Aviation Investigation Final Report

Location:	Talkeetna, Alaska	**Accident Number:**	ANC11FA071
Date & Time:	July 30, 2011, 14:15 Local	**Registration:**	N756MP
Aircraft:	Cessna U206G	**Aircraft Damage:**	Minor
Defining Event:	Midair collision	**Injuries:**	1 None
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

Two float-equipped, high-wing airplanes, a Cessna 206 and a Cessna 180, collided in midair in day visual meteorological conditions near a remote lake, which was the destination for both airplanes. The Cessna 206 pilot stated that he was maneuvering for landing after completing a right 270-degree turn, which positioned the airplane for a left downwind approach for landing to the northeast. The Cessna 180 was flying northbound and presumably also on a left downwind approach for landing to the northeast. The airplanes were about 900 feet above ground level when the collision occurred. The pilot of the Cessna 206 said he saw the Cessna 180 approaching from the right, and he made an immediate climbing left turn just before the collision. The Cessna 180 descended vertically to the ground. The Cessna 206 continued to fly and landed safely with the outboard portion of the Cessna 180's left wing entangled in its floats. Neither pilot was in communication with any air traffic control facility. The airplanes were operating in uncontrolled airspace.

The Cessna 206 pilot reported that he was monitoring 122.8 MHz, the common traffic advisory frequency (CTAF) for the area. A pilot-rated relative of the Cessna 180 pilot said the pilot monitored 122.9 MHz on previous flights, which was the MULTICOM frequency used for off-airport operations.

A review of FAA-approved CTAF radio frequencies used in the area revealed equivocal language regarding which CTAF radio frequency should be used. Additionally, due to a high concentration of aerodromes in the area, many of the frequency boundaries overlap.

Given the reports of the radio frequencies that were monitored by both pilots, it is likely that, had both pilots been announcing their intentions on the same frequency, both pilots would have had increased awareness of the presence of the other airplane.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The inadequate visual lookout and failure to see and avoid by the pilots of both airplanes while maneuvering to land, which resulted in a midair collision. Contributing to the accident was the lack of standardized, unequivocal procedures concerning common traffic advisory frequencies used in the area.

Findings

Personnel issues	Monitoring other aircraft - Pilot
Personnel issues	Monitoring other aircraft - Pilot of other aircraft
Organizational issues	(general) - FAA/Regulator

Factual Information

History of Flight

Maneuvering	Midair collision (Defining event)

HISTORY OF FLIGHT

On July 30, 2011, about 1415 Alaska daylight time, a float-equipped Cessna U206G (206) airplane, N756MP, and a float-equipped Cessna 180B (180) airplane, N5214E, collided midair near Amber Lake, about 16 miles southwest of Talkeetna, Alaska. Each airplane was operated as a visual flight rules (VFR) personal flight under 14 Code of Federal Regulations (CFR) Part 91 in visual meteorological conditions when the accident occurred. The sole occupant of the Cessna 206, a certificated airline transport pilot, was not injured. The private pilot and three passengers of the Cessna 180 received fatal injuries. The Cessna 206 departed from Sister Lake about 1400, en route to Amber Lake. The Cessna 180 departed from Lake Hood Seaplane Base about 1330, en route to Amber Lake. The Cessna 206 sustained minor damage to its left float and float spreader. The Cessna 180, which entered an uncontrolled descent following the collision, was destroyed by the ground impact and the postcrash fire.

During a telephone conversation with the National Transportation Safety Board (NTSB) investigator-in-charge (IIC) on July 31, the pilot of the Cessna 206 said that while on approach to Amber Lake he did not see the Cessna 180 coming from his right until the last seconds prior to the impact. He said he pulled his airplane up and left to avoid the collision.

