Aviation Investigation Final Report

Location:	Wichita, Kansas	**Accident Number:**	CEN09LA145
Date & Time:	January 30, 2009, 08:10 Local	**Registration:**	N345JB
Aircraft:	Cessna 421C	**Aircraft Damage:**	Substantial
Defining Event:	Wrong fuel	**Injuries:**	3 Minor
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

During initial climb, the air transport pilot reported a loss of engine power. Unable to return to a runway, the pilot elected to perform a gear-up forced landing to an open field. The twin-engine airplane was substantially damaged during the landing. A line person employed by the fixed base operator (FBO) incorrectly fueled the airplane with 80 gallons of Jet-A instead of 100LL. Two medium single-engine general aviation airplanes based at the FBO had been modified with turbo-prop engines requiring Jet-A fuel. The two modified airplanes were not required by Supplement Type Certificate to modify the fuel filler opening, allowing the airplane to operate with smaller fuel filler openings,which did not comply with certification regulations. Line personnel at the FBO discovered that by rotating the Jet-A nozzle and dispensing at a reduced pressure, Jet-A fuel could be dispensed without using the adapter. Despite having correctly fueled the accident airplane in the past, the line person mistook the accident airplane for one of the converted airplanes and dispensed Jet-A fuel.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The failure of line personnel to ensure that the airplane was serviced with the proper fuel. Contributing to the accident was the Federal Aviation Administration's approval of a Supplemental Type Certificate (STC) which allowed an improper fuel filler opening, and the complacency in non-standard fueling practices by fixed base operator (FBO) line personnel.

Findings

Aircraft	Fuel - Incorrect service/maintenance
Organizational issues	Equip certification/testing - FAA/Regulator
Aircraft	Fuel - Fluid type
Personnel issues	(general) - Ground crew
Personnel issues	Complacency - Ground crew

Factual Information

History of Flight

Prior to flight	Wrong fuel (Defining event)
Initial climb	Loss of engine power (total)
Emergency descent	Off-field or emergency landing

On January 30, 2009, approximately 0810 central standard time, a twin-engine Cessna 421C, N345JB, was substantially damaged during a forced landing following the loss of power on both engines during initial takeoff. The airline transport pilot and the two passengers on board sustained minor injuries during the forced landing. Visual meteorological conditions prevailed and an instrument flight rules flight plan was filed for the Title 14 Code of Federal Regulations Part (CFR) 91 personal flight. The airplane departed Colonel James Jabara Airport (AAO), Wichita, Kansas, at 0808 with the intended destination of Millard Airport (MLE), Omaha, Nebraska.

According to the pilot, he landed the previous night with 100 gallons of fuel on board the airplane. The pilot made a request to line personnel to add an additional 40 gallons of fuel to each tank. The morning of the accident, the pilot performed a normal pre-flight, loaded the passengers on the airplane, and taxied for takeoff. The pilot checked the engine instruments, magnetos, and propellers prior to takeoff.

During takeoff, the pilot noted 2,800 rpm, 39 inches of manifold pressure, and all engine instruments were "in the green." While climbing to 3,000 feet mean sea level, the airplane's engines began to lose power. The pilot noted propeller rpms were still 2,800 but felt as though no "power" was being produced by the engines; the pilot coordinated for an emergency return. While attempting to troubleshoot the malfunction, the pilot assessed that he could not return to the airport and elected to perform a forced landing. The pilot maneuvered around transmission lines and landed gear up in an open field. The pilot called for emergency services on a cell phone and attended to his passengers.

An examination of the airplane revealed that the fuel tanks contained what appeared to be a mixture of 100 low-lead (100LL) and Jet-A fuel. A line person employed by the fixed base operator (FBO), reported to FAA inspectors that he had fueled the accident airplane with 80 gallons of Jet-A.

Of note, two Piper PA-46s based at AAO were configured with Pratt & Whitney PT6A turbo-prop engines through a Supplemental Type Certificarte (STC) which does not require a modification of the fuel filler opening. The STC modified airplanes operate with a smaller fuel filler opening than required by Title 14 CFR 23.973. The STC modified airplanes fuel filler openings have placards notifying of the use of Jet-A fuel in accordance with 14 CFR 23.1557.

The accident airplane's fuel filler openings were modified in accordance with airworthiness directive 87-21-02 R1 to prevent the "flattened" Jet-A fuel nozzles from entering the fuel filler ports. The placard near the right main fuel tank filler cap was worn and unreadable. The placard near the left main fuel tank filler cap was legible and was in accordance with the FAA approved airplane flight manual.

The FBO's Jet-A fuel truck had the "flattened" nozzle, so the line personnel discovered that the STC modified PA-46s could be refueled without the adapter by rotating the nozzle and dispensing fuel at a reduced pressure. This method became the normal way for the accident line person to refuel the two modified PA-46 airplanes, so the line person reported that he incorrectly thought the accident airplane required Jet-A fuel despite having refueled the accident airplane several times previously.

Pilot Information

Certificate:	Airline transport; Commercial	**Age:**	61,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):	None	**Toxicology Performed:**	No
Medical Certification:	Class 1 With waivers/limitations	**Last FAA Medical Exam:**	August 1, 2008
Occupational Pilot:	UNK	**Last Flight Review or Equivalent:**	October 21, 2008
Flight Time:	22053 hours (Total, all aircraft), 49 hours (Total, this make and model), 15038 hours (Pilot In Command, all aircraft), 84 hours (Last 90 days, all aircraft), 35 hours (Last 30 days, all aircraft), 2 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Cessna	**Registration:**	N345JB
Model/Series:	421C	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	421C0494
Landing Gear Type:	Retractable - Tricycle	**Seats:**	8
Date/Type of Last Inspection:	October 6, 2008 Annual	**Certified Max Gross Wt.:**	7450 lbs
Time Since Last Inspection:	81 Hrs	**Engines:**	2 Reciprocating
Airframe Total Time:	8034 Hrs at time of accident	**Engine Manufacturer:**	Continental
ELT:	Installed, activated, did not aid in locating accident	**Engine Model/Series:**	GTSIO-520-L
Registered Owner:	FLY HIGH INC	**Rated Power:**	375 Horsepower
Operator:	FLY HIGH INC	**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	AAO,1421 ft msl	**Distance from Accident Site:**	3 Nautical Miles
Observation Time:	07:54 Local	**Direction from Accident Site:**	185°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	10 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	250°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.14 inches Hg	**Temperature/Dew Point:**	-1°C / -9°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Wichita, KS (AAO)	**Type of Flight Plan Filed:**	IFR
Destination:	Omaha, NE (MLE)	**Type of Clearance:**	IFR
Departure Time:	08:08 Local	**Type of Airspace:**	

Airport Information

Airport:	Colonel James Jabara Airport AAO	**Runway Surface Type:**	
Airport Elevation:		**Runway Surface Condition:**	
Runway Used:		**IFR Approach:**	None
Runway Length/Width:		**VFR Approach/Landing:**	Forced landing

Wreckage and Impact Information

Crew Injuries:	1 Minor	**Aircraft Damage:**	Substantial
Passenger Injuries:	2 Minor	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	3 Minor	**Latitude, Longitude:**	37.769138,-97.209945(est)

Administrative Information

Investigator In Charge (IIC):	Aguilera, Jason
Additional Participating Persons:	Richard Terrell; FAA FSDO; Wichita, KS Steve Miller; Cessna Aircraft Company; Wichita, KS
Original Publish Date:	May 12, 2009
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=73289