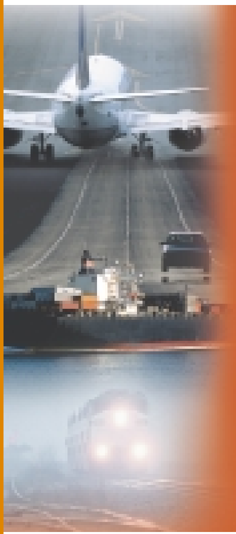


ATSB Australian Transport Safety Bureau

Air Safety Investigations

Recently completed investigations

As reports into aviation safety occurrences are finalised they are made publicly available through the ATSB website at www.atsb.gov.au

Fixed-wing Aircraft

Occ. no.	Occ. date	Location	Aircraft	Short description
200101082	13 Mar. 2001	Mildura	Lancair 320	Ground impact during spin recovery
200100591	04 Feb. 2001	1 km E Lake Evella NT	Cessna 210L	Ground impact following 'wing-over' type manoeuvre
200100421	22 Jan. 2001	111 km N Bourke NSW	Cessna 210R	Inflight pilot incapacitation
200006273	26 Dec. 2000	222 km N Williamtown NSW	BAe 146	Fire warning followed by engine shutdown
200005212	08 Nov. 2000	Aurukun Qld	Cessna 404	Nose gear collapse on landing
200005031	27 Oct. 2000	796 km S Guam	Boeing B747	Passenger injury during clear air turbulence
200003862	07 Sep. 2000	Adelaide SA	Boeing B737	Missed approach in poor visibility
200004186	02 Sep. 2000	3 km W Bowen Qld	Cessna T188C	Wire strike during agricultural spraying
200004082	02 Sep. 2000	6 km ESE Darwin NT	Cessna 310R and BAe Hawk	Infringement of separation minima
200003533	21 Aug. 2000	644 km W Adelaide SA	Airbus A320	Inflight shutdown of pressurisation and air conditioning syst.
200003155	27 Jul. 2000	185 km NW Brisbane Qld	BAe 146	Vibration indicators lead to inflight engine shutdown
200002989	16 Jul. 2000	Cairns Qld	Boeing B737	Load control confusion
200002379	09 Jun. 2000	222 km SSE Alice Springs NT	Airbus A320 and Boeing B767	TCAS alert – aircraft on reciprocal tracks
200002018	23 May 2000	31kms N Amberley NBD	PA-31	Flight fuel underestimated
200001827	05 May 2000	Darwin NT	Cessna 402C	Fuel selector system defect
199904802	09 Oct. 1999	Norfolk Island	Fokker F28	Landing gear torque link attachment lug fractures
199903327	04 Jul. 1999	Norfolk Island	Fokker F28	Main landing gear wheel fractures during landing
199901455	04 Apr. 1999	Melbourne Vic.	Boeing B737	Main landing gear trunnion pin failure

Helicopters

Occ. no.	Occ. date	Location	Aircraft	Short description
200002899	12 Jul. 2000	11kms Sth Aberdeen NSW	Bell 206B(111)	Emergency landing after RPM loss
200003143	17 Jul. 2000	9 km E Warragamba Dam NSW	BK117	Loss of control on lee side of mountain range

For more occurrence reports and safety information

visit us at www.atsb.gov.au

New air safety accident or incident report form

It is a legal requirement that the Australian Transport Safety Bureau (ATSB) is notified of any civil aircraft accident, serious incident or incident that has occurred in Australian airspace or that has involved an Australian registered aircraft overseas.

The onus for reporting an aircraft accident or serious incident falls to all responsible persons, as defined in Part 2A of the *Air Navigation Act 1920*. The ATSB must be notified of such occurrences as soon as reasonably practicable and by the quickest means possible. In practice this normally means an initial phone call to the ATSB 24-hour aircraft accident notification number 1800 011 034, followed by a written report using the Air Safety Incident/Accident Report (ASIR) form.

Aircraft incidents must be notified in writing within 48 hours after the incident, normally using the ASIR form.

