



REASSESSMENT OF THE RESPONSE TO AVIATION SAFETY RECOMMENDATION A93-03

Crew pairing

Background

On 30 April 1990, a Beechcraft C99 Airliner on a scheduled domestic flight from Timmins, Ontario, crashed while the crew was conducting a visual approach to land at the Moosonee Airport. The aircraft was destroyed by the impact and a post-crash fire. The captain and the two passengers were seriously injured, and the co-pilot received fatal injuries.

It was determined that the captain had inadvertently flown the aircraft into trees, during a condition of visual illusion, as a result of inadequate crew coordination in that neither pilot effectively monitored the altimeter. Contributing to the occurrence was the absence of approach lighting, the lack of a company crew pairing policy, the captain's unfamiliarity with black-hole illusion and the seating position of the captain.

The Board concluded its investigation and released Aviation Investigation Report A90H0002 on 10 March 1993.

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The lack of a company crew pairing policy was identified as contributing to the accident. The captain and co-pilot had been in their respective crew positions for less than one month, and the accident flight was the co-pilot's first night flight in the C99, his first trip into Moosonee, and his first flight with the captain.

Crew pairing has been identified as a contributing factor in other occurrences. In July 1987, a Lockheed 1011 was involved in a near collision with a Boeing 747 as a result of a navigational error over the Atlantic Ocean. The Lockheed 1011 flight crew, who did not perform adequate navigational cross-checks, had limited experience in North Atlantic flying, with no crew member having more than six return trips (Report 87-A74947 refers). Furthermore, in 1987, the crew of a Boeing 737 Combi flew off track while on approach to Prince George, British Columbia, because of an improper navigation switch selection. Neither pilot had been in the cockpit of a Combi before (Report 87-P74128 refers). In August 1989, the flight crew of a Boeing 727 apparently failed to notice a navigation error, resulting in a loss of separation with another aircraft. The captain was not accustomed to the type of approach being flown, the co-pilot was new to the aircraft, and neither pilot was familiar with the destination (Report A89A0209 refers).

The U.S. National Transportation Safety Board (NTSB) has recognized the importance of proper crew pairing. In October 1986, following the investigation of three commuter air carrier accidents in which crew pairing was identified as a contributing factor, the NTSB recommended

that the U.S. Federal Aviation Administration (FAA) caution commuter air carrier operators not to schedule on the same flight crew members with limited experience in their respective positions. Furthermore, following the crash of a McDonnell Douglas DC -9-14 on 15 November 1987, in which crew pairing was again identified as a contributing factor, the NTSB recommended that the FAA establish minimum experience levels for each pilot-in-command and second-in-command pilot, and that such criteria be used to prohibit the pairing of pilots who have less than the minimum experience in their respective positions. The FAA responded to these recommendations by bringing the crew pairing issue to the attention of air carriers and requesting that they develop, to the extent possible, appropriate crew pairing policies and procedures.

Crew pairing was also recently addressed by the Commission of Inquiry into the Air Ontario Crash at Dryden, Ontario. It was recommended that Transport Canada (TC) encourage air carriers which lack pilots with sufficient experience on a new aircraft type to provide highly experienced pilots from outside the air carrier to assist in training the air carrier's pilots and to fly with them until an adequate level of flight experience is gained on the new aircraft type. Additionally, it was recommended that TC proffer for enactment legislation with respect to flight crew pairing. That legislation would require that one of the flight crew members, either the pilot-in-command or the first officer, have substantial flight experience on the aircraft type.

Many factors must be considered when flight crews are made up. Not only must the crew be familiar with the aircraft type, but it should also be familiar with the aspects of the operating environment specific to a particular aircraft, an operating area, the type of operation, the time of day, and, if possible, the crew members should be familiar with each other.

In view of the importance of crew pairing to effective cockpit performance and in view of the many factors which can contribute to poor crew pairing, the Board recommended that:

The Department of Transport provide guidance for air carriers to assist in the effective pairing of flight crews.

