

# **Aviation Investigation Final Report**

Location:	MOAB, Utah		Accident Number:	SEA95FA120
Date & Time:	June 16, 1995, 22:00	) Local	Registration:	N6970E
Aircraft:	CESSNA	175A	Aircraft Damage:	Destroyed
Defining Event:			Injuries:	1 Fatal
Flight Conducted Under:	Part 91: General aviation - Positioning			

## Analysis

THE PILOT WAS PERFORMING A NIGHT VFR APPROACH INTO THE UNCONTROLLED AIRPORT WHEN THE AIRCRAFT IMPACTED THE TERRAIN ONE AND ONE HALF MILES FROM THE RUNWAY. A WITNESS OBSERVED THE AIRCRAFT IN THE TRAFFIC PATTERN AND INDICATED THE AIRPLANE GROUND TRACK APPROXIMATED THE TRAFFIC PATTERN FOR RUNWAY 21 EXCEPT THAT THE AIRCRAFT LOOKED LOWER TO THE GROUND THAN A NORMAL PATTERN. THIS WITNESS SAW THE AIRPLANE MAKE A LEFT TURN, SIMILAR TO A BASE TURN, AND DESCEND FROM VIEW BEHIND A RIDGE LINE. THE ACCIDENT FLIGHT OCCURRED ABOUT 16 HOURS AFTER THE START OF THE PILOT'S DUTY DAY. THE COMPANY OPERATIONS MANUAL STATES THAT DUTY ASSIGNMENTS SHOULD NOT EXCEED 14 HOURS. FLIGHT SERVICE HAD BRIEFED THE PILOT BEFORE HIS DEPARTURE THAT THE RUNWAY LIGHTS AT HIS DESTINATION WERE OUT OF SERVICE.

### **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 PROPER ALTITUDE IN THE VISUAL FLIGHT RULES (VFR) TRAFFIC PATTERN. CONTRIBUTING TO THE ACCIDENT WERE THE PILOT'S FAILURE TO FOLLOW DISPATCH PROCEDURES, THE DARK NIGHT CONDITIONS, AND THE UNAVAILABILITY OF THE AIRPORT'S PILOT-CONTROLLED RUNWAY AND PRECISION APPROACH PATH INDICATOR (PAPI) LIGHTS.

#### **Findings**

Occurrence #1: IN FLIGHT COLLISION WITH TERRAIN/WATER Phase of Operation: APPROACH - VFR PATTERN - BASE LEG/BASE TO FINAL

#### Findings

- 1. (F) DISPATCH PROCEDURES NOT FOLLOWED PILOT IN COMMAND
- 2. (F) LIGHT CONDITION DARK NIGHT
- 3. LACK OF RECENT EXPERIENCE IN TYPE OPERATION PILOT IN COMMAND
- 4. (F) AIRPORT FACILITIES, RUNWAY EDGE LIGHTS UNAVAILABLE
- 5. (F) AIRPORT FACILITIES, VISUAL APCH SLOPE IND(VASI) UNAVAILABLE
- 6. (C) PROPER ALTITUDE NOT MAINTAINED PILOT IN COMMAND
- 7. TERRAIN CONDITION ROUGH/UNEVEN

### **Factual Information**

#### HISTORY OF FLIGHT

On June 16, 1995, approximately 2200 mountain daylight time, a Cessna 175A, N6970E, being operated by Corporate Aircraft Service (CAS) of Rifle, Colorado under a letter of agreement with its principal operator Mountain Flying Service (MFS) of Moab, Utah, was destroyed in an inflight collision with terrain 1 1/2 miles northeast of Canyonlands Airport, Moab, Utah. The airline transport pilot, who was the sole occupant of the aircraft, was fatally injured. The 14 CFR 91 flight had originated at Salt Lake City International Airport and was attempting to land at Canyonlands, although no flight plan had been filed. The weather at Canyonlands on the night of the 16th was described by witnesses as raining with strong and gusty winds.

