

# National Transportation Safety Board - Aircraft Accident/Incident Database

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Accident Rpt# CEN17FA259	07/08/2017 1456 CDT	Regis# N4257R	Cash, AR	Apt: N/a
Acft Mk/Mdl AIR TRACTOR INC AT 602-NO SERIES	Acft SN 602-1146	Acft Dmg: DESTROYED	Rpt Status: Prelim	Prob Caus: Pending
Eng Mk/Mdl PRATT AND WHITNEY CANADA		Fatal 1 Ser Inj 0	Flt Conducted Under: FAR 137	
Opr Name: QUAD RABBIT INC	Opr dba:		Aircraft Fire: NONE	
			AW Cert: SPR	

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## Events

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

On July 8, 2017, about 1456 central daylight time, an Air Tractor Inc. AT-602 airplane, N4257R, was destroyed after impact with terrain near Cash, Arkansas. The pilot was fatally injured. The airplane was registered to and operated by Quad Rabbit Inc. under the provisions of 14 Code of Federal Regulations Part 137 as an aerial spraying flight. Day visual meteorological conditions prevailed for the local flight, which departed from a private airstrip about 1431.

According to spray operator personnel, the pilot was conducting his sixth load of the day. Two witnesses located near the accident site observed the airplane make a low altitude turn and subsequently begin spinning with a nose low attitude. The spin continued until the airplane impacted a rice field.

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Incident Rpt# DCA17IA148	07/07/2017 2356 PDT	Regis# CFKUK	San Francisco, CA	Apt: San Francisco International SFO
Acft Mk/Mdl AIRBUS 320-211		Acft SN 0265	Acft Dmg: NONE	Rpt Status: Prelim Prob Caus: Pending
			Fatal 0 Ser Inj 0	Flt Conducted Under: FAR 129
Opr Name: AIR CANADA		Opr dba:		Aircraft Fire: NONE
				AW Cert: STT

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## Events

1. Approach-VFR go-around - Air traffic event
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## Narrative

On July 7, 2017, about 2356 Pacific daylight time, Air Canada flight 759, an Airbus A-320, C-FKCK, was cleared to land on runway 28R at San Francisco International Airport (SFO), San Francisco, California, but instead lined up on parallel taxiway C, which had four air carrier airplanes on it awaiting takeoff clearance (a Boeing 787 that was first in line followed by an Airbus A340, another Boeing 787, and a Boeing 737). The flight descended below 100 feet above the ground and initiated a go-around after overflying the first airplane on the taxiway. The flight was operating under 14 Code of Federal Regulations Part 129 as an international scheduled passenger flight from Toronto/Lester B. Pearson International Airport, (YYZ), Toronto, Canada. Night visual meteorological conditions prevailed at the time of the incident.

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Accident Rpt# GAA17CA402	06/30/2017 1400 EDT	Regis# N60KH	Uniontown, KY	Apt: N/a
Acft Mk/Mdl BELL 206-B		Acft SN 1326	Acft Dmg: SUBSTANTIAL	Rpt Status: Prelim Prob Caus: Pending
		Acft TT 16139	Fatal 0 Ser Inj 0	Flt Conducted Under: FAR 137
Opr Name: KASH HELICOPTER SERVICES LLC		Opr dba:		Aircraft Fire: NONE

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Accident Rpt# GAA17CA393	07/06/2017 1600 EST	Regis# N8159J	Dixon, KY	Apt: N/a
Acft Mk/Mdl BELL 206-B		Acft SN 512	Acft Dmg: SUBSTANTIAL	Rpt Status: Prelim Prob Caus: Pending
			Fatal 0 Ser Inj 0	Flt Conducted Under: FAR 137
Opr Name: FORMING AGROTORS INC		Opr dba:		Aircraft Fire: NONE

