



# Aviation Investigation Final Report

<b>Location:</b>	Essex, Montana	<b>Accident Number:</b>	SEA04GA192
<b>Date &amp; Time:</b>	September 20, 2004, 15:30 Local	<b>Registration:</b>	N206SM
<b>Aircraft:</b>	Cessna U206G	<b>Aircraft Damage:</b>	Destroyed
<b>Defining Event:</b>		<b>Injuries:</b>	3 Fatal, 2 Serious
<b>Flight Conducted Under:</b>	Public aircraft		

## Analysis

The purpose of the public use flight was to transport four United States Forest Service (USFS) employees to a remote back-country airstrip. The flight's departure was delayed 2 hours due to heavy rain showers and a thunderstorm. The planned flight route was to follow a highway through a river valley with high terrain (peaks above 8,000 feet) on both sides until reaching a point where the highway diverged from the river. At that point, the flight was to leave the highway and follow the river. Analysis of available weather data indicated that as the airplane proceeded along the river valley, ridge tops on both sides of the valley became obscured. Bases of the overcast were probably about 7,000 feet msl. Ragged clouds and mist were probably present beneath the overcast due to recent rain showers in the area. Slant visibility was likely diminished. Local pilots reported that in these type weather conditions the numerous drainages that feed into the river valley can be similar in appearance. The pilot made a position call about 15 minutes after takeoff stating that he was over a small town located close to the point where the flight was to leave the highway. This was the last radio communication received from the airplane. Analysis of radar data available for the first 8 minutes of the flight indicated the airplane was not at the position reported by the pilot, but was actually well short of this position. About 15 minutes later, witnesses heard and saw the airplane flying up a drainage located short of the reported position. This drainage ended in a box canyon. Inspection of the accident site indicated that the airplane was in a left climbing turn when it impacted steep terrain near the head of the drainage at an elevation of about 6,600 feet. The airplane nosed over, came to rest inverted, and a fire erupted. Three of the occupants exited the burning wreckage. All communications equipment, survival equipment and foul-weather gear aboard the airplane were destroyed in the fire. One of the three initial survivors died from his injuries the following morning. At that time, the remaining two survivors decided to depart the site for lower elevation due to extreme cold and precipitation. Searchers found the wreckage later that afternoon. The two survivors walked out to the highway 2 days after the accident. No abnormalities were noted during examination of the airplane that would have prevented normal operation. When the pilot took a check ride that

allowed him to act as pilot in command of public use flights carrying passengers into the back-country, he reported to the check pilot that he had 100 hours flight time in "typical terrain (over mountains)." USFS standards required 200 hours flight time in typical terrain. However, the standards did not define typical terrain. Examination of the pilot's logbook revealed that it did not include a specific record of back country or mountain flying experience. Review of the past 2 years of logbook entries revealed a total of only 15 entries (14 hours flight time) that included a takeoff or landing at a back-country airport.

## Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot's misidentification of the airplane's location, which resulted in his improper decision to fly into the wrong drainage, and his failure to maintain terrain clearance while executing a turn to reverse course after he realized his navigational error. Contributing factors were the low visibility due to mist, obscuration of the mountainous terrain, and the pilot's lack of experience in back country flying.

### Findings

Occurrence #1: IN FLIGHT ENCOUNTER WITH WEATHER  
Phase of Operation: CRUISE

#### Findings

1. (F) WEATHER CONDITION - OBSCURATION
2. (F) WEATHER CONDITION - DRIZZLE/MIST
3. (C) BECAME LOST/DISORIENTED - PILOT IN COMMAND
4. (F) LACK OF TOTAL EXPERIENCE IN TYPE OPERATION - PILOT IN COMMAND
5. (C) IN-FLIGHT PLANNING/DECISION - IMPROPER - PILOT IN COMMAND

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Occurrence #2: IN FLIGHT COLLISION WITH TERRAIN/WATER  
Phase of Operation: MANEUVERING - TURN TO REVERSE DIRECTION

#### Findings

6. (F) TERRAIN CONDITION - MOUNTAINOUS/HILLY
7. EVASIVE MANEUVER - ATTEMPTED - PILOT IN COMMAND
8. (C) CLEARANCE - NOT MAINTAINED - PILOT IN COMMAND

