Samuel Lucas.
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To : slucas@icao.int

By E-mail: August 4, 2017.

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Attachments.

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Submissions to the Senate Inquiry into the Norfolk Island ditching.

Submissions to the Australian Safety Regulations Review (ASSR).

Dear Sir.

This abridged summary is provided for your consideration on behalf of Ms. Karen Casey.

The data provided was gleaned as part of our research to assist Ms. Casey in her efforts to provide a considered opinion of the second Australian Air Transport Safety Bureau (ATSB) report into the ditching of a 'medi-vac' jet aircraft off Norfolk Island in 2009, in which Ms. Casey was the attending Flight Nurse.

For the sake of brevity the following information has been abbreviated and condensed. There is an extensive body of research available and fully expanded explanation and researched support data which we will happily provide, on request. This extends to the provision of 'in camera' evidence presented to a Senate committee inquiry. I have also taken the liberty of including a brief summary of the PAIN association for your information.

We (the association) should like to take this opportunity to thank you, sincerely, for the time, courtesy and consideration extended to Ms. Casey; it is very much appreciated and refreshing.

Yours sincerely.

Professional Aviators Investigative Network.
On behalf of Ms. Karen Casey,

Capt. Rob Couch. PAIN Coordinator.

The following discussion, provided on behalf of Ms Karen Casey forms the basis of opinions held by the Professional Aviators Investigative Network (PAIN); a brief introduction to the network is provided at Appendix 1. The association has as, far as practicable condensed the analysis requested by Ms Casey. However, should you require either a detailed briefing on any matter raised herein; or, access to supporting information provided 'in camera' to the Senate Standing Committee (SSC) for Regional and Rural Affairs and Transport (RRAT), both may be provided on request. In short, our concerns may be divided into three separate, but interrelated categories. It is difficult to treat the interrelated elements in isolation or define the categories in order of weight and importance. On balance, as the ICAO ADREP/iSTARS system is of global significance to aviation safety, we propose to restrict opinion to the reporting of fuel related events to the ICAO as example:-

1) Accurate reporting to ICAO of 'fuel' and forecast weather related incidents; and the Classification of operations.

2) The treatment and reporting of a ditching event, which was both fuel and weather related.

In general, it must be stated that the Australian Civil Aviation Safety Authority (CASA) has an unique approach to ICAO compliance, with record number of 'notified differences'. Many of the notifications may, at face value, seem insignificant. It is our opinion that the noted differences are structured to support the complex, contradictory, flawed rule set in place. Reform of this rule set has been in train for thirty years, with successive government ministers and directors of civil aviation promising to complete the task 'within the next three years'. This is an important consideration as it reflects on the operational approach taken to both open reporting of 'incident' or event; and, the tangible fear of prosecution. Australia's Civil Aviation Regulation (CAR) are founded on the 'criminal code' and 'strict liability'; this, standing alone, provides a strong disincentive to openly reporting safety related matters. This attitude is reflected in the government safety bodies approach to ICAO compliance and reporting.

The 'unique' Australian approach to 'Fuel planning' and alternate aerodrome requirements may be clearly demonstrated through a history of the 'fuel related' events which do not appear to have been captured on either ICAO iSTAR or ECAIRS data base; thus denying the accumulation and evaluation of safety critical, fuel/weather related incidents. Concerns that the number of fuel and or weather related incidents are being down played, not critically analysed and supported by Safety Recommendations appears to be denying vital safety information to the international industry and safety analysts; those who rely on accurate data sets to formulate policy.

We propose to use Norfolk Island as a convenient, topical example. The island is 'remote' and subject to rapid, often unforeseen changes in local meteorological conditions. The treatment and reporting of several incidents combined with the 2009 ditching event providing the quintessential example of how flaws within the safety system contributed to that event.

ICAO reporting.

From the Australian Transport Safety Bureau (ARSB listed 'Fuel management' occurrences for Norfolk island during 1998-/99, our research indicates that none appear to have either a preliminary or final report filed on the ICAO ADREP/ECCAIRS system. There are reports found relating to matters 'other' than fuel/ weather related incidents. For example a filed, final report on a 1999 'operational' incident was captured and easily identified:-

https://www.atsb.gov.au/publications/investigation_reports/1999/aair/aair199904802/

The following Safety Recommendation (SR): seems to indicate that ADREP was capturing some, if not all of the fuel/weather related occurrence reports. ATSB safety recommendation R20000040:

https://www.atsb.gov.au/publications/recommendations/2000/r20000040/ -

We draw your attention to historically significant examples of Australian 'Fuel management events' for which, the original notification, Preliminary and/or the Final Reports do not appear to have been captured on the ICAO iSTAR and/or ECCAIRS database:

199904029 https://www.atsb.gov.au/publications/investigation_reports/1999/aair/aair19990402 9/ - Referred to in AO-2013-100 (Mildura fog landing).

200401270 https://www.atsb.gov.au/publications/investigation_reports/2004/aair/aair20040127 0/ - Referred to in AO-2013-100 (Mildura fog landing).

200605473 https://www.atsb.gov.au/publications/investigation_reports/2006/aair/aair20060547 3/ - Referred to in AO-2013-100 (Mildura fog landing).

AO-2007-017
https://www.atsb.gov.au/publications/investigation_reports/2007/aair/ao-2007-017/ - Not weather related

AO-2009-072
https://www.atsb.gov.au/publications/investigation_reports/2009/aair/ao-2009-072/ - Not referred to in A0-2013-100

AO-2012-073
https://www.atsb.gov.au/publications/investigation_reports/2012/aair/ao-2012-073/ - Referred to in AO-2013-100 (Mildura fog landing).

AO-2013-100
https://www.atsb.gov.au/publications/investigation_reports/2013/aair/ao-2013-100/

Norfolk Island ditching.

The ATSB reporting of this singular, rare event has been the subject of a Senate inquiry resulting in some 30 significant Senate, disregarded recommendations; followed by a ministerial inquiry conducted by an independent, internationally recognised panel which provided more than three dozen significant, disregarded recommendations. The report was subjected to an independent peer review, by the Canadian TSB, under narrow terms of reference which also made a list of recommendations, which remain lambent, but disregarded.

The analysis of the flight is, radically, a simple one; the aircraft ran out of fuel. How this came to pass is not complex, every shortcoming within the entire safety system was involved; from fatigue to systematic failure. Once again, the safety net failures were easily corrected; and, had those failings been honestly admitted and corrected, there would have been little need for the raft of inquiries and subsequent recommendations (deemed to be opinions).

Both government investigations called for public submissions. As a small part of the PAIN submission the general reporting to ICAO was tracked. During research it became apparent that there seemed to be unexplained anomalies, which were variously described as ‘taxonomy’ problems, data base error, human error etc. We submit that there are too many ‘anomalies’ to be ignored. This is either a failure of system or; could, reasonably, be construed as deliberate manipulation. Accurate statistics are a vital part of safety analysis, flawed or manipulated reporting is not only misleading but could form part of a causal chain. For example:-

Due to the Norfolk inquires, serious investigations began in 2015. This revealed that a ‘modified’ PDF copy of the preliminary Pel-Air ditching report did exist on the ICAO data base. Tracking of the document shows no changes were made. It appears that the document was ‘on-file’ within the Australian Transport Safety Bureau (ATSB) from ‘created’ date - 15 January 2010; but, was not provided to the ICAO before 10 November, 2015.

