

3

**REPORT
OF
THE BOARD OF INQUIRY
INTO THE CRASH OF SEA KING N16-124
ON CAPE YORK
SUNDAY 30 JULY 1995**

TC — ALB

Date 1/2/96

File No.

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FORM 10
REPORTS OF INQUIRIES

Navy Office
04 April 1996

Maritime Commander Australia
Maritime Headquarters
Wylde St
POTTS POINT
NSW

REPORT OF SEA KING N16-124 ACCIDENT-30 JULY 1995

References:

- A. JEPS Minute 296/95 (92-27093) of 21 Apr 95
- B. JEPS A3B/IAB 052350Z JUN 95
- C. JEPS A3B/IAB 070713Z JUN 95
- D. MHQ Minute AF 5/5/751-3 OPSDIV 953/95 dated 4 July 95.
- E. HS 817 Minute dated June 95
- F. HS 817 SQN Message KQL/LBL/HEA 290535 MAY 95
- G. HS 817 Operation Order 5/95 dated 22 June 95.
- H. HMAS SHOALWATER ABA/WAP/WAE 290610Z JUL95
- I. Aircraft Accident Investigation Team Report 1/95 dated 24 September 1995(Enclosed)
- J. Final Medical Report on the crash of Westland Sea King Mk 50 N16-124 (09) at Bamaga (Far North Queensland) on 30 July 1995. dated 09 October 1995.(Enclosed) (Author - Surgeon Lieutenant Commander N Westphalen, RAN NAS NOWRA)

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2

K. MC Directive to BOI dated 26 Feb 1996

1. In accordance with your instructions at Reference A, an inquiry into the circumstances surrounding the accident of Sea King MK 50 N16-124 has now been completed, and further in accordance with your instructions at Reference K, the board re-convened to address certain issues contained in that Reference.

2. The Board acknowledges the shortcomings of the initial report, and has therefore completely reviewed all evidence and resubmits this report as a full and complete inquiry into the accident at Bamaga.

3. The BOI visited the following locations on the dates indicated:

MHQ 3 Aug / Cairns 4 Aug / Bamaga 5 Aug / Cairns 6 Aug / Weipa 7 Aug
Cairns 8 Aug / Darwin 9 Aug.

4. The purpose of those visits was to gain a first hand appreciation of all of the events which contributed to the accident as perceived by all personnel who participated in the process. In addition the BOI was able to form a real opinion of the geographical, exercise and real world environments in which all participants were obliged to operate. The visits proved invaluable when framing the bank of questions to put to those who were subsequently interviewed formally under oath.

5. Oral evidence was taken from witnesses named in Enclosure 1; a full transcript of the evidence is at Enclosure 2.

6. Documentary evidence in the form of signal traffic and other material is at Enclosure 3.

7. Due to the resignation of CMDR M. Traves-Taylor, RAN, LEUT B. S. W. Weston, RAN was ordered to the Board.



T.J. MORGAN.
Commander, RAN
President BOI



M.G. CAMPBELL
Commander, RAN
Member BOI



B. S. W. Weston
Lieutenant, RAN
Member BOI

Enclosures:

1. List of Witnesses from whom oral evidence was taken.

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3

2. Full transcript of oral evidence.
3. Documentary evidence obtained by and submitted to the BOI.
4. Aircraft Accident Investigation Team Report 1/95 dated 24 September 1995.
5. Final Medical Report on the crash of Westland Sea King Mk 50 N16-124 (09) at Bamaga (Far North Queensland) on 30 July 1995. dated 09 October 1995

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TABLE OF CONTENTS

TITLE PAGE	1
COVERING LETTER	2
THE REPORT	
PRE-DEPLOYMENT PREPARATIONS	5
EMBARKATION	6
DETACHMENT PERSONNEL SELECTION	7
HS 817 SQUADRON K95 PRE DEPLOYMENT TASKING	8
COMMAND CONTROL COMMUNICATIONS	10
MEDEVAC TASKING OF SEA KING N16-124	12
SORTIE PREPARATION	15
THE FLIGHT TO BAMAGA	18
FIRST ARRIVAL BAMAGA	19
BAMAGA-SEISIA-BAMAGA THE FIRST TIME	19
BAMAGA-SEISIA THE SECOND TIME	20
SEISIA	21
SEISIA-BAMAGA	22
ARRIVAL BAMAGA - THE CRASH	23
EVACUATION, RESCUE AND MEDICAL CONSIDERATIONS	25
INJURIES	26
PRIMARY CAUSE OF THE ACCIDENT	27
AAIU REPORT	27
AAIU RECOMMENDATIONS	36
CONCLUSIONS	38
RECOMMENDATIONS	43
ENCLOSURES	45

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4A

326ABW	Number 326 Air Base Wing
AAIU	Aircraft Accident Investigation Unit
ADF	Australian Defence Force
AEO	Air Engineering Officer
AFTP4	Australian Fleet Tactical Publication Number 4
AGL	Above Ground Level
AIP	Aeronautical Information Publication
AIPOPS	Aeronautical Information Publication Operations
AME	Aero Medical Evacuation
AO	Area Of Operations
ASOR	Air Safety Occurrence Report
ATC	Air Traffic Control
BOI	Board Of Inquiry
CFU	Carried Forward Unserviceability
COMNORCOM	Commander Northern Command
CTAF	Common Traffic Advisory Frequency
DFOO	Duty Fleet Operations Officer
DLP	Deck Landing Practice
ECC	Exercise Control Centre
EXCON	Exercise Control
FAX	Facsimile
FLIGHTWATCH	En route Flight Information Update Service
FLIP	Flight Information Publication
FMO	Fleet Medical Officer
FNQR	Far North Queensland Regiment
FSMS	Flight Senior Maintenance Sailor
FSU	Flight Service Unit
GPS	Global Positioning System
HF	High Frequency
IFR	Instrument Flight Rules
JEI	Joint Exercise Instructions
JEPS	Joint Exercise Planning Staff
K95	Exercise Kangaroo 1995
L6	Number 6 Lumbar Vertebrae
LOTE	Life Of Type Extension
LSA	Leading Seaman Aircrewman
MAROPS	Maritime Operations
MCAUST	Maritime Commander Australia
MCM	Mine Counter Measures
MHQ	Maritime Headquarters
MTAF	Mandatory Traffic Advisory Frequency
NODUFF	Not For Practice
NOTAM	Notice To Airmen
NVFR	Night Visual Flight Rules
NVG	Night Vision Goggles
OIC	Officer In Charge
OPS NORMAL	Operations Normal
PEI	Pre Embarkation Inspection
RAAF	Royal Australian Air Force

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4B

RAC	Air Traffic Rules And Services
RADALT	Radio Altimeter
SAR	Search And Rescue
SARTIME	Search And Rescue Time
SARWATCH	Search And Rescue Watch
SK50	Sea King Mk 50
SQNLDR	Squadron Leader
UH-1H	Bell Utility Helicopter Model 1H
UHF	Ultra High Frequency
VERTREP	Vertical Replenishment
VFR	Visual Flight Rules
VHF	Very High Frequency
VIP	Very Important Person
WGCDR	Wing Commander

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THE REPORT

1 PRE-DEPLOYMENT PREPARATIONS

1.1 Advance notice of the requirement for HS 817 Squadron to participate in Exercise Kangaroo 1995 (K95) was provided in April 95 at Reference A and expanded at References B and C. Formal acknowledgment of the tasking by MHQ, and subsequent action by 817 Squadron¹, occurred at Reference D. ***The BOI could not ascertain that there was a formal tasking document from MHQ to 817 Sqn. It is significant from the evidence of Lieutenant Commander Neale Vincent Coulich, RAN, the HS 817 Squadron Senior Observer², that the decision in the Squadron to formally prepare for the K95 detachment was taken on the strength of information traffic in Reference D.*** Three airframes were identified as candidates for the K95 tasks.

1.1.1 One of these aircraft (N16-124) was unique in that the internal lighting had been configured for Night Vision Goggle (NVG) operations. NVG conversion of the remaining aircraft in the Squadron was not achieved before the Project was cancelled. During the period since the conversion, due to unserviceabilities, a number of non-NVG compatible instruments had been placed in the cockpit, rendering it outside the original approved modification specification³.

1.1.2 Evidence was received from the Squadron Air Engineering Officer (AEO) Lieutenant Commander David Mitchell, RAN that he believed squadron pilots "would prefer to fly another aircraft if they have the opportunity rather than N16-124".⁴

1.1.3 ***The aircraft had been previously rendered unserviceable for night flying in 1993⁵. On the night in question, the aircraft captain had some minor difficulty adjusting his lighting⁶ but reported no undue problems, and the co-pilot was quite comfortable with the lighting arrangements⁷.***

¹ COULCH page 2

² COULCH page 2

³ AAIU Report section 1.17.1 and 2.11.1

⁴ MITCHELL page 205

⁵ AAIU report para 1.17.1.2

⁶ BUSS page 60-62

⁷ EDMISTONE page 105-106

1.1.4 The Squadron Commanding Officer was satisfied that the aircraft was fully capable of meeting the tasking requirements in K95 and at no time had he been made aware of any concerns vis a vis cockpit lighting⁸.

- 1.2 Of the three aircraft originally prepared, one failed the pre embarkation inspection leaving N16-124 (909) and N16-239 (921) for the proposed K95 tasking. N16-239 was originally planned to operate from Weipa, while N16-124 was to remain embarked in HMAS TOBRUK, for the duration of K95. Just prior to embarking in TOBRUK, the aircraft were swapped.
- 1.3 The maintenance crew, headed by Chief Petty Officer Air Technical Communications Dean Rodney Larke (S130242), were originally given Sea King N16-239 to prepare for the deployment, however when the aircraft assignments changed, CPO Larke and his team were transferred to N16-124.
- 1.4 This last minute changing of aircraft assignment and maintenance crews is not unusual. Whether the NVG problems for the embarked Flight (TOBRUK) were suddenly realised, or for some other reason, the last minute change was not given more attention by the BOI. Both aircraft were materially sound to carry out either the Weipa based or TOBRUK tasks and had both passed Pre Embarkation Inspections(PEI).**

2 EMBARKATION

- 2.1 Embarkation in TOBRUK occurred on 19 July 1995, with N16-239 embarked forward and not flown during the transit north, while N16-124 was embarked on the flight deck and used for continuation flying by the TOBRUK Flight during transit to the K95 Area of Operations (AO).
- 2.1.1 The N16-124 maintenance crew and aircrew deployed to Weipa by civilian aircraft.
- 2.1.2 Flight and maintenance crew equipment, including aircrew navigation publications, were shipped to Weipa in a BMS container, scheduled to arrive on Monday 31 July 95, which eventuated as the day after the crash.

⁸ SMITH page 311-312

3 DETACHMENT PERSONNEL SELECTION

3.1 The air and maintenance crew selection was based on existing experience for the aircrew and a process of gaining important deployment experience for the maintenance crew.

3.1.1 The latter was particularly evident as CPO Larke was only qualified as a Flight Senior Maintenance Sailor (FSMS) a few days before N16-124 was embarked in TOBRUK. **However, CPO Larke and his maintenance team did carry out all the necessary preparations and care for the aircraft.**

3.2 The selection of the aircrew was, according to the Commanding Officer of HS 817 Squadron, LCDR Robert John Smith, RAN⁹ based upon significant flying hours and experience in detachment operations.

