



Aviation Investigation Factual Report

Location:	TOPEKA, Kansas	Accident Number:	CHI98LA342
Date & Time:	August 28, 1998, 10:53 Local	Registration:	N230H
Aircraft:	MBB BK-117	Aircraft Damage:	Substantial
Defining Event:		Injuries:	3 None
Flight Conducted Under:	Part 91: General aviation		

Factual Information

On August 28, 1998, at 1053 central daylight time, a Messerschmitt BK-117, N230H, operated by St. Louis Helicopters, dba Topeka Lifestar, collided with the terrain during a landing approach at the Topeka-Forbes Airport, Topeka, Kansas. The helicopter was returning from a maintenance test flight when a "loud bang" was heard and it began rotating to the right. The pilot was unable to control the helicopter and it descended to impact with the terrain. The helicopter was substantially damaged. The pilot and two mechanics on board were not injured. The local flight originated from the Topeka-Forbes Airport, at 1040 cdt.

The pilot reported the purpose of the flight was to obtain engine matching adjustment measurements after having had a new No. 1 engine installed. The pilot reported that they felt a "severe bump like turbulence" when the helicopter was approximately 2 miles west of the airport. He reported that he and the mechanic in the front left seat, scanned the instruments and everything seemed normal. Within seconds there was "...a loud bang, yaw and the aircraft started to oscillate violently." Another mechanic who was in the back of the helicopter, facing rearward, informed the pilot that the tail rotor had departed the helicopter. The pilot reported the helicopter immediately began to rotate to the right. He reported that they were at an altitude of about 300 to 400 feet above the ground at this time and that he had already picked out a field in which to land. The pilot reported his main objective was to try and maintain as much control of the helicopter as possible, and to land in a level attitude. The helicopter touched down in an upright attitude then rolled onto its left side.

Post accident inspection of the helicopter by Federal Aviation Administration Inspectors from the Wichita Flight Standards District Office and from the Rotorcraft Certification Directorate revealed the left engine cowling separated from the helicopter inflight. According to the FAA Inspectors the cowling separated from the helicopter which resulted in damage to the main rotor blades and the separation of the tail rotor gear box. Inspection of the cowling latches revealed the forward over center Hartwell latch was deformed and bent. The aft over center Hartwell latch was not damaged. All three wing head stud fasteners were missing. According to the inspectors the two forward wing head stud fastener holes were distorted/elongated. The wing head stud fastener hole on the aft portion of the cowling did not appear to be damaged.

On June 26, 1989, MMB-Helicopters issued Service Bulletin ASB- MBB-BK 117-20-104, to "...ensure secure fit of main transmission cowling access door and engine cowling access door in the event of a hinge failure..." This Service Bulletin addressed removing and modifying various latches of the transmission access doors and the engine cowling and the installation of new locks, the wing head stud fasteners. This service bulletin was made into Airworthiness Directive, AD 95-08-12. On June 16, 1997 Eurocopter issued Service Bulletin, SB-MBB-BK 117-20-109. This service bulletin calls for the installation of a hook system which will

prevent the transmission and engine cowlings from fully opening if the fasteners on the cowlings are not correctly latched. This service bulletin was not incorporated on the accident helicopter.

According to a technical representative from American Eurocopter, the service bulletins resulted from several occurrences where the engine and/or transmission cowlings inadvertently opened during flight. He stated that unless pressure is placed on the cowling when the Hartwell latch is closed, it is possible that it won't catch the bottom latch. In which case it appears as though the latch is secured when in fact it is not. He stated that due to the changes in airflow the cowlings have typically opened during the descents and not during cruise. The manufacturers BK-117 Flight Manual states that checking the security of the engine and transmission access doors is a preflight item which should be checked prior to every flight.

Pilot Information

Certificate:	Commercial	Age:	58, Male
Airplane Rating(s):	Single-engine land	Seat Occupied:	Right
Other Aircraft Rating(s):	Helicopter	Restraint Used:	
Instrument Rating(s):	Helicopter	Second Pilot Present:	No
Instructor Rating(s):	None	Toxicology Performed:	No
Medical Certification:	Class 2 Valid Medical--w/ waivers/lim	Last FAA Medical Exam:	November 19, 1997
Occupational Pilot:	Yes	Last Flight Review or Equivalent:	
Flight Time:	6401 hours (Total, all aircraft), 476 hours (Total, this make and model), 5563 hours (Pilot In Command, all aircraft), 65 hours (Last 90 days, all aircraft), 35 hours (Last 30 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	MBB	Registration:	N230H
Model/Series:	BK-117 BK-117	Aircraft Category:	Helicopter
Year of Manufacture:		Amateur Built:	
Airworthiness Certificate:	Normal	Serial Number:	BK-117-A4
Landing Gear Type:	Skid	Seats:	5
Date/Type of Last Inspection:	August 13, 1998 AAIP	Certified Max Gross Wt.:	3200 lbs
Time Since Last Inspection:	31 Hrs	Engines:	2 Turbo shaft
Airframe Total Time:	3928 Hrs	Engine Manufacturer:	Lycoming
ELT:	Installed, activated, did not aid in locating accident	Engine Model/Series:	LTS-101-650B1
Registered Owner:	DEBIS FINANCIAL SERVICES	Rated Power:	650 Horsepower
Operator:	ST. LOUIS HELICOPTERS	Operating Certificate(s) Held:	None
Operator Does Business As:	TOPEKA LIFESTAR	Operator Designator Code:	

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	Condition of Light:	Day
Observation Facility, Elevation:	FOE ,1080 ft msl	Distance from Accident Site:	
Observation Time:	10:53 Local	Direction from Accident Site:	
Lowest Cloud Condition:	Clear	Visibility	10 miles
Lowest Ceiling:	None	Visibility (RVR):	
Wind Speed/Gusts:	5 knots / None	Turbulence Type Forecast/Actual:	/
Wind Direction:	300°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	30 inches Hg	Temperature/Dew Point:	26°C / 20°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	(FOE)	Type of Flight Plan Filed:	None
Destination:		Type of Clearance:	VFR
Departure Time:	10:40 Local	Type of Airspace:	Class D

Airport Information

Airport:	FORBES FIELD FOE	Runway Surface Type:	
Airport Elevation:	1080 ft msl	Runway Surface Condition:	
Runway Used:	0	IFR Approach:	
Runway Length/Width:		VFR Approach/Landing:	Forced landing

Wreckage and Impact Information

Crew Injuries:	3 None	Aircraft Damage:	Substantial
Passenger Injuries:		Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	3 None	Latitude, Longitude:	

Administrative Information

Investigator In Charge (IIC): Sullivan, Pamela

Additional Participating Persons: STEPHEN H WRIGHT; WICHITA, KS
CHARLES HARRISON; FT. WORTH, TX

Report Date: March 5, 1999

Last Revision Date:

Investigation Class: [Class](#)

Note:

Investigation Docket: <https://data.nts.gov/Docket?ProjectID=43801>

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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](#).