

NATIONAL TRANSPORTATION SAFETY BOARD
Office of Aviation Safety
Washington, DC 20594

SURVIVAL FACTORS SPECIALIST'S FACTUAL REPORT

April 30, 2020

I. ACCIDENT

Airplane : Textron Aviation B300 [N534FF]
Location : Addison, TX
Date : June 30, 2019
Time : 0911 central daylight time (CDT)¹
NTSB # : CEN19MA190

II. SURVIVAL FACTORS SPECIALIST

Specialist : Jason T. Fedok
National Transportation Safety Board
Washington, DC

III. SUMMARY

On June 30, 2019, about 0911 central daylight time, a Textron Aviation B300, N534FF, was destroyed when it was involved in an accident near Addison, Texas. The airline transport pilot, the commercial co-pilot, and eight passengers sustained fatal injuries. The airplane was operated as a Title 14 Code of Federal Regulations Part 91 personal flight.

IV. DETAILS OF THE INVESTIGATION

1.0 Airplane Information

The accident airplane was equipped with two crew seats and a 9-passenger seat cabin (including the aft, belted lavatory seat). See photos 1-6.

¹ All times are reported in local time unless otherwise noted.



Photo 1. Preaccident photo of N534FF.

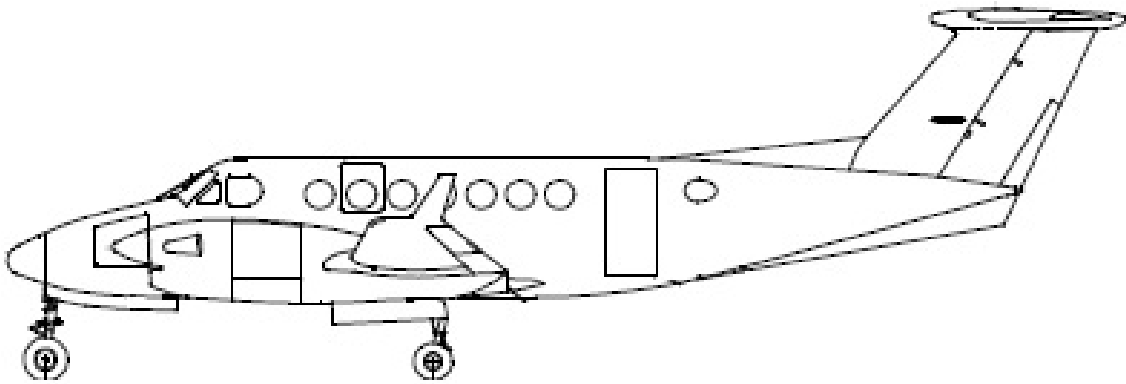


Figure 1. Diagram of a Textron Aviation B300 showing the left side emergency exits.

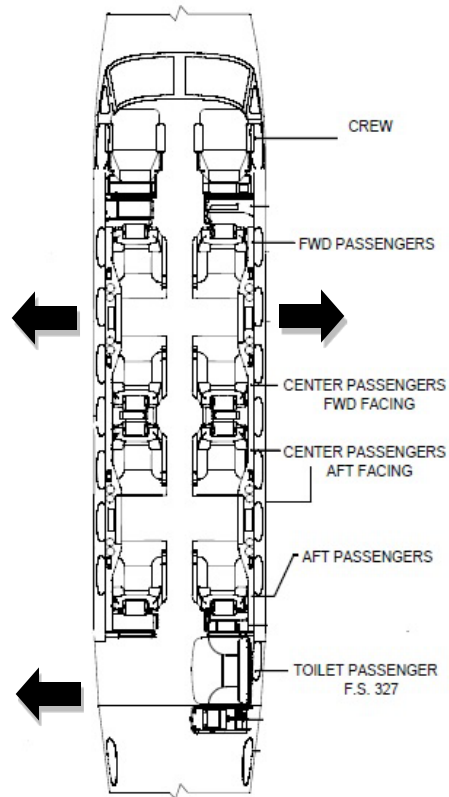


Figure 2. Interior diagram of N534FF showing seating arrangement and exit locations.



Photo 2. Left-side overwing exit (second cabin window behind cockpit) and aft entry door.



Photo 3. The right-side overwing exit (second cabin window behind cockpit).



Photo 4. Forward-facing photo of the interior of N534FF.



Photo 5. Belted lavatory seat of N534FF.



Photo 6. Aft-facing view showing the left overwing exit at row 2.

2.0 On-scene Documentation

Digital video obtained from multiple cameras both on and off the airport showed that the airplane rolled to its left and struck the roofline of an airport hangar inverted before impacting the hangar floor and sliding through a roll-up garage door that was closed at the time of the accident. See photos 7-12.



