



REASSESSMENT OF THE RESPONSE TO TSB RECOMMENDATION A91-13

Upgrading flight data recorder and cockpit voice recorder requirements

Background

On 29 November 1988, the air ambulance Beechcraft King Air A-100, Voyageur 796, with two flight crew members and two paramedics on board, departed Timmins for Chapleau, Ontario, on an instrument flight rules (IFR) flight. There, a seriously injured person was to be boarded and flown to Sault Ste. Marie, Ontario. The aircraft proceeded from Timmins en route at 12 000 feet, and, on arrival at Chapleau, the aircraft overflew the airport at low altitude and crashed 1.5 miles southwest of the airport. The four occupants were fatally injured, and the aircraft was destroyed by the impact and post-impact fire.

The Transportation Safety Board of Canada (TSB) determined that the flight crew descended below the minimum applicable IFR altitude while approaching the Chapleau non-directional beacon. It could not be determined why the crew allowed the aircraft to descend, in controlled flight, into the ground.

The Board concluded its investigation and released report A88O0491 on 12 February 1991.

TSB Recommendation A91-13 (February 1991)

Although standard investigative techniques enabled the Board to determine that a serviceable aircraft descended into the trees while in controlled flight, the underlying cause(s) of this accident will likely remain obscure. This case is one of many in which a flight data recorder (FDR) or a cockpit voice recorder (CVR) could have provided information which would point to a cause(s) and an associated safety deficiency from which preventative measures could have been identified. In the years 1988 to 1989, 14 Canadian major air occurrences were investigated. Of these, five aircraft were equipped with recorders, providing vital information in two occurrences and simplifying the investigation of the other three. Nine aircraft were not equipped, and in five of these, a recorder could have provided information to assist in confirming the cause(s) and in developing safety action. The cause(s) in four cases, including this one, will likely remain uncertain because of a lack of information.

The present Canadian regulations for flight recorders were enacted in 1969, and since then, only editorial or administrative changes have been made. In 1985, the International Civil Aviation Organization (ICAO) issued new Standards and Recommended Practices (SARPS) for flight recorders. The existing Canadian legislation met the ICAO standard, but fell short of the Recommended Practice. Canada endorsed the SARPS and formed a Flight Recorder Standards Review Group in 1986. In November 1987, the Canadian Aviation Safety Board (CASB) produced a Statement of Requirement (SOR) which advocated improved rules for flight recorders. Subsequent to consultation with the Canadian aviation industry, Transport Canada

stated their intention to issue new legislation which would correspond as closely as possible to United States rules issued in July 1988.

These rules, and thus the planned Canadian legislation do not meet all of the ICAO Recommendations nor those of the CASB SOR; nevertheless, they do offer a significant improvement over the existing Canadian rules. CVRs would be required in more of the smaller aircraft that are widely used by small air carriers. Also, CVRs would be required in many helicopters, and both CVRs and FDRs would be mandatory for large, passenger-carrying helicopters.

Better recorder technology, such as a solid-state digital CVR with a potential for two-hour capacity, will soon be available, and agencies such as EUROCAE (European Organization for Civil Aviation Electronics) are considering rule changes to take advantage of these new capabilities. However, as indicated above, new rules are needed in the near-term to provide information that may be necessary for safety investigations and effective corrective measures.

Therefore, despite the limitations of the proposed legislation and the prospect of better hardware to come, the TSB recommends that, in the interim,

the Department of Transport expedite legislation for upgrading the flight recorder requirements for Canadian-registered aircraft.

TSB Recommendation A91-13

Transport Canada's response to Recommendation A91-13 (September 1991)

The proposed amendments to the Flight Data Recorder (FDR) and Cockpit Voice Recorder (CVR) Orders have been formulated to correlate with the United States Federal Aviation Administration (FAA) FDR/CVR Final Rule issued on 11 July 1988 and which is scheduled to come into effect in the United States on 11 October 1991. One provision of the proposed CVR Order will require two pilots by certification or operating rule, such as the King Air A100 that was involved in the accident, be equipped with a CVR.

Transport Canada has accorded the highest priority to the processing of the FDR/CVR Orders and has advised the Department of Justice of the importance of expediting the promulgation of these Orders.

TSB assessment of Transport Canada's response to Recommendation A91-13 (September 1991)

TSB staff has been advised by Transport Canada (TC) staff that a meeting between operational and legal staff within TC was scheduled in the second week of October to finalize the draft legislation. Following this, approval from the Department of Justice will be sought, and the proposed regulations will be published in Part I of the *Canada Gazette*.

TC recognizes the need to expedite legislation and, although the process of producing it is long, it appears that progress is being made. TSB staff believes the response to be **Satisfactory**.

TSB reassessment of Transport Canada's response to Recommendation A91-13 (November 1997)

Current *Canadian Aviation Regulations* (CARs) about cockpit voice recorder / flight data recorder (CVR/FDR) requirements were adopted despite observations by the TSB (Direction General, Investigation Operations, letter dated 27 September 1995) that warned they were outdated. The TSB is currently participating in a Canadian Aviation Regulation Advisory Council (CARAC) working group to develop more relevant CARs.

