***Errata/Addenda* to**
Airport/Emergency Response Group Chairman's Factual Report

Accident number:	DCA01MA034
Location:	Aspen, CO
Date:	March 29, 2001
Time:	1902 MST
Aircraft:	Gulfstream III, N303GA

Errata

1. Replace Section 9, *Aircraft Rescue and Firefighting (ARFF)*, with attached pages 8-14.

Addenda

1. Add Attachment 11. *Excerpts from the ASE Airport Emergency Plan*
2. Add Attachment 12. *Transcriptions of ATCT and APCCC Radio Transmissions*

9. Aircraft Rescue and Fire Fighting (ARFF) and Emergency Response

9.1 ASE ARFF Organization and Staffing

The Aspen-Pitkin County Airport maintained an ARFF service on the airport as a requirement of 14 CFR Part 139, *Airport Certification*. The ARFF service had one full-time crew chief on duty at all times when the airport was open, and one ARFF vehicle (see Equipment, below). There were 8 airport employees who were cross-trained as ARFF crew chiefs. The crew chiefs were rotated through the fire station, periodically serving as the on-duty crew chief, but otherwise were employed in various jobs on the airport. Also, one additional airport employee was cross-trained as a basic firefighter only (crew chiefs were qualified to drive the fire truck and firefighters were not). According to the ASE fire chief, the strategy of cross training/utilizing personnel was to maximize the number of qualified ARFF personnel that were present at the airport at any given time. The ASE fire chief estimated that there were "nearly always" three additional ARFF-trained personnel on the airfield, and sometimes as many as six.

The area surrounding the airport received municipal fire protection from the Aspen Fire Protection District (AFPD), an all-volunteer special district fire department. The AFPD did not maintain regularly staffed fire stations, and relied upon firefighters to respond from their residences or places of business.

9.2 ASE ARFF Equipment

The primary emergency alarm system at Sardy Field was a siren located atop the ARFF building and activated solely by a toggle switch located in the Sardy Field Air Traffic Control Tower (ATCT). In addition, the alarm system included a red crash phone, also located in the tower. The crash phone was a continuous-ring hot line that simultaneously connected the Sardy Field ATCT to: 1) the ARFF communications center located at the airport ARFF station, 2) the airport operations office located within the terminal building, and 3) the Aspen Pitkin County Communications Center (APCCC)[14].

Sardy Field's ARFF response apparatus was a 1993 Oshkosh TB-1500 four-wheel drive vehicle (radio call sign "ARFF 699"), with 1,500-gallon water capacity, 205-gallon aqueous film forming foam (AFFF) capacity, and 500 pounds of Purple-K dry chemical agent. The vehicle met the requirements of 14 CFR Part 139.317(b) as the airport's Index B response vehicle.[15] The Aspen Fire Protection District (AFPD) also garaged a fire truck in the Sardy Field ARFF barn. The AFPD apparatus was a US Tanker/Peterbilt four-wheel drive pumper (call sign "Tender 1"), which had a 3,000-gallon water capacity and 30-gallon AFFF capacity. It was used to fight fires in the vicinity of the airport, or act as a back up for the airport fire department. Tender 1 was only operated by members of the AFPD, and did not

[14] The APCCC is a centralized communication center that receives and dispatches calls for the local police, fire department, airport administration, county sheriff's office, and ambulance services.

[15] 14 CFR 139.317(b) (1) One vehicle carrying at least 500 pounds of sodium-based dry chemical or halon 1211, and 1,500 gallons of water, and the commensurate quantity of AFFF for foam production.

have on-site staffing. As such, Tender 1 did not meet the airport's certification requirements for minimum firefighting apparatus, and it was not specified as a primary response vehicle in the ASE airport emergency plan (AEP) (Attachment 11)

The AFPD Incident Report, the APCCC incident recall log, and the APCCC audiotape recording of radio transmissions indicated that five pieces of firefighting equipment responded to the accident (ARFF 699, Tender 1, Engine 5, Engine 6, and Engine 8). Additionally, two rescue vehicles (R1 and R2), a jeep, and at least two medical units responded. A total of 30 personnel from AFPD responded to the scene (Attachment 10).

9.3 ARFF Response Sequence

The clock times reported in this section were derived from two transcribed tape recordings (Attachment 12): 1) the FAA air traffic control tower ground controller (ATCT GC) tape, transcribed by Bill English, NTSB, and Steve McCreary, NTSB, and 2) the APCCC tape, transcribed by Steve McCreary. The clock times from the two tapes were not synchronized.