The airplane was on the 14 CFR 135 operating certificates of both CAS and MFS, and was under the operational control of CAS on the day of the accident. Under this arrangement, Canyonlands was a "satellite base" for CAS flight operations, with Rifle being the "main base." The aircraft flight log, which was recovered from the aircraft wreckage, indicated that the accident flight was the sixth flight of the day. According to the log, the pilot had flown 6.3 hours on his first five flights with the first takeoff of the day at 0645.

In his report on the accident, the CAS director of operations stated the following regarding the pilot's flight activity for the day: "On the morning of Friday June 16...[the pilot] departed CNY airport [Canyonlands] at approximately 0645 local time. He flew to GJT [Grand Junction, CO] to [pick up] 3 [passengers] and take them to Sandwash Airport. He then returned to CNY by 1040 local time and called Corporate Aircraft Services (CAS) dispatch number to report that he was back at CNY. He informed CAS that he had a tentative flight from Monument Valley [a private airstrip operated by MFS, located approximately 19 nautical miles north of Kayenta, AZ] to SLC [Salt Lake] for that afternoon around 1500 local time and that he would call back if it was for certain....the pilot did not call CAS dispatch to confirm the flight....It was...the impression left with CAS dispatch that he had not flown since the Sandwash flight on the morning of the 16th. He failed to confirm the Monument Valley flight with CAS dispatch or any segment of it therefore CAS was unaware of his activity." The CAS dispatch log for N6970E for June 16th recorded only the first three flights of the day (Canyonlands-Grand Junction-Sandwash-Canyonlands).

The aircraft flight log indicates that the pilot flew from Canyonlands to Monument Valley airstrip, departing Canyonlands at 1500, and then flew from Monument Valley to Salt Lake City. The aircraft flight log contained discrepancies in the time entries for these flights, indicating arrival at Monument Valley at 2215 UTC (1615 MDT), with both departure and arrival times for the Monument Valley-Salt Lake flight logged as 2200 UTC.

According to a transcript of Cedar City AFSS telephone traffic on the night of the accident, the pilot called the AFSS at 1957 and requested a standard briefing for a flight from Salt Lake City to Moab. He indicated that he intended to depart in "twenty or thirty minutes" and gave his estimated time en route as 1 hour and 20 minutes. The transcript indicates that during this briefing, the briefer relayed an AIRMET weather advisory for turbulence along the route along with area forecasts indicating forecast conditions for the southern half of Utah as: broken clouds at 8,000 to 10,000 feet above mean sea level (MSL) with tops at 20,000 feet above MSL, and widely scattered thunderstorms (possibly severe) with cumulonimbus tops up to 40,000 feet above MSL. According to the transcript, she also relayed to the pilot a Notice to Airmen (NOTAM) that the runway lights at Canyonlands were out of service. The transcript indicates that the pilot did not file a flight plan for the Salt Lake to Moab flight during this call. Subsequent transcripts of radio communication on Salt Lake's air traffic control (ATC) frequencies indicate that N6970E was cleared for takeoff from Salt Lake at 2030 and departed Salt Lake's Class B airspace to the south at 2035. The ATC transcript indicates that Salt Lake Departure Control cleared N6970E to leave its frequency at 2039. The FAA's air traffic accident package contains no further record of communication between N6970E and ATC agencies after this point.

A witness at Canyonlands reported that between 2200 and 2230 on the 16th, he heard an aircraft over the field. He stated that he ran to the airport office (normally closed after 1800 according to the Airport/Facility Directory), saw the aircraft heading northeast, and broadcast on the Canyonlands UNICOM frequency: "Aircraft circling over Canyonlands, this is Canyonlands UNICOM." He stated that he received a reply to the effect of "Oh I didn't think anybody was home," but that the aircraft did not identify itself. He stated that he intended to tell the aircraft to wait while he turned on the runway lights manually (he indicated that only the pilot-control apparatus was inoperative), but that the aircraft did not reply after he twice broadcast "Aircraft over Canyonlands, this is Canyonlands UNICOM, go ahead." The witness stated that he did not observe the unidentified aircraft again and that he subsequently assumed that the pilot did not intend to land at Canyonlands. The witness then became concerned about the aircraft he had observed. He stated that he listened to 121.5 MHz using a handheld radio and did not hear anything. He also stated that he then contacted both Cedar City AFSS and the Denver Air Route Traffic Control Center (ARTCC) to inquire about aircraft inbound to Canyonlands. He stated that both agencies replied that there were no flight plans filed into Canyonlands at that time.

