ISSUE 2 AUGUST 2004

TOUCHDOWN

THE AUSTRALIAN NAVY AVIATION SAFETY AND INFORMATION MAGAZINE

NAVY


862
NAVY

FLEET AVIATION SAFETY CELL

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Published by
Impact Graphics Pty Limited
Tel: (02) 4443 5966 Email: graphics@impactgraphics.com.au

Photography
NAS Photographic Section
FASC
Caption Competition Photo courtesy CPOSN Kev Bryson, Naval Stores, NAS Nowra

Deadlines
Issue 3 2004 contributions by 20 October 2004. Distributed December 2004.

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Comments, contributions, etc are invited from readers in the interest of promoting Aviation Safety as widely as possible throughout the RAN.

Internet
www.navy.gov.au/publications/navypubs.html

Intranet
http://niw.albatross.navy.gov.au

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Foreword

BY BRIGADIER A FRASER
HEADQUARTERS 16TH BRIGADE
(AVIATION)

The pace of our modern lifestyles affords us little time for reflection, yet it is critical in our professional military aviation environment to the integrity of our safety system. Email, internet and mobile phones provide us unprecedented means to gain and disseminate information, but it does not replace experience and these same tools reduce the effective time our most experienced personnel are away from the actual conduct of our aviation duties.

Touchdown is an excellent forum for reflection on aviation matters, similarly the review process for ASOR's, such as AIRSAFE.
I commend CDRE Geoff Ledger, RAN and his team for the efforts placed in the management of the Navy Air Safety System.
Air Marshal Houston has taken great steps to harmonise the efforts of our three services in the management of aviation issues. Our respective Chiefs of Service create an excellent environment for us to command our capabilities in demanding times in a changing and uncertain world. Together we are all working towards a common goal; an effective operational aviation capability that provides our sailors, soldiers and airmen the aviation support they need within accepted risk levels.

Our profession carries inherent risk. There are many challenges in meeting our preparedness levels and there are always many short notice tasks. As I reflect on my observations and experiences with the Fleet Air Arm, both in Australia and the United Kingdom, and Army Aviation in Australia, the United Kingdom and United States, I believe that we expect a great deal from our junior personnel. This is though, consistent with our society.
CDRE Ledger and I are of a different generation to many of you, despite our best attempts to kid ourselves otherwise. We both strive to create the best possible environment for you to succeed in our collective profession. We can establish an airworthiness system with the best set of regulations and procedures or the most efficient headquarters, but it is your practical application of aviation that is critical to our services and our nation. We have a great deal of respect for you all.

Of course we wish we could infuse you with experience, but cannot. We all make mistakes, but what we seek is that you support, maintain or fly the aircraft with a margin that enables you and/or another member of your team to identify those errors and implement timely and appropriate corrections. The system we have implemented to document this margin is Aviation Risk Management (AVRM).

As commanders we are very proud of your efforts on the many operations we have been supporting over recent years extending from the near region to the Middle East. The aviation capability of the three services has each produced effective and safe support, at times under very demanding conditions. We each acknowledge the impact that the sustained tempo has on you and your families.

Army Aviation and the Fleet Air Arm have a close working relationship, and I look forward to strengthening this further, as we collectively meet the expectations of Government and the people of Australia, and get on with the demands of our thoroughly enjoyable profession.

Happy and Safe Flying to you all.

BRIGADIER A FRASER
HEADQUARTERS 16TH BRIGADE
(AVIATION)

FASO's Comment

This edition of TOUCHDOWN again serves to illustrate the challenging operating environment and varied roles that we encounter as part of our "normal" duties. We are regularly required to carry out operations over a wide range of activities, often with very limited or no prior warning. Planning, training, currency and proficiency combined with the continuous application of aviation risk management (AVRM) and crew resource management (CRM) are essential elements in maintaining a safe but highly capable aviation force.

Although Naval aviation will continue to provide us with challenging and often unexpected operations, there are very few areas where it is appropriate to operate outside documented and laid down regulations. ABR5150 does however give some relief in this area when a mission or task has been assessed by Command as being "operationally essential". The current designation of a mission as operationally essential as laid down in ABR5150 is as follows:

The designation of a mission as operationally essential in peacetime is restricted to flights in a designated theatre of operations, or special operations (eg Counter-terrorist). The Operationally Essential caveat means that the higher potential risk of injury/damage/loss to the crew, passengers and/or the aircraft, is deemed acceptable and justifiable where the aircrew need not comply with established regulations to achieve the task, but does not preclude risk minimisation.

The use of the operationally essential caveat is a very powerful tool which when correctly used can expand operational capability. It must be remembered however that when it is used, the protection normally afforded by regulatory guidance is removed.
For this reason the decision to invoke the operationally essential caveat must only be taken after a rigorous Command assessment of the purpose and context of the scenario or task. This is an ongoing assessment process and Command is responsible for ensuring that it is only applied to those sequences of a mission or task that genuinely meets the criteria of the definition. AVRM is a vital and very important part of that process.

At the FASC we continue to receive a number of ASOR's where crews have highlighted that their training in CRM and AVRM has been of great assistance in the maintenance of safe and effective operations in very challenging situations. I would like to take this opportunity to thank all those operators who have continued to provide the FASC and therefore the FEG and wider Fleet, with excellent feedback in the form of ASOR reporting. The frank, honest and open reporting we are seeing from all units in the FEG is exemplary of the clear and healthy reporting culture we continuously strive to maintain, and remains a vital part of our safety management system.

Finally, I would like to take this opportunity to welcome CPO Craig Johnson to the position of AFASO. CPO Johnson replaces the previous incumbent, CPO Frankie Siska who has been posted to 805 Squadron.
We wish CPO Siska well in his new posting, and thank him for his considerable efforts in the position of AFASO. CPO Johnson brings considerable aviation maintenance experience to his role and is happy to discuss any flight safety issues you may have.

FLY NAVY – FLY SAFE

LCDR R Sellers, RAN
FASO
COMAUSNAVAIRGR

New AFASO

Assistant Fleet Aviation Safety Officer
CPOATA Craig Johnson

Chief Petty Officer Johnson joined the Royal Australian Navy in 1986. His aviation maintenance background is on the Westlands Sea King for 12 years with 817 Squadron, a 4 year posting to the Engine Repair Section at NAS NOWRA where he was responsible for the depot level maintenance and functional testing of Rolls Royce Gnome gas turbine engines, and a period at NASPO in the Sea King Airframes Section.
During his 18 year career CPO Johnson has had the opportunity to serve as part of a flight on HMAS TOBRUK on numerous occasions, including a deployment in East Timor. He has also served on HMAS MANOORA in the Solomon Islands and on HMAS SUCCESS. Before joining the FASC, CPO Johnson gained the authorisation of FSMS and was the Maintenance Unit Chief at 817 Squadron. He is a member of the RAN Maintenance Human Factors Working Group and is the Secretary to the Air Safety Systems Working Group (ASSWG). He is always interested in any safety issues personnel may have, and may be contacted on (02) 4424 1251 or by email at: craig.johnson2@defence.gov.au.

Bravo Zulu

ABATA Davies
816 Squadron

Late in May 2004, Able Seaman Davies was tasked to build a wooden mock-up of a modified towing attachment for a mechanical handler. This short notice requirement came about when an opportunity arose to embark three S-70B-2 aircraft in HMAS KANIMBLA for Exercise Singaroo. A modification to the mechanical handlers used onboard LPA ships was required to enable the Seahawk to be manoeuvred on deck. AB Davies completed the mock-up in a very timely and efficient manner, thereby enabling early testing and problem solving to be carried out prior to embarking the aircraft. Minor changes to the mock-up subsequently allowed a steel towing attachment to be manufactured well ahead of the planned date for the deck handling trial.

AB Davies was also tasked with a composite repair to a damaged fairing. His workmanship and attention to detail in the repair was excellent. He completed this task well within the time allocated, enabling the aircraft to return to the flying program days ahead of schedule.

In his own time, AB Davies has also designed and manufactured protective cases for the storage of structural repair materials for embarked flights.

AB Davies' dedication to his job has been very professional. He has shown resourcefulness and dedication to his work on numerous occasions. His efforts have directly contributed to the Squadron and embarked flights meeting training and operational tasks.

SBLT Kehoe
816 Squadron

The introduction of the new Defence Aviation Hazard Reporting and Tracking System (DAHRTS) has brought with it a number of challenges for the Naval aviation community. In particular the requirement for embarked crews to submit ASORS in the DAHRTS format to the FASC for inclusion to the DAHRTS database on the DRN.

Sub Leiutenant Kehoe in her role as the 816 Squadron Flight Support Air Engineering Officer (AEO) recognised this requirement and set about developing a training template to enable embarked flights to submit ASOR's with a minimum of fuss. SBLT Kehoe developed the package in her own time and subsequently tested her product for errors and ease of use. SBLT Kehoe's finished product is a comprehensive template including examples and descriptions, which are easy to understand, and simple to use. COMAUSNAVAIRGRP FASC have highly praised her efforts and endorsed the product not only for use by detached Seahawk Flight personnel, but across the Fleet Air Arm (FAA). Flight Commanders have also expressed their thanks to SBLT Kehoe for her initiative in developing a simple solution to a perceived problem.

POATV Thorpe
723 Squadron

Petty Officer Thorpe was managing 723 Squadron flightline with minimal resources, on the final day of flying for the calendar year 2003. During the final flight of the day, PO Thorpe was manning the fire bottle for the aircraft startup; during his post start checks he noticed a screw missing from the starboard side lower tub panel. On further investigation, he discovered the remainder of the screws were only finger tight and in danger of falling away. The aircraft was immediately shutdown.

Subsequent investigations followed and revealed the error had been made in the course of routine maintenance for an R1 servicing. Post this service, the aircraft had flown 4.3 hours with 6 Aircrew acceptances and 3 maintenance Flight Servicing Inspections, all failing to notice this irregularity.

PO Thorpe's meticulous attention to detail in a role that is uncommon for a flightline Senior Sailor showed excellent Situational Awareness and task focus. PO Thorpe showed and demonstrated a high standard in professional work ethos something for all junior and experienced FAA personnel to aspire to.

