# National Transportation Safety Board
# Aviation Accident Final Report

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| **Location:** | Ft. Lauderdale, FL | **Accident Number:** | ANC04FA026 |
| **Date & Time:** | 02/20/2004, 2157 EST | **Registration:** | N24RZ |
| **Aircraft:** | Gates Learjet 25B | **Aircraft Damage:** | Substantial |
| **Defining Event:** | | **Injuries:** | 1 Serious, 1 Minor, 2 None |
| **Flight Conducted Under:** | Part 135: Air Taxi & Commuter - Non-scheduled | | |

## Analysis

The captain and first officer were conducting a CFR Part 135 on-demand charter flight, returning two passengers to the accident airplane's base airport. The multi-destination flight originated from the accident airport, about 16 hours before the accident. On the final leg of the flight, the flight encountered stronger than anticipated headwinds, and the first officer voiced his concern several times about the airplane's remaining fuel. As the flight approached the destination airport, the captain became concerned about having to fly an extended downwind leg, and told the ATCT specialist the flight was low on fuel. The ATCT specialist then cleared the accident airplane for a priority landing. According to cockpit voice recorder (CVR) data, while the crew was attempting to lower the airplane's wing flaps in preparation for landing, they discovered that the flaps would not extend beyond 8 degrees. After the landing gear was lowered, the captain told the first officer, in part: "The gear doors are stuck down.... no hydraulics." The captain told the first officer: "Okay, so we're gonna do, this is gonna be a ref and twenty...All right, probably not going to have any brakes..." According to a ATCT specialist in the control tower, the airplane touched down about midway on the 6001-foot long, dry runway. It continued to the end of the runway, entered the overrun area, struck a chain link fence, crossed a road, and struck a building. During a postaccident interview, the captain reported that during the landing roll the first officer was unable to deploy the airplane's emergency drag chute. He said that neither he nor the first officer attempted to activate the nitrogen-charged emergency brake system. The accident airplane was not equipped with thrust reversers. A postaccident examination of the accident airplane's hydraulic pressure relief valve and hydraulic pressure regulator assembly revealed numerous indentations and small gouges on the exterior portions of both components, consistent with being repeatedly struck with a tool. When the hydraulic pressure relief valve was tested and disassembled, it was discovered that the valve piston was stuck open. The emergency drag chute release handle has two safety latches that must be depressed simultaneously before the parachute will activate. An inspection of the emergency drag chute system and release handle disclosed no preaccident mechanical anomalies.

## Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot in command's misjudged distance/speed while landing, and the flightcrew's failure to follow prescribed emergency procedures, which resulted in a runway overrun and subsequent collision with a building. Factors associated with the accident are the flightcrew's inadequate in-flight planning/decision making, which resulted in a low fuel condition; an open hydraulic relief valve, and inadequate maintenance by company maintenance personnel. Additional factors were an inoperative (normal) brake system, an unactivated emergency drag chute, the flightcrew's failure to engage the emergency brake system, and pressure placed on the flightcrew due to conditions/events.

## Findings

Occurrence #1: IN FLIGHT ENCOUNTER WITH WEATHER
Phase of Operation: CRUISE - NORMAL

Findings
1. WEATHER CONDITION - UNFAVORABLE WIND
2. (F) FLUID,FUEL - LOW LEVEL
3. (F) IN-FLIGHT PLANNING/DECISION - INADEQUATE - FLIGHTCREW
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Occurrence #2: AIRFRAME/COMPONENT/SYSTEM FAILURE/MALFUNCTION
Phase of Operation: APPROACH - VFR PATTERN - DOWNWIND

Findings
4. (F) HYDRAULIC SYSTEM,RELIEF VALVE - OPEN
5. (F) MAINTENANCE - INADEQUATE - COMPANY MAINTENANCE PERSONNEL
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Occurrence #3: OVERRUN
Phase of Operation: LANDING - ROLL

Findings
6. (C) DISTANCE/SPEED - MISJUDGED - PILOT IN COMMAND
7. (F) PRESSURE INDUCED BY CONDITIONS/EVENTS - FLIGHTCREW
8. (C) EMERGENCY PROCEDURE - NOT FOLLOWED - FLIGHTCREW
9. (F) LANDING GEAR,NORMAL BRAKE SYSTEM - INOPERATIVE
10. (F) MISC EQPT/FURNISHINGS,PARACHUTE/DRAG CHUTE - NOT ACTIVATED
11. (F) LANDING GEAR,EMERGENCY BRAKE SYSTEM - NOT ENGAGED
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Occurrence #4: ON GROUND/WATER COLLISION WITH OBJECT
Phase of Operation: LANDING - ROLL

