NATIONAL TRANSPORTATION SAFETY BOARD
Office of Aviation Safety
Washington, D.C. 20594

August 9, 2001

STRUCTURES AND MAINTENANCE RECORDS GROUP CHAIRMAN'S FACTUAL REPORT

DCA01MA034

A. ACCIDENT

LOCATION: Aspen-Pitkin County Airport, Aspen, Colorado

DATE: March 29, 2001

TIME: 1902 mountain standard time (MST)

AIRCRAFT: Gulfstream III, N303GA, Avjet Incorporated

B. STRUCTURES AND MAINTENANCE RECORDS GROUP

Group Chairman: Ronald C. Price
National Transportation Safety Board
Washington, D.C.

Member: James Clayville
Federal Aviation Administration
Denver, Colorado

C. SUMMARY

On March 29, 2001, at 1902 MST, a Grumman Gulfstream III, registration number N303GA, operated by AVJET Corporation, was destroyed when it collided with terrain about 0.4 miles northwest of the Aspen-Pitkin County Airport, Aspen, Colorado. The 2 flight crew, 1 flight attendant, and all 15 passengers were fatally injured. The accident site was about 100 feet above the airport elevation of 7,815 feet. The flight had arrived under Instrument Flight Rules (IFR) and had reported the airport in sight. The flight was operating as an IFR flight under 14 CFR Part 135 operations. The weather at 1853 MST was: wind 250 degrees at 3 knots; visibility 10 miles; and light snow, few clouds at 1,500 feet, ceiling 2,500 feet broken, 5,000 feet broken. Approximately 10 minutes after the accident the visibility decreased to 1-¾ miles in light snow.

The Structures and Maintenance Records Group was formed to record and document the information regarding the airplane wreckage and maintenance records. The group began its investigation on March 30, 2001, at the accident site in Aspen, concluded the on-site investigation

on April 3, 2001. The airplane's maintenance records were examined at the Federal Aviation Administration's (FAA) Flight Standards District Office in Van Nuys, California, on April 5, 2001.

D. DETAILS OF THE INVESTIGATION

1. Wreckage distribution

The airplane was broken up and destroyed by the impact with terrain. There were isolated areas of post-crash fire. The airplane debris was spread over about a 300-foot long path along a heading of about 147 degrees that began with the initial impact point, continued through a 40-foot gully, and ended with the airplane's tail section as the last major portion of the debris. The damage was characterized by severe accordion type crushing, separated components, and fractured structural components. The initial impact point was located at 39 degrees, 14.315 minutes north latitude and 106 degrees, 52.637 minutes west longitude, as measured with a global positioning system (GPS) indicator. The main portion of the wreckage debris was located at 39 degrees, 14.278 minutes north latitude, and 106 degrees, 52.621 west longitude, as measured by GPS. All portions of the airplane were found in the wreckage path. The Federal Bureau of Investigation (FBI) documented the location of the wreckage and provided the wreckage distribution plot (Appendix B).

2. History

The airplane's records indicated that N303GA, serial number (SN) 303, was manufactured in 1980, by Gulfstream Aerospace Corporation and was issued an Export Airworthiness Certificate along with a registration number of TU-VAC.[1] The airplane's records indicated that it had been substantially damaged in Africa in 1988, shipped to the manufacturer for repairs, and placed back into service on October 6, 1989, with a new registration number of N1716W, and a United States airworthiness certificate. The airplane was sold and the registration changed to N303GA. The airplane was owned by Aircraft Charters, Inc., and operated by Avjet, Inc., of Burbank, California.

3. Fuselage

The fuselage from the nose throughout the cabin to the empennage was destroyed by impact forces. The cockpit was found to the right of the main debris path and about 200 feet from the initial impact point wrapped in aircraft wiring and control cables. The cockpit area was characterized by fractured structure, separated components, and loose cockpit controls. The cockpit components were found spread from the bottom of the gully that was to the right of the debris path. The flight crew seats were found near the cockpit area and separated from their respective attach points. The cockpit windshield was found in the wreckage debris and was shattered throughout the front glass. However, the glass was complete and had the appearance of fractures that protruded forward to the outside. The cables leading from the cockpit were not continuous and were found separated from their respective control paths.

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[1] TU is the aircraft registration prefix for the country of Ivory Coast.

The fuselage, from fuselage section (FS)[2] 100 through FS 244, was characterized by small fragments and fractured sheet metal. The fuselage section from FS 244 through FS 466 was found to the right of the main debris path and separated from the floor attach points and flattened.

