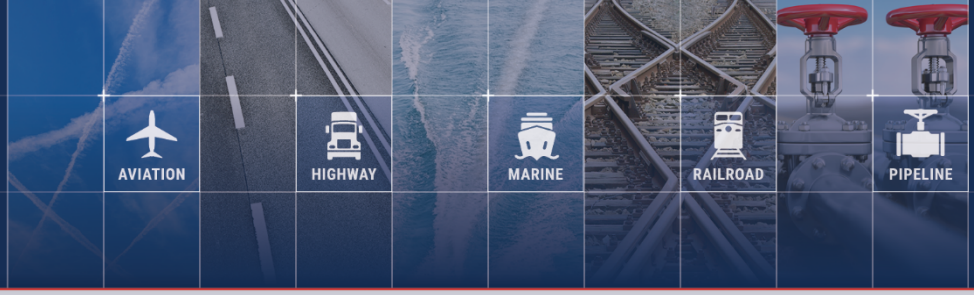

Aviation Investigation Final Report

Location:	Riverwoods, Illinois	**Accident Number:**	CEN12FA086
Date & Time:	November 28, 2011, 22:50 Local	**Registration:**	N59773
Aircraft:	Piper PA-31-350	**Aircraft Damage:**	Substantial
Defining Event:	Fuel exhaustion	**Injuries:**	3 Fatal, 1 Serious, 1 Minor
Flight Conducted Under:	Part 135: Air taxi & commuter - Non-scheduled - Air Medical (Discretionary)		

Analysis

The airplane was dispatched on an emergency medical services flight. While being vectored for an instrument approach, the pilot declared an emergency and reported that the airplane was out of fuel. He said the airplane lost engine power and that he was heading toward the destination airport. The airplane descended through clouds and impacted trees and terrain short of its destination.

No preimpact anomalies were found during a postaccident examination. The postaccident examination revealed about 1.5 ounces of a liquid consistent with avgas within the airplane fuel system. Based on the three previous flight legs and refueling receipts, postaccident calculations indicated that the airplane was consuming fuel at a higher rate than referenced in the airplane flight manual. Based on this consumption rate, the airplane did not have enough fuel to reach the destination airport; however, a 20-knot tailwind was predicted, so it is likely that the pilot was relying on this to help the airplane reach the airport. Regardless, he would have been flying with less than the 45-minute fuel reserve that is required for an instrument flight rules flight. The pilot failed to recognize and compensate for the airplane's high fuel consumption rate during the accident flight. It is likely that had the pilot monitored the gauges and the consumption rate for the flight he would have determined that he did not have adequate fuel to complete the flight.

Toxicology tests showed the pilot had tetrahydrocannabinol and tetrahydrocannabinol carboxylic acid (marijuana) in his system; however, the level of impairment could not be determined based on the information available. However, marijuana use can impair the ability to concentrate and maintain vigilance and can distort the perception of time and distance. As

a professional pilot, the use of marijuana prior to the flight raises questions about the pilot's decision-making.

The investigation also identified several issues that were not causal to the accident but nevertheless raised concerns about the company's operational control of the flight. The operator had instituted a fuel log, but it was not regularly monitored. The recovered load manifest showed the pilot had been on duty for more than 15 hours, which exceeded the maximum of 14 hours for a regularly assigned duty period per 14 Code of Federal Regulations Part 135. The operator stated that it was aware of the pilot's two driving while under the influence of alcohol convictions, but the operator did not request a background report on the pilot before he was hired. Further, the operator did not list the pilot-rated passenger as a member of the flight crew, yet he had flown previous positioning legs on the dispatched EMS mission as the pilot-in-command.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot's inadequate preflight planning and in-flight decision-making, which resulted in a loss of engine power due to fuel exhaustion during approach. Contributing to the accident was the pilot's decision to operate an airplane after using illicit drugs.

Findings

Aircraft	Fuel - Fluid level
Personnel issues	Fuel planning - Pilot
Organizational issues	Operation records - Operator
Personnel issues	Decision making/judgment - Pilot
Personnel issues	Illicit drug - Pilot

Factual Information

History of Flight

Approach	Fuel exhaustion (Defining event)
Approach	Loss of engine power (total)
Emergency descent	Collision with terr/obj (non-CFIT)
Uncontrolled descent	Collision with terr/obj (non-CFIT)

