



Aviation Investigation Final Report

Location:	Coalinga, California	Accident Number:	WPR22FA098
Date & Time:	February 16, 2022, 21:30 Local	Registration:	N72297
Aircraft:	Bell UH-1H	Aircraft Damage:	Substantial
Defining Event:	Controlled flight into terr/obj (CFIT)	Injuries:	1 Fatal
Flight Conducted Under:	Part 137: Agricultural		

Analysis

The pilot departed the operator’s ramp for five nighttime aerial application operations. He was supported by three ground crewmembers, who described normal interactions with the pilot during the landings to the truck. About 2.5 hours later, while at the third job site, the pilot indicated that the wind had increased and that he was having difficulty lining up the helicopter with the support truck (for landing). The pilot also reported that the helicopter’s heater was not working and that he was cold, even though he was dressed for the outside conditions. The pilot also exhibited confusion and difficulty with communicating with the ground crew. The pilot subsequently canceled the third and fourth jobs, directed the ground crew to the fifth job site, and then departed the fourth jobsite with chemicals still in the helicopter’s tanks and without stating his intentions—two actions that were reportedly not typical for the pilot. The helicopter was last seen heading south above a large set of power lines that were about 100 ft high and close to the fourth job site. The last location of the helicopter was also near an airstrip that the pilot commonly used when taking breaks.

The helicopter impacted terrain in a nose-low left bank. Postaccident examination of the recovered airframe and engine revealed no evidence of any mechanical anomalies that would have precluded normal operation.

Before the accident, the pilot had told two family members that he had tested positive for COVID-19. Hydroxychloroquine and ibuprofen were found in the debris field, and acetaminophen was found in one of the pilot’s specimens. His postmortem COVID-19 test was negative. A low level of ethanol was detected in a single specimen from the pilot but not in two others, which indicated that the source was not from ingestion and thus was not a factor in the accident.

Given the evidence of the pilot’s conversations about COVID-19, the medicines found at the accident site, and the reported change in the pilot’s normal behavior pattern as the night progressed suggested that the pilot might have reported to work ill and was experiencing worsening symptoms or fatigue.

The location of the accident is consistent with the pilot deciding to fly to the airstrip with the intentions of taking a break. The full moon and clear night would have provided ample illumination for a transition to the airstrip, which was parallel with the power distribution lines in the area. Even though the pilot was likely operating the helicopter at 500 ft above ground level, the altitude that the pilot used for ferry flights, the pilot likely lost situational awareness and descended the helicopter into the terrain while enroute to the airstrip.

Probable Cause and Findings

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

The pilot’s loss of situational awareness for reasons that could not be determined given the available evidence, which led to controlled flight into terrain. Contributing to the accident was the pilot’s decision to operate the helicopter while ill and fatigued.

Findings

Personnel issues	Physical fitness - Pilot
Personnel issues	Aircraft control - Pilot

Factual Information

History of Flight

Enroute-cruise	Controlled flight into terr/obj (CFIT) (Defining event)
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On February 16, 2022, about 2130 Pacific standard time, a Bell UH-1H helicopter, N72297, was substantially damaged when it was involved in an accident near Coalinga, California. The pilot was fatally injured. The helicopter was operated as a Title 14 *Code of Federal Regulations* Part 137 aerial application flight.

The pilot had planned to conduct spray operations over five separate jobsites during night conditions. A ground crew supervisor and two others were supporting the operation. The ground crew operated out of two support trucks that were equipped with a radio for communicating with the pilot and had a landing pad mounted above the tanks containing fuel and chemicals. The pilot arrived at work at 1630 and subsequently departed for the first of the five planned flights. See figure 1.



Figure 1. Google Earth image of the five job sites, the accident site, and the airstrip.

Note: The white arrows denote the direction of travel. The red line indicates the location of large power distribution lines. The two insets show the proximity of the power distribution lines to the fourth job site and the accident site.

The pilot arrived at the first job location about 1800. While at that job site, the pilot told the ground crew that the GPS was acting up. He completed operations at the first job site and then traveled about 5 miles north to the second job site. After completing operations there, the pilot traveled about 29 miles west to the third job site. He began operations at that job site but canceled the job about 2130 due to increased wind, which caused difficulty lining up the helicopter to the support truck.

