National Transportation Safety Board
Aviation Accident Final Report

Location:	Kenai, AK	**Accident Number:**	ANC07FA013
Date & Time:	01/09/2007, 1035 AST	**Registration:**	N9941M
Aircraft:	Cessna 207A	**Aircraft Damage:**	Substantial
Defining Event:		**Injuries:**	1 Fatal
Flight Conducted Under:	Part 135: Air Taxi & Commuter - Non-scheduled		

Analysis

The commercial certificated pilot prepared for a VFR cross-country nonscheduled cargo flight under Title 14, CFR Part 135, by preflighting the wheel-equipped airplane and starting the engine. The airplane had been parked on the airport ramp overnight, with an electric engine heater and an engine cover on. A portion of the flight was over ocean waters to a remote village. After engine start, the pilot contacted the company owner and reported that the engine oil pressure appeared to be low, but within the operating range. The owner and the pilot discussed the possible reasons, such as cold ambient temperatures, which was about -20 degrees F. The pilot then departed, and reported to his company that the engine pressure was good. About 10 minutes later, he declared an emergency and stated he was ditching in the water, about 18 miles west of the departure airport. Retrieved track data from the pilot's GPS showed the airplane's maximum altitude was 1,439 feet msl, while crossing the ocean in an area that was about 22 miles wide. A review of the manufacturer's maximum glide distance chart revealed that from an altitude of about 1,500 feet, the airplane could glide about 2.1 nautical miles. The airplane was located about two hours after the accident, floating nose down next to a segment of pan ice, about 8.8 miles from the initial accident location. The pilot was not recovered with the airplane, and subsequent searches did not locate him. Following recovery of the airplane, examination of the engine revealed a 8 X 5 inch hole in the top of the case, adjacent to the number 2 cylinder. The number 2 connecting rod was broken from its crankshaft journal, and broken from the bottom of the piston. The number 1 connecting rod bearing was missing from its normal position on the crankshaft journal and the rod had evidence of high heat. Evidence of oil starvation and high heat signatures to several crankshaft and connecting rod bearings was found throughout the engine, along with a large amount of fragmented bearing material. The pilot was not wearing any personal flotation equipment, and the expected survival time in the 29 degree F ocean water was about 30 minutes. The company's operations manual does not contain a written policy requiring pilot's to maintain sufficient altitude to reach shore when crossing ocean waters.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be:

The total loss of engine power during cruise flight due to the disintegration of engine bearings and the fracture of a connecting rod, which resulted in a ditching into ice covered ocean water. Factors contributing to the survivability of the accident were the pilot's improper decision to fly over frigid water without sufficient altitude to reach a suitable landing area, the lack of written policy and procedures by the operator requiring sufficient altitude to reach shore when crossing ocean waters, temperature extremes consisting of sub-zero air and below freezing water temperatures, and the lack of personal flotation/survival equipment.

Findings

Occurrence #1: LOSS OF ENGINE POWER(TOTAL) - MECH FAILURE/MALF
Phase of Operation: CRUISE

Findings
1. (C) ENGINE ASSEMBLY,BEARING - DISINTEGRATED
2. (C) ENGINE ASSEMBLY,CONNECTING ROD - FRACTURED

Occurrence #2: FORCED LANDING
Phase of Operation: EMERGENCY DESCENT/LANDING

Findings
3. (F) ALTITUDE - INADEQUATE - PILOT IN COMMAND
4. (F) IN-FLIGHT PLANNING/DECISION - IMPROPER - PILOT IN COMMAND
5. (F) PROCEDURES/DIRECTIVES - INADEQUATE - COMPANY/OPERATOR MANAGEMENT

Occurrence #3: DITCHING
Phase of Operation: EMERGENCY DESCENT/LANDING

Findings
6. TERRAIN CONDITION - WEAK ICE
7. (F) SURVIVAL EQUIPMENT - UNAVAILABLE - PILOT IN COMMAND
8. (F) WEATHER CONDITION - TEMPERATURE,LOW

