

# Science Flight Report

## Operation IceBridge Arctic 2010



**Flight:** 07  
**Mission:** Sea Ice 08

### Flight Report Summary

<b>Aircraft</b>	<b>DC-8 (N817NA)</b>
<b>Flight Number</b>	100209
<b>Flight Request</b>	108013
<b>Date</b>	Friday, April 2, 2010 (Z), Day of Year 092
<b>Purpose of Flight</b>	Operation IceBridge Mission Sea Ice 08
<b>Take off time</b>	11:01:04 Zulu from Thule Air Base (BGTL)
<b>Landing time</b>	18:19:51 Zulu at Thule Air Base (BGTL)
<b>Flight Hours</b>	7.4
<b>Aircraft Status</b>	Airworthy
<b>Sensor Status</b>	All installed sensors operational.
<b>Significant Issues</b>	None
<b>Accomplishments</b>	<ul style="list-style-type: none"> <li>• Low-altitude survey (1,500 ft AGL) of the Northwest Passage south of Ellesmere Island.</li> <li>• ATM, LVIS, POS/AV, DMS, Ku-band and snow radar were operated on the survey lines. LVIS was also operated on the high-altitude transits. Post-mission quality control of the LVIS data indicated that the data are corrupted because of a OS system disk failure.</li> <li>• Gravimeter was in operation throughout the entire flight.</li> <li>• MCoRDS was operated over the land ice segments of the flight.</li> <li>• Completed all of the planned survey lines.</li> <li>• Surveyed several additional glacier profiles from a P-3 Mission NW Glaciers between waypoints THS1 – THS4.</li> <li>• Conducted one high-elevation pass over the runway at Thule Air Base at 15,000 ft AGL for LVIS instrument calibration and one at low elevation at 2,000 ft for ATM instrument calibration.</li> </ul>
<b>Geographic Keywords</b>	Northwest Passage, Lancaster Sound, Barrow Strait, Viscount Melville Sound, M'Clure Strait, Petowik Brae, De Dodes Fjord, Igdlarssugssuak/Sidebriksfjord
<b>ICESat Tracks</b>	None
<b>Repeat Mission</b>	No

## Science Data Report Summary

Instrument	Instrument Operational			Data Volume	Instrument Issues
	Survey Area	Entire Flight	High-alt. Transit		
<b>ATM + Cambot</b>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	103.5 GB	None
<b>MCoRDS</b>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	18 GB	None
<b>Snow Radar</b>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	340 GB	None
<b>Ku-band Radar</b>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	340 GB	None
<b>LVIS</b>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	N/A	System disk failure
<b>DMS</b>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	110 GB	None
<b>POS/AV (510 + 610)</b>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	2 GB	None
<b>Gravimeter</b>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	80 MB	None
<b>DC-8 Onboard Data</b>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	20 MB	None

### Mission Report (Michael Studinger, Mission Scientist)

Today's mission is a low-elevation sea ice survey over the Northwest Passage. The weather in the survey area was good with only slightly more clouds and fog than we had expected from the forecast model and satellite imagery.

After completing the survey line from mission Sea Ice 08 as planned we headed towards Thule for a high-altitude (15,000 ft) pass over the runway for LVIS instrument calibration. After that we descended and surveyed several glaciers south of Thule at low elevation that were planned to be flown by a P-3 mission called NW Glaciers. We surveyed between the segments waypoints THS1 – THS4 before returning to Thule for a 2,000 ft pass over the runway for ATM calibration.

Post mission quality control of the LVIS data indicated that the disk with the operating system had failed during the flight corrupting almost all the LVIS data collected during the mission. The LVIS instrument was not a required sensor on this mission and there is no data loss to the IceBridge mission science goals associated with this disk failure.

### Individual instrument reports from experimenters on board the aircraft:

**ATM:** The ATM lasers worked well. We lost about 3% of the surface elevation data due to ice fog near the western end of the survey line at WP 11.

**MCoRDS:** The MCoRDS system was operated over the land ice segments and worked well.

**Snow and Ku-band radar:** Both systems worked well and collected each about 340 GB of data.

**Gravimeter:** System worked normally. No problems.

**DMS:** DMS worked well. No problems.

**LVIS:** LVIS collected data during the high-elevation transits and the low-elevation sea ice survey. Post-mission analysis, however, indicated that the data written to the disk has been corrupted.

