



National Transportation Safety Board Aviation Accident Final Report

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|-------------------------|----------------------|-------------------------|-------------|
| Location: | St. Augustine, FL | Accident Number: | NYC07LA170 |
| Date & Time: | 07/21/2007, 1410 EDT | Registration: | N70SK |
| Aircraft: | Learjet 25 | Aircraft Damage: | Substantial |
| Defining Event: | | Injuries: | 2 None |

Flight Conducted Under: Part 91: General Aviation - Positioning

Analysis

About 5 miles from the destination airport, the flight was cleared by air traffic control to descend from its cruise altitude of 5,000 feet for a visual approach. As the first officer reduced engine power, both engines "quit." The captain attempted to restart both engines without success. He then took control of the airplane, and instructed the first officer to contact air traffic control and advise them that the airplane had experienced a "dual flameout." The captain configured the airplane by extending the landing gear and flaps and subsequently landed the airplane on the runway "hard," resulting in substantial damage to the airframe. Both engines were test run following the accident at full and idle power with no anomalies noted. Examination of the airplane revealed that it was equipped with an aftermarket throttle quadrant, and that the power lever locking mechanism pins as well as the throttle quadrant idle stops for both engines were worn. The power lever locking mechanism internal springs for both the left and right power levers were worn and broken. Additionally, it was possible to repeatedly move the left engine's power lever directly into cutoff without first releasing its power lever locking mechanism; however, the right engine's power lever could not be moved to the cut off position without first releasing its associated locking mechanism. The right throttle thrust reverser solenoid installed on the airplane was found to be non-functional, but it is not believed that this component contributed to the accident. No explicit inspection or repair instructions were available for the throttle quadrant assembly. Other than the throttle quadrant issues, no other issues were identified with either the engines or airframe that could be contributed to both engines losing power simultaneously.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: A loss of power on both engines for an undetermined reason.

Findings

Occurrence #1: LOSS OF ENGINE POWER
Phase of Operation: DESCENT

Findings

1. ALL ENGINES
2. REASON FOR OCCURRENCE UNDETERMINED

Occurrence #2: FORCED LANDING
Phase of Operation: EMERGENCY DESCENT/LANDING

Occurrence #3: HARD LANDING
Phase of Operation: EMERGENCY DESCENT/LANDING

Factual Information

HISTORY OF FLIGHT

On July 21, 2007, about 1410 eastern daylight time, a Learjet 25, N70SK, operated by SK Logistics Inc., was substantially damaged during a hard landing following a dual engine flameout while on approach to St. Augustine Airport (SGJ), St. Augustine, Florida. The certificated airline transport pilot captain and the certificated commercial pilot first officer were not injured. Visual meteorological conditions prevailed, and the airplane was operating on an instrument flight rules flight plan. The positioning flight, which departed Gainesville Regional Airport (GNV), Gainesville, Florida, at 1354, was conducted under the provisions of 14 Code of Federal Regulations Part 91.

During an interview, the captain stated that while inbound to their home airport, St. Augustine, they were cleared to descend from their cruise altitude of 5,000 feet for a visual approach to runway 31. As the first officer reduced engine power, both engines "quit." The captain attempted to restart both engines without success. He then took control of the airplane, and instructed the first officer to contact air traffic control and advise them that the airplane had experienced a "dual flameout," and that they would land on runway 13. The captain configured the airplane by extending the landing gear and flaps and subsequently landed the airplane. He stated that the landing was "hard, but not that hard," and that he normally would have used power to slow the rate of descent right before touchdown. After landing, they "turned everything off" and exited the airplane.

During a separate interview, the first officer stated that on their final leg to St. Augustine, cruising at 5,000 feet, they switched radio frequencies in preparation for landing. There was congestion on the frequency, and they "had a hard time checking in." With the airport in sight, the first officer began a descent by reducing power and slowing the airplane when the engines "quit." He stated that the power reductions were very subtle, and he never reduced power all the way to idle. The first officer responded by energizing the igniters, turning on the starters, and transferring control of the airplane to the captain. The first officer called out the airplane's speed throughout the descent, and they landed on runway 13.

