



National Transportation Safety Board

Washington, D.C. 20594

Safety Recommendation

Date: November 15, 2012

In reply refer to: A-12-71 and -72

The Honorable Michael P. Huerta
Acting Administrator
Federal Aviation Administration
Washington, DC 20591

On April 2, 2011, about 0934 mountain daylight time, an experimental Gulfstream Aerospace Corporation GVI (G650),¹ N652GD, crashed during takeoff from runway 21 at Roswell International Air Center (ROW), Roswell, New Mexico. The two pilots and the two flight test engineers were fatally injured, and the airplane was substantially damaged by impact forces and a postcrash fire. The airplane was registered to and operated by Gulfstream as part of its G650 flight test program. The flight was conducted under the provisions of 14 *Code of Federal Regulations* (CFR) Part 91. Visual meteorological conditions prevailed at the time of the accident.²

The accident occurred during a planned one-engine-inoperative takeoff when a stall on the right outboard wing produced a rolling moment that the flight crew was not able to control, which led to the right wingtip contacting the runway and the airplane departing the runway from the right side. After departing the runway, the airplane impacted a concrete structure and an airport weather station, resulting in extensive structural damage and a postcrash fire that completely consumed the fuselage and cabin interior.

In the course of this investigation, the National Transportation Safety Board (NTSB) identified issues associated with airport operations staffing and emergency communications recording practices that, if addressed, will improve the safety of flight test and air carrier operations.

¹ Gulfstream uses the Roman numeral designation "GVI" for aircraft certification purposes and the designation "G650" for marketing purposes. These designations mean the same aircraft model for the purposes of this letter.

² For more information, see *Crash During Experimental Test Flight, Gulfstream Aerospace Corporation GVI (G650), N652GD, Roswell, New Mexico, April 2, 2011*, Aircraft Accident Report NTSB/AAR-12/02 (Washington, DC: National Transportation Safety Board, 2012), which is available online at <http://www.nts.gov>.

Airport Operations Staffing

Operations at ROW include daily air carrier service. At the time of the accident, the ROW air traffic control (ATC) tower was staffed daily from 0600 to 2100, but ROW's airport operations center was staffed only on weekdays from 0800 to 1700. After 1700 on weekdays and during weekends, an airport operations employee was on call for response within 20 minutes. On Saturdays and Sundays, one 14 CFR Part 121 operator has daily departure and arrival flights at ROW. Because the accident flight test occurred on a Saturday, no airport operations personnel were present at ROW at the time.³

Because airport operations personnel were not at ROW when the accident occurred, operations personnel were not able to execute the required duties that need to be completed immediately upon notification of the accident, which are included in the airport certification manual (ACM) and the Federal Aviation Administration (FAA)-approved airport emergency plan (which was part of the ACM).⁴ For example, airport operations personnel could not immediately (1) secure the accident site and the vehicle access points along the ROW perimeter fence, (2) control access to the site for law enforcement responders, (3) coordinate all vehicle traffic movement on the airport (via two-way radio communication) with the ATC tower, and (4) ensure that the accident site was clear of spectators from the telemetry trailer and other on-airport businesses who were gathered near the site, which slowed the emergency response (according to postaccident interviews with aircraft rescue and firefighting [ARFF] personnel). In addition, airport operations personnel were responsible for issuing a notice to airmen to close the airport immediately after the accident. However, controllers in the ATC tower issued the notice⁵ because no authorized airport staff member was on site to accomplish this task in a timely manner.

Title 14 CFR Part 139, "Certification of Airports," provides the governing rules for airports with scheduled air carrier service. Section 139.303, "Personnel," paragraph (a), states that certificated airports are required to provide sufficient and qualified personnel to comply with their FAA-approved ACM and the regulation. FAA airport certification inspectors are responsible for reviewing and approving an airport's ACM to ensure that the airport has established safety standards that meet the Part 139 requirements.⁶ Inspectors from the FAA's

³ The ROW airport superintendent was notified of the accident by a friend who noticed black smoke emanating from the airport. The superintendent then called the ATC tower and learned that a Gulfstream airplane had crashed. The superintendent notified the on-call airport operations employee and other airport staff while en route to ROW.

