

Log 1612

NATIONAL TRANSPORTATION SAFETY BOARD  
WASHINGTON, D.C.

ISSUED:

August 9, 1983

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Forwarded to:

Honorable J. Lynn Helms  
Administrator  
Federal Aviation Administration  
Washington, D.C. 20591

SAFETY RECOMMENDATION(S)

A-83-54 and -55

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About 1614 e.s.t., on November 20, 1982, a North American Rockwell Aero Commander Model 560E, N3827C, and a Cessna Model 182Q, N96402, collided in midair about 2,000 feet over Livingston, New Jersey, and crashed. The weather was clear at the collision altitude, and both airplanes were operating under visual flight rules. The accident occurred in the controlled airspace of the New York Terminal Control Area (TCA). Shortly before the collision, the pilot of N3827C had advised a New York Terminal Radar Approach Control (TRACON) controller of his location and altitude. There was no evidence that the pilot of N96402 had radio contact with an air traffic facility. The pilot and the passenger in N3827C were killed; the pilot of N96402, who was the airplane's only occupant, also was killed. 1/

In view of the favorable weather conditions and the angles of approach, the Safety Board could not determine why both pilots did not see each other. The Board recognizes that although both pilots may have been scanning regularly for other traffic, they may have been distracted at a critical time by chart reading or cockpit functions that interrupted their outside scan pattern. Additionally, the pilot of N3827C may have been overconfident that the TRACON controller was protecting his airspace because his airplane had been radar identified, his altitude had been acknowledged, and he was flying in positive controlled airspace. Although the position of the sun at the time of the accident was low on the horizon and slightly to the right of the track of N3827C, the Safety Board believes that because of the high overcast, the glare of the sun would not have reduced the visual range normally available to the occupants of N3827C. The sun would have been behind the pilot of N96402, and it would not have affected his ability to see.

There was a very limited period of time (107 seconds) for target detection. Assuming that the pilots were devoting a reasonable amount of time to scanning, their failure to "see and avoid" may have resulted from the difficulties of target detection and recognition. A safe flight environment requires all pilots, whether they consider themselves to be under visual flight rules (VFR) or instrument flight rules (IFR), to exercise the utmost vigilance to identify and react to potentially hazardous traffic. As

1/ For more detailed information, read Aircraft Accident Report—"Midair Collision of North American Aero Commander Model 560E, N3827C, and Cessna 182Q, N96402, Livingston, New Jersey, November 20, 1982" (NTSB/AAR-83/03).

the Safety Board has stated previously, 2/ the fundamental rule of cockpit discipline is vigilance for other traffic. The criticality of this responsibility is emphasized by the midair collision accident data from 1957 through 1982, when there were a total of 678 midair collisions, which resulted in 1,550 fatalities. General aviation aircraft were involved in 608 of these accidents. In 1982, there were 36 midair collisions throughout the United States which resulted in 59 fatalities.

A recent National Aeronautics and Space Administration study 3/ on near midair collisions found that one-half of 78 near midair collisions in TCA's s involved one airplane not known to air traffic control. The report stated that many pilots under radar control believe that they will be advised of traffic that is in a potential conflict. These pilots tend to relax their visual scan for another airplane until warned of its presence, and when warned of a conflicting airplane, they tend to look for it to the exclusion of scanning for other traffic.

The Safety Board recognizes that the Federal Aviation Administration (FAA) emphasizes the potential hazard of a midair collision and the importance of instilling out-of-cockpit vigilance through flight instructor clinics, air carrier and air taxi evaluations, and biennial flight reviews. In the FAA's Advisory Circular, AC 90-48C, "Pilot's Role In Collision Avoidance," the FAA characterizes the Aircraft Owners and Pilots Association's (AOPA) program called "Take Two and See" as "an excellent educational program designed to inform pilots on effective visual scan techniques." The Board also considers this to be an excellent program. However, in 1973, as a result of its investigation of a midair collision, 4/ the Board recommended that the FAA:

Establish a requirement for pilots to be trained in the techniques of time sharing between visual scanning for airborne targets and cockpit duties.  
(A-73-28)

In 1974, this recommendation was classified by the Board as "Closed—Unacceptable Action" after the FAA did not act to establish such a requirement. The Safety Board notes the fact that the FAA has continued to stress the importance of scanning, but the Board believes that the FAA has not provided enough emphasis on specific techniques of scanning such as those contained in the AOPA program "Take Two and See." The Board believes that this type of information and the information already contained in Advisory Circular AC90-48C should be included in FAA publications such as "Flight Training Handbook," "Instrument Flying Handbook," "Pilot's Handbook of Aeronautical Knowledge," or the Airman's Information Manual to the extent that there would no longer be a need to publish the information separately in a less popular, seldom-read format. The Board considers this to be as important as the familiar subjects of map reading, weather symbology, and pilotage.

The system of providing separation is not error-proof, nor in all probability will it ever be. Conflicting traffic, particularly near the boundaries of a TCA, may be a threat detectable only by pilots, and then only if they are looking for it. There may be one common denominator to all midair collisions, and that factor might be described as pilot complacency, particularly when an airplane is under positive control. The Safety Board emphasizes as an essential part of a collision avoidance program that separation can be

2/ "Aircraft Accident Reports Brief Format, Issue No. 4," NTSB 1981.

3/ "A Study of Near Midair Collisions in U.S. Terminal Airspace," Billings, Grayson, Hecht and Curry, National Aeronautics and Space Administration TM 81225, August 1980.

4/ Aircraft Accident Report--"North Central Airlines, Inc., Allison Convair 340/440 (CV-580), N90858 and Air Wisconsin, Inc., DHC-6, N4043B, near Appleton, Wisconsin, June 29, 1972" (NTSB-AAR-73-9).

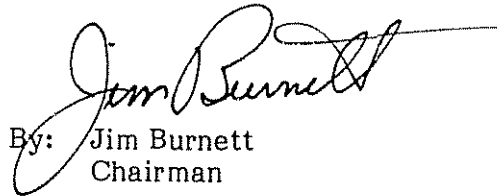
maintained most effectively by pilots who recognize that outside scanning must be an aggressive procedure. Target recognition is a difficult task, and pilots must learn to train themselves to use head and body movements as well as eye movements in a planned scanning pattern to overcome the limitations on target detection in order to be able to take timely evasive action.

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

Consolidate information on visual scan techniques in Advisory Circular AC90-48C, "Pilots Role In Collision Avoidance," and information such as that contained in the Aircraft Owners and Pilots Association's program "Take Two and See," regarding visual scan techniques, in one or more publications that are referred to by pilots on a continuing basis. (Class II, Priority Action) (A-83-54)

Include questions regarding visual scanning techniques for airborne targets in written examinations for pilot licenses. (Class II, Priority Action) (A-83-55)

BURNETT, Chairman, GOLDMAN, Vice Chairman, McADAMS, BURSLEY, and ENGEN, Members, concurred in these recommendations.

  
By: Jim Burnett  
Chairman