

A Bell 222 was on a helicopter emergency medical services (HEMS) nighttime flight to transfer a 14-month-old patient from one hospital to another when it struck a radio station tower in Aurora, Illinois, U.S., plunged to the ground and burned.

All four occupants were killed, and the helicopter was destroyed in the crash just before midnight on Oct. 15, 2008 — one of a cluster of fatal HEMS crashes that year.

The U.S. National Transportation Safety Board (NTSB) said in its final report on the accident that the probable cause was the pilot's "failure to maintain clearance from the 734-ft-tall lighted tower during the visual night flight due to inadequate preflight planning, insufficient altitude and a flight route too low to clear the tower."

The NTSB cited as a contributing factor the air traffic controller's "failure to issue a safety alert as required" by

U.S. Federal Aviation Administration (FAA) Order 7110.65, *Air Traffic Control*.

The helicopter, operated by Air Angels, departed from the company's base in Bolingbrook, Illinois, about 2254 local time, more than one hour 40 minutes after the dispatcher, Reach Air Medical Services in Santa Rosa, California, was notified of the need for EMS transport and Air Angels accepted the flight.

The NTSB says a Bell 222 HEMS pilot's inadequate preflight planning was responsible for his helicopter's collision with a radio tower.

Poor Planning

BY LINDA WERFELMAN

The pilot's most recent recurrent training was in August 2008.

At 2311, the helicopter arrived at the Valley West Hospital Heliport (0LL7) in Sandwich, Illinois. At 2338, as required by Reach/Air Angels protocol, the pilot contacted Reach dispatch with a flight following call that provided information about the helicopter's takeoff weight and balance information, the fact that it would carry four occupants and 1.5 hours of fuel, and the planned initial heading of 080 degrees for the 38-nm (70-km) flight to Children's Memorial Hospital Heliport (40IS) in Chicago, which was expected to take 18 minutes. After he completed the call, the pilot conducted the takeoff from Sandwich.

At 2355, the pilot reported to the DuPage Airport air traffic control tower that he was "over Aurora" at 1,400 ft. Radar showed the helicopter was about 12 nm (22 km) northeast of 0LL7 at the time on a 072 degree magnetic course. Radar showed that the course remained the same and the helicopter continued at a "constant altitude of 1,300 ft" until the radar track ended at 2358 at the radio station tower.

Hired in 2006

The pilot held a commercial pilot certificate with rotorcraft-helicopter and instrument ratings; he also held a private pilot certificate for single-engine land airplanes. His second-class medical certificate specified that he must wear corrective lenses for near and distant vision.

He was hired in July 2006 by Air Angels, and company records showed that he had 3,565 flight hours, including 3,183 hours in helicopters. While working for Air Angels, he accumulated 283 hours in Bell 222s. He flew 23 hours in the 30 days preceding the accident, and in October 2008, he flew six hours at night and conducted 20 night landings in Bell 222s.

The pilot's most recent recurrent training was in August 2008, and his most recent annual line check was completed on Sept. 25, 2008.

Because the pilot lived in Carmel, Indiana, about 200 mi (322 km) southeast of the Air Angels base, he did not commute during his duty

weeks. Instead, he stayed in an Air Angels bunk room. When the accident occurred, the pilot was "one day into his second week of night shift work," the report said, noting that the pilot had not flown the night before the accident and that his most recent assignment had been a 54-minute flight on Oct. 13.

The helicopter was acquired by Air Angels in 1999 and had about 5,300 hours total time. It had two Honeywell (Lycoming) LTS-101-650C engines; the no. 1 engine had 5,694 hours and the no. 2 engine, 3,717 hours. The last phase inspection was conducted Sept. 24, 2008, when the airframe had 4,271 hours. Information provided by the pilot to Reach Dispatch indicated that the helicopter was within weight and balance limits.

The helicopter was equipped with a Garmin GNS 430 — a global positioning system (GPS) receiver, combined with navigation and communications radios — that was configured with the Jeppesen aviation database. The Air Angels director of flight operations told accident investigators that the GNS 430 was the primary source of navigation information for Air Angels pilots. The device was capable of displaying terrain and obstacles, but the software for that function was not installed.

