



National Transportation Safety Board Aviation Accident Preliminary Report

Location:	Springfield, IL	Accident Number:	CEN20FA070
Date & Time:	01/28/2020, 1503 CST	Registration:	N6071R
Aircraft:	Piper PA60	Injuries:	3 Fatal
Flight Conducted Under:	Part 91: General Aviation - Personal		

On January 28, 2020, about 1503 central standard time, a Piper PA-60-601P airplane, N6071R, collided with terrain while on an instrument approach to Abraham Lincoln Capital Airport (SPI), Springfield, Illinois. The airline transport pilot, 2 passengers, and a dog were fatally injured. The airplane was destroyed during a postimpact fire. The airplane was owned by LKJ Properties, LLC, and operated under Title 14 *Code of Federal Regulations* Part 91 on an instrument flight rules (IFR) flight plan. Day instrument meteorological conditions (IMC) prevailed at the accident site. The personal cross-country flight departed Huntsville International Airport (HSV), Huntsville, Alabama, at 1301.

According to automatic dependent surveillance-broadcast (ADS-B) data that was transmitted by the airplane to Federal Aviation Administration (FAA) air traffic control (ATC), the flight departed runway 18L at HSV and turned north-northwest toward SPI. The airplane subsequently climbed to 10,000 ft mean sea level (msl) and continued direct toward SPI. At 1440:34, the pilot established radio contact with Springfield approach and reported being level at 10,000 ft msl. The approach controller replied that the pilot should expect radar vectors to join the localizer for the instrument landing system (ILS) runway 31 at SPI. At 1441:20, the approach controller told the pilot that there were a couple of pilot reports (PIREPS) for light to moderate mixed icing in the clouds at 3,000 ft msl. The approach controller also cleared the pilot to descend to maintain 3,000 ft msl. At 1441:32, the pilot reported leaving 10,000 ft msl for 3,000 ft msl. At 1441:43, the approach controller told the pilot to fly a 350° heading for vectors to the localizer. The pilot confirmed the heading change and ADS-B data showed the airplane turned to a 350° course while still in a descent.

At 1448:54, the pilot reported that the cloud tops were at 3,000 ft msl. At 1449:00, the approach controller told the pilot, "seven one romeo, roger, thank you, seven miles from CALDE, turn left heading three four zero, maintain three thousand until established on the localizer (unintelligible) I-L-S runway three one approach." The pilot replied, "three four zero on the turn, here we go."

At 1449:29, the pilot transmitted, "and seventy one romeo, we're not picking these navs on thirty one (unintelligible) or thirty one." According to ADS-B data, at that point the airplane was still flying the assigned 340° heading to intercept the localizer, and the airplane was about

0.72 miles left of the localizer centerline. At 1449:36, the approach controller asked the pilot to repeat his previous transmission and the pilot replied, "Yup, we still got neg nav lights on thirty one." At 1449:53, the approach controller transmitted "Aerostar seven one romeo, ah, we're getting green indications here (unintelligible) just to verify that you are on one one zero point one five on the localizer?" At 1450:01, the pilot replied, "One one zero, three." At 1450:04, the approach controller transmitted, "And its one one zero point one five, would you like revector for the approach?" At 1450:10, the pilot asked the controller, "Is it one one zero, five?" The approach controller replied, "It is one one, ah, zero point one five. one one zero point one five. ten point one five."

According to ADS-B data, at 1449:59, the airplane flew through the localizer centerline while still on the assigned 340° heading. After crossing through the localizer centerline, the airplane made a left turn to 295° intercept the localizer. At 1450:27, the approach controller asked the pilot if the airplane was established on the localizer. The pilot replied, "We are on the localizer, seven one, ah, romeo." At 1450:40, the approach controller asked the pilot if the airplane was also receiving the glideslope. The pilot replied, "Yes we are." At that point, the airplane was flying through the localizer centerline at 3,000 ft msl while still on the 295° course and was about 4.3 miles southeast of the locator outer marker (CALDE). At 1450:45, the approach controller told the pilot to contact the tower controller. At 1450:52, the airplane made a right turn to about 306° to rejoin the localizer.