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Accident Rpt# GAA17CA390	07/07/2017 30 CDT	Regis# N650HP	Topeka, KS	Apt: Philip Billard Muni TOP
Acft Mk/Mdl BELL 407-NO SERIES		Acft SN 53665	Acft Dmg: SUBSTANTIAL	Rpt Status: Prelim Prob Caus: Pending
			Fatal 0 Ser Inj 0	Flt Conducted Under: FAR PUBU
Opr Name: KANSAS HIGHWAY PATROL		Opr dba:		Aircraft Fire: NONE

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Accident Rpt# CEN17LA254	07/03/2017 1815 CDT	Regis# N9714B	Alpine, TX	Apt: Alpine-casparis Muni E38
Acft Mk/Mdl CESSNA 208B		Acft SN 208B0153	Acft Dmg: SUBSTANTIAL	Rpt Status: Prelim Prob Caus: Pending
Eng Mk/Mdl P&W PT6A-114A			Fatal 0 Ser Inj 0	Flt Conducted Under: FAR 135
Opr Name: MARTINAIRE AVIATION LLC		Opr dba:		Aircraft Fire: IFLT
				AW Cert: STN

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## Events

1. Initial climb - Loss of engine power (total)

## Narrative

On July 3, 2017, about 1815 central daylight time, a Cessna 208B airplane, N9714B, was substantially damaged during a forced landing near Alpine, Texas. The commercial pilot, who was the sole occupant, sustained minor injuries. The airplane was registered to and operated by Martinaire Aviation LLC under the provisions of 14 Code of Federal Regulations Part 135 as a cargo flight. Day visual meteorological conditions prevailed for the instrument rules (IFR) flight, which departed about 1812 from Alpine-Casparis Municipal Airport (E38), Alpine, Texas, with an intended destination of Maverick County Memorial International Airport (5T9), Eagle Pass, Texas.

While climbing through about 500 ft agl, the pilot heard a loud bang, followed by a squealing noise and an immediate loss of engine power. The pilot released back pressure on the controls and pulled the propeller control to feather. During the forced landing, the right and left wings were damaged due to impact with power poles and the airplane came to rest in a field.

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Accident Rpt# GAA17CA303	05/24/2017 1515 PDT	Regis# N708PV	Perris, CA	Apt: Perris Valley L65
Acft Mk/Mdl DEHAVILLAND DHC 6-300		Acft SN 489	Acft Dmg: SUBSTANTIAL	Rpt Status: Factual Prob Caus: Pending
Eng Mk/Mdl PRATT & WHITNEY PT6A-27		Acft TT 37886	Fatal 0 Ser Inj 0	Flt Conducted Under: FAR 091
Opr Name: PERRIS VALLEY AVIATION SERVICES INC>		Opr dba: SKYDIVE PERRIS		Aircraft Fire: NONE AW Cert: STN

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## Events

2. Landing - Loss of control in flight

## Narrative

The pilot of the twin-engine, turbine powered airplane reported that while providing flights for skydivers throughout the day, he had a potential new hire pilot flying with him in the right seat. He added that on the eighth flight of the day, the new pilot was flying during the approach and "approximately 200' [ft.] south from the threshold of [runway] 15 at approximately 15 feet AGL [above ground level] the bottom violently and unexpectedly dropped out. [He] believe[d] some kind of wind shear caused the aircraft [to] slam onto [the] runway and bounce into the air at a 45 to 60-degree bank angle to the right." The new pilot then said, "you got it". The pilot took the control and initiated a go around by increasing power which aggravated the "off runway heading". The right wing contacted the ground, the airplane exited the runway to the right, impacted a fuel truck and the right-wing separated from the airplane. The impact caused the pilot to unintentionally add max power and the airplane, with only the left engine functioning ground looped to the right, coming to rest nose down.

The airplane sustained substantial damage to the fuselage and right wing.

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

The automated weather observation system about 8 nautical miles from the accident site, about the time of the accident, reported the wind from 280° at 7 knots, visibility 10 statute miles, few clouds at 20,000 ft. AGL, temperature 86°F, dew point 45°F, and altimeter 29.81 in Hg. The pilot landed on runway 15.

