		NTSB ID: SEA06FA142		Aircraft Registration Number: N58MX	
		Occurrence Date: 07/16/2006		Most Critical Injury: Fatal	
		Occurrence Type: Accident		Investigated By: NTSB	
Location/Time					
Nearest City/Place Hillsboro	State OR	Zip Code 97124	Local Time 1628	Time Zone PDT	
Airport Proximity: Off Airport/Airstrip		Distance From Landing Facility: 0.5			
Aircraft Information Summary					
Aircraft Manufacturer Hawker Siddeley		Model/Series MK-58A Hunter		Type of Aircraft Airplane	
Revenue Sightseeing Flight: No			Air Medical Transport Flight: No		
Narrative					
<p>Brief narrative statement of facts, conditions and circumstances pertinent to the accident/incident:</p> <p>HISTORY OF THE FLIGHT</p> <p>On July 16, 2006, at 1628 Pacific daylight time, an experimental/exhibition Hawker-Siddeley, MK-58A Hunter, N58MX, was destroyed after colliding with terrain while maneuvering at an air show approximately 0.5 miles east of the Portland-Hillsboro Airport (HIO), Hillsboro, Oregon. The commercial pilot, the registered owner and operator of the airplane, was fatally injured. Visual meteorological conditions prevailed for the local flight conducted under the provisions of 14 CFR Part 91. The airplane departed from the Portland-Hillsboro Airport at about 1627. An instrument flight rules (IFR) flight plan was on file for the pilot's return flight to Van Nuys Airport, Van Nuys, California.</p> <p>The accident occurred during the Oregon International Air Show. Event coordinators reported that the pilot planned to make 3 non-aerobatic low passes over the runway after departing from runway 30. Subsequent to completing the maneuvers, the pilot intended to continue the flight to his home airport in Van Nuys, California.</p> <p>The airplane was a static display at the air show and, with the exception of the accident flight, the airplane did not fly during the event.</p> <p>Several eyewitnesses, both in attendance at the show, and others located in the residential community where the airplane crashed, submitted written statements to the National Transportation Safety Board (NTSB) and Federal Aviation Administration (FAA) detailing their observations during the accident sequence. One witness, who was located near midfield, reported that the pilot's takeoff was "conservative" and the engine sounded "normal." A second witness, also located near midfield, reported that the takeoff was "consistent" with what you would expect from a vintage jet. Both witnesses reported that following the takeoff; the airplane entered a right downwind for runway 30. The first witness reported that the airplane was "lower and slower" than what he would have expected. He also reported that the gear appeared to be in the "extended" position. The witness reported that the airplane appeared to "wallow" nose high before it descended beyond his vantage point behind a tree line. The witnesses observed heavy black smoke in the area shortly after the airplane descended below the tree line. Numerous witnesses reported similar observations.</p> <p>A video recording (recorded by a spectator) of the accident airplane's takeoff roll and initial climb was obtained by NTSB and reviewed by both the investigator-in-charge (IIC) and parties to the investigation. A small piece of unidentified debris could be seen flying through the air in the general vicinity of the airplane during the departure roll. The origin or type of debris was not determined.</p> <p>Further viewing of the video recording showed that the airplane oscillated left and right (about the longitudinal axis) immediately after takeoff. The oscillations continued as the airplane</p>					
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turned to the crosswind leg. The video ended approximately 7 seconds after liftoff. No visible smoke or uncharacteristic exhaust emissions were observed in the video.

The weather conditions at the time of the accident were clear skies, 10 miles visibility, winds variable at 6 knots, temperature 86 degrees Fahrenheit (F), dew point temperature 54 degrees F, and an altimeter of 30.11 inches. The density altitude was calculated at 1,861 feet.

PILOT INFORMATION

The pilot held a commercial pilot certificate with airplane single engine land and instrument ratings. The pilot also held FAA authorizations to operate, and provide flight instruction in, a Hawker-Siddeley Hunter.

The pilot held a FAA special issuance third class medical certificate. The certificate was issued on April 21, 2006, and contained a limitation that required the pilot to wear corrective lenses. On the application for the airman medical certificate (Form 8500-8), the pilot listed 4,500 hours total flight time, of which 25 hours were accrued during the six months preceding the medical application.

Pilot logbook records indicated the pilot completed a Flight Review (FAR 61.56) on January 29, 2005, in a Cessna 172. Hand written notes in the logbook indicated that the pilot's total flying experience in the accident airplane (make and model) was approximately 161 hours.

