



National Transportation Safety Board

Aviation Accident Final Report

Location:	NORTH LAS VEGAS, NV	Accident Number:	LAX00FA014
Date & Time:	10/14/1999, 1946 PDT	Registration:	N1024B
Aircraft:	Piper PA-31-350	Aircraft Damage:	Destroyed
Defining Event:		Injuries:	1 Fatal
Flight Conducted Under:		Part 135: Air Taxi & Commuter - Non-scheduled	

Analysis

The airplane collided with mountainous terrain during climb to cruise on a night departure. The pilot of the on-demand cargo flight was brought in off reserve to replace the scheduled pilot who was ill. The flight was behind schedule because the cargo was late. When the instrument flight release created further delay, the pilot opted to depart into the clear, dark night under visual flight rules (VFR) with the intention of picking up his instrument clearance when airborne. When clearing the flight for takeoff, the tower controller issued a suggested heading of 340 degrees, which headed the aircraft toward mountainous terrain 11 miles north of the airport. The purpose of the suggested heading was never stated to the pilot as required by FAA Order 7110.65L. After a frequency change to radar departure control, the controller asked the pilot 'are you direct [the initial (route) fix] at this time?' and the pilot replied, 'we can go ahead and we'll go direct [the initial fix].' A turn toward the initial fix would have headed the aircraft away from high terrain. The controller then diverted his attention to servicing another VFR aircraft and the accident aircraft continued to fly heading 340 degrees until impacting the mountain. ATC personnel said the 340-degree heading was routinely issued to departing aircraft to avoid them entering Class B airspace 3 miles from the airport. The approach control supervisor said this flight departs daily, often VFR, and routinely turns toward the initial fix, avoiding mountainous terrain. When the pilot said that he would go to the initial fix, the controller expected him to turn away from the terrain. Minimum Safe Altitude Warning (MSAW) was not enabled for the flight because the original, instrument flight plan did not route the aircraft through this approach control's airspace and the controller had not had time to manually enter the flight data. High terrain was not displayed on the controller's radar display and no safety alert was issued.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The failure of the pilot-in-command to maintain separation from terrain while operating under visual flight rules. Contributing factors were the improper issuance of a suggested heading by air traffic control personnel, inadequate flight progress monitoring by radar departure control personnel, and failure of the radar controller to identify a hazardous condition and issue a

safety alert.

Findings

Occurrence #1: IN FLIGHT COLLISION WITH TERRAIN/WATER

Phase of Operation: CLIMB - TO CRUISE

Findings

1. TERRAIN CONDITION - MOUNTAINOUS/HILLY
2. LIGHT CONDITION - DARK NIGHT
3. (C) ALTITUDE/CLEARANCE - NOT OBTAINED/MAINTAINED - PILOT IN COMMAND
4. (F) ATC CLEARANCE - IMPROPER - ATC PERSONNEL(LCL/GND/CLNC)
5. (F) MONITORING - INADEQUATE - ATC PERSONNEL(DEP/APCH)
6. (F) SAFETY ADVISORY - NOT ISSUED - ATC PERSONNEL(DEP/APCH)

Factual Information

HISTORY OF FLIGHT

On October 14, 1999, at 1946 hours Pacific daylight time, a Piper PA-31-350, N1024B, was destroyed by impact with mountainous terrain 11 miles north of North Las Vegas, Nevada. The airline transport pilot, the sole occupant, was fatally injured. The aircraft, transporting banking paperwork, was operated under the provisions of 14 CFR Part 135 by Ameriflight, Inc., as Flight 121, a nonscheduled on-demand cargo flight destined for Sacramento, California. An instrument flight plan was filed; however, the flight departed VFR from the North Las Vegas airport at 1941, and was operating under visual flight rules at the time of the accident. Night, visual meteorological conditions prevailed.

The operator reported that the outbound freight, approximately 300 pounds of bank paperwork, arrived at the North Las Vegas airport about 1 hour late and the flight was departing behind schedule. Because his instrument flight release was not available when he was ready for takeoff, the pilot elected to depart under visual flight rules with the intention of picking up the flight's instrument clearance when airborne. Before issuing takeoff clearance, North Las Vegas Air Traffic Control Tower instructed the pilot to reset his transponder to a VFR code and issued a recommended heading after takeoff of 340 degrees. After takeoff on runway 7, the aircraft was observed to turn left and depart the airport area to the north in the direction of the accident site. The pilot was in radio and radar contact with Nellis approach control at the time radar contact was lost near the accident site.

