Science Flight Report
Operation IceBridge Arctic 2012

Flight: **F05**
Mission: **South Basin Transect /Thule-Fairbanks**

Flight Report Summary

Aircraft	**P-3B (N426NA)**
Flight Number	6
Flight Request	12P006
Date	Monday, March 19, 2012 (Z)
Purpose of Flight	Operation IceBridge Mission South Basin Transect / Thule-Fairbanks
Take off time	09:53 Zulu from Fairbanks, AK (PAFA)
Landing time	18:00 Zulu at Thule Air Base (BGTL)
Flight Hours	8.3 Hours
Aircraft Status	Airworthy.
Sensor Status	All installed sensors operational, except ATM T3.
Significant Issues	None
Accomplishments	• Low-altitude survey (1,500 ft AGL) of sea ice transects over the Arctic Basin. • Completed entire mission as planned. • ATM, snow and Ku-band radars, gravimeter, magnetometer, DMS and KT-19 skin temperature sensor were operated on the survey lines. • MCoRDS and accumulation radars were not in operation on this flight due to the sea ice mission. • Several pitch and roll maneuvers over sea ice for snow and Ku-band radar calibration. • Conducted a ramp pass at Thule at 1500 ft AGL for ATM calibration.
Geographic Keywords	Arctic Ocean, Arctic Basin, Lincoln Sea
Satellite Tracks	ICESat orbits 0282 and 0284
Repeat Mission	2009, 2010, 2011

Science Data Report Summary

Instrument	Instrument Operational			Data Volume	Instrument Issues
	Survey Area	Entire Flight	High-alt. Transit		
ATM	☑	☒	☒	23 GB	T3 failure. No CAMBOT.
MCoRDS	☒	☒	☒	N/A	N/A
Snow Radar	☑	☒	☒	500 GB	None
Ku-band Radar	☑	☒	☒	500 GB	None
Accumulation Radar	☒	☒	☒	N/A	N/A
DMS	☑	☒	☒	45 GB	None
KT-19 Skin Temp.	☑	☑	☑	7.8 MB	None
Gravimeter	☑	☑	☑	1.5 GB	None
Magnetometer	☑	☑	☑	120 MB	None

Mission Report (Michael Studinger, Mission Scientist)

This mission is an exact repeat of the March 25, 2011 flight. Timing on this flight is very tight because we prefer predawn twilight lighting conditions for VFR flight once off the northern Alaska coast, but also must land at Thule before the airfield closes at 1600 local time, which is five hours ahead of Fairbanks local time (AKDT). In addition to Level-1 Requirements 4.1.1.A.3a and b, it addresses sea ice level 1 baseline requirement 4.1.1.A.3c by providing data on the thickness gradient and distribution of perennial and seasonal ice across the Arctic Basin.

The weather was good along the survey line and we did not lose any data due to clouds. We flew under dense cloud cover at the end of the line. After we reached a safe distance away from the Canadian coast we descended to 2000 ft AGL in total darkness and started collecting data. At the first glimpse of daylight that allowed us to see structures on the ice surface we descended down to our regular survey altitude of 1500 ft AGL and stayed there for the remainder of the survey line.

Individual instrument reports from experimenters on board the aircraft:

ATM: The ATM T4 systems worked well and collected good data along the entire line in cloud free conditions, except for some small patches of ice fog at the beginning. The CAMBOT system was unavailable following a failure on a previous flight. The ATM T3 narrow scanner failed on the previous mission and was send to the manufacturer for repair from Fairbanks. The spare laser is in Thule, because of weight constraints for the transit flights. ATM collected a total of 4.8 hours of science data.

MCoRDS: The MCoRDS system was not operated on this flight due to the sea ice mission.

Snow and Ku-band radar: The snow and Ku-band worked well and collected data along the entire line with the new (primary) system.

Accumulation radar: The system was not operated on this flight due to the sea ice mission.

Gravimeter: Worked well. No issues.

Magnetometer: Worked well. No issues

DMS: DMS worked well and collected data for the segments with sufficient daylight.