Further investigation of preliminary and final reports between 2009 to 2015 revealed that almost every report entered between 2009 and 2011 was uploaded by an ATSB officer during the same week the ‘modification’ of the Pel-Air ditching took place.

There exist four (4) examples of the 2009/2010 reports which were, apparently, submitted to ICAO ADREP in the first week of November 2015, presumably by an ATSB data input officer. These are attached as PDF copies. To allow a determination of when the PDF copy of the occurrence report was actually created, click on FILE, go to 'Properties' in the drop down box and click. Then view date 'created' date.

Research indicates a ‘selective’ approach to reporting and categorising of incident and accident. The PAIN data base reflects the manipulation of categorisation and subsequent lack of reporting clarity – even where an investigation as actually been carried out. ICAO reporting aside, the significant, progressive reduction in SR made since the fatal accident at Lockhart River, 2005 is of grave concern to the industry.

Operational Categorisation.

Briefly, the classification of operation only becomes legally significant when there is an accident or an incident. The 2009 ditching off Norfolk Island of a 'medivac' jet providing an example of the 'confused' state of regulation regarding the difference between 'Aerial Work' (AWK) and 'Charter' (CHTR).

For brevity, this analysis is limited 'medical' operations only. The Royal Flying Doctor Service (RFDS) serves as a classic example of 'first responder'. Their operation is based on a 24 hour 'stand by' service, providing rapid response to transport accident victims to hospital, only carrying essential, trained, qualified crew. Operations may be safely conducted under the AWK category. There is no 'commercial' element involved, the RFDS is not 'for hire'.

Patient transfer (medivac) however is highly commercial field, which sees 'brokers' competing fiercely for the lucrative 'charter' contracted by the medical insurance industry. The operation is strictly 'commercial' almost always involves short notice to flight crew and routinely requires 'international' maximum range operations. Strictly 'for hire and reward; yet these operations are sanctioned under the AWK category.

The flight category per se has little to do with the 'operational' tenets of international flight or even good practice and safe outcomes; until it become a matter for a court or coroner to rule on. It is then that the subtle differences become apparent, to the detriment of the innocent passengers.

Appendix 1.

Introduction.

The Professional Aviators Investigative Network (PAIN) is a loosely organised, informal, confidential network which has developed over a number of years. There are now approximately 1000 associates available to assist the network research, evaluate analyse and report on matters of interest. Many associates have been involved in providing expert witness testimony, implementing parliamentary aviation policy and regulatory review.

The association began conducting investigations, analysis and generating reports simply to provide a defence for fellow professional aviators against what were perceived as unfair, unreasonable, incorrect, subjective assessments made by CASA 'expert' Flight and Airworthiness Operations Inspectors.

The PAIN approach is a simple one: identify the disputed area, find industry 'experts' in the field, analyse the problem and present a solution. However, it has often occurred that despite clear empirical evidence and substantive logical argument it has been difficult to prevent excessive, administratively based punitive action; some supported by 'bizarre' interpretation of the existing rule set. The ability of the authority to manipulate the regulations and Act to suit a predetermined outcome has formed no small part of many detailed, case by case analysis. The effect on ATSB reports of accident and incident often provide no SR and appear, if not biased, then at least avoiding pertinent regulatory based anomalies.

Individuals throughout the Australian aviation industry, whether involved in management, flying operations, airworthiness or administration, are daunted by and vulnerable to retribution. The very real threat of adverse administrative decisions affecting them personally and/or their employers exists, to the extent that most are extremely reluctant to be exposed as individual targets.

For these reasons the opinions, research documents, associates names and personal details kept are confidential. However, should the panel wish to discuss the issues raised, the review coordinator has been provided details to enable access to various senior members of the PAIN Network. To that purpose we would be happy to discuss how best we can provide capable, qualified members of the network to aid the discussions on matters pertinent to this review.

AO-2010-014: VH-NXK and Dingo 42, Breakdown of separation

Date and time:	4 March 2010, 1039 WST		
Location:	22 km NW of Perth aerodrome, Western Australia		
Occurrence category:	Serious incident		
Occurrence type:	Breakdown of separation		
Aircraft registration:	VH-NXK and Dingo 42		
Aircraft manufacturer and model:	VH-NXK:	Boeing Company 717-200	
	Dingo 42:	Raytheon Aircraft Company 350 (King Air)	
Type of operation:	VH-NXK:	Air transport – high capacity	
	Dingo 42:	Military	
Persons on board:	VH-NXK:	Crew – 6	Passengers – 40
	Dingo 42:	Crew – 2	Passengers – 2
Injuries:	Crew – Nil	Passengers – Nil	
Damage to aircraft:	Nil		

SYNOPSIS

On 4 March 2010, a Boeing Company 717-200 (717) departed Perth, Western Australia (WA) on a scheduled passenger service to Port Hedland, WA. The aircraft was tracking on a GURAK 3 standard instrument departure, which involved transiting through Pearce military controlled airspace. While maintaining flight level (FL) 120[1] and turning left onto a heading of 330 degrees under the control of Pearce air traffic control (ATC), the crew received a traffic advisory (TA) warning from the traffic alert and collision avoidance system (TCAS). The crew advised ATC and were instructed to continue the turn onto a heading of 360 degrees. During the turn, the crew received a resolution advisory (RA). The crew responded and climbed the aircraft to FL125.

The crew were advised by ATC that the conflicting aircraft, a military-operated Raytheon Aircraft Company 350 (King Air) descending through FL120 on a reciprocal track, had the 717 in sight and was maintaining separation. By this time, the radar separation standard had reduced below the required distance of 3 NM (5.6 km).

This occurrence reinforces the importance of effective coordination between ATC positions, and highlights the challenges faced by air traffic controllers when managing aircraft operating within the same airspace, but under the control of different ATC positions.

FACTUAL INFORMATION

On 4 March 2010, at about 1025 WST[2], a military operated Raytheon Aircraft Company 350 (King Air) aircraft (callsign Dingo 42), with two crew and two passengers on board, was being prepared for departure from Pearce aerodrome to conduct aerial work over the Cottesloe area (Figure 1) at FL200.

At Perth aerodrome, a Boeing Company 717-200 (717) aircraft, with six crew and 40 passengers onboard, was being prepared for departure from Perth to Port Hedland. The aircraft was cleared to track on a GURAK 3 standard instrument departure, which involved transiting through Pearce military controlled airspace.

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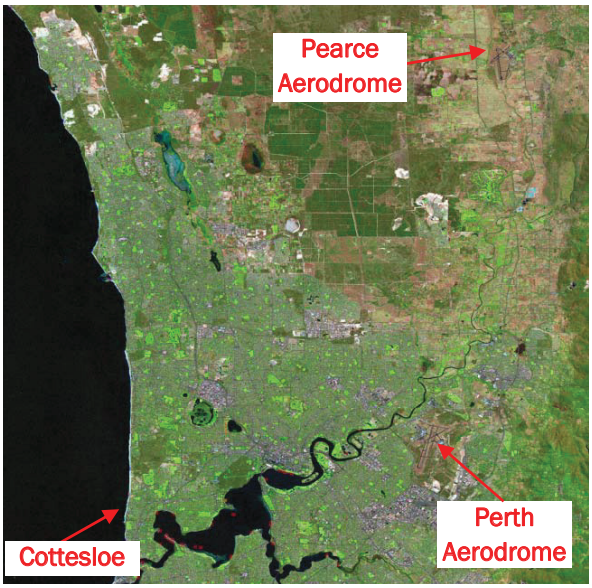
1 Flight level (FL) is a level of constant atmospheric pressure related to a datum of 1013.25 hectopascals, expressed in hundreds of feet. Therefore, FL120 indicates 12,000 feet.

