National Transportation Safety Board
Aviation Accident Final Report

Location:	Winslow, AZ	**Accident Number:**	ANC06LA021
Date & Time:	03/04/2006, 1445 MST	**Registration:**	N8322C
Aircraft:	Piper PA-32R-300	**Aircraft Damage:**	Substantial
Defining Event:		**Injuries:**	2 Minor
Flight Conducted Under:	Part 91: General Aviation - Personal		

Analysis

The certificated private pilot, with one passenger, was on a cross-country personal flight under Title 14, CFR Part 91. Just after takeoff, when the airplane was about 200 feet above the ground, the engine began to run rough and lose power. Emergency procedures did not restore power, and the airplane collided with a barbwire fence during an off-airport forced landing, sustaining substantial damage to the wings, fuselage, and empennage. The airplane was equipped with a recently installed factory-remanufactured Textron Lycoming IO-540 engine. Postaccident investigation revealed a grayish, soft, rubbery material partially blocking the ports of the fuel flow divider's metering pin. There was no debris discovered in the interior of the fuel injector servo, or in the fuel injector's inlet screen. According to a representative of Textron Lycoming, fuel system components on factory-remanufactured engines are shipped separately. It is the responsibility of the receiving maintenance technician to install the fuel system components on the engine, and ensure that no debris enters the fuel line or fuel flow divider during the installation process. A Safety Board senior metallurgist who examined the gray foreign material was unable to identify the source, but reported it consisted of agglomerations of smaller particles, consistent with a Teflon-like material. The Safety Board metallurgist also reported that the rubbery material was not consistent with fuel supply line material, and no additional debris was found inside the fuel line or within the fuel injector servo.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The presence of a foreign material/substance in the fuel system, which partially blocked the fuel flow divider, and resulted in a loss of engine power during takeoff-initial climb, and an emergency landing. A factor associated with the accident was unsuitable terrain for a forced landing.

Findings

Occurrence #1: LOSS OF ENGINE POWER(TOTAL) - NONMECHANICAL
Phase of Operation: TAKEOFF - INITIAL CLIMB

Findings
1. (C) FUEL SYSTEM,FUEL FLOW DIVIDER/DISTRIBUTOR - BLOCKED(PARTIAL)
2. (C) FUEL SYSTEM - FOREIGN MATERIAL/SUBSTANCE

Occurrence #2: FORCED LANDING
Phase of Operation: EMERGENCY LANDING AFTER TAKEOFF

Findings
3. (F) TERRAIN CONDITION - NONE SUITABLE

Occurrence #3: ON GROUND/WATER COLLISION WITH OBJECT
Phase of Operation: EMERGENCY LANDING

Findings
4. OBJECT - FENCE

Factual Information

On March 4, 2006, about 1445 mountain standard time, a Piper PA-32R-300 airplane, N8322C, sustained substantial damage following a loss of engine power and subsequent forced landing, about 2 miles south of the Winslow-Lindbergh Regional Airport, Winslow, Arizona. The airplane was being operated as a visual flight rules (VFR) cross-country personal flight under Title 14, CFR Part 91, when the accident occurred. The certificated private pilot and the sole passenger sustained minor injuries. Visual meteorological conditions prevailed, and a VFR flight plan was in effect. The intended routing of the flight was from Lincoln, Nebraska, to Palm Springs California, with a fuel stop in Winslow. The accident flight originated at the Winslow-Lindbergh Regional Airport, Winslow, about 1445.

During a telephone conversation with the National Transportation Safety Board investigator-in-charge on March 4, the pilot reported that after completing the uneventful flight between Lincoln and Winslow, he purchased about 50 gallons of fuel, and then departed on the final flight leg to Palm Springs. He said that just after takeoff, when the airplane was about 200 feet above the ground, the engine began to run rough, and lose power. The pilot said that after performing the engine emergency procedures, he was unable to restore sufficient engine power to sustain flight, and he selected a forced landing area among rolling hills. He stated that during the emergency descent, just before touch down, all engine power was lost. During the forced landing roll, the airplane struck a barbwire fence, pivoted to the left, and collapsed the main landing gear. The airplane sustained substantial damage to the wings, fuselage, and empennage.

According to the pilot/owner, the airplane was equipped with a recently installed factory-remanufactured Textron Lycoming IO-540 engine. The pilot's maintenance provider located in Lincoln preformed the engine installation, about 20 hours before the accident.

The airplane was retrieved from the accident site and transported to Phoenix, Arizona.

On March 24, 2006, a Federal Aviation Administration (FAA) airworthiness inspector from the Scottsdale Flight Standards District Office, along with an air safety investigator from Textron Lycoming, conducted an engine exam and test run of the accident engine. The FAA inspector reported that the engine remained attached to the airframe, and once the engine was started, it ran rough and would not produce full power. A subsequent internal inspection of the engine's fuel flow divider revealed a grayish, soft, rubbery material partially blocking the ports of the flow divider's metering pin.

