Aviation Investigation Final Report

Location:	CHAMBLEE, Georgia	**Accident Number:**	ATL00FA009
Date & Time:	November 7, 1999, 10:54 Local	**Registration:**	N7317A
Aircraft:	Cessna 210N	**Aircraft Damage:**	Destroyed
Defining Event:		**Injuries:**	1 Fatal
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The flight departed Dekalb-Peachtree Airport, moments later the pilot radioed that the airplane had a landing gear problem, and there was smoke in the cockpit. The pilot was instructed to enter visual traffic for runway 2R. Once the airplane was in the traffic pattern, the controller told the pilot that it appeared that the landing gear was extended, and cleared the flight to land. As the airplane neared touchdown the controller told the pilot that the landing gear was not locked and instructed the pilot to go-around. As the airplane flew by the control tower, smoke was seen coming from the airplane. As the pilot maneuvered the airplane for a landing on runway 27, the pilot was again instructed to go-around. Seconds later, the airplane touched down in a grassy area between the approach ends of runways 2L and 2R. Examination of the airplane disclosed that the airplane had sustained extensive fire damage to the floor area beneath the pilot's seat. The examination revealed that a flex hydraulic fluid supply line was missing, and there had been electrical arcing in the immediate vicinity of the hot spot.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The failure of the flex hydraulic line and the chaffing of an electrical line under the pilot seat that resulted in an inflight fire. The pilot's inflight decision to continue flight with a known airplane deficiencies.

Findings

Occurrence #1: FIRE/EXPLOSION
Phase of Operation: LANDING - FLARE/TOUCHDOWN

Findings
1. (C) HYDRAULIC SYSTEM,LINE - CHAFED
2. (C) ELECTRICAL SYSTEM,ELECTRIC WIRING - CHAFED
3. (C) IN-FLIGHT PLANNING/DECISION - IMPROPER - PILOT IN COMMAND
4. (C) OPERATION WITH KNOWN DEFICIENCIES IN EQUIPMENT - CONTINUED - PILOT IN COMMAND

Occurrence #2: IN FLIGHT COLLISION WITH TERRAIN/WATER
Phase of Operation: EMERGENCY DESCENT/LANDING

Factual Information

HISTORY OF FLIGHT

On November 7, 1999, at 1054 eastern standard time, a Cessna 210N, N7317A, collided with the ground and burst into flames while maneuvering for an emergency landing at the Dekalb-Peachtree Airport (PDK), in Chamblee, Georgia. The personal flight was operated by the pilot under the provisions of Title 14 CFR Part 91 with no flight plan filed. Visual weather conditions prevailed at the time of the accident. The airplane was destroyed, and the private pilot was fatally injured. The flight departed Dekalb-Peachtree Airport, Chamblee, Georgia, at 1045.

At 1031:41, the pilot of N7317A first contacted the PDK ground controller requesting taxi clearance for a northbound VFR departure. The pilot was instructed to taxi to runway 2L. At 1041:55, the pilot was instructed to contact the tower local controller. The pilot called the local controller at 1042:33, and was cleared for takeoff on runway 2L. He requested a straight-out departure, which was approved. At 1047:18, the pilot called PDK tower and stated that he would like to return to the airport. The controller responded, "airplane one seven alpha do you need any assistance are you just coming back inbound." The pilot stated that he was "coming back inbound" and gave no indication of a problem. At 1048:47, the local controller received a partially blocked transmission: "...I've got smoke in the cockpit and the gear won't go down." The controller then asked, "and who has smoke in the cockpit and the gear won't go down." The pilot of N7317A responded with his call sign, and the local controller then offered a straight-in approach to runway 20L. At 1049:01, the pilot replied, "two zero left, thank you."

At 1049:14, the controller told the pilot that the airport was at his twelve o'clock position and 4 miles, and the pilot replied "I have it." At 1049:46, the controller told the pilot that it looked like he was heading more toward the south and asked if he wanted to change to a left base for runway 20L or change to runway 27. The pilot replied that he wanted to do a right base entry to the pattern for runway 2R. At 1050:35, the pilot reported that he didn't think the gear was down. The local controller replied, "airplane one seven alpha roger, and say your request." The pilot then transmitted, "uh, I think I would like to get the gear down and I still got this smoke." The controller asked if the pilot would like to do a fly-by to check [the gear] and asked, "...and you don't have the smoke any more?" At 1050:57, the pilot replied, "yes I do I just have the window open." The controller acknowledged and transmitted, "uh and if you want to do a fly-by on [runway] two right to check for the gear." The pilot responded, "ok will do."

