Aviation Investigation Final Report

Location:	Havasu Lake, California	**Accident Number:**	LAX06LA228
Date & Time:	July 10, 2006, 17:24 Local	**Registration:**	N8025Q
Aircraft:	Palmer Seawind 3000	**Aircraft Damage:**	Destroyed
Defining Event:		**Injuries:**	2 None
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The amphibious airplane was destroyed in a ground fire following a forced landing. During the takeoff initial climb out, electrical fumes and smoke emanated from the right side portion of the instrument panel. A successful water landing was made; however, a post impact fire consumed the airplane. Examination of the airplane revealed that it was equipped with two batteries that were interconnected with each other and positioned in the right side nose/storage compartment area. Both batteries' cables were connected to a single MASTER solenoid and a single START solenoid. A burn mark was located in the battery compartment that was the size and position of the negative cable for the right side battery. The storage area for the batteries was not damaged; however, the cockpit was consumed in the post impact fire. Further inspection of the airplane's electrical wiring revealed that the groundside of the forward battery had been wired to the hot side of the START solenoid that resulted in a reverse polarity draw during engine start. The protective covering for the wires burned away exposing the wires that then came into contact with each other and started the fire. Recent maintenance work on the airplane included movement of both batteries to the right side, and a rewire of the cables to the MASTER and START solenoids.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: an electrical fire due to improper wiring of the electrical system by other maintenance personnel.

Findings

Occurrence #1: AIRFRAME/COMPONENT/SYSTEM FAILURE/MALFUNCTION
Phase of Operation: TAKEOFF - INITIAL CLIMB

Findings
1. (C) ELECTRICAL SYSTEM,ELECTRIC WIRING - REVERSED
2. (C) BATTERY - REVERSED - OTHER MAINTENANCE PERSONNEL
3. (C) ELECTRICAL SYSTEM,BATTERY - ARCING
4. (C) ELECTRICAL SYSTEM - FIRE

Occurrence #2: FORCED LANDING
Phase of Operation: EMERGENCY DESCENT/LANDING

Occurrence #3: FIRE
Phase of Operation: STANDING

Factual Information

On July 10, 2006, at 1724 Pacific daylight time, an experimental amphibious Palmer Seawind 3000, N8025Q, caught fire following an emergency landing on the water near Clear Bay on the Lower Colorado River's main channel of the Lake Havasu National Wildlife Refuge, near Havasu Lake, California. The emergency landing was precipitated by a strong electrical smoke in the cockpit. The water landing was successful, but the airplane was destroyed during the ensuing post impact fire. The pilot/owner operated the airplane as a personal flight under the provisions of 14 CFR Part 91. The private pilot and one passenger were not injured. Visual meteorological conditions prevailed for the flight that departed Lake Havasu City Airport (HII), Lake Havasu City, Arizona, about 1700. No flight plan had been filed. The flight was destined for French Valley (F70), Murrieta/Temecula, California.

According to an officer from the United States Fish and Wildlife Service, a call was received from the pilot at 1730 indicating that he had been involved in an accident.

In the pilot's written statement he reported that his intent was to do 4 or 5 water landings before heading to F70. On the first landing and takeoff everything was normal. During the takeoff initial climb to conduct another landing, about 150 to 200 feet above the water, he began to smell electrical fumes and immediately observed smoke emanating from the forward right vent of the instrument panel. He immediately turned off the MASTER switch and noted that smoke was still coming from the vent area. He lined up on the river and landed in the shortest time he could. He reduced the power and on short final retarded all of the levers and turned off the magnetos. After landing, he opened the canopy and instructed his son to exit the airplane. As the pilot went to retrieve the fire extinguisher, there was a "fireball of flames." He also exited the airplane. Neither he nor his son was injured.

The National Transportation Safety Board investigator-in-charge (IIC) interviewed the pilot. The pilot indicated that he had purchased the airplane in September 2005, and it had been in a maintenance shop for 7 months. He further indicated that a King Global Positioning System (GPS) had recently been installed. He reported that he had been flying the airplane for about 3 months.

