



Dark Night, Fog Cited in Bell OH-58A CFIT During Law-enforcement Flight

Investigators did not determine whether the pilot was using night-vision goggles (NVGs) when the controlled-flight-into-terrain accident occurred. Colleagues said that the pilot routinely used NVGs during nighttime flights; the helicopter operator required that they not be used during flight in instrument conditions.

FSF Editorial Staff

About 0103 local time Oct. 22, 2001, a Bell OH-58A Kiowa operated by the Polk County (Florida) Sheriff's Office (PCSO) struck terrain about 1.2 nautical miles (2.2 kilometers) northwest of Bartow (Florida) Municipal Airport in instrument meteorological conditions (IMC). The helicopter was destroyed. The pilot and flight observer were killed.

The U.S. National Transportation Safety Board (NTSB) said, in its final report, that the probable causes of the accident were "the pilot's continued VFR [visual flight rules] flight into IMC and his failure to maintain altitude." NTSB said that fog and a dark night were factors in the accident.

The helicopter was being operated as a public-use flight under U.S. Federal Aviation Regulations Part 91, the general operating and flight rules. The helicopter was manufactured in 1972 and had accumulated 4,822 airframe hours and 1,744 engine hours; it had been flown 134 hours since an annual inspection in June 2001.

The pilot, 33, held a commercial pilot certificate for helicopters and single-engine airplanes, and an airplane instrument rating.

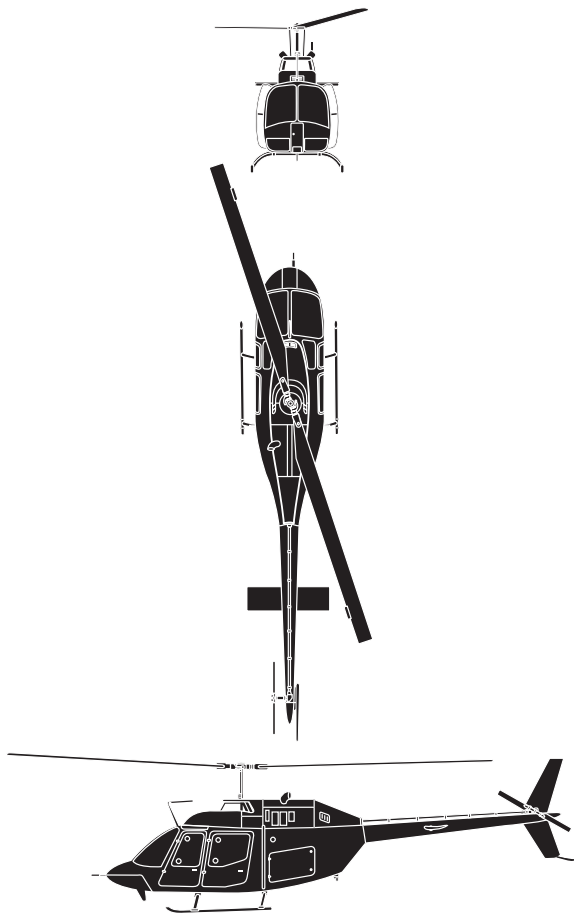


He had 1,031 flight hours, including 554 flight hours in helicopters, 232 flight hours at night, 13 simulated instrument flight hours and 49 actual instrument flight hours.

"The pilot was hired by PCSO in 1994 and had been a flight officer since 1997," the report said. "He had obtained his single-engine private pilot's license on his own and had accumulated 250 flight hours [as a Cessna 172 flight officer] before starting his rotary-wing training with PCSO [in May 2000]."

He accumulated 200 flight hours of training in a Robinson R22 before receiving a helicopter private pilot certificate in November 2000. He received a helicopter commercial pilot certificate and began training in OH-58s in February 2001. He completed OH-58 transition training in June 2001, after accumulating 100 flight hours in type, including 20 flight hours of training in law-enforcement tactics with the use of night-vision goggles (NVGs). At the time of the accident, the pilot had accumulated 156 flight hours with NVGs.

