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TOUCHDOWN

THE AUSTRALIAN NAVY AVIATION SAFETY AND INFORMATION MAGAZINE

NAVY

FLEET AVIATION SAFETY CELL

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Foreword

CMDR NICK YOUSEMAN, RAN
DIRECTOR NAVY SAFETY SYSTEMS

PAST, PRESENT AND FUTURE

"Second only in beauty and perfection to the aerodynamic shape of a Chipmunk was the airport manager's daughter."

Thus read my Midshipman's journal in 1974, describing a 'flying camp' in the South of France. No, I was not comparing the airport manager's daughter to a small striped squirrel; instead I was describing the single-engined DHC Chipmunk, a tandem 2 seat trainer aircraft in use at the time with the Royal Navy. In writing this foreword for Touchdown, and in the best interests of the readers, I thought I might cleanse my soul by explaining the truth behind the story.

The flying camp was my choice for a leave activity from naval college. I had already flown the Chipmunk for recreation with the college flying club, and this was an opportunity too good to pass up. In exchange for the all-expenses paid trip to one of the world's wealthiest playgrounds, all I had to do was fly the aircraft for 10 days and submit a journal article describing the activity and its value to the Navy.

My English tutor, an academic, was perceptive enough to realise that the flying camp was not too arduous, describing the article as "an interesting account of an obviously enjoyable holiday". But had the tutor read between the lines, he would probably have seen fit to add a footnote on safety.

The daily routine on the flying camp was how I imagined every aviator's day to be. Mornings involved a leisurely breakfast followed by prepping and flying the aircraft. Afternoons (if not required for transit flights) would be spent on a siesta or a shopping trip. Evenings meant a hot meal and, well.....partying!! I don't recall any rules about what time the partying had to stop, so we just didn't stop. That was fine until the morning after a particularly entertaining night at a local chateau.

Late to bed, early to rise, this was not the ideal preparation for a day in the skies. After 2 circuits, the instructor told me to land the aircraft and taxi off the runway. Convinced I was in trouble for a lack of concentration or poor drills, I duly parked the aircraft and waited for the reprimand. I'll never forget the blast of cold air as the flying instructor pulled back the windshield and climbed out of the rear seat. "OK", he said, "take her round again and I'll see you back here when you land."

Until that moment, I didn't seriously believe I'd been flying the aircraft without some intervention from the instructor. Now, without warning, I was being left alone to make my 1st solo flight. Once airborne, my immediate euphoria at this unexpected opportunity turned to a sobering realisation that a safe landing was not a foregone conclusion. It was too late to rewind the events of the previous evening that had led to the dulling of the very senses I now relied upon for my life. Do or die, I thought, and the former option was infinitely more attractive.

Yes, I landed the aircraft, so the story has a happy ending. But looking back, I realise that apart from the obvious interest in self-preservation, the focus of that flying camp was not on safety. We went on to take more risks on the return journey, setting off in the face of a poor meteorological forecast and flying at 200 feet over the sea to avoid low cloud, despite having lost radio contact with our Sea Devon SAR aircraft. Now, almost 30 years later, I find myself writing the foreword for Touchdown. Is this a case of Ned Kelly being put in charge of the bank? Well possibly, but it certainly involves personalities.

Anyone who has used the Myers-Briggs model of personality will know that people are classified according to 4 criteria - Extroversion-Introversion, Sensing-Intuition, Thinking-Feeling, and Judging-Perceiving. Although everyone is an individual, the Myers-Briggs model highlights similarities between people to give a total of 16 personality 'types'. The way people act is influenced, not least, by whether they have a preference for 'extroversion' or 'introversion'. The difference becomes most apparent when there is a free choice. In these situations, the extrovert will tend to act, and the introvert will tend to think. However, there are very few situations involving a totally free choice.

Our behaviour tends to be influenced by factors such as the culture of the organisation, our upbringing and training, and a range of environmental factors such as whether the situation is new or familiar to us. As a result, everyone needs some level of control if they are to conform to a common set of rules. Personality traits may otherwise dominate and, with insufficient control, the group will begin to dictate the rules. The flying camp provided a good example of group rule, fuelled by youthful energy and an exotic location.

Don't get me wrong, we were a reasonably sensible bunch with about a year of naval training under our belts, 75 percent of it at sea. We had a lot of energy and believed we were capable of handling anything the Navy required of us. Our 3 flying instructors were old enough to have known the Wright brothers, but they knew their stuff and had our best interests at heart. It's just that, away from the shackles of the naval college, we were bathing in an unfamiliar freedom from rigid discipline. There were no fixed rules to guide us, and group dynamics dictated our behaviour. That might have been fine, except for its potential effect on safety.

So what differences might we see if that flying camp took place in 2003? I believe the most significant change would be that, today, there is a greater awareness of an individual's responsibility towards safety. The basic rules need to be laid down, to provide essential guidance and ensure everyone - regardless of personality type - has a common understanding of what is expected of them. These rules go someway towards helping the employer fulfil their Duty of Care under the law, by contributing to a safe working environment. Individual conduct and adherence to these rules relies on self-discipline, especially in the face of group dynamics.

It's no good claiming that someone else made you behave the way you did. You, as the employee, are obliged under the OHS(CE) Act 1991 to take all reasonably practicable steps to ensure you don't increase the risk to yourself or to other people. 30 years ago, on that flying camp, the obligation of the individual was not so clear and consequently we didn't give it a 2nd thought. In accident investigations these days, there is significant emphasis placed on the people involved, not just on the organisational or other underlying factors. This was re-emphasised for me recently when reading the investigation report on the Qantas Boeing 747 that overshot the runway at Bangkok in 1999. 'Crew Information' had its own annex, detailing everything to do with the aircrew, including working hours on or off the aircraft, eating and sleep patterns, and other personal activity in the hours leading up to the accident.

It goes without saying that anyone with the misfortune to be involved in an accident, or any other OHS incident, would wish their annex to read as glowingly as possible. While the rules may establish the limits of acceptable behaviour, the achievement of a 'clean' annex still relies on the individual. This is where some personal risk management is required. Just as you would with any other risk management activity, you need to identify and assess the risks in the context of your employment, and adjust your behaviour to remove the risks or reduce them to as low as reasonably practicable (known in the trade as ALARP). I'll leave you to judge the risks I faced in France.

I don't know what became of the airport manager's daughter. As you can tell, she is not the only part of that flying camp that crosses my mind from time to time. Suffice it to say, as you thumb through the pages of Touchdown or take your next flight, you should remember that no matter who else you have your eye on, 1 of them must be yourself.
You no longer have a choice.

Keep Navy Safe.

CMDR Nick Youseman, RAN
Director Navy Safety Systems

Working out your Myers Briggs type, Team Technology 1997.
Available via Internet:
http://www.teamtechnology.co.uk/tt/t-articl/mb-simpl.htm

2 Occupational Health and Safety (Commonwealth Employment) Act 1991, Section 16

3 Occupational Health and Safety (Commonwealth Employment) Act 1991, Section 21

4 ATSB Investigation Report 199904538 dated April 2001.

5 ABR 6303 (NAVSAFE Manual) Chapter 5

SOP's, AVRM, CRM, DI's, SFI's, Audits... where's the Dividend?

Busy schedules, work-ups, training, deployments, non-aviation duties.

BY CMDR JOHN SIEBERT, RANR
CRM-AVRM MANAGER
FLEET AVIATION SAFETY CELL
COMAUSNAVAIRGRP

It seems to many, that safety related programmes often stand in the way of getting on with everyday life and it is often difficult to see the benefit of such initiatives. The development of the risk management initiative and the revamped crew resource management training revealed an interesting aspect of ADF aircrew perceptions of safety education. In a nutshell, many people exhibited a powerful negative reaction to the education process and they very often cited "programme fatigue" as a primary factor in their stance. I hasten to add that this type of reaction was not a universal view, nor was it concentrated in any particular aviation FEG - it was, however, a significant factor that caused me to think about how we "sell" new safety programmes in aviation in the general sense. Operational tempo, sea-shore ratios, career appointments and all of the general pressures of life today dictate that leaders and managers must actually "sell" safety initiatives if they are indeed to be accepted by the target audience.

Mental acceptance of safety as a primary element of all that we do, coupled with sound leadership and team-work, is the bedrock of our culture of safe operations.

If the selling process is not effective, programmes will be delivered with little dividend to show.

So - where is the Dividend?

Let us look at some of the initiatives that have improved safety outcomes over the years. Standard Operating Procedures, (SOP) as we know them, evolved during World War II and went a long way towards retaining "corporate lessons learned". In the RAN, SOP's were fairly disparate in the late 1960's - "Pilots Notes" for the aircraft type and a few orders and instructions. The Flying Order Book and Queens Regulations Containing prohibitions on low flying heights etc were the limit of our regulatory arrangements. With the acquisition of the A4G Skyhawks and S2E Trackers, the RAN adopted, in large part, the concept of a Navy wide standardisation system with the US Naval Training and Operational Standardisation (NATOPS) range of publications. Around this time, the concept of reporting incidents and occurrences expanded from the vulnerable A25 format to a realisation that a more expansive reporting system could add to the pool of knowledge allowing better preventative actions to be taken. The initial drafts of ABR 5147 were penned and we had the foundation of our present safety management system. As the RAN moved to an all-rotary wing service there was a period of restructuring.

This restructuring saw safety systems gradually integrate into the equipment and operational programs. More recently, the Commonwealth's OH&S obligations has given extra impetus to risk management processes and these have been dove-tailed into our safety system.

On top of the core sensible in-house safety reporting and corrective action processes, the RAN has gradually introduced "industry-best-practice" as it evolves. The crew concept and how the task or mission is managed and led is very much "bread and butter" for military organisations. However, we have realised the benefits of commercial aviation research and findings from incidents across the globe, and have adapted elements such as the Crew Resource Management (CRM) program. Similarly, the recent work in "Human Factors" has attracted considerable attention from military leaders and we will see further developments in this area.

So, having started with the point that many people view new safety initiatives with a degree of scepticism, what is the dividend or benefit from some of these programs? Let's travel back to what are often termed the "good old days" and look at how it really was. The rate of flying per aircraft was about the same as today, but it has to be said that the accident/incident rate was very much higher.

The aircraft damage sustained in the days of the Sea Fury was alarming. Today we enjoy an enviable safety record for our embarked flying. New technology has played a very big part in reducing the accident and incident rate. Several major developments have provided safer solutions to some of the peculiarities of naval aviation. For example, moving to the angled flight deck and approach lighting such as the mirror system saw a huge improvement in safe recovery of fixed wing aircraft. The helicopter Recovery Aircraft and Secure Traverse (RAST) system has allowed a greater safety margin to be achieved when recovering to small ships. On the human side, we now achieve superior training outcomes with the use of simulators and scientifically developed courses.

All of these system and technological improvements have combined to deliver the RAN with an enviable safety record over recent years - this is particularly evident with our excellent aviation safety record in embarked operations. Mental acceptance of safety as a primary element of all that we do, coupled with sound leadership and team-work, is the bedrock of our culture of safe operations. The trouble is, this culture is constantly under pressure if not attack. We all recognise some of the open and visible pressures such as mission or training dead-lines. Others are less visible such as unrecognised personal stress.

These pressures that exist in most types of aviation operations have to be properly identified and decisions made that preserve our culture of safety. This is where, I believe, the various safety education programmes come to the fore. By taking on board the ideas and systems that are passed on in these programmes, we can arm ourselves with some very valuable tools that reinforce the safety culture. The most recent programmes such as CRM and AVRM may take some time to show a definite dividend that we can point to in terms of statistics. But, like earlier safety-related initiatives, the results are well worth the effort put in at the learning stage.

Where to from here? The current CRM programme is now firmly established and TA-AVN is scheduling courses; trained facilitators from all ADF aviation FEG's to assist within the course delivery. AVRM bridging training has been delivered across the ADF and we now need to bed down some of the internal processes.

The new edition of ABR5150 is about to be released and the RAN arrangements for AVRM have been included in chapter 10. Some further refinement is also needed on the Mission Risk Profiles (MRP's) as we roll out the process. Looking ahead, we have identified a trend in human factors issues in maintenance related ASOR's and there is active consideration being given to developing an education programme for maintainers about Human Factors.

To summarise, new safety education programmes develop as we learn from recent experience. They generally need to be "sold" to the target audience in the light of competing pressures of life. When a programme is initiated, give it careful consideration with a view to adding it to your personal armoury of safety tools to help and reinforce the strong safety culture in naval aviation.

A quiet Sunday afternoon over Iraq

BY LCDR PAUL MOGGACH, RAN
FLIGHT COMMANDER
HMAS KANIMBLA

I have to admit that there are some emergency scenarios that I thought would never happen to me.

Introduction

Every one of us naturally, even subconsciously, knows the odds of certain emergency scenarios eventuating. The chances of experiencing an engine fire light without a fire are quite high. Hydraulics problems are relatively common. In some cases, it is the timing of the problem, rather than the failure itself, which creates the difficulty. We accommodate this by training to achieve proficiency in the most common and likely scenarios, and develop skill-sets that should allow us to safely deal with the more unusual and difficult emergencies.

