



AVIATION



HIGHWAY



MARINE



RAILROAD



PIPELINE

Aviation Investigation Final Report

Location:	Dayton, Ohio	Accident Number:	IAD05LA144
Date & Time:	September 30, 2005, 10:18 Local	Registration:	N62610
Aircraft:	Howard Whyte Nieuport 28	Aircraft Damage:	Substantial
Defining Event:		Injuries:	1 Serious
Flight Conducted Under:	Part 91: General aviation - Air race/show		

Analysis

During takeoff, a white "puff" of smoke was observed to exit the exhaust stack, and the engine lost power. The propeller began to "windmill," and the pilot observed the tachometer, which was driven by the right magneto's P-lead, "go to zero." The pilot attempted to restart the engine without result and performed a forced landing. During the landing, the airplane nosed over and was substantially damaged. Examination of the engine's ignition system revealed that the ends of the wire leads that went into the magneto cases were equipped with spring type spark plug terminal contacts, instead of solid phenolic or ceramic insulated eyelets or P-lead fittings. No insulation in the access holes for the contactors was present. No means to keep the spring type terminal contacts from migrating under vibration was installed, and there was no mechanism to prevent contact with the magneto cases. The engine was delivered originally without P-lead fittings. In their place were two brass knurled nuts. After the pilot advised the engine manufacturer's sales distributor of the discrepancy, the sales distributor then mistakenly shipped the spring type spark plug terminal contacts to the pilot.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: A loss of engine power due to the installation of incorrect spring type terminal contacts which were accidentally supplied by the engine distributor.

Findings

Occurrence #1: LOSS OF ENGINE POWER(TOTAL) - MECH FAILURE/MALF

Phase of Operation: TAKEOFF - INITIAL CLIMB

Findings

1. (C) IGNITION SYSTEM,MAGNETO GROUNDING LEAD (P-LEAD) - INCORRECT

Occurrence #2: FORCED LANDING

Phase of Operation: EMERGENCY DESCENT/LANDING

Occurrence #3: IN FLIGHT COLLISION WITH TERRAIN/WATER

Phase of Operation: EMERGENCY LANDING

Findings

2. TERRAIN CONDITION - GRASS

Factual Information

HISTORY OF FLIGHT

On September 30, 2005, about 1018 eastern daylight time, an amateur built Nieuport 28, N62610, was substantially damaged during a forced landing, after takeoff from Wright Patterson Air Force Base (FFO), Dayton, Ohio. The certificated private pilot was seriously injured. Visual meteorological conditions prevailed, and no flight plan was filed for the local aerial demonstration flight, which was conducted under 14 CFR Part 91.

The airplane was departing on its first demonstration flight as part of the "Dawn Patrol World War I Rendezvous" which was hosted by the National Museum of the United States Air Force.

After taking off from a grassy area on the museum's grounds, witnesses observed a white "puff" of smoke exit the exhaust stack, and the engine began to lose power. The propeller began to "windmill," and the pilot observed the tachometer, which was driven by the right magneto's P-lead, "go to zero." The pilot attempted to restart the engine without result and performed a forced landing in the grass, approximately 150 feet from his departure point. During the landing, the airplane touched down nose low, the landing gear collapsed, and the airplane nosed over.

PERSONNEL INFORMATION

The pilot held a mechanic certificate with ratings for airframe and powerplant, and a private pilot certificate with a rating for airplane single-engine land. He reported a total flight time of 380 hours, 39.5 of which were in make and model.

AIRCRAFT INFORMATION

The airplane was issued a certificate of airworthiness on June 10, 2004. The airplane's most recent condition inspection was completed on July 15, 2005. At the time of the inspection, the airplane had accrued 40.5 total hours of operation.

METEOROLOGICAL INFORMATION

A weather observation, taken about 23 minutes prior to the accident, reported, winds from 180 degrees at 2 knots, 7 statute miles visibility, few clouds at 25,000 feet, temperature 54 degrees Fahrenheit, dew point 46 degrees Fahrenheit, and an altimeter setting of 30.18 inches of mercury.

WRECKAGE AND IMPACT INFORMATION

Examination of the wreckage revealed that lower, right wing leading edge exhibited crush damage. The right wheel assembly had separated from the landing gear. The landing gear mounts had been crushed, deformed, and had folded back against both the fuselage and lower wing panels. The engine mounts were broken, the propeller was shattered and the rudder was damaged.

Powerplant and Fuel System Examination

The airplane was equipped with an Aeromotors M-14D, 9-cylinder radial engine. It was manufactured on December 18, 2000.

Continuity of the intake system, exhaust system, valve train, and crankshaft was confirmed. Both the oil and mechanically driven fuel pumps rotated freely without binding.

The fuel valve was in the open position. Fuel samples taken from the fuel quantity indicator, showed no signs of water or contamination, and the fuel gascolator showed no signs of staining or sediment.

The carburetor fuel inlet screen was intact and showed no discoloration or debris. The venturi was clear, the diaphragm was intact, and no corrosion or debris was discovered in the float bowl. A fluid sample obtained from the float bowl was consistent in color with 100LL aviation gasoline. No visible contamination was discovered. When the fluid sample was applied to a coupon containing water-finding paste, the paste did not indicate the presence of water.

Ignition System Examination

Continuity of the ignition switch in the "OFF, LEFT, RIGHT, and BOTH" positions was confirmed.

