



Aviation Investigation Final Report

Location:	Pasco, Washington	Accident Number:	SEA01LA169
Date & Time:	September 8, 2001, 07:15 Local	Registration:	N426SK
Aircraft:	Cessna 172N	Aircraft Damage:	Substantial
Defining Event:		Injuries:	1 None
Flight Conducted Under:	Part 91: General aviation - Instructional		

Analysis

The accident aircraft, piloted by a solo student, was attempting to taxi onto runway 30 for takeoff behind a Horizon Air DHC-8 undergoing a maintenance engine run in a runup area on the northeast side of the approach end of runway 30. The student pilot stated that after completing his preflight checklist, he waited, believing that the DHC-8 was about to take the runway for departure, but that when this did not happen he requested and received takeoff clearance for runway 30. The tower controller did not issue any cautionary advisories for the DHC-8 activity to the student pilot with the takeoff clearance. The student pilot reported that after starting toward the runway, "I was more than half way past behind [sic] the Horizon plane, when they revved their engines." The propeller blast from the DHC-8 forced the accident aircraft to tip to the left and forward, causing it to strike its wingtip and propeller on the taxiway surface. The aircraft continued to be buffeted by the propeller blast of the DHC-8 for several more minutes as the DHC-8 continued to do its engine run. The tower was subsequently unable to reach the DHC-8 on the radio. The DHC-8 crew, a pair of Horizon Air mechanics, continued its engine run until it was approached and signaled by an airport operations vehicle dispatched to the scene by the tower. About this time, the tower re-established radio contact with the DHC-8 and instructed the DHC-8 crew to reduce engine power. In interviews with an FAA inspector, the Horizon Air mechanics indicated they did not know how or why they lost radio contact with the tower. FAA Order 7110.65N, "Air Traffic Control", instructs controllers to "Issue [wake turbulence] cautionary information [to include use of the words jet blast, propwash, or rotorwash] to any aircraft [including those on the airport movement area] if in your opinion, wake turbulence may have an adverse effect on it." However, Order 7110.65N further states that "Because wake turbulence is unpredictable, the controller is not responsible for anticipating its existence or effect." A review of FAA Air Traffic Bulletins found no information on jet blast/prop blast hazards.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The DHC-8 maintenance crew's failure to maintain radio contact with the tower during its engine run. Factors included the tower controller not issuing a safety advisory on the DHC-8 engine run to the accident pilot as recommended by FAA guidance, and the FAA's failure to make information on jet blast/prop blast hazards available to controllers.

Findings

Occurrence #1: PROPELLER BLAST OR JET EXHAUST/SUCTION

Phase of Operation: TAXI - TO TAKEOFF

Findings

1. (C) COMMUNICATIONS - NOT MAINTAINED - OTHER MAINTENANCE PERSONNEL
2. (F) SAFETY ADVISORY - NOT ISSUED - ATC PERSONNEL(LCL/GND/CLNC)
3. (F) INFORMATION UNAVAILABLE - FAA(OTHER/ORGANIZATION)

Factual Information

On September 8, 2001, approximately 0715 Pacific daylight time, a Cessna 172N airplane, N426SK, registered to Bergstrom Aircraft Inc. of Pasco, Washington, and being operated by a solo student pilot, was substantially damaged when it was upset by the propeller blast of a stationary Horizon Air de Havilland DHC-8 aircraft, N816PH, as it taxied for takeoff behind the DHC-8 at Tri-Cities Airport in Pasco. At the time of the accident, the DHC-8 was undergoing a maintenance engine run with a maintenance crew on board. The student pilot was not injured in the accident. Visual meteorological conditions were reported at Pasco at 0653, and no flight plan had been filed for the intended flight, a 14 CFR 91 local practice flight.