CORPORAL Macdonald
816 Squadron

Whilst conducting the final maintenance quality inspection on the tail rotor pitch beam nut of Tiger 84, the MQI, Corporal Macdonald, noticed that the tail rotor blade de-ice slip ring appeared to be a new item and had been recently replaced. On further investigation it was discovered that the tail rotor blades had been removed during depot maintenance (DM) servicing at a contractor's facility. Review of DM documentation confirmed removal and reinstallation of TRB's, however, follow on re-torque requirements associated with TRB maintenance had not been recorded in the Aircraft Maintenance Documentation (AMD).

Following an extensive review of the AMD, an additional three re-torques were found not to have been recorded in the Special Maintenance Requirement (SMR) section of the AMD. All re-torques were written up and carried out, and the aircraft returned to the flying program the following day.

The requirement to conduct re-torques following major component replacements is an essential element in maintaining the technical airworthiness of an aircraft. Not completing the required re-torques can have potentially catastrophic results and is a serious breach of airworthiness principles. CPL Macdonald's vigilance, eye for detail and courage to ask relevant questions served to avert a potentially catastrophic situation from developing further. Luckily the re-torque requirement was identified prior to an overfly situation occurring.

CPL Macdonald is on exchange from the 5th Aviation regiment for a two year period and had been working on the S-70B-2 for only four months when this incident occurred. He is highly regarded by all of his peers and sets an excellent example to his subordinates.

Fly Navy
Fly Safe

The Huge Burst of Fear

BY LCDR P DAVITT, RAN
816 SQUADRON

"Man in the water, man in the water!"

I can't tell you how my heart sank when I heard my Senso Operator (SENSO) shout those words over the Internal Communication System (ICS). And things were about to get much worse.
I believe I've got your attention so I'll go back a bit to the beginning of the story.

In the interests of protecting Australian fisheries my Seahawk flight was transferred to HMAS WARRAMUNGA in support of OP CELESTA. We spent the first week of our transit to the Southern Ocean practicing Boarding Party (BP) operations including Fast Rope Insertions, developing concept of operations, and discussing all manner of safety considerations. Training continued daily including aircraft familiarisation and rescue training for BP team members. The Aviation and BP teams were as ready as we could reasonably expect to be.

I can't describe the relief I felt when the BP member was in the RHIB and safely on his way back to WARRAMUNGA. The adventures weren't over...

As we approached the operation area, environmental conditions took a turn for the worse. Although wind speeds dropped as we proceeded south of the 'Roaring Forties', air and sea temperatures dropped until they hovered just above freezing and bands of bad weather cycled through several times daily. Finding a suitable window for boarding operations would require a combination of skill and luck.

A suspected illegal fishing vessel was intercepted late in the afternoon during a period of lousy weather precluding a boarding before nightfall. The plan was to conduct the boarding at first light the next day. The aircrew would include two pilots in front, the Tactical Operator (TACCO) in the back as Mission Commander (Communications, Forward Looking Infra Red (FLIR), radar) and the SENSO (boarding party operations).

THE BOARDING

Preparations for the boarding went without difficulty. Aircraft startup, engagement and launch proceeded without difficulty.
We conducted several orbits of the vessel to ascertain the winds, ship motion and best area to conduct the BP insertion.
The flying pilot for the insertion would be my co-pilot in the right seat due to wind and visibility of the ships superstructure.
We completed our checks, asked for and received authority from WARRAMUNGA to commence the boarding and commenced our run-in from the vessels port side.

As we approached the ship, the con was handed over to the SENSO who brought us into position over the designated insertion area.

Fast rope deployment was carried out and the first BP member was deployed. Several things then happened in quick succession, which leads us to the opening line of this story. The vessel rolled heavily to starboard, the aircraft drifted slightly aft and the fast rope went overboard. The BP member on the rope attempted to lock off, but was unable to hang on and entered the near-freezing water.

THE HUGE BURST OF FEAR REVISITED

Suffice it to say that a lot happened at this point, most of it without entering into debate or discussion. The SENSO called "Man in the water!" To avoid the fast rope becoming entangled with the ship, I called "climb, climb, climb" and my co-pilot climbed up and away to clear the vessel. Once clear the SENSO successfully recovered the fast rope. Almost simultaneously the Mission Commander called "Man Overboard" to WARRAMUNGA.

Let me say at this point that most of what I write from here on I wouldn't have remembered clearly if we hadn't recorded the whole thing (visuals, internal, and external communications) on FLIR. It sounds corny to say that "the training kicked in and we did it all automatically" but that's almost exactly what happened.

We quickly began preparations for recovery of the BP member. Our SENSO was puffed and obviously agitated due to recovering the 90 foot fast rope, once recovered he caught his breath, and we continued. The Mission Commander began to get dressed to go down the wire but initially we planned a single lift recovery so that we could get the man out of the water more quickly. Once ready we lowered the strop to the BP member but it became obvious that due to his Mustang Suit, BP equipment, and cold he would be unable to don the strop himself.

We recovered the strop and were prepared to lower a wireman to conduct a double lift recovery when the ship informed us that the RHIB was inbound to conduct the recovery. We remained on station to direct the rescue.

I can't describe the relief I felt when the BP member was in the RHIB and safely on his way back to WARRAMUNGA.

The adventures weren't over. The rescue RHIB overturned and dumped all four personnel in the water. But that's another story for another time.

WHAT WE LEARNED FROM OUR EXPERIENCE

The biggest bonus from this tale is that we got the whole thing on tape. We never would have guessed what a bonus that would be. As I mentioned, a lot of what happened on the day was a (pleasant) surprise to me when I watched the tape.

RISK MANAGEMENT/ MITIGATION

Could this happen to you? Sure. The boarding went to custard...could have happened to anyone. The thing is, I wasn't thinking that at the beginning of the day...none of us were. We as aviators like to think that proper prior planning will prevent poor performance, and most times it does.

BELOW S-70B-2 SEAHAWK

But aviation is a risky business. All we can do is assess the risks, mitigate them where possible, and carry on.

CREW RESOURCE MANAGEMENT

I know this is a dated term but I want to talk, specifically, about how we interacted as a crew. What I was very pleased with is that without having to think too much about it, we ALL said and did the right things when the scenario rapidly diverged from the plan.
I think this is largely due to the fact that we HAVE a good, positive culture toward CRM in the aviation community. We don't just pay it lip service...we live it!
I don't think I appreciated that fact until, weeks later, I heard the things we had said on the recording.

TRAINING

Despite our recent training, the boarding (obviously) didn't go to plan. This goes back to AVRM... we can't hope to eliminate all risk from aviation. What we can do is conduct aviation training (as we do) and occasionally revisit that training to determine if it still meets the requirements of the aviators doing the operational flying.

WHAT CAN YOU LEARN FROM OUR EXPERIENCE?

I hope this story made you feel just a little of the tension, fear, and anxiety I felt on the day.
If so, GOOD! I hope it makes you think that second longer when you're preparing to go flying.
I hope it makes you think "I'm not Superman...I'm not made of Teflon...how can I be better prepared for this sortie?"

The sensible employment of Aviation Risk Management (AVRM), Crew Resource Management (CRM) and the chain of command ensured that this difficult evolution was conducted within the acceptable levels of risk.
As it turned out, a member of the boarding party inadvertently entered the water. The Southern Ocean is a very unforgiving environment and the conditions at the time of the incident were Air Temperature of 2°C and Sea Surface Temperature of 2°C. Added to this was a heavy rolling Sea approximately Sea State 4.

The AVRM process carried out before flight specifically addressed the possibility of a member of the boarding party inadvertently entering the water. The mitigators identified in the Risk Management process were applied to the operation and when the "unexpected" happened WARRAMUNGA's crew were immediately ready to assist.
The boarding party member was subsequently picked up within the survival time of his PPE. Imagine how different the outcome could have been if the helicopter crew had been forced to cut the winch cable and the WARRAMUNGA was too far away to effect a rescue within the survival time.

If ever there was an advertisement for the successful employment of AVRM and its acceptance and application in demanding circumstances, he is the very valued member of our team, who although cold and wet for a while, is alive and well today.

LCDR R Sellers, RAN
FASO
COMAUSNAVAIRGRP

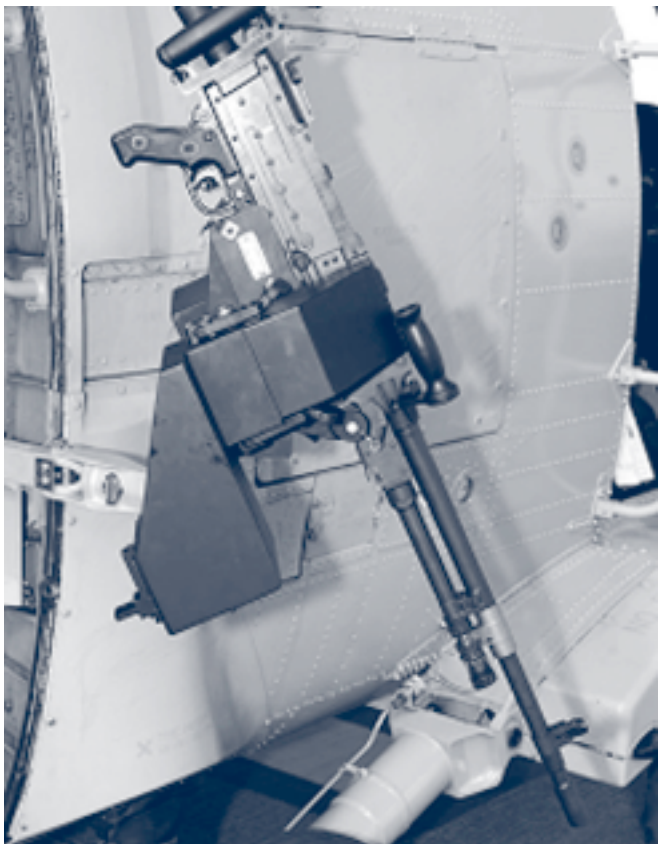
Fly Navy
Fly Safe

A Very Steep Learning Curve

BY CPOATA A WILLS
816 SQUADRON

With now less than 20 hours remaining, the pintle arm had to have minor modifications.

