



Aviation Investigation Final Report

Location:	Paso Robles, California	Accident Number:	WPR17FA089
Date & Time:	April 23, 2017, 09:12 Local	Registration:	N6190
Aircraft:	APPLEBY NIEUPORT 28	Aircraft Damage:	Substantial
Defining Event:	Loss of control in flight	Injuries:	1 Fatal
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The airline transport pilot of the experimental amateur-built World War I fighter replica departed from a private airstrip for a local flight. The airplane climbed, turned left, and entered the downwind leg for the runway. Shortly thereafter the airplane descended in a steep nose down attitude until it impacted terrain. Signatures observed at the accident site and the damage to the airplane were consistent with a near vertical impact attitude into terrain.

Postaccident examination of the airplane revealed that an elevator flight control cable rod end had separated from its turnbuckle connection, which resulted in the pilot losing pitch control of the airplane. No safety wire was found at the connection of the turnbuckle and the separated cable rod end, even though it should have been safety wired according to proper maintenance procedure. A review of the airplane's maintenance logbook revealed no maintenance documented for work performed on the elevator or elevator cables. It could not be determined when or by whom the elevator turnbuckle was connected without being properly safety wired. It is likely that the unsecured connection gradually loosened over time until it finally disconnected during the accident flight.

According to the airplane's mechanic, the flight control cables and turnbuckle assemblies that were contained in the interior of the airplane's fuselage (including the section of elevator cable found disconnected) were not accessible during routine inspections. The mechanic further stated this portion of the flight control cable and turnbuckle assemblies would even be difficult to inspect with the fuselage's fabric covering removed, due to the plywood paneling and wood stringers in that area. A window in the empennage allowed for inspections of the elevator control attachments only in the tail, and the rudder control attachments could be inspected externally. Therefore, the mechanic was unable to inspect the cables and turnbuckle assemblies contained in the interior of the airplane's fuselage.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The failure of unknown personnel to properly safety an elevator control cable turnbuckle, which disconnected in flight resulting in loss of pitch control. Contributing to the accident was the inadequate design of the experimental airplane, which did not provide a mechanism for accessing the entire flight control system during routine inspections.

Findings

Personnel issues	(general) - Other
Aircraft	Elevator control system - Incorrect service/maintenance
Aircraft	Elevator control system - Failure
Aircraft	Elevator control system - Inadequate inspection
Aircraft	Pitch control - Attain/maintain not possible
Aircraft	Fuselage main structure - Design

Factual Information

History of Flight

Approach-VFR pattern downwind	Loss of control in flight (Defining event)
Uncontrolled descent	Collision with terr/obj (non-CFIT)

On April 23, 2017, about 0912 Pacific daylight time, an experimental amateur-built Nieuport 28 biplane, N6190, sustained substantial damage when it impacted terrain about 4 miles east of Paso Robles Municipal Airport (PRB), Paso Robles, California. The airline transport pilot was fatally injured. The airplane was registered to C C Air Corporation and was being operated by the pilot under the provisions of Title 14 *Code of Federal Regulations (CFR)* Part 91. Visual meteorological conditions prevailed, and no flight plan had been filed. The local personal flight departed from Bonel Airport (95CA), Whitney Garden, California, about 0907.

A witness located about 1 mile south of 95CA, heard the airplane take off, observed the airplane turn left to the cross-wind leg of the traffic pattern, and then observed it turn left again to the downwind leg of the traffic pattern. Another witness located about 1/2 mile west of the accident site, reported observing the airplane in a steep nose-down attitude just before it impacted the ground.

Pilot Information

Certificate:	Airline transport	Age:	54, Male
Airplane Rating(s):	Single-engine land; Single-engine sea; Multi-engine land	Seat Occupied:	Front
Other Aircraft Rating(s):	Glider	Restraint Used:	4-point
Instrument Rating(s):	Airplane	Second Pilot Present:	No
Instructor Rating(s):	Airplane multi-engine; Airplane single-engine	Toxicology Performed:	Yes
Medical Certification:	Class 3 With waivers/limitations	Last FAA Medical Exam:	May 20, 2014
Occupational Pilot:	No	Last Flight Review or Equivalent:	
Flight Time:	(Estimated) 7170 hours (Total, all aircraft)		

The pilot, age 54, held an airline transport pilot certificate with ratings for airplane multi-engine land and single-engine land, airplane single-engine sea, and glider. He also held a flight instructor certificate with airplane single-engine, multi-engine, and instrument ratings. The pilot's most recent third-class Federal Aviation Administration (FAA) airman medical certificate was issued on May 20, 2014, with the limitation to have available glasses for near vision. The pilot reported on the application for that medical certificate that he had accumulated 7,170 total hours of flight experience, of which 100 hours were in the previous 6 months.

The pilot's logbooks were not located during the investigation.

