



National Transportation Safety Board

Aviation Accident Final Report

| | | | |
|--------------------------------|-------------------------------|-------------------------|------------|
| Location: | Kake, Alaska | Accident Number: | ANC19FA012 |
| Date & Time: | January 29, 2019, 18:11 Local | Registration: | N13LY |
| Aircraft: | Beech 200 | Aircraft Damage: | Destroyed |
| Defining Event: | Loss of control in flight | Injuries: | 3 Fatal |
| Flight Conducted Under: | Part 91: General aviation | | |

Analysis

The pilot of the medical transport flight had been cleared by the air traffic controller for the instrument approach and told by ATC to change to the advisory frequency, which the pilot acknowledged. After crossing the initial approach fix on the RNAV approach, the airplane began a gradual descent and continued northeast towards the intermediate fix. Before reaching the intermediate fix, the airplane entered a right turn and began a rapid descent, losing about 2,575 ft of altitude in 14 seconds; radar returns were then lost. A witness at the destination airport, who was scheduled to meet the accident airplane, observed the pilot-controlled runway lights illuminate. When the airplane failed to arrive, she contacted the company to inquire about the overdue airplane. The following day, debris was found floating on the surface of the ocean. About 48 days later, after an extensive underwater search, the heavily fragmented wreckage was located on the ocean floor at a depth of about 500 ft.

A postaccident examination of the engines revealed contact signatures consistent with the engines developing power at the time of impact and no evidence of mechanical malfunctions or failures that would have precluded normal operation. A postaccident examination of the airframe revealed about a 10° asymmetric flap condition; however, significant impact damage was present to the flap actuator flex drive cables and flap actuators, indicating the flap actuator measurements were likely not a reliable source of preimpact flap settings. In addition, it is unlikely that a 10° asymmetric flap condition would result in a loss of control.

The airplane was equipped with a total of 5 seats and 5 restraints. Of the three restraints recovered, none were buckled. The unbuckled restraints could suggest an emergency that required crewmembers to be up and moving about the cabin; however, the reason for the unbuckled restraints could not be confirmed.

While the known circumstances of the accident are consistent with a loss of control event, the factual information available was limited because the wreckage in its entirety was not recovered, the CVR recording did not contain the accident flight, no non-volatile memory was recovered from the accident airplane, and no autopsy or toxicology of the pilot could be performed; therefore, the reason for the loss of control could not be determined. Due to the limited factual information that was available, without a working CVR there is little we know about this accident.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be:

A loss of control for reasons that could not be determined based on the available information.

Findings

| | |
|----------------|------------------------------------|
| Not determined | (general) - Unknown/Not determined |
|----------------|------------------------------------|

Factual Information

History of Flight

Approach-IFR initial approach Loss of control in flight (Defining event)

Uncontrolled descent Collision with terr/obj (non-CFIT)

On January 29, 2019, about 1811 Alaska standard time, a Raytheon Aircraft Company B200 airplane, N13LY, was destroyed when it was involved in an accident in Kake, Alaska. The pilot, flight paramedic, and flight nurse were presumed fatally injured. The airplane was operated as a Title 14 *Code of Federal Regulations (CFR) Part 91* air ambulance flight.

The flight, operated by Guardian Flight LLC, departed Ted Stevens Anchorage International Airport (ANC), Anchorage, Alaska at 1604, on an instrument flight rules (IFR) flight plan, destined for the Kake Airport (AFE), Kake, Alaska. A review of archived voice communication information from the Federal Aviation Administration (FAA) indicated that, at 1806:07, the radar controller cleared the pilot for the radio navigation (RNAV) runway 11 approach to AFE, which the pilot confirmed. At 1807:45, the controller advised the pilot to change frequency, which the pilot also confirmed.

There were no further communications with the accident flight.

