Aviation Investigation Final Report

Location:	Fort Klamath, Oregon	**Accident Number:**	SEA03FA038
Date & Time:	February 8, 2003, 10:15 Local	**Registration:**	N2392W
Aircraft:	Beech A23	**Aircraft Damage:**	Substantial
Defining Event:		**Injuries:**	4 None
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The pilot reported that during descent for landing, the engine started to "knock" and "shutter." About 15 seconds later a "significant noise" was heard and oil and smoke began to come out of the engine cowling. The pilot initiated a forced landing to an open field. During the landing roll, the aircraft traveled over a ditch, which sheared off the nose gear. During the post-accident engine inspection, oil was visible on the bottom engine cowling and oil was streaked along the bottom of the fuselage from the engine to the tail. A large hole was noted to the top left side of the crankcase as well as a hole in the bottom left side between cylinders two and four. The number two rod end cap was missing as well as the bolts and nuts. Severe heat distress was noted on the number two connecting rod end and to the associated crankshaft rod journal. All oil passages were clear. The number two bearing was missing. Fragments of connecting rod and bearing material was found in the oil sump. The remaining connecting rods were intact with no evidence of heat distress noted. All oil lines were intact and connections were tight. No evidence of an oil leak was noted.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The separation of the rod end cap from the connecting rod for an undetermined reason during the descent for landing. The ditch was a factor.

Findings

Occurrence #1: LOSS OF ENGINE POWER(TOTAL) - MECH FAILURE/MALF
Phase of Operation: DESCENT - NORMAL

Findings
1. (C) ENGINE ASSEMBLY,CONNECTING ROD CAP - SEPARATION

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

Occurrence #3: ON GROUND/WATER ENCOUNTER WITH TERRAIN/WATER
Phase of Operation: EMERGENCY LANDING

Findings
2. (F) TERRAIN CONDITION - DITCH

Occurrence #4: GEAR COLLAPSED
Phase of Operation: EMERGENCY LANDING

Factual Information

HISTORY OF FLIGHT

On February 8, 2003, approximately 1015 Pacific standard time, a Beech A23, N2392W, registered to Cascade Wings LLC, operated by the private pilot as a 14 CFR Part 91 personal flight, experienced a loss of engine power during descent. The pilot initiated an off airport landing to an open field near Fort Klamath, Oregon. During the landing roll the airplane collided with a ditch. Visual meteorological conditions prevailed at the time and no flight plan was filed. The airplane was substantially damaged and the private pilot and his three passengers were not injured. The flight originated from Redmond, Oregon, about one hour and 15 minutes prior to the accident.

During a telephone interview and subsequent written statement, the pilot reported that the airplane was descending for landing to Chiloquin State Airport, Chiloquin, Oregon, when the engine started to "knock" and "shutter." About 15 seconds later a "significant noise" was heard and oil and smoke began to come out of the engine cowling. The pilot stated that the engine ran "badly" for another 15-30 seconds and then was shut down when the pilot felt that a forced landing in a large open field could be attained. The pilot reported that several ditches crossed the field. During the landing roll, the aircraft traveled over one of the ditches which sheared off the nose gear. The airplane came to a stop nose down.

PERSONNEL INFORMATION

At the time of the accident, the pilot held a private pilot certificate for single-engine aircraft. A total flight time in all aircraft was reported as 321 hours, with 274 hours as pilot-in-command. A total of 131 hours had been accumulated in the make and model aircraft involved in the accident.

AIRCRAFT INFORMATION

The aircraft was equipped with a Lycoming IO-360-A2B, serial number L-2119-51A engine. Maintenance records indicated that the engine had been overhauled in May 1980, due to metal in the oil. The entry also indicated that the front main bearing was severely scored.

In January 1999, approximately 941 hours since the engine was overhauled, an Aviation Development spin on oil filter, STC SA00402SE, SE5743NM was installed along with a heating pad type engine pre-heater on the oil sump.

In May 2000, approximately 1,049 hours since overhaul, the engine was top overhauled. The entry indicated that the mechanic supervised the owner's removal and reinstallation of all four

cylinders following repair by Avion Aeronautics.

In May 2001, the oil pump was replaced with part number 05K194235.

The last oil change, before the accident, was on August 17, 2002, and the last annual inspection was completed on January 21, 2003, approximately 1,266 hours since overhaul and 217 hours since the top overhaul. The loss of engine power occurred approximately two hours since the last annual inspection.

The mechanic who had supervised the top overhaul, and accomplished most of the maintenance on the aircraft since the top overhaul reported that at the time of the top overhaul, the engine had been consuming more oil than normal and that the oil was leaking from the case halves. Sealant material was applied at the mating halves. The mechanic reported that after the top overhaul, the consumption of oil decreased to about one quart usage every 4-6 hours. The mechanic also accomplished most of the oil changes and reported that the filter was checked each time. No metal was noted in the filter.