**POS/AV:** Systems worked well. No issues.

**DC-8 on board data:** System worked well.

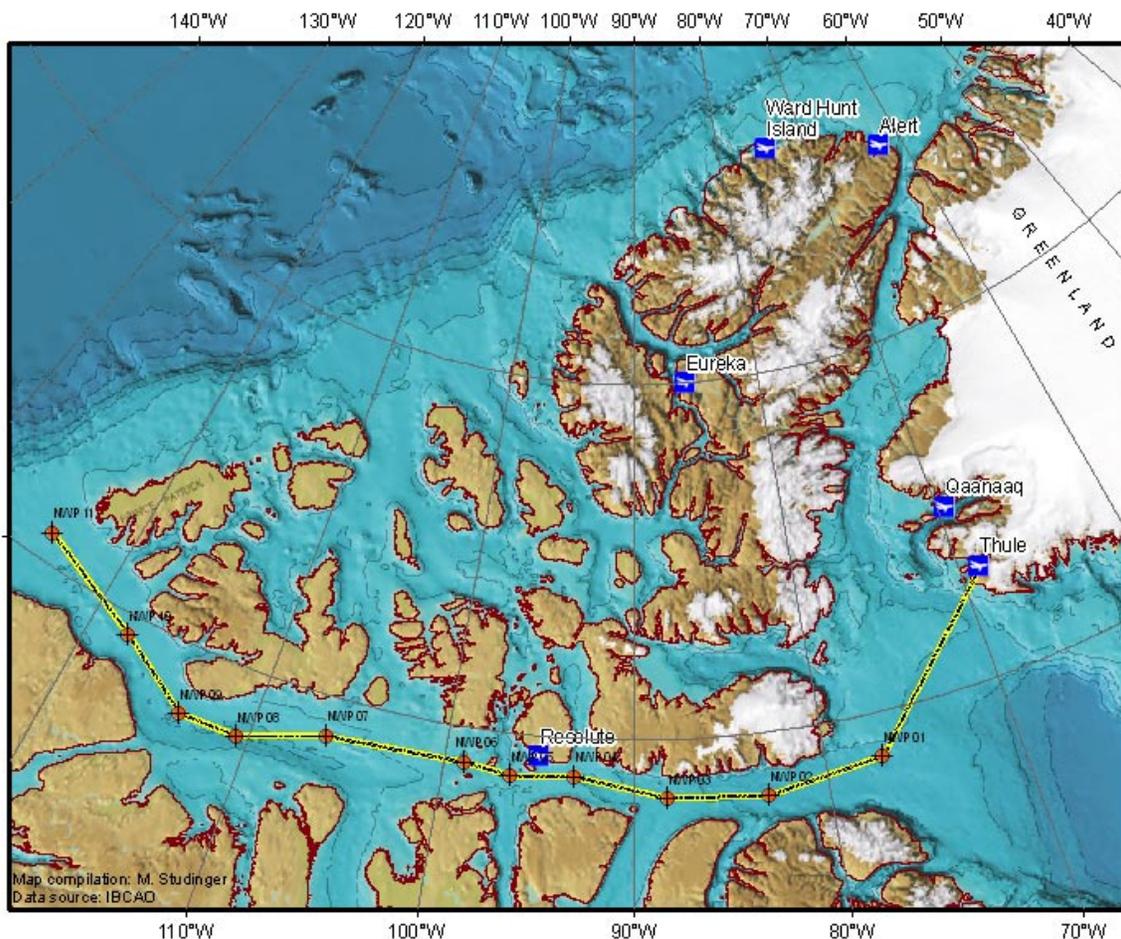


Figure 1: Northwest Passage mission plan for Sea Ice 08, F07.

