JULY 2010

TOUCHDOWN

THE FLEET AIR ARM SAFETY AND INFORMATION MAGAZINE

NAVY

FLEET AIR ARM SAFETY CELL

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

Photography
HQ-FAA Library

Deadlines
Issue 3/2010 contributions are requested by 22 October 2010.

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Contributions are invited from readers across Navy, the ADF and the retired community in the interest of promoting Aviation Safety and Safety Awareness throughout the RAN. TOUCHDOWN magazine reserves the right to edit all article submissions for content, length or format.

Internet
www.navy.gov.au/publications/touchdown

Intranet
http://intranet.defence.gov.au/navyweb/sites/FAA

CALL FOR PAPERS

In September 2010 the second Royal Australian Navy Fleet Air Arm Safety Stand Down will be conducted. The bi-annual event addresses the safety related issues facing the FAA at the present time and into the future. Guest speakers are generally taken from organisations that are of like mind and have a requirement for a superior commitment to safety. The opportunity exists for guest speakers to present their own work at the next safety stand down. Please forward discussion papers or presentation outlines to the Fleet Air Arm Safety Cell at the address below for consideration.

Call for Papers
FAASC
HMAS ALBATROSS
NOWRA NSW 2541

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Foreword

BY CDRE P G LAVER, RAN
COMMANDER FLEET AIR ARM

It is a particular honour for me to have the opportunity to write the Foreword of this edition of Touchdown soon after my assumption of command of the Fleet Air Arm.

We are members of a FAA that enjoys a proud heritage and a very bright future. Our heritage (our values, traditions, culture and professional knowledge base) is a gift to us from our predecessors. It was hard won through the experience, effort, successes, failures and indeed sacrifices of past naval aviators and maintainers. It is our privilege and obligation to treasure this heritage and build upon it to realise the future FAA.

As you are all aware, the next ten years offer exciting prospects for the FAA. In a period that is less than a third of my working life, we will replace FAA aircraft that have given venerable service, with a suite of aircraft types that are state of the art. They will offer us new capabilities, opportunities and challenges. SBLT aircrew and engineers, or AB maintainers of today, will be the Flight Commanders, Squadron REOs or Maintenance Managers for these new capabilities.

The acquisition of new aircraft, transition to new Squadrons and strategic initiative such as SRP and NGN together provide the context for our efforts. We will change the way we train, work and organise to modify and evolve current practice so that we can improve our performance. We will be obliged to use our resources more efficiently. Our aim as professionals must be to ensure the FAA of the future is one in which we are proud to serve and to which others inspire to belong.

An enduring principle for me, however, is summed up in three words; Fly Navy, *safely*. These three words articulate what we aim to do and how we aim to do it. "Fly Navy" identifies our intent to achieve the FAA mission. This is expected of us all by the Government and the Australian people. "Safely" identifies our obligation to ourselves, our families, each other and the Australian Government as professionals to achieve our mission in a manner that preserves ourselves and the equipment for which we are responsible.

Changing the way we do business is a challenging prospect. It demands our critical scrutiny of current practices and disciplined evaluation of new proposals. In this, the principles of AVRM are also enduring:

1. do not accept unnecessary risk
2. accept risk only when the benefits outweigh the costs
3. make risk decisions at the appropriate level

We must all respect and comply with current work practices, as this is the means by which we currently meet our professional obligation to ensure our safety and that of our colleagues. We must also be involved, as professional aviators, engineers and maintainers, in selecting better, more efficient work practices and offering our proposals to those who have the experience and authority to consider their adoption.

I look forward to working with you to ensure that the FAA is an organisation we can be justly proud of, now and into the future.

Fly Navy, *safely!*

CDRE P G Laver, RAN
COMAUSFAA

Deputy Fleet Aviation Safety Officer joins FAASC

LEUT Carmencita Handford joined the Fleet Air Arm Safety Cell (FAASC) on 01 March 2010 as the Deputy Fleet Aviation Safety Officer (DFASO). Carman was born in Cheng Du, Sichuan, China and arrived in Australia with her family in December 1993. After completing her secondary studies at Fahan School in Hobart she enrolled at the University of Tasmania (UTAS) to study Engineering. In August 2005 she joined the Royal Australian Navy as an undergraduate Aeronautical Engineering Officer and graduated from UTAS in November 2007 with a Bachelor of Engineering (Mechatronics).

After initial officer training at HMAS Creswell, she completed her initial engineering application course at HMAS Albatross. A subsequent posting to 817 Squadron for consolidation of theoretical knowledge and practical operational skills enabled her to gain her Certificate of Competency in February 2010.

Since joining the FAASC, Carman has completed the ADF Assistant Aviation Safety Officer Course and the Australian Transport Safety Bureau Human Factors Course. In her role as DFASO she will be attending a range of courses and conferences with regards to safety management systems, human factors and accident investigation. Like all Safety Cell personnel, Carmen is eager to establish a reciprocal network to foster the exchange of ideas, experiences and knowledge.

Carmen's principal tasks will include accident and incident prevention and maintaining a healthy safety culture. She intends to maintain a proactive liaison with FAA Squadrons and other military and civilian engineering institutions. She aims to deliver comprehensive analysis of safety issues and specifically address those procedures and techniques that may be a real or perceived threat to personnel safety and the airworthiness of fleet aviation assets.

LEUT Handford can be contacted at the FAASC on (02) 4424 2259.

Thanks go out to our retiring reservist and Touchdown magazine assistant editor WOA Steve Duffey. Steve's efforts over the past four and a half years have resulted in the production of 14 editions of the magazine and his sourcing of articles, editing and distribution of Touchdown to local and overseas audiences has been first class. Well done Steve and all the best for the future.

Bravo Zulu

ABATA Elliott
HMAS STUART

In March 2010, ABATA Elliott was tasked to conduct maintenance on the rotating scissors of Seahawk aircraft 883. During the task AB Elliott was required to take measurements to assess play in the bearings of the rotating scissor assembly. During the inspection, and whilst cleaning parts of the rotating scissor, AB Elliott identified increased wear of one of the hinged lug teflon liners. Upon closer inspection AB Elliott found that in parts, teflon was missing and had led to reduction of the parent material of the scissor lug.

The aim of the original maintenance task did not include inspection of the damaged teflon liner. Had this unserviceability not been detected during AB Elliott's inspection, vibration symptoms would have only become apparent at a later date potentially necessitating many hours of fault-finding before identifying the worn and missing teflon.
AB Elliott is commended on his professionalism and diligence in identify a defect prior to symptoms presenting in the form of unknown vibrations in the flying controls.

BZ

LSA O'Brien
HMAS STUART

In January 2010, LSA O'Brien was preparing the cabin section of Seahawk aircraft 883 for the daily flying program. During this activity aircraft external power was applied when LS O'Brien observed what appeared to be a flash of light from within the cabin section of the Seahawk. LS O'Brien reported this immediately to the Maintenance Manager.

Inspection found that none of the aircraft circuit breakers had tripped however through further discussions the origin of the flash was determined to have occurred in the rear port corner of the aircraft cabin. Inspections of the exposed aircraft wiring looms for the RAST and Aft Equipment Rack were carried out in order to identify the source of the Flash. Removal of the RAST wiring harness coverings identified 2 chaffed wires leading to the 115VAC supply for the Main RAST Probe extension and retraction. Wiring repairs were carried out and the Main RAST Probe was tested serviceable. If not for the due diligence of LS O'Brien it is likely that the latent wiring defect would have remained undetected until failure of the Main RAST Probe became fully evident. Noting the aircraft is embarked, failure of RAST Probe extension or retraction has potential to complicate recovery of the aircraft. LS O'Brien is commended for his professionalism and attention to detail in identifying this defect.

