



Aviation Investigation Final Report

Location:	ABILENE, Texas	Accident Number:	FTW86LA164
Date & Time:	September 6, 1986, 18:30 Local	Registration:	N5068F
Aircraft:	HILLER FH-1100	Aircraft Damage:	Substantial
Defining Event:		Injuries:	6 None
Flight Conducted Under:	Part 91: General aviation		

Analysis

THE PLT WAS CONDUCTING SIGHT-SEEING FLTS FROM A RODEO/FAIRGROUND AREA. DURING A CRITICAL PART OF A TAKEOFF, A TAIL ROTOR BLADE SEPARATED & THE PLT LOST DIRECTIONAL CONTROL. HE ATTEMPTED AN AUTOROTATIVE LANDING. AFTER SPINNING AROUND ABOUT 3 TIMES, THE PLT PULLED FULL COLLECTIVE, JUST BEFORE THE HELICOPTER CRASHED, BUT IT WAS STILL BADLY DAMAGED. AN INVESTIGATION REVEALED THAT A TAIL ROTOR TENSION-TORSION (T-T) BAR ASSEMBLY, PN 24-55106, HAD FAILED WHERE THE ATTACHMENT BOLT GOES THRU THE T-T STRAPS. A METALLURGICAL EXAM REVEALED CHLORINE RICH DEPOSITS IN THE FRACTURE AREA. THE GREASE FROM THE T-T BAR CAVITY HAD DARKENED & THE CAVITY FOR THE OTHER SET OF T-T STRAPS CONTAINED A SMALL AMOUNT OF FLUID WITH AN UNPLEASANT ODOR. AN ANALYSIS OF THE GREASE REVEALED EXCESSIVE AMOUNTS OF CHLORINE. THERE WAS EVIDENCE THAT WATER & CHLORINE CONTAMINATION HAD RESULTED IN STRESS CORROSION & EVENTUAL FAILURE OF THE T-T BAR ASSEMBLY.

Probable Cause and Findings

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

Findings

Occurrence #1: AIRFRAME/COMPONENT/SYSTEM FAILURE/MALFUNCTION
Phase of Operation: TAKEOFF - INITIAL CLIMB

Findings

1. (C) ROTOR SYSTEM, TAIL ROTOR BLADE CUFF - CONTAMINATION
2. (F) MAINTENANCE - INADEQUATE - OTHER MAINTENANCE PERSONNEL
3. (C) ROTOR SYSTEM, TAIL ROTOR BLADE CUFF - STRESS CORROSION
4. (C) ROTOR SYSTEM, TAIL ROTOR BLADE - SEPARATION

Occurrence #2: LOSS OF CONTROL - IN FLIGHT

Phase of Operation: TAKEOFF - INITIAL CLIMB

Findings

5. DIRECTIONAL CONTROL - NOT POSSIBLE

Occurrence #3: FORCED LANDING

Phase of Operation: DESCENT - EMERGENCY

Findings

6. AUTOROTATION - ATTEMPTED - PILOT IN COMMAND

Occurrence #4: IN FLIGHT COLLISION WITH TERRAIN/WATER

Phase of Operation: LANDING

Factual Information

Pilot Information

Certificate:	Commercial	Age:	60, Male
Airplane Rating(s):	None	Seat Occupied:	Right
Other Aircraft Rating(s):	Helicopter	Restraint Used:	
Instrument Rating(s):	None	Second Pilot Present:	No
Instructor Rating(s):	None	Toxicology Performed:	No
Medical Certification:	Class 2 Valid Medical-w/ waivers/lim	Last FAA Medical Exam:	April 8, 1986
Occupational Pilot:	Yes	Last Flight Review or Equivalent:	
Flight Time:	4870 hours (Total, all aircraft), 236 hours (Total, this make and model), 4315 hours (Pilot In Command, all aircraft), 39 hours (Last 90 days, all aircraft), 4 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	HILLER	Registration:	N5068F
Model/Series:	FH-1100 FH-1100	Aircraft Category:	Helicopter
Year of Manufacture:		Amateur Built:	
Airworthiness Certificate:	Normal	Serial Number:	227
Landing Gear Type:	Skid	Seats:	4
Date/Type of Last Inspection:	March 22, 1986 100 hour	Certified Max Gross Wt.:	2530 lbs
Time Since Last Inspection:	68 Hrs	Engines:	1 Turbo shaft
Airframe Total Time:	2530 Hrs	Engine Manufacturer:	ALLISON
ELT:	Not installed	Engine Model/Series:	250-C18
Registered Owner:	JACK O. CANON	Rated Power:	274 Horsepower
Operator:		Operating Certificate(s) Held:	None
Operator Does Business As:		Operator Designator Code:	

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	Condition of Light:	Day
Observation Facility, Elevation:	AB1 ,1789 ft msl	Distance from Accident Site:	3 Nautical Miles
Observation Time:	17:54 Local	Direction from Accident Site:	170°
Lowest Cloud Condition:	Scattered / 3000 ft AGL	Visibility	30 miles
Lowest Ceiling:	None	Visibility (RVR):	
Wind Speed/Gusts:	8 knots /	Turbulence Type Forecast/Actual:	/
Wind Direction:	30°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	30 inches Hg	Temperature/Dew Point:	28°C / 17°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	(AB1)	Type of Flight Plan Filed:	None
Destination:	(AB1)	Type of Clearance:	None
Departure Time:	00:00 Local	Type of Airspace:	Class D

Airport Information

Airport:	ABILENE ABI	Runway Surface Type:	
Airport Elevation:	1789 ft msl	Runway Surface Condition:	
Runway Used:	0	IFR Approach:	None
Runway Length/Width:		VFR Approach/Landing:	Forced landing

Wreckage and Impact Information

Crew Injuries:	1 None	Aircraft Damage:	Substantial
Passenger Injuries:	5 None	Aircraft Fire:	On-ground
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	6 None	Latitude, Longitude:	

Administrative Information

Investigator In Charge (IIC):	Dickens, Bob
Additional Participating Persons:	TONY PERRELLO; LUBBOCK , TX
Original Publish Date:	
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.nts.gov/Docket?ProjectID=22088

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The NTSB does not assign fault or blame for an accident or incident; rather, as specified by NTSB regulation, “accident/incident investigations are fact-finding proceedings with no formal issues and no adverse parties ... and are not conducted for the purpose of determining the rights or liabilities of any person” (Title 49 *Code of Federal Regulations* section 831.4). Assignment of fault or legal liability is not relevant to the NTSB’s statutory mission to improve transportation safety by investigating accidents and incidents and issuing safety recommendations. In addition, statutory language prohibits the admission into evidence or use of any part of an NTSB report related to an accident in a civil action for damages resulting from a matter mentioned in the report (Title 49 *United States Code* section 1154(b)). A factual report that may be admissible under 49 *United States Code* section 1154(b) is available [here](#).