On the day of the accident, the aircraft had been pulled over to the maintenance facility to plug in the oil sump heater and to remove frost from the wings. After the aircraft left, maintenance personnel noticed an oil puddle where the aircraft had been parked. The oil trailed out to where the airplane had stopped on the ramp, then trailed again to the run up area and runway.

ADDITIONAL INFORMATION

On February 19, 2003, investigators from the National Transportation Safety Board and Lycoming Engines inspected the engine at Specialty Aircraft, Redmond, Oregon.

Initial inspection noted that the engine remained attached to the airframe. Except for the removal of the propeller during recovery, all systems remained intact. The cowling was removed. During the removal, oil was noted on the inside of the cowling. Oil was also noted to the underside of the fuselage that traveled from the engine to the tail. After the engine was exposed, a large hole in the left side upper crankcase was noted which exposed the number 2 connecting rod. Also noted was a hole in the lower left crankcase between number 2 and 4 cylinders.

The oil lines to and from the oil filter were inspected and found intact with the connections tight. The oil lines to and from the oil cooler were intact and the connections were tight. The oil cooler displayed signs of impact damage. One connection was bent aft and the cooler was cracked. The oil sump was intact. The quick drain was found in the closed position. Evidence of oil residue was noted to the underside of the engine and cowling.

The engine was removed from the airframe and disassembled. The accessory section, all four cylinders and the oil sump were removed to separate the crankcase. Cylinders 1, 3, and 4 were intact as well as the associated pistons and connecting rods. Impact damage was noted to

cylinder and connecting rod number 1. All piston rings were intact.

Cylinder number 2 was removed. The connecting rod remained attached to the piston. The rod end cap separated from the rod arm. Neither the rod end cap, nor rod end cap nuts and bolts were present. Evidence of fragmented rod end material and bearing material were found in the oil sump. The connecting rod end displayed severe heat distress and was compressed. The bearing was missing. The number 2 crankshaft connecting-rod bearing journal displayed severe heat distress. The oil lubrication passages were inspected and found clear of blockages.

The remaining rod bearings and journals for 1, 3, and 4 did not display evidence of heat distress. The forward main bearing displayed minor scoring.

The oil sump was intact with approximately one quart of oil remaining. Within the sump, fragmented pieces of connecting rod material and bearing material were found. The oil screen was clear of contaminants.

The airframe and engine were released to personnel at Specialty Aircraft, Redmond, Oregon, on February 19, 2003.

Pilot Information

Certificate:	Private	**Age:**	52,Male
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Left
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 Valid Medical--w/ waivers/lim	**Last FAA Medical Exam:**	July 11, 2001
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	October 19, 2001
Flight Time:	321 hours (Total, all aircraft), 131 hours (Total, this make and model), 274 hours (Pilot In Command, all aircraft), 1 hours (Last 90 days, all aircraft), 1 hours (Last 30 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Beech	**Registration:**	N2392W
Model/Series:	A23	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	MA-7
Landing Gear Type:	Tricycle	**Seats:**	4
Date/Type of Last Inspection:	January 21, 2003 Annual	**Certified Max Gross Wt.:**	2550 lbs
Time Since Last Inspection:	2 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	1653 Hrs at time of accident	**Engine Manufacturer:**	Lycoming
ELT:	Installed, not activated	**Engine Model/Series:**	IO-360-A2B
Registered Owner:	Cascade Wings LLC	**Rated Power:**	200 Horsepower
Operator:		**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	LMT,4095 ft msl	**Distance from Accident Site:**	35 Nautical Miles
Observation Time:	09:53 Local	**Direction from Accident Site:**	146°
Lowest Cloud Condition:		**Visibility**	10 miles
Lowest Ceiling:	Broken / 25000 ft AGL	**Visibility (RVR):**	
Wind Speed/Gusts:	/	**Turbulence Type Forecast/Actual:**	/
Wind Direction:		**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.11 inches Hg	**Temperature/Dew Point:**	-1°C / -7°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Redmond, OR (RDM)	**Type of Flight Plan Filed:**	None
Destination:	Chiloquin, OR (2S7)	**Type of Clearance:**	None
Departure Time:	09:00 Local	**Type of Airspace:**	Class E

Wreckage and Impact Information

Crew Injuries:	1 None	**Aircraft Damage:**	Substantial
Passenger Injuries:	3 None	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	4 None	**Latitude, Longitude:**	42.7,-122

Administrative Information

Investigator In Charge (IIC):	Eckrote, Debra
Additional Participating Persons:	Jack M Swensen; FAA-FSDO; Hillsboro, OR Marcus Carr; FAA-FSDO; Hillsboro, OR Jeffrey Poschwatta; Textron Lycoming; Kent, WA
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Note:	
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