Factual Information

HISTORY OF FLIGHT

On January 9, 2007, about 1035 Alaska Standard time, a wheel-equipped Cessna 207A airplane, N9941M, sustained substantial damage when it ditched in the ocean waters of the Cook Inlet during an emergency forced landing, about 18 miles west of Kenai, Alaska. The airplane was being operated as a visual flight rules (VFR) cross-country nonscheduled cargo flight under Title 14, CFR Part 135, when the accident occurred. The airplane was operated by Air Supply Alaska Inc., Kenai. The commercial certificated pilot, the sole occupant, was not located at the accident scene, and is presumed to have received fatal injuries. At the time of the accident, visual meteorological conditions prevailed over the Cook Inlet. As search operations progressed, the weather conditions deteriorated, and instrument meteorological conditions prevailed over the inlet. VFR company flight following procedures were in effect. The flight originated at the Kenai Airport about 1023, and was en route to Kokhanok, Alaska.

The company director of operations/owner reported that the pilot began the day by preparing for the accident flight. This included preflight and engine start. The airplane had been parked on the airport ramp overnight, with an electric engine heater plugged in, and an engine cover installed. After engine start, the pilot contacted the Federal Aviation Administration (FAA) air traffic control personnel at the Kenai air traffic control tower (ATCT) and said that he was taxiing for takeoff. He then returned to the company ramp, shut down the engine, and contacted the company owner. The pilot indicated that the engine oil pressure appeared to be lower than normal, but still in the operating range. The owner indicated that he and the accident pilot discussed the possible reasons, such as cold ambient temperatures. The owner said the pilot indicated he would monitor the oil pressure prior to crossing the Cook Inlet, en route to Kokhanok.

At 1020, the pilot again contacted the Kenai ATCT, and said that he was taxiing for takeoff. At 1022, the pilot advised he was ready for departure, and was cleared for takeoff at 1023. After departure, he contacted a company employee on the company radio and advised that his departure time was 1025, and his flight time was anticipated to be 1 hour and 15 minutes. The pilot also reported that he intended to "go down" from his normal crossing point across the Cook inlet, and indicated that the engine pressure was "up in the green and good to go."

At 1033:54, the pilot contacted Kenai tower and stated, "Yes, I have a mayday. I've, ah, substantial vibration has occurred, ah, I can't see, ah, problem, I'm mid-channel, descending." The Kenai tower controller asked for the pilot's position, and the pilot said, "I'm mid-channel headed for the (unintelligible.) At 1035:06, the pilot stated, "I'm headed into the water, 60:40.94 [degrees north latitude] 151:43.542 [degrees west longitude], Mayday, Mayday." No further communication was received from the pilot.

The operator's director of operations was preparing to depart Kenai in another company airplane, and he monitored the mayday call. He asked about the accident location, departed from Kenai at 1039, and headed toward the area of the accident. Kenai ATCT personnel indicated that there was a possible radar target approximately 12 miles northwest of Kenai. That location was between Nikiski, Alaska, on the west shore of the Kenai Peninsula, and Redoubt Bay, on the east shore of the Alaska Peninsula.

At 1046, Air Route Traffic Control Center (ARTCC) personnel, Anchorage, Alaska, contacted

Kenai tower personnel via telephone, stating, "..I see that, ah, for this downed aircraft is 12 miles northwest of the VOR. Do you have anything better than that." Kenai tower personnel responding by stating, "Really, not at this time. Unofficially, we think we had a target on our radar. We got possible coordinates on him, but we have to check the tapes to make sure." ARTCC personnel inquired about a radial (magnetic direction) from the VOR, and Kenai personnel stated, "A good guess would be looked like the 310 to 330 [radial] off the East Forelands, maybe."

Several aircraft heard the unfolding emergency situation and responded to the area of the crash. The Air Force Rescue Coordination Center (AFRCC) was notified and search personnel were dispatched to the area.

About 1218, an emergency locator transmitter (ELT) signal was detected by U.S. Coast Guard search aircraft. About 1241, the tail of the partially submerged airplane was spotted floating vertically in about 60 feet of water, and the vessel "Sea Bulk Nevada" was directed to the area. The location was about 8.8 miles southwest of the initial accident site reported by the pilot. The 215 foot long vessel recovered the airplane about 1453 from the inlet, which had wide areas of floating ice and ice fog. The airplane was intact, with the exception of the nose wheel assembly, which was missing. A crewmember on the vessel reported that he saw what appeared to be two tire tracks on the pan ice, about 50 to 60 feet long, to the edge of the ice where the airplane was located.