HISTORY OF FLIGHT

On November 28, 2011, about 2250 central standard time, the pilot of Lifeguard N59773, a Piper PA-31-350 Chieftain airplane, declared an emergency, reporting that the airplane was out of fuel, and indicating that the flight was gliding without engine power direct to the destination airport, Chicago Executive Airport (PWK), near Wheeling, Illinois. The emergency medical services (EMS) airplane subsequently sustained substantial damage when it impacted trees and terrain near Riverwoods, Illinois. The airline transport pilot and two passengers on board sustained fatal injuries. A pilot-rated passenger received serious injuries and the medical crew member received minor injuries. The airplane was registered to and operated by Trans North Aviation Ltd. under the provisions of 14 Code of Federal Regulations Part 135 as a non-scheduled, domestic, on-demand, EMS passenger flight. Night visual meteorological conditions prevailed at the time of the accident for the flight, which operated on an activated instrument flight rules (IFR) flight plan. The flight departed from the Jesup-Wayne County Airport (JES), near Jesup, Georgia, about 1900.

According to a load manifest form found in the wreckage, dated November 28, 2011, the crew that flew N59773 from the Crawfordsville Municipal Airport (CFJ), near Crawfordsville, Indiana, to the Perry-Houston County Airport (PXE), near Perry, Georgia, and onto the Palm Beach International Airport (PBI), near West Palm Beach, Florida, listed the pilot-rated passenger as the pilot-in-command and listed the pilot and the medical crewmember as “other crew.” This form indicated that this crew started their duty period at 0700 when they flew from CFJ and they ended their duty period at 1430 in PBI.

According to another load manifest form, also dated November 28, 2011, the crew that flew N59773 from PBI, to JES, and onto PWK listed the pilot as the pilot-in-command and listed the pilot-rated passenger and the medical crewmember as "other crew." This form indicated that this crew started their duty period at 1430 at PBI. This form indicated that they departed from PBI at 1642 and landed at JES at 1830. Fueling records showed an airplane was fueled at JES with 160 gallons of aviation gasoline (avgas) and an additional 5 gallons of avgas, which totaled a combined servicing of 165 gallons of avgas. This manifest form indicated that they departed from JES at 1900 and were destined for PWK. The duty period ending time was not completed.

A review of the recording of the approach controller's frequency revealed that the pilot representing Lifeguard N59773 requested to fly direct to the outer marker navigation aid named PAMME. The controller indicated that the flight had to be taken on a heading to intercept the approach outside PAMME and the controller denied the request. The flight was given that heading for the instrument approach and the pilot then declared an emergency. The controller inquired if the flight was still landing at PWK. The pilot reported that he was unable, the airplane was out of fuel, and that the airplane was "coasting." The controller asked if the field was in sight. The pilot reported negative and asked for the cloud tops. The controller indicated that the cloud deck was 1,400 feet overcast. The pilot responded that the flight was coasting down and that the pilot would report visual contact. The pilot further indicated that the flight was flying direct to PWK. The controller advised the flight of a low altitude alert and the flight acknowledged that alert. The controller again asked if the pilot had the field in sight. The pilot reported affirmative. The flight was cleared for the visual approach to runway 16 and the pilot was informed to cancel the flight's IFR flight plan. The controller further indicated that the change to the airport's advisory frequency was approved. There was no further recorded radio communication from the Lifeguard EMS flight. A transcript of the air traffic controller's communications is appended to the docket associated with this investigation.

The pilot-rated passenger sat in the front right seat of the airplane. During a postaccident telephone interview, he indicated that the flight from PBI to PWK started out normal. While flying over the lower portion of Lake Michigan, the pilot selected the auxiliary fuel tanks to use up all the fuel in the auxiliary tanks. The last quarter of the main tanks was reportedly consumed "pretty fast" as monitored on the gauges. The right fuel flow warning light came on north of PWK. The pilot selected the crossfeed valve to its ON position. The fuel warning light went out. The pilot asked the air traffic controller to proceed direct to the outer marker and the air traffic control indicated that he was unable to grant that request. The fuel light came on again and the pilot declared an emergency. The pilot-rated passenger said that he had no idea of the amount of fuel that remained in the fuel tanks. The right engine subsequently started to shutter. The flight was cleared direct. The cloud tops were at 3,000 feet above mean sea level (msl). The airplane was turned left and then both engines "died" on a west heading. The airplane "coasted." The airplane was in clouds during the descent and popped out of the clouds about 1,400 feet msl where there was about 700 feet of altitude left. The pilot rated passenger made some radio calls. The airplane was turned to a southbound heading. The pilot-rated passenger advised the pilot of suitable landing sites but the flight was unable to get to them. The landing gear was up. Flaps were up. The pilot moved the mixture to idle/cutoff and feathered the engines' propellers. He pointed out a dark spot to the pilot and the pilot turned to it. The airplane scraped the tops of trees. The first tree impacted the pilot's side and it came through the window. Both the pilot and the pilot-rated passenger were "on the flight controls." The controls then went limp. The pilot-rated passenger indicated that he tried to keep the airplane away from the houses and both of his yoke handles broke off. A nearby neighbor found him in the wreckage and asked him if he was "ok." It was about one-half hour before he was placed in an ambulance.

