

Procedural Disregard

Failure to comply with recommended arrival and communication procedures played a big part in the fatal midair collision of two EMS helicopters, the NTSB says.

BY LINDA WERFELMAN

Pilots of two emergency medical services helicopters failed to see and avoid each other's aircraft before the two Bell 407s collided as they approached the Flagstaff (Arizona, U.S.) Medical Center helipad, each to drop off a patient, the U.S. National Transportation Safety Board (NTSB) said.

In its final report on the accident, the NTSB cited each pilot's failure to see and avoid the other helicopter as the probable cause of the June 29, 2008, crash that killed all seven people in the two aircraft — one operated by Air Methods Corp. of Englewood, Colorado, and the other,

by Classic Helicopter Services of Page, Arizona. Contributing factors were “the failure of [the Air Methods] pilot to follow arrival and noise abatement guidelines and the failure of [the Classic] pilot to follow communications guidelines.”

Both helicopters were destroyed in the crash, which occurred at 1547 local time in visual meteorological conditions that included clear skies and at least 10 mi (16 km) visibility.

The Air Methods pilot, operating under the call sign Angel 1, had contacted Guardian Control, the operator's communications center, at 1516, saying that he was departing from Winslow, Arizona, with two flight nurses and a patient and that he might land at Flagstaff Pulliam Airport (FLG) if he calculated that the helicopter would be too heavy for a safe out-of-ground-effect hover at the hospital helipad (FMC). He estimated his flight would take 25 minutes.

At 1517, he again contacted Guardian Control to request FLG weather conditions; within the next two minutes Guardian Control's transportation coordinator contacted FMC to report that the helicopter would arrive at the helipad in about 23 minutes. About 1518, the pilot told Guardian Control he would first fly to FLG to allow one of the flight nurses to disembark before proceeding to FMC.

The Classic helicopter pilot, with the call sign Lifeguard 2, contacted Classic Control



