National Transportation Safety Board
Aviation Accident Final Report

Location:	Tulelake, CA	**Accident Number:**	WPR14LA322
Date & Time:	08/01/2014, 0900 PDT	**Registration:**	N3627R
Aircraft:	SCHWEIZER AIRCRAFT CORP G 164B	**Aircraft Damage:**	Destroyed
Defining Event:	Loss of visual reference	**Injuries:**	1 Fatal
Flight Conducted Under:	Part 137: Agricultural		

Analysis

The pilot was applying the last load of insecticide to a field in the agricultural biplane when the top wing struck power lines as the biplane passed underneath it. The operator reported that the pilot had applied insecticide to the same field many times. Further, he had flown under the power lines many times without incident. There were no witnesses to the accident; a spotter who had been assigned to the pilot was transitioning to another location at the time.

Postaccident examination of the airframe and engine did not reveal any anomalies that would have precluded normal operation, and the propeller's damage signatures indicated that the engine was operating at the time of impact. At the time of the accident, the sun would have been positioned just off the airplane's right wing; therefore, it is unlikely that the sun hindered the pilot's view. The airplane struck thinner lines that were about 10 ft below 40-ft-high thicker lines; therefore, it is possible that the pilot was focused on the upper lines and did not see the lower ones.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot's failure to maintain clearance from power lines while maneuvering during low-altitude operations.

Findings

Aircraft	Altitude - Not attained/maintained (Cause)
Personnel issues	Monitoring environment - Pilot (Cause)
Environmental issues	Wire - Awareness of condition (Cause)

Factual Information

HISTORY OF FLIGHT

On August 1, 2014, about 0900 Pacific daylight time, a Schweizer Aircraft Corporation G-164B, N3627R, impacted terrain after striking a set of power distribution lines near Tulelake, California. The airplane was registered to, and operated by, Macy's Flying Service as an aerial application flight under the provisions of 14 Code of Federal Regulations Part 137. The commercial pilot was fatally injured; the airplane sustained substantial damage during the accident sequence, and was subsequently destroyed by post impact fire. The local flight departed Tulelake Municipal Airport about 0820. Visual meteorological conditions prevailed, and no flight plan had been filed.

Officers from the Siskiyou County Sheriff's Department responded to the accident site, and observed the airplane located in an alfalfa field, 500 ft north of a series of severed overhead power distribution lines. The airplane came to rest on a south heading, and the cabin had been consumed by fire after sustaining extensive crush damage. All four wings had become partially detached from the airframe, and the left top wing was folded up over the vertical stabilizer.

The pilot was applying insecticide to an alfalfa field, and the accident occurred on one of the last passes.

PERSONNEL INFORMATION

The 58-year-old-pilot held a commercial pilot certificate with ratings for airplane single-engine land, and instrument airplane. He was issued a second-class medical certificate on September 7, 2013, with limitations that he must wear corrective lenses. On his medical certificate application, he reported a total flight time of 30,000 hours. The operator reported that the pilot had flown 504 hours in the accident airplane in the 90 days preceding the accident.

AIRPLANE INFORMATION

The tailwheel-equipped airplane was manufactured in 1983, as a restricted agriculture and pest control category biplane. It was configured for aerial application and equipped with a 715 shaft horsepower Garrett/Airesearch TPE331-2 turboprop engine, driving a three blade controllable pitch Hartzell propeller.

The airplane's height was 10 ft, 9 inches.

METEOROLOGICAL INFORMATION

An automated surface weather observation at Klamath Falls Airport, Klamath Falls, Oregon (elevation 4,095 feet msl, 14 miles northeast of accident site), was issued 7 minutes before the accident. It indicated calm wind, 10 miles or greater visibility, clear skies, temperature at 22 degrees C, dew point 10 degrees C, and an altimeter setting at 30.14 inches of mercury.

According to the U.S. Naval Observatory, Astronomical Applications Department, the altitude of the Sun when viewed from Tulelake at 0900 was 31.8 degrees, with an Azimuth (E of N) of 94.0 degrees.

MEDICAL AND PATHOLOGICAL INFORMATION

An autopsy was conducted by the County of Siskiyou Office of the Sheriff/Coroner. The cause of death was reported as thermal injury due to an airplane crash with an anatomic finding of

soot in the larynx and trachea.

Toxicological tests on specimens recovered from the pilot were performed by the FAA Civil Aerospace Medical Institute. The results indicated 16 percent carbon monoxide detected in the blood, and were negative for all screened drug substances and ingested alcohol. Refer to the toxicology report included in the public docket for specific test parameters and results.

TESTS AND RESEARCH

Engine and Airframe Exam

The engine and airframe were recovered from the accident site, and examined by the NTSB investigator-in-charge. The empennage was intact, with the remaining airframe components displaying extensive fragmentation, thermal, and crush damage. The flight control system exhibited multiple breaches but was functionally intact. A 25-ft-long section of copper cable was found entwined in the leading edge of the upper right wing.