At 1051:36, the local controller stated, "...you're just doing a short base for runway two right are you going to make inbound [for runway] three four." The pilot replied that he was going to fly down runway 2R and let the controllers look at the gear. At 1051:51, the local controller said, "airplane one seven alpha the gear appears down say your request." At this point, the airplane was still on the right base leg. The pilot replied, "I'll land if it (the gear) looks down (pause)

looks to feels up to me." There were no further transmissions from the pilot for the remainder of the flight.

At 1052:03, the controller cleared the pilot to land on runway 2R, reporting the wind as three two zero degrees at three knots. At 1052:29, the controller transmitted, "airplane one seven alpha it does not I'm not sure whether the gear is down. Go-around." At 1052:39, the controller advised the pilot that one landing gear was not down. At 1052:48, the controller stated, "airplane one seven alpha it did not look like it was locked in place I do see smoke coming from the cockpit and say your request." An unknown pilot on frequency then told the controller to, "tell the pilot of N17A to pull the gear circuit breaker cause he probably has got a gear problem with the electric pump." The controller transmitted, "airplane one seven alpha did you copy that" but received no response.

According to the tower controllers, after the go-around from runway 2R, the airplane made a right 270 degree turn and approached runway 27 as if to attempt a landing. At 1053:10, the local controller said, "airplane one seven alpha and your uh there are just vehicles on two seven can you go around." At 1053:27, the controller again stated that there were vehicles on the runway. At 1053:32, the controller said, "airplane one seven alpha if you could make a left turn back in for two left or the vehicles are now off the runway cleared to land any runway wind three six zero at five." At 1053:45, the ground controller transmitted "alert three alert three" (local terminology for an airplane accident on the airport). The airplane collided with the ground and burst into flames between runways 2L and 2R, just south of taxiway F. The fire trucks and firefighters arrived within an estimated 10 seconds but were unable to rescue the pilot.

PERSONNEL INFORMATION

The pilot held a private pilot certificate with airplane single and multi-engine land, and instrument ratings. His total flight time was 785 hours and the approximately flying time in the Cessna 210 was not determined. The pilot held a current third class medical certificate, dated August 26, 1998, valid when wearing corrective lens for far and distant vision.

The PDK Air Traffic Control Tower (ATCT) Cab Coordinator entered on duty with the Federal Aviation Administration in December, 1990. He subsequently worked at St. Louis ATCT, Detroit-Wayne ATCT, and Ypsilanti ATCT. He arrived at PDK ATCT in August, 1998, and was fully certified on May 10, 1999. He holds a control tower operator certificate.

The PDK ATCT Local Controller entered on duty with the FAA in January 1992. After training at the FAA Academy in Oklahoma City, Oklahoma, he worked at Fulton County ATCT and Charlotte ATCT before arriving at PDK on December 21, 1997. He holds a control tower certificate.

The PDK ATCT Ground Controller entered on duty with the FAA on December 30 1985 at Kansas City Air Route Control Center Olathe, Kansas. She also worked at Forbes, Kansas,

ATCT and Waco, Texas, ATCT before arriving at PDK on December 16, 1998. She is still in training, certified on all positions except local control. She holds a control tower operator certificate.

The PDK ATCT Local Controller entered on duty with the FAA on November 15, 1992 at Atlanta Air Route Traffic Control Center, Georgia, and arrived at PDK ATCT on May 6, 1996. She became fully certified on November 25, 1997.

PERSONNEL INTERVIEW

The Dekalb County Fire Department first became aware that an airplane in distress was inbound to PDK when the tower phoned to place them on Alert II status. The tower stated that the pilot had reported smoke in the cockpit and problems with the airplane landing gear. Both C-10 and E-10 left the station in response to the alert. C-10 contacted the ground controller to confirm the landing runway, and then asked permission for the trucks to proceed south on taxiway A to the intersection with taxiway F. The ground controller approved the request.