The pilot was not recovered with the airplane, and subsequent searches did not locate him.

PERSONNEL INFORMATION

Pilot Information

The pilot held a commercial pilot certificate with airplane single-engine land, single-engine sea, and instrument airplane ratings. He also held private pilot privileges with a multiengine land rating. The most recent second-class medical certificate was issued to the pilot on April 3, 2006, and contained the limitation that the pilot must wear corrective lenses.

The pilot was hired by the operator on April 8, 2006. He completed his initial ground and flight training on May 5, 2006. He took a CFR Part 135.293 and Part 135.299 airman competency/proficiency flight check with an FAA inspector from the Anchorage Flight Standards District Office (FSDO), Anchorage, Alaska, on May 4, 2006. The inspector indicated that the result of the flight check was unsatisfactory in emergency procedures and judgment, and disapproved the checkride. The following day, after another flight check, the inspector approved the pilot.

No personal flight records were located for the pilot, and the aeronautical experience listed on page 3 of this report was obtained from the operator's records, and from an insurance company application completed by the pilot. The operator indicated that the pilot's total aeronautical experience consisted of about 5,291 hours, of which 512 hours were accrued in the accident airplane make and model.

Company Information

The company is a cargo-only operator, and does not carry passengers. The owner of the company is designated as the Chief Pilot and Director of Operations. The company operations specifications, issued by the FAA, states that operational control of flight operations are specified in the company's operations manual, Section 2.

Section 2 of the company's operations manual states, in part: "The director of operations, the chief pilot, and the pilot-in-command (PIC) are responsible and authorized to independently suspend or terminate the initiation or continuation of a flight assignment under any of the following conditions: 1. If the flight release procedures have not been met; or, 2. If any conditions at the time of flight release are not compliant with FAR(s) and the procedures of this manual; or, 3. If any unsafe conditions pose a hazard to flight. The PIC is responsible and authorized to suspend or modify the continuation of a flight assignment to the extent necessary to avoid any conditions that are hazardous to flight. If it is not possible to continue a flight assignment safely, the PIC shall terminate the flight assignment."

The owner reported that he usually crossed the Cook Inlet in a Cessna 207 between the East Foreland of the Kenai Peninsula, (about 12 miles northwest of Kenai) and the West Foreland of the Alaska Peninsula, at a minimum altitude of about 3,200 feet msl. The distance between these two points is approximately 9.5 miles.

The company owner stated that Page 2-1 of the company's training manual, "Pilot-in-Command, Single Engine Reciprocating Aircraft," contains subjects and lessons, which include the topics of emergency situations, decision making, and emergency procedures.

Page 3-10 of the training manual contains the lesson plan for emergency procedures. The elements of the lesson plan include recognition of emergencies and assignments, emergency and forced landing policies and procedures, basic first aid and physiology, survival principles and survival gear. The topic of survival principles include food, water, fire, signaling, and arctic and sea survival considerations. The topic of survival gear include ELT, location and the contents of aircraft survival gear, and other available survival equipment and resources.

AIRCRAFT INFORMATION

Examination of the maintenance records revealed that the most recent annual inspection of the airframe and engine was accomplished on February 11, 2006. At that time, the airplane had 13,468.6 hours. The engine had 2,469.3 hours, and 770.4 hours since a major overhaul.

The engine was removed from the airframe on November 19, 1999, having accrued 1,698.9 hours. The engine case, including the crankshaft, camshaft, connecting rods, oil pump and starter assembly, was overhauled on May 28, 2002, by an engine overhaul facility. On November 1, 2003, a mechanic utilizing a mix of new and overhauled components, completed assembly of the engine with the installation of the cylinders and accessories, and reinstalled the engine.

During the annual inspection on February 11, 2006, the number 2 engine cylinder was removed and replaced with an overhauled cylinder by the operator's director of maintenance. The cylinder change included new piston rings, piston pin, exhaust valve, and valve springs. The valve guides were replaced, the valve seats were ground, and the cylinder bore was honed. The intake valve was serviceable.

The most recent inspection was a 100 hour inspection on November 1, 2006, 63.2 hours before the accident. At that time, the airframe had 13,773.8 hours. The engine had 1,075.6 hours since overhaul, and 305.2 hours since the number 2 cylinder was changed.