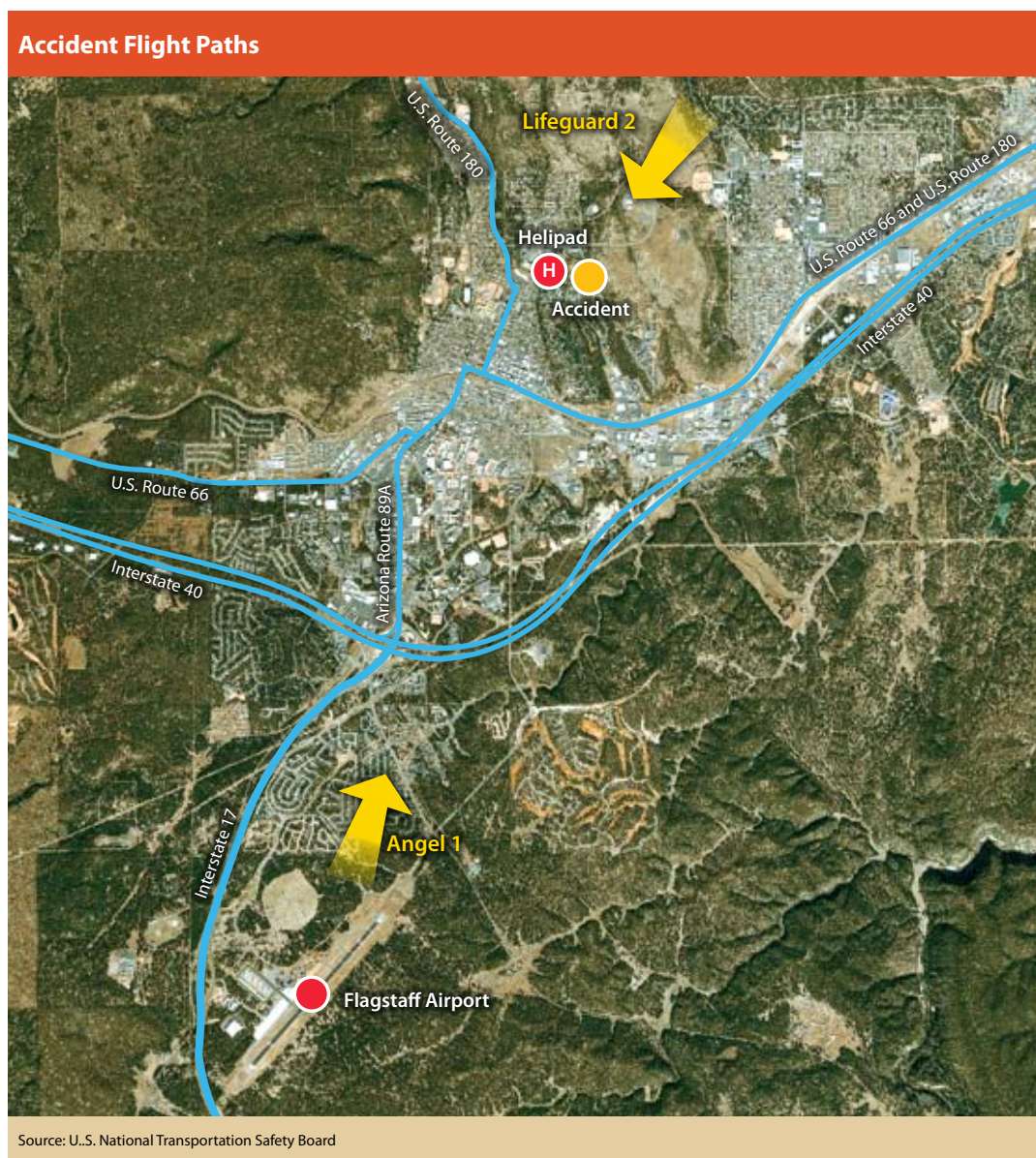


Figure 1

**The crash ...
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at 1517 to report having departed from the South Rim of the Grand Canyon and estimating that the flight to FMC would take 32 minutes. In addition to the pilot, the Classic helicopter carried a flight nurse, a flight paramedic and a patient.

At 1523, the Classic Control dispatcher contacted Guardian Control to say that Lifeguard 2 was en route to FMC and would arrive from the north. Guardian Control responded that Angel 1 also was en route and expected to land in 20 minutes.

The Classic dispatcher replied, “Oh, okay, I’ll let them know when I talk to them next, and I’ll tell them to be sure and get ahold of you.”

Guardian Control then called the FMC emergency department and said that Classic’s Lifeguard 2 would land at the hospital helipad “in about 28 minutes ... and they know about mine coming in.” The person who had answered the FMC telephone said, “All right,” and Guardian Control then contacted the Angel 1 pilot with the same information.

Bell 407

The Bell 407 is a single-engine light helicopter developed in the mid-1990s as a replacement for the JetRanger and LongRanger. The 407 has a four-blade main rotor, a wider cabin than the LongRanger and a larger cabin window area. Designed for a pilot and six passengers, it also can be modified for emergency medical services use.

The 407 has an Allison 250-C47 turboshaft engine rated at 813 shp (606 kW) for takeoff and 701 shp (523 kW) for continuous operation. Standard usable fuel capacity is 126 gal (477 L). Empty weight is 2,598 lb (1,178 kg), and maximum takeoff weight with an internal load is 5,000 lb (2,268 kg).

Maximum cruising speed at sea level is 115 kt. Maximum range is 312 nm (577 km).

Source: *Jane's All the World's Aircraft*

The Angel 1 pilot replied, “Roger, will be looking for ‘em, thanks.”

At 1532, the Lifeguard 2 pilot, in his last recorded communication, gave Classic Control a position report and said he planned to land at FMC in 15 minutes.

