



National Transportation Safety Board Aviation Accident Final Report

Location:	San Diego, CA	Accident Number:	LAX07TA051
Date & Time:	12/01/2006, 1035 PST	Registration:	N26FN
Aircraft:	Learjet 36	Aircraft Damage:	Substantial
Defining Event:		Injuries:	3 None

Flight Conducted Under: Part 91: General Aviation - Personal

Analysis

The airplane sustained an in-flight loss of the right elevator during an in-flight upset while maneuvering. The pilot was flying the airplane from the left seat. The mishap airplane rendezvoused with another Learjet to begin a series of profiles for flight testing. The crew noted that the horizon was very difficult to discern. While maneuvering for the second set of data points, the pilot lost sight of the other airplane, and rolled right to remain clear. His vision was impaired by the glare from the sun, which delayed his recognition of the airplane entering an unusual attitude. The pilot initiated recovery with the airplane in an estimated 70-degree right bank, 50-degree nose down attitude, and an airspeed of 380 KIAS. During the dive, the crew noted that the airplane was definitely shuddering, but did not recall any rolling tendencies or vibration of the control yoke. The crew conducted a controllability check by slowing it to 150 KIAS and lowering the landing gear. Again the airplane exhibited no unusual flight characteristics. The remainder of the flight and landing were uneventful. During post flight inspection, the aircrew discovered that the right elevator was missing.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot's failure to maintain aircraft control while maneuvering, which resulted in exceeding the design stress limits of the aircraft. Contributing to the accident was the sunglare.

Findings

Occurrence #1: LOSS OF CONTROL - IN FLIGHT
Phase of Operation: MANEUVERING

Findings

1. (F) LIGHT CONDITION - SUNGLARE
2. (C) AIRCRAFT CONTROL - NOT MAINTAINED - PILOT IN COMMAND
3. (F) VISUAL/AURAL DETECTION - PILOT IN COMMAND

Occurrence #2: AIRFRAME/COMPONENT/SYSTEM FAILURE/MALFUNCTION
Phase of Operation: DESCENT - UNCONTROLLED

Findings

4. FLIGHT CONTROL,ELEVATOR - SEPARATION
5. (C) DESIGN STRESS LIMITS OF AIRCRAFT - EXCEEDED - PILOT IN COMMAND

Factual Information

On December 1, 2006, about 1035 Pacific standard time, a Learjet 36, N26FN, sustained an in-flight loss of the right elevator while maneuvering off the coast of San Diego, California. L-3 Communications Flight Capital LLC was operating the airplane under the provisions of 14 Code of Federal Regulations Part 91. The airline transport pilot, the commercial rated second pilot, and one passenger were not injured; the airplane sustained substantial damage. The local public-use flight departed North Island Naval Air Station (NZY), San Diego, about 0930. Visual meteorological conditions prevailed, and no flight plan had been filed.

The operator submitted a written report.

The pilot was flying the airplane from the left seat. The airplane rendezvoused with another Learjet in W-291, approximately 100 nm west of NZY, to begin a series of flight profiles for the testing of a Common Aviation Command and Control System for the Department of Defense. Though visual meteorological conditions prevailed at the time of the accident, the crew noted that the horizon was very difficult to discern.

The first profile was flown with the airplane 1,000 feet below and slightly in trail of the other Learjet. The run was uneventful except for increasing communications difficulties with the test controllers as the flight proceeded down range. While attempting to reestablish communications with the test controllers, the high Learjet began a left-hand orbit. The pilot (of the mishap Learjet) maneuvered to a co-altitude in trail position to maintain sight of the other airplane and facilitate the setup for the next profile. During the maneuver, the pilot lost sight of the other airplane, and rolled right to what he perceived was 25,000 feet mean sea level (msl), 270 knots indicated airspeed (KIAS), and 90 percent N1, respectively. Unable to see the horizon or the other airplane, he attempted to transition to instrument references. But his vision was still impaired by the glare from the sun, delaying his recognition of the airplane's attitude. The copilot had been heads down in the cockpit, and when he ultimately noted the airplane's increasing bank, assumed that the pilot was maneuvering to avoid the other airplane. The pilot initiated recovery with the airplane in an estimated 70-degree right bank, 50-degree nose down attitude, and an airspeed of 380 KIAS.

The pilot moved the thrust levers rapidly to idle, rolled to a wings level attitude, and began the dive recovery. He noted that the airspeed seemed to stabilize at 380 KIAS, and the pull was not abrupt. Both crew members felt that the pull up was completed smoothly without excessive G force. During the dive, the crew noted that the airplane was definitely shuddering, but did not recall any rolling tendencies or vibration of the control yoke. The crew did not recall any unusual noises other than the loud wind noise.