On Sunday 13 April 2003, while operating over Iraq's Al Faw peninsular during a low level recce sortie, our Sea King suffered an uncommanded engine shut down that left us in a rather precarious position over some not so hospitable terrain. The odds of this occurring are pretty low.

BELOW LCDR MOGGACH AND LEUT BRADLEY WITH SHARK 07 ON THE GROUND AT THE KHAW AZ ZUBAYR HELIPORT AMMUNITION STORAGE FACILITY – MAY 2003

Our actions in response to the shut down can best be described as an amalgamation of skill-sets and knowledge. Although simple in action, the situation was not one that we practice in either the aircraft or the simulator at the Squadron but resulted in a variation to the basics of the advanced single engine transition.

The Emergency

We were conducting the recce for the Australian Clearance Diving Team 3 who were conducting explosive ordinance disposal in the Al Faw area. The flight profile involved a number of low level passes within 1 nautical mile of the Northern shore of the Al Faw peninsular. This was being conducted at 50-70 knots and between 100-200 feet. The helicopter was transitioned into a low (40 feet), slow (20 knots ground speed) pass along any suspect ordinance locations so that the embarked divers could assess the site. We were about 1.5 hours into the sortie and had made significant progress down the peninsular when I saw a large pile of mortar rounds lying on the ground near our flight path. I rolled the Sea King into a 30 degree angle of bank turn to the left and started to descend aiming to position the helicopter so that the divers could identify the type of mortar round.

The helicopter was about 210 degrees through the 360 degree turn when things started to go pear-shaped. At about a height of 40 feet and 30 knots airspeed, I heard an annoying whirring sound from above my head.

In the time that I had to think, "what the hell is that?" number 1 engine rapidly shut itself down leaving us in a rather unenviable position. We didn't know it at the time, but the number 1 engine input coupling, which connects the free power turbine to the gearbox had internally fractured meaning that the engine was now free to drive itself to destruction. Fortunately, (although I wasn't so sure at the time) the Sea King engines have a self-protection system that will automatically shut the engine down in just this circumstance. It is designed to prevent the catastrophic destruction of the engine in an uncontrolled over speed.

Landing is normally the option that would be taken in these circumstances however it all depends on the nature of the surface you intend landing on - in this case the surface was a soft sandy, muddy texture covered with berms and levees making the required running landing impossible. I was too low to effectively slow the aircraft into a zero-zero landing. The other thing that I vividly remember was that our likely landing point would have been in the exact location of the mortar rounds. The landing would have certainly been spectacular! That left me with only 1 option - fly away.

The advanced transition technique, which I normally have trouble remembering for the annual check ride, suddenly became crystal clear in my head. I knew what the loud bang was as soon as I heard it.

The sound of the coupling failure followed by the unmistakable sound of the engine winding down did not require a 2nd opinion. I made the 'war cry' of "Torque Split, Call Nr" to which the P2 responded with the numbers I needed.

"96, 93, 91, 91", he called as the rotor speed fell well below the normal 102.8 percent. I don't recall how much collective I had pulled in but it was enough to get the remaining engine topped out while the Nr drooped to 91 percent. The P2 recalls seeing the number 2 torque up around 130 percent. That engine had been a dog during this deployment but was now working its heart out. Through all this, 91 percent Nr is the minimum figure for safe flight and is the number that stuck in my head.

I was too low to effectively slow the aircraft into a zero-zero landing . . .

Decision time - will she keep flying or are we still going down? With my eyes on the horizon and the Nr stabilising at 91 percent, we managed to level the aircraft. The P2 remembers the airspeed wavering around the 25 knot mark, barely enough to continue. In this scenario there are 3 figures that all Sea King pilots will have had thumped into their heads during their training - 40 knots, 100 percent Nr, 65 knots.

We had levelled the aircraft at about 10 feet above the ground and were slowly flying over the many levees and berms that line the peninsular foreshore. I gently trimmed the aircraft forward and hoped that we didn't descend too much. We were still about 45 degrees out of the wind but a turn in this situation was not viable. The airspeed very slowly increased and finally hit the magic 40 knot figure - things were finally looking up! Next target is 100 percent Nr. The only way to increase the Nr in such a situation is to lower the drag on the blades, and the only way to do that is to lower the collective. I can guarantee that this is not a natural thing to do when you are flying just 10 feet off the mud but it does work. There is the added bonus that a faster rotor speed brings and that is greater lift. The end result is that I lowered the lever and climbed about 20 feet. So far, So good. Next target 65 knots. This is the easiest of the 3 targets to achieve but still requires a little finesse. I gently eased the cyclic forward and let the airspeed creep up to 65 knots, trading the newly achieved height for speed. At 65 knots and 100 percent Nr the aircraft was finally in safe flight and we could commence breathing again.

Getting Home

We subsequently worked through the check list actions and even attempted a restart on the number 1 engine. The start was successful but the Nf over ran the Nr indicating a severe disconnect between the engine and gearbox. We secured the engine and made a decision to land at the port facility at Az Zubayr, just 18nm up the river. Our ship was over 30nm away and as tempting as it was to head home to mother, it just wasn't a viable option for a single engine landing. We knew that there was a Royal Navy forward operating base at Az Zubayr and that they had a Sea King Squadron in residence. There was also a large concrete area that was suitable for the requisite running landing. We went through the checks and eventually conducted a safe landing.

Final Thoughts

There are a number of things about our actions during this incident that are worth noting.

- I do not remember looking inside the aircraft at any stage. My eyes were glued to the horizon and ground ahead of the aircraft - I had always kept my eyes moving over the instruments during training but not in this case.
- I do not recall saying anything other than "Tq split, call Nr", during the initial stages of the emergency. It wasn't intentional, I was just a little too busy for conversation. However, the TACCO and ACMN noted, during the de-brief, that I had also called "Flying Away" 3 times during the initial Nr calls. The psychologists call this a detachment - a natural reaction to a stressful situation in which the human brain focuses all it's attention on what it determines to be the most critical items. A lack of recollection of such things is apparently quite common.
- The advanced transition works! Even when applied to a scenario not practiced during training, the technique can be applied to achieve a recovery to safe flight.
- The decisions made immediately following the critical failure turned out to be the easiest. We had more trouble determining the best course of action for the landing than making the decisions regarding the failure. The thought of going downbird in a combat zone was not particularly appealing but an assessment of the situation at the landing site (force protection, facilities, etc.) made the decision simple.
- Stay focused. It is tempting to somewhat relax after getting away from a nasty situation. Remember that it's not over until it's over. The single engine landing I flew was what a Qualified Flying Instructor (QFI) might call 'unspectacular but mostly within limits"! It seemed bizarre that I could fly an advanced transition under those circumstances with accuracy yet make a meal of the slow time running landing - something that I thought I could do in my sleep.
- Emergencies NEVER happen the way they do during training. We practice advanced single engine transitions flying AWAY from the hover, not INTO the hover. Despite that, the skill-sets we learn from such training are equally applicable to other situations.
- As tempting as it may be, never think that 'this will never happen to me'. You're sure to be surprised! Soak up the techniques. They will form a set of individual skills that you can use either individually or in combination as required.
- We came very close to hitting the ground that day, yet I never thought we would. As an Aircraft Captain in time critical situations, you must trust your judgement, listen to your crew (they'll tell you if you're stuffing it up!) and have confidence in your decisions.
- Just 24 hours earlier we had been flying a similar sortie with the Chief of Navy (CN) onboard. No... Doesn't bear thinking about!

During a flying career emergencies will be encountered, often at the worst possible time, and in a form different to what has been commonly practiced. Sound decision making and assertiveness will be the key to a successful outcome. Know your aircrafts critical airspeeds and use them. Always keep your options open, but the 1st priority is "Fly the Aircraft". LCDR Moggach underpins these attributes in this article and is awarded the $100 prize for this TOUCHDOWN edition.

Editorial by LCDR Tony Reyne, RAN
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Just 10 minutes more

Sleep is critical to performance but sometimes sleep is hard to get.

BY CAPT NICOLE GRAY, HEADQUARTERS 16TH BRIGADE (AVIATION)

CAPT DAN GRIDLEY, DEFENCE FORCE PSYCHOLOGY ORGANISATION

LTCOL PETER MURPHY, HEADQUARTERS 16TH BRIGADE (AVIATION)

There is general consensus that to function at our best, most people need eight hours of continuous, quality sleep.

There are few things in life as frustrating as being extremely tired but being unable to sleep. Quality sleep is essential to maintaining physical and mental well-being. But sometimes we are our own worst enemies when we engage in activities that harm our sleep, or we refrain from simple activities that would improve sleep. That late night coffee, those 3 beers after dinner, or staying up late to watch the semi-final can sabotage your sleep and leave you fatigued the next day.

In a recent safety survey within an ADF aviation unit, a third (36 percent) of aircrew nominated fatigue as a current safety hazard. ADF aviation maintenance personnel admitted making errors because of tiredness sometimes (35 percent) or often (5 percent). Of course fatigue can be caused by many factors other than lack of adequate or quality sleep, but sleep is the most fundamental element in the fatigue management equation. The only effective cure for lack of sleep is sleep itself.

This is why many fatigue-management programs include a component that aims to promote the onset, duration and quality of sleep. This body of knowledge is usually referred to as 'sleep hygiene.' The guidance provided by sleep hygiene is generally very simple. But it is surprising how few of us devote time to understanding and nurturing an activity that takes up about a third of our lives.

How much sleep?

There is general consensus that to function at our best, most people need 8 hours of continuous, quality sleep. There are exceptions. Children usually need more than 8 hours, and the elderly tend to get their sleep in several doses each day. About 12 percent of adults state they require 9 or more hours of sleep to be at their best.

At the other end of the sleep scale, about 15 percent of adults believe they need only 5 to 6 hours of sleep and 8 percent normally get less than 5 hours. Although these people may be effective at work, they are likely to be functioning at less than their best. In the high reliability tasks typical in aviation, anything less than optimum performance can lead to trouble.

The sleep/performance tradeoff.

Recent research (Belenky et al., 2003) has shown that many people appear to adapt to restricted sleep (less than 8 hours) - but at a performance cost. This means that while performance levels can stabilise in some people after several days on a new, reduced sleep schedule, this performance level is lower than normal. The danger in this is due to fatigue being insidious - most people are not aware of how fatigue is affecting them. Sadly, this is demonstrated by road fatalities where people fall asleep while driving.

The figure shows that groups of subjects restricted to 7, 5 or 3 hours in bed demonstrated a clear decline in performance over a week of restricted sleep. The group allowed 9 hours in bed actually improved performance above baseline. While there is evidence of some adaptation (levelling off in performance scores) in the 7 hour and 5 hour groups, the group with only 3 hours in bed continued a steep performance decline over the 7 day trial.

Just as important as the finding of a performance cost to sleep restriction, is the pattern of scores during the recovery phase of the study. During recovery, all groups were allowed 8 hours in bed. None of the 3 groups that experienced sleep restriction returned to their baseline performance levels, even after 3 days of recovery. The lesson for military personnel is that they should expect lowered performance for several days after activities that are associated with reduced sleep.

These findings have serious implications for the military. It is not uncommon for personnel to have reduced sleep due to operational demands, shift rotations and work-rest schedules that are not based on awareness of the human circadian cycle. As a general rule-of-thumb, high-reliability tasks (as routinely performed by aircrew and maintenance personnel) should be performed by operators functioning at more than 90 percent of normal mental capacity. Of course there are proven strategies that can be implemented to manage fatigue when it is unavoidable (see Fatigue Management on Operations: A Commander's Guide, Department of Defence, 2002), but preventing fatigue is the preferred approach when feasible.

While it is difficult to be precise about many aspects of human performance, it is clear that it does not take much disruption to our sleep to have a significant impact on our performance. Other research has demonstrated that one night of sleep restriction, or an unusually early start at work can lower performance by 10-15 percent in even the early phases of a work shift.

Personnel in the aviation capability must realise the value of sleep. However, as noted above, getting sleep may be easier said than done. Hence the importance of sleep hygiene.

Sleep hygiene

An emphasis on sleep hygiene is often associated with shift work because most people find it difficult to sleep as easily or as well when sleeping in the daylight hours. Nevertheless, these tips are generally applicable to anyone who wants to improve their sleep. Of course not all tips will help all people. We each have our own preferences and capabilities.

1. Control the sleep environment

Noise. There are many strategies to prevent or block out noise. For example, lower the volume on phones, disconnect them, or use a silent answering machine. Teach children to respect your sleep time, or keep them away during daylight sleeping. Switch on appropriate background music or a neutral noise (such as a fan) to mask disturbing noises while getting to sleep.

Temperature. Sleep onset is generally faster when body temperature is low. Ensuring the bedroom is 'cool for you' can be conducive to sleep. What is 'cool' varies between individuals - particularly married couples. Extremes of temperature (hot or cold) tend to elicit more frequent awakenings.

