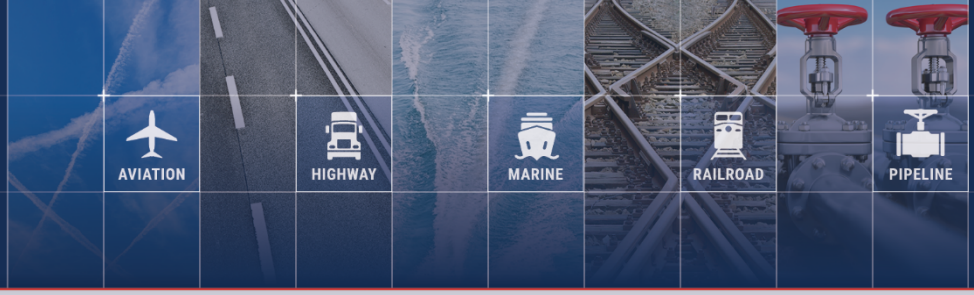

Aviation Investigation Final Report

Location:	Houston, Texas	**Accident Number:**	CEN25FA019
Date & Time:	October 20, 2024, 19:51 Local	**Registration:**	N881KE
Aircraft:	Robinson R44	**Aircraft Damage:**	Destroyed
Defining Event:	Low altitude operation/event	**Injuries:**	4 Fatal
Flight Conducted Under:	Part 91: General aviation - Business		

Analysis

The pilot of the commercial air tour helicopter was conducting a night sightseeing flight under visual meteorological conditions. Shortly after departure, the pilot established communication with the Houston Hobby Airport air traffic control tower local controller and requested the "downtown loop." The local controller identified the helicopter on radar, approved the request, and issued the current altimeter setting. Several minutes later, the controller issued a traffic advisory for another company air tour helicopter. The accident pilot reported that she observed the traffic on her ADS-B display but had not visually acquired it. The controller instructed the accident pilot to maintain visual separation from the traffic, and the pilot was reading back the instruction when her transmission abruptly ended. The helicopter then struck a 1,003-ft-tall radio tower about 100 ft below its top. The air traffic control operations supervisor looked out the air traffic control tower window and witnessed the accident. Video and photographic evidence showed that the tower's middle and top flashing beacons were operational at the time of the accident; the lower beacon was not visible in any available imagery.

The radio tower was depicted as an obstruction on applicable aeronautical charts and on the air traffic controller's radar display. Flight data showed that the helicopter maintained a straight flightpath toward the tower at an altitude below the top of the tower until impact.

An FAA safety review found that traffic volume at the time of the accident was light, with routine complexity, and identified no unusual factors that would have distracted the controller. FAA Order 7110.65, "Air Traffic Control," paragraph 2-1-2, "Duty Priority," requires controllers to give first priority to separating aircraft and issuing required safety alerts. Further, FAA Order 7110.65, paragraph 2-1-6, "Safety Alert," requires a controller to issue a safety alert when the controller is aware that an aircraft is at an altitude that, in the controller's judgement, places it in unsafe proximity to terrain, obstructions, or other aircraft. The order further notes that "while

a controller cannot see immediately the development of every situation where a safety alert must be issued, the controller must remain vigilant for such situations and issue a safety alert when the situation is recognized."

Although the pilot remained responsible for maintaining clearance from terrain and obstructions while operating under visual flight rules, air traffic control (ATC) safety alert requirements applied once the controller was aware that an aircraft was at an altitude that, in the controller's judgment, placed it in unsafe proximity to an obstruction. The tower was depicted as an obstruction on the controller's radar display, and the helicopter's flight track proceeded toward the tower at an altitude below its top. Traffic volume was light, the controller's workload was routine, and the FAA safety review identified no unusual factors that would have prevented the controller from monitoring the helicopter's flightpath. Nevertheless, the controller did not issue a safety alert before the helicopter struck the tower.

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 lighted radio tower during a visual night flight. Contributing to the accident was the air traffic controller's failure to issue a safety alert notifying the pilot of the flight's unsafe proximity to the tower.

Findings

Personnel issues	Identification/recognition - Pilot
Aircraft	Altitude - Not attained/maintained
Environmental issues	(general) - Contributed to outcome
Personnel issues	Lack of communication - ATC personnel

Factual Information

History of Flight

Maneuvering-low-alt flying	Low altitude operation/event (Defining event)

On October 20, 2024, about 1951 central daylight time, a Robinson R44 helicopter, N881KE, was destroyed when it impacted a radio tower near Houston, Texas. The pilot and three passengers sustained fatal injuries. The helicopter was operated as a Title 14 *Code of Federal Regulations (CFR)* Part 91 business/revenue sightseeing flight.

