

National Transportation Safety Board

Office of Research and Engineering

Washington, DC 20594



DCA22MA193

AIRPLANE PERFORMANCE STUDY

March 31, 2023

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A. ACCIDENT

Location: Mutiny Bay, Whidbey Island, Washington
Date: September 4, 2022
Time: 1509 PDT
2209 GMT
Airplane: De Havilland DHC-3 Turbine Otter Seaplane, N725TH

B. AIRPLANE PERFORMANCE

No airplane performance group was formed.

C. SUMMARY

On September 4, 2022, about 1509 pacific daylight time (PDT), a de Havilland DHC-3 Turbine Otter seaplane, N725TH, was destroyed when it was involved in an accident in Mutiny Bay, Whidbey Island, Washington. The pilot and nine passengers were fatally injured. The airplane was owned by Northwest Seaplanes, Inc. and operated as a Title 14 *Code of Federal Regulations (CFR)* Part 135 scheduled flight by West Isle Air dba Friday Harbor Seaplanes. The flight originated at Friday Harbor Seaplane Base (W33), Friday Harbor, Washington, with an intended destination of Will Rogers Wiley Post Memorial Seaplane Base (W36), Renton, Washington. See Figure 1.

Times in the study are quoted in PDT. Greenwich Mean Time (GMT) = PDT + 7 hr.

D. THE AIRPLANE

A picture of the accident airplane, a de Havilland DHC-3 Turbine Otter seaplane, serial number 466, is shown in Figure 2. The airplane was manufactured in 1967 and is registered to Northwest Seaplanes, Inc.

E. WEATHER SUMMARY

Jefferson County International Airport (K0S9), Port Townsend, Washington, had the closest official weather station to the accident site. The K0S9 Automated Weather Observing System (AWOS) is located 10 miles west-northwest of the accident site at an elevation of 110 feet (ft) and issued the following observations around the time of the accident:

**METAR K0S9 042215Z AUTO 31010KT 10SM FEW040 FEW075 BKN090
20/14 A3002**

The automated surface weather observation at Jefferson County International Airport on September 4 at 1515 PDT is wind 310° at 10 knots (kt); 10 statute miles visibility; a few clouds at 4,000 above ground level (agl), a few clouds at 7,500 ft agl, a broken ceiling at 9,000 ft agl; temperature 20° Celsius (C); dew point 14°C; altimeter 30.02" of mercury.

F. AIRPLANE PERFORMANCE STUDY

The airplane performance study is largely based on Automatic Dependent Surveillance-Broadcast (ADS-B) data provided by the Federal Aviation Administration (FAA). ADS-B is a primary technology supporting the FAA's Next Generation Air Traffic Control System, or NextGen, which is shifting airplane separation and air traffic control from ground-based radar to satellite-derived positions. ADS-B broadcasts an airplane's Global Positioning System (GPS) position to the ground where it is displayed to Air Traffic Control (ATC). The GPS position is also transmitted to other airplanes with ADS-B receivers, either directly or relayed through ground stations, to allow self-separation and to increase situational awareness.

GPS has an accuracy of approximately 20 meters in both the horizontal and vertical dimensions. GPS augmented with the Wide Area Augmentation System (WAAS) is accurate to approximately 1.5 - 2 meters.

Figure 3 shows the ADS-B altitude, rate of climb, and ground speed for the approximately 18-minute flight. A sounding for the area at the time of the accident indicated that a headwind of approximately 5 kt existed at 1,000 ft msl. Figure 4 highlights the final two minutes of the flight.

The airplane attitude information for the flight estimated from ADS-B data is shown in Figure 5 and is unremarkable until the end of the flight at about 1508:43. At this time, the airplane pitched up to approximately 8° and then abruptly pitched down to 58° when the ADS-B data ended. Figure 6 highlights the airplane attitude in the final two minutes of the flight.

Figure 7 includes the estimated angle-of-attack, as well as longitudinal and normal load factors. Like the airplane attitude data, these data appear normal until the last eight seconds when the airplane pitched up to reach a normal load factor of 1.3g's and then pitched down to a normal load factor of less than 0.5g's before the data ended. Figure 8 highlights the final two minutes of the flight.

