

## P-3 Orion 11/18/13 - 11/19/13

**Aircraft:** [P-3 Orion - WFF](#) (See full schedule)

**Flight Number:** Science Flight #1: TAM West

**Payload Configuration:** Operation IceBridge

**Nav Data Collected:** Yes

**Total Flight Time:** 7.8 hours

**Submitted by:** Christy Hansen on 11/19/13

**Flight Segments:**

<b>From:</b>	NZIR	<b>To:</b>	NZIR
<b>Start:</b>	11/18/13 19:50 Z	<b>Finish:</b>	11/19/13 03:47 Z
<b>Flight Time:</b>	7.8 hours		
<b>Log Number:</b>	<a href="#">14P003</a>	<b>PI:</b>	Michael Studinger
<b>Funding Source:</b>	Bruce Tagg - NASA - SMD - ESD Airborne Science Program		
<b>Purpose of Flight:</b>	Science		
<b>Comments:</b>	This was our first science mission based from NZIR in McMurdo. Data collection was nominal, and the aircraft performed well. The flight crew has done an excellent job in this new environment. We flew a mission called TAM West (transantarctic mountains). Weather was excellent with clear skies.		

**Flight Hour Summary:**

	<b>14P003</b>
<b>Flight Hours Approved in SOFRS</b>	230
<b>Total Used</b>	128.2
<b>Total Remaining</b>	101.8

**14P003 Flight Reports**

Date	Flt #	Purpose of Flight	Duration	Running Total	Hours Remaining	Miles Flown
<a href="#">11/06/13</a>	OIB ECF	Check	1.5	1.5	228.5	
<a href="#">11/08/13</a>	OIB PCF #1	Check	3.1	4.6	225.4	
<a href="#">11/08/13</a>	OIB PCF #2	Check	3.7	8.3	221.7	
<a href="#">11/11/13</a>	1711	Transit	7.4	15.7	214.3	
<a href="#">11/12/13 - 11/13/13</a>	1715	Transit	8.8	24.5	205.5	
<a href="#">11/13/13 - 11/14/13</a>	1716	Transit	8.1	32.6	197.4	
<a href="#">11/14/13 - 11/15/13</a>	1717	Transit	6.8	39.4	190.6	
<a href="#">11/15/13 - 11/16/13</a>	1718	Transit	6.7	46.1	183.9	
<a href="#">11/17/13 - 11/18/13</a>	McMurdo Check Flight	Check	4.3	50.4	179.6	
<a href="#">11/18/13 - 11/19/13</a>	Science Flight #1: TAM West	Science	7.8	58.2	171.8	
<a href="#">11/19/13 - 11/20/13</a>	Science Flight #2: Victoria 01	Science	8.3	66.5	163.5	
<a href="#">11/20/13 - 11/21/13</a>	Science Flight #3: Sea Ice Ross Fluxgate	Science	7.3	73.8	156.2	
<a href="#">11/25/13 - 11/26/13</a>	Science Flight #4: Siple Coast 03	Science	8.7	82.5	147.5	
<a href="#">11/26/13 - 11/27/13</a>	Science Flight #5: Dome C: Vostok	Science	8.2	90.7	139.3	
<a href="#">11/27/13 - 11/28/13</a>	Transit #1: NZIR-NZCH	Transit	8.8	99.5	130.5	

<a href="#">11/28/13 - 11/29/13</a>	Transit #2: NZCH-NSTU	Transit	6.3	105.8	124.2
<a href="#">11/29/13 - 11/30/13</a>	Transit #3: NSTU-Hawaii	Transit	7.4	113.2	116.8
<a href="#">12/01/13</a>	Transit #3: Hawaii - Mountain View, CA	Transit	7.1	120.3	109.7
<a href="#">12/02/13</a>	Transit #3: California - WFF	Transit	6.5	126.8	103.2
<a href="#">12/11/13</a>	ATM Post Mission Cal Flight	Check	1.4	128.2	101.8

Flight Reports began being entered into this system as of 2012 flights. If there were flights flown under an earlier log number the flight reports are not available online.