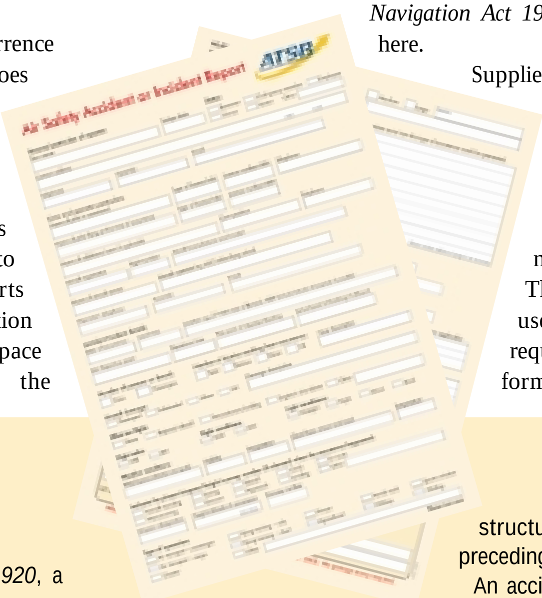
For a number of years, people reporting air safety occurrences have used only a one-page ASIR form. In many cases, this has proved to be insufficient. As a result, ATSB occurrence notification staff has frequently needed to contact operators, pilots or others in the aviation industry so that a clear understanding of the occurrence could be obtained. This follow-up action has placed a significant workload on industry and ATSB people alike.

Accordingly, the form used for reporting air safety occurrences has been changed to accommodate additional safety information. The new form uses both sides of a page and includes sections for specific information about accidents. It also includes a tear-off strip that provides information about completing the ASIR.

The occurrence information does not have to be limited to the available space. Attachments can be made to those reports where information exceeds the space provided on the form. Although this new provision for additional information will take longer to complete, it will minimise the need to contact people for additional information.

Requirements for reporting an air safety occurrence are found in the *AIP En Route* Section ENR 1.14. As an alternative to the written report, notifications can be made online using the ATSB website (www.atsb.gov.au) by selecting the Aviation page, then Online incident notification. Definitions of accidents, serious incidents and incidents, as expressed in the *Air Navigation Act 1920*, can also be found here.

Supplies of the new ASIR form are available simply by telephoning occurrence notification officers on 1800 011 034 during normal business hours. This number can also be used if assistance is required to complete the form.



Important definitions

Note: these definitions have been paraphrased from the Act. An extract of definitions from the Act can be found on the ATSB website.

Responsible Person: Pursuant to the *Air Navigation Act 1920*, a responsible person, in relation to an aircraft, is one of the following:

- Each member of the crew of the aircraft;
- If the owner of the aircraft is not a member of the crew – the owner;
- If the operator of the aircraft is not a member of the crew – the operator;
- If the hirer of the aircraft is not a member of the crew – the hirer;
- A person performing an air traffic control service in relation to the aircraft;
- A person who is licensed as an aircraft maintenance engineer under the Civil Aviation Regulations who does any work in relation to the aircraft;
- A person who is a member of the ground handling crew in relation to the aircraft.

Accident: Pursuant to the *Air Navigation Act 1920*, an accident relates to an occurrence that takes place between the time any person boards an aircraft and until all such persons have disembarked.

An accident can involve the death or serious injury of a person as a direct result of some aspect of the aircraft. An accident can also relate to situations where an aircraft is missing; or where there are reasonable grounds for believing that an aircraft has incurred significant damage or structural failure, either preceding or during a flight.

An accident does not relate to situations where death or serious injury is attributable to natural causes; is self-inflicted; or inflicted by another not performing duties of functions associated with the operation of an aircraft.

Serious Incident: Pursuant to the *Air Navigation Act 1920*, a serious incident relates to an occurrence associated with the operation of an aircraft that affects, or could affect, the safety of the aircraft. A serious incident could also involve circumstances that indicate that an accident nearly occurred.

Examples of serious incidents include: near collisions requiring an avoidance manoeuvre to prevent a collision; an aborted take-off on a closed or engaged runway; gross failure to achieve predicted performance during take-off or initial climb; fire and smoke in the passenger compartment; system failures, weather phenomena, operations outside the approved flight envelope or other occurrences which could have caused difficulties controlling the aircraft.

Incident: Pursuant to the *Air Navigation Act 1920*, an incident relates to an occurrence, other that an accident or serious incident, which is associated with the operation of an aircraft that affects or could affect the safety of the operation of the aircraft or another aircraft.

Safety briefs

Fuel need underestimated

Occurrence Brief 200002018

The following incident highlights the difficulties in drawing conclusions on how much any one or more factors may have contributed to a safety deficiency but nonetheless poses significant issues for all pilots to consider.

The pilot of a Piper Navajo underestimated fuel consumption and landed the aircraft with minutes to spare in one tank and the other tank dry on 23 May 2000 at Amberley. The pilot's estimation of fuel consumption of 140 litres per hour (he had considered this estimate over the 126 lph in the manual at 65 per cent power as more than adequate) differed from the operator's 150 lph. The investigation found that 153 lph was consumed.

A number of factors were uncovered. The pilot did not determine the actual fuel state from the previous flight before ordering a quantity of fuel added to the tanks. His practice was to use the lesser of the fuel gauges and calibration chart to determine actual fuel quantity. Inaccuracies in the fuel gauge readings resulted in an underestimate of 85 litres in indicated fuel quantity. Also, the operating company did not have procedures in place to record fuel at the end of a flight for the information of the next pilot.