During a postaccident telephone interview, the medical crew member indicated that the purpose of the flight was to fly to PBI to pick up a patient and passenger and then fly them to PWK. The patient and passenger were informed that there would be one or maybe two stops for fuel. The airplane appeared to be topped off at JES. The fueling started on the right side of the airplane and continued to the left side. The fuel pump shut off after about 160 gallons were pumped. The pump was restarted and the airplane was fueled with more fuel. The flight was "ok" until it encountered “bad air” and the flight descended to about 7,000 feet. At one point in the flight, the medical crew member saw that a cockpit gauge indicated that there was one-half hour remaining before reaching the destination. The pilot remarked on how fast the airplane was flying and the ground speed was about 250 to 260 mph. The pilot reached down and switched tanks. The pilot also rocked the airplane’s wings. Both the engines shut off at the same time. Trees were observed once the flight descended through the clouds. During the accident sequence, the airplane’s nose pitched up as the airplane impacted trees. The passenger screamed and then the screaming stopped. The pilot-rated passenger sitting in the co-pilot’s seat advised them to brace. He said that the seat belt dug into him and his seat separated from its floor track. He was able to loosen his belt. He felt the door and its bottom half was open. He pushed open the top half. He did not initially see the pilot-rated passenger. He talked to a woman in a nearby house and related that there was an airplane accident. He heard people by the airplane and went to the airplane. He observed a small fire and told responders of the fire extinguisher location. The medical crew member reported that the pilot was in the front left seat, the pilot-rated passenger was in the front right seat, the patient’s wife was in the rear-facing seat behind the pilot, the patient was belted on the gurney, and he was in the forward-facing seat just in front of the rear cabin door.

The Riverwoods Police Department received an initial 911 phone call about 2250. The first responders found the wreckage near a residence northwest of the intersection or Portwine and Orange Brace roads.

PERSONNEL INFORMATION

Pilot

The 58-year-old pilot held an airline transport certificate with an airplane multi-engine land rating and he held commercial pilot privileges for single engine land airplanes. He held a flight instructor certificate with single engine, multi-engine, and instrument airplane ratings. He also held a type rating in SA-227 airplanes. A Federal Aviation Administration (FAA) 8410-3 Airman Competency/Proficiency Check Form showed that he passed a 1-hour checkride in the PA-31-350 with the operator’s Chief Pilot on June 7, 2011. The operator reported that the pilot had accumulated 6,607 hours of total flight time, 120 hours of total flight time in the PA-31-350, 171 hours of flight time in the 90 days prior to the accident, 61 hours of flight time in the 60 days prior to the accident, 5 hours of flight time in the 24 hours prior to the accident, and 12 hours of flight time in the Chieftain in the 90 days prior to the accident.

He held a first-class medical certificate, dated February 15, 2011, with limitations for hearing

amplification and corrective lenses. The pilot reported on his application for that medical certificate that he had accumulated 6,350 hours of total flight time and 20 hours of flight time in the six months prior to that application. The pilot previously reported that he had a history of convictions for driving under the influence on both May 31, 2002, and February 01, 1997.

The operator initiated a background check in accordance with the Pilot Records Improvement Act of 1996 (PRIA) on the pilot. This PRIA check showed his training records and checkrides at previous employers and also revealed no legal enforcement actions resulting in a finding of a violation pertaining to the pilot. It listed a possible match and gave contact information for a Department of Transportation Compliance and Restoration Section in reference to checking the pilot's driver's record. The operator did not get a background check from the Department of Transportation Compliance and Restoration Section on the pilot. However, the operator was aware of the pilot's history of convictions.

Pilot-rated Passenger

The 24-year-old pilot-rated passenger held a commercial pilot certificate with single engine land, multi-engine land, and instrument airplane ratings. He held a flight instructor certificate with single engine, multi-engine, and instrument airplane ratings. He held a first-class medical certificate, dated February 28, 2011, with no limitations. He recorded in his logbook that he had accumulated 314.3 hours of total flight time, 259.5 hours of pilot in command time, 66.6 hours of multi-engine time, and 7 hours of second in command time in airplanes associated with the operator. The operator's chief pilot indicated in an e-mail that the pilot-rated passenger was compensated by the operator for the positioning flights to PBI and was considered a passenger on the flights from PBI.