All spark plugs were removed for inspection, their electrodes were intact, were gray in color, with some evidence of oil and carbon fouling.

Both Magnetos were examined, and their timing was checked. The exterior of both magnetos were undamaged except the left magneto was missing its bail. Internal examination revealed that the ends of the silicone jacketed wire leads that went into the magneto cases were equipped with spring type spark plug terminal contacts, instead of solid phenolic or ceramic insulated eyelets or P-lead fittings.

Further examination revealed that no insulation in the access holes for the contactors was present. No means to keep the spring type terminal contacts from migrating under vibration was installed, and there was no mechanism to prevent contact with the magneto cases.

TESTS AND RESEARCH

In the days prior to the accident flight, the airplane was carried to the museum via truck and then reassembled. On the day of the accident, the engine was run up, and oil pressure, temperatures, and the magnetos were checked with no anomalies noted.

Previous Engine Related Problems

During an interview the pilot stated that he had experienced a problem with the engine momentarily "burping." The pilot further described this as the engine "quitting" for less than a second while in cruise but never during takeoff. He reported that the engine tachometer would "drop to zero" during the "burp," and the engine would then recover and "run fine."

Each time the burp occurred, the pilot called the engine manufacturer's sales distributor for troubleshooting help. The sales distributor recommended that the pilot perform some maintenance tasks and then fly the airplane. These tasks included checking all of the fluid lines for blockage, the filters for blockage and contamination, pressurizing the induction system to look for leaks, checking the magneto timing, checking and adjusting the valves, continuity and operational checks of the ignition switch and wiring, checking the magnetos for defects, checking the hoses and connections for leaks, and inspecting the primer system for leaks.

These items were all accomplished individually after each "burp" and the airplane was then operated for 5 or 6 hours without any problem before the "burp" would occur again.

The problem was never isolated and was still an unknown discrepancy at the time of the accident.

ADDITIONAL INFORMATION

A review of email correspondence between the sales distributor and the pilot revealed that the engine was delivered originally without P-lead fittings. In their place the pilot received two installed brass knurled nuts. These nuts, known as "shorting plugs," had an internal O-ring and were installed over the access holes for shipment or storage. After the pilot pointed out the discrepancy, the sales distributor then mistakenly shipped the spring type spark plug terminal contacts to the pilot.

Corrective Actions

As a result of this investigation the sales distributor, reviewed their records to assure that no other engines had been shipped with improper leads and advised their customers via email of the dangers of this type of installation.

Pilot Information

Certificate:	Private	Age:	52, Male
Airplane Rating(s):	Single-engine land	Seat Occupied:	Single
Other Aircraft Rating(s):	None	Restraint Used:	
Instrument Rating(s):	None	Second Pilot Present:	No
Instructor Rating(s):	None	Toxicology Performed:	No
Medical Certification:	Class 3 With waivers/limitations	Last FAA Medical Exam:	May 1, 2004
Occupational Pilot:	No	Last Flight Review or Equivalent:	July 1, 2004
Flight Time:	380 hours (Total, all aircraft), 40 hours (Total, this make and model), 360 hours (Pilot In Command, all aircraft), 48 hours (Last 90 days, all aircraft), 14 hours (Last 30 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Howard Whyte	Registration:	N62610
Model/Series:	Nieuport 28	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	Yes
Airworthiness Certificate:	Experimental (Special)	Serial Number:	6261
Landing Gear Type:	Tailwheel	Seats:	1
Date/Type of Last Inspection:	July 1, 2005 Annual	Certified Max Gross Wt.:	1636 lbs
Time Since Last Inspection:		Engines:	1 Reciprocating
Airframe Total Time:	40.5 Hrs as of last inspection	Engine Manufacturer:	Aeromotors S.A.
ELT:	Not installed	Engine Model/Series:	M-14D
Registered Owner:	On file	Rated Power:	220 Horsepower
Operator:	On file	Operating Certificate(s) Held:	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	Condition of Light:	Day
Observation Facility, Elevation:	FFO,823 ft msl	Distance from Accident Site:	
Observation Time:	09:55 Local	Direction from Accident Site:	
Lowest Cloud Condition:	Few / 25000 ft AGL	Visibility	7 miles
Lowest Ceiling:	None	Visibility (RVR):	
Wind Speed/Gusts:	2 knots / 0 knots	Turbulence Type Forecast/Actual:	/
Wind Direction:	180°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	30.18 inches Hg	Temperature/Dew Point:	12°C / 8°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Dayton, OH (FFO)	Type of Flight Plan Filed:	None
Destination:	(FFO)	Type of Clearance:	None
Departure Time:	10:16 Local	Type of Airspace:	

Airport Information

Airport:	Wright-Patterson AFB FFO	Runway Surface Type:	Grass/turf
Airport Elevation:	823 ft msl	Runway Surface Condition:	Dry
Runway Used:	27	IFR Approach:	None
Runway Length/Width:	2150 ft / 100 ft	VFR Approach/Landing:	None

Wreckage and Impact Information

Crew Injuries:	1 Serious	Aircraft Damage:	Substantial
Passenger Injuries:		Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	1 Serious	Latitude, Longitude:	39.775001,-84.110557

Administrative Information

Investigator In Charge (IIC):	Gunther, Todd
Additional Participating Persons:	Jeff Bowling; FAA FSDO-05; Cincinnati, OH
Original Publish Date:	February 26, 2007
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.nts.gov/Docket?ProjectID=62578

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