Both the pilot and the observer were PCSO deputy sheriffs. The report included no other information about the observer.



Bell OH-58A Kiowa

The U.S. Army in 1968 selected Bell Helicopter Co. to supply a turbine-powered, light observation helicopter based on the Bell 206A JetRanger. Bell began deliveries of OH-58A Kiowa helicopters to the Army in 1969.

Major differences between the OH-58A and the 206A are the Kiowa's larger main rotor (35.3 feet [10.8 meters] vs. 33.3 feet [10.2 meters]) and longer fuselage (32.6 feet [9.9 meters] vs. 31.2 feet [9.5 meters]).

Electrical systems and interior layouts also are different.

The OH-58A accommodates a pilot and a first officer or observer, and up to 40.0 cubic feet (1.1 cubic meters) of cargo area. Two passengers can be accommodated in the cargo area by installation of seat cushions, seat belts and shoulder harnesses.

The helicopter has a 317-shaft-horsepower (237-kilowatt) Allison (now Rolls-Royce) T62-A700 turboshaft engine. Usable fuel capacity is 73 gallons (276 liters).

Empty weight is 1,464 pounds (664 kilograms). Maximum takeoff weight and maximum landing weight are 3,000 pounds (1,361 kilograms). Maximum rate of climb at sea level is 1,780 feet per minute. Maximum speed is 120 knots. Cruising speed for maximum range is 102 knots. Endurance at sea level with no fuel reserve is three hours and 30 minutes. Hovering ceiling in ground effect is 13,600 feet. Hovering ceiling out of ground effect is 8,800 feet. ♦

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

Before the accident flight, the pilot received a call from a PCSO Communications Center dispatcher to conduct aerial surveillance in support of police officers investigating a burglary in progress in Eaton Park, Florida, which is about seven nautical miles (13 kilometers) northwest of the Bartow airport.

The helicopter departed at 0030 and was flown to the area in which the investigation was being conducted. The flight's call sign was Air 1.

While operating the helicopter in the area of the investigation, the crew told the police officers, "We're in an awful lot of fog. ... We'll stay as long as we can. We're in an awful lot of fog here."

A police officer told the crew, "If you have to go ... safety first."

Later, a police officer asked the crew to focus the helicopter's searchlight on a marsh area.

The crew said, "We're trying to locate you through the fog. Give me a light."

The police officer said, "We're right by this building on the corner. ... Your tail end is right on me."

"We're having to look through the fog," the crew said. "It's limiting our ability, so just bear with us."

"I know you're doing your best," the police officer said.

The crew remained in the area of the crime, assisting ground units, until they were told that the helicopter no longer was needed.

At 0058, the crew told the dispatcher that they were "clear of the scene."

At 0103, while returning to the Bartow airport, the crew was told by the dispatcher that a PCSO deputy sheriff requested aerial assistance at an electrical-power plant south-southwest of the helicopter's position. The deputy established radio communication with the crew and requested that they conduct a fly-by of the power plant.

The crew said "ten four" to acknowledge receipt of the message. No further radio transmissions were received from the crew.

"An attempt to make contact with the helicopter by the PCSO dispatcher was made at 0105, with no response," the report said. "At 0145, the chief pilot for the PCSO's air section was notified by the PCSO Communications Center that they could not raise Air 1 by radio. The chief pilot began a search for [the helicopter] about 0205 and found the helicopter about 0400."

The helicopter was found in a saw grass swamp.

“The terrain was flat, with low vegetation and no obstacles in the immediate area,” the report said. “The helicopter was observed to be lying mostly submerged and inverted in about four feet [one meter] of water, with a portion of the belly, landing gear and vertical fin protruding above the surface. . . . The dive team that helped in the recovery of the helicopter reported that an impact crater measuring about four feet deep was located below the wreckage.”

The tail boom separated but remained attached to the fuselage by the tail-rotor-control cable. The cabin was crushed.

“The entire fuselage forward of the engine was crushed and fractured,” the report said. “All instrument [panels] and circuit breaker panels were destroyed. The interior volume of the fuselage was totally compromised.”

