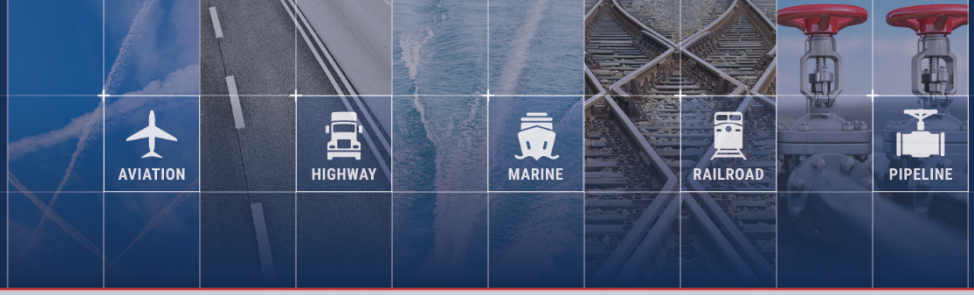

Aviation Investigation Final Report

Location:	Albany, New York	**Accident Number:**	NYC03LA033
Date & Time:	December 26, 2002, 14:40 Local	**Registration:**	N951AM
Aircraft:	MBB BK 117 A-4	**Aircraft Damage:**	Substantial
Defining Event:		**Injuries:**	3 None
Flight Conducted Under:	Part 91: General aviation - Positioning		

Analysis

The helicopter was positioned on the hospital rooftop helipad facing in a southerly direction. After the medical crew boarded the helicopter, the number 1 engine was started. As the main rotor blades began to turn, an unexpected gust of wind traveling over the rooftop caused the blades to flap excessively. The pilot then heard a series of thumps, and aborted the start. Inspection of the helicopter revealed that one of the main rotor blades had come in contact with the left vertical stabilizer, damaging the tail boom, main rotor blades, and the left vertical stabilizer. On November 30, 1990, the helicopter manufacturer issued service bulletin SB-MBB-BK-30-103, which called for a triangle section to be cut out of the stabilizer fin assembly, in an area where a potential strike from a main rotor blade could occur, and replaced with a foam core insert. The operator did not apply the service bulletin to the accident helicopter. The winds reported by the pilot at the time of the engine start were from 340 degrees at 14 knots, gusting to 24 knots.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The inadvertent encounter with a downdraft during engine start, which flexed the main rotor blades and subsequently damaged the tail boom assembly. A factor related to the accident was the failure of the operator to comply with a service bulletin.

Findings

Occurrence #1: ON GROUND/WATER ENCOUNTER WITH WEATHER
Phase of Operation: STANDING - STARTING ENGINE(S)

Findings
1. (C) WEATHER CONDITION - DOWNDRAFT
2. (F) MAINTENANCE,SERVICE BULLETIN/LETTER - NOT COMPLIED WITH - COMPANY MAINTENANCE PERSONNEL
3. MISC ROTORCRAFT,MAIN ROTOR/TAIL BOOM CONTACT

Factual Information

On December 26, 2002, at 1440 eastern standard time, an MBB (Eurocopter) BK 117 A-4 helicopter, N951AM, operated by Rocky Mountain Holdings LLC, was substantially damaged during engine start-up on a roof-top helipad at the Albany Medical Center, Albany, New York. The certificated commercial pilot and two medical flight personnel were not injured. Visual meteorological conditions prevailed, and a company visual flight rules flight plan was filed for the medevac flight conducted under 14 CFR Part 91.

According to the pilot, the helicopter was positioned on the helipad facing in a southerly direction. After the medical crew boarded the helicopter, the number 1 engine was started. As the main rotor blades began to turn, an unexpected gust of wind traveling over the rooftop of the hospital helipad caused the blades to flap excessively. The pilot then heard a series of thumps, and the start was aborted.

Inspection of the helicopter by a Federal Aviation Administration inspector revealed that one of the main rotor blades had come in contact with the left vertical stabilizer, damaging the tail boom, main rotor blades, and the left vertical stabilizer.

On November 30, 1990, the helicopter manufacturer issued service bulletin SB-MBB-BK-30-103, which called for a triangle section to be cut out of the stabilizer fin assembly, in an area where a potential strike from a main rotor blade could occur, and replaced with a foam core insert.

The service bulletin included the following information,

"During start-up and shutdown of the engines, the main rotor blades can strike into the endplates if heavy downdrafts occur while the rotor is accelerating from or slowing down to standstill. The presence of very heavy downdrafts which can cause damage to the main rotor blades and to the endplates upon engine startup and shutdown, must be reckoned with at some operational locations, especially between high buildings.

Downward deflections of the main rotor blades which can cause the endplates to be struck cannot be rule out during heavy downdrafts. For this reason, the endplate shall be modified in the potential strike area so that a piece of the endplate will be struck out upon impact, without the main rotor sustaining damage."

The service bulletin had not been applied to the accident helicopter.

The winds reported by the pilot at the time of the engine start were from 340 degrees at 14 knots, gusting to 24 knots.

The winds reported by an airport 5 miles north of the heliport, at 1451, were from 300 degrees at 19 knots, gusting to 26 knots.

Pilot Information

Certificate:	Commercial	**Age:**	51,Male
Airplane Rating(s):	None	**Seat Occupied:**	Rear
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:**	March 17, 2002
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	
Flight Time:	5000 hours (Total, all aircraft), 450 hours (Total, this make and model), 3500 hours (Pilot In Command, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	MBB	**Registration:**	N951AM
Model/Series:	BK 117 A-4	**Aircraft Category:**	Helicopter
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	7071
Landing Gear Type:	Tricycle	**Seats:**	4
Date/Type of Last Inspection:	December 20, 2002 AAIP	**Certified Max Gross Wt.:**	8975 lbs
Time Since Last Inspection:	7 Hrs	**Engines:**	2 Turbo shaft
Airframe Total Time:	6498 Hrs as of last inspection	**Engine Manufacturer:**	Garrett-AiResearch
ELT:	Installed, not activated	**Engine Model/Series:**	LTS101-650B1
Registered Owner:	Rocky Mountain Holdings	**Rated Power:**	650 Horsepower
Operator:		**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Night
Observation Facility, Elevation:	ALB,285 ft msl	**Distance from Accident Site:**	5 Nautical Miles
Observation Time:	14:51 Local	**Direction from Accident Site:**	350°
Lowest Cloud Condition:	Few / 9000 ft AGL	**Visibility**	6 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	19 knots / 26 knots	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	300°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29.87 inches Hg	**Temperature/Dew Point:**	-1°C / -6°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Albany, NY (NK64)	**Type of Flight Plan Filed:**	Company VFR
Destination:		**Type of Clearance:**	None
Departure Time:	14:40 Local	**Type of Airspace:**	Class C

Wreckage and Impact Information

Crew Injuries:	1 None	**Aircraft Damage:**	Substantial
Passenger Injuries:	2 None	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	3 None	**Latitude, Longitude:**	42.651668,-73.77861

Administrative Information

Investigator In Charge (IIC):	Demko, Stephen
Additional Participating Persons:	John Ludwig; FAA; Albany, NY
Original Publish Date:	June 30, 2004
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=56249