



Aviation Investigation Factual Report

Location:	NIGHTMUTE, Alaska	Accident Number:	ANC98GA036
Date & Time:	April 8, 1998, 16:55 Local	Registration:	N5485R
Aircraft:	Cessna 185F	Aircraft Damage:	Destroyed
Defining Event:		Injuries:	2 Fatal
Flight Conducted Under:	Public aircraft		

Factual Information

HISTORY OF FLIGHT

On April 8, 1998, about 1655 Alaska daylight time, a wheel equipped Cessna 185F, airplane, N5485R, was destroyed when the airplane collided with remote, snow covered terrain, about 5 miles west-northwest of Nightmute, Alaska. The airplane was being operated as a visual flight rules (VFR) cross-country U.S. Government flight with Y-K Aviation Inc., Bethel, Alaska. The certificated airline transport pilot, and the sole passenger, received fatal injuries. VFR company flight following procedures were in effect. The flight originated at the Toksook Bay Airport, Toksook Bay, Alaska, about 1650, and was en route to Bethel.

The pilot departed Bethel, Alaska, about 1545 for Toksook Bay, located on Nelson Island, to pick up the passenger. The passenger, an employee of the U.S. Department of Health and Human Services, Alaska Native Health Service, chartered Y-K Aviation for the flight to Bethel to attend a conference. A resident of the Village of Toksook Bay drove the passenger out to the airport about 1630. The resident reported the weather conditions at the time included light snow and wind. After picking up the passenger, the airplane departed for Bethel.

Another resident reported that snow began falling just before the accident airplane arrived in Toksook Bay. The winds were less than 20 knots from the west-southwest. He watched the airplane depart, and climb to about 200 feet above the ground. The resident then lost sight of the airplane due to visibility conditions that he described as between 1/4 and 1/2 mile.

The flight did not reach Bethel, and was reported overdue at 2343. Blizzard weather conditions prevented search personnel from Toksook Bay, and Nightmute, Alaska, from beginning an immediate search. The wreckage was located on April 9, 1998, about 1622. The accident location is about 8 1/2 miles east of Toksook Bay.

The accident occurred during the hours of daylight, at latitude 60 degrees, 30.978 minutes north, and longitude 164 degrees, 49.252 minutes west.

CREW INFORMATION

The pilot held an airline transport pilot certificate with an airplane single-engine land rating. The pilot also held commercial pilot privileges with an airplane multiengine rating, and private pilot privileges with an airplane single-engine sea rating. The most recent first-class medical certificate was issued to the pilot on January 15, 1998, and contained no limitations.

No personal flight records were located for the pilot. The aeronautical experience listed on page 3 of this report was obtained from a review of the airmen Federal Aviation Administration

(FAA) records on file in the Airman and Medical Records Center located in Oklahoma City. On the pilot's application for medical certificate, dated January 15, 1998, the pilot indicated that his total aeronautical experience consisted of about 8,800 hours, of which 650 were accrued in the previous 6 months.

The pilot held a single pilot Part 135 air carrier certificate. He completed a Part 135 proficiency check ride with an FAA inspector on August 29, 1997.

AIRCRAFT INFORMATION

The airplane's tachometer and hour meter were destroyed. An examination of the maintenance records revealed the most recent annual inspection of the engine and airframe, was accomplished on December 5, 1997. The last recorded inspection of the engine and airframe was a 100-hour inspection, completed on March 27, 1998. At that time, the airplane had accrued 6,125.5 hours.

The engine was overhauled on February 18, 1997, by Penn Yan Aero Inc., and had accrued 1,189.9 hours since the overhaul.

METEOROLOGICAL INFORMATION

The closest official weather observation station is Mekoryuk, Alaska, which is 43 nautical miles west-southwest of the accident site. Mekoryuk is located on Nunivak Island which is separated from the mainland by the Etolin Strait of the Bering Sea. On April 8, 1998, at 1537, an unaugmented automated weather observation system (AWOS) station was reporting, in part: Wind, 170 degrees (true) at 24 knots; visibility, 1 3/4 statute miles; clouds, clear below 12,000 feet; temperature, 35 degrees F; dew point, 10 degrees F; altimeter, 29.75 inHg.

