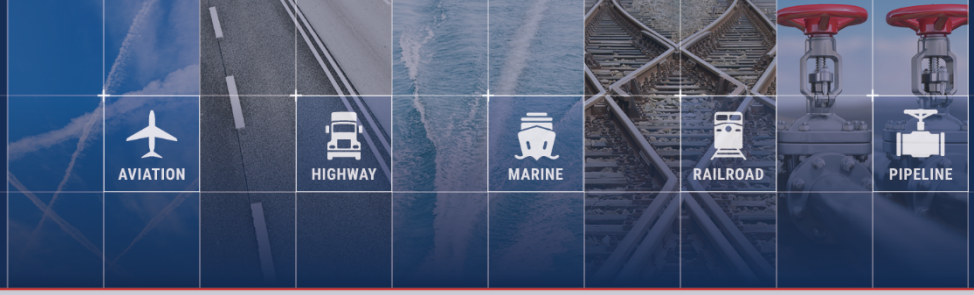

Aviation Investigation Final Report

Location:	Hydro, Oklahoma	**Accident Number:**	CEN24FA094
Date & Time:	January 20, 2024, 23:23 Local	**Registration:**	N295AE
Aircraft:	Bell 206	**Aircraft Damage:**	Destroyed
Defining Event:	Birdstrike	**Injuries:**	3 Fatal
Flight Conducted Under:	Part 135: Air taxi & commuter - Non-scheduled - Air Medical (Discretionary)		

Analysis

The helicopter was en route back to the crew's home airfield when it encountered a flock of geese during the night flight. The helicopter was in cruise flight about 500-600 ft above ground level and at 110 knots groundspeed when the encounter occurred. The bird strike resulted in an inflight breakup of the helicopter and subsequent impact with terrain.

Examination of the helicopter did not reveal any preimpact anomalies that would have contributed to the accident. Bird strike signatures were located on the main rotor pitch change links, which were both fractured in overload. Loss of a main rotor pitch change link would result in the loss of main rotor blade pitch directional control, vibrations, and excessive blade flapping. DNA testing found that all remains were consistent with female cackling geese, which have an average mass of 4.2 pounds

Preflight mission planning for the flight would likely not have detected a risk for a bird strike. A review of military and civilian bird hazard websites showed that at the time of the accident, the probability of bird strike in that area was deemed to be low. In addition, historic migration data also estimated the probability of a bird strike at the time of the accident as low.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be:

The helicopter's inflight collision with cackling geese, resulting in an inflight breakup.

Findings

Environmental issues	Dark - Effect on personnel
Environmental issues	Animal(s)/bird(s) - Effect on operation

Factual Information

History of Flight

Enroute-cruise	Birdstrike (Defining event)
Enroute-cruise	Loss of control in flight
Uncontrolled descent	Collision with terr/obj (non-CFIT)

On January 20, 2024, about 2323 central standard time, a Bell 206 L3+ helicopter, N295AE, was destroyed when it was involved in an accident near Hydro, Oklahoma. The pilot, flight nurse, and flight paramedic were fatally injured. The helicopter was operated as a Title 14 *Code of Federal Regulations* Part 135 positioning flight.

The helicopter dropped off a patient at the Mercy Health Center Heliport (OL16), Oklahoma City, Oklahoma, and the crew was returning to their home airfield, Air Evac 112 Heliport (4OK1), Weatherford, Oklahoma. The company GPS monitoring program stopped tracking the helicopter about 2330 and a search began for the helicopter. The wreckage was located in an open pasture about 1.5 miles east of Hydro, Oklahoma.

ADS-B data captured the accident flight as it departed OL16 and flew west towards OL16 between 500 ft and 600 ft above ground level and about 110 knots groundspeed. The last ADS-B point was at 2323:39 about 210 ft east of the main wreckage location (see Figure 1).

