



## REASSESSMENT OF THE RESPONSE TO TSB RECOMMENDATION A95-12

### Evaluating crew resource management and pilot decision-making skills

#### Background

The aircraft, a Convair 580, was on a flight from Vancouver to Tofino, British Columbia, with four crew members and 47 passengers on board. When the aircraft landed at Tofino, it touched down about midway down the 5000-foot runway. The aircraft ran off the end of the runway and came to rest 150 feet past the runway end. There were no injuries; however, the aircraft sustained substantial damage.

The Board determined that the descent profile flown during the approach procedure resulted in the aircraft not being in a position to land safely; the captain elected to continue rather than conduct a missed approach, and the aircraft touched down with insufficient runway remaining in which to stop. Contributing to the occurrence was inadequate monitoring, by both the air carrier and Transport Canada, of aircraft operations remote from the company's main base.

The Board concluded its investigation and released report A93P0131 on 17 February 1995.

#### TSB Recommendation A95-12 (May 1995)

In May 1995, the Transportation Safety Board of Canada (TSB) made two Aviation Safety Recommendations as a result of the investigation into a runway excursion of a Canair Cargo Convair 580 at the Tofino Airport. The recommendations were related to crew resource management (CRM) and pilot decision-making (PDM) skills.

Poor CRM/PDM in small air carrier operations has been a matter of concern to the TSB for some time. In 1990, the Board had recommended that the Department of Transport devise and implement a means of regularly evaluating the practical decision-making skills of commercially-employed pilots engaged in small air carrier operations (A90-86, issued 17 December 1990). Transport Canada (TC)'s response to this recommendation was assessed as **Unsatisfactory**.

In the Tofino occurrence, the company had not provided its crews with a course in CRM or PDM, nor was such training required by regulations. The TSB identified eight other recent occurrences which were linked to poor PDM/CRM. It was noted that, while some larger air carriers can develop the necessary training on their own, other operators will require direction in setting up meaningful training programs.

Therefore, the Board recommended that

The Department of Transport establish guidelines for crew resource management (CRM) and decision-making training for all operators and aircrew involved in commercial aviation.

**TSB Recommendation A95-11**

The Department of Transport establish procedures for evaluating crew resource management (CRM) and pilot decision-making (PDM) skills on a recurrent basis for all aircrew involved in commercial aviation.

**TSB Recommendation A95-12**

**Transport Canada's response to Recommendation A95-12 (July 1995)**

Crew resource management (CRM) and decision-making training will be mandated for all air operators who are required to adhere to the Airline Operations regulations. A standard has been developed and forms part of the Commercial Air Services Standard (CASS) incorporated by reference by *the Canadian Aviation Regulations* (CARs). The CARs will appear in the *Canada Gazette*, Part I during the summer of 1995 and be promulgated later in the year. The CASS will allow initial CRM training to be conducted separately for pilots and cabin safety personnel; however, recurrent training will be conducted annually in a joint training environment. In addition, guidance material has been developed to support the regulation and standard.

Transport Canada's (TC) response to these recommendations has been received; the extent to which the safety deficiencies are being resolved is assessed below.

**TSB assessment of Transport Canada's response to Recommendation A95-12 (no date on the document)**

**Recommendations A95-11 and A95-12**

The intent of the recommendations was to provide ... all aircrew involved in commercial aviation ... with the proper tools and skills needed to reduce the likelihood of inappropriate decisions in the day-to-day commercial flying environment. TC's response states that CRM and PDM training will be mandated for "... all air operators who are required to adhere to the Airline Operations regulations" (i.e., the large air carriers coming under the new Canadian Air Regulation (CAR) 705).

In attempting to clarify the intended scope of TC's action, informal correspondence between TC and TSB staff confirmed that Air Taxi (CAR Subpart 703) and Commuter Operators (CAR Subpart 704) will not be required to provide their crews with CRM or PDM training or evaluation. Furthermore, a TSB staff review of the guidance material developed for the CAR Subpart 705 operators revealed that this material would likely not be sufficient in detail to assist the smaller CAR Subpart 703 and Subpart 704 operators.