4. Wings

The left winglet was the initial contact with the ground and the left wing was fractured approximately 9 feet from the wingtip. The winglet and separated wing portion were found at the end of the initial ground scar with dirt and debris packed into the open wing spaces. The winglet root angle corresponded to the ground scar rut angle and the broken bush angles. The winglet root angle was approximately 50 degrees to the horizon. The left wing, from the separated tip inboard to the main portion of the wing box, was fractured and found along the debris path. The left wing was found complete from the fractured tip through the wing box. The left side flight control surfaces were separated from the wing attach points. The outboard spoiler was integral to the left wing section. The inboard spoiler was separated from its attach hinges. The flap system was separated from the flap attach points along with the flap actuator jackscrews.

The right wing tip and winglet were found along the debris path about 25 feet from the main wing near gouges left by the wing. The right wing was fractured along its length about 30 feet inboard from the tip. The right inboard wing root and about 12 feet of the right wing were integral to the wing box. None of the fuselage cabin was found attached to the wing box. The right aileron, flap system, flap actuators, and spoilers were separated from their respective attach points and found in the wreckage debris near the wing box.

5. Empennage

The tail section was separated from the fuselage at FS 666 through FS 713 and remained basically intact. All flight controls remained connected and rudder and elevators were damaged but intact. Continuity of the flight control cables was established from the fractured areas at FS 713 through the flight control surfaces. Continuity of flight control system could not be established forward of FS 713 because of fractured fuselage and sheared flight control cables.

The empennage flight control surfaces remained attached to their respective attach points. There was minor damage to the trailing edge of the rudder and elevators. The fuselage section was intact, not sooted, with no evidence of fire or heat damage. There was no staining along the length of the empennage section or on the flight control surfaces.

6. Doors

The main cabin door was found separated from its hinge points and found in the wreckage debris about 20 feet from the cockpit area. The locking tangs were found in the extended position and the handles were found in the closed position. The main baggage door was found separated from its hinge points and found in the wreckage debris. The locking tangs were found in the extended position. The four emergency exit windows were found integral to their respective cabin

[2] See airplane fuselage station diagram in appendix C.

fuselage positions. The APU access door was found locked in its correct position with no evidence of fire or sooting.

7. Landing gear

The main landing gear were found attached to their respective attach points in the main landing gear wheel wells. No evidence of fire or overheat was found near the main landing gear. The nose gear wheels and piston were found separated from the upper strut and were lying near the main cabin door in the wreckage debris path. The upper cylinder strut and some hydraulic actuators were found in the gully with the wreckage debris path about 20 feet to the right of the main wing box. The remainder of the nose gear system was found in the cockpit debris. The main landing gear doors were found separated from their respective attach points and found in the wreckage debris.

8. Powerplants

The airplane's engines were found separated from their engine pylon attach points and were located in the debris path near the empennage. The left pylon and portions of the airframe bulkheads were found integral to the engine cowling and mount systems. The right engine mounts were fractured from the pylon support system.

The APU was found integral to its empennage area with no evidence of fire, overheat, or malfunction. The APU cannot be run in-flight.

9. Maintenance records

According to the airplane's maintenance records, the following operating history was current for the airplane and engines through March 26, 2001. The airplane was equipped with two Rolls-Royce Spey MK 511-8 engines and a Garrett Model GTCP36-100 auxiliary power unit (APU).

	Serial Number	Total Time (hours)	Landings/Cycles
Airplane	303	7265.7	3507
No. 1 Engine	11005	7116.2	3499
No. 2 Engine	11006	7562.7	3822
APU	P-151	3942	

The airplane was maintained by Avjet Corporation under Avjet's FAA Repair Station Certificate, No. ABFR012C, and by Jet Center, Van Nuys, California, FAA Repair Station Certificate, No. C9FR844J. All of the maintenance activity that was accomplished on the airplane was recorded and maintained in a computer database.

The airplane's maintenance records revealed that it was maintained in accordance with an FAA-approved maintenance program that consisted of four regularly scheduled "operations inspections" that varied in the requirements for items to be inspected and the length of time

between inspections.

Operations Inspection Number	Interval	Last Accomplished	Next Due
1	150 hours	7176 hours	7326 hours
2	12 months	March 23, 2001	March 31, 2002
3	24 months	February 11, 2000	February, 2002
4	24 months	March 23, 2001	March 31, 2003

For further details on Operations Inspections No. 1,2,3,and 4, refer to Appendix D, E, F, and G, respectively.