At 1450:58, the pilot established contact with the tower controller. The tower controller asked the pilot if he was established on the localizer. At 1451:08, the pilot replied, "We're established, seventy one romeo." At 1451:10, the tower controller cleared the pilot to land on runway 31. At this point the airplane was at 3,000 ft msl and was heading toward CALDE; however, the airplane's course was about 0.1 miles left of the localizer centerline.

At 1451:25, the tower controller told the pilot that the airplane appeared to be "slightly left of course." The pilot replied "correcting." At 1451:43, the tower controller told the pilot that the airplane appeared to be on course. At 1451:46, the pilot replied, "... it looks like we went through the course." At that point, the airplane had descended to 2,400 ft msl as it crossed through the localizer centerline on a 338° course.

At 1451:56, the tower controller transmitted, "seven one romeo, ah, cancel any clearance, climb and maintain three thousand, turn right heading three six zero." At 1452:02, the pilot replied, "Okay (unintelligible) thousand, here we go, seventy one romeo." At 1452:11, the tower controller transmitted, "seven romeo lima, again, cancel any clearance, climb and maintain three thousand, turn right heading three six zero." At 1452:16, the pilot replied, "three six zero on the turn, here we go, seventy one romeo." At 1452:37, the tower controller told the pilot, "seven one romeo, contact departure, they'll vector you around for another, ah, approach here, you were, ah, right left of course we, ah, it just didn't look safe from here so contact departure one two six point one five."

At 1453:10, the pilot reestablished contact with Springfield approach control and reported flying a 360° heading. The approach controller asked the pilot if he wanted to be vectored back to the ILS 31 instrument approach or change to the ILS 22 instrument approach. At 1453:45,

the pilot replied, "How about we go back to three one?" The approach controller told the pilot to turn right to 090° for vectors to the ILS 31 approach at SPI.

At 1454:11, the approach controller asked the pilot, "are you having some issues with your nav head?" The pilot replied with a single word, "Yup." At 1454:17, the approach controller asked the pilot if he would prefer to fly an approach surveillance radar (ASR) approach instead of the ILS instrument approach. The pilot's response was unintelligible. At 1454:27, the approach controller told the pilot that his transmissions were intermittent and asked him if the airplane was having electrical issues. At 1454:33, the pilot replied, "Ah, that's negative." At 1454:39, the pilot transmitted, "Yeah, we will just do three one over again and, ah, we're picking up a little ice." At 1454:35, the approach controller asked the pilot again if he would prefer the ASR approach instead of the ILS approach. At 1454:52, the pilot replied, "Okay, no we will try it again, it just, ah, took off when we, ah (unintelligible) when we were ah about twenty three hundred."

At 1455:22, the approach controller told the pilot to turn right to a 130° heading and asked if the airplane was still in icing conditions. The pilot replied that the airplane was above the icing conditions at 3,000 ft msl. At 1456:10, the approach controller asked the pilot if the airplane's landing gear was still extended. The pilot replied that the landing gear was still extended. At 1457:46, the approach controller told the pilot to turn right to a 220° heading. At 1458:09, the approach controller asked the pilot to verify if the airplane was receiving the localizer signal. At 1458:12, the pilot replied, "Oh yeah, we're picking up the localizer, seventy one romeo."

