
National Transportation Safety Board - Aircraft Accident/Incident Database

Accident Rpt# GAA17CA285	05/15/2017 1130	Regis# N319BM	Dumas, TX	Apt: N/a
Acft Mk/Mdl AIR TRACTOR INC AT 802		Acft SN 802A-0160	Acft Dmg: SUBSTANTIAL	Rpt Status: Factual Prob Caus: Pending
Eng Mk/Mdl PRATT & WHITNEY PT6A-67AG		Acft TT 4045	Fatal 0 Ser Inj 0	Flt Conducted Under: FAR 137
Opr Name: TIGER AVIATION LLC		Opr dba:		Aircraft Fire: NONE
				AW Cert: SPR

Events

1. Maneuvering-low-alt flying - Loss of control in flight
-

Narrative

The pilot reported that while maneuvering at a low altitude during an aerial application flight, a gust of wind lifted the right wing and the left wing descended striking the "wheat" crop. Subsequently, the airplane was "sucked" into the wheat, the airplane impacted the ground and came to rest inverted.

The airplane sustained substantial damage to the fuselage and both wings.

The pilot reported that there were no pre-accident mechanical failures or malfunctions with the airplane that would have precluded normal operation.

The automated weather observation system about 4 nautical miles from the accident site, about the time of the accident, reported the wind at 160ø at 13 knots.

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Accident Rpt# ERA16CA313	09/01/2016 1300 EDT	Regis# N917PD	Rikers Island, NY	Apt: N/a
Acft Mk/Mdl BELL HELICOPTER TEXTRON CANADA	Acft SN 57148	Acft Dmg: SUBSTANTIAL	Rpt Status: Factual	Prob Caus: Pending
Eng Mk/Mdl PRATT & WHITNEY PW207D1	Acft TT 1492	Fatal 0	Ser Inj 0	Flt Conducted Under: FAR PUBU
Opr Name: NEW YORK CITY POLICE DEPARTMENT	Opr dba:		Aircraft Fire: NONE	AW Cert: STN

Summary

The pilot was landing the helicopter on a nose-up slope when he "noticed the helicopter started to tilt aft." As the pilot "immediately" increased collective pitch and applied forward cyclic to abort the landing, three of the four main rotor blades struck the wire strike protection system on the cabin roof, which resulted in substantial damage to the blades. Representatives from the helicopter manufacturer examined the helicopter, replaced the three damaged rotor blades, and then returned the helicopter to service. According to the pilot, there were no mechanical deficiencies with the helicopter that would have prevented normal operation.

Cause Narrative

THE NATIONAL TRANSPORTATION SAFETY BOARD DETERMINED THAT THE CAUSE OF THIS OCCURRENCE WAS: The pilot's overcontrolling of the helicopter during an aborted slope landing from a hover, which resulted in a main rotor blade strike.

Events

1. Maneuvering-hover - Abrupt maneuver

Findings - Cause/Factor

1. Personnel issues-Task performance-Use of equip/info-Aircraft control-Pilot - C
2. Aircraft-Aircraft propeller/rotor-Main rotor system-Main rotor blade system-Related operating info - C
3. Environmental issues-Physical environment-Terrain-Sloped/uneven terrain-Effect on operation

Narrative

The pilot was landing the helicopter on a nose-up slope when he "noticed the helicopter started to tilt aft." As the pilot "immediately" increased collective pitch and applied forward cyclic to abort the landing, 3 of 4 main rotor blades struck the wire strike protection system on the cabin roof, which resulted in substantial damage to the blades. Representatives from the helicopter manufacturer inspected the helicopter, replaced the 3 damaged rotor blades, and the helicopter was returned to service. According to the pilot, there were no mechanical deficiencies with the helicopter that prevented normal operation.