Darkness. For most people, the darker the sleep environment the better. Thick curtains, eye masks and alarm clocks with a dim setting may assist. Exposure to sunlight or other bright light sources normally helps promote sleep at night.

2. Avoid or reduce caffeine, alcohol and nicotine intake

Caffeine is a stimulant and is likely to delay sleep onset. Sources include coffee, tea, certain confectioneries and many soft drinks. Sensitivity to caffeine varies greatly, and increased sensitivity may be triggered by stress. In some people, the effects of a single coffee can last for more than 7 hours.

Alcohol may help induce sleep but it suppresses important parts of the sleep cycle (deep sleep; REM sleep) and increases awakenings during the night.

The nicotine in tobacco is a physiological stimulant. Its effects on sleep are similar to caffeine.

3. Foster a routine

Try to make sleep time predictable for your body. Make an effort to establish greater consistency in the time for going to bed. A behavioural routine prior to bed can help us to unwind mentally and prepare gradually for sleep. Such a ritual might include security, pets, checking on children, shower, teeth, alarm, diary, and/or reading. Try to make one's wakeup time as consistent as possible. Wakeup time is considered to be one of the stronger influences on promoting regularity in the body's circadian rhythms. Naps can help if fatigued, but stop napping if it appears to interfere with your main sleep.

4. Develop a sleep-friendly lifestyle

Comfort. Consider the time you spend in bed and the importance of sleep. Some people sacrifice bedroom comfort for other spending priorities. A comfortable bed, quality bedding (especially pillows that suit you) and a quiet air-conditioner are among the best quality-of-life returns for a financial investment.

Exercise. The effects of exercise are variable across individuals. Regular exercise may enhance sleep, although exercise taken just before bedtime may delay the onset of sleep. Some research suggests that exercise done 3 to 4 hours before bedtime may produce a 'rebound body cooling' effect that is conducive to sleep.

Food. Avoid heavy meals and large amounts of fluid before bedtime. A light snack and a warm milk drink (not coffee) may be helpful to some, especially if it is part of a bedtime routine.

Reduce stress. It is one of life's cruel twists that high levels of stress tend to interfere with one of the best stress antidotes - sleep. Attempt to actively manage stress in your life. Relaxation techniques are a powerful 'stress buster' and they can be beneficial in promoting sleep.

Medication. Ask for medical advice about the possible impact on sleep of medicines you are taking. Ensure you understand the side-effects of sleep medications.

Conclusion

Optimum performance only occurs when you are properly rested. For most people, getting less than 8 hours of sleep will incur a performance loss. Extended periods of restricted sleep will require extended periods of recovery before personnel reach their optimal performance levels. However, getting to sleep can be a challenge. There are many actions you can take - and some to avoid - in order to promote sleep onset and quality. If you are having trouble getting enough sleep, then try new techniques in order to find out what works for you. Sleep is not an option; it is a requirement.

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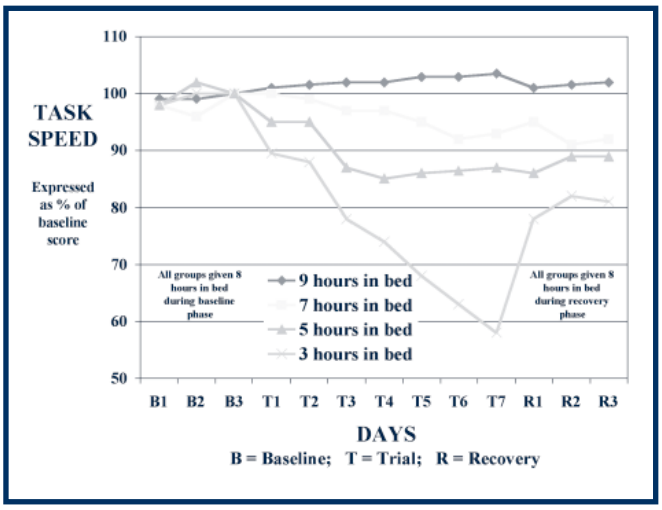
BELOW AVERAGE TASK SPEED ACROSS DAYS FOR GROUPS DEFINED BY TIME ALLOWED IN BED



Note: The scores shown in Figure 1 are for a vigilance task that is known to be sensitive to the effects of sleep restriction, and shows no learning effects over repeated administrations

Crash on Deck - for Real!

BRACE, ORIENTATE, LOCATE,JETTISON, RELOCATE, UNBUCKLE, EXIT

BY LEUT DAVID HUGHES, RAN

Ingress of water into the cabin and onto the main rotor case caused, what I believed to be the third or fourth explosion inside and the fireball illuminated the cabin.

BELOW THE REAL THING

The title sometimes sends a shiver down spines when heard on the main broadcast, then the alarm and next hoping for the pipe 'For exercise'. This is, for most, the closest any sailor wishes to get to this type of incident. 05 July 2002 saw this occasion for real. For those readers who have experienced 'Gulf' deployments the term Desert Duck means mail, stores and passengers (pax) delivery from the USN Sea King detachment in Bahrain. The lifeblood of ships on station.

On the day mentioned this was the end of such an event, mail, stores and pax. Just another "Duck Hit"!

The difference for this sortie was the loss of the tail rotor authority while the Duck was over the deck. Not the recommended way to land.

The end result was a Sea King with 7 souls on board spinning out of control and crashing onto the flight deck. Still spinning; fire, explosions, disintegrating rotors and finally cascading over the side and into the waters of the North Arabian Gulf.

This may read as a bit dramatic to some but as a passenger on this "Duck" I can use such licence and be thankful for Helicopter Underwater Escape Training (HUET). Else some other person might be writing this article.

There was no notice or warning that a crash or ditching was about to occur. Once the realisation hit that some form of failure had happened I went through every brace position I had been shown and practiced in training. I probably invented a few in the 10 seconds or so before impact. Not even recognising that we had ended up inverted and in the water, I started to talk myself through the HUET drill:

- Spot your exit
- Wait for all violent movement to cease.....

That's as far as I got!

Ingress of water into the cabin and onto the main rotor case caused, what I believed to be the third or fourth explosion inside and the fireball illuminated the cabin. At this stage I decided to exit, quickly. There was no great amount of water in the cabin and when I released my belt and fell to the roof I was still dry, inverted but dry. By the time I reached the rear door and began to force it open with a lot of assistance from the crew chief, the water was at my chest and the surface was about a meter above us and getting closer. The crew chief pushed me out. At this point he was fully submerged and the cabin full of water, he had no time to use his Helicopter Emergency Exit Drills (HEEDS). The airframe had enough buoyancy to broach the surface and float. All 7 onboard escaped with varying degrees of injury from burns and broken bones to not a scratch.

The crew did their job and made sure all pax were out.

All this occurred in 1 minute and 2 seconds from the time the tail rotor failed to the time of exit from the wreck.

I have been asked: "Was it like HUET?"

The answer is No!, because training and the real thing will always be different.

Whilst my instinct to survive made me act, the procedures taught at HUET kicked in automatically and allowed me to egress safely.

This article is not only an endorsement for HUET but for all the survival and Damage Control (DC) training that is involved in shipborne Helicopters and other Operations.

- No flight deck team were injured
- Fires were extinguished promptly
- Boats were on the scene within 3 minutes
- All other DC resulting from the crash were handled professionally
- All procedures were fully implemented.

(the extent of the damage to the ship could never be realised in drills)

It was more than just a "Crash on Deck".

Training works and prepares one to address the real incident if it should ever occur.

This Australian survivor of an inverted, submerged Sea King was very fortunate to have been through HUET at various stages in his career. He is not an aviator, and was thus not overly familiar with the aircraft environment, but he put sound training into practice. His subsequent visit to the new Naval Aviation Sea Survival Centre at TA-AVN for HUET refresher training was met with some trepidation on his part (understandably in the circumstances!) but the building block approach to the training soon had him confident in his ability to survive a similar situation. He and you will hopefully always remember:

BRACE, ORIENTATE, LOCATE, JETTISON, RELOCATE, UNBUCKLE, EXIT

Editorial by LCDR S D Hancock RAN, Manager Aviation Training, TA-AVN

"Train Like You Fight - LHS"

BY LEUT TODD GLYNN, RAN
AND SBLT NEIL AMEY, RAN
723 SQUADRON

Training prepares your mind to function when an incident occurs. Aircrew trained in Full Motion Simulators often remark that a real scenario was "just like the sim".

It is this response that trainers like to hear. In an aircraft without a simulator, such as the AS350, we do a lot of Engine Off Landings (EOL) in preparation for that fateful day. As an instructor, your QFI course and Competent to Instruct (C to I) syllabi tries to give you those experiences prior to flying with real students. It prepares you to expect the unexpected. It is not until an actual incident that you find out if your preparation is satisfactory. You will either be a hero or the ASOR will read "Instructor-Inattention."

My test came towards the end of a Night Flying sortie at JBRF. We were returning to NAS NOWRA and we had stretched the sortie to the limits of our endurance, planning to land on with only fixed reserves.

It was all going so well right up until we suffered, what I believed, was an engine failure. We were 3nm from the field at 2500 feet AMSL and my student was flying. Things seemed surreal. As the large yaw and low rotor speed horn screamed for attention, the first thing I thought was, "I didn't do that." It then dawned on me to do something.

I took control and entered autorotation. The sudden shock caused a little bit of what psychologists call disassociation. Events seemed to slow down as I went through the procedure for an engine failure. After recovering what was a rapidly decaying rotor speed, I noticed the engine was still running, but something didn't fit the traditional governor underspeed. I don't really know why, but I checked the throttle position just before committing to any further actions and discovered it not in the full position. I immediately wound the throttle back to the full position and checked to see if the governor was working as advertised.

I inadvertently retarded the throttle whilst believing I was taking off some collective friction . . .

I am pleased and extremely relieved that things finished on the right side of the fence. The biggest lesson to take-away from my experience is that training prepares us to function in stressful and pressure situations, whether you are about to drop your torpedo, fire that missile or deliver that boarding team.

I consider myself extremely lucky to have been teaching the basic syllabus, which encompasses a lot of EOLs. You may not be so lucky! Especially if you have been at sea for extended periods where critical malfunction training is harder to undertake.

My advice is take the opportunity to get into the simulator or fly with an instructor and improve your emergency handling skills. See it as developing you as an aviator - one day it will pay off.

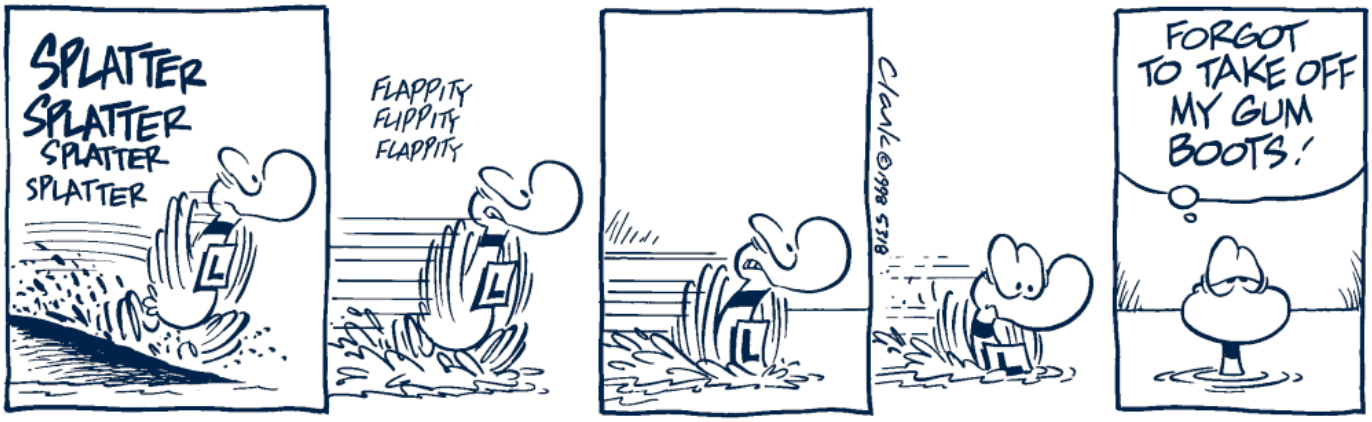
"Train like you fight - RHS The students perspective"

During our short transit back to Nowra, after a period of Unknown Landing Site (ULS) approaches, I inadvertently retarded the throttle whilst believing I was taking off some collective friction. The AS350B transits at 97% NG and pilots regularly tighten the friction to stop the gradual reduction of the collective. We had been cleared for a visual approach and I went to take off the friction in preparation for our deceleration and descent.

I had no idea that I had rolled off the throttle. I thought the instructor had introduced the yaw and I was about to question his actions when the low rotor speed horn activated. It was then that I realised I had actually retarded the throttle instead of the friction. By this stage the instructor had taken over and recovered the rotor speed.

I believe that if I had applied the "Identify Confirm Select" philosophy the incident may have been avoided. In a dark cockpit and during periods of increased workload, it bodes well to gross error check that this is the switch that you wanted to operate!!