By this time, the airplane was close to the airport and the fire crews could see the airplane approaching runway 2R. The airplane was trailing smoke from an indeterminate source, and the landing gear was clearly in an abnormal position. The ideal situation for responding to assist an airplane in distress is to position the fire apparatus ahead of the airplane but clear on the landing runway, then pull out and follow the airplane down the runway after it passes them on the rollout. This was the original reason that the fire crews asked to proceed to taxiway F; their intention was to be there in advance of the airplane's arrival, fall in behind after the airplane touched down, and assist the pilot as necessary. In this case, the airplane was too close to the airport to allow enough time for the trucks to get to taxiway F before it landed.

As the trucks approached the intersection of runway 9/27 and taxiway A, the airplane was approaching the intersection of runway 2R and 27. Based on the smoke and the appearance of the airplane, the fire. crews believed that the airplane was about to crash on runway 2R at or just past the intersection. In their opinion, the situation had escalated to Alert III status and required immediate action. They elected to turn off taxiway A onto runway 27 and hold short of runway 2R to position themselves to get to the impending accident as quickly as possible. The airplane touched down briefly, but then took off again. The fire crews were completely surprised at this, as the airplane had been in the perfect position for them to reach immediately. They felt that they would certainly have been able to reach the pilot in time is the airplane had continued the landing. C-10 called the ground controller to inform her that they PLANNED TO HOLD AT THEIR PRESENT POSITION, AND ASKED THAT THE PILOT BE INSTRUCTED TO "TOUCH DOWN RIGHT HERE AT (RUNWAY) TWO SEVEN." They believed that the airplane would be attempting another landing on 2R.

AIRCRAFT INFORMATION

The Cessna 210N, N7317A, was owned and operated by Skyclub, Inc., of Kennesaw, Georgia.

N7317A was a high-wing airplane powered by a Continental Motors IO-520-A engine. A review of the airplane maintenance logbooks showed that the airplane was maintained in accordance with applicable Federal Aviation Regulations.

METEOROLOGICAL INFORMATION

The PDK 1055 weather observation reported sky clear, visibility 10 miles, wind 020 degrees at four knots.

AIRPORT INFORMATION

PDK airport has four runways: 2L/20R, 2R/20L, 9/27, and 16/34. At the time of the accident, runways 2L and 2R were in use.

DeKalb County Fire Department station # 10 is located between the northwest ends of runways 34 and 2L. The station is normally equipped with two pieces of fire fighting apparatus: E-10, a standard fire engine, and C-10, a specialized ARFF truck carrying foam delivered through an overhead turret nozzle. Both vehicles are equipped with aviation band radios as well as fire department radios. Initial airport accident and incident notifications are normally made using a crash phone directly connecting PDK ATCT and the fire station. According to the "Airport Emergency Procedures" letter of agreement, the emergency standby point is located south of the fire station on the non-movement area near taxiway J. However, a verbal agreement with the tower management has moved the standby point further south, close to taxiway HH but still in a non-movement area.

Under the letter of agreement, there are three levels of emergency response readiness:

Alert I: A potential emergency exists that may require immediate dispatch of emergency equipment at a later time, such as a multi-engine airplane landing with a feathered propeller. Fire apparatus would normally remain in quarters awaiting further information.

Alert II: A potential emergency situation exists that requires the fire apparatus to leave quarters and respond to the emergency standby position on the airport. Situations requiring Alert II response would include airplane experiencing major difficulty such as an engine fire or landing gear problems.

Alert III: Used in the event of an imminent emergency or an airplane accident on or near the airport.

These codes are used in crash phone communications to inform the ARFF crews of the apparent seriousness of reported events and direct an appropriate response.

