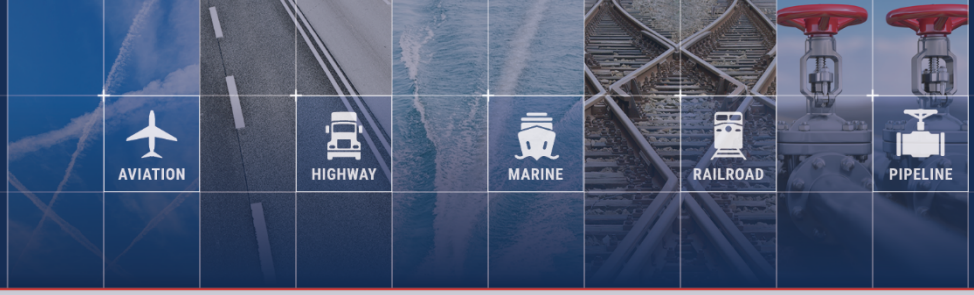

Aviation Investigation Final Report

Location:	Deland, Florida	**Accident Number:**	ERA12FA265
Date & Time:	April 2, 2012, 19:20 Local	**Registration:**	N514KT
Aircraft:	SAPP LARRY E SEAWIND 3000	**Aircraft Damage:**	Substantial
Defining Event:	Loss of engine power (total)	**Injuries:**	3 Serious, 2 Minor
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The pilot/owner flew the experimental amateur-built amphibious airplane with a pilot-rated passenger on a long cross-country flight to a land-based airport, the day prior to the accident. The purpose of the trip was to begin training for a seaplane rating, which was to be conducted in another airplane type, at a nearby lake. While en route, the airplane's transponder malfunctioned, and the purpose of the accident flight was to fly to another airport to have the transponder replaced at a maintenance facility. The airplane departed from a 4,301-foot-long, asphalt runway. The airplane experienced a total loss of engine power shortly after takeoff, stalled, and descended into the rooftop of a supermarket located about 1 mile from the departure end of the runway, where it was consumed by a postcrash fire.

The pilot-rated passenger reported that there were no problems with the airplane's takeoff roll and initial climb. As the pilot turned crosswind, the engine suddenly quit. He was also not able to recall the point at which the airplane lifted off the runway, the altitude the engine lost power, or any instrument indications. His next recollection was rolling on the floor of the supermarket. A pilot at the departure airport reported that the accident airplane rotated about 500 feet prior to the end of the runway, and began a shallow climb, while mostly maintaining a high pitch angle. Shortly thereafter, he observed the airplane stall and enter a descending left spin, before it disappeared behind a tree line.

Postaccident examination of wreckage did not reveal any catastrophic preimpact malfunctions; however, the condition of the wreckage precluded the ability to functionally check the engine, its associated components and fuel system. In addition, it could not be determined if debris found in the airplane's fuel system was present prior to the postcrash fire. While the logbooks for the engine were not located, the investigation noted that the engine was installed on an airplane that was involved in a fatal accident about 19 years prior to the accident. The engine was overhauled about 10 years 6 months prior to the accident and at the time of the accident, appeared to have been rebuilt with parts from several engines. The pilot recently purchased the airplane, which had undergone a period of not being flown for about 3 years prior to the purchase.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be:

A loss of engine power for reasons that could not be determined due to the postaccident condition of the airframe and engine, which resulted in an inadvertent stall and subsequent collision with a building.

Findings

Not determined	(general) - Unknown/Not determined

Factual Information

History of Flight

Initial climb	Loss of engine power (total) (Defining event)
Initial climb	Loss of control in flight
Uncontrolled descent	Collision with terr/obj (non-CFIT)

On April 2, 2012, about 1920 eastern daylight time, an experimental amateur-built amphibious Seawind 3000, N514KT, owned and operated by a private individual, was substantially damaged when it impacted a building shortly after takeoff from the Deland Municipal Airport (DED), Deland, Florida. The private pilot owner and a commercial pilot passenger were seriously injured (The private pilot owner succumbed to his injuries on May 26, 2012). One person inside the building was seriously injured, and two other individuals inside the building sustained minor injuries. Visual meteorological conditions prevailed and no flight plan had been filed for the flight that was destined for the Daytona Beach International Airport (DAB), Daytona Beach, Florida. The personal flight was conducted under the provisions of Title 14 Code of Federal Regulations Part 91.