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Accident Rpt# GAA17CA404 07/11/2017 1539 PDT Regis# N357PJ King Vale, CA Apt: N/a  
Acft Mk/Mdl EUROCOPTER AS 350-B3 Acft SN 3608 Acft Dmg: SUBSTANTIAL Rpt Status: Prelim Prob Caus: Pending  
Fatal 0 Ser Inj 0 Flt Conducted Under: FAR 091  
Opr Name: Opr dba: Aircraft Fire: GRD

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# National Transportation Safety Board - Aircraft Accident/Incident Database

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Accident Rpt# CEN17LA151	04/08/2017 750 CDT	Regis# N971QC	Nome, TX	Apt: N/a
Acft Mk/Mdl GRUMMAN ACFT ENG COR-SCHWEIZER	Acft SN 1655	Acft Dmg: DESTROYED	Rpt Status: Factual	Prob Caus: Pending
Eng Mk/Mdl PRATT & WITNEY PT6A-27	Acft TT 900	Fatal 0 Ser Inj 0	Flt Conducted Under: FAR 137	
Opr Name: TWIN COUNTY AIR-AG INC	Opr dba:		Aircraft Fire: IFLT	

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## Events

1. Maneuvering-low-alt flying - Fire/smoke (non-impact)
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## Narrative

On April 8, 2017, about 0750 central daylight time, a Grumman G-164A agricultural airplane, N971QC, conducted a forced landing near Nome, Texas. The pilot was not injured and the airplane was destroyed by fire during the accident. The airplane was registered to and operated by Twin County Air-AG, Inc. under the provisions of 14 Code of Federal Regulations Part 137 flight. Visual meteorological conditions prevailed at the time and no flight plan had been filed.

The pilot reported that he was conducting spray runs, when he noticed a burnt wire smell, he then noticed a low oil pressure indication. He partly opened the cabin door and noticed flames. The smoke and fire increased. Due to smoke in the cockpit, he had difficulty in seeing, but was able to find the engine fuel shut-off valve and closed it. The smoke cleared enough for him to select a hay field for a forced landing.

The responding Federal Aviation Administration (FAA) inspector noted that after landing, the fire consumed the majority of the airplane.

A review of the airplane records on file with the FAA, revealed that the airplane's original radial engine was replaced by a Walter M601E-11 turboprop engine; the Walter engine was subsequently replaced by Pratt & Whitney turboprop PT6A-27 engine on February 1, 2010.

The FAA inspector reported that the shop who owned the supplemental type certificate (STC) for the Pratt & Whitney did not perform, nor authorize the engine installation. He added the STC installation required special routing on the engine connections, including a 5-year replacement on the fuel lines. Investigators did not receive any records indicating the fuel lines were replaced in accordance with the STC. He also noted that the airplane's battery had recently been replaced.

The fire damage prevented a detailed inspection of the engine installation.

# National Transportation Safety Board - Aircraft Accident/Incident Database

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Accident Rpt# GAA17CA305	05/26/2017 1315 PDT	Regis# N6674K	Maxwell, CA	Apt: N/a
Acft Mk/Mdl GRUMMAN ACFT ENG COR-SCHWEIZER	Acft SN 16C	Acft Dmg: SUBSTANTIAL	Rpt Status: Factual	Prob Caus: Pending
Eng Mk/Mdl HONEYWELL (GARRETT) TPE-331-6-5AM	Acft TT 10114	Fatal 0 Ser Inj 1	Flt Conducted Under: FAR 137	
Opr Name: RICHTER AVIATION INC	Opr dba:		Aircraft Fire: NONE	
			AW Cert: SPR	

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## Events

2. Maneuvering-low-alt flying - Fuel exhaustion

## Narrative

The pilot reported that a few minutes after takeoff during an aerial application flight, while maneuvering to a field he intended to spray, the engine lost power and he attempted to land on a dirt road. He added that the airplane bounced on touchdown and "went off the road and struck a ditch." He further added that when the engine lost power, the fuel gauge indicated about half full. Postaccident, the pilot reported that the fuel gauge was "stuck in the middle", he did not visually check the fuel quantity prior to flight, and had exhausted the fuel supply.

