



# National Transportation Safety Board Aviation Accident Final Report

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<b>Location:</b>	BOISE, ID	<b>Accident Number:</b>	SEA97FA034
<b>Date &amp; Time:</b>	12/09/1996, 1803 MST	<b>Registration:</b>	N75142
<b>Aircraft:</b>	Douglas DC-3C	<b>Aircraft Damage:</b>	Destroyed
<b>Defining Event:</b>		<b>Injuries:</b>	2 Fatal
<b>Flight Conducted Under:</b>	Part 135: Air Taxi & Commuter - Non-scheduled		

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## Analysis

The DC-3C took off on runway 10L and immediately executed a right turn followed by a left turn back toward the airport declaring a fire aboard. Dark night visual meteorological conditions existed. Witnesses observed 'flames' or an 'orange glow' coming from the right engine. A small number of aluminum fragments identified from the aft edge of the right engine accessory cowling were found along the ground just short of the ground impact site. These fragments displayed signs of heat distress but no significant melting. An examination of the right engine and accessory section revealed no evidence of a preimpact fire, and sooting and metal splatter on the leading edge of the right horizontal stabilizer was minimal. Spectral analysis of radio transmissions revealed no evidence of significant divergence of engine RPM between the two engines. Postcrash propeller examination revealed approximate blade pitch angles of 18-19 degrees and 30-32 degrees for the right and left propellers respectively upon impact. Propeller slash mark dimensions associated with the right propeller resulted in propeller RPM of approximately 1750 to 2570 over a range of 68 to 100 knots respectively. The first officer advised the PIC (broadcasting over the tower frequency) 'we're gonna stall' approximately 10 seconds before the impact. The aircraft was in a left turn back toward runways 28 left and right when the right wing struck the ground and the aircraft cartwheeled to a stop. A postcrash fire destroyed the cockpit area and inboard right wing.

## Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: A fire within the right engine compartment of undetermined cause and the pilot-in-command's failure to maintain airspeed above the aircraft's minimum control speed. A factor contributing to the accident was the dark night environmental conditions.

## Findings

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Occurrence #1: FIRE

Phase of Operation: TAKEOFF - INITIAL CLIMB

Findings

1. (C) ENGINE COMPARTMENT - FIRE
2. (C) REASON FOR OCCURRENCE UNDETERMINED

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Occurrence #2: LOSS OF CONTROL - IN FLIGHT

Phase of Operation: MANEUVERING - TURN TO LANDING AREA (EMERGENCY)

Findings

3. (F) LIGHT CONDITION - DARK NIGHT
4. (C) AIRSPEED(VMC) - NOT MAINTAINED - PILOT IN COMMAND

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Occurrence #3: IN FLIGHT COLLISION WITH TERRAIN/WATER

Phase of Operation: DESCENT - UNCONTROLLED

## Factual Information

### HISTORY OF FLIGHT

On December 9, 1996, at 1803 hours mountain standard time, a Douglas DC-3C, N75142, operated by Desert Air Transport, Inc., doing business as Desert Air, and being crewed by an airline transport rated (ATR) pilot-in-command (PIC) and a commercial pilot serving as first officer (FO), was destroyed during impact with terrain following a loss of control while attempting to return for an emergency landing, at the Boise Air Terminal, Boise, Idaho. Both pilots were fatally injured. Visual meteorological night conditions existed and an instrument flight rules (IFR) flight plan had been filed. The flight, which was a cargo run from Boise, Idaho, to Salt Lake City, Utah, was to have been operated under 14CFR135, and departed Boise at 1800.

On December 9, 1997, between 1751:22 and 1752:10, the crew of N75142 contacted Boise (BOI) clearance delivery and requested/received an IFR clearance from Boise to Salt Lake City (refer to ATTACHMENT CT-I), and between 1752:18 and 1752:34, the crew of N75142 contacted BOI ground control and received clearance to taxi from the cargo ramp to runway 10 left (refer to ATTACHMENT CT-II).