BZ

ABATA Rigney
816 Squadron

ABATA QM1 Rigney was conducting an Area 6 Before Flight Inspection (BFI) on N24-008 (Tiger 77). During the inspection of the rotor head he identified the absence of lockwire from the retaining bolts on the Black Main Rotor Spindle Blade lockpin link. On further inspection he noted that the lock pin link bolts were only finger tight and not torqued to 50 inch pounds as prescribed in the maintenance manual.

AB Rigney immediately reported the deficiency to his supervisor, who checked CAMM2 and confirmed there were no outstanding tasks on the aircraft and therefore the lockpin should have been secured correctly. The team SMC and Duty REO were notified and the aircraft was quarantined pending a formal investigation.

If left unnoticed the potential for major damage to the aircraft was very high as the blade lock pin may have failed to drive in correctly. After the maintenance investigation, the lock pin link was immediately reassembled correctly and the aircraft was able to return to the Squadron flying program.

AB Rigney is to be highly commended for his diligence during the conduct of the BFI. Of note is that checking the blade lockpin is not a designated inspection point and several BFIs conducted previously had not identified the discrepancy. AB Rigney's professional conduct and behaviour are reflective of Navy's values and his actions have directly resulted in several areas of improvement for 816 Squadron with respect to the implementation of the new AD Maintenance Management System.

BZ

Flight 3 Aviation Maintenance Team
HMAS TOOWOOMBA

CPOATA B. Berggy
POATA C. Marsh
POATV C. Smith
LSATA G. Chester
LSATV C. Dendle
ABATA V. Hughes
ABATA S. Marshall
ABATA W. Douglas
ABATV L. Mason
ABATV T. Smith

I commend the Aviation Maintenance team of Flight 3 for their outstanding professionalism, cohesion, perseverance, teamwork, engineering skill and dedication in sustaining HMAS TOOWOOMBA's S70B-2 Seahawk helicopter during Operation SLIPPER. Extraordinarily well led and managed, your team showed sharp focus and application in the manner and speed you integrated into HMAS TOOWOOMBA. In doing so, you delivered the S70B-2 Seahawk helicopter and an aircraft maintenance capability that underpinned the aviation Work Up and the start of aviation operations for Rotation 21.

Your attitude and your maintenance achievements are especially noteworthy given your prolonged exposure to extreme temperatures, humidity, wind and deck-motion conditions by both day and night between the months of July and September, when the impact of the Indian Ocean South West Monsoon was profound. Outstanding organisation, teamwork and your professionalism was highlighted by your individual and collective efforts to complete a challenging but highly successful mid-deployment C- Phase maintenance activity and your effectiveness in restoring the Aviation capability to Fully Mission Capable status within twenty four hours of sailing.

Your responses to critical and catastrophic defects were first class. Through a combination of sheer hard work and technical excellence, you delivered a near-perfect and truly exceptional record of Aviation capability. Diligence, dedication, meticulous planning and a highly rigorous approach to effective maintenance practices and defect repair, delivered a remarkable number of sorties in support of surveillance and boarding operations, medical evacuations, vertical replenishment and personnel transfer requirements. Your great pride in your work was reflected by the immaculate condition and appearance of the aircraft which enhanced the professional reputation of Royal Australian Navy aviation given the personal feedback from many senior foreign officers including Commander Carrier Strike Group Seven, Rear Admiral Hebner Unites States Navy and Commander Task Force 151, Rear Admiral Sanders, United States Navy.

As Flight 3 maintenance personnel you have delivered a commendable level of aircraft serviceability and availability. In doing so, your very important contribution to the capability output of HMAS TOOWOOMBA is worthy of special recognition. As such, your individual and collective performance and achievements are in the finest traditions of the Royal Australian Navy and Australian Defence Force.

M A KELLY, AO
MAJOR GENERAL
COMMANDER
JOINT TASK FORCE 633

4 November 2009

BY CPOATV GORDEN

A Reality Check in Task and Trade Supervision

The problem presented to me seemed fairly simple. The 'APU Accumulator Low' warning light was not indicating as it should be. As a relatively experienced maintainer the solution was straightforward. That is, check the APU accumulator pressure switch and go from there. But my confidence and distractions on another task made me lose sight on our Squadrons first mantra of maintenance ... 'document before dismantle'.

Weeks before this event a maintenance team forgot to connect a plug....

This incident comes in two parts. The installment of the APU accumulator and, later, the final ground runs after the servicing prior to maintenance test flights (MTF's). For the installation of the APU accumulator, weeks before the ground runs I was involved in, the maintenance team identified that it would need 3 levels of certification; that is, a maintainer, a trade supervisor and an Independent Maintenance Inspector (IMI). Prior to fitment a brief was carried out and all inspection steps were identified. Due to the complexity of the task an additional mentor was assigned to assist the tradesman. All good so far.

The task on the aircraft is in a location that is dark, cramped and difficult to work in; namely above the fuel cell at the rear of the cabin section. To work in this area requires a maintainer to crawl in on his/her midsection. The maintenance manual states to secure the connector to the pressure switch and that once all of the tasks had been carried out to conduct a final IMI. In accordance with Squadron SOP a Final QA check on fluid/pneumatic systems requires checking for correct assembly and locking and a system leak check. Unfortunately two things were missed prior to the IMI being conducted. Both the tradesman and the trade supervisor missed connecting the electrical connector to the pressure switch. The IMI recalled inspecting the nitrogen/hydraulic lines, connection of the APU start valve lines and pressure gauge installation, however, did not notice the disconnected electrical connector.

So the aircraft was in this condition when my maintenance team started conducting ground runs at the completion of the servicing about a month later. I can hear many maintainers out there ask why this plug was not discovered during the Before-Flight-Inspection (BFI) or during aircrew pre-flight inspections. The plug itself is situated behind sound-proofing at the rear of the cabin section and even when looking through the viewing glass to the APU pressure gauge, the plug is out of sight. It is also not required to be inspected as part of the BFI.

To set the scene of the afternoon in question, the aircraft was undergoing multiple ground runs for main rotor track and balance checks. I perceived there was pressure to get the aircraft serviceable and back into the flying program. At the same time I was trying to complete an S205. This is a REO documentation check that I am required to complete as part of the FSMS check list. These checks are conducted to ensure accuracy of aircraft related maintenance documentation (both paper based and CAMM2). Due to factors outside of the scope of this article the previous 'doc check' was not carried out in the prescribed time frame. This left me with 640 pages of maintenance documentation to go through, line by line. Added to this was the fact that I was acting as the team Maintenance Manager (MM) and IMI as my PO was still undergoing training and was not authorised.

On our initial ground run the pilot confirmed that an APU operational check was carried out and was aware that the low level light was not illuminating. The pilot was a very experienced USN Seahawk pilot on exchange to the Squadron; but USN Seahawks vary in configuration to the Australian Seahawks. One of the variations is that the USN Seahawks have a Winterisation Kit, which basically gives the pilot two accumulators. With this fit it is not uncommon for the for the APU accumulator low level light not to illuminate as the system holds enough pressure for two charges. As the rest of the functional check progressed normally he did not believe the system was unserviceable and consequently did not report it to me.

It was on the second ground run for our main rotor track and balance checks, with another pilot at the controls, that it was noted that the APU light was not illuminating. The pilot brought this to my attention and I asked the one question that sent me down the path towards an ASOR. 'Are you happy to finish off the ground runs or do you want to U/S the aircraft?' In my pre-NASMI head it was no big deal. Both the pilot and I were confident that the APU was functioning properly and it was just an indication problem, so the pilot said he was happy to continue the ground runs. As the aircraft was preparing for the third ground run of the afternoon I informed my team of the problem and that they needed to look at it when the ground runs finished. They agreed straight away that it was more than likely the APU accumulator pressure switch. Unbeknown to me one of my maintainers, eager to get the job done, checked the aircraft prior to the ground run and saw that the pressure switch was disconnected. He reconnected the switch and let his PO know the problem was fixed. The PO approached me and told me of this issue and I told him, as I looked up from page 300-and-something of maintenance documentation, 'fine'!