According to ADS-B data and air traffic control communications, the National Helicopter Solutions, LLC (NHS) commercial air tour helicopter departed Ellington Airport (EFD), Houston, Texas, about 1942, and flew north, then northwest toward downtown Houston (see figure 1). The pilot established communications with the Houston Hobby Airport (HOU) air traffic control tower (ATCT), Houston, Texas, local controller (LC) and requested the "downtown loop." The LC identified the helicopter, approved the request, and issued the current altimeter setting.

Several minutes later, the LC issued a traffic advisory for another NHS air tour helicopter, N233JD, that was at the pilot's nine to ten o'clock position, two miles away, and northbound at 700 feet. The accident pilot reported observing the traffic on her ADS-B display but had not yet visually acquired the traffic and was searching for it. The controller instructed the accident pilot to maintain visual separation from the traffic, and the pilot was reading back the instructions when the radio transmission abruptly ended. No further communications from the accident helicopter were received. The air traffic control operations supervisor looked out the air traffic control tower window and witnessed the accident.

After the helicopter struck the radio tower, an explosion occurred and the helicopter fell to the ground. The radio tower collapsed onto the helicopter, and a postimpact fire destroyed the helicopter. The last ADS-B data point, captured at 1951:19, coincided with the approximate location of the radio tower.

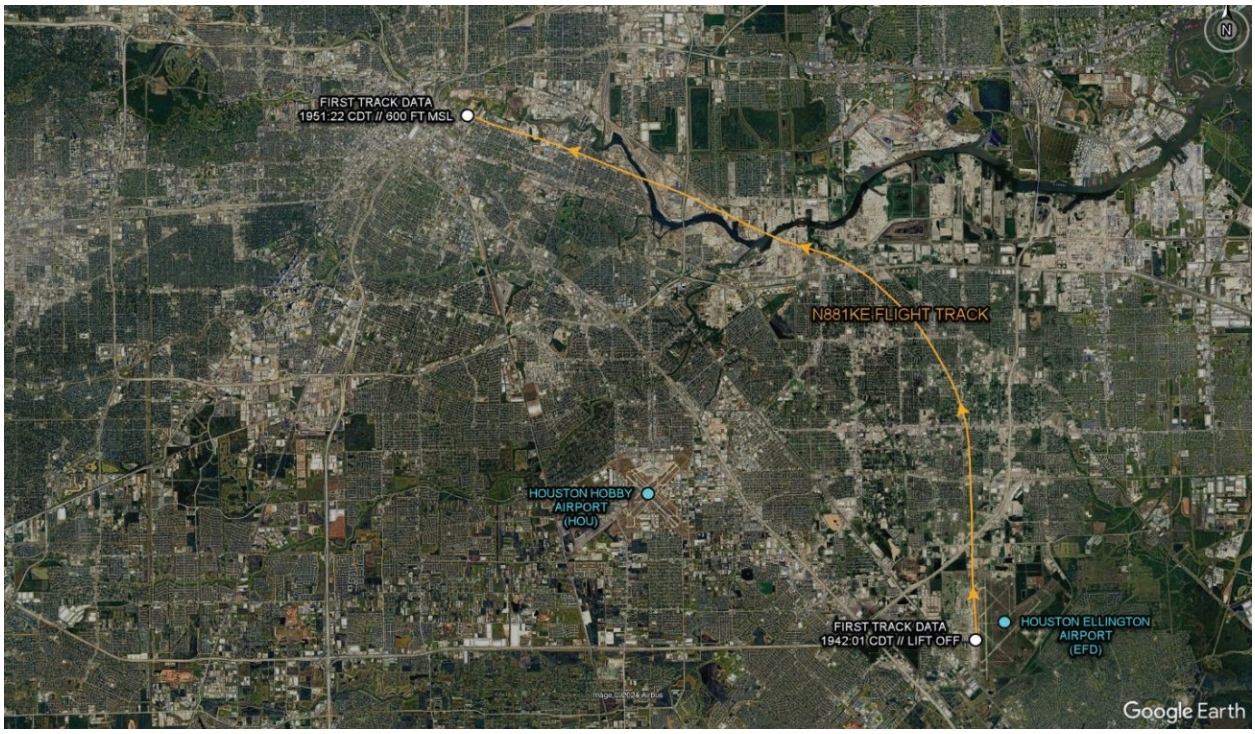

Figure 1. Overview of the accident helicopter's flight track.