2 The 24-hour clock is used in this report to describe the local time of day, Western Standard Time, as particular events occurred. Western Standard Time was Coordinated Universal Time (UTC) +8 hours.

Figure 1: Proximity of Perth, Pearce and Cottesloe



At 1028, the Pearce DEP/APR controller[3][4] contacted the Perth Approach controller to advise that the King Air was about to depart Pearce, with the phrase '*Next runway 18, Dingo 42, Pearce 2, 9,000, direct Cottesloe'*. The Pearce DEP/APR controller expected the Perth Approach controller[5] to reply with a heading and level, but received the response, *'Dingo 42, Rottnest 9,000'*. The Pearce DEP/APR controller then negotiated a heading of 270 degrees on climb to FL200. [6]

At 1031, the Perth Approach controller contacted the Pearce DEP/APR controller and amended the clearance for the King Air to climb '*...not above 6,000...*' and to coordinate with Perth Departures.

At 1033, the Pearce DEP/APR controller contacted Perth Departures and advised that the King Air would be climbing to 6,000 ft. The Perth Departures controller was not aware of the King Air's flight details and appeared confused when the departure was coordinated. The Pearce DEP/APR controller responded by electing to retain the King Air in Pearce airspace and continue the aircraft's climb to FL200.

At about 1034, the crew of the King Air contacted the Pearce DEP/APR controller and advised that they were turning right, passing through 2,500 ft, with an assigned heading of 270 degrees, on climb to FL200.

At about the same time, the crew of the 717 contacted Perth Approach and advised passing through 2,600 ft on climb to 6,000 ft. The Perth Approach controller coordinated the departure of the 717 and asked the Pearce Centre controller what level should be assigned to the crew of the 717 with reference to the King Air. The Pearce Centre controller agreed to accept the 717 on climb to FL120 for the transit through Pearce airspace. To facilitate civil transits of the Pearce Terminal Area (TMA) airspace, the Pearce Centre controller has a blanket clearance for aircraft of 11,000 ft and above[7].

Meanwhile, the Pearce DEP/APR controller was busy with other traffic and at 1036, instructed the King Air to turn right onto a heading of 360 degrees.

Immediately after, the crew of the 717 transferred radio frequency from Perth Approach and contacted the Pearce Centre controller, who acknowledged the 717 crew's transmission. The Pearce Centre controller then contacted the Pearce DEP/APR controller to ensure that they were aware of the 717 with the phrase *'Ident[8] off in Perth, NXK on climb FL120 reference Dingo'*. The Pearce DEP/APR controller, who was responsible for ensuring separation between the two aircraft[9], acknowledged the call and advised the Pearce Centre controller of the position of the King Air and its intentions.

3 The Pearce approach (APR) position had been concentrated to the Pearce departures (DEP) position. The airspace for both positions was managed by the Pearce departures/approach (DEP/APR) controller.

4 Perth and Pearce controllers are collocated in the Perth Air Traffic Centre and operate common equipment.

5 The Perth Approach controller had just taken over in the control position and was not aware of the intentions of the King Air as details of the flight had not been flight planned or coordinated.

6 Both the Pearce DEP/APR controller and Perth Approach controller were undergoing a proficiency check.

7 44WG DET PEA SI(OPS) 3-5, paragraph 16.

8 Ident – a term used by ATC as an abbreviation of the words 'for identification'.

9 The separation standards and procedures for Pearce Airspace (44 WG DET PEA SI(OPS) 3-5 paragraph 17) state that the Pearce DEP/APR controller is responsible for separating all aircraft under their control with aircraft transiting the TMA.

Table 1 below provides a summary of the subsequent events, recorded between the time 1037 and 1040.

Table 1: Summary of events between 1037 and 1040

717 (*under Pearce Centre control*)	Time	King Air (*under Pearce DEP/APR control*)
	≈1037	The Pearce DEP/APR controller instructed the King Air to continue the right turn onto a heading of 210 degrees, which was towards the 717. [19]
The crew of the 717 reported maintaining FL120 and requested a higher level.	*1038:27*	
	1038:53	The Pearce DEP/APR controller observing the 717 in transit, instructed the crew of the King Air to stop the climb and descend to FL120. [20]
The Pearce Centre controller instructed the crew to turn left onto a heading of 330 degrees to facilitate the climb.	*1038:59*	
	1039:07	The Pearce DEP/APR controller noted on his air situation display that the 717 was maintaining FL120 and instructed the crew of the King Air to descend further to FL110 and requested the '*...best rate of descent'.*
The crew received a TCAS TA. The crew advised Pearce Centre that they had received a TA[21], with traffic noted in their two o'clock position.	*1039:20*	
A short term conflict alert activated on both Pearce Centre and Pearce DEP/APR controllers TAAATS (The Australian Advanced Air Traffic System) air situation display.		
	1039:21	The training officer monitoring the Pearce DEP/APR controller reacted by transmitting to the King Air crew, '*Dingo 42 to 110 and expedite the descent, traffic is a jet aircraft your 12 o'clock 7 miles FL120'*.
The Pearce approach supervisor, monitoring Pearce Centre, instructed the 717 to immediately turn left onto 360 degrees. [22]	*1039:27*	
	1039:31	The crew advised Pearce DEP/APR that they were descending to FL110 and had sighted the 717.
	1039:36	Pearce DEP/APR instructed the crew to maintain separation with the 717.
The crew reported to the Pearce Centre controller that they had received a TCAS RA[23]. The crew climbed the aircraft to FL125.	*1039:37*	
The crew were advised by the Pearce Centre controller that the conflicting aircraft was maintaining separation with them.	*1039:42*	
The crew advised that they were clear of the conflict and were returning to FL120.	*1040:08*	

[19] This was a long way round turn to the right.

[20] The RAAF Pearce SI(OPS) 3-4 paragraph 18 states that 'Civil aircraft are to be afforded standard separation with military aircraft while transiting Pearce restricted areas'.

[21] Traffic advisory (TA): Information sent to the pilot about other traffic within plus or minus 1,200 ft and 45 seconds in time.

[22] This superseded the previous instruction to turn left onto a heading of 330 degrees.

[23] Resolution advisory (RA): Verbal or displayed indication recommending increased vertical separation relative to an intruding aircraft.

The crew of the King Air had the 717 clearly in sight and did not consider the proximity of the two aircraft to be of any concern. The crew of the 717 were advised by the Pearce Centre controller that the crew of King Air were maintaining separation with them; however, this was not until after the radar separation standard of 3 NM (5.6 km) had been compromised. The distance between the two aircraft reduced to about 2.4 NM (4.4 km) and less than 1,000 ft vertical separation.

SAFETY ACTION

Whether or not the ATSB identifies safety issues in the course of an investigation, relevant organisations may proactively initiate safety action in order to reduce their safety risk. The ATSB has been advised of the following proactive safety action in response to this incident.

Department of Defence

Crew resource management training

The Department of Defence advised the ATSB that all of the Pearce air traffic controllers have received refresher training in crew resource management.

Simulator training

The 44 Wing Detachment at Pearce has incorporated this incident into their simulator training exercises.

Coordination changes

Coordination of aircraft in Pearce military airspace has been altered such that Pearce Centre is now responsible for the airspace within which this incident occurred. There is no longer a requirement for Pearce Centre to coordinate aircraft with Pearce Approach.