Aircraft and Owner/Operator Information

Aircraft Make:	APPLEBY	Registration:	N6190
Model/Series:	NIEUPORT 28 NO SERIES	Aircraft Category:	Airplane
Year of Manufacture:	1976	Amateur Built:	
Airworthiness Certificate:	Experimental (Special)	Serial Number:	AA102
Landing Gear Type:	N/A; Skid	Seats:	1
Date/Type of Last Inspection:	April 5, 2017 Condition	Certified Max Gross Wt.:	1600 lbs
Time Since Last Inspection:		Engines:	1 Reciprocating
Airframe Total Time:	348.9 Hrs as of last inspection	Engine Manufacturer:	Gnome
ELT:	Not installed	Engine Model/Series:	9-N
Registered Owner:	On file	Rated Power:	160 Horsepower
Operator:	On file	Operating Certificate(s) Held:	None

The single-seat, fixed-gear biplane, was a World War I fighter replica, that was built in 1976 and acquired by the pilot in 1993. It was powered by a 160-horsepower, reciprocating, rotary Gnome 9-N, engine. The engine was equipped with a fixed pitch Falcon Manufacturing model 160-Gnome, propeller.

A review of the airframe logbook revealed that all maintenance and inspections had been accomplished by the same airframe and powerplant mechanic since the pilot acquired the airplane. An entry dated March 30, 1994, at an airframe time of 318 hours, indicated that the airframe was stripped, inspected, cleaned, painted, and a 160 horsepower Gnome engine was installed. On November 8, 1995, at 95CA, the airplane was disassembled for shipment. On November 29, 1995, at 95CA, the airplane was reassembled and inspected, and certified for flight. On March 23, 2016, at an airframe total time of 345.9 hours, the airplane's fabric covering was replaced, and the airplane was subsequently painted. The most recent condition inspection was completed on April 5, 2017, at an airframe total time of 348.9 hours.

The logbook indicated that the airplane was flown 5 times in 2016 for a total time of 3 hours. No flights were logged in 2017. No elevator or elevator control cable maintenance was documented in the airplane's logbook.

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	Condition of Light:	Day
Observation Facility, Elevation:	PRB,838 ft msl	Distance from Accident Site:	5 Nautical Miles
Observation Time:	08:53 Local	Direction from Accident Site:	90°
Lowest Cloud Condition:	Clear	Visibility	10 miles
Lowest Ceiling:	None	Visibility (RVR):	
Wind Speed/Gusts:	9 knots / None	Turbulence Type Forecast/Actual:	/
Wind Direction:	320°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	29.98 inches Hg	Temperature/Dew Point:	13°C / 8°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	WHITLEY GARDEN, CA (95CA)	Type of Flight Plan Filed:	None
Destination:	WHITLEY GARDEN, CA (95CA)	Type of Clearance:	None
Departure Time:	09:07 Local	Type of Airspace:	Class G

At 0853, the recorded weather conditions at PRB were wind from 320° at 9 knots, visibility 10 miles, sky clear, temperature 13° C, dew point 8° C, and an altimeter setting of 29.99 inches of mercury.

Airport Information

Airport:	BONEL 95CA	Runway Surface Type:	
Airport Elevation:	1030 ft msl	Runway Surface Condition:	Vegetation
Runway Used:	17	IFR Approach:	None
Runway Length/Width:	2000 ft / 50 ft	VFR Approach/Landing:	Traffic pattern

Wreckage and Impact Information

Crew Injuries:	1 Fatal	Aircraft Damage:	Substantial
Passenger Injuries:		Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	1 Fatal	Latitude, Longitude:	35.669166,-120.548614(est)

Examination of the accident site by the National Transportation Safety Board (NTSB) investigator-in-charge and an FAA inspector revealed that the airplane impacted the ground in a flat wheat field at an

elevation of about 1,055 ft mean sea level. All the major components of the airplane were located at the accident site. The first identified point of contact was an area of disturbed dirt that measured about 2 ft long, 3 ft wide, and 12 inches deep, in which the airplane's propeller was embedded. Wreckage debris was confirmed to an area within about 10 ft of the main wreckage. The airplane's bank and pitch angles at impact were estimated to be about 30° left-wing-down and about 80° nose-down respectively.

The fuselage came to rest inverted on a heading of about 145° magnetic, and it was displaced to the left and folded over the top of the upper left wing, which was embedded in the terrain. Fuel was observed leaking near the center of the wreckage.

The upper and lower left wings were partially attached, oriented nearly parallel to the fuselage, and sustained leading-edge compression damage throughout their wing spans. The left aileron was attached at all its respective points and sustained damage to the outboard third. The left main wheel and attachments had separated, and a 4-inch section of the wheel was crushed inward.

The upper and lower right wings remained partially attached to the main fuselage and had sustained damage about mid-span and leading-edge compression damage throughout their wing spans. The right aileron was attached at all its respective points. The right main wheel was observed to be relatively intact.