A review of archived FAA radar and ADS-B data revealed that the accident airplane crossed the CEMGA waypoint on the RNAV runway 11 approach at an altitude of about 7,000 ft above mean sea level (msl), then turned northeast and crossed the ZOLKO initial approach fix about 5,000 ft msl. The airplane then initiated a gradual descent and continued northeast toward the JOJOE intermediate fix. About 1810, while the flight was between ZOLKO and JOJOE, the airplane entered a right turn toward a southerly heading and began a rapid descent, losing about 2,575 ft of altitude in 14 seconds. The last radar data point was at 1810:36 when the airplane was at 1,300 ft msl and heading 143° with a ground speed of 174 knots. (See figure 1 and figure 2.)

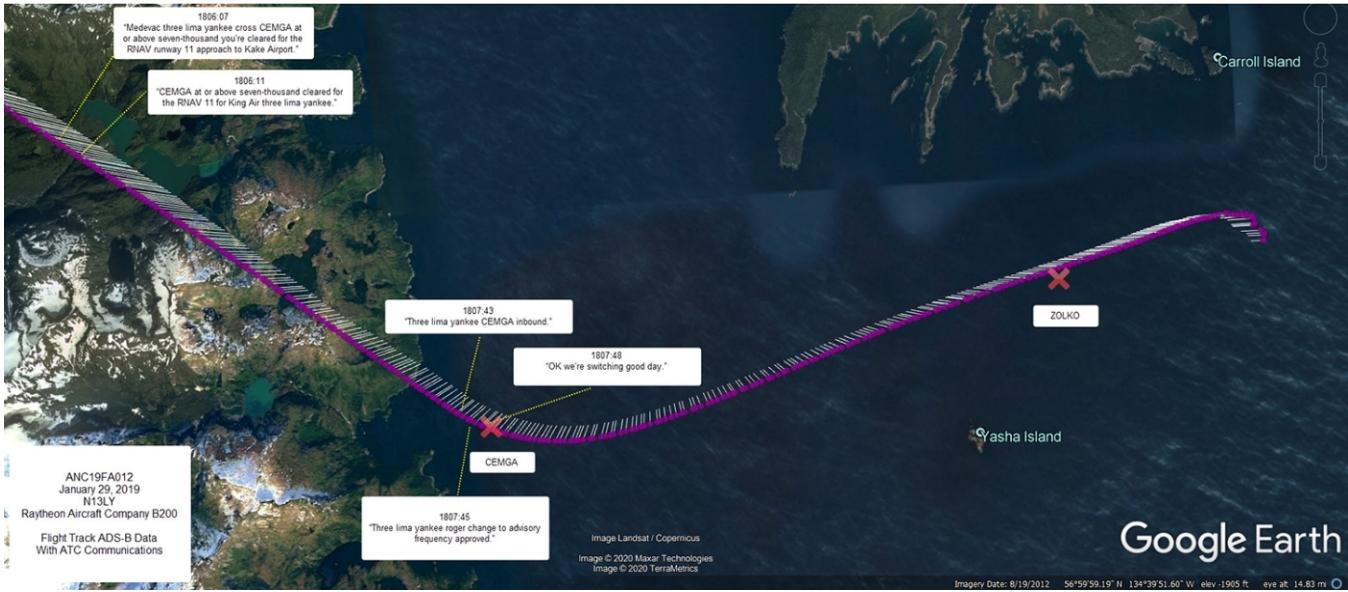


Figure 1 - ADS-B track of the accident airplane with air traffic communications for the approach clearance.

