

National Transportation Safety Board

Office of Aviation Safety

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N745MB - AIRFRAME AND ENGINE EXAMINATION REPORT

December 3, 2023

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A. ACCIDENT

Location: Sterling City, Texas
Date: November 29, 2023
Time: 1430 Central Time
Helicopter: N745MB, MD Helicopters 600N

B. N745MB - AIRFRAME AND ENGINE EXAMINATION REPORT

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C. DETAILS OF THE EXAMINATION

1.0 Onsite Examination

The investigative team arrived at the accident site on December 1, 2023. The accident site consisted of private property, with small shrubs, grass, cactus, and dirt. The accident site was a flat area, full of grass, between two sets of power lines and poles. The area was surrounded by wind turbines with no buildings present. The area is used for cattle grazing.

There were no known witnesses to the accident. There was no known security video footage of the accident site.

Automatic Dependent Surveillance-Broadcast (ADS-B) data showed that the helicopter traveled from the west near the pole that was later impacted. Just prior to flying by the pole on the south side, the helicopter then executed a 180° turn to the south and then approached the pole from the south. The data terminated at the pole as the helicopter appeared to be approaching it.

The NTSB, FAA, MD Helicopters, Rolls-Royce, and Brim Aviation arrived at the accident site on December 1, 2023. The FAA, MD Helicopters, and Brim Aviation departed from the accident site after about 1500 local time on December 1, 2023. The NTSB and Rolls-Royce returned to the accident site again on December 2, 2023.

Brim Aviation documented the accident site with a drone and reported they will share those photos with the NTSB.

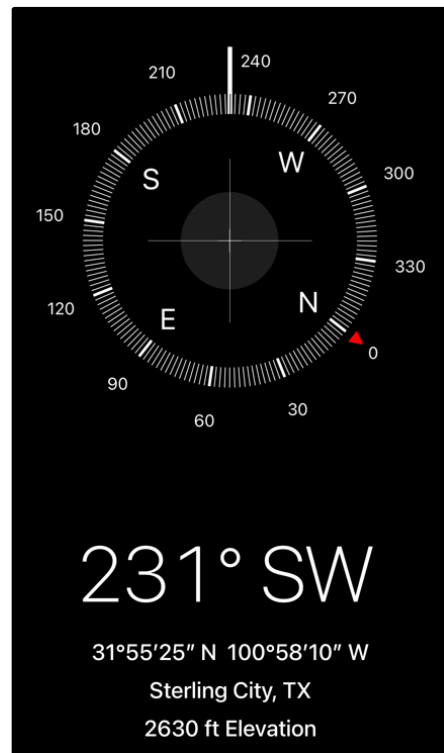
The wreckage was located between two sets of power lines that ran from the northeast to the southwest. The distance between the two sets of power lines, from pole to pole, was about 120 ft.



The pole that was impacted was the southern set of power lines (out of the two sets). The pole was at a junction where the pilot lines then traveled to the southwest.

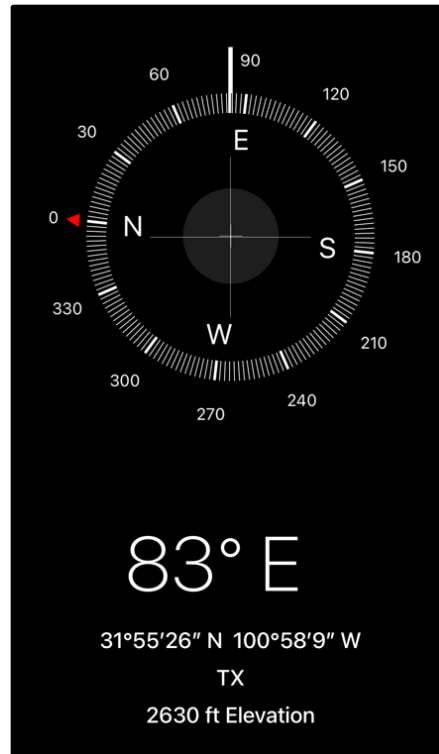
The initial impact point was a steel mono angle pole that is about 133 ft tall. Various impact marks were observed on an OPGW (optical ground wire – fiber) static arm,

that was about 12 ft long. The static arm had impact damage, about 4 ft from the base of the arm. The entire structure was found intact. Here are the coordinates for the initial impact point:



From the initial impact point to the final resting point of the wreckage, the heading was about 09° and about 103 ft (from the static arm impact point to the final resting point).