Surveillance video, witness observations, and portions of the helicopter structure embedded in the radio tower were consistent with the helicopter impacting the tower about 100 ft from the top of the 1,003-ft-tall radio tower. Surveillance video showed the tower's top and middle beacons flashing as the helicopter approached the tower (see figure 2); the tower's lower beacons were not visible in the video.

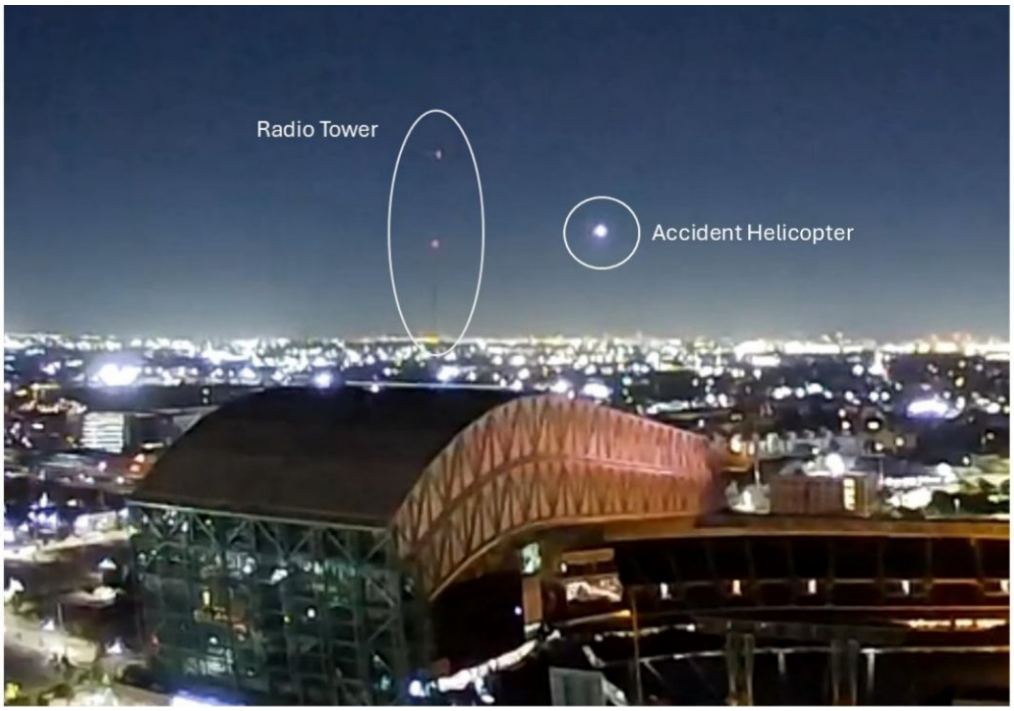

Figure 2. Surveillance video image showing the accident helicopter approaching the radio tower. The tower's top and middle flashing beacons are visible (NTSB annotation).

Pilot Information

Certificate:	Commercial; Flight instructor	**Age:**	42,Female
Airplane Rating(s):	None	**Seat Occupied:**	Right
Other Aircraft Rating(s):	Helicopter	**Restraint Used:**	3-point
Instrument Rating(s):	Helicopter	**Second Pilot Present:**	No
Instructor Rating(s):	Helicopter; Instrument helicopter	**Toxicology Performed:**	Yes
Medical Certification:	Class 2 Without waivers/limitations	**Last FAA Medical Exam:**	July 2, 2024
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	
Flight Time:	1075 hours (Total, all aircraft)		

The pilot's logbook contained an entry dated December 14, 2023, stating that she met the experience requirements of Special Federal Aviation Regulation (SFAR) 73, section 2(b)(ii)(A-D) for Robinson R44 helicopters.

According to company personnel, the pilot was hired in August 2024. A review of the pilot's logbook showed the pilot's first flight in a company helicopter occurred on September 23, 2024, and the last logbook entry was dated October 8, 2024. Investigators only obtained

information about the pilot's flight history with the company through interviews because, despite multiple requests, the company did not provide the pilot records that it reported were available.