National Transportation Safety Board - Aircraft Accident/Incident Database

Incident Rpt# OPS17IA010 12/16/2016 125 PST Regis# Mt. Wilson, CA
Acft Mk/Mdl BOEING 777-35EER Acft SN 44552 Acft Dmg: NONE Rpt Status: Prelim Prob Caus: Pending
Fatal 0 Ser Inj 0
Opr Name: Opr dba: Aircraft Fire: NONE

Events

2. Enroute-climb to cruise - Air traffic event

Narrative

On December 16, 2016, about 0125 pacific standard time (PST), Eva Air flight 015, a Boeing 777-300, registration B-16726, conducted flight below minimum vectoring altitude near Mt. Wilson, CA while receiving vectors from Southern California Terminal Radar Approach Control after departing from Los Angeles International Airport (LAX) Los Angeles, California. The airplane was not damaged and there were no reported injuries to the passengers or crew. The flight was operating under the provisions of Title 14 Code of Federal Regulations (CFR) Part 129 as a regularly scheduled flight from LAX to Taiwan Taoyuan International Airport (TPE), Taipei, Taiwan. Night instrument meteorological conditions prevailed.

National Transportation Safety Board - Aircraft Accident/Incident Database

Accident Rpt# ANC15MA041	06/25/2015 1215 AKD	Regis# N270PA	Ketchikan, AK	Apt: N/a
Acft Mk/Mdl DEHAVILLAND DHC-3		Acft SN 270	Acft Dmg: SUBSTANTIAL	Rpt Status: Factual Prob Caus: Pending
		Acft TT 24440	Fatal 9 Ser Inj 0	Flt Conducted Under: FAR 135
Opr Name: PROMECH AIR, INC.		Opr dba:		Aircraft Fire: NONE
				AW Cert: STN

Summary

The Safety Board's full report is available at <http://www.nts.gov/investigations/AccidentReports/Pages/aviation.aspx>. The Aircraft Accident Report number is NTSB/AAR-17/02.

On June 25, 2015, about 1215 Alaska daylight time, a single-engine, turbine-powered, float-equipped de Havilland DHC-3 (Otter) airplane, N270PA, collided with mountainous, tree-covered terrain about 24 miles east-northeast of Ketchikan, Alaska. The commercial pilot and eight passengers sustained fatal injuries, and the airplane was destroyed. The airplane was owned by Pantechon Aviation, of Minden, Nevada, and operated by Promech Air, Inc., of Ketchikan. The flight was conducted under the provisions of 14 Code of Federal Regulations Part 135 as an on-demand sightseeing flight; a company visual flight rules flight plan (by which the company performed its own flight-following) was in effect. Marginal visual flight rules conditions were reported in the area at the time of the accident. The flight departed about 1207 from Rudyerd Bay about 44 miles east-northeast of Ketchikan and was en route to the operator's base at the Ketchikan Harbor Seaplane Base, Ketchikan.

Cause Narrative

THE NATIONAL TRANSPORTATION SAFETY BOARD DETERMINED THAT THE CAUSE OF THIS OCCURRENCE WAS: (1) the pilot's decision to continue visual flight into an area of instrument meteorological conditions, which resulted in his geographic disorientation and controlled flight into terrain; and (2) Promech's company culture, which tacitly endorsed flying in hazardous weather and failed to manage the risks associated with the competitive pressures affecting Ketchikan-area air tour operators; its lack of a formal safety program; and its inadequate operational control of flight releases.

Events

1. Enroute-cruise - Controlled flight into terr/obj (CFIT)

Findings - Cause/Factor

1. Personnel issues-Action/decision-Info processing/decision-Decision making/judgment-Pilot - C
2. Personnel issues-Psychological-Perception/orientation/illusion-Geographic disorient (lost)-Pilot - C
3. Organizational issues-Management-Culture-Safety-Operator - C
4. Organizational issues-Management-Culture-Pressures/demands-Operator - C
5. Organizational issues-Management-Culture-Standard operating practices-Operator - C
6. Organizational issues-Support/oversight/monitoring-Oversight-Oversight of operation-Operator - C
7. Environmental issues-Conditions/weather/phenomena-Ceiling/visibility/precip-(general)-Decision related to condition - C

Narrative

The Safety Board's full report is available at <http://www.nts.gov/investigations/AccidentReports/Pages/aviation.aspx>. The Aircraft Accident Report number is NTSB/AAR-17/02.