Therefore, the response to Recommendation A91-13 is assessed as **Satisfactory Intent**.

As such, further action is unwarranted on this recommendation, the safety issue is addressed by A94-04, and the status of A91-13 is now **Inactive**.

TSB review of Recommendation A91-13 deficiency file status (April 2014)

The Board requested that A91-13 be reviewed to determine if the Deficiency File Status was appropriate. After an initial evaluation, it was determined that the safety deficiency addressed by Recommendation A91-13 is addressed by the more recent Recommendation A99-02.

It is therefore appropriate to follow the progress on the flight data recorder (FDR) safety issue through Recommendation A99-02.

Therefore, the assessment of the response to Recommendation A91-13 remains as **Satisfactory Intent**.

European Aviation Safety Agency's response to Recommendation A91-13 (November 2014)

The European Aviation Safety Agency (EASA) has provided a closing reply to this safety recommendation on 18 December 2012. As foreseen in this reply, this safety recommendation was considered within the framework of rulemaking tasks RMT.0400 and RMT.0401, "Amendment of requirements for flight recorders and underwater locating devices", which were launched on 26 September 2012.

The results of these considerations were published in a Notice of Proposed Amendment (NPA 2013-26) in December 2013. The resulting EASA Opinion (Opinion 01/2014) was then published in May 2014.

This Opinion includes the proposal to require that, by 01 January 2019, all aeroplanes which are required to carry a cockpit voice recorder (CVR) shall be fitted with a CVR which has a minimum recording duration of 2 hours.

The Opinion was submitted to the European legislator (European Commission, European Parliament and Council), which is currently assessing it.

Transport Canada's response to Recommendation A91-13 (March 2015)

Transport Canada (TC) agrees with the intent of the recommendation. It is anticipated that proposed regulations that address this recommendation will be pre-published in the *Canada Gazette* Part I in spring 2016.

TC indicated that delays are sometimes inevitable when higher-priority tasks take up resources in the regulatory program. The defined criteria for assigning priority to regulatory initiatives are presented in the following table.

TRANSPORT CANADA LIST OF REGULATORY PRIORITIES

Priority 1	Speech from the Throne, Budget, Other High Level Government Commitment, initiatives related to the Red Tape reduction and Canada-U.S. Regulatory Cooperation Council
Priority 2	Ministerial priority, Urgency, Transportation Safety Board Watchlist Initiatives
Priority 3	High Strategic Outcome Priority, International/Federal-Provincial Obligations, Time Pressure, other TSB initiatives
Priority 4	Efficiency, Parliamentary, Stakeholder Priorities
Priority 5	Miscellaneous Amendments

Note that the TSB Watchlist initiatives and other TSB initiatives are assigned Priority 2 and 3 respectively. These high ratings were assigned because the Department takes TSB safety action very seriously. Occasionally, however, even important regulatory initiatives are shifted due to higher-priority issues. The Board should be aware, however, that once Civil Aviation commits to regulatory action, timing may change, but the Department will proceed with the initiative until is completed.

TSB reassessment of the response to Recommendation A91-13 (March 2015)

In the Board’s last reassessment, the response to this recommendation was linked to Transport Canada’s response to A99-02. Transport Canada’s response restates its support for the intent of Recommendation A99-02. Additionally, it advises that the proposed regulations contained in NPA 2011-010 are further delayed and will not be pre-published in the *Canada Gazette* Part I until the first quarter of 2016. This further delay will undoubtedly push the implementation date of the proposed regulatory change well beyond the current target of 01 January 2016. In the meantime, the *Canadian Aviation Regulations* (CARs) will continue to lack harmonization with both the Federal Air Regulations (FAR) requirement and the ICAO standard for 2-hour CVR.

The European Aviation Safety Agency (EASA) reviewed their actions to date in response to Recommendation A91-13. The latest version of EASA rulemaking tasks RMT.0400 and RMT.0401 would indicate that implementation is now scheduled for 01 January 2019.

Despite implementation delays, Transport Canada is proposing regulatory changes that, when fully implemented, will substantially reduce or eliminate the safety deficiency identified in Recommendation A99-02, which in turn will do the same for A91-13. While Transport Canada’s proposed measures are reasonable, the protracted delays are not.

Therefore, the assessment of the response to Recommendation A91-13 is changed to **Unsatisfactory**.

Transport Canada’s response to Recommendation A91-13 (November 2015)

(Includes recommendations A94-04, A99-02, and A99-03.)

Transport Canada agrees with the intent of the recommendation. It is anticipated that the proposed regulations that address this recommendation will be pre-published in the *Canada Gazette*, Part I in 2016.