**Related Science Report:**

## OIB - P-3 Orion 11/18/13 - 11/19/13 Science Report

**Mission:** OIB

**Mission Summary:**

### F01 Transantarctic Mountains West

#### Accomplishments

- Low-altitude survey (1,500 ft AGL) over Transantarctic Mountains and hinterland.
- ATM, snow, Ku-band, accumulation, MCoRDS and DMS were operated on the survey lines.
- Gravimeter and magnetometer data collected over entire flight.
- Satellite Tracks: none.
- Repeat Mission: none.

Instrument	Operated	Data Volume	Instrument Issues/Comments
ATM	yes	67 GB	None. Fluid streaks on T4 window impacted data quality last 2 hours.
DMS	yes	82 GB	None. Fluid streaks impacting image quality last 2 hours.
Snow Radar	yes	133 GB	None.
Ku-band Radar	yes	133 GB	None.
Accumulation Radar	yes	177 GB	None.
MCoRDS	yes	2.0 TB	None.
KT-19	yes	8.5 MB	None. Exceeded -50°C specs on sensor.
Gravimeter	yes	1.4 GB	None.
Magnetometer	yes	300 MB	1 HF radio call caused interference with mag data.

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

Today we have flown our first science mission from McMurdo. It was an almost perfect day with routine operations on the P-3. Boredom did set in quickly. Unlike most other people the crowd on the P-3 considers a boring day a good day. It means everything is working according to plan. The only minor issue we had during the flight was a hydraulic fluid leak. The fluid streaks on the outside of the optical windows impacted the DMS and ATM instruments. For the ATM T4 scanner it reduced the amplitude of the return signal over a 100 degree arc by 40%, something that can be addressed in processing. DMS image quality was impacted by the fluid streaks as well but nothing critical for this mission. The source of the fluid leak has been identified and measures have been taken to avoid future leaking.

The weather decision was very easy this morning. Originally we had hoped last night to fly a sea ice mission in the Ross Sea, but similar to the Bellingshausen and Amundsen Seas the lack of clouds in the AMPS model could mean up to 100% cloud cover over these areas. The forecasters in the weather office confirmed our suspicion and backed it up with a satellite image that showed a layer of low stratus, which was also confirmed by fog reported from Roosevelt Island. Two out of 3 candidate mission for today, Ross Sea sea ice and Siple Coast were clouded in. The weather over the Transantarctic Mountains –West mission was perfect. No clouds and only 25 kts wind resulting in only minor turbulence here and there during the flight. We flew along the backside of the Transantarctic Mountains passing Byrd Glacier and continued on to Beardmore Glacier. We surveyed Beardmore Glacier, the two main branches of Nimrod Glacier and Lennox-King Glacier in between with spectacular scenery along the way. The main goal of today's flight lines was to establish a pair of fluxgates for the glaciers passing through the western Transantarctic Mountains, on the upstream side of the mountains, and spaced at 20 km. A second goal was to determine ice surface elevation along all glaciers in order to get another data point in the several-decade-long time series that will be built from ICESat, IceBridge, and ICESat-2 measurements. The CReSIS MCoRDS system revealed ice thicknesses that were often different from the Bedmap 2 data set – another clear reason why these flights are important.

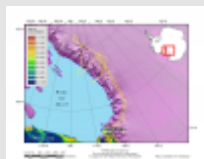
Before landing we surveyed the ATM ground truth site on Black Island. The pilots flew a simulated approach before landing to train for poor visibility landings in case we have to do it. Today felt just like another survey flight on the P-3, simply because we have prepared for this so long and have an outstanding flight crew and instrument teams that are the best. I had to remind myself frequently that this was not just “another flight” today. Congratulations to everyone! Let's hope for many more successful missions.

Data collection started 11/18/2013 20:02 UTC and ended at 11/19/2013 03:37 UTC. In total we collected 7.6 hours of science data.

To put things into perspective: today we have flown a distance equivalent to 4 Twin Otter flights with an instrument suite that would require several Twin Otters to carry. My hope is that we have started a new era of airborne science in Antarctica today.

#### Images:

### Today's mission plan and P-3 trajectory.



[Read more](#)

### View of the Transantarctic Mountains



[Read more](#)

### View of the Transantarctic Mountains



[Read more](#)

**Submitted by:** Michael Studinger on 11/22/13

Page Last Updated: April 22, 2017

Page Editor: Katja Drdla

NASA Official: Marilyn Vasques

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