About the same time, the Angel 1 pilot told Guardian Control he would land at FLG in 10 minutes to drop off the flight nurse. Two minutes later, he asked Guardian Control to contact FMC for help in moving the patient from the helicopter.

At 1543, having landed and dropped off the flight nurse, Angel 1 departed from FLG. One minute later, he told Guardian Control in his last

recorded communication, “If you haven’t figured it out, we’ve, uh, landed at the ... airport, departed and we’re about two minutes out of the hospital.”

At 1550, the Classic dispatcher telephoned Guardian Control and asked if Guardian had had contact with “my ship.” The Classic dispatcher said, “Negative.”

Medical crewmembers on both helicopters had spoken with different personnel at the hospital. The Classic crewmember said that Lifeguard 2 was expected to arrive at the hospital helipad about 1546; the Air Methods crewmember estimated a 1549 arrival time for Angel 1. The hospital medical personnel said that neither conversation mentioned that another helicopter also was en route to the helipad. Hospital personnel were not required to provide this information.

Video recorded on a hospital surveillance camera showed one of the helicopters approaching the helipad from the north, the other approaching from the south and both descending.

Witnesses said that Angel 1 approached the helipad on a “usual landing pattern,” from the southwest. The report quoted one witness as saying that she heard one helicopter approaching from the north and a second, from the south and “looked up just as the northbound helicopter apparently clipped the rotor of the southbound [helicopter]. At that time, they both were in a turn to the hospital.”

The wreckage was found about 0.25 nm (0.50 km) east of the helipad, in a wooded area. The Classic helicopter, which showed no signs

At the time of the crash, Classic Helicopter Service operated three aircraft, including this Bell 407.



of fire damage, was about 300 ft (91m) west of the Air Methods 407, which exploded in flames after striking the ground.

Full-Time EMS Pilots

The Air Methods pilot, who had 5,241 flight hours, including 4,500 hours in helicopters, held a U.S. Federal Aviation Administration (FAA) commercial pilot certificate for single-engine land airplanes and helicopters and instrument ratings for both categories of aircraft. He also held a first-class medical certificate.

He was hired by Air Methods in October 2003 to fly Bell 407s from the operator's Flagstaff base. He worked full-time as an EMS pilot and was qualified to fly with night vision goggles (NVGs). He satisfactorily completed all company initial, recurrent and NVG training courses, the operator said. He was the Air Methods safety officer and safety coordinator.

The Classic pilot had 14,500 flight hours, including 9,780 hours in helicopters. He held a commercial pilot certificate for single-engine land airplanes and helicopters and instrument ratings for both categories, and he was NVG-qualified. He also held a second-class medical certificate.

He was hired by Classic in May 2007 as a full-time EMS pilot to fly Bell 407s from the Classic base in Page, and he satisfactorily completed U.S. Federal Aviation Regulations Part 135 requalification training. He had worked for Classic previously, flying Bell 206Ls and 407s and serving as the EMS safety officer between 1998 and 2005, when he left to work for TriState CareFlight in Bullhead City, Arizona, where he flew Agusta A119s in EMS operations. He was that operator's safety and training manager.

He also had "extensive" experience in helicopter operations in the Grand Canyon and had been a U.S. Army and Army Reserve pilot.

Helipad Guidelines

The FMC helipad, at an elevation of 7,016 ft, is on the roof of the hospital emergency department, at the southeast corner of the hospital. In 1999, the hospital implemented its *Guidelines of Practice* for helipad operations.

RotorImage/Airliners.net



"The guidance states that helicopters operating at FMC are advised to establish communications with Guardian Control at the earliest opportunity," the report said. "It is required that all inbound aircraft will notify Guardian Control at the earliest convenience but not less than ... 5 miles out. The guidance stated, 'Timely communication with Guardian Air Control is especially paramount when multiple helicopters are inbound to the facility.'"

Classic said that, during approaches from the northwest, the Guardian Control signal is obscured by mountain peaks but becomes clear within 10 mi (19 km) of the helipad. The signal problems do not prevent pilots from contacting Guardian Control, however.

