



National Transportation Safety Board Aviation Accident Final Report

Location:	Battle Mountain, Nevada	Accident Number:	SEA04MA167
Date & Time:	August 21, 2004, 23:58 Local	Registration:	N2YN
Aircraft:	Bell 407	Aircraft Damage:	Destroyed
Defining Event:		Injuries:	5 Fatal
Flight Conducted Under:	Part 135: Air taxi & commuter - Non-scheduled - Air Medical (Medical emergency)		

Analysis

The emergency medical services (EMS) helicopter departed for a night flight to transport an 11-day-old infant patient from a hospital in Battle Mountain, Nevada, to another in Reno, Nevada. No record was found indicating the pilot obtained a weather briefing before departure. The pilot had a choice of taking either a direct route that crossed a remote area of rugged mountainous terrain with maximum ground elevations of about 9,000 feet or a route that was about 10 minutes longer and followed an interstate highway with maximum ground elevations of about 6,000 feet. After takeoff, the pilot reported his departure to the Elko county dispatch center, stating that his estimated time en route was 1 hour 20 minutes. There were no further radio communications from the helicopter. Radar data, which show about 4 minutes of the helicopter's flight before coverage was lost due to mountainous terrain, are consistent with the flight following the direct route. A search was initiated about 4 hours after the helicopter did not arrive at the destination hospital, and the wreckage was located the following morning. The accident site was along the direct course line at an elevation of about 8,600 feet. Physical evidence observed at the accident site indicated that the helicopter was in level flight at impact and was consistent with controlled flight into terrain. No evidence was found of any preimpact mechanical discrepancies with the helicopter's airframe or systems that would have prevented normal operation. Rotational damage to the rotor blades and transmission components were consistent with normal engine operation at impact. The two closest aviation weather reporting stations, located 31 and 54 nautical miles (nm) from the accident site, both reported 10 miles visibility, clear skies below 12,000 feet, and no precipitation at the time of the accident. However, satellite images valid approximately 1 hour before the accident indicated cloud cover over the accident site. Additionally, weather radar images valid approximately 1.5 hours before the accident indicated light precipitation was present in the vicinity of the accident site. However, the exact weather conditions and cloud ceiling at the time and location of the accident could not be determined. If the pilot had obtained a weather briefing, he would likely have learned of the cloud cover and light precipitation present along his planned route of flight. Studies conducted by the National Transportation Safety Board and industry have shown that the urgent nature of the EMS mission can result in inaccurate/incomplete preflight planning, as well as poor pilot judgment. The fact that the patient was an infant may well have placed

additional pressure on the pilot to take the direct route to arrive at the hospital sooner. The helicopter was not equipped with an enhanced ground proximity warning system (EGPWS), and none as required. If installed, an EGPWS would have alerted the pilot of high terrain ahead at least 35seconds before impact. Although the search for the helicopter was not initiated until about 4 hours after the accident (despite company flight-following procedures that indicated an aircraft should be reported missing as soon as it fails to make a required 15-minute position report), this accident was not survivable and a faster notification would not have changed the outcome.

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 clearance from mountainous terrain. Contributing factors were the pilot's improper decision to take the direct route over mountainous terrain, the dark night conditions, and the pressure to complete the mission induced by the pilot as a result of the nature of the EMS mission.

Findings

Occurrence #1: IN FLIGHT ENCOUNTER WITH WEATHER

Phase of Operation: CRUISE

Findings

1. (F) LIGHT CONDITION - DARK NIGHT
2. (F) WEATHER CONDITION - CLOUDS
3. (F) PLANNING/DECISION - IMPROPER - PILOT IN COMMAND
4. (F) PRESSURE INDUCED BY CONDITIONS/EVENTS - PILOT IN COMMAND

