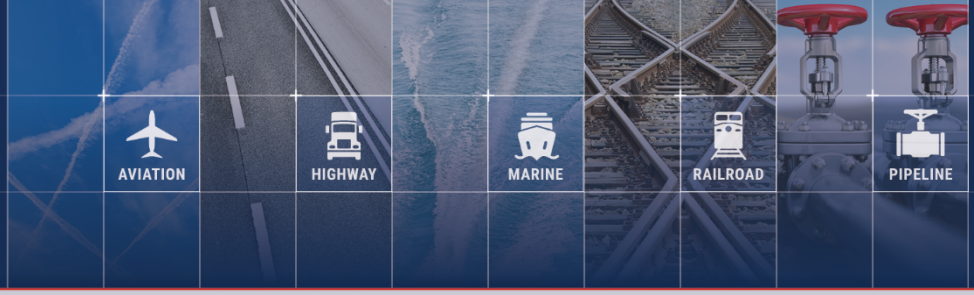

Aviation Investigation Final Report

Location:	Sterling City, Texas	**Accident Number:**	CEN24FA049
Date & Time:	November 29, 2023, 14:30 Local	**Registration:**	N745MB
Aircraft:	MD HELICOPTERS INC 600	**Aircraft Damage:**	Substantial
Defining Event:	Low altitude operation/event	**Injuries:**	2 Fatal
Flight Conducted Under:	Part 133: Rotorcraft ext. load		

Analysis

The helicopter departed from the remote landing zone with the pilot and an aerial lineman to conduct aerial power line system work. ADS-B data showed that the helicopter approached the target powerline pole from the west. The helicopter maneuvered around the pole, and the data subsequently terminated at the pole.

Various impact marks were observed on a static arm, about 12 ft long, at the top of the pole. The impact marks were located about 4 ft from the base of the static arm. The pole and attached wires were all found intact. The helicopter came to rest on its left side, about 103 ft away from the pole on a flat grass field. The helicopter sustained substantial damage to the main rotor system, fuselage, and empennage.

Postaccident examination of the airframe and the engine revealed no preimpact mechanical malfunctions or failures that would have precluded normal operation.

A review of meteorological data showed that the helicopter likely encountered gusting wind conditions to 26 kts, light turbulence, and low-level wind shear (LLWS) conditions at the time of the accident.

The weather forecast for the accident time did not forecast turbulence or LLWS and there were no PIREPs or other information indicative of turbulent conditions or LLWS within 100 miles of the accident site. The closest terminal aerodrome forecast, 42 miles southeast of the accident site, did include gusting wind conditions. The actual wind conditions for the accident site were likely below the operator's published wind limitations.

A search of archived information indicated that the pilot did not request weather information from Leidos Flight Service or through ForeFlight. The pilot did have an account through

ForeFlight but only updated route strings on the accident day. It is unknown what weather information, if any, the pilot checked or received before or during the accident flight.

Based on the available evidence, it is likely the pilot failed to maintain clearance from the power line pole's static arm during forecasted gusting wind conditions, un-forecasted light turbulence, and un-forecasted LLWS conditions, resulting in main rotor blade contact with the static arm and a subsequent loss of control and impact with terrain.

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 clearance from a power line pole's static arm during forecasted gusting wind conditions, un-forecasted light turbulence, and un-forecasted low-level wind shear conditions, resulting in main rotor blade contact with the static arm and a subsequent loss of control and impact with terrain.

Findings

Personnel issues	Aircraft control - Pilot
Environmental issues	Gusts - Effect on operation
Environmental issues	Gusts - Awareness of condition
Environmental issues	Windshear - Effect on operation
Environmental issues	Windshear - Awareness of condition
Environmental issues	Clear air turbulence - Effect on operation
Environmental issues	Clear air turbulence - Awareness of condition
Aircraft	Directional control - Not attained/maintained

Factual Information

History of Flight

Maneuvering-low-alt flying	Turbulence encounter
Maneuvering-low-alt flying	Other weather encounter
Maneuvering-low-alt flying	Windshear or thunderstorm
Maneuvering-low-alt flying	Low altitude operation/event (Defining event)

On November 29, 2023, about 1430 central standard time, a MD Helicopters Inc. MD600N helicopter, N745MB, sustained substantial damage when it was involved in an accident near Sterling City, Texas. The commercial pilot and the aerial lineman sustained fatal injuries. The helicopter was operated as a Title 14 *Code of Federal Regulations* Part 133 rotorcraft external load flight.

