



# National Transportation Safety Board Aviation Accident Final Report

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<b>Location:</b>	Hamilton, MT	<b>Accident Number:</b>	SEA05LA032
<b>Date &amp; Time:</b>	12/30/2004, 1300 MST	<b>Registration:</b>	N601DF
<b>Aircraft:</b>	Aerostar 601	<b>Aircraft Damage:</b>	Destroyed
<b>Defining Event:</b>		<b>Injuries:</b>	1 None
<b>Flight Conducted Under:</b>	Part 91: General Aviation - Personal		

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## Analysis

Immediately after taking off and raising the landing gear, the pilot noticed the left engine began to lose power. The airplane subsequently veered to the left before impacting up slopping terrain in a left wing low attitude, resulting in a fire breaking out which consumed the left side of the airplane. A postaccident examination revealed that the left engine had sustained thermal but no impact damage, and that the engine's right hand turbocharger had no thermal or impact damage. A further examination indicated that no restrictions were found in the center section of the turbocharger and there was no damage to the housing or the impeller; however, the impeller was frozen in the center section and would not turn. Indications of grooving and scraping from a lack of lubrication to the bearings and drive shaft was observed. No mechanical anomalies with the aircraft were noted by the pilot prior to takeoff which would have prevented normal operations.

## Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: A partial loss of engine power due to the lack of lubrication and subsequent failure of the left engine's right turbocharger for undetermined reasons, and subsequent forced landing after takeoff. A factor was the unsuitable terrain for the forced landing.

## Findings

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Occurrence #1: LOSS OF ENGINE POWER(PARTIAL) - MECH FAILURE/MALF  
Phase of Operation: TAKEOFF - INITIAL CLIMB

### Findings

1. (C) LUBRICATING SYSTEM - EXHAUSTION
2. REASON FOR OCCURRENCE UNDETERMINED
3. (C) EXHAUST SYSTEM,TURBOCHARGER - FAILURE

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Occurrence #2: FORCED LANDING

Phase of Operation: EMERGENCY LANDING AFTER TAKEOFF

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Occurrence #3: IN FLIGHT COLLISION WITH TERRAIN/WATER

Phase of Operation: EMERGENCY LANDING

### Findings

4. (F) TERRAIN CONDITION - NONE SUITABLE

## Factual Information

On December 30, 2004, approximately 1300 mountain standard time, an Aerostar 601 airplane, N601DF, was destroyed after impacting terrain following a loss of engine power during initial climb near Hamilton, Montana. The certificated commercial pilot, the sole occupant of the airplane, was not injured. Visual meteorological conditions prevailed for the personal flight, which was conducted in accordance with 14 CFR Part 91, and a flight plan was not filed. The flight was originating at the time of the accident, with the destination being the Stevensville Airport (32S), Stevensville, Montana.

In a telephone interview with the NTSB investigator-in-charge (IIC), the pilot stated that "almost immediately" after taking off on Runway 34 he retracted the landing gear, then noticed the left engine beginning to lose power as the airplane began to drift to the left. The pilot stated that because he was less than 100 feet above the ground, he didn't have time to "feather" the propeller. The airplane impacted up slopping terrain in a left wing low attitude, sliding to a stop and coming to rest in an upright position. The pilot reported that after he turned the master switch off and exited the aircraft, he noticed a fire starting to break out, which subsequently consumed the left side of the airplane.

A Federal Aviation Administration (FAA) airworthiness inspector, who traveled to the accident site, reported that the left engine's propeller blades were bent almost straight back, indicating minimum engine power at impact, while the right engine's propellers revealed signatures consistent with the engine generating full power. The aircraft was subsequently moved to a secure facility at the Stevensville Airport for further examination.

On January 20, 2005, an FAA airworthiness inspector, assisted by a certificated airframe and powerplant mechanic, conducted an examination of the aircraft's left engine. The examination revealed the engine, equipped with two Ray Jay turbochargers, sustained thermal damage due to a post crash fire. The oil lines feeding the turbochargers sustained thermal damage; however, the fittings were intact and no obstructions were noted. The wastegates were in the open position and moved freely. The intake hose on the left turbocharger was removed. There was no foreign object damage observed and the impeller was found to turn freely. When examined, the right turbocharger impeller would not turn, but no foreign object damage was noted. At this point the right turbocharger was removed for further examination.

The right hand mounted turbocharger exhibited no evidence of thermal or impact damage. The center section of the turbocharger was checked for restrictions and none were found, and the exhaust side of the turbocharger revealed no damage to the housing or the impeller. The impeller was frozen in the center section and would not turn. The intake impeller was then removed from the shaft and the drive shaft was tapped out of the center section. The center of the drive shaft was observed to be discolored (black and blue) with round marks evenly spaced around the shaft that matched the oil holes found on the bearings. Indications of grooving and scraping from a lack of lubrication to the bearings and drive shaft was observed. The oil holes located in the bearings positioned in the center section of the turbocharger were clear of obstructions.