In a written statement to the NTSB dated August 8, the Cessna 206 pilot reported he departed Sister Lake to the north with a right 270 degree turn due to the terrain around the lake. His destination was Amber Lake less than a mile away to the southwest. The lake elevation was approximately 450 feet above mean sea level (msl), and the weather was VFR. He flew over his cabin, which put him on a left downwind for Amber Lake on the north side. His altitude was approximately 900 to 1300 feet msl, and he had his landing and taxi lights along with strobes and beacon on. His airplane's radio was tuned to 122.8 MHz for traffic advisories, and he did not hear the Cessna 180 pilot on that frequency. He crossed the northeast end of the lake, scanned for traffic left and right, and checked the water for conditions. He was in a very slight right bank. As he rolled out of the bank, he looked to the right because that wing had been slightly down. The other aircraft came into view on his right at the same altitude. He reacted by pulling nose hard up and rolling left. The two airplanes collided. After the collision, he called on 122.8 MHz for help in the area and called Talkeetna radio on 123.6 and 121.5 MHz, gave the location of the accident, and asked for assistance. He circled the area to assess the damage to his airplane. His airplane had a strong vibration, and it took a lot of right rudder to fly straight and a lot of elevator to hold the nose level. It also took increased power to maintain altitude. After assessing the damage and options, he decided to head for Anchorage where crash fire

rescue was available. As he approached Anchorage, another aircraft flew alongside to assess the damage further. He landed the airplane on a paved runway at the Ted Stevens Anchorage International Airport, Anchorage, without further difficulty and damage.

During an on-scene interview with the NTSB IIC on July 30, the wife of the Cessna 206 pilot said she had walked outside of their cabin to watch her husband take off. While waiting for him to depart, she saw a high-wing airplane on floats to the north of her position transit the area in an east-northeast direction. After her husband departed, she watched him heading in a northerly direction, at the same time, she saw a high-winged, float-equipped airplane crossing to the north of her from the right/east. She thought it was the same airplane that she had seen previously headed in the opposite direction. As she watched, the airplanes appeared to be converging. She saw her husband's Cessna 206 pitch up and roll left, and the two airplanes collided. She said the airplanes seemed suspended together for a few seconds, and she saw a flash and smoke as the unknown airplane plummeted toward the ground trailing smoke.

PERSONNEL INFORMATION

Cessna 206 pilot:

At the time of the accident the pilot of the Cessna 206 was employed by a commercial air carrier as a Boeing 737 captain.

The pilot, age 56, held an airline transport pilot certificate with ratings for airplane single-engine land, airplane multi-engine land, airplane single-engine sea, and airplane multi-engine sea. His most recent first-class medical certificate was issued on February 18, 2011, and contained the limitation that he must possess glasses.

According to records provided by the pilot, he had logged about 19,100 hours of flight experience at the time of the accident. He also passed a currency check ride (biennial equivalent) on July 9, 2011.

Cessna 180 pilot:

The pilot of the Cessna 180, age 41, held a private pilot certificate with a rating for airplane single-engine land and airplane single-engine sea. He was issued a third-class airman medical certificate with limitations to wear corrective lenses on July 30, 2007.

No personal flight records were located for the pilot, and the aeronautical experience listed on page 3 of this report was obtained from a review of the airman's FAA records on file in the Airman and Medical Records Center in Oklahoma City. On the pilot's last application for a medical certificate, dated July 30, 2007, he indicated that his total aeronautical experience consisted of about 220 hours, of which 50 were accrued in the previous 6 months.

AIRCRAFT INFORMATION

Cessna 206:

The airplane was a Cessna 206, manufactured in 1977 and equipped with a Continental Motors IO-520 series engine.

At the time of its last annual inspection, completed on June 21, 2011, the airplane had 2,530 hours in service.

The colors of the airplane included a primary base color of white with red accent lines.

The airplane was equipped with AEROFLASH wingtip and tail strobe lights, which were operating at the time of the collision.

Cessna 180:

The airplane was a Cessna 180 manufactured in 1959, and equipped with a Continental Motors O-470 series engine.

No airplane and engine log books were discovered for examination.

The colors of the airplane included a primary base color of white with burgundy and grey accent lines.

According to a relative, the Cessna 180 was equipped with RMB tail and wingtip strobe lights. He said it was the habit of the pilot to fly with the strobe lights on at all times.