Hooper Bay, Alaska, is located 72 miles northwest of the accident site. At 1541, an unaugmented AWOS was reporting, in part: Wind, 130 degrees (true) at 28 knots; visibility, 1/2 statute mile; clouds, 100 feet overcast; temperature, 23 degrees F; dew point, missing; altimeter, 29.80 inHg.

Bethel, Alaska, is located 90 nautical miles east of the accident site. At 1653, an Aviation Routine Weather Report (METAR) was reporting in part: Wind, 170 degrees (true) at 17 knots; visibility, 30 statute miles; clouds, 3,300 feet broken, 6,000 feet overcast; temperature, 34 degrees F; dew point, 20 degrees F; altimeter, 29.99 inHg; remarks, virga.

An NTSB meteorologist conducted an investigation of the weather conditions around the accident location. The weather study revealed a warm front extending from the central Alaska Peninsula, northwestward over the Bristol Bay, to a little east of Nunivak Island. Moderate to strong southeasterly, to southerly winds, and overcast clouds were present over the coastal areas of western Alaska.

An area forecast for the Yukon-Kuskokwim Delta, issued on April 8, 1998, at 1200, and valid from 1200 until 0000, was reporting, in part: Through 1800, few clouds at 2,000 feet, 5,000 feet scattered, 10,000 feet broken, tops at 12,000 feet, widely separated layers above, tops at 25,000 feet. Temporary conditions, 2,000 feet broken, 5,000 feet overcast, visibility 5 statute miles in light snow and mist, west of a line from Hooper Bay to Cape Newenham. Isolated ceilings below 1,000 feet with visibilities below 3 statute miles in mist and freezing fog, tops at 4,000 feet east of line from Hooper Bay to Bethel. Beyond 1800, clouds and weather conditions, 2,000 feet scattered, 5,000 feet broken, 10,000 feet broken, tops at 12,000 feet, separated layers above 30,000 feet. Temporary conditions, 2,000 feet overcast, visibility 4 statute miles in light snow and mist. Isolated ceilings below 1,000 feet, visibilities below 3 statute miles in light snow, blowing snow and mist from offshore. Surface winds from the southeast at 20 knots with gusts to 40 knots from offshore.

Outlook, valid from April 9, 1998, at 0000 to 1800, marginal VFR ceilings with rain, snow, mist, and wind.

Airmets are valid until 1800. Airmet for Turbulence, Temporary moderate turbulence between 20,000 and 32,000 feet, no changes. After 1800, isolated moderate turbulence within 3,000 feet agl in the vicinity of rough terrain. Icing and freezing level, temporary light rime icing in clouds from the surface to 12,000 feet. After 1900, isolated moderate rime icing in clouds from 2,000 to 10,000 feet. Freezing level is near the surface.

An amended area forecast for the Yukon-Kuskokwim Delta was issued on April 8, 1998, at 1455, and valid until 0000, stated, in part: Airmet for IFR and mountain obscuration, west of a line from Emmonak to Cape Newenham. Temporary ceilings below 1,000 feet, visibility below 3 statute miles in light snow, mist, and freezing fog. All sections, mountains obscured, no changes. West of a line from Emmonak to Cape Newenham, 1,500 feet broken, 3,000 feet overcast, merging layers to 10,000 feet, separated layers above, tops at 30,000 feet. Visibility, 3 statute miles in light snow, surface winds from the southeast at 20 knots, gusts to 35 knots. East of line from Emmonak to Cape Newenham, 2,500 feet scattered, 5,000 feet broken, 10,000 feet broken, tops at 12,000 feet, widely separated layers above, tops at 25,000 feet. Temporary conditions, 2,500 feet broken, widely scattered, visibility 5 statute miles in light snow showers and mist. Surface winds from the southeast with gusts to 25 knots through channels.

Outlook, valid from April 9, 1998, at 0000 to 1800, west of a line from Emmonak to Cape Newenham, IFR ceilings with rain, snow, mist, and wind. East of a line from Emmonak to Cape Newenham, marginal VFR ceilings with snow.