G. SUMMARY AND CONCLUSIONS

ADS-B data provided by the FAA indicate that the accident flight was uneventful until the last eight seconds when N725TH pitched up then down abruptly and the ADS-B data ended. The pilot did not report a problem to air traffic control or other aircraft in the area.

Submitted by:

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H. FIGURES

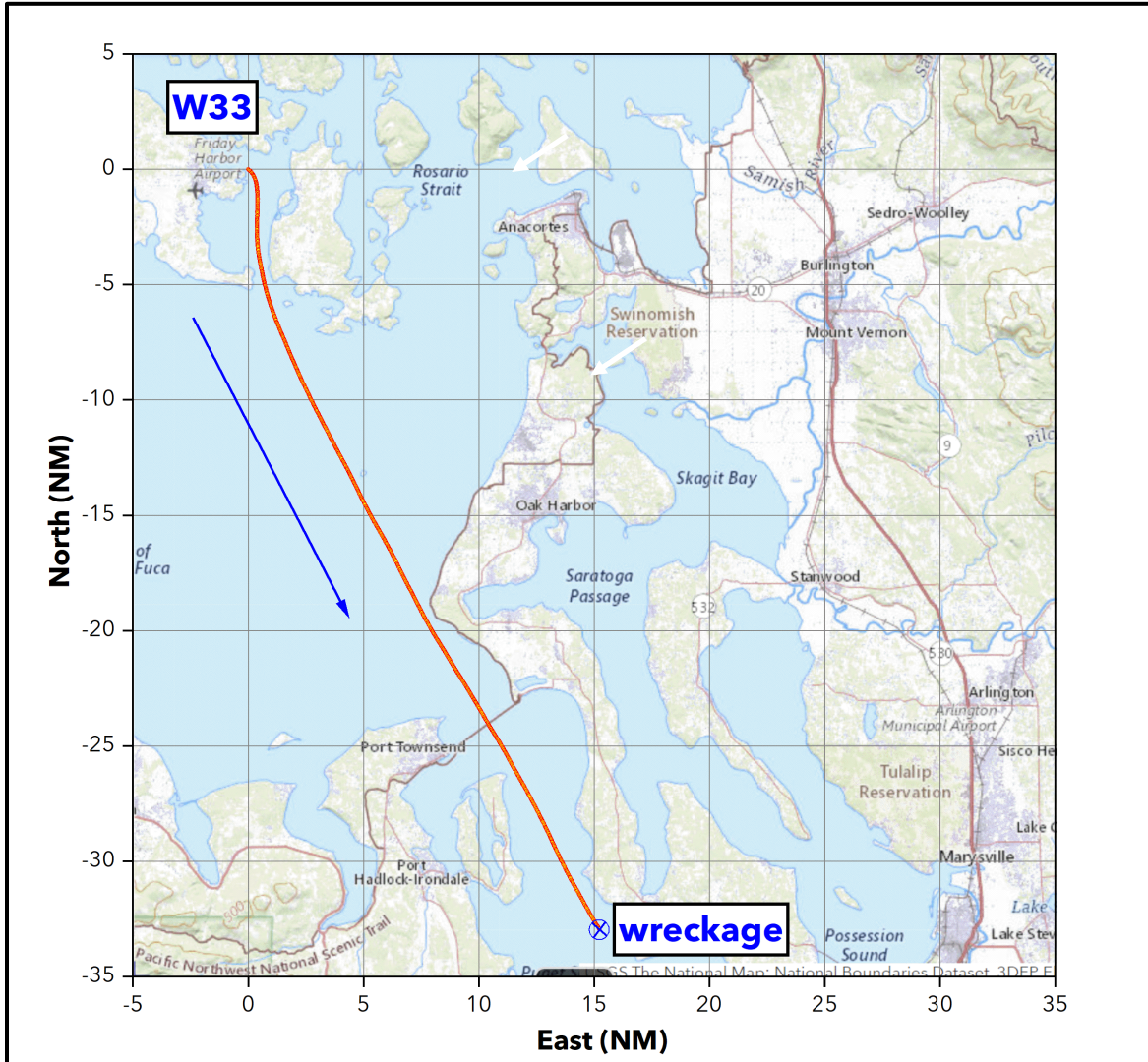


Figure 1: The Flight Departed Friday Harbor Seaplane Base (W33) with an Intended Destination of Will Rogers Wiley Post Memorial Seaplane Base (W36)



