

Log 2037A



National Transportation Safety Board

Washington, D.C. 20594

Safety Recommendation

Date: February 25, 1988

In reply refer to: A-88-28

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On January 20, 1987, about 1228, central standard time, a U.S. Army Beech U-21A airplane, Army 18061, and a Sachs Electric Company Piper PA-31-350, N60SE, collided at 7,000 feet msl over the Lake City Army Ammunition Plant, Independence, Missouri, about 5 miles east of the eastern boundary of the Kansas City Terminal Control Area. The U-21 was level at 7,000 feet and en route to Fort Leavenworth, Kansas, in accordance with instrument flight rules (IFR). The PA-31 was climbing eastbound to an unknown cruise altitude, having departed the Kansas City Downtown Airport in accordance with visual flight rules (VFR), en route to St. Louis, Missouri. The airplanes collided nearly head-on in daylight and visual meteorological conditions. Although both airplanes were equipped with operating mode-C transponders, the radar controllers in communication with the U-21 did not observe and were not alerted to the conflict. Therefore, traffic advisories were not provided. As a result of the accident, two pilots and one passenger aboard the U-21 and the pilot and two passengers aboard the PA-31 were fatally injured. Both airplanes were destroyed. 1/

A retrack of the Kansas City Terminal Radar Approach Control (TRACON) Automated Radar Terminal System (ARTS) III data demonstrated graphically how this accident might have been prevented. By manually tagging up the limited data block of the PA-31 (during the retrack), a full data block was generated and computer tracking of the PA-31 was initiated automatically. This activated the conflict alert subprogram of the ARTS III equipment. The conflict alert subprogram compared the progress of the flight track and altitude information of the PA-31 with that of all other tracked targets. Then about 40 seconds before the collision, an aural alarm was activated, the data block information of the conflicting targets began to flash on the controller's radarscope, and a conflict alert message identifying the airplanes in conflict was displayed in the preview area of the radarscope. The National Transportation Safety Board believes that if this type of distinct and unambiguous information had been presented to alert the controllers before the accident, the controller's attention would have been immediately focused on the conflicting airplanes, and the controller would have had ample opportunity to issue a traffic advisory or a safety alert to the U-21 pilots.

1/ For more detailed information, read Aircraft Accident Report—"Midair Collision, U.S. Army Beech U-21A, Army 18061, and Sachs Electric Company Piper PA-31-350, N60SE, Independence, Missouri, January 20, 1987" (NTSB/AAR-88/01).

Although the Safety Board cannot state with certainty that the pilots would have taken timely and appropriate action to avert the accident if they had received traffic advisory information, the Safety Board believes that the Army pilots' chances of averting the collision would have been improved substantially if such information had been provided. Any information the controllers could have provided to the U-21 pilots would have improved the crew's probability of acquisition of the PA-31 over that of an unalerted flightcrew.

The Kansas City TRACON East Radar controllers did not have the benefit of conflict alert before the accident because VFR airplanes are not provided discrete transponder codes, are not tagged up (tracked) unless they request and are provided air traffic control flight-following services, and because conflict alert programming does not provide a warning to controllers when a conflict between an IFR aircraft and an untracked VFR code 1200 target occurs. Transponder-equipped aircraft on VFR flights normally broadcast code 1200 to inform controllers of their location and VFR status. A limited data block is then presented on the controller's radarscope if the transponder has mode C.

The retrack demonstrated that if flight-following services had been provided to the PA-31 pilot, the conflict alert subprogram would have alerted the controllers to the collision threat about 40 seconds before the collision. Obviously, if the application of the conflict alert subprogram could be extended to include VFR mode-C aircraft, air traffic controllers could extend more positive protection against the threat of midair collisions and to a much larger population of aircraft than are protected by the present conflict alert system. Pilots could also avail themselves of the benefits of the conflict alert subprogram if they would use flight-following services on VFR flights when those services are available. Although controllers are not always able to provide flight-following services to VFR aircraft because of workload, there is no reason to believe that such services would not have been provided to the PA-31 pilot, since traffic was light.

Interviews of the Kansas City TRACON staff and review of their policies and traffic indicated that air traffic control (ATC) services typically would have been provided to the PA-31 pilot under the circumstances of the accident flight had those services been requested. During heavy controller workload conditions and at facilities that are normally very busy, VFR pilots may find that their requests for flight-following or other ATC services are frequently not fulfilled. Recognizing that the workload of many facilities is already high at times and would be increased to the extent that some VFR pilots may not always be able to obtain air traffic services, the Safety Board believes that VFR pilots should nonetheless attempt to obtain those services, when they are available, as a means of reducing the potential for involvement in midair collisions. In this case, the Safety Board concludes that the accident probably would have been prevented if the PA-31 pilot had availed himself of flight-following services (or filed an IFR flight plan).


The National Business Aircraft Association and the Aircraft Owners and Pilots Association provide valuable services to their pilot members by keeping them informed of important and timely safety information. The Safety Board believes that the circumstances of this accident and the importance of pilots availing themselves of ATC services, when available, should be stressed to pilots in the safety publications of these organizations, along with the importance of good scanning techniques, to further reduce the potential for midair collision accidents.

Therefore, the National Transportation Safety Board recommends that the National Business Aircraft Association and the Aircraft Owners and Pilots Association:

Make the facts and circumstances of the accident in Independence, Missouri, on January 20, 1987, known to your membership, and encourage the use of the services of the air traffic control system as a means of reducing the potential for midair collisions. (Class II, Priority Action) (A-88-28)

Also as a result of its investigation, the Safety Board issued Safety Recommendations A-88-24 through -27 to the Federal Aviation Administration.

BURNETT, Chairman, GOLDMAN, Vice Chairman, and LAUBER, NALL, and KOLSTAD, Members, concurred in this recommendation.


By: Jim Burnett
Chairman