At 1756:36, the crew contacted the BOI local controller stating that "we're gonna need a uh run-up on the end here," and then radioed at 1759:31, "one four two is ready to go." At 1759:38 the BOI local controller transmitted "runway one zero left cleared for takeoff." The crew of N75142 acknowledged this transmission 4 seconds later.

At 1801:56, the BOI local controller inquired "douglas uh one four two you should be on runway heading is that right?" and four seconds later the crew of N75142 radioed "we got a fire on board we're coming back in."

At 1802:02, the BOI local controller acknowledged the crews' last transmission, inquired as to whether they wished to land on runway 10 right or runway 28, and then provided the current wind. At 1802:14, the crew advised runway 28. Two seconds later the BOI local controller cleared the aircraft to land on any runway and this was acknowledged at 1802:21 with "OK."

At 1802:40, the BOI local controller received the following transmission: "we're gonna stall man ah (expletive)" followed nine seconds later by "ahhhhh (expletive)." During these latter transmissions the sound of the aircraft's engine(s) could be heard (refer to ATTACHMENTS CT-III and IV).

Three witnesses, two traveling westbound and one eastbound on Gowen Road, and a fourth witness slightly east of the upwind end of runway 10L, observed the aircraft after its takeoff (refer to CHART I). All four witnesses reported seeing "flames" or an "orange glow" coming from the right engine/wing area. The witness located near the runway reported that "it was dark and I could observe the normal blue exhaust coming from the left engine, but observed an orange glow and flames coming from the bottom of the right engine nacelle." The witnesses reported seeing the aircraft turn south and cross over Gowen road and then execute a left turn back toward the runways (10L/R). They also reported the aircraft as low (150-200 feet above ground) during the latter stages of the turn and several expressed concern over whether the aircraft would clear the power lines along the road and the fuel storage tanks just north.

Three of the witnesses were consistent in their observation of the aircraft's right wingtip

impacting the ground followed by a cartwheel maneuver. One witness reported that "all of a sudden the right wing appeared to dip and the plane appeared to "flip" and land nose first into the ground" (refer to attached witness statements, maps and diagrams).

#### PERSONNEL INFORMATION

##### Pilot-in-Command (PIC)

The PIC was 60 years old and possessed an airline transport pilot certificate with a type rating in DC-3 aircraft. His most recent FAA medical examination was conducted August 6, 1996, and he received a Class II certificate with a restriction "Must wear corrective lenses for near and distant vision." According to FAA records, his estimated total civil flight on the date of this examination was reported as 15,150 hours.

A pilot log marked "Logbook #4" and bearing the pilot-in-command's name was found at the accident site and subsequently reviewed. The log was opened on June 22, 1990, with a total time of 14,234 hours brought forward, and the last entry within this logbook was dated August 29, 1996, and recorded as a DC-3 flight from Yakutat, Alaska, to Dry Bay, Alaska, and return. The PIC's total flight time, based on this logbook, as of this closing date was 15,288 hours of which 13,819 hours were as pilot-in-command.

Company records indicated that the PIC had completed a written airman competency check in accordance with FAR 135.293(a) on September 2, 1996. Additionally, the PIC's logbook showed a 6.7 hour flight from Spokane, Washington, to Long Beach, California, where he served as pilot in command. The aircraft was N2298C, a DC-3, operated by Salair, whom the PIC had been previously employed by. The Salair Chief Pilot confirmed that he gave the PIC an FAR 135.293(b) airman competency/proficiency flight check during that flight.

##### First Officer (FO)

The first officer was 57 years old and possessed a commercial pilot license. He also possessed an expired flight instructor certificate as well as a reciprocating flight engineer rating. His most recent FAA medical examination was conducted May 6, 1996, and he received a Class II certificate with a restriction "Must wear lenses for distant - possess glasses for near vision." According to FAA records, his estimated total civil flight on the date of this examination was reported as 8,000 hours.

The operator reported the FO's total flight time as 8,862 hours, of which 292 hours were logged in the DC-3, none of which were reported as pilot-in-command time. The operator also reported that the FO was employed solely in a first officer capacity and did not serve as PIC on DC-3 flights with the company.