3.2.1 The only exception being Leading Seaman Phillip Norman Liewellyn (R134758) who had only recently qualified as an aircrewman for the SK 50, and was included for consolidation of his training.

3.3 Aircrew qualifications

3.3.1 A perusal of the pilot's logbooks, by the AAIU and the BOI concluded in an assessment that: ***The pilots were not current nor proficient in either night or instrument flying***¹⁰.

3.4 Constraints

3.4.1 In the period leading up to, and during these preparations, HS 817 Squadron had experienced significant shortfalls in maintenance personnel and logistic spares¹¹ and had addressed these issues to MHQ.

3.4.2 CO HS817¹² stated that he believed that these shortfalls created undue pressure on personnel and a potentially dangerous situation for the entire Squadron. He further stated that the aircrew had a very high administrative workload which had adversely effected Squadron aircrew currency and proficiency. He also stated that, in the months leading up to the accident, in his opinion, both pilots barely achieved minimum currency requirements.

⁹ SMITH page 305-306

¹⁰ AAIU Report 1.5.2 - 1.5.4 and 2.4.3 - 2.4.4

¹¹ SMITH page 303

¹² SMITH page 303

3.4.3 Both the AAIU¹³ and the BOI determined that both pilots failed to achieve minimum currency requirements for instrument and night flying in accordance with AFTP 4.

3.4.4 Reference E discussed the excessive Squadron administration load, and cited a requirement to reduce the load on aircrew due to flight safety implications. In addition an amplification of HS 817 ASOR 12/95 (Reference F) contained a statement with reference to maintenance personnel stating that: "... the task of operating safely, efficiently and with effect is proving more difficult and may have a bearing on any future incidents...".

3.4.5 The issue of administrative workload as it affects the matter of currency and qualifications, needs to be resolved by MHQ to ensure that, where appropriate, flying skills take priority over administrative matters.

4 817 SQUADRON K95 PRE DEPLOYMENT TASKING

4.1 Although the initial tasking of the Weipa based SK 50 was indicated in early June, the Joint Exercise Instructions (JEI) identified the main tasking as a VIP flight during the period 9 - 11 August 1995, and Search and Rescue (SAR)¹⁴. LCDR Coulich also stated¹⁵ that the Detachment was also tasked with standby Aero Medical Evacuation (AME).

4.1.1 When questioned on this latter tasking, LCDR Coulich indicated some surprise, as RAN aircraft do not view AME as a primary, or secondary role even though a SK 50 was detached to RAAF Richmond earlier in the year to participate in AME training and discuss aircraft configuration¹⁶. ***It was also indicated by the crew^{17 18} and the FMO¹⁹ that the terms SAR, Medevac and AME are interchangeable.***

4.1.2 50 hours were allocated by the Squadron to these tasks²⁰, which included a transit phase to Darwin later in the exercise for ongoing VIP tasking.

4.2 This VIP tasking was confirmed by Reference D, and then clarified by Reference C which stated in part "...support for VIP visits..." and that they were to "...be available for SAR and as standby AME."

¹³ AAIU report para 1.5.2

¹⁴ References A - D

¹⁵ COULCH page 2

¹⁶ COULCH page 12

¹⁷ COULCH page 10

¹⁸ EDMISTONE page 78

¹⁹ FLYNN page 292,297-298

²⁰ COULCH page 3

- 4.3 The only specific tasking for the detachment was Reference B which gave a time, place, and VIP concerned, with few other details. While there was little specific tasking before departure, the reactionary nature of the exercise was stressed to the Detachment Commander several times by Joint Exercise Planning Staff (JEPS) staff, and he was to be prepared for other tasking²¹ than that listed in Reference C, once chopped to Exercise Control (EXCON).
- 4.4 The detachment was allocated 40 hours for the exercise by Maritime Headquarters (MHQ)²², and the Squadron allowed another 25 hours for currency and continuation flying in the exercise area. The aircraft was thus cleared to fly 75 hours by HS 817 maintenance staff²³. ***The provision of 25 hours for currency and continuation flying was one of the better management initiatives made by HS 817 Squadron in relation to this detachment.***
- 4.5 Detachment personnel were selected approximately two months before departure. There was no dedicated crew pre-deployment training²⁴ due to limited ongoing aircraft serviceability, frantic deployment preparations, and the considerable maintenance test flying to ensure that two aircraft were ready for the exercise. Additionally, one aircraft was being prepared to go into the Sk50 Life Of Type Extension (LOTE) program.
- 4.6 In accordance with the JEI, operational control of SK 50 N16-124 was vested with K95 EXCON located in Darwin. The JEI also stated that national SAR duties in the K95 AO would be transferred from Maritime Commander Australia (MCAUST) to Commander Northern Command (COMNORCOM) for the duration of the K95 exercise.
- 4.6.1 All authorities knew and understood the declared tasking requirements of SK 50 N16-124 and that the AO for K95 also embraced the Cape York area.***
- 4.6.2 The Squadron issued an Operation Order (Reference G) for the embarkation of N16-124 in HMAS TOBRUK for the transit to Weipa.
- 4.7 TOBRUK arrived in Weipa on 26 July 1995, and the aircraft disembarked on Thursday 27 July 1995.
- 4.8 After arrival in Weipa, the detachment made little attempt to contact other ADF units in the area, other than find the local Exercise Co-

²¹COULCH page 4

²²Reference D

²³COULCH page 3

²⁴COULCH page 3 and SMITH page 306

ordination Centre (ECC) and contact the OIC²⁵. The detachment was unaware of the support facilities that 326 Air Base Wing (ABW) had to offer, particularly medical and air traffic control services^{26 27}. Some professional aviation contact was made with the Army AME detachment, however AME tasking was not discussed.

5 COMMAND, CONTROL AND COMMUNICATIONS

5.1 Within the Weipa air and land AO there were two separate Command and Control structures. Neutral elements under the Command of EXCON and, Blue Elements under the Command of COMNORCOM.

5.1.1 In addition to the SK 50 detachment, other neutral elements consisted of an ECC under the control of Major Ian J. Robinson, ARA and a detachment of Army UH-1H Iroquois aircraft from 171 Operations Support Squadron on real world (NODUFF) AME standby. There were seven collocated ECC/AME units located throughout the K95 AO under the direct control of EXCON, to evacuate 'real' emergencies as part of the ADF's Occupational Health and Safety responsibilities²⁸.

5.1.2 Blue Force elements in the Weipa area comprised 326 ABW located on the western side of the Weipa airport. This unit under the loose command of a RAAF Wing Commander consisted of a Health Support Flight with an AME team, an Air Traffic Control (ATC) Unit with a monitoring role and a detachment of Caribou aircraft to conduct tactical AME and exercise simulated casualty evacuations.

5.1.3 Communications for the Health Support Flight was by telephone, facsimile (FAX) and radio circuits, while the ATC unit had a standard ATC communications outfit including FAX facilities. There was one inadequate land line communications link between the 171 Squadron UH-1H detachment located on the other side of the Weipa Airport and 326 ABW, and no formal communication link between the Weipa ECC and 326 ABW.

5.2 AME Tasking

5.2.1 The normal process for initiating an AME task, as detailed in the JEI, was for 'real' evacuation tasks to be channelled through EXCON, who would task the appropriate ECC who would in turn task the collocated Army AME asset. It was also understood by

²⁵ COULCH page 5

²⁶ COULCH page 5

²⁷ DUTTON page 110

²⁸ Interview Major ROBINSON Weipa 07 Aug 95

ECC Weipa²⁹ that 'real world' AME could be initiated locally if the situation demanded.

- 5.2.2 Communications between EXCON, ECC units and AME flights was by telephone and facsimile (FAX) transmissions. There were no faults or operational circumstances that would render this organisation unworkable during the exercise.
- 5.3 The SK 50 Weipa Detachment had no formal instruction to establish a command or communications link with the Weipa ECC, Army AME Detachment or 326 ABW. Evidence revealed³⁰ that because the SK 50 Detachment was being accommodated in the Albatross Hotel in Weipa town, the only formal line of command and communications established on their arrival in Weipa, was directly with EXCON in Darwin via telephone.
- 5.4 The Detachment Commander subsequently established contact with Major Robinson in ECC Weipa on Friday 28 July 1995, the day after disembarkation from TOBRUK.
- 5.4.1 Detachment tasking, a communication link with ECC, and the detachment's neutral status were discussed.
- 5.4.2 The subject of AME standby was broached, however due to the lack of hours dedicated to the exercise, and the presence of the UH-1H Iroquois detachment for AME, it was agreed by Major Robinson and LCDR Coulich that the SK50 would generally not be used³¹.
- 5.4.3 However, if a situation arose where a long overwater transit was required or if a situation outside the capability or the capacity of the Iroquois developed, then the SK50 detachment could be activated³².
- 5.4.4 *The ECC in Weipa was not fully aware of the SK 50's tasking nor the identity of Tasking Authorities*³³.**
- 5.4.5 Informal contact³⁴ was made between the SK 50 air crew and the Army AME detachment.
- 5.4.6 *There was no guidance or instruction to formalise the tasking or employment of assets and human resources shared between the Army, Air Force or Navy elements in the***

²⁹ BOI Discussions with OIC ECC Weipa 7 August 1995

³⁰ COULCH page 3-4

³¹ COULCH page 12

³² COULCH page 12

³³ BOI Discussions with Major Robinson OIC ECC Weipa 7 August 1995

³⁴ EDMISTONE page 77

Weipa area especially in light of the potential for safeguard (NODUFF) emergencies.

- 5.5 The only flights undertaken at Weipa, prior to the medevac sortie, were a half hour formation and disembarkation flight from TOBRUK in Weipa, and then a two and a half hour DLP/ VERTREP/ transfer sortie with HMAS TOBRUK for currency and training purposes. ***The detachment was satisfied to deploy in TOBRUK and disembark in Weipa without navigation publications.***³⁵
- 5.6 During the weekend leading up to the ill fated sortie, the detachment had a fairly relaxing time, conducting sporting and social activities as they had been stood down due to lack of tasking³⁶.

6 MEDEVAC TASKING OF SEA KING N16-124

- 6.1 **HMAS SHOALWATER signal.** On Thursday 29 July 1995, SHOALWATER advised MHQ that one of her sailors was suffering from stress, was unemployable and may need to be landed for treatment (Ref H).
- 6.1.1 At this time SHOALWATER was engaged in MCM operations in the Thursday Island to Bamaga area as part of K 95. Her ship/shore off-line HF communications was being guarded by HMAS BRUNEI who was also in the area in support of MCM diving operations.
- 6.1.2 The SHOALWATER signal was received in MHQ at approximately 2345 (local) the same day, as noted in the Duty Fleet Operations Officer (DFOO) log.
- 6.1.3 After telephone discussions between DFOO, the Fleet Medical Officer (FMO), the MHQ Operations Co-ordination Officer, and Commander Bruce Eddes, RAN (MAROPS COMNORCOM), an MHQ reply was sent to SHOALWATER seeking more information on the sailors condition and also indicating that a 'short notice Medevac could be arranged from Bamaga.' (MHQ ABAWAP/WAE 291557ZJUL95 refers.)
- 6.1.4 SHOALWATER's reply (DTG 300435ZJUL95) which was received in MHQ at 1531 (local) on Sunday 30 JUL 95 stated that the sailor's condition had not improved, and if anything had worsened because of knowledge that the sailor's daughter had been hospitalised. SHOALWATER also requested a Medevac as soon as possible and, that she was to be at anchor at Bamaga. On receipt of this signal the DFOO contacted LTCOL

³⁵ COULCH page 15 / BUSS page 50

³⁶ COULCH page 9

Duncan (NORCOM Duty Medical officer), who then made contact with SQNLDR Andrew Weekes (EXCON K95 Air Co-ordination Cell Duty Officer).