Many weeks later, in discussions with my Squadron SMM he gave me sound advice that has stuck with me. As REO/FSMS in training we not only need to be aware of what's going on in front of our eyes but also what is happening around us and to have the courage to put our hand up when we believe things are progressing at too fast a pace and to listen to that little voice in our heads that questions everything around us and alerts us to trouble.

I didn't listen to my inner voice until the aircraft had commenced its ground run. As I sat in the office with lines of data in front of me I realised that I had overlooked a simple, yet serious regulation. We had carried out maintenance to the aircraft (connecting the electrical connector), whilst the aircraft was released from maintenance and had not documented anything! I immediately told the DAEO and he made the correct decision to cancel the ground run and quarantine the aircraft.

So, in a nutshell, what happened? Weeks before this event a maintenance team forgot to connect a plug. An experienced pilot did not write up the U/S due to perceived aircraft configuration similarities. Once discovered, the U/S was left until after operations to be entered into CAMM2. Another tradesman, wanting to get the job done, connected the plug without entering into maintenance. And finally there was me. I was task focussed on another job and not paying attention to what was happening with the aircraft. I did not follow procedure by allowing the ground run to commence, and finally, I didn't listen to that voice in my head that was trying to tell me that something was wrong until it was too late.

The ASOR would have 5 findings and as many causal factors that led to this incident. I will not go into them here. This article is from my point of view to point out that things can progress faster than we want and that we, as maintainers and supervisors, need to follow regulations and instructions as they are there to save lives. We need to document all maintenance, no matter how trivial and we need to have to courage to request help if things start to get out of our control.

FASO Comments:

Many thanks to CPO Gordon for a frank discussion on how workload and pressures we put ourselves under can lead us to make decisions we would not normally make. The organisation we work within is far from being perfect and we need to keep track of what organisational influences might be clouding our judgement. This example clearly demonstrates that simple things can go dreadfully wrong when we fail to recognise the organisation is swamping us. This appears to be an example where a 'knock it off' call could have been made and senior management apprised of the overwhelming workload that confronted a skilled technician for a short period of time. We all need assistance in dealing with workload at sometime. Ask, and assistance will usually be forthcoming.

Here at the hub of RAN Aviation Safety we require input from you, the reader. Without your input this magazine will falter. The additional attraction of dollars for a good tale should be sufficient encouragement to entice you to put pen to paper. We seek 'There I was', 'Lessons Learnt' and 'Why did it happen' type articles, however anything that contains an aviation safety message will always be gratefully received.

CPO Gorden is awarded a $100 cash prize for his article submission to TOUCHDOWN magazine. Congratulations.

LEUT B HAMMOND, RAN

The Forty Five Million Dollar Whipper Snipper...

Confined area operations are a common event for navy aircrew, regardless of your squadron or aircraft, we've all done plenty. They are a routine occurrence and in my experience, rarely any more hazardous than any other of the evolutions we regularly practice. As we all know, the number one immutable rule for all confined area ops is to maintain ten feet clearance from obstacles. How is it then that a crew of four competent, current and qualified aircrew managed not just to impinge the ten foot bubble, but actually clip a tree? This is an account of how a relatively large number of small things lead my crew and I to go against one of the most important principals in aviation... Keep the number of times the aircraft comes into contact with obstacles equal to your number of landings...

The sortie itself was an aircrewman utility check for one of the utility qualified SENSO students at the squadron. The crew consisted of the afore-mentioned SENSO student, my Flight TACCO, a QAI and myself as Aircraft Captain. The profile had us heading to Jervis Bay for some wet utility and boat work, then back to the airfield and surrounds to do some load lifting, confined areas and high winches. Unfortunately, our plan began to slide sideways pretty early on.

At 1500', departing from the airfield heading for Jervis Bay, we all heard a thud and felt a pressure change. The TACCO checked his door, and found the top pin had dislodged. We all sighed impatiently as I slowed to 60 knots, and returned to the airfield to resecure the door. I decided a Pan was prudent (if a little cautious), and we landed on taxi way Alpha. After cancelling the Pan and securing the door, the TACCO called Tiger Base to inform our authorising officer.

BELOW S-70B-2 SEAHAWK

With his concurrence, we cracked on and requested a land on time extension. No real drama, I think to myself, except we've burned down 300 – 400lbs of fuel. We had plenty to begin with, but check rides sometimes have a bit of a habit of blowing out. We checked the numbers, and were quite happy. We were planning to be in the vicinity of the airfield for the second half of the sortie in any case so fuel for a long transit was not required.

We got underway, and things began to look up again. The wet utility and boat work went pretty smoothly, and our man the SENSO student was doing pretty well. We departed the bay to carry on with our sortie profile. The next item on the agenda was to pick up the load from the 816 Squadron hardstand. A quick look at the sortie profile versus fuel burn revealed that things were beginning to get a little tight. We still had enough fuel to do what we needed to do, especially considering our proximity to the airfield. We didn't consider a refuel at this stage as we had sufficient and we would have risked running out of day light if we had refuelled.

Before we'd walked, the QAI had pulled me aside near the local area hazard map. He pointed to a CA near the airfield boundary he wanted to use. "It's pretty tight, but I was in there a few weeks ago with a load. Are you happy to go in there?" "Absolutely" I replied. Part of all of our training as naval aviators

is to evaluate each pad before you go into it. In the majority of cases, nothing will stop you from overshooting if the pad is too tight, and I was more than happy to at least have a look. In this instance, we had plenty of power, and no significant limitations to our overshoot options.

We picked up the load, and the QAI revealed his cunning plan to the SENSO student. We lifted the load, and flew it to the pad. I set up in an orbit above the CA, and we ran through PSWATPs. There wasn't a lot of wind, and we took the most obvious approach route. The pad itself is about half a mile South West of the 816 Squadron hardstand. It's a small clearing with a creek running into a dam on the western side. There are some high trees curving around the Eastern side, and low trees around the remainder of the pad with a key hole near the dam. Our approach takes us the most obvious route along the creek line, over the dam and through the key hole. It's pretty tight as I'm flying down final approach, but I'm happy. We'll go down and have a look.

We settled into a high hover above the pad, with the high trees in the 12 o'clock. The load is well clear and we begin to work our way down to drop off height. I had deselected COMM 1, leaving the TACCO on the tower frequency by himself. There was a lot of traffic on the tower frequency at the time, and I didn't want to be distracted by the all the chatter whilst listening to the con. It wasn't unusual to do it this way, and myself and the aircrewman found it much easier this way. The problem now is that the TACCO has to keep an ear on the tower chatter, as well as the con. A couple of times he missed clear left calls, but we catch him. I'm not too concerned and into the pad we go.

We lower the load into the CA and the subject of the check ride asks the QAI "Am I releasing the load?" The QAI's cunning plan rears its sneaky head. "Yep, release the load." "Are you sure?" asks our student, a little wary of instructor tricks. "Affirm, we'll come back for it." I can almost hear our man shrug as he calls for electrical release. Departure is straight forward, we depart vertically above the trees, get safe single engine parameters and head for our next event. We are burning our fuel down, although we do have enough to complete our profile, and we are operating less than a mile from the airfield. It's also late in the day, but a quick check of my knee board reveals that there is still enough day light left before last light to complete the mission.