TC's action is aimed only at those operators who have the resources to establish proper CRM/PDM training, and in all likelihood, already have done so. With this limited extent of the TC action, the shortcomings in CRM and PDM training for the crews of smaller operators will continue.

Therefore, the response to Recommendation A95-12 is assessed as **Unsatisfactory**.

## **TSB assessment of Transport Canada's response to Recommendation A95-12 (March 2005)**

The action taken to date addresses one aspect of the deficiency, although not substantially eliminating it for all operators and aircrew.

Therefore, the assessment is **Satisfactory in Part**.

However, given that the safety deficiency being addressed by Recommendation A95-12 (as well as that by A95-11) is very similar to that being addressed by the more recent Recommendation A00-06 (i.e., lack of guidelines and standards for PDM training for all pilots involved in commercial air operations), it is appropriate to follow the progress on PDM safety issue through Recommendation A00-06.

As such, **Further Action is Unwarranted** on this recommendation, and the status of A95-12 is now **Inactive**.

## **TSB review of Recommendation A95-12 deficiency file status (April 2014)**

The Board requested that Recommendation A95-12 be reviewed to determine if the Deficiency File Status was appropriate. After an initial evaluation, it was determined that the safety deficiency addressed by recommendations A95-12 and A95-11 is addressed by the more recent recommendations A00-06 and A09-02.

It is therefore appropriate to follow the progress on crew resource management (CRM) and pilot decision-making (PDM) safety issues through recommendations A00-06 and A09-02.

Therefore, the assessment of the response to Recommendation A95-12 remains **Satisfactory in Part**.

## **Transport Canada's response to Recommendation A95-12 (January 2015)**

Transport Canada agrees with the intent of the recommendation.

Work continues on the development of Standards and Guidance material for crew resource management (CRM) and updated pilot decision-making (PDM) to be incorporated in the CRM modules. Public consultation on proposed amendments to the standards is underway, and the standards are expected to come into effect in late 2015.

## **TSB reassessment of Transport Canada's response to Recommendation A95-12 (March 2015)**

Until all regulatory changes proposed by Transport Canada are enacted, the deficiency identified in Recommendation A95-12 will continue to exist. However, the proposed regulatory changes, if fully implemented, will substantially reduce or eliminate the risks associated with the safety deficiency identified in Recommendation A95-12.

Therefore, the assessment of the response to Recommendation A95-12 remains **Satisfactory in Part**.

## **Transport Canada's response to Recommendation A95-12 (November 2015)**

(Includes recommendations A95-11, A00-06, A07-03, and A09-02.)

Transport Canada agrees with the intent of the recommendation. Work continues on the development of standards for crew resource management (CRM). A Notice of Proposed Amendment on CRM standards was developed and will be published in 2016.

## **TSB reassessment of Transport Canada's response to Recommendation A95-12 (March 2016)**

Transport Canada appears to be making meaningful progress. However, the action has not been sufficiently advanced to reduce the risks to transportation safety. Until the proposed CRM standards are fully implemented, the safety deficiency will continue to exist.

Therefore, the assessment of the response to Recommendation A95-12 is changed to **Satisfactory Intent**.

## **Transport Canada's response to Recommendation A95-12 (January 2017)**

TCCA agrees with the intent of this recommendation. TCCA proposes to go beyond the scope of the recommendation and require crew resource management (CRM) training for CAR 702 (Aerial work) operations as well. A revised Notice of Proposed Amendment for CRM was posted to the CARAC Activity Reporting System under Activity #2014-021 and emailed to all CARAC stakeholders on May 9, 2016.

The new CRM Standard will be published in May/June 2017, together with guidance material for industry in the form of an Advisory Circular being published at the same time. Industry stakeholders will be briefed before publication.

The new standard will come into effect 30 days after publication.