The Air Traffic Control (ATC) Group interviewed the Sardy Field ATCT local controller on duty at the time of the accident (ATC Group Chairman's Factual Report). The local controller reported that at "about 1902" she noted the airplane was rolling rapidly to the left, and she immediately reached for the crash phone. She hit the emergency siren switch to notify ARFF just as she saw an explosion.

At 1901:53, the APCCC dispatcher received an Alert III notification from the Aspen ATCT. At 19:03:28, ARFF 699 came on ATCT frequency and asked the local controller for emergency information. At 1903:41, APCCC issued a general radio tone-out and verbal confirmation of the accident to all Aspen fire and ambulance units, as well as ARFF 699. ATCT ground control called ARFF 699 at 1903:40, and told the crew chief that the accident location was "north of the runway…approximately…Shale Bluffs area." At 1904:21, ARFF 699 told the ground controller, "…We will respond." At 1904:57, the ASE on-duty operations officer announced on ATCT frequency, "ARFF 699, stand down." The ARFF 699 crew chief called APCCC at 1905:52 and asked that the airport manager be contacted to determine whether ARFF 699 should respond to the accident. At 1906:56, Tender 1 notified the APCCC that they were "enroute." ARFF 699 called the ATCT at 1908:28, and advised, "ARFF 699 is off airport." Neither fire truck made a transmission on either ATCT or APCCC frequencies indicating when they arrived at the scene. The ATCT ground controller called the ASE on-duty operations officer at 1908:48 asking whether the airport was still open. The operations officer told the controller that the airport was "closed to commercial traffic" because ARFF was unavailable.

At the time of the accident, Air Wisconsin flight 666, a Bae-146 aircraft, a regularly scheduled air carrier flight between Aspen and Denver, had taxied from the gate and was awaiting departure instructions. At 1909:04, the ATCT local controller radioed, "Air Wisconsin 666, airport management advises that the airport is closed to commercial operations. Do you want to taxi back to the ramp?"(ATC Group Chairman's Factual Report).

At 1911:22, Air Wisconsin 666 contacted ground control stating "Air Wisconsin 666, like to taxi back to the gate." According to the Airport Operations Logbook, a NOTAM under the initials "VO" was issued at 2135 on the evening of the accident, closing the airport to all traffic.

9.4 ASE Airport Certification Manual and Airport Emergency Plan

The ASE AEP subsection of the ACM described ARFF duties and procedures pertaining to "incidents occurring inside the Aspen Pitkin county airport perimeter," and did not specifically mention off-airport ARFF responsibilities. However, under Section VII, *Incident Response: Dispatch Procedures* (f), the plan stated: "The agency that can take the quickest effective suppression action should be dispatched for initial response per existing procedures protocols and agreements." Under Section VI, *Pre-Response*, 6.4 *Mutual Aid Zones*, the plan stated: "As a result of the combination of all the underlying interagency agreements, there is county-wide reciprocal mutual aid for the first period of incidents between all agencies." The AEP contained one mutual aid agreement, entitled, *Mutual Aid Agreement for Emergency Medical Services*, and addressed hospital and ambulance services.

The ASE ACM contained procedures for notification of the FAA and air carriers in the event of ARFF index reduction due to inoperative firefighting equipment. The ACM states, in part:

> If a required firefighting vehicle becomes inoperative, it shall be replaced immediately with equipment having at least equal capabilities. If replacement equipment is not available immediately, each air carrier user and the FAA shall be so notified in accordance with FAR Part 139.339. If the vehicle cannot be repaired or replaced with in 48 hours, air carrier service will be reduced until the appropriate level of service is restored and a NOTAM issued in accordance with Section 339 of this manual and FAR Part 139.339.

9.5 FAA Guidance on Index Reduction and Off-Airport ARFF Response

Under Title 14 CFR Part 139.319, *Aircraft rescue and firefighting: Operational requirements*, reduction in ARFF capability is allowed, subject to the following conditions:

> (d) Any reduction in the rescue and firefighting capability from the Index required by paragraph (a) of this section in accordance with paragraph (c) of this section shall be subject to the following conditions:

1) Procedures for, and the persons having the authority to implement, the reductions must be included in the airport certification manual.
2) A system and procedures for recall of the full aircraft rescue and firefighting capability must be included in the airport certification manual.
3) The reductions may not be implemented unless notification to air carriers is provided in the Airport/Facility Directory or Notices to Airmen (NOTAM), as appropriate, and by direct notification of local air carriers.