Figure 2: Accident Airplane, N725TH, Serial Number 466, a 1967 a de Havilland DHC-3 Turbine "Otter" Seaplane

**DCA22MA193: DHC-3 Turbine Otter, N725TH
Mutiny Bay, Whidbey Island, WA
9/4/2022**

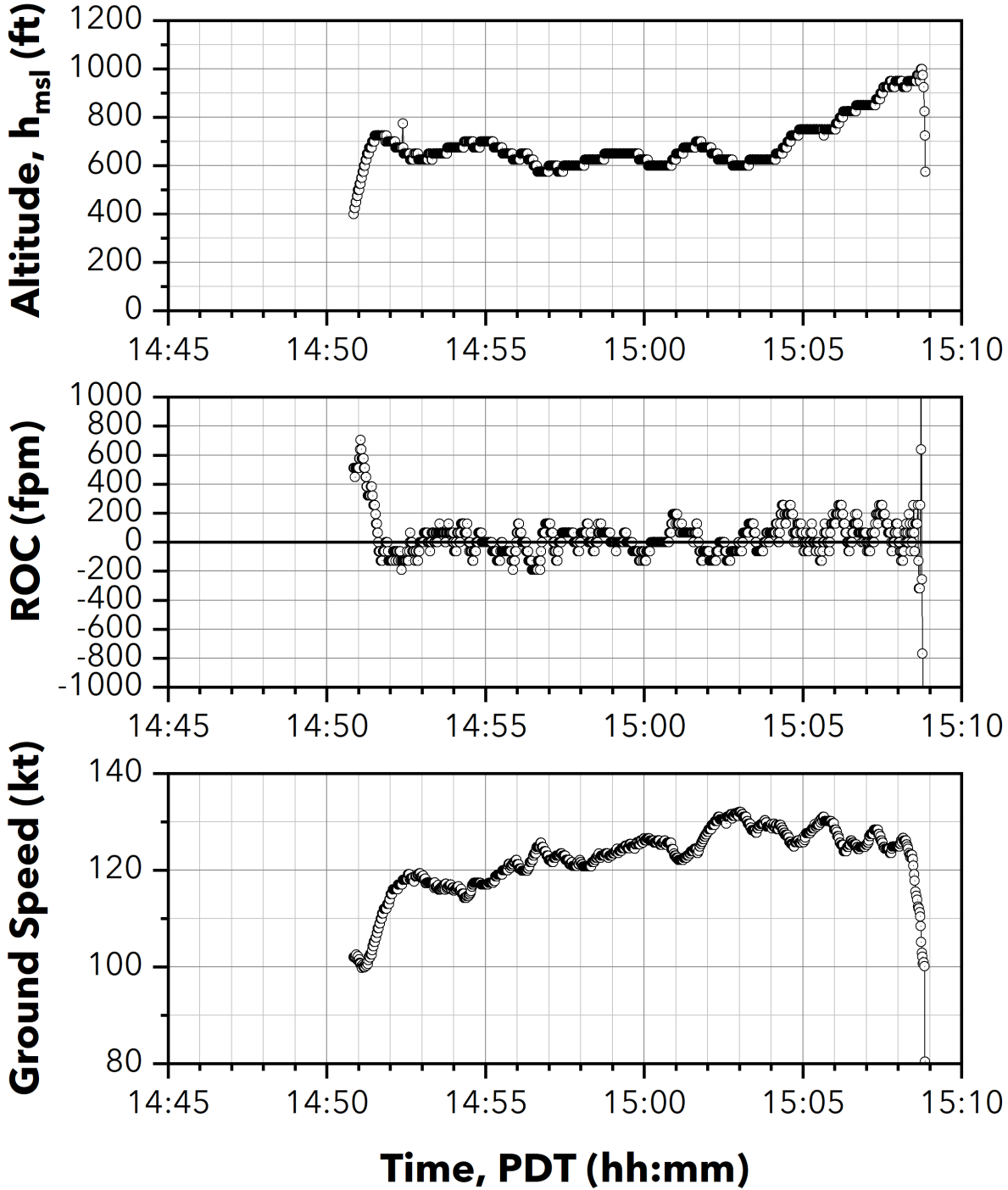