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National Transportation Safety Board - Aircraft Accident/Incident Database

Accident Rpt# CEN17FA012	10/06/2016 1645 CDT	Regis# N4035G	Lino Lakes, MN	Apt: N/a
Acft Mk/Mdl FAIRCHILD HILLER FH 1100-NO SERIES	Acft SN 502	Acft Dmg: DESTROYED	Rpt Status: Factual Prob Caus: Pending	
Eng Mk/Mdl ALLISON C20B	Acft TT 502	Fatal 2 Ser Inj 0	Flt Conducted Under: FAR 091	
Opr Name: PILOT	Opr dba:	Aircraft Fire: GRD		AW Cert: STN

Summary

The airline transport pilot was conducting a local flight with one passenger. The accident flight was the pilot's third flight in the helicopter on the day of the accident; before that day, he had not flown the helicopter in nearly one year. One witness stated that he saw the helicopter rocking back and forth before it "spun sideways" and "a bunch of parts" departed the airframe. Some reported hearing a "clunk" sound, and others reported hearing a "pop" sound. Another witness saw the main rotor blades "seize," then "snap off," followed by the tail rotor departing the helicopter. The witness stated that the helicopter then "dropped out of the sky." The fuselage impacted in an open field, and a postcrash fire erupted. The separated main rotor blades and hub were found in a pond about 500 ft south of the main wreckage.

Examination of the rotor mast showed deformation and fractures consistent with overstress under bending and torsion loads but no evidence of preexisting cracks or corrosion. The observed deformation of the mast was consistent with a mast bumping event. Mast bumping can occur in low acceleration of gravity (G) flight conditions, causing the rotor blade to exceed its flapping limits and resulting in the main rotor hub bumping into the rotor shaft. This often results in structural failure of the rotor shaft and a subsequent separation of the main rotor.

Due to the extensive thermal damage to the wreckage, only a limited examination could be conducted; however, no mechanical malfunctions or anomalies were noted that would have precluded normal operation.

The pilot had accumulated about 15,000 flight hours in airplanes but only had about 55 hours flight time in helicopters, most of which were accumulated more than 1 year before the accident. Although the pilot had received instruction on how to avoid mast bumping, given his low helicopter experience relative to his airplane experience, it is possible that he made a large, abrupt flight control input that resulted in a low-G flight condition and led to the observed mast bumping. However, the pilot's control inputs are unknown, and the initiating event for the mast bumping could not be determined.

Cause Narrative

THE NATIONAL TRANSPORTATION SAFETY BOARD DETERMINED THAT THE CAUSE OF THIS OCCURRENCE WAS: The separation of the main rotor assembly due to mast bumping.

Events

1. Enroute - Mast bumping
2. Enroute - Flight control sys malf/fail
3. Uncontrolled descent - Collision with terr/obj (non-CFIT)

Findings - Cause/Factor

1. Personnel issues-Experience/knowledge-Experience/qualifications-Recent experience w/ equipment-Pilot
2. Personnel issues-Action/decision-Action-Incorrect action performance-Pilot
3. Aircraft-Aircraft propeller/rotor-Main rotor system-Main rotor mast/swashplate-Capability exceeded - C

Narrative

HISTORY OF FLIGHT

On October 6, 2016, about 1645 central daylight time, a Fairchild Hiller FH-1100 helicopter, N4035G, was destroyed when it impacted the ground near Lino Lakes, Minnesota, following an in-flight separation of the main rotor assembly. The airline transport pilot and passenger sustained fatal injuries, and the helicopter was destroyed. The helicopter was registered to Helicopter Connection LLC, and operated by the pilot under the provisions of 14 Code of Federal Regulations Part 91 as personal flight. Day visual meteorological conditions prevailed, and no flight plan was filed for the local flight, which originated from the Anoka County-Blaine Airport (ANE), near Minneapolis, Minnesota, about 1620.

According to a pilot-rated passenger who had flown with the accident pilot in the helicopter earlier in the day, the accident pilot had not flown the helicopter for about a year and wanted the passenger to "ride along" as a safety pilot. Both the pilot and passenger performed a preflight inspection of the helicopter, which revealed no anomalies. About 1000, they departed on a 5-minute flight then returned and went to lunch. After lunch, they departed on a local flight, which lasted about 45 minutes. After the flight, the passenger asked the pilot if he wanted help moving the helicopter into the hangar, and the pilot indicated that he may fly

the helicopter later.