## Factual Information

### HISTORY OF FLIGHT

On September 20, 2004, approximately 1530 mountain daylight time, a Cessna U206G, N206SM, impacted mountainous terrain while maneuvering about 6 nautical miles northwest of Essex, Montana. The airplane was being operated under contract to the United States Department of Agriculture, Forest Service (USFS) by Edwards Jet Center of Kalispell, Montana, as a public use flight. The purpose of the flight was to transport a forest inventory team from Kalispell to the Schafer USFS Airport, Schafer, Montana. Four USFS employees and an Edwards pilot were on board. The pilot and two USFS employees were killed, and the other two USFS employees sustained serious injuries. Visual meteorological conditions prevailed for the airplane's departure at 1500 from Glacier Park International Airport in Kalispell. An FAA flight plan was not filed; however, the airplane was receiving flight following services from the USFS.

According to USFS personnel, the flight was originally scheduled to depart at 1300. The scheduled departure was delayed from 1300 to 1500 due to weather conditions. The planned route of flight was to follow Highway 2 from Glacier Airport to a point about 3 miles south of the town of Essex, where the highway and the Middle Fork of the Flathead River separate. At this point, the flight was to leave the highway and follow the Middle Fork drainage to Schafer.

According to personnel at the Glacier Airport Tower, their last contact with the airplane was at 1508, when the pilot reported that he was through "the canyon" (Badrock Canyon approximately 8 miles northeast of Glacier Airport) and switching to "backcountry frequency" (USFS dispatch). Examination of radar data confirmed that at 1508, the airplane was exiting Badrock Canyon heading northeast. Radar contact with the airplane was lost at this time due to mountainous terrain. From Badrock Canyon, the airplane's planned route proceeded along Highway 2, which follows a large bend in the Middle Fork of the Flathead, heading first northeast, then east, and finally southeast towards Essex. At 1515, the airplane checked in with USFS dispatch, and the pilot reported his position as "Essex, inbound for Schafer." This was the last radio communication received from the airplane.

The distance from Badrock Canyon to Essex via Highway 2 is approximately 33 miles. In order for the airplane to reach Essex from Badrock Canyon in 7 minutes, it would have had to travel at a groundspeed of approximately 280 mph. According to the Cessna Model U206G Information Manual, the airplane's maximum airspeed for all operations (red line) was 211 mph (183 knots) and its maximum structural cruising airspeed (upper limit of green arc) was 172 mph (149 knots). At maximum structural cruising airspeed, the airplane would have traveled about 20 miles in 7 minutes, which would have placed it in the vicinity of Nyack at 1515. Nyack is a small town located about 13 miles north of Essex on Highway 2.

One of the survivors reported that she was seated in the middle right seat and was wearing a headset that allowed her to hear the pilot and the right front seat passenger talking during the flight. She recalled the pilot making a radio call saying they were over Essex. About 5 minutes later, she noticed they were flying into a valley. At that time, the front passenger looked back and then asked the pilot, "Is that the Middle Fork?" The pilot replied, "Yes, that's the Middle Fork." The survivor recalled looking out the right side window and seeing snow on the peaks and then noticed they were "really close to the ground." She looked back forward and the airplane impacted.

The other survivor reported that he was seated in the middle left seat and was not wearing a headset. He recalled they made a right turn out of the main river valley and started flying up "a pretty tight canyon." As they continued up the canyon, the "scenery got more and more dramatic" and "the canyon started to close in a little bit." He felt their elevation was not high enough and realized they were going to crash. Within seconds, the airplane impacted.