ABOVE GENERAL PURPOSE MACHINE GUN (GPMG)



The First Day

I had just completed my Aircraft Maintenance Charge Certificate (AMCC) part one exam on the previous day. I was one of 17 personnel who were quite anxious about their results with this exam. It was definitely a constant thought in the back of my mind on this day.
This day was a particularly important one for me. It was my first day out of my Chief's course, my first day as the 816 Squadron Servicing Unit Chief (SUCPO) and my first day in a Chief's billet.
I was now partly responsible for seven S-70B-2 Seahawk helicopters that were being rotated around a two to three line program. I had two shifts of approximately 25 personnel in each watch to manage and yes, an AMCC part two oral board to think about in one weeks time.

The Firing Order

On that first eventful morning, I was handed the Firing Order for a practice General Purpose Machine Gun (GPMG) sortie. Having never seen one of these orders, even on my Chief's course, I was quietly confused as to what I was to do with it. It was not until I noticed the maintenance action paragraph after reading it two to three times that I fully understood why I was given this firing order.

The importance of the sortie associated with this firing order was relayed to the Servicing Unit (SU) staff. This sortie was pivotal to the qualification of two air crewmen who were required for postings to sea in the immediate future. If the sortie was missed, a detrimental effect to the mission capability to ship's flights would have occurred.

The firing order was to go with the Design Deviation (DD) 112 for the S-70B-2. This DD related to the modification and fitment of the GPMG pintle arm to the modified Seahawk airframe.

From what I understood, I was to fit the GPMG pintle arm - that, by the way was still at stores - to the Seahawk in accordance with the DD to affect the firing order sortie.

What a sigh of relief to know that there was still 24 hours remaining until the sortie.
Plenty of time to order the pintle arm, slightly modify it to suit the S-70B-2 configuration and fit it in accordance with the DD.

The Pintle Arm

That afternoon, 816 Squadron late watch had received the GPMG pintle mount kit from stores under the three Naval Stores Numbers (NSNs) called for by the DD.

Problem 1
The modification kit came without adequate aeronautical product supporting documentation.

816 Squadron Air Engineering Officer was informed, and with a speedy reply being that because the modification kits were part of a non standard fit, not part of the standard aircraft configuration, supporting documentation in the form of a EE435 MAARS card or EE209 Serviceable label would not be forthcoming.
The modification kits were new, having been received and inspected by Navy Aviation System Project Office (NASPO) only a few weeks prior.

Modifications to the Pintle Arm

With now less than 20 hours remaining, the pintle arm had to have minor modifications to be carried out in accordance with DD 112. These included the replacement of an azimuth lock and the replacement of the fold arm lock hardware. With minimal intervention, the late watch maintenance personnel had figured out what had to go where to complete this modification. Prior to heading home, I thought it prudent to have a look at this pintle arm, its modification components and cross reference them with the procedure laid down in the DD. This I thought would hopefully reduce any telephone calls at home that night.

Problem 2
There were three bolts/nuts that did not have supporting torque values for their fitment in the DD.

Noting the time of day being 1620, I called the NASPO Airframe Design Engineer (DE) regarding this issue. The DE promptly gave me two out of the three torque values with the third to follow in the next day.

The Day of the Firing

The following morning, and now with a full day's experience in the job as SUCPO, I was greeted with what looked like an almost fully modified GPMG pintle arm ready to accept a weapon. We now had less than six hours until the firing practice would take place.

I contacted our Deputy Engineer at NASPO who was unable to supply us with any torque values for these two bolts that had not been torqued the preceding night. I then asked 816 AEO for guidance. He used his engineering experience to determine the optimum torque value for this bolt, considering the material, its size and the type of structure it was securing to.
He directed that the deviation to the DD would be recorded in the Carried Forward Unserviceability (CFU) section of the Aircraft Maintenance Document (AMD).

Upon securing these bolts to the fold arm lock with our new torque rating a third problem was encountered.

Problem 3
A large split pin was restricting the movement of the fold arm into the stowed position.

Initial reactions as to why this split pin was creating a restriction were to ask was the split pin the correct size. The NASPO DE came down to the squadron to alleviate any further problems for this pintle arm.
After much discussion, both with senior 816 Squadron maintenance managers and NASPO personnel, it was decided that the split pin required further pressing into the body of the fold pin. This would ensure that adequate distance was created.

Fitting the Arm to the Mount

With a fully modified and assembled pintle arm, a trial aircraft was used in the hangar to ensure maintenance teams were able to fit this arm in an expedient manner. The aircraft that had been designated for the firing order was currently flying. It was now less than four hours to sortie time.

The maintenance team slid the mount onto the airframe and then installed the pintle arm into the mount. Upon checking the list of Break Down Spares (BDS) and accompanying illustration, it was noted that a washer was missing in the list of BDS.

Problem 4
A washer was illustrated in the BDS however not included in the list.

This problem would cause the nut to become thread bare upon securing the pintle arm to the mount. 816 AEO gave permission to source a suitable washer that displayed appropriate form, fit and function. The use of this washer would be included in the CFU stated earlier.

During these stages in this evolution, the SU management team constantly reviewed the risks being taken. At all times, the team ensured that the risks taken to deviate from the DD would not outweigh the costs of damage to personnel or material.

Fitting the DD to the Aircraft

With Tiger 81 shut down and released to maintenance and with less than one hour remaining, the early watch took the GPMG mount out ready to be fitted. A maintainer then approached the line office.

Problem 5
A Hi-Lok rivet tail on the airframe fitting was impinging on the mount, restricting the fitment of the mount.

From this problem now arising, fears as to what next could go wrong were becoming apparent. My thoughts were now strongly biasing toward cancelling the sortie. Having just received extensive human factors training both at Royal Melbourne Institute of Technology (RMIT) and TA-AVN, alarm bells were definitely ringing. What next could go wrong, and what would be the consequences.

It was at this stage that the 816 Squadron AEO intervened for the final time, asking about if our spare aircraft could take the mount. Upon checking, it was confirmed and with the DD allowing fitment to multiple airframes, the GPMG mount was successfully fitted! A suitable CFU entry was made to fully document all deviations that were made in order to fit this pintle arm and mount.

The Sortie

The GPMG practice firing sortie was a complete success with no reported abnormalities to the function of the pintle arm and mount. The success of this mission enabled the qualification of key aircrew personnel that had been posted to Ship Flights in the near future.

Lessons Learnt

From this very steep learning curve, I learnt the following lessons:

a Allow adequate time to fully investigate the maintenance requirements prior to operations such as firing orders.

b Do not assume that all DDs are 100 percent validated and tested. Again, allow adequate time to fully investigate all maintenance actions required.

c Constantly inform the relevant personnel and ensure that the decisions are being made at the appropriate levels and that they are recorded somewhere, even as a diary entry or a record of conversation.

d Document all deviations to standard procedures including any risk analyses carried out and;

e Understand the importance of terms such as mission first, safety always.

"This is a timely reminder of the complexity of tasks that maintenance personnel face on a day to day basis, even for an evolution such as fitting a gun mount to an aircraft, and is a reminder to ensure maintenance personnel adhere to documentation/ procedures and the processes involved when the documentation or procedures can not be followed. It also highlights the requirement for more human factors training in maintenance, particularly at the lower ranks".

CPOATA C JOHNSON
AFASO
COMAUSNAVAIRGRP

CPO ANTHONY WILLS is a joint winner in this edition of TOUCHDOWN - CONGRATULATIONS

A minute from 816 Squadron to NASPO was written to highlight Squadron concerns relating to this issue. The author successfully passed his exam and subsequent oral board the following week of this story.

Acknowledgments:

816 Squadron AEO,
LCDR Scott Lockey, RAN.

816 Squadron DAEO,
SBLT Virginia Kehoe, RAN.

Prepare for Outside the Square

BY LCDR R J ALLEN, RAN
FLIGHT COMMANDER
HMAS STUART

On the evening of Saturday 24 April 2004, three concurrent and explosive waterborne attacks were made by persons unknown against the Al Basra (ABOT) and Kwahr Al Amaya (KAAOT) oil terminals in the North Arabian Gulf. The suicide attacks were unsuccessful in their attempt to cause damage to the terminals, however a US Navy patrol boat that intercepted one of the attacking vessels sustained casualties. At the time of the incident, HMAS STUART was patrolling the area surrounding the terminals and was conducting routine surveillance flying. STUART responded to the incident by providing immediate rescue and medical assistance as well as securing the area. Throughout the next 24 hours, STUART, with responsibilities as the on-scene commander, coordinated the evacuation of coalition killed and wounded, set and maintained defensive forces, facilitated the reinforcement of KAAOT and ABOT, and began the process of gathering evidence to support an analytical reconstruction of the attack.

RIGHT TIGER 72 SEAHAWK (HAMISH) AND ABOT

It was just another dusk surface search sortie in the North Arabian Gulf. We had been on station for 10 days and were developing an efficient rhythm in our picture compilation. Some 50 minutes after launch, we closed STUART to conduct a Photo Exercise (PHOTEX) against a backdrop of the Al Basra oil terminal at sunset. Shortly after completing the PHOTEX, the Anti Submarine Aircraft Controller (ASAC) reported an explosion to the north and tasked the helicopter to close for investigation from a 2nm stand-off. The explosion was not observed from the helicopter as we were heading south to investigate a fishing dhow. After turning right, a large black smoke cloud was seen from 6nm in the near vicinity of the coalition patrol craft, USS FIREBOLT. During our transit to FIREBOLT (near KAAOT), there was some confusion over what we were seeing from the air. Whilst nothing was visible beneath the rising smoke cloud, multiple objects (later identified as personnel) could be seen in the water nearby. As we closed further, the patrol craft released rocket distress flares and up to four strobe lights were spotted in the water near an upturned Ridged Hull Inflatable Boat (RHIB). It was then fully apparent the explosion had involved FIREBOLT's personnel and boat.

Sitreps were established with STUART as the on-scene commander and we set listening watch on marine VHF. The Aircraft Captain directed the Sensor Operator (Senso) to unstrap and prepare for a winch recovery of survivors. In fading light we could see a significant rescue task unfolding.

