National Transportation Safety Board
Aviation Accident Final Report

Location:	MERRILL PASS, AK	**Accident Number:**	ANC94FA001
Date & Time:	10/02/1993, 1430 AKD	**Registration:**	N5647N
Aircraft:	MAULE M-6-235	**Aircraft Damage:**	Substantial
Defining Event:		**Injuries:**	1 Fatal
Flight Conducted Under:	Part 91: General Aviation - Business		

Analysis

THE PILOT-IN-COMMAND WAS ATTEMPTING TO FLY THROUGH MERRILL PASS IN WEATHER CONDITIONS THAT WERE FORECAST TO BE MARGINAL. OTHER PILOTS IN THE AREA REPORTED THE PASS WAS MARGINAL TO CLOSED. THE WRECKAGE WAS FOUND IN A BOX CANYON ONE VALLEY BEFORE REACHING THE PASS. THE TURN REQUIRED INTO THE BOX CANYON WAS THE SAME TURN REQUIRED TO GO THROUGH THE PASS. THE AIRPLANE CRASHED ON THE GLACIER AT THE 4000-FOOT-LEVEL, 90 DEGREES TO THE LONG AXIS OF THE BOX CANYON. THE GLACIER AND SURROUNDING MOUNTAINS WERE COVERED WITH FRESH SNOW.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: THE PILOT-IN-COMMAND'S ATTEMPT TO FLY VFR INTO IMC CONDITIONS. A FACTOR WAS THE WHITEOUT WEATHER CONDITION.

Findings

Occurrence #1: IN FLIGHT COLLISION WITH TERRAIN/WATER
Phase of Operation: MANEUVERING

Findings
1. TERRAIN CONDITION - BLIND/BOX CANYON
2. (F) WEATHER CONDITION - WHITEOUT
3. (C) VFR FLIGHT INTO IMC - ATTEMPTED - PILOT IN COMMAND

Factual Information

HISTORY OF FLIGHT

On October 2, 1993, at 1430 Alaska daylight time, a wheel equipped Maule M-6-235 airplane, N5647N, registered to the Pilot- in-Command, collided with glacier/terrain while maneuvering to reverse direction in a large box canyon located immediately southeast of Merrill Pass. The business flight, operating under 14 CFR Part 91, last departed Merrill Field, Anchorage, Alaska, and the destination was Bethel, Alaska. The Private Certificated Pilot-in-Command, the sole occupant, was fatally injured, and the airplane was substantially damaged. A visual flight rules flight plan was filed, and according to witnesses on the west side of Merrill Pass, marginal visual meteorological conditions prevailed.

PERSONNEL INFORMATION

The 53 year old Pilot-in-Command was the holder of a Private Pilot certificate, number 1618778, with airplane single engine land and sea ratings. He was also the holder of a Federal Aviation Administration class 3 medical certificate, with no limitations, dated 4/22/93.

Examination of the Pilot-in-Command's logbook showed that he met the requirements for a biennial flight review based upon the issuance of his Airplane Single Engine Sea Rating on April 25, 1992.

The records show that the Pilot did not possess an instrument rating and his logbook showed only 5.4 hours of simulated hood time, only 4.1 hours of simulator time, and no actual weather experience.

AIRCRAFT INFORMATION

The airplane, N5647N, was registered to the Pilot-in-Command and the aircraft logbooks show that the airplane had been removed from floats and placed on wheel landing gear on 9/28/93 at tach time 1384.8. The tach time at the accident site read 1386.0.

The logbook records show that the Emergency Locator Beacon battery was to be replaced in Jul, 1994.

The engine, serial number L-21934-48A, capable of producing 230 horsepower had received an oil and filter change at tach time of 1384.8. It was last inspected on June 21, 1993, in accordance with a 100 hour inspection. The engine had a total time of 1386.0 hours since new and had not been overhauled.

METEOROLOGICAL INFORMATION

The Pilot-in-Command received a full weather briefing from the Kenai Automated Flight Service Station. The Pilot's route of flight would have taken him through Merrill Pass, Sparrevohn,and on to Bethel, Alaska. The weather briefer told the Pilot that the weather had been below VFR in the Sparrevohn area for the last three hours and that VFR flight was not recommended. The pilot received this briefing twice, once at 0806 adt and 1127 adt.

Sparrevohn is located approximately 40 miles west of the Alaska Range and beyond the western exit of Merrill Pass.

The general area forecast, received by the Pilot the day before the accident, called for marginal conditions with snow and the possibility of low level wind shears. Merrill Pass was

forecast to be VFR but turbulent. The Bethel area forecast, the Pilot's destination, called for worsening conditions due to ceilings and snow showers.

The accident site was covered with fresh fallen snow with a light dusting of snow on the airplane. The site was located in a box canyon and the surrounding mountains shadowed the wreckage. The surrounding terrain was also covered white with snow.

There are no weather reporting facilities within Merrill Pass.