METEOROLOGICAL INFORMATION

The closest official weather observation station is Talkeetna, Alaska, about 16 miles northeast of the accident site. At 1353, an aviation routine weather report (METAR) was reporting, in part: Wind 210 degrees (true) at 5 knots; visibility 10 statute miles; sky condition, few at 3,500 feet; temperature 66 degrees F; dew point 50 degrees F; altimeter 29.77 inHg.

COMMUNICATIONS

No air traffic control services were requested by either airplane.

An FAA publication dated May 14, 2008, titled, “Your Role in Collision Avoidance,” suggests that pilots make frequent position reports along their route and, at uncontrolled airports, broadcast their positions and intentions on common traffic advisory frequencies (CTAF).

Additionally, in an FAA article titled, “Recommended Traffic Advisory Practices,” pilots of inbound traffic should monitor and communicate as appropriate on the designated CTAF from

10 miles to landing. Pilots of departing aircraft should monitor/communicate on the appropriate frequency from start-up, during taxi, and until 10 miles from the airport unless the CFRs or local procedures require otherwise.

According to the Airman's Information Manual (AIM), the CTAF frequency for a particular airport is contained in the A/FD, Alaska Supplement, Alaska Terminal Publication, Instrument Approach Procedure Charts, and Instrument Departure Procedure (DP) Charts. Also, the CTAF frequency can be obtained by contacting any FSS. Use of the appropriate CTAF, combined with a visual alertness and application of the following recommended good operating practices, will enhance safety of flight into and out of all uncontrolled airports.

According to the FAA's Alaska Supplement, the CTAF for airports south and west of the Parks Highway, which includes the area of the accident, is 122.8 MHz. The supplement further states that airports north and east of the Parks Highway will be assigned CTAF frequencies of 122.9 MHz.

FAA advisory circular AC 90-42F defines a CTAF as a designated frequency for the purpose of carrying out airport advisory practices while operating to or from an airport that does not have a control tower or an airport where the control tower is not operational. The CTAF is normally a UNICOM, MULTICOM, flight service station (FSS) frequency, or a tower frequency. MULTICOM - A mobile service, not open to public use, used for essential communications in the conduct of activities performed by or directed from private aircraft.

Note: Airports such as Nugget Bench and Skwentna, which are south and west of the Parks Highway near the accident site, have been allocated radio frequencies of 122.9 MHz.

Although the definition of CTAF and MULTICOM speak to airport operations, CTAF has been associated with air-to-air communications in FAA publications. Examples of such air-to-air CTAFs are the Denali Flight Advisory, White Mountains area Flight Advisory, and Lake Clark Pass CTAF, all of which are contained in the FAA Alaska Supplement and involve only air-to-air communications.

According to the pilot of the Cessna 206, he was transmitting position reports and listening on 122.8 MHz, the CTAF frequency designated for the area in the FAA Alaska Supplement.

According to a pilot-rated member of the Cessna 180 pilot's family, another pilot heard the Cessna 180 pilot making position reports on 122.9 MHz at the time of the accident. The family member said communicating on 122.9 MHz, MULTICOM, was the common practice used by the Cessna 180 pilot and himself at all remote lakes.

Note that both airplanes were operating in 'Class G' airspace, and there is no regulatory requirement for either airplane to be equipped with two-way radio communications.

WRECKAGE AND IMPACT INFORMATION

Cessna 206:

The Cessna 206 landed on a paved runway at a tower controlled airport.

An examination of the Cessna 206 showed minor scars and marks, and a hole in its left float.

The left wing section and the left aileron of the Cessna 180 was lodged in the left float assembly of the 206 with the wingtip protruding outboard of the 206's left float. The left wingtip of the 180 had penetrated the space between the 206's left fore and aft vertical float supports and the top deck and the bottom of the left float's cabin step. The top skin of the 180's wing was peeled back along the span of the wing, and the trailing edge of the 180's aileron had impacted and became entangled on the rear float support of the 206. The inboard edge of the 180's wing portion showed metal tearing around its circumference. Remnants of the 180's ruptured wing fuel tank were still attached, and smoke soot was visible.