BELOW SWAMP CARTOON USED WITH PERMISSION



Don't Get Caught Up over RA Recoveries

BY LEUT PETER TALBOT, RAN
FLIGHT OPERATIONS OFFICER
HMAS SYDNEY

In those moments the rotor wash blew the excess messenger cable around his neck . . .

The S-70B-2 Seahawk is capable of landing on board an FFG in sea states and weather conditions that would otherwise preclude such an evolution, by means of a Recovery Assist (RA) landing. A relatively simple yet potentially dangerous evolution, the RA landing is achieved by the helicopter manoeuvring over the ship's flight deck and lowering a messenger cable to the flight deck crew. The crew connect the messenger to the haul down cable of the ship's Recovery Assist Secure and Traverse (RAST) system. The aircraft then recovers the messenger cable and the attached haul down cable is locked into the RAST main probe on the aircraft. Once connected, the Landing Safety Officer (LSO) embarked in the ship hydraulically retracts the haul down cable, which assists the pilot in landing the aircraft in the correct position on the flight deck.

The following story recounts a potentially fatal incident we had whilst conducting an RA landing. The flight was embarked in HMAS MELBOURNE, deployed to the Arabian Gulf in support of OPERATION SLIPPER. The helicopter's primary roles were to conduct surface search missions and provide support and top cover for boarding operations. We had been in theatre for almost 8 weeks when the incident happened. Prior to that ... we felt comfortable within the environment and conditions we were flying in on a daily basis.

Due to the benign weather conditions in the Arabian Gulf, RA landings 'in anger' were virtually unheard of.

They were conducted as a matter of maintaining LSO currency, as well as ensuring the systems ongoing serviceability. Whilst we were well within currency for RA landings, we had not conducted one recently. It had been 3 weeks since the last day RA recovery and just over 6 weeks since we'd done one at night.

So it was briefed that on conclusion of this routine night surface search sortie, the recovery would be via an RA landing. The conditions on this night were clear skies, but with zero illumination, hence an extremely dark night and no visible horizon. For those unfamiliar with embarked operations, this means that whilst over the deck, the only horizon reference for the aircrew is the stabilised horizon bar (horizon reference system - HRS) which is mounted centrally above the hangars. Due to tactical considerations it was standard practice for the flight to conduct all take-offs and landings using emission control procedures (EMCON). This requires all signals between the LSO and the aircrew to be conducted via lights. The LSO utilises the deck status lights (mounted above the starboard hangar door), whilst the aircrew use the helicopter position lights, flashing them from bright to dim. The 2 hour sortie proceeded without incident, as did the preparations on the flight deck for the ensuing RA landing. As per Standing Operating procedures (SOP's), approximately 30 feet of haul down cable was faked out on deck, with the Flight Deck Marshaller (FDM), the cable and earthing personnel in position awaiting the aircrafts arrival.

The aircraft was given a green deck for recovery and proceeded to cross the deck and lower the messenger cable. In a flash, and unbeknownst to the aircrew or LSO, the recovery momentarily turned from a 'routine' landing to one that had disastrous and fatal potential. The earthing member earthed the messenger cable, which was then connected to the haul down cable by the cable number. The messenger cable was raised following the appropriate signal from the deck crew. At this point however, with the excess aircraft cable not being positively controlled, the earthing number turned his back to disconnect the earthing wand. In those moments the rotor wash blew the excess messenger cable around his neck. The cable continued to rise and it was only his own quick reaction of removing it from his neck that prevented the cable potentially being wrapped around his neck as it became taught. The remainder of the recovery proceeded without incident.

There were 2 main issues in this incident. The 1st being the excess messenger cable that was lowered from the aircraft. The 2nd was the flight deck member turning his back on the cable, and neither of the deck crew ensuring positive control was maintained. The cable, by its nature will always present a snagging hazard. An excessive amount increases its hazardous potential as it is blown by the rotor wash. Control of the cable, along with maintaining visual reference of its whereabouts is imperative. Non adherence to this procedure is considered the main factor in this incident.

The possibility always exists for excess cable to be lowered from the aircraft during the RA procedure. The measures in place to prevent this have been developed partly as a result of at least 1 previous incident. Firstly, the LSO transmits 'stop lowering, stop lowering' once adequate aircraft cable has been lowered. Then the LSO changes the deck status from green to amber to instruct the aircrew to 'stop lowering'. The aircrews responsibility is then to stop lowering, 20 seconds after it commenced if neither of the 2 previous signals have been received. In this incident, the 20 second limit had not been reached before lowering was ceased. When using EMCON procedures, one of these fail-safes is lost with the verbal command not being transmitted.

The excess cable in this instance was attributable to a combination of factors. The main contributor in this instance is believed to be a delay in the pilot noticing the amber light and informing the Tacco to stop lowering. This would have been exacerbated by it being such a dark night and his attention being primarily focused on the HRS at the crucial moment the light turned amber. Additionally, the time it takes the Tacco to hear the command to stop lowering, to physically taking his finger off the switch, adds another length of time excess cable can result underneath the aircraft.

Regarding the deck member not controlling the cable, this was simply a matter of established procedures not being adhered to. Similarly, turning away from the cable before any slack has been removed is procedurally incorrect. The 2 personnel are under the helicopter to ensure the cable is earthed and controlled at all times. When excess cable is lowered, it must be controlled as it rises, while the deck crew maintains visual contact with it. An unsecured cable is at the mercy of the rotor wash.

Whilst the only damage done in this incident was a significant scare to the deck crewmen involved, and consequent 'wake-up call' to the whole flight, its potential was quite frightening and many lessons were learnt. Primarily, the benign conditions and lack of ship movement saved us in this case. If we'd had a pitching deck at the time, or the pilot inadvertently climbed (possibly by as little as 1 or 2 feet), or had the earthing member been unable to remove the cable from his neck, we could have hung him, simple as that. The consequences of snatch loading a steel cable whilst it is snagged around a person's neck are obvious.

Lessons learnt are numerous. The age old adage that nothing is 'routine' in aviation speaks for itself. Enough accidents and incidents have taught us that. A thoroughly briefed and graduated work up program to complex evolutions is always preferable, or even for seemingly simple tasks that have not been conducted for a period of time. You don't have to be out of currency for an evolution, to be well out of practice.

Specific to this incident is being aware of the potential of excess cable underneath the helicopter. It must be noted however, that when the ship is pitching significantly, more cable must be lowered to allow for this. No amount of excess cable absolves responsibility of the deck crew to control the cable at all times. If an unsafe situation develops, personnel are taught to immediately clear the flight deck. Control of the messenger cable can not be relinquished until all slack in that cable is removed. Deck crew must always remain cognisant of its position and security. Flight deck personnel are crucial to safety in all evolutions. They must be ever vigilant and conscious of the dangers of operating in, around and underneath aircraft. Strict adherence to established procedures is critical, regardless of how benign the conditions or evolution may appear.

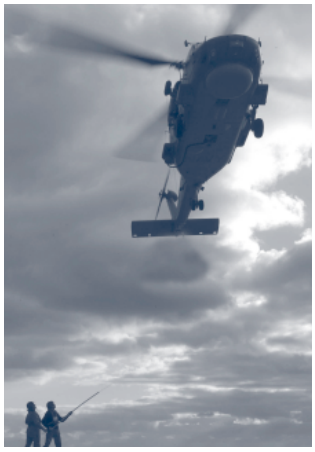
This incident reminded us to always take that extra moment to step back and analyse a sortie, mission, or evolution that is to be undertaken, **before** it is conducted.

You will never be able to think through every possible eventuality, they are countless. But you can help yourself be best prepared for any eventuality, by considering your task at hand, and remembering that 'routine' in aviation, does not exist.

The aircraft was a FLIR fitted Seahawk, embarked on MELBOURNE, deployed on Operation Slipper. The incident was captured on FLIR tape. This footage is now utilised as a valuable training aid for flight deck team training courses. Additionally, a flight safety poster has been produced by the RAN Flight Safety Cell in conjunction with DFS-ADF to warn personnel of the 'noose' coming from underneath the aircraft.

Editorial by LCDR Shane Craig, RAN
Flight Commander
HMAS MELBOURNE

BELOW SETTING UP FOR A RECOVERY ASSIST LANDING



Women as Aviators - a Favourable View

BY WGCDR TRACY SMART
COMMANDING OFFICER
INSTITUTE OF AVIATION MEDICINE

WOMEN AS AVIATORS - AN UNFAVOURABLE VIEW

As a matter of fact, flying is not a woman's job. Admittedly, there have been women who could fly quite well, but in 10 years' intimate and constant connection with aviation I can only remember 3 women who could by any stretch of the imagination be called good pilots, and they were altogether exceptional in every way. The rest were like the average woman car-driver. They had excellent eyes and excellent hands, but they always lost their heads in a sudden emergency. To put it more or less metaphorically, they always let go the wheel and grabbed for their hats whenever a gust hit them.

Mr. C. G. Grey, reported in "The Argus" 24 August 1918

Introduction

Despite Mr. Grey's sentiments women have been flying aircraft for over 90 years and today are very much a part of the Australian Defence Aviation community. The ADF currently has approximately 60 qualified female aircrew and more under training.

As is the case in most western militaries, female ADF aircrew have been involved in operational missions for many years. The recent war against Iraq saw many female aviation firsts, including the first female B-2 pilot to fly a combat mission and a fully female team who conducted a KC-135 Stratotanker air refueling mission. This is of course not new, as the Russians had fully female fighter and bomber squadrons in World War II. It is likely that as time passes, these types of occurrences will become more and more frequent.

BELOW MEMBERS OF AN ALL FEMALE KC-135 STRATOTANKER AIR REFUELLING MISSION OVER AFGHANISTAN ON JANUARY 2003

Nevertheless, although times and attitudes have changed, flying remains a male dominated field and problems still exist for female aviators. In a previous article entitled "Fast Women"[1], I addressed the 4 traditional arguments as to why women shouldn't be flying - their physiological differences, their perceived physical weakness, specific women's health problems, and squadron cultural issues. I concluded that although many differences exist, solutions can be found to overcome these differences. In this article, I will examine some of the more recent developments affecting women aviators and how the ADF is dealing with this issue.

Anthropometric Differences

On average females are smaller than males across all parameters considered important in cockpit and flying clothing design. Women were not flying in military aircraft when most of the aircraft currently in the ADF inventory were designed. In fact, in the US, it is estimated that as many as 50 percent of women may be excluded from flying current military aircraft on the basis of anthropometry alone[2]. In addition, the last anthropometric survey of aircrew conducted in the ADF was in the RAAF in 1977, well before women were allowed to operate military aircraft. The result is that both aircraft and aircrew flying clothing were designed purely with males in mind.

Future aircraft are being designed to accommodate a greater percentage of the female population. An example of this is the design of the new Joint Strike Fighter (JSF) which has been designed for both males and females. The JSF will have a fully adjustable seat and adjustable cockpit and rudder controls, therefore is likely to accommodate the median 95 percent of all eligible US military pilot candidates[3].

In order to ensure that clothes and aircraft fit, the ADF is about to undertake a major anthropometric survey of aircraft workstations, and of current and potential aircrew. This 3 year study will be conducted as a joint project between DSTO, the RAAF Institute of Aviation Medicine (AVMED) and external contractors and this time females will be included in the measurements.

MAINTAINING THE STANDARDS


HMAS NEWCA

ASTLE FLIGHT

Photograph courtesy ABPH Richards

HD 235

Female aircrew. Pregnancy is incompatible with the continuation of inflight duties in view of the unacceptable risk posed to flight operations and safety by the physiological (including anthropometric) changes of pregnancy and increased potential for morbidity and incapacitation associated with it. The possible ill effects of the flying environment on the foetus are as yet undetermined. Female aircrew (including Flight Stewards and DHS personnel) are to cease flying duties on medical grounds at the time of confirmation of pregnancy: they remain fit for ground duties as for non-aircrew pregnant members.

It is hoped that data gathered from this study will not only ensure that aircraft will accommodate people of most sizes and both genders, but will also ensure that appropriate sizes of flying clothing are available to all.

G Tolerance

In the past, studies have shown a significant difference in G tolerance between males and females at higher levels of G[4]. It was postulated that this was because females have reduced body strength compared with males and therefore have difficulties in sustaining an anti-G straining manoeuvre at high G. Another possible explanation is inadequate G suit fit, particularly as these garments have been designed for men. This was supported by a 1997 study utilising custom fit G suits which demonstrated no significant differences in time to fatigue between the sexes[5].

The USAF Female Acceleration Tolerance Enhancement (FATE) Project[6] found that 50 percent of females had poor G suit fit as opposed 24 percent of males, and 25 percent did not fit into current G suits at all. Problems included a loose waistband, and pain and breathing difficulties due to the position of the abdominal bladder. In response, a modification to the G suit was made incorporating a "v" dart to the waist band and a reduction in dimension of the abdominal bladder. This not only improved comfort but allowed females to double their endurance and produced gender parity. Legal modifications to G suits to improve fit have also been performed in the RAAF by applying darts in the waist, thighs and calves. More recently designed advanced G technologies such as COMBAT EGDE and Advanced Technology Anti-G Suits (ATAGS) have been designed to accommodate women.