The recovered material, along with the fuel flow divider, fuel injector servo, and a portion of fuel line that connected the fuel injector servo to the fuel flow divider fuel supply line, was sent to the National Transportation Safety Board's Materials Laboratory for examination. A Safety Board senior metallurgist reported that the grayish-colored rubbery material consisted of agglomerations of smaller particles, consistent with Teflon like material, showing a significant fluorine elemental peak. Each mass measured less than 0.06 inches in maximum dimension with individual particles estimated to be a few thousands of an inch in size, which would break apart into smaller clumps when probed. The metallurgist reported that the rubbery material was not consistent with the fuel supply line material, and no additional debris was found inside the fuel line or within the fuel injector servo. There was no debris discovered in the interior of the fuel injector servo, or in the fuel injector's inlet screen.

A senior manager for Textron Lycoming's materials laboratory reported to the NTSB that when factory-remanufactured engines are shipped, the fuel injector servo assembly is not installed on the engine. He said that once the engine has been test-run at the factory, and before the engine is shipped to the customer, or to the customer's maintenance provider, the fuel injector servo is removed from the engine, and placed inside the engine-shipping crate. He stated that the fuel flow divider assembly remains attached to the engine, and that the fuel line which connects the fuel flow divider and the fuel injector servo, remains connected to the fuel flow divider. The other end of the fuel line is then capped-off during shipment. It is the responsibility of the maintenance technician to install the fuel control servo on the engine, connect the fuel line, and ensure that no debris enters the fuel line or fuel flow divider during the process.

The Safety Board released the fuel system components to the owner's representatives on November 13, 2006.

Pilot Information

Certificate:	Private	**Age:**	60, Male
Airplane Rating(s):	Single-engine Land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	Seatbelt, Shoulder harness
Instrument Rating(s):	Airplane	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 3 With Waivers/Limitations	**Last Medical Exam:**	05/01/2004
Occupational Pilot:		**Last Flight Review or Equivalent:**	05/01/2004
Flight Time:	2839 hours (Total, all aircraft), 1900 hours (Total, this make and model), 2464 hours (Pilot In Command, all aircraft), 24 hours (Last 90 days, all aircraft), 11 hours (Last 30 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Manufacturer:	Piper	**Registration:**	N8322C
Model/Series:	PA-32R-300	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	No
Airworthiness Certificate:	Normal	**Serial Number:**	32R-7680093
Landing Gear Type:	Retractable - Tricycle	**Seats:**	6
Date/Type of Last Inspection:	01/01/2006, Annual	**Certified Max Gross Wt.:**	3600 lbs
Time Since Last Inspection:	20 Hours	**Engines:**	1 Reciprocating
Airframe Total Time:	6679 Hours	**Engine Manufacturer:**	Lycoming
ELT:	Installed, activated, did not aid in locating accident	**Engine Model/Series:**	IO-540-KIA5D
Registered Owner:	Ronald D. Craig, Trustee, Bruce A. Miller	**Rated Power:**	300 hp
Operator:	Ronald D. Craig	**Air Carrier Operating Certificate:**	None

Meteorological Information and Flight Plan

Observation Facility, Elevation:		**Observation Time:**	
Distance from Accident Site:		**Condition of Light:**	Day
Direction from Accident Site:		**Conditions at Accident Site:**	Visual Conditions
Lowest Cloud Condition:	Clear	**Temperature/Dew Point:**	
Lowest Ceiling:	None	**Visibility**	10 Miles
Wind Speed/Gusts, Direction:	15 knots, 180°	**Visibility (RVR):**	
Altimeter Setting:		**Visibility (RVV):**	
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Winslow, AZ (KINW)	**Type of Flight Plan Filed:**	VFR
Destination:	PALM SPRINGS, CA (KPSP)	**Type of Clearance:**	None
Departure Time:	1445 MST	**Type of Airspace:**	

Airport Information

Airport:	Winslow-Lindbergh Regional (KINW)	**Runway Surface Type:**	Asphalt
Airport Elevation:	4941 ft	**Runway Surface Condition:**	Dry
Runway Used:	22	**IFR Approach:**	None
Runway Length/Width:	7499 ft / 150 ft	**VFR Approach/Landing:**	None

Wreckage and Impact Information

Crew Injuries:	1 Minor	**Aircraft Damage:**	Substantial
Passenger Injuries:	1 Minor	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	2 Minor		

Administrative Information

Investigator In Charge (IIC):	Clinton O Johnson	**Adopted Date:**	04/25/2007
Additional Participating Persons:	Michael E Brown; Federal Aviation Administration; Scottsdale, AZ Mark Platt; Textron Lycoming; Williamsport, PA		
Publish Date:			
Investigation Docket:	NTSB accident and incident dockets serve as permanent archival information for the NTSB's investigations. Dockets released prior to June 1, 2009 are publicly available from the NTSB's Record Management Division at pubinq@ntsb.gov, or at 800-877-6799. Dockets released after this date are available at http://dms.ntsb.gov/pubdms/.		