Cessna 180:

On July 30, 2011, the NTSB IIC, along with an FAA air safety inspector from the Anchorage Flight Standards District Office (FSDO), examined the Cessna 180 wreckage at the accident site.

The airplane crashed vertically into a moderately wooded area next to a dirt road, within 300 feet of the edge of a lake that was adjacent to Amber Lake.

The majority of the passenger compartment and right wing were consumed by a postcrash fire. The left wing was missing its outboard portion, from the aileron outward. The left wing skins showed signs of tearing. The empennage was mostly intact. Due to the postcrash fire, control continuity could not be established, and the instrumentation could not be documented. The three-bladed propeller broke off the engine at the propeller flange and showed moderate torsional twisting and bending.

MEDICAL AND PATHOLOGICAL INFORMATION

A postmortem examination of the Cessna 180 pilot was done under the authority of the Alaska State Medical Examiner, Anchorage, Alaska, on August 1, 2011. The examination revealed that the cause of death was attributed to blunt force trauma and thermal injuries.

A toxicological examination by the FAA's Civil Aeromedical Institute (CAMI) on October 5, 2011, was negative for any alcohol or drugs.

ADDITIONAL INFORMATION

Title 14 CFR 91.113, "Right-of-way rules: Except water operations," states the following: (a)

Inapplicability. This section does not apply to the operation of an aircraft on water. (b) General. When weather conditions permit, regardless of whether an operation is conducted under instrument flight rules or visual flight rules, vigilance shall be maintained by each person operating an aircraft so as to see and avoid other aircraft. When a rule of this section gives another aircraft the right-of-way, the pilot shall give way to that aircraft and may not pass over, under, or ahead of it unless well clear.

Title 15 CFR 91.103 describes the pilot-in-command's preflight duties as follows: "Each pilot in command shall, before beginning a flight, become familiar with all available information concerning that flight."

Mat Su Mid-Air Working Group

A review of the CTAF frequencies used in the area around the accident site revealed the use of two primary radio frequencies, 122.8 and 122.9, but due to the high concentration of aerodromes in the area, many of the frequency boundaries overlap.

As a result of this accident, representatives from the FAA, Aircraft Owners and Pilots association (AOPA), Alaska Airmen's Association, and the Alaskan Aviation Safety Foundation, along with other aviation industry and government organizations formed the Mat Su Mid-Air Collision Avoidance Working Group. The purpose of the group was to identify inconstancies and confusing guidance concerning CTAF frequencies, and then provide the FAA with suggested recommendations to establish effective advisory radio frequencies.

Pilot Information

Certificate:	Airline transport; Commercial; Flight engineer; Flight instructor	**Age:**	56,Male
Airplane Rating(s):	Single-engine land; Single-engine sea; Multi-engine land; Multi-engine sea	**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:**	No
Medical Certification:	Class 1 With waivers/limitations	**Last FAA Medical Exam:**	February 18, 2011
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	July 9, 2011
Flight Time:	19100 hours (Total, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Cessna	**Registration:**	N756MP
Model/Series:	U206G	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	U20604202
Landing Gear Type:	Float	**Seats:**	6
Date/Type of Last Inspection:	June 21, 2011 Annual	**Certified Max Gross Wt.:**	3600 lbs
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:	2593 Hrs as of last inspection	**Engine Manufacturer:**	CONT MOTOR
ELT:	Installed, not activated	**Engine Model/Series:**	IO 520 SERIES
Registered Owner:	EARP KEVIN W	**Rated Power:**	285 Horsepower
Operator:	EARP KEVIN W	**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:		**Distance from Accident Site:**	
Observation Time:		**Direction from Accident Site:**	
Lowest Cloud Condition:		**Visibility**	10 miles
Lowest Ceiling:	Broken / 4500 ft AGL	**Visibility (RVR):**	
Wind Speed/Gusts:	/ None	**Turbulence Type Forecast/Actual:**	/
Wind Direction:		**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:		**Temperature/Dew Point:**	
Precipitation and Obscuration:			
Departure Point:	Talkeetna, AK	**Type of Flight Plan Filed:**	Unknown
Destination:	Talkeetna, AK	**Type of Clearance:**	None
Departure Time:	14:10 Local	**Type of Airspace:**	