Occurrence #2: IN FLIGHT COLLISION WITH TERRAIN/WATER

Phase of Operation: CRUISE

Findings

5. (F) TERRAIN CONDITION - MOUNTAINOUS/HILLY
6. (C) CLEARANCE - NOT MAINTAINED - PILOT IN COMMAND

Factual Information

HISTORY OF FLIGHT

On August 21, 2004, approximately 2358 Pacific daylight time, a Bell 407 helicopter, N2YN, operating as an air ambulance flight, impacted mountainous terrain in cruise flight and was destroyed about 27 nautical miles (NM) southwest of Battle Mountain, Nevada. The airline transport pilot, the two medical crewmembers, the infant patient being transported and the patient's mother, were fatally injured. The helicopter was operated by Jeflyn Aviation, Inc., of Boise, Idaho, dba Access Air. The purpose of the Title 14 CFR Part 135 flight was to transport the infant patient from Battle Mountain Hospital to Washoe Medical Center in Reno, Nevada. Dark night visual meteorological conditions prevailed for the 2338 departure from Battle Mountain Hospital. A company flight plan was filed.

According to Access Air personnel, the pilot reported for duty approximately 1930 at the company base located on the Elko Regional Airport in Elko, Nevada. At 2221, through Elko's Central Dispatch Authority (Elko Dispatch), Battle Mountain Hospital requested Access Air to transfer an 11-day-old infant patient to Reno. According to Elko Dispatch records, the helicopter departed Elko en route to Battle Mountain at 2237.

The helicopter landed on the pad at Battle Mountain Hospital approximately 2300. According to the grandmother of the infant patient, the nurse and paramedic went into the hospital and the pilot stayed with the helicopter. The nurse and paramedic spoke with her daughter, the infant's mother, and the grandmother overheard one of them say to her, "it is going to be a little bit rocky up there." The grandmother watched them board the helicopter and reported that her daughter was seated on a stretcher with an orange box behind her holding her infant in her arms. She also reported that the helicopter crew gave her daughter a headset to wear and told her that she could talk unless they asked her to be quiet. The grandmother watched the helicopter depart and stated that there were no unusual or strong winds at the time.

At 2338, the pilot reported his departure from Battle Mountain Hospital to Lander County dispatch and stated that his estimated time en route to Reno was 1 hour 20 minutes. (Battle Mountain is located in Lander County.) There were no further radio communications from the helicopter. The USAF 84th Radar Evaluation Squadron provided radar data which shows about 4 minutes of the helicopter's flight, beginning at 2344:51. The last radar return was at 2348:40, approximately 17 NM northeast of the accident site. The data shows the helicopter flying a magnetic course of about 232 degrees. The radar data are consistent with the helicopter flying a route commonly used by the operator, direct from Battle Mountain Hospital to Derby Field Airport, Lovelock, Nevada, then direct Washoe Medical Center in Reno.

The helicopter did not arrive at Washoe Medical Center, a search was initiated, and the wreckage of the helicopter was located on the morning of August 22, 2004. The accident site was along the direct course line from Battle Mountain Hospital to Derby Field Airport in Lovelock. The helicopter impacted rugged mountainous terrain on the eastern slope of the Tobin Range in Pershing County at a Global Positioning System (GPS) location of 40 degrees 27.147 minutes North, 117 degrees 29.517 minutes West, and an elevation of approximately

8,600 feet.

PERSONNEL INFORMATION

The pilot held an airline transport pilot certificate with an airplane multi-engine land rating, a Learjet type rating and commercial privileges in single engine land airplanes and helicopters. He was helicopter instrument rated. Additionally, he was a certified flight instructor with airplane single and multi-engine land and instrument airplane ratings. His most recent second class medical certificate was issued on February 2, 2004, with the restriction must wear corrective lenses.

According to a resume he provided to Access Air, the pilot received his helicopter flight training in the US Army. He served in the Army from October 1971 to November 1987 as a helicopter pilot in various positions including Medevac, VIP, Instructor Pilot and Instrument Flight Examiner. During this time period, he flew in the Republic of Korea, South Vietnam, Europe and the continental US in OH-58 and UH-1H helicopters. After leaving active duty, he entered the Alabama Army National Guard and from May 1988 to January 2000, he served as a pilot and instrument flight examiner in UH-1H and UH-60 helicopters. His total flight experience in military helicopters listed on the resume was 6,052 hours.