About 1530, a USFS employee, located on Road 1637, observed an airplane flying up the Tunnel Creek drainage. Tunnel Creek originates from a small lake near the crest of the Flathead Range at an elevation of about 6,600 feet and flows east-northeast until it crosses Highway 2 and runs into the Middle Fork of the Flathead River about 7 miles south of Nyack and 6 miles north of Essex. The employee had been monitoring the radio in his vehicle and had heard the pilot of the airplane report over Essex. He estimated that it was approximately 15 minutes later that he made the sighting; at the time, he did not know if it was the accident airplane that he saw. The employee reported that the airplane was heading west to southwest, paralleling the ridge that forms the northern boundary of the Tunnel Creek drainage. The employee further reported that the airplane appeared to be in level flight, at an elevation near the top of the ridge, below a cloud layer that was obscuring the top of the ridge. About 1610, after hearing that a search for a missing airplane was in progress, the employee reported the sighting to USFS dispatch.

Two bow hunters who were hunting in the vicinity of Road 1637 about 1530 reported hearing the sound of an airplane engine "laboring, then two pops, then nothing." This report was not made until about 1315 on September 21, when the two hunters were returning to their vehicle and encountered USFS personnel involved in the ground search for the airplane.

When the airplane did not check in with USFS dispatch as expected at 1530, a search was initiated. An airplane from Edwards Jet Center and a helicopter under contract to the USFS searched by air until about 1725, when they were called back for the evening due to impending darkness and obscured mountain peaks. Based on the sighting of an airplane flying up the Tunnel Creek drainage by a USFS employee, the helicopter conducted a search of that drainage about 1700. According to the helicopter pilot, who viewed the accident site after it was discovered the following day, the cloud bases in the drainage prevented him from reaching the elevation of the accident site during his search on the day of the accident.

At 1827, the airplane was officially declared missing having passed the time limit for fuel on

board (3.5 hours). Montana Aeronautics Division assumed command of the aerial search, and the Flathead County Sheriff's Office assumed ground search responsibilities. About 0730 on September 21, a group of airplanes launched from Glacier Airport to search assigned grids. According to the aerial search coordinator, the airplane assigned to the grid where the accident site was eventually located flew along Highway 2 from Nyack towards Essex, but was unable to penetrate very far up the drainages from the Middle Fork of the Flathead due to low cloud bases. About 0945, while en route to his assigned grid, the pilot of the helicopter that had searched the Tunnel Creek drainage on the afternoon of the 20th, flew through the head of the Tunnel Creek drainage, but did not spot the wreckage. The pilot later reported that he was at a higher elevation in the drainage than the accident site when he made this over flight.

The wreckage of the airplane was spotted by ground searchers about 1345 on September 21, 2004. Search and rescue personnel reached the accident site via helicopter about 1510. The Deputy Coroner for Flathead County inspected the scene and announced that all five occupants were fatally injured. The ground search was suspended. Approximately 1430 on September 22, 2004, the two survivors walked out of the Tunnel Creek drainage.

#### PERSONNEL INFORMATION

The pilot held an airline transport pilot certificate with a multi-engine land airplane rating and commercial privileges in single engine land airplanes. Additionally, the pilot held a flight instructor certificate with single and multi-engine airplane and instrument airplane ratings. His most recent second class medical certificate was issued on October 22, 2003, with the limitation, must wear corrective lenses.

The pilot was hired by Edwards Jet Center in May 2004. Review of the pilot's logbook indicated he received 4.3 hours of 14 CFR Part 135 flight training during two separate flights in the accident airplane in April 2004. According to the instructor who provided the training, in order for a pilot to be eligible to fly for the USFS and "use the mountainous airports, they have to have a minimum of one takeoff and landing at [each] airport they are going to use." For that reason, during the training, they used the following airports: Condon (S04), Meadow Creek (0S1), Spotted Bear (8U4) and Schafer (8U2). The instructor stated that the pilot met and exceeded "every minimum requirement." The pilot successfully completed the required check ride in a Cessna 182 on May 13, 2004, and was approved to act as pilot in command of Cessna 182 and Cessna 206 airplanes operated by Edwards Jet Center under 14 CFR Part 135.

On June 14, 2004, the pilot received an Interagency Airplane Pilot Qualification Card after satisfactorily completing a 1.8 hour evaluation check ride in the accident airplane. The card authorized the pilot to act as pilot in command of Cessna 182 and Cessna 206 airplanes carrying federal employees in day VFR conditions on point to point, air tactical, fire surveillance, reconnaissance and mountain flying/unimproved strips missions. According to a written statement by the USFS pilot who performed the evaluation, the pilot's "performance was comparable" to that of other pilots to whom he had given evaluation rides.