We depart the tight pad, and head for a tiny clearing to carry out a high winch. It takes us two approaches to get in as we lose sight of the pad on our first approach. The element of time pressure begins to sneak into the equation at this point. We still have enough fuel, just, and we still have enough daylight but it doesn't want to get any tighter. I think to myself very briefly that maybe we should knock this off and try again tomorrow. But as quickly as the question pops into my head, the reply is there. Why? We are within limits, we are close to the airfield, and we have enough daylight. Crack on then!

As we set up for the second approach with a nice snappy power-wind-plan brief, the Master Caution illuminates. Quick as a flash, just as he's been trained, the TACCO presses the acknowledge push button and says "# 1 Fuel Low". "Roger" I reply. It's worth mentioning at this point that we still have about 500lbs of fuel remaining, enough for around 10-15 mins of flying before hitting fixed reserves at 300lbs. Just enough time to pop into to the pad, winch down our wire man, hook up the load, retrieve our wireman and transit to the hard stand for load drop off. Phew! Lucky we're only half a mile from the hardstand!

As we set up on downwind for our pad, the TACCO reminds me to put up my dark visor. "Roger" I say, thinking to myself that I'll do it the next chance I get to take a hand off the controls. As we turn base, the #1 Fuel Low caption keeps flickering. Every time the Master Caution illuminates, the TACCO's response is conditioned and he looks in to check what caption has come on and press the cancel button. He also makes the war cry "Master Caution, #1 Fuel Low", which is exactly what he'd been trained to do for a good number of years. Perfect, except at the moment he really can't be too distracted by events inside the cockpit as we fly into the CA, I want his eyes out assuring clearances on the left. "I've got it in my scan Mate, happy with it." I say, which I really can't hope to overcome 5 years of solid TACCO training and operations.

On short final, the #2 Fuel Low caption starts flickering as well. Again, no problem. We still have 470lbs of fuel at this point. All it means is that the #2 Fuel Low light keeps coming on, distracting the TACCO twice as much. The second approach is an exact replica of the first, except for the fuel low captions... and it's a bit dark. Dark visor! Ugh! It's Ok, I can still see quite clearly, and there's a good 20 mins of daylight left. We terminate in the hover in exactly the same position as the previous approach. However, this time we need to be 10' lower for the live winch.

There's still a lot of traffic at the airfield, and I'm still off COMM1. The TACCO misses a couple of clear left calls, and again we catch him. Between the Master Caution and Baldock 1 & 2 joining for right initial, he wasn't hearing all of the con from the back. Whilst we weren't necessarily in the best position, nothing had yet flagged on my "knock-it-off-o-meter". I'd given it brief consideration, but everything was within limits, and well within our capabilities as a crew. In terms of the old rule of three, we probably had one amber here, our fuel state. We terminated the approach in a 100' hover, just below the tops of the high trees on the Eastern side of the pad.

In order to get down, we needed to manoeuvre the tail. No one had made a closest obstruction call up to this point, and immediately in the back of my head the tail became the part of the aircraft closest to obstructions. We moved down the last few feet to the 10' hover and prepared to winch out our wireman. The TACCO was keeping a good eye on fuel, and made a hand signal to indicate 10 mins to reserves. I didn't really want to push our fuel, and verbalised to the crew that we only had a couple of minutes left. In hindsight, I probably put too much emphasis on our time constraint. Our poor SENSO student is rapidly approaching capacity, and his con is not as fluid as it usually is. Things are beginning to happen very quickly. My information flow is limited, my TACCO distracted. Our wire man is above the load. "Move left to the 9 o'clock, 3 feet."

Almost instantly, "Stop, stop, stop, no further left... I think we just hit something." comes from my TACCO in an altogether too calm manner. The culmination of quite a few little holes in our well used Swiss Cheese model has eroded our defences. We quickly con ourselves back to the centre of the pad and the issues continue. We have someone down the wire, we're in the middle of a tight pad and we've just hit something. In my mental model, the closest obstruction is near the tail, and I'm thinking we've just put the stab into a tree. I figured if it had been the main or tail, I'd have know all about it. There was no vibration, no control feedback and no noise. The con had dried up somewhat,

ABOVE S-70B-2 SEAHAWK

and I thought our wireman was still dangling. He was actually on the ground hooking up the load. Nobody had actually verbalised what or where we'd hit, or what damage, if any, had occurred.

I made the decision to get the aircraft out of further danger. Our defences had been eroded, and I wanted to get out of there in a controlled and careful manner, and get the aircraft back on the deck. "Right, we're terminating this sortie. Bring in the wireman, leave the load where it is. Let's get back on the deck and discuss this." We got the wireman back in with no further mishaps, then departed in the same manner we did previously. I still thought we'd put the stabilator in some leaves and I was happy there'd be no control issues. The airfield was right in front of me, and I transitioned to taxiway Alpha. I decided a Pan wasn't necessary and no one questioned the decision. We taxied in and shut down normally.

During the pre-shutdown compressor wash, my TACCO stayed in the aircraft to discuss events. It then began to emerge what we'd just done. I realised that we'd actually hit the main rotor in the 10 o'clock position, and it occurred to us that the CDR tapes might be pulled for the inevitable investigation, so they'd need to be intact. I finished the compressor wash quickly, and got power off the aircraft. The revelations kept coming once back in the crew room. It emerged then that the wireman had already been on the ground preparing to connect up the load. So I'd just hit a tree with the rotors, winched someone from the ground into the aircraft after having clipped a tree, then taxied an aircraft with potential rotor damage into the lines rather than shutting down in situ on the taxiway. I wasn't feeling great about how the last half hour of the flight had gone.

How had we got ourselves there? I wondered whether I'd pushed

too hard, too close to the limits. No single one, or few for that matter, of our minor challenges on that flight prior to clipping the tree was anything more than what I'd experienced in your average sortie. At which point do you finally say "No, this is getting silly, let's go home." The correct answer is I guess "Some time before you hit the tree, you goose!" Unfortunately, as we all know, it's just not that simple. The challenge we have as aviators is developing the experience and knowing when you're starting to line up those holes in the cheese. In my case, I'll take it as proof that I'll never stop learning nor stop developing skills. We'd let the holes develop in the Swiss cheese, and were unfortunate that they'd lined up. We were fortunate that there were enough layers of that good old Swiss cheese between my crew and me making an after hours phone call to CO 816 Squadron to explain why I'd left the aircraft on its side in the CA minus its rotor blades.

The other aspect of that flight which for me had significant room for improvement was CRM. I was short of information and I didn't ask for more. A simple "What part of the aircraft did we hit?" or "Where is our wireman?" from me would have removed all uncertainty. By the same token, a simple war cry from another member of the crew, "Main rotor strike, 10 o'clock" would have removed all doubt. In this particular case, it may not have significantly changed our actions, but in another situation, it could have been critical. Communication is the most important element of CRM. If you have information, share it. If you need information, ask for it. Most importantly, learn to recognise when you are information starved.

Well used or not, the Reason model for risk management should not just be used to generate a book of dusty MRPs in the duty office. It needs to come into play every time you go flying. Everyone needs to be aware when they are poking holes in the Swiss cheese. You'll never be sure when or how those holes will line up.

FASO Comments:

CRM is a wonderful thing and is one of the components of human factors we often discuss, but fail to relate to the overall HF picture. This article, and the ASOR arising from the incident indicate several significant HF issues. The overall thread indicates the crew became so task focussed that they allowed a number of seemingly small detractors to accumulate to become a significant threat that was not dealt with when it presented itself. Whilst it is always easy to be the armchair expert, the simple preventative measure that could have averted this occurrence was to can the sortie when things started to get pressed. Time, fuel, light levels vs dark visors, TACCO workload, traffic, confined area SOP failings, radio clutter, inadequate crew discussion and the fact that the pilot actually considered knocking it off early in the sortie but didn't voice his thinking are all small triggers that this sortie was not going 100% to plan. The rule of three should have kicked in and knock it off called. Again I stress this is easy from the comfort of my (not leather bound) armchair. CRM broke down to the point where the pilot had no idea of what sort of a collision had occurred and therefore no appreciation of the possible threat to the survival of his aircraft and crew. A valuable lesson has been learnt with, fortunately, no injury or significant damage; but we all must heed the lessons and ensure we all apply them in order to prevent recurrence. We cannot forget the fact that more aircraft and crews are lost in training than in combat and that we don't need to take unnecessary risks in the training environment.