One ground crewmember reported that the pilot became confused about the number of loads remaining at the third job site and had to be told twice about the number of loads remaining. The ground crew foreman (who was not part of the ground crew at the job sites) explained that the pilot was usually very aware of the loads left to be applied and that it was odd that a ground crewmember would have to tell the pilot that information. In addition, the ground crew supervisor reported that, while at the third job site, the pilot stated that he was cold and that the heater on the helicopter was acting up.

The pilot departed and traveled west about 1 mile, overflowed the fourth job site, canceled it, and directed the ground crew to go to the fifth job site. The pilot then departed the area without announcing his intentions. One ground crewmember saw the helicopter “lift off, making a passenger-side [left] turn toward the south, over the [power distribution] wires and leveling out.” The last communication with the pilot occurred about 2138 and involved the pilot questioning a ground crewmember about how he determined the wind speed at the fifth job site. About 2200, when the helicopter had not arrived at the fifth job site and the pilot did not respond to radio calls, the ground crew supervisor alerted his employer and then called 911. None of the ground crewmembers supporting the operation reported hearing a mayday call over the radio.

The helicopter was found in an orchard about 0300 the next day. The wreckage was located about 9 miles southeast of the fourth job site and about 3 miles northwest of Harris Ranch Airport (308) Coalinga, California. According to another pilot, the accident pilot was known to land at the airport when taking breaks. The ground crew supervisor stated that it would not have been normal for the pilot to take off to the store without telling the ground crew, and for the pilot to take a load of pesticides to Harris ranch. One ground crewmember stated that the pilot did not indicate that he needed a break.

A set of power distribution lines was located about 120 ft east of the accident site. The power distribution line towers were about 100 ft tall and ran generally north and south parallel to an interstate highway and alongside the fourth job site and 308. The power distribution lines and the towers near the accident site showed no evidence of damage.

Pilot Information

Certificate:	Commercial	Age:	54, Male
Airplane Rating(s):	Single-engine land; Single-engine sea	Seat Occupied:	Right
Other Aircraft Rating(s):	Helicopter	Restraint Used:	4-point
Instrument Rating(s):	Airplane	Second Pilot Present:	
Instructor Rating(s):	Airplane multi-engine; Airplane single-engine; Instrument airplane	Toxicology Performed:	Yes
Medical Certification:	Class 2 With waivers/limitations	Last FAA Medical Exam:	October 1, 2021
Occupational Pilot:	Yes	Last Flight Review or Equivalent:	
Flight Time:	(Estimated) 32800 hours (Total, all aircraft), 10000 hours (Total, this make and model)		

Multiple people reported that the pilot thought that he had contracted COVID-19. A family member reported that, 2 days before the accident flight, the pilot asked questions about the symptoms of COVID-19 and went to sleep immediately after dinner. Both the pilot’s wife and an employee of his business reported that, on the day before the accident, the pilot told them that he tested positive for COVID-19.

One ground crewmember reported that, when he communicated with the pilot on the night of the accident, the pilot would already be talking as he keyed the microphone and that he would release the microphone before he stopped talking.

A pilot who was trained to operate the accident helicopter by the accident pilot reported that the accident pilot “insisted” that ferry flights be flown at 500 ft above ground level. This pilot also stated that, because of the power lines, the accident pilot would not have considered flying the helicopter lower than that altitude on the night of the accident.

Aircraft and Owner/Operator Information

Aircraft Make:	Bell	Registration:	N72297
Model/Series:	UH-1H	Aircraft Category:	Helicopter
Year of Manufacture:	1967	Amateur Built:	
Airworthiness Certificate:	Restricted (Special)	Serial Number:	67-17147
Landing Gear Type:	Skid	Seats:	2
Date/Type of Last Inspection:	December 16, 2021 Annual	Certified Max Gross Wt.:	
Time Since Last Inspection:	0 Hrs	Engines:	1 Turbo shaft
Airframe Total Time:	13162.2 Hrs as of last inspection	Engine Manufacturer:	Honeywell Aerospace
ELT:	Not installed	Engine Model/Series:	T-53-L13
Registered Owner:	AMERICAN AG AVIATION INC DBA	Rated Power:	1800
Operator:	AMERICAN AG AVIATION INC DBA	Operating Certificate(s) Held:	Agricultural aircraft (137)
Operator Does Business As:	American West LLC	Operator Designator Code:	