The main cockpit area sustained severe impact damage. Several flight instruments had separated from the instrument panel. The tachometer displayed an engine rpm of about 2,040 rpm and the airspeed indicator indicated about 87 mph. The empennage and fuselage aft of the cockpit area, was relatively intact. The rudder and elevators remained attached.

Flight control continuity was established to the ailerons and rudder. The elevator control cable that resulted in the elevator trailing-edge down movement was intact, and the control cable that resulted in elevator trailing-edge up movement was found disconnected at its turnbuckle connection located within the belly of the airplane. No evidence of any safety wire or safety clips was observed on either end of the turnbuckle assembly. The end of the turnbuckle where the rod end should have been connected was undamaged, and the threads on the rod end and within the barrel of the turnbuckle were undamaged. All remaining turnbuckles throughout the airplane's flight control system were safety wired.

The engine was embedded into the ground about at the impact angle. Both magnetos remained attached, and several engine accessories were separated. Both wood propeller blades were buried in the dirt. One blade separated near the hub, and the other blade was separated and splintered about mid-span. Examination of the engine revealed no evidence of any mechanical malfunction or failure that would have precluded normal operation.

Medical and Pathological Information

The San Luis Obispo County Coroner's Office, San Luis Obispo, California, conducted an autopsy on the pilot. The medical examiner determined that the cause of death was blunt force trauma.

The FAA's Bioaeronautical Sciences Research Laboratory, Oklahoma City, Oklahoma, performed toxicological testing on the pilot. The results for the testing were negative for carbon monoxide, cyanide, volatiles, and all tested for drugs.

Additional Information

According to FAA regulations, experimental airplanes are required to receive a conditional inspection every 12 months that is to be performed by an airframe and powerplant mechanic in accordance with 14 *CFR* Part 43, Appendix D. Appendix D outlines requirements in part, to inspect all systems and components for improper installation, apparent defects, and unsatisfactory operation. Flight and engine controls are to be inspected for improper installation and improper operation. Further, all systems are to be inspected for improper installation, poor general condition, apparent and obvious defects, and insecurity of attachment.

According to the mechanic, who performed the maintenance on the airplane, the flight control cables and turnbuckle assemblies that were contained in the interior section of the airplane's fuselage (including the section of elevator cable that was found disconnected) were not accessible during routine or condition inspections. A window in the empennage allowed for inspections of the elevator control attachments only in the tail, and the rudder control attachments could be inspected externally. The mechanic stated that even when the fuselage's fabric skin was removed, the entire flight control cables and turnbuckle assemblies in the belly were not readily accessible to be observed because of the plywood paneling and wood stringers in the area.

FAA Advisory Circular 43.13B, Acceptable Methods, Techniques, and Practices – Aircraft Inspection and Repair, Chapter 10, Paragraph 7-179 states "safety all turnbuckles with safety wire using either the double or single wrap, or with any appropriately approved special safetying device complying with the requirements of FAA Technical Standard Order TSO-C21."

Administrative Information

Investigator In Charge (IIC):	Nixon, Albert
Additional Participating Persons:	Wilbert Robinson; Federal Aviation Administration; San Jose, CA
Original Publish Date:	February 26, 2019
Last Revision Date:	
Investigation Class:	Class
Note:	The NTSB traveled to the scene of this accident.
Investigation Docket:	https://data.nts.gov/Docket?ProjectID=95043

The National Transportation Safety Board (NTSB) is an independent federal agency charged by Congress with investigating every civil aviation accident in the United States and significant events in other modes of transportation—railroad, transit, highway, marine, pipeline, and commercial space. We determine the probable causes of the accidents and events we investigate, and issue safety recommendations aimed at preventing future occurrences. In addition, we conduct transportation safety research studies and offer information and other assistance to family members and survivors for each accident or event we investigate. We also serve as the appellate authority for enforcement actions involving aviation and mariner certificates issued by the Federal Aviation Administration (FAA) and US Coast Guard, and we adjudicate appeals of civil penalty actions taken by the FAA.

The NTSB does not assign fault or blame for an accident or incident; rather, as specified by NTSB regulation, “accident/incident investigations are fact-finding proceedings with no formal issues and no adverse parties ... and are not conducted for the purpose of determining the rights or liabilities of any person” (Title 49 *Code of Federal Regulations* section 831.4). Assignment of fault or legal liability is not relevant to the NTSB’s statutory mission to improve transportation safety by investigating accidents and incidents and issuing safety recommendations. In addition, statutory language prohibits the admission into evidence or use of any part of an NTSB report related to an accident in a civil action for damages resulting from a matter mentioned in the report (Title 49 *United States Code* section 1154(b)). A factual report that may be admissible under 49 *United States Code* section 1154(b) is available [here](#).