When the pilot changed tanks airborne he did not record times or keep a fuel log. He estimated remaining fuel en route from the gauges. Headwinds worsened the situation created when the pilot did not monitor the actual engine operating times versus the planned times. The investigation determined there was 190 minutes of fuel in the tanks and the flight time was 180 minutes.

To the extent that the pilot's limited hours on the aircraft type, and significant experience as an instructor on single engine aircraft influenced the outcome, is inconclusive, and noted in the ATSB report. ■

Electrical short circuit

Occurrence no 200005212

An electrical short circuit in the landing gear indication led the crew of a Cessna 404 Titan aircraft to make a go-around at Aurukun airport on 8 November 2000.

During the approach to land the crew had noticed that the aircraft had a malfunction in its landing-gear indications. They reported to Air Traffic Control in Brisbane, that first the aircraft had all three green landing-gear down lights illuminated, then the red landing-gear unlocked light illuminated.

The crew circled the aircraft overhead the airport while they assessed the situation. They found that the hydraulic circuit breaker had tripped. The circuit breaker was reset but tripped again. The crew then attempted to manually extend the landing gear using the emergency extension landing-gear but this was unsuccessful.

The crew advised ATC of the details and of their intention to land. On landing the nose wheel collapsed, the aircraft sustained damage to both propellers, nose wheel and abrasion damage to the underside.

On examination of the landing-gear, company engineers found that the electrical cannon plug connector at the bulkhead for the nose landing-gear wheel had suffered an electrical short circuit. As a result several terminals had fused together, causing the malfunction in the landing-gear indications.

The most likely cause for the electrical short circuit would be ingress of water. Maintenance personnel tested the emergency extension system and found that it operated normally.

The ATSB was provided with information relating to the incident from the flight crew and company engineering personnel and did not conduct an on-site investigation. ■

Error of expectancy

Occurrence brief 200003862

The crew of a Boeing 737 aircraft conducting a night approach at Adelaide Airport on 7 September 2000 misidentified the Anzac Highway lights for runway 05. When the crew discovered their error they executed a missed approach. A low level weather trough was moving through the area at the time of the incident and visibility was poor.

Due to strong northerly winds on the final approach track the crew expected to see runway 05 through the co-pilot's window. As they tracked towards the highway lights, believing them to be the runway lights, the pilot in command (PIC) checked the electronic horizontal situation indicator after the co-pilot had been unable to see the precision approach path indicator (PAPI).

The PIC noted the aircraft was well to the right of the inbound approach track. At 320 ft radar altitude the crew immediately initiated the missed approach. The aircraft was subsequently landed safely on runway 23 after an ILS approach.

The crew's actions were consistent with an "error of expectancy". During the approach they had expected to see a lighted line feature in a north-easterly direction through the co-pilots window. Their sighting of the lights fitted their "mental model" of what they expected to see.

Generally in cases of "error of expectancy", it is preferable to modify the environment or the task that led to the error, than to simply encourage people not to make such errors. In this case, there were no approach lights for runway 05 to draw the crews' attention to the runway.

This incident highlights the importance of maintaining reference to instruments when operating in poor visual meteorological conditions. As a result of this and other similar occurrences the ATSB is investigating the issues surrounding approach lights to non-precision approach runways. ■

Loss of control

Occurrence Brief: 200101082

An amateur-built Lancair aircraft impacted the ground while recovering from a spin during a demonstration flight near Mildura on 12 March 2001. The pilot and passenger were fatally injured and the aircraft was destroyed.

An ATSB investigation established that the aircraft had impacted the ground with wings level at a steep nose-down angle at high speed. No indication was found of any pre-existing defect in the aircraft or the engine. The investigation determined that the circumstances of the accident were consistent with a loss of control during a demonstration of the handling characteristics of the aircraft at low airspeed.

It was determined that the aircraft entered a spin. The rotation of the spin was subsequently arrested, however the aircraft impacted the ground as it was accelerating during the pull out from a dive at the end of spin recovery. The landing gear and flaps were extended at the time of the accident.

The owner had flown the aircraft from Maroochydore to Mildura that morning to meet two prospective purchasers of the Lancair who intended to inspect and fly the aircraft. Prior to the demonstration flight, one of the potential purchasers had expressed interest in the aircraft's take-off and landing performance and low speed handling characteristics.

The aircraft had a transparent canopy, and the cockpit would have been warm during the flight to Mildura. The pilot had stated that he had consciously restricted his fluid intake during the long legs of the flight, and the conditions in the cockpit would have accelerated the dehydration of its occupants.