AIRCRAFT INFORMATION

The airplane, serial number 31-7652044, was a 1976 Piper PA-31-350, Chieftain, with twin-engines, retractable landing gear, and a conventional semi-monocoque design. The airplane had a maximum gross weight of 7,368 pounds. Two 350-horsepower Lycoming TIO-540-J2BD engines, serial number L-7462-61H and serial number L-1701-68A, powered the airplane. Each engine drove a three-bladed, constant speed, controllable pitch, full feathering Hartzell propeller. The airplanes cockpit was equipped with dual pilot flight controls. According to a major repair and alteration form dated February 11, 1999, a Spectrum Aeromed Inc. Air Ambulance conversion had been installed in the airplane in accordance with supplemental type certificate SA1666GL.

According to the operator's accident report, the airplane's last annual inspection was completed on July 22, 2011. The operator indicated that the airplane had accumulated 17,630 hours of total time at the time of that inspection. An endorsement in the logbook for the airplane's right engine indicated that an installation of a repaired engine was completed on November 18, 2011, and at that time, the Hobbs meter indicated 2832 hours.

The Chieftain's main cabin door was a two-piece door that separated in the middle. The upper half swung up and was held in the open position by a spring-loaded support. The lower half swung down and it housed the entrance steps. To open from the inside, one must push the lock button beside the handle, pull, and lower the bottom half of the door. Then raise the upper half to the locked position. A 23 by 30 inch emergency exit is located in the right forward side of the fuselage.

The fuel system consisted of fuel cell, engine-driven and emergency fuel pumps, fuel boost pumps, control valves, fuel filters, fuel pressure and fuel flow gauges, fuel drains and non-icing fuel tank vents. Fuel could be stored in four flexible fuel cells, two in each wing. The outboard cells hold 40 gallons each and the inboard cells hold 56 gallons each, giving a total of 192 gallons, of which 182 gallons were usable.

The emergency fuel pumps were installed for use in case of an engine driven fuel pump failure, or whenever the fuel pressure fell below 34 pounds per square inch (psi). They were also operated during takeoffs, landings, and for priming the engines. Control switches for the emergency fuel pumps were located in the overhead switch panel to the right of the fuel gauges.

The fuel boost pumps operated continuously and provided fuel under pressure to the other fuel pumps, improving the altitude performance of the fuel system. The fuel boost pumps were activated when the master switch was turned on and continue to operate until the master switch was turned off or the fuel boost pump circuit breakers were pulled off. Fuel boost pump warning lights, mounted at the bottom of the windshield divider post, illuminated when the fuel boost pump pressure was less than three psi.

The fuel management controls were located in the fuel control panel at the base of the pedestal. Located here were the fuel tank selectors, fuel shutoffs and crossfeed controls. During normal operation, each engine was supplied with fuel from its own respective fuel system. The fuel controls on the right controlled the fuel from the right cells to the right engine and the controls on the left controlled the fuel from the left fuel cells to the left engine. For emergencies, fuel from one system can supply the opposite engine through a crossfeed system. The crossfeed valve was intended only for emergencies. The crossfeed control was located in the center of the fuel control panel. A warning light, located on the fuel control panel was incorporated in the firewall fuel shut-off system to indicate that one or both of the shut-off valves were not fully open.

A note in the Pilot's Operating Manual (POM) Description - Airplane and Systems chapter, in part, stated: "The crossfeed system was not to be used for normal operation. When the crossfeed valve was on, be certain fuel selector valve on tank not in use was off. Do not use crossfeed to compensate for an inoperative emergency fuel pump."

Right and left fuel flow warnings lights, mounted at the base of the windshield divider post, illuminated to warn the pilot of an impending fuel flow interruption. The lights were activated

by a sensing probe mounted near each inboard fuel tank outlet. In the event the fuel level near the tank outlet dropped to a point where a fuel flow interruption and power loss could occur, the sensing probe would illuminate its corresponding warning light. The warning light would be on for a minimum of 10 seconds and would remain on if the condition was not corrected.

A 50,000 British thermal unit Janitrol heater installed in the right nose section furnished hot air for cabin heating and windshield defrosting. Heater fuel was supplied from the right wing fuel cells only. Information supplied by the manufacturer indicated that the heater would use about 3.9 pounds, or about .65 gallons of fuel per hour (gph) when in use.