6.2 **SK 50 tasked** It was decided during this latter conversation to task the Weipa SK 50 (N16-124) with the Medevac task.

6.2.1 During the visit to Darwin, the Board confirmed that the conversation did take place between LTCOL Duncan and SQNLDR Weekes. Further advice given to the Board from WGCMDR King (OIC Air Co-ordination Cell EXCON) confirmed that EXCON considered the UH-1H detachment for the task, however as they (EXCON) had been briefed to work on a 50 Nm radius of action for the UH-1H, that aircraft was discounted.

6.2.2 Later discussions with ECC Weipa and the UH-1H detachment concluded that if ECC Weipa had been consulted on the task, the UH-1H detachment would have been approached for their assessment, before the SK 50 detachment. *The UH-1H detachment answer would have been that the task Weipa - Bamaga- Weipa was within the capabilities of the UH-1H³⁷.*

6.2.3 *Another factor influencing the choice of the SK 50, was the seeking of additional tasking by the SK 50 Detachment Commander directly to SQNLDR Weekes in EXCON³⁸.*

6.3 **MHQ Tasking/decision making.** There is no indication that any of the MHQ staff involved in the Medevac discussions declared a preferred method of evacuation, even though MHQ was orchestrating the process of determining that an evacuation should actually occur.

6.3.1 MHQ's response to SHOALWATER was released as a Medical-in-Confidence signal (200 groups) at 1732 (local) on Sunday 30 JUL 95. This signal stated that the Weipa SK 50 would be tasked with the Medevac and ordered SHOALWATER to advise addressees (two action and 11 info addresses) the estimated time of arrival of the landed sailor at Bamaga. (MHQ ABA/WAP/WAE 300732ZJUL95, refers).

6.3.2 *No strategy was established to transport the sailor from the wharf area to the airfield, which represents a driving time of about one hour over unsealed roads.*

6.3.3 This latest MHQ signal was not received by the communications guard ship BRUNEI, until 2309 (local) on Sunday 30 JUL 95, some five hours after release. The exact time the signal was

³⁷ BOI discussions with OIC Army UH-1H det and OIC ECC Weipa 7 August 1995

³⁸ COULCH page 6

received and decoded by SHOALWATER could not be determined.

6.3.4 *In any event, SHOALWATER was unaware that a Medevac was actually underway and that she would need to land her sailor to a particular point on the ground.*

6.4 **SK 50 Detachment Response.** The first indication to the SK 50 Detachment of the SHOALWATER Medevac was a telephone call from Major Robinson (ECC Weipa) at approximately 1640 (local) on Sunday 30 July 95, asking LCDR Coulich to telephone SQNLDR Weekes at EXCON in Darwin³⁹.

6.4.1 The call to SQNLDR Weekes was made shortly after, when LCDR Coulich was informed that a psychologically disturbed sailor from SHOALWATER needed to be moved from Horn Island to Weipa. LCDR Coulich agreed that the task was possible and requested more details, including an ETA for SHOALWATER at Horn Island, and the condition of the sailor. LCDR Coulich then checked that the crew had had no alcohol during the day, ascertained that sufficient crew were present, despatched the maintenance crew to the airfield to prepare the aircraft, then awaited the return telephone call from SQNLDR Weekes⁴⁰.

6.4.2 After it was determined that the task was achievable, standfast a requirement to fuel the aircraft, Weekes called back. During this second conversation, SQNLDR Weekes changed the position of the pick up to Bamaga, and informed LCDR Coulich that they would have a medic from 326 Air Base Wing to assist them with the medevac⁴¹.

6.4.3 LCDR Coulich stated that they could be at Bamaga at 1845 (local). SQNLDR Weekes indicated that the proposed arrival time may be a bit quick and, even though queried by LCDR Coulich whether or not they should continue with the task, SQNLDR Weekes apparently stated that because SHOALWATER was close to Bamaga, the tasking should go ahead, and a message would be passed to the ship to ensure that the sailor was at the airfield by about 1845 (local).⁴²

6.5 **EXCON/ECC Breakdown.** Because Major Robinson (ECC Weipa) had asked LCDR Coulich to contact EXCON, LCDR Coulich assumed that Weipa ECC was aware of the tasking. During the Board discussions

³⁹ COULCH page 12 - 13

⁴⁰ COULCH page 13

⁴¹ COULCH page 14

⁴² COULCH page 13

with SQNLDR Weekes in Darwin 9 August 1995, he also assumed that Weipa ECC would have been informed of the tasking by the SK 50 Detachment. Neither assumption was correct.

6.5.1 *Why EXCON ignored their own Command and Control structure for the tasking of 'real' medical evacuations through the Weipa ECC, could not be determined. No records of telephone conversations exist within EXCON.*

6.5.2 However, as indicated by SQNLDR Weekes, he assumed⁴³ that the appropriate authorities in Weipa were aware of the tasking, and that SHOALWATER was also aware of the Medevac intentions because MHQ was about to release an Immediate signal ordering the tasking.

6.5.3 *Again, the initial assumption proved to be incorrect. SQNLDR Weekes was misguided, because of a lack of knowledge of the problems associated with off-line ship/shore communications in major exercise conditions.*

6.5.4 When LCDR Coultch was asked if he required hard copy tasking from EXCON, he replied that he did not, but that EXCON should dispatch a signal informing all necessary agencies that the Weipa SK 50 had been launched on an AME⁴⁴. *There is no evidence to suggest that this was done.*

6.6 **Task Urgency.** It could not be ascertained in discussion with SQNLDR Weekes in Darwin whether he used the term AME or referred to a Medevac. The SK 50 crew were of the understanding that they were being launched for a Medevac.

6.6.1 *The latter term is commonly used in Navy and generally implies that the patient is of a more serious nature⁴⁵. When interviewed, the aircraft crew were unfamiliar with the term AME, some had heard it but none were comfortable with its meaning or the relative degree of urgency attached to it⁴⁶.*

7 SORTIE PREPARATION

7.1 Once the tasking had been confirmed by the second call from SQNLDR Weekes, Lieutenant Barry Buss (USN) arranged for the fuel truck to fill up the aircraft at 1730. On completion of the second phone call from SQNLDR Weekes, the crew changed clothing, and as each

⁴³ BOARD Discussions with SQNLDR Weekes Darwin 09 August 1995

⁴⁴ COULTCH page 38

⁴⁵ BUSS page 49 - 50

⁴⁶ COULTCH page 10, EDMISTONE page 78, and FLYNN page 292,297-298

detachment member became aware of the tasking they were given a short overview of the requirement by LCDR Coulich.

- 7.2 It was at this stage that it was decided to use all the detachment aircrew. Past experience had shown HS 817 that a crew of four is capable of conducting all missions, but that a fifth person on board is very useful in a difficult situation⁴⁷. So it was decided not to leave a duty officer behind for SAR or other purposes, rather, have all available crew on hand to allow for all possible contingencies.
- 7.3 ***It was only the later presence of mind and initiative of CPO Larke⁴⁸, whose actions were well above those expected of a FSMS, in alerting the proper authorities of the disappearance of the aircraft that provided SAR coverage for the flight.⁴⁹***
- 7.4 The crew arrived at the aircraft at approximately 1730. Aircraft pre-flight, refuelling, engine start, and rotor engagement were conducted in a hurried manner. The RAAF AME team arrived at the aircraft at approximately 1745. They were met by Leading Seaman Aircrewman (LSA) Joseph P. Dutton (R137583) and given the necessary crew and safety brief. LSA Dutton advised the RAAF support staff that the aircraft ETA back at Weipa would be 2000 Local.
- 7.4.1 ***The crew understood that the patient was psychologically distraught or disturbed, and that there was no medical life or death type situation involved⁵⁰.***
- 7.5 As the detachment's BMS container had not yet arrived, the crew were without most of their navigation gear, and LSA Dutton's helmet⁵¹. To get by, the crew had photocopied a large scale map⁵² and borrowed an L6 low level airways chart from TOBRUK, and borrowed a RAAF Flight Information Publication (FLIP) Enroute Supplement from the Army UH-1H⁵³ detachment. The Enroute Supplement is the only document which contained details of Bamaga airfield such as runway direction, pavement type and length, airfield facilities, communications facilities, lighting and other essential details.
- 7.6 ***The detachment did not have the necessary flight information publications and charts to undertake the flight. LSA Dutton wore a flight deck cranial protective helmet for the duration of the sortie.***

⁴⁷ COULCH page 18

⁴⁸ LARKE page 176-177

⁴⁹ COULCH page 19

⁵⁰ EDMISTONE page 79/BUSS page 49/COULCH page 14

⁵¹ COULCH page 15

⁵² BUSS page 50

⁵³ EDMISTONE page 78

- 7.7 ***The only unserviceabilities to effect the aircraft before launch were carried forward unserviceabilities (CFU) for the co-pilot's altimeter, and for the bearing of the airborne automatic direction finding (ADF) system rendering the aircraft unsuitable for Night Visual Flight Rules (NVFR) and Instrument Flight Rules (IFR) in accordance with Aeronautical Information Publication (AIP) Air Traffic Rules and Services(RAC) 44.6.1.***
- 7.8 Sometime after aircraft engine start, most of the crew remember someone giving a brief on intercom, however during testimony three different personalities were said to have given this brief⁵⁴. So it is considered that a form of brief was given, but that it's effect was questionable. ***The crew had failed to obtain adequate weather information, failed to obtain Notice to Airman (NOTAM) information, and failed to obtain adequate sunset and airfield information, despite having transported a FAX machine to the area and set it up for that express purpose⁵⁵.***
- 7.9 The pilot, LEUT Buss had seen a lunchtime television weather brief predicting fine weather for the Cape, and considered that this was adequate for the flight⁵⁶. The entire crew have stated that no extreme weather was expected throughout the flight. The weather that the aircraft later encountered at Bamaga airfield was not expected, and possibly came as a shock to the crew, one for which they were unprepared. ***There is little doubt that there was some urgency to reach Bamaga by sunset⁵⁷ but not one member of the crew could inform the Board of the time of sunset at Bamaga other than an approximation⁵⁸.***
- 7.10 The weather up until that time had been unseasonal with middle to high level overcast with drifting rain showers in the general area of the Cape York peninsula. When questioned by the BOI Bamaga locals claimed to have not previously experienced such weather at that time of the year. There was therefore no way to ascertain the predominant weather pattern on the night in question. The BOI's meteorological conclusions were therefore derived from eye witness reports.
- 7.11 ***Despite the aircraft captain's knowledge of the information available to him⁵⁹ to ensure adequate preflight briefing in accordance with ABR 5150 Art. 934 and AIP OPS FLIGHT PLANNING (flight plan preparation), he failed to follow the correct procedures.***

⁵⁴ COULCH page 16, LLEWELLYN page 141, EDMISTONE page 79 - 81, and DUTTON page 113

⁵⁵ COULCH page 6

⁵⁶ BUSS page 48

⁵⁷ BUSS page 48 - 49

⁵⁸ BUSS page 48 - 49

⁵⁹ BUSS page 48 - 49

- 7.12 The requirement to reach Bamaga in time, as well as the mention of the word "medevac" were factors that the crew perceived as requiring urgency of action on their part⁶⁰. The crew were firmly convinced that the sortie would be a simple navigation exercise from Weipa to Bamaga and return with a patient. Further pressure could have come from an aircrew cultural desire not to fail in a mission, particularly not a medevac.

