



National Transportation Safety Board Aviation Accident Final Report

Location:	MCGRATH, AK	Accident Number:	ANC98LA014
Date & Time:	01/02/1998, 1526 AST	Registration:	N861TA
Aircraft:	Douglas DC-6B	Aircraft Damage:	Destroyed
Defining Event:		Injuries:	3 None
Flight Conducted Under:	Part 125: 20+ Pax,6000+ lbs		

Analysis

During the takeoff roll, while passing 45 knots indicated airspeed, ice formed between the inner and outer panes of the airplane's windshield, obscuring the crew's vision. The flight crew aborted the takeoff, the airplane drifted off the left side of the snow covered runway, and caught fire. The crew reported the airplane and windshield were cold soaked and the temperature was -10 degrees Fahrenheit. The windshield anti-ice system blows air from a combustion heater between the windshield glass panes. The air source for the heater, once the airplane has forward airspeed, is two leading edge wing scoops. The crew told the NTSB investigator that the taxi time was too short for the windshield to warm up, and that during the taxi, snow was circulated around the airplane and into the wing scoops.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The ingestion of snow into the windshield anti-ice system, and the resulting obscured windshield which made runway alignment not possible. Factors associated with this accident were the cold windshield, the reduced performance of the windshield anti-ice because of the short taxi by the crew, and the insufficient information on the system provided by the manufacturer.

Findings

Occurrence #1: AIRFRAME/COMPONENT/SYSTEM FAILURE/MALFUNCTION
Phase of Operation: TAKEOFF - ROLL/RUN

Findings

1. (C) ANTI-ICE/DEICE SYSTEM, WINDSHIELD - ICE INGESTION
 2. (F) ANTI-ICE/DEICE SYSTEM, WINDSHIELD - TOO COLD
 3. (F) ANTI-ICE/DEICE SYSTEM - DIMINISHED - PILOT IN COMMAND
 4. (F) INFORMATION INSUFFICIENT - KIT MANUFACTURER
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Occurrence #2: ON GROUND/WATER ENCOUNTER WITH TERRAIN/WATER
Phase of Operation: TAKEOFF - ABORTED

Findings

5. WINDOW, FLIGHT COMPARTMENT WINDOW/WINDSHIELD - OBSTRUCTED
 6. (C) PROPER ALIGNMENT - NOT POSSIBLE - PILOT IN COMMAND
 7. TERRAIN CONDITION - BERM
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Occurrence #3: FIRE
Phase of Operation: TAKEOFF - ABORTED

Factual Information

On January 2, 1998, at 1526 Alaska standard time, a Douglas DC-6B airplane, N861TA, departed the edge of runway 34 during an aborted takeoff from the Nixon Fork Mine landing strip, thirty miles north of McGrath, Alaska. The transport category airplane was destroyed by a postcrash fire. The airline transport certificated pilot, and the other two flight crewmembers, were uninjured. The airplane was operated by Woods Air Fuel, Inc., of Palmer, Alaska. The flight was operated under 14 CFR Part 125 as a cargo flight transporting ore concentrate from Nixon Fork Mine. The flight originated from Palmer at 1230, and was on the takeoff roll of the return leg. Visual meteorological condition prevailed at the time of the accident, and an IFR flight plan was on file.

The captain reported that at an indicated airspeed of 45 knots during the takeoff roll, ice formed between the inner and outer windshield panes, with the icing following the flow of heated air through the windshield. The crew's forward visibility was obscured, and the takeoff was aborted. The captain reported that the airplane drifted left into snow berms on the side of the 4,200 feet long by 85 feet wide runway and caught fire. The three crewmen evacuated the airplane without injury.

The three crewmen relayed to the NTSB investigator that after arrival at the mine strip, the airplane and windshield cold soaked for about one hour in the -10 degree Fahrenheit temperature. After loading the airplane, they taxied for only a few minutes in light, powdery snow, before beginning the takeoff roll. The crewmen stated that the windshield anti-ice system was activated, but because of the short taxi, did not have time to warm completely. All crewmembers indicated that during the taxi, snow was circulated around the airplane and the wing scoops.

Research revealed that the windshield anti-ice system was modified as part of installing Supplemental Type Certificate (STC) number 981SO on June 26, 1987. This STC eliminated the superchargers on engines numbers 3 and 4 from providing conditioned air to the airplane's cabin. The modification was part of a conversion to a cargo configuration.

