Australian Government
Australian Transport Safety Bureau

Chief Commissioner

11 November 2012

Mr Stephen Palethorpe
Committee Secretary
Standing Committee on Rural and Regional Affairs and Transport
Australian Senate
PO Box 6100
PARLIAMENT HOUSE CANBERRA 2600

Via email: rrat.sen@aph.gov.au

Dear Mr Palethorpe

Aviation Accidents Investigations Inquiry

A number of written submissions to the Aviation Accidents Investigation Inquiry, and oral evidence to the committee on 22 October 2012, made assertions about the investigation and report by the Australian Transport Safety Bureau (ATSB) into the ditching at Norfolk Island on 18 November 2009. In summary, it was argued that there were factual inaccuracies in the report and that a number of lines of inquiry had either not been pursued during the investigation or had been left out of or suppressed in the final report. In addition, it was claimed that the investigation and report did not comply with Annex 13 (*Aircraft Accident and Incident Investigation*) to the Convention on International Civil Aviation (the Chicago Convention).

The ATSB has reviewed the submissions published by the Committee and oral evidence as recorded in the draft Hansard of the 22 October hearings. This supplementary submission responds to what we take to be the main issues raised about the ATSB's investigation and report. We are, of course, unable to address any other matters that may have been canvassed in confidential submissions or in camera unless the Committee brings them to our attention.

In providing evidence to the committee on 22 October 2012, I indicated that an ATSB investigation report needs to recognise and meet the non-disclosure requirements of Annex 13 (as set out in paragraph 5.12) – as well as the associated 'restricted information' provisions of the *Transport Safety Investigation Act 2003* – while containing sufficient information to support the analysis and findings of the report. At the same time, the ATSB endeavours to balance the use of material that could imply adverse comment with the need to properly explain what happened, and why, in a fair and unbiased manner. I suggested that finding this balance can, at times, result in insufficient information being included in a report to satisfy a reader that all relevant factors were considered, particularly when those factors had been found not to have been at play in the development of an occurrence. It does not indicate, however, that those factors were not considered.

62 Northbourne Ave
Canberra ACT 2601
Australia

PO Box 967
Civic Square
ACT 2608 Australia

Web www.atsb.gov.au
Twitter @ATSBinfo

ABN 65 061 156 887

The ATSB has noted the Committee's concern that potentially significant lines of inquiry may not have been adequately pursued in the case of the investigation into the ditching at Norfolk Island on 18 November 2009. We also remain conscious of the requirement under section 60 of the *Transport Safety Investigation Act* to protect restricted information arising from an investigation. On balance, we believe it is in the interests of safety to provide the following amplifying information in response to a number of issues that have been brought to the attention of the Committee.

Fatigue

In considering the potential for fatigue to have affected the flight crew's performance, the investigation considered evidence acquired through interviews with the pilot and copilot, from the operator's duty records and from the Civil Aviation Safety Authority (CASA) investigation report. Based on this evidence, a number of the ATSB's human factors investigators were involved in the examination of whether fatigue was a factor in the occurrence.

By way of background, fatigue modelling is useful for assessing the probability of crew fatigue when developing crew rosters but, because of individual differences, it is not possible to determine an individual's level of fatigue at any point in time based on the retrospective use of a fatigue modelling tool alone.

The determination of whether fatigue was a factor was made more difficult by the changing reports over time about the amount of rest obtained by the pilot in command (PIC) while in Samoa. The ATSB placed more weight on the contemporaneous recollection by the PIC that he slept for most of the reported 8-hour rest period in the hotel in Samoa.

On testing, the hypothesis that the PIC was significantly fatigued at the time of receipt of the 0800 SPECI could not be proven to the level of likelihood used as a standard by the ATSB. The ATSB nevertheless concluded that the flight crew were experiencing some level of fatigue on the flight to Samoa. If the PIC only had 4 hours sleep in Samoa, as was later reported, then it is more likely he was experiencing fatigue on the return flight at a level likely to have had at least some effect on performance. (Pages 14 and 15 of the investigation report refer.)