On the Airplane Pilot Qualifications and Approval Record (USFS Form FS-5700-20) completed by the pilot on June 14, 2004, he listed 285 hours pilot in command (PIC) time in Cessna 182 airplanes and 7 hours PIC time in Cessna 206 airplanes. In the block titled, PIC "Typical Terrain" (Over Mountains), the pilot listed 100 hours. In the block titled, PIC "Low Level" Op[eratio]ns (-500' AGL), the pilot listed 250 hours. According to documents provided by the USFS, for a pilot to be carded by the USFS, that pilot must meet specific minimum flying experience requirements. These requirements include 25 hours as PIC in make and model to be flown and 200 hours as PIC conducting operations in typical terrain. The documents did not provide a definition of typical terrain.

The USFS pilot who performed the evaluation check ride stated that he was not able to review the pilot's logbook; however, he did question the pilot about his hours as PIC in make and model and in typical terrain. The accident pilot responded that he had 60 hours flight time in Cessna 210 airplanes, and the USFS pilot accepted this time as applicable to the make and model requirement since it was in "a 200 series Cessna aircraft." He further responded that he was confused by the wording on the form and that he assumed his 250 hours as PIC in low level operations applied to his flying in mountainous terrain. He also stated that to him typical terrain over mountains meant flying over mountains at altitudes several thousand feet above the highest point. The USFS pilot questioned the accident pilot further and after the accident pilot "described the areas where he had flown with privately owned aircraft, and the practical training he had received from experienced Edwards Jet Center pilots in backcountry takeoffs, landings and point to point flying," he "felt confident" that the accident pilot met the requirements. The USFS pilot stated that the definition of typical terrain over mountains "is open to interpretation to pilots throughout the agency."

Review of the pilot's personal flight logbook indicated that the last entry had been made on September 18, 2004. As of that date, the pilot had accumulated 2,723 hours total flight time of which 15 hours were in a Cessna 206. The pilot's logbook did not include a specific record of back country or mountain flying experience. It did include specific records of the pilot's flight time for Edwards Jet Center, 35 hours, and for the Civil Air Patrol, 94 hours. Logbook entries dating from September 2002 to September 2004 were reviewed, and there were a total of 15 entries involving a total flight time of 14 hours that included a takeoff or landing at any of the four mountainous airports identified by the instructor who provided the pilot's Part 135 flight training. Seven of the entries recorded an operation at Schafer airstrip. The most recent entries indicated the pilot had landed at Schafer twice on September 10, 2004 and twice on September 12, 2004; these landings were made in the accident airplane.

## AIRCRAFT INFORMATION

Examination of the airplane's maintenance records indicated that the 1982 model Cessna Stationair 6 received its most recent annual inspection on August 3, 2004, at a total airframe time of 4,224 hours. As of that date, the engine, a Continental IO-520-F, S/N 574383, had accumulated 1,290.8 hours since overhaul. Review of the maintenance records revealed no evidence of any uncorrected maintenance discrepancies. The airplane was equipped with a

King KLX-135 GPS COM. This unit had no capability to show terrain on a moving map display. The airplane was not equipped with automated flight following equipment, nor was this required.

The airplane was inspected by a USFS aircraft inspector on May 25, 2004. The inspector approved the airplane for public use passenger, cargo, fire surveillance/reconnaissance and air attack flights. Although the airplane was certified by the FAA to carry 5 passengers, the inspector approved the airplane for 3 passengers. The inspector stated that his reason for limiting the number of passengers was that at the time of his inspection there were only 3 seats installed in the airplane. He further stated that he called his supervisor and was advised by the supervisor "to enter 3 on N206SMs aircraft data card for the number of passenger seats that were actually installed in the aircraft."