Air traffic control service at Peachtree-DeKalb Airport is provided by a VFR-only tower staffed with FAA controllers. At the time of the accident there were four controllers on duty: a local

controller, ground controller, cab coordinator, and another controller who was in the process of taking over the local control position. The cab coordinator was acting as controller-in-charge, as there were no management personnel present in the facility. The tower is equipped with a single Digital Bright Radar Indicator Tower Equipment (DBRITE) radar display that is used by controllers to maintain awareness of airplane positions Instead, the airplane made a tight left turn and appeared to heading for runway 27. The officer-in-charge of the on site crash fire rescue operation is a pilot; he stated that the airplane appeared to almost stall on the go-around, was flying erratically through the turn, and looked too high to land on runway 27. When the airplane rolled out of the turn it seemed to be pointed right at the trucks, which were stopped between runways 2L and 2R well past the landing threshold of runway 27. The officer-in-charge of the on site crash fire rescue operation also stated that he did not hear any changes in engine sound after the first go-around. The airplane seemed to be running at a high power setting, but with a high angle of attack as well.

The drivers of C-10 and E-10 saw the airplane coming and immediately started moving their vehicles into the grass just south of runway 27. They did not hear the ground controller's instruction to clear the runway, but were doing so anyway because they could see the situation developing. The first truck was able to exit immediately, but was partially blocking the exit of the other truck, so it had to wait a few seconds before it was safe to proceed. They were both off the runway before the airplane reached them. The airplane passed above and behind the vehicles, then turned left and crashed between 2L and 2R slightly south of taxiway F. The firefighters did not notice any flames on the outside of the airplane during flight. They estimated that they reached the crash site within 10 seconds of impact. They foamed the wreckage immediately, but by the time they were able to reach the pilot he was "obviously deceased." The pilot was found on the right side of the airplane, and he did not appear to have been wearing a seat belt or shoulder harness at impact.

The officer-in-charge of the on site crash fire rescue operation stated that PDK is not a 14 Code of Federal Regulations Part 139 airport. Firefighters assigned to station 10 received training in accordance with the requirements of the State of Georgia's Firefighter Standards and Training Council. The fire department uses a checklist covering airport familiarization, geography, lighting, surface markings, fuel storage areas, and a map test. Firefighters are also trained on ATC communications procedures, and communication procedures for use when the tower is closed and assist them in sequencing traffic landing at PDK. According to a tower cab equipment status checklist completed by the local controller at 1137, the DBRITE was displaying radar data from the Dobbins airport surveillance radar system.

WRECKAGE AND IMPACT INFORMATION

Examination of the accident site disclosed that wreckage debris from the airplane was scattered over an area 250 feet long and 45 feet wide. The wreckage path was oriented on a 085 degree magnetic heading. Examination of the airframe revealed that the cockpit and cabin areas of the airframe had sustained extensive fire damage. Additional examination of the airframe also revealed that a 6-inch aft section of the pilot's inboard seat track was missing

from the normally installed position. The missing section of the seat track was located in the freshly disturbed dirt 75 feet west of the main wreckage. There were "broom straw" patterns on both ends of the recovered section of the seat track. The post impact fire was confined to the immediate vicinity of the main wreckage.

During the examination of the airframe, the hydraulic system was also examined. The hydraulic examination disclosed that several pieces of the hydraulic system lines were not recovered from the area of the extensive fire damage. The hydraulic pump assembly was removed from the airframe. The examination of the hydraulic pump failed to reveal a mechanical malfunction, however only a few ounces of fluid were recovered from the pump and reservoir assembly. According to hydraulic system specifications, the system fluid capacity is approximately 64 ounces.

The examination and functional run of the engine failed to disclose a system malfunction or a component failure. Examination of the remainder of the airframe also failed to disclose a mechanical malfunction or the failure of related component assemblies.

MEDICAL AND PATHOLOGICAL INFORMATION

Postmortem examination of the pilot was performed by Dr. Steven Dunton at the office of the County Medical Examiner in Decatur, Georgia. The Forensic toxicology was performed by the FAA Toxicology and Accident Research Laboratory, Oklahoma City, Oklahoma. The tests were negative for carbon monoxide, cyanide, drugs and alcohol.

FIRE

Further examination of the area of heaviest fire damage was performed. No fuel lines ran through this area. Other systems located underneath the pilot's seat included the hydraulic system for the main landing gear and an electrical wire bundle.

Hydraulic power is supplied by an electrically driven power pack behind the control pedestal. The power pack's only function is to supply hydraulic power for operation of the retractable landing gear. This is accomplished by applying hydraulic pressure to the actuator cylinders, which extend or retract the gear and operate the gear down locks. There are no up-locks on this aircraft. The gear is held up by trapped hydraulic pressure. A 30-amp push-pull type circuit breaker switch on the circuit breaker panel protects the electrical portion of the power pack.