Later that day, several witnesses saw the helicopter flying in a northerly direction. One witness stated that he observed the helicopter rocking back and forth before it "spun sideways" and "a bunch of parts" departed the helicopter. Some reported hearing a "clunk" sound, and others reported hearing a "pop" sound. One witness saw the main rotor blades "seize," then "snap off," followed by the tail rotor departing the helicopter. The witness stated that the helicopter then "dropped out of the sky." Several of the witnesses saw parts departing the helicopter as it descended to ground contact.

PERSONNEL INFORMATION

The 48-year-old pilot held an airline transport pilot certificate with an airplane multi-engine land rating. He held commercial pilot privileges in airplane single engine land, airplane single engine sea, and rotorcraft-helicopter. The pilot also held a flight instructor certificate with airplane single- and multi-engine and instrument airplane ratings. He held a flight engineer certificate with a turbojet rating. The pilot held a Federal Aviation Administration (FAA) special issuance first class medical certificate, dated August 16, 2016, with limitations for corrective lenses and not valid for any class after February 28, 2017. The pilot reported that he had accumulated 15,000 total hours of flight time and 400 hours of flight time during the six months before the medical exam. The last entry in the pilot's logbook was dated September 4, 2015, which was the date he passed his commercial rotorcraft-helicopter checkride. The pilot accumulated 55.5 hours of total flight experience in helicopters at the time of that entry, of which about 38 hours were in the accident helicopter make and model.

The pilot's helicopter flight instructor reported that, from April 15, 2015, to August 4, 2015, he provided instruction to the pilot in the accident helicopter to prepare him for his checkride to obtain a rotorcraft-helicopter rating. The flight instructor stated that the pilot had some trouble at first in the transition from fixed wing to helicopter and that this is fairly common for high-time fixed-wing pilots, such as the accident pilot. After some time, the accident pilot seemed to handle the transition as well as any other of his students that had previous fixed-wing time.

The instructor stated that he gave the pilot ground instruction on teetering rotor systems. When asked how the pilot responded during training situations that could precipitate mast bumping, the instructor stated that the pilot responded correctly to flight in turbulent conditions. He added that, during power loss simulations, the pilot initially was slow to lower the collective and would allow the nose to drop. Eventually, the pilot demonstrated proper entry into and proficiency in autorotations.

The pilot's helicopter flight instructor reported that all the instruction he provided to the pilot took place near Lake Charles, Louisiana, and, after passing his rotorcraft-helicopter checkride, the pilot trailered the helicopter to the Minneapolis area. During the trip, one of the doors of the helicopter came open and cracked the windshield of the helicopter. According to the flight instructor, the pilot had just completed replacement of the windshield a short time before the accident.

AIRCRAFT INFORMATION

The accident helicopter was issued an FAA standard airworthiness certificate on October 20, 1982, and was certificated for normal category operations. The Allison (Rolls Royce) model M250-C20B engine powered a two-bladed, teetering main rotor system. The engine manufacturer indicated that the rated horsepower for the M250-C20B engine is 420 shaft horsepower. According to the helicopter's type certificate data sheet, the engine had a takeoff power rating of 274 shaft horsepower (hp) for a maximum of 5 minutes, and a maximum continuous power rating of 233 shaft hp. The helicopter had a maximum gross weight of 2,750 lbs and could be configured to accommodate a pilot, another pilot or passenger in the cockpit, and three passengers in the cabin. The helicopter's flight manual had limitations to prohibit acrobatic flight and to avoid abrupt control movements when flying in turbulence. The helicopter's most recent annual inspection was completed on June 18, 2015, at a total time in service of 501.7 hours.

In January 2004, the helicopter manufacturer issued Alert Service Letter 23 - 5. The letter indicated that several instances of internal and external mast corrosion had been discovered even when the mast was properly sealed. The corrective action was to remove the transmission top case, with the mast attached, and ship the assembly to the factory for non-destructive inspections. A special coating was to be applied on the interior surfaces. This process is only approved at the factory and cannot be performed in the field. Subsequent to the initial inspection, this process must be done at each overhaul of the transmission or every 10 years whichever comes first.