Pregnancy

Pregnancy results in a change to the body's physiology and therefore poses specific problems in the aviation environment. Concerns relate both to the effects on the woman herself and to her foetus, which in turn raise flying safety (risks of sudden incapacitation, safety equipment and ergonomic issues), mission completion (psychological and physical distraction) and occupational health and safety issues (stresses on the foetus). The risks vary on an individual basis and also depending on the stage, or trimester, of the pregnancy.

The risks of sudden incapacitation are especially high during the 1st trimester due to complications such as spontaneous abortion, ectopic pregnancy, and morning sickness. Also of concern are the potential effects on the embryo in its most delicate stage of development. Most studies looking at overall risks to the foetus in this trimester have been performed in female flight attendants. There does not appear to be a significant risk to pregnancies when all factors are controlled for in this group of individuals[7], however this type of flying is vastly different from many types of military aviation. Of greatest concern for medical practitioners are the medico-legal aspects if complications occur during or after a flight. For all of these reasons, most military forces ground pregnant aviators during the 1st trimester.

Maternal complications are less likely to cause incapacitation in the 2nd trimester however other effects of the pregnancy may become significant, including anaemia and fatigue. Ergonomic issues begin to become an issue during this period including fit of the G-suit and other safety equipment. However it is a relatively safe time for the foetus. Overall the risks are minimal and as such flying, at least in a multi-crew role, could be permitted on a case by case basis.

Risks of sudden incapacitation increase again in the 3rd trimester and ergonomic problems are exacerbated. In addition, psychological distraction is known to be a problem as the pregnancy progresses. It is therefore common practice to ground aircrew from the start of the 3rd trimester until after the birth.

The ADF Policy on pregnancy is contained in Health Directive 235 "Management of Pregnant Members of the Australian Defence Force". It states that female aircrew are to be grounded at the time of confirmation of pregnancy. Guidelines are also provided for those flying as a passenger. Members may fly up to 32 weeks without requiring medical clearance, and should not fly after 36 weeks. Recently, this policy has been questioned by female aircrew, especially those in the Crew Attendant mustering.

CASA regulations allow female flight personnel to continue flying provided the pregnancy is not likely to interfere with the safe performance of duties. It does however make Class 1 and Class 2 civil aviation certificate holders medically unfit for flying from 30 weeks, and Class 3 from 34 weeks[8] until approximately 6 weeks after delivery.

Physiologically there is no real reason why non-fast jet aircrew cannot be returned to flying in the 2nd trimester. The reason why this has not occurred in the past has been both "duty of care" and operational. It has been thought impractical for aircrew to be off duty for 3 months and then return to flying for only 3 months before grounding them again.

AVMED is currently reviewing this policy and is likely to recommend that aircrew flying in non-fast jet aircraft be allowed to return to flying duties during the 2nd trimester. This is on the proviso that the individual remains well and can wear appropriate flying clothing and life support equipment. This approach appears to balance duty of care with the best interests of both mother and foetus. It must be noted however that this policy cannot be compulsory, as every woman and every pregnancy is different. Those who do not wish to continue flying as aircrew during their pregnancy can and should not be forced to do so for medico-legal reasons.

Long Hair

Long hair related issues are of particular concern for some female aircrew. Flying safety concerns relate to inadequate helmet fit, which in turn could interfere with the protection offered by the helmet, risk of entanglement in the ejection seat, and fire risk. In addition there have been cases in the past where the integrity of the helmet has been compromised by cutting holes in the liner to accommodate hair buns in order to ensure adequate fit.

A survey of USN and USMC female aircrew found that most preferred to wear their hair short and straight usually for comfort and convenience[9]. Certainly this would appear to provide the best fit, however a suggestion made several years ago that ADF female aircrew wearing helmets and/or flying in ejection seat aircraft should be forced to adopt such a style caused considerable debate as many women still want to keep their hair long.

During this period, 1 enterprising female pilot developed a nomex hair bag which could be tucked down into the back of the flying suit to solve the entanglement and fire risk concerns. It does not necessarily solve the fitment issue however as a large amount of hair at the back of the head may interfere with nape strap grip. It also may cause neck restriction during manoeuvring under high G.

Due to a reluctance to enforce the potentially unpopular but most safety conscious option, policy was released which avoided the issue of hairstyle. Instead safety was emphasised, in that provided an adequate helmet fit was achieved, hair could be worn in any style (DI (AF) Ops 6-16). This has probably not solved the problem completely however the issue has not been raised since this time.

DI(AF) Ops 6-16

Correct fitment of the flying helmet is mandatory to obtain maximum protective benefit. The cut, style or grooming of the hair style shall not interfere with the correct fit of the helmet. Helmets are not to be modified to accommodate hairstyles.

Female Bladder Relief

In many aircraft types, including the F-111, F/A-18 and helicopters, sorties lasting several hours are possible, especially with air to air or "hot" refuelling, however onboard toilet facilities are limited. Even aircraft with more spacious toilet facilities, such as the C-130, present difficulties to female aircrew wearing flight suits, who may need to disrobe almost entirely to use the facilities.

For male aircrew, "piddle packs" of various types have been in use for some time, and some aircrew flying high performance aircraft in the US have been using condom catheters for a more "hands-free" operation. And of course in many aircraft types it is possible for a man to just relieve himself as nature intended.

Unfortunately this system is not suitable for females and therefore a variety of other options have been suggested. NASA developed the Disposable Absorption Containment Trunk (DACT), really a glorified diaper.

Female U2 aircrew use a specially designed absorptive pad with tubing connected to their pressure suits. For other female aircrew, the only options have been to dehydrate themselves, pass a catheter or just hold on.

In 2001 the USAF undertook a market survey to find a solution to this problem. The result was the choice of the Travel John (see picture) as the device of choice for female aircrew to relieve themselves in flight. This simple and cheap device consists of a plastic bag with a harder plastic lip designed to fit the female anatomy. Inside the bag is an inner bag containing absorbent polymer powder which instantly gels and deodourises liquids within seconds. The bag can then be rolled up, put in a re-sealable bag and stored for the duration of the flight.

However finding the right device was only part of the solution. It was also evident that the flight suit itself required alteration in order to use such a device without disrobing. The simple solution was to design a flight suit with a longer zipper and this change has been incorporated in the new female flight suit currently under development. In the meantime, flight suits can be modified by adding another zipper under the current midline zipper.

This device and the associated modification has met with great success with USAF aircrew in all aircraft types however it is recognised that it is not the final solution. There are still problems associated with using the device in close quarters and particularly in aircraft such as the F-111

BELOW THE TRAVEL JOHN. A SOLUTION TO AIRBORNE FEMALE BLADDER RELIEF. PHOTO COURTESY OF TRAVEL JOHN PRODUCTS

which allows little privacy for the user. Ultimately a comfortable, hands free, constant wear device which is compatible with NBC and other flying clothing ensembles must be developed, and work on such a project is currently underway in the US. There is no male version bladder relief method which satisfies these criteria; therefore this research may also provide the ultimate solutions for males too.

Breast Implants

In the recent rewrite of ADFP 701, "Recruit Medical Examination Procedures", many medical conditions have been included for the 1st time. 1 of these is the medical fitness of women with breast implants. The ADF aviation community has not formally faced this issue before and indeed the experience of most militaries is somewhat limited in this area. Concerns relate to the possibility of trapped air expanding with altitude, effects under G, risk of complications and the effect of impact forces.

Although the possibility of trapped gas remains, and augmented breasts have been known to become firmer with altitude, no reports of rupture of implants with altitude have been recorded. Breast soreness caused by the safety equipment however could be of concern in this situation. Likewise there is no evidence that G is likely to cause problems. While many studies have shown the potentially damaging effects of oscillatory motion on normal breast tissue, breast discomfort has not been reported in centrifuge studies and there is no evidence that unidirectional motion is likely to cause long term damage. Of course the augmented breast is somewhat heavier, and therefore the risks of soft tissue stretching may be increased.

Certainly as with any procedure, complications such as infection can be an issue, however provided adequate screening occurs and a suitable time has elapsed since surgery, this should not be a major concern. Perhaps the biggest risk is that the breast implants will rupture upon impact against the aircraft harness system itself during crash or ejection. Even if this were to occur, it is unlikely to cause a flight safety risk. In fact the worst case scenario appears that the fluid could leak and the individual will get wet!

The AVMED recommendation is therefore that women who have had breast implants are fit for flying duties provided they are more than 3 months post-surgery, there are no complications from the surgery, and they are aware that they may be at increased risk of implant rupture due to the environment in which they work.

Cultural issues

Recently, much publicity was generated by the case of Lt Col Martha McSally, USAF, an A-10 pilot. Lt Col McSally challenged a military policy requiring servicewomen stationed in Saudi Arabia to wear the Muslim abaya (a black head-to-toe robe worn in certain Muslim cultures) when off base. The basis of her objection was that such a display, although culturally sensitive, was degrading to western woman. Her case resulted in the passing of an amendment by the US Senate to prohibit the Department of Defense from requiring or even formally urging women to wear the garment.

Fortunately such issues have not arisen in the Australian Defence Force, however the fact remains that many of the countries which we are likely to work with or in, either on UN missions or in Coalition operations, do not share our views on the role of women.

While this can potentially lead to some difficult situations, provided commonsense is applied by both commanders and individual aircrew, most of these issues can be overcome. ADF female on UN missions such as those in East Timor, working side by side with members of many male dominated cultures, have reported few problems and certainly cultural sensitivity alone is not a reason to limit their opportunities.

Summary and Conclusions

In peace-time it might be all very well for a well-to-do woman to keep a nice, quiet, comfortable aeroplane for her own private flying, or it might be very nice for the pilot of a fast two-seater fitted with dual controls to hand over the control to his best girl when taking her for a cross-country trip, and at a safe altitude; but there certainly does not seem the slightest reason, still less any necessity, for women pilots in war.

Mr. C. G. Grey, "The Argus" 24 August 1918

Women and men will continue to be different, and these differences will continue to result in female specific issues being raised in the aviation world. This is not a reason to restrict aircrew opportunities but to rethink our current ways of doing business and in some cases the result may be improvements for both genders. Despite the reservations of Mr Grey, there still remains no good reason why appropriately qualified women cannot achieve as much or more than their male counterparts in both peacetime and on operations. Women are now an integral part of our military flying force and are here to stay. AVMED will continue to monitor developments in female aviation and intends to conduct a survey of all female aircrew in the near future, in an attempt to further identify some of the issues facing women in the ADF.

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A Job well done...or not!

BY LEUT STEPHEN MINA, RAN
AIR TRAFFIC CONTROLLER
NAS NOWRA

Combined tower/approach operations at night in the old ATC tower at NAS Nowra could be quite an easy ride. Just yourself, your trusty Surface Movement Controller (SMC), the television, an Automatic Terminal Information Service (ATIS), which remains current and with any luck, all of your aircraft on Operational normal (Ops Normal).

This CAVOK, wind-"calm" night, the SMC and I had solved most of the problems of the world while having one Sea King operating in Jervis Bay, one Seahawk operating in the Shoalhaven Bight and a Squirrel in Helo North training area. Ops Normal were not due for at least another 20 minutes, and we had been kicking back over a hot cuppa. A quick scan of the radar and the world was a happy place.

5 minutes later, the radios crackled to life with a quick and excited "MAYDAY, MAYDAY, MAYDAY", no callsign, position or intentions. Obviously this guy was in serious trouble. A close look at the radar (without spilling the coffee), all aircraft could be identified and there appeared to be no dramatic changes in level and/or direction on the radar identities, "@#$&?* Kids!!!" was the 1st thought that crossed my mind, as I had experienced unauthorised transmissions on this frequency at a recent air show. Thinking back inside the envelope, I commenced radio checks with all aircraft. Working anti-clockwise around the screen, the Sea King advised ops normal, from the Seahawk I could immediately identify the origin of the MAYDAY, mainly by the pitch in his voice!

The Aircraft Captain advised that the aircraft had nearly impacted the water and now that they were under control, a PAN was declared. I acknowledged the PAN and then confirmed that the SMC had all details on the aircraft before pushing the Crash Alarm. Emergency services were placed on standby, and were positioned for the aircraft's arrival to Run Way 21 (RWY).

Trying to give the pilot the best "warm and fuzzy" feeling possible, I asked whether the Sea King was able to shadow the Seahawk in. He could, but had an unserviceable winch... who was holding SAR for these guy's? or more to the point the "R" in SAR.... but something was better than nothing, and he could orbit the aircraft if they did have to make an emergency landing/ditching. Everything was now set for the aircraft's arrival, and we did a quick once over the checklist just to make sure it was complete. It was, and as the Seahawk approached 8 miles from Nowra the aircraft captain cancelled the PAN. Quick as a flash we stood down the base emergency services, and returned the Sea King to his operating area just off Jervis Bay. Thoughts of a fresh brew came to mind, after all it's not every day that you get to handle a MAYDAY at night, so professionally as we had.