TSB reassessment of Transport Canada's response to Recommendation A91-13 (March 2016)

The Board has linked the mitigation of the risks associated with Recommendation A91-13 to its assessment of Recommendation A99-02. Transport Canada's latest update repeats the statement that its proposed regulations to address the risks identified in Recommendation A99-02 are to be pre-published in the *Canada Gazette*, Part I in 2016.

While Transport Canada's proposed regulatory changes are reasonable, the protracted delays are not.

Therefore, the assessment of the response to Recommendation A91-13 remains as **Unsatisfactory**.

Transport Canada's response to Recommendation A91-13 (January 2017)

It is anticipated that the proposed regulations that address the CVR (2-hr recording capacity) component of this recommendation will be pre-published in the *Canada Gazette*, Part I, in summer 2017.

TSB reassessment of Transport Canada's response to Recommendation A91-13 (March 2017)

TC's latest update indicates that its proposed regulatory amendments, designed to mitigate the risks associated with the CVR component of Recommendation A91-13, is anticipated to be pre-published in the *Canada Gazette*, Part I, in summer 2017. Since 2011, this milestone has been revised three times, extending the anticipated pre-publishing in the *Canada Gazette*, Part I, from 2012 to 2017.

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.

While TC's proposed regulatory changes are reasonable, the protracted delays are not.

Therefore, the response to Recommendation A91-13 is assessed as **Unsatisfactory**.

Transport Canada's response to Recommendation A91-13 (October 2017)

TC agrees in principle with the recommendation.

It is anticipated that the proposed regulations that address the cockpit voice recorder (CVR) (2-hr recording capacity) component of this recommendation will be pre-published in the *Canada Gazette*, Part I in fall 2017.

TSB reassessment of Transport Canada’s response to Recommendation A91-13 (June 2018)

TC’s proposed amendments to the *Canadian Aviation Regulations* (CARs), which were pre-published in the *Canada Gazette*, Part I, in December 2017, only partially address the flight recorder requirements introduced by the International Civil Aviation Organization (ICAO) in 2010. If these amendments are implemented by 2019, the regulations will not come into effect until 2023, which is 7 years after the ICAO effective date of 01 January 2016, 13 years since the introduction of the ICAO requirements, and 32 years after the issuance of Recommendation A91-13.

The following is a list of ICAO Annex 6 FDR/CVR requirements, which have been introduced since November 2010 and have not been addressed by TC:

Date	Requirements
18 November 2010	<ul style="list-style-type: none"> • CVR and FDR requirements changed to “all turbine-engined aeroplanes” for aircraft issued a type certificate after 01 January 2016 (Transport Canada only addresses multi-engine turbine aeroplanes) • FDR or lightweight FDR are required for all turbine aircraft 5700 kg or less and are issued a type certificate after 01 January 2016 • discontinue use of Mag tape and wire CVRs by 01 January 2016 • discontinue use of Mag tape and wire FDRs by 01 January 2016 • all CVRs to be 2-hour duration by 01 January 2016 • sampling and recording rates were increased for some FDR parameters for aircraft issued a type certificate after 01 January 2016 • discontinue use of analogue and photographic FDRs by 01 January 2012
15 November 2013	<ul style="list-style-type: none"> • CVR requirements for all turbine-engine aeroplanes between 2250 kg to 5700 kg for type certified aircraft after 01 January 2016 (<i>Canada Gazette</i>, Part 1, only covers multi-engine, 6 or more passengers) • 90-day underwater locator beacon (ULB) for all FDRs and CVRs by 01 January 2018 • requirement to install low frequency 30-day ULB on airframe by 2018 • Note: <i>Canada Gazette</i>, Part I, allows for a CVR not to have a ULB, which is non-compliant with ICAO, Annex 6
10 November 2016	<ul style="list-style-type: none"> • requirement for 25-hour CVR for new manufactured aircraft > 27,000 kg after 01 January 2021 • requirement aeroplanes > 27,000 kg and type certified after 01 January 2021 to be equipped with a means to recover flight recorder data in a timely manner • introduction/authorization to install automatic deployable flight recorders

The current flight recorder requirements in the CARs are out of date and non-compliant with ICAO requirements. The Notice of Proposed Amendment (NPA) for the CVR amendments published in the *Canada Gazette*, Part I, was initiated in 2011 and will take effect in 2023, at the earliest, if implemented by 2019. As such, TC was unable to “expedite legislation for upgrading the flight recorder requirements for Canadian-registered aircraft”.

Therefore, the response to Recommendation A91-13 is assessed as **Unsatisfactory**.

Next TSB action

Because of the constant delays in addressing Recommendation A91-13, the Board believes that, after 27 years, TC is no longer in a position to either address or fulfill the intent of Recommendation A91-13, which was to expedite legislation with regards to the flight recorder requirements. Since the safety deficiency is also documented in more recent recommendations, A94-04, A99-02 and A99-03, the TSB will continue to monitor the progress of TC's proposed regulatory amendments to mitigate the risks associated with the safety deficiency identified in those recommendations and will reassess the deficiency on an annual basis or when otherwise warranted through those same recommendations.

This deficiency file is **Closed**.