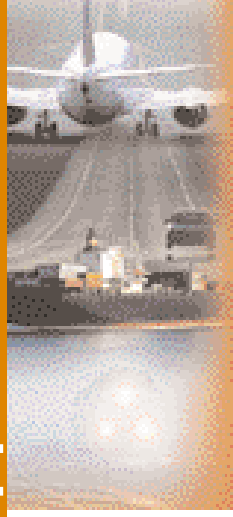

ATSB Australian Transport Safety Bureau

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
199800640	01 Mar 1998	Mt Gambier SA	Air Tractor AT-802	Fatal accident during airshow firefighting demonstration
199803910	14 Sep 1998	Perth WA	Fairchild Metro 23 and Cessna 402B	ATC use of conditional clearances
199804432	21 Oct 1998	Horn Island Qld	Aerocommander 500-S	Fuel exhaustion followed by ditching short of runway
199900003	04 Jan 1999	37 km SSW Mudgee NSW	Boeing 737 and Boeing 737	Separation infringement following incorrect clearance
199900192	19 Jan 1999	4 km E Perth WA	Fokker F27 and Cessna 172	Close proximity incident during practice ILS approach
199900970	10 Mar 1999	Hoxton Park NSW	Pitts S-2A and Beech Sundowner	One aircraft lands on another during take off
199901797	24 Mar 1999	9 km NNW Cairns Qld	Cessna 310 and Aero Commander 500-S	Ambiguous terminology during busy arrival sequence
199901894	18 Apr 1999	185 km N KIMMI Qld	Boeing 747 and Boeing 767	Separation breakdown following request to descend
199902003	03 May 1999	13 km E Cairns	Boeing 737 and Boeing 737	Aircraft performance differences and traffic separation
199903463	16 Jul 1999	46 km SW Onslow WA	Cessna 172H	Unqualified low-altitude operation leads to fatal accident
199903602	28 Jul 1999	9 km NNE Brisbane Qld	BAe 3201, Metroliner and BAe 146	Inappropriate 'sight and follow' during approach
199904972	18 Oct 1999	28 km NW Wagga NSW	Boeing 737 and Boeing 737	Infringement of separation standard
199905302	09 Nov 1999	9 km ENE Cairns Qld	Embraer Brasilia and Cessna Citation	Safety and ATC separation assurance techniques
199905463	15 Nov 1999	185 km E Williamtown NSW	De Havilland Dash 8 and Westwind 1125	Misunderstanding during ADF radar calibration
199905466	17 Nov 1999	56 km NNW Adelaide SA	MIG-15 and MIG-15	Formation flight and Air Traffic Services
199906104	27 Dec 1999	Melbourne Vic	Boeing 737	Nosegear damaged by airside vehicle pre-departure
200000148	17 Jan 2000	Croker Island NT	Cessna 210	Wheels-up landing
200000190	21 Jan 2000	1 km S Verona Sands Tas	Cessna Skylane	Engine failure following possible carburettor icing
200000313	31 Jan 2000	Point Cook Vic	Piper Tomahawk	Sticking carburettor float needle leads to engine failure
200002727	01 Jul 2000	Maroochydore Qld	Skyfox Gazelle	Corrosion leads to aileron separating from aircraft

Helicopters

Occ. no.	Occ. date	Location	Aircraft	Short description
199800442	13 Feb 1998	Mangalore Vic	Bell 206B	Dynamic rollover situation during takeoff
200000125	17 Jan 2000	Jandakot WA	Robinson R22 BETA	Helicopter damaged following ground contact

In addition, the *Aircraft Maintenance Safety Survey – Results* and the earlier investigation report into the Embraer Bandeirante accident in Fiji on 24 July 1999 were published on the website.

Human factor maintenance error led to jammed cyclic

By Sam Webb

THE pilot of a Sikorsky S76 helicopter was left with only lateral cyclic control when a loose screw lodged at the base of the cyclic stick.