According to the pilot-rated passenger, the pilot reportedly set his power settings from a card that was kept in his window's visor. He indicated that the engines operated "ok" while they were running. The right engine was new and it was installed on the airplane about two and one-half weeks prior to the accident. The pilot-rated passenger also said that the right engine's gauges were not accurate during the accident flight. In addition, the pilot increased the mixture on the right engine about one gph due to its break-in.

The POM General Specifications chapter, in part, stated:

PERFORMANCE

Published figures are for the Standard PA-31-350 airplane flown at gross weight under standard conditions at sea level unless otherwise stated. Performance for a specific airplane may vary from published figures depending upon the equipment installed, the condition of engines, airplane and equipment, atmospheric conditions and piloting technique.

METEOROLOGICAL INFORMATION

At 2252, the recorded weather at PWK was: Wind 350 degrees at 9 knots; visibility 10 statute miles; sky condition overcast 1,400 feet; temperature 2 degrees C; dew point -2 degrees C; altimeter 29.99 inches of mercury.

At 2352, the recorded weather at PWK was: Wind 360 degrees at 9 knots; visibility 10 statute miles; sky condition overcast 1,400 feet; temperature 2 degrees C; dew point -2 degrees C; altimeter 29.97 inches of mercury.

At 2252, the recorded weather at the DuPage Airport (DPA), near West Chicago, Illinois, was: Wind 340 degrees at 11 knots; visibility 10 statute miles; sky condition overcast 1,400 feet; temperature 1 degree C; dew point -3 degrees C; altimeter 29.96 inches of mercury.

At 2352, the recorded weather at DPA, was: Wind 360 degrees at 14 knots gusting to 23 knots; visibility 9 statute miles; overcast 1,000 feet; temperature -1 degree C; dew point – 3 degrees C; altimeter 29.94 inches of mercury.

AIDS TO NAVIGATION

The published inbound course for PWK's instrument landing system (ILS) runway 16 approach was 161 degrees magnetic, with the published straight in decision height of 893 feet msl, with a height above touchdown of 250 feet above ground level (agl). The crossing altitude for the locator outer marker PAMME was 2,279 feet. The distance between PAMME and the touchdown zone was 4.9 nautical miles (nm). The touchdown zone elevation was 643 feet. The published weather minimums for the ILS runway 16 approach were a 300-foot ceiling and three-quarter mile visibility for category A, B, C, and D aircraft. The published weather minimums for the circling approach were a 500-foot ceiling and one-mile visibility for category A and B aircraft. The minimum descent altitude for the circling approach was 1,140 feet msl and the height above the airport was 493 feet agl for category A and B aircraft. The PWK ILS RWY 16 approach plate is appended to the docket associated with this investigation.

AIRPORT INFORMATION

PWK was a tower-controlled airport. The airport had an elevation of 647 feet msl and was served by three intersecting paved runways 16-34, 12-30, and 06-24. Runway 16-34 was a 5,001 foot by 150 foot grooved asphalt runway. Runway 12-30 was a 4,397 foot by 50-foot asphalt runway. Runway 06-24 was a 3,652 foot by 50-foot asphalt runway.

WRECKAGE AND IMPACT INFORMATION

The airplane impacted trees and terrain in a wooded residential neighborhood about 3 nautical miles northeast of PWK. The wreckage path was about 250 feet in length from the first found impacted tree to the main wreckage on a magnetic heading of about 130 degrees. The airplane was found fragmented along the path. The left propeller separated from its engine and was found 32 feet west of the main wreckage. The airplane fuselage came to rest facing about 280 degrees magnetic. An on-site inspection confirmed that the fuselage, empennage, wings, and all flight control surfaces were located within the wreckage debris path. The landing gear were found in the up position in their wheel wells.

The left and right throttle levers were found in the full forward position. Both left and right mixture levers were found in the forward rich position. The left and right propeller levers were found in the forward high rpm position. The Hobbs meter read 2848.8 hours. All four magneto switches were in the on position. The left fuel boost pump switch was in the on position and the right fuel boost pump switch was in the off position. Both the left and right fuel tank selectors were positioned on their respective inboard fuel tanks. The crossfeed valve was found in the on position. All fuel caps were in place in their filler necks. Approximately 1.5 ounces of a liquid consistent with avgas was found within the airplane fuel system. All four electric fuel pumps were operational when electrical power was applied to them. The flap jackscrew extension was consistent with the flaps being in the up position. Left and right engine control continuity was established. Flight control continuity was established.