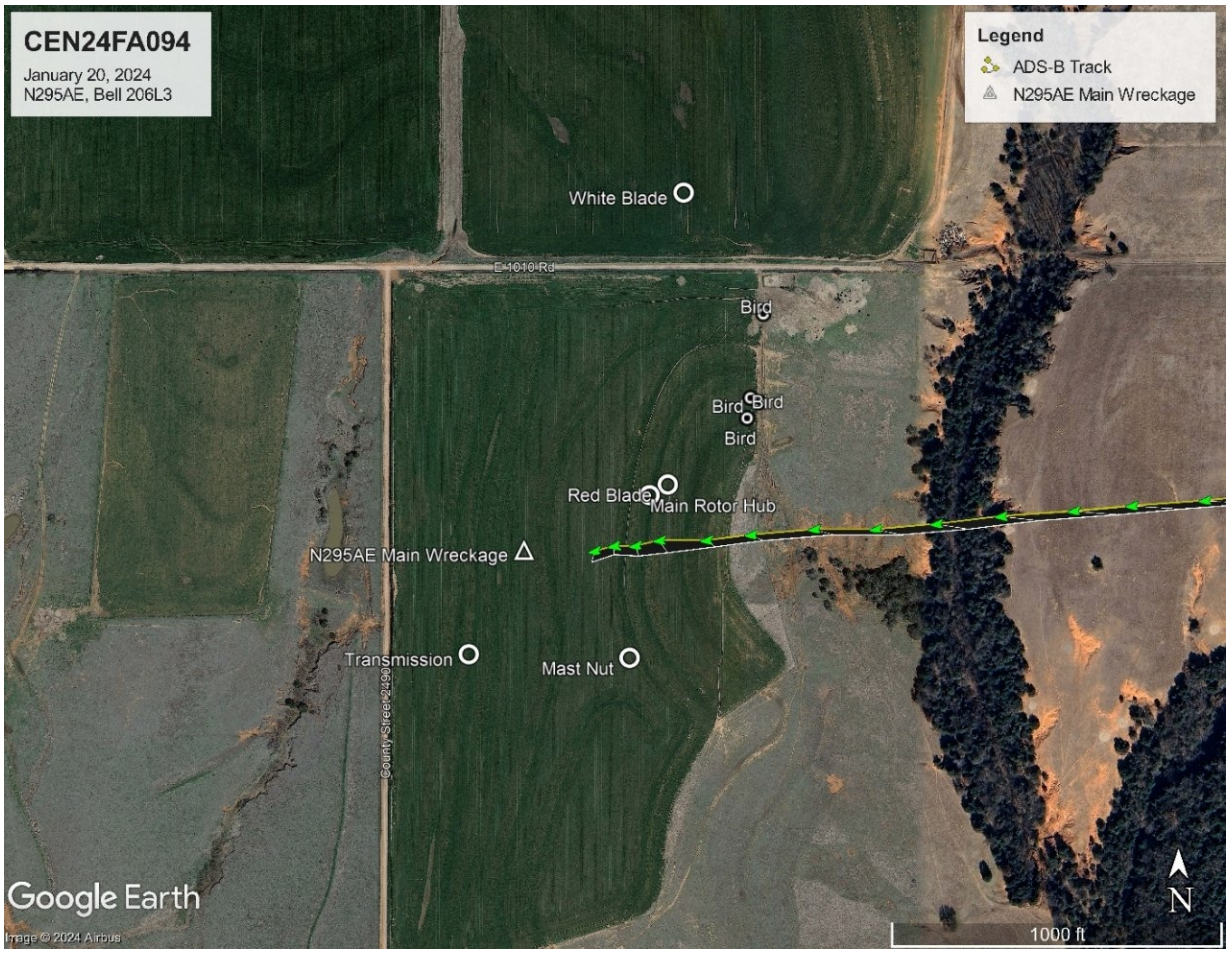

Figure 1. ADS-B Flight Track with Wreckage and Bird Locations

Pilot Information

Certificate:	Commercial	**Age:**	53,Male
Airplane Rating(s):	None	**Seat Occupied:**	Right
Other Aircraft Rating(s):	Helicopter	**Restraint Used:**	4-point
Instrument Rating(s):	Helicopter	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	Yes
Medical Certification:	Class 2 Without waivers/limitations	**Last FAA Medical Exam:**	December 1, 2023
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	May 26, 2023
Flight Time:	6282 hours (Total, all aircraft), 934 hours (Total, this make and model), 5282 hours (Pilot In Command, all aircraft), 38 hours (Last 90 days, all aircraft), 3 hours (Last 30 days, all aircraft), 1 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Bell	**Registration:**	N295AE
Model/Series:	206 L3+	**Aircraft Category:**	Helicopter
Year of Manufacture:	1991	**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	51455
Landing Gear Type:	High skid	**Seats:**	4
Date/Type of Last Inspection:	January 16, 2024 100 hour	**Certified Max Gross Wt.:**	4450 lbs
Time Since Last Inspection:	8.3 Hrs	**Engines:**	1 Turbo shaft
Airframe Total Time:	16401.9 Hrs at time of accident	**Engine Manufacturer:**	Allison
ELT:	C126 installed, not activated	**Engine Model/Series:**	250-C30P
Registered Owner:	AIR EVAC EMS INC	**Rated Power:**	726 Horsepower
Operator:	AIR EVAC EMS INC	**Operating Certificate(s) Held:**	Commuter air carrier (135)
Operator Does Business As:		**Operator Designator Code:**	EVCA

The helicopter had been modified using Bell Service Instruction BHT-206-SI-2052, which modified the airframe and systems to allow operations at a gross weight of 4,450 lbs. The upgrade provided L4 performance for an L3 helicopter.

In addition, the helicopter had been modified via Supplemental Type Certificate to replace the pilot-side windshield with a polycarbonate kit that offered increased resistance to windshield penetration by a bird strike.

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Night
Observation Facility, Elevation:	KOJA,1605 ft msl	**Distance from Accident Site:**	5 Nautical Miles
Observation Time:	23:35 Local	**Direction from Accident Site:**	276°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	7 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	160°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.39 inches Hg	**Temperature/Dew Point:**	-7°C / -14°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Oklahoma City, OK (OL16)	**Type of Flight Plan Filed:**	Company VFR
