together in the detection, interception and destruction of enemy aircraft. In this regard, a special thanks is extended to Robert F. Linden for the story of William Lower and James Ritchie which covers the human link between these systems.

And finally, thanks to John McDonald of Ottawa who spent three and one half years in the Offensive Section of the Telecommunications Flying Unit at RAF Station Defford. His recall of happenings during those years was most helpful.

The photographs used are from the author's collection.

H. R. Macaulay/2000

AIR INTERCEPTION RADAR IN WORLD WAR II NIGHT FIGHTER AIRCRAFT

Selection and Training for the Secrets of Radar

Having been brought up in a family with a military background, I was very familiar with the expression “the exigencies of the service”, so the promises expressed by the RCAF Recruiting Officer in Saint John, NB, were known not to be written in stone, i.e. “you will have to wait many more months for aircrew training, but we have just the thing for you. With your Matriculation Certificate and completion of fourth year industrial at Vocational College, you are well qualified to commence military training for a new secret requirement. Furthermore, some of the graduates will be commissioned upon completion of training and the remainder will be made Sergeants”. This sounded very good, so I said goodbye to three hooks in the Canadian Army Non-Permanent Active Militia and work as a motor mechanic in Saint John, to start a new career in a field that no one could or would talk about.

Great Britain had made an urgent request to the Canadian Government to train thousands of officers and airmen to install, service and maintain (the ever increasing uses of) radio direction finding (RDF) equipment, later known as radar. The selection standards were high and demands on trainees would result in a wastage rate of 35 percent. Canada met the request with flying colours and by May 1943 over 5000 radar officers and airmen had been sent overseas.

The first University classes started in mid 1941, consisting of 2135 students attending 13 Universities across Canada. I am sure the members of our group at Mt. Allison would have been representative of those attending other Universities. They consisted of recently graduated students, University under-graduates, tradesmen, business employees, school teachers and other professional personnel. In fact we had one lawyer from Summerside in our class. I recall meeting this individual at the railway station in Edinburgh early in 1942. After a short period on a ground radar station in the Orkney Islands he realized the misplacement of personal skills and was on his way to RCAF Headquarters in London. He was later commissioned in the Legal Branch. Donald L. Northrup, a well respected teacher from the Sussex, NB, area, became a competent radar technician in Bomber Command. We were very close friends and I had the honour to carry out the duties of “best-man” at his wedding while on course at Mt. Allison. I was happy to have him return this favour at my wedding in England in 1943. Like many of the radar technicians, Don went to University after the war and then carried out a successful practice as a dentist in Sussex. Many friendships made during training and wartime continued through post-war years and this fraternity expanded in the 1990's with WW II radar reunions in England and Canada. Today a new wave of interest has surfaced as a number of ex-radar personnel have undertaken to write the history of Canada's technical radar support to the Royal Air Force during World War II. Many of us continued to serve in the RCAF after the war or returned to the military following University graduation. For me I am happy to say it was an enjoyable career and afforded the opportunity to continue association and meet new friends with a common service background.

AI Radar

My journey to becoming a radio direction finding mechanic (radar) on air interception (AI) equipment in the RCAF started on 14 April 1941. The first month was devoted to basic training at Yarmouth, NS. and then to Mt. Allison University where I joined 49 others, in what was referred to as the “slide-rule squadron.” After attending a 14-week course, which consisted of lectures and laboratory work on electricity and basic radio, we were selected for training on air or ground radar equipment. Some of the students were sent directly to England for equipment training and the remainder were held at the Manning Depot in Toronto until classes started at 31 Radio School, RAF Clinton, Ontario. I was on course CAN 8 at Clinton and trained on Mk 4 AI (Air Interception) and Mk 2 IFF (Identification, Friend or Foe). Only two of our University class were commissioned - H.M.Bell and E.D.Reid. The Recruiting Officer was right, I was made a Sergeant eventually, but not upon course graduation! After training in Canada I would spend the next three and one half years on air interception radar in England.



**Basic training at RCAF Station Yarmouth, NS.
(Recruits Don Northrup and Horace Macaulay).**

Christmas 1941 and New Year's 1942 were spent at the “Y” Depot in Halifax, NS, awaiting overseas draft. On the 7th of January we were “packed” into the Stratheden troopship, an old round bottom vessel of the P & O Line, unfit for winter passage in the North Atlantic. On the second day out we became separated from the convoy and travelled the rest of the journey alone, arriving at Greenock after a two week miserable crossing. Two hundred and fifty radar mechanics were stowed in an area on “G” deck at the bottom of the vessel, accessible only by steel vertical ladders to the last two decks. Individuals were detailed to bring food from the kitchen which was lowered on ropes in baskets and metal containers. Anyone standing at the bottom received an extra ration of soup in the form of rain from above. I believe everyone in this lot were sick and unable to move out of the confined space for a breath of fresh air. We had to secure our kit onto overhead pipes to avoid it sloshing around in a mixture of sea-water, toilet overflow and up-chucked meals. What a relief to set foot on dry land and view the beautiful scenery of England as we travelled south to Bournemouth on a troop train. The Stratheden survivors must have been a sick-looking bunch to the locals viewing the new arrivals sent to help win the war.

No. 3 Personnel Reception Centre at Bournemouth dispersed us to different hotels that had been taken over by the Military. I ended up at the Carleton Hotel, overlooking the East Cliffe, today rated as five-star luxury accommodation. Compared to the Stratheden it certainly was a five-star improvement, even with wall to wall cots in each room. While at Bournemouth we attended two parades each day for draft assignments. I was enjoying the rest and beauty of the city, so was not

AI Radar

disappointed that a number of days passed before my name was called out. As they say, “all good things come to those who wait,” and on the 6th of February I was instructed to report to RAF Station Hurn. I was rather disappointed at first, thinking that after this long wait I would only be travelling about ten miles north of the city. All of my buddies seemed to have been selected for more romantic spots, such as the Hebrides or Shetland Islands. However, I was soon to find out that Hurn was a privileged posting. I was attached to the Telecommunications Flying Unit (TFU) which supported the Telecommunications Research Establishment (TRE) at Worth Matravers, just west of Hurn, near Swanage in the Purbeck peninsula.

Telecommunications Flying Unit (TFU), Hurn, Hants, England.

The TFU consisted of a Defensive Section (DS) which was responsible for radar equipment used in day and night fighter aircraft, and the RDF mechanics employed therein were trained on AI equipment. The Offensive Section (OS) of TFU was responsible for radar equipment used in coastal and bomber aircraft and the RDF mechanics employed here would normally be graduates of air to surface vessel (ASV) radar. The “DS” radar section had about 12 technicians and the Canadian RDF mechanics I can remember were Jack Tully, Bruce Hunt, Nelson Derkson, Harry Bristow and Bruce Glendenning. The rest of the staff were RAF personnel. Our main duty was to carry out daily inspections (DI’s) to ensure that the aircraft radar systems were serviceable. This was referred to as flight line work and unserviceable equipment would be removed from the aircraft and returned to the workshop for repair. Bench testing, equipment repair and adjustments in the workshop were normally carried out by the more experienced technicians. The radar officer, F/O Eldred and a senior non-commissioned officer, F/Sgt “Backie” (spelling), were also located in the workshop area. We assisted with the installation of modified or experimental equipment as delivered by the boffins from TRE. It was our responsibility to ensure that external power was available for ground checks and we were proud of the small part we played in assisting TRE with their ingenious radar work in developing new and improved systems. (A Canadian Radar Officer, by the name of Jack Cowan, was posted to “DS” sometime in 1943).

We were also responsible for the radar beacons located on the station. These included a homing beacon, referred to as Mother, which could be picked up on the aircraft radar. The aircraft operator’s display would show the coded signal of the home base and also indicate the direction and distance for return. The homing beacon was monitored in the workshop to ensure it was operating properly when required. The other beacon on the base was known as BABS (beam approach beacon system). It was used during night flying or inclement weather to assist the pilot in approach to the runway from the correct direction. BABS was a ground transponder positioned at the far end of the live runway with its aerials pointing down the runway towards approaching aircraft. A receiving aerial was positioned with line-of-shoot directly towards the approach and two transmitting directional aerials positioned slightly off the line-of-shoot (forming a narrow V with open end towards the approach). When the aircraft was correctly lined up with the runway, the operator’s display should show equal returns on either sides of the B scan timebase, in addition to the distance from the runway. I am certain every radar technician that worked on an air base had some tense experiences aligning BABS

AI Radar

as aircraft continued to take off and land. The roar of a Beaufighter racing down the runway and lifting off immediately above you, guaranteed rapid completion of the morning DI. It was alright to be on the runway in use to check BABS, but I could never understand why I was lectured so severely at Hurn for being on a live runway with a bicycle!



“A Canadian Pushing Jennie”

External power was used to run up the aircraft radar equipment. This was provided by a small gasoline engine that ran a generator delivering 80 volts ac and 12 or 24 volts dc as required. The equipment was mounted on a two-wheel cart with a metal top and canvas storm sides which were rolled up when in use. A bar handle at one end was used to push the unit from aircraft to aircraft. It was commonly referred to as “Jennie.” Having

worked as a motor mechanic before joining the RCAF, I soon realized that the gasoline engines required some attention to improve their starting ability. The technicians were wearing themselves out pulling the starting cord. Cleaning and gap setting the spark plugs one evening did wonders, which was much appreciated by the flight line crews the next morning. However, I was reminded by higher authority that this was the responsibility of Motor Pool personnel. I may have had a better defence for my action had I then known that the man responsible for developing this unique generator of AC/DC power was none other than the father of AI, Dr. E.G.Bowen, on staff with TRE at Worth Matravers.

Aircraft with unique aerial configurations were often seen at Hurn, but if we were not involved, we knew enough not to discuss the different types of installations. We had certainly been lectured on the Official Secret Act and as far as radar was concerned, if you did not have a need to know, there was no discussion with others. Thus it was many years later that I read the story of a bulbous-nosed B24 Liberator aircraft that arrived at Hurn in March, 1942. This aircraft was fitted with the first centimetric air to surface vessel (ASV) radar, a variant of AI used by Coastal Command for surface vessel detection and control. British equipment was used to develop this radar system at the Massachusetts Institute of Technology (MIT) and it was then flown to England for extensive testing and evaluation by TRE. Two Royal Canadian Air Force Sergeants, Gilbert Edgerton and James A. Leach, were with this aircraft, having been on the project since day one, and they continued to fly with the aircraft, known as “Dumbo,” on the Atlantic coast off USA until October, 1942. World War II was only a month old when these two wireless telegraphy operator mechanics were selected for special training by the National Research Council of Canada. In October, 1940, they were attached incognito as “civilians” to MIT in Boston, USA. They were indeed RCAF pioneers in radar maintenance. (I first met Gil Edgerton at Clinton, Ontario, in 1955, when we were on the same commissioning course).

AI Radar

Accommodation at RAF Hurn was limited and many of us were billeted out in civilian homes. I lived with a young family in Christchurch, less than three miles from the airdrome. We were transported by lorry to and from work and had our meals on the base. Living with a local family was a great introduction to life in England and we had many interesting talks on the differences of our two homelands. The hospitality of the local pub nearby was certainly foreign to my temperance life in rural New Brunswick. But the reality of the fact that Christchurch was only 65 miles from the enemy-occupied coast of France was brought home rather suddenly one day in early March as I walked through the town park. It was late afternoon and I can remember the spring flowers in bloom - how advanced, compared to the growth we would see at home this time of year. Ahead of me was a young Mother pushing a perambulator. The next moment I heard an aircraft and looking up saw what turned out to be a Me109 aircraft approaching with machine guns firing. I guess I must have yelled "jump" because we both landed flat in the flowers. No damage except for a few dirty clothes, a shaken Mother and a baby still snoozing. It was later reported that a Josephine O'Reilly of Ilford Bridge Hotel was hit by machine gun fire while sitting reading on a riverside bench in Christchurch Quay. Yes, there was a war on!

Raids on the South Coast of England were frequent during this time. Many sneak raids by a lone aircraft accounted for a number of deaths in the area and considerable property damage. The worst raid Bournemouth experienced during the war was at noon on Sunday, 23 May, 1943. Sixteen Fokker Wolf 190H aircraft approached the city low over the water and dropped their bomb loads in the main business centre, hitting many hotels and businesses. A total of 208 people were killed, including 11 members of the RCAF who were in the Hotel Metropole when it was destroyed. While attending a WW II Radar Reunion in Bournemouth during May, 1999, I visited the North Cemetery in the city to pay respect to the resting place of the Canadian servicemen killed on 23 May, 1943. It was indeed comforting to witness the neat and well maintained area of the War Graves Commission.

Telecommunications Flying Unit, Defford, Worcs., England.

Arriving for work on the 20th of March, I was advised to go back and pick up my belongings in Christchurch, return to the workshop by 13:00 hrs and only to mention to the lady at the house that I was being moved and would be in touch later. The workshop was in the process of being dismantled and packed for transportation when I returned. We completed the job that afternoon and after supper loaded everything, including all the radar personnel onto lorries and moved to the local rail station, where everything and everybody were transferred to a troop train. How exciting! But to where? About 05:00 hrs the next morning we arrived at RAF Defford, which was to be TFU's new location for continued support to TRE who were also on the move from Worth Matravers to Malvern. We were not impressed with our first view of Defford. The base was under construction and the spring rains resulted in mud everywhere. For the first few weeks we lived in our Wellington rubber boots, only to take them off when we entered our sleeping quarters - a row of bell tents. At first we had no floor boards under the tent and I remember scrounging around for sufficient material to make duck boards to lift our palliasses a couple of inches off the damp ground.

AI Radar

It was not until many years after the war that I found out the reason for the fast exodus from the South Coast. On the 27 February, 1942, Britain had carried out a successful raid at Bruneval on the coast of France and captured parts of a German Würzburg gun-laying radar. The concern that the Germans would retaliate with a raid on TRE resulted in plans for a rapid move inland. Their new location in the Malvern Hills of Worcestershire became the home of the Royal Radar Establishment for many years and today is the location of the Defence Evaluation and Research Agency.

As the weather improved and construction neared completion, we were moved into Nissen huts and soon changed our first impressions of Defford. We were in the heart of a beautiful part of England and our bicycles took us over the hills and past the fruit farms as we explored the area on our time off. Within a radius of 10 miles we could visit Pershore and Evesham in the Avon valley and north to the interesting city of Worcester. Everyone was aware of the power within the rough cider that many farmers had for sale at a going price of 8p (approx. 10 cents) per pint. The guideline was:- one pint and you rode the bike with caution; two pints and you walked the bike home; three pints and you went back for the bike in the morning. By late spring our radar section had about 17 technicians - one American, "Yank" Allan, six Canadians as previously mentioned and ten RAF personnel - Des Downey, Dave Durant, Bill Tew, Alan Clarke, Ian Dick,Edmunds, andGloster. Names of the remainder have slipped my mind. They indeed made up a most friendly and co-operative group.