Another witness at Canyonlands observed an aircraft over the field between 2200 and 2215. She stated that the aircraft turned toward the northeast along a ground track approximating the traffic pattern for runway 21, but that the airplane looked lower than the normal traffic pattern altitude. She stated that the aircraft made a descending left turn "as if turning base", then disappeared from view. Taken to the vantage point from which she observed the aircraft and asked to indicate which direction it was when it disappeared, she pointed toward a ridge northeast of the airport which obstructed the wreckage of N6970E from view. She indicated that the aircraft maintained a steady, descending flight path, with no abrupt changes, until it disappeared. She stated that the airplane had its landing lights on, and that while the wind

made it difficult to hear the airplane, the engine noise she could hear over the wind sounded normal.

The operator stated that the pilot was scheduled for two days off following the day of the accident and that he did not become aware that N6970E was missing until Sunday evening (6/18), when CAS dispatch attempted unsuccessfully to contact the pilot. He stated that during follow-up inquiries as to the pilot's whereabouts, it was discovered that the airplane was not located at Canyonlands. When the airplane and pilot could not be located, the airplane was listed as missing at approximately 2230 on Sunday night. About 0645 Monday morning (6/19), the wreckage was spotted by another aircraft.

The accident occurred during the hours of darkness at approximately 38 degrees 46.5 minutes North and 109 degrees 44 minutes West.

#### PERSONNEL INFORMATION

The pilot held an airline transport pilot certificate with commercial privileges for single-engine land airplanes. He was also a certificated flight instructor with single-engine, multi- engine, and instrument instructor ratings. His logbook indicates that he had over 4,600 hours total time, including 140 night hours, and 67 hours in the 90 days before the accident. However, the pilot had logged only 1.9 night hours and two night landings in the 90 days before the accident.

The operator stated that the pilot had recently been hired by CAS. The pilot successfully completed a 14 CFR 135 initial pilot proficiency check on May 26, 1995.

Based on the start time indicated on CAS flight and duty time records, the pilot departed Salt Lake 14 1/2 hours after the start of his duty day. The accident occurred approximately 16 hours after the start of the pilot's duty day. The CAS operations manual states that duty assignments, to include 14 CFR 91 flights (unless approved by management), should not exceed 14 hours.

#### AIRCRAFT INFORMATION

According to the aircraft records, the 1960 Cessna 175A had a newly overhauled Lycoming O-360-A1A engine installed in 1993 in accordance with an FAA Supplemental Type Certificate. The airplane's last inspection was a 50/100 hour inspection on May 20, 1995. The aircraft's emergency locator transmitter (ELT) battery was replaced during this inspection.

#### METEOROLOGICAL INFORMATION

The only weather information available for the time and location of the accident is from witnesses who described the weather in the Moab area as rainy with strong, gusty winds. A special observation taken at Green River, UT (25 nautical miles northwest of Canyonlands) at 2048 (0248 UTC) indicated an estimated overcast ceiling at 6,000 feet, visibility 50 miles, and

#### wind from 180 degrees at 10 knots.

According to the Canyonlands airport manager, there are four certified weather observers at Canyonlands. The airport manager, who is one of the certified observers, stated that although observations at Canyonlands are not taken every day, the observers' goal is to perform one observation for the field at the beginning of each day. She stated that each observer is required to perform 5 observations per month to maintain his or her observer certification. An observation log provided by the airport manager revealed that a total of 8 observations had been taken at the airport from June 1 until the accident date, and that the last recorded observation for the airport prior to the accident had been taken at 0735 on June 14th. The airport is attended until 1800 according to the U.S. government Airport/Facility Directory effective at 0901 UTC on May 25, 1995. A remote communications outlet is available at Moab for radio communication with Cedar City AFSS.

A solar/lunar event prediction computer program used by the investigator computed sunset at Canyonlands on June 16th to be 2046 with evening twilight ending at 2158. The program computed moonrise at Canyonlands on the 16th as 2343 with 76 percent moon illumination thereafter (100% representing a full moon).