Destination:	Weatherford, OK (4OK1)	**Type of Clearance:**	None
Departure Time:	22:58 Local	**Type of Airspace:**	Class G

A review of moon data found that at the time of the accident, the moon was at an azimuth of 262°, elevation of 56.8°, and a disk illumination of 80.6%.

Wreckage and Impact Information

Crew Injuries:	3 Fatal	**Aircraft Damage:**	Destroyed
Passenger Injuries:	N/A	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	3 Fatal	**Latitude, Longitude:**	35.54926,-98.551756

The helicopter wreckage was located in a rolling pasture about 6.2 miles east of the destination heliport of 4OK1. The debris field was about 265 yards long and 455 yards wide. All major components of the helicopter were located at the accident site. The main wreckage consisted of the fuselage, engine, and tail rotor. The transmission had separated from the fuselage and was located at the site. The helicopter's main rotor blades had been changed via supplemental type certificate to Van Horn Aviation composite blades. The white main rotor blade was fractured and found in an adjacent field, about 300 yards north of the main rotor

hub. The red main rotor blade was also fractured and found near the main rotor hub. The mast nut had separated and was located in the debris field.

Examination of the helicopter found no evidence of preimpact anomalies. All breaks in flight control continuity had signatures consistent with overload.

Signatures consistent with a bird strike were located on the main rotor pitch change links, which were both fractured in overload.

Medical and Pathological Information

An autopsy of the pilot was performed by the Office of the Chief Medical Examiner, Oklahoma City, Oklahoma. According to the autopsy report, the cause of death was acute multiple blunt force trauma, and the manner of death was accident. The FAA Forensic Sciences Laboratory performed toxicological testing on specimens from the pilot which was negative for all tested substances.

Tests and Research

Wildlife remains were recovered from the cockpit area, tail rotor area, and pitch change links. Samples of the wildlife remains were sent to the Smithsonian Institution’s Feather Identification Laboratory. The samples were identified as cackling goose.

DNA testing found that all remains were consistent with female cackling geese, which have an average mass of 4.2 pounds.