METEOROLOGICAL INFORMATION

At 1645, the recorded weather at ANE, about 4 miles southwest of the accident site, included wind from 010ø at 6 knots, visibility 10 statute miles, overcast clouds at 6,000 feet; temperature 15øC, dew point 6øC, and an altimeter of 29.95 inches of mercury.

WRECKAGE AND IMPACT INFORMATION

The main wreckage came to rest on its right side about 4 nautical miles and 52ø magnetic from ANE, on a heading about 20ø magnetic. The area around the main wreckage was discolored and charred, consistent with a postaccident ground fire. The remaining sections of wreckage did not exhibit any evidence of pre- or postimpact fire.

The initial piece of wreckage was a section of composite material located about 1,675 ft south of the main wreckage. A debris path extended to the main wreckage and contained the floor mats, a section of white interior material, an exhaust stack, exhaust duct, a section of the tailboom, the engine cowl, a section of exterior metal with the rotating beacon, a seat cushion, and a section of the tail, including the tail rotor and its gearbox. The separated main rotor blades and hub were found east of this debris path in a pond about 500 ft south of the main wreckage. All major components were accounted for at the scene.

The main wreckage, consisting of the cockpit and cabin, was destroyed by impact and postimpact fire. Cyclic, collective, and tail rotor control continuity could not be established due to substantial damage to the cockpit and cabin areas. However, all observed control discontinuities were consistent with overload or thermal damage.

The engine, transmission, and tail rotor driveshafts exhibited separations. All observed separations were consistent with torsional overload and overload. Circumferential witness marks were observed on the exterior of the tail rotor driveshaft.

The main transmission exhibited sections with thermal melting damage, soot-colored discoloration, and deformation. The separation surface at the top of the mast exhibited overload fractures. The mast could not be rotated by hand.

The main rotor blades and hub exhibited overload fractures on the separation surface. Examination of the main rotor system and components found outside the main wreckage site did not exhibit soot colored discoloration or thermal damage.

Examination of the engine revealed that several compressor blades were missing. The remaining compressor blades were found bent opposite the direction of rotation.

A section of the transmission's main rotor mast and the section of mast from the main rotor hub were removed and were sent to the National Transportation Safety Board (NTSB) Materials Laboratory for detailed examination.

MEDICAL AND PATHOLOGICAL INFORMATION

An Anoka County Coroner arranged for the Midwest Medical Examiner's Office, Ramsey, Minnesota, to conduct an autopsy on the pilot. Toxicological samples were taken during the autopsy. The cause of death was listed as multiple blunt force injuries and the manner of death was indicated as an accident.

The FAA Bioaeronautical Sciences Research Laboratory, Oklahoma City, Oklahoma, performed toxicology testing on the pilot. Testing was negative for carbon monoxide, ethanol, and all tested-for drugs.

TESTS AND RESEARCH

The retained sections of rotor mast were examined by the NTSB Materials Laboratory. The mast showed deformation and fractures on slant angles consistent

with an overstress fracture under bending and torsion loads. Deformation to the mast associated with impact marks adjacent to the fracture were consistent with mast bumping. No evidence of preexisting cracks or corrosion was observed.

ADDITIONAL INFORMATION

The NTSB database was queried for previous mast bumping accidents with Fairchild-Hiller FH 1100 helicopters. The FTW68A0085, NYC83FA102, LAX83FA362, IAD98FA049, and DFW07FA198 investigations listed occurrences of mast bumping findings and their reports are appended to the docket material associated with this investigation.

The NTSB database also contained the CHI00FA266 investigation. Internal corrosion was observed within the main rotor mast on that helicopter. This previous investigation report is also appended to the docket material associated with this investigation.

The FAA Helicopter Flying Handbook (FAA-H-8083-21A), in part, stated:

Low-G Conditions and Mast Bumping

Low acceleration of gravity (low-G or weightless) maneuvers create specific hazards for helicopters, especially those with semirigid main rotor systems because helicopters are primarily designed to be suspended from the main rotor in normal flight with only small variations for positive G load maneuvers. Since a helicopter low-G maneuver departs from normal flight conditions, it may allow the airframe to exceed the manufacturer's design criteria. A low-G condition could have disastrous results, the best way to prevent it from happening is to avoid the conditions in which it might occur.