From November 1996 to November 1999, the pilot was employed flying Bell 206 and Sikorsky S-76 helicopters offshore in the Gulf of Mexico. His total flight experience listed on the resume in Bell 206 series helicopters was 665 hours and in Sikorsky S-76 helicopters was 970 hours. The resume did not indicate any previous experience flying the Bell 407.

The pilot was hired by Access Air in January 2003. He had no previous experience as a pilot for a commercial air ambulance service. He received initial training in the Bell 407 consisting of 16 hours aircraft ground training and 3 hours flight training and was approved to act as pilot in command of this helicopter under 14 CFR Part 135 on January 25, 2003. He received transition training in the Bell 206L3 consisting of 5 hours aircraft ground training and 1.2 hours flight training and was approved to act as pilot in command of this helicopter under 14 CFR Part 135 on March 30, 2003. He completed recurrent training for the Bell 407 on February 20, 2004, and for the Bell 206L3 on April 14, 2004.

During his first full year with Access Air, the pilot flew 116 hours, 91 hours in the Bell 407 and 25 hours in the Bell 206L3. A pilot information sheet completed by the pilot on January 24, 2004, indicated that he had a total flight time of 8,948 hours including 2,208 hours instrument flight time and 934 hours night flight time. From January 2004 to the day of the accident, the pilot accumulated an additional 87 hours with Access Air. Assuming these 87 hours were all in the Bell 407, at the time of the accident, the pilot had accumulated 178 hours flight time in the Bell 407, with 32 hours in the past 90 days and 9 hours in the past 30 days.

According to the manager of Access Air's Elko base, the duty schedule for the pilots was 7 days on, working 12 hour shifts, followed by 7 days off. The pilots worked day shift for 7 days, had 7 days off, and then worked night shift for 7 days. The day shift was from 7:30 am to 7:30 pm, and the night shift was from 7:30 pm to 7:30 am. The accident flight occurred on the third day of the pilot's week working the night shift. On the first day of his work week, he made one 0.2-

hour flight. He made no flights on the second day of his work week. The accident flight was his first flight on the third day of his work week. According to the manager, the pilot did not have another job, and he would go home during the day when he was working the night shift. The pilot's residence was in Spring Creek, Nevada, located about 13 miles from the Elko Airport.

AIRCRAFT INFORMATION

The 1998 model Bell 407 helicopter, S/N 53239, was powered by one 650-horsepower Rolls Royce Corporation turbo-shaft 250-C47B engine, S/N CAE 847259, driving a four bladed main rotor system and a two bladed tail rotor. The helicopter was equipped with the instruments required for flight under Instrument Flight Rules (IFR) listed in FAR 91.205. It was also equipped with a Garmin GNC-250XL GPS/COM. This unit had no capability to show terrain on a moving map display.

Examination of the helicopter's maintenance records revealed that it received its most recent annual inspection on April 14, 2004, at an airframe total time of 2,143.5 hours and an engine total time of 2,056.4 hours. The most recent transponder test required by FAR 91.413 and the most recent altimeter and static system test required by FAR 91.411 were performed on March 31, 2004. The most recent inspection was an airframe 100 hour inspection and an engine 150 hour inspection completed on August 5, 2004, at an airframe total time of 2,329.6 hours and an engine total time of 2,242.5 hours. When the accident occurred, the helicopter had been flown approximately 31 hours since this inspection. At the time of this inspection, the engine was removed "to replace the engine gearbox for metal generation." In addition to changing the engine gearbox, the turbine section was also changed, and the engine was reinstalled on the helicopter.

Review of the daily maintenance report sheets for the helicopter from July 1, 2004, to the date of the accident revealed no listings of any uncorrected maintenance discrepancies. The single corrected maintenance discrepancy listed for this time period was entered on July 23, 2004, and stated, "eng[ine] chip light illuminated in flight, landed with[out] further incident." The corrective action for this discrepancy was the engine maintenance completed on August 5, 2004.

According to the day shift pilot who flew the helicopter on a 3 hour flight on the day of the accident, he experienced no problems with the aircraft. The day shift pilot mentioned the recent engine work performed on the helicopter and stated that the engine was "making lots of power and running good."