Additional Information

The US Air Force maintains a resource tool called Avian Hazard Advisory System (AHAS), which is designed to use "…NEXRAD (WSR-88D) weather radars to track the movement of birds…". The accident site occurred close to Point G on the low level Visual Route 104. A review of data provided by AHAS showed that at the time of the accident the probability of bird strike in that area was deemed to be "low." In addition, historic migration data used in the Bird Avoidance Model found the historical probability of bird strike at the time of the accident would have been "low."

In addition, another bird avoidance resource, BirdCast, uses a collaboration of radar and spotter information to provide near-real-time models of bird activity. A review of historic data contained on their website showed no significant bird activity in the vicinity of the accident (see Figure 2)

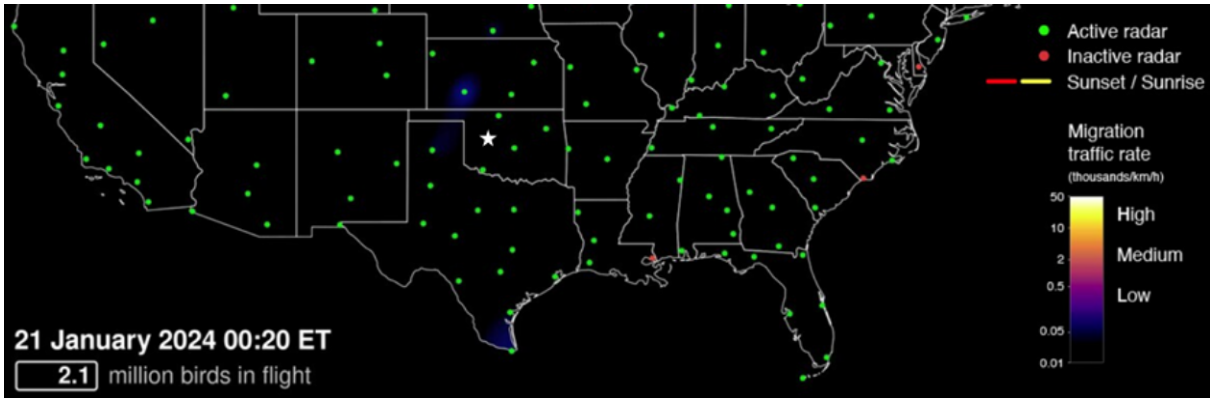

Figure 2. BirdCast Information – Accident location annotated by a white star.

On October 3, 2023, the FAA released Special Airworthiness Information Bulletin (SAIB) AIR-21-17R1, *Rotorcraft Bird Strike Protection and Mitigation*, to inform pilots about the risk of bird strikes. Among the operational risk mitigation options, recommendations from the Rotorcraft Bird Strike Working Group were:

- Learn about the local bird population and use it to plan and fly your route.
- Reduce airspeed when practical.
  Three out of four bird strikes (77%) occur during airspeeds greater than 80 knots. When operating rotorcraft in areas of high bird concentrations, the likelihood of a damaging bird strike goes up as airspeed increases. When operating in these areas, fly at 80 knots or less, particularly when at lower altitudes.
- Increase altitude.
  Increase altitude as quickly as possible and practical, when allowed by other flight variables. There is a 32% decrease of bird strike likelihood for every 1,000 ft gained above 500 ft AGL. Also, birds fly higher at night, so you will have to increase your altitude even more than during the day to try to avoid them.
- Wear Personal Protective Equipment (PPE)

A helmet and visor, at least for the crew, should be worn when practical.

Following the accident, the operator reviewed their safety directives and made additional improvements to mitigate future bird strikes. They encouraged all pilots to review bird migration tracking websites before flight, increased the recommended cruise altitude to 2,500 ft above ground level in areas of potential bird activity, and moved the recommended approach to land/descent airspeed to around 80-90 knots versus descending at cruise airspeed

Administrative Information

Investigator In Charge (IIC):	Aguilera, Jason
Additional Participating Persons:	Laurence Schreiber; FAA FSDO; Oklahoma City, OK Helen Tsai; Canada TSB Mark Stuntzner; Bell Helicopters; Fort Worth, TX Jack Johnson; Rolls-Royce Engines; Indianapolis, IN Tony Bonham; Air Evac Lifeteam; O'Falllon, MO
Original Publish Date:	March 19, 2025
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Investigation Class:	Class 3
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=193686