A review of the list of scheduled maintenance items revealed that there were no overdue inspections (Appendix H).

All of the unscheduled maintenance was also logged into the airplane's maintenance history. The airplane's maintenance record for the month of March 2001 revealed three unscheduled maintenance items that were accomplished. On March 7, 2001, the left navigation light was listed as inop and it was replaced. On March 9, 2001, the upper aircraft beacon was listed as being "half lit only" and it was replaced. On March 27, 2001, the right hand no. 2 seat was reported as being loose on the floor tracks. The nuts on the seat's base were stripped and they were replaced. For further details on the work that was accomplished by Avjet to N303GA during March 2001, refer to Appendix I. According to the records, there were no discrepancies prior to the accident flight. The flight crew did not report any failures or malfunctions to the operator during the flight.

The computer database of maintenance records revealed the following scheduled maintenance items had been accomplished:

DATE	ITEM
3/28/01	Complied with Part 1 of Alert Customer Bulletin for modification of landing gear door control valve
3/1/01	Removed and replaced the No. 1 and 2 batteries
2/22/01	Removed and replaced the cabin temperature control valve
2/12/01	Removed and replaced the Autopilot Computer
1/13/01	Removed and replaced the No. 1 and 2 batteries
1/9/01	Removed and replaced the No. 1 and 2 inertial navigation units batteries
1/5/01	Removed and replaced the attitude indicator battery

For further details on these maintenance items, refer to Appendix J.

Additionally, the records show that on March 26, 2001, Jet Center completed work on the airplane that involved Operations Inspections No. 2 and 4, inspections of the of the wing and winglet fittings, NDT [non-destructive test] inspections with no defects noted, and installation of a Traffic Alert and Collision Avoidance System along with the associated transponder. For further details on the work accomplished by Jet Center, refer to Appendix K.

The maintenance records included supplemental logbook entry sheets for avionics work that had been accomplished by Duncan Avionics, Van Nuys, California, FAA Component Repair Station No. YXZR335L.

DATE	ITEM
2/12/01	Troubleshot No. 2 high frequency (HF) system. Discrepancy could not be duplicated on ground. HF couplers were swapped. No defects noted on test flight. Removed rental No. 1 and 2 radio altimeters and reinstalled No. 1 and 2 radio altimeters that had been removed from airplane on 1/20/01. Ground function checks good.
1/20/01	Removed No. 1 and 2 radio altimeters for inspection/repair and installed rental No. 1 and 2 radio altimeters. Ground function checks good. Removed and reinstalled copilot's RMI. Ground function checks good. Completed avionics ramp test.
1/19/01	Repaired copilot's microphone jack. Ground function checks good. Complied with radio frequency check. No defects noted.

For further details on the avionics work that was accomplished by Duncan Avionics, refer to Appendix L.

The maintenance records show that all of the airplane's applicable airworthiness directives (AD) had been accomplished. For further details on the ADs applicable to the airplane, refer to Appendix M.

The airplane was substantially damaged in Africa in 1988.[3] The airplane was shipped to Grumman Aerospace Corporation's Savannah, Georgia facility for repair and return to service. The records show that the left and right wings were replaced; a G-III nose gear and G-IV main landing gear were installed; the engines were removed, repaired, and reinstalled; the thrust reversers were replaced; the flaps, ailerons, and spoilers were replaced; and numerous repairs accomplished to the fuselage and empennage skin. For further details of the work accomplished to the airplane by Grumman following the accident in Africa, refer to Appendix N.

[3] According to Gulfstream, the airplane landed on a closed runway and went through a ditch that tore off the landing gear and damaged the wings.

The airplane's interior was refurbished by Syncro Aircraft Interiors, Van Nuys, California, on March 24, 2001. The records show the lower side and decor panels, forward left hand closet curtain, and the conference table pads were stripped, recovered, and reinstalled; the carpet and padding was removed and replaced, the seats and divan were stripped, reupholstered, and fireblocked, and the seat belts were rewebbed. The records show Syncro recalculated the airplane's empty weight and balance as 38,712.2 pounds and the empty center of gravity at 43.44 percent mean aerodynamic chord, which was within limits. For further details on the interior work accomplished to the airplane by Syncro and the recalculated weight and balance, refer to Appendix O.

Ronald C. Price
Group Chairman