Local law enforcement pilots, patrolling the city in a helicopter, reported that the night was very dark with only a small (new) moon visible to the southwest. Gass Peak and the adjacent ridgeline were not visible in the night sky. As they were patrolling, they saw the bright flash of the fire when the aircraft impacted the mountain, and proceeded to the location. Their helicopter was equipped with a FLIR (forward looking infrared sensor), which they employed to locate the ridgeline.

Recorded radar data was provided by Nellis ATCF, and was plotted onto a visual navigation chart by the Safety Board investigator (attached). The data shows the aircraft flying approximately a 340-degree course from the departure end of runway 7 to the accident site. The Las Vegas Class B airspace overlies the flight path and the terrain rises north of North Las Vegas.

PERSONNEL INFORMATION

The pilot was hired by Ameriflight in January 1999, and completed his most recent 14 CFR Part 135 check ride in the Piper PA-31-350 on June 25, 1999. He had been employed from June 1998 to January 1999 with a Grand Canyon tour operator, and flew in the Las Vegas area before being hired by the current operator. According to Ameriflight, the pilot had flown 176 hours in the last 90 days, including 24 at night. He had flown one daytime trip into North Las Vegas in the same period.

According to the operator, the pilot who was scheduled to fly Flight 121 called in ill and unable to fly. The pilot involved in the accident was assigned from the evening reserve staff. The pilot was on evening reserve the previous day also, and was on stand-by at the operator's Burbank, California, facility from 1500 to 2300; however, no flying requirement developed that evening. The pilot was released at 2300 and had 16 hours off-duty time available for rest. The following

day, the day of the accident, the dispatcher called the pilot at home about 1230 and told him to expect to come to Burbank at 1500 and then travel by commercial airline to Las Vegas to fly Flight 121.

The pilot's father spoke with him by telephone about 1330 on the day of the accident. He said that his son told him he had walked his dog and was now going to Las Vegas to fly the trip. He made no comment about any reservations regarding flying the trip and seemed to be in good spirits and good health.

AIRCRAFT INFORMATION

According to the operator, the aircraft was dispatched with no deferred maintenance items (squawks).

METEOROLOGICAL CONDITIONS

The scheduled weather observation taken at 1947 at North Las Vegas was clear skies and visibility 10 miles. A sun and moon illumination computer program used by the Safety Board calculated that, at the time of the accident, the sun was 19.7 degrees below the horizon on a bearing of 261.3 degrees (magnetic) from the accident site, and the moon was 19.3 degrees above the horizon on a bearing of 212 degrees. The moon's illumination was 27 percent of full moon illumination. The program makes no allowance for the shadowing effect of mountainous terrain to the west and southwest (non-level horizons).

COMMUNICATIONS

According to communications transcripts provided by North Las Vegas Tower, the pilot contacted ground control at 1853 and was issued an instrument clearance to Sacramento via the published instrument departure procedure and the flight planned route. The flight was originally cleared to maintain 4,000 feet and was to expect clearance to 12,000 feet 10 minutes after departure. At the pilot's request, the controller read the text of the published instrument departure. According to the operator, the initial fix on the company (canned) flight plan is the Beatty (Nevada) VORTAC located 83 miles west (280 degrees magnetic) of North Las Vegas. At 1935, the pilot again contacted ground control and requested taxi clearance for takeoff. The flight was cleared to taxi to runway 7. At 1938, the pilot contacted North Las Vegas Tower and advised he was ready for takeoff. The tower advised there would be a 10-minute delay for instrument departure and the pilot requested a "VFR clearance out." At 1939, the tower issued the pilot a suggested heading of 340 and provided a Nellis departure control frequency. At 1940, the tower instructed the pilot to squawk a VFR code (1200), said "we're going to alert Nellis of your request," and cleared Flight 121 for takeoff on runway 7. At 1942, the tower authorized a frequency change.