At the time of the accident, the airplane had a total time in service of 13,837 hours. The engine had accrued 1,138.8 hours since overhaul, and 368.4 hours since the number 2 cylinder was changed.

The operator reported that the airplane departed on the accident flight with about 50 gallons of fuel.

The accident airplane was parked overnight on the operator's ramp, next to the company office and hangar. The airplane was equipped with a "Little Buddy" brand engine heater, which has electrical heating coils and fan, installed beneath the engine. The operator reported that the heater will maintain about 100 degrees in the engine compartment. The engine heater was plugged into an electrical outlet, and the engine was covered by a quilted engine cover.

The airplane manufacturer's information manual, Section 3, "Emergency Procedures, Engine Failure," states, in part: "After an engine failure in flight, the best glide speed as shown in Figure 3-1 should be established as quickly as possible." Figure 3-1 contains best glide speeds for three airplane weights, and lists the following: 3,800 pounds gross weight - 80 knots; 3,400 pounds - 75 knots; 3,000 pounds - 70 knots.

Figure 3-1 also has a maximum glide distance chart depicting a ratio of ground distance (nautical miles) vs height above terrain (feet). The glide ratio of altitude to distance, is about 8 to 1.

METEOROLOGICAL INFORMATION

At 1045, a special weather observation at Kenai was reporting, in part: Wind, 060 degrees (true) at 6 knots; visibility, 10 statute miles; clouds and sky condition, clear; temperature, -20 degrees F; dew point, -27 degrees F; altimeter, 30.56 inHg. Following the accident, search personnel reported that fog moved in the area of the search, with visibilities of about 1/8 mile.

The terminal forecast for the Kenai Airport, issued at 0808, and valid until 0300 on January 10, was reporting: "Wind, 020 degrees at 4 knots; visibility, greater than 6 statute miles; clouds and sky condition, variable ceilings due to fog, 1,000 feet scattered. Temporary conditions between 0800 and 1100, visibility 5 statute miles in mist, 500 feet broken, variable overcast ceilings of 1,000 feet.

The area forecast for Cook Inlet and Susitna Valley, issued at 0750, and valid until 1800, was reporting, in part: AIRMET for IFR conditions, from the east side of Palmer, Alaska, to the Turnagain Arm of the Cook Inlet, occasional ceilings below 1,000 feet, tops at 1,200 feet, visibility below 3 statute miles in ice crystals and mist, improving, valid until 1200. Otherwise, from the east side of Palmer to Turnagain Arm, 300 feet scattered, visibility 4 statute miles in mist. From Turnagain Arm to Kenai, 400 feet scattered, 1,600 feet broken to overcast, tops at 2,500 feet. Elsewhere, sky clear.

From 1400, few clouds at 1,500 feet. Between 1600 to 1800, from the east side of Palmer to Turnagain Arm, isolated ceilings below 1,000 feet, visibility below 3 statute miles in ice crystals and mist. Outlook, valid between 1800 to 1200 on January 10, VFR. From 0600 (January 10) between Anchorage, Alaska, and Palmer, IFR due to ceilings in mist.

COMMUNICATIONS

A transcript of all radio communications between the accident airplane and the Kenai ATCT facility, between 1015 and 1102, is included in the public docket of this report.

RADAR DATA

The FAA reported that no discreet radar data pertaining to the accident airplane was found.

A private company, utilized by the airframe manufacturer, analyzed unofficial primary radar data provided by the FAA's ARTCC that began at 1028:37, and ended at 1035:26. The radar data closely matched track data recovered from the pilot's personal global positioning system (GPS) receiver. The radar data did not show any altitude information, or transponder code information.

WRECKAGE AND IMPACT INFORMATION

On January 10, 11, and 12, the National Transportation Safety Board investigator-in-charge (IIC), and the parties noted in this report, examined the airplane after it was retrieved from the ocean. The airplane fuselage was intact and relatively undamaged, except for the missing nose wheel assembly, and some crushing near the vertical stabilizer where a nylon strap was used to lift the airplane from the water.

During the hoisting operation to remove the airplane from the vessel on January 10, and place it on a trailer, a portion of an engine connecting rod was discovered wedged below the propeller spinner, between the forward edge of the engine cowling, and the aft end of the propeller spinner bulkhead. The connecting rod was intact at its upper end to include the piston wristpin retaining hole, but was missing the lower end, adjacent to the connecting rod bolt holes. The connecting rod cap was missing, as was the piston wristpin.