Low-G conditions are not about the loss of thrust, rather the imbalance of forces. Helicopters are mostly designed to have weight (gravity pulling down to the earth) and lift opposing that force of gravity. Low-G maneuvers occur when this balance is disturbed. An example of this would be placing the helicopter into a very steep dive. At the moment of pushover, the lift and thrust of the rotor is forward, whereas gravity is now vertical or straight down. Since the lift vector is no longer vertical and opposing the gravity (or weight) vector, the fuselage is now affected by the tail rotor thrust below the plane of the main rotor. This tail rotor thrust moment tends to make the helicopter fuselage tilt to the left. Pilots then apply right cyclic inputs to try to correct for the left. Since the main rotor system does not fully support the fuselage at this point, the fuselage continues to roll and the pilot applies more right cyclic until the rotor system strikes the mast (mast bumping), often ending with unnecessary fatal results. In mast bumping, the rotor blade exceeds its flapping limits, causing the main rotor hub to "bump" into the rotor shaft. The main rotor hub's contact with the mast usually becomes more violent with each successive flapping motion. This creates a greater flapping displacement and leads to structural failure of the rotor shaft. Since the mast is hollow, the structural failure manifests itself either as shaft failure with complete separation of the main rotor system from the helicopter or a severely damaged rotor mast.

In situations like the one described above, the helicopter pilot should first apply aft cyclic to bring the vectors into balance, with lift up and gravity down. Since helicopter blades carry the helicopter and have limited motion attachment, care must be given to those attachment limits. Helicopter pilots should always adhere to the maneuvering limitations stated in the [rotorcraft flight manual]. There may be more than one reason or design criteria which limits the helicopter's flight envelope. Heed all of the manufacturer's limitations and advisory data. Failure to do so could lead to dire, unintended consequences.

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Accident Rpt# CEN17LA177	05/08/2017 945 CDT	Regis# N171BW	Beech Grove, AR	Apt: Private
Acft Mk/Mdl GRUMMAN G-164C		Acft SN 21C	Acft Dmg: DESTROYED	Rpt Status: Prelim Prob Caus: Pending
Eng Mk/Mdl HONEYWELL TPE-10-511M		Acft TT 7192	Fatal 0 Ser Inj 0	Flt Conducted Under: FAR 137
Opr Name: TRACY DOWLER		Opr dba: KINCO AG		Aircraft Fire: GRD
				AW Cert: SPR

Events

1. Takeoff - Miscellaneous/other

Narrative

On May 8, 2017, about 0945 central daylight time, a Gruman G-164C airplane, was destroyed by ground fire after it veered off a private airstrip during takeoff near Beech Grove, Arkansas. The commercial pilot was not injured. The airplane was owned by HDS, Inc., and operated by the pilot under the provisions of the Code of Federal Regulations Part 137 as an aerial application flight. Visual meteorological conditions prevailed at the time of flight, which was not on a flight plan. The airplane was departing the private airstrip on a local flight.

The pilot reported that while on takeoff roll about halfway down the runway, the right main tire "went flat and possibly blew." The airplane suddenly veered right and it went off the side of the runway. It hit a field ditch, bounced, turned sideways, and slid to a stop. The pilot saw fuel running out of the engine compartment and it caught fire. The pilot exited the airplane without injury. The airplane continued to burn and the engine compartment, cockpit, fuselage, empennage, and left wing were largely consumed by fire.

At 0935, the surface weather observation at the Walnut Ridge Regional Airport (ARG) located 10 miles east of the accident site was: wind 220 degrees at 6 knots; 10 miles visibility; sky clear; temperature 22 degrees C; dew point 13 degrees C; altimeter 30.10 inches of mercury.