Our first home at RAF Station Defford. Spring, 1942

l to r: Gloster, Allan, Tulley, Durant, (Unknown), Dick, Hunt, Clarke, Macaulay.

AI Radar



Gloster and Allan in front of our 4-star hotel - RAF Station Defford'42

While the majority of our work involved daily inspections and servicing of Mk 4 and Mk 5 AI and IFF equipment fitted in Blenheim, Halifax, Anson and Beaufighter aircraft, we were occasionally called upon to work on other aircraft used for transport and experimental fitments which included the Hurricane, Wellington, Lysander and Oxford aircraft. By this time the “long nosed” Beaufighter fitted with the Mk 8 AI radar was a common sight and a curiosity to those not familiar with 10 centimeter radar. Mk 6 AI radar was installed in a Hurricane, but never went into production due to the pilot’s difficult task of watching the tube and also searching in the darkness for the enemy. I can recall being with the boffins working on the Mk 6 in a Hurricane prior to the pilot doing a test flight. Considerable time was spent on the ground with a lot of test equipment adjusting the complex circuitry required for automatic operation.

This essay only relates to AI experiences, but before leaving Defford, mention should be made of the other RDF mechanics employed on the station. John McDonald of Ottawa was with the Offensive Section at Defford for nearly three and one half years. During those years he worked on radar equipment in well over 35 different aircraft types from Bomber, Coastal, Fighter and Transport Commands. The scope of radar equipment increased considerably as new systems were developed to assist aircraft in navigation, bomb aiming, gun laying and support to the bomber stream by specially-equipped fighter aircraft. Some of the systems included ASV (air to surface vessel), H2S (navigational aid and blind bombing device), AGLT (airborne gunlaying in turrets), GEE (navigation system), LORAN (long range navigation system), GEE-H (blind bombing and precision navigation), OBOE (blind-bombing system), IFF (identification friend or foe) and various types of Airborne Interrogators and Transponders. To classify these RDF mechanics who worked in the Offensive

AI Radar

Section as ASV specialists was definitely a misnomer. Canadian radar personnel in the Offensive Section included F/O Pullen,Drouin, Al Johnson, John McDonald, Bernard Minson, Cecil Scott and Bill Thurgood..

Another group of Canadian radar personnel were employed in the Special Installation Unit at RAF Defford. They included Jack Bond, Norman Carscallen, Myer Cohen,Deering, Jack Fraser, John Holmes, Vernon House,Hunter, William Lee, Kenneth Rose, William Trotter and James Wilkins.

The Telecommunications Flying Unit at RAF Station Defford presented many challenges with its variety of aircraft and equipment types. RDF mechanics fortunate enough to receive a posting to Defford were rewarded with valuable training and experience.

All this, and in a beautiful part of England!

AI Radar Technicians at Royal Air Force Station Defford, Worcs.



- Summer, 1942 -

Front (left to right): Bill Tew; Des Downey; F/Sgt "Backie" (spelling); Dave Durant; Jack Tulley (RCAF).
Back (left to right): Cpl Edmunds; Ian Dick; Nelson Derkson (RCAF);.....Gloster; Bruce Hunt (RCAF);
(unknown); Cpl Harry Bristow (RCAF); (unknown); (unknown).
Missing in photo: Allan Clarke; Bruce Glendenning (RCAF); H. (Red) Macaulay (RCAF).

AI Radar

Air Interception Radar Systems

Following is a brief description of different marks of AI radar used by night-fighter aircraft during World War II to detect and intercept aircraft:

Mk 4 - External aerials were fitted to the aircraft. A folded dipole for transmitting, with a director element, was mounted on the nose. Receiving azimuth and elevation aerials were fitted to the aircraft wings. Return signals were fed through a motor switch to azimuth and elevation cathode ray tubes. Maximum range was three and one half miles. Wavelength of 1.5 meters (193 Mc/s). This was the first operational AI radar and first flown by the RAF about December, 1940. It had considerable operational success fitted in night-fighter aircraft.

Mk 5 - The main difference from Mk 4 was the indicating display tubes. The pilot was provided with a separate tube which eliminated need for the operator to pass oral instructions. The operator had two indicating tubes - the left hand tube had a horizontal range trace with a moveable strobe to strengthen the target. The target appeared on the right tube as a dot, indicating azimuth and elevation. This spot now appeared on the pilot's tube. Only a few aircraft were fitted with Mk 5 AI as it was difficult for the pilot to alter his attention from watching the tube to searching the darkness for the enemy.

(Note; The external azimuth and elevation aerials of the Mk 4 and Mk 5 AI installations required considerable maintenance. Moisture would accumulate in the bollards used to mount the dipoles to the aircraft, causing a squint or error in signal strength being fed to the display units. The megger was used to determine the line resistance and the bollards were packed with lanolin to prevent moisture build-up).

Mk 6 - This was the only AI equipment designed by the British for use in single seat fighters and was tested at Defford early in 1942. Basically it used the Mk 4 installation and the Mk 5 pilot's indicator. The circuitry was modified to eliminate the need for adjustments by the pilot. Operation of the strobe as used in the Mk 5 was also automatic. Some clever design went into this set, but only a few were produced and then only used as experimental installations. It had the same disadvantage as mentioned with the Mk 5 set.

Mk 8 - The Mk 8 was the first AI set to use a magnetron (CV64), and transmitted on a wavelength of 9.1 cm (3,300 Mc/s). The peak pulse power output was 25 kW. The aerial system consisted of a dipole fixed at the focus point of a three-foot parabolic reflector and enclosed inside a perspex nose on the aircraft. The parabolic reflector and common transmitting and receiving aerial operated in a spiral scan, with 45 degree coverage in all directions from line ahead. The display consisted of one

AI Radar

cathode ray tube with a radial timebase for target range, location and IFF interrogation. Maximum range was five and one half miles.

Mk 10 (SCR 720) - The Mk 10 AI was an American set using a magnetron on the same frequency as the British Mk 8. The main difference between the two was that the Mk 10 used a helical scan of the beam, instead of the spiral movement. The dipole aerial was fixed at the focal point of the parabolic mirror. The parabolic mirror could be moved up and down, rotated 360 degrees or selected to sector scan. The peak pulse power was 70kW and maximum range was six miles. The operator had two display tubes - a C scope on the left to indicate azimuth and elevation and a B scope on the right to indicate range and azimuth.

All of the above types of AI equipment were at Defford during the time I was stationed there except the Mk 10. The Mk 6 and the centimeter Mk 8 equipment were only experimental at that time.

AI radar technicians were also responsible for maintaining other radar systems, including the following; - Identification, Friend or Foe (IFF), the Homing Beacon, Beam Approach Beacon System (BABS) and a Radar Altimeter.

IFF - The main function of IFF equipment was to enable radar operators, on ground equipment and in aircraft, to recognize friendly aircraft and ships. Basically, they were receiver/transmitter systems that provided a radar response when interrogated. The first production model was the Mk 2 which covered three frequency bands. This was followed by the Mk 2G which had an additional band for interrogation by Ground Controlled Interception (GCI) equipment. Mk 3 was developed shortly after to cover the additional range of radar frequencies in use. Mk 3G followed to enable direct response to the GCI equipment.

Radar Beacons - The Homing beacon (Mother) and BABS as used at Hurn and Defford have already been covered.

Additional radar equipment was installed in AI-equipped aircraft when operations included intruder flights over enemy territory. These included Gee, Monica and Rebecca (Lucerno) interrogators:

GEE - A radar navigational aid that enabled the navigator to pin-point the aircraft's position.

MONICA - A radar set mounted in the tail of the aircraft to warn of approaching AI-equipped fighters.

REBECCA (LUCERNO) - An airborne interrogator used to locate ground Eureka sets and other transponders by receiving response on the aircraft's AI equipment.

AI Radar

Air/Ground Radar Systems

Before covering the three years I spent on a night-fighter squadron in England, let us briefly review the complete radar systems used for the detection of enemy aircraft and then vectoring friendly aircraft to intercept, challenge and destroy the invaders. Hopefully, this over-view and the following story of two Canadian radar officers will portray the complete picture of the ground/air radar systems and the human interface between the two.

The detection and destruction of intruders involved a close working relationship with a number of radar and communications systems - initial contact by the early warning radar stations (CH and CHL): the consolidated plotting and display of radar returns (Filter Rooms): identification and control of interceptions (GCI): and the aircraft assigned for final interception, identification and destruction (AI). These systems were tied together by voice command and control, but maintenance and operating personnel carried out their roles with limited knowledge of what went on in the other parts of this important chain.

Radar data were also passed to other defence systems to alert artillery batteries, searchlight crews and the general sounding of "alarm" in the path of the intruder. Coastal defence radar installations and Coastal Command aircraft fitted with air to surface vessel (ASV) radar were used for surveillance of ships and submarines and formed part of the overall radar watch systems.

The coast of Britain had complete radar coverage by long-range detection equipment - chain home (CH) and chain home low (CHL). These stations were located on or near the coast overlooking the sea and had a range of 100 - 150 miles. They provided early warning of incoming intruders. The ground controlled interception (GCI) radar stations were capable of accurately determining aircraft heights and had a usable range of 60 to 70 miles. They would vector and control day fighter aircraft within visual sighting or night-fighter aircraft within range of their AI equipment via ground-to-air radio telephone communication.

The Royal Air Force organization for control of GCI stations was different from that of CH and CHL radar reporting stations. The CH and CHL stations were entirely under the control of No.60 Group for operations, administration, technical supervision and maintenance, whereas GCI stations were under technical control of No.60 Group and under operational control of one of the Fighter Command Groups. A Fighter Group's area of responsibility was divided into Sectors. Each Sector had a Sector Control Point where the Sector Controller was responsible to assign any GCI station in his area to take over the handling of an interception when hostile aircraft entered its area of coverage. The GCI station would then take over control and using R/T communications, vector intercept aircraft onto the invader. The day missions were normally carried out by Spitfire aircraft, using visual means of contact and during night flying, intercepts would normally be carried out with Beaufighter and Mosquito aircraft fitted with Mk 4, Mk 8 or Mk 10 AI radar.

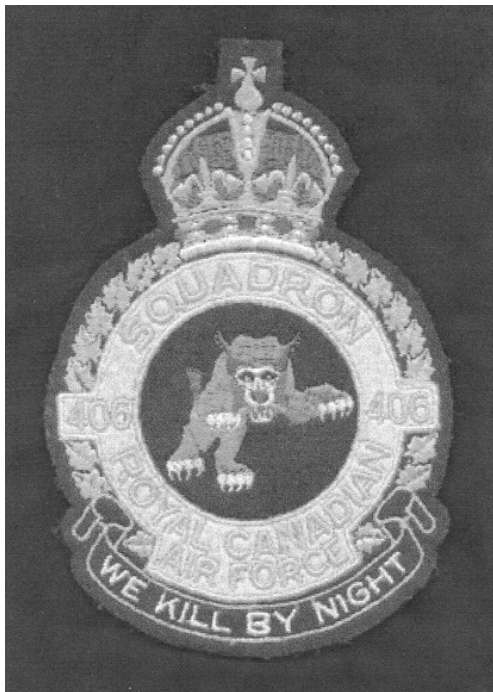
AI Radar

Life on a Night Fighter Squadron

On the 21 July, 1942, I was transferred to 406 Night Fighter Squadron, flying Beaufighter aircraft with Mk 4 AI. I had mixed feelings about this move. On one hand, I certainly looked forward to the action of an operational unit, while on the other I had reservations of having to part company with a fine group of co-workers. Later, in retrospect, I would also fully appreciate the experience of working with a variety of radar equipments (many of which were on the leading edge of development) and becoming familiar with so many different types of aircraft. Support to TRE activities during that last six months was indeed a rewarding experience!

***406 Squadron (City of Saskatoon)**

The first Canadian night fighter squadron was No.406, “the Lynx Squadron” whose motto “we kill by night” was very appropriate as we recall their success in WWII. Operations included three and a half years on night defensive duties over Britain and offensive intruder operations over enemy territory in the last months of the war, when they were the top scoring intruder unit in Fighter Command. The squadron was credited with 64 enemy aircraft destroyed, seven probably destroyed and 47 damaged. In addition, several locomotives and ground installations were blown up or strafed by shelling. These services had won the squadron three D.S.O.’s, one second Bar to the D.F.C., one Bar to the D.F.C., fourteen D.F.C.’s, two D.F.M.’s and four Mention in Despatches. The squadron flew over 1800 sorties in the four years they were operational. During night fighter activities it lost eight aircrew and as an intruder unit its casualties were twelve killed and two taken prisoner. Non-operational accidents took the lives of thirteen squadron members.



406 Squadron was formed at Acklington, Northumberland on 10 May, 1941. Initially they were equipped with Beaufighter II aircraft, fitted with Mk 4 AI radar equipment and IFF. Fire power included four 20mm canons and six .303 calibre machine guns. The squadron’s first kill came on the night of 01 September, 1941, over the Newcastle area. Flying Officer R.C. (Moose) Fumerton and his operator, Sergeant L.P.S. Bing, won this victory by shooting down a JU88 German aircraft. In August 1943, Wing Commander R.C. Fumerton, D.F.C. and Bar, would return from the Mediterranean theatre with twelve kills to his credit and become the first Canadian to command 406 Squadron.

**Operational details of 406 Squadron are from the April 1951 issue of “The Roundel” - Vol. 3,*

AI Radar

WWII Locations of 406 Night Fighter Squadron.

May 1941 to January 1942.....RAF Acklington, Northumberland - 12 Fighter Group.
(Squadron formed 10 May 1941).
January 1942 to June 1942.....RAF Ayr, Ayrshire - 13 Fighter Group.
June 1942 to September 1942.....RAF Scorton, Yorkshire - 12 Fighter Group.
September 1942 to December 1942.....RAF Predannack, South Cornwall - 10 Fighter Group.
December 1942 to March 1943.....RAF Middle Wallop, Hampshire - 11 Fighter Group.
March 1943 to November 1943.....RAF Valley, North Wales - 12 Fighter Group.
November 1943 to April 1944.....RAF Exeter, Devon - 10 Fighter Group.
April 1944 to September 1944.....RAF Winkleigh, North Devon - 10 Fighter Group.
September 1944 to November 1944....RAF Colerne, Wiltshire - 10 Fighter Group.
November 1944 to June 1945.....RAF Manston, Kent - 11 Fighter Group.
June 1945 to September 1945.....RAF Predannack, South Cornwall. (Squadron
disbanded 1 September 1945).

One of the first RDF mechanics to join 406 Squadron was R81204, Frank E. Smith, who now resides in Parksville, BC. Appendix "A" of this essay contains highlights of Frank's diary written during WWII, with post-war inclusions to reflect equipment, aircraft and locations which were highly classified during wartime. This diary has many references to other radar personnel he worked with while involved in over three years of operational and experimental AI radar activities. Reading Appendix "A" will reveal his activities with Mk 4 AI, IFF, BABS and Mother beacons while with 406 Squadron and experiences with searchlight-equipped AI Havoc aircraft, "serrate" radar systems used on night-fighters providing coverage for bomber aircraft, the development of backward-looking AI radar by 141 Squadron and time with a Special Radar Unit, formed by 100 Group, to assist the "boffins" of TRE with various radar problems.