Photo 7. Aerial view of accident site and final resting location of N534FF (yellow arrow).



Photo 8. Interior view of hangar just prior to impact.



Photo 9. Interior view of hangar at the moment of impact.



Photo 10. Interior view of hangar as N534FF (black arrow) exits the building through the roll-up garage door.



Photo 11. Interior view of hangar about three seconds after impact.



Photo 12. Ground view of the hangar impacted by accident airplane and airplane's final resting location.

After sliding through the roll-up garage door, the airplane came to rest on its right side and was immediately involved in a postcrash fire. See photos 13 and 14. The NTSB Structures Group documented the airplane wreckage on-scene and noted that the fire

consumed a majority of the fuselage. The charred remains of the aft entry door were found in the main wreckage and one of the two overwing window exits was found partially burned in the hallway near the hangar office door, next to the main fuselage wreckage site. The other overwing window exit was not identified in the wreckage. See the Structures Group Factual Report for additional on-scene photographs.



Photo 13. Airplane wreckage lying on its right side.



Photo 14. Cabin area of airplane.

Portions of all of the crew and cabin seats were identified by the Structures Group. All seats showed evidence of various degrees of fire consumption. Some seats showed deformation consistent with impact damage and separation from seat tracks and flooring. The data tag from one passenger seat indicated it was manufactured by Aircraft Modular Products (model 252401401-3067A75, S/N 170125-07) to comply with National Aircraft Standard (NAS) 809 and Technical Standard Order C39B (Fwd 9G, Up 7G, Side 3G, Down 9G). Photographs showing the condition of some of the damaged seats are shown below.



Photo 15. Damaged and charred passenger seat.



Photo 16. Damaged and charred passenger seat still attached to some seat track.



Photo 17. Fire-consumed crew seat.



Photo 18. Fire-consumed crew seat with fractured seatpan tubes.



Photo 19. Damaged passenger seat still attached to a section of cabin flooring.

5.0 Medical and Pathological Information

5.1 Injury Table

Type of Injury	Flight Crew	Passengers	Total
Fatal	2	8	10
Serious	0	0	0
Minor	0	0	0
None	0	0	0
Total	2	8	10

5.2 Injury Information

The two flight crewmembers and eight passengers all sustained fatal injuries in the accident. Autopsy reports obtained from Office of the Medical Examiner in the Southwestern Institute of Forensics Sciences at Dallas indicated that all of the occupants experienced thermal and or smoke inhalation injuries that contributed to their deaths. Six of the 10 occupants also had blunt force traumatic injuries that contributed to their deaths, while 4 occupants died solely from thermal and/or smoke inhalation injuries. For more information on the occupants' injuries, see the injury chart in attachment 1.

6.0 Emergency Response

6.1 Summary

Addison Fire Department (AFD) Fire Station 1 was located at ADS about 600 feet from the accident site. The battalion chief reported that he was inside the station at the time and heard the explosion but did not know what it was. The station was equipped with a direct-line ringdown service from the air traffic control tower which activated almost immediately and reported an Alert 3 (accident on the airport). He and the nine other firefighters in the station responded to the accident site in 5 vehicles. Figure 1 contains the vehicles that responded and routes from Fire Station 1.² Heavy smoke was observed as soon as they left the station and the vehicles followed Airport Parkway onto the airfield through an automatic gate which they encountered no difficulty using via a remote opener.