According to communications transcripts provided by the U.S. Air Force, Nellis Air Traffic Control Facility (NATCF), at 1941, North Las Vegas Tower contacted Nellis by landline and told them "I've just sent you a strip on AMF121 to Sacramento. He's departing VFR: he'll call you for his IFR clearance in the air." At 1942, the pilot contacted Nellis Approach Control "three-thousand, two-hundred, climbing." After verifying the pilot was requesting his instrument clearance, and his destination, the controller said "roger standby, I need to see if I can pull it up." At 1943, Nellis issued the flight a transponder code of 7221. At 1944, Nellis Approach said, "AMF121 is radar contact 6 miles north of North Las Vegas. UH, are you direct Beatty at this time?" The pilot replied "Umm, 121 um we can go ahead and we'll go direct Beatty." At 1945, Nellis transmitted "AMF One-Twenty" and at 1946, transmitted "AMF121 radar contact

lost you can, uh, maintain VFR, and uh, proceed to Beatty." Approximately 20 seconds later, the pilot of another aircraft reported observing a large flash over the mountains. Nellis Approach transmitted to Amflight 121 until 1949 without receiving a reply.

The pilot did not communicate any distress message or report any flight irregularity to Air Traffic Control.

WRECKAGE AND IMPACT INFORMATION

The accident site was on the south face of Gass Peak in the Sheep Mountains about 11 miles north of the North Las Vegas airport. The site is at latitude 36 degrees 23.83 minutes north and longitude 115 degrees 12.26 minutes west, at approximately 5,200 feet msl (GPS). To the north of the site, the mountain slope rises steeply to a ridgeline top of approximately 6,000 feet msl. About 1 mile to the east, Gass Peak rises to 6,943 feet msl and to the west, along the ridge, the peak descends into a wide, open valley. To the south, the city of North Las Vegas and the North Las Vegas airport are visible in the distance in the valley below.

The site is in arid desert terrain on a mountain slope of approximately 40 degrees, sparsely populated by mesquite shrubs and dry grasses. A large rock outcropping (irregular boulder) approximately 30 feet in diameter presented a vertical southern face, which was discolored black. Imbedded in the southern face of the rock were pieces of metal and small aircraft components. The aircraft wreckage was at the base of the rock. Approximately 40 feet south-southeast of the wreckage was an area of disturbed terrain about 15 feet wide, 10 feet long, and 1 foot deep. In the area of disturbed dirt were metal access panels and radio antennas identifiable with the aircraft's lower fuselage.

The aircraft was destroyed forward of the empennage by impact and fire. Components identifiable with the nose, cockpit, and cabin were co-located in one 6-foot-diameter pile at the base of the rock with the empennage adjacent to the southeast and oriented pointing northwest. The cockpit instruments and controls were destroyed. The right engine (separated from the wing and inverted), and the right wing were adjacent to the northeast of the fuselage at the base of the rock. The right wing tip, however, was nearest the fuselage and the root section was most distant. Similarly, the left engine (separated from the wing and upright), and left wing were adjacent to the southwest. Both wings exhibited crushing damage to the mid-chord inboard and lesser leading edge damage outboard. The left wing was bent aft about 90 degrees outboard of the midspan.

The left propeller was located in pieces at the base of the rock. The hub was shattered and the three blades were separated. The right propeller was found under the cabin area wreckage with the hub intact, one complete blade attached, and the root section of the other two blades attached. The tip of one of the blades was located in the disturbed dirt area southeast, and the tip section of the third blade was not located. The separation surface of the third blade did not have a leading edge nick nor were there any visible fatigue striations. The blades of both propellers exhibited deep leading edge gouges and chordwise striations accompanied by torsional twisting.

The top spark plugs of the left engine and the bottom spark plugs of the right engine were removed. The spark plug electrodes were unfouled and gray in color.

The instrument panel light rheostat was damaged by impact and fire. The wiper segment was positioned approximately 1/3 of available travel from the dim position toward the bright position.

MEDICAL AND PATHOLOGICAL INFORMATION

An autopsy was conducted by the Clark County (Nevada) Office of the Coroner, and toxicology was performed by the FAA Civil Aeromedical Institute in Oklahoma City, Oklahoma.

ADDITIONAL INFORMATION

The Safety Board formed an Air Traffic Control Group as part of the investigation. The group chairman's report is attached. On November 23, 1999, the group interviewed the Las Vegas Terminal Radar Approach Control (TRACON) Support Specialist. Regarding the origin and use of the suggested 340-degree heading, the Specialist reported that the procedure was developed in response to numerous airspace "busts" by aircraft departing eastbound off North Las Vegas and who penetrated Nellis airspace 3 miles east of North Las Vegas airport. By turning aircraft to 340 degrees, the departures were paralleling the Class B airspace boundary while obtaining clearance from Nellis Approach to proceed eastbound.

