LYCOMING

Air Safety Investigation

Single Engine Final Report

Mishap Date:	July 11, 2012	**Mishap Time (24 hr.):**	1240 MST
Aircraft Registration:	N718JT	**Air Safety Investigator:**	Mark W. Platt
Aircraft Manufacturer:	Bunch Matthew 2005	**Aircraft Model:**	Cozy-Canard III
Location:	Winslow, AZ	**Aircraft S/N:**	Bunch 1
On Scene Examination:	No	**Aircraft Damage:**	Destroyed
Federal IIC:	Patrick Jones	**NTSB Report#:**	WPR12LA302

Engine:	**Engine**
Model	O-320-E2D
Serial Number	L-25183-27A
Total Time	Hours Since Field O/H
Crankshaft S/N	unknown
Case Match #	1708

Propeller:	**Manufacturer**	**Part Number**	**Serial Number**
	unknown	unknown	unknown

Injuries:	**Number**	**Fatal**	**Serious**	**Minor**	**None**
Crew	1	0	1	0	0
Passengers	1	1	0	0	0
Ground		0	0	0	

Registered Owner: Tischler Joseph F
[redacted]
Thousand Oaks, CA 91360

Operator: Pilot/owner

Pilot: Joseph Tischler

Medical, Date Issued:
Pilot Rating:

Summary:

On July 11, 2012, about 1240 Mountain Standard Time (MST), an experimental Bunch-Cozy Canard III, registered as N718JT, impacted terrain during takeoff at Winslow, Arizona. The private pilot sustained serious injuries, and the passenger was fatally injured. The owner/pilot was operating the airplane under the provisions of 14 Code of Federal Regulations (CFR) Part 91. The airplane was destroyed impact forces and there was no fire. The cross-country personal flight was departing Winslow-Lindbergh Regional Airport (INW) about 1240, with an unconfirmed destination. Visual meteorological conditions prevailed, and no flight plan had been filed.

Engine Data

Model	Serial Number	Total Time
O-320-E2D	L-25183-27A	Hours Since Field O/H

Above engine Information taken from: Dataplate

Case Match # 1708 Engine S/N on Case: L-25183-27A

Crankshaft S/N: unknown

Last Annual Inspection by: Date

Last Overhaul by: Date

Maintenance Records Attached? ☐ Yes ☒ No

On-Scene Exam? ☐ Yes ☒ No

Propeller Attached? ☒ Yes ☐ No

Was Engine Disturbed Prior to Your Arrival? ☒ Yes ☐ No

Does Engine Appear to be run able? ☐ Yes ☒ No

Does Crankshaft Rotate? ☒ Yes ☐ No

Evidence of Fire? ☐ Yes ☒ No

Comments:

There was no National Transportation Safety Board or Lycoming Engines travel to the mishap site. Inspectors from the Federal Aviation Administration (FAA) responded to the accident site. The aircraft was subsequently removed from the site and transported to the facilities of Air Transport, Phoenix, Arizona, where a subsequent examination was conducted July 24, 2012.

Engine Data

Propeller

Manufacturer	Part Number	Serial Number
unknown	unknown	unknown

Propeller Type ☐ Metal ☒ Wood ☐ Composite ☐ Unknown

Propeller Blade Serial Numbers:

Blade 1 n/a Blade 2 n/a

Blade 3 n/a Blade 4 n/a

Propeller Governor

Manufacturer	Part Number	Serial Number
n/a	n/a	n/a

Gasket Screen Condition:

Governor Oil Line:

Properly Secured? ☐ Yes ☐ No ☐ Unknown ☒ N/A

Correct Line Nuts? ☐ Yes ☐ No ☐ Unknown ☒ N/A

Correct Fittings? ☐ Yes ☐ No ☐ Unknown ☒ N/A

Propeller Comments:

The two bladed wooden propeller remained attached at the crankshaft flange. The wooden/composite covered propeller blades had been splintered and separated with about 9 inches of blade material remaining near the hub.