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Transport Canada's response to Recommendation A93-03 (August 1993)

The issue of crew pairing is being addressed by Transport Canada officials as a result of the recommendations contained in the Commission of Inquiry into the Air Ontario Crash at Dryden, Ontario. The subject of crew pairing has been designated as MCR 71 by the Dryden Implementation Project and is currently under active review. In addition, the Federal Aviation Administration (FAA) has issued a Notice of Proposed Rulemaking (NPRM) for a regulation which would prevent the pairing of pilots if both have 75 hours or less of operating time on the type of aircraft being flown.

There has been extensive consultation between Transport Canada Aviation (TCA) and the aviation industry on how to best implement this recommendation. It is expected that the Canadian implementation of legislation for crew pairing will be similar to that of the FAA. This legislation will be addressed by the Dryden Commission Implementation Project and its review of MCR 71.

Board assessment of the response to Recommendation A93-03 (August 1993)

Transport Canada's (TC) response stated that the issue of crew pairing is being addressed as a result of the recommendations contained in the Commission of Inquiry into the Air Ontario Crash at Dryden Ontario, and that the issue is under active review. In addition, TC indicated that the Federal Aviation Administration (FAA) has issued a Notice of Proposed Rulemaking (NPRM) for a regulation which would prevent the pairing of pilots if both have 75 hours or less of operating time on the type of aircraft being flown, and that TC expects to implement legislation similar to that of the FAA.

The response focuses on legislation regarding minimum hours on type. The intent of the recommendation, however, concerned overall guidance to air carriers in order to prevent poor crew pairing resulting from other factors (discussed in the report), such as the lack of familiarity with an operating area, type of operation, night operations, or other crew members.

The action indicated by TC is limited to addressing crew experience on aircraft type. This proposal would probably have little effect in preventing accidents attributable to poor crew pairing where pilots, although experienced on type, are unsuitably paired with respect to other aspects of the total operating environment; such as was the case with the accident at Moosonee.

Therefore, the response to Recommendation A93-03 is assessed as **Satisfactory in Part**.

Board reassessment of the response to Recommendation A93-03 (November 1996)

Canadian Aviation Regulations (CARs) 725.108 partially addresses the concern.

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

Board reassessment of the response to Recommendation A93-03 (November 1997)

CARs 725.108 partially addresses the concern.

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

Board reassessment of Recommendation A93-03 (January 2004)

For the most part, the combination of requirements under CARs 705.108 (crew pairing) and 725.111 (route and aerodrome qualifications) should address the safety deficiency. However, pairing requirements may not be as comprehensive as suggested in the deficiency.

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

As such, "Further Action is Unwarranted" with respect to Recommendation A93-03, and the status is set to **Inactive**.

Board review of Recommendation A93-03 deficiency file status (April 2014)

The Board requested that Recommendation A93-03 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 A93-03 needed to be reassessed.

A request for further information was sent to Transport Canada and a reassessment will be conducted upon receipt of Transport Canada's response.

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

Consequently, the status of Recommendation A93-03 is changed to **Active**.

Transport Canada's response to Recommendation A93-03 (July 2015)

Transport Canada agrees with this recommendation.

The guidance for crew pairing has been addressed in CARs 705.108 as well as supporting guidance material in Standards 725.108 and 745.108.

Board reassessment of Transport Canada's response to Recommendation A93-03 (March 2016)

In its response, Transport Canada indicates that guidance for flight crew pairing is addressed in CARs 705.108 and its accompanying Standard, 725.108. In addition, guidance material has been published in 745.108.

The TSB believes that the combination of the guidance provided in the regulation, the standard and the accompanying guidance material will substantially reduce the safety deficiency identified in Recommendation A93-03 and therefore the Board re-assesses TC's response to the recommendation as being **Fully Satisfactory**.

Next TSB action

No further action is required.

This deficiency file is **Closed**.