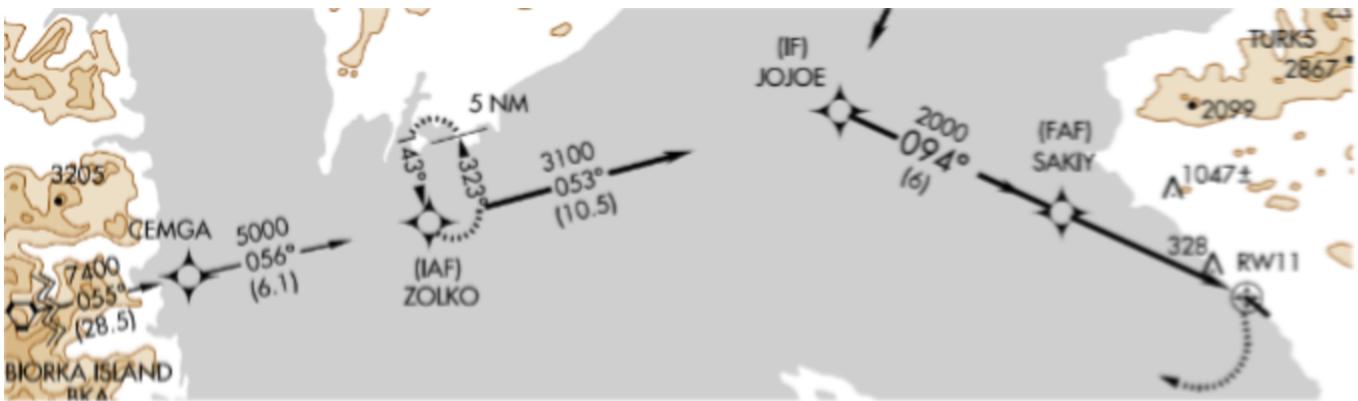


Figure 2 - Excerpt RNAV (GPS) RWY 11 Approach PAFE.

A witness at the destination airport, who was scheduled to meet the accident airplane, observed the pilot-controlled runway lights illuminate. When the airplane failed to arrive, she contacted the company to inquire about the overdue airplane.

The airplane impacted the ocean waters of Frederick Sound. On January 30, airplane debris was located about 22 miles west of Kake floating on the surface of the water near Point Gardner in Chatham Strait.

Pilot Information

| | | | |
|---------------------------|--|-----------------------------------|--------------------|
| Certificate: | Airline transport | Age: | 63, Male |
| Airplane Rating(s): | Single-engine land; Single-engine sea; Multi-engine land; Multi-engine sea | Seat Occupied: | Left |
| Other Aircraft Rating(s): | Helicopter | Restraint Used: | Unknown |
| Instrument Rating(s): | Airplane; Helicopter | Second Pilot Present: | No |
| Instructor Rating(s): | Airplane multi-engine; Airplane single-engine | Toxicology Performed: | No |
| Medical Certification: | Class 1 With waivers/limitations | Last FAA Medical Exam: | September 17, 2018 |
| Occupational Pilot: | Yes | Last Flight Review or Equivalent: | October 11, 2018 |
| Flight Time: | (Estimated) 17774 hours (Total, all aircraft), 1644.5 hours (Total, this make and model), 93 hours (Last 90 days, all aircraft), 40 hours (Last 30 days, all aircraft) | | |

According to the operator's training records, the pilot completed initial training at Guardian Flight (the accident operator) and was eligible for duty as a pilot-in-command in a Raytheon Aircraft Company B200 aircraft on May 15, 2015. According to his personal logbook, he was hired with a total flight time of about 16,878 hours, 1,937.9 hours of actual IFR, 1,371.5 hours of simulated IFR, 3,720.2 hours of night time, and 12,559.2 hours cross country. In addition, he had accumulated about 1,644.5 hours in the accident airplane make and model since starting with the company. His most recent airman competency/proficiency check, which was administered by a company check airman, was completed on October 11, 2018.

The pilot's flight and duty records revealed that on January 26, his duty day started at 0600 and ended at 1800; and he did not fly. On January 27, his duty day started at 0600 and ended at 1830; and he flew 2.4 hrs. On January 28, his duty day started at 0600 and ended at 1800; and he flew 1.5 hrs. On January 29, the day of the accident, the pilot's duty start time was not recorded; however, Guardian Flight indicated his duty day started at 0600 and he flew about 2.5 hrs prior to the accident flight.