LEUT Hammond is awarded a $200 cash prize for his article submission to TOUCHDOWN magazine. Congratulations.

BY LCDR R ILLYES, RAN

Back to the Future (Part 2)

Part Two of a Two Part Article - By LCDR 'Ralph' Illyes

Although the Sea King incident had left those of us involved slightly shaken, the morning's events with the A4 had also stuck in my mind. My specialist job at the time was the role known as a 'hookman'. As one of only four sailors aboard, working in pairs between two watches, my responsibility was to remove the wire from A4 Skyhawk arrester hooks upon landing. This was a straightforward, yet nonetheless very important task, requiring speed and agility, but most of all quick reflexes, particularly if an aircraft missed trapping a wire and 'boltered'. Aircraft returning from missions would be low on fuel and could not make too many approaches before becoming fuel critical, so clearing the landing area of the flight deck expeditiously was paramount. The gravity of the potential dangers never really occurred to me as it was an exciting job. For those of us wearing the green skivvies signifying our status, I was part of a select minority group that called ourselves the 'Fleet Hookmen' as we had determined that we were indeed the only four people in the entire fleet that were silly enough to chase jets up the flight deck like a dog would chase a car up the street. Our elitist attitude was much to the chagrin of some of the more senior bears onboard and we were often briefed about how indispensible we really weren't. There was a false sense of security of standing behind the Tracker safety line during an aircraft recovery and any number of things could spell the difference between success and disaster. The skill and dexterity of the aviators who piloted the 'kerosene darts' towards what must have appeared like a matchbox on the surface of the ocean, the LSO's timely and concise talk down, the ships movement, and the precise timing of the hookmen in getting out to the aircraft to remove the arrester wire followed by the rapid and accurate hand manoeuvring of the aircraft, were just some of the variables during a recovery sequence.

Occasionally things didn't happen as planned. During an A4 day landing sequence I was training up a newly recruited hookman and had briefed him on how the evolution would occur; or at least expected it to. The aircraft landing appeared normal and, having carefully briefed my understudy on the importance of timing, I made my dash toward the aircraft just as the wire was picked up, and the tell tale puff of tyre smoke signified touchdown. As the aircraft rapidly decelerated to a halt I arrived alongside the hook ready to disengage the wire. 'What perfect timing' I thought to myself and making a great impression on my new cohort. I had pre briefed the trainee hookman on his positioning and the simple technique of disengaging the wire and that together we would reef the wire forward and off the bite of the arrester hook before giving a thumbs up and clearing the aircraft. Having followed my tracks diligently out to the aircraft, the understudy however, was now frozen with fear, standing directly behind me and incapable of hearing any profanities that I was now spitting toward him whilst motioning him to get into position. This was due to the deafening noise of the A4 above us still producing full thrust. To make matters worse the pilot, also apparently still very excited by his scorching arrival, was still standing hard on the brakes like Fred Flintstone, which was not allowing the aircraft to roll back and the wire remained taught on the arrester hook.

Quickly assessing this situation, I could see the wire was hanging slightly lower on the opposite (left) side of the hook, which lent itself to an easier disengagement from either the opposite side of the aircraft or by access from over the top of the hook. What I wasn't sure of however, was the pilot's arrester hook selection as it was in a central position (half way between deployed and housed). I had assumed this was because it was still selected 'down' and that the wire tension was holding it up off the deck. The pilot usually selects 'up' hook after landing as the wire is disengaged and before taxiing forward to park, but his lack of brake release had led me to believe that he had also left the hook down. This was my unlucky day; I had second guessed the pilot's selection and had made a judgement error. The hook had in fact already been selected 'up' and the tension on the arrester wire was actually holding it down. The hydraulic system on the A4 which serves the arrester hook, from my memory, operates at around 3000psi. It's not hard to visualise what happened when, without thinking through the consequences of my actions, I stuck my arm over the top hook in an attempt to punch down on

ABOVE HMAS MELBOURNE IN JERVIS BAY NSW

the taught wire with my fist. After about three attempts, with my understudy now keenly looking on, the wire sprang free and the arrester hook snapped upwards like the jaws of a crocodile against its stop pinching the side of my upper arm as it recoiled upwards. Another few centimetres and my upper arm could have snapped like a twig or been punctured by one of the protruding vents along the tailpipe. Luckily, there was only severe bruising to my arm and my ego.

Day time launch and recovery sequences were interesting enough but night operations were a whole different ball game. An A4 arriving at around 100 knots in the dark, right in front of you on the pitching deck of a ship, was just bloody exciting! During night operations we were not permitted to commence our run toward the aircraft until it had reached a complete stop on the deck. Nobody in their right mind would want to be run over by an aircraft or be sucked into an intake. This made the timing of getting to the aircraft all the more critical for removing the arrester wire in order to quickly move the aircraft to a parking spot forward of the island. What happened on one particular evening was extremely hazardous but with a comical twist. I had always thought that the A4 looked kind of lanky and awkward on the tall landing gear struts and often wondered how much roll it would need for one to tip over. On one particular night my curiosity was soon realised. The aircraft's final approach appeared as a set of rapidly growing, descending lights, the path of which suddenly flattened out with an accompanying thud, signalling the aircraft's arrival on deck. With the sparks of the arrester hook contacting the deck, there was an instant blur of lights passing me and a rush of wind, jet noise and kerosene fumes.

As the aircraft quickly decelerated to a halt, our marshaller cleared our ingress and we sprinted across the deck in the darkness. It was an uphill struggle, as the carrier was slowly rolling with a long swell running and as we arrived at the aircraft it began to teeter on the main gear before tipping over onto its starboard wing. With the brakes on hard, the arrester wire still engaged and the engine still producing thrust; to our bemusement, the canopy suddenly popped open and with his best Monty Python 'run away' impersonation, the pilot jumped down and ran, putting in some big steps into the darkness and the safety of the island superstructure. This left us with a dilemma. It was dark, the aircraft was still hooked up to a wire, the engine was running with the hungry starboard intake now closer to the ground, the ship was rolling, it was noisy and it was unclear if the ejection seat had been made safe. Other deck crew were now also rushing towards the aircraft. Once the crash rescue crew had ensured the security of the ejection seat and shut the engine down the pilot sheepishly reappeared, offering us a hand. The aircraft, looking like it was tired after a hard day's work as if it were leaning over on one elbow, was soon righted and parked. All in a night's work!

Many things departed the ship during my time on board Melbourne. Whilst alongside at Garden Island, at the forward end we had 'Chloe', the affectionately named dockyard trolley that was shot from the catapult into the harbour during post refit testing. At the aft end often there was 'Big Carl', a giant Aviation category sailor who had a passion for roller skating out of working hours. He once rolled off the 'round-down' at the aft end of the flight deck, cleaning himself up into the Admirals catwalk, a small narrow sponson running across the back of the flight deck. I also witnessed a fork lift, a mobile crane carrying a gangway and several paint brushes go over the side during my time on Melbourne.