The weight and balance of the airplane at takeoff was estimated using the following information: basic empty weight 2,107 pounds, front seat occupants 484 pounds, middle seat occupants 290 pounds, rear seat occupant 130 pounds, rear seat baggage 100 pounds, aft baggage 125 pounds, fuel 300 pounds (50 gallons). The estimated takeoff weight was 3,536 pounds, which was below the maximum gross weight of 3,600 pounds. The estimated takeoff moment was 169.6/1000 (pound-inches/1000), which was within the allowable moment range for the calculated takeoff weight. (At 3,600 pounds, the allowable moment range is 153.0/1000 to 178.9/1000.)

#### METEOROLOGICAL INFORMATION

The surface analysis chart prepared by the National Weather Service (NWS) for 1500 on September 20, 2004, showed a weak trough of low pressure over northwestern Montana.

Pertinent surface weather observations for the Glacier Park International Airport, in part, follow:

At 1155, the reported weather conditions included wind from 140 degrees at 3 knots; visibility 10 miles; present weather none; sky condition broken 500 feet, broken 800 feet, overcast 3,300 feet; temperature 8 degrees Celsius; dew point 6 degrees Celsius; altimeter setting .29.99 inches hg; remarks none.

At 1255, the reported weather conditions included wind from 130 degrees at 8 knots; visibility 10 miles; present weather none; sky condition scattered 1,300 feet, broken 3,300 feet, overcast 4,500 feet; temperature 9 degrees Celsius; dew point 6 degrees Celsius; altimeter setting 30.00 inches hg; remarks none.

At 1335, the reported weather conditions included wind from 310 degrees at 4 knots; visibility 1 3/4 miles; present weather heavy rain, mist; sky condition broken 1,900 feet, overcast 3,400 feet; temperature 7 degrees Celsius; dew point 5 degrees Celsius; altimeter setting 30.02 inches hg; remarks rain began 1306.

At 1355, the reported weather conditions included wind from 150 degrees at 9 knots; visibility 10 miles; present weather none; sky condition broken 1,900 feet, overcast 3,400 feet; temperature 8 degrees Celsius; dew point 6 degrees Celsius; altimeter setting 30.02 inches hg; remarks rain began 1306 ended 1355.

At 1409, the reported weather conditions included wind from 140 degrees at 7 knots; visibility 10 miles; present weather thunderstorm; sky condition broken 4,300 feet, broken 9,500 feet; temperature 8 degrees Celsius; dew point 7 degrees Celsius; altimeter setting 30.02 inches hg; remarks thunderstorm began 1403, thunderstorm overhead moving east.

At 1424, the reported weather conditions included wind from 140 degrees at 7 knots; visibility 10 miles; present weather none; sky condition few 3,100 feet, broken 4,300 feet; temperature 9 degrees Celsius; dew point 7 degrees Celsius; altimeter setting 30.02 inches hg; remarks thunderstorm began 1403 ended 1418, thunderstorm overhead moving east.

At 1455, the reported weather conditions included wind from 130 degrees at 10 knots; visibility 10 miles; present weather none; sky condition few 1,200 feet, scattered 3,100 feet, broken 4,500 feet; temperature 9 degrees Celsius; dew point 6 degrees Celsius; altimeter setting 30.01 inches hg; remarks thunderstorm began 1403 ended 1418.

At 1530, the reported weather conditions included wind from 170 degrees at 10 knots; visibility 10 miles; present weather light rain; sky condition broken 1,800 feet, broken 4,900 feet; temperature 9 degrees Celsius; dew point 7 degrees Celsius; altimeter setting 30.02 inches hg; remarks rain began 1524.

At 1555, the reported weather conditions included wind from 220 degrees at 7 knots; visibility 4 miles; present weather moderate rain; sky condition broken 1,800 feet, broken 3,300 feet, overcast 4,600 feet; temperature 8 degrees Celsius; dew point 7 degrees Celsius; altimeter setting 30.03 inches hg; remarks rain began 1524.

According to the owner of a local air taxi service, Red Eagle Aviation, about 1100, he had flown three hunters from Kalispell City Airport to the Schafer Airport using the same route as planned for the accident flight. His total flight experience was approximately 25,000 hours with the majority of that time obtained flying in the back country out of Kalispell. He described the weather conditions he encountered along the route as "a thousand foot ceiling but broken" and "raining hard." He stated that the USFS dispatcher had asked for a weather report, and he told the dispatcher the route was "a little tough, but flyable." (According to the USFS dispatch log, this weather report was made at 1227.) Additionally, he stated that "the clouds were about a third of the way down the mountains, but it was raining hard, hard enough to where visibility was interrupted. If you didn't know, it would be really easy to go up the wrong draw [drainage]."