The engine had separated from its mount, and the gearbox had detached from the engine's forward section. The exhaust stack was still attached, and light brown sooting was present on its inner surface; there were no indications of cracks or indentations associated with internal engine blade liberation. The inlet compressor wheel was intact, could be rotated by hand, and moved smoothly with corresponding rotation of the forward accessory case gears. The propeller hub remained attached to the gearbox along with two propeller blades which both exhibited leading edge gouges, chordwise scratches, and twist throughout their entire length. The third blade was separated from the hub and exhibited similar damage.

Examination did not reveal any anomalies with the airframe or engine that would have precluded normal operation. A full report is contained within the public docket.

Power Lines

The power lines and poles were owned by Pacific Power of Portland, Oregon. The poles were about 40 ft tall, oriented east-west, and covered a span of 300 ft. A set of three high-voltage power transmission lines were strung at the top of each pole, with four thinner-gauge power distribution, "under-build" lines hanging below, 30 ft 6 inches from the ground. According to representatives from Pacific Power, the lower under-build lines had been severed about 50 ft east of the west pole, and the higher power transmission lines were undamaged.

A spotter had been assigned to the pilot; however, he did not witness the accident, and was transitioning to another location at the time. According to the operator the pilot was familiar with the field, had flown under the lines many times before, and most likely made the decision to fly under because they were very high relative to the field location.

FAA regulations allow pilots of agricultural aircraft flexibility with the regard to obstacle clearances, specifically, Part 137.29, Subpart C states, "The holder of an agricultural aircraft operator certificate may deviate from the provisions of part 91 of this chapter without a certificate of waiver, as authorized in this subpart for dispensing operations, when conducting nondispensing aerial work operations related to agriculture, horticulture, or forest preservation in accordance with the operating rules of this subpart."

Furthermore, Advisory Circular AC 137-1A for agricultural operators gives specific guidance for flying in various conditions, including when it is necessary to fly under wires.

History of Flight

Maneuvering-low-alt flying	Loss of visual reference (Defining event) Collision with terr/obj (non-CFIT)

Pilot Information

Certificate:	Commercial	**Age:**	58, Male
Airplane Rating(s):	Single-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 Medical Exam:**	09/19/2013
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	01/06/2014
Flight Time:	(Estimated) 30000 hours (Total, all aircraft), 22350 hours (Total, this make and model), 30000 hours (Pilot In Command, all aircraft), 504 hours (Last 90 days, all aircraft), 154 hours (Last 30 days, all aircraft), 7 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Manufacturer:	SCHWEIZER AIRCRAFT CORP	**Registration:**	N3627R
Model/Series:	G 164B	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	No
Airworthiness Certificate:	Restricted	**Serial Number:**	731B
Landing Gear Type:	Tailwheel	**Seats:**	1
Date/Type of Last Inspection:	01/08/2014, Annual	**Certified Max Gross Wt.:**	5200 lbs
Time Since Last Inspection:		**Engines:**	1 Turbo Prop
Airframe Total Time:	15484 Hours	**Engine Manufacturer:**	Garrett/Airesearch
ELT:	Not installed	**Engine Model/Series:**	TPE331-2-201A
Registered Owner:	MACYS FLYING SERVICE INC	**Rated Power:**	715 hp
Operator:	MACYS FLYING SERVICE INC	**Air Carrier Operating Certificate:**	Agricultural Aircraft (137)

Meteorological Information and Flight Plan

Observation Facility, Elevation:	KLMT, 4092 ft msl	**Observation Time:**	1553 UTC
Distance from Accident Site:	14 Nautical Miles	**Condition of Light:**	Day
Direction from Accident Site:	328°	**Conditions at Accident Site:**	Visual Conditions
Lowest Cloud Condition:	Clear	**Temperature/Dew Point:**	22°C / 10°C
Lowest Ceiling:	None	**Visibility**	10 Miles
Wind Speed/Gusts, Direction:	Calm	**Visibility (RVR):**	
Altimeter Setting:	30.14 inches Hg	**Visibility (RVV):**	
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Tulelake, CA (O81)	**Type of Flight Plan Filed:**	None
Destination:	Tulelake, CA (O81)	**Type of Clearance:**	None
Departure Time:	0820 PDT	**Type of Airspace:**	Class G

Airport Information

Airport:	TULELAKE MUNI (O81)	**Runway Surface Type:**	N/A
Airport Elevation:	4044 ft	**Runway Surface Condition:**	Dry
Runway Used:	N/A	**IFR Approach:**	None
Runway Length/Width:		**VFR Approach/Landing:**	None

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Destroyed
Passenger Injuries:	N/A	**Aircraft Fire:**	On-Ground
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Fatal		

Administrative Information

Investigator In Charge (IIC):	Eliott Simpson	**Adopted Date:**	01/05/2016
Additional Participating Persons:	William Bell; Federal Aviation Adminstration FSDO; Sacramento, CA		
Publish Date:	01/05/2016		
Note:	The NTSB did not travel to the scene of this accident.		
Investigation Docket:	http://dms.ntsb.gov/pubdms/search/dockList.cfm?mKey=89780		

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The Independent Safety Board Act, as codified at 49 U.S.C. Section 1154(b), precludes the admission into evidence or use of any part of an NTSB report related to an incident or accident in a civil action for damages resulting from a matter mentioned in the report.