Aviation Investigation Final Report

Location:	Ponce, Puerto Rico	**Accident Number:**	MIA06LA044
Date & Time:	January 12, 2006, 03:43 Local	**Registration:**	N495LF
Aircraft:	MBB BO-105S	**Aircraft Damage:**	Substantial
Defining Event:		**Injuries:**	1 Minor, 3 None
Flight Conducted Under:	Part 135: Air taxi & commuter - Non-scheduled - Air Medical (Unspecified)		

Analysis

After the patient was placed aboard the helicopter, the pilot started the engines and performed a hover check. He then moved the helicopter forward to gain airspeed and initiated a climb to cruise altitude. After reaching an altitude of about 100 feet, the main rotor rpm light and audio warning system activated, and the number 2 engine N1 rpm and torque began to decay. The pilot attempted to regain normal engine parameters, but was unable to regain engine rpm. The pilot maneuvered to avoid several light poles as he attempted to land in a parking lot. By this time, main rotor rpm had bled off sufficiently to prevent the hydraulic pumps from pressurizing the hydraulic system, and all flight controls locked is a slight right banked attitude. This prevented the helicopter from reaching the parking lot. The helicopter impacted a construction area in a right bank, nose down attitude. An on-site and later follow-up investigation by FAA and Rolls-Royce investigators revealed a B-nut on the Pc line connecting the power turbine governor (PTGOV) to the fuel control unit (FCU) had become loose at the T-fitting end. It was partially torqued and could be moved with the fingers. The female end was threaded onto the male end three-quarters of a turn. There was no cross-threading. The torque stripe was broken. According to Rolls-Royce Allison, "This line serves a critical function to the engine control system and when leakage occurs will cause the engine to roll back to an idle or near idle condition."

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: A loose B-nut on the PC line connecting the power turbine governor (PTGOV) to the fuel control unit (FCU) that created a leak and caused the engine to roll back to an idle condition, causing a low hydraulic system pressure and subsequent control lock. A contributing factor was the unsuitable terrain (construction area) on which to make a forced landing.

Findings

Occurrence #1: LOSS OF ENGINE POWER(PARTIAL) - MECH FAILURE/MALF
Phase of Operation: TAKEOFF - INITIAL CLIMB

Findings
1. (C) PNEUMATIC SYSTEM - LEAK
2. MISC ROTORCRAFT,MAIN ROTOR RPM WARNING SYSTEM - ACTIVATED

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

Findings
3. (C) HYDRAULIC SYSTEM - LOW PRESSURE
4. (C) ROTORCRAFT FLIGHT CONTROL SYSTEM - LOCKED

Occurrence #3: IN FLIGHT COLLISION WITH TERRAIN/WATER
Phase of Operation: DESCENT - UNCONTROLLED

Findings
5. (F) TERRAIN CONDITION - NONE SUITABLE
6. (F) TERRAIN CONDITION - CONSTRUCTION AREA

Factual Information

On January 12, 2006, at 0343 Atlantic standard time, a Eurocopter Messerschmitt-Boelkow-Blohm BO-105S, N495LF, registered to and operated by MSE Air Group, Inc., as Aviane Air Ambulance, and piloted by a commercial-certificated pilot, was substantially damaged when it collided with terrain during an attempted forced landing following a loss of power in one of its engines during takeoff from San Cristobal Hospital, Ponce, Puerto Rico. Night visual meteorological conditions prevailed at the time of the accident. The air ambulance flight was being conducted under the provisions of Title 14 CFR Part 135, and a company visual flight rules (VFR) flight plan had been filed. The pilot sustained minor injuries, and two medical flight crew members and one passenger were not injured. The flight had originated in San Juan, Puerto Rico, at 0141.

The pilot stated that the flight from San Juan to Ponce had been uneventful, and landed at 0205. After the patient was placed aboard the helicopter, the pilot started the engines and performed a hover check. He then moved the helicopter forward to gain airspeed and initiated a climb to cruise altitude. After reaching an altitude of about 100 feet, the main rotor rpm light and audio warning system activated, and the number 2 engine N1 rpm and torque began to decay. The pilot attempted to regain normal engine parameters, but was unable to regain engine rpm. The pilot maneuvered to avoid several light poles as he attempted to land in a parking lot. By this time, main rotor rpm had bled off sufficiently to prevent the hydraulic pumps from pressurizing the hydraulic system, and all flight controls locked is a slight right banked attitude. This prevented the helicopter from reaching the parking lot. The helicopter impacted a construction area in a right bank, nose down attitude.

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Pilot Information

Certificate:	Commercial; Sport Pilot	**Age:**	59,Male
Airplane Rating(s):	None	**Seat Occupied:**	Rear
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 3 With waivers/limitations	**Last FAA Medical Exam:**	October 1, 2005
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	February 1, 2005
Flight Time:	4475 hours (Total, all aircraft), 252 hours (Total, this make and model), 3151 hours (Pilot In Command, all aircraft), 46 hours (Last 90 days, all aircraft), 13 hours (Last 30 days, all aircraft), 3 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	MBB	**Registration:**	N495LF
Model/Series:	BO-105S	**Aircraft Category:**	Helicopter
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	S645
Landing Gear Type:	High skid	**Seats:**	3
Date/Type of Last Inspection:	December 1, 2005 Annual	**Certified Max Gross Wt.:**	5512 lbs
Time Since Last Inspection:		**Engines:**	2 Turbo shaft
Airframe Total Time:	7566 Hrs as of last inspection	**Engine Manufacturer:**	Allison
ELT:	Installed, not activated	**Engine Model/Series:**	250-C20B
Registered Owner:	MSE Air Group Inc.,	**Rated Power:**	715 Horsepower
Operator:		**Operating Certificate(s) Held:**	On-demand air taxi (135)
Operator Does Business As:	Aviane Air Ambulance	**Operator Designator Code:**	Q6WA

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Night
Observation Facility, Elevation:	TJPS,23 ft msl	**Distance from Accident Site:**	
Observation Time:	03:50 Local	**Direction from Accident Site:**	
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	6 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	120°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29.97 inches Hg	**Temperature/Dew Point:**	21°C / 18°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Ponce , PR	**Type of Flight Plan Filed:**	Company VFR
Destination:	San Juan, PR	**Type of Clearance:**	None
Departure Time:	03:43 Local	**Type of Airspace:**	

Wreckage and Impact Information

Crew Injuries:	1 Minor, 2 None	**Aircraft Damage:**	Substantial
Passenger Injuries:	1 None	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Minor, 3 None	**Latitude, Longitude:**	18,-66.550003

Administrative Information

Investigator In Charge (IIC):	Lovell, John
Additional Participating Persons:	Fernando Otero; FAA FSDO; San Juan, PR Bob ketchum; Rolls Royce Allison; Indianapolis, IN
Original Publish Date:	December 20, 2007
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=63093

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