Figure 3: ADS-B Altitude, ROC, and Ground Speed for Accident Flight

**DCA22MA193: DHC-3 Turbine Otter, N725TH
Mutiny Bay, Whidbey Island, WA
9/4/2022**

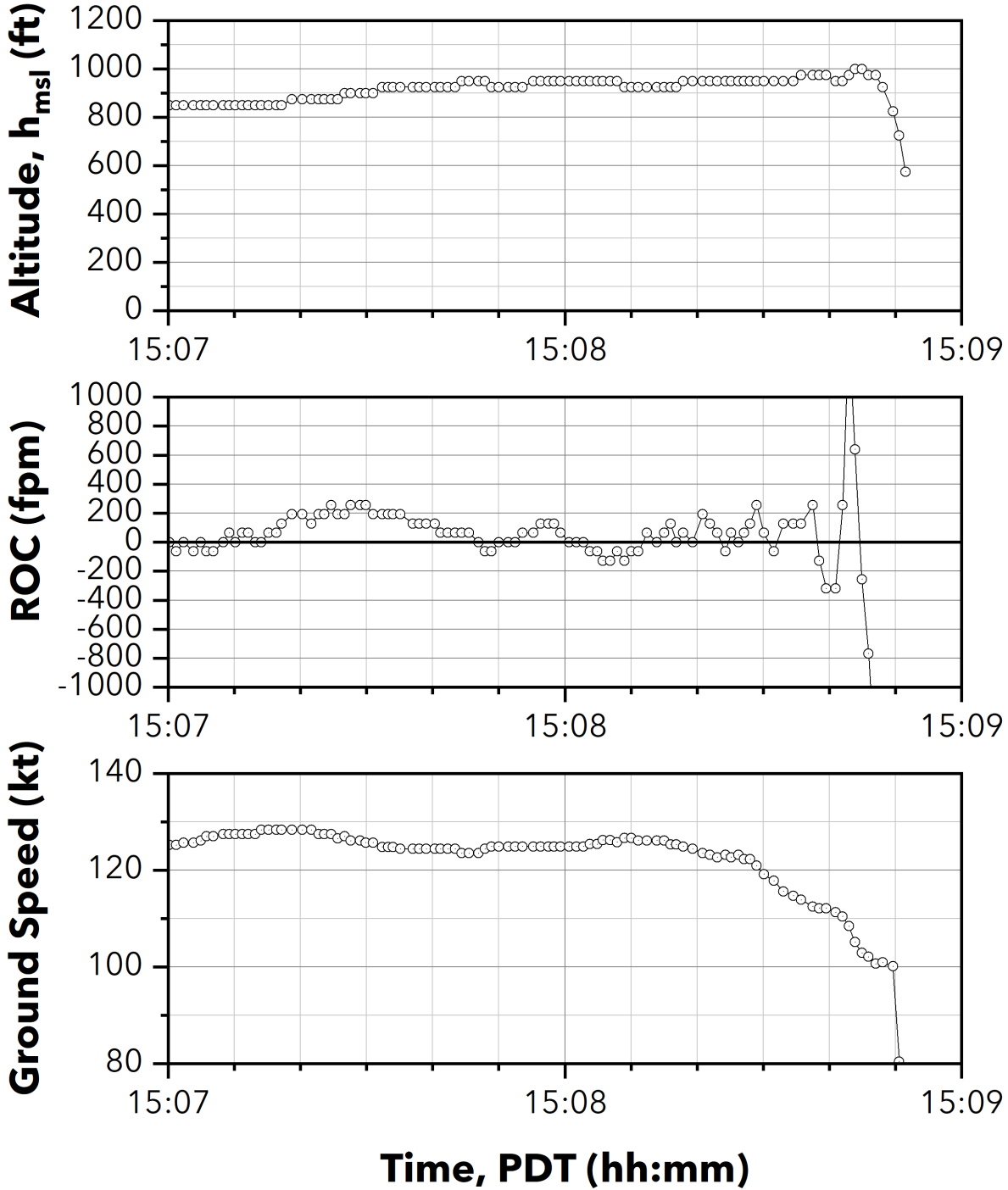