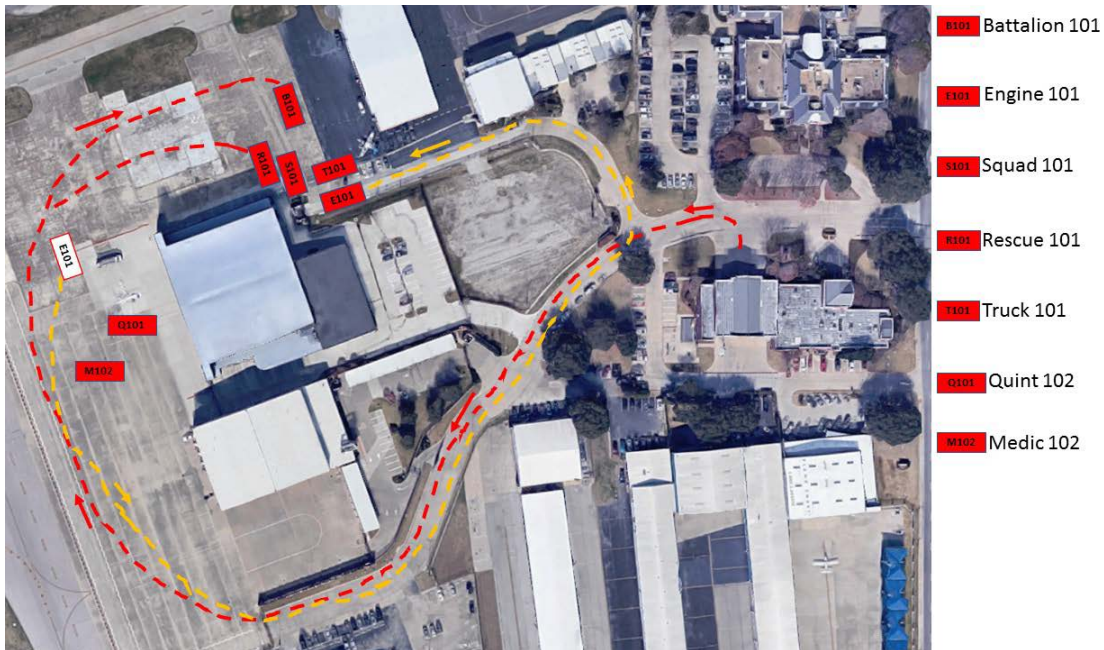


Figure 3. Response routes taken by AFD vehicles responding from Fire Station 1.

The hangar was completely engulfed in fire and smoke upon arrival. The battalion chief directed Rescue 101 (R101) to attack the hangar fire through the large hole in the hangar roof. He was aware that the hangar usually housed a helicopter, a Falcon 50, and a 737. He believed the accident airplane was still in hangar and was concerned about fire spreading into the 737. The battalion chief also noticed that there was a secondary fire on the ground to the left of the hangar and initially thought it was an electrical panel fire. Squad 101 positioned their apparatus around R101 and had a straight shot to the secondary fire, which he later learned was the airplane fuselage. He also redirected Engine 101 to go back around to Eddie Rickenbacker Dr. and attack the secondary fire from that direction.

² Two vehicles shown (Quint 102 and Medic 102) responded from Fire Station 2 which was located about 2 miles away.

The fires were knocked down within about 14-15 minutes and the firefighters enlisted assistance from on-airport personnel to force open the doors to the hangar. There was a lot of heat and smoke in the hangar but not much fire remaining.

During the firefighting, the battalion chief contacted the tower to inquire about how many persons were on board the airplane. The tower personnel initially replied that there were at least 2 persons on board but was not certain. It was not until several hours later that he learned there were 10 people on board; although he stated that information would not have changed his tactics because he did not recognize that the location of the secondary fire was the accident airplane. When asked if his tactics or attack would have been any different had he known the location of the accident airplane upon arrival, he stated that he might have concentrated more on it but that there was no way to know it was an aircraft until the fire was extinguished.



Photo 20. Internet photo showing the initial attack on the hangar fire by Squad 101 (bumper turret) and Rescue 101 (roof turret).



Photo 21. Internet photo showing Engine 101 using its roof turret to extinguish residual fire near the accident airplane.

6.1 Vehicle Camera Video

Video obtained from a camera inside a vehicle parked near Fire Station 101 showed the airplane's impact with the hangar and subsequent explosion. The video showed that the initial impact occurred at 0910:40.³ About one second later debris could be seen flying into the air in the area of the roll-up garage door, which was obscured in the frame, followed by a second eruption of fire. See photos 22 and 23.



Figure 4. Google Earth image with the relative locations of the accident airplane, Fire Station 1, and the camera vehicle.



Photo 22. Video frame from a camera mounted in a vehicle near Fire Station 1 showing the explosion after impact with the hangar.

³ The time scale of the truck camera recording was approximately 11 seconds slower than the time recorded by both the airplane's Cockpit Voice Recorder (CVR) and interior hangar camera. For the purposes of this section, all times referenced are from the truck camera's clock.



Photo 23. Video frame two seconds later showing a second eruption of fire emanating from the area of the roll-up garage door.

The same camera also captured the emergency response vehicles from Fire Station 1 traveling on Airport Parkway. Battalion car 101 could be seen responding at 0911:59 followed by Engine 101 at 0912:34, Squad 101 at 0912:56, Rescue 101 at 0913:02, and Truck 101 at 0913:14. A computer-aided dispatch report provided by AFD indicated that all five vehicles from Fire Station 1 (101 units) were dispatched at 0911:36 and Engine 101 arrived on-scene at 0913:08. For more information about the emergency response see attachments 2 and 3.

Jason Fedok
Survival Factors Investigator

Attachments

Attachment 1 – Injury Chart

Attachment 2 – Interview Summary

Attachment 3 – AFD Computer-Aided Dispatch Reports