Findings
12. OBJECT - BUILDING(NONRESIDENTIAL)

## Factual Information

HISTORY OF FLIGHT

On February 20, 2004, about 2157 Eastern standard time, a Gates Learjet 25B airplane, N24RZ, sustained substantial damage when it struck a fence and building during a runway overrun while landing at the Fort Lauderdale Executive Airport (FXE), Fort Lauderdale, Florida. The airplane was being operated by Skylink Jets, Fort Lauderdale, as a Title 14, CFR Part 135, on-demand charter flight returning two flight nurses to Fort Lauderdale when the accident occurred. Of the four people aboard, the airline transport captain sustained serious injuries, the airline transport first officer sustained minor injuries, and the two flight nurses were not injured. Visual meteorological conditions prevailed at the time of the accident, and an instrument flight rules (IFR) flight plan was filed. The accident leg of the flight originated at the Luis Munoz Marin International Airport, San Juan, Puerto Rico, about 2033 Atlantic standard time.

According to the two flight nurses aboard, the flight originated at the Fort Lauderdale Executive Airport about 0530, on the day of the accident. The flight flew to Providenciales, Turks and Caicos Islands, and to Barbados, where a patient was picked up and flown to Caracas, Venezuela. After delivering the patient to Caracas, the flight flew to San Juan, Puerto Rico, where the airplane was refueled for the return flight to the Fort Lauderdale Executive Airport.

During a telephone conversation with the National Transportation Safety Board (NTSB) investigator-in-charge (IIC) on February 20, about 2300, a Fort Lauderdale Executive Airport Air Traffic Control Tower (ATCT) specialist reported that as the accident airplane passed through Miami Approach Control's airspace, the crew requested to proceed direct to the Fort Lauderdale Executive Airport to avoid a low fuel situation. The flight was cleared direct to the Fort Lauderdale Executive Airport. The ATCT specialist said that as the accident airplane entered a left downwind for runway 08, the crew reported low fuel. The ATCT specialist instructed another airplane already on final approach to runway 08 to go around, and then immediately cleared the accident airplane for landing on runway 08. She said that as the accident airplane approached the runway, it touched down about midway on the 6001-foot long, dry runway. It continued to the end of the runway, entered the overrun area, struck a chain link fence, crossed a road, and struck a building.

During an interview with the NTSB IIC on February 24, the captain of the accident airplane reported that after an uneventful takeoff from San Juan, the flight climbed to an initial en route altitude of 39,000 feet msl, and then to 41,000 feet msl as the flight progressed towards Fort Lauderdale. The captain said that while en route to Fort Lauderdale, the flight encountered stronger than anticipated headwinds, which reduced the flight's maximum fuel range. He said that as the flight neared the Fort Lauderdale Executive Airport, the flight's destination airport, the first officer voiced his concern about the airplane's remaining fuel condition. The captain said the first officer was mostly concerned about a 300 pound discrepancy between what the airplane's fuel gauges were reporting, and what the airplane's cockpit mounted fuel totalizer was reporting. The captain said that he assured the first officer that they had enough fuel to reach Fort Lauderdale.

The captain said that as they maneuvered the airplane into a left downwind for landing on runway 08, they overheard the ATCT specialist clear a Cessna 172 for a long final approach for

runway 08. The captain said he was now concerned about having to fly an extended downwind leg in order to provide adequate spacing, so he had the first officer tell the ATCT specialist the flight was low on fuel, in order to obtain immediate landing priority. The captain said that as his airplane entered a left base, he instructed the first officer to extend the airplane's wing flaps to 8 degrees. He then instructed the first officer to extend the airplane's wing flaps to 20 degrees, followed shortly thereafter by a request to lower the airplane's landing gear. He said that after the flaps were extended and the landing gear lowered, the first officer reported, "three greens, and two reds," indicating that the landing gear was safely down and locked, but the inboard landing gear doors had remained open during the landing gear extension. As the captain turned the airplane from a left base to final approach, he instructed the first officer to apply full flaps. He said that as the first officer applied full flaps, the first officer stated, "I think we only have 8 degrees flaps," followed by the first officer's comment concerning either low, or no hydraulic pressure. The captain said that he placed the auxiliary hydraulic pump to the "on" position, and continued the approach. He said that after touchdown, as he applied the brakes, the brakes failed to respond. He then instructed the first officer to activate the airplane's emergency drag-chute, but the first officer was unable to pull the handle up in order to release the drag-chute. He said that the airplane tracked down the centerline on the runway until reaching the end, and he then veered the airplane slightly to the left to avoid obstructions at the end of the runway. The airplane continued for an additional 1,748 feet beyond the end of the runway before striking a fence, crossing a four lane road, and hitting a concrete building. The captain reported that during the landing roll, neither he nor the first officer attempted to activate the nitrogen-charged emergency brake system.