## **TSB reassessment of Transport Canada response to Recommendation A95-12 (March 2017)**

TC's latest response suggests that its revised *Notice of Proposed Amendment* (NPA 2014-021) addresses the deficiency identified in Recommendation A95-12. The NPA states that TC's current framework for CRM training does not reflect many contemporary CRM training concepts. The NPA's objective is to integrate such concepts into commercial aviation crew training programs. Additionally, the proposed amendments will see a broader application of these updated CRM training requirements to include *Commercial Air Service Standards* (CASS) Subparts 722, 723, 724 and 725.

Progress toward mitigation of the risks associated with this recommendation has been slow. Such extended delays have prompted the TSB to add an item to its key safety issues Watchlist that calls for both TC and the Government of Canada to move towards an improved and accelerated process for taking action on TSB recommendations.

The Board is encouraged that amendments to the CASS, and guidance material for industry, are planned to be published in May/June 2017 and come into effect 30 days following their publication.

The Board is pleased that the intent of NPA 2014-021 is to update CRM training standards across all CASS, including Aerial Work operations, which were not included in the original recommendation. Consequently, if fully implemented, the proposed changes should serve to mitigate the risks identified in Recommendation A95-12.

However, until the new CRM Standards are fully implemented, the risks associated with the safety deficiency identified in Recommendation A95-12 will continue to exist.

Therefore, the response to Recommendation A95-12 is assessed as **Satisfactory Intent**.

### **Transport Canada's response to Recommendation A95-12 (December 2017)**

TC agrees with the intent of the recommendation.

The new standards for the Crew Resource Management (CRM) have been published on the CARAC Activity Reporting website on 28 July 2017 and can be found at the following locations: <http://www.wapps.tc.gc.ca/Saf-Sec-Sur/2/NPA-APM/actr.aspx?id=15&aType=1&lang=eng> and <http://www.wapps.tc.gc.ca/Saf-Sec-Sur/2/NPA-APM/actr.aspx?id=15&aType=1&lang=fra> (last link on the page entitled 'Standard – Crew Resource Management').

Industry stakeholders were briefed prior the publication and the new standards will come into effect on 31 January 2019.

The amendments will be incorporated into the actual standards on the CARs website as part of the December 2018 CARs amendment (30 days before the amendments become effective).

In the meantime, there will be a new link added to the CARs Index page for 'Approved Standards Not Yet in Effect' when the next CARs amendment is released. The new link will take you to a page providing the text of the amended/new provisions that are not yet in effect. The CARs Index page is at the following link: <http://www.tc.gc.ca/eng/acts-regulations/regulations-sor96-433.htm>

Transport Canada has no further activities planned for this recommendation.

### **TSB reassessment of Transport Canada's response to Recommendation A95-12 (February 2018)**

TC's response indicates that the new crew resource management (CRM) standards will come into effect on 31 January 2019, under subparts 722, 723, 724 and 725 of the *Commercial Air Service Standards* (CASS), and apply to aerial work, air taxi, commuter and airline operators. Under these new standards, air operators are required to provide contemporary CRM training to flight crews, flight attendants, dispatchers/flight followers, ground crew and maintenance personnel, on an initial and annual basis.

These new standards will integrate contemporary CRM by applying threat and error management (TEM) concepts for commercial air operators. In order to validate CRM skills, the new standards also require an assessment for non-technical skills, such as cooperation; leadership and managerial skills; situational awareness; and decision making. The training will provide knowledge and skills which can assist flight crews in recognizing risks, such as those associated with conducting approaches in deteriorating weather conditions.

The new CRM standards have been published on the Canadian Aviation Regulation Advisory Council (CARAC) Activity Reporting website. Additionally, TC published Advisory Circular 700-042, which provides guidance to the industry for compliance with the new standards, as well as an article in its Aviation Safety Letter, Issue 4/2017, regarding the need for commercial air operators to prepare for the new CRM standards.

The Board believes that the actions taken by TC will substantially reduce the risk associated with the safety deficiency identified in Recommendation A95-12, once the new CRM standards come into effect.

Therefore, the Board considers the response to Recommendation A95-12 to be **Fully Satisfactory**.

#### **Next TSB action**

This deficiency file is **Closed**.