Figure 4: ADS-B Altitude, ROC, and Ground Speed for Final Two Minutes

**DCA22MA193: DHC-3 Turbine Otter, N725TH
Mutiny Bay, Whidbey Island, WA
9/4/2022**

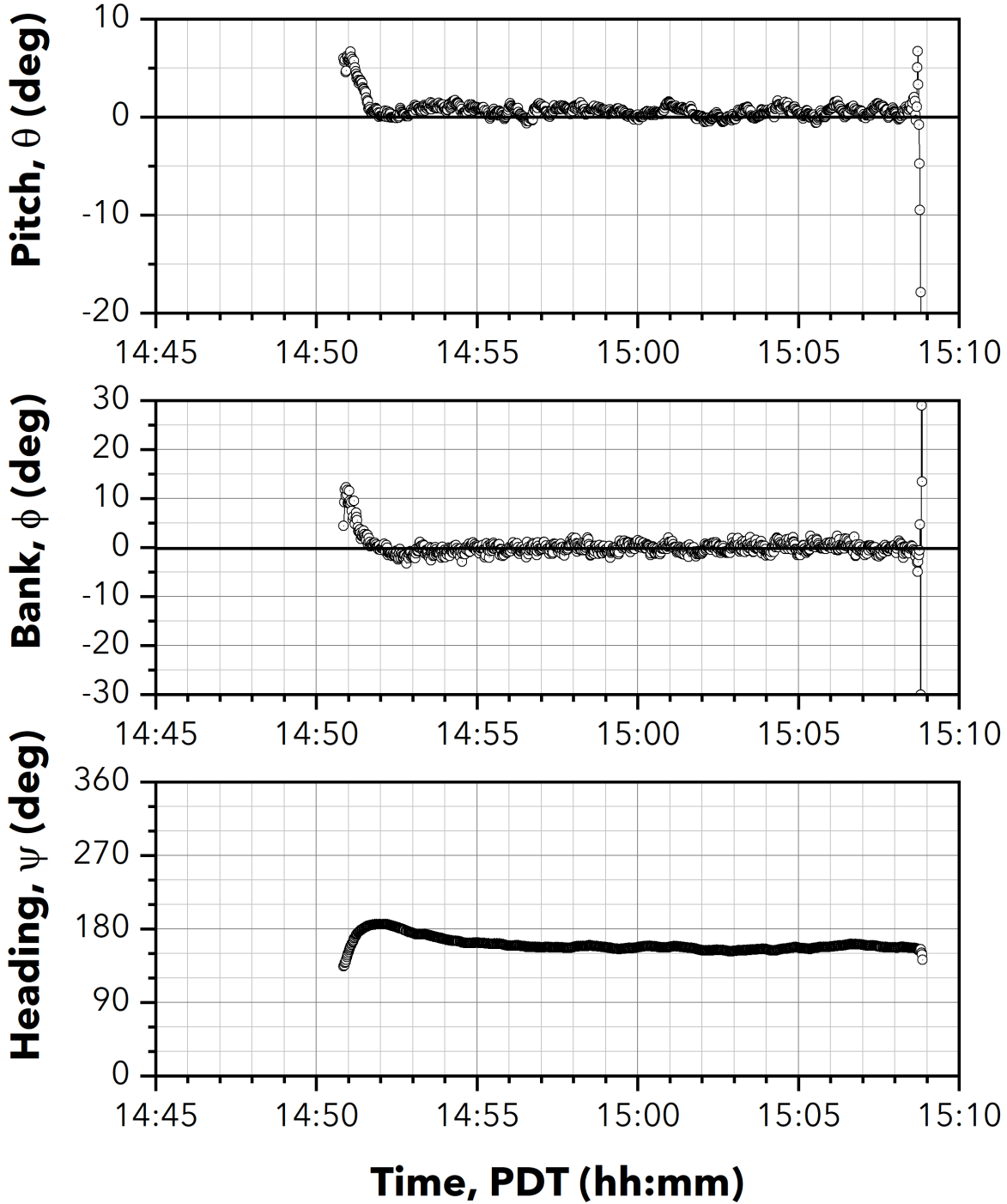


Figure 5: Estimated Pitch, Bank, and Heading Angles for Accident Flight