During the on scene portion of the investigation, the airplane's cockpit voice recorder (CVR) was recovered from the wreckage, and was forwarded to the NTSB laboratory in Washington, DC, for review. According to the CVR data, the captain was the flying pilot on the flight from San Juan, Puerto Rico to Fort Lauderdale, and the first officer was the non-flying pilot.

At 2124, as the flight neared Fort Lauderdale, while in level cruise flight at 41,000 feet msl, the first officer asked the captain, in part: "Eight hundred pounds a side?" The captain responded: "Huh?" The first officer stated again: "Eight hundred pounds a side.... What? ... Hello...Are we doin' okay?" The captain then said: "Yeah, we're gonna come down like a bat out of hell and we're gonna cancel at eighteen." The first officer said: ".... get us in there...huh? ... It's too (expletive) close." The captain said: "Naw it's not, we're fine." The first officer said, again: "It's too (expletive) close." The captain then said: "We're gonna go down to idle pretty soon." At 2129, the first officer reported to the Miami ARTCC specialist on duty: "...Lear 24RZ is leaving 41,000 for 6,000." The sound of the airplane's engine's being reduced can be heard within the cockpit. The captain said: "You see, we're down to idle now." The first officer asked the captain: "Just ask (expletive) direct FXE right now?" The captain responded to the first officer's question by saying: "He's not going to give it to you, but you can ask him for it."

At 2130, the first officer then contacts the Miami Center specialist, and said: "ah... Center, Lear 24RZ, we'd like to go direct, ah to request direct FXE at this time." The Miami Center specialist responded by saying: "24RZ uh, for now direct DEKAL (intersection), direct Fort Lauderdale Exec." The first officer responded by saying: "DEKAL direct Exec., Romeo Zulu."

At 2131, the first officer tells the captain: "(expletive) 80 miles away.... Is it enough fuel?" The captain said: "What happened?" The first officer said: "Just want to see what fuel counters

sum is... four, three, five, three." The captain said: "I think there's more fuel than what this is saying."

At 2134, the captain contacted the Miami Center specialist, and said: "Sir, we are trying to avoid a minimum fuel situation... we'd like to get direct FXE. When we get below eighteen, we'll cancel and give you the airspace." The Miami Center specialist said: "24RZ, you are wanting into approach uh, VFR?" The captain said: "Uh, that's affirmative. Its, its VFR at Executive." The Miami Center specialist said: "...and November 24RZ, cleared direct to Executive." The first officer is then said: "He doesn't care, (expletive) it."

At 2136, the captain tells the first officer: "It's called the art of the deal... Hey, we're fine...I think we got more in here than what this is saying." The first officer said: "You think?" The captain responded: "Yeah, by three hundred pounds."

Between 2136 and 2139, the accident flight continued northbound towards the Fort Lauderdale Executive Airport, at 17,500 feet msl, and about 35 miles southeast of the airport. During this time, the flight was under control of Miami Center. The captain continued to monitor radio transmissions from Miami Center, and the first officer attempted to contact the Fort Lauderdale ATCT specialist using a second radio, but the tower personnel reported a very weak, unreadable radio signal. The captain contacted the Miami Center specialist and said: "24RZ cancel IFR, direct to Executive." The Miami Center specialist said: "N24RZ, roger on the cancellation. Maintain VFR. Remain on the present code for flight following." The first officer told the captain: "Looks like 7 minutes."

At 2140, the captain again attempted to contact Fort Lauderdale ATCT specialist using a second radio, and said, in part: "Ah yes, is [runway] 26 available tonight?... We're about uh, thirty miles out, over the water, inbound VFR." The ATCT specialist said: "24RZ, understand you're 30 miles east VFR... What's your request? I can't, I can't understand you now. You have another radio you can try?" The captain said: "Uh, yeah, we're talking to Miami at this time. Uh, we're VFR at 17,500 inbound from San Juan. We're just wondering if runway 26 is available?... We could do a straight in." The ATCT specialist said: "I see you're requesting runway 26?" The captain replied: "Yes. that's affirmative." The ATCT specialist reports: "Learjet 24RZ approach, report (unintelligible) one five miles east of the airport for a straight in approach for runway 26. Wind 160 at 5, altimeter's 30.03." The captain said: "Okay, one five miles east for an approach to 26, Romeo Zulu." The captain told the first officer: "Okay, we got 26."

While the captain continues to communicate with the Fort Lauderdale ATCT specialist on one radio, the first officer was simultaneously communicating with the Miami Center specialist on another radio.