Both engines' crankshafts were rotated and each engine exhibited gear and valve train continuity. All cylinders produced thumb compression and suction. Both dual magnetos produced sparks at all leads. All removed spark plugs exhibited the appearance of normal combustion when compared to the Champion AV-27 spark plug chart. Both engines' turbocharger impellers spun when rotated by hand. The left and right propellers were found in the feathered position. No airframe or engine preimpact anomalies were found.

MEDICAL AND PATHOLOGICAL INFORMATION

An autopsy was performed on the pilot by the Lake County Coroner's Office. The autopsy listed multiple traumatic injuries as the cause of death.

According to a preemployment drug test report, its results indicated that the pilot was negative for the tests performed on a sample collected from the pilot on April 14, 2011.

The FAA Civil Aerospace Medical Institute prepared a Final Forensic Toxicology Accident Report on toxicological samples taken during the autopsy on the pilot. The report, in part, stated:

Blood unsuitable for analysis of Tetrahydrocannabinol (Marihuana)
0.1077 (ug/ml, ug/g) Tetrahydrocannabinol (Marihuana) detected in Liver
0.0198 (ug/ml, ug/g) Tetrahydrocannabinol (Marihuana) detected in Lung
0.0157 (ug/ml, ug/g) Tetrahydrocannabinol Carboxylic Acid (Marihuana) detected in Liver
0.0024 (ug/ml, ug/g) Tetrahydrocannabinol Carboxylic Acid (Marihuana) detected in Blood

COMPANY INFORMATION

Trans North Aviation Ltd, dba Travel Care International, was a commercial on-demand air taxi operator, which was authorized to conduct Part 135 IFR, visual flight rules (VFR), day, and night operations. The company provided medical air transportation services from two bases. The company employed three pilots and one mechanic. The company operated four airplanes, which included the Piper PA-31 and Cessna 340 airplanes. The company's website indicated they operated bases in Eagle River, Wisconsin, Green Bay, Wisconsin, Chicago, Illinois, and Charleston, South Carolina.

Trans North Aviation Ltd utilized a FAA approved pilot training program that addressed new hire, initial aircraft, recurrent, re-qualification, transition, and upgrade training. The accident pilot had previously completed all required training at the time of the accident and had passed required check rides.

The Director of Operations at Trans North Aviation Ltd monitored all flights and approved all departures. According to the operator, they familiarize themselves "with all available information prior to each flight. This information includes, but is not limited to the length and route of flight, notices to airmen, performance data (such as fuel burn and takeoff data);

departure, en route and destination weather; approach minimums, maintenance items, airworthiness of the aircraft and crew, airport conditions, time and duty logs to ensure the pilot can complete the flight safely."

Aircraft were maintained in accordance with an FAA approved inspection program. All maintenance activity was monitored by their Director of Maintenance.

According to the Trans North Aviation Ltd President, the airplanes' fuel logs were a recommendation from a Department of Defense audit and those logs were not reviewed by management.

FAA records indicated that the operator had been in business for 48 years and that their operating certificate was issued on November 18, 1964.

TESTS AND RESEARCH

A National Transportation Safety Board (NTSB) national resource specialist prepared a performance study. The original flight planning records for the accident flight could not be located. According to the study, an on-line internet service used by the accident pilot, FltPlan.com, was able to re-create the navigation logs for the study. The accident flight plan showed a proposed departure time from JES of 1708, a proposed cruising altitude of 10,000 feet msl en route to PWK, five hours of fuel on board, and it listed DuPage Airport, near West Chicago, Illinois, as an alternate airport. Those navigation logs showed that the 182 gallons of usable fuel available for the Piper Chieftain should have been sufficient for all flight legs that day. The final accident leg from JES to PWK would have required the most fuel. FltPlan.com calculations assumed a fuel burn rate between 34-37 gallons per hour for cruise and the POM indicated a fuel burn between 26-35 gallons per hour (depending on the power setting) with the engines leaned to best economy. The average actual fuel burn computed for the flight legs flown on November 28, 2011, was 47 gallons per hour.

Fuel records recovered from the wreckage indicated that the airplane was filled to its capacity with fuel at CFJ, PXE, and at JES. The fuel records also indicated that only 75 gallons of fuel was added at PBI.

A nominal fuel burn rate of 30 gallons per hour would indicate that landing with a minimum of 22.5 gallons of fuel would meet the 45-minute IFR fuel reserve requirement: with the Chieftain's 182 gallons of usable fuel, the maximum amount of fuel that should be added after a flight conducted under instrument flight rules is 159.5 gallons. N59773 was serviced with 167.3 gallons and 165.0 gallons at PXE and JES respectively.