The purpose of the flight was to perform aerial work on a power line system. The helicopter was operated by Brim Aviation. There were no known witnesses to the accident sequence.

Prior to the flight, the pilot completed the operator's flight risk assessment tool. The helicopter arrived at the remote landing zone (LZ) to perform the work about 1240. Between 1245 and 1310 the helicopter was configured for the work, and a safety meeting was held. From 1315 to 1340, a pre-work scouting flight was performed. At 1340, the helicopter arrived back at the LZ to prepare for the work and another briefing was held.

A review of ADS-B data showed that the helicopter departed from the LZ about 1415. The helicopter then approached the target power line pole (a steel mono pole that was about 133 ft tall) from the west. The helicopter maneuvered around the pole, and the data subsequently terminated at the pole about 1429.

At 1440, the helicopter was overdue, and the operator began multiple communication attempts and then started searching for the helicopter. At 1551, the operator arrived at the accident site and discovered the wreckage of the helicopter.

Pilot Information

Certificate:	Commercial	**Age:**	31,Male
Airplane Rating(s):	None	**Seat Occupied:**	Left
Other Aircraft Rating(s):	Helicopter	**Restraint Used:**	4-point
Instrument Rating(s):	None	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	Yes
Medical Certification:	Class 2 Without waivers/limitations	**Last FAA Medical Exam:**	January 16, 2023
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	April 30, 2023
Flight Time:	(Estimated) 1975 hours (Total, all aircraft), 74.7 hours (Total, this make and model), 1665 hours (Pilot In Command, all aircraft), 74.7 hours (Last 90 days, all aircraft), 58 hours (Last 30 days, all aircraft), 3.4 hours (Last 24 hours, all aircraft)		

Other flight crew Information

Certificate:	None	**Age:**	22,Male
Airplane Rating(s):	None	**Seat Occupied:**	Rear
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	None	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	Yes
Medical Certification:	None None	**Last FAA Medical Exam:**	
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	
Flight Time:			

The pilot was employed by the operator and was signed off by the operator to perform Part 133 work two days before the accident.

The aerial lineman was employed by Source Utility Services, Georgetown, Texas, and was signed off by Source Utility Services to perform aerial lineman work on October 23, 2022. The aerial lineman, who would be standing on the left skid during his work, was secured to the cabin with two personal restraint lanyards.

Aircraft and Owner/Operator Information

Aircraft Make:	MD HELICOPTERS INC	**Registration:**	N745MB
Model/Series:	600 N	**Aircraft Category:**	Helicopter
Year of Manufacture:	2002	**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	RN067
Landing Gear Type:	None; Skid	**Seats:**	2
Date/Type of Last Inspection:	November 28, 2023 100 hour	**Certified Max Gross Wt.:**	4100 lbs
Time Since Last Inspection:	3.5 Hrs	**Engines:**	1 Turbo shaft
Airframe Total Time:	9053.3 Hrs as of last inspection	**Engine Manufacturer:**	Rolls-Royce
ELT:	C126 installed, not activated	**Engine Model/Series:**	250-C47M
Registered Owner:	Cobra Aviation Services, LLC	**Rated Power:**	650 Horsepower
Operator:	Brim Equipment Leasing, LLC	**Operating Certificate(s) Held:**	Rotorcraft external load (133), On-demand air taxi (135), Agricultural aircraft (137)
Operator Does Business As:	Brim Aviation	**Operator Designator Code:**	BV0L

A review of the FAA-Approved MD Helicopters MD600N Rotorcraft Flight Manual (RFM) found that with a takeoff weight of 3,548 pounds and a density altitude of 3,278 ft, the helicopter would be operating within the controllability envelope for crosswind conditions. The RFM states in part:

Hover in ground effect operation in winds in excess of 17 kts has been demonstrated for all azimuths.

The Brim Aviation General Operation Manual lists a maximum wind speed of 40 kts and a gust spread of 15 kts for flight operations.

