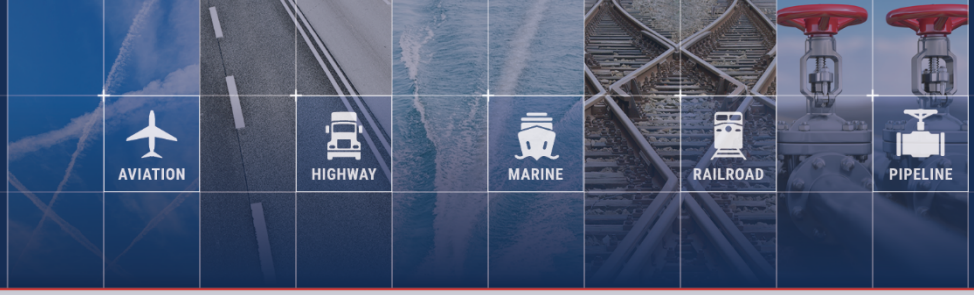

Aviation Investigation Final Report

Location:	Brewster, Washington	**Accident Number:**	SEA06LA133
Date & Time:	July 2, 2006, 18:50 Local	**Registration:**	N8120H
Aircraft:	Nanchang China CJ-6	**Aircraft Damage:**	Substantial
Defining Event:		**Injuries:**	1 None
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

While in cruise flight at 5,000 feet the pilot heard a loud bang, followed by an instantaneous increase in RPM. Subsequent attempts to sustain engine power with throttle and propeller inputs were unsuccessful, which resulted in the pilot attempting a forced landing to a paved runway approximately 4 miles away. The airplane subsequently impacted the last row of trees of an orchard less than one-half mile from the end of the runway, which resulted in the airplane coming to rest on its belly oriented on an easterly heading. A post accident examination of the airplane's engine revealed that all three planetary gears were severely damaged, and all three gears appeared to have lost all gear teeth, with a portion of the gear teeth located in the oil sump. The reason for the damage to the planetary gears was not determined.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The failure of the engine's three planetary gears for undetermined reasons. A factor contributing to the accident was the tree orchard.

Findings

Occurrence #1: AIRFRAME/COMPONENT/SYSTEM FAILURE/MALFUNCTION
Phase of Operation: CRUISE - NORMAL

Findings
1. (C) REDUCTION GEAR ASSY - FAILURE

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

Occurrence #3: IN FLIGHT COLLISION WITH OBJECT
Phase of Operation: MANEUVERING

Findings
2. (F) OBJECT - TREE(S)

Factual Information

On July 2, 2006, approximately 1850 Pacific daylight time, a single-engine Nanchang China CJ-6 experimental airplane, N8120H, sustained substantial damage after impacting terrain following a loss of engine power and a forced landing approximately one-half mile west of Anderson Field (S97), Brewster, Washington. The airplane is registered to a private individual. The certificated private pilot, sole occupant of the airplane, was not injured. Visual meteorological conditions prevailed for the personal cross-country flight, which was operated in accordance with 14 CFR Part 91, and a flight plan was not filed. The flight departed the Arlington Municipal Airport (AWO), Arlington, Washington, about 1800, with its destination being the Omak Airport, Omak, Washington.

According to the Pilot/Operator Aircraft Accident/Incident Report (NTSB Form 6120.1), the pilot reported that while in cruise flight about 5,000 feet mean sea level and approximately 3 or 4 nautical miles west of S97, he heard a "loud pop" followed by an "instantaneous increase" in [propeller] revolutions per minute (RPM), to over 4,000 RPM. The pilot further reported that after the engine would not respond to throttle or propeller [control] inputs, he set up the best rate [of descent] speed for a straight in approach in an attempt to reach Runway 07 at S97. The pilot stated that he approached the airstrip at just above stall speed and elected to delay lowering the landing gear until he cleared the tree orchard, located less than one-half mile from the end of runway 07. The pilot revealed that the airplane settled into the last row of trees before coming to rest on its belly about 10 to 15 feet past the orchard, and oriented in an easterly direction.

A post accident examination of the airplane revealed that the airplane had sustained substantial damage to both wings, the right wing tip, and the horizontal stabilizer. Damage was also observed to the engine cowling, propeller and the airplane's belly skin.

A subsequent examination of the engine by the pilot, who advised the NTSB investigator-in-charge that he had 15 years experience working on and operating the Housia HS6, revealed that the propeller "free wheeled" without any evidence of connection to the engine crankshaft. The pilot reported that after the engine cowling was removed there was no external damage observed to the engine. The pilot further reported that after the propeller governor, propeller, shutters and nose case were removed, it was revealed that inside the nose case the three planetary gears were found to be severely damaged; all three appeared to have lost all [gear] teeth. The pilot stated that a portion of the broken gears was later recovered in the oil sump. The pilot further stated that during the examination the engine was found to have continuity between all accessories, pistons, valve train and the main crankshaft. The pilot reported that he could offer no reason for the failure of the planetary gears.

Pilot Information

Certificate:	Private	**Age:**	59,Male
Airplane Rating(s):	Single-engine land; Single-engine sea	**Seat Occupied:**	Front
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 3 With waivers/limitations	**Last FAA Medical Exam:**	April 1, 2004
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	July 1, 2004
Flight Time:	1384 hours (Total, all aircraft), 65 hours (Total, this make and model), 1321 hours (Pilot In Command, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Nanchang China	**Registration:**	N8120H
Model/Series:	CJ-6	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Experimental (Special)	**Serial Number:**	48-21
Landing Gear Type:	Retractable - Tricycle	**Seats:**	2
Date/Type of Last Inspection:	April 1, 2006 Condition	**Certified Max Gross Wt.:**	3080 lbs
Time Since Last Inspection:	7 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	2112 Hrs at time of accident	**Engine Manufacturer:**	Housia
ELT:	Not installed	**Engine Model/Series:**	HS6
Registered Owner:	On file	**Rated Power:**	285 Horsepower
Operator:	On file	**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	OMK,1305 ft msl	**Distance from Accident Site:**	20 Nautical Miles
Observation Time:	18:53 Local	**Direction from Accident Site:**	60°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	3 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	200°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29.93 inches Hg	**Temperature/Dew Point:**	25°C / 1°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Arlington, WA (AWO)	**Type of Flight Plan Filed:**	None
Destination:	Omak, WA (OMK)	**Type of Clearance:**	None
Departure Time:	18:00 Local	**Type of Airspace:**	

Airport Information

Airport:	Anderson Field S97	**Runway Surface Type:**	Asphalt
Airport Elevation:	914 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	07	**IFR Approach:**	None
Runway Length/Width:	4000 ft / 60 ft	**VFR Approach/Landing:**	Forced landing;Straight-in

Wreckage and Impact Information

Crew Injuries:	1 None	**Aircraft Damage:**	Substantial
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 None	**Latitude, Longitude:**	48.104721,-119.730003

Administrative Information

Investigator In Charge (IIC):	Little, Thomas
Additional Participating Persons:	Phil Vittetoe; Federal Aviation Administration; Spokane, WA
Original Publish Date:	February 26, 2007
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=64085