Wreckage and Impact Information

Crew Injuries:	1 None	**Aircraft Damage:**	Minor
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 None	**Latitude, Longitude:**	62.181667,-150.506668

Administrative Information

Investigator In Charge (IIC):	Lewis, Lawrence
Additional Participating Persons:	Ken Clark; FAA FSDO-03; Anchorage, AK Pat Sullivan; FAA FSDO-03; Anchorage, AK
Original Publish Date:	July 18, 2013
Last Revision Date:	
Investigation Class:	Class
Note:	The NTSB traveled to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=81294

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.

Aviation Investigation Final Report

Location:	Talkeetna, Alaska	**Accident Number:**	ANC11FA071
Date & Time:	July 30, 2011, 14:15 Local	**Registration:**	N5214E
Aircraft:	Cessna 180B	**Aircraft Damage:**	Destroyed
Defining Event:	Midair collision	**Injuries:**	4 Fatal
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

Two float-equipped, high-wing airplanes, a Cessna 206 and a Cessna 180, collided in midair in day visual meteorological conditions near a remote lake, which was the destination for both airplanes. The Cessna 206 pilot stated that he was maneuvering for landing after completing a right 270-degree turn, which positioned the airplane for a left downwind approach for landing to the northeast. The Cessna 180 was flying northbound and presumably also on a left downwind approach for landing to the northeast. The airplanes were about 900 feet above ground level when the collision occurred. The pilot of the Cessna 206 said he saw the Cessna 180 approaching from the right, and he made an immediate climbing left turn just before the collision. The Cessna 180 descended vertically to the ground. The Cessna 206 continued to fly and landed safely with the outboard portion of the Cessna 180's left wing entangled in its floats. Neither pilot was in communication with any air traffic control facility. The airplanes were operating in uncontrolled airspace.

The Cessna 206 pilot reported that he was monitoring 122.8 MHz, the common traffic advisory frequency (CTAF) for the area. A pilot-rated relative of the Cessna 180 pilot said the pilot monitored 122.9 MHz on previous flights, which was the MULTICOM frequency used for off-airport operations.

A review of Federal Aviation Administration-approved CTAF radio frequencies used in the area revealed equivocal language regarding which CTAF radio frequency should be used. Additionally, due to a high concentration of aerodromes in the area, many of the frequency boundaries overlap.

Given the reports of the radio frequencies that were monitored by both pilots, it is likely that, had both pilots been announcing their intentions on the same frequency, both pilots would have had increased awareness of the presence of the other airplane.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The inadequate visual lookout and failure to see and avoid by the pilots of both airplanes while maneuvering to land, which resulted in a midair collision. Contributing to the accident was the lack of standardized, unequivocal procedures concerning common traffic advisory frequencies used in the area.

Findings

Personnel issues	Monitoring other aircraft - Pilot
Personnel issues	Monitoring other aircraft - Pilot of other aircraft
Organizational issues	(general) - FAA/Regulator

Factual Information

History of Flight

Maneuvering	Midair collision
Uncontrolled descent	Collision with terr/obj (non-CFIT)

HISTORY OF FLIGHT

On July 30, 2011, about 1415 Alaska daylight time, a float-equipped Cessna U206G (206) airplane, N756MP, and a float-equipped Cessna 180B (180) airplane, N5214E, collided midair near Amber Lake, about 16 miles southwest of Talkeetna, Alaska. Each airplane was operated as a visual flight rules (VFR) personal flight under 14 Code of Federal Regulations (CFR) Part 91 in visual meteorological conditions when the accident occurred. The sole occupant of the Cessna 206, a certificated airline transport pilot, was not injured. The private pilot and three passengers of the Cessna 180 received fatal injuries. The Cessna 206 departed from Sister Lake about 1400, en route to Amber Lake. The Cessna 180 departed from Lake Hood Seaplane Base about 1330, en route to Amber Lake. The Cessna 206 sustained minor damage to its left float and float spreader. The Cessna 180, which entered an uncontrolled descent following the collision, was destroyed by the ground impact and the postcrash fire.