Engine Data

Fuel System ☒ Injection ☐ Carburetor

Manufacturer: Airflow Performance Model: FM-100 Setting: 5010005

Serial. No.: 20611448 Floats: ☐ Metal ☐ Composite ☐ Plastic

Fuel Screens

Carburetor/Injector Inlet: ☒ Clean ☐ Contaminated ☐ Unknown

Aircraft Main Fuel Strainer: ☐ Clean ☐ Contaminated ☐ Unknown

Flow Divider ☒ N/A

Manufacturer: _____ Part No.: _____ Serial No.: _____

Evidence of Fuel Found? ☐ Yes ☐ No ☐ Unknown

Injector Nozzles: ☐ N/A

Type: ☐ One Piece ☒ Two Piece ☐ Unknown

Condition: ☒ Open ☐ Plugged ☐ Unknown

Fuel Pump: ☒ Diaphragm ☐ Geared ☐ Unknown ☐ None

Manufacturer: unknown Part No.: unknown Serial # / Date Code: unknown

Fuel System Comments:

The subject engine was originally delivered from Lycoming as a normally aspirated (carbureted) engine and had been field modified with a fuel injection system. The installed fuel system is manufactured by Airflow Performance.
The Ney fuel injection nozzles were installed by way of STC SE 8628 SW.

The fuel injection servo had been displaced from the engine due to the forces of impact. The fracture surfaces exhibited signatures consistent with overload.

The throttle and mixture controls remained secure at their respective control arms of the servo.

The fuel lines at the fuel nozzles and divider manifold remained secure at each fitting.

The fuel injection nozzles remained secure at each cylinder with the fuel line attached. The nozzles remained free of obstruction to flow.

The fuel pump was not removed.

Engine Data

Ignition System:

Magnetos:

☒ Left or ☐ Dual Magneto

Manufacturer: Slick Model: 4371 P/N: S/N: 04091936

Impulse Coupling? ☒ Yes ☐ No Functioning? ☒ Yes ☐ No ☐ Unknown

Timing Checked? ☒ Yes ☐ No Results: 25° BTDC #1

Damage: None

Right Magneto

Manufacturer: unknown Model: unknown P/N: unknown S/N: unknown

Impulse Coupling? ☐ Yes ☐ No Functioning? ☐ Yes ☐ No ☐ Unknown

Timing Checked? ☐ Yes ☐ No Results:

Damage: None

Magneto Comments:

Reference the "Engine Observations" narrative for more information.

Spark Plugs

Manufacturer: Champion Type: REM-37BY SI 1042 Approved? ☒ Yes ☐ No

1 Top	undamaged electrode, oil soaked	1 Bottom	Undamaged electrode, normal color
2 Top	undamaged electrode, oil soaked	2 Bottom	Undamaged electrode, normal color
3 Top	undamaged electrode, oil soaked	3 Bottom	Undamaged electrode, normal color
4 Top	Undamaged electrode, normal color	4 Bottom	Undamaged electrode, normal color
5 Top		5 Bottom	
6 Top		6 Bottom	
7 Top		7 Bottom	
8 Top		8 Bottom	

Spark Plug Comments:

The spark plugs were secure at each position with their respective spark plug lead attached. The spark plugs were removed, examined and photographed. The spark plug electrodes remained mechanically undamaged, and according to the Champion Spark Plugs "Check-A-Plug" chart AV-27, the spark plug electrodes displayed coloration consistent with normal operation. The static oil soaking of the spark plugs (as noted) was attributed to the engine positioning at the mishap site and post recovery.

Ignition Harness

Tested: ☐ Yes ☒ No Condition: Good

Comments:

The ignition harness was attached at the respective magneto electronic ignition and each spark plug.

Engine Data

Starter:

Manufacturer: not recorded
Part No.: not recorded Serial No.: not recorded

Comments: The starter was securely attached at the mounting pad, with the electrical connection secure at the post.

Alternator:

Manufacturer: not recorded
Part No.: not recorded Serial No.: not recorded

Comments: The alternator was securely attached at the mounting pad, with the electrical connections secure at each post.

Generator:

Manufacturer: n/a
Part No.: n/a Serial No.: n/a

Comments:

Vacuum Pump:

Manufacturer: not recorded
Part No.: not recorded Serial No.: not recorded

Comments: The rear-mounted vacuum pump was secure at the mounting pad. The vacuum pump was not removed for examination.