#### AIRCRAFT INFORMATION

N75142, a Douglas DC-3C, serial number 9173, was manufactured in 1944, and at the time of the accident privately owned and leased to the operator. Aircraft logs and records, as well as paperwork found at the crash site, indicated that the aircraft total time at the time of the accident was approximately 34,124 airframe hours. The basic empty weight of the aircraft, according to its last weighing on May 20, 1994, was 17,673 pounds. The maximum gross takeoff weight was reported to be 26,900 pounds. According to information provided by the aircraft manufacturer, the gear ratio between the engine and propellers was 16:9 (1.777).

According to Aircraft Flight and Maintenance Log records found at the accident site, N75142

departed Salt Lake City, Utah, at 1125 on Saturday, December 7, 1996, with 600 gallons of aviation gasoline (avgas). Based upon a 2.0 hour flight time for the December 7 flight and a fuel burn of 100 gallons per hour (dual engine operation, block to block) from flight planning information found at the accident site, the aircraft would have arrived at Boise with approximately 400 gallons of fuel. The aircraft did not fly again until the evening of the accident.

The aircraft was equipped with a left and right main fuel tank, each with a capacity of 202 gallons, and a left and right auxiliary tank, each with a capacity of 200 gallons. Fueling records maintained by Western Aircraft, Inc. at the Boise airport indicated that N75142 was fueled on December 9, 1996, with a total of 120.0 gallons of 100 low lead octane aviation fuel avgas. The fuel slip indicated that truck number "JT-3" was utilized. An interview of the fueler by the FAA coordinator revealed that this was a written error and that the aircraft had, in fact, been fueled from truck number "FT-3." The total fuel weight at takeoff was estimated at 3,052 pounds.

Combining the basic empty weight of 17,673 pounds with an estimated 200 pounds per pilot plus the estimated 3,052 pound fuel load provided a useful load of 5,775 pounds. According to the "Airway Bill/Manifest" from the shipper, 4,109 pounds of cargo consisting of metal stove pipe segments and plastic construction trim material were loaded. The aircraft's gross takeoff weight was estimated to be 25,235 pounds.

The aircraft was also equipped with a fire detection and warning system consisting of a thermocouple loop located in each engine accessory area as well as the engine exhaust area. This system, when activated by a fire, would produce an audible "bell" warning in the cockpit as well as a visual (light) indication.

The daily log maintained by the Boise airport Air National Guard (ANG) fire department contained an entry indicating that on Saturday afternoon, December 7, 1996, at 1330 local time the "tower reported fire coming from the engine of Desert Air DC-3." An ANG Aircraft Rescue and Firefighting truck at the Boise airport was dispatched to the cargo ramp to investigate the fire, which was reported by a witness to be in the vicinity of the right engine. The aircraft was followed to parking and the log reflected that the "pilot reported it was normal and canceled all those who responded."

The captain operating this flight was interviewed and reported that an ANG crash truck drove up to the aircraft but remained only about 10 seconds before departing. He also reported that the first officer (the same first officer on the accident flight) exited the aircraft, inspected the right engine and found nothing unusual and that neither he nor the first officer discussed the matter with the ANG fire truck crew. He speculated that what the ANG crew had observed was torching characteristic of the DC-3 engines. The captain also reported that the flight from Salt Lake City to Boise was uneventful and that the aircraft's fire warning system (bell and light(s)) did not activate during the flight. He also reported that he had never had a backfire while operating this aircraft.

#### METEOROLOGICAL AND ENVIRONMENTAL INFORMATION

The 1756 aviation surface weather observation recorded at the Boise airport on the day of the accident reported the following conditions:

Winds from 110 degrees magnetic at 10 knots, visibility 10 statute miles, light rain, 6,500 foot overcast conditions, temperature 9 degrees Celsius, dew point 6 degrees Celsius, altimeter 29.49 inches of mercury.

The approximate time of sunset at Boise was 1708 local and the sun's elevation was approximately -10 degrees below the horizon at the time of the accident. Dark night environmental conditions existed at the time of the accident.

#### COMMUNICATIONS INFORMATION

There was no evidence of any communications difficulties between the aircraft and the respective FAA facilities it was in contact with (refer to ATTACHMENTS CT-I through CT-IV).