During transition from normal cruise flight to the approach to land the pilot found that the cyclic could not be moved aft. He also found that with any further forward movement of the cyclic stick it could not be moved aft of the new position.

The pilot froze the cyclic longitudinal position and the helicopter stabilised in a level pitch attitude at about 85 knots indicated airspeed. Using only lateral cyclic movements to manoeuvre the helicopter, the pilot conducted an 80-knot run-on landing on the runway at Barrow Island. A run-on landing utilises the aircraft's weathervane effect to streamline the fuselage until landing.

An inspection discovered that a panhead type screw was lodged at the base of the cyclic stick. The screw had lodged between the lower protrusion on the casting on the end of the cyclic stick torque tube and the lugs on a support bracket.

The cyclic stick base hardware is accommodated in a tub-like area formed by the cabin structure supports. A leather boot mounted at the base of the cyclic normally prevented foreign objects from entering the tub. Further inspection found the leather boot on this helicopter to be intact. With the boot in place, the only possible entry points for a screw is through a rigging pin hole in the aft mid-height position of the boot-halves joint, or vertically through an opening provided for the cyclic stick electrical wiring loom.

It was unlikely that the screw would have entered the tub area with the boot fitted. It was more probable that it was introduced during previous maintenance when the boot was removed.

After this incident and a similar incident experienced by another Australian S76 operator in 1995, an ATSB investigation was begun. The operator issued an alert message for its fleet of S76 helicopters to undergo an inspection of the subject area. A defect report was also submitted to the Civil Aviation Safety Authority.

The ATSB worked with the manufacturer to develop an acceptable solution that would eliminate the hazard.

The manufacturer conducted a design engineering review of the cyclic stick base hardware. It was agreed that an engineering design change, although extensive in nature, would more effectively reduce the effects of human factor maintenance error in this area.

The manufacturer advised that a field modification of the pilot's side bracket was being prepared to increase the gap between the torque tube rig boss and the bracket foot.

In October 1999, the manufacturer issued Alert Service Bulletin 76-64-44 outlining an inspection for foreign objects and procedures to modify both the composite controls cover and the cyclic stick support tube assembly. These modifications eliminate the foreign object interference problem.

Helicopter Operations Safety Bulletin

The ATSB has published its first issue of the twice-yearly Helicopter Operations Safety Bulletin which contains statistics, occurrences, confidential reports and safety recommendations specifically for the helicopter industry. It is now available on the website at www.atsb.gov.au

Safety briefs

Aircraft ditched after fuel exhaustion

Occurrence Brief 199804432

The engines of a Shrike Commander lost power and the pilot had to ditch the aircraft into the sea 400 metres short of the threshold of runway 14 at Horn Island Aerodrome on 21 October 1998. The aircraft was substantially damaged and its five occupants received minor injuries.

The investigation found that both the engines had stopped because of fuel exhaustion. The findings included inaccuracies in the management of the fuel system that led to an incorrect understanding of the quantity of fuel remaining in the aircraft.

The fuel quantity indicator was unserviceable and the right engine fuel control unit was worn which allowed up to six litres an hour of extra fuel through. Inappropriate fuel consumption rates were used for flight planning and the fuel log contained inaccuracies that resulted in a substantial underestimation of the fuel used.

A number of organisational and management deficiencies were also identified. One was in the adequacy of assessing chief pilots for their ability to manage charter operations safely. The Civil Aviation Safety Authority will be amending the Air Operator Certification Manual to more adequately address system safety management issues. The ATSB will continue to monitor the progress of that amendment.

Fuel usage needed thought

Occurrence report 199905596

An accident near Canberra airport at the end of a training flight on 28 November 1999 has highlighted the need to make a realistic assessment of fuel consumption according to the type of operation.

A student and flight instructor returning from an uneventful local training flight struck a tree during a forced landing after the engine failed. The flight instructor died of complications from his injuries a week later.

