



# National Transportation Safety Board Aviation Accident Final Report

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<b>Location:</b>	Clear, AK	<b>Accident Number:</b>	ANC01LA039
<b>Date &amp; Time:</b>	03/03/2001, 1300 AST	<b>Registration:</b>	N42DC
<b>Aircraft:</b>	Helio H-295	<b>Aircraft Damage:</b>	Substantial
<b>Defining Event:</b>		<b>Injuries:</b>	1 None

**Flight Conducted Under:** Part 91: General Aviation - Positioning

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## Analysis

The certificated airline transport pilot reported that while in level, cruise flight, the engine began to run rough and lose power. The pilot said that while performing the engine emergency procedures, he smelled smoke in the cabin, and noted a substantial amount of engine oil on the windscreen. The airplane collided with trees during a subsequent forced landing. A postaccident investigation revealed that the number two connecting rod had sustained a complete fracture. The number 2 connecting rod journal displayed significant amount of heat induced bluing. The fractured connecting rod, main journal bearing shells (7 halves), and rod bearing shells (7 halves) were sent to the NTSB's Materials Laboratory for examination. A Senior Safety Board metallurgist reported that the separated connecting rod displayed evidence of low cycle, high stress fatigue cracking. A scanning electron microscope (SEM) examination of the rod bearing shells disclosed pitting, with irregular-shape metal particles embedded on the surface of the bearing material. The area around the pits showed evidence of metallic flow from the pits.

## Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The shifting of engine connecting rod bearings, and the fracture of an engine connecting rod.

## Findings

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

### Findings

1. (C) ENGINE ASSEMBLY,CONNECTING ROD - FRACTURED
2. (C) ENGINE ASSEMBLY,BEARING - SHIFTED

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

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Occurrence #3: IN FLIGHT COLLISION WITH OBJECT  
Phase of Operation: EMERGENCY DESCENT/LANDING

### Findings

3. OBJECT - TREE(S)

## Factual Information

On March 3, 2001, about 1300 Alaska standard time, a wheel/ski equipped Helio H-295 airplane, N42DC, sustained substantial damage during a forced landing about 20 miles south of Clear, Alaska. The airplane was being operated as a visual flight rules (VFR) positioning flight under Title 14, CFR Part 91, when the accident occurred. The airplane was registered to, and operated by, Wright Air Service, Inc., Fairbanks, Alaska. The solo airline transport pilot was not injured. Visual meteorological conditions prevailed, and a VFR flight plan was filed. The flight originated about 1245, from the Stampede Airstrip, located about 37 miles west of Healy, Alaska, and was en route to Fairbanks.

During a telephone conversation with the National Transportation Safety Board investigator-in-charge on March 5, the pilot reported that while in level, cruise flight, the engine began to run rough and lose power. The pilot said that while performing the engine emergency procedures, he smelled smoke in the cabin, and noted a substantial amount of engine oil on the windscreen. The airplane collided with trees during a subsequent forced landing, and sustained substantial damage to the wings, fuselage, and empennage.

The pilot stated that a postaccident inspection revealed a fist-sized hole on the left side of the engine crankcase.

The director of maintenance for the operator reported that at the time of the accident, the engine had accrued a total time in service of 1,143.0 hours since overhaul, and was installed in the accident airplane in late August of 1999. The engine maintenance records note that the engine was "overhauled" and reassembled per Lycoming overhaul manual 60294-5-6 on August 17, 1999. All work was performed by the operator, at the operator's maintenance facility, in Fairbanks.

The airplane was eventually recovered by the operator and insurance personnel, and moved to the operator's maintenance facility in Fairbanks.

On April 12, 2001, in the presence of a Federal Aviation Administration (FAA) airworthiness inspector from the Fairbanks Flight Standards District Office, an engine tear down and inspection was conducted at the operator's maintenance facility in Fairbanks. According to the FAA inspector, the inspection revealed that the number two connecting rod had sustained a complete fracture. The fracture surfaces displayed postfailure circumferential scoring, and damage. In addition, the FAA inspector noted a significant amount of heat induced, bluing of the number 2 connecting rod journal.

The fractured connecting rod, main journal bearing shells (7 halves), and rod bearing shells (7 halves) were sent to the National Transportation Safety Board's Materials Laboratory for examination. A Senior Safety Board metallurgist reported that the separated connecting rod displayed evidence of low cycle, high stress fatigue cracking. He noted that a scanning electron microscope (SEM) examination of the rod bearing shells disclosed irregular-shape metal particles that were embedded on the surface of the bearing material. He added that the rod bearing shells displayed many pits. The area around the pits showed evidence of metallic flow from the pits.