ADDITIONAL INFORMATION

Code of Federal Regulations Part 135.223, IFR: Alternate airport requirements, in part, stated:

(a) Except as provided in paragraph (b) of this section, no person may operate an aircraft in IFR conditions unless it carries enough fuel (considering weather reports or forecasts or any combination of them) to -

(1) Complete the flight to the first airport of intended landing;

(2) Fly from that airport to the alternate airport; and

(3) Fly after that for 45 minutes at normal cruising speed

Code of Federal Regulations Part 135.263, Flight time limitations and rest requirements, in part, stated:

(c) Time spent in transportation, not local in character, that a certificate holder requires of a flight crewmember and provides to transport the crewmember to an airport at which he is to serve on a flight as a crewmember, or from an airport at which he was relieved from duty to return to his home station, is not considered part of a rest period.

Code of Federal Regulations Part 135.267, Flight time limitations and rest requirements, indicated that 14 hours should not be exceeded for a regularly assigned duty period.

Code of Federal Regulations Part 135.273, Duty Period Limitations and Rest Time Requirements, in part, stated, “Duty period means the period of elapsed time between reporting for an assignment involving flight time and release from that assignment by the certificate holder.”

A report, from the Milwaukee, Wisconsin, Flight Standards District Office (FSDO), generated by their Program Tracking and Reporting Subsystem (PTRS), on their activity between December 1, 2008 and the date of the accident, was reviewed. There were 59 PTRS recorded entries with results relating to the FSDO’s surveillance of Trans North Aviation Ltd. Of those, there were 54 entry results that indicated “S” for satisfactory, 2 entry results that indicated “I” for satisfactory and information provided in comments, and 3 entry results that indicated “F” for follow-up action completed or follow-up activity scheduled.

The FAA posted a web page concerning “Pilot Records Expunction Policy Changes.” The page, in part stated:

What is the Pilot Records Improvement Act (PRIA)?

PRIA is a law that requires airlines to perform background checks on pilots before hiring them. It's designed to make sure that airlines have more information to make good hiring decisions.

How does PRIA work?

PRIA requires an airline to ask the FAA and a pilot's former employers for certain records. These records include records of legal enforcement actions against individuals.

What is the new law?

The Airline Safety and Federal Aviation Administration Extension Act of 2010, signed August 1, 2010, changes how PRIA works. The changes it made require the FAA to change how it handles pilot records.

How did the new law change PRIA?

The new law requires employers to give all the records they must report under PRIA to the FAA. The FAA will put those employer records, along with all the records the FAA must provide under PRIA, into a pilot records database. Airlines will then check the pilot records database to fulfill their PRIA requirements.

How did the new law change FAA policy?

The new law required the FAA to retain certain legal enforcement records until the agency is notified that a pilot has died. Previously, some types of legal enforcement records were expunged after five years. The FAA has suspended this expunction policy while it determines the full scope of the new law's effect on the expunction policy. The law required the FAA to begin keeping the records starting August 1, 2010.

Advisory Circular 120-68E, Pilot Records Improvement Act of 1996, in part, stated:

APPENDIX 8, OVERVIEW AND USE OF FORM 8060-13

NOTE: Consult the Pilot Records Improvement Act (PRIA) Web site at http://www.faa.gov/pilots/lic_cert/pria/ for the most current information on the overview and use of Federal Aviation Administration Form 8060-13, National Driver Register Records Request.

Part I National Driver Register (NDR) Records Request. Part I of the NDR records request is used by the hiring air carrier in operation under Title 14 of the Code of Federal Regulations (14 CFR) Part 121 or 135, air operator under 14 CFR Part 125, or other person (collectively referred to as the “hiring employer”) to request NDR records concerning an individual seeking employment as a pilot with the employer.
…

5. Distribution. NDR requirements vary from state to state and, therefore, it is not practical to establish one firm procedure that will satisfy all requests. Notwithstanding, the requesting employer should begin its NDR request process in the manner described in the latest revision of this advisory circular or in the PRIA Office Procedures for the Air Carrier to discover a

request process that will produce the most reliable and consistent results for the state.
...

11. NDR Data System Match. The hiring employer receives an NDR report that will state that (1) a data system match was not found – meaning that the record of the individual is clean, or that (2) a data system match concerning the motor vehicle driving record of the individual was found and indicated a:
a. Record of suspension from the previous 5-year period, if applicable.
b. Record of revocation from the previous 5-year period, if applicable.
c. Any conviction of driving under the influence of alcohol, if applicable.