The following RDF (radar) personnel were posted to 406 Squadron shortly after it was formed in 1941. This list has been extracted from Frank E. Smith's diary;

04 July 1941:

R91372 Fenwick, Albert A. (RCAF), Summerland, British Columbia..
R91613 Giles, Harvey G. (RCAF), MacGregor, Manitoba.
R87916 Grain, Peter (RCAF), Westview, British Columbia.
R100042 Hutson, Neil (RCAF), Stonewall, Manitoba
R95292 Kendall, Joseph E. (RCAF), Elm Creek, Manitoba. (Note: Joe Kendall was the only original RDF mechanic to remain on 406 Squadron until the end of the war, returning to Canada as a Flight Sergeant in 1945).
R92751 Lunde, Louie (RCAF), Barons, Alberta.
R94785 Markell, Ernie (RCAF), Secretan, Saskatchewan.
R81204 Smith, Frank E. (RCAF), Qualicum Beach, British Columbia.

AI Radar

06 July 1941:

Flight Lieutenant Blachler (RCAF)
Sergeant Phil Nield (RAF)

Author's notes:

1. F/O E.H.Tull (RCAF), of Prince Rupert, British Columbia, was a Radar Officer on strength of 406 Squadron in 1941 and posted out around 15 January, 1942. Possibly replaced at this time by F/O Brian Redfern of Winnipeg, Manitoba. Brian remained with 406 Squadron until he was repatriated to Canada in August, 1944. He was replaced by F/L Jack Fenn of Fort Francis, Ontario.

2. Records also indicate that the following RAF personnel were among the first RDF mechanics on 406 Squadron;

979671 Swift, Harry A..

1024877 Sapsford, H.

3. Additional RDF personnel who served with 406 Squadron are shown in other lists in this essay.

When I joined 406 Squadron they were located at RAF Scorton in Yorkshire. During that time the Mk 4 AI radar-equipped Beaufighters proved invaluable against raids on the city of York and in the Middlesborough area. In this period the squadron accounted for eight destroyed, one probable and six damaged, including four kills and one probable in one night. An incredible score, considering interceptions were made with this early design of aircraft interception radar. We were kept busy on the flight lines and in the workshop maintaining the equipment. It was indeed a relief when a day off allowed us to get away from the airbase and hop on the train for a short break in Darlington, our nearest city. (See Appendices "B" and "C").

The squadron moved to RAF Predannack, South Cornwall, on 01 September, 1942. The airbase was located on a flat remote area, near Lizard Point, the most southerly part of England. We were surprised to see palm trees growing in the area of Helston and Falmouth, our nearest-built up areas. The runways extended to the edge of the high cliffs, overlooking the North Atlantic and entrance to the English Channel. The coves and small fishing villages were accessed from the main road by narrow trails winding down to the sea. Some very picturesque and interesting areas awaited being explored on our time off duty. The weather that fall was warm and sunny and the presence of sun tans revealed the many hours some spent on the sandy beaches.

During the time we were in Cornwall the air defence of the South Coast of England was being strengthened to protect the build-up of forces for the invasion of North Africa. The squadron had very little contact with the enemy during this period but was involved with many air-sea rescue sorties. All airmen received special arms training and spent considerable time on double-guard duty on the perimeter of the airdrome. The first week of November saw the arrival of many US aircraft and airborne troops. Within about 24 hours the airdrome was swamped with Mitchell bombers and C-47 Dakota troop transport aircraft. The mass of equipment and personnel assembled at Predannack

AI Radar

in such a short period was astonishing. I can still see the long line-up of American forces waiting for the chow line to move through the kitchen. We were awakened the night of 07/08 November, 1942, as all of the aircraft vacated Predannack. At 08:00 hrs the radio broke the news that American and British forces had invaded French North Africa at Casablanca, Oran and Algiers. Our squadron was to leave Predannack about one month later and on 09 December, we were relocated to 11 Fighter Group at RAF Middle Wallop, Hampshire.



Radar Technicians on 406 Squadron at Predannack, Cornwall, England - Sept/42
l to r: Horace (Red) Macaulay, Reginald Pope, Clyde Lattin, Howard Homan and Albert Caskey.

The airdrome at Middle Wallop was unique in that there were no paved runways - all aircraft taking off and landing on the grass. It was a very busy location as the control tower had to accommodate a couple of other squadrons in addition to 406. The radar workshop was situated on a knoll overlooking the landing area and we would often watch flights of fighter aircraft landing to be refueled. They would sweep in, two or three abreast with a second wave right on their tail. Unfortunately these events were not without mishaps and the crash tender and ambulance were often required on site. Fortunately the day fighters had gone to roost when our aircraft scrambled or took off for patrols. While at Middle Wallop the squadron also carried out a number of offensive “ranger” patrols into enemy-occupied France, resulting in attacks on 34 locomotives and several road vehicles.

The IFF equipment used to interrogate aircraft as to friendly or otherwise had an explosive charge to ensure its destruction if the aircraft crashed or landed on enemy territory. This charge could be set off by the pilot or automatically upon a crash. Crash detonation was activated by wiring the electrical circuit through a gravity switch. Setting this gravity switch required sensitive fingers to ensure that a swinging pendulum was seated in a concave fixed part of the switch. Any violent shock, such as a

AI Radar

crash or rough landing, would dislodge the pendulum and blow up the IFF. Checking the IFF after a rough grass landing required considerable caution and agile fingers. I'll never forget the time one of the radar techs had entered the rear hatch of a Beaufighter. Seconds later out from the blast and smoke of an explosion appeared one disturbed airman. As he stood up he came face to face with F/O Brian Redfern, the Radar Officer on the Squadron. Quickly preferring the aircraft blast he ducked back into the hatchway amidst the clearing smoke.

At the end of March, 1943, our squadron was moved to 12 Fighter Group at RAF Valley, North Wales, apparently to provide night attack coverage for the Liverpool area. Rumour had it that we were sent there for a rest period. Quiet it was in all respects and we remained on the Isle of Anglesey for the next seven months. During this time the squadron also had a detachment located at RAF Ballyhalbert, Northern Ireland, for coverage in the Clyde Estuary.

We were indeed out of the action and the area provided lots of fresh air and beautiful sandy beaches. Quarters and facilities were marginal and I can recall standing in snow as I took a cold shower in the open roof wash area. The food was also not up to standard which resulted in complaints from many. Generally, the RAF food was wholesome and plentiful, although lacking in variety which was to be expected under wartime conditions. This often resulted in snacking or lunching at the canteen rather than taking regular hot meals at the mess hall. This habit and irregular rest due to shift work were possibly responsible for persistent colds and general run-down conditions, especially during the cold and damp winter months. I believe my Welsh laundry-lady took pity on me as she always had a fresh egg packed in with my clean shirts. Valley has one lasting pleasant memory for me. It was at the beautiful resort town of Rosneigor, situated on the coast next to Valley, that Peggy and I spent part of our honeymoon in April, 1943.

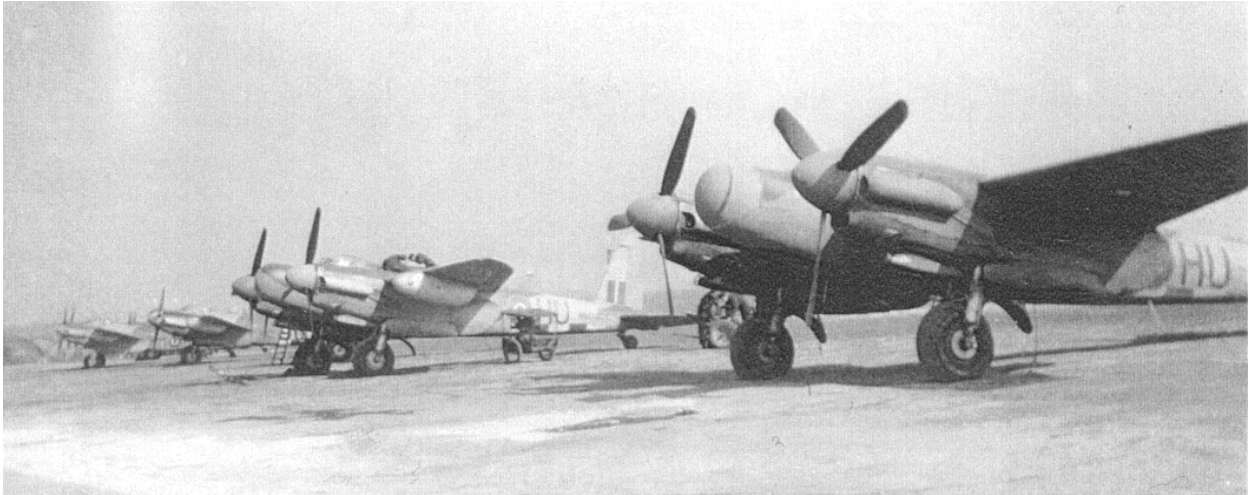
Our quarters on RAF bases were normally Nissen huts, constructed of corrugated steel which formed the roof and sides in a half circle design. This was erected over a cement pad with an access door at each flat vertical end. The huts were not heated, but did have a small cast-iron stove in the centre of the room. The ration of coke for the stove was one scuttle-full per week. Certainly not enough for a fire every evening, but it did come in handy heating up items that arrived in care packages from home, such as soup and cocoa. Scrounging additional fuel was out of the question as the coke storage compound had good security. You were considered a potential thief even to be found walking in that area. The radar technicians were normally assigned a separate hut for approximately 15-20 personnel. Single cots were provided with a felt mattress or palliasses and a bolster, two grey blankets, but no sheets or pillow cases. Rest in the daytime for the night crews was frequently interrupted with in/out traffic and you were expected to attend day parades for pay, medical, camp musters, special lectures and training classes. Each hut was wired into a station public address system, which seemed to have frequent urgent messages. This was especially so when we were at RAF Manston during the winter of 1944/45. Manston was one of the main recovery airdromes during the invasion, and many a night we were awakened with an urgent call for a certain blood type. However, there was never any binding over these calls as a trip to the hospital would probably save

AI Radar

someone's life. The ablution compound for personal washing, shaving and showering was located in a communal area, normally some distance from the sleeping quarters. Many of these facilities were rather primitive, with a long recessed cement slab and a cold water tap about every 3-4 feet. Soap was severely rationed and always a welcomed item in parcels from home. Razor blades were also difficult to find. Some of the old timers used a straight razor, but a good many had invested in the Rolls razor which came with its own stone and leather strop for sharpening.

Now, back to Valley. Bill Ireland and I were sent to No. 8 RAF Radio School at Cranwell, Lincolnshire, for a course on Mk 8 AI radar equipment. This was a four-week course, from 23 June to 24 July, 1943. The squadron was being re-equipped with Beaufighter V1's and a new centimeter radar. Things were looking up, but before continuing, let us give thanks to the Mk 4 AI. It had been introduced to the RAF in December, 1940, and was responsible for many successful interceptions and destroyed invaders.

Mosquito night fighter aircraft fitted with Mk VIII AI radar.



Aircraft are parked on the taxi strip and technicians are carrying out daily inspections (DI's) in readiness for night scrambles. (Note "Jennie" - petrol engine driven generator used to run up the radar set).

Photo courtesy of Ron Cottey

The Lynx squadron returned to 10 Fighter Group in November, 1943, and was now stationed at RAF Exeter. The squadron was back in action as the South Coast was receiving frequent visits from the Luftwaffe during the time of build-up for D-Day. The aircrews were involved in many sorties under the control of Exminster and Bolt Head. I recall one night early in 1944 when Exeter was again subjected to heavy bombing. We worked through the night attempting to re-service aircraft and get them back in the air. A visit to the city within a few days revealed the devastation and work required

AI Radar

to remove the debris. In the first half of 1944, the squadron destroyed 16 invaders, three probables and one damaged. We were relocated to RAF Winkleigh, North Devon, in April, 1944, resuming Channel patrols and carrying out ranger sorties into Brittany, adding many more locomotives to the scoreboard. By August the squadron Beaufighters had been replaced with Mosquito XXX's fitted with Mk 10 AI (SCR 720) equipment.

Radar Technical Staff of 406 Squadron - Winkleigh, N. Devon. - Summer, 1944 -



Standing (l to r): F/O Reg Labbe; T.G. MacGregor; F/Sgt Joe Kendall; Reg Gaetz;
(unknown); Bob McDowell; Wilf Lederman.
In front (l to r): Clyde Lattin; F/O Jack Fenn; Doug Long; John Lindsay; Alf Loach;
Manley Richardson; Horace (Red) Macaulay; Jim Schaffter.

AI Radar

During the time we were at Exeter one of the radar technicians became ill, complaining of loss of energy. He had a problem finding sufficient energy to ride his bicycle across the airdrome to work. There was definitely something wrong as he had been a strong, athletic individual in the group. The day he reported to the medics was the last time we saw him. He was sent to a hospital and shortly after returned to Canada where he died within months of leukemia. There had always been some talk about the possible effect on the body from exposure to short-wave radiation, one of which was the possibility of becoming sterile from continued exposure to this type of radiation. Following this unfortunate loss of one of our colleagues, the radar technicians from our squadron were sent to Exeter hospital for blood tests, but were never informed of any results. Howie Homan was a very competent and popular member of the radar section. It was a difficult task visiting his family after the war, but a pleasure to meet his wife and children and his mother.

In April, 1944, I was back in Cranwell on a Mk 10 AI course. The workshop was set up as soon as new equipment arrived at Winkleigh and in the following weeks I accompanied the Group Radar Officer to set up Mk 10 AI at other RAF stations and instruct staff on this new American centimeter radar. Before leaving the story of Winkleigh, I must mention Ron Cottey, the farmer who today owns the land that contains the airfield and what buildings remain after nearly 55 years. The farm today is known as "Gerrydown". Ron has taken an active part in collecting memorabilia, recording wartime history of the base and has placed a memorial stone on the property which was duly dedicated by the District Council, military personnel and local dignitaries on 12 May, 1995. It was indeed a pleasure for Peggy and myself to meet Ruth and Ron during a visit to Winkleigh in November, 1997.

While at Winkleigh, Wing Commander D.J. (Blackie) Williams D.S.O., D.F.C. took over command of 406 Squadron. The squadron was now fully equipped with Mosquito XXX aircraft, and fitted with Mk 10 AI. In September, 1944, we moved to RAF Colerne, Wiltshire, another base in 10 Fighter Group. The crews were busy training for a new type of work, offensive intruder flights into enemy territory. This type of operation required the fitment of additional types of radar equipment in the Mosquitoes. Monica - a tail-mounted backwards-looking radar that warned of approaching aircraft. This system had been used in bomber aircraft since early 1943. The use of Monica was later cancelled as enemy aircraft were fitted with equipment that enabled them to home on the transmitted pulse. A GEE radar navigation aid was also installed as well as airborne interrogators (Rebecca and Lucerno) that were used to locate ground Eureka sets and other beacon transponders. It was a busy period for the radar technicians as well as the aircrew becoming familiar with this new equipment. The radar workshop was set up with specialists trained on specific systems.