The intercom and radio chatter was brisk but without panic. Clearance to aid in recovery operations was given by STUART and we descended and set-up on approach to the first survivor. The Senso conned on top to effect a single lift recovery by winch. He informed the crew that this person had very significant head injuries. The Nowra Strop was lowered to the man, although it was soon apparent that he could not don the strop for a normal winch recovery. With injuries and shock, he was only able to grip the rescue strop for support in remaining afloat. OK,plan one is a NO-GO. What do we do now without another crewman aboard as the double lift wireman? After a few moments of healthy crew discussion, we decided to try and drag the survivor towards FIREBOLT, which was also attempting frantic retrieval of personnel with liferings and lines. Unable to recover the first survivor, we requested the urgent dispatch of a RHIB from STUART, and were advised it was already being launched. This all took place in the first 10 minutes after the explosion.

By now the survivor was losing his hold on the strop and released it on two occasions. Each time we manoeuvred the aircraft and returned the strop to his grasp. After the third release, our Senso reported the survivor had gone under water and appeared to be unconscious.

Fearing imminent drowning and noting the approach of a RHIB from 3nm, we made an operational decision to deploy the Senso to assist the submerged victim. The helicopter was descended to a height of 10 feet, displaced 10 yards from the victim. On the Aircraft Captain's call and wearing normal aircrew ensemble, the Senso entered the water on last light using a diver drop profile. The aircraft was then moved left and climbed to a safe holding position to enable visual monitoring of our Senso. Once in the water, he swam to the injured sailor and pulled his head clear. The Senso then inflated his own life preserver and supported the man whilst awaiting pickup by RHIB. Whilst hovering under searchlight, we could see the full extent of the debris field from the exploded fishing dhow. Matchstick sized wreckage everywhere and a dark slick on the surface.

Shortly after the diver drop, a frantic Mayday was heard on marine VHF giving details of a speedboat attack and explosion at the Al Basra Oil Terminal (some 6nm south). The call was from the Master of a tanker alongside ABOT and was answered by a nearby coalition surface unit. A little numbed by this escalation, I provided Mayday relay to STUART on UHF who then confirmed hearing the distress call on marine VHF. We could see the rising smoke above ABOT and we watched in disbelief.

A few minutes later and a second ABOT explosion, with an immediate smoke pall rising into the night sky. This just couldn't be happening! We were minding our own business on a routine surface search and barely 20 minutes later it felt like Armageddon! At the pace this situation was unfolding, we each held private fears of what might come next.

Back in STUART, the flight deck team witnessed the first explosion and felt the shockwave before retreating to the hangar for protection. Deck personnel described the second explosion as being louder, with a more powerful shockwave rippling the hangar curtain violently.

On scene communications relay was maintained until the Senso and victim were recovered by RHIB, which then proceeded to FIREBOLT.

We returned to STUART's deck (now at action stations) to embark our second Pilot and reconfigure the cabin. The aircraft remained rotors running whilst a side facing seat was removed by maintainers to provide more utility space. A Paraguard stretcher was embarked and I took a few moments to supply ammunition to the GSMG mount. Ammo had already been provided for the sortie. Knowing that Search and Rescue (SAR) and stretcher tasks were likely, I also donned the double-lift harness in preparation for wireman duties. It is never a comfortable fit, but as I clambered into the double-lift nappy, there was reassurance in knowing we had trained with the harness only a few days before.

Meanwhile, the Flight Senior Maintenance Sailor (FSMS) took charge of hangar activities and briefed spare hands and the assembled Ship's Medical Emergency Team (SMET) well in advance of aircraft and casualty arrivals.

On completion of the crew change, we relaunched to FIREBOLT to locate our Senso and continue with SAR tasking. To provide optimum utility crewing for ongoing rescue efforts, we intended recovering the Senso by a single lift from FIREBOLT's deck. We made a further operational decision to use the Tacco as the winchman despite lapsed currency as a utility crewman. It had been 8 years since my last "hands on" winching experience in the S-70B-2, so this was not a decision taken lightly. We ran through the options before us. Could there be another way?... what might be the likely result of our actions?... despite the grave situation were we pushing into unacceptable risk? We teamed our collective experience and differing crew perspectives to reach an operationally focussed consensus.

No one crew member came up with the ideas and no one crew member was "carrying" the others.

Over the next 20 minutes, we were informed on a number of occasions that our Senso was onboard FIREBOLT. Confusion ran high in the midst of multiple emerging casualties on a very dark night. Our Aircraft Captain directed for the Senso to make his way to the forecastle and prepare for a winch transfer. With the Senso recovered, our intention was to assume the usual crew roles for a minimum manned Flight. This would involve the Tactical Co Ordinator (TACCO) being the double-lift wireman for supervision of stretcher rigging on FIREBOLT. They already had a casualty in a stretcher ready for evacuation and their Helicopter Director and team were prepared on the forecastle.

To recover our Senso, an approach was made to the winching point under my control from the cabin door. Once established overhead, it became apparent that our Senso was not present on deck. Although FIREBOLT was eager to transfer her patient, we could not be certain about the stretcher rigging. We noted that FIREBOLT's stretcher was not an approved Paraguard but was larger and had wire suspension cables. Although not recognised at the time, this stretcher may have been a type of Stokes Litter. The aircraft was moved up and back to clear the forecastle and reduce noise over the deck. A second approach was made after FIREBOLT advised that our Senso was now onboard and was ready for transfer. Again when the helicopter reached the transfer point under searchlight, the Senso could not be located and again the aircraft was moved clear. Communications with our own ship could not confirm the Sensos whereabouts. Further conflicting advice now had our Senso in transit to STUART on a RHIB. Where was he? This was all we needed!

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Despite the Senso's absence, the Aircraft Captain was confident that his remaining crew could continue to provide operational lifesaving and force protection support....

Soon after, FIREBOLT requested an immediate stretcher lift as their casualty was now considered critical. Noting the deteriorating condition of the patient, we discussed our ability to undertake a night stretcher lift. Even when current as a utility Senso, I had never done a night stretcher lift. I hadn't even done a stretcher lift from a patrol boat. Was I kidding myself that this was a good idea? In a few moments of contemplation, I put to rest some of the doubts in my mind. Real confidence had been regained in conning the aircraft during the aborted winching approaches to the forecastle. It became a sort of re-currency for the more difficult utility task that now presented. On each approach I had run through winch checks and winch emergencies despite having not used them for many years. At the same time, our crew sought confirmation from FIREBOLT that her deck team was satisfied with the stretcher rigging.

We manoeuvred to the transfer point for the third time but just as the aircraft crossed overhead FIREBOLT, the searchlight failed. The crew was advised of the lighting failure and the hover rescue light was selected to maintain visual cues. With ample lighting regained, the winch hook connection and stretcher raising began smoothly. There was excellent visibility of the stretcher rigging and winch-hook throughout the operation and this provided reassurance that we would be safe to lift. The stretcher was very carefully raised from the deck and made a clear passage around the various obstructions present on a small boat. On arrival at the cabin doorway, the physical size (width and suspension arrangement) prevented manoeuvring the stretcher into the cabin. Having raised the patient without significant spin or swing, we made an operational decision to transit to STUART with the stretcher just beneath the door. We were not about to put him back on FIREBOLT's deck as his need for medical care was desperate. My boot was then used to steady the stretcher during transit. After about a mile at 20 knots groundspeed, a winch transfer was conducted to our own flightdeck. Relieved to have the patient down safely, we made a cleardeck recovery a short time later.

Once secured on deck, I raced off for a command update whilst the Pilots and Deck Team refuelled the aircraft. The uplifting news on return was that our Senso had been located safe and physically well. The reverse side of the coin was that he was unable to rejoin the crew due to Temporarily Medically Unfit for Flying (TMUFF) status after his initial rescue tasks. We discussed the impact of this loss on our crewing and assessed ways of continuing to provide air support. Despite the Senso's absence, the Aircraft Captain was confident that his remaining crew could continue to provide operational lifesaving and force protection support.

Further tasking was received for Medical Evacuation (MEDEVAC) of our critically injured stretcher patient and the crew began preparing for the mission whilst rotors running. The patient and a medical attendant were embarked and the aircraft re-launched for Kuwait. Enroute to the designated triage facility, a directive was received from higher authorities that our casualty was now to be evacuated to a larger Armed Forces Hospital. We sought and gained confirmation that pad lighting would be activated for our arrival. We briefed enroute for the revised destination and consulted onboard documentation to familiarise with the hospital layout. Inherent in our tasking, operational decisions were made to conduct night overwater MEDEVAC and a night approach to the hospital pad.

On arrival at the hospital, a quick recce of the pad was carried out and the subsequent landing was effected without incident. The patient was despatched to a waiting ambulance accompanied by the medic. The aircraft was shutdown to await return of our medical attendant some 30 minutes later. During this time a dust storm passed through the area reducing visibility to less than 1000m. Due uncertainty about further MEDEVAC tasking, the aircraft relaunched for return to STUART, aided by a 40 knot tailwind. On arrival, the aircraft was stood down from further tasking. The job was then to clear the deck in anticipation of inbound MEDEVAC helicopters. A further 10 movements by USN HH-60H and MH-60S helicopters took place for the transfer of wounded, Killed In Action (KIA) and security elements throughout the night and morning. Operationally essential movements were undertaken between 2350-0200, 0320-0410, 0620-0720 and 0900-1015 local.

The operationally essential nature of extending our duty cycle was discussed at length between command, the FSMS and myself. We had a clear and unified approach knowing the urgency of the task, the readiness of the deck team and the safety net that could be established through additional supervision. The deck team napped as best they could between each movement window. Both Flight Pilots were stood down at 0200 to prepare for contingency tasking the next morning. The deck team went down at 1030 in preparation for late afternoon contingencies. They turned to at 1730 for the next daily inspection of our helicopter. In the end, no further tasking emerged that day and the team was stood down overnight from 1830. The flight conducted comprehensive debriefing of events mid afternoon the following day.