At sea, too, things came amiss from the ship. On 23 August 1979, during exercise TASMANEX 79, a Tracker aircraft diverted to Whenuapai in New Zealand having experienced a single engine failure. A USN Sea Knight helicopter from USS Camden later landed onboard Melbourne to pick up a spare engine for the Tracker. Due to fading light and poor conditions, this became an unscheduled overnight stop. The Sea Knight crew did not have with them the all important blade socks and tie down equipment necessary to tether the rotor blades which were folded down the side of the aircraft. The rough seas and high winds during the evening necessitated watches of flight deck Aviation sailors working in pairs, keeping 15 minute watches to hold the rotor blades from slapping against either side of the aircraft, which was parked aft alongside the island.

Later, at around 0200 the next morning, whilst on watch with a couple of other bears, we heard a horrible screeching of metal; the kind of sound that would be made by a series of well rusted

and tortured bolts on a flange holding a very heavy object in a rolling sea that had probably been painted over. The noise soon gave way to a short pause, then a loud splash. Immediately, the bridge was informed from the flight deck the probability of something large, possibly a static aircraft, having gone over the side. Flight deck flood lighting was turned up and the flight deck inventory checked to find that everything appeared to be in order and all aircraft and ground support equipment was accounted for. Up in the Operations room however, the air search radar picture was blank and the duty electrician had reported to the Officer of the Watch (OOW) that the LWO4 radar had fallen off. The OOW, taking this to mean falling off line or being temporarily inoperable, queried the time it would be down for repair when the duty greenie elaborated on the very real nature of the situation. The large radar antenna had broken off at its mounting base and fallen into the ocean as the ship rolled in the swell. Thankfully, the huge antenna array had fallen outboard and over the side and not inboard or the outcome would have been tragic for those of us cuddled up against the Sea Knight helicopter. Yet again, the Gods were smiling and the net result was that nobody was injured but Melbourne could no longer provide an Air Search capability. To some, it came as no surprise that the radar had broken from its mounting, when somebody recounted the sailor's motto 'if it moves salute it and if it doesn't paint over it'.

BELOW HMAS MELBOURNE

One month later on 24 September and not so lucky however, was an Able Seaman maintenance sailor, who was riding brakes in an A4 when he got much more of a ride than he was expecting when he made an extremely short and unpowered flight. The A4 was about to be moved from just forward of the island, when a strong wind gust during rough seas caused the remaining two nose lashings connected to the aircraft to snap under the enormous snatch loading. The aircraft reared nose up like an angry colt before it flipped first onto its back onto a 40/60 gun sponson below and then rolled clumsily into the ocean. The maintainer suffered lacerations to the forehead from the shattering canopy on the first impact, and was then hurled unceremoniously into the sea as the aircraft plunged into the ocean. Our accompanying Rescue Destroyer (RESDES) HMAS Hobart plucked the frantic sailor from the boiling seas several minutes later. A safety swimmer had been dispatched whilst alongside the hapless survivor and the Hobart's deck crew tried in vain to place a rescue strop within his reach, however the sea state was such that he was eventually grabbed by sailors and hauled up over a guardrail as the ship pitched into the swell. As a light hearted gesture after his incident, the maintainer was issued with a charge sheet from Hobart's Captain for improperly leaving his ship.

I also once went up over the side of Melbourne whilst at sea, as the brunt of a practical joke. Following a launch sequence somewhere in the Pacific and whilst chatting with mates on the LSO platform one said 'nice knowing you' and with a shove in the chest I was gone. With that sudden helpless feeling of irrecoverably overbalancing on a precipice I was over the side, arms flailing, to what I thought was my impending visit to the 'ten tango fresh fish locker' (ocean). My fall was quickly arrested though as I slapped hard into the LSO's emergency chute. Whilst the boys on the platform above had a great belly laugh at my expense (apparently the look on my face was priceless) the stokers in the mess adjacent to where the chute

terminated below were not so amused at their unwelcome transient visitor, and I was given a verbal barrage for using the safety chute as playground equipment.

By this time into my posting aboard the Flagship, I thought I had seen and done everything in the accident and incident department; that was, until the day I was run over by a Wessex helicopter. These agricultural looking aircraft were heavy and cumbersome to man handle on the flight deck. Whenever flying stations were piped, 'Pedro' had to be brought up the aft aircraft lift and ranged on number six spot (furthest aft on the deck). Once the aircraft had arrived at flight deck level a team of us had gathered around the aircraft. I was pushing on an engine access platform in front of the main oleo, and after lumbering with the aircraft on a pitching deck, we were within a final push to the spot. With the call 'two-six-heave' from the marshaller, I pushed with all of my strength, allowing myself to stretch out before stepping forward when the big bulbous wheel of 'Pedro' caught up with my heel. I could hear cracking as my foot folded over. Again, by some twist of fortune, nothing was actually broken, just some dislocation & more bruises. The boys decided after that incident that my temporary nickname would be 'chocks' and suggested that perhaps I should paint my deck boots GSE yellow. No Defence OHS Incident Report (AC 563) existed back then, but it did rate a mention on my medical records with an interesting diagram. Red faced, the subject came up years later, when at an aircrew selection board I was questioned on my coordination.

I could probably write a book on my carrier experiences alone as there are countless; mostly hilarious but some sombre, recollections I have from these two short yet extremely interesting years aboard the flagship. So, how you might ask is all of this warrie spinning relevant? Well, from an aviation safety perspective, I have learnt much over the years from humble beginnings as a flight deck bear. Aviation safety has evolved significantly over the years and we are certainly getting smarter and more informed about how we do business. Technology advancements alone have given us some powerful tools in allowing rapid access to data (30 years ago we didn't have PC's and now it seems we can not function normally without them). We have more grunt in the safety bag with AVRM & CRM; our evolving airworthiness system and accompanying regulations are robust and continually being refined. Yet we still have humans in the loop that can make errors. The ones that hurt the most are usually the ones that haven't been learned or realised yet. I certainly made plenty and learnt well from them and with the wheel turning almost full circle on the re-introduction of flat-top ships with aircraft; some of these old lessons need to be highlighted and reconsidered.

We may not be envisaging operating fixed wing aircraft with catapults and arrester systems any time soon, but we are about to get back into the business of multi aircraft and multi spot operations at sea with helicopters. Such operations bring complexity and, inherently, new risks. To ensure that we integrate an optimal aviation potential on our new LHD's, there is a need for properly trained people in newly created roles and a carefully graduated training regime that will ramp up to a full operational capability. Our operations will see significant integration between Army and Navy operating at sea. Differences in our cultures, equipment and our modus operandi themselves will be hurdles that need to be cleared. Multi spot operations require good communications, flexibility and strong situational awareness. There is no room for complacency in such a dynamic environment and little room for error, as a few of the anecdotes I have shared will attest to. We must harness all of the safety tools we have today and gather all the corporate knowledge that is available, to provide an LHD borne aviation capability that can deliver the required mission both safely and effectively. More than ever the focus needs to be ensuring that the 'the team works'.

BELOW SPANISH LHD

A Brief Discussion on the S-70B-2 Loss of Engine Cowl In Flight on 22 Feb 2010

AIIT Executive Summary
(Abridged)

1. At 0002 local Monday 22 February 2010, a Seahawk S-70B-2 helicopter experienced an in-flight loss of the port engine cowl soon after launching from a RAN ship. The aircraft sustained damage to the main rotors, tail rotor and both sides of the horizontal stabilator; however the crew were able to successfully recover the aircraft for landing onboard the ship although unaware the cowl had separated from the aircraft until after shutdown.

2. Shipboard preparations for flying were conducted in accordance with the procedures laid down in ABR 5419 and Ship's Standing Orders and preparation for flying was completed in good time and without incident. The aircraft had been correctly maintained, prepared and presented for flight with no discrepancies. As far as could be determined there were no pre-existing material deficiencies within the structure or locking mechanism of the port engine cowl prior to the flight.