During a telephone conversation with the National Transportation Safety Board (NTSB) investigator-in-charge (IIC) on July 31, the pilot of the Cessna 206 said that while on approach to Amber Lake he did not see the Cessna 180 coming from his right until the last seconds prior to the impact. He said he pulled his airplane up and left to avoid the collision.

In a written statement to the NTSB dated August 8, the Cessna 206 pilot reported he departed Sister Lake to the north with a right 270 degree turn due to the terrain around the lake. His destination was Amber Lake less than a mile away to the southwest. The lake elevation was approximately 450 feet above mean sea level (msl), and the weather was VFR. He flew over his cabin, which put him on a left downwind for Amber Lake on the north side. His altitude was approximately 900 to 1300 feet msl, and he had his landing and taxi lights along with strobes and beacon on. His airplane's radio was tuned to 122.8 MHz for traffic advisories, and he did not hear the Cessna 180 pilot on that frequency. He crossed the northeast end of the lake, scanned for traffic left and right, and checked the water for conditions. He was in a very slight right bank. As he rolled out of the bank, he looked to the right because that wing had been slightly down. The other aircraft came into view on his right at the same altitude. He reacted by pulling nose hard up and rolling left. The two airplanes collided. After the collision, he called on 122.8 MHz for help in the area and called Talkeetna radio on 123.6 and 121.5 MHz, gave the location of the accident, and asked for assistance. He circled the area to assess the damage to his airplane. His airplane had a strong vibration, and it took a lot of right rudder to fly straight and a lot of elevator to hold the nose level. It also took increased power to maintain altitude.

After assessing the damage and options, he decided to head for Anchorage where crash fire rescue was available. As he approached Anchorage, another aircraft flew alongside to assess the damage further. He landed the airplane on a paved runway at the Ted Stevens Anchorage International Airport, Anchorage, without further difficulty and damage.

During an on-scene interview with the NTSB IIC on July 30, the wife of the Cessna 206 pilot said she had walked outside of their cabin to watch her husband take off. While waiting for him to depart, she saw a high-wing airplane on floats to the north of her position transit the area in an east-northeast direction. After her husband departed, she watched him heading in a northerly direction, at the same time, she saw a high-winged, float-equipped airplane crossing to the north of her from the right/east. She thought it was the same airplane that she had seen previously headed in the opposite direction. As she watched, the airplanes appeared to be converging. She saw her husband's Cessna 206 pitch up and roll left, and the two airplanes collided. She said the airplanes seemed suspended together for a few seconds, and she saw a flash and smoke as the unknown airplane plummeted toward the ground trailing smoke.

PERSONNEL INFORMATION

Cessna 206 pilot:

At the time of the accident the pilot of the Cessna 206 was employed by a commercial air carrier as a Boeing 737 captain.

The pilot, age 56, held an airline transport pilot certificate with ratings for airplane single-engine land, airplane multi-engine land, airplane single-engine sea, and airplane multi-engine sea. His most recent first-class medical certificate was issued on February 18, 2011, and contained the limitation that he must possess glasses.

According to records provided by the pilot, he had logged about 19,100 hours of flight experience at the time of the accident. He also passed a currency check ride (biennial equivalent) on July 9, 2011.

Cessna 180 pilot:

The pilot of the Cessna 180, age 41, held a private pilot certificate with a rating for airplane single-engine land and airplane single-engine sea. He was issued a third-class airman medical certificate with limitations to wear corrective lenses on July 30, 2007.

No personal flight records were located for the pilot, and the aeronautical experience listed on page 3 of this report was obtained from a review of the airman's FAA records on file in the Airman and Medical Records Center in Oklahoma City. On the pilot's last application for a medical certificate, dated July 30, 2007, he indicated that his total aeronautical experience consisted of about 220 hours, of which 50 were accrued in the previous 6 months.

AIRCRAFT INFORMATION

Cessna 206:

The airplane was a Cessna 206, manufactured in 1977 and equipped with a Continental Motors IO-520 series engine.