Another company pilot trained the accident pilot to conduct local air tour flights. The training consisted of traffic pattern maneuvers and autorotations. During air tour route training by the company pilot, the accident pilot flew the helicopter from the left front seat while the company pilot occupied the right front seat and provided tour narration to the passengers. The training included discussions of operating near high-rise buildings and a 700-ft-tall lighted pole near the Houston aquarium. The company did not have a documented training program, nor was it required to have one under 14 *CFR* Part 91 regulations.

The pilot's husband reported that she had worked consecutively for about the last nine days before the accident.

Aircraft and Owner/Operator Information

Aircraft Make:	Robinson	**Registration:**	N881KE
Model/Series:	R44 II	**Aircraft Category:**	Helicopter
Year of Manufacture:	2002	**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	10031
Landing Gear Type:	None; Skid	**Seats:**	4
Date/Type of Last Inspection:	October 7, 2024 Annual	**Certified Max Gross Wt.:**	2500 lbs
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:	4676.7 Hrs as of last inspection	**Engine Manufacturer:**	Lycoming
ELT:	Not installed	**Engine Model/Series:**	IO-540-AE1A5
Registered Owner:	PORTER EQUIPMENT HOLDINGS LLC	**Rated Power:**	260 Horsepower
Operator:	National Helicopter Solutions, LLC	**Operating Certificate(s) Held:**	None

The current owners purchased NHS in December 2023. The company employed three pilots and two boarding assistants. The company's principal base of operations was in Conroe, Texas, and NHS operated out of EFD and David Wayne Hooks Memorial Airport, Houston, Texas.

On October 7, 2024, the FAA issued a letter of authorization (LOA) "Commercial Air Tour Operations Authorization and Drug and Alcohol Testing Program Registration" to NHS to

conduct commercial air tour operations under 14 *CFR* Part 91.147 with three authorized helicopters listed, including the accident helicopter.

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Night/dark
Observation Facility, Elevation:	KMCJ,227 ft msl	**Distance from Accident Site:**	3 Nautical Miles
Observation Time:	19:55 Local	**Direction from Accident Site:**	224°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	12 knots / None	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	130°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.22 inches Hg	**Temperature/Dew Point:**	23°C / 14°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Houston, TX (EFD)	**Type of Flight Plan Filed:**	Company VFR
Destination:	Houston, TX (EFD)	**Type of Clearance:**	VFR flight following
Departure Time:	19:42 Local	**Type of Airspace:**	Class B

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Destroyed
Passenger Injuries:	3 Fatal	**Aircraft Fire:**	Both in-flight and on-ground
Ground Injuries:	N/A	**Aircraft Explosion:**	In-flight
Total Injuries:	4 Fatal	**Latitude, Longitude:**	29.757248,-95.338352(est)

The helicopter impacted terrain on the southeast corner of a level and open field, covered with a short layer of grass. The tower structure and support cables were found strewn on the field and on top of the helicopter (see figure 3).

Figure 3. Accident site with collapsed radio tower.

The debris field extended about ¼ mile northwest of the radio tower and contained fragmented sections of plexiglass, main rotor blades, console components, upholstery, flight controls, and landing gear. Portions of the forward fuselage structure were found embedded in the radio tower structure about 100 ft from the top, consistent with the video and witness information.

The cockpit and fuselage cabin were fragmented and displayed thermal damage. Cockpit instruments and controls were destroyed. Cockpit and cabin door locking pins were found engaged in the locked position.

The outboard 1-ft sections of both main rotor blades were separated. One blade separated near the root and exhibited multiple separations along its span.

Portions of the flight control tubes were consumed by fire, and all flight control rod ends were attached to their respective flight control tubes. Flight control continuity was not established due to thermal and impact damage. The pilot's collective was found in the full Up position, and the cyclic grip was separated from the cyclic cross tube.

The engine displayed thermal and impact damage on the cylinders and accessories. Borescope examination of the engine crankshaft, camshaft, connecting rods, and cylinders revealed no anomalies.

Postaccident examination of the helicopter wreckage revealed no mechanical malfunctions or failures that would have precluded normal operation.

A Stratus 2s ADS-B receiver was recovered from the accident site and sent to the NTSB Vehicle Recorders Laboratory for data extraction. No data from the accident flight was found. A portion of data was recovered from a flight before the accident flight.