The accident occurred as the Cessna was attempting to taxi onto runway 30 for takeoff behind the DHC-8, which was located in a runup area on the northeast side of the approach end of runway 30. In statements furnished to an FAA inspector, the student pilot of the Cessna reported that upon arriving at the runway 30 runup area and finding the DHC-8 already there, he parked in the east side of the runup area and performed his preflight checklist. The student pilot stated that after completing his preflight checklist, he waited, believing that the Horizon aircraft (the DHC-8) was about to take the runway for departure, but that when this did not happen after a few more minutes he called the tower and requested and received takeoff clearance for runway 30. The student pilot reported that after starting toward the runway, "I was more than half way past behind [sic] the Horizon plane, when they revved their engines." The student pilot stated that the propeller blast from the DHC-8 immediately forced his aircraft to tip to the left and forward, causing it to strike its wingtip and propeller on the taxiway surface. The student pilot stated that the airplane's engine stopped when the propeller struck, and that the airplane turned 25 degrees to the right. The student pilot stated that the Cessna remained with its left wingtip on the pavement, being buffeted by the propeller blast of the DHC-8 for several minutes as the DHC-8 continued to do its engine run. The student pilot stated that he then called the tower and asked the tower to notify the Horizon aircraft of his position and ask them to power down the engine, but that the tower replied that it had been trying to reach the Horizon aircraft by radio to no avail. The student pilot stated that he then observed an airport fire truck pull up and flash the DHC-8 crew with lights, and that the DHC-8 crew subsequently reduced engine power.

Review of a certified re-recording of the Tri-Cities ground control frequency, and a transcript prepared from the recording, disclosed that N816PH (the DHC-8), using the call sign "de havilland eight one six papa hotel", called for taxi from the Horizon terminal (located on the southeast side of the airport) to "the runup area" at 0649, and was cleared "as requested to the approach end of runway three zero." N816PH subsequently called Pasco tower and requested clearance across runway 30 to the runup area, and was cleared across runway 30. N426SK (the Cessna) called for taxi from Bergstrom Aircraft (located on the northeast side of the airport) at 0707, and was instructed to taxi to runway 30. At 0713:17, N426SK called Tri-Cities

Tower for takeoff, and was cleared for takeoff from runway 30 at 0713:30. At 0715:05, the controller called, "dehavilland six papa hotel ground." Eight seconds later, at 0715:13, N426SK called, "tri cities tower uh can you get horizon to uh be aware of me", and the controller replied, "I'm trying to sir." The controller then made several attempts to contact N816PH, with no response. The controller then began to attempt to contact Bergstrom Aircraft, asking another Bergstrom aircraft on the airport for a good telephone number to Bergstrom Aircraft (the one the controller had was not working) and advising the other Bergstrom aircraft that "we got one of the company airplanes sitting on its wingtip over there behind that dash eight the dash eight doesn't answer my calls." The controller subsequently dispatched two vehicles, Fire Truck 1 and Airport 2 (an airport operations vehicle), to the runup area to make contact with the DHC-8. Another Horizon aircraft that had landed after the propeller blast encounter, Horizon 94A, then contacted the controller and advised him that they had tried to contact the other Horizon aircraft on a Horizon company frequency, also with no response. N816PH subsequently contacted the controller on ground control frequency, and was instructed to reduce his power to idle.

The FAA inspector assigned to the accident interviewed the Horizon mechanics who performed the engine run on the DHC-8. These interviews disclosed that the DHC-8, which was undergoing a maintenance engine run on its number 1 engine at the time, was crewed by two mechanics, one sitting in the left (captain's) seat and operating the engine controls and the other sitting in the right (first officer's) seat and recording engine performance numbers. The right-seat mechanic indicated that while doing their engine run (in what he described as a designated runup area), they observed an airport fire truck flash its lights at them, and that he then observed the truck operator point behind them. The right-seat mechanic stated that he then observed, for the first time, a Cessna 172 tipped onto its nose. The right-seat mechanic stated that they then shut down the engine and emerged from the aircraft, whereupon they were told that the tower was trying to reach them regarding the aircraft behind them. The right-seat mechanic stated he did not know how or why they lost radio contact with the tower. When asked by the FAA inspector if he had anything to add to the right-seat mechanic's statement, the left-seat mechanic replied that he did not. 14 CFR 91.126 and 14 CFR 91.127 state that unless otherwise authorized or required by air traffic control, no person may operate an aircraft on an airport having an operational control tower unless two-way radio communications are maintained between that aircraft and the control tower.

FAA Order 7110.65N, "Air Traffic Control", paragraph 2-1-20, "WAKE TURBULENCE CAUTIONARY ADVISORIES", subparagraph b, instructs controllers to "Issue cautionary information to any aircraft if in your opinion, wake turbulence may have an adverse effect on it." A note immediately following this subparagraph further states:

Wake turbulence may be encountered by aircraft in flight as well as when operating on the
airport movement area. Because wake turbulence is unpredictable, the controller is not
responsible for anticipating its existence or effect. Although not mandatory during
ground

operations, controllers may use the words jet blast, propwash, or rotorwash, in lieu of wake turbulence, when issuing a caution advisory.