METEOROLOGICAL INFORMATION

The two closest Automated Surface Observing Systems (ASOS) to the accident location were the Winnemucca (KWMC), Nevada, and Lovelock (KLOL), Nevada, stations. KWMC was approximately 31 NM from the accident site on a bearing of 331 degrees, and KLOL was about 54 NM away at 245 degrees. The elevations of KWMC and KLOL are roughly 4,300 feet and 3,900 feet, respectively. Additionally, a Remote Automated Weather Station (SIAN2) was 8 NM southwest of the accident site on a heading of 238 degrees; however, this station does not provide sky coverage, visibility data, or present weather information (e.g. rain, snow,

thunderstorm, etc.). The elevation of SIAN2 is 4,600 feet. Data from these three stations surrounding the time of the accident are provided below.

KWMC:

Time - 2256; wind - 230 degrees at 8 knots; visibility - 6 miles; weather - haze; sky condition - clear below 12,000 feet; temperature - 24 degrees Celsius (C); dew point temperature - 4 degrees C; altimeter setting - 29.96 inches of Mercury (in Hg).

Time - 2356; wind - 170 degrees at 8 knots; visibility - 10 miles; sky condition - clear below 12,000 feet; temperature - 23 degrees C; dew point temperature - 6 degrees C; altimeter setting - 29.97 in Hg.

Time - 0056 on August 22; wind - 170 degrees at 10 knots; visibility - 10 miles; sky condition - clear below 12,000 feet; temperature - 22 degrees C; dew point temperature - 6 degrees C; altimeter setting - 29.96 in Hg.

KLOL:

Time - 2253; wind - 210 degrees at 8 knots; visibility - 10 miles; sky condition - clear below 12,000 feet; temperature - 23 degrees C; dew point temperature - 10 degrees C; altimeter setting - 29.98 in Hg.

Time - 2353; wind - calm; visibility - 10 miles; sky condition - clear below 12,000 feet; temperature - 22 degrees C; dew point temperature - 11 degrees C; altimeter setting - 29.96 in Hg.

Time - 0053 on August 22; wind - 120 degrees at 6 knots; visibility - 10 miles; sky condition - clear below 12,000 feet; temperature - 18 degrees C; dew point temperature - 10 degrees C; altimeter setting - 29.95 in Hg.

SIAN2:

Time - 2230; wind - south at 13 knots, gusts to 24 knots; temperature - 23 degrees C; dew point temperature - 7 degrees C.

Time - 2330; wind - south-southeast at 9 knots, gusts to 23 knots; temperature - 23 degrees C; dew point temperature - 5 degrees C.

Time - 0030 on August 22; wind - south at 6 knots, gusts to 14 knots; temperature - 23 degrees C; dew point temperature - 4 degrees C.

A review of AIRMETs issued by the National Weather Service (NWS) indicated that IFR conditions and mountain obscuration were not forecast for the accident area. No significant turbulence was expected except in the vicinity of convective activity.

Two WSR-88Ds (Weather Surveillance Radar-1988 Doppler) are located in northern Nevada.

The Elko (LRX), Nevada, radar was located about 36 NM away from the accident location at 61 degrees, and the Reno (RGX), Nevada, radar was 100 NM away at 245 degrees. The images from LRX valid at roughly 2229 and 2358 indicated reflectivities ranging from 15 to 20 dBZ southwest of the accident site. Moreover, the RGX images valid at roughly 2231 and 2357 indicated similar reflectivities in the vicinity of the accident site. According to the NWS video integrator and processor (VIP)/dBZ conversion table, reflectivities of this magnitude correspond to a rainfall rate of 0.01 to 0.02 in/hr.

An infrared image taken at 2345 from the Geostationary Operational Environmental Satellite (GOES) 10 indicated cloud cover over the accident site. Advanced Very High Resolution Radiometer (AVHRR) data from the NOAA-17 satellite platform valid at approximately 2247 also indicated cloud cover over the accident site.

According to the U.S. Naval Observatory, the moon set in Battle Mountain at 2238 PDT on August 21, 2004.