Fractured fuel line

Occurrence Brief 200006273

The crew of a BAe 146 aircraft shut down the number three engine following a fire warning indication, which was later found to be the result of higher than normal engine operating temperatures and a cracked fuel line, during a regular public transport flight on 26 December 2000.

The fire warning stopped as soon as the engine was shut down. The crew informed air traffic control of their action and of their intention to continue to their destination, Williamtown. All available emergency services at Williamtown were placed on standby, however, the aircraft landed safely without further incident.

The BAe 146 was fitted with four Avco Lycoming ALF 502R-3s engines. A preliminary examination of the number three engine by the operator revealed that it had been subjected to extremely high temperatures around the bleed-band area and had a cracked fuel line between the flow divider and the fuel manifold assembly.

Subsequent examination of the cracked fuel line found that it had failed immediately inboard of the weld between the tube and the union on the flow divider end of the unit. A close examination of the fracture surfaces indicated that the cracking originated from a point on the inside bore of the tube. The cracking appeared consistent with a fatigue mechanism propagating under high frequency, low magnitude vibrating loads. The fatigue crack had extended along the outer boundary and covered approximately eighty percent of the cross-section. The remaining section failed in overload.

The ATSB's investigation found no evidence of any pre-existing physical defect or prior cracking and concluded that the material of the tube and the unions complied with the manufacturer's specifications.

Despite a thorough examination of the fuel line, the investigation was unable to conclude the reason for the fatigue cracking of the tube.

Main rotor failure

Occurrence brief 200002899

A Bell JetRanger helicopter was damaged during an emergency landing, 11 km south of Aberdeen, following the loss of main rotor RPM on 12 July.

While cruising at 2,500 ft AGL the pilot reported the loss of main rotor RPM. He noticed that the rotor RPM indicator had decreased to zero and immediately initiated an auto-rotation. However, he did not notice a low rotor RPM caution light or horn.

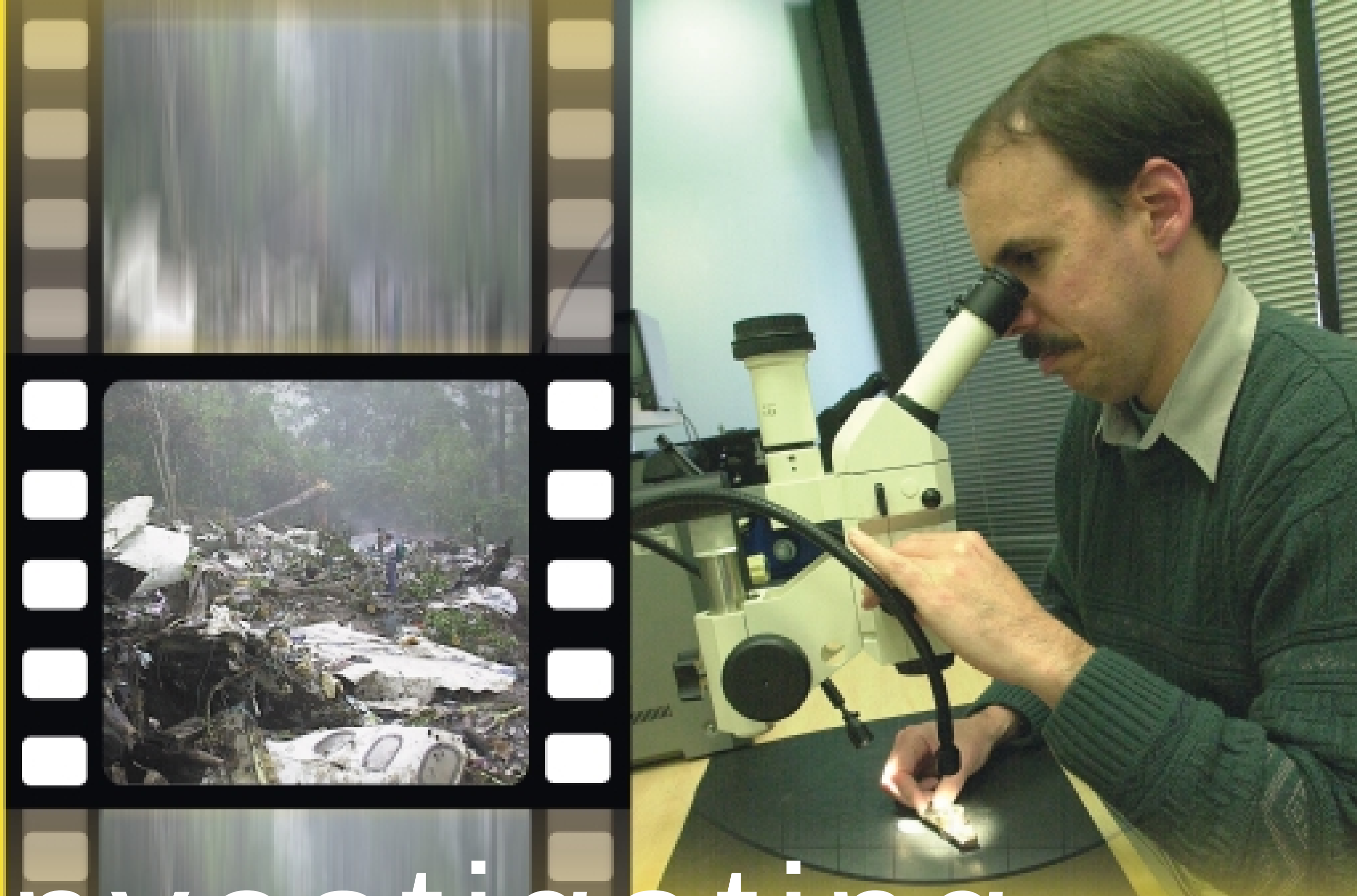
The controls were stiff and the helicopter descended at higher than normal speed. The helicopter landed heavily which caused the right skid crosstube support to fail and the helicopter rolled onto its side.