#### WRECKAGE AND IMPACT INFORMATION

The aircraft crashed at a point one nautical mile short and bearing 105 degrees magnetic from the threshold of runway 28L. The latitude and longitude of the accident site was 43 degrees 33.1 minutes north and 116 degrees 11.7 minutes west respectively (refer to CHART I). The elevation of the site was approximately 2,870 feet above mean sea level (MSL).

The first evidence of ground impact was a shallow, narrow smear which quickly broadened to four to six feet in width as it progressed north. Small fragments of green glass were found at the southernmost point of the ground scar (refer to photograph 1). This ground scar progressed north approximately 140 feet and then arced counter-clockwise approximately 110 feet to the final resting place of the forward portion of the aircraft cabin (refer to CHART II). Both propellers and both pilots (in their seats), as well as the upper instrument panel (above the windscreen), were located in the vicinity of the midsection of the ground scar arc (refer to photograph 2 and CHART II).

The main fuselage came to rest with its longitudinal axis oriented along a 043/223 degree magnetic bearing line (tail northeast). The aircraft displayed extensive post crash fire damage and much of the metal stovepipe which had been part of the cargo load was scattered out the front end of the fuselage. The forward portion of the aircraft fuselage, including the cockpit, had been destroyed by fire and documentation of the cockpit areas was not possible with the exception of those items found clear of the fire area. The left wing exhibited no fire damage and a small amount of diagonal buckling on its upper surface. The right wing exhibited fire damage in the inboard area and extensive upwards bending deformation and shattering from the mid-span area out toward the tip (refer to photographs 3 and 4).

Both engines were observed separated from their respective nacelles. The right engine and accessory section was observed in an approximate 45 degree nose down attitude adjacent to the aircraft's left main landing gear and outside the primary post-crash fire area (refer to photographs 5 and 6). The engine's exhaust manifold assembly remained attached to the engine with the exception of 3 sections. These sections were all found along the wreckage distribution path beyond the propellers. The right propeller (all three blades and associated hub assembly) was observed lying on the ground in the southern portion of the arcing ground scar. Two of the three blades showed gradual aftward bending deformation and all three blades were in a relatively flat pitch blade angle (refer to photographs 7 and 8). Several prominent "slash" like cuts were observed in the soil at the point where the ground scar arc commenced (immediately south of the location of the right propeller). The slash marks were both oriented along a 310 degree magnetic bearing line and the perpendicular distance between these two marks was measured to be 28 inches (refer to CHART II).

The left engine and accessory section was observed in an approximate 45 degree nose up attitude adjacent to the aircraft's left wingtip and outside the primary post-crash fire area (refer to photographs 9 and 10). The engine's exhaust manifold assembly remained attached to the

engine. The left propeller (all three blades and associated hub assembly) was observed lying on the ground in the central portion of the arcing ground scar. Two of the three blades showed extensive bending deformation and all three blades were in a high pitch blade angle (refer to photographs 11 and 12).

Both left and right main landing gear were observed in the retracted position. The tail wheel was observed to have been broken free and was under the rear empennage. The right main wheel had sustained extensive post crash fire damage (refer to photograph 13). The left main wheel displayed minimal fire damage (refer to photograph 14). Photograph 15 is a panoramic view of the final resting place of the main airframe and engines. The right wing outboard section from the approximate mid-span point (landing light) to the wingtip displayed extensive upward bending deformation and shattering damage.

The vertical and horizontal stabilizers remained attached to the aft empennage. The rudder panel was observed to be attached and the rudder trim tab was in a near neutral position (refer to photograph 16). The left horizontal stabilizer, elevator and trim tab displayed buckling deformation and a small amount of upward bending deformation (refer to photograph 17). The right horizontal stabilizer, elevator and trim tab displayed no major buckling deformation nor any upward or downward bending deformation. The elevator had become partially detached at the outboard hinges (refer to photograph 18). The left horizontal stabilizer was free of particulate material along its de-ice boot. The right horizontal stabilizer, however, displayed several short one inch soot type trails on its upper surface just aft of the de-ice boot and approximately mid span and outboard. Additionally, occasional small silver particles characteristic of melted aluminum were noted adhering to the outboard upper portion of the de-ice boot (refer to photograph 19). Both right and left split flaps were observed in their retracted or "UP" position at the site (refer to photographs 20 and 21). The Janitrol heater, which was installed directly after of the first officer's seat was observed lying on the ground just aft of the trailing edge of the right wing and outside the post crash fire area. The unit displayed no evidence of fire or sooting.