The operator had a computer system available at the Elko base for its pilots to use to obtain weather data from the Direct User Access Terminal System (DUATS). The pilots used one common access number to obtain DUATS weather information via Cirrus, a windows-based interface to DUATS. According to DynCorp Systems & Solutions, LLC, a CSC Company ("DynCorp"), the last session using this access number prior to the time of the accident occurred at 0945 on the morning of the accident. The accident pilot was not on duty at this time. The FAA had no record of the pilot obtaining a weather briefing from a Flight Service Station.

WRECKAGE AND IMPACT INFORMATION

The impact site was on a steep east-facing rocky slope directly below a rock outcrop projecting above the ridgeline. The GPS measured altitude of the rock outcrop was 8,684 feet MSL. The slope angle varied from 30 to 60 degrees depending on localized topography. The majority of the wreckage was distributed along a 66-foot-long path with a measured magnetic heading of 230 degrees magnetic. The wreckage and ground surface along and on either side of this axis were sooted and burned. At an elevation of about 8,600 feet, a crushed cluster of airframe components associated with the forward lower fuselage, including both sets of pedals and the pitot tube, was found. This cluster was imbedded in a crevice, and fractured rock, which appeared to have fallen down slope, partially covered the cluster. After excavation, the two sets of pedals were observed to be oriented cross slope and at the same level. The pitot tube was found between the two sets of pedals.

Approximately 20 feet below the forward lower fuselage cluster, on a small ledge, were the unburned, impact damaged front cross tube, portions of both skid tubes, a burned frame of one of the seats, and a crushed landing or search light housing. Approximately 20 feet above the forward lower fuselage cluster, at a measured GPS altitude of 8,619 feet MSL, a crushed and burned cluster of airframe components and wiring associated with the upper main fuselage was found. About 5 feet to the right of this cluster was the blade grip and inboard portion of a main rotor blade that exhibited heavy rotational impact damage, and about 5 feet further right was the forward portion of the tailboom. Rotational witness marks were apparent inside the

forward end of the tail rotor drive shaft cover.

Approximately 16 feet farther upslope, at a measured GPS elevation of 8,635 feet, was the largest cluster of wreckage, consisting of portions of the upper fuselage main beam, main transmission, main rotor mast and rotor head, portions of main rotor blades, the engine and associated firewalls, remains of the hydraulic system, and the oil cooler assembly. The upper cluster of wreckage was approximately 10 feet further upslope, and consisted of the aft portion of the tail boom including the 90-degree gearbox and tail rotor assembly, the central portion of the tail boom and portions of the tail rotor drive train, and the burned remnants of the horizontal stabilizer. Additionally, there were other airframe components and mission associated equipment scattered on either side of, below and above the main wreckage trail. Due to impact and fire damage, drive train and control continuity could not be determined. The fire damage to the helicopter wreckage was consistent with a fuel-fed fire erupting on impact.

The engine assembly came to rest on its left side and was torn from its mounting structure. Visual observation revealed no breaches or discontinuities to the turbine or compressor sections. The compressor impeller displayed evidence of foreign object damage (FOD) to the leading edge airfoils. The accessory gearbox was destroyed by fire. All engine accessories were destroyed by impact and fire damage. The Electronic Engine Control (ECU) was destroyed by fire and impact damage.

MEDICAL AND PATHOLOGICAL INFORMATION

Autopsies of all five occupants were conducted by the Washoe County Medical Examiner in Reno, Nevada. The cause of death of all occupants was found to be multiple traumatic injuries. Toxicological tests performed on tissue samples from the pilot by the FAA's Toxicology and Accident Research Laboratory were negative for ethanol and drugs.

SURVIVAL ASPECTS / SEARCH

The accident was not survivable.

Review of audio recordings provided by Elko Dispatch indicated they received a call about 0341 on August 22, 2004, from a nurse at the Battle Mountain Hospital who stated, "the baby is not at Washoe Medical Center yet. I'm wondering what happened. Can you find out?" The Elko dispatcher then called the dispatch centers for Reno and the counties the helicopter would have flown through en route to Reno (Churchill, Pershing, and Humboldt). None of these dispatch centers reported having any contact with the helicopter. The Elko dispatcher then called the Lander County dispatch center. The Lander County dispatcher reported that her last contact with the helicopter was when it departed Battle Mountain Hospital for Reno at 2338 on August 21. She stated that she "never heard anything more from them from the time they left here. They didn't track with me at all." Following this call, about 0357, the Elko dispatcher called the Access Air base in Boise, Idaho, and notified them of the missing helicopter. Access Air called the various counties along the route of flight to request that a search be started.