Operator

Air Angels was an on-demand air taxi operator operating from Clow International Airport in Bolingbrook and serving northern Illinois and northwestern Indiana. The company was established in 1998 and acquired in 2007 by Reach Medical Holdings, a California company that operates medical transport companies throughout the United States.

Air Angels flights were dispatched by Reach Air Medical Services, which typically contacted the duty pilot by cell phone in response to a request for medical transportation and provided a briefing on sending and receiving facilities. The pilot then checked the weather and told the dispatcher whether to accept or reject the flight. The pilot was not required to perform a formal risk assessment, the report said. After a flight



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was accepted, the dispatcher briefed the medical crew about the patient’s condition.

In the air, the pilot communicated with dispatch by radio and a Voice over Internet Protocol” connection to Santa Rosa. A call was required before takeoff, and a position report was required every 15 minutes to provide information about latitude, longitude, estimated arrival time, groundspeed and heading.

until 1900 or from 1900 until 0700 — for seven consecutive days, followed by seven days off; the duty schedule typically called for one week of daytime work alternating with one week of nighttime work. However, the director of flight operations had asked the other two pilots to perform extra work until the chief pilot’s position could be filled. The accident pilot had agreed to work an additional week on the night shift.

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The pilot had contacted DuPage Airport’s air traffic control tower at 2355:21, saying that the helicopter was “just over Aurora en route to Children’s Hospital, ah, downtown Chicago at about 1,400 feet.”

The controller responded that the pilot was cleared through the airport’s Class D airspace and provided altimeter information. The pilot acknowledged the information at 2355:42.

The report said

that at 2358:26, an unidentified transmission “similar to ‘ahhhhh’” was heard on the radio frequency and that there was no further contact with the helicopter.

Radar Track

The radar display at the DuPage air traffic control tower showed one aircraft with a position and track that corresponded to the accident helicopter’s direct track from 0LL7 to 40IS, at an altitude between 1,300 and 1,400 ft. The radio station tower was “in line with the flight path depicted by the recorded radar track,” the report said. The final radar return was at 2358:25.

