



National Transportation Safety Board

Washington, D.C. 20594

Safety Recommendation

Date: April 19, 2001

In reply refer to: A-01-10

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

On October 17, 2000, about 1551 Pacific daylight time, a Raytheon Beechcraft King Air C90, N1801B, and a Gulfstream Aerospace G3, N162JC, collided in flight about 2.5 miles north of the Van Nuys Regional Airport (VNY), Van Nuys, California, as both airplanes were on approach to runway 16R. The pilot and two passengers on board the C90 sustained no injuries nor did the pilot and two crewmembers on board the G3. Although both airplanes landed safely at VNY, the C90 was substantially damaged, and the G3 received minor damage. The C90 was being operated by Sun Quest Executive Air Charter under the provisions of 14 *Code of Federal Regulations* (CFR) Part 135 as a nonscheduled, domestic air taxi flight. The C90 departed from Bakersfield, California, about 1520 on a visual flight rules (VFR) flight plan. The G3 was being operated by Trans-Exec Air Service, Inc., under the provisions of 14 CFR Part 91 as a positioning flight. The G3 departed from Reno, Nevada, about 1500 on an instrument flight rules flight plan. Reported visibility was 10 miles.¹

During its flight, the C90 had been receiving radar flight following² from the Los Angeles Air Route Traffic Control Center (ZLA). About 1545, as the C90 was approximately 12 miles north of and beginning its descent into VNY, an air traffic controller at ZLA attempted a radar handoff to Southern California Terminal Radar Approach Control (SCT). However, because the airplane was at too low an altitude to be seen by the SCT's radar, the handoff could not be completed. The SCT controller advised the ZLA controller to terminate radar service on the C90. The ZLA controller acknowledged and advised the pilot of the C90 to contact the VNY tower. About 1547, the pilot of the C90 contacted the VNY tower and reported that he was inbound over the Newhall Pass, approximately 7 to 12 miles north of VNY. The VNY tower controller acknowledged the pilot, instructed him to make a straight in approach to runway 16R, and

¹ The accident description for LAX01FA018A/B can be found at www.ntsb.gov/aviation/Accident.htm.

² When the pilot of a VFR flight requests radar flight following, air traffic control (ATC) will provide traffic advisories on a workload-permitting basis.

advised him to set his transponder³ to code 0220. However, the pilot erroneously set his transponder code to 0226,⁴ which was identified in the Automated Radar Terminal System (ARTS) as being associated with an aircraft under the jurisdiction of the Los Angeles International Airport (LAX) tower.⁵

As the C90 headed toward VNY, the SCT controller was vectoring the G3 to the runway 16R final approach course. About 1548, the SCT controller observed a limited information display for the C90, which did not include any aircraft or altitude information, on his radar display.⁶ The SCT controller issued a traffic advisory to the pilot of the G3 and told him that he did not have any altitude data for the other airplane. About 3 to 4 miles north of the runway 16R threshold, about 1,800 feet, the airplanes collided in flight.⁷ Although this accident is still under investigation, preliminary findings indicate that if the SCT controller had been able to display altitude information for the C90, he would have been able to provide a more informed traffic advisory to the flight crew of the G3, possibly enabling it to avoid the collision with the C90.

The SCT controller saw only a limited display for the C90 because the track was in suspend status. The suspend feature of ARTS allows controllers to place a track in suspend status, which limits the data displayed for an aircraft to a position symbol and an order number.⁸ Controllers may activate this feature if they wish to minimize the amount of clutter on their displays, which can occur, for example, when multiple aircraft are performing prolonged holding patterns in a condensed area. In addition, an airplane's track will automatically be placed in suspend status if it is under a tower's control and the airplane passes beyond the range of the tower's Digital Bright Radar Indicator Tower Equipment (D-BRITE).⁹ Although the C90 was within the range of the VNY D-BRITE (as previously mentioned), the pilot had inadvertently entered an incorrect transponder code (controllers report that this is not an uncommon occurrence), which resulted in the airplane's track being placed under the control of the LAX tower, instead of the VNY tower. This caused the C90's track to automatically appear in suspend status because it was well outside the range of the LAX D-BRITE.