8 THE FLIGHT TO BAMAGA

- 8.1 The aircraft taxied at Weipa at 1751, making the necessary Common Traffic Advisory Frequency (CTAF) radio calls.
- 8.2 At 1752 the aircraft launched establishing VHF communications with Brisbane Flight Service Unit (FSU) and nominating a SAR time of 1930 local (the time at which ATC commences an uncertainty phase for an overdue aircraft) for arrival at Bamaga airfield. The aircraft tracked north to intercept the western coastline of the Cape York peninsula in the vicinity of Port Musgrave. It tracked coastal on a clear Sunday afternoon at and below 500ft above ground level (AGL) and occasionally descending down to 80ft AGL to inspect beach flotsam⁶¹.
- 8.3 During the transit North rainshowers were noted inland and the crew delayed their turn right to track to Bamaga airfield. The actual position of these showers could not be ascertained by the BOI but were already at this time having an influence on the crew's decision making process. ***The presence of these showers should have cued the crew to the changing weather conditions and triggered, at the least, a request for an updated weather situation in the Cape York area which could easily have been obtained from FLIGHTWATCH whilst airborne⁶².***
- 8.4 From the vicinity of Vrilya Point the aircraft tracked on a more or less direct line to the Bamaga airfield at between 300ft and 500ft AGL for the majority of that leg. A broadcast call was made on, and the aircraft remained on, the required CTAF frequency. The aircrew incorrectly came to the conclusion that because there was no response to their general broadcast call at this point that there would be no air or ground traffic in the vicinity of Bamaga airfield.⁶³ ***This dangerous assumption led to the decision to join the airfield at low level in a non-conforming flight pattern which resulted in their alighting on the***

⁶⁰ BUSS page 49 - 50 and COULCH page 34

⁶¹ EDMISTONE page 234-235

⁶² Enroute Supplement Australia (ERSA) General

⁶³ EDMISTONE page 84

runway in contravention of regulations.⁶⁴ The aircraft was flown below 500ft AGL during the transit from Weipa to BAMAGA without authorisation to do so.⁶⁵

9 FIRST ARRIVAL BAMAGA

- 9.1 The aircrew were not in accord about their height immediately prior to their becoming visual with the airfield however it is probable, on evidence from the pilots⁶⁶, that the aircraft was at 300-500 ft and became visual with the airfield at approximately one mile to the South West of the airfield. The aircraft landed at Bamaga at approximately 1853.
- 9.2 *Poor airmanship was displayed by the pilots, and a lack of understanding of the AIP regulations was apparent by the decision to remain at low level navigating into an unknown airfield such that they became visual with the runway environment as late as one mile in reducing light⁶⁷.*
- 9.3 Again there is lack of agreement about the light level on arrival at Bamaga airfield yet there is agreement that immediately after arrival at the Bamaga tarmac area the aircraft searchlight was used to illuminate the deserted terminal building as LCDR Coulch and LSA Dutton sought out the patient.
- 9.4 With no patient awaiting the aircraft the crew looked for a telephone to seek further guidance from EXCON in Darwin. There was no telephone and LCDR Coulch and LSA Dutton returned to the aircraft where the crew discussed the option to launch and transit to the Bamaga town/wharf area to try to locate HMAS SHOALWATER visually whilst attempting voice contact on UHF Ship/Air Coordination Frequency.

10 BAMAGA-SEISIA-BAMAGA THE FIRST TIME

- 10.1 The aircraft became airborne again shortly after 1900 and transited to Bamaga Town and Wharf area for a quick visual search and an attempt to make contact on UHF. There was no contact and no sightings of Naval like vessels. The crew were unaware of the contact vessels name, type, or recognition features. It fell upon the RAF AME crew to advise that SHOALWATER was the vessel in question⁶⁸. The aircraft then returned to Bamaga airfield believing that the patient might have arrived in their brief absence.

⁶⁴ AIP OPS 87.5.4

⁶⁵ AIP RAAF SUP GEN-1

⁶⁶ EDMISTONE page 83

⁶⁷ EDMISTONE page 83

⁶⁸ EDMISTONE page 85

- 10.2 ***The return flight was conducted at 500 ft AGL in complete dark in contravention of regulations⁶⁹. The airfield became visual at approximately 1-1.5 nautical miles(NM) in the aircraft spotlight. The aircraft landed straight ahead on the runway in contravention of regulations,⁷⁰ and taxied into the tarmac area. No radio calls were made on the CTAF frequency on either the departure to Bamaga or on return in contravention of regulations⁷¹.***
- 10.3 Upon landing the second time at about 1925 local, the crew observed the lights of a landrover and their "spirits were buoyed" because they believed that the patient had arrived. LSA Dutton and the two medics disembarked the aircraft to go to the vicinity of the terminal building where the vehicle was. (The occupants of the vehicle were later to be identified as a patrol of 51 Far North Queensland Regiment (FNQR)). When questioned about a medevac by Dutton et al the patrol departed quickly, being of the belief that the crew were orange force employing some form of subterfuge.
- 10.4 In the meantime Brisbane FSU had called "a couple of times"⁷² because the aircraft's nominated SAR time had expired. The aircraft became airborne shortly after 1930 because whilst they could receive VHF radio on the ground, they but could not make any successful transmissions.
- 10.5 It is uncertain what frequency the aircraft was on after landing but it should have remained on the designated CTAF frequency to monitor other local aircraft movements.

11 BAMAGA-SEISIA THE SECOND TIME

- 11.1 Following the unfruitful exchange with the 51 FNQR patrol the crew determined to become airborne to cancel SAR. Once airborne they elected to transit to Bamaga Town area where the lights were better for (visual) flying and to call Darwin EXCON on HF to seek clarification. SARWATCH was cancelled on the way to Bamaga town at about 1934, no further SARTIME or OPS NORMAL routine was established. The crew made this decision on the basis that they were in two way communication with Brisbane FSU (who were under no obligation to maintain any form of SAR watch on the aircraft.)

11.1.1 *There was no further attempt during the night to establish some form of SAR alerting.*

⁶⁹ AIP RAC 41.8

⁷⁰ AIP OPS 53.1

⁷¹ AIP OPS 45.4 / 87.5.5

⁷² COULCH page 22

11.1.2 Noting the marginal conditions of flight; darkness, unlit airfield, deteriorating weather conditions and the chosen flying altitudes not having SAR alerting was both extremely unsafe and displayed remarkably poor airmanship.

11.1.3 The aircrew did not make any additional calls on the CTAF frequency in the vicinity of the airfield for the remainder of flight⁷³.

- 11.2 By this time it was very dark as the aircraft transited towards Bamaga Town at approximately 500 ft AGL. There was no moon, no stars and no residual light in the vicinity of Bamaga airfield. There was a medium to high level overcast. Wind remained from the South East at approximately 15kts.
- 11.3 The pilots mentioned to the crew that the weather was closing in⁷⁴ although the observer could detect nothing of significance on the radar. Because of the operating characteristics of the SK50 I band radar, it would have been normal for storm cells, dense cloud or heavy rain to be displayed.
- 11.4 During the transit to BAMAGA town, the observer intended to establish a phone patch on the HF radio to EXCON Darwin and requested the pilots tune the HF radio for him. It was nearly ten minutes before the pilots informed the observer that the HF radio was unserviceable. The observer was frustrated that the radio would not work and that the pilots had taken so long to inform him. The Brisbane FSU (on VHF) were subsequently asked to contact EXCON Darwin by telephone to seek clarification of the task and the whereabouts of the patient⁷⁵.
- 11.5 The aircraft remained in the Bamaga Town area for about 20 minutes where it has been reported by the crew that there were ample visual cues to maintain visual flight⁷⁶. The aircraft was flown in that area at 500ft AGL and below, with the object of not losing Radar altitude(RADALT) indication which occurs in the SK 50 (as a design feature) at 500ft AGL and above. The aircraft may have been in VMC, however it was not operating under night VFR regulations⁷⁷.

12 SEISIA

- 12.1 At about 2003 Brisbane FSU was again contacted to see if there had been any response to the previous request to contact EXCON in Darwin. The tone of the response from Brisbane FSU indicated to the

⁷³ EDMISTONE page 239

⁷⁴ COULCH page 20

⁷⁵ COULCH page 22 - 23

⁷⁶ EDMISTONE page 239

⁷⁷ AIP RAC 41.8

crew a lack of urgency or particular concern from the FSU when the aircraft was informed that SHOALWATER had been directed to "expedite the manoeuvre". This response aggravated the crew because of the perceived laissez faire approach by the FSU and the apparent lack of urgency by anyone else in the chain of events⁷⁸.

13 SEISIA-BAMAGA

- 13.1 Shortly after 2003 there was a discussion within the aircraft as to the next course of action. The options were to remain in the vicinity of Bamaga township or to return to the airfield. LEUT Edmestone who was not the aircraft captain, assumes that it was his decision that resulted in the aircraft returning to the airfield for the third time⁷⁹. There was no dispute with this assumption from the crew.
- 13.2 ***This is the first clear indication to the BOI that decisions were being made rather by committee (if that), than by the aircraft captain assessing all possibilities in order to make clear command decisions.***
- 13.3 LEUT Edmestone was flying the aircraft at this time and commenced the return flight at about 500ft AGL where the aircraft encountered low cloud. The aircraft entered cloud at this time and remained in cloud for a period of some 5-10 seconds while a descent was initiated to about 400 ft AGL to maintain the lights of the township visual. The pilots agreed that they could barely make out the black outlines of the ground from this height⁸⁰.
- 13.3.1 ***This regime of flight comprised serious breaches of the rules of the air⁸¹ and displayed extremely poor airmanship and disregard for the safety of the crew.***
- 13.4 ***LCDR Coulch was directing the pilots to Bamaga airfield with GPS headings in contravention of regulations⁸².*** At some time during the short transit LEUT Buss took control of the aircraft while LEUT Edmestone operated the searchlight. LCDR Coulch was concerned because Buss was having difficulty maintaining the assigned heading of 127 degrees⁸³.
- 13.5 ***This was the first indicator to the crew of pilot overload causing LEUT Buss to subconsciously neglect heading in his instrument scan. The remainder of the crew did not discuss this issue***

⁷⁸ COULCH page 36 - 37

⁷⁹ EDMISTONE page 91

⁸⁰ EDMISTONE page 91

⁸¹ AIP RAC 41

⁸² AIP RAC 44.1 Note

⁸³ COULCH page 27

although it is clear that it was observed by, LEUT Buss, LEUT Edmestone and LCDR Coulch⁸⁴.