Additional guidance for reduced ARFF capability, specifically due to off-airport ARFF response is provided in FAA Order 5280.5B, *Airport Certification Program Handbook*. Section 330, paragraph C states, in part:

> c. Off Airport Response of ARFF Equipment.
>
> The ACM/ACS should include procedures for repositioning ARFF vehicles to maintain required Index response capabilities and/or conditions and procedures for reducing ARFF Index when the required vehicles/personnel/agents are unavailable to respond to an emergency. This includes those situations when equipment and personnel are on or off the airport responding to an emergency and are unavailable to provide the published index capabilities. Procedures must include notifying the carriers of a reduced index through normal air carrier notification procedures and use of NOTAM's. While airport operators should not be encouraged to respond to off-airport non-aircraft emergencies, it is recognized that mutual aid agreements may call for this support in certain circumstances. Since the concept of mutual aid relies heavily on this sharing of support, it is recommended that mutual aid use of ARFF equipment be very limited. If it is used, the agreement should provide for immediate return to the airport as soon as structural or other relief equipment arrives.

FAA Advisory Circular (AC) 150/5200-31A, *Airport Emergency Plan*, provides guidance to airport operators in developing and implementing the airport emergency plan required under 14 CFR Part 139.325. In Chapter 6 of the AC, under Section 7(c)(1), Fire and Rescue, Operations, the FAA advises airports to include in the AEP, "General overall policies, plans and procedures of the airport fire and rescue response to emergency situations, both on and off airport." Further, in Section 7(d)(1)(b), which describes the specific organizational structure and associated responsibilities that are assigned to ARFF, the AC identifies the airport manager as the official that, "Establishes airport policy regarding off-airport response by airport rescue and fire fighting personnel and equipment."

9.6 Interview Summaries

Steve Howard
ASE Airside Operations Supervisor/Fire Chief
Interviewed by telephone February 14 and 15, 2002.

Chief Howard said that the policy at ASE had been for ARFF crews to respond to off-airport emergencies until "about October 2000," when the Pitkin County Sheriff's office notified airport officials that the airport had no jurisdiction beyond the airport perimeter. In order to comply with the sheriff's decree, the airport began instructing ARFF crews that they were not to leave the airport without permission from the airport director. At that time, the airport began working on an inter-governmental agreement that was to have specified that ARFF crews would respond to aircraft accidents outside the airport operations area. Before the agreement was signed, the Avjet airplane crashed a short distance outside of the airport

perimeter fence. The responding ARFF crew intended to respond to the accident, but was temporarily detained on the airfield by the on-duty operations officer, pending permission from the airport director. On April 5, 2001, Chief Howard issued a written memorandum (Attachment 10) to all ARFF personnel that stated, "Effective immediately, ARFF 699 may leave the airport operations area for downed aircraft emergencies at the discretion of the crew chief, with permission of the on-duty operations officer (airport director approval is not required)." According to Chief Howard, a revised AEP is currently being reviewed by FAA certification officials, and specifically states therein, "The ARFF crew provides initial response for all aircraft-related emergencies on the airport property and within close proximity to the airport."

Vernard (Vinnie) Oliver
ASE Operations Officer
Interviewed by telephone 3-14-02.

Mr. Oliver was the on-duty Operations Officer at ASE the night of March 29, 2001. He was in the ARFF station when the crash alarm went off. The crew chief (Cindy MaetzoldJohnson) got into ARFF 699 and left the station. Mr. Oliver followed ARFF 699 in a separate airport vehicle. Crew Chief MaetzoldJohnson drove ARFF 699 to the Alpha 3 taxiway staging area, where she was met by another airport vehicle (jeep). The driver of the jeep was another airport firefighter who had been working in the main terminal building when the alarm sounded. The firefighter parked the jeep at Alpha 3, and got into ARFF 699 with Crew Chief MaetzoldJohnson. By that time, someone had announced on the radio that the crash was off-airport. Crew Chief MaetzoldJohnson turned ARFF 699 around and headed for airport perimeter gate 5, approximately 100 yards behind the Apha 3 staging area. Crew Chief MaetzoldJohnson made a radio call that "ARFF 699 would respond." Mr. Oliver called her on the radio, and told her, "ARFF 699, stand down." Mr. Oliver noted that Crew Chief MaetzoldJohnson was unaware of the policy that ASE ARFF crews were not to leave the airport, therefore, she intended to respond. Crew Chief MaetzoldJohnson radioed Aspen Pitkin County Communications Center and asked them to notify the airport manager and get permission to leave the airport. A few minutes later, someone on the radio gave Crew Chief MaetzoldJohnson permission to leave the airport. Mr. Oliver said that up until about "two or three" months before the accident, the policy had been that ARFF crews would respond to fire events up to three miles off airport property, but the policy had been changed at one of the monthly ARFF training sessions. Mr. Oliver also noted that Crew Chief MaetzoldJohnson had not attended the training session where the policy change was discussed, so, was not aware of the change. According to Mr. Oliver, the policy change came about as a result of a jurisdictional disagreement between the Aspen Pitkin County Airport and the Aspen Fire Protection District.

