

# Science Flight Report

## Operation Ice Bridge Fall 2009



**Antarctic Flight No 19**  
**Mission Plan: Peninsula 4 (PEN 4)**

<b>Aircraft</b>	<b>DC-8 (N817NA)</b>
<b>Flight Number</b>	DC8-100127
<b>Flight Request Number</b>	108002
<b>Flight Hours</b>	10.6
<b>Date</b>	Sunday, Nov 15 2009, Day of Year 319
<b>Purpose of Flight</b>	Operation Ice Bridge Peninsula 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 level survey over Drewry and Evans Ice Streams (1500 ft AGL).</li> <li>• Completed all of the planned survey lines.</li> <li>• ATM, DLH, DACOM, gravimeter, MCoRDS, Ku-band radar, snow radar, DMS, and POS/AV operational throughout target areas.</li> <li>• AVOCET, WAS and LVIS were not operated on this mission.</li> <li>• Conducted one pass over runway at Punta Arenas airport for ATM instrument calibration.</li> </ul>
<b>Planned Events</b>	<ul style="list-style-type: none"> <li>• The forecast for tomorrow based on the AMPS WRF model from 12 UTC today looks best for the Larsen C (PEN 5) mission and we tentatively plan to give this the highest priority based on the forecast.</li> </ul>

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

Today's mission is a laser, ice-penetrating radar, and gravity survey of the Drewry and Evans Ice Streams. None of the survey lines have been flown before. The survey started with a profile down the centerline of Drewry Ice Stream, which is one of the longest tributaries that flow into Evans Ice Stream. Over Evans Ice Stream we have flown five ICESat tracks out to the Zumberge Coast where the Evans Ice Streams flows into the Ronne Ice Shelf.

The area around Evans Ice Streams lived up to its reputation of being very cloudy and with weather conditions that are difficult to forecast. Today is the first day in our deployment where the forecast shows conditions in the survey area that justify a launch into the Evans/Drewry area. The weather turned out to be fine and we mostly encountered the conditions that we have expected from the forecast. During the transit into the survey area we observed the weather over the George VI Ice Shelf and its steep shoulders that also turned out mostly cloud free as forecasted by the AMPS model and the meteorologist at the airport met office.

Given the difficulties during power transfer from ground to aircraft power so far the decision was made to play it safe today and shut down the ATM INS during power transfer and align the INS after power transfer and push back from the parking position.

13:29:00 Zulu: takeoff  
16:08:45 Zulu: begin descent into survey area  
16:50:12 Zulu: start of first survey line at waypoint EIS01  
20:45:00 Zulu: end of last survey line at waypoint 15999, starting to climb  
23:50:15 Zulu: ramp over flight at Punta Arenas airport for ATM boresight alignment  
00:00:14 Zulu: touchdown

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

**ATM:** The ATM systems acquired data for the entire survey missing only a few seconds due to a patch of wispy ice fog near the survey start. Approximately 150 million total laser elevations were recorded. The Cambot photo system also ran continuously during the survey.

**MCoRDS:** During today's 4 hour 25 minute survey the MCoRDS system collected over 1.2 TByte of data. The system performed well, detecting a bottom echo more than 80% of the time.

**Snow and Ku-Band radar:** System performed as expected. Snow radar collected 346 GByte of data. Ku-band radar collected also 346 GByte of data.

**LVIS:** Was not in operation during today's flight.

**DLH/DACOM:** System work well.

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

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

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

**DC8 on board data:** worked well.

# Peninsula 4

10.4 hrs total / 4.4 hrs survey  
440 knots transit / 250 knots survey

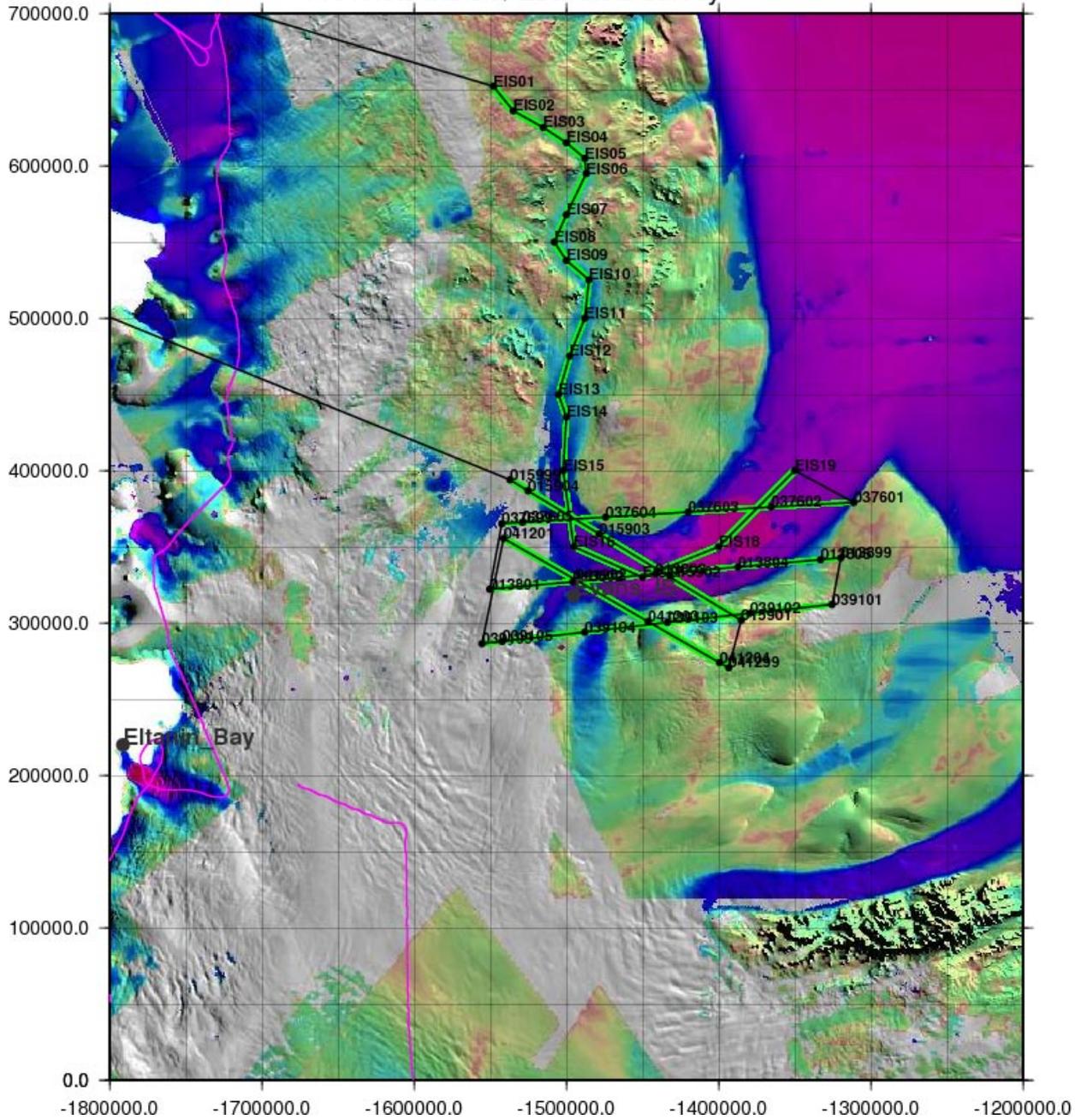


Figure 1: Waypoints and survey area of Flight 19 – Mission ID PEN 4.