12. The NDR Report.
a. A completed NDR report without reference to an action taken against the pilot's driver's license is considered a clean report. If the report does indicate a clean record, add the report to the pilot/applicant's PRIA-related records file and the NDR request process is considered complete.

b. If the report does indicate a problem, however, it will point to a specific state(s) in which the problem(s) occurred. In these cases, the record will indicate a possible match, and the hiring employer is required to conduct further investigation. The hiring employer must disclose this information to the individual in an attempt to verify whether a positive match with the pointer record exists, or if the possible match pertains to another individual with similar identifying information.

(1) If the resulting investigation confirms the individual as a positive match with the pointer record, a second NDR request must then be sent to the state(s) indicated in the initial report, to determine the exact nature of the problem.

(2) If the resulting investigation confirms that the individual is not a match with the pointer record, then along with the results of the investigation the report is considered clean, the matter closed, and the NDR request process completed for that individual.

Pilot Information

Certificate:	Airline transport	**Age:**	58,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):	Airplane multi-engine; Airplane single-engine; Instrument airplane	**Toxicology Performed:**	Yes
Medical Certification:	Class 1 With waivers/limitations	**Last FAA Medical Exam:**	February 15, 2011
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	June 7, 2011
Flight Time:	6607 hours (Total, all aircraft), 120 hours (Total, this make and model), 6485 hours (Pilot In Command, all aircraft), 171 hours (Last 90 days, all aircraft), 61 hours (Last 30 days, all aircraft), 5 hours (Last 24 hours, all aircraft)		

Other flight crew Information

Certificate:	Commercial	**Age:**	24,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Right
Other Aircraft Rating(s):		**Restraint Used:**	
Instrument Rating(s):	Helicopter	**Second Pilot Present:**	No
Instructor Rating(s):	Airplane multi-engine; Airplane single-engine; Instrument airplane	**Toxicology Performed:**	No
Medical Certification:	Class 1 Without waivers/limitations	**Last FAA Medical Exam:**	January 28, 2011
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	
Flight Time:	314 hours (Total, all aircraft), 260 hours (Pilot In Command, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Piper	**Registration:**	N59773
Model/Series:	PA-31-350	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	31-7652044
Landing Gear Type:	Retractable - Tricycle	**Seats:**	6
Date/Type of Last Inspection:	July 22, 2011 Annual	**Certified Max Gross Wt.:**	7368 lbs
Time Since Last Inspection:		**Engines:**	2 Reciprocating
Airframe Total Time:	17630 Hrs as of last inspection	**Engine Manufacturer:**	LYCOMING
ELT:	C91A installed, not activated	**Engine Model/Series:**	TIO-540-J2BD
Registered Owner:	TRANS NORTH AVIATION LTD	**Rated Power:**	350 Horsepower
Operator:	TRANS NORTH AVIATION LTD	**Operating Certificate(s) Held:**	On-demand air taxi (135)
Operator Does Business As:		**Operator Designator Code:**	EBFA

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Night
Observation Facility, Elevation:	PWK,647 ft msl	**Distance from Accident Site:**	3 Nautical Miles
Observation Time:	23:52 Local	**Direction from Accident Site:**	185°
Lowest Cloud Condition:		**Visibility**	10 miles
Lowest Ceiling:	Overcast / 1400 ft AGL	**Visibility (RVR):**	
Wind Speed/Gusts:	9 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	360°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29.96 inches Hg	**Temperature/Dew Point:**	2°C / -2°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Jesup, GA (JES)	**Type of Flight Plan Filed:**	IFR
Destination:	Wheeling, IL (PWK)	**Type of Clearance:**	IFR
Departure Time:	19:00 Local	**Type of Airspace:**	

Airport Information

Airport:	Chicago Executive Airport PWK	**Runway Surface Type:**	
Airport Elevation:	647 ft msl	**Runway Surface Condition:**	
Runway Used:		**IFR Approach:**	Visual
Runway Length/Width:		**VFR Approach/Landing:**	Full stop

Wreckage and Impact Information

Crew Injuries:	1 Fatal, 1 Minor	**Aircraft Damage:**	Substantial
Passenger Injuries:	2 Fatal, 1 Serious	**Aircraft Fire:**	On-ground
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	3 Fatal, 1 Serious, 1 Minor	**Latitude, Longitude:**	42.164443,-87.898056(est)

Administrative Information

Investigator In Charge (IIC):	Malinowski, Edward
Additional Participating Persons:	Robert Hendrickson; Federal Aviation Administration; Washington, DC Michael McClure; Piper; Duncanville, TX John Butler; Lycoming; Arlington, TX
Original Publish Date:	August 29, 2013
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=82408