In November, 1944, the squadron moved to RAF Manston, Kent, in 11 Fighter Group and was taken over by another Canadian, Wing Commander R. Bannock, D.F.C. The squadron was successful in shooting down a number of V1 flying bombs and then started intruder operation over Germany on 05 December, 1944. Escorting bombers and carrying out ranger sorties as far as Prague and Vienna, the next four months the Squadron accounted for 23 aircraft destroyed in the air, 10 on the ground,

AI Radar

two probable and 23 damaged on the ground. During intruder flights the Squadron lost seven aircraft to enemy action, with 12 aircrew killed and two taken prisoner. Their last assignment was escorting naval vessels during liberation of the Channel Islands after five years of Nazi rule. Wing Commander R.G. Gray, D.F.C. and Bar, assumed command of 406 Squadron after the war ended and on the 15 June, 1945, the squadron moved to RAF Predannack, South Cornwall, where it was disbanded on 01 September, 1945. - A commendable record over the past four years and four months of action!

“Busy Radar Techs on DI Duties”



Bill Ireland



Bill Peters (with AVO meter)



Jim Wilson

The following is a list of Special Signals (Radar) personnel on 406 Squadron as of 01 January, 1943, with the date of their arrival on the Squadron;

<u>Reg. No.</u>	<u>Rank and Name</u>	<u>Arrived on 406 Sqdn.</u>
979671.....	Sergeant Swift, H.A...(RAF).....	16 June 1941
1024877.....	Corporal Sapsford, H.....”	
R98292.....	“ Kendall, J.E...(RCAF).....	04 July 1941
1502005.....	Leading Aircraftsman Dunn, A.C...(RAF).....	24 August 1941
1371810.....	“ “ Talbot, J.....”	19 September 1941
1482889.....	“ “ Thompson, S....”	10 October 1941

AI Radar

1345360	Leading Aircraftsman	Graham, D.K .	RAF	.....	24 October 1941
R74353	“	“	Black, D.E.M (RCAF) .		12 December 1941
R95824	“	“	Caskey, A.H ..	“	..... 24 December 1941
R94402	“	“	Gribben, J .....	“	..... 24 December 1941
R100400	“	“	McLean, L.R .	“	..... 24 December 1941
R99695	“	“	Hall, A.M .....	“	..... 18 January 1942
R90648	“	“	Pope, R.H	“	
R93713	“	“	Hyland, C.H ..	“	..... 08 February 1942
R94391	“	“	Lattin, C.P .....	“	..... 12 May 1942
R102620	“	“	Loach, A.G ....	“	..... 12 May 1942
R84507	“	“	Long, W.D ....	“	..... 12 May 1942
R95952	“	“	McDowall, R.J	“	..... 12 May 1942
R99068	“	“	Macaulay, H.R	“	..... 23 July 1942
R154197	“	“	Hillman, H.S .	“	..... 19 December 1942
R150859	“	“	Homan, H.J ...	“	..... 19 December 1942

The following is a list of all RCAF radar technical personnel known to have worked on the Lynx squadron;

F/L Blachler	F/O Brian Redfern, Winnipeg, Manitoba.
F/O E.H. Tull, Prince Rupert, British Columbia.	F/O Jack Fenn, Fort Francis, Ontario.
F/O Reg. Labbe, Montreal, Quebec.	F/Sgt Joseph E. Kendall, Elm Creek, Manitoba
Armstrong, George.	Lindsay, John, Cobalt, Ontario
Black, D.E.M.	Loach, Alfred, Toronto, Ontario.
Caskey, Albert, Madoc, Ontario.	Long, Douglas, Richibucto, New Brunswick.
Chisolm, Chris, Ottawa, Ontario.	Lund, Louie, Barons, Alberta.
Fenwick, Albert A., Summerland, B.C.	Macaulay, Horace R., Lr. Millstream, N.B.
Gaetz, Reginald, Bridgewater, Nova Scotia.	MacGregor, T.G., New Glasgow, Nova Scotia.
Giles, Harvey B., MacGregor, Manitoba.	Markell, Ernie, Secretan, Saskatchewan.
Grain, Peter, Westview, British Columbia.	McDowall, Robert J., Guelph, Ontario.
Gribben, James.	McLean, L. Raymond, Ottawa, Ontario.
Hall, A.M.	Pearson, Frank, Winnipeg, Manitoba.
Hart, Edward, Sackville, New Brunswick.	Peters, William.
Hillman, H.S.	Pope, Reginald H.
Homan, Howard, Killam, Alberta.	Power, W. Pendleton, Ottawa, Ontario.
Hopper, Edward, Ottawa, Canada.	Richardson, Manley J., Markham, Ontario
Hutson, Neil, Stonewall, Manitoba.	Schaffter, James,
Hyland, C.H.	Smith, Frank E., Qualicum Beach, B.C.
Ireland, William.	Wilson, James, Regina, Saskatchewan.
Lattin, Clyde P., St. Lambert, Quebec.	Wincott, Frank, Niagara Falls, Ontario.
Lederman, Wilfred, Toronto, Ontario.	

AI Radar

I am sure there are a few more names that should be added to the above list, but records I have been able to uncover and discussion with others have resulted in the above list of 42 officers and airmen. The initial build-up of personnel in the AI radar section reached full strength of approximately 15 by early 1942. This number stabilized until the fall of 1943 when additional personnel arrived and the section grew to around 20. One interesting fact is that by mid-1942 all of the personnel in the radar section were Canadian, except Cathy, our WAAF driver, who capably handled our Bedford signals van on flight line trips with replacement units and meal runs from dispersal site to the mess hall. A great crew! All personnel had to be rightly proud of their contributions to the remarkable success of the Lynx squadron.



Our squadron had been adopted by the City of Saskatoon during those dark days of WWII and a special thanks had to be extended to the ladies of this fair city. In addition to warming our hearts, their hand-knitted scarves, sweaters, socks and gloves did wonders in keeping our bodies warm as well. These items were indeed cherished gifts and I sincerely hope word of our appreciation reached them many years ago! Albert Caskey did his part in this regard as I quote from a letter he wrote to his mother on 31 December, 1941. The letter was published in the North Hastings Review on 5 February, 1942 (Madoc, Hastings County, Ontario):

“On Monday, the three of us went to the Orderly Room and received our comforts from the Red Cross. They included a Balaclava woolen cap, scarf, sleeveless sweater, woolen mitts with long wrists and a pair of extra heavy stockings, which come up to your knees. They are all very practical and are greatly appreciated by the boys.”

At the end of July, 1945, I said my farewells to 406 squadron and boarded the Duchess of Richmond at Torquay, Devon, on 12 August, 1945, for return to Canada. Peggy and Peter (our first born) arrived at Pier 21 in Halifax aboard the Queen Mary one year later. We would all celebrate his first birthday in the Yukon on 01 January, 1947. Life with radar and telecommunications was to continue until retirement from the Canadian Armed Forces in April, 1972.

A book on the life of Margaret (Peggy) Coppock and our family (Peter, Jane, Sandra and seven grandchildren) is well on its way to completion. An interesting story of a girl brought up in the village of Burgh Heath, Surrey, England, whose destiny in life would change completely upon meeting a Canadian airman on leave in London. At the time she was with the Royal Signals Corps of the British Army, working in the underground War Offices as a Sergeant A.T.S. cipher clerk. Bend an ear! She would be only too happy to recall experiences of those pioneering years in Canada.

AI Radar

The Story of two RCAF Technical Radar Officers

This story focuses on the night of 17 March, 1944, as a Luftwaffe bomber, bent on destruction, headed towards the British and American soldiers dug in on the Anzio beachhead. Not known by each other at the time, two RCAF officers, linked only by radio call-signs and radar, were responsible for the destruction of this bomber. Their story is a fine example of the ground controlled radar and air interception radar at work. Let us first review the background of these two gentlemen - William Matthew Lower and James Ritchie.

William Matthew Lower.

In May, 1941, Bill Lower was one of the 500 trainees at the University of Toronto. He was commissioned on 01 October, 1941, and attended a month Officer Administrative course at Trenton, Ontario. He then spent eight weeks at the RAF No. 31 Radio School, Clinton, Ontario, studying the intricacies of ground radar before arriving in the United Kingdom on 21 January, 1942. Following familiarization training at 73 Wing of 60 Group he was sent to the Middle East, arriving 06 May, 1942. He spent time with AMES 522 and 526 in North Africa and on 15 May, 1943, was made commanding officer of AMES 871. AMES 871 operated from the deck of a Tank Landing Craft or on the beach with the assault troops. This unit took part in Operation Husky - the invasion of Sicily on 10 July, 1942; Operation Anvil - landing in Southern France; Operation Avalanche - the landing at Salerno Beach, Italy on 09 September, 1942; Operation Shingle - the landing at Anzio beach, Italy, 22 January, 1943.

Flight Lieutenant Lower received the following award and decoration;

Mention in Despatches

871 AMES, (GCI) RAF, No.202 Group, Mediterranean Allied Tactical Air Force (MATAF) France - Award effective 1 January, 1945, as per London Gazette of that date and AFRO 337/45 dated 23 February, 1945.

Member, Order of the British Empire

No. 871 AMES (GCI) RAF, 202 Group, MATAF, Italy and the South Coast of France, operated from a Tank Landing Craft to give radar cover on the beachheads and then to operate from the beachhead as soon as it was secure. - Awarded effective 14 June, 1945, as per London Gazette of that date and AFRO 1219/45 dated 27 July, 1945. The Public Records Office Air 2/9056 contains the following recommendation for the MBE:

"This officer was posted to form No. 871 AMES in May 1943. Since that time he has worked unceasingly to build up a reputation and efficiency second to none for his unit. He has displayed an extremely high standard of technical skill and excellent

AI Radar

qualifications of leadership and initiative. The skill and high standard of the station as a whole can be attributed to his unfailing enthusiasm and example. Under his command the unit has accounted for 30 enemy aircraft”.

James Ritchie

Along with 550 others James Ritchie commenced the radio physics course in 1941 at McGill University in Montreal and on 06 October was commissioned as a Pilot Officer. He was posted directly overseas to a radar school at Prestwick, Scotland. Here he learned the technical intricacies of the Mark IV air interceptor (AI) radar. After the course he was posted as a Tech/Radar Officer on No.1457 Experimental Flight, later designated No. 536 RAF night-fighter Squadron. His duties required a number of equipment test flights and some operational flights. For these operational flights he was awarded a Radio Observer's wing by 10 Group headquarters (ref 10G / 5058 / P.2 dated 19 June 1942). On 18 October, 1942 he joined No. 600 RAF night-fighter Squadron as a Tech/Radar/Officer.

In early November, 600 Squadron was providing night cover for the invasion of North Africa and later for the landings at Sicily and Italy. During this action the Squadron accounted for well over 100 enemy aircraft destroyed. Entries in the Operations Record Book of No. 600 Squadron show that F/O James Ritchie flew on a number of operational missions as the Radio Navigator.

12 July 1943

S/L Horne (P) and F/O Ritchie (R/Nav) while operating from Malta destroyed one HE.111 10 miles S.E. of Syracuse, Sicily.

29 January 1944

F/L R.W. Hilken (P) and F/O J. Ritchie (R/Nav) obtained contact and visual on four DO 217 aircraft flying in formation... When north of Anzio after four bursts from dead astern, strikes were seen on fuselage and starboard wing. Enemy aircraft claimed as damaged. This has since been confirmed by AMES 871 as destroyed. Another contact was obtained which was identified as a DO 217 and it was destroyed at 18:10 hours south of Tiber mouth.

6 February 1944

F/L Hilkin (P) and F/O Ritchie (R/Nav) on defensive patrol from Marcinaise for GCI "PROJECT" told bandits approaching Anzio at 03:20 hours.... identified two DO 217's fired second burst 200 yards.... This was 04:15, 30 miles north of Rome. It was seen burning on the ground 5-10 minutes later.

AI Radar

Flying Officer James Ritchie received the following Award and Decoration;

Mention in Despatches

No. 600 Squadron - RAF, The City of London Auxiliary Squadron, nightfighters, flying Beaufighter aircraft equipped with Mk IV Airborne Interceptor (AI) radar covering the landings and armies in the Italian campaign. F/O Ritchie was the Squadron's technical radar officer. Award effective 14 January 1944 as per London Gazette of that date and AFRO 874/44 dated 21 April, 1944.

Distinguished Flying Cross

F/O James Ritchie was the Radio Navigator in the night fighter destruction of enemy aircraft while with No. 600 Squadron in Malta and Italy (MACAF):

7 December 1943 - one HE 111 destroyed 10 miles S.W.
Syracuse, Sicily.

29 January 1944 - two DO 217's N.W. of Anzio.

6 February 1944 - one DO 217 30 miles north of Rome.

17 March 1944 - one JU 88 north of Anzio.

DFC awarded effective 15 May, 1944, as per London Gazette dated 23 May, 1944, and AFRO 1380/44 dated 30 June, 1944.

Flying Officer James Ritchie

“This officer is of non-aircrew category but has shown himself competent to fly as observer and has always availed himself of every opportunity of flying. As a member of an operational aircrew he has participated in the destruction of four enemy aircraft, two of which were destroyed on the same night. Flying Officer Ritchie has always shown outstanding courage and coolness”.

We have now identified in detail the two outstanding Tech/Radar Officers involved in the story that centres around the night of 17 March, 1944. At that time they knew each other only as call signs as they completed the link between ground and airborne radar systems. Night fighter aircraft, with the call sign “CHINA”, from 600 Squadron were on continuous patrol over the Anzio beachhead from 18:30 hours to 20:30 hours. The radar station on the beachhead, under command of F/L W.M. Lower, detected an incoming raider. In the control room, illuminated only by the green fluorescent light from the radar screen, the radar operator/controller, with the call sign “PROJECT,” reported:

“Bandits 58 miles, angels 10, air speed 220 mph”.

“PROJECT controller to CHINA 21. Make for point 10 miles off Anzio and hold pattern”.

AI Radar

“Roger PROJECT. Experiencing strong radar jamming. CHINA 21 out”.

(W/C Styles and his radar operator F/O James Ritchie put their Beaufighter into position).

(20:40 hours). *“CHINA 21, vector north east at angels 11”.*

(20:45 hours). *“Contact PROJECT”.* (CHINA 21 calls as Ritchie picks up the incoming enemy on his radar screen and then directs Styles into visual range). *“Bandit less than two miles dead-ahead and slightly below”.* (Styles peers into the darkness and releases the safety on his fire control).

(20:50 hours). (The enemy is sighted). *“PROJECT this is CHINA 21. Tally ho, a Junkers 88. I am attacking”.*

- Another enemy aircraft destroyed -

James Ritchie rejoined Northern Electric in 1945 and after a successful career is now retired and living in Belleville, Ontario.