14 ARRIVAL BAMAGA - THE CRASH

14.1 On arrival in the airfield vicinity Edmestone was once again flying the aircraft. The BOI could not ascertain when he took control from Buss or why the handover took place; although to handover control periodically itself is quite normal.

14.1.1 This casual approach to crew duties had now become par for this sortie.

14.2 Edmestone has testified that it was his intention to set up a race track pattern on headings of approximately 140-320 degrees magnetic in the airfield vicinity whilst awaiting the return call from Brisbane FSU. He did not communicate this intention to other members of the crew.⁸⁵ At about this time the rear seat crewman LSA Llewellyn advised that he could see car lights⁸⁶. He personally believed the lights were at the airfield terminal building. He did not inform the other crewmembers of this assumption. Testimony to the BOI indicates that the rest of the crew believed that the lights were on the road leading to the airfield.

14.2.1 It was at about this phase of the sortie when complete crew management and co-ordination had broken down. The AAIU deals at length at 1.19.1 and 2.1.3.2, and in subsequent conclusions and recommendations with the concept of Flat Trans-Cockpit Authority gradient. The BOI has not heretofore been familiar with this term but agrees with the phenomenon as described in the AAIU report. Further this phenomenon would explain the gross lack of clear authority present within this crew.

14.3 The aircraft was at this time in a right hand turn being flown by LEUT Edmestone who was also operating the searchlight. At some time whilst orbiting the airfield vicinity LEUT Edmestone (who was flying the aircraft both visually and on instruments and operating the searchlight)⁸⁷, by his own testimony became disoriented and lost twenty knots airspeed and also had difficulty maintaining height^{88,89}. He asked LEUT Buss to take control as he was finding it quite difficult. Again there was no clear cockpit duty brief. LEUT Edmestone retained control of the

⁸⁴ COULCH page 27, BUSS page 62, and EDMISTONE page 242.

⁸⁵ EDMISTONE page 93

⁸⁶ LLEWELLYN page 155

⁸⁷ EDMISTONE page 93

⁸⁸ EDMISTONE page 93

⁸⁹ BUSS page 55

searchlight while LEUT Buss flew the aircraft evidently partially on instruments and partially visual.

14.4 Each member of the crew, except LSA Dutton in their testimony asserted that they had seen parts of the airfield environment; however, apart from LSA Llewellyn at the back door, no-one can recall advising any other crewmembers of this. LSA Dutton is quite uncertain as to what other members were reporting; he did not see any part of the airfield⁹⁰.

14.5 LEUT Buss had commenced left hand orbits and recalls that in his first one or two orbits he sighted the runway centreline through his chin bubble⁹¹ at about the same time he thought LSA Llewellyn reported seeing the hardstanding or terminal building. The barometric height hold was engaged at this time as LEUT Buss decided to commence a left-hand turn into a teardrop pattern to ultimately turn right while descending to 300 ft to bisect the runway from the West and hopefully pick visual cues to land. LEUT Buss further testified that he intended to climb initially from about 4-450 ft⁹².

14.5.1 The BOI believes that the aircraft was at this time no higher than 300ft AGL on the testimony of the other crew members. LEUT Buss must have intervened in the aircraft height hold system to initiate a climb.

14.6 The aircraft entered a right hand turn at about 100° magnetic. The aircraft inexplicably lost airspeed and descended into the top of the trees where the rate of descent was arrested at about 70ft.

14.7 **This was in all probability a combination of full power being applied and the aircraft encountering 70ft high tree tops. The aircraft could not fly away and crashed into the trees with both pilots now on the controls.**

14.7.1 The flying pilot's (LEUT Buss) instrument scan broke down during this turn as a result of poor procedural flying techniques and lack of a clear brief delineating cockpit duties. It is probable that he was either consciously or sub consciously attempting to locate the runway environment visually.

⁹⁰ DUTTON page 125

⁹¹ BUSS page 57

⁹² BUSS page 58

15 EVACUATION, RESCUE AND MEDICAL CONSIDERATIONS

15.1 Whilst the BOI is charged with reporting on the medical issues pertaining to this accident, Reference J has been produced by a qualified medical practitioner advising the AAIU. The BOI considers that Reference J is a comprehensive assessment of the medical aspects including safety equipment and post-crash survival issues. The BOI is satisfied that the final medical report can be read in conjunction with this report. The following specific comments are made on the conclusions and recommendations of that report.

15.1.1 Reference J Conclusions

96	-agree
97/98	-strongly agree
99/100	-agree
101	-strongly agree
102-105	-strongly agree
106	-strongly agree
107	-agree
108	-agree
109	-agree
110/2	-strongly agree
113	-strongly agree; note however that this conclusion tends to understate significantly the degree to which Survival Equipment was inadequate in the circumstances.
114	-agree

15.1.2 Reference J Recommendations

115a	-strongly agree
115b	-strongly agree
115c	-agree
115d	-agree; noting that this issue would have had little impact on this accident
115e	-conditionally agree; pending proper needs analysis in respect of all backseat aircrew
115f(1)	-most strongly agree
115f(2)	-strongly agree
115f(3)	-strongly agree
115f(4)	-strongly agree
115f(5)	-strongly agree
115g(1)	-most strongly agree
115g(2)	-most strongly agree
115g(3)	-strongly agree in respect of space blankets.
115h	-most strongly agree
115i	-strongly agree

- 115j -most strongly agree
115k -conditionally agree; an adequately prepared AIT might achieve the same outcome.

15.2 ***The BOI believes that the strongest leadership displayed throughout this ill-fated sortie, particularly during the evacuation and rescue phases, was that of Leading Seaman Dutton and is worthy of suitable formal recognition⁹³.***

16 INJURIES

- 16.1 Injuries suffered as a result of the accident are listed in Reference J paragraph 5. Additionally, causes of injuries sustained are at paragraphs 39 - 54 of Reference J. All aircrew had blood taken for testing at about 0900 on 31 July 1995 which was about 22 hours after the accident. Urine was also taken for urinary glucose, ketones and drug screen. All aircrew were positive for paracetamol, codeine and/or opiates, but this was due to their pain relief (Panadeine Forte), which had been provided in the period between the accident and specimen collection. Tests for cannabis were negative.
- 16.2 Due to the significant vertical impact forces, all aircrew underwent bone scans to exclude spinal/other bone injuries. The scans indicated stress fractures in both pilots. Both pilots also had neuropsychological testing with normal results.
- 16.3 The following personnel were on board the aircraft at the time of the accident, and sustained the following injuries:

⁹³ DUTTON page 129 - 132, COULCH page 40 -41.

CREW	INJURIES
LEUT Buss (left pilot seat)	Minor Closed Head Injury (CHI), laceration and bruising left eyebrow, stress fracture T12/L1 vertebrae.
LEUT Edmiston (right pilot seat)	Minor CHI, multiple bruises, stress fracture right anterior lower ribs.
LCDR Coulch (radar seat)	Multiple bruises, right knee injury.
LSA Dutton (Front Cabin)	Multiple bruises.
LSA Llewellyn (Rear Cabin)	Fractured left clavicle
FLGOFF Masterson (passenger seat)	Crush fracture L1 vertebra.
FSGT Busuttil (passenger seat)	Laceration right eyebrow, significant CHI, subjective back pain, multiple bruises and post traumatic stress.

17 PRIMARY CAUSE OF THE ACCIDENT

17.1 The cause of the accident was due to a breakdown of the flying pilot's instrument scan during the final turn towards the airfield. This resulted from:

17.1.1 poor procedural flying techniques;

17.1.2 lack of a clear brief delineating cockpit duties;

17.1.3 the aircraft captain failed to ensure that cockpit responsibilities were clearly briefed;

17.1.4 Flat TAG contributed to lack of communication between the pilots;

17.1.5 Low proficiency from a lack of currency in night and instrument flying;

17.1.6 Failure to appreciate the progressively worsening weather conditions throughout the sortie;

17.1.7 a poor understanding in the crew of rules and procedures;

17.1.8 The aircraft continued to fly below LSALT in IMC.

17.1.9 a perceived pressure on the crew to complete the mission because of the urgency connotations amongst the crew through the use of the term "medevac".

17.1.10 Inadequate cockpit lighting as a result of partial embodiment of NVG modification.

AAIU REPORT

18 AAIU CONCLUSIONS

For ease of assimilation the AAIU conclusions and recommendations have been repeated in the text of this report and follow intact with their own numbering. The BOI agrees with paragraphs unless stated otherwise or amplified in **bold comment**.

3.1 Findings

3.1.1 *The aircraft was airworthy and mission capable except for the installed panel instrument lighting. All damage sustained was a result of trees and ground impact and that all aircraft systems were capable of normal operation prior to the accident. The aircraft had a modified instrument lighting configuration to make it capable of NVG operations although the requirement was cancelled in 1993. The installed modification had changed since installation and trial by AMAFTU.*

3.1.2 *NALO had failed to ensure the instrument lighting was capable of being properly maintained despite trials information from AMAFTU on its importance. NALO had also failed to have the configuration reassessed by AMAFTU before issuing an STI which authorised the replacement of some of the lighting.*

3.1.3 *The squadron had highlighted the aircraft instrument lighting as a flight safety hazard in 1993 for night flying however it did not limit the aircraft's operations. The squadron had requested the removal of the modification prior to the accident.*

3.1.4 *The naval aviation culture coupled with a perceived pressure to prove the aircraft's usefulness encouraged a "can do" attitude amongst the aircrew.*

3.1.5 *The squadron maintenance organisation had failed to maintain the configuration integrity and AMD information was incorrectly entered.*

The BOI is satisfied with the AAIU investigation in this matter. It is adequately covered in the AAIU report at 1.17.1.4.

3.1.6 *FAEU had failed to correctly audit the aircraft maintenance documentation on several occasions.*

Whilst the AAIU report, does not detail the specific instances of FAEU audit, in para 1.17.1.2.1 the AAIU argues that no detail or

justification was entered into the AMD for corrective action taken to remove an entry in the CFU section on 1 March 1993. The BOI can only assume that the AAIU has reached this conclusion on the basis that AMD would have been audited between that time and the PEI on 28 June 1995 by FAEU. This issue would require further investigation by AAIU recommendation 4.16.

3.1.7 NALO had failed to ensure the Sea King modification publication and its amendment state was correct.

The BOI is satisfied with the AAIU investigation in this matter. It is adequately covered in the AAIU report at 1.17.1.1 and 1.17.1.2.

3.1.8 NALO had failed to keep the Sea King aircrew manuals were up to date as they did not reflect the aircraft configuration at the time of the accident.

As above.

3.1.9 ANAMC and NALO had failed to place the appropriate modification classification on the instrument lighting removal and ensure the associated modifications were progressed in a timely and efficient manner.

