Aviation Investigation Final Report

Location:	Challis, Idaho	**Accident Number:**	SEA05LA170
Date & Time:	August 13, 2005, 10:30 Local	**Registration:**	N6677P
Aircraft:	Piper PA-24-250	**Aircraft Damage:**	Substantial
Defining Event:		**Injuries:**	2 Serious
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The pilot reported that shortly after takeoff, the propeller RPM became erratic and uncontrollable and he elected to return to the airport. He reported that during the descent, the airplane developed a rough running engine and eventually lost power resulting in an off airport landing. Preliminary external examination of the assembly revealed a large hole in the engines crankcase, adjacent to the number four cylinder assembly. The number four piston rod was fractured and extensive heat distress, deformation and discoloration was noted to both the number three and number four piston assemblies. A representative from Textron Lycoming reported that this type of damage is indicative of oil depravation. Further examination of the engine assembly revealed that the hydraulic pump adapter pad cover gasket was protruding from between the accessory mounting pad and its associated cover. A section of the gasket separated and was displaced from its installed position. The FAA Airworthiness Inspector overseeing the examination reported that the installed gasket was intended to be used in conjunction with a hydraulic pump, if applicable, however, this particular engine configuration does not utilize a hydraulic pump, and therefore a hydraulic pump adapter pad gasket should have been installed. Personnel at the Challis airport reported that a large puddle of oil was found in the run-up area following the airplane's pre takeoff run-up and departure.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The installation of an improper oil gasket by maintenance personnel, which resulted in a loss of engine oil and subsequent loss of engine power during the emergency descent.

Findings

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

Findings
1. (C) LUBRICATING SYSTEM,OIL GASKET - INCORRECT
2. (C) MAINTENANCE,OVERHAUL - IMPROPER - OTHER MAINTENANCE PERSONNEL

Occurrence #2: LOSS OF ENGINE POWER(PARTIAL) - MECH FAILURE/MALF
Phase of Operation: LANDING

Findings
3. (C) LUBRICATING SYSTEM,OIL GASKET - FAILURE
4. (C) FLUID,OIL - LOSS,TOTAL

Occurrence #3: FORCED LANDING
Phase of Operation: EMERGENCY DESCENT/LANDING

Occurrence #4: HARD LANDING
Phase of Operation: EMERGENCY LANDING

Findings
5. TERRAIN CONDITION - GROUND

Factual Information

On August 13, 2005, about 1030 mountain daylight time, a Piper PA-24-250 Comanche, N6677P, sustained substantial damage following a loss of engine power and off airport forced landing near the Challis Airport (LLJ), Challis, Idaho. The airplane is owned by the pilot and was being operated as a visual flight rules (VFR) personal/pleasure flight under the provisions of 14, CFR Part 91, when the accident occurred. The private pilot and passenger received serious injuries. Visual meteorological conditions prevailed, and no flight plan was filed for the flight that originated at Challis approximately 3 minutes prior to the accident. The pilot's intended destination was Mackay, Idaho.

During a telephone conversation with the National Transportation Safety Board IIC on August 15, the pilot reported that shortly after takeoff from runway 34, the propeller RPM became erratic and uncontrollable and he elected to return to Challis. He reported that during the descent into Challis the airplane developed a rough running engine and eventually lost power. The pilot stated that he landed in a hay field, short of runway (16), resulting in substantial damage.

Personnel at the Challis airport reported that a large puddle of oil was found in the run-up area following the airplane's pre takeoff run-up and departure.

The airplane was equipped with a Lycoming O-540-A1C5 engine. Examination of the engine's maintenance records revealed that the engine had been overhauled and inspected on July 13, 2004, subsequent to a "prop strike." The records indicated that the "tach time" at overhaul was 255.6 hours, approximately 35.2 hours prior to the accident. Additional maintenance records for this accident can be found in the public docket.

On August 25, representatives from the Federal Aviation Administrations Boise, Idaho, Flight Standards District Office, (FSDO), Textron Lycoming and The New Piper Aircraft Company performed an engine examination and teardown.

Preliminary external examination of the assembly revealed a large hole in the engines crankcase, adjacent to the number four cylinder assembly. The number four piston rod was fractured and extensive heat distress, deformation and discoloration was noted to both the number three and number four piston assemblies. The representative from Textron Lycoming reported that this type of damage is indicative of oil depravation.

Further examination of the engine assembly revealed that the hydraulic pump adapter pad cover gasket was protruding from between the accessory mounting pad and its associated cover (part number 89106). A section of the gasket (part number 68315) separated and was displaced from its installed position.

The FAA Airworthiness Inspector overseeing the examination reported that the installed gasket (Part number 68315) was intended to be used in conjunction with a hydraulic pump, if applicable, however, this particular engine configuration does not utilize a hydraulic pump, and therefore a hydraulic pump adapter pad gasket (part number 69551) should have been installed.

The Lycoming O-540-A series Parts Catalog illustrates the use of gasket number 69551 when utilizing the hydraulic pump adapter pad cover.

Pilot Information

Certificate:	Private	**Age:**	59,Male
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	Airplane	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 3 With waivers/limitations	**Last FAA Medical Exam:**	February 1, 2004
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	February 1, 2005
Flight Time:	328 hours (Total, all aircraft), 62 hours (Total, this make and model), 267 hours (Pilot In Command, all aircraft), 6 hours (Last 90 days, all aircraft), 3 hours (Last 30 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Piper	**Registration:**	N6677P
Model/Series:	PA-24-250	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	24-1801
Landing Gear Type:	Retractable - Tricycle	**Seats:**	4
Date/Type of Last Inspection:	August 1, 2004 Annual	**Certified Max Gross Wt.:**	2800 lbs
Time Since Last Inspection:	35 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	4571 Hrs as of last inspection	**Engine Manufacturer:**	Lycoming
ELT:	Installed	**Engine Model/Series:**	O-540
Registered Owner:	Christopher James Trust	**Rated Power:**	250 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:	KLLJ,5072 ft msl	**Distance from Accident Site:**	1 Nautical Miles
Observation Time:	10:30 Local	**Direction from Accident Site:**	
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	7 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	30°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.12 inches Hg	**Temperature/Dew Point:**	16°C / 4°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Challis, ID (KLLJ)	**Type of Flight Plan Filed:**	None
Destination:	MACKAY, ID (U62)	**Type of Clearance:**	None
Departure Time:	10:30 Local	**Type of Airspace:**	

Airport Information

Airport:	CHALLIS U15	**Runway Surface Type:**	Asphalt
Airport Elevation:	5072 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	34	**IFR Approach:**	Visual
Runway Length/Width:	4600 ft / 60 ft	**VFR Approach/Landing:**	Forced landing

Wreckage and Impact Information

Crew Injuries:	1 Serious	**Aircraft Damage:**	Substantial
Passenger Injuries:	1 Serious	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	2 Serious	**Latitude, Longitude:**	44.523056,-114.217498

Administrative Information

Investigator In Charge (IIC):	Hogenson, Dennis
Additional Participating Persons:	Cliff Smart ; FAA FSDO; Boise , ID Charles Little ; The New Piper Aircraft Company ; Vero Beach , FL Mark Platt; Textron Lycoming ; Williamsport , PA
Original Publish Date:	March 28, 2006
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=62215