Cindy MaetzoldJohnson
ARFF Crew Chief
Interviewed by telephone 3-20-02.

Crew Chief MaetzoldJohnson was in the fire barn when the crash alarm sounded. Leo Meraz (another firefighter) was also there. They both donned their gear and got into ARFF 699, leaving the fire barn about 60 seconds after the alarm sounded. She heard on the radio that "it was not a drill," and proceeded toward the Apha 3 staging area. Before arriving at Alpha 3, she heard on the radio that the crash was off-airport, so she changed her destination to Gate 5, and made a radio call that she "would respond." She knew that the policy was not to leave the airport, but thought that the crash was "just outside the perimeter fence." Before she opened Gate 5, she was issued an order to "stand down," from Vinnie Oliver, the on-duty airport operations officer. She called Vinnie on the Sardy 1 frequency[16] and asked him to contact Peter, the airport manager, to get permission to go off-airport. "About 3 minutes later," Vinnie called her back and told her she had permission to leave the airport. She drove ARFF 699 to the crash site. There was not much fire at the scene. Tender 1 was already there, and she did not think that any other fire trucks had arrived. She had not seen Tender 1 leave the fire barn, but thinks that it had arrived at the crash site about 3 minutes before ARFF 699. Leo and the two volunteer firefighters from Tender 1 pulled a hand line from ARFF 699, and began applying agent to the fire. She did not use the turret on her truck.

Leo Meraz
ASE Building Maintenance and ARFF Crew Chief
Interviewed by telephone 3-28-02.

Mr. Meraz was eating dinner with a co-worker in the terminal building when the crash occurred. He heard the siren on the ARFF barn go off, and thought that it was a "speed drill" to test how quickly ARFF is able to respond to an emergency. The airport operations officer called Mr. Meraz on his radio, and told him that it was not a drill. Mr. Meraz went to the "airside" administrative offices in the terminal building, borrowed a jeep, and drove to the ARFF barn. As he approached, he saw ARFF 699 pulling out of the barn. The crew chief (Cindy MaetzoldJohnson) that was driving ARFF 699 stopped the truck about 20 feet outside the ARFF barn to let Mr. Meraz climb in the truck with her. As ARFF 699 proceeded toward the Alpha 3 staging area, Mr. Meraz donned his turnout gear. About the same time as ARFF 699 reached the staging area, there was a transmission over the radio in the truck that the accident was "off airport." The crew chief turned the truck around and headed for Gate 5, leading off the airfield. As the crew chief stopped ARFF 699 to open the gate, the airport operations officer told the crew chief to "stand down." The operations officer began trying to contact the airport director in order to get permission for ARFF 699 to go off the airfield. While ARFF 699 was waiting for permission, Mr. Meraz saw Tender 1 traveling down highway 82 toward the accident scene. "About 30 seconds" after being told to stand down, Mr. Meraz heard the airport director on the radio giving permission for ARFF 699 to proceed off of the airport to the accident site. The crew chief did not hear the transmission, so, Mr. Meraz told her it was OK to leave. The airport operations officer opened Gate 5, and ARFF 699 drove to the scene. Mr. Meraz estimated that it took "about 30 seconds" to get to the

[16] Sardy 1 frequency is used by airport operations personnel on Sardy Field, and is not recorded.

scene after leaving the airfield. The crashed airplane was “about 200 feet” from the airport perimeter fence. When ARFF 699 arrived on the accident scene, Tender 1 was the only other fire truck there, although there were several other vehicles present. He did not remember anything else about the other vehicles. Mr. Meraz got out of ARFF 699, and with the help of 2 AFPD firefighters, pulled a hand line from ARFF 699 and took it up a hill towards the fire. The crew chief remained in ARFF 699 and charged the hand line. After a “couple of minutes,” he had “knocked down” the fire. ARFF 699 and the crew chief remained on scene for “about 2 hours,” and Mr. Meraz remained for 6 hours. There were 5 fire trucks on scene: one from Snowmass, Tender 1, ARFF 699, and Engines 5 and 6 from AFPD.

Prior to the accident, Mr. Meraz believed that the ARFF truck was authorized to leave the airfield at the discretion of the crew chief. However, he was not surprised that they were initially told not to leave the airfield in this instance, because Shale Bluffs is a very large area, and the crash could have been a long way from the airport. He did not realize until he arrived on scene, how close it actually was to the airport.

9.7 Additional Attachments

- Attachment 10, Sardy Field ARFF Documentation
- Attachment 11, ASE Airport Emergency Plan
- Attachment 12, Transcriptions of ATCT and APCCC radio transmission recordings