⁴ The ACM stated that the air center manager, the assistant air center manager/superintendent of maintenance, or trained and qualified airport maintenance personnel were responsible for these duties. Another airport entity (such as ATC or aircraft rescue and firefighting) is not allowed to assume these responsibilities in the absence of airport operations personnel.

⁵ Even though another airport entity is not allowed to assume this responsibility in the absence of airport operations personnel, ATC accomplished this task to ensure safety.

⁶ A public comment received by the FAA regarding the notice of proposed rulemaking for the June 21, 2000, proposed revisions to Part 139 (67 *Federal Register* [FR] 38636) requested clarification about what the FAA considered to be "sufficient and qualified" personnel. The FAA responded that it is impractical to define the number of personnel each certificate holder would need due to the variations in each airport. However, the FAA stated that if an airport was found to be in noncompliance with Part 139 and its ACM, it may require the certificate holder to provide additional personnel. See 69 FR 6380, 6396, February 10, 2004.

Southern Region approved ROW's ACM,⁷ even though the manual had no provision for on-site airport operations staffing during weekend operations when air carriers are operating.

Although this accident did not involve a scheduled air carrier, the NTSB is concerned that these deficiencies in airport operations staffing could affect the response to accidents involving scheduled air carrier operations. The NTSB concludes that without sufficient airport operations staffing, required accident-related responsibilities might be delayed. Therefore, the NTSB recommends that the FAA determine whether 14 CFR Part 139 airports have sufficient and qualified operations personnel on duty at the airport during all scheduled air carrier operations, and direct airports without such staffing to implement actions to meet the personnel requirements of section 139.303.

Emergency Communications Recordings

The NTSB has investigated accidents in which the emergency communications (transmitted via a crash phone or telephone lines) between ATC and ARFF personnel were recorded and others, including this accident, in which the emergency communications were not recorded. FAA Order 7210.3V, "Facility Operation and Administration," dated February 14, 2008, chapter 3, section 4, "Recorders," addresses the use of recorders in ATC facilities but does not require emergency communications to be recorded (with valid time references) and retained.⁸ Conversely, air traffic facilities at airports operated by the U.S. Air Force, Air National Guard, and Air Force Reserve Command are required to record the primary crash alarm system (emergency communications) with an approved time source installed (for example, global positioning satellite).⁹ These recordings can provide valuable information during an accident or incident investigation to help determine exact response times or actual notification instructions that controllers provide to ARFF personnel. Emergency communications recordings can also provide important information for airport emergency response critiques previously recommended by the NTSB.¹⁰

The NTSB could not determine an exact response time for the Gulfstream G650 accident because the emergency communications at ROW were not recorded. Without this recording, important information, such as the initial accident notification time¹¹ and the details that ATC

⁷ The FAA's Southern Region originally approved ROW's ACM on June 9, 2005, and the latest approved revision is dated February 14, 2011.

⁸ Paragraph 3-4-1 states that "air traffic facilities shall record operational communications to the maximum extent practicable," and paragraph 3-4-2 outlines the prioritization for assigning recorder channels.

⁹ U.S. Department of the Air Force, *Airfield Operations Procedures and Programs*, Air Force Instruction 13-204, Volume 3 Change 1, May 20, 2011.

¹⁰ On December 10, 2001, the NTSB issued Safety Recommendation A-01-67, which recommended, in part, that the FAA develop specific criteria, using the Federal Railroad Administration's requirements as guidance, to be evaluated during postaccident interagency emergency response critique. (On October 8, 2011, Safety Recommendation A-01-67 was classified "Closed—Acceptable Alternate Action.") For more information, see *Runway Overrun During Landing, American Airlines Flight 1420, McDonnell Douglas MD-82, N215AA, Little Rock, Arkansas, June 1, 1999*, Aircraft Accident Report NTSB/AAR-01/02 (Washington, DC: National Transportation Safety Board, 2001), which is available online at <http://www.nts.gov>.

¹¹ FAA Form 8020-3, the *Facility Accident/Incident Notification Record*, completed by ROW ATC indicated that ATC notified ARFF of the accident about 0930. However, the NTSB determined the accident occurred about 0934. As such, the NTSB believes that the FAA form was an unreliable source for obtaining notification times.

provided ARFF during the notification, could not be obtained to support the investigation. As a result, the NTSB relied on radio logs from dispatcher records (which did not have valid time references) and postaccident photographs to determine an approximate response time.

