



U.S. Department
of Transportation

Federal Aviation
Administration

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Office of the Administrator

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Washington, D.C. 20581

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REC'D MAR 17 2005

The Honorable Ellen G. Engleman Connors
Chairman, National Transportation
Safety Board
490 L'Enfant Plaza East, SW.
Washington, DC 20594

Dear Madam Chairman:

This is in further response to Safety Recommendations A-04-48 through -50 issued by the Board on June 25, 2004, and supplements our letter dated September 9, 2004. These safety recommendations were issued as a result of the Board's investigation of an incident on January 19, 2004, involving Air Canada Jazz flight 8093, a de Havilland DHC-8, C-GTAQ. The flightcrew landed the airplane on taxiway T at Seattle-Tacoma International Airport (SeaTac), Seattle, Washington, after being cleared to land on adjacent runway 16R. There were no injuries to the two flight crewmembers, the flight attendant, or any of the 32 passengers, and the airplane was not damaged. The scheduled air carrier passenger flight was conducted under the provisions of 14 CFR Part 129.

A-04-48. Allow Seattle-Tacoma International Airport, as an interim solution, to apply a) large nonstandard taxiway identification markings (such as the word "TAXIWAY") at regular intervals to the full width of the taxiway T surface, starting near the approach end and continuing for one-half the length of the taxiway; and b) a continuous serpentine line over the taxiway centerline, between each of the aforementioned nonstandard taxiway identification markings.

A-04-49. Conduct research to establish marking standards for use on taxiways at airports with a recurring taxiway landing problem. The research and standards should include, but not be limited to, the dimensions, placement, and conspicuity of such markings under various weather, lighting, and visibility conditions.

A-04-50. Revise Advisory Circular 150/5340-1H, "Standards for Airport Markings," based on the findings of the research conducted in response to Safety Recommendation A-04-49.

FAA Comment. The Federal Aviation Administration formed a team of subject matter experts (pilots, human factors, markings) to review the SeaTac situation and provide an initial assessment, based on previous incidents and human factors best practices. The team's review included chartering an aircraft to conduct actual approaches to runway 16R and taxiway T and to review videotapes taken from the cockpit during those approaches. I have enclosed a copy of the team's final report for the Board's information.

In summary, the team approached the problem by looking at a means to get pilots' attention at three stages of an approach to SeaTac runway 16R:

- prior to visual contact with the airport;
- at initial runway selection; and
- after runway selection to correct a selection error.

The team discussed the following various mitigation measures and how well these would work at each stage of the approach rather than make final recommendations:

Prior to visual contact

- Add information on this situation to airport diagrams and all instrument and visual approach plates for runway 16R at SeaTac. Both the National Aeronautical Charting Office and Jeppesen charts have been amended to include this information.
- Add a caution statement on the SeaTac Air Traffic Information System (ATIS) about lining up on taxiway T. The FAA has included a message on the ATIS for south flow operations.

Guidance at initial runway selection

- Install and operate Runway End Identifier Lights (REIL) on both runway 16R and 16L during daytime visual flight rules during a south flow operation. This is being done.
- Turn on sequence flashing lights for runway 16R and 16L during IMC weather conditions. Both the REILs and the sequence flashing lights are being operated in accordance with the team's recommendations.

Measures to correct an erroneous runway selection

- Install a treatment on each side of taxiway 2 in a triangular pattern to make the taxiway appear curved so it would be obvious to pilots on approach that the taxiway is not a runway. The team recommended further research on the size and pattern of this treatment and what materials should be used. The FAA is initiating a research project at the Technical Center for this purpose.
- The team also examined the specific actions recommended by the Board in Safety Recommendation A-04-48. The Board recommended allowing the airport operator to install large nonstandard taxiway identification markings (such as the word "TAXIWAY"), and to use a nonstandard continuous serpentine line over the taxiway centerline. The team found the measures recommended by the Board to be ineffective because they would not be visible to pilots sufficiently far from touchdown, especially in wet weather conditions common at SeaTac.

- The Board also recommended in Safety Recommendation A-04-49 that further research on means to address the SeaTac taxiway T issue and the general issue of confusing runways and taxiways. The FAA agrees with the recommendations for further research. As mentioned above, the team specifically recommended research on materials that could change the appearance of taxiway T. The research project at the Technical Center will address the immediate issue of materials for taxiway T, and will also include an investigation of the causes of pilot confusion in distinguishing parallel runways and taxiways and recommend solutions to address that problem.

The Board recommended in Safety Recommendation A-04-50 that the FAA amend its advisory circular on airfield marking to include the results of the research results from Safety Recommendation A-04-49. The FAA plans to make appropriate modifications to its guidance material once the research is completed.

Safety Recommendation A-04-48 has been addressed in the team's review, and I believe that the FAA has satisfactorily responded to this safety recommendation. I will keep the Board informed of the FAA's progress on Safety Recommendations A-04-49 and -50.

Sincerely,



Marion C. Blakey
Administrator

Enclosure