According to the Pershing County Sheriff's Office, the search was initiated at approximately

0430 on August 22, 2004. Involved in the effort were the Humboldt County Composite Civil Air Patrol Squadron, Lander, Humboldt and Pershing County Sheriff's Offices, Reno Emergency Medical Services Association, and the Fallon Naval Air Station. According to the Civil Air Patrol, the wreckage was first spotted by a pilot not affiliated with the Civil Air Patrol effort. This pilot relayed information concerning the site to the Civil Air Patrol who then dispatched a Navy Search and Rescue helicopter to the scene. The Navy helicopter crew confirmed the site and confirmed that there were no survivors. This information was received by Elko Dispatch about 1047.

TESTS AND RESEARCH

The helicopter was not equipped with an Enhanced Ground Proximity Warning System (EGPWS), and none was required under 14 CFR Part 135. At the request of the NTSB, a U.S. manufacturer of helicopter EGPWS equipment created a simulation of the warnings their system would have given to the pilot based on the following assumptions:

1. The helicopter was cruising at 125 knots and the wind was from 170 degrees at 8 knots.
2. The aircraft was flying level at 8,600 feet msl.
3. The aircraft heading depicted by the radar data was maintained.

According to the simulation, a "Caution Terrain" aural alert would have been issued 35 seconds before the impact, and a "Warning Terrain" aural alert would have been given 21 seconds before and continued all the way until impact. Additionally, the impact site would have been shown in yellow on the EGPWS screen, indicating the terrain was above the helicopter's altitude, before the aural caution was issued.

The airspeed indicator was examined at the NTSB Materials Laboratory in Washington, DC. No witness marks indicating the position of the needle at impact were noted during the examination.

COMPANY INFORMATION

Jeflyn Aviation, Inc., dba Access Air, based in Boise, Idaho, held an air carrier certificate issued in 1995 by the Federal Aviation Administration (FAA) authorizing the company to conduct on demand common carriage operations. Jeflyn Aviation also held operating certificates issued by the FAA authorizing the company to conduct commercial agricultural aircraft operations and rotorcraft external load operations. The company's FAA certificates were managed by the FAA Flight Standards District Office in Boise, Idaho. The company's operations specifications included authorization to conduct helicopter air ambulance operations in accordance with 14 CFR Part 135. Jeflyn Aviation began conducting air ambulance operations in November 1999 in the Boise area. In July 2000, the Elko base was opened. The staff at the Elko base consisted of 4 full time pilots and 10 medical crewmembers. Some medical crewmembers worked part time and some split their time between the Elko and Boise bases. The Elko base operated one helicopter, the accident aircraft.

ADDITIONAL INFORMATION

Dispatch Procedures

Review of the Dispatch Procedures section of Jeflyn Aviation's Helicopter Air Ambulance Operations Manual current at the time of the accident (Effective Date: 15 DEC 99, Revision: Original) revealed that it stated the following regarding flight following: Each air ambulance aircraft will flight follow via radio with STATECOM during all phases of the mission. The following data will be relayed at the appropriate time:

1. Departure time - From home base
2. Destination - Location of pickup site
3. Arrival time - Pickup site
4. Departure time - Pickup site
5. Destination - Name of medical facility
6. Arrival time - Medical facility
7. Departure time - Medical facility
8. Arrival time - Home base
9. Enroute - Every 15 minutes

If at any time an air ambulance aircraft is overdue more than 5 minutes beyond an ETA to a destination, fails to make a required enroute position report, and/or radio contact can not be established with that aircraft, STATECOM will immediately initiate the "Accident/Incident/Overdue Aircraft Emergency Plan."