**DCA22MA193: DHC-3 Turbine Otter, N725TH
Mutiny Bay, Whidbey Island, WA
9/4/2022**

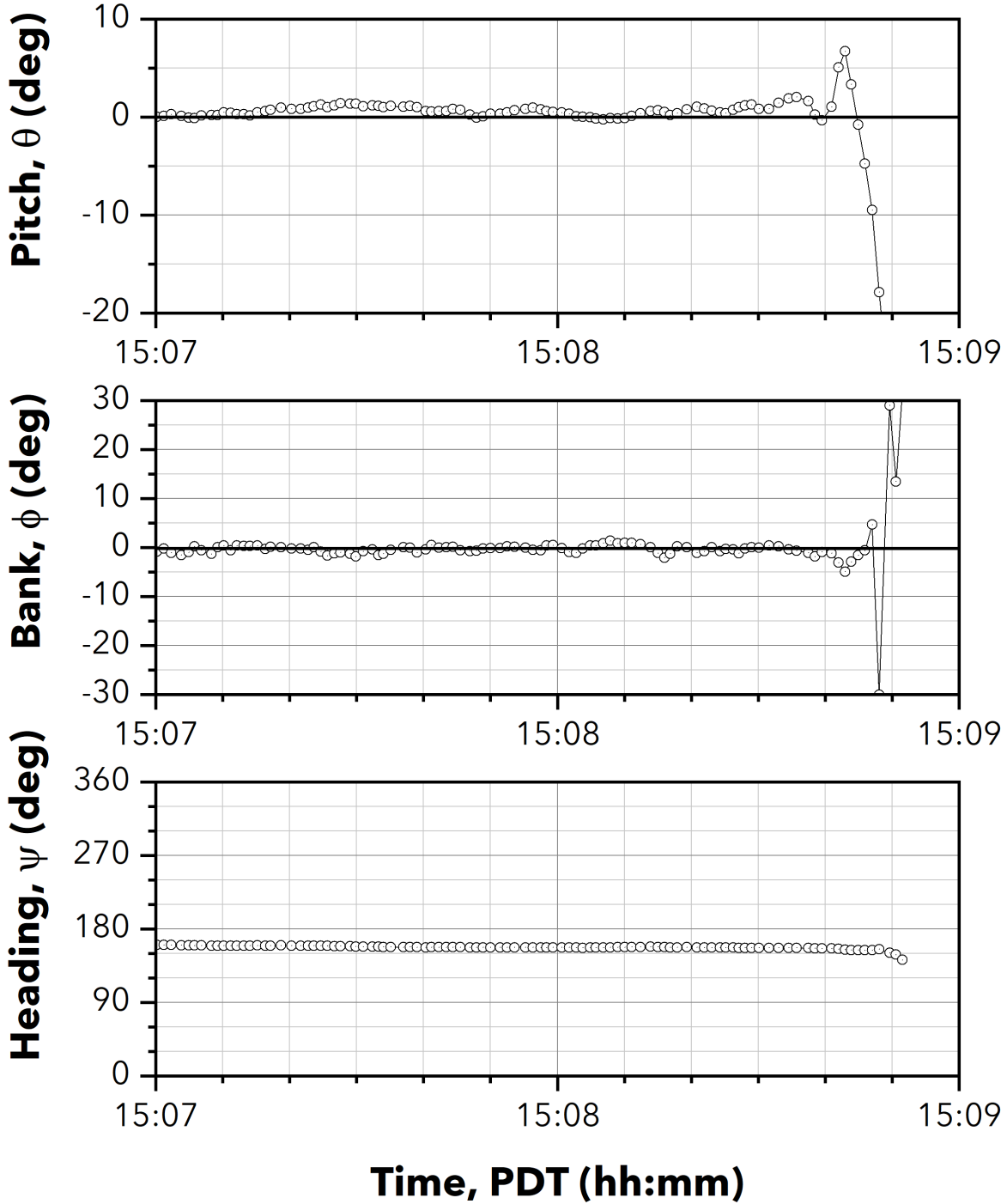


Figure 6: Estimated Pitch, Bank, and Heading Angles for Final Two Minutes