Communications

The pilot contacted the HOU ATCT and requested the "downtown loop," which was not a standard or published route but rather a general term used by some local helicopter pilots when requesting to operate in the downtown Houston area. The HOU ATCT LC identified the helicopter, approved the request, and issued the current HOU altimeter.

According to certified ATC audio recordings, the LC issued traffic advisories to the pilot and another helicopter in the vicinity, consistent with FAA Order JO 7110.65, Air Traffic Control. However, the LC did not receive acknowledgment of visual acquisition from the accident pilot before instructing to maintain visual separation from the traffic, as required by FAA Order JO 7110.65. The LC did not issue a safety alert for the radio tower along the helicopter's projected route of flight. A review of the FAA Falcon replay, which began about 30 seconds before the collision, showed the radio tower in line with the helicopter's recorded flightpath (see figure 4).

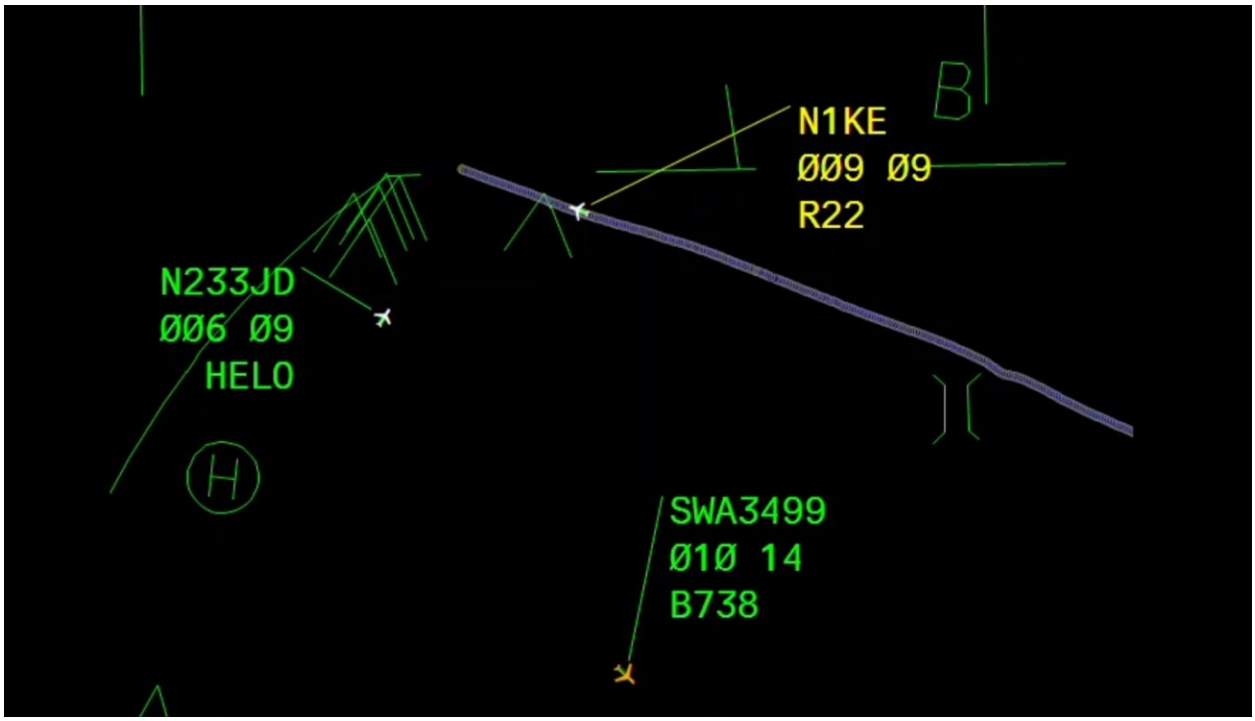

Figure 4. FALCON replay image showing the helicopter's flight track and the radio tower depicted by a large chevron symbol.

FAA Order 7110.65AA CHG 2, Air Traffic Control, in effect at the time of the accident, provides direction to controllers on duty priority and actions to take in response to potential hazards affecting aircraft. Paragraph 2-1-1, "ATC Service," states in part:

a. The primary purpose of the ATC system is to prevent a collision involving aircraft operating in the system.
b. In addition to its primary purpose, the ATC system also:
    1. Provides a safe, orderly, and expeditious flow of air traffic.
    2. Supports National Security and Homeland Defense mission.
c. The ATC system must provide certain additional services to the extend permitted. The provision of additional services is not optional on the part of the controller, but rather required when the work situation permits. It is recognized that the provision of these services may be precluded by various factors, including, but not limited to:
    1. Volume of traffic.
    2. Frequency congestion.
    3. Quality of surveillance.
    4. Controller workload.
    5. Higher priority duties.
    6. The physical inability to scan and detect situations in this category.

