Aviation Investigation Final Report

Location:	BLANDBURG, Pennsylvania	**Accident Number:**	IAD97FA065
Date & Time:	April 20, 1997, 14:37 Local	**Registration:**	N6856C
Aircraft:	Lockheed PV2	**Aircraft Damage:**	Destroyed
Defining Event:		**Injuries:**	2 Fatal
Flight Conducted Under:	Part 137: Agricultural		

Analysis

The pilot/owner of an air tanker was dispatched to drop a load of retardant on a fire burning up a valley wall. The pilot made radio contact with the firefighters on the ground, who requested that the pilot deliver the entire load on the first drop. A helicopter pilot who was dropping water on the fire positioned himself about a mile away to allow the air tanker to make its drop. The winds were from the northwest at 15 knots and gusting to 20 knots, and the helicopter pilot reported turbulence in the area. The helicopter pilot watched as the air tanker came from the northeast, overflew the fire, and made a descending counterclockwise turn. The airplane flew towards the fire parallel to the valley ridge, and the helicopter pilot observed the air tanker drop its retardant. During the drop, the airplane flew through smoke, and its right wing impacted trees on the upslope side of the valley. The airplane then rolled 90 degrees and descended into the steeply inclined wooded terrain. A review of the pilot's FAA medical records revealed that he lacked color vision.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: Pilot in command misjudged his maneuvering altitude. Factors to this accident were the mountainous terrain, windy conditions, turbulence in the area, and smoke.

Findings

Occurrence #1: IN FLIGHT COLLISION WITH OBJECT
Phase of Operation: MANEUVERING - AERIAL APPLICATION

Findings
1. OBJECT - TREE(S)
2. (F) TERRAIN CONDITION - MOUNTAINOUS/HILLY
3. (F) WEATHER CONDITION - HIGH WIND
4. (F) WEATHER CONDITION - TURBULENCE
5. (F) WEATHER CONDITION - HAZE/SMOKE
6. (C) LOW ALTITUDE FLIGHT/MANEUVER - MISJUDGED - PILOT IN COMMAND
7. PHYSICAL IMPAIRMENT(VISUAL DEFICIENCY) - PILOT IN COMMAND

Factual Information

HISTORY OF FLIGHT

On April 20, 1997, about 1437 eastern daylight time, a Lockheed PV2, N6856C, was destroyed when it impacted trees while dropping fire retardant in Blandburg, Pennsylvania. The certificated commercial pilot/owner and co-pilot received fatal injuries. The airplane, operated by Hirth Air Tanker, was flying in support of the Pennsylvania Department of Conservation and Natural Resources, Division of Forest Fire Protection. Visual meteorological conditions existed and no flight plan was filed for the flight conducted under 14 CFR Part 137. The flight originated from the Mid-State Airport, Philipsburg, Pennsylvania, about 1415.

The airplane had been dispatched from Mid-State Airport to drop water on a fire. According to a witness in a fire tower, "I reported when it (N6856C) passed Lost Mt. It went over to the fire, turned west past the fire, then turned and went east back past the fire. Then turned west again to make its drop."

Another witness southeast of the accident site stated:

"...I observed the aircraft on its run just before it crashed. I estimate the aircraft was in my view about twenty to twenty-five seconds. The engines did not sound like they were malfunctioning as the props sounded synchronized and they were not turning at an excessive R.P.M. Nothing was trailing from the aircraft such as smoke or fuel. The plane passed in front of me at an altitude of about 1,500 feet, however, it would have been much closer to the ridge-tops, as I was in a valley. I observed the airplane making a shallow, descending left turn, heading into the wind. It continued descending and turning below the line of my sight..."

A helicopter pilot dropping water on the fire, and firefighters on the ground stated that the air tanker made radio contact inbound to the fire. Clearing the airspace for the air tanker, the pilot stated that he positioned himself about 1 mile to south of the fire. The pilot hovered the helicopter in this location at 1,000 feet agl, and watched as the air tanker approached from the northeast.

The helicopter pilot stated:

"At 14:33, tanker 39 [tanker 38] approached from the N.E. at approximately 3,500 feet M.S.L. and made a descending left turn to a heading of 295. At 14:35, upon reaching the fire line...[tanker 38] made a drop and flew through a heavy smoke line. I witnessed the right (upslope) wing contact trees. The aircraft then rolled 90 vertical left wing low and knife edged into the side of the mountain...Winds were 330[degrees] @ 12 gusts 18. Smoke direction was 100 [degrees], downdrafts were present."

A firefighter on the ground that was in radio contact with the airplane stated, "...[the pilot] told me he was going to make a high, dry run and asked me where I would like the drop." The firefighter instructed the pilot to give him "one drop across the header of the fire."