The airplane was transported to a nearby hangar for the postaccident examination. Examination of the connecting rod revealed that it was not jammed or pinned between the cowling and the propeller assembly, but merely hanging there, retained only by the outer lip of the piston wristpin hole. It was easily removed by hand. Minor rotational scratches were noted on the forward face of the upper engine cowling, on either side of the propeller spinner. There were no punctures of the upper engine cowling. There was a hole in the forward portion of the lower cowling, just below the propeller spinner, with outward tearing and folding of the cowling material. Oil streaking was noted along the left side of the engine cowling.

The instrument panel was coated with silt. Cleaning of the silt revealed the instrument gauges. No thermal damage was found to the airplane. The generator circuit breaker was the only breaker to have tripped. The instrument clock was stopped at 1034. The transponder was set to 1200, but was in the stand-by position.

The throttle and mixture controls were full forward. The propeller control was extended about 1/2 inch from full forward. The fuel selector was on the right tank.

The flight control surfaces remained connected to their respective attach points, and could be moved by the cockpit controls. The right aileron had slight upward bending along its trailing edge. The flaps were extended about 10 degrees.

The propeller assembly remained connected to the engine crankshaft. Two propeller blades were straight and undamaged. The third blade had slight forward bending about 8 inches inboard from the tip of the blade. The propeller could not be turned by hand.

Removal of the engine cowling revealed about an 8 inch by 5 inch hole in the top of the engine case, adjacent to the number 2 cylinder. The left magneto was intact and retained in its mounting pad. The right magneto was broken from its mounting pad. An extensive amount of oil was found on the engine, on the firewall, and in the lower cowling.

The engine intake and exhaust tubes were undamaged, and the inlet fuel screen was free of contaminants.

The "Little Buddy" engine heater electrical circuit began to draw current and the fan activated when it was plugged into an electrical power outlet.

Several quarts of an oil/water mix were drained from the engine sump. The engine propeller was removed and the engine was shipped to Teledyne Continental Motors, Mobile, Alabama.

On May 1, and May 2, 2007, the engine was examined at Teledyne Continental Motors. The parties noted in this report, with the exception of the operator and FAA, participated in the examination. The examination revealed the previously described rupture of the upper deck of the engine case halves. Extensive fracturing and cracks radiated from the ruptured portion of the case, downward to the number 1 cylinder attaching bolts. The top of the number 1 cylinder, at its base where it bolts to the engine case, had a high heat (blue) discoloration.

The case was bulged outward at the base of the number 1 cylinder, along the lower edge of the cylinder deck studs. The base of the number 1 cylinder was pulled away from the engine case about 1/4 inch. The number 8 deck stud of the number 1 cylinder was missing its hold-down nut, and the bolt threads were stripped and distorted. The number 6 and 7 deck studs were loose.

Removal of the number 2 cylinder revealed that the piston was jammed in the cylinder bore. The wristpin retaining bore holes on the underside of the piston were fractured on either side of the piston skirt. The wristpin was missing and was not located in the engine, nor ever recovered. The fracture surface of the wristpin hole radius had a jagged and rough appearance. The lower edges of the piston skirt were extensively fractured.

An extensive amount of metal material was found in the engine oil sump, along with the right magneto drive coupling. The recovered material was generally of three categories. The first was sections of the fractured number 2 connecting rod cap, along with segments of bolt material. A second was broken segments of piston skirt material. The last was a large amount of fragmented bearing material.

The upper side of the number 1 cylinder piston skirt had scoring and scratching. The upper side of the number 3, 4, and 5 cylinder had scoring and scratching of a lesser extent.

Examination of the right engine case half revealed fretting on the case half mating surfaces, adjacent to the number 2 main bearing saddle. The number 2 main bearing was elongated and had shifted forward from its normal position, almost contacting the radius of the crankshaft cheek. The bearing surface had fretting.

The number 2 rod journal had a blackened surface. The oil galley was deformed and peened over at its lower end.

Both halves of the number 1 connecting rod bearing was missing from its normal position around the crankshaft journal. The rod cap bolts were still attached, but the rod had significant movement on its crankshaft journal due to the missing bearing material, and had high heat (blue) signatures.