Paragraph 2-1-2, "Duty Priority," states in part:

a. Give first priority to separating aircraft and issuing safety alerts as required in this order. Good judgement must be used in prioritizing all other provisions of this order based on the requirements of the situation at hand.

REFERENCE – FAA Order JO 7110.65 Para 2-1-6, Safety Alert.

NOTE – Because there are many variables involved, it is virtually impossible to develop a standard list of duty priorities that would apply uniformly to every conceivable situation. Each set of circumstances must be evaluated on its own merit, and when more than one action is required, controllers must exercise their best judgement based on the facts and circumstances known to them. The action that is most critical from a safety standpoint is performed first.

Paragraph 2-1-6. “Safety Alert,” states in part:

Issue a safety alert to an aircraft if you are aware the aircraft is in a position/altitude that, in your judgement, places it in unsafe proximity to terrain, obstructions, or other aircraft. Once the pilot informs you action is being taken to resolve the situation, you may discontinue the issuance of further alerts. Do not assume that because someone else has responsibility for the aircraft that the unsafe situation has been observed and the safety alert issued; inform the appropriate controller.

NOTE –

1. The issuance of a safety alert is a first priority (see paragraph 2-1-2, Duty Priority) once the controller observes and recognizes a situation of unsafe aircraft proximity to terrain, obstacles, or other aircraft. Conditions, such as workload, traffic volume, the quality/limitations of the radar system, and the available lead time to react are factors in determining whether it is reasonable for the controller to observe and recognize such situations. While a controller cannot see immediately the development of every situation where a safety alert must be issued, the controller must remain vigilant for such situations and issue a safety alert when the situation is recognized.
2. Recognition of situations of unsafe proximity may result from minimum safe altitude warnings (MSAW)/E-MSAW, automatic altitude readouts, Conflict/Mode C Intruder Alert, observations on a PAR scope, or pilot reports.
3. Once the alert is issued, it is solely the pilot’s prerogative to determine what course of action, if any, will be taken.
    a. Terrain/Obstruction Alert. Immediately issue/initiate an alert to an aircraft if you are aware the aircraft is at an altitude that, in your judgement, places it in unsafe proximity to terrain and/or obstructions. Issue the alert as follows:

PHRASEOLOGY –

LOW ALTITUDE ALERT (call sign),

CHECK YOUR ALTITUDE IMMEDIATELY.

Paragraph 7-6-1. “Application” states in part:

a. Basic radar services for visual flight rules (VFR) aircraft must include”
    1. Safety alerts.
    2. Traffic advisories
    3. Limited radar vectoring when requested by the pilot.
    4. Sequencing at locations where procedures have been established for this purpose and/or when covered by a LOA.

The accident pilot had requested to transition through Class B airspace but had not requested MSAW services.

A VFR aircraft is required to request altitude alerts specifically. The controller would make a keyboard entry that would turn on the MSAW processing on the control tower radar display. MSAW alerts are disabled on VFR aircraft by default, because it can generate nuisance alerts, especially with helicopters flying low altitude routes. This would not preclude the issuance of safety alerts, which are required if the controller is aware that a situation exists that in their judgment places the aircraft in unsafe proximity to terrain or obstructions. VFR pilots remain responsible for maintaining clearance from terrain and obstructions while receiving ATC services.

An FAA safety review team found that the air traffic manager (ATM) described the traffic volume as light with routine complexity and that there were no unusual factors that would cause a distraction. The HOU ATCT personnel included four certified professional controllers (CPCs), two trainees, and one operations supervisor. At the time of the accident, two CPCs and one trainee were available, and the operations supervisor was providing direct supervision. The position configuration was normal for the time of day and volume of traffic.

Medical and Pathological Information

An autopsy of the pilot was performed by the Harris County Institute of Forensic Science, Houston, Texas. The cause of death was multiple blunt force injuries.

The FAA Forensic Sciences Laboratory performed toxicological testing of specimens from the pilot. Testing detected glucose at 17 mg/dL in the pilot’s urine; no drugs or ethanol were detected.