Another pilot, who participated in the initial search for the airplane, stated that the weather conditions on the day of the accident were changing rapidly and "absolutely atrocious." He



departed Glacier Airport about 1700 in a Cessna 182 and attempted to follow the accident airplane's intended flight route. After he proceeded through Badrock Canyon and approached the town of West Glacier, the weather rapidly deteriorated from an 8,000 foot ceiling and 20 miles visibility to an indefinite ceiling and zero visibility looking ahead into the valley of the Middle Fork. The weather conditions prevented him from continuing any farther along the intended flight route. His total flight experience was approximately 16,000 hours with about 8,000 hours flying in the back country of Montana.

For further weather information, see the Meteorology Factual Report in the public docket for this accident.

## WRECKAGE AND IMPACT INFORMATION

The airplane impacted rugged mountainous terrain near the head of the Tunnel Creek drainage of the Flathead Range at a Global Positioning System (GPS) location of 48 degrees 19.011 minutes North, 113 degrees 44.166 minutes West, and an elevation of 6,604 feet. The airplane came to rest in a sparsely wooded, rocky area on an upslope of 30 to 45 degrees. All major components of the airplane were accounted for in the main wreckage area. The debris path measured approximately 80 feet in length along a magnetic bearing of 165 degrees. The debris path began at a tree that was broken off at a height of about 3 feet and continued across and up the slope to a ground scar containing 3-foot diameter rocks that had been dislodged. The left wheel was found a few feet left of the ground scar, and the nose wheel was located about 12 feet left of the ground scar. About 20 feet to the right of the ground scar, branches were broken and bark was torn from a tree and fragments of the right wingtip were found. The center of the main wreckage, which consisted of the fuselage, both wings and the empennage, was located about the 50 foot point. The fuselage came to rest inverted on a magnetic heading of 36 degrees, and the empennage, which remained attached to the fuselage by control cables came to rest upright. The outboard section of the left horizontal stabilizer was separated. The separated section was located about 50 feet down slope from the main wreckage, and it displayed a circular indentation in its leading edge that matched the diameter of the broken tree at the beginning of the wreckage path.

All flight controls remained attached to their respective attach points, and control continuity was verified from the control surfaces to the cockpit controls. The cockpit, cabin and the inboard sections of both wings were destroyed by fire. The majority of the instruments were destroyed by fire. The altimeter was indicating 5,700 feet and the Kollsman window was set to 1013 mb (29.92 inches). The attitude indicator was showing a 40 degree left bank and a 20 degree nose up pitch attitude. The vertical speed indicator was indicating a 1,000 foot per minute climb rate.

The engine was separated from the firewall and found about 5 feet upslope along the wreckage path from the fuselage. The fins on top of cylinders number two and five were impact damaged, and the rocker box covers on cylinders number two and four were broken. The oil sump was crushed up into the bottom of the engine, and longitudinal gouges were

present on the bottom of the sump running from the left front corner toward the right aft corner. The exhaust and induction tubes were bent, crushed and broken. The right exhaust tubing was broken off just below cylinder number three. The fracture surface had two distinct surfaces. About 3 inches of the fracture surface was rough and shiny. The remaining fracture surface was smooth and was colored an iridescent blue and pink. The fuel pump was removed from the engine, the drive coupling was found intact, and the pump turned freely. The vacuum pump was removed from the engine, the drive coupling was intact, and the pump turned freely. The spark plugs were removed and found to be new in appearance when compared to the Champion Check A Plug card. The crankshaft was rotated using a tool in the vacuum pump drive, and continuity was confirmed through to the propeller mounting flange. Compression was obtained on all cylinders, and both magnetos produced spark as the crankshaft was rotated.