The helicopter came to rest on a heading of about 83°. The helicopter came to rest on the left side of fuselage. The accident site elevation was about 2,630 ft above mean sea level. There was no additional impact points observed. There were no signs that the helicopter impacted any other obstacles (besides the static arm) prior to impact. Here are the coordinates for the final resting point:



There was no postimpact fire. The helicopter sustained substantial damage. All major structural items from the fuselage and the empennage were observed at the accident site. All six main rotor blades were present with extensive impact damage and were somewhat stacked up on each other, on the top side of the fuselage. Three of the six main rotor blade tip weights were not accounted for at the accident site. The tail boom was found separated and the NOTAR (no-tail-rotor) system was found about 30 feet away from the tail boom separation point on the fuselage. The NOTAR system sustained some impact damage.

The airframe data plate was observed and was found intact. The airframe is serial number RN067.

The cockpit and cabin areas sustained extensive crushing damage.

The skid system was fractured in multiple locations from the impact sequence. About 30 gallons of fuel were observed to leak from the airframe on the ground during recovery operation. The fuel spill area was marked by the recovery team.

The bladder style fuel system was found breached from the impact sequence. The airframe fuel filter was found intact, and it was removed, and no visible contaminants were observed in the filter or in the bowl.

A fuel sample from the bladder (about 300 ML) and the airframe fuel filter (about 200 ML) were obtained. Both samples showed a clear liquid present.

The fuel port was found separated from the fuselage, due to impact damage. The fuel cap was found secured and attached to the filler neck.

Two air filters were found outside of the wreckage and sustained impact damage.

The oil cap was found secured and attached to the filler neck.

Flight control continuity could not be established on site.

The cockpit was configured for flight operation from the left seat only. A collective and cyclic were not observed installed for the right seat. The right seat pedals were found locked, with a lock installed between the two pedals. The left seat collective, cyclic, and pedals all sustained impact damage.

Two four-point restraint systems were found in the cockpit, and both appeared to be intact. Both cockpit inertia reels locked functioned when tested by hand at the accident site.

A bench type seat, that sustained impact damage, was found in the cabin. Various straps and carabiners were found in the cabin area. Two laminated cabin safety cards were found in the wreckage.

There were no large bags or large cases observed in the wreckage. Two smaller tool bags with lineman tools were observed in the wreckage.

The helicopter was equipped with a wire strike protection kit and a radar altimeter.

Multiple avionic devices were removed from the cockpit and were shipped to the NTSB Vehicle Recorders Laboratory. The cockpit light panel was removed, and it was shipped to the NTSB Materials Laboratory.

Various circuit breakers in the cockpit were found extended and were documented. The various switches in the cockpit were documented. The various cockpit indications were documented. The Kollsman window appeared to show 30.05.

The cockpit-based Hobbs meter showed 2,756.0 hours. The airframe (found on the lower right side) Hobbs meter showed 8,836.1 hours.

A 406 Mhz emergency locator transmitter (ELT) was found intact and connected. The switch at the unit showed it was in the off position. A cockpit-based ELT switch was observed but the position of the button could not be determined.

The transmission appeared somewhat intact. The fluid sight glass appeared to show the transmission was full of fluid.

Airframe to engine control continuity was not established on site.

The engine data plate was observed and was found intact. The engine serial number is CAE-847247. The helicopter was equipped with a Rolls-Royce 250-C47M turboshaft engine.

The engine was found intact, but with some crushing damage. No holes were observed in any engine components, with no signs of fluid leaks on the engine. No loose b-nuts or loose connections were observed. The electronic control unit (ECU) was found intact. Data from the ECU was downloaded on December 1, 2023. The data showed the engine appeared to produce power.

The N1 system turned freely and was continuous from the compressor impeller to the starter drive and first stage turbine wheel. The N2 system also turned freely and was continuous from the fourth stage turbine wheel to the short shaft. The short shaft was also rotated in the opposite direction, to confirm the operation of the freewheeling unit.

Weight and balance records were found in the wreckage and were documented.

A pilot kneeboard was not identified in the wreckage.

A damaged flight helmet belonging to the pilot was found near the wreckage.

The wreckage was recovered by Lone Star Retrieval on December 2, 2023. During the recovery, various portions of the airframe were cut to facilitate recovery from the field. The engine was also removed from the airframe to facilitate recovery. The wreckage was transported to Air Salvage of Dallas (ASOD) in Lancaster, Texas.

Two damaged iPads and two damaged cellular phones were retained by the operator to give to the pilot and the lineman's next of kin. The pilot's backpack was retained by the operator to give to the pilot's next of kin.

2.0 Maintenance Records Review

The airframe and engine maintenance records were requested from the operator on December 2, 2023.

The historical FAA airworthiness and registration records were retrieved and were reviewed.

Submitted by:

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Investigator-In-Charge