An air traffic control investigator in the NTSB's Operational Factors Division in Washington, D.C., who conducted a review of FAA Air Traffic Bulletins on behalf of the investigation, reported to the investigator-in-charge that the review disclosed no information on jet blast or prop blast hazards in the Air Traffic Bulletins.

Pilot Information

Certificate:	Student	Age:	41, Male
Airplane Rating(s):	None	Seat Occupied:	Left
Other Aircraft Rating(s):	None	Restraint Used:	
Instrument Rating(s):	None	Second Pilot Present:	No
Instructor Rating(s):	None	Toxicology Performed:	No
Medical Certification:	Class 3 Valid Medical--no waivers/lim.	Last FAA Medical Exam:	November 21, 2000
Occupational Pilot:	UNK	Last Flight Review or Equivalent:	
Flight Time:	80 hours (Total, all aircraft), 79 hours (Total, this make and model), 29 hours (Pilot In Command, all aircraft), 11 hours (Last 90 days, all aircraft), 4 hours (Last 30 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Cessna	Registration:	N426SK
Model/Series:	172N	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	
Airworthiness Certificate:	Normal; Utility	Serial Number:	17273720
Landing Gear Type:	Tricycle	Seats:	4
Date/Type of Last Inspection:	September 7, 2001 100 hour	Certified Max Gross Wt.:	2300 lbs
Time Since Last Inspection:	0 Hrs	Engines:	1 Reciprocating
Airframe Total Time:	2864 Hrs	Engine Manufacturer:	Lycoming
ELT:	Installed, not activated	Engine Model/Series:	O-320-H2AD
Registered Owner:	On file	Rated Power:	160 Horsepower
Operator:	On file	Operating Certificate(s) Held:	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	Condition of Light:	Day
Observation Facility, Elevation:	PSC	Distance from Accident Site:	
Observation Time:	06:53 Local	Direction from Accident Site:	
Lowest Cloud Condition:	Clear	Visibility	10 miles
Lowest Ceiling:	None	Visibility (RVR):	
Wind Speed/Gusts:	4 knots / None	Turbulence Type Forecast/Actual:	/
Wind Direction:	350°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	30.2 inches Hg	Temperature/Dew Point:	3°C / 3°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Pasco, WA (PSC)	Type of Flight Plan Filed:	None
Destination:		Type of Clearance:	VFR
Departure Time:	07:20 Local	Type of Airspace:	Class D

Airport Information

Airport:	Tri-Cities PSC	Runway Surface Type:	
Airport Elevation:		Runway Surface Condition:	Unknown
Runway Used:	30	IFR Approach:	None
Runway Length/Width:		VFR Approach/Landing:	None

Wreckage and Impact Information

Crew Injuries:	1 None	Aircraft Damage:	Substantial
Passenger Injuries:		Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	1 None	Latitude, Longitude:	46.410423,-118.899826(est)

Administrative Information

Investigator In Charge (IIC):	Nesemeier, Gregg
Additional Participating Persons:	Robert S Rasmussen; FAA - Spokane FSDO; Spokane, WA
Original Publish Date:	June 18, 2002
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.nts.gov/Docket?ProjectID=53465

The National Transportation Safety Board (NTSB) is an independent federal agency charged by Congress with investigating every civil aviation accident in the United States and significant events in other modes of transportation—railroad, transit, highway, marine, pipeline, and commercial space. We determine the probable causes of the accidents and events we investigate, and issue safety recommendations aimed at preventing future occurrences. In addition, we conduct transportation safety research studies and offer information and other assistance to family members and survivors for each accident or event we investigate. We also serve as the appellate authority for enforcement actions involving aviation and mariner certificates issued by the Federal Aviation Administration (FAA) and US Coast Guard, and we adjudicate appeals of civil penalty actions taken by the FAA.

The NTSB does not assign fault or blame for an accident or incident; rather, as specified by NTSB regulation, “accident/incident investigations are fact-finding proceedings with no formal issues and no adverse parties ... and are not conducted for the purpose of determining the rights or liabilities of any person” (Title 49 *Code of Federal Regulations* section 831.4). Assignment of fault or legal liability is not relevant to the NTSB’s statutory mission to improve transportation safety by investigating accidents and incidents and issuing safety recommendations. In addition, statutory language prohibits the admission into evidence or use of any part of an NTSB report related to an accident in a civil action for damages resulting from a matter mentioned in the report (Title 49 *United States Code* section 1154(b)). A factual report that may be admissible under 49 *United States Code* section 1154(b) is available [here](#).