AIRCRAFT INFORMATION

The accident airplane, a MK-58A Hunter (s/n XE-49), was manufactured by Hawker-Siddeley in 1958-1959. The airplane was originally designed as a single engine, swept-wing, tactical military aircraft, powered by a Rolls-Royce Avon turbojet engine and equipped with a full functioning emergency ejection seat. The airplane was an asset of the Swiss Air Force from the date of manufacture through 1995, after which it was retired from military service. The airplane was imported to the United States in 1995 and, at the time of the accident, carried an experimental category airworthiness certificate. The airworthiness certificate was issued on April 15, 2003, by the Boise, Idaho, Flight Standards District Office (FSDO).

In addition to the internal fuel tanks (approximate capacity of 392 gallons), the airplane was equipped with four (two inboard and two outboard) external drop tanks. The capacity of the inboard drop tanks was approximately 150 gallons each; the capacity of the outboard fuel tanks was approximately 100 gallons each.


Fueling records obtained by the NTSB IIC indicated that the airplane was topped off with 588.6 gallons of Jet A fuel on July 16, 2006.

Engine maintenance records began on February 10, 1998, and documented the start of an FAA approved maintenance program. A corresponding logbook entry showed that the engine total time was 1,359 hours.

The airframe maintenance records began on February 10, 1998, and documented the start of an FAA approved maintenance program. A corresponding logbook entry showed that the airframe total time was 2,816 hours.

The maintenance records showed that the most recent airframe and engine inspection, in accordance with the approved inspection program, was completed on March 4, 2006. The airframe total time at inspection was 2,907 hours.

No open maintenance discrepancies were noted during a post accident review of the airplane's

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maintenance records.

WRECKAGE AND IMPACT INFORMATION

Inspectors from the FAA's Portland, Oregon, Flight Standards District Office (FSDO), conducted the onsite investigation. The inspectors were in attendance at the air show, and arrived at the accident site immediately after the accident.

The inspectors reported that the airplane impacted terrain in a residential neighborhood approximately .5 miles from the airport. One home was destroyed and two others were damaged by the post crash fire. Impact forces and post impact fire destroyed a majority of the airframe and associated components. The engine came to rest approximately 14 feet south of the main wreckage and a section of the aircraft's tail was located approximately 40 feet southeast of the primary impact location. Both sustained fire and impact related damage. The wreckage debris field, as measured by FAA personnel, was approximately 150 feet in length and 65 feet wide.

At the conclusion of the onsite investigation, the wreckage was transported to a storage facility in Independence, Oregon.

MEDICAL AND PATHOLOGICAL INFORMATION

The Office of The State Medical Examiner, Clackamas, Oregon, conducted a postmortem examination of the pilot on July 17, 2006. According to the postmortem report, the pilot's cause of death was attributed to "head and chest injuries."

The FAA Civil Aerospace Medical Institute (CAMI), Oklahoma City, Oklahoma, conducted a toxicological examination subsequent to the accident. The postmortem toxicology testing yielded negative results for controlled substances and alcohol.

See attached toxicological report for specific test parameters and results.


TESTS AND RESEARCH

Representatives from the NTSB, FAA and Rolls-Royce (Bristol, United Kingdom) examined the wreckage at a hangar facility in Independence, Oregon, on August 24-25, 2006.

The airframe, to include cockpit controls, instrumentation and flight controls, were destroyed by impact forces and post crash fire.

Thermal and impact related deformation was noted to the entire engine assembly and associated accessories. The forward air intake casing and forward section of the compressor casing were completely destroyed. Extensive thermal and impact related damage was noted to compressor stages 1 through 4, and a large percentage of the compressor blades (composed of aluminum alloy) and stators were destroyed. Extensive damage was noted to compressor stages 5 through 7; and the associated compressor blades were sheared from the disk assembly near the blade roots. Thermal related damage was observed. The aft section of the compressor assembly, stages 8 through 15 were intact. Bending deformation, opposite the direction of rotation, and thermal deformation was noted. Compressor blade tip erosion was noted to disks 8 through 13. The compressor disks throughout the compressor assembly were intact. The compressor outlet casing, flame tubes, combustion chamber casing, nozzle box and cooling air manifold remained intact.

The turbine assembly, to include the rotor blades and stators, were intact and with the exception of the surrounding case, sustained minimal damage. Silver/gray colored splatter type deposits were noted along the leading edges, pressure surface and shrouds of the turbine airfoils.

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Examination of the material, utilizing a scanning electron microscope (SEM), indicated the silver/gray material was mostly composed of aluminum alloy.

No evidence of pre impact case deformation was noted during the engine exam.

ADDITIONAL DATA/INFORMATION

The wreckage was released to CTC Services Aviation LAD, Renton, Washington, on July 19, 2007.