ATSB COMMENT

Effective coordination between ATC positions is essential for ensuring the efficient management of air traffic. This occurrence reinforces the importance of effective coordination and highlights the challenges faced by air traffic controllers when managing aircraft operating within the same airspace, but under the control of different ATC positions.

AO-2010-015: VH-NXM, Cabin safety event

Date and time:	4 March 2010, 1500 CST
Location:	Ayers Rock aerodrome, Northern Territory
Occurrence category:	Accident
Occurrence type:	Cabin safety event
Aircraft registration:	VH-NXM
Aircraft manufacturer and model:	Boeing Company 717-200
Type of operation:	Air transport – high capacity
Persons on board:	Crew – 6 Passengers – 91
Injuries:	Crew – 1 (serious) Passengers – Nil
Damage to aircraft:	Nil

SYNOPSIS

On 4 March 2010, a Boeing 717-200 aircraft, registered VH-NXM, was being prepared to depart Ayers Rock, Northern Territory (NT) on a scheduled passenger flight to Cairns, Queensland (Qld).

At about 1500 Central Standard Time[1], the passengers had boarded the aircraft and the pilot in command instructed the cabin crew to close the aircraft doors. The cabin crew member allocated to the forward left door had difficulty unlatching the door, so the cabin crew member allocated to the forward right door came to assist. The assisting cabin crew member placed one foot outside the aircraft onto the portable stairs to assist with closing the door. At this point, ground personnel commenced moving the portable stairs and the assisting cabin crew member fell through the open door onto the apron. The cabin crew member sustained a fractured left arm, a sprained right wrist and some other minor injuries.

The aircraft operator and ground handling agent advised the ATSB that as a result of this occurrence, the ground handling agent has issued an interim procedure, which includes increased safety checks to ensure that the aircraft's doors are closed prior to the removal of the portable stairs.

FACTUAL INFORMATION

On 4 March 2010, the crew of a Boeing 717-200 aircraft, registered VH-NXM, were preparing the aircraft for a scheduled passenger service from Ayers Rock, NT to Cairns, Qld. At about 1500, the six crew and 91 passengers had boarded the aircraft and the pilot in command instructed the cabin crew to close the aircraft doors.

After receiving the relevant paperwork, the ground crew runner[2] onboard the aircraft confirmed with the cabin crew that they were ready to close the aircraft doors. The runner then descended the portable stairs and stated 'doors closed' to the movement controller[3] over a two-way radio. The stair operator[4], located at the foot of the stairs, and the marshaller[5], located at the base of the stairs under the fuselage, reported hearing the runner say 'doors closed'.

When the cabin crew member assigned to the left forward door received the instruction to close the doors from the pilot in command, they attempted

1 The 24-hour clock is used in this report to describe the local time of day, Central Standard Time, as particular events occurred. Central Standard Time was Coordinated Universal Time (UTC) + 9.5 hours.

2 The ground crew runner was a customer service agent responsible for the dispatch of the aircraft.

3 The movement controller was a customer service agent responsible for the ground operations of the operator's aircraft at the aerodrome.

4 The stair operator was responsible for the forward stairs on the aircraft.

5 The marshaller at the time of the incident was assisting the stair operator.

to unlatch the door from the fuselage. However, as they experienced difficulties unlatching the door, the cabin crew member allocated to the forward right door came to assist. In preparation to assist, the cabin crew member placed one foot outside the aircraft onto the stairs.

At the same time, the runner had descended the stairs and gave a 'thumbs-up' signal to the stair operator. The stair operator released the brakes and commenced moving the stairs away from the aircraft. The marshaller, who could not see the aircraft door from their location, also assisted in moving the stairs.

When the stairs commenced moving, the assisting cabin crew member, who still had a foot on the stairs, fell through the open door onto the apron. The cabin crew member sustained a fractured left arm, a sprained right wrist and some other minor injuries in the fall.

Ground crew operations

Ground crew operations for the aircraft at Ayers Rock aerodrome were contracted out to ground handling agents from another operator. The service agreement between the two operators did not specifically cover the requirements relating to ground handling procedures. An investigation conducted by the ground handling agent identified that each operator had in place procedures for ramp operations; however, it was not clear as to which operator's procedures should be complied with.

The ground crew runner had been employed by the ground handling agent for about 1 month and was conducting their first shift as runner on the day of the occurrence. Prior to the accident flight, the movement controller had been working alongside the runner. The dispatch of the occurrence aircraft was the runner's first flight without direct supervision.

It was the runner's understanding that they were to inform the movement controller that the flight was ready to depart by stating 'doors closed' over the two-way radio. The runner did this while descending the stairs. When the runner stepped off the stairs, they gave a 'thumbs-up' signal to the stair operator to indicate they had completed their role.

Both the operators' standard operating procedures required that the stair operator check whether the aircraft door had been closed prior to moving the stairs. After hearing the runner state 'doors closed' and receiving the 'thumbs-up' signal, the stair operator reported disengaging the stabiliser and commenced moving the stairs away from the aircraft, without first checking the door was closed.

Similar events

Both the aircraft operator and ground handling agent examined their respective safety databases to identify similar occurrences to the accident flight. The search returned four occurrences between 2 February 2008 and 14 February 2010, where both operators were involved. In each of these events, the stairs had been removed prematurely, either before the doors were closed or while a door was being closed; however, no injuries were recorded on those occasions. Information surrounding these events had been shared between the operators, and after the 14 February event the ground handling agent released a Safety Alert Notice.

SAFETY ACTION

While there is the possibility for safety issues to be identified throughout the course of an investigation, relevant organisations may proactively initiate safety action in order to reduce their safety risk. The following proactive safety action in response to this accident has been submitted by those organisations.

Ground handling agent

Safety Alert Notice

On 5 March 2010, the ground handling agent implemented an interim procedure for the removal of mobile stairs. The procedure requires a ground crew member to remain at the top of the platform or stairs and observe the door being closed and locked. They are then required to alight the stairs and give a 'thumbs-up' signal to the ground staff personnel who are manning the stairs, who are then to visually confirm that the door has been closed prior to removing the stairs.

AO-2010-099: VH-VUX, Runway Overrun

Date and time:	24 November 2010, 1700 EDT
Location:	Hobart Airport
Occurrence category:	Serious incident
Occurrence type:	Runway excursion – overrun
Aircraft registration:	VH-VUX
Aircraft manufacturer and model:	Boeing Company 737-8FE
Type of operation:	Air transport –high
Persons on board:	Crew – 6 Passengers – 158
Injuries:	Crew – Nil Passengers –Nil
Damage to aircraft:	Nil

FACTUAL INFORMATION

On 24 November 2010 at about 1600 Eastern Daylight-saving Time[1], a Boeing Company 737-8FE aircraft, registered VH-VUX (VUX), departed Melbourne, Victoria, on a scheduled passenger flight to Hobart, Tasmania. On board the aircraft were six crew and 158 passengers. The copilot was designated as the pilot flying and the pilot in command (PIC) was the pilot monitoring.

The flight to Hobart was uneventful and the crew planned to conduct an instrument landing system (ILS) approach to runway 12. The crew were informed that the runway was wet, but understood that the braking was good. Based on the reported weather, aircraft weight and airport conditions, the copilot calculated that a landing with the flaps set at 30^0 and the use of auto brakes 3 would provide sufficient braking for the landing distance available.

The crew reported that there had been rain during the day; however, at the time of the approach the conditions were clear. They became visual at about 13 NM (24 km) from the airport and at 3,000 ft.