The number 6 connecting rod bearing had excessive heat signatures and was binding on the crankshaft journal.

The number 3 main bearing had some galling of the crankshaft journal.

The connecting rod bearings had evidence of scoring.

The oil filter contained a large amount of metal flakes, and the interior of the oil pump housing had scratching, but the gears could be rotated by hand.

SURVIVAL ASPECTS

The air temperature at the time of the accident was about -20 degrees F. The water temperature was about 29 degrees F. Review of U.S. Coast Guard survivability data revealed that in 32 degree water, the time to a loss of useful consciousness is about 30 minutes. The operator reported that the pilot did not wear any type of personal flotation equipment.

The location of the accident was about 18 miles west of Kenai. The airplane was found about 8.8 miles southwest of the accident site, which was about 24 miles west of Kenai. The shortest distance across the Cook Inlet, between the East Foreland of the Kenai Peninsula and the West Foreland of the Alaska Peninsula, is about 9.5 miles.

The captain of the vessel "Sea Bulk Nevada" reported that the Cook Inlet had areas of pan ice up to the size of a football field, and varying in thickness from 8 to 14 inches.

SEARCH AND RESCUE

Search and rescue personnel from the U.S. Coast Guard, Alaska National Guard, the Alaska State Troopers, as well as civilian search aircraft, responded to the area of the pilot's mayday call. Weather conditions deteriorated in the area to include fog, which restricted visibility. The vessel "Sea Bulk Nevada," a civilian oil spill response vessel that was at a dock at Nikiski, was requested about 1100 to respond to the area of the accident. An ocean current of about 3 knots toward the southwest was running in the Cook Inlet at that time. Once in the area, a Coast Guard airplane began receiving an ELT signal and directed a Coast Guard helicopter to the area. After the tail of the airplane was spotted, the "Sea Bulk Nevada" arrived at the scene about 1343, retrieved the airplane with a crane, and transported the wreckage to a dock at Kenai. Search efforts continued for the pilot, but were unsuccessful.

TESTS AND RESEARCH

The pilot had a personal Garmin GPS receiver attached to the glare shield of the instrument panel. The GPS was recovered and sent to the NTSB's Vehicle Recorder Division for examination. Several minutes of stored GPS position data was retrieved from the unit's track log. The beginning of full position data began at 1032:20, at latitude 60 degrees, 39.111 minutes north, and longitude 151 degrees, 35.840 minutes west. At that time, the airplane's altitude was 1,283 feet msl with an airspeed of 113 mph, and a heading of 275 degrees true.

The retrieved track data showed the airplane's maximum altitude was 1,439 feet msl, at 1033:37, about 2 minutes before the crash. The airspeed was 116 mph. The airplane's altitude, as well as the airspeed, began decreasing until ending at the accident site at 1035:41.

The GPS data revealed that the pilot had previously stored several user-defined routes in the data base. The retrieved track data showed a curving deviation to the south from one of the pilot's stored routes. The deviation from the route curved back to the northwest, ending just about on the pilot's prestored route at the time of the crash.

Cook Inlet, between the west shoreline of the Kenai Peninsula, and the east shore of the Alaska Peninsula, along the pilot's planned route, is about 22 miles wide. A review of the manufacturer's maximum glide distance chart revealed that from an altitude of about 1,500 feet, the airplane could glide about 2.1 nautical miles.

The details of the retrieved GPS data is included in the public docket of this accident.

ADDITIONAL INFORMATION

The FAA's Federal Aviation Regulations (FARs) contain several sections pertaining to minimum altitudes and equipment for airplanes. Title 14, CFR Part 135.183, Performance Requirements: Land Aircraft Operated Over Water, states, in part: "No person may operate a land aircraft carrying passengers over water unless - (a) It is operated at an altitude that allows it to reach land in the case of engine failure." (The operator is a cargo operator only, and does not carry passengers.)

Title 14, CFR Part 135.203, VFR, Minimum Altitudes,, states, in part: "Except when necessary for takeoff and landing, no person may operate under VFR - (a) An airplane - (1) During the day, below 500 feet above the surface or less than 500 feet horizontally from any obstacle."