In all, 3 Navy and Coastguard personnel from USS FIREBOLT were KIA with 4 others wounded. Those KIA included the sailor that our Senso and boat crew fought so valiantly to save, both in the water and through resuscitation efforts aboard the RHIB.

Tell us about your incidents


723 SQU
NAVY
865
864
723
WINGS OF THE ALBATROSS

PHOTO BY ABPH NEIL RICHARDS
HMAS ALBATROSS


so others don't
report to us about
your accidents

The stretcher patient retrieved by winch was still alive on arrival in the military hospital, but sadly succumbed to his injuries around 7 hours later.

Outside the Rules and Regulations

A number of regulations within ABR 5150, ABR 5419 Vol 1, 816 Squadron SOP's and the ADF Airworthiness Manual were circumvented for operationally essential purposes during the incident. These included regulations in place for:

- Aircrew surface swimmer jumps
- Night Visual Flight Rules (VFR) procedures to remote landing sites
- Minimum utility crew
- Waiver of duty time limitations
- Night Aeromedical evacuation over water
- Winching and Paraguard stretchers
- Prohibition on the use of Stokes Litter
- Maintenance crew duty cycles
- Completion of documentation for aircraft role change

Risk Mitigation (put some things in place before the unexpected arises)

There were a number of aviation risk management factors that helped to reduce risk during the incident flying operations. These included:

1 Crew interaction, understanding and familiarity. We had been operating together as a fully integrated team for the last 4 months and were deployed on operations as a Mission Ready Flight. We had already sorted out the peculiarities of operating and communicating together as a crew.

2 Solid knowledge of regulations and limitations. The operations outside the bounds of laid down rules and procedures were not done in ignorance or disregard of the regulations, but with a good knowledge of where we stood. The re-issues of ABR 5150 and 816 Squadron SOP's certainly aided our knowledge by reducing duplication.

3 Active and effective Crew Resource Management during decision making. Key decisions were made after rigourous and open consultation within the crew, and where necessary with external players in STUART or FIREBOLT.

4 FSMS as a dedicated safety number during flying stations. A management practice to catch small procedural errors that may lead to nastier consequences if unchecked.

ABOVE HMAS STUART AT KAAOT

5 Tacco's previous S-70B-2 utility experience. Provided options that we utilised through a risk managed process to maintain operational capability.

6 S-70B-2 systems knowledge. Murphy indicates that things will go wrong at the worst possible moment! As a crew we were able to deal with a minor searchlight failure at a critical point without losing the bubble. Good training (even from years ago) can still be recalled if aircrew maintain their supporting systems knowledge.

7 Pilot stand-down to enhance contingency crewing options. Despite the action it was no use keeping everyone on deck for the whole night. We needed to have some clear thinkers available in the aviation leadership chain for the new day.

8 Weapons posture. Despite the surprise of these attacks, the Flight had been maintaining appropriate weapons posture for each sortie based on written, personal delegations provided to each Aircraft Captain by the Commanding Officer.

Some of the Lessons Learned

1 Experience is just one of the inputs to good decision making. Don't let your experience dominate the inputs of other (perhaps more junior) aircrew.

2 You can't plan or legislate for every contingency. On the day of the race you may need to push to the established limitations. Be very aware where the boundaries are and why they exist.

3 Take steps to put useful systems and processes in place for your operations. For our Flight, this was the clear guidance on weapons readiness and the role of the FSMS during Flying Stations.

4 Thorough training and recency can be like adding quality tools to your flying toolbag. Some of the tools we use everyday, and others only rarely or in an emergency. When you need the right tool you must know that it is available and ready for use.

5 If you circumvent aviation regulations, expect to face scrutiny for your actions. This is a reasonable requirement of our operational airworthiness system.

Naval aviation will continue to provide a challenging and unpredictable operating environment. Aviation Risk Management (AVRM) and Crew Resource Management (CRM) are two of the tools available to ensure that appropriate decisions are made commensurate with risk/return in those circumstances.
LCDR Allen's article provides an excellent example of the operational employment of AVRM and CRM to accept a suitable level of risk having regard to the circumstances confronting the ship and its flight. The actions of the maintenance and operational crews, and how they dealt with the challenges and hazards associated with the operations described, reflect very well on HMAS STUART and her flight.
I would like to thank the Flight Commander, LCDR Allen for his excellent article. It reminds us why we carry out our training in CRM, AVRM and Operations generally. His article underlines why our requirements for training, practice, proficiency and currency are so important. You never know when you will be called upon to use all the skills that you so diligently practice.
How is your currency and proficiency?

Note: A further description of the issues covered in this article are described in the following signals:

A. HMAS STUART I3G/LBK 302052Z APR 04 (OPERATIONALLY ESSENTIAL LIFESAVING AND AEROMEDICAL EVACUATION OPS INVOLVING STUART HELO) - 24/25 APR 04.

B. COMAUSNAVAIRGRP I3K/LBL 210150Z MAY 04 (COMAUSNAVAIRGRP RESPONSE TO STUART HELO OPERATIONS)

LCDR R Allen is the other winner of $100 prize for the best submission to this edition of TOUCHDOWN - Congratulations

LCDR R Sellers, RAN
FASO
COMAUSNAVAIRGRP

Fly Navy
Fly Safe

Formation Inadvertant Entry into IMC

BY CMDR B WHITE, RAN
COMMANDING OFFICER
816 SQUADRON

How often have you briefed it? How often have you thought this is so unlikely to happen? How often have you really thought about it and considered what happens after the initial actions?

On passing Braidwood the cloud base and visibility deteriorated very quickly...

Well for me since completing my pilot's course 18 years ago, the answers are as follows:

Almost all form briefs, the exceptions being mass formation fly-pasts where lead has simply said it will not happen and the break plan would be to complicated to detail.

As to likelihood, who would lead a formation of helicopters into cloud? Interestingly a couple of weeks before the subject incident I remember a discussion at a close form brief where the lead, one of our British recruits, briefed that in the event of entry into Instrument Meteorological Conditions (IMC) there would be no break. This was as he had done while flying helicopters in his previous service. Needless to say that plan was changed as none of the remaining aircraft captains had been in a helicopter formation in cloud, and did not want to start during that sortie. Anyway I digress, that may be the subject of a crew room chat another time.

The last question I suppose can be wrapped up in the standard brief that each aircraft will climb to its allocated altitude after turning away and then on clearing cloud a rejoin will be conducted, otherwise just make your own way home. Sounds pretty easy to me.

You have all no doubt read the Aviation Safety Occurrent Report (ASOR), but in case you haven't, here is the story. Tiger black, a tactical formation of three S-70B-2, was transiting (Nowra) YSNW to (East Sale) YMES via a 500ft Above Ground Level (AGL) Visual Flight Rules (VFR) Navigation Exercise (NAVEX) as part of the Squadron's TASMANEX 2004 involvement. The planned route had the aircraft operating along the eastern slopes and ranges. The first two legs of the NAVEX Nowra-Nerriga and Nerriga–Braidwood saw overcast cloud base at 500-800ft AGL. To remain clear of the cloud the aircraft were operating 300-500ft AGL with good visibility along flight path. On passing Braidwood the cloud base quickly decreased to approx 300ft AGL and visibility reduced to 1000m. The formation reduced speed to 70-80 Knots Indicator Air Speed (KIAS) and was now at 200ft AGL. After only approximately 30 seconds in these conditions lead entered a very fine mist shower and visibility along track was reduced to less than 500m. Before visual reference with the ground was completely lost, lead initiated the pre-briefed inadvertent entry into cloud procedure and commenced a climb to Lowest Safe Altitude (LSALT) while calling heading. Blacks Two and Three turned right and left respectively and commenced climbs to LSALT plus 500 and LSALT plus 1000 respectively. On reaching LSALT lead became visual and reported cloud tops to formation. On becoming visual lead also immediately found a large break in the cloud where a holding pattern was established and a rejoin was completed after the other aircraft had cleared the cloud. After rejoin the transit to East Sale was completed without further incident. Approximately 30NM down track the cloud cleared.

Well you might say it was definitely a mistake getting into an IMC situation while leading this form. And you would definitely be right. However having made that mistake, the brief worked, what's the problem? It would be unprofessional of us if we did not review how we got ourselves into this situation in a bit more detail.

The brief followed the normal format, with emphasis on the tactical formation, not less than 4 rotor diameters, the Navigation Route at 500 AGL and the weather. The weather at Nowra and on the slopes and ranges was discussed using the forecasts following:

BELOW S-70B-2 SEAHAWK FORMATION

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Area 21 Forecast 151700 to 160500

Overview

Isolated showers and thunderstorms in the NW after 03z. Broken low cloud developing on coast and ranges E of Mt Victoria/Cooma till 23z. Isolated showers sea/coast.

Cloud

BKN ST 1000/2000 coast, 3000/4000 ranges E of Mt Victoria/Cooma till 23z. Locally BKN ST with TS ranges 3000/4500, slopes 2000/3500.

Area 30

Overview

Southerly surface flow. Low cloud overland S of divide, contracting to E and clearing by 23z. Good conditions in the north.

Cloud

BKN ST 1200/2500 over land S of divide, contracting to E and clearing by 23z.

BKN SC 2500/2500 overland S of divide becoming SCT after 23z and clearing land by 01z.

The plan was to continually assess the weather along track, diverting to the coast if cloud on the slopes and ranges precluded flying the route visually. However in analysing the area forecasts there was an expectation that the weather would improve as the formation moved south in area 21 and entered area 30. This expectation was reinforced by the Terminal Aerodrome Forecast (TAF) at (Canberra) YSCB, (Cooma)YCOM and YMES all reporting Ceiling of Visibility OK (CAVOK). While the cloud base became slightly lower during the first two legs good visibility along track was maintained. As the aircraft approached Braidwood lead considered that although the weather had deteriorated slightly, it was still safe to continue along the planned route, as visibility along track appeared to be in excess of 10km. This assessment was further influenced by the continued expectation that the weather would improve, reinforced by the conditions being reported by the YSCB Aerodrome Traffic Information Service (ATIS), (10km vis SCT 030). Leads assessment and plan was transmitted to Blacks Two and Three where their assessment/input was sought. All reported that they remained happy with the situation.