The BOI finds that the process described at paras 1.17.1.1 and 1.17.1.2, was protracted and failed to take account of the potential risk to safety of flight in allowing hybrid instrument lighting in this aircraft.

3.1.10 There appeared to be no linkage between the squadron's training documentation and any higher authoritative documents or directives.

3.1.11 Although the squadron had conducted similar tasks in the past, the aircrew were not given any formal training by the squadron in the over land AME task, particularly in night operations to unlit landing areas. As a result, the aircrew were not qualified to conduct the task they were assigned.

The BOI concurs that aircrew had not received specific training, but notes further that in the absence of a qualification statement for this task, the question of qualification is therefore a moot point. The body of evidence however leaves open to question the competence of this crew to conduct this task.

3.1.12 The squadron did not conduct annual night flying standards checks.

The BOI observes that the absence of annual flying checks in either the aircraft or a simulator leaves the Squadron management with only a subjective knowledge of the skill base of it's aircrew.

3.1.13 The squadron maintained an internal audit on flying standards however there was no external audit body, as there was for instructor and examiner standards.

The BOI observes that there was no requirement for such an external audit body. However, the system in place ought to have been robust enough to maintain an adequate internal quality assurance process. This brings into question therefore, the quality of the internal audit system.

3.1.14 The squadron Instructor and Flying Guides were incomplete and in some areas did not adequately address training for the squadron roles.

3.1.15 Maritime Headquarters had failed to ensure the training documentation was appropriate and complete during the last inspection.

The onus of burden in this instance cannot be adequately substantiated from the AAIU text, however it is reasonable to assume that periodic checks by higher authority would detect shortcomings of this nature.

3.1.16 The squadron did not ensure the crew were fully current and qualified before detaching them to Weipa.

Agreed as supported by Table 1.5.2 of the AAIU report page 9.

3.1.17 All the aircrew were medically fit and adequately rested. There was no evidence of drug and alcohol use by the aircrew causal to the accident.

3.1.18 All persons on board were equipped with appropriate survival equipment except the aircrewman in the forward cabin who was wearing a cranial head set instead of Alpha helmet which is not in accordance with ABR 5150 requirements. The ACMFC's helmet was unserviceable and its replacement took 3.5 months to be issued. Both AME team members were strapped in, appropriately dressed, briefed and wearing cranial head sets. Whilst the wearing of cranial head sets was not a routine practice in RAN aircraft, the head sets had proved effective in minimising head injuries in this accident. Passenger seat shoulder straps would have lessened the passengers' injuries.

3.1.19 The aircraft and personnel were detached from HS 817 in support of the K95 exercise. The observer was the detachment commander. ECC Weipa was the tasking authority for the detachment although this flight had been tasked by EXCON Darwin. ECC Weipa was not aware of the aircraft's tasking or departure. EXCON Darwin tasking information was contradictory and placed unwarranted urgency on the AME. EXCON Darwin did not provide sufficient information for the aircraft captain or observer to conduct a reasonable risk analysis before accepting the task. The observer and aircraft captain placed a high level of urgency on the AME however a Mercy Flight was not declared in accordance with AIPs.

This paragraph is a simplistic representation of the issues, for detailed discussion see BOI Report paras 6.4 - 7.4. Further, the inference in the final sentence that AIP's were contravened by not declaring a Mercy Flight is incorrect. This course of action would have been prudent in the circumstances, but remained only an option for the aircraft captain.

3.1.20 The crew were current in accordance with regulations in all areas of flying practice except instrument and night flying. None of the aircrew were current for night flying in accordance with AFTP4(F). The pilots were not current for instrument flying in accordance with AFTP4(F) and ABR 5150. The copilot was not qualified for instrument flying in accordance with ABR 5150.

See para 3.1.16 above.

3.1.21 The aircraft captain and observer were not current in CRM training in accordance with ABR 5150. The observer was not current for HUET training in accordance with ABR 5150.

3.1.22 The aircrewman in the front cabin was not current for SE lecture requirements in accordance with ABR 5150 and AFTP4(F).

3.1.23 The flight had been planned to arrive at Bamaga airfield in daylight and the return trip at night. The crew did not obtain a weather brief before departure or during the sortie. Other than the lack of a weather information, the flight had been briefed correctly. The authorising officer was the aircraft captain who had the appropriate authority to do so. The authorisation officer authorised the flight to return at night despite the aircrew's lack of currency in night and instrument flying.

The BOI concludes that a proper brief was not conducted, see BOI report para 7.8.

3.1.24 Bamaga was an unlit airfield without radio navigation aids and was unsuitable for night operations in accordance with AIPs.

3.1.25 The aircraft arrived at Bamaga before sunset as planned however the AME passenger was not at the airfield. The aircraft left Bamaga airfield twice in an attempt to clarify the tasking and find the AME passenger. It had successfully made one approach and landing in the daylight and one at night before the accident.

3.1.26 As night fell, the weather at Bamaga deteriorated with a lowering cloud base and drizzle. There was no moon or visible horizon except in the direction of Bamaga and Seisia townships to the west. The aircraft captain had difficulty maintaining heading and aircraft attitude during transits primarily due to the aircraft's poor lighting. The weather deteriorated from VMC as night fell and the aircraft was being flown with reference to instruments whilst there were attempts to maintain visual with the airfield.

The BOI concludes that the procedure employed by the pilots to fly in these weather conditions at the altitudes that they chose were entirely inappropriate. This AAIU conclusion underplays that fact. See BOI Report para 14.3.1.

3.1.27 During the final transit to Bamaga airfield from the coast, the aircraft flew into cloud at approximately 500 feet but descended again to remain clear. The aircraft captain assumed control of the aircraft and held at low airspeed at approximately 300 feet in the Bamaga airfield circuit area.

3.1.28 A vehicle was seen approaching along the road to the airfield which led the aircraft captain to decide to make a descending turn at low airspeed to the airfield, however, he became fixated on the compass. He failed to notice the height loss indicated on the RADALT, high rate of descent on the RCDI, nose high attitude on the AI and decreasing airspeed on the ASI. He flew the aircraft into trees south west of the airfield. The aircraft lost airspeed during the turn probably because the AFCS pitch authority was exceeded resulting in a pitch up not noticed by the aircraft captain.

The BOI notes that although not conclusive, this is the most plausible explanation of the events immediately prior to impact.

3.1.29 The fixation which caused the accident was primarily due to the poor state of the instrument panel lighting which made some of the instruments, particularly the compass, difficult to read.

See BOI comment on AAIU para 3.2.1 below.

3.1.30 The aircraft impacted trees approximately 800 metres to the south west of Bamaga airfield. It struck the trees in a nose high attitude at low forward speed, finally free falling approximately 16 metres and coming to rest approximately 46 metres from the initial impact point. There was no evidence of the rotor system turning during the final descent to the ground.

3.1.31 An army platoon, part of exercise K 95 saw the aircraft descend behind trees but did not equate the descent with a crash believing the aircraft to be exercise enemy forces. They did not raise the alarm. The detachment flight senior maintenance sailor raised the alarm in Weipa when he considered the aircraft to be overdue.

See BOI Report para 7.3.

3.1.32 There was a strong flat TAG existing amongst the aircrew.

3.1.33 The crew exhibited overconfidence by failing to recognise the appropriate juncture at which the sortie should have been aborted.

The BOI is not necessarily satisfied that overconfidence was the phenomena exhibited by the crew. Nonetheless, all crew members had sufficient training and experience to be able to recognise the appropriate point in time beyond which the sortie should not have proceeded.

3.1.34 The crew were experiencing frustration at the non appearance of the AME patient.

3.1.35 The pilots did not have their helmet clear visors down and the observer was not wearing his LPA or secured into his seat.

3.1.36 All helmets, liferafts, despatcher harnesses and Pattern 50N life jackets were examined and operated as expected. All the SE routine servicing was in date. The pilots' inertia reels failed to lock on the final ground impact but when tested were found to be serviceable. It is most probable the inertia reels failed to lock due to the low forward velocity experienced by the aircraft on ground impact.

3.1.37 The aircraft captain and the front cabin aircrewman had difficulties igniting the day/night flares as they could not tell the difference between the ends. The configuration had recently changed but the two aircrew attempted to utilise the old methodology of identifying the appropriate ends. In addition, the night flare ring pulls pulled out without flare activation on two occasions.

- 3.1.38 *Due to impact unserviceabilities and loss post impact of the Service issue torches, the crew had to use their personal penlight type torches.*
- 3.1.39 *The present Service issue aircrew knife proved inadequate for the survival situation so the aircrew had to revert to using personal 'Leatherman' type knives.*
- 3.1.40 *Space blankets were carried as a personal initiative by the aircrew and proved very useful for keeping the injured cases comfortable.*
- 3.1.41 *The SARSAT compatible EPIRB operated correctly and was received by satellite. The information was passed to Brisbane RCC but not to Maritime Headquarters.*
- 3.1.42 *Both the fuel and the oil samples were consistent with those fluids which are specified for the Sea King helicopter, namely F-34 AVTUR and OX-27 respectively, and there was nothing to implicate either the fuel or the gearboxes and engines as having contributed to the accident.*
- 3.1.43 *The popped circuit breakers found in the wreckage would most probably tripped as a result of the impact, or as a result of physical impact to the re-set buttons during the event. No evidence was found to suggest that they tripped as a result of a voltage spike.*
- 3.1.44 *The globes from the pilot's controller were determined to be either OFF or ON , during some part of the impact, however, the low energy impacts experienced prevented a conclusive analysis; in most cases, the filament did not fail. There was no evidence to suggest that the pilot's controller itself or the AFCS had malfunctioned.*
- 3.1.45 *The findings and causes were derived from crew and witness statements, the impact of wreckage on surrounding environment and the inspection of the wreckage itself. The AAIU believes it would be extremely unlikely that the investigation would have been able to derive an adequate assessment of the accident profile if there had been no survivors. Cockpit voice and flight data recorders are essential tools in investigating aircraft accidents in such circumstances and would have provided valuable verifiable data in this accident.*

Evidence taken under oath by the BOI of all crew members is in some instances inconsistent with respect to flight profiles and prevailing weather. This is not wholly unexpected in the circumstances, but the presence of CVR and FDR would have allowed unequivocal reconstruction of the critical final stages of the sortie.

3.2 Causes

3.2.1 Primary Cause

Instrument Scan Breakdown. The primary cause was established to be a controlled flight into terrain by the aircraft captain caused by his failure to maintain an adequate instrument scan due to the poor state of the aircraft's instrument panel lighting.

Whilst the instrument panel lighting was indeed a significant factor in the resultant crash, the BOI does not place the same weight of significance as that applied by the AAIU. See BOI Report para 14.8.1 and 17.1.

3.2.2 Major Contributing Factors

3.2.2.1 NALO's failure to issue instructions on the care of the instrument lighting caused the NVG lighting modification, over time, to become a night and instrument flying hazard.

3.2.2.2 HS 817 had failed to limit the aircraft's operations despite raising the NVG modification as a flight safety hazard.

Notwithstanding that the NVG mod was allegedly made an issue as mentioned in AAIU Report 1.17.1.2.1, evidence to the BOI by both flying pilots did not place undue concern on the state of the lighting. See BOI Report para 1.1.3.