The fuselage and both wings sustained substantial damage.

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

The Federal Aviation Administration Pilot's Handbook of Aeronautical Knowledge stated in part:

### Fuel Gauges

The fuel quantity gauges indicate the amount of fuel measured by a sensing unit in each fuel tank and is displayed in gallons or pounds. Aircraft certification rules require accuracy in fuel gauges only when they read "empty." Any reading other than "empty" should be verified. Do not depend solely on the accuracy of the fuel quantity gauges. Always visually check the fuel level in each tank during the preflight inspection, and then compare it with the corresponding fuel quantity indication.

# National Transportation Safety Board - Aircraft Accident/Incident Database

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Accident Rpt# ERA17LA209	06/23/2017 1315 EDT	Regis# N765KV	Dennis, WV	Apt: N/a
Acft Mk/Mdl HUGHES 369-E		Acft SN 0082E	Acft Dmg: SUBSTANTIAL	Rpt Status: Prelim Prob Caus: Pending
Eng Mk/Mdl ROLLS-ROYCE 250 C20B		Acft TT 28285	Fatal 0 Ser Inj 0	Flt Conducted Under: FAR 133
Opr Name: HAVERFIELD INTERNATIONAL INC		Opr dba: HAVERFIELD AVIATION INC		Aircraft Fire: NONE
				AW Cert: STN

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## Events

1. Maneuvering-hover - Loss of engine power (total)
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## Narrative

On June 23, 2017, about 1315 eastern daylight time, a Hughes 369E, N765KV, operated by Haverfield Aviation Inc, was substantially damaged during a hard landing near Dennis, West Virginia. The commercial pilot was not injured. The external load flight was conducted under the provisions of 14 Code of Federal Regulations Part 133. Visual meteorological conditions prevailed and no flight plan was filed for the local flight.

The pilot reported that he returned to the landing zone with a conductor attached to a long line. The helicopter was in a 100-foot hover over the landing zone, while the pilot monitored a ground crewmember disconnect the conductor from the long line. The helicopter began to settle and the pilot raised the collective control; however, the helicopter continued to settle as a warning horn sounded and the engine noise ceased. The pilot then entered an autorotation and during the landing, a main rotor blade contacted the tailboom, which resulted in a tailboom separation.

Further examination of the helicopter was planned following its recovery to the operator's facility.

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Accident Rpt# DCA17MA022	10/28/2016 1751 EDT	Regis# N370FE	Fort Lauderdale, FL	Apt: Fort Lauderdale/hollywood Intl FLL
Acft Mk/Mdl MCDONNELL DOUGLAS MD 10-10F-10F	Acft SN 46608	Acft Dmg: SUBSTANTIAL	Rpt Status: Prelim	Prob Caus: Pending
Eng Mk/Mdl GENERAL ELECTRIC CF6-6D	Acft TT 84589	Fatal 0	Ser Inj 0	Flt Conducted Under: FAR 121
Opr Name: FEDERAL EXPRESS	Opr dba:	Aircraft Fire: GRD	AW Cert: STT	

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## Events

1. Landing-landing roll - Landing gear collapse

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## Narrative

On October 28, 2016, about 1751 eastern daylight time, FedEx Express flight 910, a McDonnell Douglas MD-10-10F, N370FE, experienced a left main landing gear collapse after landing on runway 10L at Fort Lauderdale-Hollywood International Airport (FLL), Fort Lauderdale, Florida. The airplane came to rest off the left side of the runway and subsequently caught fire. The two flight crew members were not injured and the airplane was substantially damaged. The cargo flight was operating under 14 Code of Federal Regulation (CFR) Part 121 and had originated from Memphis International Airport (MEM), Memphis, Tennessee.