**DCA22MA193: DHC-3 Turbine Otter, N725TH
Mutiny Bay, Whidbey Island, WA
9/4/2022**

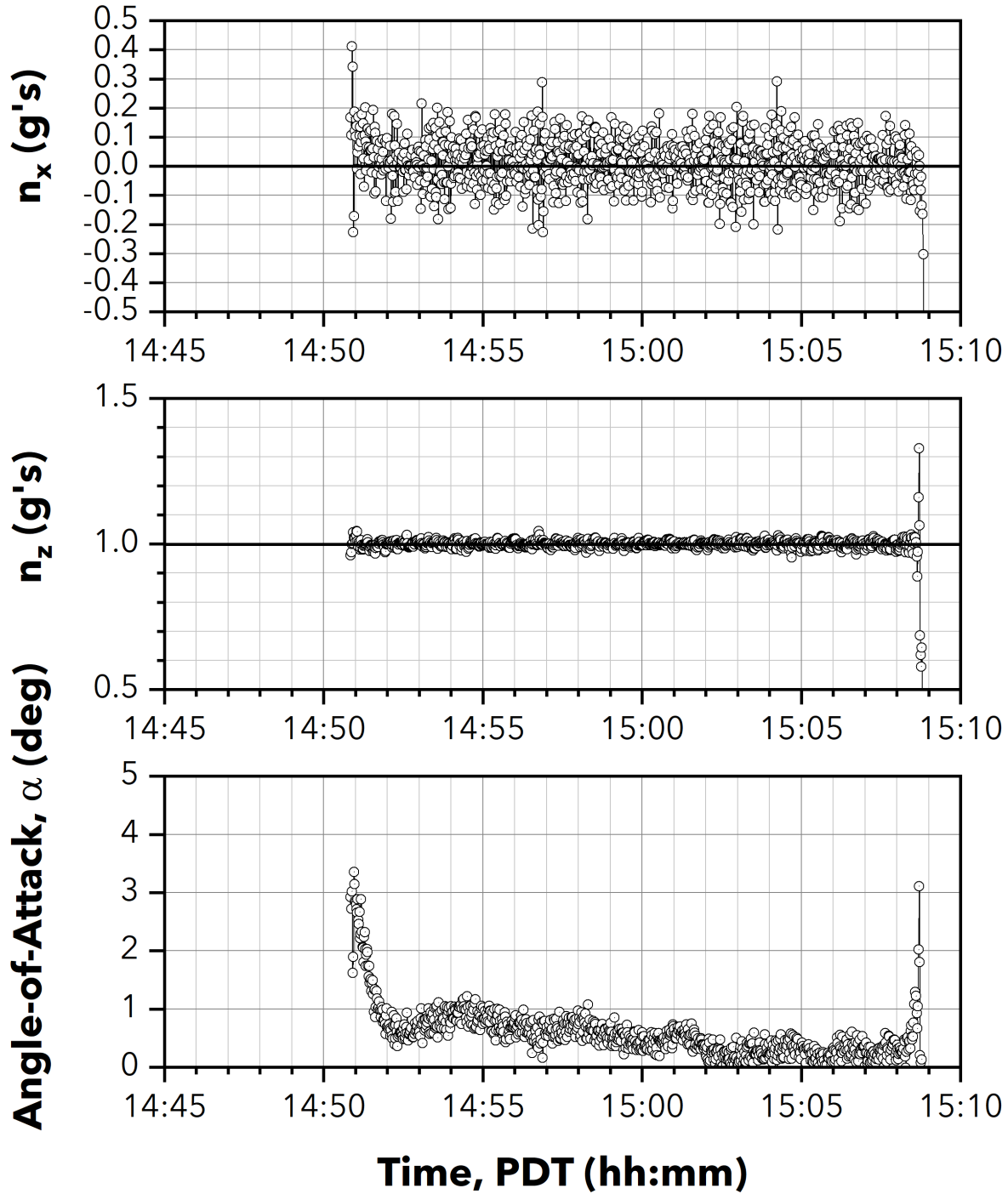


Figure 7: Estimated Longitudinal / Normal Load Factors and Angle-of-Attack for Accident Flight