The aluminum hydraulic lines, serving the main landing gear, were located under the pilot's seat. In the fire damage area, the hydraulic lines were missing. In addition, flexible (flex line) connectors that were also part of the hydraulic system for the main landing gear were missing. These lines would normally have been located under the pilot's seat along the outboard edge.

The hydraulic fluid in the accident aircraft was MIL-H-5606. Hydraulic fluid has a flash point of

82 degrees C. (180 degrees F.) system pressure drops, the hydraulic pump turns on and stays on until the pressure returns to 1500 pounds per square inch (PSI).

Also, in the area where the flex lines were located, remains of a wire bundle were found. In the area forward of the pilot's seat, the wires were found to be intact with insulation intact and in good condition. As the wires traveled aft, especially in the fire-damage area, intact wires in this area were brittle and two wires had evidence of beading on the ends. One wire was a 30-amp wire that served the flaps. The wire served the down limit switch to down switch in the down flap selector. The wire has power regardless of the flaps' position. If the flaps are in an up position, the power goes to the motor. If the flaps are in the down position, power goes to the ground. There were beads on several conductor strands within the wire. The other was a low amperage stereo wire. There was a bead on the end of one of the conductor strands within the wire. A section of the wire bundle was missing. Further aft where the bundle went along the aft post behind the pilot's seat, the damage to the wires was minimal with some areas of insulation melted.

ADDITIONAL INFORMATION

According to the pilot's handbook, the emergency procedures for a cabin fire are: 1. Master Switch -Off 2. Vents/cabin/heat-Closed (to avoid drafts) 3. Fire Extinguisher-Activate (if available-no fire extinguisher installed in N7317A) 4. Land the airplane as soon as possible to inspect for damage.

The airplane wreckage was released on May 29, 2000 to Mr. Kevin Twist, an insurance adjuster, Atlanta, Georgia.

Pilot Information

Certificate:	Private	**Age:**	60,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	Airplane	**Second Pilot Present:**	No
Instructor Rating(s):		**Toxicology Performed:**	Yes
Medical Certification:	Class 3 Valid Medical--w/ waivers/lim	**Last FAA Medical Exam:**	August 26, 1998
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	
Flight Time:	785 hours (Total, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Cessna	**Registration:**	N7317A
Model/Series:	210N 210N	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	21063560
Landing Gear Type:	Retractable - Tricycle	**Seats:**	6
Date/Type of Last Inspection:	June 10, 1999 Annual	**Certified Max Gross Wt.:**	3800 lbs
Time Since Last Inspection:	86 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	5205 Hrs	**Engine Manufacturer:**	Continental
ELT:	Installed, not activated	**Engine Model/Series:**	IO-520-A
Registered Owner:	SKYCLUB INC	**Rated Power:**	285 Horsepower
Operator:	ROBERT P. BARTON	**Operating Certificate(s) Held:**	None
Operator Does Business As:		**Operator Designator Code:**	

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	PDK ,1000 ft msl	**Distance from Accident Site:**	1 Nautical Miles
Observation Time:	10:55 Local	**Direction from Accident Site:**	360°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	6 knots / None	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	40°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30 inches Hg	**Temperature/Dew Point:**	21°C / 10°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	(PDK)	**Type of Flight Plan Filed:**	None
Destination:		**Type of Clearance:**	VFR
Departure Time:	10:45 Local	**Type of Airspace:**	Class D

Airport Information

Airport:	DEKALB-PEACHTREE AIRPORT PDK	**Runway Surface Type:**	Asphalt
Airport Elevation:	1002 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	2R	**IFR Approach:**	None
Runway Length/Width:	8000 ft / 158 ft	**VFR Approach/Landing:**	Forced landing

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Destroyed
Passenger Injuries:		**Aircraft Fire:**	In-flight
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Fatal	**Latitude, Longitude:**	33.900661,-84.299797(est)

Administrative Information

Investigator In Charge (IIC):	Powell, Phillip
Additional Participating Persons:	JOHN THRELKELD; COLLEGE PARK , GA
Original Publish Date:	March 2, 2001
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=47737