The investigation determined that the drive spline and coupling from the main gearbox to the hydraulic pump had failed due to lack of lubrication. This resulted in the loss of hydraulic power to the controls and the loss of main rotor RPM indication.

Up until January 1998 the maintenance requirement was to lubricate the splines every 1200 hours or 12 months. In January 1998 the manufacturer issued a new maintenance manual with combined requirements for the Bell 206 series helicopters. This change deleted the calendar requirements.

As a result of the investigation, the ATSB made the following three recommendations:

1. Bell Helicopter Textron P/L revise the maintenance manual for the Bell 206B III series helicopter to require the hydraulic pump spline be inspected and lubricated on a calendar basis.
2. CASA advise the Australian operators of the Bell 206B III series of the deficiency in the maintenance manual and revise the calendar requirement for the lubrication of the hydraulic pump splines.
3. The Federal Aviation Administration alert all operators of the Bell 206 B III series to a deficiency in the maintenance manual.



Investigating Complex Factors

by Trudy McInnis

THERE has been an aircraft accident. Debris from the wreckage is scattered throughout a 200-metre radius. Tragically, the aircraft's crew and its passengers have been fatally injured. The sound of sirens permeates the scene as police and ambulance services attend. Soon, media representatives arrive to speculate as to its causes with cameras poised to document the wreckage.

That this could happen so suddenly and wreak such devastation strikes at the heart of many people. An occurrence like this is always associated with a sense of urgency to understand its underlying features. But aircraft accidents are commonly attributable to a complex interaction of many factors and on-scene speculation rarely resembles the final conclusion. Often, long after commotion surrounding an accident has dissipated, a team of highly skilled experts continues to investigate the reasons for its occurrence and uncover the events that preceded it.

Scientific analysis of evidence

The interpretation of evidence resulting from an occurrence can require scientific analysis. This is the role of the Technical Analysis Unit of the ATSB, which investigates, often in painstaking detail, any structural, mechanical or operational factors related to aircraft accidents or incidents.

Failures of propulsion systems, landing gear or flight control structures, fractures in crankshafts, engine rods or turbine fan blades, abnormal aircraft speeds or flying operations are just some areas of investigation undertaken by the Unit.

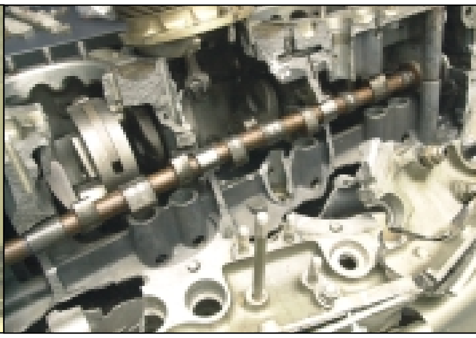
Because there are myriad potential causes of aircraft safety breaches, the team of specialists working in the Unit approaches each occurrence with an assumption that it is unique.

"Investigations are rarely the same," said the Unit's Team Leader Dr Arjen Romeyn. "There are always new issues, new understandings to be gained. What we're trying to do, ultimately, is get specific answers to questions surrounding an occurrence."

Questions can include: what was the mode and sequence of failures?; have all components performed to their specifications?; what were the mechanical settings at the time of the occurrence?; what results does analysis of the residual matter furnish?