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	KBPG,2573 ft msl	**Distance from Accident Site:**	33 Nautical Miles
Observation Time:	14:15 Local	**Direction from Accident Site:**	302°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	15 knots / None	**Turbulence Type Forecast/Actual:**	None / Clear air
Wind Direction:	170°	**Turbulence Severity Forecast/Actual:**	N/A / Light
Altimeter Setting:	30.01 inches Hg	**Temperature/Dew Point:**	16°C / 6°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Sterling City, TX (None)	**Type of Flight Plan Filed:**	None
Destination:	Sterling City, TX (None)	**Type of Clearance:**	None
Departure Time:	14:15 Local	**Type of Airspace:**	Class G

A review of meteorological data showed that a mid-level trough was located west of the accident site and provided mid-level support for cloud development. In addition, cloud cover and increasing surface moisture were moving across the accident site from the south as evidence by the surface analysis chart for 1500.

Based on the Aviation Routine Weather Reports (METARs) and High-Resolution Rapid Refresh (HRRR) sounding, the cloud cover base was likely somewhere between 2,000 and 3,000 ft agl with no precipitation noted below the cloud base. The surface winds were gusting as high as 26 kts, which was supported by the HRRR sounding and confirmed by wind farm wind sensor information.

Wind speed information from a wind turbine located 900 ft west-northwest of the accident site was retrieved. The wind speed sensor was located on a wind turbine tower around 262 ft agl with the wind speed reported in meters per second (m/s). The wind speed around the accident time ranged from 18 kts to 22 kts.

There was a range of 10 to 15 kts between the sustained and gusting wind speeds. In addition, the GOES-16 visible satellite information confirmed transverse banding in the lower-level cloud cover, typically indicative of turbulent conditions.

The HRRR sounding also indicated a density altitude of 3,278 ft.

The weather forecast information applicable for the accident time indicated no forecast information for turbulence or low-level wind shear (LLWS) and there were no Pilot Reports (PIREPs) or other information indicative of turbulent conditions or LLWS within 100 miles of

the accident site. The closest terminal aerodrome forecast, located 42 miles southeast of the accident site, had wind gusts to 21 kts.

FAA Advisory Circular (AC) 91-92 “Pilot’s Guide to a Preflight Planning” (dated March 15, 2021) provided pilot guidance on preflight self-briefings, including planning, weather interpretation, and risk identification/mitigation skills. The AC further stated in part:

Pilots adopting these guidelines will be better prepared to interpret and utilize real-time weather information before departure and en route, in the cockpit, via technology like Automatic Dependent Surveillance-Broadcast (ADS-B) and via third-party providers.

A search of archived information indicated that the pilot did not request weather information from Leidos Flight Service or through ForeFlight. The pilot did have an account through ForeFlight, but only updated route strings on the accident day. It is unknown what weather information, if any, the pilot checked or received before or during the accident flight.

Wreckage and Impact Information

Crew Injuries:	2 Fatal	**Aircraft Damage:**	Substantial
Passenger Injuries:	N/A	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	2 Fatal	**Latitude, Longitude:**	31.923796,-100.96924(est)

Various impact marks were observed on a static arm, about 12 ft long, at the top of the pole. The static arm supported optical ground wire. The impact marks were located about 4 ft from the base of the static arm. The pole and attached wires were all found intact.

The helicopter came to rest on its left side, about 103 ft away from the pole on a flat grass field. The remote field, used for cattle grazing, was located on private property, and was surrounded by wind turbines. The fuselage sustained extensive crushing damage. The NOTAR (no tail rotor) system was found separated, about 30 ft away from the fuselage. All major structural items from the fuselage and empennage were observed at the accident site. The helicopter sustained substantial damage to the main rotor system, fuselage, and empennage.

All six main rotor blades exhibited significant deformation, fractures, and fragmentation of their outboard ends. All fractures observed exhibited signatures consistent with overload. The leading edges of two main rotor blades exhibited blue paint transfer that was a close color

match to the paint scheme of the tail boom. Flight control continuity was established for the airframe.

The annunciator panel was radiographed by the NTSB Materials Laboratory to determine the filament status of the individual bulbs within the annunciator lights. Each individual annunciator light contained 4 bulbs. None of the bulbs exhibited hot coil stretching in any filaments.