Aircraft and Owner/Operator Information

| | | | |
|-------------------------------|---|--------------------------------|--------------------------|
| Aircraft Make: | Beech | Registration: | N13LY |
| Model/Series: | 200 B200 | Aircraft Category: | Airplane |
| Year of Manufacture: | 2000 | Amateur Built: | No |
| Airworthiness Certificate: | Normal | Serial Number: | BB-1718 |
| Landing Gear Type: | Retractable - Tricycle | Seats: | 7 |
| Date/Type of Last Inspection: | December 12, 2018 Continuous airworthiness | Certified Max Gross Wt.: | |
| Time Since Last Inspection: | | Engines: | Turbo prop |
| Airframe Total Time: | 5226 Hrs as of last inspection | Engine Manufacturer: | Pratt & Whitney Canada |
| ELT: | C126 installed, not activated | Engine Model/Series: | PT6A-52 |
| Registered Owner: | | Rated Power: | 850 Horsepower |
| Operator: | | Operating Certificate(s) Held: | On-demand air taxi (135) |

The Raytheon Aircraft Company B200 was a six seat, low wing, multiengine airplane manufactured in 2000. The airplane was equipped with two tandem LifePort stretcher systems and Aerosleds that had been installed in conformance with LifePort supplemental type certificate No. SA00273WI.

The aircraft was configured with two flight crew seats in the cockpit. The LifePort tandem stretcher systems were installed on the right side of the cabin portion of the airplane, and three passenger seats were on the left side of the cabin portion of the airplane, two forward facing and one aft facing.

The operator maintained the airplane in accordance with the Beechcraft Super King Air 200 Series Maintenance Manual P/N 101-590010-19, issued December 21, 1973, and P/N 101-590010-19D6 revised May 1, 2017.

Meteorological Information and Flight Plan

| | | | |
|----------------------------------|----------------------|--------------------------------------|-------------------|
| Conditions at Accident Site: | Visual (VMC) | Condition of Light: | Night |
| Observation Facility, Elevation: | PAFE, 171 ft msl | Distance from Accident Site: | 18 Nautical Miles |
| Observation Time: | 02:56 Local | Direction from Accident Site: | 258° |
| Lowest Cloud Condition: | Clear | Visibility | 10 miles |
| Lowest Ceiling: | Broken / 1500 ft AGL | Visibility (RVR): | |
| Wind Speed/Gusts: | 6 knots / | Turbulence Type Forecast/Actual: | / |
| Wind Direction: | 100° | Turbulence Severity Forecast/Actual: | / |
| Altimeter Setting: | 29.95 inches Hg | Temperature/Dew Point: | 2°C / 1°C |
| Precipitation and Obscuration: | Light - None - Rain | | |
| Departure Point: | Anchorage, AK (PANC) | Type of Flight Plan Filed: | IFR |
| Destination: | Kake, AK (PAFE) | Type of Clearance: | IFR |
| Departure Time: | | Type of Airspace: | Class E |

Airport Information

| | | | |
|----------------------|-------------------|---------------------------|---------|
| Airport: | Kake Airport PAFE | Runway Surface Type: | |
| Airport Elevation: | 172 ft msl | Runway Surface Condition: | Unknown |
| Runway Used: | | IFR Approach: | RNAV |
| Runway Length/Width: | | VFR Approach/Landing: | None |

AFE is a publicly owned, non-tower-controlled airport located in Class "G" airspace about 1 mile southeast of Kake, AK, at an estimated elevation of 171.5 ft msl. At the time of the accident, the airport was served by two instrument approach procedures with one asphalt surfaced runway oriented in a 11/29 configuration.

Wreckage and Impact Information

| | | | |
|----------------------------|---------|---------------------------------------|-----------------------|
| Crew Injuries: | 3 Fatal | Aircraft Damage: | Destroyed |
| Passenger Injuries: | | Aircraft Fire: | None |
| Ground Injuries: | | Aircraft Explosion: | None |
| Total Injuries: | 3 Fatal | Latitude, Longitude: | 56.994998, -134.46722 |

The airplane impacted the ocean waters of Frederick Sound and was located with the assistance of a remote operated vehicle (ROV) on March 19, 2019, at a depth of about 500 ft. A cone shape debris field spanned about 1,650 ft on a bearing of 45°, with the lighter debris farther northeast due to the ocean current. (see figure 3.)