The crew reported that they were informed that the wind was about 4 kts from 030^0. The crew were advised by air traffic control (ATC), at about 1,000 ft, that the wind was tending more northerly and offered the crew the option of conducting a visual circuit for a landing onto runway 30. Due to the scattered cloud[2] in the area, the limited experience of the copilot, the small tailwind component and an observation by the copilot that the windsock on the airport indicated nil wind, the crew elected to continue the approach to runway 12.

The touchdown and initial deceleration was reported to be normal, with the thrust reversers and autobraking operating correctly. Both crew believed that the touchdown was normal.

At about 60 kts, the PIC took over control of the landing and braking. At that point, the aircraft was about three quarters of the way through the landing roll, with the thrust reversers stowed and the autobrakes disengaged. He stated that soon after taking the controls he did not get the braking response he expected. The PIC increased the braking pressure until he could not apply any more. The copilot reported that in the last 1,000 ft (300 m) of the runway, the aircraft felt like it was sliding or aquaplaning. The cabin crew also reported that the deceleration did not feel normal in the last portion of the landing.

The PIC then re-introduced the thrust reversers. The copilot noted that once the aircraft reached the

[1] The 24-hour clock is used in this report to describe the local time of day, Eastern Daylight-saving Time, as particular events occurred. Eastern Daylight-saving Time was Coordinated Universal Time (UTC) + 11 hours.

[2] Cloud amounts are reported in oktas. An okta is a unit of sky area equal to one-eighth of total sky visible to the celestial horizon. Few = 1 to 2 oktas, scattered = 3 to 4 oktas, broken = 5 to 7 oktas and overcast = 8 oktas.

runway threshold markings at the southern end of the runway the speed decreased significantly.

The crew reported that the aircraft overran the runway onto the sealed stopway[3] at a walking pace. The aircraft came to a stop, with the cockpit about 4 m beyond the end of the runway.

The crew turned the aircraft around, with one main gear on the overrun area and the other inside the runway. They informed ATC of the overrun and taxied the aircraft to the gate.

The runway and stopway was inspected and no damage was found.

Once the aircraft was shutdown, the PIC inspected the tyres and brakes and determined that there was no damage. The PIC and copilot returned the aircraft to Melbourne where the aircraft landed without further incident. The braking was reported as normal for the return landing at Melbourne.

Weather

The Bureau of Meteorology recorded 10.8 mm of rainfall at Hobart Airport on 24 November 2010. It was reported that there were showers all day, although at the time of the incident the rain had stopped.

Prior to touchdown, the copilot observed the windsock and noted that it indicated nil wind and that the last wind had been from the north. After the landing, the copilot looked at the windsock again and noted that it had not moved and still indicated nil wind.

Recorded information

The flight data recorder (FDR) was removed from the aircraft for download and analysis. The data indicated that VUX touched down about 660 m (2,200 ft) along the 2,251 m (7,385 ft) runway, with a computed airspeed (CAS) of 143 kts. Based on the data, there was about a 10 kt tailwind at the time of the landing. The brakes were applied and the aircraft decelerated to 60 kts (CAS) about 1,800 m (5,900 ft) along the runway. Significant brake pressure was applied in the last section of the landing roll.

Flight data from a previous flight into Hobart was also examined. The flight had occurred the previous day, when the aircraft had landed on runway 30. The conditions on the day were dry with the data indicating a tailwind of about 3.5 kts. On that flight, the aircraft touched down at 590 m (1,900 ft) and the CAS had reduced to 60 kts at 1,980 m (6,500 ft) (Figure 1).

Pilot information

The PIC had about 5,000 hours on the Boeing 737 aircraft type. The copilot had completed line training 2 days prior to the incident. He had a total of around 3,500 hours, with about 150 hours on the aircraft type. He had flown into Hobart on runway 12 a few days prior to the incident on his check to line.

Hobart Airport

Hobart Airport consisted of one runway aligned 12/30, with a length of 2,251 m (7,385 ft). The runway was level, with a grooved surface.

The runway at Hobart was scheduled for a full resurfacing in 2012/2013. To lengthen the life of the runway it was resealed with a spray treatment called ‘Liquid Road’ in February 2010, to prevent the runway surface breaking up. Some sections of the runway had broken up and required patching, the patching was not grooved.

On 16 September 2010, another crew of the aircraft operator had reported to the airport operator that the runway was slippery and performed as if it was ice-affected. After the report, the runway condition was reviewed by an airport pavement engineer and found to be satisfactory. The engineer advised not to groove the patched sections, consisting of about 1.5 % of the runway surface.

On the day of the incident, the crew of another aircraft reported to ATC that the runway was slippery. However this report was not passed onto the crew of VUX.

After the incident, the runway and stopway area were inspected. While no damage was found it was noted that there was rubber build-up around the runway 30 touchdown area; runway patching in this area had not been re-grooved.

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[3] The stopway was rated to accommodate a Boeing 737.

SAFETY ACTION

Whether or not the ATSB identifies safety issues in the course of an investigation, relevant organisations may proactively initiate safety action in order to reduce their safety risk. The ATSB has been advised of the following proactive safety action in response to this incident.

Aircraft operator

As a result of this occurrence, the aircraft operator issued a flight crew operation notice (FCON), which informed flight crews of the incident and that in wet conditions, there had been less than the expected braking action reported at Hobart. Due to these reports, the FCON detailed modified wet runway takeoff and landing procedures for Hobart.