☐ Stand-by Pump or ☐ Aux. Pump:

Manufacturer:
Part No.: Serial No.:

Lubrication System:

Oil Suction Screen:	☐ Clean	☐ Contaminated	☒ Unknown	
Oil Pressure Screen:	☐ Clean	☐ Contaminated	☐ Unknown	☒ N/A
Oil Filter:	☐ Clean	☐ Contaminated	☒ Unknown	☐ N/A
Oil Cooler Integrity:	☐ Secure	☐ Leaking	☒ Unknown	☐ N/A
Oil Cooler Hoses:	☐ Tight	☐ Leaking	☒ Unknown	☐ N/A

Oil System Comments:

The oil filter was secure at the mounting pad and was not removed for examination. The oil suction screen was secure at the mounting and was not removed for examination. There was no evidence of pre-mishap metal contamination observed at the rocker box areas when opened for examination.

Engine Data

Turbo System: ☒ **Page Not Applicable on this engine model.**

☐ **Single or** ☐ **Left**

Manufacturer: _____

Part No.: _____ Serial No.: _____

Rotate? ☐ Yes ☐ No Functioning? ☐ Yes ☐ No ☐ Unknown

Damage: _____

☐ **Right**

Manufacturer: _____

Part No.: _____ Serial No.: _____

Rotate? ☐ Yes ☐ No Functioning? ☐ Yes ☐ No ☐ Unknown

Damage: _____

Density Controller ☐ **Not Applicable on this engine model.**

Manufacturer: _____

Part No.: _____ Serial No.: _____

Differential Control ☐ **Not Applicable on this engine model.**

Manufacturer: _____

Part No.: _____ Serial No.: _____

Variable Absolute Controller ☐ **Not Applicable on this engine model.**

Manufacturer: _____

Part No.: _____ Serial No.: _____

Slope Controller ☐ **Not Applicable on this engine model.**

Manufacturer: _____

Part No.: _____ Serial No.: _____

Manifold Pressure Relief Valve ☐ **Not Applicable on this engine model.**

Manufacturer: _____

Part No.: _____ Serial No.: _____

Exhaust Bypass Valve ☐ **Not Applicable on this engine model.**

Manufacturer: _____

Part No.: _____ Serial No.: _____

Comments:

Engine Observations

The subject wreckage and engine were examined July 24, 2012, at the facilities of Air Transport, Phoenix, Arizona, under the auspices of the National Transportation Safety Board, Investigator in charge (NTSB-IIC).

The powerplant is a four cylinder, air cooled, direct drive, horizontally opposed, normally aspirated (fuel injected), internal combustion engine rated at 150hp @ 2700rpm. The subject engine was originally shipped from Lycoming Engines as a carbureted engine and had been field modified to fuel injected.

The subject aircraft is configured in the “pusher” style; therefore, the engine is situated with the crankshaft flange facing aft. For the purposes of clarification, all references to right and left positions will be made as if viewing the rear of the engine.

The bottom spark plugs were removed, examined and photographed. The crankshaft was rotated by hand utilizing the propeller. The crankshaft was free and easy to rotate in both directions. "Thumb" compression was observed in proper order on all four cylinders; however, the number one cylinder produced a notably weaker thumb compression when compared to the others. Air could be heard leaking into the exhaust system pipe. The complete valve train was observed to operate in proper order, and appeared to be free of any pre-mishap mechanical malfunction. Normal "lift action" was observed at each rocker assembly. Clean, uncontaminated oil was observed at all four rockerbox areas. Mechanical continuity was established throughout the rotating group, valve train and accessory section during hand rotation of the crankshaft. The top spark plugs were removed, examined and photographed. The combustion chamber of each cylinder was examined through the spark plug holes utilizing a lighted borescope. The combustion chambers remained mechanically undamaged, and there was no evidence of foreign object ingestion. The tops of each piston was devoid of significant carbon build-up The valves were intact and undamaged. There was no evidence of valve to piston face contact observed. The blue painted cylinder fin area denoting nitrite cylinder barrels was white in color.

The gas path and combustion signatures observed at the spark plugs, combustion chambers and exhaust system components displayed coloration consistent with normal operation. There was no oil residue observed in the exhaust system gas path.

The left magneto remained secure at the mounting pad with the distributor cap secure. The left magneto impulse coupler could be heard clicking during hand rotation of the crankshaft. The magneto timing was observed at 25 degrees BTDC cylinder #1, which was within specification. The magneto powered all of the top spark plugs. The magneto was not removed.

The right electronic ignition system could not be identified and remained secure at the magneto mounting pad. The spark plug leads remained secure and were connected to the bottom spark plugs. The ignition module was not removed.