Airmets are valid until 1800. Airmet for Turbulence, Temporary moderate turbulence between 20,000 and 32,000 feet, no changes. Isolated moderate turbulence within 3,000 feet agl in the vicinity of rough terrain. Icing and freezing level, temporary light rime icing in clouds from the surface to 12,000 feet. West of a line between Emmonak to Cape Newenham, isolated moderate rime icing in clouds from 2,000 to 10,000 feet. All sections, the freezing level is near the surface.

An area forecast for the Yukon-Kuskokwim Delta, issued on April 8, 1998, at 1745, and valid until April 9, 1998, at 0600, stated, in part: Airmets valid until April 9, 1998, at 0000. Airmet for strong surface winds, along the coast, sustained surface winds of 30 knots or greater, spreading across the entire area by 0000. No change. Airmet for IFR and mountain obscuration, west of a line between Emmonak to Cape Newenham, temporary ceilings below 1,000 feet with visibilities below 3 statute miles in light snow and blowing snow, spreading east across the entire area by 0000 and intensifying. Otherwise, west of a line from Emmonak to Cape Newenham, 1,500 feet broken, 3,000 feet overcast, merging layers to 10,000 feet, separated layers above, tops at 30,000 feet. Temporary conditions of 1,000 feet overcast, visibility 3 statute miles in light snow and blowing snow. Surface winds from the southeast at 30 knots with gusts to 45 knots. East of a line from Emmonak to Cape Newenham, 2,500 feet scattered, 5,000 feet broken, 10,000 feet broken, tops at 12,000 feet, separated layers to 25,000 feet. Temporary conditions of 1,500 feet broken, 2,500 feet overcast, visibility 5 statute miles in light snow and blowing snow. Conditions lowering after 0000 per above.

Outlook, valid on April 9, 1998, at 0600 to 0000, IFR ceilings with rain, snow, mist, and wind.

Airmets are valid until 0000. Airmet for Turbulence, temporary moderate turbulence below 3,000 feet, spreading east and intensifying. After 0000, temporary moderate turbulence 20,000 to 32,000 feet. Icing and freezing level, light isolated moderate rime icing in clouds 1,000 to 12,000 feet. Freezing level near the surface.

COMMUNICATIONS

Once the airplane departed Bethel, no further communications were received from the pilot.

The National Transportation Safety Board (NTSB) investigator-in-charge (IIC), requested radar data in the area of the accident from the FAA. Personnel from the Anchorage Air Route Traffic Control Center (ARTCC) indicated that no data was observed.

During the search for the airplane, personnel from the U.S. Air Force Alaska Rescue Coordination Center (RCC), Elmendorf Air Force Base, Anchorage, Alaska, requested radar data from the U.S. Air Force Regional Air Operations Center (RAOC). Military controllers located three radar returns in the area of the accident. The radar data was from the Cape Romanzov radar installation that has a verifiable area of coverage that begins at 1,500 feet above ground level (AGL). Military personnel indicated that radar coverage may extend below the minimum established threshold.

The first radar return indicated a target at 1653:50 with a transponder code of 1200. The last radar return at 1654:13, indicated a speed of 78 knots on a heading of 83.1 degrees. A copy of the RAOC controller's computer screen is included in this report.

WRECKAGE AND IMPACT INFORMATION

The NTSB IIC examined the airplane wreckage at the accident site on April 11, 1998. The airplane was located in an area of rolling hills at an elevation of about 350 feet msl. The entire area was extensively covered by snow. The wreckage was located in a large crater that was filled by blowing snow on about a 10 degree slope. The upper, longitudinal surface of the fuselage was oriented on a 230 degree heading. (All heading/bearings noted in this report are oriented toward magnetic north.)

All of the airplane's major components were found at the main wreckage area. The entire airplane was separated into several main groups. The wings were separated from the fuselage, and displayed extensive spanwise leading edge aft crushing and folding. The forward spar of each wing was compressed to their respective rear spars. The wings were oriented in a near vertical attitude with the leading edge of the wings oriented down, about 2 feet beneath the surface of the snow. Both the ailerons and flap assemblies remained attached to the trailing edge of their respective wings, and were almost entirely covered by drifting snow. The left wing lift strut separated from its wing attach point, but remained attached to its lower fuselage attach point. The right wing lift strut was still attached to the right wing, but separated from its fuselage attach point.