The propeller was separated from the crankshaft and found about 14 feet upslope from the engine at the 80-foot mark of the wreckage path. All blades were loose in the hub and displayed about equal damage. One blade was bowed back about 90 degrees, its tip was broken off in forward bending, there was substantial leading edge damage and chordwise scoring was present. The second blade was bowed back and the outboard end was bowed forward, its tip was separated, there was substantial leading edge damage and chordwise scoring was present. The third blade was bowed forward about 45 degrees, the tip was separated, there was substantial leading edge damage and chordwise scoring was present.

#### MEDICAL AND PATHOLOGICAL INFORMATION

Autopsies of the pilot and the two passengers were performed by the State Medical Examiner in Missoula, Montana. The cause of death for the pilot and the rear seat passenger was determined to be thermal injuries. The cause of death of the right front seat passenger was determined to be complications of thermal injuries and blunt force injuries.

Toxicological tests on the pilot were conducted by the FAA's Toxicology and Accident Research Laboratory. The test results were negative for ethanol. The drug quinine was detected in liver.

#### SURVIVAL ASPECTS

The right middle seat passenger (female survivor) reported that after the airplane stopped moving, she was able to release her lap belt, open the door and get out. When she exited the plane, there were flames 15 feet tall coming out of the front of the airplane. She heard the left middle seat passenger (male survivor) calling and went back and helped him free his foot and get out of the airplane. She looked back at the rear seat passenger and saw that she had blood on her face and was not moving or talking. She attempted to pull the rear passenger out of the airplane, but her seat belt was still fastened and she was unable to move her before the entire airplane was engulfed in flames. The survivor noticed that the right front seat passenger was out of the airplane laying on the ground. The front passenger told her that the pilot had

unbuckled his seat belt and pushed him out of the airplane. The pilot did not get out of the airplane.

The male survivor reported that after the airplane stopped moving, he unbuckled his lap belt and then realized his right foot was caught underneath the seat in front of him. The female survivor helped him free his foot and he got out of the airplane. When he got out, the entire airplane was on fire and the front passenger was out of the airplane laying on the ground.

The survivors reported that all their gear, including foul-weather clothing, food, sleeping bags and a satellite telephone, remained in the airplane and was destroyed in the fire. After getting out of the airplane, they had only the clothes they were wearing for the flight. The female survivor reported that she was wearing "hiking boots, a pair of black Carhartts, a capilene T-shirt and a hooded sweatshirt." Her clothes were not significantly fire damaged. She had burns on her hands and a back injury. The male survivor reported that he was wearing two thin polypropylene shirts, wool pants and hiking boots. His shirts and pants were completely burned away in the front. He had burns on his face, hands and chest and a back injury. According to the female survivor, the front passenger was wearing an undershirt, a button-down shirt and a Nomex jacket, jeans and hiking boots. His jeans were burned away from the thigh down, but the Nomex jacket was undamaged. He had a broken leg and burn injuries to his face, hands and legs.

The right front seat passenger succumbed to his injuries the morning after the accident. At that time, the two survivors decided to depart the site for lower elevation due to extreme cold and precipitation.

#### ADDITIONAL INFORMATION

The wreckage was released to a representative of the operator on September 25, 2004, at the conclusion of the on scene investigation.

## Pilot Information

<b>Certificate:</b>	Airline transport; Flight instructor	<b>Age:</b>	60, Male
<b>Airplane Rating(s):</b>	Single-engine land; Multi-engine land	<b>Seat Occupied:</b>	Left
<b>Other Aircraft Rating(s):</b>	None	<b>Restraint Used:</b>	
<b>Instrument Rating(s):</b>	Airplane	<b>Second Pilot Present:</b>	No
<b>Instructor Rating(s):</b>	Airplane multi-engine; Airplane single-engine; Instrument airplane	<b>Toxicology Performed:</b>	Yes
<b>Medical Certification:</b>	Class 2 Valid Medical-w/ waivers/lim	<b>Last FAA Medical Exam:</b>	October 22, 2003
<b>Occupational Pilot:</b>	UNK	<b>Last Flight Review or Equivalent:</b>	May 13, 2004
<b>Flight Time:</b>	2723 hours (Total, all aircraft), 15 hours (Total, this make and model), 2603 hours (Pilot In Command, all aircraft), 68 hours (Last 90 days, all aircraft), 15 hours (Last 30 days, all aircraft)		