The airplane touched down on runway 13 near the threshold. Both main tires blew out and the airplane came to rest on runway 13 just short of taxiway A3.

PERSONNEL INFORMATION

The captain held several certificates and ratings including an airline transport pilot certificate with a rating for airplane multiengine land, and an LR-JET type rating. He reported 4,620 total hours of flight experience, 250 hours of which were in the accident airplane make and model. His most recent Federal Aviation Administration (FAA) first-class medical certificate was issued on March 1, 2007 with no limitations.

The first officer held several certificates and ratings including a commercial pilot certificate with a rating for airplane multiengine land, and a LR-JET second-in-command type rating. He reported 2,453 total hours of flight experience, 368 hours of which were in the accident airplane make and model. His most recent FAA first-class medical certificate was issued on June 20, 2007 with no limitations.

AIRPLANE INFORMATION

The accident airplane was a transport category, twin turbojet airplane manufactured by the Gates Learjet Corporation in 1970. The accident airplane was powered by two GE CJ610-6 engines, rated at 2,950 pounds of thrust each. The airplane's maximum gross weight was listed as 15,000 lbs.

The airplane was maintained in accordance with the manufacturer's inspection program and had accumulated 15,812 hours in service at the time of the accident. Engine No. 1 had accumulated a total of 13,433 hours, with 4,385 hours since the last overhaul. Engine No. 2 had accumulated 7,989 total hours, with 4,681 hours since the last overhaul. The engines had each accumulated 274 hours of service since the most recent inspection, performed on June 28, 2007.

METEOROLOGICAL INFORMATION

The weather conditions reported at SGJ, at 1402, included calm winds, 10 statute miles visibility, clear skies, temperature 82 degrees Fahrenheit, dewpoint 72 degrees Fahrenheit, and an altimeter setting of 29.97 inches of mercury.

AIRPORT INFORMATION

SGJ was located at an elevation of 10 feet and its layout was comprised of 3 intersecting runways. Runway 13-31 was 7,996 feet long and 150 feet wide, with an asphalt surface. The control tower was in operation at the time of the accident.

FLIGHT RECORDERS

Although the accident events were captured on the cockpit voice recorder (CVR), the audio did not offer any additional information that had not been obtained through other sources in the investigation. Therefore, no CVR transcript was prepared.

WRECKAGE AND IMPACT INFORMATION

A postaccident inspection of the airplane by an FAA inspector revealed that the airplane had incurred substantial damage to the wings and fuselage during the landing.

On July 23, 2007, the SK Logistics Director of Maintenance started both engines on the accident airplane. The engines were operated to full power and throttles were repeatedly closed to the idle position, but the flameouts could not be duplicated.

An inspection conducted on August 8, 2007, by National Transportation Safety Board investigators revealed that the left and right sides of the fuselage over the wings, 31 inches forward of the wings' trailing edges, were buckled. The left side of the fuselage was buckled between the top of the wing and 12 inches above the wing. The right side of the fuselage was buckled between the top of the wing and 13 inches above the wing. There was no other apparent damage to the fuselage.

The left wing did not have any apparent damage, and the underside of the wingtip fuel tank was not scraped. The right wing had a 9-inch long by 7 1/2-inch wide tab lifted off the upper surface of the wing over the right main landing gear strut. The tab was lifted approximately 1 1/2 inches at the rear. The underside of the right wingtip fuel tank was not scraped.

The upper surface portion of the right main landing gear strut was protruding slightly above the upper wing surface. An 'O' ring from the top of the landing gear strut was lying on top of the wing and was cut. The right main landing gear outboard wheel rim was broken 360 degrees

around from the hub. The right main landing gear outboard tire was deflated. The right main landing gear strut door was buckled.

The nose and left main landing gear did not appear to have any damage.

The left and right engines were still in place on the airplane and did not have any indications of an uncontainment, case rupture, or fire. The left and right engines' rotors could be rotated with slight finger pressure and the compressor and turbine blades rotated concurrently. There was no apparent damage to the compressor or turbine blades.