National Transportation Safety Board - Aircraft Accident/Incident Database

Accident Rpt# WPR16FA120	06/06/2016 745 PDT	Regis# N4191X	De Smet, ID	Apt: N/a
Acft Mk/Mdl ROCKWELL S2R		Acft SN 1956R	Acft Dmg: SUBSTANTIAL	Rpt Status: Factual Prob Caus: Pending
Eng Mk/Mdl ALLIED SIGNAL TPE331-6-252M		Acft TT 10109	Fatal 1 Ser Inj 0	Flt Conducted Under: FAR 137
Opr Name: GREGORY R FAUNCE		Opr dba:		Aircraft Fire: NONE
				AW Cert: SPR

Summary

During an aerial application flight to apply fungicide to a wheat field, the pilot was flying the airplane from west to east making a spray pass along the south edge of the field, which was bordered by powerlines. About 660 ft. from the west end of the field where the pilot started his spray pass, a set of guy wires originated from the top of one of the utility poles that supported the powerlines, extended about 65 ft. into the field, and ran directly perpendicular to and in line with the airplane's flight path. However, the pilot failed to maintain clearance with the guy wires, and the airplane's outboard right wing impacted the wires. The airplane subsequently veered right and impacted the powerlines, crossed a road that bordered the field on the south, and collided with a stand of trees. The airplane came to rest within the stand of trees about 490 ft. southeast of the initial impact point with the guy wires. Examination of the airframe and engine revealed no evidence of mechanical malfunctions or failures that would have precluded normal operation. Given that the sun was very close to the horizon and would have been almost directly in the pilot's eyes as he attempted to avoid the guy wires, it is likely that sun glare contributed to his difficulty in maintaining clearance from the wires.

Cause Narrative

THE NATIONAL TRANSPORTATION SAFETY BOARD DETERMINED THAT THE CAUSE OF THIS OCCURRENCE WAS: The pilot's inadequate visual lookout, which resulted in his failure to maintain clearance from guy wires during an aerial application flight. Contributing to the accident was the pilot's reduced ability to see the guy wires due to sun glare.

Events

1. Maneuvering-low-alt flying - Low altitude operation/event
2. Maneuvering-low-alt flying - Collision with terr/obj (non-CFIT)
3. Uncontrolled descent - Collision with terr/obj (non-CFIT)

Findings - Cause/Factor

1. Personnel issues-Psychological-Attention/monitoring-Monitoring environment-Pilot - C
2. Aircraft-Aircraft oper/perf/capability-Performance/control parameters-Altitude-Not attained/maintained - C
3. Environmental issues-Physical environment-Object/animal/substance-Tower/antenna (incl guy wires)-Response/compensation - C
4. Environmental issues-Conditions/weather/phenomena-Light condition-Glare-Effect on personnel - F
5. Environmental issues-Physical environment-Object/animal/substance-Tower/antenna (incl guy wires)-Awareness of condition - F

Narrative

HISTORY OF FLIGHT

On June 6, 2016, about 0745 Pacific daylight time, a Rockwell International S-2R restricted-category agricultural airplane, N4191X was substantially damaged during a collision with guy wires, powerlines, and trees while engaged in an aerial application flight about 3 nautical miles (nm) west of De Smet, Idaho. The airplane was owned and operated by Faunce Ag Aviation Inc., Tekoa, Washington. The commercial pilot, who was the sole occupant, sustained fatal injuries. Visual meteorological conditions prevailed for the flight, which was being operated in accordance with 14 Code of Federal Regulations Part 137, and a flight plan was not filed. The flight departed a private airstrip near Tekoa at about 0700.

According to a witness whose residence was located about 700 ft. east of the accident site, she was watching the pilot spray the field that was located immediately north of and across the road from her house. The pilot was making spray passes in the west and east direction, parallel to a powerline that bordered the south side of the field. The witness stated that she saw the airplane flying south along the west side of the field; the airplane turned left until it was heading east and began a spray pass on the south edge of the field, next to the powerline. The witness reported that, shortly thereafter, she observed downed powerline wires, followed by the sound of the airplane's impact with terrain. The witness stated that she did not see the airplane collide with the wires.

In a telephone interview with the National Transportation Safety Board (NTSB) investigator-in-charge (IIC), the owner of the property being sprayed stated that the pilot had been applying a fungicide to the wheat field when the accident occurred. The property owner stated that the pilot had sprayed this field for the past 25 years, that he thought the pilot was very familiar with the environment, and that the pilot had never had any issues while spraying the field in the past.