## Aircraft and Owner/Operator Information

<b>Aircraft Make:</b>	Cessna	<b>Registration:</b>	N206SM
<b>Model/Series:</b>	U206G	<b>Aircraft Category:</b>	Airplane
<b>Year of Manufacture:</b>		<b>Amateur Built:</b>	
<b>Airworthiness Certificate:</b>	Normal	<b>Serial Number:</b>	U20606459
<b>Landing Gear Type:</b>	Tricycle	<b>Seats:</b>	6
<b>Date/Type of Last Inspection:</b>	August 3, 2004 Annual	<b>Certified Max Gross Wt.:</b>	3600 lbs
<b>Time Since Last Inspection:</b>		<b>Engines:</b>	1 Reciprocating
<b>Airframe Total Time:</b>	4224 Hrs as of last inspection	<b>Engine Manufacturer:</b>	Teledyne Continental
<b>ELT:</b>	Installed, not activated	<b>Engine Model/Series:</b>	IO-520-F
<b>Registered Owner:</b>	Edwards Jet Center of Montana	<b>Rated Power:</b>	300 Horsepower
<b>Operator:</b>	USDA, Forest Service, Flathead National Forest	<b>Operating Certificate(s) Held:</b>	None

## Meteorological Information and Flight Plan

<b>Conditions at Accident Site:</b>	Visual (VMC)	<b>Condition of Light:</b>	Day
<b>Observation Facility, Elevation:</b>	FCA,2977 ft msl	<b>Distance from Accident Site:</b>	21 Nautical Miles
<b>Observation Time:</b>	15:30 Local	<b>Direction from Accident Site:</b>	268°
<b>Lowest Cloud Condition:</b>		<b>Visibility</b>	10 miles
<b>Lowest Ceiling:</b>	Broken / 1800 ft AGL	<b>Visibility (RVR):</b>	
<b>Wind Speed/Gusts:</b>	10 knots /	<b>Turbulence Type Forecast/Actual:</b>	/
<b>Wind Direction:</b>	170°	<b>Turbulence Severity Forecast/Actual:</b>	/
<b>Altimeter Setting:</b>	30.02 inches Hg	<b>Temperature/Dew Point:</b>	9°C / 7°C
<b>Precipitation and Obscuration:</b>	Light - None - Rain		
<b>Departure Point:</b>	Kalispell, MT (FCA )	<b>Type of Flight Plan Filed:</b>	Company VFR
<b>Destination:</b>	Schafer, MT (8U2 )	<b>Type of Clearance:</b>	None
<b>Departure Time:</b>	15:00 Local	<b>Type of Airspace:</b>	Class G

## Wreckage and Impact Information

<b>Crew Injuries:</b>	1 Fatal	<b>Aircraft Damage:</b>	Destroyed
<b>Passenger Injuries:</b>	2 Fatal, 2 Serious	<b>Aircraft Fire:</b>	On-ground
<b>Ground Injuries:</b>	N/A	<b>Aircraft Explosion:</b>	None
<b>Total Injuries:</b>	3 Fatal, 2 Serious	<b>Latitude, Longitude:</b>	48.316944,-113.736114

## Administrative Information

<b>Investigator In Charge (IIC):</b>	Struhsaker, Georgia
<b>Additional Participating Persons:</b>	Rick E Koffman; FAA, Helena FSDO; Helena, MT Gary Morgan; USDA, Forest Service; Milwaukee, WI Tom Moody; Cessna Aircraft Company; Wichita, KS Scott Boyle; Teledyne Continental Motors; Arvada, CO
<b>Original Publish Date:</b>	September 13, 2005
<b>Last Revision Date:</b>	
<b>Investigation Class:</b>	<a href="#">Class</a>
<b>Note:</b>	The NTSB traveled to the scene of this accident.
<b>Investigation Docket:</b>	<a href="https://data.nts.gov/Docket?ProjectID=60179">https://data.nts.gov/Docket?ProjectID=60179</a>

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](#).