



Loy 2271

National Transportation Safety Board

Washington, D.C. 20594
Safety Recommendation

Date: February 13, 1991
In reply refer to: A-91-15

Honorable James B. Busey
Administrator
Federal Aviation Administration
Washington, D.C. 20591

On June 2, 1990, at 0937 Alaskan Daylight Time, MarkAir, Inc., flight 3087, a Boeing 737-2X6C, registered in the US as N670MA, crashed about 7.5 miles short of runway 14, Unalakleet, Alaska, while executing a localizer approach to that runway.¹ The flight originated at Anchorage International Airport, Anchorage, Alaska at 0828. Instrument meteorological conditions existed at the time and the flight was on an instrument flight rules (IFR) flight plan. The captain, the first officer, and a flight attendant sustained minor injuries. Another flight attendant sustained serious injuries. There were no passengers on board, and the airplane was destroyed.

On Jeppesen approach plates, "airport reference circles," with radii of 5 statute miles (SM), are shown around the airport to depict airport traffic areas (if applicable) and otherwise to draw the plate reader's attention to the airfield location. The diameter of the circles are noted in the "Approach Chart Legend" section of the introduction to the Jeppesen Airway Manual but not on the actual plates. On NOS low-altitude approach plates, these circles are called "distance rings" and have varying radii, most of which are 10 NM. They indicate that everything within the ring is to cartographic scale. The words "10 NM" appear near the ring circumferences of the plates with 10 NM distance rings. Rings of other radii have the radii annotated in a similar manner. This 10 NM ring and other distance rings on NOS plates may be offset from the airfield.

On the Jeppesen LOC Rwy 14 approach plate, the airport reference circle happens to intersect the final approach fix of DRIGE at 5 DME. It is possible that as the captain glanced at the Jeppesen plate during the accident descent, he saw the circle running through the final approach fix and believed (because of his frequent and recent use of NOS plates with 10 NM distance rings) that the circle crossed the final approach course at 10 DME. He could have then believed that it would have been proper to descend to 500 feet, the next step-down altitude after the DRIGE final approach fix on the

¹ For more detailed information, read Aircraft Accident Report-- "MarkAir, Inc., flight 3087, Boeing 737-2X6C, N670MA, Controlled Flight into Terrain, Unalakleet, Alaska, June 2, 1990," (NTSB/AAR-91/02).

LOC Rwy 14 approach. The captain, however, said that this scenario was less likely than his own theory that he mentally connected the boldfaced "10 NM" and "DRIGE" wording on the chart.

Since the captain could not recall why he descended through 1,500 feet prematurely, these scenarios are conjecture. However, it is clear that the captain incorrectly deduced that 10 DME was his reference point rather than 5 DME. The Safety Board believes that the differences involving approach plate formats may explain the error. The Safety Board further believes that the standardization of approach plate formats would enhance aviation safety considerably and is a desirable goal. To this end, the FAA, through the Flight Information Advisory Committee and in coordination with Jeppesen Sanderson, Inc., should agree upon one common depiction of reference circles or distance rings on instrument approach plates. The Safety Board believes that the circles should have common radii or that the radii should be noted on the approach plate and that the circles should center around the same type of navigation fix or landmark. The best features of both the Jeppesen and the NOS depictions should be incorporated.

Therefore, the National Transportation Safety Board recommends that the Federal Aviation Administration:

In conjunction with the Flight Information Advisory Committee, and in coordination with Jeppesen Sanderson, Inc., arrive at a standard depiction of reference circles or distance rings on instrument approach charts. The depictions should include common radii or the notation of the radii on the approach chart and common centering points for the circles. (Class II, Priority Action)
(A-91-15)

Also, as a result of this investigation, the Safety Board issued Safety Recommendations A-91-16 through -18 to MarkAir, Inc.

KOLSTAD, Chairman, COUGHLIN Vice Chairman, and LAUBER, BURNETT, and HART, Members, concurred in this Recommendation.


By: James L. Kolstad
Chairman