At 2141, the Fort Lauderdale ATCT specialist asked the captain: "Learjet 24RZ, do you require any assistance?" The captain then said: "Uh, negative, negative. Uh, we're just...Uh, the winds got beat to us... The winds beat us coming back from San Juan. We just don't want to have to declare minimum fuel, so we're just trying to get a shortcut, that's all." The ATCT specialist said: "Lear 24RZ, just be advised that your transmitter is unreadable um, I kind of understood that you are low on fuel. If yes, just click your mic twice." The captain then responds and said: "Negative, negative, negative. We're fine, we're just requesting that runway for a shortcut."

At 2144, the Fort Lauderdale ATCT specialist asked the captain: "Learjet 24RZ, I show you four

miles southeast. Would you like a right downwind for runway 8 or would like to continue to 26?" The captain said: "Uh no, we're kinda dealing with Miami. If we can't do 26, we'll come around for [runway] 8. Its, its we're just trying to get a shortcut but uh, Miami's asking us to stay here now."

At 2142, Miami Center specialist said: "All right, you've got to turn right 030, vectors for the descent." The captain then tells the first officer: "Uh... minimum, just tell him we'll have to declare minimum fuel." The first officer then told the Miami Center specialist: "Yes sir, and we'd like to request direct FXE at this time, or else we will have to have a minimum fuel situation." The specialist said: "A minimum fuel situation understood, proceed direct to Executive."

At 2146, as the flight nears Fort Lauderdale, the crew is instructed to contact the Fort Lauderdale ATCT. After initial contact is confirmed with the Fort Lauderdale ATCT specialist, the first officer said, in part: "We just want to land right now. Uh come, we're passing through seven." The Fort Lauderdale ATCT specialist asked the first officer: "24RZ roger, traffic on a niner mile final for runway 8 is a Cessna descending out of 2,200. Are you gonna tear it back to the left or the right for landing?" The first officer said: "We're on a modified uh, left downwind for runway 8." The ATCT specialist instructs the crew to maintain at or above 3,000 feet msl for the Cessna traffic that was now on a 6 mile final, also landing runway 8. The first officer told the ATCT specialist: "Yes sir, we're declaring minimum fuel at this time. We wanna go straight in." The ATCT specialist instructed the landing Cessna to discontinue its approach to runway 8 with a left climbing turn, and cleared the accident airplane for landing on runway 8.

At 2149, the crew began to configure the airplane for landing. The captain told the first officer: "...flaps eight.... gear down.... flaps twenty." The captain commented: "(unintelligible) the pumps." The first officer responded: "The pumps." The captain said: "...Huh...I see that." As the approach continues, the captain again said: "Flaps twenty." The first officer: "Uhh, (unintelligible).... the flaps are not coming down.... flaps not, no flaps." The captain told the first officer: "Yeah, the gear doors are stuck down.... no hydraulics." The first officer said: "Oh (expletive)...the gauges." The Captain asked that first officer: "We got three greens?" The first officer said: "We got three greens, you're landing, right?" The captain asked: "We got no flaps?." The first officer said: "NOPE." The captain asked the first officer: "Okay, what.... how much flaps can you give me?" The first officer said: "Actually, that...an, that's an eight...it looks like an eight?" The captain told the first officer: "Okay, so we're gonna do, this is gonna be a ref and twenty...All right, probably not going to have any brakes..."

At 2151, a sound similar to the airplane touching down on the runway is heard. The captain said: "No brakes... Drag chute, drag chute, pull it [spoken in strained voice], straight up, but don't let go... Pull it, pull it, pull it, pull it." The first officer said: "Uuuuuuh, what the (expletive) [spoken in strained voice] The captain again said: "Pull it." The first officer said: "...it's not coming."

At 2152, the captain said: "Hold on...Hold on" [spoken in a yelling voice] Sound of impact, and end of recording.

FLIGHT CREW INFORMATION

The captain and first officer declined to provide written statements to the NTSB.

The NTSB IIC received pilot training and check ride information on both pilots from the

operator's chief pilot, about 10 days after the accident. According to the chief pilot, all training and pilot records were kept off site, at the chief pilot's residence, located out of state. According to the FAA representative from the Fort Lauderdale Flight Standards District Office, all training and pilot records were to be kept on site, at the operator's base of operation.

According to the FAA representative from the Fort Lauderdale Flight Standards District Office, neither the captain or first officer were qualified to act as flightcrew members, since both pilots failed to complete the FAA's initial hire training curriculum.

Captain

The captain held an airline transport pilot certificate with an airplane, single-engine and multiengine land ratings, and a type rating for Learjet aircraft. He also held commercial airplane pilot privileges for single-engine land and multiengine land. The captain's most recent first-class medical certificate was issued on September 19, 2003, and contained no limitations.