The entire empennage, with the tailwheel still attached, was separated from the fuselage at the forward vertical stabilizer attach point. The empennage was located resting on the surface of the snow, positioned on top of, and just forward of the wings. The right horizontal stabilizer displayed leading edge aft crushing, and upward buckling of the underside of the stabilizer. The left horizontal stabilizer displayed aft crushing about mid span, and aft compression and folding of the leading edge along the outboard half of the stabilizer. The leading edge of the vertical stabilizer was crushed in a aft direction in a large semicircular shape, and was folded slightly to the left. The elevators and rudder remained attached to the empennage. The empennage was connected to the main cabin section by the rudder, and elevator cables.

The main cockpit/cabin area of the fuselage was extensively crushed and distorted. It was separated from the forward portion of the airframe about the forward door post, and was separated from the empennage near the baggage area. The upper half of the cockpit/cabin roof structure was torn away and extensively crushed. The fuselage section was positioned about 8 feet aft of the empennage.

The propeller assembly separated from the engine crankshaft. The blades and hub were located about 3 feet below the snow level, about 1 foot below the ground level. The propeller was positioned near the outboard end of the buried left wing. Excavation of the propeller assembly revealed the spinner was crushed aft, and folded and formed around the shape of the propeller dome. One propeller blade was still retained in the hub. The blade exhibited very minor leading edge gouging, but extensive "S" bending, and slight torsional twisting. The cambered side of the blade displayed an extensive area of paint removal in an area of aft bending, about 8 inches outboard from the hub. The second blade was separated from the hub, and exhibited minor leading edge gouging, and extensive "S" bending.

The engine was separated from the fuselage, and was positioned just to the left of the empennage point of rest. It sustained extensive impact damage to the underside, and front portion of the engine. The exhaust tubes were extensively crushed, bent, and folded, producing sharp creases that were not cracked or broken along the creases.

The magneto mounting flange, and both magnetos, were broken from the engine case.

The directional gyro instrument, and the attitude indicator instrument case, were both crushed. Examination of the internal gyro rotor from each instrument did not reveal any obvious rotational scoring.

MEDICAL AND PATHOLOGICAL INFORMATION

A postmortem examination of the pilot was conducted under the authority of the Alaska State Medical Examiner, 5700 E. Tudor, Anchorage, Alaska, on April 14, 1998.

SEARCH AND RESCUE

Search personnel from Toksook Bay and Nightmute were requested by the Alaska State Troopers office in Bethel. The search coordinator reported that blizzard conditions prevented an immediate search. Later in the day of April 9, 1998, snow machines from each village began search operations, and located the wreckage. There was no emergency locator transmitter (ELT) signal from the airplane.

TESTS AND RESEARCH

On May 6, 1998, an engine examination was conducted at Alaskan Aircraft Engines Inc., Anchorage, Alaska. The examination revealed the oil sump cover was crushed upward against the case. The engine case was broken adjacent to the number five cylinder, and also broken between the number four, and number six cylinders.

All of the cylinder cooling fins exhibited impact damage. The number one, three, and five cylinder valve covers were broken away from each cylinder head. The forward edge of the number five cylinder was broken and missing. The number two, and the number four cylinder valve covers were crushed. The number six cylinder valve cover was broken and missing.

The fuel manifold was broken away from its attach point. The manifold screen was free of contaminants. The diaphragm was intact. The fuel servo inlet screen was free of contaminants.

The engine driven fuel pump, and the pump drive pin between the pump and the drive gear, were broken away from the engine and were missing. Examination of the inboard face of the fuel pump drive gear revealed a curved impression/score mark that matched the contour of an

adjacent engine case support. The impression/score mark was smeared radially along the face of the gear. In addition, two depressions were noted in the wall of the engine case housing, adjacent to the rotating path of the fuel pump drive gear. The outer edges of the depressions exhibited a slight rolled appearance with a slight gouging of the engine case.

The top spark plug from the number three cylinder was completely shattered. The number one cylinder plug insulators exhibited minor lead deposits. All of the plugs exhibited minor electrode ovaling, with a gray color. The number two, number five, and number six plugs had minor accumulations of oil and water.