The firefighter then observed the airplane make a "very high fly over (approximately 2,500 feet)." The airplane then went out of sight and returned a few minutes later and reported that he was on final approach. The firefighter further stated:

"...[the airplane] was coming in - everything sounded normal - engine sounded good. In my years of experience as a forest patrolman, I have personally witnessed this pilot making 50 or 60 drops, and this drop looked no different than any other drop...[the airplane] came in, made a good drop on the header of the fire...then I saw..[the airplane]...making a jerking motion up on its right side - right wing down...I then heard a loud crash that sounded like metal flying through trees..."

The accident occurred during the hours of daylight about 40 degrees, 38 minutes north latitude, and 78 degrees, 24 minutes west longitude.

PERSONNEL INFORMATION

The pilot held a commercial pilot certificate with ratings for airplane single engine land, multi-engine land, and instrument airplane. The airplane multiengine certificate had the following limitation: "VFR ONLY". The pilot obtained a type rating for the Lockheed L-B34 (PV2), in December, 1986. The pilot's logbooks were reported to be in the airplane and not located. In the Pilot/Operator Aircraft Accident Report, the co-owner stated that the pilot's last Biennial Flight Review was during February 1996, in a Cessna 170. On the pilot's application for the Pennsylvania Bureau of Forestry contract, dated January 15, 1997, he indicated a total of 2,000 plus flight hours, of which 300 hours were in multi-engine airplanes, and 170 hours in the PV2. No records on the pilot's training in the PV2 were available.

The pilot obtained a second class medical certificate on July 19, 1996, and a review of the pilot's applications for Airmen Medical Certificates was performed. The color vision block on the oldest available application from 1984 stated, "24 plates of 24 plates missed of the Ishihara colour vision test." A limitation on the 1984 airmen's medical certificate stated, "not valid for night flying or color signal control." The limitation was listed on all subsequent airmen medical examinations, which included the medical dated July 19, 1996.

According to data compiled and submitted by the Pennsylvania Department of Conservation and Natural Resources (DCNR) and the co-owner of the Hirth Air Tankers, the pilot began his air tanker fire fighting airplane experience in 1989. Between 1989 and 1997, the data indicated that the pilot accumulated a total of 1,128 fire retardant drops as pilot in command and co-pilot, in both single and multi-engine airplanes.

The co-pilot held a commercial pilot certificate with ratings for airplane single and multi-engine land. The application for the Pennsylvania Bureau of Forestry contract, dated January 27, 1997, indicated a total of 1,977 flight hours, with 25 multi-engine hours, and 18 hours in the PV2.

The co-pilot obtained a second class medical certificate on March 5, 1997, with no restrictions.

AIRCRAFT INFORMATION

The PV-2 was a former military airplane built in 1945, and had a gross weight of 33,000 pounds. It was equipped with two Pratt & Whitney R-2800-31 engines. Each engine had 2,000 horsepower with a Hamilton-Standard three bladed hydromatic-full feathering-constant speed propeller. The civilian version of the PV-2 had the external wing fuel tanks, the bomb bay and cabin fuel tanks removed. The retardant tanks were installed in the bomb bay area and each tank had a capacity of 525 gallons for a total of 1,050 gallons.

METEOROLOGICAL INFORMATION

The weather recorded at 1450, at Altoona-Blair County Airport, located 20 miles to the south, was: Clear skies, wind: 340 degrees at 12 knots, temperature: 55 degrees Fahrenheit. The helicopter pilot reported on site weather as: Clear skies, wind: 330 degrees magnetic at 15 knots with gusts to 20 knots, Temperature: 50 degrees Fahrenheit.

WRECKAGE AND IMPACT INFORMATION

The airplane impacted on a steeply inclined, wooded, valley wall, sloping about 40 degrees, at an approximate elevation of 1,900 feet msl. The airplane was fragmented and pieces of the wreckage escaped the ensuing fire when thrown westward and rolled down slope from the main wreckage debris field. The initial impact crater was a long, narrow trench, about 18-24 inches in depth and oriented about 320 degrees magnetic. The trench contained two deep gouges, about the same distance apart as the two engines on the airplane. The furthest west gouge contained the three left propeller blades embedded in the ground, with chordwise scratching on the blades.

The left engine was found west of its propeller about 30-40 feet, and was consumed in the ensuing fire. The right engine, with the propellers still attached, came to rest wedged against a tree, about 40-50 feet down slope from the east gouge in the trench. A burnt portion of the twin tail empennage was found 30 to 40 feet west of the impact trench.