**DCA22MA193: DHC-3 Turbine Otter, N725TH
Mutiny Bay, Whidbey Island, WA
9/4/2022**

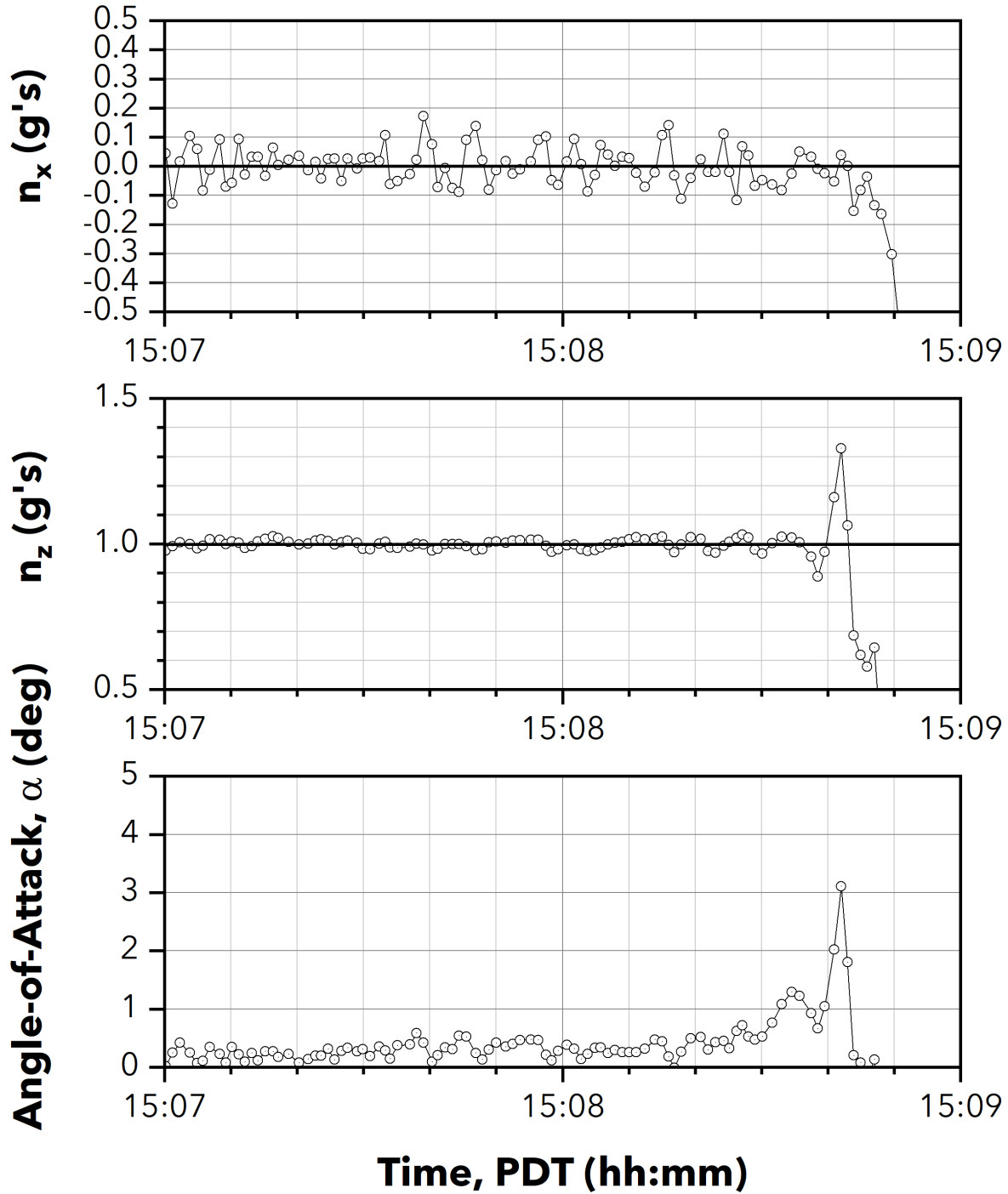


Figure 8: Estimated Longitudinal / Normal Load Factors and Angle-of-Attack for Final Two Minutes