Reduced Vertical Separation Minimum (RVSM) airspace

The cruise phase of the flight was intended to be and was actually conducted entirely in RVSM airspace. The ATSB considered the implications for the flight (if any) had the aircraft not been allowed entry into that airspace by the respective air traffic control agencies. The ATSB found that:

- although the aircraft was not RVSM-equipped, it was carrying out an 'ambulance' flight and this was known to New Zealand and Fijian air traffic control
- New Zealand and Fijian regulations allow non-RVSM 'ambulance' flights to operate in RVSM airspace
- the aircraft was cleared by air traffic control (ATC) to flight level (FL) 350 (equivalent to 35,000 ft) and subsequently to FL390 as requested by the pilot (both flight levels are within RVSM airspace)
- had the aircraft not been cleared into the RVSM airspace as requested, this would have presented an operational requirement for the pilot because of increased fuel consumption, the management of which may have required him to

re-plan via other locations, including any requirement to take on additional fuel as required

- the flight crew's in-flight management of the aircraft's fuel state and performance in the flight reconstruction indicated that they would have accommodated any potential need to divert via intermediate destinations.

The ATSB concluded that RVSM airspace and the lack of RVSM equipment was not a factor in the development of the accident.

Pilot supervision and support

The degree of pilot supervision and support as it affected the flight is noted in a number of places throughout the investigation report and resulted in the highlighting of two safety issues in the report:

- the ATSB found that the operator's procedures and flight planning guidance did not effectively minimise the risk of operations to remote islands in the case of aeromedical operations (pp 37-38 of the report) and this was highlighted as a safety issue (p 43 of the report)
- it was not normal practice for crews to report to the operator if flights were progressing satisfactorily and the operator did not normally monitor a flight as it progressed (see p 4 of the investigation report)
- the ATSB identified that there was no independent evidence to indicate that the operator routinely assured itself of the accuracy of pilot's international flight planning and forms or their in-flight navigation logs and crews' compliance with the operator's procedures (p 32 of the report)
- there was significant variation in pre-flight planning procedures by flight crews that would have made it more difficult for the operator to oversee the consistent conduct of flights and the report notes that, although not required by the operator's procedures, closer review of flight documentation and how it was being applied would have increased the likelihood that inconsistent interpretation and application of the operations manual concerning fuel management would have been identified (p 38 of the report)
- there was a lack of regulated requirements or operator procedures to inform the crew of when to obtain the most recent weather information in order to manage an un-forecast deterioration in the weather, increasing the risk of crews inadvertently continuing to an unsafe destination (p 39 of the report)
- the lack of guidance on managing deteriorating weather was a cross-industry problem (p 40 of the report) and was highlighted as a safety issue (p 43 of the report).

In its consideration of these issues, the ATSB assessed that they met the tests for presence and significance as safety factors. At the same time, a flight reconstruction conducted with the crew as part of the investigation determined that both pilots were interacting satisfactorily, performing to the same standard, and managing the reconstructed flight broadly consistent with the operator's procedures. This suggested that there had been no 'drift' in the application of these in-flight procedures by the flight crew and it was not possible for the ATSB to establish to the necessary level of likelihood that they had been contributing factors.

It was on this basis that the safety factors and issues relating to supervision and support were classified as 'other' rather than 'contributing' safety factors.

Pilot training

The PIC's and copilot's qualifications and endorsements are listed at pp 13 and 14 of the report respectively. In respect of their training and proficiency checks the ATSB:

- examined each pilot's training records, which recorded their developing competence in the operation of the Westwind and, if an issue developed with that competence, remediation carried out in order for the affected pilot to be certified competent
- ascertained that both pilots were certified competent in their control position for the flight
- examined each pilot's proficiency records, which indicated checks on each pilot on an about 6-monthly basis preceding the accident that confirmed the pilots' competence and, in both cases, the conduct of a proficiency check in early September 2009, again confirming satisfactory performance
- established in the flight reconstruction that both pilots were performing to the same standard and managing the reconstructed flight broadly consistent with the operator's procedures.

Taken as a whole, this information indicated to the ATSB that each pilot had reached and maintained a consistent standard and had been assessed as meeting the defined competency requirements for the pre- and in-flight management of the aircraft.

Crew resource management (CRM)

As reported on p 14 of the investigation report, both pilots had completed a crew resource management program in March 2009. Additional CRM training included:

- an undated but signed certificate that indicated the PIC completed an Introduction to CRM Course before participating in a CRM Education Program on 20 March 2008
- the copilot completed an initial CRM Education Program on 26 March 2008.

In addition, the flight reconstruction that was carried out as part of the ATSB investigation found that both pilots were interacting satisfactorily, performing to the same standard, and managing the reconstructed flight as a team consistent with the principles of CRM.

