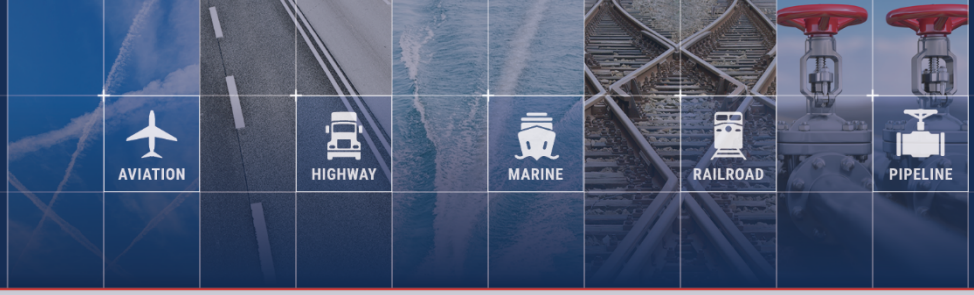

Aviation Investigation Factual Report

Location:	Breckenridge, Texas	**Accident Number:**	CEN12LA227
Date & Time:	April 4, 2012, 14:10 Local	**Registration:**	N14HP
Aircraft:	Grumman F8F-1	**Aircraft Damage:**	Substantial
Defining Event:	Loss of control in flight	**Injuries:**	1 Fatal
Flight Conducted Under:	Part 91: General aviation - Personal		

On April 4, 2012, at 1410 central daylight time, a Grumman model F8F-1 airplane, N14HP, was substantially damaged when it collided with trees and terrain during a low-altitude aerobatic maneuver performed shortly after takeoff from the Stephens County Airport (BKD), Breckenridge, Texas. A postimpact fire ensued. The commercial pilot was fatally injured. The airplane was registered to and operated by the Breckenridge Aviation Museum under the provisions of 14 Code of Federal Regulations Part 91 without a flight plan. Day visual meteorological conditions prevailed for the personal flight that was originating at the time of the accident.

A witness to the accident reported that he was in his airplane preparing to depart when the accident airplane was taxiing toward runway 17. He told the accident pilot, via radio, that he wanted to watch the accident airplane takeoff ahead of him. The accident pilot reportedly announced over the radio that he was going to perform a Half Cuban Eight aerobatic maneuver after takeoff and then overfly the runway in the opposite direction. The witness stated that after takeoff the accident airplane climbed about 150 feet in a shallow climb before it pitched-up into a near vertical climb. The airplane continued the climb in an inside loop before leveling out, inverted, about 500 feet above the runway, heading in the opposite direction of the takeoff. The witness then saw the airplane's wings roll suddenly before the airplane entered a near vertical descent. The witness described the final portion of the aerobatic maneuver as a split-S maneuver, or a descending half loop, from which the airplane did not recover before impacting the terrain on a southeasterly heading. The witness stated that the airplane exploded on impact and a postimpact fire ensued.

Another witness reported seeing the airplane pitch-up into a steep climb shortly after takeoff. The airplane continued in the steep climb to about 1,000 feet above the runway where it entered a right descending roll. The witness stated that the airplane was rolling toward wings level when it descended into trees located off the south end of runway 17. The witness noted that the airplane appeared to be recovering from a dive when it impacted terrain.

Pilot Information

Certificate:	Commercial	**Age:**	77
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Single
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	Airplane	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	Yes
Medical Certification:	Class 2 With waivers/limitations	**Last FAA Medical Exam:**	June 24, 2011
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	March 8, 2011
Flight Time:	16689 hours (Total, all aircraft), 2008 hours (Total, this make and model), 16227 hours (Pilot In Command, all aircraft), 59 hours (Last 90 days, all aircraft), 28 hours (Last 30 days, all aircraft), 0 hours (Last 24 hours, all aircraft)		

According to Federal Aviation Administration (FAA) records, the pilot, age 77, held a commercial pilot certificate with single and multi-engine land airplane and instrument airplane ratings. His last aviation medical examination was completed on June 24, 2011, when he was issued a second-class medical certificate with a restriction for near vision corrective lenses.