According to witnesses and information obtained from the Federal Aviation Administration (FAA), the pilot/owner and pilot-rated passenger flew from the Aurora Municipal Airport (ARR), Aurora, Illinois, to DED on April 1, 2012, with a refueling stop in Tennessee, to begin training for a seaplane rating on the morning of the accident. The training was to be conducted on a lake in Altamonte Springs, Florida, utilizing a float equipped Maule M-7-235. The owner originally intended to land in Sanford, Florida; however, he elected to land at DED after the airplane's transponder malfunctioned while en route. The purpose of the accident flight was to fly to DAB to have the transponder replaced at a maintenance facility.

During a telephone conversation with an employee at the maintenance facility, the pilot/owner reported

that he was new to the airplane, which he had purchased about 6 weeks earlier, after it had not been flown for about 3 years.

The airplane departed from runway 23, a 4,301-foot-long, asphalt runway.

The passenger reported that there were no problems with the airplane's takeoff roll and initial climb. As the pilot turned crosswind, the engine suddenly quit. His next recollection was rolling on the floor of a supermarket. The passenger did not hear any engine sputtering or observe any other anomalies during the flight. He was also not able to recall the point at which the airplane lifted off the runway, the altitude the engine lost power, or any instrument indications.

A pilot at DED reported that he landed on runway 23, and while taxiing, observed the accident airplane depart. The airplane rotated about 500 feet prior to the end of the runway, and began a shallow climb, while mostly maintaining a high pitch angle. Shortly thereafter, he observed the airplane "stall" and enter a descending left spin, before it disappeared behind a tree line. He did not hear any communications from the accident airplane over the airport common traffic advisory frequency after the takeoff.

A witness, who was in a car that was parked outside the front entrance of the supermarket, reported that she heard one or two "sputtering" engine sounds. She then looked up and observed the airplane in a climb attitude, very low in the sky. The airplane turned left and immediately descended straight down, nose first into the roof of the supermarket.

Pilot Information

Certificate:	Private	**Age:**	60
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	Unknown
Instrument Rating(s):	Airplane	**Second Pilot Present:**	Yes
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 3 Without waivers/limitations	**Last FAA Medical Exam:**	September 9, 2010
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	
Flight Time:	(Estimated) 500 hours (Total, all aircraft), 20 hours (Total, this make and model), 7 hours (Last 24 hours, all aircraft)		

Pilot-rated passenger Information

Certificate:	Commercial	**Age:**	52
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Right
Other Aircraft Rating(s):	None	**Restraint Used:**	Unknown
Instrument Rating(s):	Airplane	**Second Pilot Present:**	Yes
Instructor Rating(s):	Airplane single-engine; Instrument airplane	**Toxicology Performed:**	No
Medical Certification:	Class 2 With waivers/limitations	**Last FAA Medical Exam:**	January 3, 2012
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	
Flight Time:	(Estimated) 4000 hours (Total, all aircraft), 10 hours (Total, this make and model)		

The pilot/owner, age 60, held a private pilot certificate, with ratings for airplane single-engine land, airplane multiengine land and instrument airplane. His most recent FAA third-class medical certificate was issued on September 9, 2010. At that time, he reported a total flight experience of 450 hours. The pilot reported 495 hours of total flight experience, which included 15 hours during the previous 12 months, on an insurance application dated September 22, 2009.

The pilot/owner's logbooks were not located and his total flight experience and his flight experience in make and model could not be determined.

The passenger, age 52, held a commercial pilot certificate, with ratings for airplane single-engine land, airplane multiengine land and instrument airplane. He also held a flight instructor certificate with ratings for airplane single-engine, multiengine and instrument airplane. His most recent FAA second-class medical certificate, prior to the accident, was issued on January 3, 2012. At that time, he reported 4,000 hours of total flight experience.