At 1500:09, the approach controller transmitted, "November seven one romeo, six miles from CALDE, turn right heading two eight zero, maintain three thousand until established on the localizer, cleared I-L-S runway 31 approach." The pilot replied, "Okay, here we go, two eight oh on the turn, and three thousand until established, seventy one romeo." According to ADS-B data, between 1400:30 and 1401:00, the airplane's course was about 270° as it approached the localizer from the east. At 1401:00, the airplane turned right to a 290° and flew through the localizer at 1401:29. At that point the airplane had descended to 2,600 ft msl and was about 5 miles from CALDE. The airplane continued toward CALDE slightly left of the centerline. At 1502:03, the approach controller transmitted, "Aerostar seven one romeo, is everything looking good now, we are showing you on course." At 1502:07, the pilot replied, "Yup, looking good." At 1502:11, the approach controller told the pilot to contact Springfield tower. At 1502:14, the pilot replied, "Contact tower, seventy one romeo." At that point, the airplane was at about 3.5 miles from CALDE, and the airplane's course was still paralleling the localizer slightly left of the localizer centerline.

About 5 seconds after the pilot had been cleared to contact the tower controller, the airplane entered a left descending turn away from the localizer to a south-southwest course. The left turn began at 2,400 ft msl and descended to 700 ft msl before ADS-B track data was lost at 1503:11. The final ADS-B datapoint was recorded at 700 ft msl (about 125 ft above ground level) and the airplane's ground track and ground speed were 267° and 87 knots, respectively. The final ADS-B datapoint was located about 362 ft east-northeast of the airplane's initial impact with terrain.

At 1502:37, the tower controller attempted to contact the pilot on the tower radio frequency without any reply. At 1502:45, the tower controller again attempted to establish radio contact with the pilot. At 1502:47, the pilot replied, "We've got a prob (unintelligible)." At 1502:49, the tower controller asked the pilot if he was able to climb. There was no recorded response from the pilot. At 1502:56, the tower controller told the pilot to climb and maintain 3,000 ft msl. There was no recorded response from the pilot. At 1503:15, the tower controller told the pilot to climb and maintain 3,000 ft msl and to turn left to a heading of 180°. There was no recorded response from the pilot.

The airplane impacted a harvested cornfield about 7.3 miles southeast of the runway 31 threshold. The wreckage debris path measured about 200 ft and was oriented on a 248° compass heading. The airplane's left wingtip impacted the ground first, followed by the left and right propellers, respectively. The nose landing gear wheel was found separated from the fork assembly about 40 ft from the initial point of impact. The outboard 2.5 ft of the left aileron was found separated from the left wing along the wreckage debris path. The main wreckage came to rest at the western edge of the cornfield amongst several trees and a wire fence. The main wreckage consisted of the entire fuselage, both wings, and the empennage. The fuselage cabin and cockpit exhibited extensive damage from the postaccident fire. Both wings spars had fractured at the respective wing roots and each wing remained partially attached to the fuselage by engine control cables. Flight control continuity was not established because the control push/pull tubes for the ailerons, elevators, and rudder exhibited extensive fire and impact damage. Both ailerons and flaps exhibited impact and fire damage. Both hydraulic flap actuators were extended about 1.5" and were consistent with about 20° of flap extension. The flap control handle was found in an intermediate position. Both elevators remained attached to the horizontal stabilizer and exhibited fire damage. The rudder remained attached to the vertical stabilizer, but most of the rudder had been destroyed by fire. The landing gear was found extended. The landing gear selector handle was not located during the investigation. The throttle quadrant was destroyed by impact and fire damage. The airspeed indicator and altimeter were destroyed by fire. The attitude indicator and horizontal situation indicator were extensively damaged by fire. The internal gyros of the attitude indicator and horizontal situation indicator did not exhibit any evidence of rotational scoring. The turn indicator gyro was found separated from its instrument case that was not located during the investigation. The turn indicator gyro did not exhibit any evidence of rotational scoring. The electronic engine trend monitor was destroyed by fire. The electronic engine tachometer indicated 1,200 rpm for both engines. The manifold pressure gauge indicated 28 and 30 inches of mercury for the left and right engines, respectively.