The modified cockpit heating and windshield anti-ice system receives supply air from one of two sources. On the ground, a blower fan draws air from the underside of the fuselage for a combustion heater. As the airplane transitions to flight, ram air pressure from two wing leading edge scoops becomes greater than ground blower discharge air, and becomes the heater air supply source. Air and any particulate matter in the wing scoops and ducting passes directly to the heater. Once airborne, the blower fan is deactivated by a weight on wheels switch.

From the heater the warm air is ducted directly to the windshield, where it flows between the outer glass pane and the inner vinyl pane, and is then discharged into the cockpit.

The "DC-6 Airplane Operating Manual" used by two other companies states "...Certain combinations of temperature and humidity will cause moisture to condense from the air between the windshield panels and settle on the inner surfaces of the glass, obscuring vision. Once formed, anti-icing airflow with heater operation will be required to clear the panels." This language is not included in the STC literature, nor in the flight handbook for the company operating the accident airplane.

Pilot Information

Certificate:	Airline Transport; Flight Instructor; Commercial; Flight Engineer	Age:	55, Male
Airplane Rating(s):	Multi-engine Land; Single-engine Land	Seat Occupied:	Left
Other Aircraft Rating(s):	None	Restraint Used:	Seatbelt, Shoulder harness
Instrument Rating(s):	Airplane	Second Pilot Present:	Yes
Instructor Rating(s):	Airplane Multi-engine; Airplane Single-engine	Toxicology Performed:	No
Medical Certification:	Class 2 Valid Medical--w/ waivers/lim.	Last Medical Exam:	01/31/1997
Occupational Pilot:		Last Flight Review or Equivalent:	
Flight Time:	27000 hours (Total, all aircraft), 16000 hours (Total, this make and model), 24000 hours (Pilot In Command, all aircraft), 250 hours (Last 90 days, all aircraft), 55 hours (Last 30 days, all aircraft), 1 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Manufacturer:	Douglas	Registration:	N861TA
Model/Series:	DC-6B DC-6B	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	No
Airworthiness Certificate:	Transport	Serial Number:	43522
Landing Gear Type:	Retractable - Tricycle	Seats:	4
Date/Type of Last Inspection:	12/22/1997, AAIP	Certified Max Gross Wt.:	103800 lbs
Time Since Last Inspection:	25 Hours	Engines:	4 Reciprocating
Airframe Total Time:	46626 Hours	Engine Manufacturer:	P&W
ELT:	Installed, not activated	Engine Model/Series:	R-2800-CB-16
Registered Owner:	WOODS AIR FUEL, INC.	Rated Power:	2400 hp
Operator:	WOODS AIR FUEL, INC.	Air Carrier Operating Certificate:	Air Cargo
Operator Does Business As:		Operator Designator Code:	W4FB

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	Condition of Light:	Day
Observation Facility, Elevation:	, 0 ft msl	Observation Time:	0000
Distance from Accident Site:	0 Nautical Miles	Direction from Accident Site:	0°
Lowest Cloud Condition:	Clear / 0 ft agl	Temperature/Dew Point:	-23° C
Lowest Ceiling:	None / 0 ft agl	Visibility	60 Miles
Wind Speed/Gusts, Direction:	Calm, Variable	Visibility (RVR):	0 ft
Altimeter Setting:		Visibility (RVV):	0 Miles
Precipitation and Obscuration:			
Departure Point:	NIXON FORK MINE, AK (NFR)	Type of Flight Plan Filed:	IFR
Destination:	PALMER, AK (PAQ)	Type of Clearance:	IFR
Departure Time:	1526 AST	Type of Airspace:	Class G

Airport Information

Airport:	NIXON FORK MINE STRIP (NFR)	Runway Surface Type:	Snow
Airport Elevation:	1500 ft	Runway Surface Condition:	Dry; Snow--dry
Runway Used:	34	IFR Approach:	None
Runway Length/Width:	4200 ft / 85 ft	VFR Approach/Landing:	

Wreckage and Impact Information

Crew Injuries:	3 None	Aircraft Damage:	Destroyed
Passenger Injuries:	N/A	Aircraft Fire:	On-Ground
Ground Injuries:	N/A	Aircraft Explosion:	On-Ground
Total Injuries:	3 None	Latitude, Longitude:	

Administrative Information

Investigator In Charge (IIC):	MATTHEW L THOMAS	Adopted Date:	02/15/2001
Additional Participating Persons:	ALLAN R LEE; ANCHORAGE, AK JAMES C HEIRSTON; ANCHORAGE, 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 pubinq@ntsb.gov , or at 800-877-6799. Dockets released after this date are available at http://dms.nts.gov/pubdms/ .		

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