The NTSB has investigated other accidents and incidents in which a record of emergency communications between ATC and ARFF would have been beneficial in evaluating the accident notification and response. After the June 1, 1999, runway overrun in Little Rock, Arkansas, the controller notified the ARFF station via the crash phone that an airplane had crashed on runway 4R, but the controller did not specify that the airplane was at the departure end and not the approach end of the runway. The ARFF crews responded to the approach end of the runway before proceeding to the departure end. Because the crash phone was not recorded, the information discussed during the crash phone conversation had to be learned from postaccident interviews. Although the information from these postaccident interviews was sufficient for the NTSB to evaluate the emergency response,¹² real-time emergency communications recordings would provide a more accurate and complete documented record of the conversation.

Another example involves the November 28, 2005, Beechjet 400 incident in Jacksonville, Florida. When the flight crew initiated the descent to Marco Island, Florida, both engines flamed out. The flight crew then declared an emergency, diverted to Jacksonville, and made a successful emergency landing.¹³ The Jacksonville ATC tower had notified ARFF about the impending emergency arrival via the crash phone. However, a quality assurance review worksheet, which a Jacksonville ATC staff member completed after the incident, indicated that ARFF did not know whether one or both engines on the airplane had flamed out. The worksheet also indicated that if ARFF had known about the “imminent unpowered flight arrival...the fire equipment would have [been] set up differently.” The ATC staff member also noted, “wish we had the ability to record the Crash Phone.” These statements suggest a gap in communication between ATC and ARFF that limited the understanding of the emergency and necessary response actions.

A June 18, 2003, memorandum from the FAA to the NTSB indicated that the FAA’s airway facilities division had studied the feasibility of recording emergency communications using existing ATC equipment and determined that it would be feasible to do so.¹⁴ The NTSB concludes that because emergency communications recordings are not consistently captured and are not required to be captured, valuable information may not be available for investigative purposes. Emergency communications recordings can also be beneficial for airport safety evaluation purposes and safety management system programs by addressing emergency response safety concerns resulting from an accident or incident investigation or an airport emergency response evaluation.¹⁵ Therefore, the NTSB recommends that the FAA amend Order 7210.3V to

¹² The NTSB’s report on the Little Rock accident concluded that part of the delay in locating the wreckage was preventable and that several minutes in the emergency response might have been saved if the ARFF units had been directed to the departure end of the runway. See NTSB/AAR-01/02.

¹³ More information about this incident, NTSB case number DCA06IA007, can be found online at <http://www.nts.gov/aviationquery/index.aspx>.

¹⁴ Airport operations centers, including the one at ROW, are not required to record emergency conversations and, unlike ATC towers, do not have existing equipment for recording operational conversations.

¹⁵ FAA Order 7210.3V, paragraph 3-4-1, states that “recorders may be used to monitor any position for evaluation, training, or quality control purposes.”

ensure that, when practicable, emergency response notification telephone or communication lines are recorded, with valid time references, in ATC facilities.

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

Determine whether 14 *Code of Federal Regulations* Part 139 airports have sufficient and qualified operations personnel on duty at the airport during all scheduled air carrier operations, and direct airports without such staffing to implement actions to meet the personnel requirements of section 139.303. (A-12-71)

Amend Order 7210.3V to ensure that, when practicable, emergency response notification telephone or communication lines are recorded, with valid time references, in air traffic control facilities. (A-12-72)

In response to the recommendations in this letter, please refer to Safety Recommendations A-12-71 and -72. We encourage you to submit updates electronically at the following e-mail address: correspondence@ntsb.gov. If your response includes attachments that exceed 10 megabytes, please e-mail us at the same address for instructions. To avoid confusion, please do not submit both an electronic copy and a hard copy of the same response.

Chairman HERSMAN and Members SUMWALT, ROSEKIND, and WEENER concurred in these recommendations. Vice Chairman HART did not participate.

[Original Signed]

By: Deborah A.P. Hersman
Chairman