Travelling east, away from the main debris field, pieces of the airplane were located at 300 feet. Between 300 feet and 450 feet, pieces of a white radio antenna, similar to the one on the bottom of the airplane's fuselage, large paint chips matching the color of the airplane, and fresh tree cuttings were found lying on the forest floor. At 480 feet, a rubber hose and a rubber gasket were recovered. Both of these parts were later matched up with similar parts on the

right engine from a similar airplane. In this location, a 10 to 12 inch diameter tree was observed, missing its top 6 inch diameter branches about 40 feet above the ground. The predominate trees in the area were deciduous with early spring buds.

MEDICAL AND PATHOLOGICAL INFORMATION

An autopsy was performed on the pilot on April 21, 1997, by Dr. Vimal Mittal, of Memorial Hospital, Johnstown Pennsylvania.

Toxicological testing was conducted by the FAA Toxicology Accident Research Laboratory, Oklahoma City, Oklahoma, and was negative for drugs and alcohol.

ADDITIONAL INFORMATION

The fire had burned in the valley that was oriented east/west. The topography map of the area depict contour lines for the base of the valley at 1,400 to 1,600 feet, while the surrounding plateau tops indicate an elevation of 2,355 to 2,467 feet. The fire had burned up slope on the north wall of the valley. According to the helicopter pilot, the fire was about 1,900 foot elevation of the valley wall when the air tanker arrived.

The helicopter pilot stated that he experienced turbulence which he thought was due to the topography and winds, along with the convective activity created by the fire. The smoke rising from the fire was captured by local news crew and showed the smoke drifting on a southeasterly heading.

WRECKAGE RELEASE

The wreckage was released on April 22, 1997, to Mrs. C. Hirth, co-owner of the company.

Pilot Information

Certificate:	Commercial	**Age:**	46,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	Airplane	**Second Pilot Present:**	Yes
Instructor Rating(s):	None	**Toxicology Performed:**	Yes
Medical Certification:	Class 2 Valid Medical--w/ waivers/lim	**Last FAA Medical Exam:**	July 19, 1996
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	
Flight Time:	2000 hours (Total, all aircraft), 170 hours (Total, this make and model)		

Aircraft and Owner/Operator Information

Aircraft Make:	Lockheed	**Registration:**	N6856C
Model/Series:	PV2 PV2	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Restricted (Special)	**Serial Number:**	15-1156
Landing Gear Type:	Retractable - Tailwheel	**Seats:**	2
Date/Type of Last Inspection:	March 5, 1997 Annual	**Certified Max Gross Wt.:**	33000 lbs
Time Since Last Inspection:	7 Hrs	**Engines:**	2 Reciprocating
Airframe Total Time:	3497 Hrs	**Engine Manufacturer:**	P&W
ELT:	Not installed	**Engine Model/Series:**	R-2800-31
Registered Owner:	JOHN W. HIRTH	**Rated Power:**	2000 Horsepower
Operator:		**Operating Certificate(s) Held:**	
Operator Does Business As:	HIRTH AIR TANKER	**Operator Designator Code:**	

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	AOO ,1504 ft msl	**Distance from Accident Site:**	20 Nautical Miles
Observation Time:	14:50 Local	**Direction from Accident Site:**	180°
Lowest Cloud Condition:	Clear	**Visibility**	20 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	12 knots / None	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	340°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29 inches Hg	**Temperature/Dew Point:**	13°C / -7°C
Precipitation and Obscuration:	N/A - None - Smoke		
Departure Point:	MID STATE (PSB)	**Type of Flight Plan Filed:**	None
Destination:		**Type of Clearance:**	None
Departure Time:	14:15 Local	**Type of Airspace:**	Class G

Airport Information

Airport:		**Runway Surface Type:**	
Airport Elevation:		**Runway Surface Condition:**	
Runway Used:	0	**IFR Approach:**	None
Runway Length/Width:		**VFR Approach/Landing:**	None

Wreckage and Impact Information

Crew Injuries:	2 Fatal	**Aircraft Damage:**	Destroyed
Passenger Injuries:		**Aircraft Fire:**	On-ground
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	2 Fatal	**Latitude, Longitude:**	40.660762,-78.449943(est)

Administrative Information

Investigator In Charge (IIC):	Cain, Jim
Additional Participating Persons:	WILLIAM J KOSHAR; WEST MIFFLIN , PA HENRY VEJLSTRUP; WEST MIFFLIN , PA FORREST E KISSINGER; HARRISBURG , PA CONSTANCE C HIRTH; BUFFALO , WY
Original Publish Date:	November 14, 2000
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=28132