During interviews conducted by the NTSB investigator-in-charge, two pilots from the Elko base reported that STATECOM was the dispatch center for the state of Idaho and was used for flight following out of the company's Boise base. Out of the Elko base, they used the individual county dispatch centers for flight following. As flights crossed from one county into another, flight following responsibility moved from one dispatch center to another. For example, on a flight from Elko to Battle Mountain then on to Reno, on takeoff, the pilot would call Elko Dispatch and give them the flight's destination and estimated time in route. Elko Dispatch would then call the helicopter for a position report every 15 minutes. As the helicopter approached Battle Mountain and entered Lander County, the pilot would sign off with Elko Dispatch and contact Lander County. On takeoff from Battle Mountain, the pilot would notify the Lander County dispatcher of the intended destination and time en route. As the flight proceeded towards Reno, it would exit Lander County and pass through Pershing and Churchill Counties with the pilot talking to each county's dispatch center in turn. Regarding the required 15 minute position reports, one of pilots stated that the counties (other than Elko) did not call the helicopter to request the 15 minute position reports, so he called them every 15 minutes. The other pilot stated that while Elko was "very good" at asking for position reports, some of the other counties were "not very good" about it, and he had to initiate the reports himself.

Routes

Regarding the routes utilized by Access Air to fly from Battle Mountain to Reno, the two pilots reported that there were two commonly used routes, the direct route followed by the accident helicopter and a route that followed interstate highway I-80. The pilots indicated that the I-80 route was longer and added about 10 minutes to the flight time. They stated that the decision as to which route to take was made by the pilot. One of the pilots stated that if the weather was

good, he would take the direct route, and if the weather was not good, he would follow the highway. He further stated that if there was mountain obscuration, he would follow the highway. The other pilot stated that to use the direct route, he wanted a 4,000 foot ceiling and good visibility and that he would only use the direct route if he "could see very well." He commented that if it was dark, with no moon, he would follow the highway and stated that even late at night, there was always traffic on I-80 to provide him with visual reference to the ground.

Examination of aeronautical charts indicated that the maximum ground elevations encountered on the I-80 route were approximately 6,000 feet, and the maximum ground elevations encountered on the direct route were approximately 9,000 feet. The minimum enroute altitude for Victor Airway V6, which runs between the Battle Mountain VOR and the Lovelock VOR, was 12,000 feet msl.

Mission Influence and Time Pressure in Emergency Medical Service (EMS) Helicopter Operations

In its 1988 Safety Study, Commercial Emergency Medical Service Helicopter Operations, SS-88-01, the NTSB identified "Mission Influence" as a factor that could affect pilot judgment during EMS operations. Regarding Mission Influence, the study stated, in part: Some operators believe that the importance of the EMS mission -- transporting seriously ill or injured patients -- can affect the pilot's good judgment. The power of the mission itself to influence and perhaps override an EMS pilot's judgment is enhanced by the lack of a strong managerial structure to support the pilot in the working environment. Often the pilot's direct supervisory management is not resident at the hospital and may even be located in a distant city.

In a 2002 publication of the Air Medical Physician Association, A Safety Review and Risk Assessment in Air Medical Transportation, the authors summarized a study conducted by the NASA-Ames Research Center. The Ames study reviewed Aviation Safety Reporting System (ASRS) reports related to EMS helicopter incidents. Regarding "Time Pressure," the publication stated, in part:

Time related pressures were cited as a frequent contributor to the ASRS incidents. These pressures centered around four different considerations: patient condition, rapid mission preparation, flight to the patient pick-up location, and low fuel. Patient condition was reported 44% of the time and was the most important contribution to time pressure. The critical condition of a patient could create a sense of maximum urgency. As a result, preflight planning may be inaccurate or preflight inspections and checklist may be hurried and incomplete. Other reports cited such oversights as not stopping for refueling; failure to obtain or review correct charts; overflying scheduled aircraft maintenance; inadequate or less-than-thorough weather briefings; and inadequate evaluation of weather briefings preceding the go/no-go decision.

Administrative Information

The wreckage, with the exception of the airspeed indicator, which was retained for further examination, was released to a representative of the owner for removal to secure storage on August 24, 2004. The airspeed indicator was returned to Plain Parts, Pleasant Grove,

California, following its examination at the NTSB Materials Laboratory in Washington, DC. The wreckage was fully released to a representative of the owner on December 28, 2004.

