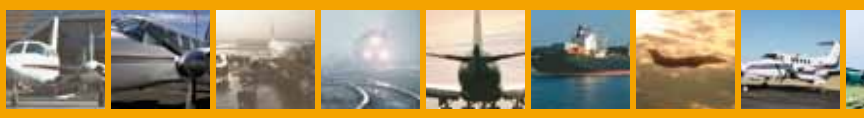
Australian Government
Australian Transport Safety Bureau

The Australian



ATSB stakeholder comments invited in response to the Minister's Statement of Expectations

On 6 October 2009, the Minister for Infrastructure, Transport, Regional Development and Local Government, the Hon Anthony Albanese MP, provided me with his Statement of Expectations for the ATSB. I have undertaken to respond by early February 2010. My response will be in the form of a Statement of Intent, outlining how the Commission intends to give effect to the Minister's expectations.

The Minister's expectations of the ATSB include that we:

- be an active and effective participant in the transport policy and regulatory framework, working effectively with industry and other agencies while retaining its operational independence
- provide high quality transport safety investigation and research into transport accidents and incidents
- continue to give priority to transport safety investigations that have the potential to deliver the best safety outcomes for the travelling public
- provide occasional assistance to accident investigations in other countries, in accordance with international protocols
- prepare to meet the Council of Australian Governments' commitment for it to be the preferred investigator of rail accidents
- have particular regard to building strengthened working relationships with CASA and AMSA.

The full Statement of Expectations is available on the ATSB website, at <www.atsb.gov.au/about_atsb/corporate/ministers-statement-of-expectations.aspx>

In addition to the formal consultative processes already underway, I would welcome any other stakeholder's views on the Statement of Expectations, and suggestions on possible strategies we could consider to achieve these objectives.

Comments should be sent to <atsbinfo@atsb.gov.au> by 31 January 2010.

Martin Dolan
Chief Commissioner

Threats and errors in aerial work and low capacity operations

Threat and error management (TEM) is a method flight crew can use to identify and mitigate the threats and errors they encounter during flight. A TEM 'train-the-trainer' course for the general aviation and low capacity air transport sectors was run by the Guild of Air Pilots and Air Navigators (GAPAN) in November 2007. The ATSB surveyed the participants of this course to investigate the sources of threats and errors faced by those pilots. This report describes the common perceived threats and errors as well as threat and error mitigation strategies that pilots are encouraged to familiarise themselves with.

For pilots involved in aerial work (who were mostly represented by pilots in flying training) and low capacity air transport operations, the most common perceived external threats included adverse weather, traffic congestion, operational pressure, Air Traffic Control (ATC) communications issues, maintenance events and malfunctions. Some ways pilots can mitigate these threats are included in the report. The most common threat internal to the flight deck was the lack of pilot skill, knowledge or experience, closely followed by pilot fatigue.

The symptoms and effects of fatigue on performance, such as poor short-term memory and degradation in communication, are well documented. Pilots are advised to assess whether they are fit to fly before conducting a flight as part of their threat management strategy. The report also offers some suggestions on how pilots can avoid being fatigued in the first place.

It is important that pilots are aware of these common threats that exist in their flying category, and that they plan countermeasures for them as part of their pre-flight routine. This pre-flight assessment and planning may reduce workload during flight if these threats materialise during flight.

Common errors identified included checklist errors, communications from ATC and other aircraft, non-compliance with standard operating procedures, and planning errors. The report presents some error reduction strategies for each of these errors. For example, to avoid checklist errors, pilots should confirm each item visually and by touching/pointing, and verbally announcing switch positions. To mitigate planning errors, pilots should always provide a pre-flight briefing. Even if it is a solo flight, the pilot should go through each briefing item as he or she would with another pilot. ■

Aviation Safety Investigator

The dangers of wave turbulence

At 1946 Eastern Standard Time, on 31 July 2007, a Rockwell International Aero Commander 500-S, registered VH-YJB, departed Essendon Airport, Vic. on a business flight to Shepparton, carrying the pilot and one passenger. The flight was conducted at night under the instrument flight rules, and the pilot was familiar with the route, the terrain and the seasonal meteorological conditions. At 1958, while in the cruise at 7,000 ft above mean sea level in Class C controlled airspace, radar and radio contact with the aircraft was lost when it was about 46 km north-north-east of Essendon.