Fuel samples were taken from the left and right wing tank sumps and tested for density, flash point, and water content. All of the samples were found to meet the requirements for Jet A fuel, and the fuel tanks contained more fuel than the minimum useable. A total of four fuel filters were removed from the engines, two from each high pressure fuel pump and two from the fuel control on each engine. None of the filters displayed any visible contamination or debris.

Examination of the throttle rigging revealed that when the cockpit throttle levers were in the cutoff position, idle stop, or maximum power, the throttle pointer was in the appropriate position on each engine.

The original throttles of the Lear 25 were designed that when pulled back to the idle position, their motion was stopped by a detent. A lock pin then needed to be raised to allow the throttle levers to continue back to the cutoff position. The aftermarket throttles installed in the accident airplane operated in a similar fashion; however, the knobs of the throttles were not the standard knobs for the Lear 25, and were typical of those found in Lear 30 series airplanes.

When moving the throttle levers from the power position to the idle stop on the accident airplane, it was possible on numerous attempts to make the left engine's throttle lever go past the idle stop into cutoff without having to raise the lock. When lifting the throttle locks, the left lock required less force to lift, an average of 1 lb., 12 oz.; while the right lock required an average of 2 lb., 5 oz. to lift. In addition, when the throttle locks were lifted and then released, the left throttle lock would not return to the locked position.

The throttle quadrant was removed from the airplane for detailed examination. Examination of the throttle quadrant lock plate revealed that it was worn on both the left and right side between the idle stop position and the fuel cutoff hole. Both of the throttle levers were partially disassembled to remove the throttle locking pins and the internal springs. The springs in the left hand throttle lever were both intact, but both were partially crushed. One of the springs in the right hand throttle lever was intact although partially crushed, and the other spring had several small pieces broken off.

Examination of both thrust reverser solenoids revealed that the left solenoid was smaller than the right, and appeared to be original equipment. The left thrust reverser solenoid plunger pin was properly engaged with its respective interlock pawl. A functional test of the left hand thrust reverser interlock solenoid confirmed that it was operational. The right solenoid plunger pin was not engaged with its interlock pawl, and the interlock pawl was the incorrect piece by part number for the non-original equipment solenoid that was installed. The right solenoid body was also loose on its bracket, and the plunger could be moved freely. Functional testing of the right solenoid revealed that it would not function.

A review of the available maintenance instructions revealed that there were no specific inspection requirements for the throttle levers and associated parts other than a visual

inspection.

Pilot Information

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| Certificate: | Airline Transport | Age: | 40, Male |
| Airplane Rating(s): | Multi-engine Land | Seat Occupied: | Left |
| Other Aircraft Rating(s): | None | Restraint Used: | Seatbelt, Shoulder harness |
| Instrument Rating(s): | Airplane | Second Pilot Present: | Yes |
| Instructor Rating(s): | None | Toxicology Performed: | No |
| Medical Certification: | Class 1 Without Waivers/Limitations | Last Medical Exam: | 03/01/2007 |
| Occupational Pilot: | | Last Flight Review or Equivalent: | 05/01/2007 |
| Flight Time: | 4620 hours (Total, all aircraft), 250 hours (Total, this make and model), 2500 hours (Pilot In Command, all aircraft), 160 hours (Last 90 days, all aircraft), 55 hours (Last 30 days, all aircraft), 3 hours (Last 24 hours, all aircraft) | | |

Pilot Information

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|----------------------------------|---|--|----------------------------|
| Certificate: | Commercial | Age: | 22, Male |
| Airplane Rating(s): | Multi-engine Land; Single-engine Land | Seat Occupied: | Right |
| Other Aircraft Rating(s): | None | Restraint Used: | Seatbelt, Shoulder harness |
| Instrument Rating(s): | Airplane | Second Pilot Present: | Yes |
| Instructor Rating(s): | Airplane Single-engine | Toxicology Performed: | No |
| Medical Certification: | Class 1 Without Waivers/Limitations | Last Medical Exam: | 06/01/2007 |
| Occupational Pilot: | | Last Flight Review or Equivalent: | 12/01/2006 |
| Flight Time: | 2453 hours (Total, all aircraft), 368 hours (Total, this make and model), 1647 hours (Pilot In Command, all aircraft), 244 hours (Last 90 days, all aircraft), 89 hours (Last 30 days, all aircraft), 3 hours (Last 24 hours, all aircraft) | | |