At the time of the engine failure the aircraft had been airborne for 1.2 hours. The instructor had dipped the tanks before departure and determined that there were 40 litres of useable fuel on board with four litres more in the right tank than the left.

During the lesson steep turns, spiral dives, incipient spin recovery and the demonstration of the commencement of a loop were practised, much of which would have required the use of full power.

The owner's manual indicated that the fuel consumption for a 74% power setting to be 22 litres per hour operating the aircraft at full throttle. Company policy was to plan for 22 L/h. An engine manufacturer's representative indicated that a fuel consumption of 33.4 L/h could be expected when operating the aircraft at the full power position.

An aircraft manufacturer's publication, "Pilot Safety and Warning Supplement" cautions pilots about uncoordinated flight for longer than 30 seconds when fuel tanks are less than one-quarter full.

It is possible that training manoeuvres caused the fuel to transfer from the left to the right tank resulting in the fuel quantity imbalance noted during the post-accident investigation of the fuel system. If the turn to position the aircraft for the correct approach was uncoordinated, the remaining fuel in the right tank may have displaced away from the fuel pick-up pipe resulting in fuel starvation.

Frozen throttles on 747

Occurrence report 199901894

While cruising at FL370 the crew of a Boeing 747 found that they were unable to move any of the throttle levers. The aircraft was put into a descent and within 15 minutes the levers became operable. The aircraft had been operating in light icing conditions for 20 minutes.

An ATSB investigation established that there was a known problem associated with restricted movement of throttle levers believed to be a result of moisture on the throttle cables freezing to seals and fairleads.

The aircraft manufacturer had issued Service Bulletin 747-76-2060 which urged aircraft operators to replace rigid throttle vapour seals and fairleads with new flexible seals and fairleads. This action was expected to prevent restricted throttle lever movement due to moisture freezing on throttle cables.

The aircraft involved in the occurrence had been fitted with the modified flexible seals and fairleads during its manufacture. The manufacturer requested that the operator carry out further inspections of the throttle cable seals, fairleads and drain holes. The operator subsequently advised that these inspections did not identify any anomalies that could have contributed to the restricted throttle movement.

The aircraft manufacturer published an In-service Activity Report, number 99-10 (17 September 1999) which included an article detailing the circumstances of this occurrence.

Multiple factors in mustering accident

Occurrence report 199903463

Pilot fatigue, inadequate rest and inexperience were the main findings of an investigation into an aerial sheep mustering accident on 16 July last year in which the Cessna 172 aircraft was destroyed and the pilot fatally injured.

The pilot was positioning the aircraft to cut off a mob of sheep that had broken away from the group when the aircraft impacted the ground in a near vertical attitude at low forward speed. No evidence of any mechanical defect was found.

The property owners had employed the pilot to fly their aircraft to assist with mustering but they had little knowledge of operating a light aircraft. One of the owners was aware of the need for a mustering endorsement and reported that despite contacting a number of organisations and authorities he had not found anyone to train the pilot.

The pilot was issued with a private pilot licence on 4 June 1999 six weeks before the accident. He had accumulated 191 hours, 68 of them within the nine days since arriving at the station.

The pilot had not received any low flying training and was not qualified to conduct mustering operations. Without these qualifications the pilot was legally required to operate no lower than 500 ft above ground level. At this height the aircraft may have been of some use in spotting sheep but probably would have been ineffective at mustering.

As the operation was conducted in the private category there was no requirement for the pilot or aircraft operator to comply with flight duty time limitations. On the day of the accident the pilot had flown for at least eight hours 30 minutes with a short break every four hours when he refuelled the aircraft. The pilot had received minimal training to help identify the visual illusions associated with low level flight. (see next page for fatigue factors)

Look-out avoided runway incursion

Occurrence report 199803910

An incident at Perth airport in September 1998 serves as another reminder of the importance of look-out before taxiing across a runway even with a clearance.