At the time, special weather reports for severe turbulence and severe mountain waves were current for that area. Wind speeds on the ground were reported to be 50 kts. Calculations made using the recorded radar data and forecast wind showed that the aircraft had been in cruise flight at speeds probably greater than its published manoeuvring speed, prior to disappearing from radar.

The air traffic controller declared a distress phase after a number of unsuccessful attempts to contact the pilot. At 2003, the Operations Director at Melbourne Centre declared the aircraft as probably lost and advised the Australian search and rescue agency. A search was begun using a helicopter and an aeroplane, in addition to ground search parties. No emergency locator transmitter signal was reported. At 2147, wreckage was located by a searching aircraft amidst the timbered ranges near Clonbinane, approximately 50 km north of Melbourne. At about 2200, a ground search party confirmed that the wreckage was that of YJB and that there were no survivors. The aircraft had been seriously damaged by excessive in-flight aerodynamic forces and impact with the terrain. It had descended almost vertically through the tree canopy.

The wreckage and its distribution pattern were consistent with an in-flight breakup during cruise flight, with the aircraft being subjected to rapid and extreme aerodynamic forces during normal cruise flight at 7,000 ft. Examination of the damage to the structure revealed no evidence of any pre-existing defect, such as metal fatigue or corrosion. The wing structure failed in negative overstress. The symmetrical nature of that failure was indicative of a breakup in straight flight, consistent with the radar data, rather than during a turn or a spiral descent. That type of failure of the aircraft's structure can be explained by either the rapid onset of an extremely powerful downward gust, or by forward elevator control application by the pilot (possibly in response to a sudden nose-up pitching movement), or a combination of both.

The investigation found that some pilots operating the aircraft type are generally unaware of the applicability of the aircraft's manoeuvring speed during flight through turbulence, despite the inclusion of relevant advisory information in the Operator's documentation. There is also a concern that pilots generally may not be exercising as much caution in forecast severe turbulence conditions as they would for thunderstorms, even though the intensity of the turbulence can be similar.

As a result of this investigation, the Australian Transport Safety Bureau reissued the publication *Mountain Wave Turbulence* (available for download at www.atsb.gov.au), and distributed the investigation report to all Australian operators of the Aero Commander aircraft. A safety advisory notice was also issued to aircraft operators and pilots, encouraging operators to review their procedures and to ensure awareness of the implications of the combination of aircraft weights and speed, and of the ambient conditions; in particular, when flying in, or near areas of forecast severe turbulence. ■

ATSB investigation report AO-2007-029 released on 9 November 2009 is avaliable on the website.

Investigation briefs

Fuel planning

ATSB Investigation AO-2009-022

On 21 May 2009, the pilot of a Piper PA 31 Navajo, registered VH-WAL, was conducting a return flight under the instrument flight rules from Albury, NSW to Canberra, ACT with one passenger on board.

Before leaving Canberra, the pilot had used a computerised flight-planning program to plan and submit the flight plan, but did not use the associated fuel-planning section in the program to calculate the required fuel uplift. The pilot checked the aircraft's fuel records and gauges, and ascertained that the aircraft had what he considered to be more than sufficient fuel, including reserves. The flight to Albury took less time than anticipated because of a 25 kt tailwind, therefore, the aircraft consumed less fuel during that flight.

Before leaving Albury, the pilot checked the remaining fuel using the aircraft's fuel gauge and fuel calibration card, and determined that the aircraft had 160 L of fuel remaining. He performed a mental calculation to ascertain the fuel required for the flight, but stated that he inadvertently used the lower fuel flow figures for the multi-engine Duchess aircraft that he normally flew, instead of the figures actually required for the Navajo.

Approximately halfway through the flight, the pilot became concerned about the quantity of fuel remaining and subsequently conducted a precautionary landing 50 km south-west of Canberra. There was no reported damage to the aircraft or injuries to the occupants.

The aircraft operator has advised the ATSB that, as a result of this occurrence, it has implemented a requirement for all of its pilots to use a documented fuel plan in all circumstances when flying from one location to another. ■

Tail rotor pitch link failure

ATSB Investigation AO-2008-068

On 19 September 2008, during a flight from Fitzroy Falls to Rosehill, NSW, the pilot of a Eurocopter AS350 BA helicopter, registered VH-BUK, experienced the onset of severe vibration within the tail rotor controls and made an emergency landing at Casula High School.

Examination of the aircraft revealed that a tail rotor pitch change link had fractured, resulting in lateral movement of the tail rotor and damage to the tail boom and tail cone. The link had fractured from fatigue cracking – the result of excessive play in the heavily-worn spherical bearing.