At the time of its last annual inspection, completed on June 21, 2011, the airplane had 2,530 hours in service.

The colors of the airplane included a primary base color of white with red accent lines.

The airplane was equipped with AEROFLASH wingtip and tail strobe lights, which were operating at the time of the collision.

Cessna 180:

The airplane was a Cessna 180 manufactured in 1959, and equipped with a Continental Motors O-470 series engine.

No airplane and engine log books were discovered for examination.

The colors of the airplane included a primary base color of white with burgundy and grey accent lines.

According to a relative, the Cessna 180 was equipped with RMB tail and wingtip strobe lights. He said it was the habit of the pilot to fly with the strobe lights on at all times.

METEOROLOGICAL INFORMATION

The closest official weather observation station is Talkeetna, Alaska, about 16 miles northeast of the accident site. At 1353, an aviation routine weather report (METAR) was reporting, in part: Wind 210 degrees (true) at 5 knots; visibility 10 statute miles; sky condition, few at 3,500 feet; temperature 66 degrees F; dew point 50 degrees F; altimeter 29.77 inHg.

COMMUNICATIONS

No air traffic control services were requested by either airplane.

An FAA publication dated May 14, 2008, titled, “Your Role in Collision Avoidance,” suggests that pilots make frequent position reports along their route and, at uncontrolled airports, broadcast their positions and intentions on common traffic advisory frequencies (CTAF).

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inbound traffic should monitor and communicate as appropriate on the designated CTAF from 10 miles to landing. Pilots of departing aircraft should monitor/communicate on the appropriate frequency from start-up, during taxi, and until 10 miles from the airport unless the CFRs or local procedures require otherwise.

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Note: Airports such as Nugget Bench and Skwentna, which are south and west of the Parks Highway near the accident site, have been allocated radio frequencies of 122.9 MHz.

Although the definition of CTAF and MULTICOM speak to airport operations, CTAF has been associated with air-to-air communications in FAA publications. Examples of such air-to-air CTAFs are the Denali Flight Advisory, White Mountains area Flight Advisory, and Lake Clark Pass CTAF, all of which are contained in the FAA Alaska Supplement and involve only air-to-air communications.

According to the pilot of the Cessna 206, he was transmitting position reports and listening on 122.8 MHz, the CTAF frequency designated for the area in the FAA Alaska Supplement.

According to a pilot-rated member of the Cessna 180 pilot's family, another pilot heard the Cessna 180 pilot making position reports on 122.9 MHz at the time of the accident. The family member said communicating on 122.9 MHz, MULTICOM, was the common practice used by the Cessna 180 pilot and himself at all remote lakes.

Note that both airplanes were operating in 'Class G' airspace, and there is no regulatory requirement for either airplane to be equipped with two-way radio communications.

WRECKAGE AND IMPACT INFORMATION

Cessna 206:

The Cessna 206 landed on a paved runway at a tower controlled airport.

An examination of the Cessna 206 showed minor scars and marks, and a hole in its left float.

The left wing section and the left aileron of the Cessna 180 was lodged in the left float assembly of the 206 with the wingtip protruding outboard of the 206's left float. The left wingtip of the 180 had penetrated the space between the 206's left fore and aft vertical float supports and the top deck and the bottom of the left float's cabin step. The top skin of the 180's wing was peeled back along the span of the wing, and the trailing edge of the 180's aileron had impacted and became entangled on the rear float support of the 206. The inboard edge of the 180's wing portion showed metal tearing around its circumference. Remnants of the 180's ruptured wing fuel tank were still attached, and smoke soot was visible.

Cessna 180:

On July 30, 2011, the NTSB IIC, along with an FAA air safety inspector from the Anchorage Flight Standards District Office (FSDO), examined the Cessna 180 wreckage at the accident site.

The airplane crashed vertically into a moderately wooded area next to a dirt road, within 300 feet of the edge of a lake that was adjacent to Amber Lake.

The majority of the passenger compartment and right wing were consumed by a postcrash fire. The left wing was missing its outboard portion, from the aileron outward. The left wing skins showed signs of tearing. The empennage was mostly intact. Due to the postcrash fire, control continuity could not be established, and the instrumentation could not be documented. The three-bladed propeller broke off the engine at the propeller flange and showed moderate torsional twisting and bending.