The most recent pilot logbook entry was dated April 2, 2012. At that time, the pilot had accumulated 16,689.4 hours total flight time, of which 16,227.2 hours were logged as pilot-in-command. He had logged 10,498.2 flight hours in single-engine airplanes and 6,191.2 hours in multi-engine airplanes. He had accumulated 805.1 hours in actual instrument conditions, 895.0 hours in simulated instrument conditions, and 681.3 hours at night. The logbook contained a summary of his flight experience in numerous aircraft types, including the accident airplane make/model. According to the summary, he had logged 10,045.4 flight hours in warbird classification airplanes, including 2,007.8 hours in Grumman airplane models F8F-1 and F8F-2. He had logged 288.0 hours in the past year, 138.3 hours in the prior 6 months, 58.7 hours in the previous 90 days, and 27.5 hours in the last 30 days. The pilot did not log a flight within 24 hours of the accident. The pilot's last flight review was completed on March 8, 2011, in a Beechcraft model B60 airplane.

The pilot reportedly was as an experienced aerobatic pilot who had routinely performed at airshows throughout his flying career.

Aircraft and Owner/Operator Information

Aircraft Make:	Grumman	**Registration:**	N14HP
Model/Series:	F8F-1	**Aircraft Category:**	Airplane
Year of Manufacture:	1945	**Amateur Built:**	
Airworthiness Certificate:	Limited (Special)	**Serial Number:**	90446
Landing Gear Type:	Retractable - Tailwheel	**Seats:**	1
Date/Type of Last Inspection:	March 22, 2012 Annual	**Certified Max Gross Wt.:**	8800 lbs
Time Since Last Inspection:	0.9 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	2759.6 Hrs at time of accident	**Engine Manufacturer:**	Pratt & Whitney
ELT:		**Engine Model/Series:**	R-2800-34W
Registered Owner:	Breckenridge Aviation Museum	**Rated Power:**	2100 Horsepower
Operator:	Breckenridge Aviation Museum	**Operating Certificate(s) Held:**	None

The accident airplane was a 1945 Grumman model F8F-1, serial number (s/n) 90446. A 2,100-horsepower Pratt & Whitney model R-2800-34W reciprocating engine, s/n P333510, powered the airplane. The airplane was equipped with a constant speed, four blade, Aeroproducts model A-642-G1 metal propeller. The tail wheel-equipped airplane was configured with a single seat. It had a maximum takeoff weight of 8,800 pounds and was certified for aerobatic flight.

The accident airplane was a flying museum-quality, World War II-era airplane, owned and operated by the Breckenridge Aviation Museum, Breckenridge, Texas. The airplane was used predominately as a static display museum attraction. However, the airplane was also flown at airshows around the United States that featured World War II-era airplanes. On May 22, 1987, the FAA issued the airplane a special airworthiness certificate, limited category, for exhibition purposes. The airframe had accumulated a total service time of 2,759.6 hours at the time of the accident. The last annual inspection was completed on March 22, 2012, at 2,758.7 total airframe hours. The engine had accumulated 133.3 hours since its last major overhaul, which was completed during January 2008. The propeller had accumulated 440.9 hours since it last overhaul, which was completed during April 2002.

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	BKD,1284 ft msl	**Distance from Accident Site:**	1 Nautical Miles
Observation Time:	14:15 Local	**Direction from Accident Site:**	360°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	8 knots / None	**Turbulence Type Forecast/Actual:**	/ None
Wind Direction:	280°	**Turbulence Severity Forecast/Actual:**	/ N/A
Altimeter Setting:	29.87 inches Hg	**Temperature/Dew Point:**	21°C / 7°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Breckenridge, TX (BKD)	**Type of Flight Plan Filed:**	None
Destination:	Breckenridge, TX (BKD)	**Type of Clearance:**	None
Departure Time:	14:10 Local	**Type of Airspace:**	Class G

At 1415, the airport's automated surface observing system reported: wind 280 degrees at 8 knots, sky clear, visibility 10 miles, temperature 21 degrees Celsius, dew point 7 degrees Celsius, altimeter setting 29.88 inches of mercury.

Airport Information

Airport:	Stephens County Airport BKD	**Runway Surface Type:**	Asphalt
Airport Elevation:	1284 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	17	**IFR Approach:**	None
Runway Length/Width:	4998 ft / 100 ft	**VFR Approach/Landing:**	None

The Stephens County Airport (BKD), located about 2 miles south of Breckenridge, Texas, was served by three runways: 17/35 (4,998 feet by 100 feet, asphalt); 13/31 (2,400 feet by 50 feet, asphalt); and 4/22 (2,399 feet by 50 feet, asphalt). The airport elevation was 1,284 feet mean sea level (msl). The elevation of the runway 17 threshold was 1,255 feet msl. A two-light

precision approach path indicator (PAPI) was installed for runway 17.