#### AERODROME AND GROUND FACILITIES

According to the Airport/Facility Directory, Canyonlands runway 21 is equipped with medium intensity runway lights and precision approach path indicator (PAPI) lights. Both lighting systems are pilot-controlled by repetitively keying a radio on the Canyonlands UNICOM frequency.

On the night of the accident, a NOTAM was in effect indicating that the runway lights at Canyonlands were out of service. The owner of MFS stated in a telephone conversation with the investigator that they had been out of service since approximately the beginning of May; the FAA coordinator to the accident reported that the NOTAM was issued on May 21 at 0358 UTC. The NOTAM was relayed to the pilot by Cedar City AFSS during his telephone briefing at Salt Lake. One witness stated to investigators that only the pilot-controlled activation system was inoperative, and that the lights could still be turned on manually from the ground.

#### WRECKAGE

The airplane wreckage was examined at the accident site on June 20, 1995. The examination of the wreckage revealed a pattern 167 feet long from the initial ground scar to the main wreckage, oriented 322 degrees magnetic. All aircraft components were located within the area between the initial ground scar and the main wreckage, except the magnetic compass which was on the side of a hill 138 feet northwest of the main wreckage, and the left main gear wheel which was 240 feet north-northeast of the main wreckage. The main wreckage site was within approximately 1/4 mile of, and to the left of, the extended centerline of Canyonlands runway 21.

The initial ground scar contained fragments of red glass at its initiation point. Fragments of wingtip fairing were scattered for about 10 feet beyond the initial ground scar. The initial ground scar ran for 42 feet on a heading of 330 degrees magnetic from its initiation point to its other end, where the propeller was buried approximately 6 inches into the ground. Two round ground scars, each approximately 1 foot in diameter and 6 inches deep, were located about 30 feet past the initiation point of the initial scar. They were just to the right of, and on a line parallel to, the initial scar. The round scars were approximately 5 feet apart. The buried propeller was embedded in a 3 foot high terrain rise containing a large gouge. Numerous dislodged aircraft instruments and instrument pieces, along with a piece of engine cowling, were located on the terrain rise immediately beyond the gouge.

The main wreckage consisted of both wings, cabin remnants (e.g. seats, instrument panel, etc.) and empennage. It had come to rest in an upright position, headed approximately south, with the tail adjacent to an east-west barbed wire section fence. The main wreckage site was east of a 50-foot-high north-south ridge, at the base of the ridge. This ridge was between the accident site and the airport. Both doors, the nose strut, nose wheel, and right-main-gear wheel were adjacent to the main wreckage. The engine was adjacent to the main wreckage, by the right side of the tail. The fuselage was demolished from the cabin forward and the forward part of the aircraft was bent downward about 60 degrees relative to the tail section, with the bend at the aft end of the cabin. The fuselage skin aft of the cabin was wrinkled and the skin was torn at the base of the forward edge of the vertical tail. The vertical tail was buckled to the right at about mid-length. The only damage evident to the horizontal stabilizer was a broken right tip fairing. The left wing was broken backward about 60 degrees. The left wing tank contained fuel. The right wing was broken away from the fuselage at the root and was folded over inverted in front of the aircraft but was still attached to its lift strut.

The engine had separated from the aircraft and firewall and had come to rest in an inverted position. The engine was extensively damaged with several components missing and not recovered, including: carburetor broken off; fuel pump broken off; propeller governor broken off (control cable was still attached); sump fragmented; left magneto broken off; oil filter crushed; starter and alternator destroyed; propeller flange broken off crankshaft; and number 2 cylinder bottom spark plug missing. The number 1 and 3 cylinders' exhaust pipes were bent, and number 2 and 4 cylinders had exhaust and intake pipes broken off. Continuity was established to the accessory gears by rotating the crankshaft, and the vacuum pump shaft also turned. Thumb compression was obtained on all four cylinders.

Both propeller blades were still in the propeller hub and exhibited "S" bending, torsional twisting and chordwise scratching.