Bill Lower enrolled at the University of Toronto in 1945, graduating with a degree in Electrical Engineering. After a successful career as a Professional Engineer, he is now retired and lives in Islington, Ontario.

“Because they always communicated in code names, CHINA and PROJECT, neither was aware of the other’s name until many years after the war. They were the “no-name” human link that tied the ground and airborne radar systems together.”

AI Radar

ADDITIONAL AI RADAR EXPERIENCES

A search for additional stories and experiences involving RCAF RDF Mechanics during their time with AI radar has uncovered some interesting activities. But it is unfortunate that we do not have a more extensive source of information, the space to include them all in this essay nor the time left to conduct a more thorough research. When the war was over we left it all behind us and settled down to the task of preparing oneself for return to life as a civilian. Many continued their education; some returned to their old employment while others approached a new career in a new location. Yes, there were some who elected to continue life in the military!

Our memories of WW2 experiences were filed in deep cells, but not completely forgotten.. For many the time of recall would not occur until after retirement when we had the freedom to attend reunions, read those books set aside for a rainy day or devote hours for research with the hopes of maybe writing our own book.

The attached stories have been provided by the following RCAF radar personnel “who were there” to gain first hand experience. We must be grateful to them for taking time to record their experiences:

Milt Brooker, Radar Section, 219 Squadron, RAF.

Donald H. Munro, Radar Section, 219 Squadron, RAF.

Harold Wolverton, Radar Section, 151 Squadron, RAF.

John McDonald, Telecommunications Flying Unit, Hurn, Hampshire and Defford, Worcestershire.

AI Radar

Milt Brooker - Radar Section - 219 Squadron (RAF).

“My arrival at RAF Tangmere, Sussex, England, and 219 Sqdn. RDF section after a six weeks’ crash course in Mark IV gear at Cranwell Lines, took place on October 3rd, 1941. It was unheralded and unsung after spending seven days’ leave in London. This was our first official leave in England and we made the most of it. Bob Moore and I were posted to 219 from Cranwell RDF School and we were the first Canadian Mechs. to join the section. The section was under the command of F/O Dave Gwinn, a Canadian from Toronto, and the section staff was made up of English, Welsh and New Zealand men who were for the most part professional radio men who really knew their way around in the electronic world. I am referring to people like Bob Breary, Ted Brunt, Bill Markwick etc. who later on were given commissions and became the bosses in their field.”

“Tommy Watson was in the section at that time as a corporal in charge of one of the flight crews. A flight crew consisted of four erks and a corporal and there were two crews working twenty-four hours on and twenty-four hours off and believe me it was all work. The squadron had been equipped with new kites early that summer, fitted with Mark IV gear and the teething troubles, along with finger trouble, were still very much in evidence when Bob and I were posted to the section.”

“It was quite a rough time for us because the things they told us about the working of the gear at Cranwell didn't always hold true on the Squadron and we had our troubles trying to sort it all out. I can assure you that the British boys were our backbone at that time and we were truly thankful for their help and assistance in our time of need. It was a hectic time but we enjoyed it because it was new and different and always changing. As time went on more bodies were posted to the section which of course allowed us to put up larger flight crews and more mechanics in the workshop to do the servicing.”

“People like Jimmy Spooner, George Tumber, Tubby Probert and others were among this group and they were all welcomed with open arms. I am not so sure now but I think that George Holmes, Bill Hammond and Doc Lynch were the next Canadians to arrive in the section, a short time before Christmas - and what a dreary Christmas that was! We were billeted at Goodwood Race Track in the tack house for sleeping and a small building outside the main gate was used as a mess hall. I have no idea as to where they got the cooks but they could really spoil food faster than anyone else that I ever saw in the Forces. We complained of course and later on it did improve somewhat but it really never went above Grade D. I don't remember what we were served for our first Christmas dinner but I am sure that the cheer of Christmas deteriorated considerably when it was placed before us. Along with all of this, the weather man decided that after a fifty-year drought, he would give us a touch of English snow for a change and he dropped about twelve inches of the stuff on us one night. It was wet and slippery and it brought all operations to a halt for the better part of a week.”

“When the station commander got over the shock of it all, he equipped everyone on the station with a shovel and gum boots and sent them out to the runways to clear off the snow. After a couple of

AI Radar

days or more, working twenty-four hours at a stretch, he managed to mark out the station with a great black runway and a pure white background which, if the Jerries who were also socked in with snow and fog had seen, we would have really gotten a stick or two for all our work. After about two weeks or so of all this goings on, the snow disappeared, the weather got better and before we knew it the Spring flowers were sprouting and life became a little easier to live. Tangmere is situated in a rather nice part of the country, with Chichester being the closest big town. It had several pubs and a good cinema which featured vaudeville acts along with the usual film.”

“Life on the squadron settled down to a steady routine but the workload was ever increasing, also some of our newer aircraft were being fitted with Mark V gear which turned out to be not as good as our Mark IV. We tried our best to debug the stuff but it was a hopeless task and after several months of this we were ordered to move the Squadron to Acklington, Northumberland, where we refitted the aircraft with the old Mark IV. This move took place about June 17th, 1942, but George Tumber and I went on a three-week refresher course to Prestwick, Scotland, instead of going to Acklington. This turned out to be a three week holiday for us because they were giving Mark V instruction and we were not very interested as we knew that the Squadron was reverting back to the Mark IV at that particular moment.”

“Life at Acklington was more or less routine and a bit dreary due to the lousy weather, rain most of the time, the closest pubs were at Alnick about two miles away. The outstanding incident at Acklington, I think, took place one late night in the fall when Jerry raided a dummy airdrome about two miles away and burnt the place down while we stood outside our billets and watched the whole show.”

“Our next move took us to Scorton, Yorkshire, on October 21st, 1942, and it turned out to be quite a lively spot. We were still using the Mark IV gear and with fairly good results as the aircrews became more proficient in the operation of the aircraft and the radar. This is the Station where we changed from the Mark IV to the Mark VIII ten-centimetre gear in preparation for our jaunt to North Africa in the spring of 1943. Actually, the Squadron moved from Scorton to Catterick on April 26th for assembly and outfitting, including the hypodermic needles for typhus etc.. We left Catterick May 14th, 1943, for Gourock, Scotland, where we sailed down the Clyde for our destination in North Africa, which turned out to be Algiers and Hussien Bay. This was May 27th, 1943, and after three weeks of being exposed to the hot sun and dirt, we moved on to Bone, Algiers, where we picked up our new aircraft and fitted them with Mark VIII, which we had packed and shipped from Catterick, Yorkshire, back in early May.”

“Bone was one of the better spots in Africa. There was lots of fruit available which we had not seen for some years and the sand beach off the Mediterranean was out of this world. Eventually though, after getting our aircraft operational, we moved on to Sebala in the hills on August 23rd, 1943, where we became really operational, covering the activities in Italy. This is where we got our first taste of the North Africa rainy season. We were using tents and they were pitched on a side hill about fifty or sixty feet above the flat land of the airdrome. One morning about three or four o'clock

AI Radar

we were awakened by the sound of rain beating on the tent roof. It was coming down in torrents and in a few minutes it was running through the middle of the tent and "Pop's" bed which was right on the ground. Fortunately, we were able to save "Pop" Dinzey from drowning, but the rains continued day and night for the next six or seven weeks. The mud was so deep that at times the aircraft could not get off the deck."

"Eventually, on October 26th, 1943, we moved to Sidi Amor, near Tunis, and set up our living quarters (tents) in a large olive grove which helped protect us from the hot sun. This is where I became immobile from a septic ulcer on my left leg which refused to heal. On November 13th, 1943, the M.O. sent me to Carthage hospital where, for two weeks, they plastered my leg with sulphur powder until it became allergic to the stuff. They had to change the treatment to Gentian Violet, which turned the leg to a nice purple shade. After about three weeks of this nonsense, they sent me back to the Squadron with the sore still open and telling me that I would have to live with it. As a matter of interest I might add that almost half of the Squadron personnel wound up in Carthage hospital with yellow Jaundice, including our M.O., so we were very much short-handed during our stay at Sidi Amor."

"When I returned to the Squadron, I had a little conference with Cammie about my health and he decided that I should go to an American Beaufighter Squadron stationed at Tafaroui in Algeria to get a change in food and also to help them with the servicing of their Mark VIII gear. We felt that maybe a change of food might help heal the hole in the leg and the Americans certainly needed any help they could get from anyone."

"Eventually Cammie and I went to Tafaroui in a Beaufighter and I was introduced to everyone in their Radar section and also to their M.O. who went along with our idea regarding the treatment of the leg. He continued the purple treatment on it and the food was beautiful and plentiful. I think I added four or five pounds during my stay there. After assessing the serviceability of the radar I found that we needed as many pulse transformers as we could scrounge. So we flew a Beaufighter down to a Maintenance Unit near Algiers where I talked to the O/C of the unit and he let me have sixteen transformers. We returned to the Squadron with them and eventually managed to get some of the kites operational. It was a pleasant stay with the Americans and I spent Christmas with them. Roast turkey and all the trimmings. I thought about all the boys back on our Squadron and wondered how they had fared, but I found out later that they also enjoyed themselves at the Christmas table. Early in January 1944, the Americans were booked to move to Sardinia to set up for the D-Day proceedings and the Radar Officer asked me if I would like to go with them, but I said no, because I had been informed, via the grapevine, that 219 was going back to England."

"On January 10th, 1944, I returned to Sidi Amor just in time to help pack up for the return to the U.K. About January 20th, 1944, we boarded the freight train at Tunis and after a three day journey, we arrived at Algiers. On January 30th, 1944, we sailed for the U.K. and were eleven days getting back to Liverpool. On February 12th, 1944, we moved to Woodvale, north of Liverpool, and everyone was sent on disembarkation leave while the orderly room boys got all our documents

AI Radar

put together again.”

“Pop” and I decided to spend our leave in London and that almost became a disaster. About three or four days after we arrived we were out pub-crawling up around Covent Garden and about 9:30 at night Jerry decided to raid the city in that particular area. We got outside the pub and as we started across the road a fairly large chunk of shrapnel hit the cobblestones alongside us.. We ran all the way to St. James Park with stuff banging on the pavement all around us. I guess Jerry was saying hello and welcome back to London.”

“After our leave was over, we returned to the Squadron at Woodvale and there we were introduced to new Mosquito aircraft and Mark X gear, which we fitted and got serviceable after many headaches. Our moves came rather quickly at this time, moving to Honiley, Colerne and Bradwell Bay in the space of about six weeks. Bradwell Bay was our home from April 1st, 1944 to September 1st, 1944, and being situated in Sussex, it was a real nice spot. The Squadron became very active here, what with D-Day, buzz bombs and night patrols. Our Mark X gear was put to the test and on the whole it stood up remarkably well.”

“In September 1944, we moved into tents at Hunsdon. That was a sad day because I believe everyone had enjoyed the activities at Bradwell and really would have been satisfied to have remained there for the duration. Hunsdon was our jump-off point for Europe and we left on October 10th, 1944 for Glisy, France, with all new air and ground crew except the radar section, which remained with the Squadron. This was quite a shakeup and we lost a lot of good friends from the North African days.”

“Our days in Europe were pretty much routine as far as I was concerned. Some of the fellows were able to get to Paris on leave. In March, 1945, our Squadron moved from Glisy to Gilze Rijen in Holland and within the next two months I was posted to 410 Canadian Squadron. Within a week I was on my way to the Embarkation Unit at Torquay, England. On July 1st, 1945, we landed at Halifax aboard the Ile de France.”

“Thus ended my tour of duty with the Air Force which had covered the period from April 23rd, 1941, to August 22nd, 1945.”

Milt Brooker (originally from Orillia, Ontario - now deceased)

AI Radar

Donald H. Munro - Radar Section - 219 Squadron (RAF).

"I arrived in Gourrock, Scotland, on April 2nd, 1944, aboard the New Amsterdam. We went immediately to Bournemouth and, on April 13th, we were lined up for postings to various squadrons. The group I had trained with in Canada were broken up into groups of two's and three's, but not me. I was posted on my own to 219 Squadron, who were then at Colerne, Wiltshire. The next 36 hours were a nightmare."

"Everything was so different and confusing. I had just completed a rough crossing of the Atlantic where we hadn't undressed or washed for ten days. I was a million miles from home, with money I didn't understand and everything worked backwards to what I was used to. Driving on the wrong side of the road; the light switches went "down" for "on"; the beer was warm; the natives spoke with a funny accent and used words I didn't understand, like "bubble and squeak."

"I started out early the next morning on my own, with a train ticket and my lunch in a bag, and was told to report to Colerne. I had no idea what direction it was in or how far it was, and neither did anyone I asked. To complicate things I had to change stations that no one had heard of. Every time the train stopped, I got off the train and looked around to see if this was it. When I got back on again, my seat would be taken. Finally, near dusk, I arrived at the Colerne railway station. I was the only one to get off the train. I decided to phone the guard house and ask them to pick me up. Upon entering the phone booth, I was confronted with button A and B for the first time. After the usual delay, I got through to the station only to be told that they wouldn't pick up one person, especially an LAC. Walk, I was told. Somehow I made it with all my kit and through a light rain. When I checked in, the S.P. put me on charge for wearing a non-issue raincoat. He had never seen Canadian issue. I was then escorted to one of the barrack buildings and assigned a bed on the second floor. When I mentioned that I hadn't eaten since lunch time, he mumbled something about breakfast being served at 7:00 a.m."

"My next mistake of the day was to visit the Radar Section and check in. I was told it was on the far side of the airfield, at the far end, but that I could cut straight across the runways to reach it. It was almost dark, but I could still see the outline of the building when I reached it. After an hour or two, I left to go back to the barracks. The night was pitch black and the blackout was in full force. Rather than try to return by the direct route I had come by, and get hopelessly lost, I decided to follow the paved tarmac that ran like a huge oval around the outside perimeter of the runways, knowing I would eventually be able to see the outline of buildings as I came close to them, and find my bed by the process of elimination. The walk, which must have been a mile or two, seemed to take forever. I looked in a dozen buildings but never found mine. I did find an empty bed and dropped into it, exhausted, mad, hungry and homesick. When the sun came up, I found the right building, found the mess hall and reported for duty. From then on things could only get better!"

A Return Visit After The War

"In September, 1972, my wife, Babs and I were in Paris, with a spare day. We rented a car and drove to Amiens. There is a new highway running into Amiens, between the road that the airport is

AI Radar

on and the road we lived on. We drove by without seeing it, so turned around and came back and stopped at a garage. I showed a photo of the old corner where the old bombed- out garage used to be. The attendant seemed to recognize it and pointed to a road to the left, which was the old airport road. The airport is still there, but it is now a civilian flying club. Two old quonset type hangers remain, (I think they were there before). Only half of the runways are used by the small aircraft, so most of the runways are grown over with weeds. We went next to our living area, armed with pictures of the bombed- out house behind our tents, but this had also changed. The area is wild with bush and is now a Boy Scout camping area. We did find the foundations of what was probably the German mess hall, but nothing else. We then went into Boves, the town to the south of the camp. I showed pictures of the area to a local policeman, but he didn't really recognize anything.