Aircraft and Owner/Operator Information

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|-------------------------------|--------------------------|------------------------------------|--------------------------|
| Aircraft Manufacturer: | Learjet | Registration: | N70SK |
| Model/Series: | 25 | Aircraft Category: | Airplane |
| Year of Manufacture: | | Amateur Built: | No |
| Airworthiness Certificate: | Transport | Serial Number: | 049 |
| Landing Gear Type: | Retractable - Tricycle | Seats: | 10 |
| Date/Type of Last Inspection: | 06/01/2007, Conditional | Certified Max Gross Wt.: | 15000 lbs |
| Time Since Last Inspection: | | Engines: | 2 Turbo Jet |
| Airframe Total Time: | 15812 Hours | Engine Manufacturer: | General Electric |
| ELT: | Installed, not activated | Engine Model/Series: | CJ610-6 |
| Registered Owner: | SK Logistics Inc | Rated Power: | 2950 lbs |
| Operator: | SK Logistics Inc | Air Carrier Operating Certificate: | On-demand Air Taxi (135) |
| Operator Does Business As: | | Operator Designator Code: | E7LA |

Meteorological Information and Flight Plan

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|----------------------------------|----------------------------------|-------------------------------|---------------|
| Conditions at Accident Site: | Visual Conditions | Condition of Light: | Day |
| Observation Facility, Elevation: | SJG, 11 ft msl | Observation Time: | 1402 EDT |
| Distance from Accident Site: | 1 Nautical Miles | Direction from Accident Site: | 130° |
| Lowest Cloud Condition: | Clear | Temperature/Dew Point: | 28° C / 22° C |
| Lowest Ceiling: | None | Visibility | 10 Miles |
| Wind Speed/Gusts, Direction: | Calm | Visibility (RVR): | |
| Altimeter Setting: | 29.97 inches Hg | Visibility (RVV): | |
| Precipitation and Obscuration: | No Obscuration; No Precipitation | | |
| Departure Point: | Gainesville, FL (GNV) | Type of Flight Plan Filed: | IFR |
| Destination: | St. Augustine, FL (SGJ) | Type of Clearance: | None |
| Departure Time: | 1354 EDT | Type of Airspace: | |

Airport Information

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|----------------------|-----------------------------|---------------------------|-----------------------------|
| Airport: | St. Augustine Airport (SGJ) | Runway Surface Type: | Asphalt |
| Airport Elevation: | 10 ft | Runway Surface Condition: | Dry |
| Runway Used: | 13 | IFR Approach: | Visual |
| Runway Length/Width: | 7996 ft / 150 ft | VFR Approach/Landing: | Forced Landing; Straight-in |

Wreckage and Impact Information

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|----------------------------|--------|-----------------------------|-----------------------|
| Crew Injuries: | 2 None | Aircraft Damage: | Substantial |
| Passenger Injuries: | N/A | Aircraft Fire: | None |
| Ground Injuries: | N/A | Aircraft Explosion: | None |
| Total Injuries: | 2 None | Latitude, Longitude: | 29.960000, -81.340000 |

Administrative Information

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| Investigator In Charge (IIC): | Dennis J Diaz | Adopted Date: | 09/26/2008 |
| Additional Participating Persons: | Robert J Nutt; FAA/FSDO; Tampa, FL Ralph Witzke; Learjet; Wichita, KS Brian Bowie; SK Logistics, Inc.; St. Augustine, FL Jerry Healy; Nordam; Tulsa, OK | | |
| Publish Date: | | | |
| Investigation Docket: | NTSB accident and incident dockets serve as permanent archival information for the NTSB's investigations. Dockets released prior to June 1, 2009 are publicly available from the NTSB's Record Management Division at pubinq@ntsb.gov , or at 800-877-6799. Dockets released after this date are available at http://dms.nts.gov/pubdms/ . | | |

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.

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