3.2.2.3 The aircrew check, training and currency requirements in ABR 5150 and AFTP4(F) were inadequate.

The BOI agrees with this statement insofar as there is no overland night flying check requirements.

3.2.2.4 NALO and ANAMC had failed to progress MOD 6726 and 6728 in a timely and efficient fashion.

3.2.2.5 The crew were neither current nor proficient to conduct the assigned task at night.

3.2.2.6 The pilots lacked instrument flight proficiency.

3.2.2.7 The flat TAG between the pilots contributed to their failure to maintain adequate instrument flying cockpit discipline.

See BOI Report para 13.2, 14.3.1, 14.8.1.

3.2.2.8 The aircraft captain attempted to maintain VFR in IMC into an unlit airfield, devoid of landing aids.

3.2.2.9 The physiological limitations of the human eye in scanning from inside to outside at night combined with the poor instrument lighting impinged upon the aircraft

captain's ability to read and interpret his instruments causing a severe reduction in his situational awareness.

The BOI notes however, that the aircraft captain, had he been adhering to correct and prudent procedures in the prevailing circumstances, should not have looked at other than his flying instruments. It was the remaining crew's responsibility to be looking outside for visual cues, with the co-pilot monitoring the flying instruments from time to time.

3.2.3 Contributing Factors

3.2.3.1 *It is considered that an organisational "can do" culture within naval aviation coupled with the perception that the aircraft was unreliable created an implied pressure on the aircrew to accept the task and pursue its completion despite the mounting indications that the sortie should have been aborted sooner.*

BOI Qualification: To the extent that this perception of unreliability extends to the Sea King class outside HS 817 Squadron, the BOI agrees with this assumption. To the extent that this perception of unreliability relates to N16-124 the BOI deduced no evidence under oath from the aircrew to support this.

3.2.3.2 *The detachment commander and the aircraft captain failed to obtain a weather report either before or during flight.*

The BOI observes that there was not a requirement per se for the detachment commander to obtain or ensure that a weather report was obtained before or during the sortie. However, the detachment commander as a member of the crew, and at the time, a Squadron executive, might have been expected to contribute better to the conduct of the sortie by his insistence on compliance with the requirement to properly brief both before and during the flight.

3.2.3.3 *The aircraft captain failed as the authorising officer to make a valid risk assessment and ensure the crew were qualified and current.*

3.2.3.4 *Due to the lack of a reassessment by AMAFTU, it is likely the STI which required the fitment of white lighting to instruments of the NVG modification effectively invalidated the configuration in N16-124.*

3.2.3.5 *NALO and ANAMC had failed to afford MOD 6728 the appropriate classification priority.*

3.2.3.6 *EXCON Darwin awarded an inappropriate priority to the AME.*

The BOI cannot support this statement. See 3.1.19 above.

3.2.3.7 *EXCON Darwin failed to give the appropriate information to permit the crew to make a valid risk assessment.*

The BOI cannot support this statement. See 3.1.19 above.

3.2.3.8 *FAEU's failed to correctly audit the N16-124's maintenance documentation and notice the SRC discrepancies.*

See AAIU Report 3.1.6 above.

3.2.3.9 *There is a lack of appropriate and adequate training and regulatory documentation.*

3.2.3.10 *Maritime Headquarters had failed to adequately audit HS 817's flying and operating standards.*

See comments on para 3.1.15 above.

3.2.3.11 *A feeling of overconfidence, particularly by the aircraft captain, appears to have prevailed in that none of the crew appeared to question the developing situation.*

See comments on para 3.1.33 above

3.2.3.12 *The crew coordination and communication appears to have been reduced by the flat TAG that existed amongst the crew in that normal briefings were abbreviated and in some circumstances were missed.*

See BOI Report para 14.3.1.

3.2.3.13 *The lack of leadership due to the strong flat trans-cockpit authority gradient within the Sea King aircrew led to a failure by the aircraft captain to develop definitive plans as the situation developed during the mission.*

See BOI Report para 14.3.1.

3.2.4 Other Issues

3.2.4.1 *The Sea King Aircrew Manual was out of date , namely equipment listing and descriptions were not up to date and Advance Australian Information Leaflets dating back to 1979 and 1980s were still in the manual.*

3.2.4.2 *Ground support equipment transported in the aircraft was not adequately stowed or secured inside the aircraft.*

3.2.4.3 *The Sea King Aircrew Operational Data Manual which included Centre of Gravity data was out of date.*

3.2.4.4 *The Sea King did not have a MEL which specified the essential equipment required to fly in defined meteorological conditions and operations.*

The BOI notes that the requirement for an MEL is a civilian need not required by RAN aircraft. Note AAIU Report para 1.17.4.4.

AAIU RECOMMENDATIONS

4.1 *NALO (and ANAMC) review the management of RAN aircraft modification procedures and ensure that configuration management standards are established and maintained.*

Agreed, noting that the standards are already established.

4.2 Maritime Command direct Commanding Officers to actively pursue the resolution of identified flight safety hazards and where appropriate restrict flight operations.

Agreed. The BOI assumes that this relates to current unresolved issues.

4.3 Maritime Command direct Commanding Officers to adhere to rules and regulations and no deviations are to occur without higher authority approval.

Agreed in view of this accident, but should not be necessary.

4.4 Maritime Command direct Commanding Officers to ensure aircrew are current and qualified to conduct assigned tasks.

Agreed in view of this accident, but should not be necessary.

4.5 The RAN review the validity of present aircrew basic skill and role currency requirements.

Agreed.

4.6 The RAN establish squadron roles and functions in high authority documentation to permit linkage through to operational and training procedures.

Agreed.

4.7 The RAN validate flying training and regulatory documentation against established squadron roles and tasks.

Agreed.

4.8 Naval Training Command and Director General Naval Health Services review aircrew CRM and AVMED training content to ensure human factors issues such as TAG, empty field myopia applicability to instrument scanning, situational awareness, overconfidence and stress are addressed.

Agreed.

4.9 Maritime Command investigate the introduction of risk management matrix and training for use by authorising officers.

Agreed, in the context of a more specific training package for authorising officers duties and responsibilities. This might prove particularly beneficial for CO's of HMA Air Capable Ships.

4.10 Naval Training Command review CRM course availability to provide sufficient places for naval aircrew to meet present qualification and currency requirements.

Agreed.

4.11 NALO review aircrew manuals to ensure they reflect current aircraft configuration and operational procedures.

Strongly Agreed, mindful that Squadrons can be pro-active in this matter.

4.12 NALO validate the procedures for reviewing aircraft publications, their amendments and distribution.

Agreed.

4.13 NALO review aircraft internal cargo securing procedures and the provision of tie down equipment.

Agreed.

4.14 Maritime Command establish an agency external to operational units to monitor aircrew flying standards.

Agreed. Overtaken by events with the advent of COMAUSNAVAIR.

4.15 Director General Naval Health Services review the system of AME tasking of RAN assets and provide clear guidance to flying units on AME procedures.

Broadly agreed, but the responsibility should be jointly shared by FMO and COMAUSNAVAIR.

4.16 Maritime Command review engineering and operational auditing procedures conducted by FAEU and FAVO respectively.

Strongly agreed, however MC might consider inviting DAVENG-N/COMAUSNAVAIR to participate.

4.17 The RAN conduct a study to determine the extent and cause of the "can do" culture within naval aviation and its appropriateness within naval operations.

Qualified agreement. MC might consider engaging psychological advice on the veracity of such a course.

4.18 The RAN review survival requirements of naval aircrew and the appropriateness of Service issued survival equipment such as knives, space blankets and torches.

Strongly agreed.

4.19 NALO investigate the servicing of survival equipment to ensure its timely availability to aircrew.

Strongly agreed.

4.20 Maritime Command issue MELs to ensure RAN aircraft operate with basic levels of equipment fits suitable to specified conditions.

Agreed. COMAUSNAVAIR should take the lead.

4.21 The RAN review passenger seating in RAN aircraft (ie. the provision of shoulder harnesses) to ensure an appropriate level of crash survivability and injury minimisation is provided.

Strongly agreed.

4.22 The RAN install cockpit voice recorders and flight data recorders in all naval aircraft.

Most strongly agreed.

4.23 AMAFTU investigate the reported problems of using the clear visors, fitted to the Alpha

Agreed.

19 CONCLUSIONS

- 19.1 The BOI could not ascertain that there was a formal tasking document from MHQ to 817 Sqn. The decision to formally prepare HS 817 Squadron for the K95 detachment was taken on the strength of information traffic in Reference D (1.1)
- 19.2 N16-124 had been previously rendered unserviceable for night flying in 1993. On the night in question, the aircraft captain had some minor difficulty adjusting his lighting but reported no undue problems, and the co-pilot was quite comfortable with the lighting arrangements (1.1.3).
- 19.3 The Squadron Commanding Officer was satisfied that the aircraft was fully capable of meeting the tasking requirements in K95 and at no time had he been made aware of any concerns vis a vis cockpit lighting (1.1.4)
- 19.4 N16-124 was materially sound to carry out either the Weipa based or TOBRUK tasks and had passed a Pre Embarkation Inspection(PEI).(1.2 - 1.4)
- 19.5 CPO Larke and his maintenance team carried out all the necessary preparations and care for the aircraft. (3.1, 3.1.1)
- 19.6 Both pilots were not proficient in either night or instrument flying (3.3.1)
- 19.7 Both pilots failed to achieve minimum currency requirements for instrument and night flying in accordance with AFTP 4 (3.4.1 - 3.4.3)
- 19.8 The Squadron suffered from a high administrative workload affecting aircrew currency and qualifications (3.4.4 - 3.4.5)
- 19.9 The aircrew and the FMO believed that the terms SAR, Medevac and AME are in practise used interchangeably. (4.1 - 4.1.1)
- 19.10 All authorities knew and understood the dedicated tasking requirements of SK 50 N16-124, and that the AO for K95 also embraced the Cape York area (4.6.1.)
- 19.11 The ECC in Weipa was not fully aware of the SK 50's tasking (of this flight) nor the identity of Tasking Authorities (5.4.4)
- 19.12 There was no guidance or instruction to formalise the tasking or employment of assets and human resources shared between the Army, Air Force or Navy elements in the Weipa area. (5.4.6)