Donald H. Munro, Burlington, Ontario.

R97945 - Harold Wolverton - Radar Technician on No.151 RAF Night Fighter Squadron.

Records show that I was posted to # 151 Squadron which was equipped with Mosquito night fighter aircraft carrying Mark10 centimetre radar. I had been a member of the radar section of #157 Squadron but I don't recall why some of us were sent to help #151 Squadron which was stationed at Colerne. Colerne was at the top of the hill north west of Bath, the famous old Roman Town. As a consequence of being so close to the famous city we spent days off sight-seeing in Bath and the surrounding countryside including Castle Coombe and the Priory.

I cannot recall where we were housed, although I think it was on the station proper. I suppose the various RAF stations used by fighter squadrons and their personnel were so much alike, that unless there was something unusual about a station it is hard to remember one from another. However, I do recall the radar section at Colerne because it was from there that the following story evolves:

For a couple of days the weather had been inclement with low fog and rain. There had not been much flying, but even when there was no flying, the radar equipment had to be kept in top notch condition. In the 'old days' when all we had was primitive RDF (radio direction finding) equipment, it was a job to keep the 'gremlins' out of the circuitry of the electrical equipment. But with the new Mark 10 centimetre radar sets carried by our aircraft, dependability was expected.

We had a much easier time providing it. As I was saying the weather had been awful, so when it came to tea time around 4 pm it was getting dark already. Most of the technicians in the section had quietly slipped away knowing there would be little possibility of our aircraft being called out except under emergency pressures. Before our administrative staff left they had to make sure some personnel remained in the section over night, as night-duty 'wallas'.

I had no plans to go anywhere or do anything special so was 'invited' to be one of the 'night-duty bods'. Some one else was dinged to be on the 'night-duty roster' also. I have a notion it was Knobby Clark. However, Knobby Clark was not one for sitting on his back-side putting in time. An hour or two later on, he proposed that, since the possibility of any pilot goofy enough to fly in that murk

AI Radar

and gloom would be in need of a head examination, two bods to guard the section was just one too many. So he was on his way to be with friends. "So-long chum, see you in the morning".

I remember thinking it was pretty quiet. The section, during the day, with airmen and airwomen moving around the shop, coming and going, made considerable noise to which we were accustomed. Being by myself writing letters with no one else around, was a strange feeling. Time did hang a little heavy with no one to talk to or with whom to argue. I was contemplating putting a mug of water on the coke heater to brew up tea, when I thought I heard the ground crew down at the 'Flights' start up the engines of one of our Mosquitos. I went to look out but could not see any action and the engines continued to be revved up. In a few minutes, sure enough, one of our Mossies went trundling by along the perimeter, past our section. When the Mosquito night fighter got to the end of the runway, the lights along the borders of the runway were switched on and through the fog and mist, two very courageous flyers went hurtling down the runway throwing up huge clouds of spray.

With skill they became airborne and soon the sound of their engines faded. Once again all became quiet in the dark wet night as the runway lights were switched off. I settled back into a state of relaxation, preparing for a few hours of sack time on an army cot, under one blanket and my great-coat.

About ten minutes after the Mosquito had taken off I just about jumped out my skin when the phone rang. I picked up the receiver and was told that the radar set in the aircraft they had just sent up had failed and I had better be at the flight office the minute 'C' for Charlie came back. It was put to me that they were not happy to send a crew up in such foul weather, only to have an RDF equipment fail, necessitating recalling the aircraft. That put me in a terrible dilemma. It was a 'court-martial offence' to leave a radar section unattended and yet here I had been ordered to appear at the flight office to answer the question, 'why doesn't the RDF work'? Believe it or not, I still, after many long years, get a dreadful feeling just reliving that event.

It is in those circumstances that one's brain goes into 'over-drive'. I was familiar with the set in that aircraft and so what could possibly have gone 'haywire' with it. Nothing that I could think of except a breakdown of some part which was natural wear-and-tear or, saying it in hushed tones, 'finger trouble'. So with those thoughts in mind and not a minute to spare, I put one of each piece, of a complete Mark 10 radar set, except parts, that I would not be able to replace by myself, into the van which I had backed right up to the door of the section.

I loaded my tool box into the van, put in an extra cable or two - ones which might have developed a fault, and scrambled around searching for a dependable flashlight. I left all the lights on full in the section. Then, quietly looked outside to see if any one was lurking suspiciously and took off down to the flight shack. I pulled the van well out of the way of wing tips of any aircraft swinging around and went to find the 'jennie'. The rain was pelting down and even the ground crew were not hanging around outside. No sooner had I prepared for what I thought might transpire than our C for Charlie came lumbering along and wheeled into the bay next to the flight shack.

AI Radar

Both operator and pilot emerged from the hatch of the Mosquito, and as soon as the operator turned to face me, I asked what was wrong with his set. He said he switched the set on and it came to life but within half a minute there was light in the video but no signal and therefore useless as a search weapon. That gave me a very good clue and so I told the riggers and engine fitters that I would go to work on the aircraft and if they would leave their duties for a few minutes I might be able to get our gear to work. They agreed and I had that 'jennie' plugged in and giving power as fast as I could manage.

I climbed into the operator's seat of the aeroplane, switched on the power and as soon as the video CRTs lit up, I went through a routine to check for a transmission and signal response. There was no signal coming from the receiver. Ah, maybe a receiver problem-- switch off-- undo the receiver, and lug it out, after undoing the big cable at the bottom and a couple of smaller ones. I didn't need a flashlight. I knew those cables so well. Down the flimsy aluminum ladder with the precious receiver and into the truck for a replacement. Back up the ladder to install the fresh replacement by attaching the cables and floor fasteners. Once done, (I hadn't switched off the 'jennie' in case the ground crew thought I was finished), I carefully went over what I had done and then switched on again. As the set warmed up a beautiful picture came back on, enough to make any radar mech develop a tear in each eye. A couple of quick tests for range and scanner and switch off.

Down the ladder and unplugged the 'jennie', asking a bloke near-by to haul the 'jennie' clear of the airplane. I rushed over to the flight shack and found the aircrew still standing around explaining what had happened. I told them I had fixed the problem and would sign for the work as OK, right now. They did not think the fault could be fixed that quickly but I told them what it was and that it could not have been predicted, but the set now was perfectly good to use. They had not even taken off their flying gear when I went into the shack, and on the spur of the moment they decided that if the bogey they had been sent to dispatch was still about, they might have another 'go' at it.

Before I got all the equipment out of the van back at the section, those two very brave officers took off again in search of the enemy which was prowling around the district above the clouds, hoping to find a hole in the cloud cover through which to send bombs down on some target they had knowledge of.

It was years later that I read in one of the War History books that a meeting of high level War Strategy Officers was slated in one of the towns in that region, perhaps Box, the HQ of #10 Group or Farnborough, both of which were not far away. So, now for the story of how our aircraft and the 10 centimetre airborne radar, along with ground station surveillance units, worked in harmony, to 'home-in' on the unsuspecting enemy bomber cruising above the clouds.

Once our night fighter was up over 2000 feet, contact was made with Ground Control. GCI (Ground Controlled Interception), a ground fixed or mobile radar station located in the general

AI Radar

area of aircraft activity. The operator of the GCI was a veteran who knew all about flying and in the case of fighter aircraft, knew very well the skills necessary to make a successful interception. In this case the GCI operator provided our crew with a vector to fly. Our pilot was given precise information as to where the bogey was, how high, range and direction to follow. The plan was to place our aircraft below and behind the bomber but down far enough in the cloud cover, so as not to be seen by the tail gunner of the bomber. Following a sufficient gain in altitude more precise information was relayed to our aircrew about the changing tactics of the bomber and assistance relayed to our airborne radar operator.

At once our crew found the target ahead of them and above, they followed, unseen by the enemy. They worked their aircraft close enough to bring their cannons to bear at the right range. All this was being monitored by the GCI stations around the countryside, but only one had assumed the right to be in contact with our Mosquito. Gradually the Mosquito crept up to an ideal range and with their onboard radar, were able to follow every turn and twist of the enemy bomber. Finally, as the pilot and operator told me later, they decided it was time, and with gun-lock switches open, rose up through the remaining cloud cover and drilled the bomber full of holes. It lost the ability to remain airborne, slowly turning on its side and disappeared down into the cloudy gloom. Our aircrew followed the bomber down for a few thousand feet but could see it was doomed and so came back to base to issue their report, and find out from civilian sources where it finally crashed..

After the Mossie landed, the telephone in our section rang again and the flight shack informed me that the crew had been successful in their venture and had brought down the 'Bogey' which had had the authorities worried for the past hour.

Then I was honoured by the Pilot and Operator coming over to the radar section to offer me their personal thanks for helping them do their job by coming to their rescue at a very critical moment. I said they were the ones who really should be given medals, for flying with such skill in abominable weather, demonstrating such fearlessness.

Harold Wolverton, Vancouver, BC.

AI Mechanics Side-tracked to ASV. - (AI RDF Mech - R101737 - John McDonald)

John McDonald of Ottawa (originally from Delburne, Alberta), was with a number of air interception (AI) radar trained RDF mechanics posted to the Offensive Section of the Telecommunications Flying Unit (TFU) at RAF Station Hurn, Hampshire. Here they would be working on air to surface vessel (ASV) radar equipment, supporting development work of the Telecommunications Research Establishment (TRE) at Worth Matravers. John would spend the next three and one half years with the TFU, which moved to RAF Station Defford, Worcestershire, in May, 1942, at the same time that TRE relocated to Great Malvern, Worcestershire. John provides the following comment:

“After arriving in Bournemouth in early February, 1942, we waited eagerly for our posting notice that came on the 5th of March. We were to report the next day to Hurn airfield which is about 10

AI Radar

miles away. Our travel arrangements were not the best. We had to take a city bus from Bournemouth to a road near Christchurch. The bus driver told us when to get off and pointed northward - "your camp is about 4 miles up that road." Of course we were laden with full kit bags, gas mask and other articles. So off we went trudging along the four miles, saying a few nasty words occasionally as the various vehicles whizzed by. Eventually we passed some huts, mess hall, etc., but the camp guardhouse was another mile away. We reported to the orderly room, left our bags, etc., and were told to go another mile to the Defensive Section. When we arrived there they were surprised to see us as they were not expecting anyone. A phone call or two were made and we were informed that we should be reporting to the Offensive Section. This group was just being formed and it was located on the other side of the field, another mile and a half to go. The staff consisted of a Canadian Officer, F/O Pullin, and three RAF aircraftsmen. The Officer was pleased to see us but not very happy when he heard we were trained on AI, but he was not going to let us go as staff was hard to get. Our group consisted of three RAF lads - Allen, Colman, Murgatroyd and four RCAF lads - Cecil Scott, Bernard Minson, W. Thurgood, and myself."

"Canadians in the Offensive Section were not too happy with their lot. So sometime in May we decided to meet in London and go to RCAF Headquarters and complain. After stating the problem that we were AI trained and now working on ASV radar, the suggestion was made that maybe we should have ASV training or be transferred elsewhere. This did not sit too well with the Officer who saw us, so he asked us to leave the room, except Bernard Minson". A few minutes later Bernard came out and said: "Let's go and accept our fate. If we complained further we could be charged."

AI Radar



**ASV Technicians at RAF airfield Hurn, on way to Bournemouth, May, 1942.
L to R: John McDonald, Abe Playfoot, Bernard Minson, Cecil Scott.**

Photo courtesy of John McDonald, Ottawa, Ontario.

Author's Note: The next page is a commemorative to our colleague, Bernard Minson, who lost his life at Defford while carrying out flight testing of radar equipment in a USAF Liberator aircraft.

AI Radar

In Memory of
BERNARD RICHARD MINSON
Sergeant
R/90624
Royal Canadian Air Force
who died on
Wednesday, 24th November 1943. Age 27.

Additional Information: Son of Charles and Mary Minson, of West Brompton, London.

Commemorative Information

Cemetery: PERSHORE CEMETERY, Worcestershire, United Kingdom

Grave Reference/
Panel Number: Plot Q. Grave 390.

Location:

Pershore, on the River Avon, is a market town 8.5 miles south-east of Worcester. The cemetery is two and a half miles south-west of the railway station, on the Cheltenham road. It contains war graves of both world wars.

Historical Information:

During the 1939-45 War there was a Royal Air Force Station at Pershore. In the early days of the 1939-45 War a special section in the far right-hand corner of the cemetery was set aside by the local authorities for service graves, and 60 of the burials (including all the Canadians) are in this war graves plot. At the northern end stands the Cross of Sacrifice between two Canadian Maple trees, taken from a number sent from Canada as a gift.



Commemorative Information courtesy of Veterans Affairs, Canada

This photograph of **Bernard Minson** was taken in the Public Gardens of Bournemouth, England, in January, 1942. On 5th March he was posted to the Offensive Section of the Telecommunications Flying Unit at RAF Station Hurn. This Unit was moved to Defford on May 24th, 1942. Both these stations provided flight testing for the Telecommunications Research Establishment at Worth Matravers, Dorset and at Malvern, Worcestershire.

Bernard was a RDF Mechanic (Radar) with the RCAF and attached to the RAF. He was originally trained on Air Interception radar (AI) and later employed on Air to Surface Vessel radar (ASV), which included H2S (bomber's eye) as developed at Malvern and flight tested from the airfield at Defford.

Bernard lost his life at Defford while carrying out flight testing in a USAF Liberator.

AI Radar

APPENDIX “A”

WW II Diary of Frank E. Smith - R81204

Introduction (compiled from notes by and discussion with Frank E. Smith)

Frank E. Smith hailed from the Qualicum Beach area when he joined the Royal Canadian Air Force on 29 November, 1940. He was one of the LAC “A” group ‘direct entries,’ recruited for the potential pool of RDF mechanics in response to an urgent request from the British Government. At that time he held an Amateur Radio License - VE5AGQ. Initial radar training was received from the Royal Air Force at Prestwick, Scotland, in June, 1941, and then he was posted to a Canadian night-fighter squadron - No. 406, located at Acklington, Northumberland. Here he gained experience on the Mk 4 air interception radar(AI), identification friend or foe equipment(IFF), beam approach beacon system (BABS) and the homing beacon (MOTHER).

While at Acklington he joined Flight 1532, which consisted of “Turbolight” Havoc aircraft (American Boston) fitted with searchlights and used with Hurricane aircraft in a night-fighter role. This configuration had a short life due to a number of problems. The Mk 4 AI-equipped Havoc was fitted with a bank of accumulators in the bomb bay which could only deliver approximately three minutes of power to the searchlight. The unarmed Havoc relied on the Hurricane to quickly close and shoot down the illuminated invader. A good theory, but by the time the slower- accelerating Hurricane could manoeuvre into position, the enemy tail gunner had doused the Havoc’s searchlight.