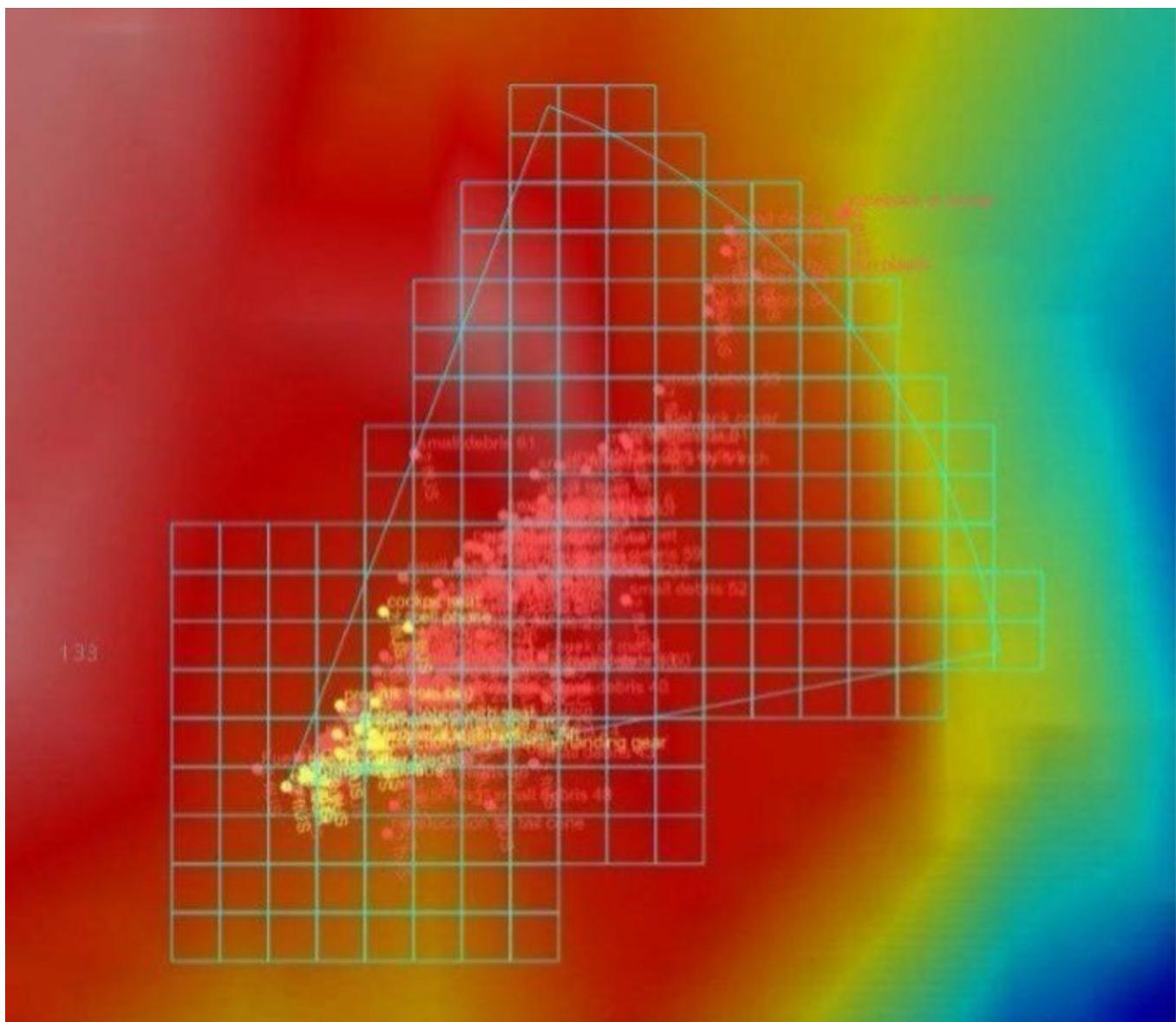


Figure 3 - Debris field figure produced by TerraSond courtesy of Alaska Claims Services, Inc.