- 19.13 The detachment were mistakenly satisfied to deploy in TOBRUK and disembark in Weipa without navigation publications (5.5)
- 19.14 The seeking of additional tasking by the SK 50 Detachment Commander directly to SQNLDR Weekes in EXCON influenced the choice of the SK50 by EXCON for this mission. (6.2.3)
- 19.15 The UH-1H AME Detachment commander was satisfied that the Weipa - Bamaga - Weipa task was within their capabilities on the night in question. (6.2.2)
- 19.16 There was no strategy established by any of the participating players to transport the ill sailor from the wharf area to the airfield, which is a driving time of about one hour over unsealed roads (6.3.2)
- 19.17 SHOALWATER was unaware that a Medevac was actually underway and that she would need to land the ill sailor to a particular point on the ground (6.3.3 - 6.3.4)
- 19.18 In this instance EXCON ignored their own Command and Control structure for the tasking of real world medical evacuations through the Weipa ECC. (6.5, 6.5.1)
- 19.19 SQNLDR Weekes, being unaware of the problems associated with off-line ship/shore communications in major exercise conditions, did not know that ECC Weipa and other appropriate authorities were not informed of the SK50 tasking. (6.5)
- 19.20 No signal was released by EXCON informing all appropriate authorities of the SK50 task, despite being requested by LCDR Couch to do so. (6.5.4)
- 19.21 The aircraft crew were unfamiliar with the meaning and implications of the term AME. Medevac is the term most commonly used in Navy which generally implies that a patient's condition requires urgent attention. (6.6, 6.6.1)
- 19.22 The presence of mind and initiative of CPO Larke, whose actions were well above those expected of a FSMS in alerting the proper authorities to the disappearance of the aircraft, provided the only SAR coverage for the aircraft after the first arrival at Bamaga. (7.2 - 7.3)
- 19.23 The crew understood that the patient was psychologically distraught (or disturbed), and that there was no medical life or death situation involved (7.4.1)
- 19.24 The detachment did not have the necessary flight information publications and charts to undertake the flight. (7.5 - 7.6)

- 19.25 LSA Dutton wore a flight deck cranial protective helmet for the duration of the sortie (7.6)
- 19.26 LCDR COULCH flew long periods of the sortie with his harness unfastened. (AAIU Report para 3.1.35)
- 19.27 The aircraft was unsuitable for flight under the Night Visual Flight Rules (NVFR) and Instrument Flight Rules (IFR). (7.7)
- 19.28 The crew failed to obtain adequate weather information, Notice to Airman (NOTAM) information, and sunset and airfield information, before or during the flight. (7.8)
- 19.29 The aircraft captain allowed his own sense of urgency to reach Bamaga by sunset to persuade himself to bypass the correct pre-flight briefing procedures. (7.9, 7.11)
- 19.30 The presence of rain showers during the transit to Bamaga did not cue the crew to the changing weather conditions, which should have lead them to obtain an in-flight briefing from FLIGHTWATCH. (8.3)
- 19.31 No response to a CTAF broadcast inbound to Bamaga led the crew to the assumption that there could be no conflicting traffic at that time. (8.4)
- 19.32 The aircraft was flown below 500ft AGL during the transit from Weipa to BAMAGA without authorisation to do so (8.4)
- 19.33 Poor airmanship was displayed by the pilots, and a breach of AIP regulations was apparent by the decision to remain at low level navigating into an unknown airfield such that they became visual with the runway environment as late as one mile in reducing light and continuing to join and alight on the airfield in a non-standard manner. (9.1, 9.2)
- 19.34 The ill sailor was not at any stage at Bamaga airfield. (9.4)
- 19.35 The return flight Seisia - Bamaga was conducted at 500 ft AGL in complete dark in contravention of regulations. (10.2)
- 19.36 The aircraft landed straight ahead on the runway in contravention of regulations, and taxied into the tarmac area. (10.2)
- 19.37 No radio calls were made on the CTAF frequency after the first arrival for the remainder of the flight in contravention of regulations (10.2, 11.1.3)

- 19.38 The aircraft became airborne in the dark to cancel SARWATCH with Brisbane FSU. There was no further attempt during subsequent flights to establish any form of SAR alerting (10.4, 11.1, 11.1.1)
- 19.39 In the marginal conditions of flight; darkness, unlit airfield, deteriorating weather conditions and the chosen flying altitudes, the decision by the aircraft captain, to not establish SAR alerting was both extremely unsafe and displayed remarkably poor airmanship (11.1.2)
- 19.40 Pressure exerted by the co-pilot in the decision making process to return to Bamaga airfield for the final time was a clear indication that cockpit authority was becoming muddled. (13.2, 14.3)
- 19.41 The final flight Seisia - Bamaga airfield comprised serious breaches of the rules of the air and displayed extremely poor airmanship and disregard for the safety of the crew (13.3.1)
- 19.42 The aircraft was navigated from Seisia to Bamaga airfield with sole reference to GPS headings in contravention of regulations (13.4)
- 19.43 LEUT Buss' inability to maintain heading on the final return to Bamaga airfield was the first indicator to the crew of pilot overload. (13.4, 13.5)
- 19.44 From the time the decision was taken to return to the airfield in now deteriorating conditions there was no crew brief on cockpit duties nor division of responsibilities amongst the crew. (14.2.1)
- 19.45 On final arrival in the vicinity of Bamaga airfield, complete crew management and co-ordination had broken down. The flat Flat Trans-Cockpit Authority gradient (TAG) was responsible for the gross lack of clear authority present within this crew. (13.2, 14.2.1, 14.3.1, 14.3.3, 17.1, 17.2.2)
- 19.46 During the penultimate manoeuvre prior to impact, the aircraft was no higher than 300ft AGL. (14.6.1)
- 19.47 The aircraft lost airspeed, and descended into the treetops, at about 70ft. The aircraft could not fly away and crashed into the trees with both pilots now on the controls. (14.7, 14.8)
- 19.48 The flying pilot's (LEUT Buss) instrument scan broke down during the final turn towards the airfield as a result of poor procedural flying techniques and lack of a clear brief delineating cockpit duties. It is probable that he was either consciously or sub consciously attempting to locate the runway environment visually. (14.8.1)
- 19.49 The strongest leadership displayed throughout this ill-fated sortie was that of Leading Seaman Dutton and is worthy of suitable formal recognition. (15.2)

- 19.50 The service issue survival knives were grossly unsuitable for the task required during the post impact survival phase. (AAIU Report para 3.1.39 and 4.18 above)
- 19.51 The lack of passenger shoulder harnesses in the Sea King Mk50 lead to serious passenger injuries in this accident. (AAIU Report para 3.1.18 and 4.21 above; Final Medical Report 1.15f(5); and BOI Report 15.1.2)
- 19.52 The inclusion of cockpit voice recorders (CVR) and flight data recorders (FDR) would have simplified the task of the accident investigation team and BOI. (BOI Comment on AAIU Report 3.1.45, and 4.22)
- 19.53 The lack of procedural knowledge, and casual approach by this crew in their flagrant disregard of regulations, stem from weak management in HS 817 Squadron, and poor leadership within the detachment.
- 19.54 MHQ oversight of HS 817 Squadron in the areas of flying training, and flying and operating standards should have revealed the inadequacies evidenced by this accident. . (BOI Comment on AAIU Report 3.1.15, and 3.2.3.10)

20 RECOMMENDATIONS

- 20.1 The BOI is satisfied that the recommendations of the AAIU are adequately supported in the text of the AAIU report, and to that extent the degree of endorsement so applied by the BOI should be inferred to be recommendations of the BOI.
- 20.2 Formal detailed tasking should be a matter of course for all Squadron detachments. (19.1)
- 20.3 ABR 5150 should be amended to reflect that no RAN aircrew should deploy or detach to operate, without first having met appropriate currency and proficiency minima or standards. (19.6, 19.7)
- 20.4 Higher authority must be attuned to the impact of burdensome administrative processes on operational units. (19.8)
- 20.5 A regulation in ABR 5150 or RAAF AIP SUP should be established to require continuous SAR coverage for RAN aircraft. (19.22, 19.38, 19.39)
- 20.6 A formal process of education and testing, similar to civilian commercial pilot's license and command instrument rating theory

- examinations, should be implemented by COMAUSNAVAIR to ensure adequate knowledge and understanding by RAN aircrew of pertinent procedures and regulations. (19.27, 19.28, 19.38, 19.39)
- 20.7 The RAN must improve it's awareness of ADFP 53 and the Aero Medical Evacuation procedures contained therein, to ensure a consistent approach in a joint environment. (19.9, 19.21)
 - 20.8 Command and control procedures which relate to non-exercise tasking of deployed assets should be unambiguous and rigorously adhered to. (19.11, 19.14, 19.15, 19.18)
 - 20.9 Where real time safeguard/NODUFF procedures are envisaged, a plan for joint co-operation of diverse assets should be mandatory. (19.12)
 - 20.10 Wearing of helmets or some form of cranial protection should be mandatory for RAN helicopter passengers; (Ref J para 115j)
 - 20.11 RAN aircraft should not be permitted to fly without the necessary Enroute publications and charts required for the mission; (19.13, 19.24)
 - 20.12 Communications procedures during major joint exercises should be streamlined to allow for quicker communications in the event of a safeguard or real situation requiring the rapid passage of information; (19.16, 19.17, 19.19, 19.34)
 - 20.13 In the assessment of a degree of urgency in a task, aircrew and authorising officers must have the skill and knowledge to weigh up the relative merits of conflicting courses of action ie. the need to save life versus the need to preserve life. (19.23, 19.28, 19.29, and 19.35 - 19.38, 19.41, 19.44)
 - 20.14 Passenger shoulder harnesses should be fitted to the Sea King Mk50. (19.51)
 - 20.15 Because there were survivors who could be interviewed, the BOI and the AAIU were able to discern the cause of this accident. Future accidents may not be so easily re-constructed. Therefore, the inclusion of cockpit voice recorders (CVR) and flight data recorders (FDR) for all RAN aircraft should be implemented immediately. (19.52)
 - 20.16 The abilities and knowledge of aircraft captains and authorising officers in HS 817 Squadron should be assessed by FSSC to ascertain whether the shortcomings of this crew represent individual ineptitude or endemic systemic failure. (19.27 - 19.33, and 19.35 - 19.44, 19.53, 19.54)

- 20.17 Flat TAG should be recognised as a significant phenomena and measures such as Crew Resource Management courses be undertaken at shorter intervals than dictated in ABR 5150, should lack of proficiency/currency dictate. (19.43 - 19.45, 19.48)
- 20.18 CPO Larke should be highly commended at the very least, for his actions in response to the delay in return of the aircraft to Weipa. (19.22)
- 20.19 LSA Dutton should be highly commended for his leadership and presence of mind during the rescue and evacuation phases of the accident. (19.49)
- 20.20 The administrative workload on HS 817 Squadron aircrew should be reviewed to ensure that secondary duties do not detract from their primary duty of competently, and capably maintaining flying skills. (19.8)
- 20.21 The evidence contained in this report supports DFDA charges specified below. Noting the immunity from DFDA prosecution of the aircraft captain under the Status of Forces Agreement, the Maritime Commander might in any case, consider that charges be laid where appropriate, and such other action as is necessary be taken to ensure that individuals regardless of service receive proper disciplinary/ administrative action:
- 20.21.1 **Section 29 - Failure to Comply with a Lawful General Order**
- 20.21.1.1 Paras 7.11, 8.4, 10.2, 13.4.
- 20.21.2 **Section 35 - Negligent Performance of Duty**
- 20.21.2.1 Paras 8.4, 9.2, 10.2, 11.1, 13.4.
- 20.21.3 **Section 36 - Dangerous Behavior**
- 20.21.3.1 Paras 8.4, 9.2, 10.2, 11.1, 13.3, 13.4.
- 20.21.4 **Section 41 - Low Flying**
- 20.21.4.1 Paras 8.4, 9.2, 10.2, 13.3, 14.5.
- 20.21.5 **Section 43 - Destruction of, or Damage to, Service Property**
- 20.21.5.1 Paras 14.2, 14.5, 14.7.