The crew of a Metro 23 was cleared by the surface movement controller (SMC) to enter runway 11 and taxi to the threshold of runway 21 prior to departure. As the aircraft approached the runway 11 hold point, the crew checked the final approach path and saw a Cessna C402 landing on runway 11 in front of them.

Just prior to the incident, the SMC had control authority for runway 11/29, and the runway 11/29 selector buttons on the console were in the de-selected position. When the crew of the Metro requested a taxi clearance, the SMC cleared them to taxi to runway 21, entering runway 11 at taxiway Echo. The threshold of runway 21 is at the midway point of runway 11/29 and access to the threshold of runway 21 is by taxiing on runway 11. Once details of the Metro were no longer required by the SMC, the flight progress strip for the aircraft was placed into the top transfer slot on the aerodrome controller's (ADC) side of the console.

Three minutes after the taxi clearance was issued, the ADC elected to land a C402 on runway 11. Prior to issuing the landing clearance, the ADC selected the runway 11/29 selector button to indicate to the SMC that the ADC was taking control authority for runway 11/29. Because the SMC no longer held a flight progress strip as a memory marker, he also turned on his selector button and advised the ADC 'no traffic runway 11'. The ADC did not notice the Metro, which had not yet entered taxiway Echo, nor did he notice the flight progress strip in the top transfer slot. The ADC cleared the C402 to land on runway 11.

As a result of this and other occurrences the ATSB is investigating a safety deficiency in the use of conditional clearances for runway entry and runway crossings by vehicles and aircraft, and the procedures used by air traffic controllers to alert themselves that vehicles or aircraft are on an active runway. Any recommendation issued as a result of this analysis will be published in the ATSB's Quarterly Safety Deficiency Report.

Air show ends in tragedy

Occurrence report 199800640

A pilot was fatally injured on 1 March 1998 when his Air Tractor 802A impacted the ground at an airshow following a water drop in a firefighting demonstration.

The aircraft approached the drop site ten knots faster than recommended, and during the water release, the nose pitched up and the aircraft entered a climb. The nose continued to pitch up with an increasing climb angle. There was no evidence that the pilot had made any elevator input to reduce the steepness of the climb.

The aircraft climbed straight ahead for a short distance before starting to yaw and roll to the left. The bank angle increased to about 90 degrees and the nose attitude dropped to almost horizontal.

At about 450 ft and at low speed the aircraft rolled inverted and entered the incipient stages of an inverted spin. The aircraft impacted the ground inverted in a wings level attitude at a nose down angle of approximately 45 degrees.

The AT-802A flight manual notes that during load release there will be a sudden pitch-up of the nose of the aircraft. Experienced pilots reported that the intensity of the pitching moment depended on the aircraft's speed, which was greater at higher speeds, and the rate at which the hopper was emptied.

The pilot was experienced enough to deal with the magnitude of the upward pitch associated with the water release. It is possible that the pilot intended to climb the aircraft steeply after releasing the load in an attempt to increase the visual impact of the display.

It is doubtful that such a manoeuvre could have been safely completed as the flaps were extended towards maximum deflection during the climb.

Fatigue is a safety threat

By Sarah-Jane Crosby

The Cessna 172 after the accident at Mindaroo Station

Worker fatigue, leading to delayed reaction times, impaired reasoning and reduced situational awareness, is rapidly becoming one of the greatest recognised threats to safety in the transport industry, according to experts at the University of South Australia's Centre for Sleep Research.

Two aviation occurrences in 1999, one of them a fatal mustering incident and the other a wheels-up landing, highlight some of the potential hazards of fatigue on flying performance.

Mustering accident

A newly-licensed private pilot was fatally injured at Mindaroo Station in Western Australia when mustering sheep with a Cessna 172. The accident happened late in the afternoon at the end of more than eight hours of low-level flying following nine days of intense flying activity.