The navigation and strobe lights were now clearly visible as we visually tracked the aircraft from about 5 miles to a left base for RWY21. The Seahawk made the expected base call at the appropriate time and as I gave the landing clearance, an eerie silence descended within the tower. I looked nervously at the SMC, and I believe that he saw the same look of disbelief in my face. We had an aircraft that had initially declared a MAYDAY, and as we had discussed while he was recovering, probably pulled a LOT of collective, then declared a PAN which was cancelled without an aircraft inspection by a crew that was most likely still running on pure adrenalin. We knew that it was the aircraft captains call on the distress phase, but surely we could not have been so stupid as to have stood all emergency support down.

We obviously had, and you cannot believe as to how long you have to hold your breath while a Seahawk transitions from flight, to flare, to wheels on ground.

That night we discussed at length, what we should have done. We were both junior officers, but experienced in NAS operations. I had time and again drilled into trainee's that declaring a PAN on behalf of an aircraft is not only free, but a pilot may one day even thank you for the service. Skyhawk A4's were still operating at NAS, and generator failures were quite common, some pilots declared PAN's for this and others didn't. Declaring a PAN on behalf of the aircraft captain when they have notified of minor problems such as this exercise the base emergency response and adds to the realism of an aircraft emergency.

On this occasion we both (SMC and myself) instinctively cancelled the emergency, without reason to do so. I believe that you get lucky at least once in your ATC career, and this night I believe it was mine.

As an aside, the aircraft was rumoured to have suffered extensive over-torque to the gearbox and airframe. The MAYDAY call was also received by the RAAF WILLIAMTOWN Fire Section (they operate the same MBZ frequency) and they initiated their emergency response plan. They ran their response, which eventually required the resources of Australian Maritime Safety Authority (AMSAR) and involved SAR aircraft searching the Nelson Bay area outside Newcastle. A rather expensive, and at night, a rather dangerous operation.

We also updated the emergency checklist to include "Notify Australian Search and Rescue (AUSSar)".

The Mysteries and Miracles of Technology (or, things that go splash in the night)

BY LCDR TERRY GADENNE RAN, THEN 816 SQUADRON

I assessed water impact as imminent and grabbed the collective and pulled as my focus returned to the AI, setting zero pitch wings level and yelled a Mayday

Have you ever scared yourself so badly that when you were finally safe again there was this deep down urge to throw up? I have on a few occasions and the night of 22 January 2001 was one of them. Fortunately I lived to tell the tale and hope that others can learn from my experiences.

816 Squadron was conducting "back in the saddle" (BITS) training as part of its post Christmas leave work-up. Having already done simulator emergency sessions and day general and instrument flying we were into the night BITS. The sortie mission profile was to proceed direct to the Shoalhaven Bight for night box knocking (winch recovery of a life ring), then return to the field via a self-controlled radar approach up the Shoalhaven River for circuit operations.

Not surprisingly, the night was particularly dark (aren't they all in these articles?). There was an illumination of only 5-10 percent and that was only from the coastal towns. The wind was 30 to 33 knots from the northeast (which put the coast out to our 9 o'clock while in the hover). The training required the use of the Automatic Flight Control System (AFCS) to conduct approaches to the hover for the box knocking. With the lack of a visible horizon of any kind the AFCS operations were conducted solely on instruments. The pilot on the controls was kept busy as we completed the approach and entry to the hover, there was an uncomfortable high nose 'buck' by the helicopter. This set the mood up front as the wind and sea-state kept the aircraft on the move and continual inputs were required to keep the aircraft doing what we expected of it. This is the beginning of the mysteries of technology.

There are some odd things about systems we seem to accept in benign environments and these things are accepted mostly because we can't explain them and they didn't scare us. The 1st of these was a 'common' coupler failure in the 1st hover that was reset without any further complications (yet). After resetting the AFCS the aircraft stabilised somewhat from its tendency to hunt by +/-5 knots, but continued to nod by about 3 degrees while sitting in the hover. After placing the 'ring' in the water and marking 'on top' we departed automatically without any problems. On return to the ring we found ourselves 80 yards short and to the left. With the conning from 1 of our 2 aircrewman, the aircraft slowly approached the pick up position. Every time the pilot reduced inputs, the aircraft made greater than expected attitude changes. It also seemed that although initially trimmed to a steady hover, the aircraft would not return to this attitude. It was uncomfortable when combined with the sole reference to instruments. After a little hunting the ring was picked up and then placed back in the water for the aircrewmen to practice 'crew hover'. By this time I was very focused on monitoring the event as captain and instructor. I was at the edge of my comfort zone. It was a tough night for this business.

After backing away 40 yards crew hover was passed back and the approach was in main movements. The 1st pause by the controller caused a 'buck' of 13 degrees nose up to about zero on the AI. I commented on the manoeuvre and the pilot guarding the controls responded in kind. The guys in the back apologised although is was not their fault and we moved on to the 2nd approach that placed us over the ring. That pause caused a 15 degrees up and 5 degrees down change that I exclaimed was uncomfortable and the pilot responded again in kind. At that moment the aircraft seemed to depart the hover for forward flight. The guys in the back cautioned the forward speed with 60 feet of cable out and my scan noted speed approaching 60 knots and climbing away. I called for the pilot guarding the controls to "take control of the aircraft" which he did by easing back on the cyclic to arrest the acceleration and touching down on the lever to settle the climb. These actions seemed normal to me and I expected all of this to settle down at the hover. From there we could return to the ring, after which we would call it off and try and work out what happened. What happened then is a mystery.

The AFCS in combination with the pilot's inputs had the aircraft in a 15 degrees nose up attitude that seemed normal for deceleration. The guys in the back had retrieved a little cable and in seconds I noticed we had begun to move backward and developed a rate of descent. I called "altitude" and the guys called "watch your height". I broke my scan when the brightness of the rescue light on the water caught my peripheral sight out of my left cockpit window. I looked out and was frightened to see the rate at which we were approaching the surface and how close we had got in seconds. I guessed it at 15 to 40 feet. I assessed water impact as imminent and grabbed the collective and pulled as my focus returned to the AI, setting zero pitch wings level and yelled a Mayday. There was no time to talk to the pilot who from post incident debriefs indicated that he sensed imminent water impact at the same time and made similar inputs to mine to cushion the expected impact (afterwards all aircrew thought it was inevitable we would hit the water).

The miracle of technology was in the ability of the aircraft to absorb so much punishment. I pulled an estimated 150 percent Torque and drooped rotor RPM well below 90 percent. I had tunnel vision due to stress now and focused on the AI.

The rotor RPM was so low that even in the strong wind tail rotor effectiveness was lost. In the recovery from the descent that was possibly as low as 5 to 10 feet we spun around 3 to 5 times. The men in the back cut the flailing cable and hung on for their lives. In the climb I pushed forward on the cyclic and felt the pressure on the control from the other pilot. I told him "I had control". As my vision widened I saw all the red lights on the instrument panel. I lowered the lever. I saw torque come down through 127 percent, the low rotor RPM flash stopped and rotor RPM recovered above 96/97 percent. Passing 800 feet and heading towards lights and shore I further reduced the torque from 118 percent to the normal flight range. The AFCS had many fail captions and was reset for the trip back. I updated the Mayday and returned to Nowra.

Technology played its part in a close call that night that could have been tragic. In turn the situation was saved by several benefits of technology. Firstly the aircraft was powerful enough to absorb the demands that were placed on it and pull us out of the descent (Mr Sikorsky really built the Seahawk like a brick s#*t house). Another is the use of the simulator to allow exposure to unusual and high-risk scenarios that assisted a very frightened aircraft captain and crew to get back to Nowra in 1 piece.

So what else did we learn from the incident? With the benefit of 20/20 hindsight we discovered a number of lessons including:

a. hearing sometimes fails under conditions of extreme stress (a well documented phenomena);

b. if it can bite it will and we need to be prepared by considering the risks through out training processes and authorisation;

c. added vigilance is required when conducting evolutions that we may not be current in;

d. there is no such thing as a benign evolution (they all have the potential to bite);

e. disorientation can be as insidious as hypoxia and needs to be communicated early to the crew;

f. you don't recover overnight from a really bad fright and it takes a while to rebuild damaged confidence;

I've flown Tiger 83 since the incident and it was quite an odd feeling the 1st time, sitting in an aircraft in which I came frighteningly close to flying into the water in the dark. The get well program for the aircraft took a lot longer than mine but she was a stout old girl that I am grateful gave her all when we needed it most. The main message that I hope everyone can take away from my experience is that technology may be great, but the only thing that will keep you out of the water when it all turns to worms is your flying ability and awareness. As such, we must be trained, current, and prepared for any eventuality that may demand our best.

A Job Well Done...or not, and this article give differing perspectives that tell a story of how close we came to reducing the Seahawk inventory by 1 that night. There is no doubt that this is as close as you can get to ditching without getting wet. At the time this was considered by most Seahawk aviators to be a 1-off incident, after all, the RAN had been operating the Seahawk for more than a decade without a similar event. The Incident Investigation Report agreed that similar occurrences were of a minor nature and usually involved uncommanded pitch oscillations or AFCS failures as a result of gyro unserviceability or wiring problems. No loss of control incidents of this magnitude had been reported previously.

Unfortunately, we can no longer regard this as a 1-off event. On 26 March 2003, the crew of Seahawk N24-007 while conducting coupler operations during a night boarding exercise experienced a coupler failure followed by a rapid 30 degree nose up pitch change, HMAS NEWCASTLE ASOR 05/03 refers. The pilot whilst attempting to regain control subsequently lost control for several seconds prior to recovering from the unusual attitude. The circumstances and crew accounts of these loss of control incidents are remarkably similar. Do we have a problem?.... hopefully the Incident Investigation Report due out in August 2003 will shed further light on this subject.

A closely related perspective as viewed by the Human Factors and Ergonomics Society.

"Incorrect pilot interaction with the AFCS has become a major concern in the civil transport industry. This problem has variously been described as lack of mode awareness, mode confusion, or automation surprises. 2 main factors have been cited, in accident and incident reports and in the scientific literature, as being responsible for such breakdowns: (a) The user's "mental model" of the machine's behaviour is not matched correctly. (b) The interface between the user and the machine provides inadequate information about the status of the machine. Both factors may limit the users ability to reliably predict or anticipate the next move of the machine and, hence, may lead to false expectations, confusion, and error.

Editorial by LCDR Leigh Curac, RAN
Chief Pilot Examiner
COMAUSNAVAIRGRP

BELOW NIGHT FLYING

RAeS Field Award for Flying Safety for 2002

BY JOHN CRAWLEY
EDITOR - SPOTLIGHT
DFS-ADF

COMAUSNAVAIRGRP, TOUCHDOWN and DFS-ADF have much pleasure in announcing that Chief Petty Officer Aviation Technician Avionics (CPOATV) Peter Calvert of 816 Squadron, HMAS ALBATROSS is the winner of the RAeS Field Award for Flying Safety for 2002.

The Royal Aeronautical Society (RAeS), award comprises a $100 prize and a framed certificate.

CPOATV Calvert was awarded his certificate and prize on Tuesday 27 May 2003 by CDRE Geoff Ledger, RAN at a ceremony held at 816 Squadron.

A Keen Eye

On Friday 25 October 2002, Seahawk 872 was scheduled to depart NAS NOWRA to join HMAS STUART for an embarked transit to Fleet Base West. The departure had been delayed by 30 minutes due to a minor unserviceability, leading to considerable pressure to launch to meet the planned embarkation time window. The majority of the detachment's maintenance personnel had already joined the ship by boat-leaving only CPO Calvert, the Flight Senior Maintenance Sailor (FSMS), and a POATA to embark with the aircraft.

On rectification of the unserviceability, the aircraft crew and passengers boarded the aircraft and, after start-up, taxied for departure. However, as the aircraft reached the threshold of Runway 26, the Aircraft Captain radioed squadron maintenance, requesting an inspection of the flight line where the aircraft had been parked. One of the passengers (CPO Calvert) had witnessed what he believed to be a washer fall from the aircraft as it taxied from the parking spot.

An inspection of the flight line revealed 2 nuts and 2 washers, which appeared to have sheared from 1 of the aircraft's main wheels. A return radio call led to the aircraft being taxied clear of the runway and shut down. It was subsequently confirmed that 2 of the 8 main wheel hub bolts on the starboard main wheel had in fact sheared.

CPO Calvert had glimpsed the washer as it fell away from the aircraft. Seated in a side-facing seat for the transit flight, he had no direct communications with the aircraft's crew, so, unsure of what he had seen falling from the aircraft, he quickly wrote a note and passed his concern to the aircraft captain via one of the backseat crewmembers.

CPO Calvert's quick and decisive reaction to an unusual sighting on the flight line averted what had the potential to be a catastrophic failure of the aircraft's main wheel. Had the aircraft proceeded to sea and recovered to the ship in the significant seas being experienced, it is likely that the starboard main wheel may have failed, with potentially critical consequences for the aircraft, crew and flight deck team.