A sweep of the ground between the crash site and a point south of the fuel tanks and on toward West Gowen Road (refer to CHART I) was accomplished. A number of small fragments of aluminum were retrieved during this ground search (refer to photographs 22 and 23). These fragments displayed some evidence of heat stress (re-crystallization of the aluminum) but no significant melting was noted.

#### MEDICAL AND PATHOLOGICAL INFORMATION

Post mortem examination of both pilots was conducted by Frank A. Roberts, M.D., at St. Alphonsus Regional Medical Center, Boise, Idaho, on December 10, 1996, (Coroner reference numbers 96-837-1209 and 96-838-1209).

Toxicological evaluation of samples from both pilots was conducted by the FAA's Toxicology and Accident Research Laboratory, Oklahoma City, Oklahoma. All tests for each pilot were negative (refer to attached toxicological reports).

#### TESTS AND RESEARCH

Both propellers were disassembled and examined. A propeller shim plate template for the Hamilton Standard model 23E50 propeller was used as a reference against the three shim plates (numbers one through three) for both the left and right propellers. Each propeller blade was numbered as was its associated shim plate (refer to photographs 8 and 11 which shows the

numbering for each blade). The blade butt impact marks for each shim plate were documented and measured with the following approximate blade impact angles determined:

	SHIM PLATE #:	BLADE ANGLE:	Right #1	~+19
deg	Right #2	~+19/-22 deg	Right #3	
~+18	deg			
	Left #1	~+30 deg	Left #2	
~+32/+60deg	Left #3	~+31 deg		

The right propeller blade butt spring pack shims for blades #1 and #3 displayed little to no rotational deformation and the shim plates from these two blades were intact. Additionally, the #1 and #3 blade gear segments (pitch change gear teeth) displayed little or no damage. The right propeller blade butt spring pack shims for blade #2 displayed rotational displacement about the blade's longitudinal axis consistent with twisting motion of the blade. The shim plate for this blade was broken into several pieces. The #2 blade gear segment (pitch change gear teeth) displayed deformation and missing gear teeth. The right propeller dome assembly was examined and its rotating cam was observed to be bottomed out against the low pitch stop.

The left propeller blade butt spring pack shims for blade #1 displayed a light degree of rotational deformation and the shim plate from this blade was intact. The left propeller blade butt spring pack shims for blade #3 displayed little to no rotational deformation and the shim plate from this blade was also intact. The right propeller blade butt spring pack shims for blade #2 displayed rotational displacement about the blade's longitudinal axis consistent with twisting motion of the blade. The shim plate for this blade was also intact. Additionally, the #1 and #3 blade gear segments (pitch change gear teeth) displayed little or no damage. The #2 blade gear segment (pitch change gear teeth) displayed deformation and missing gear teeth. The left propeller dome assembly was examined and its rotating cam was observed to be nearly bottomed out against the low pitch stop.

Engine RPM may be calculated when the aircraft ground speed and distance (feet) between propeller slash marks is known. Without specific ground speed information a range of ground speeds may be utilized to calculate a range of RPM's for the propeller slash marks noted adjacent to the right propeller as documented at the crash site:

$$\text{-----} = \frac{(\text{GS}) \times (\text{GR}) \times (101.3)}{\text{Engine RPM} \times (\text{N}) \times (\text{D}) \text{-----}}$$

where GS = Ground Speed (knots) = variable GR = Gear Ratio = 1.777 N = number of propeller blades = 3 D = distance between propeller slash marks (feet) = 2.333 feet

Engine RPM based upon the above data and the following range of ground speeds was calculated as follows:

68 Kts	=	1749 RPM (stall speed at 25,000 pounds)	77
Kts	=	1980 RPM (Vmc - minimum control speed)	90
Kts	=	2315 RPM	
		100Kts =	2572 RPM

A certified audio cassette re-recording of the Boise local control (tower), containing radio transmissions between the tower and N75142, was sent to the Safety Board's audio laboratory



in Washington, DC, for electronic evaluation. Several transmissions were received along with non-verbal "open-mike" transmission containing background noise captured from the crew microphones.