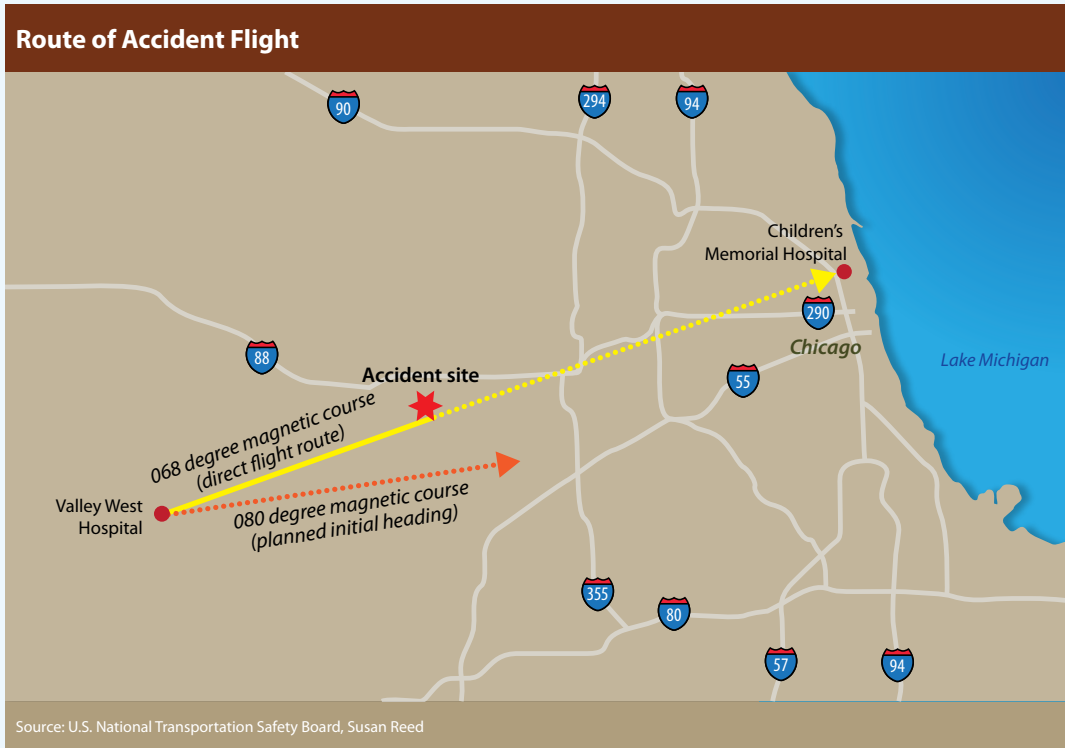


Figure 1

Air Angels operated under U.S. Federal Aviation Regulations Part 135, “Commuter and On-Demand Operations,” with authorization for visual flight rules (VFR) operations involving no more than nine passengers. Part 135 flights under instrument flight rules were not authorized.

At the time of the accident, Air Angels operated two Bell 222s and employed three pilots; the chief pilot had left his job the week before the accident, and the director of air operations had temporarily taken over the chief pilot’s duties.

Air Angels pilots usually were scheduled to work 12-hour shifts — either from 0700

The helicopter struck the ground within a forest preserve, about 1,250 ft (381 m) from the radio station tower in a flat area covered with 6-ft-tall (2-m-tall) prairie grass. Parts of the upper vertical structure of the 734-ft (224-m) tower buckled with the impact, which also severed the uppermost guy wire on the west side of the tower. The conduit for the electrical wiring that supplied power for the tower's high intensity strobe lights also was severed about 50 ft (15 m) from the top of the tower.

Investigation

Weather at nearby airports at the time of the crash included visibility of about 10 mi (16 km). Skies were clear to the north and west of the accident site; to the northeast, there was an overcast ceiling at 3,300 ft and to the southeast, a broken ceiling at 1,900 ft and an overcast at 2,400 ft.

Investigators who examined the wreckage found no indication of any defect in the helicopter that existed before the crash. The helicopter was not equipped with a terrain awareness and warning system, and the pilot was not using a night vision imaging system.

Video from a nearby train station surveillance camera showed that the tower's strobe lights were functioning until about the time of the accident.

As part of the investigation, a simulation conducted by Honeywell International using their helicopter terrain awareness and warning system (H-TAWS) indicated that the system "could have provided the pilot a 'Caution Obstacle' prompt about 34 seconds before impact with the tower and a 'Warning Obstacle' prompt about 23 seconds before impact," the report said.

Although the DuPage Airport air traffic controller provided the current altimeter setting and cleared the pilot through the airport's airspace, he provided no specific instructions about the route of flight "because the pilot was flying under [VFR] and had chosen his specific route of flight on a direct course from the departure point to the destination," the report

said, noting that during his preflight planning, the pilot should have identified obstacles along the planned route, including the radio station tower.

"While the NTSB recognizes that it was the pilot's responsibility to see and avoid the radio tower, the controller also had a responsibility to issue an alert as required by FAA directives," the report said. The NTSB cited FAA Order 7110.65, paragraph 2-1-6, which says controllers should issue safety alerts to pilots "if they are aware that the aircraft is at an altitude that places it in an unsafe proximity to terrain, obstructions or other aircraft."

Order 7110 specifies that issuance of safety alerts takes priority over other controller tasks, such as administrative duties — which were occupying the DuPage controller as the accident helicopter passed through his airspace. The report said that the controller's failure to notice when the helicopter disappeared from his radar display was an indication that he "was not monitoring the aircraft's progress sufficiently to watch for hazards and issue safety alerts."

NTSB Vice Chairman Christopher Hart disagreed with the Safety Board's designation of the controller's action as a factor that contributed to the accident.

"VFR pilots should continue to receive the clear, unambiguous and unequivocal message [that] ... seeing and avoiding obstacles is solely and exclusively the responsibility of the pilot-in-command — with no exceptions," Hart said.

In this case, the accident pilot did not ask the controller for flight following or VFR advisories — requests that typically are interpreted as requests for information about other aircraft — but "merely requested ... to transit the controller's Class D airspace," Hart said.

In the report, the NTSB noted six related safety recommendations issued to the FAA before the accident, including a call for all EMS operators to implement flight risk evaluation programs. ➔

This article is based on NTSB accident report CEN09MA019 and accompanying docket information.

'Seeing and avoiding obstacles is solely and exclusively the responsibility of the pilot-in-command!'