During the nine days, the pilot had flown 68 (tachometer) hours. The flying was both mentally and physically demanding, involving sheep spotting and low-level mustering.

The pilot, who had no formal low-level or mustering training, had to manoeuvre the aircraft in conditions that were sometimes turbulent, and was operating under constant aircraft noise and vibration. On the day of the incident, he had taken no more than a short break, which included refuelling after about four hours of flying.

It is quite possible that he was unaware that fatigue had affected his flying performance.

The pilot had exceeded the flight duty times normally permitted for a commercial operation (dealt with in Section 48 of the Civil Aviation Orders). Although these requirements are not mandatory for private operations such as this one, they are a guide to flying limits.

In the absence of any formal duty time requirement, the pilot was responsible for determining his own daily flying limitations. This was done in conjunction with the property owners, property manager and the mustering party. A typical day started at 0700 local time and the pilot worked through the day until just before last light.

Wheels-up landing incident

In this incident, the pilot of a Cessna 210 had forgotten to re-engage the landing gear circuit breaker, which had popped during the flight.

On the morning of the incident, the pilot woke at 0530 local time and started his tour of duty at 0630. The pilot had flown an Instrument Flight Rules (IFR) check flight for 2.3 hours in the morning and his performance was considered to be above average.

The pilot departed on a Visual Flight Rules

(VFR) charter towards the end of the tour of duty. The pilot had pulled the circuit breaker after it popped to prevent damage to the electric motor that had continued to run. This procedure was in accordance with the Cessna 210 Operating Handbook recommendation.

On final approach, the pilot selected the landing gear down but forgot to re-engage the landing gear circuit breaker and the landing gear did not deploy. The investigation revealed that the pilot did not recall hearing the landing gear warning horn nor did the pilot notice the status of the landing gear indicator lights.

The investigation concluded that the pilot was probably suffering from a transient fatigue-related memory lapse and, unlike the incident at Mindaroo Station, was not suffering severely from accumulated fatigue.

"The pilot reported that he was very tired on the day of the occurrence and he had been for some time leading up to the incident," the ATSB report said.

During the investigation, the pilot's work and rest history for the 14 weeks before the incident was examined using a computerised fatigue algorithm developed by the Centre for Sleep Research.

The results demonstrated that the pilot probably wasn't suffering severely from cumulative fatigue. Of more significance was that the pilot had been on duty for more than 12 hours and had been awake for almost 14 hours.

Effects of fatigue

Research has shown that the effects of fatigue are similar to moderate alcohol consumption. On-the-job performance loss for every hour of wakefulness between 10 and 26 hours is equivalent to a .004 per cent rise in blood alcohol concentration. Eighteen hours of wakefulness is usually considered to be equivalent to a blood alcohol concentration of .05. A person who has been awake for this length of time will act and perform as if they have consumed .05 of alcohol.

The result is significantly delayed response and reaction times, impaired reasoning, reduced vigilance and impaired hand-eye coordination.

The article 'Pilot Fatigue and the Limits of Endurance', *Flight Safety Australia* (April 1999), reported that fatigue makes a pilot less vigilant and more willing to accept below par performance, and a pilot begins to show signs of poor judgement. It reported that expert research into fatigue had established that it degrades a pilot's:

- Muscular strength and coordination
- Vision and perception
- Memory
- Performance monitoring
- Error management
- Decision making
- Motivation and attitudes
- Communication
- Ability to cooperate.

But the greatest single threat is being unaware that it is happening.

Before the mustering incident at Mindaroo Station, the pilot had been talking to the ground mustering party by radio as well as flying the aircraft (possibly below 500 ft). The ATSB investigation found that he had worked very long hours in a highly demanding job in which he was inexperienced.