The radio transmissions were examined on an audio spectrum analyzer to identify any background sound signatures that could be associated with either of the engines or the propellers. These radio transmissions (recorded between 1801:59 and 1802:50) contained sounds that could be associated with the propeller(s) of the aircraft. Propeller operating speeds (RPM) were calculated for the following times:

	TIME	ELAPSED	ENGINE SPEED			
0:00					1759:42	
	CLEARANCE FOR TAKEOFF ACKNOWLEDGED				1801:59	
1:19	2633 RPM		1802:13	1:31	2566 RPM	
1802:20	1:38	2646 RPM		1802:28	1:46	2600
RPM		1802:33	1:51	2600 RPM		1802:35
1:53	2653 RPM		1802:39	1:57	2750 RPM	
1802:43	2:01	- - - RPM		1802:47	2:05	2566
RPM				2550 RPM		
2528 RPM		1802:50	2:08		SOUND OF IMPACT	

There were no major beat frequency oscillations characteristic of one propeller remaining in the 2500-2700 RPM range while the opposing propeller's RPM decayed, during the examined time period (1801:50 through 1802:50). Refer to attached Specialist's Factual Report of Investigation. Additionally, no warning bells characteristic of the fire warning system on the aircraft were heard during any of the recorded radio transmissions.

A second examination of the airframe, engines and associated cowling and exhaust ducting was conducted on October 23/24, 1997, at Boise, Idaho, with the assistance of the Safety Board's Fire National Resource Specialist. The examination revealed no evidence of any pre-impact fire on the left engine. Examination of the right engine revealed no evidence of any pre-impact fire damage forward of the firewall (exhaust system and forward), or within the accessory section. All seven segments of the exhaust manifold were examined. There was no evidence of any pre-impact separation or fire.

The right wing was examined and exhibited extensive sooting and fire damage at the leading edge inboard sections adjacent to the right engine nacelle. The observed fire damage was characteristic of the post crash fire although this may have masked pre-impact fire or inflight fire damage. Additionally, the right tire was observed to have been consumed by fire except for the steel beads and approximately 5 percent of the remaining rubber. The wheel rim was intact except for some melting on the very periphery over about a 20 degree arc. The entire inboard wall of the wheel well was destroyed including all the fuel/oil/hydraulic lines in this area.

The small aluminum fragments retrieved from the ground and discussed previously were examined. Two of the larger pieces were matched to areas of the right engine cowling on a similar DC-3 currently in operation with the operator in an attempt to establish their location. It was determined that the fragments matched two different areas of the right hand cowling at the trailing edge section of the right engine accessory cowling. The first potential location was found to be along the aft edge at the 7-8 o'clock position of the cowling when standing aft of the engine looking forward (refer to photographs 24 and 25). This area has numerous fluid lines but no exhaust ducting nearby (refer to photograph 26). The second potential location was

found to be in the approximate 2-3 o'clock position of the cowling when standing aft of the engine looking forward (refer to photographs 27 and 28). This area has no fluid lines but does have exhaust ducting nearby (refer to photograph 29).

Additionally, twenty-three of the 28 cowl flaps segments were recovered and none exhibited any fire damage. Nor did the forward engine cowl fairings.

#### ADDITIONAL INFORMATION

On-site examination of the wreckage was conducted on December 10 and 11, 1996. The engines and propellers were retained by the Board and stored at the facilities of Western Aircraft, Inc., at the Boise airport. The airframe was conditionally released for the purpose of moving it to a secure site with restricted access. The propellers were subsequently disassembled and inspected at the facilities of Precision Propeller at the Boise airport, on January 9, 1997. They were then released to the insurance representative to be stored with the remainder of the airframe. The fire examination of the engines and associated airframe components was conducted on October 23 and 24, 1997, after which the engines were released from storage to the insurance representative. Formal written wreckage release is documented on NTSB Form 6120.15 (attached) and all retained logs, records, paperwork and aircraft components retained by the Board were released.