Additional Information

Radio Tower Information

The guyed tower, identified as TX 189B0-A, Federal Communications Commission number 1052552, constructed on June 1, 1987, was owned by SBA Communications, LLC, Boca Raton, Florida. SBA Communications purchased the tower on September 6, 2024.

The tower was illustrated on both the Houston VFR Sectional and Houston Terminal Area aeronautical charts. Both charts identified the tower as an obstruction, 1,000 ft or higher above ground level (agl), and indicated that the tower height was 1,047 ft mean sea level (msl) and 1,011 ft agl.

According to a maintenance inspection report, dated August 5, 2024, the tower was 920 ft tall, and an overall height of 1,003 ft, including with the top appurtenance. Two sets of guy wires extended from the tower; the inner set extended about 100 ft, and the outer set extended about 340 ft. The tower was painted in alternating white and aviation orange colors. The report noted that all lighting inspection categories were checked and found acceptable.

The tower had flashing beacons at the 340 ft, 639 ft, and 1,000 ft positions from the surface. Multiple witness and surveillance videos showed that the top and intermediate beacons illuminated and flashed red in unison at a rate of about 30 times per minute. The lower beacon was not visible in the videos.

Four days before the accident, on October 16, 2024, at 2344, the following Notice to Air Missions (NOTAM) was issued for the radio tower: !HOU 10/073 HOU OBST TOWER LGT (ASR 1052552) 294527.00N0952020.00W (7.4NM NNW HOU) 1033.8FT (999.0FT AGL) U/S 2410170444-2410312359.

According to the radio tower owner, the company issued a NOTAM due to the recent change in ownership while integrating the tower site into their Network Operations Center (NOC). An incident report showed that “all lights out” awaiting delivery to the NOC. The NOC used “all lights out” when a site was not communicating with the NOC and the NOC did not have the ability to electronically monitor the lighting. There were no known outages with the tower flashing beacons.

Previous Company Air Tour Flight Information

A review of ADS-B data showed that from October 17 to October 20, the accident helicopter (pilot unknown) conducted seven flights from EFD to the downtown Houston area, and back to EFD. All seven flight paths generally followed the same route (see figure 5). Five of the seven flights occurred after sunset or during the period encompassing sunset.