Flight recorder analysis

To answer such questions the team uses specialist equipment and apparatus. The Unit has the capacity to download and analyse data from all civil flight data and cockpit recorders (commonly referred to as 'black boxes') fitted to Australian-registered aircraft. Because of its ability to establish the sequence of events prior to an accident, this undertaking can provide critical information. This is particularly so in instances where accidents have resulted in a negligible amount of recoverable aircraft wreckage or where evidence is transitory, such as occurrences involving windshear.



Even in situations where significant material evidence has been recovered an investigation can be reduced by days, or even weeks, through the retrieval of information from a flight data recorder.

Equipment for this purpose includes specialised tape decks and interfaces, and both hardware and software for signal processing and enhancing.

A radio frequency-shielded audio room, designed to prevent internal and external interference, preserves the integrity of audio analysis activities. It is also in line with the *Air Navigation Act 1920*, which affords protection to audio captured by cockpit voice recorders from any individuals not directly associated with its analysis, as part of an investigation.

The Unit is also equipped with advanced computer graphics software with the capacity to convert recovered data into three-dimensional animations. This capability can provide a detailed graphic reconstruction of a flight, allowing the examination of any sequence of events, from any perspective, and at any time. The benefits of this technology were demonstrated in the investigation of the much-publicised overrun of QF1 at Bangkok Airport, which occurred on 23 September 1999. Animations of the flight used for the investigation were subsequently aired on commercial television.

Materials failure analysis

Often microscopic features provide corroborating or conclusive evidence in the determination of failed components. They can also be vital to the detection of manufacturing assembly, maintenance or operational abnormalities, such as fractures in engine mechanisms or defects in airframe components.

Microscopes utilised in the Unit include: a low-power stereo microscope for general observation, which has the capacity for magnification of up to 50 times; a reflected-light microscope for the examination of the internal structures of materials, which has the capacity for magnification of up to 1000 times; and a scanning electro-microscope which magnifies from 14 to 300,000 times the actual size of an object. In addition, this microscope has an x-ray analysis facility for determining the chemistry of small material items.

The team approach

According to Dr Romeyn, while the array of equipment used in the laboratories is impressive, the Unit's most important assets are the highly skilled investigators who staff it.

"There is a perception that, because we work in a technical area, it's the equipment that does the work and we're just operators. To do our job we need particular tools, but that's all they are. It's the understanding of what the tools allow us to see that's important," said Dr Romeyn.

Core skills necessary to undertake the work required of the Unit include a high degree of understanding in the ways mechanisms operate and their environmental affects, an appreciation of design issues, an awareness of how structures function and the ability to identify failure modes.

These skills are reflected in the academic backgrounds of the Unit's five investigators which comprise advanced qualifications in metallurgy, aeronautical engineering and electrical design engineering. According to Dr Romeyn, however, while knowledge of these areas is vital, it is not in itself sufficient.

"Safety investigative work is a complex system and it's the depth of understanding that is important. You don't gain that just by doing a degree. It's a continual learning process and experience is an essential component of the success of our work," said Dr Romeyn.

Dr Romeyn also acknowledges the importance of contributions made from other areas of speciality. "In any investigation a range of skills are applied and this is just one skilled area. It is very important to talk to a wide range of people. Investigators with expertise in such areas as cabin safety and human performance, as well as individuals from the wider aviation industry, can be vital sources of information. It's the coming together of experience that provides the basis for fruitful investigation," said Dr Romeyn.

Often pro-active measures are initiated from work performed by the team. On 13 October 2000, while on a climb out of Hobart, a Boeing 737 experienced a dramatic malfunction in one of its engines which caused a reaction consistent with explosion. The aircraft landed safely and its pilot and passengers were unharmed. By analysing the factors surrounding the incident, the team identified deficiencies in a procedure used to repair cracks in turbine blades. Pursuant to these findings, the operator of the aircraft modified repair procedures to prevent recurrence.

According to Dr Romeyn, initiating such improvements to existing safety defences is a critical aspect of the work of the Unit.

"In the context of our work, pro-active investigations are those directed at events which haven't threatened safety directly but have the potential to do so. We know that little things can trigger big accidents. In a way, we operate as independent auditors of the aviation system," said Dr Romeyn.

Aircraft accidents and incidents can have significant, immediate and long-term affects on those involved. The determination of underlying factors takes time and months can lapse between an occurrence and the official release of findings related to it. However, investigations into occurrences, such as those undertaken by the team of the Technical Analysis Unit, can furnish illuminating explanations as to what went wrong and how safety can be improved. ■

Confidential Aviation Incident Reporting

THE Confidential Aviation Incident Reporting (CAIR) system helps to identify and rectify aviation safety deficiencies. It also performs a safety education function so that people can learn from the experiences of others. The reporter's identity always remains confidential. To make a report, or discuss an issue you think is relevant, please call me on 1800 020 505 or complete a CAIR form, which is also available from the Internet at www.atsb.gov.au

Chris Sullivan
Manager CAIR

CAIR reports

Collision during taxiing operations (CAIR 200003026)

A Cessna 207 was being taxied back from the fuel bowser to the line, when its left wingtip struck the rudder of a Cessna 172, which was parked on line. The pilot had deliberately taxied close to the C172 to make sure the aircraft didn't touch a Cessna 402 parked behind the C172. The pilot saw both aircraft and had taxied this way countless times before. However, in the pilot's haste to get the aircraft back on line, the pilot had a little more speed than was usual. This combined with the C207's seat sliding back in the turn meant that the pilot could not stop the wingtip from contacting the other aircraft.