On passing Braidwood the cloud base and visibility deteriorated very quickly, the formation was now at 200 FT AGL, 70-80 KIAS and with approximately 1000m visibility. At this time Lead was definitely thinking about other options. Less than a minute after this thinking process began and while in a right turn, lead entered a misty shower and light cloud which reduced visibility along track to less than 500m. Unwilling to lead the formation lower and/or attempt to turn the formation around over the undulating terrain in the area, Lead initiated the formation inadvertent entry into cloud break procedure before visual reference with the ground was completely lost. On rolling wings level and commencing the climb lead called heading and the LSALT to which he was climbing. Blacks Two and Three turned right and left respectively, initiated their climbs and called their heading. On the third heading and altitude call, lead also added that the heading was magnetic, having been operating in True Navigation (TNAV) mode low level, the Horizontal Visual Situation Display (HVSD) was changed to VHF Omni Direction and Ranging (VOR) mode during the climb noting the formation was operating close to the eastern boundary of Canberra's airspace. During the climb lead contacted Canberra Approach (CB APP) to inform them of the situation and to attempt to organise an airways clearance for Black Two, the aircraft heading west, should it be required. This was not required as all three aircraft became visual on reaching LSALT and the rejoin was completed clear of controlled airspace.

Having completed the remainder of the sortie without further incident the debrief revealed the following points:

- All aircraft captains reported experiencing the leans during the climb, most notably at the commencement of the instrument climb. This is attributed to the rapid transfer from a visual scan to an instrument scan and having to roll wings level and/or initiate a turn/climb at the same time.
- Black Two also reported that, with his RADALT bug set to 200ft, during the first few seconds of his climb his RADALT alert was sounding. This indicates that his turn had been towards slightly rising ground.
- The issue of whether the heading being called by lead was magnetic or true occurred to the crews of Black Two and Three, and they expressed relief when magnetic was added to the heading and altitude reports. This had not been briefed as part of the break plan.
- Lead acknowledged that he had left the planning and brief preparation to his Tactical Co Ordinator (TACCO) and Black Two aircraft captain due to other administrative duties. Had he given more attention to the brief preparation and the route weather analysis prior to the brief, possibly a better assessment of the plan could have been made. Although lead considers this unlikely as the plan discussed at the brief was considered sound.

If you had not already figured it out, I was the formation lead and I can certainly say, I learned from this incident. The importance of early and timely decisions can not be over emphasised. Three aircraft in close proximity over unfamiliar ground, with only a couple of hundred feet in which manoeuvre indictates the requirement for timely decisions. In this case, as the formation approached Braidwood and discussed alternative plans, this point was probably the time that a divert to the coast should have been initiated. I was asked at the whole Squadron debrief what would I do differently if I'd had the chance. In hindsight, it would have been to turn and divert at the point just before Braidwood. Although the visibility down track was apparently still suitable, the slightly deteriorating weather and the increasingly rough and hilly terrain south of Braidwood should have prompted a divert.

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The speed at which the weather conditions changed from marginal to completely unsuitable definitely caught me by surprise. Erring on the side of caution is important, particularly if you are leading a formation.

The execution of the IMC break was successful and highlights the importance of briefing the separation plan. Although in this case the situation was eased by the formation becoming visual at LSALT and completing a rejoin. Had this not been the case, organising the remainder of the transit would have the nausea of in-flight IFR flight plan submission for the three aircraft and then ensuring correct separation is established and maintained.

The significance of the three pilots experiencing the leans during the climb highlights the importance of IF procedures, scan, CRM, training and regular practice.

On a personal note, after the incident was over, the heart rate had settled and we had resumed our transit to East Sale, I found I was wrestling with feelings of anger, embarrassment and disappointment. I had made a mistake as formation lead, I had lead my formation into a potentially dangerous situation. Dealing with these issues plus not wishing to tempt fate the remainder of the trip was conducted at A085, despite it becoming 8/8 clear 30 miles down track.

How much attention do you pay to the IMC break procedure? Have you ever practiced it? How often do you practice very quick changes from a visual scan to a 100% IF scan while manoeuvring the aircraft? How do you deal with making a mistake airborne?

CMDR White is a very experienced pilot. And yet with all his experience to fall back on he found himself and his formation in a situation where their combined options had reduced to one, the emergency IMC recovery procedure. If you think that this could never happen to you, think again! Due to the well briefed and conducted emergency IMC recovery procedure all three aircraft were able to recover safely to LSALT and regroup for the continuation of their transit to their destination.
CMDR White's article raises a number of issues worthy of further discussion:

1. The only certainty about the predictability of the weather is that it is unpredictable. More so in decreasing marginal conditions.

2. A formation requires a lot more room to manoeuvre than a single aircraft, and therefore requires a much higher level of weather minima's to remain safe.

3. Leadership in the formation is even more important when unpredicted events require a change to the plan or the adoption of an emergency break procedure.

4. Pre brief heading changes and call headings in the break (including Mag or True if appropriate).

5. Helicopters almost always operate at low level; this already reduces the margin of error, so if in doubt bug out – early.

6. Do you practice the simulated inadvertent IMC break when practicing formation? If not perhaps you should discuss this option with your instructor or standards cell.

CMDR White states that he probably should have diverted when he became aware of the decreasing weather and rough, hilly terrain further down track. It is very important however to keep in perspective that It was good leadership and adherence to the brief, which ensured the safety of the formation when visibility was lost.

One final point for consideration: Black 2 reported that his Rad Alt warning went off during the recovery indicating that his aircraft had approached within 200 feet of terrain. Helicopters are usually operating at low level. In the formation IMC break, we usually brief elements to turn through a given heading change and climb to a given level to ensure separation.

If a formation IMC break is carried out when operating below LSALT and terrain avoidance may be an issue, consider immediately adopting BEST ANGLE OF CLIMB SPEED and MAX POWER in the break as well as the requirement for heading and Altitude separation. This may be worth mentioning in the brief, particularly for low-level formation transits.

LCDR R Sellers, RAN
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BELOW S-70B-2 SEAHAWKS IN FORMATION

Hanging by a Thread

BY RICHARD BLAIR
READERS DIGEST

As the afternoon drew towards a close on the island resort of Sentosa, hundreds of visitors began making their way to the cable-car station for the 1.75 kilometre trip back to Singapore. It was Saturday, 29 January 1983, and grey clouds were rolling in. Everyone hoped to beat the rain.

At 5.50 pm, seven members of an Indian family boarded a bright-red gondola, and were lifted up over the South China Sea. From 56 metres above the jade-coloured waters of Singapore harbour, the view from the bubble-shaped car was breathtaking.

Inside, Manmohan Kaur, 25, her mother-in-law, Pritam Kaur, 60, a sister-in-law, Harbhajan Kaur, 43, and a brother-in-law, Mahinder Singh, 44, looked across the harbour and chatted. Manmohan held Harbhajan's eight-year–old son, Jagjit. Manmohan's own sons, Tasvinder, 22 months old, and Balvinder, four years old, watched the tugboats below.

Suddenly, their car began swinging wildly. Manmohan froze as she saw a blue car ahead oscillate violently, and plunge into the churning waters below. Farther ahead, a red car lurched off the main cable and tumbled into the bay, spilling passengers through an open door.

Manmohan's car somersaulted completely round the main cable. The door popped open. In a lightning move, Mahinder, who was holding Tasvinder, threw the boy away from the door. But he lost his own balance and pitched headfirst through the opening. Springing up, Pritam grabbed her grandson. She slipped and plunged out the door with Tasvinder. Manmohan fainted from fear and shock.

In a few moments of horror, seven people had been thrown to their deaths. (Miraculously, Tasvinder would survive). The remaining 13 cable cars had stopped moving. Inside four of them, 13 people were dangling helplessly above the darkening sea, paralysed with fear.

On the fourteenth-floor observation deck of the harbourside building, Colonel Lee Hsien Loong, Chief of Staff of Singapore's Air Force Rescue Squadron, who was in charge of the rescue operation, viewed the accident scene and listened to a briefing on the disaster from officials of the Port of Singapore Authority (PSA). An oil-drilling ship being towed out to sea had broken loose from its tugboats, and its drilling rig, 68 metres tall, had hit the main cable car line. One car had been wrenched free from its 42 millimetre support cable, and was now hanging only by the tow cable, 29 millimetres in diameter; there was no telling how long it would hold.

Winds and rain were blowing up to eight knots. "Anything we try will be risky," one of Lee's aides warned.

Lee called in a ship-borne crane, hoping to lover the cable-car passengers to safety in a basket. But when it arrived, it proved to be too short. So Lee summoned two helicopter rescue teams.

LIGHTNING crackled, and a cold wind howled through the empty window frame of the car holding and American, Dorothy Jean Gilliland, and a Canadian couple, John Huisman, 43, and his wife Catherine, 36. In pain from a broken collarbone, Huisman sprawled on the metal floor. Catherine Huisman, her clothes bloodstained from the cuts on her face, wept helplessly. Dorothy Jean Gilliland fought back the pain from a badly bruised arm, and tried to calm her companions. But their situation seemed less precarious than in the nearby car, which was held aloft only by the tow cable, that carried Manmohan Kaur and the surviving members of her family.

Two young New Zealand soldiers, Allan Brown and Stephen Wells, were in a car suspended over land some 150 metres from the Singapore terminal. In a fourth car were four young Singaporean residents, Leong Siew Keng, Halijah binti Manaf, Low Hock Seng, and Hamad bin Jom; their gondola had just left the Sentosa station, and hung suspended over the island's verdant woodland.

They attempted a few Malay songs to keep up their spirits. But they couldn't remember the words, and their singing finally dissolved into sobbing.

In Manmohan kaur's car, the two women cried, prayed and pleaded for help until their throats were hoarse. Harbhajan was suffering from broken bones in her hand and a severely wrenched back. Only four-year-old Balvinder remained calm. Consoling his mother and cousin, he reminded them of temple teachings about the love of God and the need to have faith in that love. "Don't worry," the boy said at one point. "God will help us, you'll see."