The aeronautical experience listed on page 3 of this report was obtained from a review of airman Federal Aviation Administration (FAA) records on file at the Airman and Medical Records Center located in Oklahoma City, Oklahoma. On the pilot's application for medical certificate, dated September 19, 2003, the pilot indicated that his total aeronautical experience consisted of 4,500 hours, of which 100 were accrued in the previous 6 months.

Additional training records were obtained from the captain's most recent Learjet recurrent training facility. According to training records provided by Simcom, the captain's most recent Learjet recurrent simulator training was accomplished on September 28, 2003, at the facilities training center located in Orlando, Florida.

According to the operator's chief pilot, the captain was working as a contract pilot for Skylink Jets on an "as needed basis." The captain was employed full time in a non-aviation related occupation.

According to documentation supplied by the operator's chief pilot, the captain completed his initial Part 135 check ride on October 3, 2003. The chief pilot conducted the captain's Part 135 check ride, in the accident airplane.

First officer

The first officer held an airline transport pilot certificate with airplane single-engine and multiengine land ratings. He also held foreign-based (German) private pilot certificate with a single-engine land and instrument airplane ratings. The first officer's most recent first-class medical certificate was issued on August 5, 2003, and contained no limitations.

The aeronautical experience listed on page 3 of this report was obtained from a review of airman FAA records on file at the Airman and Medical Records Center located in Oklahoma City, Oklahoma. On the pilot's application for medical certificate, dated August 5, 2003, the pilot indicated that his total aeronautical experience consisted of 3,000 hours, of which 200 were accrued in the previous 6 months.

At the time of the accident, the first officer was working as a contract pilot for Skylink Jets, on

an "as needed basis." The first officer completed his initial Learjet 25 training while employed by another Lear 25 operator, Air America Flight Services, Inc. According to documents provided to the NTSB by Air America Flight Services, the first officer completed his initial Learjet 25 second-in-command company training on January 16, 2003.

According to documentation supplied by the operator's chief pilot, the first officer completed his initial Part 135 check ride on September 1, 2003. The chief pilot conducted the first officer's check ride in the accident airplane.

## COMPANY INFORMATION

At the time of the accident, Skylink Jets, Inc. operated two Learjet 25 series airplanes. According to Skylink Jets president and owner, he was also acting as the director of operations at the time of the accident. The company maintained an office in Fort Lauderdale, but had no other corporate facilities.

According to the company's FAA approved operations specifications, the director of operations listed at the time of the accident was an employee that was no longer employed by Skylink Jets. According to the president/owner, he notified his FAA principal operations inspector (POI) regarding the proposed change, in which he would assume the duties of director of operations, but no response was received from the FAA. The president was unable to provide the NTSB IIC with any documentation concerning the proposed changes, and was unable to provide a date when the change would have been effective. According to a representative from the FAA's Fort Lauderdale Flight Standards District Office, a review of the operator's correspondence file failed to disclose such a request.

According to the FAA representative from the Fort Lauderdale Flight Standards District Office, the operator suspended all flight operations following the accident. The FAA representative reported that the suspension was due to the operator's lack of qualified management personnel.

## AIRCRAFT INFORMATION

The accident airplane was a Gates Learjet 25B, serial no. 159, which was manufactured in 1974. The airplane was equipped with two General Electric model CJ610-8A turbojet engines rated at 2,950 pounds of thrust. At the time of the accident, the airplane accrued about 4,104.1 flight hours.

The accident airplane was not equipped with thrust reversers.

### Maintenance Records Review

An FAA airworthiness inspector assigned to the Fort Lauderdale Flight Standards District Office conducted a postaccident aircraft maintenance records review, with special emphasis being placed on past hydraulic anomalies. The inspector's review revealed that at the time of the accident, the airplane was being maintained in accordance with the manufacturer's FAA approved maintenance schedule. According to the aircraft records supplied by the operator, the airplane's last scheduled inspection was a 300-hour / 12 month inspection, accomplished on March 21, 2003, at 3,880.9 total flight hours. In addition, the airplane had undergone a 30-day, 3 and 6-month inspection on November 26, 2003.

The aircraft maintenance logbook for recording mechanical irregularities, which was required by 14 CFR Section 135.65 to be on board the airplane, could not be located during examination

of the airplane wreckage.

Examination of the airplane's maintenance records revealed an entry on January 28, 2004, at aircraft total time 4,073.1, stating the following:

> Found hydraulic oil accumulating around the service port area.
>
> Tighten suspected "B" nut on return line & cleaned area. Serviced
>
> system, leak check O.K. All work done I.A.W. Lear maintenance
>
> manual, return to service.