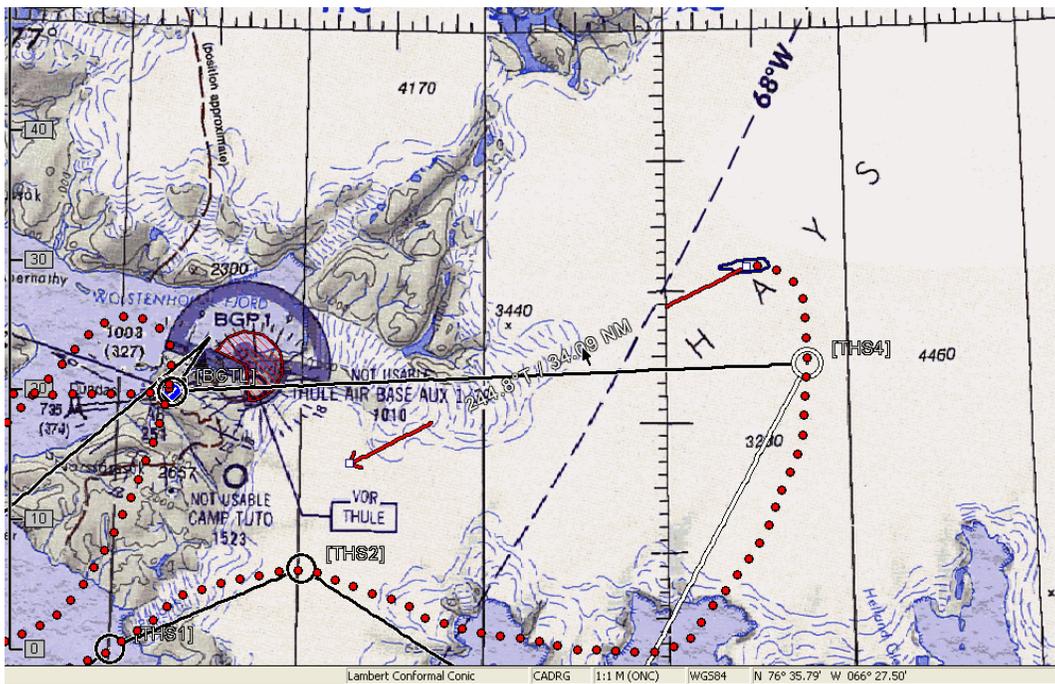


Figure 2: Additional waypoints from P-3 Mission NW Glaciers.

# Sea Ice 08

7.9 hours at 250 knots survey / 440 knots transit

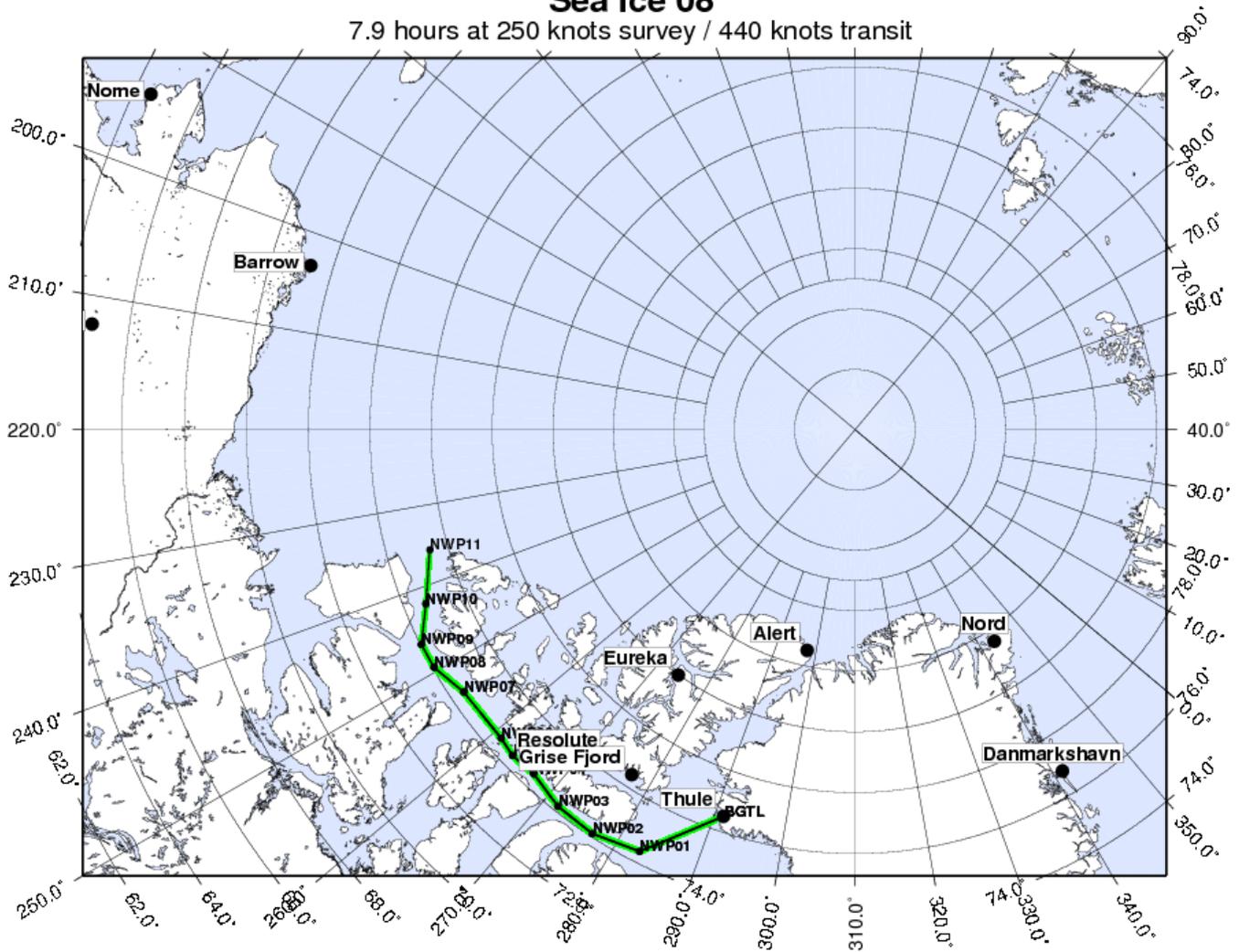


Figure 3: Waypoints and survey area of Flight 07 from John Sonntag.