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

HUMAN PERFORMANCE

GROUP CHAIRMAN'S FACTUAL REPORT

July 29, 2020

CEN19MA190

A. ACCIDENT

Location: Addison, Texas
Date: June 30, 2019
Time: 0911 central daylight time[1]
Airplane: Textron Aviation B300, N534FF

B. GROUP CHAIRMAN

Dujuan Sevillian, Ph.D.
Human Performance Investigator
National Transportation Safety Board

C. 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.

D. FACTUAL INFORMATION

This report contains two interview summaries conducted in support of this investigation.

[1] All times are central daylight time (CDT) based on a 24-hour clock, unless otherwise noted.

1.0 Interview Summary-Palmer

Interviewee:	Mrs. Courtney Palmer, wife of Mr. Palmer
Representative:	Jon Kettles, Attorney
Date, Time:	1/7/2020, 1400
Location:	via phone from NTSB Washington, D.C.
Interviewer:	Dujuan Sevillian, Ph.D. (NTSB), Ralph Hicks (NTSB)

During the interview, Mrs. Palmer stated the following:

Her husband's daily normal routine was to wake up at 7:00 a.m. and in bed by 10:00 p.m. Her husband flew with Mr. Cassady most of the time and she said that he enjoyed flying with Mr. Cassady. She also said that her husband did not express any issues with Mr. Cassady's flying abilities or his handling on the flight deck. She said that Mr. Cassady would not let her husband fly the King Air if passengers were on board, he was just a co-pilot. Her husband did not have a type rating in the King Air 350. When asked, if Mr. Palmer discussed any King Air aircraft systems issues with her, she said no.

On June 25, 2019, Mr. Palmer flew to Colorado and back to Addison, Texas. On June 26 he did not fly and worked at his house. On June 27 and 28, he was on his sailboat and worked at his house. On June 29, he had a short test flight, went to the lake, and was in bed by 10:00 p.m. On June 30, he drove to Addison, TX at 6:30 a.m.

2.0 Interview Summary-Roberts

Interviewee:	Charlie Roberts, (FAA aircraft certification test pilot)
Representative:	Matt Smith FAA Attorney, Washington, D.C.
Date, Time:	12/19/2019, 1300
Location:	via phone from NTSB Washington, D.C.,
Interviewer:	Dujuan Sevillian, Ph.D. (NTSB) Matthew Rigsby (FAA)

During the interview, Mr. Roberts stated the following:

He had been flying for 20 years in the Air Force Reserves as a KC-135 pilot. He worked for the FAA for over 16 years, and 9 of those years was as a test pilot in Fort Worth, Texas. He was type rated in the King Air 300 and 200 aircraft. As an aircraft certification test pilot, Mr. Roberts job was to find compliance to Federal Aviation regulations including certification. His certification duties included fixed wing or any aircraft that required certification. This also included initial type certification and supplemental type certification (Parts 23 and 25).

Mr. Roberts said that the FAA test objectives for the acoustic flight were to collect sound spectrum data in the test aircraft and show the scenario of the aircraft accident. He stated that the test consisted of a one engine inoperative with a failed engine not feathering, to assess controllability of the aircraft and to assess the change to a feathered engine. When asked how long it takes to run through procedures prior to takeoff in the King Air 300, he said it depended on the experience level of the pilots. The average pilot would get through checklists from aircraft parked to taxied to the runway in about 15-20 minutes. This was dependent on every part of the checklist being completed. He said that based on his experience, he believed that there was a checklist item in the QRH[2] about use of the friction lock. The procedure may be a pre-start or after start item on the checklist, and it said something to the effect of 'adjust'. He said that adjustment of the throttle friction lock was quick, and it was essentially a knob that was used to perform that check. Generally, the friction lock procedure was completed on the ground, but the system would allow adjustments in flight. Duration was about five seconds to adjust the friction lock. When asked if he had ever experienced a throttle migration (retard of throttle) during takeoff, he said that he had not experienced it, other than during the test flight where they intentionally introduced no friction lock (0 setting).

When asked, if he heard from other pilots experiencing throttle migration during takeoff, he said the common denominator was that the friction lock was set too low or not at all. He said that the recommended method for ensuring the throttles do not migrate during takeoff, was use of the checklist and it was pilot dependent. There was no quantification that said it is good or bad, it was merely up to the pilot. It should have been enough friction in the throttle quadrant so that the

[2] Quick reference handbook.

throttles did not migrate. Too much friction made it difficult to manipulate. Friction systems over time would change due to wear over the course of the airplane life.

Mr. Roberts was asked to explain the difference between a power loss and engine failure. He said that an engine turbine failure could be a mechanical failure. A power loss occurred when the power was reduced to a lower power, anywhere from initial power setting to idle power setting. The cause of power loss could be a variety of reasons. When asked, under what circumstances would a pilot be confused regarding a power loss versus engine failure, he said a power loss would be harder to detect from a pilot's standpoint. When there was a reduction of power with the engine still running, there were less indications other than the powerplant instruments. Depending on what caused the engine failure there would be more indications for the pilot.

If a pilot fails to adjust the friction lock during takeoff phase of flight, the degree of effect would be related to the specific friction lock system. For example, the age of the friction lock system (e.g. 10 years) could result in throttle migration. Mr. Roberts was asked if he had seen pilots guard the throttles of a multi-engine aircraft. He said it was normal practice in a multi engine aircraft for the pilot flying to set the initial aircraft power until V1. The pilot not flying still guards the throttle during the takeoff phase. Mr. Roberts also said that pedal forces increase or decrease with asymmetric power. To keep the aircraft pointing in the right direction you make rudder inputs, and how much rudder depends on the aircraft speed. The faster the speed the more effective the rudder. If one engine failed and the prop feathers, this would lower the rudder force. The V_{mca}[3] speed will go up; high pedal forces are needed with a lower speed. More speed requires less force on the rudder to maintain directional control of the aircraft. Whether or not the prop feathers or does not feather, failed engine or power loss will impact forces required to control the airplane.

3.0 Pilot in Command's (PIC's) 72-hour history

Multiple attempts were made to solicit 72-hour history from the PIC's wife, but she would not provide the information to investigators.

[3] Controllability speed of the aircraft.

4.0 Flight Safety Textron Aviation Training

Flight Safety Textron Aviation Training (FSTAT) indicated they emphasize the importance of proper friction lock settings during its course presentation and during simulator training. Further, FSTAT provides, as part of the pilot checklist for the Beechcraft King Air 350 Fusion (for training purposes only), exact wording used in the manufacturer's checklist procedures. These procedures list, as part of the 'BEFORE ENGINE START' checklist, the requirement to check:

a. Power Levers……..……. IDLE, FRICTION SET

b. Prop Levers……. FULL FORWARD, FRICTION SET

c. Condition Levers…… FUEL CUT OFF, FRICTION SET

Further, the BEFORE TAKEOFF (RUN-UP) Checklist contains a requirement to check:

7. Engine Controls Friction Locks…….. SET

Dujuan Sevillian, Ph.D.
Human Performance Investigator