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	Condition of Light:	Night
Observation Facility, Elevation:	KNLC,234 ft msl	Distance from Accident Site:	14 Nautical Miles
Observation Time:	21:56 Local	Direction from Accident Site:	80°
Lowest Cloud Condition:	Clear	Visibility	10 miles
Lowest Ceiling:	None	Visibility (RVR):	
Wind Speed/Gusts:	5 knots /	Turbulence Type Forecast/Actual:	None / None
Wind Direction:	260°	Turbulence Severity Forecast/Actual:	N/A / N/A
Altimeter Setting:	30.11 inches Hg	Temperature/Dew Point:	6°C / -5°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Five Points, CA	Type of Flight Plan Filed:	None
Destination:	Five Points, CA	Type of Clearance:	None
Departure Time:		Type of Airspace:	Class G

A witness to the meteorological conditions on the night of the accident (one of the operator's fixed-wing pilots who searched for and located the missing helicopter) reported that the moon was full and that visibility was unlimited.

According to the US Naval Observatory, on the day of the accident, the sun set at 1742, and moonrise occurred at 1651. The moon phase was full with 100% of the moon's disk illuminated.

Wreckage and Impact Information

Crew Injuries:	1 Fatal	Aircraft Damage:	Substantial
Passenger Injuries:	N/A	Aircraft Fire:	None
Ground Injuries:		Aircraft Explosion:	None
Total Injuries:	1 Fatal	Latitude, Longitude:	36.29256,-120.24516

The helicopter came to rest on its left side in an orchard, as shown in figure 2. The orchard was at an elevation of about 385 ft mean sea level and consisted of 12-ft trees spaced about

15 ft apart. An area of disturbed ground and felled trees extended back from the helicopter about 120 ft on a magnetic bearing of 170°. The fuselage had rotated about 180°.



Figure 2. Aerial view of the accident site and the power distribution lines (left side).

All major components of the helicopter were observed near the accident location. The forward area of the fuselage exhibited damage consistent with a nose-low, left-bank impact. Flight control continuity was established for all flight controls to the hydraulic servos for the respective systems and from the hydraulic servos to the respective flight control surfaces.

Both rotor systems exhibited damage consistent with rotation at impact. The helicopter was equipped with forward-facing LED supplemental lights. Examination of the pilot's collective control revealed that both supplemental light switches were in the ON position. According to a pilot employed by the operator, the helicopter's supplemental lights were used for night

spraying, and the pilot would not normally use the lights for ferry flights because the lights were oriented upward and the beam would be too high for straight-and-level flight.

Examination of the engine revealed that it remained secured to the engine mounts and that a section of the firewall had separated and become wrapped around the power output shaft. Tree debris and airframe wire were found between the compressor inlet guide vanes, consistent with ingestion at impact. A teardown of the engine axial compressor section at the engine manufacturer's facility revealed that all blades exhibited hard-body impact damage and trailing-edge tip bending opposite the direction of rotation.

Postaccident examination of the airframe and engine revealed no mechanical malfunctions or failures that would have precluded normal operation.

The annunciator panel, master caution, rpm warning, and fire warning lights were recovered from the instrument panel. No light filaments appeared to be stretched.

Medical and Pathological Information

The Fresno County Sheriff–Coroner's Office, Fresno, California, performed an autopsy on the pilot. His cause of death was head injury due to blunt impact. The pilot's postmortem COVID-19 test was negative, and a blood sample sent to the Federal Aviation Administration (FAA) was negative for carbon monoxide. The autopsy report stated that the pilot was dressed in (among other things) two jackets, and long johns.

Toxicology testing performed by the FAA Forensic Sciences Laboratory identified ethanol in the pilot's femoral blood but not in his urine and found acetaminophen in the pilot's subclavian blood and urine. Acetaminophen is an over-the-counter analgesic and fever reducer commonly marketed with the name Tylenol. It is generally not considered impairing.

A pack of Plaquenil (hydroxychloroquine) and a bottle of ibuprofen were found at the accident site.

Administrative Information

Investigator In Charge (IIC):	Salazar, Fabian
Additional Participating Persons:	Allison Engel; Honeywell Aerospace; Phoenix, AZ Troy Wise; Federal Aviation Administration; Fresno, CA Jason Rasmussen; Ozark Aerospace
Original Publish Date:	August 23, 2023
Last Revision Date:	
Investigation Class:	Class 3
Note:	
Investigation Docket:	https://data.nts.gov/Docket?ProjectID=104646

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](#).