On January 31, 2004, at aircraft total time 4,082.1, an additional maintenance records entry stated the following:

> Found hydraulic oil accumulating around the service port area again.
>
> Removed hydraulic reservoir for leak pressure check, none found,
>
> installed back on the aircraft. Serviced hydraulic system. Bleed Hyd.
>
> system. Found pressure line leaking. Tighten "B" nut. Complied with
>
> hydraulic system internal components leak check, found within specs
>
> IAW maintenance manual. All work done I.A.W. Lear maintenance
>
> manual, returned to service.

During an interview conducted during the accident investigation, the president/owner of Skylink Jets was asked if he was aware of any problems with the airplane before the accident. The president/owner replied that he was only aware of an oil leak, which had been previously repaired by his director of maintenance.

Emergency Braking System

The accident airplane was equipped with a nitrogen-charged emergency brake system that can be used in the event of a normal brake system failure. The system is activated by pushing downward on the emergency brake handle, located on the right side of the instrument panel pedestal, and just forward of the throttle quadrant.

Emergency Drag Parachute

The accident airplane was equipped with a tail-mounted, emergency drag chute system, which can be used to slow the landing ground roll in the event of a normal brake system failure. The emergency drag chute deployment handle is located aft of the emergency brake handle, on the right side of the instrument pedestal, between the captain and first officer. Either the captain or first officer can activate the drag chute. In order to avoid inadvertent deployment of the emergency drag chute system, two handle-mounted safety latches must be depressed simultaneously before pulling the handle straight up, which releases the drag chute.

METEOROLOGICAL INFORMATION

The closest weather observation station is located at the Fort Lauderdale Executive Airport. On February 20, at 2157, an Aviation Routine Weather Report (METAR) was reporting, in part: Sky conditions and ceiling, 4,650 feet few, 7,000 feet overcast; visibility, 10 statute miles; wind, 150 degrees at 4 knots; temperature, 72 degrees F; dew point, 61 degrees F; altimeter, 30.02.

AERODROME AND GROUND FACILITIES

The Fort Lauderdale Executive Airport's published elevation is 13 feet mean sea level. The airport is equipped with two intersecting hard-surfaced runways. The accident runway, runway 08, is 6,001 feet long and 100 feet wide, and is equipped with medium intensity runway and centerline lights.

FLIGHT RECORDERS

A flight data recorder (FDR) was not installed, nor was it required to be under 14 CFR Part 135. The CVR installed on the airplane was a Fairchild model A-100. The voice recording consisted of four audio channels of fair to good-quality audio information. One channel contained the cockpit area microphone audio information, and the two other channels contained the captain's and first officer's audio panel information. The fourth channel was not used. A transcript was prepared of the entire 32-minute, 31-second recording.

WRECKAGE AND IMPACT INFORMATION

The National Transportation Safety Board investigator-in-charge (IIC), examined the airplane wreckage at the accident site on February 20, 2004. The airplane's wreckage came to rest between two concrete buildings, with the nose of the airplane oriented on a magnetic heading of 052 degrees. (All heading/bearings noted in this report are oriented toward magnetic north.) All of the airplane's major components were found at the main wreckage area.

After the airplane exited the runway-overrun area, it struck a chain link fence, then went across a four-lane road. The left wing struck a telephone pole and the pivoted airplane to the left. During the collision with the telephone pole, the left wing was severed.

The left side of the airplane came to rest against the concrete building. The left side of the airplane's nose section, just forward of the captain's windshield, was crushed inward and displaced to the right.

A 4-foot section of the left wing, along with the 364-gallon tip tank, was severed from the left wing. The severed portions of left wing and tip tank were located within the wreckage path, about 25 feet behind the main wreckage path. The left wing's inboard portion of the leading edge had substantial aft compressions and denting. The entire wing assembly, at the wing to fuselage attach point, was displaced about 6 inches aft.

The right wing remained attached. It had denting of the leading edge.

The leading edge of the vertical stabilizer had deep gouges located about mid-span between the fuselage and the tail plane. Remnants of chain link fencing materials were found protruding from the gouges.

The airplane's main and nose landing gear was collapsed, and the airplane's belly was resting on the ground. Access to the airplane's aft hydraulic compartment was not possible at the accident site.

Interior & Cockpit Area

During the on-scene investigation the NTSB IIC inspected the airplane's cockpit area and noted that the emergency drag chute handle was found in the stowed position.

The airplane's nitrogen-charged emergency brake handle was found in the off, or stowed position. The brass safety wire that is broken when the emergency brake system is activated

was found intact. The instrument panel-mounted pressure gauge that indicates remaining nitrogen pressure for the emergency brake system, located in front of the first officer, showed about 1,800 pounds per square inch (psi). According to a Learjet representative, the normal operating pressure is between 1,800 and 3,000 psi.