Investigators discovered no evidence of pre-impact structural failure, flight control malfunction, or fire during their on- scene examination of the wreckage.

MEDICAL AND PATHOLOGICAL INFORMATION

An autopsy was performed by the Utah State Medical Examiner's Office, Salt Lake City, on June 20, 1995. The examiner's opinion in the autopsy report was that the pilot "died of multiple blunt force injuries...."

Toxicology tests on the pilot were performed by the Armed Forces Institute of Pathology under contract to the FAA Civil Aeromedical Institute. The tests did not detect the presence of ethanol or drugs in the pilot.

#### SURVIVAL ASPECTS

The CAS director of operations stated in his accident report: "Given that the pilot had intended to take the weekend off it was not until the evening of Sunday June 18th when CAS dispatch was trying to contact [the pilot] that suspicions occurred about his whereabouts. During the evening it was discovered that his aircraft was not at CNY airport. Thus it was assumed he must have flown a trip, presumably the Monument Valley trip he alluded to on Friday. After several phone calls to contacts in Utah it was determined [the pilot] was missing and Cedar City FSS was contacted for search and rescue."

A witness at Canyonlands airport who observed an aircraft over the field at approximately the flight's estimated time of arrival on Friday evening stated that he did not hear an ELT signal when he monitored a handheld radio tuned to 121.5 MHz. However, it was noted that a ridge between Canyonlands and the wreckage site obstructed the line of sight between them. The witness stated that he subsequently contacted both Cedar City AFSS and Denver ARTCC on Friday evening to inquire about flights inbound to Canyonlands. He stated that both agencies informed him that they had no flight plans on file into Canyonlands.

According to the Canyonlands airport manager, the wreckage was spotted by a local aircraft on Monday morning. Rescue personnel subsequently found the pilot dead at the scene. Grand County Sheriff personnel stated to investigators that the pilot was located about 33 feet northwest of the main wreckage at the accident site.

In a letter to the investigator, the FAA coordinator to the accident reported: "Air Force search and rescue did not receive an ELT signal from this accident."

#### TESTS AND RESEARCH

Since an ELT signal was not detected from the aircraft after the accident, the FAA coordinator had the ELT function-tested at Kings Avionics of Salt Lake City, UT. The FAA coordinator reported the following test findings: "...the ELT and the battery are fine. At the time of the accident the cable to the external antenna was crushed. This grounded the signal and prevented the ELT from functioning properly. I asked one of our Avionics Inspectors if this occurred frequently and he said he had never heard of it happening."

#### ADDITIONAL INFORMATION

The CAS director of operations furnished the investigator with copies of several chapters of the company's FAA-approved operations manual. The operations manual sections contained the following provisions relative to the accident flight:

"PILOT-IN-COMMAND: ...Ensures that a flight plan or other authorized flight following procedure is followed on each flight...Keeps the company informed of any known or anticipated changes in flight itinerary. Calls the company at least once a day and anytime there is a change in the trip's itinerary. Ensures that if an FAA flight plan is not used that the company is kept continuously aware of the flight's location and schedule...."

"FLIGHT PLANS - General: Flight plans, properly filed with Flight Service or the company, shall be used for all flights. The filing of a company flight plan will be in detail...."

"SATELLITE BASE FLIGHT FOLLOWING: Satellite pilots will file either an FAA or company flight plan prior to each flight...Satellite base pilots will call base operations office at the beginning and completion of each flight and relay status of the flight."

"FLIGHT AND DUTY TIME LIMITATIONS - FLIGHT TIME LIMITS: Pilots not flying air taxi flights (such as training, ferrying, maintenance or corporate pilot services) shall include their flying time under the Commercial Flying Time category."

"FLIGHT AND DUTY TIME LIMITATIONS - ASSIGNED DUTY PERIODS: Duty assignments should not exceed fourteen hours...Pilots shall adhere to the more restrictive air taxi duty time limits for all company flights unless, in the case of FAR 91 operations, management approval to deviate from the requirements has been received."

"DESTINATION AIRPORT REQUIREMENTS - GENERAL: ...Airports to be used must be adequate for the proposed operation, with respect to...lighting....Night operations require runway lights...."