An autopsy report said that the cause of the pilot’s death was “multiple blunt forces traumatic injuries.”

The report said that no preexisting mechanical deficiencies were found. The pilot’s collective control and cyclic control separated at the base of the control tubes on impact, and the anti-torque pedals separated from their mounts.

“All flight controls and control linkages within the main fuselage were destroyed and/or damaged,” the report said. “An examination of these components revealed no breaks, and continuity was established. All observed fracture surfaces appeared to be overload in nature.”

No preexisting discrepancies were found in the rotors and rotor-drive systems. The engine fuel-control throttle lever was found to be fully open. Investigators determined that the engine was producing power and driving the rotors on impact.

“About 50 gallons [189 liters] of fuel was drained from the tanks after the helicopter was recovered from the water,” the report said. “[The fuel-filter bowl] contained both fuel and water.”

Recorded air traffic control radar data showed that after departing the area of the investigation in Eaton Park, the helicopter initially was flown eastbound about two nautical miles (four kilometers). The helicopter then was flown on a heading of 150 degrees for 0.8 nautical mile (1.5 kilometers) and on a heading of 180 degrees for 1.0 nautical mile (1.9 kilometers) before radar contact ceased.

“When the radar data was placed on a map of the area, it showed that the helicopter flew to the north of Lake Hancock while heading eastbound and then flew over the water along the eastern portion of the lake after it had turned to a southerly heading,” the report said.

At the time of the accident, weather conditions at the Bartow airport included a 400-foot broken ceiling, 10 statute miles (16 kilometers) visibility with fog and drizzle, and surface winds

from 060 degrees at six knots. Surface temperature and dew point both were 16 degrees Celsius (61 degrees Fahrenheit).

PSCO personnel told investigators that the accident pilot used NVGs while flying the helicopter at night.

“Most of the deputies that flew with the pilot of [Air 1] said he always flew at night with the goggles and would land the helicopter using NVGs,” the report said. “Heavily damaged remains of two pairs of Litton M949 goggles were found in the wreckage. The goggles were found separated from the victims and in the ‘Off’ position. However, the type of goggles being used by the crew would automatically shut down if separated from the helmet.”

A PCSO instructor prepared a statement for investigators on the use of NVGs. The statement included the following information:

Foremost, one must comprehend that NVGs are simply a tool to enhance safety while flying at night. . . . NVGs greatly enhance an aviator’s ability to safely navigate and avoid obstacles while performing flight at lower altitude than those normally flown at night, specifically [during] law-enforcement missions. . . . The NVGs are worn directly in front of the aviator’s eyes and, by movement of the head, can very quickly and readily be moved wherever the wearer chooses. . . .

NVGs are not intended for use while conducting IMC operations. . . . Crewmembers are taught various techniques for recognizing when meteorological [conditions] are deteriorating to the point that [VFR] flight, even with NVGs, is no longer advisable. Instruction is also given as to procedures [to follow after] inadvertently entering into IMC. . . .

One of the most advantageous aspects of the newer-generation NVGs [the type aboard the accident helicopter] is ‘look-under’ capability. When properly worn, the NVGs permit pilots a full view of the cockpit instrument panel simply by shifting their eyes to look underneath the NVGs. . . . It also allows for a *full* transition to instrument-flying techniques if needed. . . .

However, this is not to imply that missions should be launched into IMC. Intentional NVG flight into IMC is not advisable and serves no operational goal.

Investigators did not determine whether the pilot was using NVGs during the accident flight.♦

[FSF editorial note: This article, except where specifically noted, is based on U.S. National Transportation Safety Board (NTSB) Brief of Accident report MIA02GA011 (two pages), adopted May 21, 2003; NTSB Factual Report — Aviation MIA02GA011 (12 pages); and NTSB Docket ID 53640 (344 pages with illustrations and appendixes).]

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Ahlam Wahdan, telephone: +1 (703) 739-6700, ext. 102;

e-mail: wahdan@flightsafety.org.

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