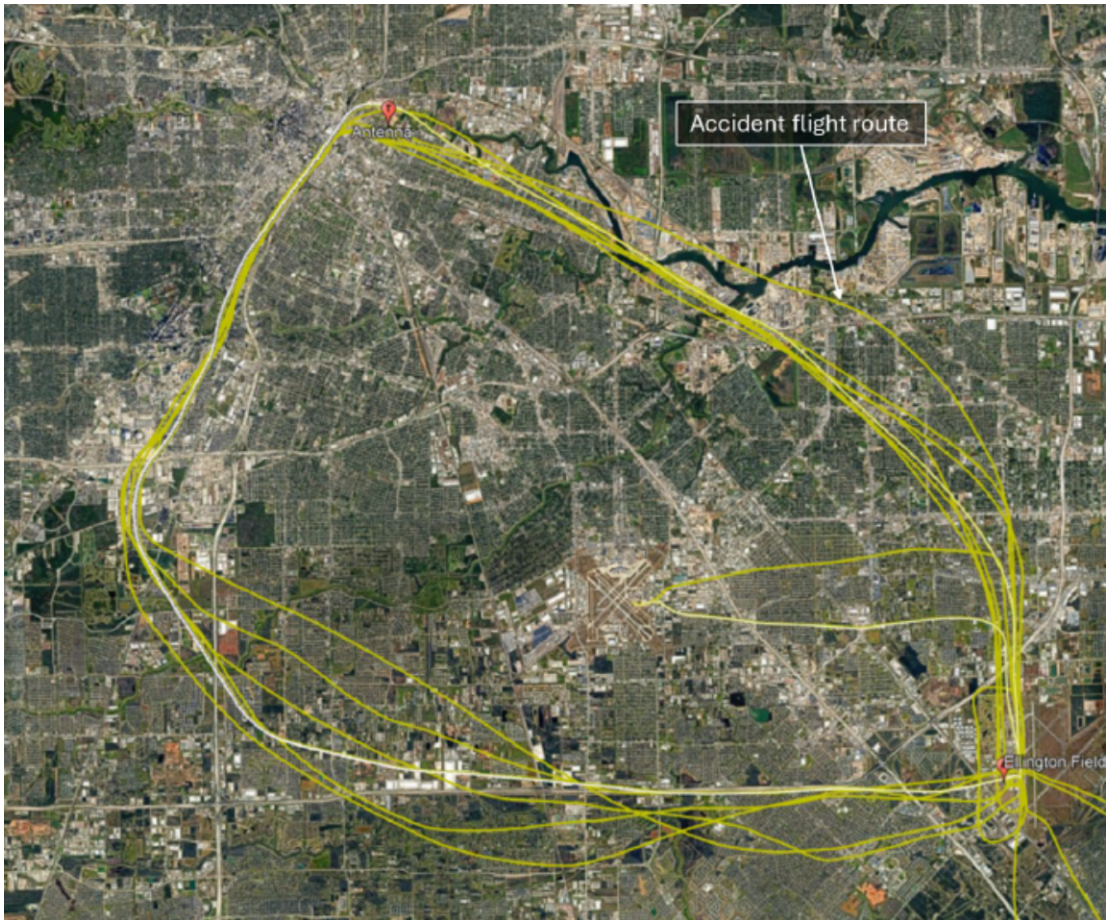

Figure 5. Google Earth image showing seven flights conducted from EFD between October 17 and 20, 2024. The accident flight is annotated.

14 *CFR* Part 91.147, Passenger-Carrying Flights for Compensation or Hire

According to Part 91.147, the operator may conduct nonstop passenger-carrying flights in an airplane, powered-lift, or rotorcraft for compensation or hire that begin and end at the same airport and are conducted within a 25-statute-mile radius of that airport. The operator must obtain an LOA from the FAA. Part 91 air tour operators are not subject to the requirements and oversight comparable to those applicable to Part 135 air tour operators, such as having a safety management system, and limitations and risk mitigations that can be imposed through operations specifications and operations manuals. Part 91.147 does not require operators to provide any pilot information on an LOA or perform checkrides; thus, the FAA therefore does not receive pilot qualification information through the LOA process.

NTSB Aviation Investigation Report – AAR-21/03

Based on a long history of concerns about the safety of various revenue passenger-carrying operations conducted under Part 91, on March 23, 2021, the NTSB adopted Aviation Investigation Report, AAR-21/03, "Enhance Safety of Revenue Passenger-Carrying Operations Conducted Under Title 14 *Code of Federal Regulations* Part 91." The report issued six new safety recommendations and four reiterated safety recommendations to the FAA. The report can be found in the public docket for this accident investigation.

Administrative Information

Investigator In Charge (IIC):	Sauer, Aaron
Additional Participating Persons:	Ron Jacobs; Federal Aviation Administration - Houston FSDO; Houston, TX Thom Webster; Robinson Helicopter; Torrence, CA David Harsanyi; Lycoming Engines; Williamsport, PA
Original Publish Date:	September 23, 2026
Last Revision Date:	
Investigation Class:	Class 2
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=195349

The National Transportation Safety Board (NTSB) is an independent federal agency charged by Congress with investigating every civil aviation accident in the United States and significant events in other modes of transportation—railroad, transit, highway, marine, pipeline, and commercial space. We determine the probable causes of the accidents and events we investigate, and issue safety recommendations aimed at preventing future occurrences. In addition, we conduct transportation safety research studies and offer information and other assistance to family members and survivors for each accident or event we investigate. We also serve as the appellate authority for enforcement actions involving aviation and mariner certificates issued by the Federal Aviation Administration (FAA) and US Coast Guard, and we adjudicate appeals of civil penalty actions taken by the FAA.

The NTSB does not assign fault or blame for an accident or incident; rather, as specified by NTSB regulation, "accident/incident investigations are fact-finding proceedings with no formal issues and no adverse parties … and are not conducted for the purpose of determining the rights or liabilities of any person" (Title 49 *Code of Federal Regulations* section 831.4). Assignment of fault or legal liability is not relevant to the NTSB's statutory mission to improve transportation safety by investigating accidents and incidents and issuing safety recommendations. In addition, statutory language prohibits the admission into evidence or use of any part of an NTSB report related to an accident in a civil action for damages resulting from a matter mentioned in the report (Title 49 *United States Code* section 1154(b)). A factual report that may be admissible under 49 *United States Code* section 1154(b) is available here.