The passenger had known the pilot since 1994. He was not aware of the pilot's intention to purchase the accident airplane. He was aware that the pilot was previously interested in purchasing the certified version of the Seawind upon its release. The passenger had flown with the pilot in the accident airplane for about 1 hour, about 1 week prior to the accident. He believed the pilot had received some initial training in the airplane from the individual who brokered the sale; however, he was not able to estimate the pilot's flight experience in make and model.

Aircraft and Owner/Operator Information

Aircraft Make:	SAPP LARRY E	**Registration:**	N514KT
Model/Series:	SEAWIND 3000	**Aircraft Category:**	Airplane
Year of Manufacture:	2002	**Amateur Built:**	Yes
Airworthiness Certificate:	Experimental (Special)	**Serial Number:**	60
Landing Gear Type:	Retractable - Tricycle	**Seats:**	4
Date/Type of Last Inspection:	May 3, 2011 Condition	**Certified Max Gross Wt.:**	3400 lbs
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:	as of last inspection	**Engine Manufacturer:**	Lycoming
ELT:		**Engine Model/Series:**	IO-540-K1G5D
Registered Owner:	On file	**Rated Power:**	300 Horsepower
Operator:	On file	**Operating Certificate(s) Held:**	None

The amphibian, four-seat, high-wing, retractable-gear, composite airplane, serial number 60, was manufactured from a kit in 2002. It was powered by a tail-mounted Lycoming IO-540-K1G5D, serial number L-18822-48A, 300-horsepower engine, equipped with a three-bladed Hartzell HC-E3YR-1RF constant-speed propeller assembly.

According to records obtained from the FAA, the airplane was issued an experimental airworthiness certificate in July 2002, and was purchased by the private pilot on January 7, 2012.

The airframe and engine logbooks were not located.

According to Lycoming, the engine was manufactured in 1978 and subsequently shipped to Piper Aircraft Company.

A search of the NTSB accident database revealed that the same serial number engine that was installed on the accident airplane was previously installed on a Piper PA32RT-300, N2221G that was involved in a fatal accident on March 7, 1993, after it experienced a partial loss of engine power during takeoff, in Big Bear City, California (NTSB Accident Number - LAX93FA141). At that time, the engine had been operated for about 3,800 total hours and about 1,030 hours since it was overhauled during February 1985.

An engine repair invoice from a repair station in Zephyrhills, Florida, revealed that the engine was overhauled during October 2001.

The airplane listing information provided by the pilot's representative indicated that the airplane had been operated for 400 hours, which included the engine being operated for 400 total hours since overhaul. The listing also noted that the airplane was equipped with long range fuel tanks (110 gallons), had undergone a condition inspection on May 3, 2011, and the sale price included 10 hours of dual instruction. The broker was fatally injured in a Seawind 3000 accident that occurred in Sarasota, Florida, on January 12, 2013 (NTSB Accident Number – ERA13FA109).

A third individual, who was a friend of the passenger, and was also attending the seaplane training reported that the pilot/owner told him the that the airplane performed well during the flight from Illinois to Florida, and cruised at 155 knots, with a fuel burn of 17 gallons per hour. The pilot/owner also mentioned to him that the airplane was purchased from an estate sale and had not been flown for a 3 year period.

According to fueling records obtained from a fixed-base operator at McMinn County Airport (MMI), Athens, Texas, the airplane was "topped-off" with 50.8 gallons of 100-low-lead aviation gasoline on April 1, 2012.

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	DED,80 ft msl	**Distance from Accident Site:**	1 Nautical Miles
Observation Time:	19:35 Local	**Direction from Accident Site:**	170°
Lowest Cloud Condition:	Clear	**Visibility**	7 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	7 knots /	**Turbulence Type Forecast/Actual:**	/ None
Wind Direction:	240°	**Turbulence Severity Forecast/Actual:**	/ N/A
Altimeter Setting:	29.87 inches Hg	**Temperature/Dew Point:**	29°C / 15°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Deland, FL (DED)	**Type of Flight Plan Filed:**	None
Destination:	Daytona Beach, FL (DAB)	**Type of Clearance:**	None
Departure Time:	07:20 Local	**Type of Airspace:**	

The reported weather at DED, elevation 80 feet, at 1935 was: wind 240 degrees at 7 knots, visibility 7

statute miles; sky clear; temperature 29 degrees Celsius (C); dew point 15 degrees C; altimeter 29.87 inches of mercury.