A Safety Board investigator examined the airplane at Air Transport, Phoenix, Arizona, on October 29, 2006. Two Odyssey Extreme drycell batteries, which were interconnected in a tandem configuration, powered the airplane. The batteries were secured to a wall on the right side nose/storage compartment area. There were two solenoids that the batteries were connected to, a MASTER and a START solenoid. Each battery had their own positive and negative cables that were then connected to the solenoids. The battery compartment had a burn mark on the side that corresponded with the size and position of the negative cable on the right side battery. The right battery cables' protective coverings were burned and melted

off. The protective covering for the left battery cables were intact until they passed through the firewall. The Safety Board investigator noted that after the cables passed through the firewall, the positive cable for the right battery had melted together with the negative cable for the left battery. In addition, the cables had sustained thermal damage, with 3 of the 4 cables separated on the cockpit side of the firewall. The fourth cable, the negative cable for the left battery remained continuous.

Additional inspection of the airplane's electrical wiring by personnel from Aircraft Engine Reconstruction Specialists, Inc., Prescott, Arizona, revealed that the groundside of the forward 24V battery had been wired to the "hot side" of the START solenoid. This would result in a reverse polarity draw during engine start, and a short would occur anytime the starter was energized.

Paperwork obtained from Airmech, Inc., dated August 8, 2006, indicated the company moved both batteries to the right side of the nose and rewired the cables to the batteries and solenoids.

According to a representative from Seawind, for the experimental airplanes such as the accident airplane, the requirement was for the installation of one battery positioned on the right side nose storage/compartment area at bulkhead 36. The directions also contained information on how to cover the battery and placement of the MASTER and STARTER solenoids. A basic electrical wiring diagram was provided to kit builders.

Pilot Information

Certificate:	Private	**Age:**	50,Male
Airplane Rating(s):	Single-engine land; Single-engine sea; Multi-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	Airplane	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 3 With waivers/limitations	**Last FAA Medical Exam:**	August 1, 2004
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	October 1, 2005
Flight Time:	2305 hours (Total, all aircraft), 100 hours (Total, this make and model), 2245 hours (Pilot In Command, all aircraft), 127 hours (Last 90 days, all aircraft), 46 hours (Last 30 days, all aircraft), 2 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Palmer	**Registration:**	N8025Q
Model/Series:	Seawind 3000	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	Yes
Airworthiness Certificate:	Experimental (Special)	**Serial Number:**	025
Landing Gear Type:	Retractable - Tricycle; Amphibian	**Seats:**	4
Date/Type of Last Inspection:	September 1, 2005 Annual	**Certified Max Gross Wt.:**	3400 lbs
Time Since Last Inspection:	100 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	190 Hrs at time of accident	**Engine Manufacturer:**	Lycoming
ELT:	Installed, activated, did not aid in locating accident	**Engine Model/Series:**	IO-540
Registered Owner:	Robert L. Hemme	**Rated Power:**	300 Horsepower
Operator:		**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	EED,916 ft msl	**Distance from Accident Site:**	14 Nautical Miles
Observation Time:	16:56 Local	**Direction from Accident Site:**	315°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	3 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:		**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29.65 inches Hg	**Temperature/Dew Point:**	44°C / 6°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Lake Havasu Cit, AZ (HII)	**Type of Flight Plan Filed:**	None
Destination:	Murrieta/Temecu, CA (F70)	**Type of Clearance:**	None
Departure Time:	17:00 Local	**Type of Airspace:**	

Airport Information

Airport:	LAKE HAVASU CITY HII	**Runway Surface Type:**	
Airport Elevation:	800 ft msl	**Runway Surface Condition:**	
Runway Used:		**IFR Approach:**	None
Runway Length/Width:		**VFR Approach/Landing:**	Forced landing

Wreckage and Impact Information

Crew Injuries:	1 None	**Aircraft Damage:**	Destroyed
Passenger Injuries:	1 None	**Aircraft Fire:**	Both in-flight and on-ground
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	2 None	**Latitude, Longitude:**	34.553611,-114.399719

Administrative Information

Investigator In Charge (IIC):	Cornejo, Tealeye
Additional Participating Persons:	Dwayne Day; Federal Aviation Administration; Riverside, CA
Original Publish Date:	November 29, 2007
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=64079