



REASSESSMENT OF THE RESPONSES FROM TRANSPORT CANADA TO AVIATION SAFETY RECOMMENDATION A03-04

IN-FLIGHT ENTERTAINMENT NETWORK -SUPPLEMENTAL TYPE CERTIFICATE PROCESS

Background

On 02 September 1998, Swissair Flight 111, a McDonnell Douglas MD-11 aircraft, departed John F. Kennedy Airport in New York, New York, en route to Geneva, Switzerland. Approximately one hour after take-off, the crew diverted the flight to Halifax, Nova Scotia, because of smoke in the cockpit. While the aircraft was manoeuvring in preparation for landing in Halifax, it struck the water near Peggy's Cove, Nova Scotia, fatally injuring all 229 occupants on board. The investigation revealed that the flight crew had lost control of the aircraft as a result of a fire in the aircraft's ceiling area, forward and aft of the cockpit bulkhead.

The Board concluded its investigation and released report A98H0003 on 27 March 2003.

Board Recommendation A03-04 (27 March 2003)

Based on its investigation into the circumstances of Swissair's in-flight entertainment network (IFEN) MD-11 modification and other entertainment system designs, the TSB believes that, as currently written, United States Federal Aviation Regulation (FAR) 25.1309 can be interpreted to allow Supplemental Type Certificate (STC) approval of system-to-aircraft integration designs that are not compliant with the original type certification. Therefore, the TSB recommended that:

Regulatory authorities require that every system installed through the STC process undergo a level of quantitative analysis to ensure that it is properly integrated with aircraft type-certified procedures, such as emergency load-shedding.

A03-04

Response to A03-04 (16 June 2003)

In its 16 June 2003 response to Recommendation A03-04, Transport Canada (TC) provided the following comments:

- TC does not agree that a quantitative assessment is always required for every system installed through the STC process;

- TC states that the regulatory requirements are in place to deal with the approval of STCs;
- TC states that it will develop advisory material to emphasize the need to verify that system integration requirements are adequately addressed during the STC process;
- TC states that it will initiate awareness training on this issue for industry delegates and TC certification engineers, focussing on “non-essential, non-required” systems; and
- TC states that it will continue its harmonization efforts related to FAR 25.1309.

Board Assessment of the Response to A03-04 (29 October 2003)

TC’s response suggests that aspects of Recommendation A03-04, such as the intention of the phrase “a level of quantitative analysis,” may not have been fully understood. Although TC disagrees with the premise of Recommendation A03-04, it nevertheless plans to expend resources to develop improved advisory material and initiate awareness training to ensure that STC installations are properly integrated. While these proposed initiatives may have some short-term positive impact, the systemic deficiency raised in Recommendation A03-04 will remain.

Therefore, the response is assessed as being **Unsatisfactory**.

Next TSB Action (29 October 2003)

The TSB Air Branch will liaise with TC to validate TC’s understanding of the deficiency raised in the recommendation and monitor TC’s efforts to ensure that the STC process provides for proper system integration. If these efforts do not result in action that will mitigate the risk delineated in Recommendation A03-04, a follow-up Board safety concern or recommendation re-stating the deficiency should be considered.

Response to A03-04 (07 April 2004)

In response to discussions with the TSB, TC provided the following comments:

- TC does not agree that a quantitative assessment is always required for every system installed through the STC process;
- TC states that Canadian regulatory requirements (Canadian Aviation Regulation [CAR] 525.1309) in place adequately deal with the approval of STCs;
- TC states that it will develop advisory material to emphasize the need to verify that system integration requirements are adequately addressed during the STC process;

- TC states that it will initiate awareness training on this issue for industry delegates and TC certification engineers, focussing on “non-essential, non-required” systems; and
- TC states that it will continue its harmonization efforts related to FAR 25.1309.