Both engines remained attached to their respective engine mounts and nacelles. Internal engine and valve train continuity were confirmed for each engine while their respective engine crankshaft was rotated through a rear accessory gear. Compression and suction were noted on all cylinders in conjunction with crankshaft rotation. Both magnetos on each engine were damaged by fire and could not be tested. The spark plugs were removed and exhibited features consistent with normal engine operation. A lighted borescope inspection of each cylinder did not reveal any anomalies with the cylinders, pistons, valves, or valve seats. Both oil pumps discharged oil when their respective engine crankshaft was rotated. The pressure pump installed on each engine could not be rotated because of fire damage to their respective drive

gears; however, a partial disassembly of both pressure pumps revealed no evidence of internal failure that would have precluded normal function during flight. The turbocharger system components remained secured at their respective mounts. The turbocharger compressors and turbine impellers remained intact and undamaged. The turbine impellers rotated freely by hand. The exhaust bypass valves remained secured at each turbocharger exhaust pipe and their butterfly valves remained intact and undamaged. The postaccident examination of both engines did not reveal any anomalies that would have precluded normal operation during the flight.

The left propeller remained attached to the engine propeller shaft flange. One propeller blade appeared to be in the feathered position, and the remaining two blades appeared to be in the normal range of operation. Two propeller blades were visibly bent in the aft direction, and the remaining blade appeared to be slightly bent aft. Two propeller blades had indications of heat exposure such as charring, sooting, and paint blistering. One propeller blade could be partially rotated by hand force. The spinner dome was dented with one counterweight mark on the internal surface in the normal blade angle range of operation. The hydraulic unit remained intact and undamaged and the piston/pitch change mechanism appeared to be on the start locks. Propeller blade no. 1 was bent aft, bent opposite rotation and twisted towards low pitch. Propeller blade no. 2 was bent slightly aft with no remarkable twisting. Propeller blade no. 3 was bent aft, opposite rotation and twisted towards low pitch. All three propeller blades exhibited chordwise/rotational scoring isolated to the leading edges on both the camber and face side. The low pitch stop had an impact mark consistent with the propeller operating on or near the low pitch stop angle. The preload plate for propeller blade no. 3 had knob impact marks in the range of 26°-31°, which was consistent with blade angles between 17°-22°.

The right propeller remained attached to the engine propeller shaft flange. All three propeller blades appeared to be in the normal blade angle range. The spinner dome was dented with counterweight impressions that were consistent with normal blade angle range of operation. All three propeller blades were bent aft, opposite rotation in varying degrees and twisted towards low pitch. One propeller blade had indications of heat exposure such as charring, sooting and paint blistering. All three propeller blades could be partially rotated by hand force. The hydraulic unit remained intact and undamaged and the piston/pitch change mechanism appeared to be in the feathered position. All three propeller blades exhibited chordwise/rotational scoring isolated to the leading edges on both the camber and face side. The pitch change knob on all three blades were fractured. The low pitch stop had an impact mark suggesting the propeller was operating on or near the low pitch stop angle. The preload plate for propeller blade no. 2 had a knob impact mark in the slot at about 45°, which was consistent with a blade angle of about 3°. The preload plate for propeller blade no. 3 had a knob impact mark in the slot at about 21°, which was consistent with a blade angle of about 27°.

The airplane was a 1979 Piper PA-60-601P (Aerostar), serial number 61P-0686-7963324. On June 19, 1992, the two Lycoming IO-540-AA1A5 reciprocating engines were modified by supplemental type certificate (STC) Nos. SA4156NM and SE4157NM to include twin-turbochargers and intercoolers. The modified engines were rated at 350 horsepower when operated at 42 inches-of-mercury and 2,500 rpm. The engines provided thrust through

constant-speed, full-feathering, three-blade, Hartzell HC-C3YR-2UF/FC8468B-8R propellers. The mid-wing airplane was of conventional aluminum construction with a retractable tricycle landing gear and wing flaps. The airplane had a pressurized cabin configured to seat six people. The airplane was equipped for operations in IMC and icing conditions. The airplane had a total fuel capacity of 173.5 gallons (165.5 gallons usable) distributed between two wing fuel tanks and a fuselage tank. According to fueling documentation, the airplane's fuel system was topped-off before the accident flight.