The instrument-mounted switch that controls the auxiliary hydraulic pump was found in the on position.

The airplane was retrieved from the accident site and transported to the operator's hangar by company and insurance personnel. On February 23, the NTSB IIC, along with an FAA airworthiness inspector assigned to the Fort Lauderdale Flight Standards District Office, and an air safety investigator from Bombardier Aerospace, conducted an additional wreckage examination.

An inspection of the airplane's hydraulic fluid reservoir level revealed that the hydraulic fluid level was about 1/3 from the bottom of the sight glass. According to a Learjet representative, the hydraulic fluid level is considered acceptable when fluid is visible in the sight glass.

TESTS AND RESEARCH

Hydraulic System Components

On April 13, 2004, in the presence of the NTSB IIC, the accident airplane's hydraulic pressure relief valve was examined and functionally tested at Bombardier Aerospace's analytical laboratory located in Wichita, Kansas. A visual examination of the hydraulic pressure relief valve, P/N 2380034-1, S/N: 909, revealed indentations and small gouges on the exterior portion of the valve's main body, consistent with being repeatedly struck with a tool. The hydraulic pressure relief valve was placed on a hydraulic test bench, and hydraulic pressure was applied. When hydraulic pressure was applied, hydraulic fluid flowed freely from the outlet port at minimal pressure. When the hydraulic pressure relief valve was disassembled, it was discovered that the valve piston was stuck open. During the testing process, the outer seal O-ring was replaced with a new O-ring, and the valve was reassembled. The hydraulic pressure relief valve operated normally when re-tested. The hydraulic pressure relief valve was sent to the NTSB's Materials Laboratory for further examination.

On April 22 and 26, 2004, an FAA service difficulty engineer from the FAA's Aircraft Certification Office (ACO), Wichita, Kansas, conducted a functional pressure test and internal examination of the hydraulic pressure regulator. The testing was conducted while in the presence of the FAA engineer, at Bombardier Aerospace's analytical laboratory located in Wichita. According to the FAA engineer, the hydraulic pressure regulator functioned at the proper pressures for the aircraft installation. In her written report she noted during the internal examination: "The relief valve piston O-ring was deformed." She added that the poppet casing, in the main block of the valve, displayed witness marks consistent with the poppet valve riding against the casing. It was noted that the exterior casing of the hydraulic pressure regulator displayed numerous gouges and elliptical mallet marks on the faceplate, consistent with being repeatedly struck with a tool.

A suspect section of hydraulic line was removed from the accident airplane's keel beam, located within the left main landing gear wheel-well, and sent to the NTSB's Materials Laboratory for further examination and testing. A Safety Board metallurgist reported that when hydraulic pressure was applied to the section of hydraulic line, there was a distinct spray of hydraulic fluid. He added that a detailed metallurgical examination revealed significant corrosion pits

and small cracks in the walls of the hydraulic lines. A complete copy of the NTSB's materials laboratory factual report is included in the public docket for this accident.

According to the president/owner of Skylink Jets, the emergency drag chute was partially deployed during the wreckage recovery. The NTSB IIC, along with an air safety investigator from Bombardier Aerospace, conducted an inspection of the drag chute system and release handle. No mechanical anomalies were discovered.

ADDITIONAL INFORMATION

A review of the emergency procedures section in the FAA approved flight manual for the accident airplane stated, in part:

Hydraulic System Failure / Emergency Braking System

In the event of a failure of the normal brake system, emergency brakes can be used to stop the airplane.

1) EMER BRAKE handle, right side forward of throttle quadrant -- Push downward on handle to apply brake pressure.

NOTE

- If conditions permits, break safety wire on the handle to prevent an abrupt application of the brakes.
- The EMER BRAKE handle must be pushed down approximately 2 inches before braking action begins.
- Small movements of the EMER BRAKE handle will produce improved feel and reduce the probability of tire skid. This does not significantly reduce emergency air bottle pressure.
- Use of drag chute or thrust reversers (if installed) is recommended.

WRECKAGE RELEASE

The Safety Board released the main wreckage to the owner's representatives on February 21, 2004, at the accident site, but retained various hydraulic system components. All retained components were released to the buyer of the airplane's salvage on April 18, 2005.