One magneto produced spark upon hand rotation. The second magneto could not be rotated.

Disassembly of the engine oil pump revealed minor rotational scoring on the inner surface of the pump cover, and the inner surface of the housing, adjacent to the oil pump gears. Closer examination of the pump cover revealed an impression mark, consistent with the shape of an oil gear tooth at the axial end of the gear. Within the impression mark shape, several bright rotational score lines were noted that did not extend beyond the impression mark.

The engine cylinders and pistons did not exhibit any unusual appearance. The presence of lubricants was noted throughout the engine. The crankshaft was displaced aft in the engine case about 1/2 inch, and was bent toward the top of the case. The camshaft was also displaced aft in the case.

No preimpact mechanical malfunction was noted during the examination of the engine.

WRECKAGE RELEASE

The Safety Board released the wreckage to the owner's representatives on May 11, 1998. No parts or components were retained by the Safety Board.

Pilot Information

Certificate:	Airline transport; Commercial; Private	Age:	35,Male
Airplane Rating(s):	Single-engine land; Single-engine sea; Multi-engine land	Seat Occupied:	Left
Other Aircraft Rating(s):	None	Restraint Used:	
Instrument Rating(s):	Airplane	Second Pilot Present:	No
Instructor Rating(s):	None	Toxicology Performed:	Yes
Medical Certification:	Class 1 Valid Medical--no waivers/lim.	Last FAA Medical Exam:	January 15, 1998
Occupational Pilot:	Yes	Last Flight Review or Equivalent:	
Flight Time:	8800 hours (Total, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Cessna	Registration:	N5485R
Model/Series:	185F 185F	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	
Airworthiness Certificate:	Normal	Serial Number:	18503038
Landing Gear Type:	Tailwheel	Seats:	4
Date/Type of Last Inspection:	March 27, 1998 100 hour	Certified Max Gross Wt.:	3350 lbs
Time Since Last Inspection:		Engines:	1 Reciprocating
Airframe Total Time:	6126 Hrs	Engine Manufacturer:	Continental
ELT:	Installed, not activated	Engine Model/Series:	IO-520-D
Registered Owner:	Y-K AVIATION INC.	Rated Power:	300 Horsepower
Operator:	ALASKA NATIVE HEALTH SERVICE	Operating Certificate(s) Held:	None
Operator Does Business As:		Operator Designator Code:	

Meteorological Information and Flight Plan

Conditions at Accident Site:	Instrument (IMC)	Condition of Light:	Day
Observation Facility, Elevation:	PAM ,48 ft msl	Distance from Accident Site:	43 Nautical Miles
Observation Time:	15:37 Local	Direction from Accident Site:	243°
Lowest Cloud Condition:	Clear	Visibility	1.34 miles
Lowest Ceiling:	None	Visibility (RVR):	
Wind Speed/Gusts:	24 knots / None	Turbulence Type Forecast/Actual:	/
Wind Direction:	170°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	29 inches Hg	Temperature/Dew Point:	2°C / -2°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	TOKSOOK BAY (OOK)	Type of Flight Plan Filed:	Company VFR
Destination:	BETHEL (BET)	Type of Clearance:	None
Departure Time:	16:50 Local	Type of Airspace:	Class G

Airport Information

Airport:		Runway Surface Type:	
Airport Elevation:		Runway Surface Condition:	
Runway Used:	0	IFR Approach:	None
Runway Length/Width:		VFR Approach/Landing:	None

Wreckage and Impact Information

Crew Injuries:	1 Fatal	Aircraft Damage:	Destroyed
Passenger Injuries:	1 Fatal	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	2 Fatal	Latitude, Longitude:	60.489894,-164.810806(est)

Administrative Information

Investigator In Charge (IIC): Erickson, Scott

Additional Participating Persons: HERB HERZOG; ANCHORAGE , AK
GREG SCHMIDT; WICHITA , KS

Report Date: October 14, 1998

Last Revision Date:

Investigation Class: [Class](#)

Note:

Investigation Docket: <https://data.nts.gov/Docket?ProjectID=3097>

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](#).