



Aviation Investigation Final Report

Location:	FORT WORTH, Texas	Accident Number:	FTW93FA126
Date & Time:	April 12, 1993, 07:00 Local	Registration:	N12RW
Aircraft:	WARD PITTTS SPECIAL WSC-1	Aircraft Damage:	Destroyed
Defining Event:		Injuries:	1 Serious
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

THE PILOT WAS PERFORMING A SERIES OF UNLIMITED CATEGORY MANEUVERS. WITNESSES REPORTED THAT DURING AN INVERTED OVER THE TOP LOOPING TYPE OF MANEUVER, THE AIRPLANE ENTERED AN INVERTED FLAT SPIN. THE AIRPLANE IMPACTED THE TERRAIN INVERTED. THE PORTABLE FIRE EXTINGUISHER HAD BEEN SECURED BY TIEWRAPPS TO THE LOWER COCKPIT SUPPORT TUBES FORWARD OF THE PILOT CONTROL STICK. A DENT ON THE SIDE OF THE FIRE EXTINGUISHER MATCHED THE DIAMETER OF THE SUPPORT TUBE NEAR THE RIGHT RUDDER PEDAL. METALLURGICAL EVALUATION OF BLACK SMUDGES ON EACH SIDE OF THE FIRE EXTINGUISHER AND THE PILOT'S SHOE SOLE WERE CHEMICALLY SIMILAR. PHYSICAL EVIDENCE INDICATED THE FIRE EXTINGUISHER CAME LOOSE DURING THE FLIGHT ROUTINE AND JAMMED BETWEEN THE SUPPORT TUBE AND THE PILOT'S RIGHT FOOT ON THE RUDDER PEDAL. SHOE MATTER WAS ALSO SMEARED ON THE OPPOSITE SIDE OF THE FIRE EXTINGUISHER.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: THE FIRE EXTINGUISHER IN THE COCKPIT CAME LOOSE AND JAMMED THE RIGHT RUDDER PEDAL.

Findings

Occurrence #1: LOSS OF CONTROL - IN FLIGHT

Phase of Operation: MANEUVERING

Findings

1. (C) FIRE EXTINGUISHER, PORTABLE - LOOSE
2. (C) FLIGHT CONTROL, RUDDER - JAMMED
3. AIRCRAFT CONTROL - NOT POSSIBLE - PILOT IN COMMAND

Occurrence #2: IN FLIGHT COLLISION WITH TERRAIN/WATER

Phase of Operation: DESCENT - UNCONTROLLED

Factual Information

HISTORY OF FLIGHT:

On April 12, 1993, at approximately 1910 central daylight time, during an aerobatic maneuver near Fort Worth, Texas, a homebuilt Pitts Special WSC 1, N12RW, sustained substantial damage when it impacted trees and terrain. The commercial pilot sustained serious injuries. Visual meteorological conditions prevailed for the local personal flight.

Investigation revealed that the airplane departed Spinks Airport, Fort Worth, Texas, approximately ten minutes prior to the accident, with the intent of flying to a local maneuver area for the aerobatic routine.

Witnesses reported the information in this paragraph on the enclosed statements and during telephone interviews conducted by the investigator in charge. The practice area was located approximately one mile West of Luck Airport, Fort Worth, Texas, from 1,500 feet above ground level to 3,000 feet above ground level. Hand held radios were carried by the pilot and the witnesses in order to alert the pilot to discontinue the routine if other traffic entered the area. The pilot routine was planned as a four minute free style unlimited category of maneuvers. During the fourth maneuver, the airplane was observed, at 2,500 feet above the ground level, inverted over the top of a loop and heading south. The airplane went into an inverted flat spin, which was not part of the planned maneuver, did about 4 or 5 rotations, continually losing altitude as the pilot attempted to come out of the maneuver, and impacted the ground inverted at approximately 140 knots.

PERSONNEL INFORMATION:

Interviews conducted by the investigator in charge with a relative revealed that numerous airshows and aerobatic competition flights had been performed by the pilot, who had owned the airplane for several years.

AIRCRAFT INFORMATION:

Data placards in the airplane indicated the experimental category Pitts Special WSC 1 airplane serial number 1589048 was built by Lionel Ray Ward of Broken Bow, Oklahoma, and entered into service on June 2, 1971. Original maximum gross weight was 1,000 pounds with an empty weight of 638 pounds. The airplane was powered by a Lycoming O-360-A1A, 180 horsepower engine.

Federal Aviation Administration data indicated the airplane was registered to the pilot on March 13, 1985.

Maintenance records and logbooks were never made available to the investigator in charge.

WRECKAGE AND IMPACT INFORMATION:

The airplane impacted in a wooded area of mesquite trees and brush. A broken tree limb was located at the base of a mesquite tree approximately 30 feet tall. On a measured heading of 220 degrees and a distance of approximately 65 feet from the base of the tree was an east to west ground scar approximately three feet in length and six inches deep. A sequence of ground scars continued at the following distances: 27 inches, 14 inches, 15 inches, and 25 inches. Numerous pieces of canopy and several sections of the propeller blades were located along the ground scar area. One section of the propeller blade was located approximately 78 feet from the base of the mesquite tree. Numerous broken branches of mesquite brush were located to the south of the last ground scar. The airplane came to rest in an upright position on a measured magnetic heading of 020 degrees approximately 52 feet beyond the mesquite branches. Upper wings and struts were destroyed and the rudder was bent toward the right side.