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Substantial
Passenger Injuries:		**Aircraft Fire:**	On-ground
Ground Injuries:	N/A	**Aircraft Explosion:**	On-ground
Total Injuries:	1 Fatal	**Latitude, Longitude:**	32.718887,-98.89167(est)

A postaccident investigation was completed by FAA Inspectors assigned to the Lubbock Flight Standards District Office (FSDO). The FAA on-site investigation confirmed that all airframe structural and flight control components were located at the accident site. The initial impact was located in a field about 1/2 mile south of the runway 17 departure threshold. The initial impact crater contained one propeller blade. The right wing had separated from the fuselage and was located about 25 yards south of the initial impact point. The main wreckage, which consisted of the fuselage, left wing, and empennage, was found entangled within trees about 35 yards southeast of the initial impact point. The engine was located about 100 yards south of the initial impact point. The propeller hub had separated from the engine and the propeller blades exhibited blade-twisting.

All observed structural component failures were consistent with overstress separation. Flight control continuity could not be established between the individual flight control surfaces and their respective cockpit controls due to damage; however, all separations were consistent with overstress. The flap position could not be determined due to impact damage. The fuselage, including the cockpit and instrument panel, was fragmented and damaged by fire. The postaccident examination of the airframe, engine, and propeller revealed no evidence of mechanical malfunctions or failures that would have precluded normal operation.

Medical and Pathological Information

On April 5, 2012, an autopsy was performed on the pilot at the Tarrant County Medical Examiner's District Morgue, located in Fort Worth, Texas. The cause of death for the pilot was attributed to multiple blunt-force injuries sustained during the accident. The autopsy report indicated that a majority of the heart and brain were not available for examination and that the degree of injury to the extremities precluded further evaluation of those areas.

The FAA Civil Aerospace Medical Institute (CAMI) in Oklahoma City, Oklahoma, performed toxicology tests on samples obtained during the pilot's autopsy. No carbon monoxide or cyanide was detected in blood samples. Ethanol was detected in blood and liver samples, but was attributed to

sources other than ingestion. Rosuvastatin was detected in liver and blood samples. Rosuvastatin, brand name Crestor, is a medication to treat high cholesterol and prevent heart disease.

According to FAA medical documentation, the pilot reported having cataract surgery to his Aviation Medical Examiner (AME) in 2001. In March 2004, he requested a waiver for that procedure although he had already been granted a second class certificate in 2001, 2002, and 2003. In June of 2004 he reported a preoperative physical and a second cataract surgery (on the other eye). His second class certificate was issued routinely in 2004, 2005, and 2006. In 2007, the pilot reported having high cholesterol that was managed with Zetia and Crestor (ezetimibe and rosuvastatin, both cholesterol lowering agents). In 2008, the pilot reported the use of levothyroid (levothyroxine, thyroid hormone replacement). His second class certificates were issued by the AME on each of these visits.

In 2009, per the FAA record, the pilot provided his AME results of a pharmacologic nuclear stress test along with results of cholesterol and thyroid testing. All were results were classified as being "normal." The FAA record also included a copy of a physician note from the pilot's cardiologist made during an office visit on May 14, 2010. In this note, the diagnoses included hyperlipidemia, coronary atherosclerosis of native coronary artery, peripheral vascular disease, and hypertension. The past history section detailed a PTCA (percutaneous transluminal coronary angioplasty) with stent placement of the right coronary artery and a PTA (percutaneous transluminal angioplasty) with stent placement in the popliteal artery. Laboratory results from the May 14, 2010, office visit indicated that the pilot had an elevated glucose level and normal cholesterol and thyroid hormone levels. In June 2010, the AME noted the laboratory results but did not comment on the recorded historical elements and issued a second class medical certificate. The FAA medical record also contained reports of an echocardiogram, another nuclear stress test, and a carotid Doppler examination being completed during 2011. The results of these tests were reported as being "normal" and the pilot was issued a second class medical certificate from his AME on June 24, 2011.

Additional Information

Federal Aviation Regulation 91.303 required that aerobatic flight be conducted above 1,500 feet above ground level unless a specific waiver has been granted. According to FAA documentation, an aerobatic waiver had not been approved for flights over BKD. The Lubbock FSDO received a request for an aerobatic box in 2009, but a request for additional information made to the requester was not fulfilled and the request was not approved.

Administrative Information

Investigator In Charge (IIC):	Fox, Andrew
Additional Participating Persons:	Daniel J Vengen; Federal Aviation Adminstration - Lubbock FSDO; Lubbock, TX Paul Arrambide; Federal Aviation Adminstration - Lubbock FSDO; Lubbock, TX
Report Date:	May 21, 2014
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=83298