Adequacy of the aircraft for the aeromedical evacuation flight

As reported on p 1 of the investigation report, at about 0900 Coordinated Universal Time (2000 Eastern Daylight-saving Time) on 17 November 2012, the PIC and copilot were tasked to carry out an aeromedical retrieval flight from Sydney to Apia via Norfolk Island for a refuelling stop. The patient retrieval was planned to Melbourne, Victoria.

In considering the aircraft performance during the flight, the ATSB established that:

- Civil Aviation Regulation (CAR) 234 stipulated that the determination of the amount of fuel carried during a flight shall include consideration of the possibility of an engine failure and a loss of pressurisation

- given the forecast in-flight weather, aircraft performance and regulatory requirements:
    - the flight crew departed Apia with less fuel than required for the flight in case of one engine inoperative or depressurised operations
    - the aircraft was capable of carrying enough fuel to meet the CAR 234 requirements for the flight
- the effect of unplanned winds or weather or other performance-related variables can result in an operational requirement and necessitate action by the PIC of any flight, including the potential for in-flight re-planning via other locations in order to take on additional fuel as required
- if required, Nadi was a suitable intermediate destination and/or alternate for the flight to Norfolk Island within the fuel amounts specified in CAR 234
- the flight crew's in-flight management of the aircraft's fuel state during the flight, and performance during the flight reconstruction, would suggest that they would have managed a diversion to an intermediate destination.

The ATSB concluded that the adequacy of the aircraft for the flight was not a factor in the development of the accident.

Previous safety recommendations

The ATSB's investigation considered three aspects of the flight to Norfolk Island that have been the subject of previous safety recommendations by the ATSB.

(a) Reliability of Norfolk Island Forecasts

Safety Recommendation R20000040 related to the conduct of regular public transport operations to Norfolk Island and was issued to the Bureau of Meteorology (BoM) on 22 February 2000. It recommended that the BoM should review the methods used, and resources allocated to, forecasting at Norfolk Island with a view to making the forecasts more reliable. As a result of advice of changes in the notification by Norfolk Island observers to the BoM's Sydney-based forecasters of differences between the current forecast and actual conditions, and provision by the BoM to the Norfolk Island Airport manager of a display of the latest observations at the island for transmission to aircraft, the ATSB classified the response as **Closed-Accepted** on 27 April 2000.

(b) Classification of operations

Safety Recommendation R20010195 was issued to CASA on 7 September 2001 and recommended that CASA consider an increase in the operations classification, and/or the minimum safety standards required, for organisations that regularly transport their own employees and similar personnel (for example contractors, personnel from related organisations, or prisoners, but not fare-paying passengers). After initial efforts by CASA to amend CAR 206 to account for this recommendation, the ATSB was advised on 21 December 2004 that the proposed amendment to CAR 206 was problematic but that the carriage of patients and other personnel (other than air transport operations) would be regarded as Aerial Work under Civil Aviation Safety Regulation (CASR) Part 136 *Emergency and Medical Services Operations*. On the basis of CASA's ongoing work to develop and promulgate CASR Part 136, the ATSB classified the recommendation as **Closed-Partially Accepted** on 2 February 2009.

(c) Subsequent advice of safety action in respect of air ambulance/patient transfer operations

Although not specifically linked to recommendation R20010195 *Classification of operations*, as part of its advice of safety action in response to the accident at Norfolk Island on 18 November 2009, CASA advised its intent to regulate air ambulance/patient transfer operations as follows (p 47 of the ATSB investigation report refers):

> Air Ambulance/Patient transfer operations in the proposed operational Civil Aviation Safety Regulations (CASRs) will be regulated to safety standards that are similar to those for passenger operations.
>
> While CASR Parts 138/136 will be limited to domestic operations and, if CASA decides to retain Air Ambulance/Patient transfer operations in these rule suites, any such operation wishing to operate internationally will also be required to comply with CASR Part 119. If, however, CASA decides to move these operations into CASR Parts 121/135/133 they will already be required to comply with CASR Part 119. Either way, Air Ambulance/Patient transfer operations will be regulated to the same standard as Air Transport Operations (ATO). In relation to Norfolk and Lord Howe Islands, all ATO which include Air Ambulance/Patient transfer, will be required to carry mainland alternate fuel.