MEDICAL AND PATHOLOGICAL INFORMATION

A postmortem examination of the Cessna 180 pilot was done under the authority of the Alaska State Medical Examiner, Anchorage, Alaska, on August 1, 2011. The examination revealed that the cause of death was attributed to blunt force trauma and thermal injuries.

A toxicological examination by the FAA's Civil Aeromedical Institute (CAMI) on October 5, 2011, was negative for any alcohol or drugs.

ADDITIONAL INFORMATION

Title 14 CFR 91.113, “Right-of-way rules: Except water operations,” states the following: (a) Inapplicability. This section does not apply to the operation of an aircraft on water. (b) General. When weather conditions permit, regardless of whether an operation is conducted under instrument flight rules or visual flight rules, vigilance shall be maintained by each person operating an aircraft so as to see and avoid other aircraft. When a rule of this section gives another aircraft the right-of-way, the pilot shall give way to that aircraft and may not pass over, under, or ahead of it unless well clear.

Title 15 CFR 91.103 describes the pilot-in-command's preflight duties as follows: "Each pilot in command shall, before beginning a flight, become familiar with all available information concerning that flight."

Mat Su Mid-Air Working Group

A review of the CTAF frequencies used in the area around the accident site revealed the use of two primary radio frequencies, 122.8 and 122.9, but due to the high concentration of aerodromes in the area, many of the frequency boundaries overlap.

As a result of this accident, representatives from the FAA, Aircraft Owners and Pilots association (AOPA), Alaska Airmen’s Association, and the Alaskan Aviation Safety Foundation, along with other aviation industry and government organizations formed the Mat Su Mid-Air Collision Avoidance Working Group. The purpose of the group was to identify inconstancies and confusing guidance concerning CTAF frequencies, and then provide the FAA with suggested recommendations to establish effective advisory radio frequencies.

Pilot Information

Certificate:	Private	**Age:**	41,Male
Airplane Rating(s):	Single-engine land; Single-engine sea	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	None	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	Yes
Medical Certification:	Class 3 With waivers/limitations	**Last FAA Medical Exam:**	July 30, 2007
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	
Flight Time:	220 hours (Total, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Cessna	**Registration:**	N5214E
Model/Series:	180B	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	50514
Landing Gear Type:	Float	**Seats:**	4
Date/Type of Last Inspection:	Unknown	**Certified Max Gross Wt.:**	2650 lbs
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:		**Engine Manufacturer:**	CONT MOTOR
ELT:		**Engine Model/Series:**	O-470 SERIES
Registered Owner:	CARLSON COREY B	**Rated Power:**	230 Horsepower
Operator:	CARLSON COREY B	**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:		**Distance from Accident Site:**	
Observation Time:		**Direction from Accident Site:**	
Lowest Cloud Condition:		**Visibility**	10 miles
Lowest Ceiling:	Broken / 4500 ft AGL	**Visibility (RVR):**	
Wind Speed/Gusts:	/ None	**Turbulence Type Forecast/Actual:**	/
Wind Direction:		**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:		**Temperature/Dew Point:**	
Precipitation and Obscuration:			
Departure Point:	Anchorage, AK (PALH)	**Type of Flight Plan Filed:**	None
Destination:	Talkeetna, AK	**Type of Clearance:**	None
Departure Time:	13:30 Local	**Type of Airspace:**	

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Destroyed
Passenger Injuries:	3 Fatal	**Aircraft Fire:**	Both in-flight and on-ground
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	4 Fatal	**Latitude, Longitude:**	62.181667,-150.506668

Administrative Information

Investigator In Charge (IIC):	Lewis, Lawrence
Additional Participating Persons:	Ken Clark; FAA FSDO-03; Anchorage, AK Pat Sullivan; FAA FSDO-03; Anchorage, AK
Original Publish Date:	July 18, 2013
Last Revision Date:	
Investigation Class:	Class
Note:	The NTSB traveled to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=81294

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.