Board Reassessment of the Response to A03-04 (21 July 2004)

As it pertains to Recommendation A03-04, TC’s letters state that, if interpreted properly, CAR 525.1309 is sufficient to preclude the approval of systems that degrade the level of safety achieved at the initial type certification. TC’s recent 07 April 2004 letter also describes the differences between how TC implements the provisions of CAR 525.1309 and the FAA’s management of FAR 25.1309. Although the two regulations are essentially the same, it appears that TC has taken a more hands-on management approach to aircraft certification standards for the approval of STC system-to-aircraft integration designs. For example, TC differentiates between the level of scrutiny required for “non-required” avionics equipment installed in the cockpit or interfacing with “required” certified aircraft systems and cabin equipment installed for the convenience of the occupants. In the case of the former, depending on the complexity of the interface, a quantitative analysis may be required to ensure that the STC is properly integrated.

TC also explained that its approach to the management and administration of its ministerial delegations emphasizes the standards associated with CAR 525.1309 to the delegates responsible for ensuring compliance with the requirements as defined in the basis of certification.

TC’s current position is that the risk articulated in Recommendation A03-04 can be dealt with by a proactive approach to managing the STC process and a change in the regulations. While these initiatives may reduce the deficiency, the fact that TC will continue to allow a qualitative analysis in some cases implies that a level of undefended risk will remain.

Therefore, the response to TSB Recommendation A03-04 is assigned as **Satisfactory-in-Part**.

Next TSB Action (21 July 2004)

TSB staff will continue to monitor the effectiveness of TC’s actions that mitigate the risks articulated in Recommendation A03-04.

Response to A03-04 (14 December 2005)

Although this remains an active recommendation, Recommendation A03-04, due to an administrative error, was not part of the list of active recommendations sent by the TSB to TC on 01 September 2005. Consequently, an updated response to this recommendation was not in TC’s update on 14 December 2005.

Board Reassessment of the Response to A03-04 (29 August 2006)

TC's planned action or the action taken will reduce but not substantially reduce or eliminate the deficiency.

Therefore, the assessment remains as **Satisfactory-in-Part**.

Next TSB Action (29 August 2006)

TSB staff will liaise with TC to solicit an activity update with respect to the deficiency described in Recommendation A03-04 as part of the Aviation Annual Reassessment of Active Recommendations for 2007.

Response to A03-04 (07 February 2007)

Although included in TSB's request for activity update dated 03 October 2006, TC's response dated 07 February 2007 did not contain an update with respect to this active recommendation.

Board Reassessment of the Response to A03-04 (24 July 2007)

It is the Board's understanding that TC remains committed to providing an update to its original action plan, which, if fully implemented, will substantially reduce or eliminate the deficiencies as described in the Recommendation A03-04.

Therefore, the assessment remains at **Satisfactory-in-Part**.

Next TSB Action (24 July 2007)

TSB staff will liaise with TC to solicit an activity update with respect to the deficiency described in Recommendation A03-04.

Response to A03-04 (06 and 11 March 2008)

TC's responses dated 06 and 11 March 2008 did not contain an update with respect to Recommendation A03-04.

Board Reassessment of the Response to A03-04 (13 August 2008)

Because TC has not indicated otherwise, the Board believes that TC remains committed to providing an update to its original action plan. Although the initiatives contained in the action plan may reduce the deficiency, the fact that TC will continue to allow a qualitative analysis in some cases implies that a level of undefended risk will remain. The planned action will reduce but not substantially reduce or eliminate the deficiencies as described in the Recommendation A03-04.

Therefore, the assessment remains at **Satisfactory-in-Part**.

Next TSB Action (13 August 2008)

TSB Air Branch staff will liaise with TC to solicit an activity update with respect to the deficiency described in Recommendation A03-04.

Review of A03-04 Deficiency File Status (23 September 2009)

In its latest position statement with respect to the deficiency identified in Recommendation A03-04 TC declares that although its solution is heavily dependant on recurrent training, based on regulatory initiatives completed and in progress, it considers the recommendation closed.

Therefore, the assessment remains at **Satisfactory-in-Part**.

The Board also concludes that, as no further action is planned by TC to address any residual risk, continued reassessment will not likely yield further results.

Next TSB Action (23 September 2009)

TSB Air Branch staff will not monitor TC's activities to require that every system installed through the STC process undergo a level of quantitative analysis.