Title 14, CFR Part 91.205, Powered civil Aircraft with Standard Category, U.S Airworthiness certificates: Instrument and Equipment Requirements, states, in part: "(b) Visual Flight Rules (day). For VFR flight during the day, the following instruments and equipment are required... (12) If the aircraft is operated for hire over water, and beyond power-off gliding distance from shore, approved flotation gear readily available to each occupant, and unless the aircraft is operating under Part 121 of this subchapter, at least one pyrotechnic signaling device. As used in this section, "shore" means that area of the land adjacent to the water which is above the high water mark, and excludes land areas which are intermittently under water."

The company does not supply personal flotation devices to their pilots for single-engine operations. The airplane was not equipped with, nor was it required to carry, a survival raft. The owner stated his company policy is to fly at an altitude that would allow an airplane to reach shore in the event of an engine failure, and the topics of emergency situations, decision making, and emergency procedures and survival are covered in the company training manual.

The operator indicated that he does not have a written policy in his operations manual, because all pilots must comply with the FARs. In correspondence with the operator concerning personal flotation devices, the owner reported that, "...regarding the question on personal flotation devices, the FAR requirement to maintain adequate altitude over water to reach power-off gliding distance to shore, in the event personal flotation devices are not carried aboard the aircraft, is very clear, and this FAR is clearly covered in our training as well as the practical aspects of the requirement to maintain adequate altitude over water in a single-engine aircraft to reach a suitable landing area due to the very limited chance of survival in the event a aircraft does go down in the cold waters of Alaska."

The Safety Board released the wreckage, located at Kenai, Alaska, to the owner's representatives on January 12, 2007. The engine was retained by the Safety Board for examination until its release on May 2, 2007.

Pilot Information

Certificate:	Commercial	**Age:**	52, Male
Airplane Rating(s):	Multi-engine Land; Single-engine Land; Single-engine Sea	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	Seatbelt, Shoulder harness
Instrument Rating(s):	Airplane	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 2 With Waivers/Limitations	**Last FAA Medical Exam:**	04/01/2006
Occupational Pilot:		**Last Flight Review or Equivalent:**	05/01/2006
Flight Time:	5291 hours (Total, all aircraft), 512 hours (Total, this make and model), 4330 hours (Pilot In Command, all aircraft), 96 hours (Last 90 days, all aircraft), 27 hours (Last 30 days, all aircraft), 1 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Cessna	**Registration:**	N9941M
Model/Series:	207A	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	No
Airworthiness Certificate:	Normal	**Serial Number:**	20700748
Landing Gear Type:	Tricycle	**Seats:**	1
Date/Type of Last Inspection:	11/01/2006, 100 Hour	**Certified Max Gross Wt.:**	3800 lbs
Time Since Last Inspection:	64 Hours	**Engines:**	1 Reciprocating
Airframe Total Time:	13774 Hours as of last inspection	**Engine Manufacturer:**	Continental
ELT:	Installed, activated, aided in locating accident	**Engine Model/Series:**	IO-520-F27B
Registered Owner:	Alaska Aircraft Leasing LLC	**Rated Power:**	300 hp
Operator:	Air Supply Alaska Inc.	**Operating Certificate(s) Held:**	On-demand Air Taxi (135)
Operator Does Business As:		**Operator Designator Code:**	K58C

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	**Condition of Light:**	Day
Observation Facility, Elevation:	PAEN, 99 ft msl	**Distance from Accident Site:**	18 Nautical Miles
Observation Time:	1044 AST	**Direction from Accident Site:**	96°
Lowest Cloud Condition:	Clear	**Visibility**	10 Miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	6 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	38°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.56 inches Hg	**Temperature/Dew Point:**	-29°C / -33°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Kenai, AK (PAEN)	**Type of Flight Plan Filed:**	Company VFR
Destination:	Kokhanok, AK (9K2)	**Type of Clearance:**	VFR
Departure Time:	1023 AST	**Type of Airspace:**	

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:**	60.681944, -151.725833

Administrative Information

Investigator In Charge (IIC):	Scott Erickson	**Report Date:**	12/20/2007
Additional Participating Persons:	Pat Carty; FAA-AL-ANC FSDO 03; Anchorage, AK Mike Koonce; Cessna Aircraft Company; Wichita, KS Josh Cawthra; Teledyne Continental Motors; Mobile, AL Michael Kellie; Air Supply Alaska Inc.; Kenai, 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/.		