Survivability aspects

The survival aspects of the accident were reported on pp 20 to 24 of the investigation report. In light of other issues raised during the course of the inquiry, the following is additional information that the ATSB obtained in the course of the investigation but did not include in the report on the basis that it did not indicate broader safety issues:

- As indicated on p 21 of the investigation report, the liferafts were reported removed from their normal storage position and placed in the aircraft's central aisle ready for deployment after the ditching. There are advantages and disadvantages associated with this action. Access to the liferafts may be more readily available from a position in the central aisle; however, in anything but a low energy impact with the water, it could be expected a liferaft might move/dislodge from that position.
- As indicated on pp 19 and 21 of the investigation report, the reported two or three large impacts with the water were sufficient in this case to fracture the fuselage immediately forward of the main wing spar. The fractured fuselage was reported to have remained aligned for a few seconds before the aircraft's nose and tail partially sank with the passenger cabin/cockpit section adopting a nose-down attitude.
- The copilot indicated that a quantity of equipment and baggage descended or rolled down the fuselage as it filled with water – this could be expected to have included the liferafts (p 22 of the investigation report refers).
- Given the insecure equipment and baggage in the darkened cabin/cockpit area, the difficulty experienced with the aircraft's main door, the requirement to assist the patient from the stretcher and then the aircraft and the increasing ingress of water, the priority given by the remaining aircraft occupants to exiting the aircraft over recovering and deploying the liferafts is understandable. Whether in that context their recovery and deployment would have been more likely from their stowed position is debatable.
- In interview with the ATSB, the PIC indicated that he was not wearing a life jacket and reported that the light on the nurse's life jacket was not working

(although it is possible that the light was obscured by the patient she was supporting). The PIC also recalled that he may have inadvertently slightly deflated one of the survivors' life jackets in the water at some time but it was too dark to tell, and that the whistle lanyard on one of the three jackets was too short and could not be used. It was not possible to determine whether or not this was due to tangling or snagging of the lanyard.

- The passenger indicated at interview on 24 November 2009 that his life jacket rode up on him and he found that this pushed his head forward. In addition, the passenger reported that the whistles were not available on two of the jackets and that he only activated one inflation 'toggle'. Another of the survivors activated the second toggle on the passenger's life jacket.
- The copilot was interviewed on 2 December 2009. In this interview the copilot indicated that she did not wear a life jacket and that she initially attempted to open the aircraft's main door before the fuselage tipped down. This compelled the copilot to seek an emergency exit. The copilot reported that, once on the surface, the doctor helped her to remain afloat.
- The doctor was interviewed on 4 December 2009. The doctor confirmed that only three of the aircraft occupants had life jackets but that all three jackets worked satisfactorily. He reported that one life jacket light failed and that only one whistle was located. He indicated that, once near rescue, he wasn't sure that a whistle would have helped. He reported that at evacuation, the priority was assisting the patient from the aircraft, rather than deploying the liferafts.
- An interview with the patient on 10 December 2009 determined that the patient was not wearing a life jacket. This is consistent with the report from the doctor that he did not put a life jacket on the patient due to concerns about a jacket hindering the already difficult task of releasing the patient's restraints after the ditching (pp 20 and 21 of the investigation report refer).
- The flight nurse was interviewed on 10 December 2009. The nurse recalled that only half of her life jacket had inflated but that was all right. The nurse reported assisting the patient to stay afloat and that after one hour it was difficult to maintain the patient afloat. The flight nurse stated that two life jacket lights were working, but that hers was generally underneath the patient, who was being held afloat.

Annex 13 investigations

There appears to be some misunderstanding about the content and effect of Annex 13 to the Chicago Convention as it relates to Australian investigation practices and reports. We have summarised at Attachment A the main elements of Annex 13 and the state of Australian and ATSB adherence to them. Australia has, as it is entitled to under the Chicago Convention, signalled some areas where its practices will differ from those required by or recommended in Annex 13.

The ATSB is concerned that information provided to the Committee suggesting that the ATSB investigation was not conducted in accordance with the provisions of Annex 13 is misleading. It appears this assertion is based primarily on the format of the final ATSB report. The provision in Annex 13 relating to the format of the final report is a 'Recommended Practice', which also states that the format may be adapted to the circumstance of the accident or incident. Further, Australia has filed a difference with respect to this 'Recommended Practice'.

The ATSB is satisfied that its investigation procedures are in all material aspects consistent with Australia's obligations under Annex 13. We have also reviewed the Norfolk Island investigation report and consider it also meets those obligations.

Safety recommendations

There was some discussion during the Committee's hearings about the comparatively small number of recommendations issued by the ATSB. As indicated in the detailed material about compliance with Annex 13, Australia has filed a difference with respect to the use of recommendations arising from safety investigations.