CAIR note: The reporter was contacted and questioned on whether the damage was significant to either aircraft. The reporter advised that the other aircraft was damaged and was being repaired but there was no damage to the C207. The incident was not confidential locally but the reporter was instructed to submit a CAIR, rather than an ASIR, by the company.

While a CAIR report is a method of reporting occurrences and meets the requirements of the *Air Navigation Act 1920* sub-section 19BA and 19BC, reporters are encouraged NOT to discuss the submission of a CAIR report with any other person. Such discussion has the potential to severely limit the ability of the program to guarantee the protection of the identity of the reporter.

Pushbacks using non-LAME tasking (CAIR 200101637)

I have observed that [regional airline] *is doing pushbacks on their aircraft from Bay* [##] *at* [location]. *To carry out this procedure, I have observed that they have to disconnect the nose strut torque links at the mid-attachment, so as to disconnect the nose wheel steering. The procedure in itself is not detrimental to air safety but on further evaluation the following issues are.*

The people carrying out these pushbacks are classified as Tarmac Helpers and are recruited straight off of the street on a part-time basis with no prior mechanical or aviation related experience. They have been put through a one-to-two-week course on tarmac procedures, aircraft handling, and receipt and dispatch procedures. This is a very unsatisfactory situation I think for the following reasons.

The major concern is that an aircraft system is being disturbed and reconnected by non-engineering personnel. I have been told by various people of incidents where the nose gear torque links have not been properly reconnected on other aircraft types and have subsequently disconnected on take-off with major damage occurring. I feel that a LAME should at least supervise the reconnection of the nose strut torque links.

My next concern is that no documentation is kept of these pushbacks. Considering that an aircraft system is being disturbed, some sort of certification should be made for the reconnection of the torque links. If this is not possible then I feel that the engineer in charge of the pushback should certify for the dispatch of the aircraft. This last method would cover the actual pushback and the reconnection of the torque links. This would make people more accountable for their actions and the operation safer all over.

As to the above issues, I think [regional airline] *paperwork and procedures do not meet the required standards or regulations and is a major deficiency in its operational procedures.*

Another major concern is that the Tarmac Helpers are not under the control of engineering but under the control of operations. This I feel is another deficiency because these people are not under any direct supervision on the tarmac and virtually run themselves. This could be a major contributory factor towards the occurrence of an incident or accident not only with the [aircraft type] *but also the* [other aircraft type].

Talking to some of the Tarmac Helpers they are young and keen but lack the overall experience for the responsibility they are shouldering. Their inexperience and lack of direct supervision on a busy tarmac such as Sydney could also endanger general tarmac safety - as well as their own - in extreme circumstances. The part time nature of their employment also tends to detract from the safety of the operation due to the possible high turnover of staff and lack of long-term continuity leading to an overall lack of responsibility.

As you can see, I feel that the safety of the whole [regional airline] *operation is being compromised for the above reasons and I feel they should be investigated by you.*

Response from CASA: The Civil Aviation Regulations (CAR) defines maintenance in regulation 2 (CAR 2). Under this definition the actions described in your report would be considered maintenance. As a consequence, these actions require certification in accordance with CAR 42ZC by a LAME or the holder of an Airworthiness Authority before the aircraft departs.

We will bring this matter to the attention of the responsible District Office to take up with [regional airline].

Mobile Telephones

First report: (CAIR 200100004)

The use of mobile phones by flight crew, engineers, refuelling and catering staff while on, *in and around aircraft, whilst the aircraft is on the tarmac has become prevalent.*