The cockpit light panel was submitted to the NTSB Materials Laboratory for examination. The panel was submitted to determine the status of the filaments in the light bulbs for each annunciator light. The panel was x-rayed to determine the status of each filament. There were 20 lights in the panel. The radiographs of the light bulbs showed no hot filament stretching in any of the filaments. In addition, all the filaments were intact.

An external examination of the engine revealed no uncontainment or fire damage. The disassembly and examination revealed rotational scoring in the compressor impeller and shroud as well as presence of metal spray in the turbine section, consistent with engine operation during impact.

Postaccident examination of the airframe and the engine revealed no preimpact mechanical malfunctions or failures that would have precluded normal operation.

Flight recorders

The helicopter was not equipped with a crashworthy voice or data recorder, nor was it required to be.

Medical and Pathological Information

A private forensic pathologist performed the pilot's autopsy at the request of the Justice of the Peace of Sterling County, Texas. According to the pilot's autopsy report, his cause of death was multiple blunt impact injuries.

A private forensic pathologist performed the aerial lineman's autopsy at the request of the Justice of the Peace of Sterling County, Texas. According to the aerial lineman's autopsy report, his cause of death was multiple blunt impact injuries.

The aerial lineman's postmortem toxicological testing by the FAA Forensic Sciences Laboratory detected delta-8-tetrahydrocannabinol (delta-8-THC) in cavity blood, at a low level. Delta-8-THC was not detected in urine. Carboxy-delta-8-THC was identified in cavity blood at 5.5 ng/mL and detected in urine at 56.5 ng/mL. Carboxy-delta-9-THC was detected in cavity blood and detected in urine at 1.8 ng/mL. Vilazodone was detected in cavity blood at 230 ng/mL and in urine at 173 ng/mL.

Delta-8-THC is a psychoactive cannabinoid chemical. Very little delta-8-THC occurs naturally in the cannabis plant, and delta-8-THC used in consumer products typically is chemically manufactured from cannabidiol (CBD), another chemical in the cannabis plant. Delta-8-THC is available in a variety of over-the-counter products for oral consumption, smoking, and inhalation. Delta-8-THC has psychoactive and intoxicating effects that can impair motor coordination, reaction time, decision making, problem solving, and vigilance. The potency of delta-8-THC varies widely in consumer products. Delta-8-THC products may also contain impurities including delta-9-THC. Carboxy-delta-8-THC is a non-psychoactive metabolite of delta-8-THC.

Carboxy-delta-9-THC is a non-psychoactive metabolite of delta-9-THC, the primary psychoactive substance in cannabis. Delta-9-THC was not detected in this case. Delta-9-THC may be inhaled or ingested recreationally by users seeking mind-altering effects. It may also be used medicinally, such as to treat illness-associated nausea and appetite loss. Psychoactive effects of delta-9-THC vary depending on the user, dose, and route of administration, and may impair motor coordination, reaction time, decision making, problem solving, and vigilance. Carboxy-delta-9-HC may be detected in urine for days or weeks after last cannabis use, well beyond the expected window of acute psychoactive effects.

Vilazodone is a prescription medication commonly used to treat major depression. Use of vilazodone may impair coordination, worsen reaction time and judgement. Vilazodone generally carries a warning that patients should not drive a car or operate machinery until they know how this medication affects them.

The aerial lineman was not required to hold a FAA medical certificate.

Additional Information

The Vertical Aviation International published the Utilities, Patrol, and Construction Working Group Safety Guide for Helicopter Operators on July 10, 2020. This document provides exemplary aviation job hazard analyses for power line construction and maintenance operators to utilize. One of the hazards listed that can be encountered during this mission profile is a loss of control due to gusty winds.

Administrative Information

Investigator In Charge (IIC):	Hodges, Michael
Additional Participating Persons:	Robert Smith; FAA Lubbock FSDO; Lubbock, TX Lawrence Johnson; MD Helicopters; Mesa, AZ Jon-Adam Michael; Rolls-Royce; Indianapolis, IN Eugene Hill; Brim Aviation; Ashland, OR
Original Publish Date:	January 14, 2026
Last Revision Date:	
Investigation Class:	Class 3
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=193451