Excessive play in the bearing resulted in a loading condition that originated a high cycle fatigue crack at one of the outside corners of the rod end and progressed through a majority of the section before failure. A second fatigue crack then originated on the interior surface of the rod end and progressed a short distance before the remaining material failed through overstress. Endurance test results provided by the aircraft manufacturer found that it was probable the bearing degradation was relatively advanced in the broken link at the time of the most recent 'after last flight' inspection. The reason that play was not identified in the subject link during this inspection was not determined.

As a result of this incident, the aircraft manufacturer released Safety Information Notice 2000-S-65, to highlight the tail rotor pitch link inspection and maintenance requirements. CASA released Airworthiness Bulletins 27-009 Issue 2 (AS 350) and AWB 27-010 Issue 1 (AS 355 and AS 550) to emphasise inspection requirements relating to the tail rotor pitch change links and the importance of frequently checking for link wear. ■

Agricultural spraying

ATSB Preliminary Investigation AO-2009-060

The ATSB has released the preliminary factual report into a fatal accident that took place near Wickepin, WA. The information contained in the preliminary report is derived from initial investigation of the occurrence.

At about 1130 WST on 3 October 2009, the pilot of an Air Tractor Inc. AT-502 aircraft, registered VH-ODP, departed from a paddock on a property about 5 km north-east of Wickepin, WA to conduct agricultural spraying operations. A short time later, the owner of the property discovered the wreckage of the aircraft, which had impacted the ground fatally injuring the pilot.

Debris from the aircraft's spray boom, and a substantial number of tree branches, were found at the base of a 23 m high tree that was located at the corner of one of the fields that were intended for spraying. The tree was significantly taller than the other trees that ran along the western boundary of the field. There was extensive damage to the leading edges of the aircraft's wings, consistent with the damage observed to the tree canopy.

The aircraft impacted the ground about 150 m north of the tree, in an inverted, steep nose-down attitude and slid inverted for about 50 m, before coming to rest. Numerous items of aircraft wreckage were distributed along the wreckage trail.

The investigation is continuing. ■

QF72 ADIRU spikes

ATSB Investigation AO-2008-070

The ATSB has released a second Interim Factual Report into the Qantas Airbus A330-303 in-flight upset, 154 km west of Learmonth, WA, on 7 October 2008. The aircraft (registered VH-QPA) was being operated on a scheduled passenger service (QF72) from Singapore to Perth. While cruising at 37,000 ft, the aircraft experienced two uncommanded pitch-down events. The flight crew were able to quickly return the aircraft to level flight on each occasion and diverted to Learmonth for a safe landing.

There has been speculation of a potential link between the QF72 accident with the AF447 accident that occurred on 1 June 2009 on a flight from Rio de Janeiro, Brazil to Paris, France. Although each of the accidents involved the same basic aircraft type, there are several important differences between the two accidents:

- The (air data inertial reference units) ADIRUs on the two aircraft were different models, and constructed by different manufacturers.
- The cockpit-effect messages and maintenance fault messages from both flights showed a significantly different pattern of events. For example, a series of maintenance messages that were transmitted by AF447 prior to the accident showed inconsistencies between the measured airspeeds and the associated consequences on other aircraft systems. No such messages were recorded by QF72.
- The airspeed sensors (pitot probes) on the two aircraft were different models made by different manufacturers.

Despite extensive testing and analysis, the reason why the ADIRU started providing erroneous data (spikes) during the flight has not been identified to date. Nevertheless, the crew operational procedures that were provided by Airbus significantly reduced the chance of another in-flight upset by limiting the time that a faulty ADIRU could output angle of attack spikes. Airbus is also modifying the flight control primary computer software used in the A330/A340 fleets to prevent angle of attack spikes leading to an in-flight upset.

The investigation is continuing. ■

Risk of unanticipated yaw

ATSB Investigation AO-2008-043

At 1026 EST on 18 June 2008, a Robinson Helicopter Company R44 Clipper II helicopter, registered VH-RYW, departed Cairns Airport, Qld, to film a residential development site that was located in the vicinity of False Cape, about 10 km east of the airport. On board the helicopter were the pilot and three passengers.