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Accident Rpt# CEN17LA033	10/29/2016 1540 CDT	Regis# N25YR	Dallas, TX	Apt: Dallas Executive RBD
Acft Mk/Mdl NORTH AMERICAN TB 25N		Acft SN 43-27868	Acft Dmg: SUBSTANTIAL	Rpt Status: Factual Prob Caus: Pending
Eng Mk/Mdl CURTISS-WRIGHT CYCLONE		Acft TT 5232	Fatal 0 Ser Inj 0	Flt Conducted Under: FAR 091
Opr Name: COMMEMOATIVE AIR FORCE		Opr dba:		Aircraft Fire: NONE
				AW Cert: SPL

## Events

1. Maneuvering - Part(s) separation from AC

## Narrative

### HISTORY OF FLIGHT

On October 29, 2016, about 1540 central daylight time, a North American TB-25N airplane, N25YR, was damaged when the left inboard landing gear door separated in flight. The airline transport rated pilot, airline transport rated co-pilot, and seven passengers were not injured. The airplane sustained substantial damage. The airplane was registered to American Airpower Heritage Fly Museum and operated by the Central Texas Wing of the Commemorative Air Force (CAF) under the provisions of 14 Code of Federal Regulations Part 91 as an airshow flight. The local flight departed from the Dallas Executive Airport (RBD), Dallas, Texas, about 1500 and landed at RBD about 1545.

The pilot reported that the airplane was flying about 155 mph and 1,000 ft above ground level, when the airplane entered the traffic pattern. The landing gear was lowered on the downwind leg and when the gear was in transit the crew felt a jolt as if a bird had impacted the front of the airplane. The pilot noted that the main gear extended normally, but the nose gear was slow to indicate a down and locked position. He then felt a flight shudder from the airplane and a few seconds later the nose gear down indication was confirmed. He checked the flight controls for functionality with no abnormalities noted. He made a normal landing and parked the airplane.

The crew from another airplane reported to the pilot that they observed an object depart the accident airplane as the landing gear was extended in the traffic pattern. Witnesses on the ground reported observing the same event.

According to the responding Federal Aviation Administration (FAA) inspector, the left inboard landing gear door separated in flight and impacted the nacelle and then the left horizontal stabilizer and elevator. The airplane made an uneventful landing at RBD where damage was observed to the left horizontal stabilizer and elevator. The landing gear door was found in a field about 1.5 miles from RBD.

### AIRCRAFT INFORMATION

A review of the maintenance logbooks revealed that a Phase B inspection, as a part of the continuous inspection program, was completed on February 12, 2016. There were no logbooks entries pertaining to the landing gear door and the operator stated they did not have any discrepancies with the associated components.

According to the airplane's operating manual, the maximum gear extended speed is 170 mph.

### METEOROLOGICAL INFORMATION

The automated weather station located at RBD recorded wind from 170 degrees at 7 knots, gusting to 16 knots, 10 miles visibility, clear sky, temperature 82 degrees F, dew point 57 degrees F, and altimeter setting 30.05 inches of mercury.

### TESTS AND RESEARCH

The landing gear door connecting rod assembly was found fractured into two pieces and was sent to the NTSB Materials Laboratory, Washington, DC, for examination. The examination revealed that one end of the connecting rod was outfitted with a spherical bearing rod end and the other end was outfitted with a clevis rod end. The clevis end was bent along the shank. The bend axis was perpendicular to the clevis hinge. The spherical bearing rod end was fractured in the threaded portion of the shank in the same plane as a drill hole for safety wire. There were no features indicative of a preexisting crack. Microscopic examination of the fracture surface revealed tear lines radiating away from the safety wire drill hole on the outer bend side of the fracture. The features

observed on the connecting rod assembly were consistent with an overstress failure in bending.

## ADDITIONAL INFORMATION

The CAF Director of Maintenance reported that the landing gear door connecting rod was bent and fractured into two pieces at the safety wire hole. The gear door is equipped with two arresting cables that are intended to prevent the door from hyperextending. He also reported that the arresting cables were not installed in the correct position. The investigation could not determine how long the arresting cables has been incorrectly installed.