WRECKAGE AND IMPACT INFORMATION

The airplane wreckage was found in a box canyon that was 1/4 mile wide and 3.25 miles long. The slope in the canyon was 10 degrees down slope from the wreckage. The canyon floor was covered with a glacier and was completely snow covered. There were no open crevasses visible, however, there were snow bridges visible from on the ground near the wreckage. The canyon walls on all three sides were near vertical and the lowest point along the canyon wall was 1300 feet above the wreckage site (5300 feet above mean sea level). The magnetic path into the canyon was 184 degrees.

The airplane wreckage was found at the 4000 foot level of the glacier in the canyon approximately .25 mile from the rear canyon wall. The airplane's wreckage path and heading were 269 degrees. The first impact mark was a scar in the snow cause by the left wing. The fuselage impacted the snow approximately 10 feet beyond the left wing ground scar. The airplane came to rest 55 feet beyond the left wing ground scar.

The engine remained attached to the right side of the firewall and was skewed to the right. The propeller separated from the engine and was located 10 feet beyond the engine and slightly left of the crash path. Examination of the propeller blades showed that both blades were bent, one forward and one rearward. Both blades had chordwise scoring and damage.

The left wing was folded rearward with the leading edge pointing downward. The left wing tip was crushed more severely than the right wing tip and the leading edge of the left wing tip was rolled under the wing. The forward wing attach point of the left wing separated from the cabin top. The wing struts were bent.

The right wing was also bent rearward slightly and downward. Both wing attach points remained attached to the cabin top. The wing struts were bent.

The empennage was twisted slightly and the horizontal stabilizer, elevators, vertical fin, and rudder were not damaged.

The bottom of the cockpit and cabin were pushed upward into the fuselage. The amount of crush was not measured due to the snow coverage of the lower fuselage.

ADDITIONAL INFORMATION

Merrill Pass is a widely used pass that transects the Alaska Range on an East/West course. The Eastern end of the pass is wide and continually narrows until reaching the actual pass. The actual pass requires the accomplishment of a left 70 degree turn and then a right 45 to 50 degree turn to successfully negotiate the pass. Once those turns are made the pass begins to widen. The terrain slowly rises along the flight path until passing through the two turns. The maximum elevation necessary to clear the pass is approximately 3400 feet above mean sea level. The terrain begins to descend once passing through the turns in the pass.

Pilot Information

Certificate:	Private	**Age:**	53, Male
Airplane Rating(s):	Single-engine Land; Single-engine Sea	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	Seatbelt, Shoulder harness
Instrument Rating(s):	None	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	Yes
Medical Certification:	Class 3 Valid Medical--no waivers/lim.	**Last FAA Medical Exam:**	04/22/1993
Occupational Pilot:		**Last Flight Review or Equivalent:**	
Flight Time:	1309 hours (Total, all aircraft), 242 hours (Total, this make and model), 1235 hours (Pilot In Command, all aircraft), 65 hours (Last 90 days, all aircraft), 13 hours (Last 30 days, all aircraft), 2 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	MAULE	**Registration:**	N5647N
Model/Series:	M-6-235 M-6-235	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	No
Airworthiness Certificate:	Normal	**Serial Number:**	7421C
Landing Gear Type:	Tailwheel	**Seats:**	4
Date/Type of Last Inspection:	06/21/1993, Annual	**Certified Max Gross Wt.:**	2500 lbs
Time Since Last Inspection:	55 Hours	**Engines:**	1 Reciprocating
Airframe Total Time:	1386 Hours	**Engine Manufacturer:**	LYCOMING
ELT:	Installed, activated, aided in locating accident	**Engine Model/Series:**	IO-540-W1A5D
Registered Owner:	BIVIN, WILLIAM C.	**Rated Power:**	235 hp
Operator:	BIVIN, WILLIAM C.	**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Instrument Conditions	**Condition of Light:**	Day
Observation Facility, Elevation:	, 0 ft msl	**Distance from Accident Site:**	0 Nautical Miles
Observation Time:	0000	**Direction from Accident Site:**	0°
Lowest Cloud Condition:	Unknown / 0 ft agl	**Visibility**	3 Miles
Lowest Ceiling:	Unknown / 0 ft agl	**Visibility (RVR):**	0 ft
Wind Speed/Gusts:	20 knots / 30 knots	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	140°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:		**Temperature/Dew Point:**	-1°C
Precipitation and Obscuration:			
Departure Point:		**Type of Flight Plan Filed:**	VFR
Destination:	BETHEL, AK (BET)	**Type of Clearance:**	None
Departure Time:	1214 ADT	**Type of Airspace:**	Class G

Wreckage and Impact Information

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

Administrative Information

Investigator In Charge (IIC):	GEORGE KOBELNYK	**Report Date:**	12/02/1994
Additional Participating Persons:	FSDO 03 ; ANCHORAGE, AK		
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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