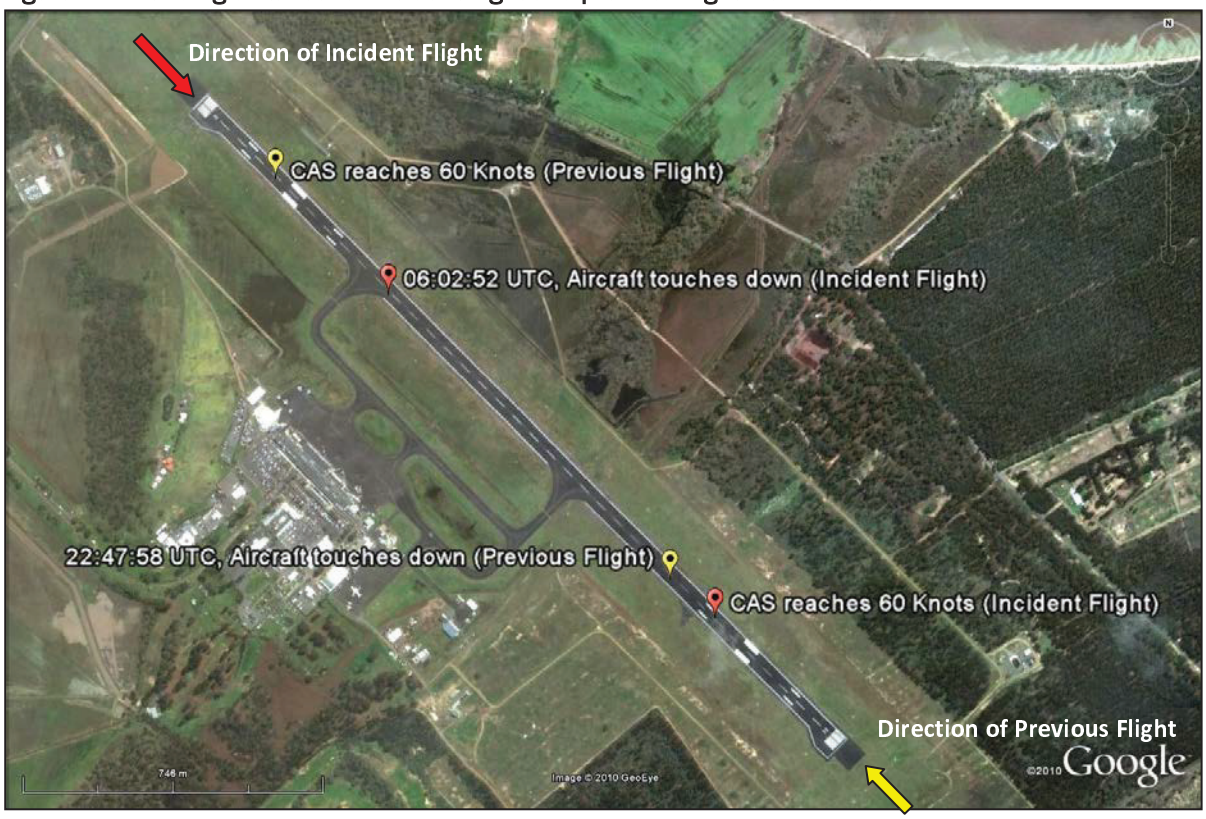
Airport operator

As a result of the occurrence, the airport operator conducted a review of the runway condition. On 25 November 2010, a Notice to Airmen (NOTAM) was issued stating that the runway may be slippery when wet, based on pilot reports of aquaplaning in heavy rain. On 10 December, the NOTAM was modified to advise jet aircraft crew to maximise use of reverse thrust to mitigate potential aquaplaning. In addition, on 14 December 2010, the NOTAM was reissued stating that the runway was not grooved and the En-Route Supplement Australia entry for Hobart Airport was amended to state that the runway was ungrooved.

The operator also elected to remove the majority of the 'liquid road' on 8 m either side of the runway centreline. This was completed on 11 January 2011.

They have also brought forward a planned full resurfacing of the runway to November 2011.

Figure 1: Landing distance for incident flight and previous flight into Hobart



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ATSB TRANSPORT SAFETY REPORT
Aviation Occurrence Investigation AO-2009-072
Preliminary

Ditching – Norfolk Island – 18 November 2009

Abstract

On 18 November 2009, an Israel Aircraft Industries Westwind 1124A aircraft, registered VH-NGA, ditched in the ocean 3 NM (6 km) to the west of Norfolk Island. The six occupants evacuated the sinking aircraft and were later recovered by a rescue vessel from Norfolk Island.

The flight crew had been unable to conduct a landing at Norfolk Island Airport because they could not see the runway after conducting four instrument approaches. The crew then elected to ditch before the aircraft's fuel supply was exhausted.

Following the event, the aircraft operator initiated a program of checking and revalidation for the company's commercial Westwind pilots.

The investigation is continuing.

FACTUAL INFORMATION

The information contained in this preliminary report is derived from initial investigation of the occurrence. Readers are cautioned that there is the possibility that new evidence may become available that alters the circumstances as depicted in the report.

History of the flight

At about 0545 Coordinated Universal Time[1] on 18 November 2009, an Israel Aircraft Industries Westwind 1124A aircraft, registered VH-NGA, departed from Apia, Samoa, under the instrument flight rules, on an aeromedical flight to Melbourne, Vic. A refuelling stop was planned at Norfolk Island. The flight was initially planned to take off at 0530 but was delayed. There were six people on board the aircraft, comprising two flight crew, two medical staff, a patient and the patient's partner.

At Apia, the pilot in command submitted a flight plan by telephone to Airservices Australia. At that time, the forecast weather conditions at Norfolk Island for the arrival did not require the carriage of additional fuel for holding, or the nomination of an alternate airport. The crew elected to only fill the aircraft's main tanks, which would provide sufficient fuel and reserves for the flight. There was no fuel in the aircraft's wing tip tanks.

The flight crew stated that, on reaching the planned cruising altitude, the headwind gradually increased and, in response, the engine thrust settings were reduced to increase the aircraft's range.

During the flight, meteorological information was received from Auckland Oceanic[2] that indicated the weather at the island was deteriorating. The flight crew reported that they also monitored the weather reports for Norfolk Island during the flight and, at 0904, they requested the 0900 Norfolk Island automatic weather report[3].

The crew subsequently received an updated weather report that was issued at 0902. The report indicated that the weather conditions had

1 The 24-hour clock is used in this report to describe the time of day, Coordinated Universal Time (UTC), as particular events occurred.

2 The air navigation service provider for that portion of the flight.

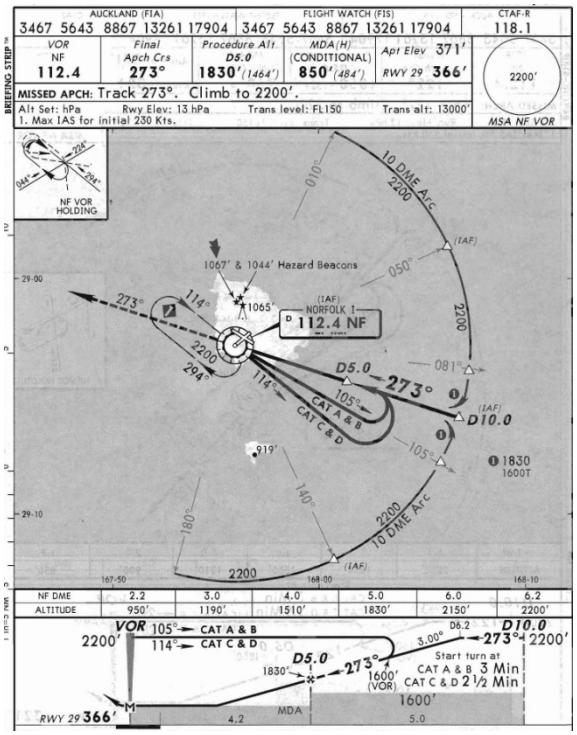
3 A weather **report** is a report of observations of meteorological conditions at an aerodrome. A report refers to a time in the past. A weather **forecast** is a statement of expected meteorological conditions for a specified period, and for a specified area or portion of airspace. A forecast refers to a time in the future.

deteriorated from those forecast at the time of the flight's departure from Apia.

At 0928, the flight crew contacted the Norfolk Island Unicom[4] operator (Norfolk Unicom), advising that they were about 20 minutes from the airport. Norfolk Unicom provided an updated weather report, indicating a deterioration in the conditions to well below the landing minima[5]. Subsequently, the crew sought regular weather updates from Norfolk Unicom as they descended, and also requested the operator to proceed to each end of the runway to assess the weather conditions in order to supplement the official weather report.

Upon arrival at Norfolk Island, the copilot conducted a very high frequency omnidirectional radio range/distance measuring equipment (VOR/DME) instrument approach procedure[6] for a landing on runway 29 (Figure 1). However, the flight crew was not 'visual' at the missed approach point,[7,8] and a missed approach was carried out at 1004. At that time, it was dark and raining with low cloud and poor visibility.

Figure 1: Runway 29 VOR/DME instrument approach procedure



Following the missed approach, the pilot in command assumed control of the aircraft as the handling pilot. A second instrument approach was conducted for runway 29; however, the crew were again unable to visually acquire the runway, and initiated a second missed approach at about 1013.

The flight crew then repositioned to conduct a VOR/DME instrument approach for landing on runway 11. The runway 11 instrument approach procedure permitted the crew to descend 100 ft lower than the runway 29 approach before acquiring visual reference with the runway (Figure 2).