The occupants of the helicopter reported that while conducting the second period of filming, there was a sudden and violent movement of the nose of the helicopter to the right, which continued into a rapid rotation of the helicopter. The pilot's reported attempt to reduce the rate of right yaw was unsuccessful, and he entered autorotation and attempted to reach a clear area. The helicopter subsequently collided with trees before impacting the ground, seriously injuring the pilot and front seat passenger.

This accident highlighted the risk of loss of tail rotor effectiveness associated with the conduct of aerial filming/photography and other similar flights involving high power, low forward airspeed and the action of adverse airflow on a helicopter.

The investigation also identified that the lack of the nomination of a search and rescue or scheduled reporting time for the flight, decreased the likelihood of a timely response in the case of an emergency.

In response to this accident, the helicopter manufacturer advised that it was considering a revision to the aerial survey and photography flights safety notice that was contained in the R44 Pilot's Operating Handbook. That revision would, if adopted, include a discussion of the risk of unanticipated right yaw associated with the conduct of those flights. ■

New investigation team

The ATSB receives around 15,000 notifications of aviation occurrences each year, 8,000 of which are accidents, serious incidents and incidents. It is from the information provided in these notifications that the ATSB makes a decision on whether or not to investigate. While some further information is sought in some cases to assist in making those decisions, resource constraints dictate that a significant amount of professional judgement needs to be exercised.

There are times when more detailed information about the circumstances of the occurrence would have allowed the ATSB to make a more informed decision both about whether to investigate at all and, if so, what necessary resources were required (investigation level). In addition, further publically available information on accidents and serious incidents would increase safety awareness in the industry and enable improved research activities and analysis of safety trends, leading to more targeted safety education.

To enable this, the Chief Commissioner is establishing a small team to manage and process short factual investigations, the Level 5 Investigation Team.

The primary objective of the team will be to undertake limited-scope factual gathering investigations, which result in a short summary report. The summary report will be a compilation of the information the ATSB has gathered, sourced from individuals or organisations involved in the occurrences, on the circumstances surrounding the occurrence and what safety action may have been taken or identified as a result of the occurrence. These reports will be collated and released publically on a periodic basis.

The implementation of these new 'short' investigations will start at the end of 2009, but it will take 6 to 12 months before this new practice is adopted for all accidents and serious incidents, as resources within the ATSB are built up to perform the function. If you have any questions or comments about this initiative, please contact the ATSB's Director Safety Data, Research and Technical, Julian Walsh on 02 6274 7548 or by email to julian.walsh@atsb.gov.au ■

REPCON briefs

Australia's voluntary confidential aviation reporting scheme

REPCON is established under the Air Navigation (Confidential Reporting) Regulations 2007 and allows any person who has an aviation safety concern to report it to the ATSB confidentially. Unless permission is provided by the person that personal information is about, either the reporter or any person referred to in the report, the personal information will remain confidential. If you believe it would be necessary to act on information about an individual referred to in your report then you should consider reporting this directly to CASA. Only de-identified information will be used for safety action.

To avoid doubt, the following matters are not reportable safety concerns and are not guaranteed confidentiality:

(a) matters showing a serious and imminent threat to a person's health or life;

(b) acts of unlawful interference with an aircraft;

(c) industrial relations matters;

(d) conduct that may constitute a serious crime.

Note 1: REPCON is not an alternative to complying with reporting obligations under the Transport Safety Investigation Regulations 2003 < www.atsb.gov.au>.

Note 2: Submission of a report known by the reporter to be false or misleading is an offence under section 137.1 of the Criminal Code.

REPCON would like to hear from you if you have experienced a 'close call' and think others may benefit from the lessons you have learnt. These reports can serve as a powerful reminder that, despite the best of intentions, well-trained and well-meaning people are still capable of making mistakes. The stories arising from these reports may serve to reinforce the message that we must remain vigilant to ensure the ongoing safety of ourselves and others.

If you wish to obtain advice or further information, please call REPCON on 1800 020 505.

Helicopter hot refuelling

R200900034

Report narrative:

The reporter expressed safety concerns that pilot training should include training in dangerous goods after witnessing a helicopter pilot refuelling a helicopter while the engine was still operating. The reporter believes that pilots would gain a better respect for the possibility of static discharge if they were more aware of the dangers of fuel that is taught in dangerous goods courses.

REPCON comment:

REPCON supplied the Civil Aviation Safety Authority (CASA) with the de-identified report and CASA provided the following response:

> In respect of the comments made about pilot training we note the Day VFR [Visual Flight Rule] Syllabus for a Commercial Pilot (Helicopter) Licence includes flight standards for managing fuel. The observation does not relate to a dangerous goods issue.
>
> The regulations make provision for the refuelling of helicopters with the engines running in certain circumstances.