On 28 June, 1943, Frank was posted to 141 Squadron at RAF Wittering. This was a night-fighter squadron flying Beaufighters and was the first squadron to be fitted with the “serrate” radar system. Serrate was one of the systems which resulted from the monthly meetings between the “boffins” of Telecommunications Research Establishment and Field Commanders. The German night-fighters were taking a heavy toll of our bomber force. They had developed an AI radar system operating on a frequency of 600 Mhz with a lazy-H antenna installation that produced an exceptionally narrow beam. The radar section of 141 Squadron designed, developed and fitted a system in the Beaufighters which utilized a converter box that allowed the German radar transmissions to be picked up on the Mk 4 AI receiving system. Our night-fighters would fly with the bomber stream and allow the German night-fighter to “home” on our night-fighter. In the “serrate” mode our radar navigator would watch the signal from the rear approaching aircraft and when within enemy firing range he would switch to the AI mode and the pilot would execute a rate one-quarter turn and dive. The enemy’s radar contact would be lost immediately due to their narrow beam radar and hopefully the Beaufighter would quickly vector onto the German night-fighter for the kill. The serrate system proved most effective but did require an experienced navigator and change in night-fighter tactics once the enemy understood the serrate system. It is interesting to note that the Squadron Commanding Officer was the famous night-fighter pilot, Wing Commander J.R.D. Braham, DSO,DFC and AFC. He was promoted to the rank of Group Captain in the fall of 1943 and worked at 100 Group HQ. Post war he joined the RCAF as a Wing Commander at RCAF HQ in Ottawa.

AI Radar

Frank also mentions that the radar officer and the non-commissioned officer on 141 Squadron were decorated as the result of work on the serrate system - RNZAF Flying Officer Pollard received the OBE and RAF Flight Sergeant Coker received the Oak Leaf and Cluster decoration.

By the end of 1943, 141 Squadron converted to Mosquito aircraft and had moved to RAF West Raynham, Norfolk. It was here that squadron radar personnel developed and installed backward-looking AI radar. Major problems were encountered due to the restricted space in the tail of a Mosquito. The mounting of antennae on the wooden skin of the aircraft required considerable time in the development of proper counterpoise, which finally was solved with the use of metallic paint. Eventually there were three Mosquito night fighter squadrons using the “serrate” radar system.

Other Canadian radar technicians on 141 Squadron included Jack Sherman (Toronto), D.F. Parkhill (Toronto), Jack Warner (B.C.), John Mains (B.C.), John Parsons (B.C.), John Kendrick (Montreal), “Mac” McDonald (Manitoba), “Mac” Switzer (Toronto), Ed Simmonds (Edmonton), and Bill Nettleton (Saskatchewan).

In the spring of 1944 Frank was posted to a special radar unit formed by 100 Group. This unit was headed up by his old boss, now Flying Officer Pollard, and the staff included an RAF Flight Sergeant and two RAF Corporals in addition to himself. Their job was to investigate radar problems within the operational squadrons and develop modifications to correct problems where necessary. As he has stated “this was probably my most satisfying posting in WWII”.

Frank was released from the RCAF at Jericho Beach, BC, on 29 August, 1945, and enrolled at the University of British Columbia for Academic Year 1945/46. After receiving his Electrical Engineering Degree, he continued studies at UBC on a National Research Council Scholarship and later received a Masters Degree in Applied Science. He then commenced work on staff with Defence Research Board in the Electronics Research Laboratory in May, 1951. An interesting career followed, with work at Valcartier on CARDE’s Velvet Glove Missile Project; development of electronic counter-counter measures for the North American Air Defence System; work-related projects with the Massachusetts Institute of Technology and Queen’s University, where he taught for a period in 1964/65. At the time of his retirement from the Public Service in 1978 he was the Director of Radar Research in the Federal Department of Communications. He continued working in the Ottawa area as a private consultant for the next 17 years.

I don’t believe the word “retirement” exists in Frank’s future plans as during a recent conversation he talked about continuing work with Queen’s University. This summary covers the highlights of rewarding experiences as a radar technician during WWII and reveals valuable contributions to Canada as a research scientist during many years in the Public Service. We are grateful that he has permitted us to include highlights of his diary of WWII experiences, which is attached.

Horace R. (Red) Macaulay/2000

AI Radar

APPENDIX "A" (continued)

Highlights of WWII Diary-(CAN R81204) - Frank E. Smith (RCAF).

(Note: All addresses are pre-war, except where otherwise indicated).

- Nov 29,1940.... Join RCAF as LAC "A" Group (thanks to Amateur Radio License VE5AGQ).
Jan to Apr,'41....Posted to Temporary Embarkation Depot, Debert, N.S.
April, 1941..... Join convoy of 42 ship at Halifax, N.S., and board the (Armed Merchant Cruiser) A.M.C. DERBYSHIRE.
May 7,1941.....Arrive at Reykjavik, Iceland and travel to RAF "HELGAFEL" Camp.
May 18,1941.....(a) Arrive Greenoch, Scotland.
(b) Travel by train to RAF Station WEST KIRBY.
(c) RAF Trade Test Officers examine all potential RDF Mechanics.
Jun 6, 1941.....Start AI MK 4 Course. Other course members include:
C.V. MARTIN (RCAF)--R82553, 30 Fourth Ave., Ottawa, Ontario.
HARVEY G. GILES (RCAF)--R91613, MacGregor, Manitoba..
JIM K. KINNEAR (RCAF) -R97813, 2262 E.33 Ave. Vancouver.
LOUIE LUNDE (RCAF)--R92751, Barons, Alberta.
ERNIE MARKELL (RCAF)--R94785, Secretan,Saskatchewan.
J.E. KENDALL (RCAF)--R95292, (Address in England)), 3 Crayford Terrace, Ham Hill, Snodland, Kent.
NEIL HUTSON (RCAF)--R100042, Stonewall, Manitoba.
PETER GRAIN (RCAF)--R87916, P.O. Box 10, Westview, B.C.
ALBERT A. FENWICK (RCAF)--R91374, RR#I, Summerland, B.C.
Jul 4, 1941.....LOUIE LUNDE, ERNIE MARKELL, J.E.KENDALL, HARVEY GILES, NEIL HUTSON, PETER GRAIN, ALBERT FENWICK and FRANK E. SMITH posted to 406 Sqdn., Acklington,Northumberland.
Jul 6, 1941.....406 Sqdn Radar Officer is F/LT BLACHLER (RCAF) and the Radar Section SGT. is PHIL NIELD (RAF).
Jul 13,1941..... Install IFF Beacon with CPL MORRIS UREN (RAF) and PETER GRAIN.
Aug 1,1941.....CLIFF SHARP and FRANK SMITH assigned task of installing TX and RX aerials for the 406 Sqdn Radar Workshop.
Aug 28,1941....Worked on VHF sets with CPL SMITH (RAF).
Sep 4,1941.... On Night Duty with BILL MACKEY. 406 Sqdn credited with first confirmed Jerry "kill".
Oct 3,1941..... 406 Sqdn CO W/C MORRIS (South Africa, RAF) obtains two confirmed "kills" in "P" for Peter.
Oct 4,1941..... Jerry starts to bomb York. FRANK SMITH, ALBERT FENWICK and ART

AI Radar

DOWNES sent to Scorton to service AI, IFF and install beacons for three Beaufighters of 406 Sqdn to meet this threat.

- Nov 1,1941.....New Canadian RDF type arrives on 406 Sqdn.,GEORGE ARMSTRONG from Vancouver,B.C.
- Nov 29,1941....Instructing JOE TALBOT on the maintenance and aligning procedures switch motors.
- Dec 2,1941....Adjust aerial coupling on beacons with F/0 TULL (RCAF), from Courtenay,B.C.
- Dec 10,1941....PHIL NIELD receives his commission.
- Dec 29,1941....P/0 FIRTH and SGT. HARDING credited with a "kill".
- Jan 7,1942....Reported to 1460 Flight. Inspected Havoc a/c with "Turbolite" and MK 4 AI installation.
- Jan 10,1942....Working on "Mother" Beacon with F/0 TULL.
- Jan 15,1942....Bade farewell to F/0 TULL and JOE ALLEN. New Canadian Radar Mechanic, BOB HORNE, arrives 1460 Flight.
- Jan 16,1942....PETER GRAIN posted to Swanedge.
- Jan 22,1942....Instructed new Canadian Radar Mechs on Radar installations in the Havoc a/c.
- Jan 30,1942....406 Sqdn departs for Ayr, Scotland. Bade farewell to CPL MORRIS UREN, JOE TALBOT, JOCK DUNN and NEIL HUTSON.
- Apr 17,1942...Examined GL(Gun Laying) Radar with HARVEY GILES and RAY HILL(RCAF).
- May 22,1942...Viewed display of captured German a/c equipment.
- May 26,1942...Arrived in Prestwick for AI MK 5 Course.
Met AL ORR of 1451 Flight and visit with LOUIE LUNDE (406 Sqdn Ayr).
- Jun 16,1942....Final examinations for Mk 5 AI course.
Visit with CPL WALTON, REG HILL and JOE ALLEN.
- Jun 18,1942....Arrive back at Acklington.
Discussions with P/0 WATERS and recently promoted SGT SMITH (RAF).
On Flap with JIMMY WALTON and DAVE RAINEY.
- Jun 21,1942....Started RAF "Backers Up" Course.
- Jun 28,1942....Looked over installation of MK 5 AI in one of 219 Sqdn's Beaufighters.
- Aug 1,1942... ROY WYLIE posted from 410 Sqdn(Canadian Night Fighter Sqdn),
CO W/C HILLOCK-Toronto,Ont. -Mosquito a/c to 219 Sqdn.
- Aug 21,1942... Air test of radar equipment in a/c "Z" with operator SGT JOLLARDS and pilot P/O WALLACE.
- Aug 29,1942....All Canadian Radar Mechs undergo Trade Tests for- "A" Grouping.
- Sep 9, 1942....1460 Flight receives seven new Hurricanes and becomes 539 Sqdn.
- Sep 29,1942.... Met our new Canadian Radar Officer, F/0 IRWIN.
- Oct 7,1942.... Bade farewell to BOB CAPSON, HOWARD OVEREND, JIM WALTON,
JACK RICHARDSON and NORMAN MARCHMENT.
- Dec 1,1942.... Two new chaps arrive; LAC SAMSON (RCAF), and LAC F. NORRIS -
R85951, 35 Lockwood Road, Toronto, Ontario.

AI Radar

- Jan 17-1943... .Checking out "Mother" beacon with GEORGE BEW.
Jan 23,1943.... Official announcement that 539 Sqdn is to be disbanded.. Talk by
C0, S/L MORTON.
- Jan 30,1943... .Returning 539 Sqdn radar test equipment and Workshop equipment and parts to
Station Stores.
- Feb 2,1943.... 410 Sqdn Radar Workshop moving into the 539 Radar Workshop.
- Feb 8,1943....Bade farewell to HARVEY GILES, ALBERT FENWICK, JACK DOWD and
KOPELOW.
- Feb 10,1943....Reported to 410 Sqdn (CO, W/C HILLOCK, Radar Officer F/0 IRVINE
PAGHIS (RCAF).
- Feb13,1943....Received notification of posting to 68 Sqdn.,Coltishall.
- Feb 17,1943....Meet 68 Sqdn Radar Officer, F/0 MONTGOMERY and Section NCOi/c, F/SGT
LEONARD. Introduced to new centimetric radar installed in Beaufighter a/c.
Meet the following Radar Section personnel:
LAC FRED NORRIS (RCAF)-R85951 -Previously with 539 Sqdn..
LAC "DAVE" D.T. JONES (RCAF), 2610 Cook St., Victoria,B.C.
(Operator of Amateur Radio VE5ACE).
LAC CYRIL SMITH (RAF), 25 Rotherham Road, West Melton,
Nr. Rotherham, Yorks.(Operator of Amateur radio Station G3YA).
LAC AL CLARKE.
- Feb 23,1943....Meet CPL "BOB" R. NICHOLL (RCAF)-RI33625 (English address) 3058 S.
Echelon, Coleby Grange, nr. Lincoln, Lincs., and LAC CHARLES CHADWELL.
- Mar 23,1943....Meet DAVE PHILIPS, a Radar Mech with the ROYAL NAVY. Look over
remote control system in Swordfish a/c belonging to the Fleet Air Arm
Detachment at Coltishall.
- Mar 24,1943....Work on ASV switchmotors with DAVE PHILIPS.
- Apr 6,1943....Work on Blind Approach Beacons with American and English Officers.
- Apr 13-18'43...Work on "BABS"(Blind Approach Beacon System) with JIM BACH and
American Signals Officer 2nd LT. VINCE SPAHR.
- Apr 25,1943...Meet SHQ Signals Officer, F/0 MASON.
- Jul 2,1943...Worked on " GEE " with DOUG PARSONS (RCAF) -R101327. W.D.
PARSONS, Ganges, Salt Spring Island, BC.
- Jul 7,1943.... Discussion with F/SGT COKER.
- Jul 11,1943.... Worked on aerial systems with (a) LAC MOORE, (b) LAC LLOYD
MACDONALD (RCAF)-R147933, Box 109, Springside, Saskatchewan and (c)
LAC JOHNNY MAINES (RCAF)-R92851, J.J. MAINES, 1636 West 11th ,
Vancouver, B.C.
- Aug 2,1943.... Discussed Radar information with chaps who are scheduled for Trade Tests at
RCAF HQ, London.
- Aug 8,1943.... Discussion with CPL N. BICHENO (New Zealand)-NZ405635, 12 Shorell Street,
Sandringham, Auckland, New Zealand.