Airport Information

Airport:	Deland Municipal DED	**Runway Surface Type:**	Asphalt
Airport Elevation:	80 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	23	**IFR Approach:**	None
Runway Length/Width:	4301 ft / 75 ft	**VFR Approach/Landing:**	None

Wreckage and Impact Information

Crew Injuries:	1 Serious	**Aircraft Damage:**	Substantial
Passenger Injuries:	1 Serious	**Aircraft Fire:**	On-ground
Ground Injuries:	1 Serious, 2 Minor	**Aircraft Explosion:**	None
Total Injuries:	3 Serious, 2 Minor	**Latitude, Longitude:**	29.056388,-81.300834(est)

The airplane descended into the roof of a supermarket, located about 1 mile from the departure end of runway 23. The airplane penetrated the roof, and impacted shelving before coming to rest upright, on a heading of about 260 degrees.

The airplane was initially examined at the accident site and then recovered to a storage facility for additional examination.

A postcrash fire destroyed the cockpit and consumed the airframe, with the exception of the outboard 8 feet of the right wing and small composite fragments. The outboard 56 inches of the right aileron and outboard 11-inches of the right flap remained attached. Both right wing fuel tank caps remained installed. The right elevator tip was located on the roof top. All three landing gear were located in the debris, as was the top portion of the vertical fin.

All primary flight controls were connected at their respective control columns and pedals in the cockpit. Flight control continuity for the elevator was confirmed from the cockpit to the elevator bellcrank control tube. The right aileron control cable remained attached to the control surface. The left aileron cable was intact to a charred portion of the left aileron bellcrank. The rudder control cables were continuous from the cockpit, to about the mid-cabin area.

The propeller assembly remained attached to the crankshaft flange. One propeller blade was melted about 24 inches from the hub. A second blade was separated about 17 inches from the hub, with its outboard section located in the debris. A third blade was intact. Two of the propeller blades had curled tips and contained a series of small leading edge gouges. All of the propeller blades were relatively straight, with no twisting damage. The propeller pitch change mechanism remained intact; however, it did not display any witness marks associated with propeller blade angle position.

The engine, including all accessories sustained fire damage. A subsequent teardown of the engine at Lycoming Engines, Williamsport, Pennsylvania, did not reveal any preimpact malfunctions. The engine was rotated about 350 degrees, with corresponding valve continuity and piston movement, prior to coming to a hard stop. During disassembly, a piece of molten metal was located between a connecting rod and counterweight, which resulted in restricted movement. The spark plugs were removed and their

electrodes were found intact. The fuel injector fuel inlet screen was found properly installed and absent of contamination. It was also noted that the engine crankcase numbers did not match. In addition, five of the six cylinders contained different part numbers. According to a Lycoming representative, two of the cylinders (Nos. 1 and 2) were not approved for installation on the IO-540K series engine.

The engine fuel flow transducer, fuel line and fitting, which were heavily fire damaged, were examined at the Safety Board's Material's Laboratory, Washington, DC., in an attempt to identify if debris found in those components may have been present prior to the accident. A black colored particulate was removed from the transducer and similar material was removed from the fuel line. Examination of the particles utilizing a Fourier Transform Infrared (FTIR) micro-spectrometer with a germanium attenuated total reflectance (ATR) accessory revealed no significant spectral patterns, which was consistent with little or no organic material present. The samples were then analyzed by scanning electron microscopy (SEM) and quantitative standardless energy dispersive x-ray spectroscopy (EDS), which revealed the presence of materials found within the engine and fuel system. Due to the extent of the fire damage to the transducer, fuel lines, and fitting it was not possible to determine if the debris was present prior to the fire.

Administrative Information

Investigator In Charge (IIC):	Schiada, Luke
Additional Participating Persons:	Joseph W Gramzinski; FAA/FSDO; Orlando, FL Mike Childers; Lycoming Engines; Williamsport, PA Tom McCreary; Hartzell Propeller Inc.; Piqua, OH
Original Publish Date:	December 2, 2013
Last Revision Date:	
Investigation Class:	Class
Note:	The NTSB traveled to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=83275