## Pilot Information

| | | | |
|---|---|---|---|
| **Certificate:** | Airline Transport | **Age:** | 40, Male |
| **Airplane Rating(s):** | Multi-engine Land; Single-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):** | Airplane Single-engine; Instrument Airplane | **Toxicology Performed:** | No |
| **Medical Certification:** | Class 1 Valid Medical--no waivers/lim. | **Last FAA Medical Exam:** | 09/19/2003 |
| **Occupational Pilot:** | | **Last Flight Review or Equivalent:** | 09/28/2003 |
| **Flight Time:** | 4500 hours (Total, all aircraft), 100 hours (Last 90 days, all aircraft) | | |

## Co-Pilot Information

| | | | |
|---|---|---|---|
| **Certificate:** | Airline Transport | **Age:** | 45, 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):** | None | **Toxicology Performed:** | No |
| **Medical Certification:** | Class 1 Valid Medical--no waivers/lim. | **Last FAA Medical Exam:** | 08/05/2003 |
| **Occupational Pilot:** | | **Last Flight Review or Equivalent:** | 09/01/2003 |
| **Flight Time:** | | | |

## Aircraft and Owner/Operator Information

| | | | |
|---|---|---|---|
| **Aircraft Make:** | Gates Learjet | **Registration:** | N24RZ |
| **Model/Series:** | 25B | **Aircraft Category:** | Airplane |
| **Year of Manufacture:** | | **Amateur Built:** | No |
| **Airworthiness Certificate:** | Normal | **Serial Number:** | 159 |
| **Landing Gear Type:** | Retractable - Tricycle | **Seats:** | 8 |
| **Date/Type of Last Inspection:** | 03/21/2003, 100 Hour | **Certified Max Gross Wt.:** | 13500 lbs |
| **Time Since Last Inspection:** | 3880.9 Hours | **Engines:** | 2 Turbo Jet |
| **Airframe Total Time:** | 4104.1 Hours at time of accident | **Engine Manufacturer:** | General Electric |
| **ELT:** | Installed, activated, did not aid in locating accident | **Engine Model/Series:** | CJ610-8A |
| **Registered Owner:** | Aztec Captital Corporation | **Rated Power:** | 2950 lbs |
| **Operator:** | Aztec Captital Corporation | **Operating Certificate(s) Held:** | On-demand Air Taxi (135) |
| **Operator Does Business As:** | Skylink Jets | **Operator Designator Code:** | XF7A |

## Meteorological Information and Flight Plan

| | | | |
|---|---|---|---|
| **Conditions at Accident Site:** | Visual Conditions | **Condition of Light:** | Night |
| **Observation Facility, Elevation:** | FXE, 13 ft msl | **Distance from Accident Site:** | |
| **Observation Time:** | 2157 EST | **Direction from Accident Site:** | |
| **Lowest Cloud Condition:** | Few / 4600 ft agl | **Visibility** | 10 Miles |
| **Lowest Ceiling:** | Overcast / 7000 ft agl | **Visibility (RVR):** | |
| **Wind Speed/Gusts:** | 4 knots / | **Turbulence Type Forecast/Actual:** | / |
| **Wind Direction:** | 150° | **Turbulence Severity Forecast/Actual:** | / |
| **Altimeter Setting:** | 30.02 inches Hg | **Temperature/Dew Point:** | 22°C / 16°C |
| **Precipitation and Obscuration:** | | | |
| **Departure Point:** | San Juan, PR (TJSJ) | **Type of Flight Plan Filed:** | IFR |
| **Destination:** | Ft. Lauderdale, FL (KFXE) | **Type of Clearance:** | None |
| **Departure Time:** | 2033 AST | **Type of Airspace:** | Class C |

## Airport Information

| | | | |
|---|---|---|---|
| **Airport:** | Fort Lauderdale Exec. Airport (KFXE) | **Runway Surface Type:** | Asphalt |
| **Airport Elevation:** | 13 ft | **Runway Surface Condition:** | Dry |
| **Runway Used:** | 08 | **IFR Approach:** | Visual |
| **Runway Length/Width:** | 6001 ft / 100 ft | **VFR Approach/Landing:** | Full Stop |

## Wreckage and Impact Information

| | | | |
|---|---|---|---|
| **Crew Injuries:** | 1 Serious, 1 Minor | **Aircraft Damage:** | Substantial |
| **Passenger Injuries:** | 2 None | **Aircraft Fire:** | None |
| **Ground Injuries:** | N/A | **Aircraft Explosion:** | None |
| **Total Injuries:** | 1 Serious, 1 Minor, 2 None | **Latitude, Longitude:** | 26.197222, -80.170556 |

## Administrative Information

| | | | |
|---|---|---|---|
| **Investigator In Charge (IIC):** | Clinton O Johnson | **Report Date:** | 07/07/2005 |
| **Additional Participating Persons:** | Jean M Ferrara; Federal Aviation Administration; Fort Lauderdale, FL<br>Tim Verble; Bombardier/Learjet; Lake Worth, FL<br>Rafael Zur; Skylink Jets; Fort Lauderdale, FL | | |
| **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.ntsb.gov/pubdms/. | | |