The equipment operator seated at the midpoint of the cabin noted that the wind noise and the shudder continued to increase in intensity until partway through the dive recovery. At the end of this time, he heard a very loud bang and felt a large shudder, after which the airplane's shuddering almost immediately ceased. Everything seemed to return to normal "as if nothing happened."

The dive recovery was completed by 16,000 feet msl, and the aircrew noted no unusual handling qualities as the airplane slowed to 200 KIAS. The crew conducted a controllability check by slowing it to 150 KIAS and lowering the landing gear. Again the airplane exhibited no unusual flight characteristics. The remainder of the flight and landing at NZY were uneventful.

During post flight inspection, the aircrew discovered that the right elevator was missing.

Pilot Information

Certificate:	Airline Transport	Age:	60, 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):	None	Toxicology Performed:	
Medical Certification:	Class 1 Without Waivers/Limitations	Last Medical Exam:	09/01/2006
Occupational Pilot:		Last Flight Review or Equivalent:	11/01/2006
Flight Time:	19581 hours (Total, all aircraft), 12016 hours (Total, this make and model), 16473 hours (Pilot In Command, all aircraft), 186 hours (Last 90 days, all aircraft), 27 hours (Last 30 days, all aircraft)		

Co-Pilot Information

Certificate:	Commercial	Age:	38, Male
Airplane Rating(s):	Multi-engine Land; Single-engine Land	Seat Occupied:	Right
Other Aircraft Rating(s):	Helicopter	Restraint Used:	Seatbelt, Shoulder harness
Instrument Rating(s):	Airplane; Helicopter	Second Pilot Present:	Yes
Instructor Rating(s):	None	Toxicology Performed:	
Medical Certification:	Class 2 Without Waivers/Limitations	Last Medical Exam:	05/01/2006
Occupational Pilot:		Last Flight Review or Equivalent:	10/01/2006
Flight Time:	2086 hours (Total, all aircraft), 891 hours (Total, this make and model), 248 hours (Pilot In Command, all aircraft), 205 hours (Last 90 days, all aircraft), 52 hours (Last 30 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Manufacturer:	Learjet	Registration:	N26FN
Model/Series:	36	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	No
Airworthiness Certificate:	Restricted	Serial Number:	011
Landing Gear Type:	Retractable - Tricycle	Seats:	4
Date/Type of Last Inspection:	08/01/2006, Continuous Airworthiness	Certified Max Gross Wt.:	18300 lbs
Time Since Last Inspection:		Engines:	2 Turbo Fan
Airframe Total Time:	12043 Hours	Engine Manufacturer:	Garrett
ELT:	Installed, not activated	Engine Model/Series:	TFE 731-2-2B
Registered Owner:	L-3 Communications Flight Capital LLC	Rated Power:	3500 lbs
Operator:	L-3 Communications Flight Internata	Air Carrier Operating Certificate:	None

Meteorological Information and Flight Plan

Observation Facility, Elevation:	NZY, 26 ft msl	Observation Time:	0855 PST
Distance from Accident Site:	140 Nautical Miles	Condition of Light:	Day
Direction from Accident Site:	36°	Conditions at Accident Site:	Visual Conditions
Lowest Cloud Condition:	Clear	Temperature/Dew Point:	21° C / -9° C
Lowest Ceiling:	None	Visibility	7 Miles
Wind Speed/Gusts, Direction:	Calm	Visibility (RVR):	
Altimeter Setting:	30.11 inches Hg	Visibility (RVV):	
Precipitation and Obscuration:	Haze		
Departure Point:	San Diego, CA (NZY)	Type of Flight Plan Filed:	IFR
Destination:		Type of Clearance:	IFR
Departure Time:	0930 PST	Type of Airspace:	

Airport Information

Airport:	NORTH ISLAND NAS/HALSEY FIELD (NZY)	Runway Surface Type:	
Airport Elevation:	26 ft	Runway Surface Condition:	
Runway Used:	NA	IFR Approach:	None
Runway Length/Width:		VFR Approach/Landing:	None

Wreckage and Impact Information

Crew Injuries:	2 None	Aircraft Damage:	Substantial
Passenger Injuries:	1 None	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	3 None		

Administrative Information

Investigator In Charge (IIC):	Howard Plagens	Adopted Date:	03/31/2008
Additional Participating Persons:	Bill Dickinson; Federal Aviation Administration; San Diego, CA		
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.

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.