



# National Transportation Safety Board

Washington, D.C. 20594

## Safety Recommendation

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**Date:**

**In reply refer to:** A-98-87

Honorable Jane F. Garvey  
Administrator  
Federal Aviation Administration  
Washington, D.C. 20591

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On February 8, 1997, about 1935 Atlantic standard time, a Cessna 402, N318AB, operating under the provisions of Title 14 Code of Federal Regulations (CFR) Part 135 as Air Sunshine flight 319, crashed into the Caribbean Sea southwest of St. Thomas, U.S. Virgin Islands. The flight had been a regularly scheduled flight operating under visual flight rules (VFR) between St. Thomas and St. Croix. The airplane was destroyed; two passengers were killed, and the pilot and two of the remaining four passengers sustained minor injuries. Night, visual meteorological conditions prevailed at the time.

The pilot, who had accrued over 11,000 hours in the 400-series Cessna airplane types, mostly in the south Florida area, had begun flying in the Caribbean area less than a week before the accident. The pilot estimated that he had executed between 10 and 15 approaches to St. Thomas, with 4 or 5 of those at night. The pilot told Safety Board investigators that, at the time of the accident, he was unable to receive the distance measuring equipment<sup>1</sup> signal from St. Thomas. Consequently, he was especially attentive to receiving and establishing the proper localizer<sup>2</sup> course to St. Thomas to remain clear of the mountains on the north side of the island. The pilot said that he encountered some difficulties receiving the radio signal and was attempting to adjust the localizer course setting. During this time, the pilot noticed that the airplane was passing through 1,100 feet mean sea level. The pilot said that he refocused on the localizer and then the airplane struck the water about 3 miles from shore.

According to the pilot's account of the accident, the sky was dark and few or no lights were visible over the water. The evidence suggests that the absence of visual cues caused by the combination of dark sky and darkness over the water produced a "black hole" effect in which the pilot lost a visual sense of the airplane's height above water. As a result, the pilot misjudged the airplane's distance from the island and height above the water. Further, because the flight was conducted under

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<sup>1</sup> Distance measuring equipment provides accurate information on the distance of the airplane from a properly equipped navigation aid.

<sup>2</sup> The localizer is a component of the instrument landing system that provides the pilot with lateral information.

VFR, the pilot had no assistance from air traffic control (ATC) regarding proximity to the surface, despite the approach path being within an area of ATC radar coverage. Had the pilot operated under instrument flight rules (IFR), radar would have enabled the controller to monitor the flight's altitude, as well as its position.

Radar advisories were also available to flights operating under VFR in the St. Thomas area. However, unlike IFR operations, VFR flights do not operate on standard routes with minimum safe altitudes that are published for pilots and controllers to use. As a result, controllers do not have a criterion for identifying VFR flights that are operating at unsafe altitudes. Further, the St. Thomas ATC facility incorporated the minimum safe altitude warning (MSAW) system, which is designed to alert a controller if an airplane descends prematurely toward terrain or water. However, to reduce the frequency of nuisance MSAW alerts from VFR flights operating below minimum IFR altitudes, the St. Thomas ATC radar MSAW system was configured by the Federal Aviation Administration (FAA) to alert controllers only about flights operating under IFR. The Safety Board notes that the FAA's configuration of the MSAW to exclude VFR operations is not unique to the St. Thomas ATC facility.

Although current rules allow aircraft used to provide scheduled passenger services under 14 CFR Part 135 (aircraft with fewer than 10 passenger seats) to be operated under VFR, the Safety Board is concerned that visual flight operations at night may impose incremental risks on users of these services. The hazards of night flight over large bodies of water have been recognized by the FAA and addressed in its Aeronautical Information Manual (AIM). The AIM section titled "Official Guide to Basic Flight Information and ATC Procedures" states the following:

Featureless terrain illusion—An absence of ground features, as when landing over water, darkened areas, and terrain made featureless by snow, can create the illusion that the aircraft is at a higher altitude than it actually is. The pilot who does not recognize this illusion will fly a lower approach.

The Safety Board previously addressed the risks of operating scheduled passenger flights under VFR in its investigation of a 1989 accident involving a DeHavilland DHC 6-300, conducted under 14 CFR Part 135, that crashed into the side of a mountain in Molokai, Hawaii, while the pilot was attempting to operate under VFR during IFR conditions.<sup>3</sup> As a result of that accident, in Safety Recommendation A-90-137, the Safety Board urged the FAA to require that scheduled 14 CFR Part 135 operations of turbine-powered or multiengine airplanes be conducted under IFR during hours of darkness or whenever visibilities less than 3 miles or ceilings less than 1,000 feet are forecast, reported, or encountered. The FAA replied to the Safety Board that it agreed with the intent of the recommendation. In 1996, the FAA further responded to the Safety Board by citing the promulgation of the commuter rule, which changed the regulatory basis of scheduled passenger operations using aircraft with 10 or more passenger seats from 14 CFR Part 135 to Part 121. Based on this action and the existing Part 121 restrictions on VFR operations, on July 15, 1996, Safety Recommendation A-90-137 was classified "Closed—Acceptable Action."

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<sup>3</sup> See *Aloha IslandAir, Inc., Flight 1712, DeHavilland Twin Otter, DHC-6-300, N707PV, Halawa Point, Molokai, Hawaii, October 28, 1989*. Aviation Accident Report NTSB/AAR-90/05. Washington, DC.

Although the FAA's action in response to Safety Recommendation A-90-137 has continued to be effective for operations that use 10-seat and larger aircraft, the St. Thomas accident indicates that VFR operations at night continue to pose a hazard to passengers on scheduled flights that use smaller aircraft. Passengers on these flights should be provided the additional safety benefits that result from using IFR procedures and receiving radar traffic and terrain advisories when their flights are operated at night. These benefits include the restriction of operations to published routes or areas where ATC can provide radar vectors and the MSAW system. Most 14 CFR Part 135 scheduled passenger flights should be able to operate under IFR. However, the Safety Board recognizes that some of these flights may not be able to operate under IFR because of the lack of necessary ground navigational aids and instrument approach procedures or the characteristics of the airplanes being used. (Commercial, passenger-carrying operations are not permitted to fly under IFR in many single-engine airplane types.)

Therefore, the National Transportation Safety Board makes the following recommendation to the Federal Aviation Administration:

Require all 14 Code of Federal Regulations Part 135 scheduled passenger flights that are operated at night to be conducted under instrument flight rules, with any exceptions to be provided in air carrier operations specifications on a route-by-route basis when instrument flight rules operations are found to be unfeasible. (A-98-87)

Chairman HALL, Vice Chairman FRANCIS, and Members HAMMERSCHMIDT, GOGLIA, and BLACK concurred in this recommendation.

By: Jim Hall  
Chairman