> **"It is quite possible he was unaware that fatigue had affected his performance."**

He had received minimal training that would help him to understand the visual illusions associated with low-level flight. The investigators considered that in the absence of specific training for low level flying operations, he was probably unaware of the appropriate techniques to safely manoeuvre an aircraft at low level.

According to the ATSB Occurrence Brief (number 199903464) a human factors report noted that the pilot had worked long hours in a job in which he was inexperienced and that he probably found this type of flying both physically and mentally demanding. The report concluded that at the time of the incident the pilot was suffering from the effects of fatigue, possibly impairing his ability to safely operate the aircraft.

According to the Centre for Sleep Research's 1999 report to the Neville Committee *Fatigue and Transportation* it has been difficult for researchers to determine all the factors that cause and contribute to fatigue; and "determining the relative importance of these factors under different conditions has also been problematic".

However, research had concluded that when a person works long hours, for more than say 50 hours a week, there is increasing competition between restorative sleep and the other activities of daily living.

Non-work factors contribute to overall fatigue by a reduction in the opportunity for sleep and recovery. These include social factors and domestic arrangements (for example working away from home) sleep disorders and shift work.

"For example, the same roster could have quite different effects according to social circumstances," the report stated. "A 12-hour night shift might have very different consequences for an 18-year old single male living on his own compared to a 35-year old single mother of two toddlers without access to 24-hour childcare facilities.

"Taken together, both employees and employers have clear responsibilities with respect to managing fatigue. The basic responsibilities of both parties relate to ensuring that adequate sleep can be obtained between shifts so that fatigue does not reach dangerous levels during shifts. Thus, lack of sleep causes fatigue and sleep allows recovery from fatigue.

"Employers have a duty of care to provide safe work schedules that permit adequate time for an employee to sleep, rest and recover as well as fulfil their social and domestic responsibilities.

"Employees also have a duty of care to use their time away from work in a safe and responsible manner…to ensure that they obtain sufficient sleep and recovery in order to complete their work duties in a safe and responsible manner."

How safe are you?

There are many flying organisations operating with exemptions from the requirements of CAO 48 issued by the Civil Aviation Safety Authority (CASA).

Whether you are working to the flight and duty time guidelines under CAO 48, or under an exemption, how safe are you? Are there other factors in your life that may make you more tired than usual?

Remember, the onset of fatigue is insidious.

Confidential Aviation Incident Reporting

CAIR comment

THE CONFIDENTIAL AVIATION Incident Reporting (CAIR) program 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 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 available from the Internet at www.atsb.gov.au

Chris Sullivan
Manager CAIR

CAIR reports

High number of circuit aircraft in MBZ (CAIR 200002375)

There have been reports of excessive numbers of aircraft in the circuit from pilots who have been operating in the circuit after last light and after closure of the tower (1800 hours). Recently, when the circuit was an MBZ (mandatory broadcast zone), one pilot called TMA (terminal approach control) on the RAS (radar advisory service) frequency and advised that he was holding at the substation (outside the control zone) because there were nine aircraft in the circuit. These aircraft were observed on radar.

I feel that there should be an entry in ERSA (EnRoute Supplement Australia), similar to the entry for Moorabbin, limiting the number of aircraft in the circuit when the tower is not active. Nine aircraft in one circuit would be difficult for a controller to manage. In an uncontrolled environment this is hazardous.

CAIR note 1: CAIR staff examined the example of the ERSA entry for Moorabbin that was quoted in the report. The ERSA (15 June 2000) entry for Melbourne/Moorabbin, Special Procedures, Note 4C (page FAC M-211) stated: A maximum of five aircraft are permitted in the circuit at any one time when the tower is unmanned.

The de-identified content of the CAIR was then forwarded to the aerodrome operator and to the Civil Aviation Safety Authority (CASA). Airservices Australia had no jurisdiction over the control of aircraft in airspace designated as an MBZ.