The serving of alcohol beverages in-flight

R200900050

Report narrative:

The reporter expressed safety concerns about the serving of alcohol beverages in-flight to passengers. Policy offered by airlines is not explicit in helping crew manage this issue e.g. one manual states 'Not to serve alcohol to any passenger to the point of intoxication'. The policy or procedures do not prevent intoxication.

In the event of an emergency situation or evacuation, an intoxicated passenger would be a risk to themselves and to other passengers and crew. A passenger cannot enter an aircraft in an intoxicated state as this is prohibited by legislation, but can be served alcohol to the point of intoxication.

The reporter has observed that each individual has a different point of intoxication based on their genetic makeup. When the cabin crew observe that a passenger has reached or is approaching their intoxication point and the passenger is refused any more alcoholic drinks, this is where problems have been seen to arise and some passengers have become disruptive, abusive and violent.

The reporter is aware of three incidents where cabin crew have been assaulted, and on at least one occasion, where police were required to intervene when the aircraft was safely on the ground. The reporter believes that one in five Darwin flights have issues relating to the consumption of alcohol by passengers.

Responsible serving of alcohol is open for interpretation, resulting in crew making up their own policies and procedures due to the absence of anything else that prevents intoxication. Passengers often do not show signs of intoxication at the time of request or delivery. The reporter believes that there needs to be set procedures that set out exactly how many drinks a passenger may be provided in a set time frame to avoid intoxication becoming an issue.

REPCON comment:

REPCON supplied CASA with the de-identified report and CASA provided the following response:

> The current Australian aviation safety legislation addresses concerns related to intoxicated persons entering and on board aircraft. Regulation 256 of the *Civil Aviation Regulations 1988* (CAR) provides that '[a] person shall not, while in a state of intoxication, enter any aircraft.' It is an offence for a person to do so (penalty: 5 penalty units = $550).
>
> There is nothing in the civil aviation legislation governing the service of alcohol to persons on board an aircraft, or expressly prohibiting a person from being or becoming intoxicated after he or she is already on board an aircraft. However, CAR 256AA does address the problematic conduct of persons who are or may be intoxicated, making it an offence for a person 'to behave in an offensive and

disorderly manner' (penalty: 50 penalty units = $5,500).

Where the conduct of any person (including a person who is or may be intoxicated) involves action that (i) interferes with a crew member of an aircraft in the course of the performance of his or her duties as such a crew member; or (ii) threatens the safety of an aircraft or of persons on board an aircraft', this may constitute an offence under section 24 of the *Civil Aviation Act 1988*, for which a person may be imprisoned for up to 2 years.

Having particular regard to the provisions of CAR 256 and CAR 256AA, as well as section 24 of the *Civil Aviation Act,* CAR 309 provides that the pilot in command of an aircraft, with such assistance as is necessary and reasonable, may:

- take such action, including the removal of a person from an aircraft or the placing of a person under restraint or in custody, by force, as the pilot considers reasonably necessary to ensure compliance with the Act or the Regulations, in or in relation to the aircraft; and
- detain passengers (or crew members) for such period as the pilot considers reasonably necessary to ensure compliance with the Act or the Regulations, on the same basis.

CASA conducts audits and other surveillance activities to ensure that aircraft operators have procedures and systems that are consistent with the legislative provisions mentioned above. However due to the de-identified version of the REPCON report, CASA is unable to comment on the particular circumstances described by the reporter.

Aircraft pushback procedures

R200900073

Report narrative:

The reporter expressed safety concerns that after receiving pushback clearance from surface movement control (SMC) and with the aircraft beacon switched on, a ground crew member approached the aircraft and opened the forward cargo door. The crew contacted the person on the headset to stop this from happening, but a response was received that 'nothing could be done nowadays'.

REPCON comment:

REPCON supplied the operator with the de-identified report and the operator advised that it had found some similar occurrences in its database. A safety investigation was conducted for each occurrence, identifying causal factor/s, and specific safety action was introduced for each occurrence. The operator also advised that the statement about 'nothing could be done nowadays' in the report was not true, but have accepted the report as a safety indicator, and will strive even more to improve the safety culture within ground handling operations. The operator indicated that it is introducing a National Training System program which will provide human factors training to ground operations staff and this should be beneficial in reducing these types of occurrences.