On March 22 through March 26, 2019, recovery crews, with the assistance of a ROV, recovered most of the airplane's major components from the ocean floor and transported them to Juneau, Alaska. Items that were not found or recovered included but were not limited to, the right aileron, portions of both left and right wings, and portions of both left and right elevators.

The cockpit and instrument panel exhibited extensive impact damage. The floor of the cabin area of the fuselage separated from the aircraft structure and none of the cockpit or passenger seats were located within the airplane.

The left wing was fragmented but remained relatively intact along its span. The outboard section of the left wing, which included most of the left aileron, separated from the wing structure but remained attached by the twisted aileron and aileron trim cables.

The left inboard flap actuator was extended 2.55 inches, which equated to about 0°-10° extended. The left inboard flap actuator flex drive cable was fractured at the actuator. The left outboard flap actuator was extended 2.95 inches, which equated to about 10° extended. The left outboard flap actuator flex drive cable was partially separated, stretched and the cable strands were separated near the actuator.

The right wing was heavily fragmented and separated from the fuselage into three main sections. The inboard section included the inboard flap and aft spar section from the wing root to the right engine nacelle. The center section included the right main landing gear, the aft portion of the right engine nacelle, and about 8 ft of the wing. The outboard section consisted of about a 10 ft by 3 ft section of the wing skin with the fractured right aileron bellcrank attached. The right aileron was not recovered.

The right inboard flap actuator was extended 2.10 inches, which equated to fully retracted. The right inboard flap actuator flex drive cable attachment fitting was fractured and separated at the actuator. The outboard right flap actuator was extended 1.70 inches, which also equated to fully retracted. The outboard right flap actuator flex drive cable remained attached to the actuator.

The vertical stabilizer separated and exhibited leading edge impact damage. The rudder remained attached to its attach points and was relatively undamaged. The right horizontal stabilizer, right elevator, and about a 3-ft section of the left elevator separated from the vertical stabilizer. About 2 ft of the outboard right elevator and the remainder of the left elevator were not recovered.

The cockpit flight crew seats were recovered, and both seat belt restraints were found unbuckled. One passenger seat was recovered, and the seat belt restraint was found unbuckled. The base of a second passenger seat was recovered; however, the seat back and seat belt restraint were not recovered. All recovered seats exhibited impact damage. One rear passenger seat was not recovered.

Both engine external cases exhibited no signs of fire damage or thermal distress. No anomalies, contamination, or evidence of malfunction were found in any of the engine accessories. The engines displayed contact signatures to their internal components characteristic of the engines developing power at the time of impact. The examination of the engines revealed no evidence of mechanical malfunctions or failures that would have precluded normal operation.

Both the left and right propeller hubs fractured and separated at the propeller shaft. The left propeller blades exhibited torsional twisting, two blades exhibited leading edge gouging, and one blade was missing its tip. All four of the right propeller blades exhibited torsional twisting and leading-edge gouging, and one blade was missing a portion of the propeller tip.

Control continuity could not be established due to numerous fractures in the system and missing cabling and flight control surfaces.

Additional Information

SSCVR Test

The Beechcraft Pilot's Operating Handbook and FAA Approved Flight Manual Supplement for the Fairchild A100S SSCVR, stated in part:

LIMITATIONS

The SSCVR self-test must be successfully accomplished prior to flight.

NORMAL PROCEDURES

After Starting:

1. *Battery, Generator, and Inverter Switches – ON*
2. *CVR TEST Button – DEPRESS AND HOLD DOWN (5 second minimum)*
3. *Test Circuit Meter – OBSERVE METER NEEDLE IN GREEN BAND*
4. *CVR TEST Button – Release*

**5. Plug headset into control head and speak into CVR instrument panel mounted area mike.*

**6. Voice should play back into headset after approximately 1/2 second delay.*

**May be omitted for quick turn-around at pilot's discretion.*

Company Checklist

A review of the Guardian Flight Normal Procedures, which was an FAA-accepted checklist for the accident airplane, revealed that it did not contain a checklist item for the SSCVR self-test.