Also on November 23, 1999, the group interviewed the supervisor at Nellis Air Traffic Control Facility (NATCF). The supervisor reported that Amflight 121 often departs VFR, northbound off North Las Vegas, and then turns westbound toward Beatty. When the pilot of the accident flight replied at 1944 "we can go ahead and we'll go direct Beatty," the controller expected the pilot to turn westbound VFR toward Beatty. The Minimum Safe Altitude Warning (MSAW) system was not enabled for Amflight 121 because the flight plan processing authority, Los Angeles Air Route Traffic Control Center (ARTCC), routed the flight plan only to North Las Vegas Tower, Las Vegas TRACON, and Los Angeles ARTCC. The flight plan was not routed to Nellis ATCF because the programming is built with the assumption that the aircraft, as the flight plan was originally issued, would climb above NATCF airspace. The NATCF controller had not had time to affix a data block to the target, an alternate action necessary to enable MSAW. Further, the supervisor said that terrain is not depicted on their radarscope because there is so much mountainous terrain in their area that it would clutter their display.

The wreckage was released to Mr. Steve Lora, insurance adjuster for USAIG on January 5, 2000.

Pilot Information

Certificate:	Airline Transport; Flight Instructor	Age:	30, Male
Airplane Rating(s):	Multi-engine Land; Single-engine Land	Seat Occupied:	Left
Other Aircraft Rating(s):	None	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--no waivers/lim.	Last FAA Medical Exam:	05/25/1999
Occupational Pilot:		Last Flight Review or Equivalent:	
Flight Time:	2103 hours (Total, all aircraft), 250 hours (Total, this make and model), 1956 hours (Pilot In Command, all aircraft), 176 hours (Last 90 days, all aircraft), 40 hours (Last 30 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Piper	Registration:	N1024B
Model/Series:	PA-31-350 PA-31-350	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	No
Airworthiness Certificate:	Normal	Serial Number:	31-7652107
Landing Gear Type:	Retractable - Tricycle	Seats:	2
Date/Type of Last Inspection:	09/30/1999, AAIP	Certified Max Gross Wt.:	7000 lbs
Time Since Last Inspection:	26 Hours	Engines:	2 Reciprocating
Airframe Total Time:	14048 Hours	Engine Manufacturer:	Lycoming
ELT:	Installed, activated, did not aid in locating accident	Engine Model/Series:	TIO-540-J2BD
Registered Owner:	AMERIFLIGHT, INC.	Rated Power:	350 hp
Operator:	AMERIFLIGHT, INC.	Operating Certificate(s) Held:	On-demand Air Taxi (135)
Operator Does Business As:		Operator Designator Code:	JIKA

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	Condition of Light:	Night/Dark
Observation Facility, Elevation:	VGT, 2203 ft msl	Distance from Accident Site:	11 Nautical Miles
Observation Time:	1947 PDT	Direction from Accident Site:	160°
Lowest Cloud Condition:	Clear / 0 ft agl	Visibility	10 Miles
Lowest Ceiling:	None / 0 ft agl	Visibility (RVR):	0 ft
Wind Speed/Gusts:	Calm /	Turbulence Type Forecast/Actual:	/
Wind Direction:	Variable	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	29 inches Hg	Temperature/Dew Point:	28°C / -7°C
Precipitation and Obscuration:			
Departure Point:	, NV (VGT)	Type of Flight Plan Filed:	IFR
Destination:	SACRAMENTO, CA (SAC)	Type of Clearance:	VFR
Departure Time:	1941 PDT	Type of Airspace:	Class G

Wreckage and Impact Information

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

Administrative Information

Investigator In Charge (IIC):	RICHARD B PARKER	Report Date:	04/06/2001
Additional Participating Persons:	JACK HOLBROOK; LAS VEGAS, NV CHARLES R LITTLE; VERO BEACH, FL MARK W PLATT; WILLIAMSPORT, PA JOHN W HAZLET, JR.; BURBANK, CA		
Publish Date:			
Investigation Docket:	NTSB accident and incident dockets serve as permanent archival information for the NTSB's investigations. Dockets released prior to June 1, 2009 are publicly available from the NTSB's Record Management Division at pubinq@ntsb.gov , or at 800-877-6799. Dockets released after this date are available at http://dms.ntsb.gov/pubdms/ .		

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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](#).