REPCON supplied CASA with the de-identified report and a version of the operator's response. CASA advised that it had reviewed the REPCON report and CASA was satisfied with the response from the operator. CASA advised that the operator investigated the matter, took appropriate action and has demonstrated its commitment to promoting a positive safety culture within the organisation through human factors training.

REPCON reports received	
Total 2007	117
Total 2008	121
First Quarter 2009	41
Second Quarter 2009	28
Third Quarter 2009	21
October/November 2009	24
What happens to my report?	
For Your Information issued	
Total 2007	58
Total 2008	99
First Quarter 2009	42
Second Quarter 2009	20
Third Quarter 2009	39
October/November 2009	18
Alert Bulletins issued	
Total 2007	1
Total 2008	12
Year to date 2009#	0
Who is reporting to REPCON?#	
Aircraft maintenance personnel	25%
Air Traffic controller	4%
Cabin crew	3%
Facilities maintenance personnel /ground crew	1%
Flight crew	35%
Passengers	7%
Others*	25%

\# 29 January 2007 to 30 November 2009

* examples include residents, property owners, general public

New REPCON Confidential Reporting Form

A new form has been released that will make the reporting process easier and quicker to submit your safety concern to the ATSB.

How can I report to REPCON?

On line: ATSB website at <www.atsb.gov.au>

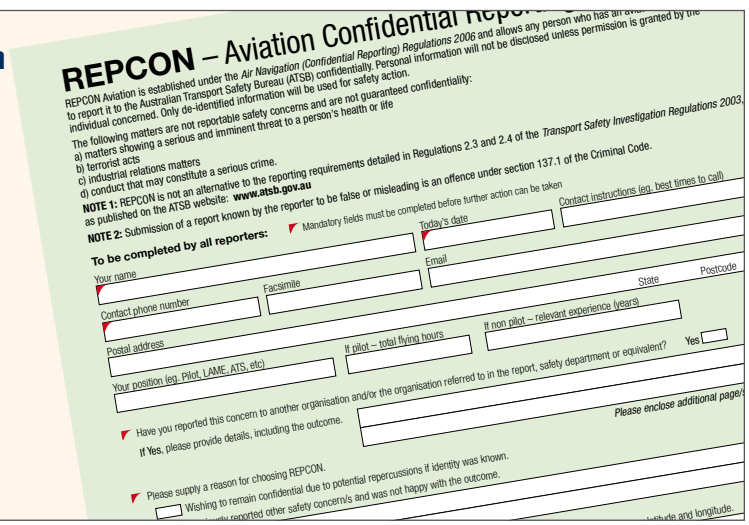
Telephone: 1800 020 505

by email: repcon@atsb.gov.au

by facsimile: 02 6274 6461

by mail: Freepost 600,

PO Box 600, Civic Square ACT 2608


REPCON – Aviation Confidential Report

REPCON Aviation is established under the *Air Navigation (Confidential Reporting) Regulations 2006* and allows any person who has an aviation safety concern to report it to the Australian Transport Safety Bureau (ATSB) confidentially. Personal information will not be disclosed unless permission is granted by the individual concerned. Only de-identified information will be used for safety action.

The following matters are not reportable safety concerns and are not guaranteed confidentiality:
a) matters showing a serious and imminent threat to a person's health or life
b) terrorist acts
c) industrial relations matters
d) conduct that may constitute a serious crime.

NOTE 1: REPCON is not an alternative to the reporting requirements detailed in Regulations 2.3 and 2.4 of the *Transport Safety Investigation Regulations 2003*, as published on the ATSB website: **www.atsb.gov.au**

NOTE 2: Submission of a report known by the reporter to be false or misleading is an offence under section 137.1 of the Criminal Code.

To be completed by all reporters: Mandatory fields must be completed before further action can be taken

Your name | Today's date | Contact instructions (eg. best times to call)

Contact phone number | Facsimile | Email

Postal address | State | Postcode

Your position (eg. Pilot, LAME, ATS, etc) | If pilot – total flying hours | If non pilot – relevant experience (years)

Have you reported this concern to another organisation and/or the organisation referred to in the report, safety department or equivalent? Yes

If Yes, please provide details, including the outcome.

Please enclose additional page/s

Please supply a reason for choosing REPCON.

Wishing to remain confidential due to potential repercussions if identity was known.

reported other safety concern/s and was not happy with the outcome.

latitude and longitude.