KT-19 skin temperature sensor: System worked well.

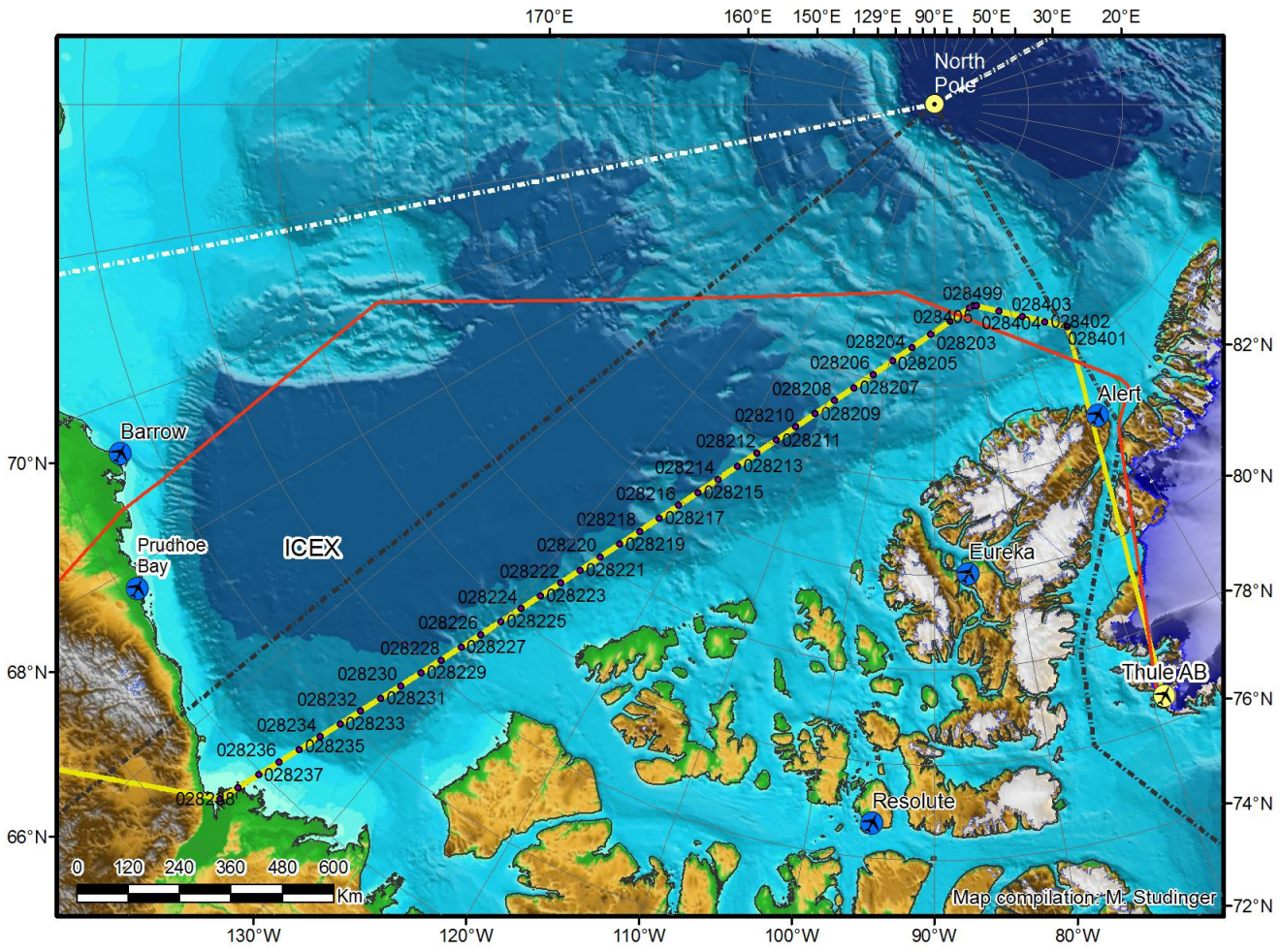

Figure 1: Today's sea ice mission plan (yellow). Red line is F01.