Maintenance records revealed that on January 25, 2000, the left engine's right turbocharger was replaced and new oil lines installed. Recorded data also indicates that on March 28, 2004, both of the engine's turbochargers were replaced with overhauled ones. The recorded time on both left and right turbochargers at the time of the accident was 24.3 hours.

The type certificate data sheet lists the takeoff manifold pressure at 29.9 inches for the engine with turbocharger installed. A normally aspirated IO-520 engine puts out approximately 24.5 inches at takeoff, a difference of 5.4 inches of manifold pressure at takeoff power.

The pilot reported that there were no mechanical anomalies with the aircraft prior to takeoff which would have prevented normal operations.

## Pilot Information

<b>Certificate:</b>	Flight Instructor; Commercial	<b>Age:</b>	87, Male
<b>Airplane Rating(s):</b>	Multi-engine Land; Single-engine Land	<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>	Airplane Multi-engine; Airplane Single-engine; Instrument Airplane	<b>Toxicology Performed:</b>	No
<b>Medical Certification:</b>	Class 2 Valid Medical--w/ waivers/lim.	<b>Last FAA Medical Exam:</b>	09/03/2004
<b>Occupational Pilot:</b>		<b>Last Flight Review or Equivalent:</b>	10/28/2004
<b>Flight Time:</b>	13409 hours (Total, all aircraft), 1000 hours (Total, this make and model), 13409 hours (Pilot In Command, all aircraft), 20 hours (Last 90 days, all aircraft), 9 hours (Last 30 days, all aircraft), 3 hours (Last 24 hours, all aircraft)		

## Aircraft and Owner/Operator Information

Aircraft Make:	Aerostar	Registration:	N601DF
Model/Series:	601	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	No
Airworthiness Certificate:	Normal	Serial Number:	00014
Landing Gear Type:	Tricycle	Seats:	6
Date/Type of Last Inspection:	09/27/2004, Annual	Certified Max Gross Wt.:	6000 lbs
Time Since Last Inspection:	6.7 Hours	Engines:	2 Reciprocating
Airframe Total Time:	3289.6 Hours at time of accident	Engine Manufacturer:	Lycoming
ELT:	Installed, not activated	Engine Model/Series:	TIO-540
Registered Owner:	Kline and Associates	Rated Power:	290 hp
Operator:	Robert M. Kline	Operating Certificate(s) Held:	None

## Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	Condition of Light:	Day
Observation Facility, Elevation:	KMSO, 3205 ft msl	Distance from Accident Site:	47 Nautical Miles
Observation Time:	1953 MST	Direction from Accident Site:	3°
Lowest Cloud Condition:	Clear	Visibility	3 Miles
Lowest Ceiling:	None	Visibility (RVR):	
Wind Speed/Gusts:	Calm /	Turbulence Type Forecast/Actual:	/
Wind Direction:		Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	29.62 inches Hg	Temperature/Dew Point:	-1°C / -3°C
Precipitation and Obscuration:			
Departure Point:	Hamilton, MT (KHMM)	Type of Flight Plan Filed:	None
Destination:	Stevensville, MT (32S)	Type of Clearance:	None
Departure Time:	1300 MST	Type of Airspace:	Class G

## Airport Information

Airport:	Ravalli Country Airport (6S5)	Runway Surface Type:	Asphalt
Airport Elevation:	3642 ft	Runway Surface Condition:	Dry
Runway Used:	34	IFR Approach:	None
Runway Length/Width:	4200 ft / 75 ft	VFR Approach/Landing:	Forced Landing

## Wreckage and Impact Information

<b>Crew Injuries:</b>	1 None	<b>Aircraft Damage:</b>	Destroyed
<b>Passenger Injuries:</b>	N/A	<b>Aircraft Fire:</b>	On-Ground
<b>Ground Injuries:</b>	N/A	<b>Aircraft Explosion:</b>	None
<b>Total Injuries:</b>	1 None	<b>Latitude, Longitude:</b>	46.257500, -114.126667

## Administrative Information

<b>Investigator In Charge (IIC):</b>	Thomas M Little	<b>Report Date:</b>	07/07/2005
<b>Additional Participating Persons:</b>	Patric M MacQuarrie; Federal Aviation Administration; Helena, MT		
<b>Publish Date:</b>			
<b>Investigation Docket:</b>	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:pubinq@ntsb.gov">pubinq@ntsb.gov</a> , or at 800-877-6799. Dockets released after this date are available at <a href="http://dms.ntsbt.gov/pubdms/">http://dms.ntsbt.gov/pubdms/</a> .		

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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](#).