The CAF Director of Maintenance issued an internal safety bulletin to warn the other B-25 crew of the safety issue. The bulletin noted that the inner gear door attachment rod bolt failed upon gear extension which allowed the door to fly open breaking both hinges and grounding straps. The door then struck the left horizontal stabilizer on the leading edge then passed under the horizontal and struck the elevator where it tore the fabric and bent one rib. The bulletin recommended to remove the safety wire and inner landing gear door bolts and inspect the mechanical gear door linkage for signs of stress. The door connecting rods must both push the doors open and then pull them closed. Once closed, the doors are held in position in tension by these connecting rods. Carefully inspect the shorter inner adjustment bolt for any signs of bending especially near the top attachment point.

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Accident Rpt# WPR15FA195	06/22/2015 930 PDT	Regis# N206PZ	Maricopa, CA	Apt: Camarillo CMA
Acft Mk/Mdl SHORT BROTHERS PLC S312 TUCANO T	Acft SN T31	Acft Dmg: DESTROYED	Rpt Status: Factual	Prob Caus: Pending
Eng Mk/Mdl GARRETT TPE331-12B	Acft TT 3358	Fatal 1 Ser Inj 0	Flt Conducted Under: FAR 091	Aircraft Fire: GRD
Opr Name: JAMES HORNER	Opr dba:		AW Cert: SPE	

## Events

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

## Narrative

### HISTORY OF FLIGHT

On June 22, 2015, about 0930 Pacific daylight time, an experimental, exhibition-category Short Brothers PLC S312 Tucano T MK 1 airplane, N206PZ, impacted terrain about 16 miles south of Maricopa, California. The private pilot was fatally injured, and the airplane was destroyed. The airplane was registered to Tucano Flyer LLC and was being operated as a 14 Code of Federal Regulations Part 91 personal flight. Visual meteorological conditions existed near the accident site about the time of the accident, and a flight plan had not been filed. The flight originated from Camarillo Airport (CMA), Camarillo, California, at 0810.

According to the air traffic control (ATC) communications, the pilot was in contact with the Southern California Air Route Traffic Control Center and was receiving advisories while performing airwork. At 0823, the pilot informed the controller that he would be performing airwork between 2,500 and 10,000 ft mean sea level (msl). The controller explained that he would probably lose radio contact and would not be able to provide flight following below 7,000 ft msl. The pilot replied that he understood and would be performing airwork for about 1 hour before returning to CMA. The controller continued to monitor the airplane during the flight. At 0924, the pilot advised the controller that he would be descending and that he may lose him for a few minutes. He added that he would then climb to 9,000 ft msl and return to CMA, and the controller acknowledged. Subsequently, the controller made several attempts to contact the pilot, but no further response was received from him.

Review of radar data provided by the Federal Aviation Administration (FAA) revealed a primary target, consistent with the accident airplane, performing multiple turns and rapidly changing altitude and airspeed. At 0845, the airplane was traveling on an eastbound heading at 3,400 ft above ground level (agl), and during the next 2 minutes, it climbed over rising terrain. Over the next 8 minutes, the airplane's speed varied and reached 325 knots and continued to make multiple turns and rapid changes in altitude and descended to within less than 100 ft above a mountain ridgeline. The airplane then continued to the northwest over lower terrain before turning southbound. During the next 18 minutes, the airplane performed multiple turns at altitudes between 2,000 and 3,000 ft agl. During the last 6 minutes of the flight, the airplane performed a 360° descending right turn near a residence at the lower entrance of Quatal Canyon at an altitude of about 3,600 ft, descending to 1,600 ft agl. The airplane headed westbound for 3 minutes and then returned to the lower entrance of Quatal Canyon. At 0924, the last radar targets showed the airplane heading eastbound above the canyon's dry river bed about 1,600 ft agl.