The airplane's hour meter was destroyed by the postimpact fire, which precluded a determination of the airplane's total service time at the time of the accident. According to available maintenance documentation, the last annual inspection of the airplane was completed on August 1, 2019, at 3,542.7 total airframe hours. As of the last annual inspection, the left engine, s/n L-32219-48E, had accumulated 1,691 hours since new, and the right engine, s/n L-32893-48E, had accumulated 1,571.5 hours since new. The static system, altimeter system, automatic pressure altitude reporting system, and transponder were last tested on May 10, 2016.

On November 26, 2019, the airplane's left propeller collided with bird(s) while on approach to Sarasota/Bradenton International Airport (SRQ), Sarasota, Florida. The left propeller was removed and sent to an overhaul facility to be inspected and possibly repaired. The damaged propeller exceeded repair limits and another overhauled propeller was installed on the airplane on January 27, 2020. Additional maintenance actions completed on January 27, 2020, included servicing the turbocharger waste gates on both engines, replacement of the pressure pump and its outlet hose on the left engine, replacement of the cabin heater thermostat, and adjustment of the pilot seat track guides and locks. The airplane had accumulated 3,584.7 total airframe hours when the last maintenance actions were completed on January 27, 2020.

According to FAA records, the 69-year-old pilot held an airline pilot certificate with airplane single-engine land, airplane multiengine land, and instrument airplane ratings. The airplane single-engine land rating was limited to commercial privileges. The pilot also held an expired flight instructor certificate for single and multiengine airplanes and instrument airplane. The pilot's most recent FAA third-class medical certificate was issued on February 6, 2018, with a limitation for corrective lenses. On the application for his current medical certificate, the pilot reported having accumulated 5,500 total hours of flight experience and 60 hours within the previous 6 months. A review of available logbook documentation revealed that the pilot's last recorded flight was a flight review completed on October 29, 2017. It is unknown if the pilot had another, more current, logbook onboard the airplane at the time of the accident. The pilot's recent instrument flight experience could not be determined with the available documentation.

During August 21-23, 2019, the pilot received initial training in the Piper PA-60-601P airplane from Advanced Flight Training International, Sarasota, Florida. The flight instructor who provided the training stated that the pilot had received a certificate of completion that was limited to visual flight rules (VFR) operations. The reason the certificate of completion was limited to VFR operations was because the airplane had a malfunctioning horizontal situation indicator during training, which prevented an evaluation of the pilot's ability to fly solely by

reference to instruments under IFR. The flight instructor stated the pilot had demonstrated, "very good piloting skills operating the aircraft in a safe manner and keeping it within its limitations."

A postaccident review of available meteorological data established that day instrument meteorological conditions prevailed at the accident site. At 1452, about 11 minutes before the accident, the SPI automated surface observing system reported a calm wind, 5 miles surface visibility with mist, 700 ft above ground level (agl) overcast ceiling, temperature -1°C, dew point -3°C, and an altimeter setting of 30.10 inches of mercury. There was an active weather advisory (AIRMET) for moderate icing while operating in clouds between the freezing level and 8,000 ft msl. The pilot reported to the approach controller that the cloud tops were about 3,000 ft msl.

Abraham Lincoln Capital Airport, a public airport located about 3 miles northwest of Springfield, Illinois, was owned and operated by the Springfield Airport Authority. The airport field elevation was 598 ft msl. The airport was served by three runways, runway 4/22 (8,001 ft by 150 ft), runway 13/31 (7,400 ft by 120 ft), and runway 18/36 (5,300 ft by 150 ft). The airport was equipped with an air traffic control tower and approach control that was operational at the time of the accident.