Response from aerodrome operator: I acknowledge receipt of the CAIR notice regarding the number of aircraft in the (xxxxx) circuit during hours that the Tower is not staffed. This issue has the potential to pose a danger to flying and the community and is of concern to us as the airport operator.

However, following discussion with an ATSB investigator of your office it was agreed that we have no jurisdiction or indeed competencies in regard to the flying operations or indeed the airspace in the vicinity of our airports, other than the controls over development that may intrude into that airspace.

Accordingly, I would recommend that you re-direct the CAIR Notice to both CASA and Airservices Australia for their respective risk assessments and conveyance of any messages to aviators through the ERSA.

In the meantime, we will raise the issue with the local operators and recommend that they develop a memorandum of understanding between themselves until such time as a formal and/or regulated advice is issued.

CAIR note 2: The de-identified content of the CAIR was forwarded to CASA and a response is pending.

Model aircraft display (CAIR 200001485)

A model aircraft event was held at (ABC Racecourse) on 30 April 2000. At 1535 a model aircraft was observed doing aerobatics and trailing smoke up to 1 000 ft (approximately). This could have been a problem for (XYZ airport) operations if the duty runways were 17, as the racecourse is a common reporting point when 17 is used. I do not believe a notice to Airmen (NOTAM) was issued to cover this activity. The organisers should be informed of the proximity of (XYZ airport) operations and the need to at least advise the tower of the time of such activity.

CAIR note: This occurrence was discussed with the CASA District Office. CASA was aware of the display but understood that the display would not exceed 300 feet. Without permission in writing by CASA, CAO 95.21 paragraph 4.2.(e) prohibits flight at a height exceeding 300 ft above terrain, except when in the confines of a model aircraft flying area.

Conflict of information between ERSA and ERC Low 6 (CAIR 200002488)

After reading the information about the Low Level Airspace Management changes due on 15 June 2000, I have noted a conflict in information between the ERSA and ERC 6 concerning the Horn Island area.

ERC LOW 6 shows an expanded MBZ boundary (much larger than the previous one) and also a change in MBZ frequency to 126.5 [from 126.0] for the Horn Island area.

CAIR note 1: Four other discrepancies were detailed in the original report.

These two aerodromes are in a very busy MBZ and pilots that only read the new ERSA may not note any difference, and a possible conflict could occur.

At the time there was no NOTAM issued concerning the conflict in information. I feel that at least a NOTAM is warranted until the ERSA can be rectified.

CAIR note 2: An Alert Bulletin which included the full content of the report was forwarded to Airservices Australia

Response from Airservices Australia:
I am writing in response to the above report, which relates to apparent discrepancies between ERSA and ERC6 in the Horn Island area.

In recognition of the issues identified a NOTAM was issued on 13 June 2000 regarding the MBZ amendments. An AVFAX chart has also been placed on the system to provide pilots with a pictorial presentation of

the MBZ.

Emergency exit cabin seating

(CAIR 200000074)

(Airline X) has had reconfigured cabin seating installed with a row of two seats placed directly in front of the window emergency exits.

Some pilots and flight attendants claimed that they had not been notified of changes or instruction about the new configuration. They were particularly interested to know if an emergency evacuation had been carried out to ensure passengers could get out in the 90 seconds required. The person asked had no knowledge of any trial evacuation having been performed.

To date five aircraft (registrations supplied) have been reconfigured. When the seats are in the upright position, there is seven inches of clear space between the forward extremity of the seat cushion and a point vertically below the rear extremity of the top of the back of the seat immediately in front. Leg space from the front of the seat cushion to the back of the seat immediately in front is between 12 and 13 inches. Reference has been made to regulation AD/General/4 Amendment 3 Para 2(e) and FAR regulations.

Questions:

1. *Should an evacuation be performed to verify compliance with the regulations?*
2. *Why has advisory information not been provided to technical crew?*
3. *Should flight attendants have instructions about the type of person suitable to sit in modified access rows?*

Please provide me with some feedback on this issue.