For instance:-

1. *Our regular [###] refueller at Sydney is always wearing two mobile phones attached to his belt, as well as a small communications radio, and he regularly uses these phones whilst refuelling the aircraft. ie. while at the refuelling point, under the aircraft wing. These phones are supplied by the refuelling company for the use of the refueller, and are not specifically designed for use in the fuelling environment. They are "off the shelf" models. Almost without exception, the refuellers at country ports carry mobile phones (presumably turned on) whilst they are refuelling the aircraft.*
2. [Regional airline] *engineers regularly use mobile phones in and around the aircraft as they accomplish their duties. They do not take any precautions when the aircraft is being refuelled, or when they are in close proximity to the aircraft navigation management systems, ie. in the aircraft cockpit. The mobile phone is the only means of communication that the engineers have with them outside of the engineers' service van, and is the primary means of communication with the company.*
3. [Airline] *catering staff regularly use mobile phones whilst they carry out their duties both in and around the aircraft.*
4. [Regional airline] *customer service staff, flight operations staff, cabin attendants, and flight crew all use mobile phones while in and around the aircraft, without regard for the navigation management systems of the aircraft, and while the aircraft is being refuelled.*

A mobile telephone clearly constitutes an item of "electrical apparatus" referred to in CAO 20.9, Section 4.4.3, which deals with the refuelling of aircraft. Have mobile phones been assessed in relation to the CAO requirements? ie. CAO 20.9. But, we insist that our passengers turn their mobile phones "off" prior to leaving the terminal building to board the aircraft until they return to the terminal after disembarking the aircraft.

Where is the consistency? If the phones used by the passengers pose a threat to the safe operation of the aircraft then surely those phones used by the company staff pose the same threat. Banning mobile phones on flights is an internationally accepted practice endorsed by the International Air Transport Association. Has their use on the tarmac areas been assessed?

Second report: (CAIR 200100685) (received by phone)

The reporter was concerned about the use of mobile telephones by passengers on [major airline] *aircraft. There is a perception that the company does not want to develop or enforce a policy of prohibition because of potential adverse customer relations.*

As a flight attendant, the reporter often has observed passengers boarding the aircraft while talking on their mobile telephones. Passengers have received calls during push back and even on approach to landing. The potential hazards of mobile telephone use on aircraft are well documented, including the adverse effect on aircraft electronic systems and as an ignition source during aircraft refuelling operations. Whenever the reporter has challenged the mobile telephone user's behaviour, their action is often met with abuse by the passenger. The company always seems to support the customer by questioning the ability of the attendants' people skills.

If the company and the safety regulator are serious about prohibiting the use of mobile telephones on Australian registered aircraft, then the actions of flight attendants in enforcing this rule must be supported. Airline customers must be educated on why they should not use mobile telephones. Customers should be informed at a time well before boarding that their mobile must be turned off.

Serious penalties apply to the use and/or carriage of firearms on aircraft. Firearms are a potential threat to the safety of flight. Mobile telephones are also a potential threat. However, nobody but the flight crews that travel on these aircraft seem to care about the issue.

Third report: (CAIR 200102506)

I am writing to highlight a concern that I have with mobile phones on aircraft. I travel regularly by air and am aware of the dangers associated with mobile phones on aircraft.

I travelled to Perth and back from Canberra the other day, four sectors in all, and although I may have been reminded to turn off my phone by cabin safety staff, I realised it was still on after boarding and I turned it off. On a later sector, upon arrival in Canberra, I opened my briefcase and realised that my phone had been switched on all the way from Melbourne.

If I can make such a mistake, an act of omission, when I have a strong interest in flight safety, there must be many more people that do the same.

What is CASA and the airlines doing about this potential problem - or is it not a problem at all? Is the problem too hard and are we going to wait for an accident or for some other country to make a decision?

CAIR comment: These reports have been forwarded to the airlines concerned and the regulator. At the time of publication there had been no responses.

Unsecured baggage (CAIR 200101944)

During descent, the cabin attendant secured another passenger's cabin baggage, which was too large to fit under a seat or into a locker, into the aisle seat next to me using the seat belt. The piece extended from the back support to the back of the seat in front, thus blocking my egress to the aisle. During boarding the passenger to whom the baggage belonged and the cabin attendant had both unsuccessfully tried to place the piece under a seat or in the overhead locker; it was placed somewhere behind me for departure and the remainder of the flight. When asked about the legality of the placement of the cabin baggage, the answer was "it's secure".

Response from operator: A review of company operations procedures was undertaken with respect to the stowage of luggage on a seat. It revealed that our Operations Manual OM-1 states that "cargo" (determined the case to be in this report) shall not be carried in the passenger cabin unless restrained by an approved device that has been fitted to cabin seats by an approved person (a company engineer or a pilot that has received appropriate training to do so). The fitment of these devices is under the authority of an approved (CAR 35) Engineering Order.

I contacted the Flight Operations department to re-iterate the policy to technical crew and flight attendants. I also have had discussion with Flight Operations with respect to the understanding of when cabin baggage becomes cargo, a simple concept so I thought, however this was not the case. With that in mind, I have had sign off from Flight Operations to ensure compliance in future. ■

ATSB is part of the Commonwealth Department of Transport & Regional Services