It was soon after midnight. The rain had slackened, but the wind had picked up to 12 knots. Officials in the tower were worried that the down draught of the rescue helicopters, combined with the wind, might blow the cars into the sea.

The drilling rig was still caught in the cable; mooring lines were made fast between the mother ship and the wharf, and tugs were helping to keep the rig from drifting down the harbour and carrying the entire cable system with it. The sound of screeching metal borne on the wind emphasised the precarious situation of the 13 trapped people.

"Rescue One Zero," piloted by Singapore Air Force Lieutenant Kao Yit Chee, made a trial run on an empty car - then moved down the line to the first stranded car, holding the New Zealander's. Swinging in wide pendulum like swoops on the end of a winch cable 15 metres below the helicopter was Kao's winchman, Lance Corporal Phua Kim Hai.

Phua was taking a fearsome risk. If he became entangled in the tramway cables, Lieutenant Kao would have to order the severing of the winch cables, sending Phua to almost certain death in the dark waters of the harbour. The alternative would be to risk losing the helicopter and its four-man crew.

It took more that 15 minutes of manoeuvring to edge Phua to the side of the New Zealanders' car. He opened the door and hoisted himself inside. Allan Brown emerged first, strapped into a rescue harness. Pulled into the chopper 30 seconds later, Brown hugged the floor and muttered with relief, "Thank you, Singapore!"

Both New Zealanders were transferred to hospital. Kao's crew moved to the car nearest to Sentosa, and lifted the four terrified Singaporeans to safety.

The two "easy" rescues had been accomplished. The challenge now was to save the seven people in the two remaining cars, one of which was held aloft only by the towline.

The piloting part of this job fell to Lieutenant Geoff Ledger, of the Royal Australian Navy, who was in Singapore helping its armed forces train helicopter pilots. Ledger lifted "Rescue One One" into the darkness and manoeuvred towards the car in which the Canadian couple and the American lay injured. Sighting on the cable and its concrete support tower, Ledger started turning the helicopter so that his winchman, Lance Corporal Selvanathan, could approach the car from the side.

Suddenly, as the aircraft yawed in the wind, Ledger, lost sight of his hover reference. He backed off, realising that he would have to depend on directions from his winch operator, Staff Sergeant Ho Tsu Keng, the only crewmember who could see both the winch man and the car. Ledger cut off radio contact with the ground, in order to concentrate on intercom instructions from Ho.

"Geoff, you gotta move left...more...steady!"

In spite of this 11 year's experience as a pilot, Ledger found it impossible to keep his machine from lurching in the wind gusts. A violent billow of wind slammed against the aircraft. "Pull back!" the winch operator shouted. A flash caught the corner of Ledger's eye as sparks shot up from below. Selvanathan's winch wire had touched the support cable. "We over shot," shouted Ho.

Ledger checked his watch. He'd been manoeuvring for only 15 minutes, but it seemed like hours. His hands and wrists ached. He pointed the helicopter's nose towards the stranded car.

"A bit more right. That's it now, steady... he's got hold now. He's in!"

The Huismans and Dorothy Jean Gilliland were transferred safely to land. Now Ledger faced his toughest task.

Observers in the PSA tower and on the drilling rig had reported that the four occupants of the last car seemed, understandably, to be in a state of panic. If they moved suddenly, rushing at the winchman, for example, the thin cable supporting the car could be dislodged. Ledger jerked his head back and forth, fighting the stiffness in his neck muscles. This time he would have only the fine tow wire as reference to help him hold his chopper steady.

HARBHAJAN K'AUR lay semi-conscious on the floor. Manmohan sat on a bench, Balvinder tied to her with a scarf. I will go mad with this terror, she thought.

When the helicopter approached, the car suddenly shuddered in the down draught. Manmohan was certain the end was near. She bowed her head in prayer. When she lifted it again, Lance Corporal Selvanathan was swinging in the doorway. "I've come to take you home," he said. Little Balvinder seemed most composed, and the winchman put the harness round him first.

"Don't drop me," Balvinder said. "You be careful now."

"Don't worry," Selvanathan told the boy. "We're going for a helicopter ride!"

When he returned for Jagjit, however, the little boy without his cousin to give him courage, cowered in a corner. Selvanathan spoke gently, "Your cousin is waiting for you. Come on, it'll be alright."

Slowly, Selvanathan slipped the rescue harness over the boy's head and arms as both he and Manmohan petted him. Then Selvanathan took the boy in his arms and, with Jagjit sobbing away on his shoulder, he stepped back through the opening and ascended to the chopper.

Manmohan was lifted out next. But when Selvanathan re-entered the car and attempted to strap Harbhajan into the rescue harness, each movement brought screams of pain. Desperately, Selvanathan struggled with the harness, knowing that Ledger could not hold his hover for more than a few minutes.
Finally, the harness in place, the exhausted winchman struggled to his feet and eased the woman's limp body through the door.

AFTER FALLING 56 metres into Singapore harbour, 22-month-old Tasvinder Singh had been plucked from the tidal currents by an alert by-stander, Abdul Latip, who jumped aboard a moving ferry and dived into the water for the rescue. Tasvinder was rushed to hospital suffering from shock, a fractured skull and bleeding lungs. At first, his blood pressure and pulse were so weak that doctors had difficulty recording them. But, after 10 days, recovered from his injuries, he was reunited with his family.

All the crew members received letters of commendation from Winston Choo, Singapore's Chief of General Staff, congratulating them for courageously bearing the perils of injury or death on a night when 13 lives were hanging by a thread.

Geoff Ledger became the first foreign national to receive such an award since the formation of the Republic of Singapore.

We thank the author Mr Richard Blair and Readers Digest for permission to reprint this article. It certainly makes for a very exciting read!

I had an opportunity to discuss the events of the fateful evening with CDRE Ledger and asked him the following questions:

Would we approach such a difficult scenario any differently today?

"We didn't have the advantage of Risk Management or CRM training back then. I recall that we made a careful but quick assessment of the task, the weather and what dangers may be encountered both by the aircrews involved and the people we were trying to rescue. The risks however were very evident and briefed. For example would the downwash from our aircraft dislodge any of the cable cars precariously hanging on the cables? The rescue was to be conducted at night and there would be limited visibility".

How were these risks mitigated?

"Night winching had been carried out with the SAR crews within the last month.

We tested whether the helicopter downwash was likely to dislodge a cable car by practicing on an unmanned car first.

We determined that it would be safer to winch out the survivors rather than rope them down to boats 200 ft below.

The two Aircraft Captains selected for the mission were chosen because of their high levels of experience".

Were there any CRM issues of note?

"The scenario was already difficult. The crew was multi lingual – English was used as the medium throughout. Nevertheless language/ communication at times can present problems – particularly under stress. A thorough briefing was carried out prior to the mission, and was updated in flight, as the method of winching and the full details of the task were uncertain until we arrived at the scene".

"Training was key to our success".

I thank CDRE Ledger for the opportunity to pass on some of the issues he and his crew had to deal with on the night of the rescue described above, and leave you with a final thought:

In military aviation we should always expect the unexpected. In our careers we can be called upon to do things requiring every inch of our skills and capabilities and quite often with very limited or no warning. Planning, preparation, training, understanding and dealing with risk and good crew coordination, are all covered in CDRE Ledger's comments above.

I don't think that we would do it any differently today.

LCDR R Sellers, RAN
FASO
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BELOW BELL 212 SAR RESCUE HELICOPTER AT RSAF BASE SEMBAWANG

Merlin HM MK 1 - An Exchange Officer's View

BY LCDR C SPINKS, RAN
824 SQUADRON
RNAS CULDROSE

In October 2002 I was posted to 824 Naval Air Squadron (NAS) at RNAS Culdrose in Cornwall, United Kingdom on the long-standing RAN/RN Observer exchange. This position had previously been on the 'venerable' Anti Submarine Warfare (ASW) Sea King, and included time on both frontline and training squadrons. I however, was fortunate enough to be the first foreign exchange officer posted to a squadron operating the Merlin HM Mk 1, the aircraft that has essentially replaced the Sea King in the ASW Role. Having completed conversion and instructor standardisation I am now instructing aircrew on both their advanced and operational conversions to the aircraft as well as being the Observer standards officer for the RN Merlin fleet.

There is a long (and distinguished!) list of Observers who have previously been on this exchange, and with a considerable number of ex Royal Navy aircrew now serving in the RAN it is appreciated that there is no shortage of expertise on the roles and functions of the Royal Navy and its Fleet Air Arm. Accordingly, in this article I am only seeking to provide a general overview of the Merlin and the organisation that supports it. I am also including a few insights and observations regarding the challenges, flight safety and otherwise, that face operators of complex Naval Helicopters, particularly those on exchange....

The Squadron

824 NAS conducts all advanced and operational flying training for aircrew and all engineering training on the Royal Navy's Merlin. The squadron provides trained aircrew and maintainers to the front line Squadrons of 820 and 814 and also parents the two current Merlin Flights that are based on the type 23 Frigates HMS LANCASTER and HMS MONMOUTH. The number of Merlin Flights is ultimately to expand to 6 in total by 2007, all of which will eventually be parented by 829 NAS, expected to commission in May 2004. Merlin operational evaluation is conducted by 700M NAS, also based at Culdrose.

There are around 50 staff aircrew and 170 staff maintainers at 824, making it larger than any other RN or RAN squadron. These staff support 8 aircraft plus the simulator and ground training complex. Currently there are 30 student Aircrew on course. For comparison the frontline squadrons, 820 and 814, currently have around 110 personnel each including 24 aircrew.

The Aircraft

The Merlin is an aircraft jointly designed by Westlands of the UK and Agusta of Italy. It is a 3 engined helicopter with a maximum all up weight of 14600 kgs. It has a 'glass cockpit' and mission and aircraft management systems. It is fitted with Link 11, ESM Suite, Active Dipping Sonar (ADS), Passive Acoustic system and Radar. In addition it has a fully coupled automated flight control system that allows it, amongst other things, to transition from dip position to dip position automatically. It can carry any mix of up to 4 heavy weapons, currently limited to Mk 11 Depth Charges and Stingray Torpedoes.