FAA Order 8900.1, Volume 3, Chapter 32, Section 12 Safety Assurance System: Aircraft Checklists for 14 CFR Parts 121/135, 3-3402, Checklist Content, A, stated, in part:

A. **Content.** *POIs shall ensure that aircraft checklists are limited to action items or verification items. The aircraft checklist should not contain elaboration or explanation. POIs must ensure that the required actions and decisions for flightcrews when performing a checklist are thoroughly described in the operator's manual and training program. POIs will consider the following when evaluating aircraft checklist content:*

1. Non-normal and emergency checklists must contain each sequential step of an FAA-approved procedure found in the AFM or RFM. POIs must contact the applicable Aircraft Evaluation Group (AEG) and obtain concurrence before approving the deletion of an item or the rearrangement/modification of items in these checklists.

FAA Safety Alert for Operators (SAFO) 06019, states, in part:

SUBJECT: *Functional Test of the Cockpit Voice Recorder (CVR) Prior to the First Flight of the Day*

PURPOSE: This SAFO emphasizes the importance of operators ensuring they have procedures and training for the functional test of the CVR.

BACKGROUND: Accident investigations have revealed that some of the CVRs in use by the operators are not being tested in accordance with the Aircraft Flight Manual, which would have shown them to be either malfunctioning or inoperative prior to the first flight of the day.

DISCUSSION: The importance of performing the functional test of a CVR prior to the first flight of the day is not only required, but essential to providing an accident investigation tool in case of a mishap or accident.

RECOMMENDED ACTION: All Directors of Operations and Chief Pilots should ensure that all training requirements for testing of CVRs are emphasized during initial and recurrent training. All pilots of aircraft equipped with a CVR should test the function of the CVR before the first flight of each day as part of an approved aircraft checklist.

Flight recorders

The airplane was not equipped nor was it required to be equipped with a flight data recorder (FDR).

Although the airplane was equipped with a Fairchild A100S solid-state cockpit voice recorder (SSCVR), the last audio recorded was from May 15, 2015.

Medical and Pathological Information

To date, the remains of the pilot and the two additional crewmembers have not been located; therefore, no pathological or toxicology information exists. At the time of the pilot's last medical examination, no concerns were reported by the pilot and no significant issues were identified by the medical examiner.

Organizational and Management Information

Guardian Flight LLC was a 14 CFR Part 135 air operator that held on-demand operations specifications. The company headquarters was located in South Jordan, Utah. At the time of the accident, the president, director of operations, chief pilot, and director of maintenance all were based in South Jordan, Utah. The company was operating about 60 airplanes, of which 10 were Raytheon Aircraft Company B200.

Administrative Information

| | | |
|-----------------------------------|---|--------------|
| Investigator In Charge (IIC): | Banning, David | Report Date: |
| Additional Participating Persons: | Dwayne D Edwards; Federal Aviation Administration, Fight Standards ; Juneau, AK | |
| Publish Date: | Investigation Class: 2 | |
| Note: | The NTSB traveled to the scene of this accident. | |
| Investigation Docket: | https://data.ntsb.gov/Docket?ProjectID=98934 | |

The National Transportation Safety Board (NTSB), established in 1967, is an independent federal agency mandated by Congress through the Independent Safety Board Act of 1974 to investigate transportation accidents, determine the probable causes of the accidents, issue safety recommendations, study transportation safety issues, and evaluate the safety effectiveness of government agencies involved in transportation. The NTSB makes public its actions and decisions through accident reports, safety studies, special investigation reports, safety recommendations, and statistical reviews.

The Independent Safety Board Act, as codified at 49 U.S.C. Section 1154(b), precludes the admission into evidence or use of any part of an NTSB report related to an incident or accident in a civil action for damages resulting from a matter mentioned in the report. A factual report that may be admissible under 49 U.S.C. § 1154(b) is available [here](#).