At 0925 radar contact was lost. Shortly after, an airplane in the area of the accident site reported to ATC that a small fire was located in a river bed. Local authorities responded to the fire and confirmed that it was the accident site.

A witness, located about 1 1/2 miles west of the accident site, reported seeing the airplane circle near her house about 500 to 800 ft agl. She stated that the engine sound was "loud and consistent." She added that she last saw the airplane fly eastbound, parallel to Quatal Canyon Road, and that shortly after saw dust and smoke rise high above a nearby mountain.

Another witness, located about 2 3/4 miles west-southwest of the accident site, reported seeing the airplane fly directly over his house in straight-and-level flight between 500 and 750 ft agl. He added that the engine sounded different than other airplanes that fly in the area but that it did not sound like anything was wrong. The airplane continued to fly straight and level in an easterly direction toward Quatal Canyon Road.

## PERSONNEL INFORMATION

The pilot held a private pilot certificate with airplane single-engine land and rotorcraft ratings. He held an FAA second-class airman medical certificate, issued on June 19, 2015, with the limitation that he must wear corrective lenses.

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According to the pilot's logbooks, he had accumulated 891.2 total flight hours in fixed wing aircraft and rotorcraft. He had accumulated 76.9 hours in the accident airplane make and model, 27.8 hours of which were in the previous 6 months. The pilot successfully completed his most recent flight review on January 14, 2015, in the accident airplane.

## AIRCRAFT INFORMATION

The two-seat, low-wing airplane, serial number (S/N) T31, was manufactured in 1989. It was powered by a Honeywell (Garrett) TPE331-12B-703A engine, S/N P-65617, rated at 1,100 shaft horsepower at a propeller speed of 2,000 rpm. The airplane was equipped with a Hartzell propeller, model HC-D4N-5C. Review of the maintenance records showed that an annual inspection was completed on October 20, 2014. The airplane was produced to meet stringent military requirements and was designed for high-g landing loads; advanced fatigue testing; and spin tests, including inverted spins, at all altitude.

## METEOROLOGICAL INFORMATION

Data recorded by the Meadows Field Airport, Bakersfield, California, automated weather observation station, located about 41 miles northeast of the accident site, included winds from 180° at 4 knots, visibility clear, temperature 24°C, dew point 3°C, and an altimeter setting of 30.01 inches of mercury.

## WRECKAGE AND IMPACT INFORMATION

Examination of the accident site revealed that the airplane was destroyed by high-impact forces and postimpact fire, which was observed along the debris path; the fire burned about 1 acre of land surrounding the accident site. The wreckage, including all major structural airplane components and primary flight controls, was located in a dry creek bed and was contained within a debris path that was about 641 ft long and 355 ft wide.

The first identified point of contact (FIPC) was a trough of disturbed ground about 2 ft wide, 20 ft long, and 1 ft deep, consistent with an airplane attitude of 45-degrees nose down and right wing downward about 90-degrees from level flight. The wreckage debris path was oriented along a magnetic heading of about 360° from the FIPC to the main wreckage. A green light emitting diode navigation light was found near the FIPC. At the end of the trough was a crater, about 11 ft in diameter and 5 ft deep. Two separated propeller blades, a landing gear strut with the wheel attached, and distorted pieces of sheet metal were found in and near the crater. The dirt in the crater was discolored and smelled of fuel. A third propeller blade, the wing and fuselage sections, and the engine bull gear assembly were found between the crater and the main wreckage.

The main wreckage was located about 180 ft from the FIPC and included the empennage, aft fuselage, firewall, and engine, and the wreckage was twisted and distorted. Wire bundles and cabin instrumentation were found with the main wreckage, and all of it was burned and crushed. The fourth propeller blade was located about 80 ft past the main wreckage. All four propeller blades revealed S-type bending, chordwise scoring, and leading-edge gouging near the tips.

The attached parachute and canopy were found in several sections past the main wreckage and in line with the center of the debris field. A single-point refueling port was found 641 ft from the FIPC and was the last piece of wreckage found along the debris path.