4 'Unicom' is a local non-Air Traffic Services communications service that provides additional information to pilots at a non-towered aerodrome.

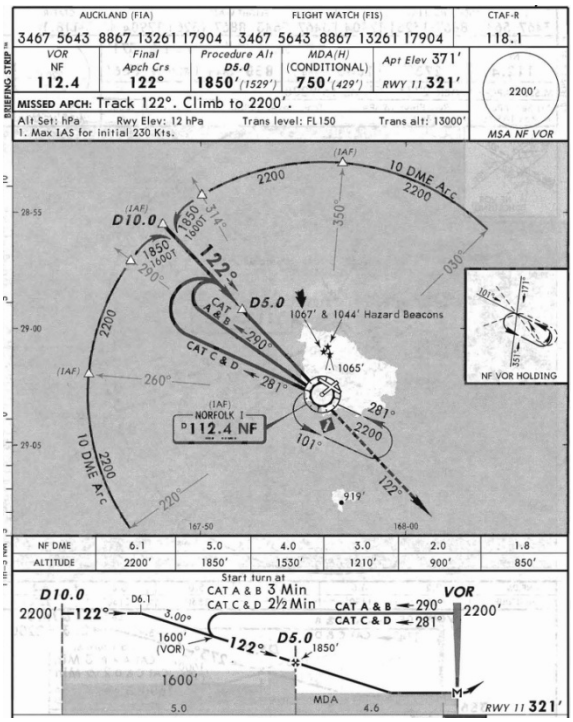
5 The prescribed minimum meteorological conditions under which an aircraft can land from the lowest altitude of an instrument approach procedure.

6 An instrument approach procedure is a set of predetermined manoeuvres conducted by reference to flight instruments that are used to fly an aircraft to a point, known as a missed approach point. From this point, a landing can be completed if the pilot can see the runway. Alternately, a missed approach can be commenced in order to climb the aircraft to a safe height.

7 In the case of a VOR/DME approach, the requirement for a pilot to execute a missed approach included not establishing visual reference at or before the missed approach point for the approach. Visual reference meant that either; the runway threshold, the runway approach lights (if installed), or other markings identifiable with the landing runway were clearly visible to the pilot.

8 A point on an instrument approach procedure at or before which the prescribed missed approach procedure must be initiated by the pilot to ensure the maintenance of the required minimum obstacle clearance.

Figure 2: Runway 11 VOR/DME instrument approach procedure



The crew did not gain visual reference with runway 11 and conducted a third missed approach at about 1019, before reporting to Norfolk Unicom that they were planning to ditch because the aircraft was running out of fuel. The crew then conducted a third instrument approach for runway 29 (four approaches in total), but again did not visually acquire the runway.

The fourth missed approach procedure was initiated at about 1025. The crew then levelled the aircraft at about 1,200 ft above mean sea level and turned the aircraft to the south-west. When the flight crew were confident that they were established over water they reduced engine thrust to flight idle, selected full flap extension with the landing gear retracted, and adjusted the aircraft's attitude on instruments to slow the aircraft to an approach speed of 100 kts. The aircraft's landing lights were switched on; however, the flight crew later reported that they never saw the surface of the sea before ditching.

The pilot in command reported maintaining control of the aircraft during the descent by reference to the attitude indicator, and initiating a normal landing flare by reference to the radio altimeter. The pilot stated that contact with the water was at 100 kts. All of the occupants survived the ditching. The aircraft sank about 3 NM (6 km) west of Norfolk Island. Ninety minutes later the occupants were rescued by a vessel from Norfolk Island.

A radio transmission that was recorded on Norfolk Unicom was consistent with a ditching at 1026:02. The last confirmed transmission on the Unicom by the flight crew indicated that the aircraft had been conducting a runway 11 instrument approach.

Personnel information

Pilot in command

Flight Crew Licence	Air Transport Pilot (Aeroplane) Licence issued 11 October 2002
Instrument rating	Command instrument rating, valid to 28 February 2010
Aviation medical	Class 1 medical, valid to 23 January 2010; vision correction required
Wet drill emergency training	Conducted 27 April 2008
Aircraft endorsement	Command Westwind, issued 27 July 2007
72-hour history	On reserve until about 0900 on 17 November 2009

Copilot

Flight Crew Licence	Commercial Pilot (Aeroplane) Licence issued 07 September 2004
Instrument rating	Command instrument rating, valid to 31 October 2010
Aviation medical	Class 1 medical, valid to 08 April 2010; vision correction required
Wet drill emergency training	Conducted 19 April 2008
Aircraft endorsement	Command Westwind, issued 29 January 2008
72-hour history	On reserve until about 0900 on 17 November 2009

Aircraft information

Type/model	Israel Aircraft Industries Westwind 1124A
Registration	VH-NGA
Serial number	387
Date of manufacture	1983
Date first registered in Australia	25 January 1989
Approximate flight hours[9]	21,528
Approximate landings[9]	11,867
Engine type	2x Garrett turbofan
Engine model	TFE731-3

The aircraft was equipped with main and wingtip fuel tanks for each engine.

Meteorological information

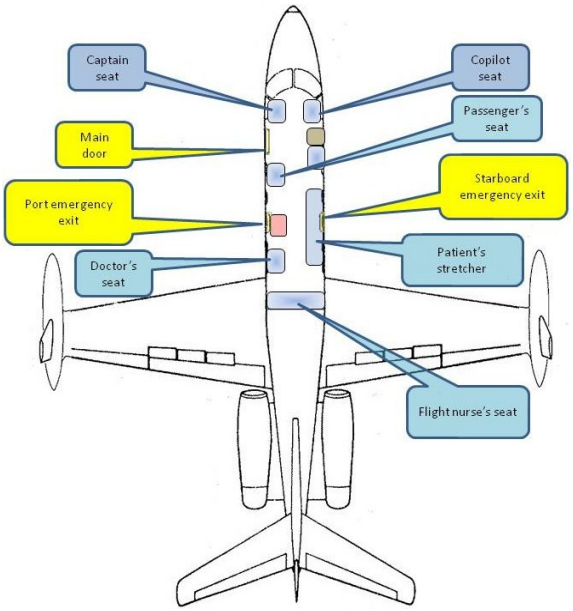
At 0803, the Australian Bureau of Meteorology issued an amended terminal aerodrome forecast (TAF) for Norfolk Island. The amended TAF indicated that the expected cloud base at Norfolk Island airport would descend to 1,000 ft by the time the aircraft arrived at Norfolk Island.

Survival aspects

Seating configuration and safety equipment

The aircraft's seating configuration included two flight crew seats, a passenger's and doctor's seat on the left of the cabin, the patient's stretcher and an unused passenger seat on the right of the cabin, and the flight nurse's seat across the rear of the cabin (Figure 3).

Figure 3: Seating positions



Lifejackets were available for every occupant, and there were two liferafts in the aircraft.

Aircraft ditching

As the aircraft initiated the third missed approach from runway 11, the copilot instructed the passengers to prepare for the ditching.

The passenger, doctor and nurse donned lifejackets in preparation for the ditching. The doctor decided not to put a lifejacket on the patient due to concerns about the potential for a lifejacket to hinder the release of the patient's restraints after ditching. The patient was lying on the aircraft's patient stretcher on the right of the cabin and was restrained by a number of harness straps. The doctor ensured that the patient's harness straps were secure and instructed the patient to cross her arms in front of her body for the ditching.