This is the first fully system integrated helicopter operated by the Royal Navy and represents a significant change not only in equipment and technology, but also the manner in which the crew are now able to work together. The mission system provides all 4 crew positions with excellent situational awareness and allows them to contribute to the effective operational capability of the aircraft by increasing their work rate when required to reduce the workload on other members of the crew. This is a concept that those S-70B-2 operators will be familiar with and no doubt will also be instrumental in the future effective operation of the SH2-G(A).

It is however, quite new for the RN and is one that is promoted as vital to being able to fully maximise the operational capability of this aircraft. Aircraft such as the Merlin with mission systems accessible to all crew positions see the traditional demarcation lines of crew function becoming blurred.

BELOW MERLIN HM MK1

A significant amount of training is given to trainee crews in Crew Resource Management (CRM) to provide a sound basis from which to develop these skills. With the majority of Merlin trained aircrew currently coming from an ASW Sea king background it has been somewhat of a revelation that they are all able to interact with each other's traditional areas of responsibility. While for those coming from their basic flying training it is quite a leap from operating an AS350 or Jetstream. It is the first time that most of the Pilots have been able to see a radar or tactical picture while airborne or that the Observer has been able to 'fly' the aircraft from his crew position utilising the coupled navigation system.

A three-man crew, a Pilot, Observer and Aircrewman, currently operates the Merlin. That said, it is quite rare for the front left hand seat to be empty, particularly on a tactical sortie. It will generally be filled by an appropriately qualified crewmember, either an Aircrewman, Pilot or Observer dependent on the mission. Even with an integrated mission system the workload can be quite high for the various crewmembers at different stages of the sortie and in my experience the addition of a fourth crewmember allows far more effective use of the various aircraft systems. From an operators perspective the fully integrated and 'automated' systems of the aircraft can often require a substantial level of management in order for them to deliver a useful output. The crewing of the aircraft has been an ongoing point of discussion in the RN and may be subject to review pending the outcome of various workload and operational effectiveness studies.

Indeed one of my first jobs as staff was to review the training and qualification scheme for non pilots in the left hand seat.

It is a very capable aircraft that brings a great deal to any force to which it is assigned.

The Observer and Aircrewman are seated in the Mission Booth which is located directly aft of the cockpit. These seating arrangements can take some getting used to as you are both facing aft, sitting side by side on a console that is offset to the port side of the Aircraft.

I initially found the 7 degrees nose up and 3 degrees left wing low attitude while in the dip quite disconcerting as I felt as thought I was going to fall out my window but it is something I have become quite used to now!

Behind the Mission Booth is the main cabin area that is configurable dependant on the role. Typically, 824 aircraft are fitted with the ADS, a 10 Buoy rotary Carousel Buoy Launcher (two can be fitted), a further 'A' Frame sonobuoy stowage and a total of 5 seating positions for passengers. A SAR bag containing Strops, Harnesses etc is also routinely carried, as is a Hi Line. The aircraft itself is an interesting mix of the old and the new. The hook for example is the same Semi Automatic Cargo Release Unit (SACRU) that has been fitted to the Sea Kings for years, though those Sea King trained readers may be disappointed to know, that there is not quite the same amount of oil dripping on them that they may have been use to in the past!. Power is provided by 3 Rolls Royce RTM 322 engines and the aircraft is also fitted with an APU. Performance wise, it is of note that even with three engines, the aircraft is often unable to hover in nil wind conditions following a single engine failure until later in a sortie, once sufficient weight in fuel has been used.

The Training

824 NAS has been training personnel on the Merlin for the last 5 years, prior to this it was conducted at the Westland's factory in Yeovil where the aircraft were assembled. Initially, only those aircrew with experience on other types were converted to Merlin, the vast majority of these being former Sea King crew. However, the first course of aircrew straight from their basic training to have completed the full syllabus graduated in

November 2003 after a 12 month training package.
I completed the shorter convertee course, which at times was quite a challenge as the training has been specifically targeted at aircrew with a particular experience and skillset. For someone with no experience in ADS operations it was quite a steep learning curve but my transformation to a 'pinger' has been one that I have enjoyed.

As the Merlin is a relatively new aircraft there is still a tremendous amount of work to be done as its capabilities are developed and its roles are further defined. It is a very capable aircraft that brings a great deal to any force to which it is assigned. There is no doubt that there are issues yet to be fully scoped regarding aircrew training and these are being progressed. The task of establishing a new training system on a new aircraft type of this complexity is not one to be underestimated! To compound this challenge the RN has adopted new training technology for Merlin that is quite heavily dependent on computer based training, emulators, and simulators, quite different from that used in the past. Greater dependence has also been placed on civilian companies to provide training packages and support, however the general consensus is that these have not necessarily delivered the tailored product in the timelines that have been required by the Royal Navy. Regular software upgrades have also created issues as the training devices and Aircraft have not been able to be upgraded concurrently.

Flight Safety

The Flight Safety culture of an RN Squadron is similar to that of an RAN Squadron. There are visits by the Flight Safety Organisation, incident signals available in the crewroom and the usual flight safety magazines and posters around the building. That said, there are significantly more hours flown in the RN and as a consequence, aircraft accidents seem to be much more of a reality than anywhere I have previously worked.

For example, the week before I wrote this article there had been an accident involving a Lynx in the Antarctic and also a wire strike involving a Mk 4 Sea King conducting training in the UK.

All my recent flying in the RAN was on Ship's Flights, flying with the same crew and liaising with the same maintenance personnel daily. Flying on a large squadron like 824 certainly emphasises the importance of standard procedures. As the resident Observer in the Merlin Standards Cell it is quite a challenge to ensure that the procedures adopted across all RN Merlin Squadrons are effective and safe as the Merlin matures.

Whilst flying with the RN is in many ways similar to the RAN, it is often that perceived similarity that makes it the most hazardous. Even basic procedures are conducted differently and I have rapidly learnt to ask the 'stupid' question, as it is often assumed that I have a full understanding of the task at hand. My short time with the RN has reinforced the old adage that you are never too old to learn.

To that end, there are two specific points relating to Flight safety that I have rediscovered while on exchange, they both relate to operating helicopters with advanced air vehicle and mission systems and are equally applicable to the RAN Seahawk, and presumably the Super Sea Sprite as well.

BELOW MERLIN HM MK1

The first point is that it doesn't matter how hi tech the aircraft, common sense still applies. The Merlin can be a very complicated aircraft to operate, the Flight Reference Cards are an intimidating 234 page document and even they do not cover every eventuality. Additionally, given that it is a new aircraft type, there is an understandably relatively low level of corporate experience on operating and maintaining the aircraft.

An illustration of this occurred soon after my arrival, when a previous Senior Pilot, a very experienced Test Pilot (TP), opted to land in a field and shut down rather than continuing a sortie. In his words the aircraft 'did not feel like it wanted to fly anymore', subsequent engineering investigation found a fault that justified his decision. There was no specific advice in the Flight Reference Cards (FRC's) pertaining to the situation they found themselves in. Recent personal experience has also further reinforced the view that if you think there may be something wrong, there usually is, and that no amount of aircraft technology or Flight Reference Cards can substitute for sound judgment and common sense.

The second point is that no matter how 'modern' your helicopter is, it remains vitally important to maintain good airmanship. Technology has provided an incredible range of operating options for Merlin crews. There is, however, potential for the crew to become fixated on utilising every facet of a particular system, or analysing a minor malfunction. From experience, it is very easy for the whole crew to be head down in the cockpit trying to work through a software or hardware issue.

No 'Human Machine Interface' is perfect and complex mission systems do not always allow functions to be used as quickly as one would like. Thus there are times when trying to use the full functionality of the system detracts from the achievement of the aim. It is always worth taking stock of what you are actually trying to achieve, and then utilising the system to achieve that, but only up to the point that it starts to become a hindrance.

All very interesting ..... but am I having fun?!

I would have to answer a resounding YES to that question. I cannot recommend the opportunity to participate on a flying exchange highly enough. Sure, it can be pretty bleak in the UK in the winter but that is all part of the experience, though I don't think I will eventually miss wearing an immersion suit for what seems like every sortie. There is a great deal to be gained by getting out of your comfort zone and having to come to terms with a new aircraft and a different way of doing business. The chance to operate the Merlin has so far been excellent and a valuable insight into the introduction of a very complex aircraft. The RN Fleet Air Arm, like our own, has a reputation for getting the very best out of the equipment they are provided with and the maritime Merlin provides a great deal of scope for future development. On a personal side, the other elements of the exchange are not to be ignored either and there have been a range of excellent social and travel opportunities arising both from within, and outside the workplace.

LCDR Spinks has given us an excellent insight into the challenges and opportunities we may face during the introduction of a new type to service and at the same time reminded us all of the value gained from exchange posting opportunities. The gain to our culture in learning from the experiences of other operators and the giving of our own experience can only result in the development of our professional standards and capabilities as individuals and as a Naval aviation force.

LCDR Spinks also raises some points in his article particularly worthy of further thought for our current and future operations:

"From an operators perspective the fully integrated and 'automated' systems of the aircraft can often require a substantial level of management in order for them to deliver a useful output". This is very true of all highly automated aircraft systems - it is the way of the future - Crews will need to be expert in understanding the efficient use of the automated systems. Expertise in "systems management" will be the hallmark of highly capable crews.

"The task of establishing a new training system on a new aircraft type of this complexity is not one to be underestimated!" This is a challenge currently facing our instructional staff as our aircraft expand in automation and capability (S-70B-2 SMULE/SH-2G (A)/MIRTAS).

"From experience, it is very easy for the whole crew to be head down in the cockpit trying to work through a software or hardware issue". This is another gotcha common to most advanced technology aircraft and just as dangerous in "legacy" aircraft.
As crew, do you already have formalised head down calls? It's worth thinking about.

And from the Aviation Safety perspective - "Given that it is a new aircraft type, there is an understandably relatively low level of corporate experience on operating and maintaining the aircraft - no amount of aircraft technology or Flight Reference Cards can substitute for sound judgment and common sense".

LCDR R Sellers, RAN
FASO
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Thank you to CPOSN Kev Bryson for this editions Caption Competition Photograph.


NAVY