CPO Calvert's actions are highly commendable and provide an excellent example for all maintenance personnel and aircraft passengers. His actions demonstrate that, regardless of the role anyone may play in the operation of an aircraft - if you see something unusual: speak up!

THE RAeS FLYING SAFETY AWARD

Negotiations during 2001 between DFS-ADF (on behalf of the ADF) and the Royal Aeronautical Society (RAeS), Australian Division resulted in the creation of an annual award to recognise an individual or collective effort enhancing flying safety in the ADF.

The award is known as the RAeS Field Award for Flying Safety, which includes a $100 prize and an RAeS certificate; however, commencing with the 2003 award the RAeS has generously increased the prize to $200.

Members of the ADF (including foreign exchange and loan personnel), Defence civilians and Defence contractors and their staff, are eligible for consideration for the award.

The award embraces each calendar year. In judging the award, DFS-ADF and the RAeS consider the following:

- *Good Show* awards (or similar) made throughout the calendar year;
- initiatives by flying safety personnel during their day-to-day activities; and
- initiatives by any other flying, ATC, ground support or technical agency, or individual, brought to the attention of DFS-ADF staff.

Commanders and supervising staff within ADF squadrons, ground support units and other agencies that support flying operations, however remotely, are invited to forward recommendations for the 2003 RAeS award to DFS-ADF. Recommendations may include personnel being considered for other awards (or already rewarded for flying safety initiatives) during 2003.

BELOW CPOATV PETER CALVERT PICTURED AFTER RECEIVING HIS AWARD

RAN Aviation Achievements OP BASTILLE / FALCONER

BY LEUT EMILY CURTIS, RAN
FLEET PUBLIC AFFAIRS OFFICER
MARITIME HEAD QUARTERS

Two RAN Seahawk helicopters and one RAN Sea King helicopter have recently returned from Operation Bastille/Falconer, Australia's contribution to the liberation of Iraq. HMA Ships ANZAC and DARWIN both had an embarked Seahawk helicopter, and HMAS KANIMBLA was home to the embarked Sea King helicopter.

Achievements/Highlights

- HMA Ships DARWIN and ANZAC were actively involved in the aviation planning leading up to the conflict. DARWIN and ANZAC's flight crews contributed significantly to plans for the clearance of the Khor Abd Allah (KAA) - waterway between Iraq and Kuwait leading the main port of Iraq.
- Throughout OP SLIPPER and OP FALCONER de-conflicting airspace was the biggest issue regarding aviation in the Gulf. Australian aircrews were very committed to airspace de-confliction issues and were the main players responsible for driving this issue. The Australian Flights were effectively the airspace owners/watchdogs! Either DARWIN or ANZAC was responsible for ensuring that all coalition ships were given the correct briefing package for their embarked Flights so that the risk of accidents was minimised.
- Australian helicopters earned the respect of their coalition counterparts as a result of their flexibility, provision of information and services, effective and safe search procedures, top cover, and 'dhow herding' techniques.
- Coalition ships made comment on the thorough service that Australian helicopters provided in the surface search coordination role, and this was a source of great pride for DARWIN and ANZAC's flights.
- The ability that the Seahawk flights demonstrated to adapt and overcome to complete tasks and the way that they supported each other is a credit to them.
- What is seen by the Flights to be their biggest achievement was the continuous good situational awareness and vigilance that kept them safe in the air.
- For the week surrounding the start of the war, the airspace was extremely busy, and a visual lookout proved to be the most reliable way to keep out of the path of other traffic in the 30 nautical miles of airspace surrounding the Al Faw Peninsular and the entrance to the KAA.
- Within this busy area, another technique used was flying at non-typical altitudes to avoid other known operating heights.

Anecdotes from HMAS DARWIN's Flight

On day 1 of the war, DARWIN's flight was tasked to undertake a passenger transfer to Kuwait Naval Base. While shut down waiting for the passengers to arrive, the air raid siren sounded indicating possible chemical attack. The flight crew of DARWIN dived for their masks in the back of the aircraft and moved with their weapons and ammunition via a truck to a crude bunker where they spend the next 30 minutes until the all clear was given.

A 2nd air raid siren sounded and this time the Flight had to run the 300 metres to the bunker with weapons, ammunition, and gas mask in tow as no vehicle support was in the vicinity.

DARWIN's Flight said it was a very surreal experience.

"We later listened to the Kuwaiti radio broadcast from the ship - there had indeed been 2 Scud missile attacks on Kuwait. It was not a false alarm. Patriots had knocked all missiles down".

On day 3 of the war, AGRO was the 1st Australian helicopter to support the mine counter measure effort up the KAA - all the way to Iraq's main port of Umm Qasr. The helicopter supported two MH53 Super Sea Stallions, both towing sleds - 1 a surface sled and the other submerged. AGRO looked after both MH53's while United States Seahawk returned for fuel, and then AGRO took one MH53 while the US helicopter took the other.

During this time a couple of fast moving craft came down the river from the north of Umm Qasr which raised the heart-rate of the Flight. The flight crew had to be 100 percent concentrating on the task at hand, as the fast moving craft turned out to be a United States boat, this is a good example of how important identification of friend or foe was.

After the height of the conflict, DARWIN's Flight supported the delivery of humanitarian aid, specifically medical stores, from KANIMBLA to Kuwait. From Kuwait the stores were then transferred to Baghdad via a RAAF C130 aircraft.

AGRO also supported KANIMBLA's aircraft (Shark 07) during the period of her defect when on the ground in Iraq (North of Umm Qasar at Kwar Az Zubawr). AGRO conducted 70 nautical mile transits with underslung equipment, tools and stores so that KANIMBLA's helicopter maintainers could effect Shark 07's repairs on the ground. Stiff headwinds and unstable loads slowed transits, but it was another example of Australian helicopters supporting each other in the area of operations.

The Persian Gulf stores helicopter, the 'Desert Duck', shut down broken on DARWIN's deck at the end of March. One of the oil servicing/supply lines to her head had burst and it looked like the Desert Duck would foul DARWIN's deck for at least a day until delivery of spares. DARWIN's maintainers assisted and came up with a solution - using the hose off one of AGRO's servicing rigs. It was fitted and approved by Duck's engineers ashore for a ground test. It worked and Desert Duck got home safely!

Missiles were outbound from coalition warships on several occasions while AGRO was airborne. There was a codeword to direct all coalition helicopters below a certain height during this time so that ships could fire their missiles on Iraq. Ships and helicopters could see the plumes as missiles were fired.

Flights were mainly surface search of the KAA waterway and plan "sheepdog" the herding of dhows back up the KAA. Most nights the dhows would start their run around sunset and AKUBRA would have turned them all around before midnight. On some occasions they would have a 2nd try, but once they turned AKUBRA would simply escort them to the border (hence the 'herding' term).

2 lives were saved during the operation. Both were heart attack victims that required urgent medical treatment. 1 was winched from Royal Auxiliary Fleet (RFA) Bayleaf, the other from USS Milius. During the 2nd medical evacuation the female patient "died" a couple of times and was revived by our Medical Officer in the back. He was given a commendation from the Commanding Officer of Milius for saving her life.

Logistic runs to Bahrain were a regular event especially when Shark 07 had her defect in Khor Az Zubayr. Mail and urgent defect rectifications stores were the priority. AKUBRA conducted a vertical replenishment sortie from a Polish ship that took most of the day. ANZAC's stores were placed on their flight deck with a tarp covering them. Prior to commencing the sortie AKUBRA asked if they could ensure the tarp was secure. The Polish way to secure a tarp is to clear lower deck of all personnel and lay on the tarp! It worked.

Achievements/Highlights

To finally go up the KAA and seeing what it was like was a highlight for AKUBRA's flight. There were/are still a few abandoned steel hulls left on the river. Looking at ANZAC's indentations of our 5 inch gun on the Al Faw Peninsular was also interesting. AKUBRA's flight also met the "Marine Mammal MK 7" which are the dolphins trained to find mines. AKUBRA was often asked to look out for them because they would go on swim-abouts!
The maintainers of AKUBRA have also earned a special mention. They have worked very hard at keeping the aircraft serviceable and when they weren't doing that they were upperdeck sentries, mine sentries and working in the cafe. During the naval gunfire support, the maintainers were gun loaders and would willingly help out anywhere help was required.

- KANIMBLA's Sea King helicopter and crew, recorded a record flying month during the height of operations in the Persian Gulf. During March, the Flight flew a total of 126.5 hours which is more than the combined monthly flying rate of all other 817 helicopters for the same period - breaking a Squadron record.
- Since deploying the Flight has played an integral role including:
  - Conducting surface search operations
  - Lifted and transported thousands of pounds of stores
  - Transferred hundreds of passengers
  - Carried out 2 medical evacuations
  - Was the 1st RAN aircraft to land in Iraq after the commencement of hostilities.
- During the deployment it has carried out an enormous array of tasks, making good use of the Sea King's endurance and heavylift capabilities.
- The flight crew has worked at 4 times the normal rate of effort and has maintained its professionalism and commitment throughout.
- This Flight has ensured continued safety in a very dynamic multinational environment.
- The Flight maintainers have maintained a very high standard of service to both Shark 07 and visiting aircraft.
- During Operation Baghdad Assist, where KANIMBLA provided medical stores to the people of Iraq, both 'Shark 07', and DARWIN's helicopter, 'Agro', had stores loaded on to them for transfer to Kuwait.
- KANIMBLA's flight deck team swiftly loaded the stores into the helicopters and they launched almost simultaneously for a speedy transit to Kuwait to drop off the stores before the supplies were picked up by a C130 for transportation to Iraq.

KANIMBLA's Flight Deck Team Statistics/Information

The ship sailed from Sydney on 24 January 2003 with a fresh and relatively inexperienced flight deck team and no aircraft embarked. With a week's work up culminating in an Operational Readiness Evaluation (ORE) off Darwin 7 days later, the new flight deck team passed the 1st test - the ORE - with good results.

Since the commencement of OP Falconer KANIMBLA's flight deck team have received 13 different aircraft types from 4 different countries, and in 1 day hot refueled no less than 13 helicopters, pumping over 26,000 pounds of fuel into various coalition aircraft.

During the 10-day peak of the war, KANIMBLA conducted over 100 deck recoveries from 9 different types of helicopters.

KANIMBLA has 6 members that make up the ship's aviation department, plus 7 additional billets including 3 musicians - this in itself is a 1st for both the ships aviation department and any RAN ship. There are also 2 stewards whose ancillary duty is to be flight deck team.

The ships aviation department has had to overcome challenges along the way during their deployment.

One being the fact that the United States and Royal Navies use night vision goggles (NVG) for flying at night, which is something the Royal Australian Navy doesn't do. This meant that KANIMBLA's flight deck teams had to adjust and adapt by using NVG compatible cylume sticks and work on an NVG compatible (darkened) deck.

The flight deck teams were exposed to new aircraft from different nations frequently, and the flight deck captain, Petty Officer Mark French, would need to brief the Flight Deck Team with a diagram of the underbelly of new visiting aircraft so they knew how to identify the tie down and refueling points.

Throughout the operation KANIMBLA's flight deck team has formed good relationships with visiting aircrews and has impressed Flight Commanders in the MEAO.

BELOW STORES LOADING FOR DESPATCH

Statistics for HMAS DARWIN's Seahawk

Aircraft:
Seahawk helicopter embarked in HMAS DARWIN (call sign AGRO)

Total hours flown for whole deployment	275.8
Total hours flown during OP SLIPPER	193.7
Total hours flown during OP FALCONER	68.1
Total number of sorties (Op Slipper)	62
Total number of sorties (Op Falconer)	27
Total sorties	89
Estimated total passenger carried while deployed	130

DARWIN flights helicopter operated with various units while deployed:

United Kingdom	Type 23 FFG, Sir Class
	Winch to Type 42 Destroyer
United States	Aircraft Carrier constellation CV64
	Supply Class (Rainier AOE7)
	Henry J Kaiser Class (replenishment)
	Ticonderoga Class CG
	Spruance Class DD
	Arleigh Burke Class DDG
	Oliver hazard Perry Class FFG

The flight deck team also had these helicopter types visit her deck:

Australia	Seahawk, Sea King
United Kingdom	Super Lynx
United States	SH60B Seahawk
	HH60H Seahawk (USNR)
	SH60S Knight Hawk
	Dauphine (United States Coast Guard)
	UH3H Sea King

Statistics for HMAS ANZAC's Seahawk

Aircraft:
Seahawk helicopter embarked in HMAS ANZAC (call sign AKUBRA)

Total hours flown for whole deployment	302.5
Total sorties	125

Statistics for HMAS KANIMBLA's Sea King

Aircraft:
Sea King helicopter embarked in HMAS KANIMBLA (call sign Shark 07)

Total hours flown for whole deployment	205.9

Types of sorties:
Maritime logistic support, Medical Evacuations, Surface Search Coordination, Combat Support (CDT3), Reconnaissance (CDT3)

Serviceability	75%
Passengers carried	422
Cargo carried	226,350 pounds

Two Medivacs during Op Falconer (one by 100ft Hi-line)

1st RAN aircraft to land in Iraq after hostilities:
(25 March 2003 at Khaw Az Zubayr)

Technical Supervision - the Naval Aviation Perspective

BY LEUT DUANE UNWIN, RAN
MANAGER OF TECHNICAL AVIATION
TA-AVN
NAS NOWRA

Quite often the question is asked (particularly at Airworthiness boards and other forums) on how Naval Aviation Technicians are trained to become "supervisors". The term "supervisor" can have several applications and varying responsibilities depending on the situation. When things sometimes don't go quite to plan 1 of the 1st questions inevitably asked by senior management is "who was supervising?" This article seeks to provide some answers to how Naval Aviation prepares our Technicians to become supervisors.