"SATELLITE BASE OPERATIONS - FLIGHT FOLLOWING: Satellite Base flight following will be conducted [through] the Main Base office whereas the satellite pilot will call the Main Base office prior to and after the completion of each flight operation to relay information on the status and route of each flight...."

The aircraft wreckage was released to Mr. Charles Carstensen of Carstensen Company, Montrose, CO, on June 21, 1995. Mr. Carstensen is the insurance adjuster representing the owner. The wreckage was released at the accident site after investigators had completed their on-scene examination.

### **Pilot Information**

Certificate:	Airline transport; Commercial	Age:	46,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	Seat Occupied:	Left
Other Aircraft Rating(s):		Restraint Used:	
Instrument Rating(s):	Airplane	Second Pilot Present:	No
Instructor Rating(s):	Airplane multi-engine; Airplane single-engine; Instrument airplane	Toxicology Performed:	Yes
Medical Certification:	Class 1 Valid Medical–w/ waivers/lim	Last FAA Medical Exam:	April 3, 1995
Occupational Pilot:	Yes	Last Flight Review or Equivalent:	
Flight Time:	4671 hours (Total, all aircraft), 59 hours (Total, this make and model), 4598 hours (Pilot In Command, all aircraft), 67 hours (Last 90 days, all aircraft), 48 hours (Last 30 days, all aircraft), 8 hours (Last 24 hours, all aircraft)		

## Aircraft and Owner/Operator Information

Aircraft Make:	CESSNA	Registration:	N6970E
Model/Series:	175A 175A	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	
Airworthiness Certificate:	Normal	Serial Number:	56470
Landing Gear Type:	Tricycle	Seats:	4
Date/Type of Last Inspection:	May 20, 1995 100 hour	Certified Max Gross Wt.:	2350 lbs
Time Since Last Inspection:	48 Hrs	Engines:	1 Reciprocating
Airframe Total Time:	7313 Hrs	Engine Manufacturer:	LYCOMING
ELT:	Installed, activated, did not aid in locating accident	Engine Model/Series:	0-360-A1A
Registered Owner:	WISCHMEYER, JIM	Rated Power:	180 Horsepower
Operator:	HOFFMAN, PAUL	Operating Certificate(s) Held:	On-demand air taxi (135)
Operator Does Business As:	CORPORATE AIRCRAFT SERVICE	Operator Designator Code:	OTCA

### Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	Condition of Light:	Night/dark
Observation Facility, Elevation:	U34 ,4225 ft msl	Distance from Accident Site:	26 Nautical Miles
Observation Time:	20:48 Local	Direction from Accident Site:	283°
Lowest Cloud Condition:	Unknown	Visibility	50 miles
Lowest Ceiling:	Overcast / 6000 ft AGL	Visibility (RVR):	
Wind Speed/Gusts:	10 knots / None	Turbulence Type Forecast/Actual:	/
Wind Direction:	180°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:		Temperature/Dew Point:	22°C / -1°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	SALT LAKE CITY (SLC)	Type of Flight Plan Filed:	None
Destination:	(CNY)	Type of Clearance:	None
Departure Time:	20:31 Local	Type of Airspace:	Class G

# **Airport Information**

Airport:	CANYONLANDS CNY	Runway Surface Type:	
Airport Elevation:	4553 ft msl	Runway Surface Condition:	
Runway Used:	21	IFR Approach:	None
Runway Length/Width:		VFR Approach/Landing:	Traffic pattern

# Wreckage and Impact Information

Crew Injuries:	1 Fatal	Aircraft Damage:	Destroyed
Passenger Injuries:		Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	1 Fatal	Latitude, Longitude:	38.529418,-109.549148(est)

#### **Administrative Information**

Investigator In Charge (IIC):	Nesemeier, Gregg	
Additional Participating Persons:	RICHARD S LUND; SALT LAKE CITY , UT EMILE J LOHMAN; WICHITA , KS GERALD R JAMES; DALLAS , TX	
Original Publish Date:	January 29, 1996	
Last Revision Date:		
Investigation Class:	<u>Class</u>	
Note:		
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=42055	

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