



REASSESSMENT OF THE RESPONSES FROM TRANSPORT CANADA TO AVIATION SAFETY RECOMMENDATION A00-04

ENGINE TREND MONITORING REQUIREMENTS

Background

The aircraft, a Pilatus PC-12, serial number 151, was on a scheduled domestic flight from St. John's, Newfoundland, to Goose Bay, Labrador, with the pilot, a company observer, and eight passengers on board. Twenty-three minutes into the flight, the aircraft turned back towards St. John's because of a low oil pressure indication. Eight minutes later, the engine (Pratt & Whitney PT6A-67B) had to be shut down because of a severe vibration. The pilot then turned towards Clarenville Airport, but was unable to reach the airfield. The aircraft was destroyed during the forced landing in a bog one and a half miles from the Clarenville Airport. The pilot, the company observer, and one passenger sustained serious injuries.

The Board concluded its investigation and released report A98A0067 on 29 March 2000.

Board Recommendation A00-04 (29 March 2000)

Before the implementation of the Canadian single-engine instrument flight rules (SEIFR) regulation, Transport Canada (TC) staff produced a position paper that proposed means of managing the associated risk. One of the proposals was for an engine performance monitoring system capable of monitoring engine parameters and comparing actual engine performance against the ideal. This system would provide operators with early indications of engine damage and deterioration. The final SEIFR rule, however, did not include a requirement for such a system.

The Australian Civil Aviation Safety Authority (CASA) has included a requirement for automatic engine performance and condition monitoring, and the draft European policy has adopted this requirement. The Federal Aviation Administration (FAA) requires an inspection program that incorporates either the manufacturer's recommended engine trend monitoring program, which includes an oil analysis, if appropriate, or an FAA-approved engine trend monitoring program that includes an oil analysis at defined intervals.



TC initially proposed an engine monitoring system, and other regulating authorities have recognized the value of these systems and have included the requirement. These systems can provide early warning of engine deterioration and of the necessity to conduct an early removal and overhaul of the engine. Therefore, the Board recommended that:

The Department of Transport require that single-engine instrument flight rules (SEIFR) operators have in place an automatic system or an approved program that will monitor and record those engine parameters critical to engine performance and condition.

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Response to A00-04 (21 June 2000)

In its response on 21 June 2000, TC stated its concurrence with the recommendation and, subject to the Canadian Aviation Regulation Advisory Council (CARAC) consultation process, will develop Notices of Proposed Amendment (NPAs) for applicable areas of the *Canadian Aviation Regulations* and associated standards. TC is anticipating submitting these documents to the December 2000 meeting of the CARAC's Commercial Air Services Operations Technical Committee.

Board Assessment of the Response to A00-04 (13 September 2000)

In its reply, TC indicated that it concurs with the recommendation and, subject to the CARAC consultation process, will develop NPAs for applicable areas of the *Canadian Aviation Regulations* and associated standards. TC is anticipating submitting these documents to the December 2000 meeting of the CARAC's Commercial Air Services Operations Technical Committee. Given that safety action will not take place until after the consultative process with the CARAC, the response is considered **Satisfactory Intent**.

Next TSB Action (13 September 2000)

This deficiency file is assigned an **Active** status.

Response to A00-04 (14 December 2005)

TC's response dated 14 December 2005 stated that amendments to *Canadian Aviation Regulations* Standard 726.07, Quality Assurance Program, were published on 31 May 2005.

The paragraph applicable to the issue raised by Recommendation A00-04 reads as follows:

(2) Where the air operator carries passengers in single engine aircraft under IFR or VFR at night pursuant to subsection 703.22(2), the program shall include engine trend monitoring or equivalent procedures to identify any deterioration in engine performance and reliability.

Board Reassessment of the Response to A00-04 (23 June 2006)

TC's letter dated 14 December 2005 indicates that *Canadian Aviation Regulations* Standard 726.07 (2) was amended on 31 May 2005 to read as follows:

Where the air operator carries passengers in single engine aircraft under IFR or VFR at night pursuant to subsection 703.22(2), the program shall include engine trend monitoring or equivalent procedures to identify any deterioration in engine performance and reliability.

This action taken will substantially reduce the safety deficiency as described in Recommendation A00-04.

Therefore, the assessment is **Fully Satisfactory**.

Next TSB Action (23 June 2006)

As the Board considers this safety deficiency to be rectified, no follow-up action is required and this deficiency file is assigned an **Inactive** status.