3. The environmental conditions were acceptable for the conduct of the flight. Several members of the Flight Deck Team and the Aircraft Captain commented on the intensity and depth of the darkness experienced, however this did not prevent all members from completing their assigned duties. Ship motion was well within limits and the wind across the deck was close to the centre of the aircraft Ship Helicopter Operating Limits (SHOL). Moonset had occurred 47 minutes before the launch.

4. The start and engagement cycle were normal except for one minor discrepancy, not involving the engine cowl, which required a confirmation check of the rotor head after APU start. This check involved a maintenance sailor ascending to the top of the aircraft from the starboard side and physically inspecting the rotor head. The maintainer did not notice any anomalies with the aircraft, nor was he expected to look in any other location than the rotor head. This action was completed without undue delay and the engine start, engagement and pre-launch checks were completed without incident.

5. Shortly after launching from the ship the crew heard and felt a series of thuds with some minor vibrations. Approximately 20 seconds later a second series of thuds and more pronounced vibrations was felt throughout the airframe. A Pan was declared and the aircraft manoeuvred for a free deck recovery. On short final the Sensor Operator (SENSO) glimpsed an unrecognised object flailing outside the port aft window and relayed this information to the front cockpit crew.

6. The CRM coordination within the aircraft following the initial symptoms of the incident was of a high standard and is considered contributory to the safe recovery of the aircraft.

Significant findings

7. The following key findings are based on the balance of probabilities as evidenced through pilot interview, analysis of the operation of the cowl locking mechanism, the apparent lack of other damage to the aircraft in the vicinity of the cowl and its operating mechanisms, and consideration of the data obtained through photographic, video and verbal means:

   a. The aircraft had been correctly maintained and all maintenance activity had been correctly documented.
   b. As far as could be determined there were no pre-existing material deficiencies within the structure or locking mechanism of the port engine cowl prior to the flight.
   c. The pre flight briefing and Flying Stations preparation were conducted in good time with no external pressures being experienced by the aircrew, the Flight Deck Team or the Ship's Command Team.
   d. Environmental factors contributed to the error producing condition.
   e. The pre-flight inspection of the aircraft was conducted in good

ABOVE S-70B-2 SEAHAWK PORT ENGINE

time. The balance of probabilities indicate the port engine cowl was not correctly secured and **this error is considered the most likely primary causal factor of the incident.**

f. During rectification of a pre-start deficiency no anomalies were detected, nor was the maintainer expected to look in any other location than the rotor head.

g. The aircrew were appropriately rested, briefed and prepared for the flight and no abnormalities have been detected in the planning of the mission.

h. Soon after launching the port engine cowl opened, structurally failed in the open position and separated from the airframe. The cowl impacted three main rotor blades, the tail rotor blades and both port and starboard sides of the stabilator. The aircraft remained controllable and returned to the ship.

i. The application of CRM within the aircraft following the incident was sound, reflects credit upon the crew and contributed significantly to the safe recovery of the aircraft.

Inadequate or absent organisational defences

8. The AIIT identified organisational deficiencies and absent or failed defences as contributing safety factors leading to the occurrence. These deficiencies are as follows:
   a. absence of a checklist step to confirm all cowls and latches are secure,
   b. no readily visible markings that would indicate the cowl is in an unlatched position,
   c. latch design and operation,
   d. Australian Army experiences and information sharing, and
   e. USN experience, corrective actions and information sharing.

What Went Right

Personal involvement in a safety incident, like any error, is probably not considered a badge of pride for most. After all, professionals take their jobs seriously and view their work efforts as reflections of their competency and skill. In addition, the FAA Safety Management System focus is on error reduction, risk mitigation, proactive inputs, and generative contributions to limit the potential negative impact of human-machine interactions. Thus, we seem to be constantly on the prowl for problems (real or imagined) and weakness within the individuals, methods, and systems.

However, for every error or violation uncovered there is an individual or team who found the fault. While a Bravo Zulu for exposing a threat or risk gets a bit of notice, the underlying faults that were exposed tend to get the lion's share of our attention. With all of our investigative attention on "what went wrong," we forget that it is just as important to understand "what went right." This serious incident is a good example of the value in examining teamwork when faced with an unknown circumstance. As an adjunct to the AIIT investigation the Fleet Air Arm Safety Cell have examined the reactions of the crew that led to their safe return.

Paragraph 5 of the AIIT Executive Summary (Abridged) sums up the situation encountered by the aircrew:

Shortly after launching from the ship the crew heard and felt a series of thuds with some minor vibrations. Approximately 20 seconds later a second series of thuds and more pronounced vibrations was felt throughout the airframe. A Pan was declared and the aircraft manoeuvred for a free deck recovery.
On short final the Sensor Operator (SENSO) glimpsed an unrecognised object flailing outside the port aft window and relayed this information to the front cockpit crew.

What the investigative report does not detail is that the aircrew were placed in a condition of threat and uncertainty and had to make several decisions in seconds. Keep in mind that the sortie was at midnight, the situation arose just after a take off, and the aircraft was over water. Here are the some of the paraphrased thoughts of what happened as the situation unfolded:

1) The Aircrewman
I felt a sudden unusual vibration and noise and immediately inquired to the others up front for confirmation. A few seconds later a second noise and vibration became evident to all. Then nothing; I could not hear any more unusual sounds or feel further vibrations. There is no checklist for this type of scenario. An immediate impulse was to unstrap and try to look outside of the aircraft to see if anything was visible. Several "what ifs" came to my mind. There were no visual cues to help figure what had just happened. All I could do was to try to isolate where the noise had come from and try feel for further vibration and communicate to the guys up front what I knew.

2) The Pilot
I was in the process of establishing minimum height having just lifted off. Thinking back, I recall hearing/feeling a slight bump but discounted it to a dropped TACAID when I heard the query from the back. I was trying to finish levelling out when a definite bumping noise and a brief vibration seemed to

reverberate through the entire airframe. I'm finding myself automatically starting to decelerate and was glancing at gauges when another call from the back asks for confirmation that we are aware that something is not right "you guys felt that, right?" I confirm while continuing my scans which reveal nothing to provide any clues to the situation. Among the many thoughts racing through my mind was - from the direction of the noise - if the recent work on the gear box was involved.

3) The TACCO

I was going through the after takeoff checks when the Aircrewman asks if we felt something. I was thinking that I had not really noticed anything when I heard a noise and felt a sudden vibration. What seemed like a textbook take off suddenly became a serious situation and my attention was split between generating a list of possible problems, monitoring gauges, and seeking out input from the crew. A quick discussion among the crew indicated everything seemed to check out normal. There weren't any further noises or vibrations, just lingering doubt at the back of the mind.

The immediate decision was made among the aircrew to return to the ship.

Whenever multiple parties are interviewed about an event or individual, I think back to the 1950 Akira Kurasowa classic Rashomon. In a nutshell, for any situation there are disparate interpretations. This aircrew was no different – each member having a unique take on what system(s) might be involved given the possible location of the noise and vibration. While they might have formed differing hypotheses of what might have occurred, there was no disagreement in the outcome – return to the ship. The communication between the aircrew never stopped and each members input was used.