Liferafts were placed in the aircraft's central aisle ready for deploying after ditching. At the time of the ditching, the two flight crew and the patient were not wearing lifejackets.

The aircraft occupants recalled two or three large impacts when the aircraft contacted the water. The occupants in the front of the aircraft described the impact forces acting in a horizontal, decelerating direction, while the rearmost occupant described a significant vertical component to the impact force.

9 Extrapolated from the last logbook entry.

The main plug-type[10] aircraft door was pushed in by the force of the water, which flowed in through the bottom third of the open door space. The pilot in command moved rearwards from the cockpit into the cabin and ascertained that the main door was not usable. Continuing rearwards to the two emergency exits in the fuselage centre section, the pilot in command opened the port emergency exit, and water immediately flowed in through the door opening. The pilot in command exited the aircraft.

The doctor released the patient's harnesses and opened the starboard (or right) emergency exit. Water flowed through the now open emergency exit and the doctor believed that the door opening was completely underwater. The flight nurse, doctor and patient exited the aircraft through the starboard emergency exit.

The copilot sustained injuries from a reported contact with the control yoke during the aircraft's second impact with the water. The copilot was not aware of the pilot in command leaving the cockpit, and may have lost consciousness for a short period of time. The copilot experienced difficulties when attempting to find an exit route from the aircraft by the main door. The copilot then swam rearward along the fuselage, located an emergency exit door by touch, and exited the aircraft.

When the passenger, who was seated immediately behind the main door on the left of the aircraft, released his seat belt, there was little breathing room in the top of the fuselage. The passenger stated that there was no light and that the nose of the aircraft had tipped down. The passenger swam rearwards along the fuselage until he felt an emergency exit door, and exited the aircraft; probably through the port (or left) emergency exit. The passenger believed that he swam upwards some distance before reaching the surface of the water.

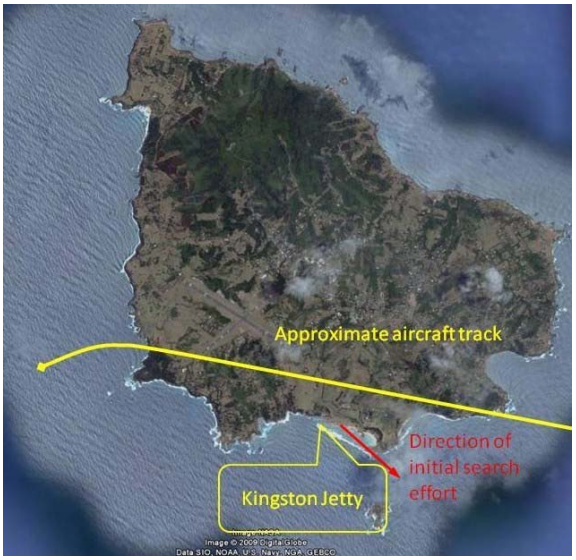
All the occupants advised that they exited the aircraft very quickly, and that there had been no time to take the liferafts. The pilot in command stated that he returned to the aircraft in an attempt to retrieve a liferaft, but it was too dangerous.

The flight crew had previously conducted ditching procedures wet-drill training, which included the simulated escape from a ditched aircraft. Similarly, the medical staff normally flew in aeromedical helicopters, and had previously conducted helicopter underwater escape training. The pilot in command and medical staff stated that their ditching training had helped them when escaping from the aircraft.

Recovery and rescue

The Norfolk Unicom operator had alerted the Norfolk Island emergency response agencies to a local standby condition when the weather first deteriorated to the extent that the Unicom operator felt it might be difficult for an aircraft to land. The Unicom operator subsequently initiated a deployment of the emergency services following the aircraft's second missed approach. In addition, two local boat owners prepared to launch their fishing vessels at Kingston Jetty to search for the ditched aircraft and its occupants (Figure 4).

Figure 4: Approximate runway 29 VOR/DME final approach and overshoot track (Kingston Jetty highlighted)



When Norfolk Unicom lost contact with the flight crew, the airport firemen drove from the airport to Kingston Jetty to help if possible with the recovery

10 A door having inward/upward travel or with retractable upper and lower portions that is larger than the doorway. The tapered edges of the door and doorway mate to increase the security of a pressurised fuselage. Aircraft pressurisation forces the plug door more tightly against the frame of the doorway.

efforts. The first rescue vessel departed to the south-east at 1125, toward the flight path for the missed approach segment of the runway 11 instrument approach.

At about this time, the pilot in command remembered that he had a bright, light-emitting diode (LED) torch in his pocket. He shone the torch beam upwards into the drizzle and towards the shoreline. One of the airport firemen reported that he elected to drive a longer way from the airport to Kingston Jetty, because he believed that it was possible the aircraft had ditched to the west of the island. That route took the fireman along the cliff overlooking the sea to the west of the airport. From that vantage point, he believed he could see an intermittent faint glow in the distance to the west of the island. After watching for a few minutes to satisfy himself he could actually see the light, the fireman reported the sighting to the Emergency Operations Centre (EOC) at the airport. The EOC forwarded the information to the rescue vessel.

In response, the rescue vessel turned and travelled toward the reported position of the light. The crew of the rescue vessel identified a radar return when they were 1.4 NM (3 km) from the aircraft occupants, and sighted the lifejacket lights when they were 1 NM (2 km) from the survivors.

SAFETY ACTION

While there is the possibility for safety issues to be identified as the investigation progresses, relevant organisations may proactively initiate safety action in order to reduce their safety risk. The following proactive safety action in response to this accident has been submitted by those organisations.

Aircraft operator

Aircraft operations

The aircraft operator has advised that, following this accident, a program was initiated to check and revalidate the company's commercial Westwind pilots. The program addressed the company's; policies and procedures, safety management systems, the use and application of threat and error management principles, and the Instrument Flight Rules.

INVESTIGATION ACTIVITIES

The investigation is continuing and will include further examination and analysis of the:

- meteorological information and its effect on the decision making and actions of the crew during the flight
- fuel planning relevant to the flight
- operational requirements that were relevant to the conduct of the flight
- crew resource management
- aeromedical flight classification and dispatch.

MEDIA RELEASE

The Australian Transport Safety Bureau (ATSB) is releasing its Preliminary Factual report into the ditching that occurred 6 km to the west of Norfolk Island on the evening of 18 November 2009 and involved Israel Aircraft Industries Westwind 1124A aircraft, registered VH-NGA. The six occupants evacuated the aircraft as it sank, and were later recovered by a rescue vessel from Norfolk Island.

While the ATSB has yet to establish all the factors relevant to this occurrence, it nevertheless highlights the risks in operating long distance flights to remote island locations which are subject to rapidly changing weather conditions.

As a result of this accident, the aircraft operator commenced a program to check and revalidate the company's commercial Westwind pilots. The program addressed a number of aspects of the company's Westwind operations.

The ATSB has interviewed a number of witnesses and people who were associated with the occurrence, and is assessing the feasibility of recovering the aircraft Cockpit Voice and Flight Data recorders from the seabed.

The investigation is continuing and will include further examination and analysis of the:

- meteorological information and its effect on the decision making and actions of the crew during the flight
- fuel planning relevant to the flight
- operational requirements that were relevant to the conduct of the flight
- crew resource management

- aeromedical flight classification and dispatch.

The remainder of the investigation is likely to take some months. However, should any critical safety issues emerge that require urgent attention, the ATSB will immediately bring such issues to the attention of the relevant authorities who are best placed to take prompt action to address those issues.