National Transportation Safety Board - Aircraft Accident/Incident Database

In an interview with a Federal Aviation Administration (FAA) aviation safety inspector, a family member of the pilot who was familiar with the operation reported that the accident occurred on the pilot's fourth load of the morning. The amount of chemical the pilot departed with was not determined during the investigation.

PERSONNEL INFORMATION

The pilot held a commercial pilot certificate with an airplane single-engine land rating and a second-class airman medical certificate issued on January 12, 2016, with the following limitations: "Not valid for night flying or by color signal control. Not valid for any class after January 31, 2017."

According to operator-supplied records and the pilot's airman medical application, at the time of the accident, the pilot had accumulated 10,109 hours flight time of which, 7,124 hours were in the accident airplane make and model. The pilot's personal flight logbook was not provided to the IIC during the investigation.

AIRCRAFT INFORMATION

The single-seat, low-wing, fixed-gear, tailwheel-equipped airplane, serial number 1956R, was manufactured in 1974. It was powered by a Garrett TPE331-6-252M engine, serial number P-03069C, rated at 715 horsepower. The most recent annual inspection was performed on November 6, 2015, at a total airframe time of 9,944 hours and an engine total time of 9,888.7 hours. At the time of the accident, the airplane had accumulated a total of 167.1 flight hours since its last inspection.

METEOROLOGICAL INFORMATION

At 0753, the weather reporting facility at the Pullman/Moscow Regional Airport (PUW), Pullman, Washington, located about 24 nm south of the accident site, reported wind calm, visibility 10 miles, sky clear, temperature 23ø C, dew point 13ø C, and an altimeter setting of 29.92 inches of mercury.

At the time of the accident, the sun was about 13.8ø above the horizon. Additionally, the sun's lateral position was about 20ø to the left of the heading of the airplane's eastbound spray run over the field.

WRECKAGE AND IMPACT INFORMATION

On the day following the accident, the NTSB IIC and the FAA inspector surveyed the accident site. Physical evidence showed that the airplane initially impacted a set of guy wires about 660 ft. west of where the airplane entered the field on its spray run: the guy wires were directly in line with and perpendicular to the airplane's flight path. The guy wires were secured to the top of one of the utility poles that supported the powerline bordering the south side of the field. The guy wires descended to the ground on about a 45ø angle and were anchored in the field about 65 ft. north of the utility pole. After impacting the guy wires, the airplane collided with and went through the powerline wires, crossed a county road, and impacted a stand of fir trees. The airplane came to rest within the stand of trees about 490 ft. southeast of the initial impact point with the guy wires. An outboard section of the airplane's right wing, about 30 inches in length, was located about 160 ft. east-southeast of the first point of impact with the guy wires. Additionally, yellow and black paint chips, which were consistent with the wing's paint scheme, were located about 100 ft. southeast of the guy wires.

The airplane was severely fragmented and deformed by impact forces. With the exception of about 7 ft. of the inboard section of the forward spar, the right wing was observed separated from the fuselage and destroyed. Additionally, the left wing was observed completely separated from the fuselage and destroyed by impact forces as was the aft fuselage from the cockpit to the forward section of the empennage. The entire empennage separated due to impact forces and was located about 20 ft. south of the main wreckage. The engine remained attached to the fuselage at its mounts. The cockpit was crushed and deformed. With the exception of the outboard section of the right wing, the entire wreckage was located within about a 50-ft radius of the main wreckage site.

No catastrophic mechanical anomalies were noted with the engine or airframe that would have precluded normal operation.

MEDICAL AND PATHOLOGICAL INFORMATION

An autopsy was performed on the pilot at the Office of the Medical Examiner, Spokane, Washington. The cause of death was attributed to blunt force trauma.

The FAA's Bioaeronautical Research Laboratory conducted toxicological testing on the pilot. The results were negative for carbon monoxide and ethanol; ibuprofen was detected in cavity blood. Testing for cyanide was not performed.

Ibuprofen is a medication in the nonsteroid anti-inflammatory drug class that is commonly used for treating pain, fever, and inflammation.