³ A transponder is the airborne radar receiver/transmitter portion of a radar system that responds to interrogation signals from ground-based ATC radar equipment.

⁴ The setting was confirmed by a Federal Aviation Administration (FAA) inspector who examined the airplane after landing.

⁵ Over 2 hours earlier, a controller at ZLA made an unintentional entry into the ARTS computer, which assigned the code 0226 to a nonexistent aircraft. When the pilot of the C90 selected the code 0226, the ARTS began tracking the target; however, it was associated with the false data from the ZLA entry.

⁶ In a postaccident interview, the SCT controller stated that he attempted to display all of the information for the C90, or at least the airplane's altitude, so that he could provide a more informed traffic advisory to the pilot of the G3.

⁷ The bottom left flap of the G3 and the top fuselage and left wing of the C90 impacted. In postaccident interviews, both pilots reported that they did not see the other airplane before they collided.

⁸ When not placed in suspend status, airplane information displays also include airplane identification and altitude information.

⁹ A D-BRITE is a radar display in an ATC tower that is remotely linked to a terminal radar approach control.

When tracks are in suspend status, other controllers in the same facility can see only the position symbol for the airplanes related to such tracks and cannot display other information about these airplanes unless they use a logic check override function, which removes control of the track from the original controller and gives it to the controller using the override function.¹⁰ Air traffic controller training discourages routinely using the logic check override function. The National Transportation Safety Board agrees with this training concept because it is concerned that overuse of the logic check override function may unintentionally create safety problems if original controllers are denied access to information about tracks that have been overridden.

During the investigation of this accident, Safety Board investigators were provided copies of numerous Unsatisfactory Condition Reports¹¹ (UCR) that had been submitted to SCT management by controllers regarding their inability to display desired airplane information because of the suspend feature in the ARTS software. SCT management closed these UCRs by advising controllers to delay initiating ARTS handoffs to towers until they are sure that an aircraft is established inbound to the runway. Controllers at SCT filed responses indicating that the proposed solution was not satisfactory and not in agreement with good handling practices of completing handoffs as early as practicable. The Board agrees that SCT's proposed solution was not satisfactory and has determined that it would not have prevented C90's track from appearing in suspend status or prevent other airplanes with transponder codes associated with out-of-range tower D-BRITEs from appearing in suspend status because the suspend feature in the ARTS software would automatically place such tracks in suspend status whether or not a handoff even occurs.

The Safety Board is concerned that air traffic controllers' inability to display all information for aircraft in suspend status, especially altitude and identification information, can pose a safety hazard. Therefore, the Safety Board believes that the FAA should modify all versions of terminal ARTS software to incorporate a capability that provides air traffic controllers with the option of displaying, at minimum, identification numbers and altitudes for airplanes related to tracks that are in suspend status. This capability should function without controllers having to use the ARTS logic check override function.

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

Modify all versions of terminal Automated Radar Terminal System (ARTS) software to incorporate a capability that provides air traffic controllers with the option of displaying, at minimum, identification numbers and altitudes for airplanes related to tracks that are in suspend status. This capability should function without controllers having to use the ARTS logic check override function. (A-01-10)

¹⁰ Further, if controllers use the override function, they then have to specifically transfer control back to the original controller, increasing controller workload.

¹¹ A UCR is a report of a problem that, in the opinion of the submitter, represents a safety hazard or other serious matter in need of urgent correction. FAA procedures require that all UCRs be tracked and receive a timely and substantive response.

Acting Chairman CARMODY and Members HAMMERSCHMIDT, BLACK, and
GOGLIA concurred with this recommendation.

By: Carol J. Carmody
Acting Chairman