Australia's position is that overuse tends to devalue the currency of safety recommendations. As a result, our policy is to reserve them as a tool for addressing significant safety issues where the necessary safety action has not been taken. The key tasks of investigation are to identify safety issues and to take all reasonable steps to ensure they are responded to. Recommendations are one of a suite of possible ways of bringing safety issues to attention and having them dealt with.

Attachment B is a more extended discussion of Australia's approach to these questions.

Conclusion

A number of parties have assumed that matters were not included in the Norfolk Island investigation report either because they were not considered or because they were suppressed. As indicated, the more prosaic reality is that the ATSB, conscious of its duty to protect investigation information, did not include information about a number of lines of inquiry because they did not point to any safety issues and did not add to the analysis and findings of the report.

The Australian Government, and the ATSB as part of it, is meeting its obligations under Annex 13 of the Chicago Convention and the Norfolk Island investigation was conducted accordingly.

I would be grateful for an opportunity to discuss this supplementary submission and any issues arising from it with the Committee at a time convenient to the Committee.

Yours sincerely

Martin Dolan

Annex 13 investigations

International Civil Aviation Organization (ICAO) Standards and Recommended Practices (SARPS) for each area of ICAO responsibility are contained in 'Annexes'. Each Annex deals with a particular subject area. Annex 13 contains the SARPS relating to *Aircraft Accident and Incident Investigation.* The ATSB is responsible for meeting Australia's Annex 13 responsibilities for the notification and independent investigation of accidents and other safety occurrences involving civil aircraft in Australia and taking part in the investigation of accidents and other occurrences involving Australian aircraft overseas.

Standards and Recommended Practices are defined as follows:

> **Standard(S):** Any specification for physical characteristics, configuration, materiel, performance, personnel or procedure, the uniform application of which is recognized as necessary for the safety or regularity of international air navigation and to which Contracting States will conform in accordance with the Convention. In the event of non-compliance with a Standard by a contracting State, notification to the Council is compulsory under Article 38.
>
> **Recommended Practice (RP):** Any specification for physical characteristics, configuration, materiel, performance, personnel or procedure, the uniform application of which is recognized as desirable in the interests of safety, regularity or efficiency of international air navigation, and to which Contracting States will endeavour to conform in accordance with the Convention. Australia notifies differences to ICAO in respect of aspects of non-adherence with the Recommended Practices contained in the SARPS.

Annex 13 SARPS are reflected in the *Transport Safety Investigation Act 2003* (TSI Act) and in the ATSB's policies, procedures and guidelines. Further, section 12AD of the TSI Act requires that the ATSB ensure that the powers under the TSI Act are exercised in a manner consistent with Australia's obligations under international agreements, including Annex 13.

The Annex 13 SARPS cover a range of investigation responsibilities, tasks and functions, including:

- the objectives of the investigation
- protection of evidence, custody and removal of aircraft
- international notification requirements
- various State responsibilities for initiating and conducting the investigation, and the rights and obligations of States associated with the occurrence
- designation of investigators in charge and access and control of accident sites and other evidence
- flight recorders
- medical and autopsy examinations
- coordination with judicial authorities and security authorities
- non-disclosure of records
- reopening of investigations
- report processes and administration

- safety recommendations
- ICAO international reporting requirements
- accident prevention measures, including reporting and occurrence data.

Australia has range of differences filed with ICAO as detailed in Aeronautical Information Publication (AIP) Supplement H12/11. With respect to Annex 13, the following more pertinent filed differences are brought to the Committee's attention:

- **The definition of safety recommendation (Chapter 1)**: The essence of the definition is adopted in legislation and in policy and procedures documents. However, Australia reserves the term safety recommendation for making formal recommendations which are used as a last resort (see later section of safety issues and actions).
- **Non-disclosure of records – para 5.12 (S):** There are elements of 5.12 where Australia is more exacting and exceeds the standard, but in other areas its legislation is less protective.
- **Final Report - format – para 6.1 (RP)**: Australia endeavours to comply with the recommended format for international aviation accident and serious incident reports and the more complex domestic aviation occurrences. However, for some complex investigations Australia may use what it considers to be a more appropriate format to clearly disseminate the facts, analysis and findings. A simpler abbreviated format may be utilised for domestic occurrences of a less complex nature.
- **Final Report – safety recommendations – para 6.8 (S):** Australia will notify desired safety action to a relevant organisation or person as soon as a safety issue is identified. Australian safety action may be in the form of agreed proactive remedy, a defined safety recommendation, safety advisory notice, or safety education.