The aft fuselage and tail section structure were partially intact, and cable control continuity was confirmed to the midsection of the fuselage. The aileron control cables were found with the main wreckage. All primary flight controls were found in the debris field.

The engine exhibited thermal discoloration and impact damage. The first stage of the compressor section was visible, and all of the blades exhibited rotational signatures. The third stage was also visible from the damaged housing and exhibited rotational signatures.

## Follow-up Examination

The wreckage was relocated to a secure facility where a layout examination took place. The examination of the wreckage revealed no evidence of any preimpact mechanical malfunctions or failures that would have precluded normal operation. The wing sections exhibited leading edge crush damage. The main spar was found in several sections with bending near the midsection. Each of the ailerons were found in two 3-ft sections. The wing flaps exhibited signatures suggesting that they were in the retracted position during impact. Both elevators and horizontal stabilizers were impact damaged and crushed. The trim actuator shaft had separated midspan, and 45° shear lips were observed on the separation surfaces. The trim actuator shaft was measured from the shaft bolt to the rubber seal and was 3.845 inches long, which equated to about a 0.5° (near neutral) pitch trim position. The rudder and vertical stabilizer sustained impact



damage and remained attached via the rudder control cables. The vertical stabilizer and aft fuselage remained secure at all the attachment points.

The propeller assembly, which had separated from the engine during the accident sequence, was impact damaged. The cylinder, piston, feathering spring, and hub were found separated into numerous sections. Hub sections were removed from two of the four blade shanks. The blades revealed leading edge gouging and chordwise scoring from the shank areas to the tips. Two of the blades were bent rearward from the midsection to the tip and had a decreased pitch twist from the midsection to the tip. Another blade had a slight rearward bend, and the last blade was bent forward from the midsection to the tip. For further information, refer to the Hartzell Propeller Teardown Report in the public docket for this accident.

The engine was found separated in three major sections: the bull gear, second-stage compressor housing and impeller, and the turbine stator outer vane support housing. Other loose engine parts were found in the debris field. The engine exhibited damage signatures consistent with the engine operating during impact. For further information, refer to the Honeywell Aerospace Engine Wreckage Examination Notes in the public docket for this accident.

The cabin instruments had separated from the instrument panel and were impact damaged. The rpm gauge face had separated from the instrument housing and was bent; white paint transfer marks were visible near the '100' displayed on the face. The torque gauge face had white paint transfer marks between the '80' and '100' displayed on the face.

## MEDICAL AND PATHOLOGICAL INFORMATION

The pilot was ejected from the airplane during the accident sequence. The Ventura County Coroner's Office did not conduct an autopsy on the pilot because of the condition of the body. The pilot had reported high cholesterol and the use of the prescription drugs rosuvastatin and fenofibrate to treat it to the FAA.

The FAA's Bioaeronautical Sciences Research Laboratory performed toxicology testing of the pilot's muscle tissue. The testing detected 0.046 gm/dl of ethanol, 2.033 ug/g of butalbital (the therapeutic range is between 1 and 10 ug/ml), and 0.033 ug/g of codeine.

Ethanol may be detected due to ingestion, or it may also be produced by postmortem microbial activity in the body. Ethanol significantly impairs pilots' performance even at low levels. FAA regulations prohibit any person from acting or attempting to act as a crewmember of a civil aircraft while having 0.040 gm/dl or more ethanol in the blood.

Butalbital and codeine are frequently combined with acetaminophen, aspirin, and/or caffeine in prescription medications to treat pain or headaches. The combination of the two drugs carries the following warning: "Butalbital, Acetaminophen, Caffeine, and Codeine Phosphate Capsules may impair mental and/or physical abilities required for the performance of potentially hazardous tasks such as driving a car or operating machinery. Such tasks should be avoided while taking this combination product. Alcohol and other CNS [central nervous system] depressants may produce an additive CNS depression when taken with this combination product and should be avoided."