During an ILS approach, the localizer provides lateral guidance for the final approach course, and the glideslope provides vertical guidance as the aircraft descends toward the runway. For a precision approach, such as an ILS approach, the missed approach point is where the aircraft reaches the decision altitude while on the glideslope. The published inbound course for the ILS runway 31 approach at SPI was 308° magnetic, the crossing altitude for the final approach fix (CALDE) was 2,014 ft msl, and the distance between CALDE and the runway 31 threshold was 4.3 nm. The published localizer frequency was 110.15 MHz. The touchdown zone elevation was 590 ft msl. The decision altitude was 790 ft msl (200 ft agl) and required ½ mile visibility to land. The missed approach procedure was to climb on runway heading to 1,700 ft msl, then make a climbing left turn to hold at the locator outer marker (CALDE) at 3,100 ft msl. According to FAA documentation, the ILS runway 31 approach at SPI was fully functional at the time of the accident.

The database cards for the airplane's Garmin 430 and 530 panel-mounted GPS navigation/communication devices were recovered at the accident site and placed in a test device to determine their expiration dates. The obstacle database cards and IFR database cards had expired on September 13, 2018. Further review of the IFR database cards established that the stored localizer frequency for the ILS runway 31 approach at SPI was the same frequency that was listed on the current approach plate (110.15 MHz).

A doorbell security camera located about 300 ft north of the accident site captured video and audio of the final seconds of the flight. A review of the camera footage revealed that the airplane descended toward the ground in a left wing down, slightly nose-down attitude. All three landing gear were observed to be extended before impact. There was no evidence of an inflight fire before impact. The initial impact with the ground was obscured by a door post and trees; however, when the airplane reemerged it was observed sliding on its lower fuselage. Smoke from a postimpact fire was observed a couple seconds after the accident.

A second doorbell security camera, located about 0.6 miles south of the accident site, captured audio of the final seconds of the flight. The sound spectrums of both doorbell cameras were analyzed to identify any propeller sound signatures that were consistent with the propellers rotating under engine power. Both sound spectrums exhibited a relatively constant propeller noise signature until about two seconds before impact. The results of an acoustic analysis were consistent with the airplane's propellers rotating at 2,500 rpm before a sudden reduction in propeller speed to about 1,200 rpm about two seconds before impact.

Both propellers left three distinct slash marks in the soil. The average distance between the left propeller strike marks was 2.5 ft. The average distance between the right propeller strike marks was 2.64 ft. An estimation of the airplane's ground speed at impact was calculated using the average distance between the propeller strike marks and a propeller rotation speed of 1,200 rpm (as determined by the electronic tachometer and the sound spectrum analysis from the video footage). The propeller strike mark calculations estimated the airplane's ground speed was between 88 and 94 knots at impact.

Aircraft and Owner/Operator Information

Aircraft Make:	Piper	Registration:	N6071R
Model/Series:	PA60 601P	Aircraft Category:	Airplane
Amateur Built:	No		
Operator:	LKJ Properties LLC	Operating Certificate(s) Held:	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Instrument Conditions	Condition of Light:	Day
Observation Facility, Elevation:	SPI, 598 ft msl	Observation Time:	1452 CST
Distance from Accident Site:	8 Nautical Miles	Temperature/Dew Point:	-1° C / -3° C
Lowest Cloud Condition:		Wind Speed/Gusts, Direction:	Calm / ,
Lowest Ceiling:	Overcast / 700 ft agl	Visibility:	5 Miles
Altimeter Setting:	30.1 inches Hg	Type of Flight Plan Filed:	IFR
Departure Point:	Huntsville, AL (HSV)	Destination:	Springfield, IL (SPI)

Wreckage and Impact Information

Crew Injuries:	1 Fatal	Aircraft Damage:	Substantial
Passenger Injuries:	2 Fatal	Aircraft Fire:	On-Ground
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	3 Fatal	Latitude, Longitude:	39.762500, -89.572222

Administrative Information

Investigator In Charge (IIC):	Andrew T Fox
Additional Participating Persons:	Nick Loftus; Federal Aviation Administration, Springfield FSDO; Springfield, IL Mark Platt; Lycoming; Phoenix, AZ Les Doud; Hartzell Propeller; Piqua, OH
Note:	The NTSB traveled to the scene of this accident.