The ATSB is concerned that misleading information was provided to the Committee suggesting that the ATSB investigation was not conducted in accordance with the provisions of Annex 13. It appears this assertion is based primarily on the format of the final ATSB report. The provision in Annex 13 relating to the format of the final report is a 'Recommended Practice', which also states that the format may be adapted to the circumstance of the accident or incident. Further, as noted above, Australia has filed a difference with respect to this 'Recommended Practice'.

ICAO Doc 9756 (Manual of Aircraft Accident and Incident Investigation – Part IV – Reporting) provides guidance material that supports the suggested format contained in section 6 of Annex 13 and the associated Appendix. While that guidance material is useful, it is not mandatory. Doc 9756 makes specific reference to the collection of human factors material as an integral part of the investigation. That is consistent with the ATSB's approach to investigation, which considers human factors as an integrated part of the overall investigation and analysis methodology, aligned with the Doc 9756 that states:

> ...Thus, the Human Factors information should be integrated into the appropriate areas of the factual report, rather than being placed under a separate heading. Human Factors information should be presented in a language that is consistent with the presentation of the other factual information.

An investigation report will rarely be reflective of the full range of investigative activities undertaken throughout an investigation. However, the report needs to contain sufficient information to support the analysis and findings, while recognising and balancing the

requirements of Annex 13 (para 5.12) with respect to non-disclosure of records and the associated 'restricted information' provisions of the TSI Act. At all times the ATSB endeavours to balance the use of material that could imply adverse comment with the need to properly explain what happened, and why, in a fair and unbiased manner.

Managing safety issues and actions

Traditionally, accident investigation agencies produce final reports and issue safety recommendations to other organisations or individuals, to encourage change in order to prevent a recurrence of an accident. Further, performance targets are often associated with the number of recommendations issued by investigation authorities. The focus of an ATSB investigation is on achieving safety outcomes; that is through the identification of the factors that increased risk, particularly those associated with ongoing/future risk (safety issues), such that action can be taken by relevant organisations to address the identified 'safety issue'. This does not in itself require the issuing of safety recommendations, although that is an option. Noting that safety recommendations are not enforceable, the issuing of a safety recommendation in itself may not achieve any tangible safety benefit, if the target organisation elects not to accept and react to the recommendation.

In this regard, the ATSB prefers to encourage proactive safety actions that address the 'safety issues' identified in its reports. Other benefits of this approach are that the stakeholders are generally best placed to determine the most effective way to address any 'safety issues' and the publication of the safety actions that address an issue proactively should be viewed as a positive step that provides for timely safety action prior to the release of the report and a level of completeness when the final report is published. This approach is reflected in the difference that Australia has filed with respect to Annex 13 para 6.8.

The response to a safety recommendation is most often unlikely to be any different to the safety action reported by an organisation in response to an identified safety issue, but the latter is likely to be more proactive and timely. That is specifically the case with respect to the Norfolk Island investigation, where the responses to any formal safety recommendations to CASA and Pel-Air related to the two identified safety issues, are likely to be as per the safety action detailed in the report.

The ATSB is in the process of redeveloping its website to be 'safety issue' focussed rather than 'recommendation' focussed. The point of importance is that the safety issue remains open (like a recommendation) until such time as it is either adequately addressed, or it is clear that the responsible organisation does not intend taking any action (and has provided its reasons). In the event that no, or limited, safety actions are taken or proposed, the ATSB has the option to issue a formal safety recommendation. However, experience has been that this is rarely required.

The ATSB's Safety Investigation Information Management System (SIIMS) provides tools for investigators to record and track safety issues and actions, including through the setting up of alerts to prompt periodic follow-up of progress with safety action where a safety issue is open and the safety actions are being monitored (the same process applies if a recommendation were issued). In addition, a standing agenda item is included in the quarterly Commission meetings to review safety issues and actions during the previous quarter, with particular focus on those that remain open.

The ATSB's Annual Plan and part of the ATSB's Key Performance Indicators specifically relate to a measurement of safety action taken in response to safety issues; in the case of 'critical' safety issues, the target is for safety action to be taken by stakeholders 100% of the time, while for 'significant' safety issues, the target is 70%. For the FY11/12, there were no identified critical safety issues and 28 significant safety issues. In response to the significant safety issues, adequate safety action was taken in 89% of cases and a further 4% were assessed as partially addressed.