Flight control continuity was established. Fuel continuity to the engine was established. A hand held radio, located in the cockpit was set on a frequency of 122.8 Megahertz (MHz). The airspeed indicator read 150 knots.

A hand held fire extinguisher painted red with loose tiewraps was resting on the cockpit support tubes to the left of the right rudder pedal. One tiewrap was located around a support tube forward of the base of the pilot control stick. Another portion of a tiewrap was found in the right rudder pedal area. The right rudder pedal cable exhibited stretch marks. Cockpit support tubes painted white and fuel line fittings painted blue exhibited red paint transfer marks. The right shoe for the pilot, when positioned on the right rudder pedal, exhibited scuff marks on the sole of the shoe in the area of the right rudder cable and the inside edge of the rudder pedal. On each side of the fire extinguisher bottle were black smudge marks which appeared similar in color to the shoes of the pilot. The fire extinguisher bottle had a dent whose dimensions fit the diameter of the support tube near the right rudder pedal. The fire extinguisher, right rudder pedal, and pilot shoes were forwarded to the metallurgists for examination. Fuel line fittings and an in line fuel screen with debris were also forwarded for examination.

TEST AND RESEARCH:

An engine test run was conducted on May 4, 1993. The engine was equipped with a test propeller and an external fuel cell was connected into the airplane fuel system. The number 2 and number 4 push rod shrouds had sustained impact damage. Oil leaked from the shrouds during the engine run and precluded a continuous run at maximum power. The engine run was conducted for approximately 15 minutes, during which time the power was

increased to 1,800 RPM two consecutive times. There were no engine anomalies that would have contributed to the accident.

Metallurgical energy dispersive spectral examination of the black smudges on the fire extinguisher bottle and comparison with the black shoe soles gave carbon as the major element with oxygen, sodium, aluminum, silicon, and calcium elements common to both samples. The fire extinguisher can was composed of aluminum. Chemical elements in the paint included oxygen, silicon, and carbon. The Board metallurgy reports are enclosed.

ADDITIONAL INFORMATION:

The airplane was released to the owner's representative following the investigation.

Pilot Information

Certificate:	Commercial	Age:	40, Male
Airplane Rating(s):	Single-engine land; Multi-engine land	Seat Occupied:	Center
Other Aircraft Rating(s):	None	Restraint Used:	
Instrument Rating(s):	None	Second Pilot Present:	No
Instructor Rating(s):	None	Toxicology Performed:	No
Medical Certification:	Class 2 Valid Medical-w/ waivers/lim	Last FAA Medical Exam:	February 15, 1993
Occupational Pilot:	No	Last Flight Review or Equivalent:	
Flight Time:	1600 hours (Total, all aircraft), 1 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	WARD	Registration:	N12RW
Model/Series:	PITTS SPECIAL WSC-1 PITTS SPEC	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	Yes
Airworthiness Certificate:	Experimental (Special)	Serial Number:	1589048
Landing Gear Type:	Tailwheel	Seats:	1
Date/Type of Last Inspection:	August 30, 1992 Annual	Certified Max Gross Wt.:	1000 lbs
Time Since Last Inspection:		Engines:	1 Reciprocating
Airframe Total Time:		Engine Manufacturer:	LYCOMING
ELT:	Not installed	Engine Model/Series:	O-360-A1A
Registered Owner:	MACGUIRE, JOHN C.	Rated Power:	180 Horsepower
Operator:		Operating Certificate(s) Held:	None
Operator Does Business As:		Operator Designator Code:	

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	Condition of Light:	Day
Observation Facility, Elevation:	FTW ,710 ft msl	Distance from Accident Site:	10 Nautical Miles
Observation Time:	18:53 Local	Direction from Accident Site:	30°
Lowest Cloud Condition:	25000 ft AGL	Visibility	7 miles
Lowest Ceiling:	None	Visibility (RVR):	
Wind Speed/Gusts:	4 knots /	Turbulence Type Forecast/Actual:	/
Wind Direction:	180°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	29 inches Hg	Temperature/Dew Point:	27°C / 17°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:		Type of Flight Plan Filed:	None
Destination:		Type of Clearance:	None
Departure Time:	19:00 Local	Type of Airspace:	Class G

Airport Information

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

Wreckage and Impact Information

Crew Injuries:	1 Serious	Aircraft Damage:	Destroyed
Passenger Injuries:		Aircraft Fire:	Unknown
Ground Injuries:	N/A	Aircraft Explosion:	Unknown
Total Injuries:	1 Serious	Latitude, Longitude:	32.570537,-97.349441(est)

Administrative Information

Investigator In Charge (IIC):	Smith, Joyce
Additional Participating Persons:	EDWARD L HINCH; FORT WORTH , TX
Original Publish Date:	September 13, 1994
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=18649

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The NTSB does not assign fault or blame for an accident or incident; rather, as specified by NTSB regulation, “accident/incident investigations are fact-finding proceedings with no formal issues and no adverse parties ... and are not conducted for the purpose of determining the rights or liabilities of any person” (Title 49 *Code of Federal Regulations* section 831.4). Assignment of fault or legal liability is not relevant to the NTSB’s statutory mission to improve transportation safety by investigating accidents and incidents and issuing safety recommendations. In addition, statutory language prohibits the admission into evidence or use of any part of an NTSB report related to an accident in a civil action for damages resulting from a matter mentioned in the report (Title 49 *United States Code* section 1154(b)). A factual report that may be admissible under 49 *United States Code* section 1154(b) is available [here](#).