CAIR note 1: During subsequent discussion, the reporter added that if the seat in front of the access was left fully reclined, there would be no access to the exit. The reporter conceded that this would be most unlikely, as the seats would normally be fully upright and locked before an emergency landing. However, if the seat was in the reclined position and the cabin crew were too busy to notice, or if the seat became damaged during an emergency landing, there would be no access to the exit. In the previous seating configuration, there was a clear space of 20 inches (the full width of the emergency exit) which guaranteed access to the exit. The reporter specifically asked if any passenger evacuation trials for the new seating configuration had been carried out prior to the reconfiguration.

CAIR note 2: The following detail is provided to expand on the CAIR report.

AD/GENERAL/4 para 2(e)(1) states:

Each passageway between individual passenger areas, or leading to a Type I or Type II emergency exit, must be unobstructed and at least 508 mm (20 inches) wide.

FAR Sec 25.807 defines the types of exits. A Type II exit is defined as:

A rectangular opening of not less than 20 inches wide by 44 inches high, with corner radii not greater than seven inches. Type II exits must be floor-level exits unless located over the wing, in which case they must not have a step-up inside the aeroplane of more than 10 inches nor a step-down outside the aeroplane of more than 17 inches.

FAR 25.813 details emergency exit access. Included in the detail is the following statement:

Passageways between individual passenger areas and those leading to Type I, Type II or Type C emergency exits must be unobstructed and at least 20 inches wide.

Response from CASA: The reason for references in the CAIR to Type I, II or C emergency exits (and associated spacing) is unclear; the exit in question is a Type III exit.

The reporter is quoted as having reservations about aisle obstruction due to seat backs being reclined. There has been no change to requirements for seat back lock-outs where such obstruction is possible and flight attendants have been observed to comply with this requirement by CASA officers.

The new layout was determined to conform with AD/Gen/4, AD/Gen/73 and ultimately to FAR 25.813(c)(1)(ii). However, none of the foregoing makes statements about seats that fold forward, contrary to the (Airline X) claim. There is a 1993 Civil Aviation Authority letter, referred to as an Equivalent Safety Determination (but which doesn't make that claim for itself), which says no more than all seat backs in applicable exit rows will have restricted break forward capability. There is no explanation beyond this, and the letter was certainly not written with the current configuration in mind, so the degree of restriction envisaged is not apparent.

Clearly, the intention was that a seat back breaking forward should not obstruct the aisle in front of that seat and, in this context, a seat that does not fold forward at all would meet this criterion.

The change was accepted on the basis that it meets the appropriate FAR requirements, and (Airline X) stated that no change to operational procedures was involved. The change did not therefore, attract a requirement for a cabin evacuation demonstration. CASA inspection of the new configuration was limited to verification that the layout conformed with the stated specifications. It is understood that in the United States great emphasis is placed on the selection of suitable and willing passengers to place in the seats adjacent to overwing exits. This judgement must be tempered by the knowledge that both of those airlines operate with fewer flight attendants than (Airline X). However, if disquiet about the practicality of operating the exit is found to be common among cabin crew, the matter may be referred to CASA cabin safety specialists for further consideration.

CASA welcomes any additional information that comes to light on this issue.

Marshalling bats in nosewheel door

(CAIR 200002586)

The reporter advised that he had inadvertently left a set of marshalling bats in the undercarriage door of the nose wheel of a B737. On arrival at the destination an engineer found the bats still lodged in the door.

The reporter believes that fatigue and increasing workloads may be the catalyst for the increasing incidence of human factor related errors.

CAIR note: The reporter is commended for lodging this report. The CAIR program was established to capture not only incidents that previously went unreported but as important those mistakes that the reporter, and others, made that others may learn from.

Have you made an error lately?

A CAIR form can be obtained from the ATSB website @ www.atsb.gov.au or by telephoning 1800 020 505.

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