#### Pilot Information

<b>Certificate:</b>	Airline Transport; Commercial	<b>Age:</b>	60, Male
<b>Airplane Rating(s):</b>	Multi-engine Land; Single-engine Land	<b>Seat Occupied:</b>	Left
<b>Other Aircraft Rating(s):</b>	Helicopter	<b>Restraint Used:</b>	Seatbelt
<b>Instrument Rating(s):</b>	Airplane	<b>Second Pilot Present:</b>	Yes
<b>Instructor Rating(s):</b>	None	<b>Toxicology Performed:</b>	Yes
<b>Medical Certification:</b>	Class 2 Valid Medical--w/ waivers/lim.	<b>Last FAA Medical Exam:</b>	08/06/1996
<b>Occupational Pilot:</b>		<b>Last Flight Review or Equivalent:</b>	
<b>Flight Time:</b>	15447 hours (Total, all aircraft), 5502 hours (Total, this make and model), 14430 hours (Pilot In Command, all aircraft), 252 hours (Last 90 days, all aircraft), 73 hours (Last 30 days, all aircraft)		

## Aircraft and Owner/Operator Information

Aircraft Make:	Douglas	Registration:	N75142
Model/Series:	DC-3C DC-3C	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	No
Airworthiness Certificate:	Normal	Serial Number:	9173
Landing Gear Type:	Retractable - Tailwheel	Seats:	2
Date/Type of Last Inspection:	12/02/1996, AAIP	Certified Max Gross Wt.:	26900 lbs
Time Since Last Inspection:	15 Hours	Engines:	2 Reciprocating
Airframe Total Time:	34124 Hours	Engine Manufacturer:	P&W
ELT:	Installed, not activated	Engine Model/Series:	R1830-92
Registered Owner:	RICHARD L. RUDE	Rated Power:	1200 hp
Operator:	DESERT AIR TRANSPORT, INC.	Operating Certificate(s) Held:	On-demand Air Taxi (135)

## Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	Condition of Light:	Night/Dark
Observation Facility, Elevation:	BOI, 2858 ft msl	Distance from Accident Site:	2 Nautical Miles
Observation Time:	1756 MST	Direction from Accident Site:	294°
Lowest Cloud Condition:	Unknown / 0 ft agl	Visibility	10 Miles
Lowest Ceiling:	Overcast / 6500 ft agl	Visibility (RVR):	0 ft
Wind Speed/Gusts:	11 knots /	Turbulence Type Forecast/Actual:	/
Wind Direction:	110°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	29 inches Hg	Temperature/Dew Point:	9°C / 6°C
Precipitation and Obscuration:			
Departure Point:	(BOI)	Type of Flight Plan Filed:	IFR
Destination:	SALT LAKE CITY, UT (SLC)	Type of Clearance:	IFR; VFR
Departure Time:	1800 MST	Type of Airspace:	Class A

## Airport Information

Airport:	BOISE AIR TERMINAL (BOI)	Runway Surface Type:	
Airport Elevation:	2858 ft	Runway Surface Condition:	Wet
Runway Used:	0	IFR Approach:	None
Runway Length/Width:		VFR Approach/Landing:	Precautionary Landing

## Wreckage and Impact Information

Crew Injuries:	2 Fatal	Aircraft Damage:	Destroyed
Passenger Injuries:	N/A	Aircraft Fire:	In-Flight
Ground Injuries:	N/A	Aircraft Explosion:	On-Ground
Total Injuries:	2 Fatal	Latitude, Longitude:	

## Administrative Information

Investigator In Charge (IIC):	STEVEN A MCCREARY	Report Date:	03/31/1998
Additional Participating Persons:	MERRITT S BIRKY; WASHINGTON, DC JAMES CASH; WASHINGTON, DC LEON S LINDSAY; BOISE, ID VINCENT W COSTELLO; PALMDALE, CA		
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](#).