AI Radar

- Aug 18, 1943... 141 SQDN dispatched 10 Beaufighters installed with SERRATE Radar on the 17/16 Aug. RAF bombing raid on Peenemunde. 141 is credited with four German fighters destroyed. (This entry is not from the diary of F.E. Smith, but from the book "The Peenemunde Raid" by Martin Middlebrook. Paperback edition was published by Penguin Books in 1966).
- Oct 1, 1943.... First flight in 141's new Mosquito a/c to operate the new "Target" Serrate beacon for Night Flying Tests. Pilot was F/LT FORESHAW (RAF).
- Oct 24, 1943.... CHUCK NORMAN and TOMMY FORD receive postings.
- Nov 1, 1943.... Went over circuit diagrams with (a) JOE SPENCER (RCAF) and (b) "MAC" SWITZER (RCAF)-R156334, M. SWITZER, 295 Grace Street, Toronto, Ontario.
- Nov 11, 1943.... Worked on "GEE" equipment with GRAHAM YATES (RCAF).
- Nov 25, 1943.... Finished mathematics portion of British Institute of Engineering Technology (BIET) course. (Note; Courses on mathematics, physics and electromagnetism were offered by BIET during WW II. The BIET Certificate qualified one for "The City and Guilds" level of technical achievement).
- Nov 27, 1943.... Discussions with (a) JACK SHERMAN (RCAF), (b) BILL NETTLETON (RCAF), (c) DOUG PARKHILL (RCAF)-R165256, D.F. PARKHILL, 89 Orchard View Blvd., Toronto, Ontario.
NOTE: DOUG became ADMR (Assistant Deputy Minister of Research) for the Department of Communications, Canada, in the 1970's, a post he held until his retirement.
- Dec 3, 1943.... 141 SQDN departs from Wittering and moves to West Raynham, Norfolk.
- Dec 7, 1943.... Travel to Little Snoring with Station VHF Corporal and Station Signals Officer to install "MOTHER" beacon.
- Dec 21, 1943.... Working on Junction Box for "Backward Looking AI" modification.
- Jan 13, 1944.... Worked on "SQUEGGERS" of 239 Sqdn with FRANK HIGGINS.
- Mar 7, 1944.... Bade farewell to 141 and 239 Sqdns, Radar Mechanics and moved to 169 Sqdn at Little Snoring. See BOB SIMONS again and meet STAN POOLE.
- Mar 8, 1944.... Meet the 169 Sqdn Radar Officer, F/O HICKSON (RCAF). Work with DOUG PARSONS and JOHNNY MAINES again. SIMONS, MAINES and PARSONS were on 141 Sqdn at Wittering.
- May 22, 1944... W/C BROMLEY (CO 169 Sqdn) credited with a "kill".
- May 25, 1944... On Flap with NORMAN SLOW.
- May 31, 1944... On Flap with Fred Smith.
- Jun 1, 1944... Plotted course to Mildenhall. Flew in Oxford a/c with P/O TIDY and W/O GILES to gain practical experience flying with "GEE" equipment.
- Jun 3, 1944... 169 Sqdn moves from Little Snoring to Great Massingham.
- Jun 7, 1944.... Travel to West Raynham for discussion with (a) F/O SMITH-BOWER (RAF) (b) SGT TED STEVENS (RAF) (c) CPL JIM BOW (RAF) (d) CPL TED COLBOURNE (RAF).

AI Radar

- Jun 8,1944....F.E. SMITH (RCAF) is to join the Special Radar Unit, to be headed by F/0 POLLARD along with SGT STEVENS, CPL BOW and CPL COLBOURNE.
This unit will be called The 100 GROUP RADAR POOL.
- Jun 10,1944....Setting up 100 GROUP POOL Radar Section at West Raynham.
- Jun 22,1944....Discussed new aerial systems with F/0 HICKSON and electro-biology with P/0 GRAY.
- Jun 24,1944....SGT STEVENS and F.E. SMITH visit Swannington and Oulton. Picked up radar equipment and looked over American MK. 10 AI gear.
- Jun 28,1944....Two trips to Swannington with SGT STEVENS.
- Jun 30,1944....Worked in 100 Group Radar Pool.
- Jul 4,1944.... RF Unit Calibrations at Great Massingham.
- Jul 6,1944.... Discussions with T.R.E. "boffins" at Great Massingham.
- Jul 7,1944.... Modifications to SERRATE equipment carried out at Great Massingham.
- Jul 9,1944.... Worked with 100 Group Maintenance Party.
- Jul 11,1944.... Worked on Resonant Cavity Wavemeter in 141 Sqdn Radar Workshop.
- Jul 14,1944.... Discussed plans for the construction of a V.T.V.M (Vacuum Tube Voltmeter).
Rearranged layout of the West Raynham 100 Group Radar Pool.
- Jul 24,1944.... Bade farewell to RON HATCH (RAF). R.S. HATCH, 114 Waterloo Road, Ashton, Preston, Lancs.
- Jul 26,1944.... Complete construction of 100 Group Radar Pool V.T.V.M. Discussion with F/0 POLLARD.
- Jul 29,1944.... Finish construction of V.T.V.M. probe and test frequency calibration up to 50Mhz
- Aug 1,1944....Visited 100 Group HQ with F/0 POLLARD and SGT STEVENS. Visited Oulton.
- Aug 3,1944.... Assisted 169 Sqdn at Great Massingham on an IFF problem.
- Aug 5,1944.... Worked on Beaufighter aerial installation and also worked on Anson a/c Radar System.
- Aug 6,1944.... Worked at 141 Sqdn Radar Section.
- Aug 8,1944.... Worked on 141 Sqdn a/c and finished installing new aerial system on MOSSIE 6.
- Aug 10,1944... Visited North Creake, Little Snoring and Swannington with SGT STEVENS.
- Aug 12,1944... Worked on 141 Sqdn a/c. Helped SGT TED STEVENS carry out IFF system modifications.
- Aug 13,1944... Travelled to Foulsham, with Dutch Officer F/0 SMALS. Traveled to Walsingham, Little Snoring and North Creake with SGT STEVENS.
- Aug 14,1944... Modifying CHL Modulator. CPL N. BICHENO (141 Sqdn.) notified of repatriation to New Zealand.
- Oct 18,1944... Worked on RF Wattmeter and 720 Signal Generator. A.S.H.(Airborne Search and Homing) gear arrives at 100 Group Radar Pool.
- Oct 20,1944... Travelled with F/0 POLLARD and SGT STEVENS through Kings Lynn, Holbeach, Grantham, Nottingham, Derby and Stafford.
- Oct 21,1944... Collected radar- equipment at 16 M. U. and returned to West Raynham.
- Oct 22,1944... Working on A.S.H.

AI Radar

Oct 25,1944... Notified of repatriation to Canada.
Oct 27,1944... Travelled to RCAF "R" Depot Warrington.
Oct 31,1944... Visit Warrington with AL LYONS, DAVE RUMBLE and ART WILLIAMS -
R75916, A.A. WILLIAMS, 190 Sheridan Street, Brantford, Ontario
Nov 6,1944.. .Discussed post-war activities with personnel counsellor F/LT LIND.
Nov 6,1944... Left Damhead Hall for Liverpool and boarded the troop ship ANDES.
Nov 17,1944... Arrived in Halifax and boarded the train for Vancouver, with a stop-over for a
public reception in Ottawa.
Nov 23,1944....Arrived in Vancouver.
Dec 31,1944... .Received telegram to report to #5 Radio School in Clinton, Ontario for RR#1
(Radar Repatriation Course #1).
Jan to Mar'45...RR#1 Course on various airborne and ground radar equipments, plus radar
navigation systems.
April, 1945.... Posted to RCAF Station Comox, B.C.
May to Aug'45..Prepare course and teach LORAN Navigation System to other Radar Mechanics
at Comox.
Aug 29, 1945...Discharged at Jericho Beach, Vancouver, B.C.

General Comments: There is no mention of classified material in my WWII Diary in accordance with wartime regulations, however, there were enough remarks to freshen my memory and now that all the information has been declassified I have taken the liberty of mentioning certain specific equipments by name.

In any case, the main emphasis is upon the Radar personnel encountered during my WWII RCAF career and upon the squadrons served. Hopefully, the dates and places along with the personnel involved will be of some interest.

The word "discussions" is meant to convey the exchange of technical information at a rather detailed and significant level. In a few entries the discussions concerned poetry, literature or, in one case, E.S.P.(Extrasensory Perception). However, for the most part technical discussions were involved.

Frank E. Smith,
166 Pheasant Place,
Parksville, B.C.
V9P 1M5

August 15, 1993.

AI Radar

APPENDIX "B"

406 Squadron Daily Routine Orders

(11 July 1942)

Following is an excerpt from daily routine orders dated 11 July 1942 at Scorton, Yorkshire, England:

SQUADRON ROUTINE ORDERS

by

Wing Commander D.G.Morris, DFC

Commanding

No. 406 Squadron, RCAF. SCORTON.

Serial No 111

Page No 1

Date 11.7.42

1. *As a result of the successful operations carried out on the night of 7/8-7-42 the following congratulatory messages have been received.*

The combined efforts of all members of 406 Squadron made possible the excellent score achieved on that night, and all have merited the kind congratulations extended to the Squadron as a whole.

(i) *From Secretary of State, (Sir Archibald Sinclair)*

"CONGRATULATIONS ON YOUR GOOD HUNTING LAST NIGHT."

(ii) *From Headquarters Fighter Command*

"WELL DONE 406. THAT IS THE WAY TO CRACK THEM DOWN."

(iii) *From A.O.C. No. 13 Group.*

"A GOOD NIGHT'S WORK. CONGRATULATE W/C's MORRIS, STOCKDALE, P/O's HARRISON AND LAWRENCE, CREWS AND CONTROLLERS CONCERNED."

(iv) *From 410 RCAF Squadron.*

"CONGRATULATIONS FROM 410 SQUADRON."

Telephone messages and congratulations have been received from:-

Brigadier Patrick, 43rd/A.A. Brigade.

The Commandant, 9th Observer Corps Area.

W/Cdr. V.S.Bowling - R.A.F. Station, Ayr.

W/Cdr. P.Y.Davoud - 409 Squadron, R.C.A.F.

F/Lt. Nendick - R.A.F. Stn. Ayr.

and others.

(DRO entry courtesy of Raymond McLean, Ottawa).

AI Radar

APPENDIX "C"

Following is an extract from **WINGS ABROAD**, the Official R.C.A.F. Newspaper.

London, Wednesday, July 15, 1942

R.C.A.F. NIGHT FIGHTERS GET BAG OF FIVE

Wing Commander Morris adds One More to His Score

Stalking five enemy raiders over the North East Coast of England one night last week, a Royal Canadian Air Force night fighter squadron shot them out of the sky. It was the most successful nocturnal operation the squadron has had since it was formed.

The South African Wing Commander of this R.C.A.F. Squadron, D. G. Morris, D.F.C., set the pace for the rest of his twin-engined Beaufighter fliers. He brought down a Dornier 217 medium bomber, which brings the total number of victims of his sharpshooters up to five.

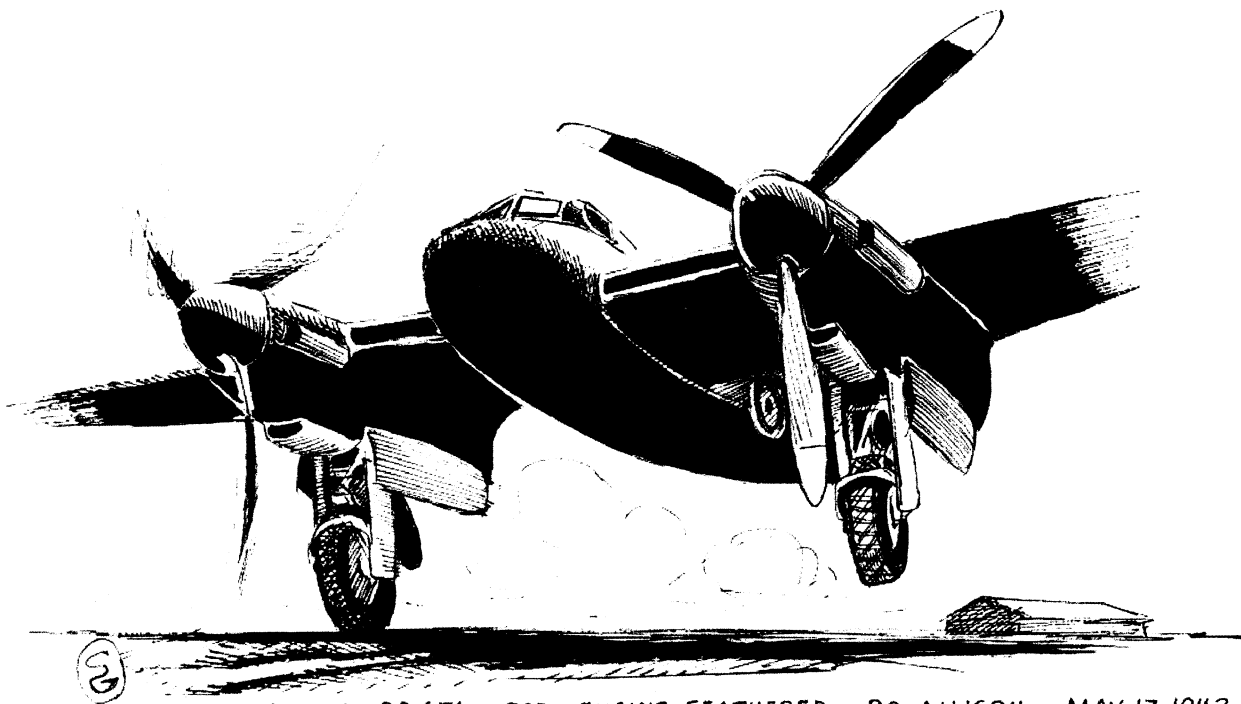
There were quite a few curious and characteristic points about the other night's combats. The Wingco, after his fashion, got in close, and with a burst of less than two seconds blew his target into so many minute pieces that he came back a mass of dents from flying debris. Later on in fact, on the ground, he picked a six-inch square of fuselage out of a blast tube and seemed pretty happy when he found he could still smell German petrol on it. P/O Rix, D.F.M., the Wingco's running mate, coincidentally celebrated his birthday at 2 a.m. and it was in the next few minutes that the Wingco and he got their Jerry.

P/O George Arthur Lawrence, 24-year-old pilot from Brandon, Man., scored his second victory. His first was on the night of April 28-29, when, flying with his observer, Sgt. N. J. Wilmer, he shot down a Junkers 88. In his latest exploit, Lawrence manoeuvred to close range to launch a stern attack. "I fired two short bursts," he explained. "After my second attack I saw a flash from the enemy's starboard engine. The aircraft went into a flat spin from a height of 8,000 ft., and was still spinning when I lost sight of it."

An R.A.F. flight Commander, W/C G. G. Stockdale, just advanced from Squadron Leader to Wing Commander, celebrated his promotion by shooting down another Dornier 217. A short burst from his guns was enough to set the Dornier on fire. It crashed into the sea in a vertical spin with burning pieces falling off in all directions. The fourth German raider fell to an R.A.F. member of this Canadian squadron, P/O Harrison, who in a pair of combats scored two. Although he came back without a mark on his kite he had what was probably the weirdest cannon stoppage of all time. A cartridge entered the chamber and left the bullet behind on a panel, and the cartridge did not fire. The unit has been in the process of "Canadianisation" for some time, and is now largely composed of Dominion personnel. It is the unit which provided the first operational activity for F/L "Moose" Fumerton, D.F.C. of Fort Coulonge, Que., who since has been active in the Middle East and Malta. The night's operation swelled the total bag for the squadron up to 12 enemy aircraft destroyed. Messages of congratulations on the night's fine work were received from many sources, including the Secretary of State, Fighter Command and Group. There was also one from W/C Davoud, commanding officer of another R.C.A.F. Squadron.

(This article courtesy of Raymond McLean, Ottawa)

AI Radar



MOSQUITO DD 631 - PORT ENGINE FEATHERED - P.O. ALLISON - MAY 17 1942.

Drawing by Sidney C. Goldsmith