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Landing Facility/Approach Information					
Airport Name	Airport ID:	Airport Elevation	Runway Used	Runway Length	Runway Width
PORTLAND-HILLSBORO	HIO	204 Ft. MSL	30	6600	150
Runway Surface Type: Asphalt					
Runway Surface Condition: Dry					
Approach/Arrival Flown: NONE					
VFR Approach/Landing: Forced Landing; Traffic Pattern					
Aircraft Information					
Aircraft Manufacturer		Model/Series		Serial Number	
Hawker Siddeley		MK-58A Hunter		XE-49	
Airworthiness Certificate(s): Experimental (Special)					
Landing Gear Type: Retractable - Tricycle					
Amateur Built Acft? No	Number of Seats: 1	Certified Max Gross Wt.	25000 LBS	Number of Engines: 1	
Engine Type:	Engine Manufacturer:	Model/Series:	Rated Power:		
Turbo Jet	Rolls-Royce	Avon MK 207	10150 LBS		
- Aircraft Inspection Information					
Type of Last Inspection	Date of Last Inspection	Time Since Last Inspection	Airframe Total Time		
AAIP	03/2006	Hours	2909 Hours		
- Emergency Locator Transmitter (ELT) Information					
ELT Installed?/Type No	ELT Operated?	ELT Aided in Locating Accident Site?			
Owner/Operator Information					
Registered Aircraft Owner		Street Address			
Robert E. Guilford		City	State	Zip Code	
		Los Angeles	CA	90025	
Operator of Aircraft		Street Address			
Robert E. Guilford		City	State	Zip Code	
		Los Angeles	CA	90025	
Operator Does Business As:			Operator Designator Code:		
- Type of U.S. Certificate(s) Held: None					
Air Carrier Operating Certificate(s):					
Operating Certificate:			Operator Certificate:		
Regulation Flight Conducted Under: Part 91: General Aviation					
Type of Flight Operation Conducted: Air Race/Show					
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First Pilot Information

Name On File	City On File	State On File	Date of Birth On File	Age 73
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Sex: M	Seat Occupied: Front	Occupational Pilot?	Certificate Number: On File
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Certificate(s): Commercial

Airplane Rating(s): Single-engine Land

Rotorcraft/Glider/LTA: None

Instrument Rating(s): Airplane

Instructor Rating(s): None

Current Biennial Flight Review? 01/2005

Medical Cert.: Class 3	Medical Cert. Status: With Waivers/Limitations	Date of Last Medical Exam: 04/2006
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- Flight Time Matrix	All A/C	This Make and Model	Airplane Single Engine	Airplane Multi-Engine	Night	Instrument		Rotorcraft	Glider	Lighter Than Air
						Actual	Simulated			
Total Time	4500	161								
Pilot In Command(PIC)										
Instructor										
Instruction Received										
Last 90 Days										
Last 30 Days										
Last 24 Hours										

Seatbelt Used? Yes	Shoulder Harness Used? Yes	Toxicology Performed? Yes	Second Pilot? No
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Flight Plan/Itinerary

Type of Flight Plan Filed: IFR

Departure Point Same as Accident/Incident Location	State	Airport Identifier HIO	Departure Time 1627	Time Zone PDT
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Destination VAN NUYS	State CA	Airport Identifier VNY	
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Type of Clearance: VFR

Type of Airspace:

Weather Information

Source of Wx Information:

Unknown


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Weather Information					
WOF ID	Observation Time	Time Zone	WOF Elevation	WOF Distance From Accident Site	Direction From Accident Site
KHIO	1626	PDT	208 Ft. MSL	1 NM	270 Deg. Mag.
Sky/Lowest Cloud Condition: Clear			Ft. AGL	Condition of Light: Day	
Lowest Ceiling: None		Ft. AGL	Visibility: 10	SM	Altimeter: 30.11 "Hg
Temperature: 30 °C	Dew Point: 12 °C	Weather Conditions at Accident Site: Visual Conditions			
Wind Direction: Variable		Wind Speed: 6	Wind Gusts:		
Visibility (RVR): Ft.	Visibility (RVV)	SM			
Precip and/or Obscuration: No Obscuration; No Precipitation					

Accident Information		
Aircraft Damage: Destroyed	Aircraft Fire: Ground	Aircraft Explosion: Ground

- Injury Summary Matrix	Fatal	Serious	Minor	None	TOTAL
First Pilot	1				1
Second Pilot					
Student Pilot					
Flight Instructor					
Check Pilot					
Flight Engineer					
Cabin Attendants					
Other Crew					
Passengers					
- TOTAL ABOARD -	1				1
Other Ground					
- GRAND TOTAL -	1				1

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Administrative Information

Investigator-In-Charge (IIC)
Dennis J. Hogenson

Additional Persons Participating in This Accident/Incident Investigation:

John Judge
FAA - FSDO
Hillsboro, OR

John S Fisher
FAA FSDO
Hillsboro, OR

Erik Ramseyer
FAA FSDO
Hillsboro, OR

Kevin Munro
Rolls-Royce
Bristol, UK,