OUTLINE

In basic terms the Naval Aviation Technician Training System is blocked into 3 broad elements:

- ITT (Initial Technical Training - conducted at RAAFSTT Wagga)
- Type Specific (ie Seahawk/ Sea King/Squirrel/Seasprite - conducted at TA-AVN)
- ATT (Advanced Technical Training - conducted at RMIT & TA-AVN) coupled with Leadership and Management Training normally at Training Centre East.

ITT & TYPE SPECIFIC

ITT and Type Specific training enables Navy to develop competent tradespersons/ technicians (Able Seaman) whom carry out the bulk of autonomous hands on maintenance on specific aircraft types. Training at RAAF Wagga comprises about 2300 hours over 18 months and on completion of the associated Competency Journal a nationally recognised Aircraft Maintenance Engineer certificate (AQF Level 4) is awarded. Following arrival at TA-AVN trainees complete Basic Ordnance and Administration courses as well as an Equipment Application Course (EAC) to enable transfer of theoretical aircraft system knowledge gained at Wagga to be applied to current RAN aircraft.

ATT

At each rank after Able Seaman, specific Aviation ATT courses (ie LS-ATT, PO-ATT, and CPO-ATT) are coupled with Navy wide generic Leadership and Management Courses (ie LSLC, POMC). These courses are undertaken at each rank to enable us to develop our tradespersons into technical supervisors/managers, with varying increased levels of supervision/management responsibilities at each rank level. This approach ensures those generic principles of supervision; leadership and management that apply across the wider Naval communities' non-commissioned ranks are coupled with the specific Naval Aviation responsibilities inherent in our maintenance system.

COMPETENCIES

The training described previously is derived from the competency standards (3 for LS, 10 for PO and 8 for CPO), which define the category employment profile for each rank level. A summary of these competency standards and their relationship to the employment profile is as follows -

- Leading Seaman (Supervisor) required to supervise small teams in aviation maintenance activities such as aircraft movements, jacking of aircraft, installation of major sub-assemblies. Conducts Quality Assurance (QA) inspections and provides workplace leadership.
- Petty Officer (Coordinator) Maintenance Coordination and supervision of larger maintenance teams (termed a "Watch" up to 15 personnel). Responsibilities for Occupational Health and Safety (OHS), Human Resource Management (HRM) and coordination & application of QA and workplace assessment.
- Chief Petty Officer (Manager) Management, Coordination and supervision of Aircraft Maintenance activities and detachments ashore/embarked and increased responsibilities for management of aircraft configuration, performance testing (MTFs), QA and OHS.

SUMMARY

In summary the Naval Aviation training continuum does not seek to isolate supervision into 1 discreet component or course. Supervision training begins inherently in its most basic form within the training for the rank of Leading Seaman and is further developed into more complex forms of supervision training which in competency terminology are defined as coordination and then management. Ultimately the continuum seeks to develop a technician Able Seaman (AB) into a manager Chief Petty Officer (CPO) capable of maintaining and managing Naval helicopters, maintenance personnel and support equipment at sea or remote from parent squadrons.

Presentation of Fleet Air Arm Association Medallions of Merit

BY BEVERLY CLARKE
PUBLIC AFFAIRS OFFICER
NAS NOWRA

Commodore Geoff Ledger, RAN, Commander Australian Navy Aviation Group (COMAUSNAVAIRGRP), has presented a number of Fleet Air Arm Association (FAAA) Medallions of Merit to members of the RAN Naval Aviation Branch.

BELOW CDRE JEFF LEDGER, RAN, CDRE T. A. DADSWELL, RAN (RTD) LSA SHIMMINGS, CPOATV A WILLIAMS, LEUT D MATHEWS,RAN

This is to recognise their achievements in their aviation training courses during 2002.

Lieutenant David Matthews, Chief Petty Officer Aviation Technical Avionics Antony Williams and Leading Seaman Aircrew Adele Shimmings each received their medallions of merit in front of Commodore T.A. 'Toz' Dadswell, AM, RAN (Rtd) who is the National President of the Fleet Air Arm Association, members of the Fleet Air Arm Association and guests, at Australia's Museum of Flight.

Leut Matthews achieved 1st place in the Air Engineering Officer Application Course. He is currently posted to 816 Squadron as the squadron Flight Support Aeronautical Engineering Officer.

The Chief Petty Officer Aviation Advanced Technician Training Course saw CPO Williams take 1st place. CPO Williams is posted to the RAAF School of Technical Training in Wagga Wagga as the Navy Administration Chief.

LSA Shimmings, who achieved 1st place in the Basic Aircrewman Course, has now completed her Rotary Wing Basic course and is currently working as a Staff Aircrewman at 723 Squadron consolidating her knowledge before starting her Operational Flying Training.

Bravo Zulu

LSNPC Jeremy Davey
HMAS ALBATROSS Security

BELOW LSNPC JEREMY DAVEY

At approximately 0325 Thursday 27 February 2003, Leading Seaman Naval Police Coxswain Jeremy Davey was performing his duties as the Duty LSNPC - Security Supervisor (a watchkeeping position) at HMAS ALBATROSS. In the course of his external security rounds he received report of an incident detected by the SERCO SODEXHO Defence Services Mobile Security Patrol. The Patrol Officer reported that he noticed fuel leaking from one of the PELAIR Lear Jets parked in the vicinity of Foxtrot Hangar. LS Davey took immediate action to safeguard this potentially dangerous situation by isolating the area and informing the SERCO SODEXHO Fire Section of the situation, who promptly responded and attended the scene. Whilst at the scene, LS Davey noticed that the Fire Services IC was inspecting the area with a lit cigarette in his mouth. Using a high level of initiative and leadership he immediately confronted the Fire Fighter and directed him to extinguish the cigarette and comply with OH&S practices as detailed in ALBATROSS Fuel Spillage SOPs. LS Davey followed up the incident up by informing the ALBATROSS Command without delay and submitting an OH&S Incident Report (AC563) to the NAS OH & S Officer. This action ultimately led to the termination of the Fire Fighter's employment with SERCO SODEXHO Defence Services on the grounds of a serious breach of safety. LS Davey's diligence and dedication to his duties were the main stay in alleviating the potential for a dangerous incident to escalate towards serious injuries to personnel and the destruction of aircraft and surrounding infrastructure.
LS Davey received a 'BZ' from the ALBATROSS Command on his vigilance and excellence in carrying out his duties.

Royal Navy Lynx aircraft visits 817 Squadron

BY LCDR PAUL HANNIGAN RN
817 SQUADRON

ABOVE LCDR PAUL HANNIGAN RN WELCOMES AIRCRAFT CAPTAIN LCDR LEE DAVIES RN

817 Squadron hosted a visit from a Royal Navy Lynx aircraft from HMS MARLBOROUGH at the beginning of June. The Lynx Mk8 DSP (Digital Signal Processing) from 815 Naval Air Squadron, was crewed by pilot LCDR Lee Davies RN and observer LEUT Scott Simpson RN. The aircraft's primary role is HMA (Helicopter Maritime Attack), comprising ASUW and ASW and has just completed a deployment to the Gulf in MARLBOROUGH, a Type 23 frigate.

In order to maintain currencies and conduct liaison visits the flight took the opportunity to disembark to Brisbane before heading for Nowra while MARLBOROUGH was alongside in Sydney.

The ship left the United Kingdom on 17 January 2003 and spent 10 weeks in the Gulf patrolling the Iraqi coastline, where MARLBOROUGH played an active role in NGS for allied landings discharging some 59 shells.

Upon leaving the Gulf, port visits have included the Seychelles, Cairns, Auckland and Sydney. The ship is returning to the United Kingdom via Exercise Flying Fish and a visit to Singapore expecting to arrive home in Portsmouth 08 August 2003. The aircrew and maintainers were welcomed to NAS Nowra by LCDR Paul Hannigan RN and LEUT Jeff Choat RN, 2 current Royal Navy exchange aviators.

OPHAZ / ASOR + ASSWG = Flight Deck Goggles

BY LEUT (USN) KARL DREIKORN
FLEET AVIATION ENGINEERING UNIT

A new Military Flight Deck Goggle from Eye Safety Systems (ESS) has been introduced for use in flight line and flight deck operations, including VERTREP and transfer operations. The new goggle came about from the direct results of the Air Safety System Work Group (ASSWG) receiving several OPHAZ's. Prior to making the preferred choice of these goggles, many evaluations were performed including an assessment undertaken aboard HMAS MELBOURNE.

You can obtain your new Military Flight Deck Goggle (NSN 4210-01-492-5720) from the NAS NOWRA loan-clothing store. They provide 100% UVA/UVB protection and come with tinted and clear anti-fog lenses. The lenses exceed the requirements of ANSI Z87.1, European Standard Stanag 2920, Canadian Standard CAN/CSAZ94.3-92 and the .22 calibre military ballistic impact test MIL-V-43511C. The goggles are designed to fit over most eyeglasses however there are those it won't. An insert called "RX Lens carrier", has been designed to accommodate prescription lenses. The lens carriers have been recently codified with the NSN 8415-66-148-6360 and will be available soon.

With the advances in material technology, superior personal protective equipment is constantly being developed.
So to ensure the RAN keeps abreast of technology advancements to provide you the very best protection, keep submitting your OPHAZ's or simply contact your Unit Safety Coordinator.

ABOVE MILITARY FLIGHT DECK GOGGLES

BELOW GOGGLES IN USE

BY LCDR MARK MATTHEWS, RAN
(COMMANDING OFFICER
LADS FLIGHT) AND
LSHSO PAUL ROBJENT

LADS (Laser Airborne Depth Sounder Unit) - Ten Years On and Still Going Strong

On 22 February 2003, LADS Flight (Laser Airborne Depth Sounder Unit) celebrated 10 years as an operational unit of Navy. Over the last 10 years LADS has completed more than 1500 operational sorties and surveyed vast areas of previously uncharted Australian waters. This has made LADS arguably the most productive hydrographic survey system in the world.

As a reminder to those who may have forgotten us, or perhaps have never heard of us, LADS Flight is an operational unit within the Australian Maritime Command. LADS employs a Fokker F27 Friendship (VH-EWP), callsign "Navy Survey", for Hydrographic Survey tasks around Australia. Built in 1976, the aircraft was originally owned by East West airlines and used for runs to Norfolk Island. This particular aircraft was selected as it was going cheap! Only joking. It was selected for its internal space and for it's long endurance of more than 7 hours. The personnel at LADS consist of 8 Navy Hydrographers, 3 civilian pilots, 3 Lames, a Field Manager, a Ground System Maintainer and an Airborne System Maintainer.

BELOW SPORTING A NEW BRAND NAVY LOOK

The aircraft is owned by the Navy, but is flown and maintained by civilian contractors.

After 10 years service the LADS survey system is perhaps no longer 'state-of-the-art', but it remains one of the most efficient and capable hydrographic survey systems in the world. Progress is continuing to be made on a replacement for the LADS system with a new system due in service in early 2005. The ever-reliable F27 is expected to remain in service for many years to come.

The beginning of 2003 was relatively quiet for LADS with the aircraft in extended maintenance. On 10 March 2003, LADS Course commenced with 6 students. The 5 week practically orientated course covered Laser theory, operation of the air and ground survey systems and a CASA recognised flight safety training.

The aircraft returned to Cairns airport on 17 March 2003 sporting a new 'Brand Navy' look. The new livery was part of a complete re-paint with the 'mature girl' looking young again. Survey operations commenced a few days later with many sorties being used jointly for training whilst continuing actual survey tasks off Cairns and further down the coast.

The new livery was part of a complete re-paint with the 'mature girl' looking young again.

On 26 February 2003 at HMAS CAIRNS Divisions, LADS Flight was honoured by the Maritime Commander, RADM R.W. Gates RAN, with the award of the Hydrographic Efficiency Shield for 2002. It was a fitting tribute for the Flight to receive this award for the 2nd time at the completion of 10 years service. Whilst the award is in recognition of the efforts for 2002 it also recognises the efforts of all who have served in LADS and who have put into place the procedures and professional ethos that has been the hallmark of LADS since inception.

The closer relationship between LADS and the Aviation FEG was highlighted on 28 April 2003 when COMAUSNAVAIRGRP, Commodore G.A. Ledger, RAN, visited LADS in Cairns. A short and very scenic demonstration over the Great Barrier Reef off Cairns, showcased the LADS capability and allowed Commodore Ledger to gain an in depth understanding of the LADS Flight operation.