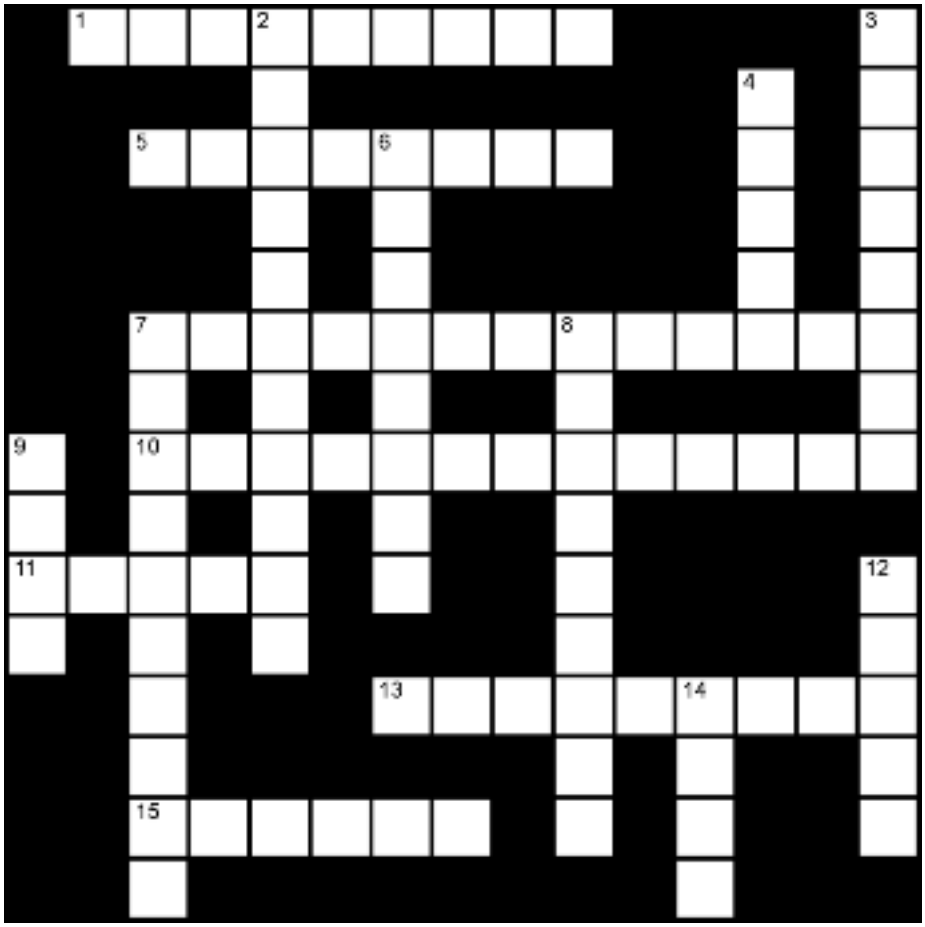
The decision to return to the Ship seems simple sitting here reading this article. But these airmen did not have luxury of Terra Firma under their feet nor the assurance that this was a test of skill and knowledge in the safety of a simulator. This was an uncontrolled, unknown event (high threat & stress) during one of the more complex parts of a sortie and the reality is that a number of crucial decisions were made in seconds, in the dark of night over water. The uncertainty of the situation led to a diminished trust of the aircraft. The only things they could trust were each other, their training, and the use of CRM to ensure that all possible information was being considered.

As a result of their training and practice, without conscious effort the crew engaged the steps in the **DECIDE** acronym which was developed to assist in aviation decision making processes.
D - detect change. ***"Did you guys feel that?"***
E - estimate the significance of the change. ***"It could be the transmission"***
C - choose the outcome objective. ***"Fly safely"***
I - identify plausible action ***options. "Immediately call off sortie"***
D - do the best action. ***"Contact the Ship, return, & assess aircraft for damage"***
E - evaluate the progress. ***"Monitor gauges, use CRM, & maintain communication"***

After landing it was found that there had been an *in-flight loss of the port engine cowl soon after launching*. Regardless of the possible cause(s), the AIIT assessment of the resulting actions of the crew found: *The CRM coordination within the aircraft following the initial symptoms of the incident was of a high standard and is considered contributory to the safe recovery of the aircraft.*

Very clearly, the success of this crew demonstrates that value in both the technical and nontechnical skills necessary for safe flight. In this instance, teamwork, communication, and CRM were essential contributors to "what went right".

Crossword Solution Page 20



From the Editor:

Crossword puzzle feedback is appreciated. Readers are encouraged to submit Aviation safety related clues and answers for use in future crossword editions.

Submissions should be forwarded to the editor at: navyairsafety@defence.gov.au

Across:

1 Runway incursions may lead to this (9)

5 A red substance carried by fire bombing aircraft (8)

7 Over mainland Australia these are characterised by large hail, flash floods and strong winds (13)

10 Adverse mental states, physical limitations or environmental conditions are considered to be (13)

11 An environmental factor that might be a causal factor (5)

13 Don't enter the runway without a (9)

15 Gas used in inflatable seat belts (6)

Down:

2 Trust your (11)

3 Unsafe acts, hazards and contributing factors are entered into which section of the ASOR data base (8)

4 Better to arrive late than (5)

6 New DFASO (8)

7 What has a major influence on flying conditions in south eastern Australia (10)

8 Caffeine is a (9)

9 Shouldn't fly with a (4)

12 Situational awareness aids in keeping the mind where in relation to the aircraft (5)

14 What process is in place to plan for and manage accepted risk in aviation (4)

Caption Competition

Think of a caption for the photo above and send it to navyairsafety@defence.gov.au or Tel (02) 4424 2328. Competition closes 22 October 2010. The best caption will be published in TOUCHDOWN 3 of 2010.

WINNER OF THE TOUCHDOWN APRIL 2010 CAPTION COMPETITION IS:

LS Ann Bradbery of HMAS ALBATROSS who sent in the following caption:

"Relax and lie still, this won't hurt a bit - I've got it down to a tee!"

LS Ann Bradbery will receive a Gift Pack from the Fleet Air Arm Safety Cell. Congratulations!

Upcoming Aviation Training Courses

For more information on these and other training courses contact Mr Mel Jacques on (02) 442 41466

CRM Initial	CRM Refresher		Rotary Wing AVMED Refresher	AVRM
19 Oct 10	10 Aug 10		18 Aug 10	21 Oct 10

Course Name	Course No	Start Date	End Date
Vertrep & Transfer Director	70	23 Aug 10	23 Aug 10
	71	20 Sep 10	20 Sep 10
	72	18 Oct 10	18 Oct 10
	73	01 Nov 10	01 Nov 10
Vertrep & Transfer Team	67	23 Aug 10	23 Aug 10
	68	20 Sep 10	20 Sep 10
	69	18 Oct 10	18 Oct 10
	70	01 Nov 10	01 Nov 10
Flight Deck Marshaller	194	19 Jul 10	23 Jul 10
	195	02 Aug 10	06 Aug 10
	196	16 Aug 10	20 Aug 10
	197	30 Aug 10	03 Sep 10
	198	13 Sep 10	17 Sep 10
	199	27 Sep 10	01 Oct 10
	200	11 Oct 10	15 Oct 10
	201	25 Oct 10	29 Oct 10
Flight Deck Team	201	19 Jul 10	23 Jul 10
	202	02 Aug 10	06 Aug 10
	203	16 Aug 10	20 Aug 10
	204	30 Aug 10	03 Sep 10
	205	13 Sep 10	17 Sep 10
	206	27 Sep 10	01 Oct 10
	207	11 Oct 10	15 Oct 10
	208	25 Oct 10	29 Oct 10
HUET with EBS (plus wet winch/ Wet drills)	269	03 Aug 10	03 Aug 10
	270	07 Sep 10	07 Sep 10
	271	05 Oct 10	05 Oct 10
	272	08 Nov 10	08 Nov 10
HUET without EBS	770	13 Jul 10	13 Jul 10
	791	20 Jul 10	20 Jul 10
	792	29 Jul 10	29 Jul 10
	793	10 Aug 10	10 Aug 10
	794	16 Aug 10	16 Aug 10
	795	24 Aug 10	24 Aug 10
	796	09 Sep 10	09 Sep 10
	797	14 Sep 10	14 Sep 10
	798	21 Sep 10	21 Sep 10
	799	12 Oct 10	12 Oct 10

NAVY