The guidelines also instruct pilots to avoid noise abatement areas when possible during their approaches to the helipad and to maintain an altitude of 8,000 ft mean sea level over Flagstaff. The guidelines specify that simultaneous operations are not conducted, and that, if two helicopters are approaching at about the same time, the first should land on the southern side of the helipad and move to the parking area on the north side to make room for the second. Alternative guidelines call for the first helicopter

The pilot of Air Method's Angel 1 stopped at nearby Flagstaff Pulliam Airport before continuing to the hospital helipad.

to “hot drop” its patient — unload the patient without shutting off the engine — and then fly to FLG to allow the second helicopter to land.

The First Time

The transportation coordinator (TC) at Guardian Control said that the accident flight marked the first time in her 1 ½ years in that job that a Classic pilot failed to notify her that he was approaching FMC.

The Classic Control dispatcher, who had worked for Classic since September 1997 and had been a supervisor since 1999, told investigators that all three Classic aircraft had been dispatched on the day of the accident and that he had handled all three flights.

“At 1532, the pilot of Lifeguard 2 gave a ... position report via the on-board radio,” the report said. “The dispatcher acknowledged the call but did not inform the pilot of the inbound Air Methods helicopter. He said, ‘We normally would notify our aircraft about another helicopter that was inbound at the same time.’ At that time, he said he was unconcerned because the Guardian Control TC had told him that she would notify the pilot of Lifeguard 2 of the other inbound helicopter. In addition, he knew the Lifeguard 2 pilot was ‘so anal’ about contacting Guardian Control prior to landing at FMC.”

Investigators had the Classic dispatcher listen to a recording of his 1523 telephone conversation with the Guardian Control TC. Afterward, the Classic dispatcher said that he was “amazed” not only that he had not remembered the Air Methods helicopter’s correct arrival time at FMC but also that he had “incorrectly remembered his conversation with the Guardian Control TC about who was supposed to advise Lifeguard 2” about the presence of the Air Methods helicopter.

The Classic 407 had a global positioning system that included a terrain awareness and warning system (TAWS), the report said. The Air Methods 407 was not equipped with TAWS, and TAWS was not required.

Neither helicopter had a traffic-alert and collision avoidance system (TCAS). Although

TCAS was not required, the report said, “had such a system been on board, it likely would have alerted the pilots to the traffic conflict so they could take evasive action before collision.”

No Contact

In addition, the report said, if the Classic pilot had contacted the FMC communications center, the FMC transportation coordinator “likely would have told him directly that another aircraft was expected at the helipad. If the pilot had known to expect another aircraft in the area, he would have been more likely to look for the other aircraft.”

The Classic pilot, approaching the helipad from the northeast, likely was visually scanning the typical flight paths described in the FMC approach and noise abatement guidelines and did not see the Guardian helicopter, which was approaching from the south — and not on a typical path.

“At the time of the collision, both pilots were at a point in the approach where their visual attention typically would have been more focused on the helipad in preparation for landing, rather than on scanning the surrounding area for other traffic,” the report said. “Nevertheless, the pilots were responsible for maintaining vigilance and to see and avoid other aircraft at all times.”

The report reiterated four NTSB safety recommendations issued to the FAA in 2006, including one that called on the agency to require operators to install TAWS in all EMS aircraft and ensure that crews are adequately trained in its use.

The three other recommendations involved actions that had been in place for the accident flights: requiring EMS operators to comply with Part 135 requirements — instead of the more lenient weather minimums for Part 91, “General Operating and Flight Rules”; to implement flight risk evaluation programs; and to use formal dispatch and flight-following procedures.

The NTSB has placed four related safety recommendations, all dealing with EMS operations at night, on its “Most Wanted List of Safety Improvements.”

This article is based on NTSB accident report DEN08MA116A and supporting documents.

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