Pilot Information

Certificate:	Airline transport; Flight instructor	Age:	54, Male
Airplane Rating(s):	Single-engine land; Multi-engine land	Seat Occupied:	Right
Other Aircraft Rating(s):	Helicopter	Restraint Used:	
Instrument Rating(s):	Airplane; Helicopter	Second Pilot Present:	No
Instructor Rating(s):	Airplane multi-engine; Airplane single-engine; Instrument airplane	Toxicology Performed:	Yes
Medical Certification:	Class 2 Valid Medical--w/ waivers/lim	Last FAA Medical Exam:	February 2, 2004
Occupational Pilot:	Yes	Last Flight Review or Equivalent:	April 14, 2004
Flight Time:	9034 hours (Total, all aircraft), 178 hours (Total, this make and model), 7754 hours (Pilot In Command, all aircraft), 32 hours (Last 90 days, all aircraft), 9 hours (Last 30 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Bell	Registration:	N2YN
Model/Series:	407	Aircraft Category:	Helicopter
Year of Manufacture:		Amateur Built:	
Airworthiness Certificate:	Normal	Serial Number:	53239
Landing Gear Type:	Skid	Seats:	4
Date/Type of Last Inspection:	August 5, 2004 100 hour	Certified Max Gross Wt.:	5250 lbs
Time Since Last Inspection:	31 Hrs	Engines:	1 Turbo shaft
Airframe Total Time:	2361.2 Hrs at time of accident	Engine Manufacturer:	Rolls-Royce
ELT:	Installed, not activated	Engine Model/Series:	250-C47B
Registered Owner:		Rated Power:	650 Horsepower
Operator:		Operating Certificate(s) Held:	On-demand air taxi (135)
Operator Does Business As:	Access Air	Operator Designator Code:	JL9A

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	Condition of Light:	Night/dark
Observation Facility, Elevation:	KWMC, 4308 ft msl	Distance from Accident Site:	31 Nautical Miles
Observation Time:	23:56 Local	Direction from Accident Site:	331°
Lowest Cloud Condition:	Clear	Visibility	10 miles
Lowest Ceiling:	None	Visibility (RVR):	
Wind Speed/Gusts:	8 knots /	Turbulence Type Forecast/Actual:	/
Wind Direction:	170°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	29.96 inches Hg	Temperature/Dew Point:	23° C / 6° C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Battle Mountain, NV	Type of Flight Plan Filed:	Company VFR
Destination:	Reno, NV	Type of Clearance:	None
Departure Time:	23:38 Local	Type of Airspace:	Class G

Wreckage and Impact Information

Crew Injuries:	3 Fatal	Aircraft Damage:	Destroyed
Passenger Injuries:	2 Fatal	Aircraft Fire:	On-ground
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	5 Fatal	Latitude, Longitude:	40.452499, -117.491943

Administrative Information

Investigator In Charge (IIC):	Struhsaker, Georgia
Additional Participating Persons:	Clarence Bohartz; FAA, FSDO; Reno, NV David C Dosker; Bell Helicopter; Fort Worth, TX Michael A Weber; Roll-Royce Corporation; Indianapolis, IN
Original Publish Date:	January 26, 2006
Note:	The NTSB traveled to the scene of this accident.
Investigation Docket:	https://data.nts.gov/Docket?ProjectID=59956

The National Transportation Safety Board (NTSB), established in 1967, is an independent federal agency mandated by Congress through the Independent Safety Board Act of 1974 to investigate transportation accidents, determine the probable causes of the accidents, issue safety recommendations, study transportation safety issues, and evaluate the safety effectiveness of government agencies involved in transportation. The NTSB makes public its actions and decisions through accident reports, safety studies, special investigation reports, safety recommendations, and statistical reviews.

The Independent Safety Board Act, as codified at 49 U.S.C. Section 1154(b), precludes the admission into evidence or use of any part of an NTSB report related to an incident or accident in a civil action for damages resulting from a matter mentioned in the report. A factual report that may be admissible under 49 U.S.C. § 1154(b) is available [here](#).