## Pilot Information

<b>Certificate:</b>	Airline Transport; Flight Engineer	<b>Age:</b>	51, Male
<b>Airplane Rating(s):</b>	Multi-engine Land; Single-engine Land; Single-engine Sea	<b>Seat Occupied:</b>	Left
<b>Other Aircraft Rating(s):</b>	None	<b>Restraint Used:</b>	Seatbelt, Shoulder harness
<b>Instrument Rating(s):</b>	Airplane	<b>Second Pilot Present:</b>	No
<b>Instructor Rating(s):</b>	None	<b>Toxicology Performed:</b>	No
<b>Medical Certification:</b>	Class 2 Valid Medical--w/ waivers/lim.	<b>Last FAA Medical Exam:</b>	06/28/2000
<b>Occupational Pilot:</b>		<b>Last Flight Review or Equivalent:</b>	12/31/2000
<b>Flight Time:</b>	18800 hours (Total, all aircraft), 5500 hours (Total, this make and model), 18300 hours (Pilot In Command, all aircraft), 100 hours (Last 90 days, all aircraft), 30 hours (Last 30 days, all aircraft), 3 hours (Last 24 hours, all aircraft)		

## Aircraft and Owner/Operator Information

<b>Aircraft Make:</b>	Helio	<b>Registration:</b>	N42DC
<b>Model/Series:</b>	H-295	<b>Aircraft Category:</b>	Airplane
<b>Year of Manufacture:</b>		<b>Amateur Built:</b>	No
<b>Airworthiness Certificate:</b>	Normal	<b>Serial Number:</b>	1454
<b>Landing Gear Type:</b>	Tailwheel	<b>Seats:</b>	4
<b>Date/Type of Last Inspection:</b>	12/15/2000, 100 Hour	<b>Certified Max Gross Wt.:</b>	3800 lbs
<b>Time Since Last Inspection:</b>	96 Hours	<b>Engines:</b>	1 Reciprocating
<b>Airframe Total Time:</b>	7519 Hours at time of accident	<b>Engine Manufacturer:</b>	Lycoming
<b>ELT:</b>	Installed, not activated	<b>Engine Model/Series:</b>	GO-480-G1D6
<b>Registered Owner:</b>	Wright Air Service, Inc.	<b>Rated Power:</b>	295 hp
<b>Operator:</b>	Wright Air Service, Inc.	<b>Operating Certificate(s) Held:</b>	On-demand Air Taxi (135)
<b>Operator Does Business As:</b>		<b>Operator Designator Code:</b>	HYTA

## Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	Condition of Light:	Day
Observation Facility, Elevation:		Distance from Accident Site:	
Observation Time:		Direction from Accident Site:	
Lowest Cloud Condition:	Clear	Visibility	100 Miles
Lowest Ceiling:	None	Visibility (RVR):	
Wind Speed/Gusts:	Calm /	Turbulence Type Forecast/Actual:	/
Wind Direction:		Turbulence Severity Forecast/Actual:	/
Altimeter Setting:		Temperature/Dew Point:	-15°C
Precipitation and Obscuration:			
Departure Point:	Stampede, AK (Z90)	Type of Flight Plan Filed:	VFR
Destination:	Fairbanks, AK (FAI)	Type of Clearance:	None
Departure Time:	1245 AST	Type of Airspace:	Class E

## Wreckage and Impact Information

Crew Injuries:	1 None	Aircraft Damage:	Substantial
Passenger Injuries:	N/A	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	1 None	Latitude, Longitude:	64.178611, -149.437500

## Administrative Information

Investigator In Charge (IIC):	Clinton O Johnson	Report Date:	07/02/2002
Additional Participating Persons:	Kenneth C Thomas; Federal Aviation Administration; Fairbanks, AK		
Publish Date:			
Investigation Docket:	NTSB accident and incident dockets serve as permanent archival information for the NTSB's investigations. Dockets released prior to June 1, 2009 are publicly available from the NTSB's Record Management Division at <a href="mailto:pubinquiry@ntsb.gov">pubinquiry@ntsb.gov</a> , or at 800-877-6799. Dockets released after this date are available at <a href="http://dms.nts.gov/pubdms/">http://dms.nts.gov/pubdms/</a> .		

The National Transportation Safety Board (NTSB), established in 1967, is an independent federal agency mandated by Congress through the Independent Safety Board Act of 1974 to investigate transportation accidents, determine the probable causes of the accidents, issue safety recommendations, study transportation safety issues, and evaluate the safety effectiveness of government agencies involved in transportation. The NTSB makes public its actions and decisions through accident reports, safety studies, special investigation reports, safety recommendations, and statistical reviews.

The Independent Safety Board Act, as codified at 49 U.S.C. Section 1154(b), precludes the admission into evidence or use of any part of an NTSB report related to an incident or accident in a civil action for damages resulting from a matter mentioned in the report. A factual report that may be admissible under 49 U.S.C. § 1154(b) is available [here](#).