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**Client:** Lamont-Doherty Earth Observatory  
**Job No:** MGL2316  
**Block:** North Puerto Rico  
**Client Contact:**  
**Consultancy:**  
**Job No:**

**Contractor:** Lamont-Doherty Earth Observatory  
**Job No:** MGL2316  
**Vessel:** Marcus G Langseth  
**Supervisor:**  
**Party Chiefs:** Todd Jensvold  
**Client Reps:** Dr. J. Pablo Canales

Daily Comment Summaries - Daily Summary

Mon 20 Nov

We mobilized at the dock in San Juan for the entire day.

Daily Comment Summaries - Plan for Tomorrow

Mon 20 Nov

Sail for the southern portion of the prospect and begin.

Timing Diary (Marcus G Langseth, OBS\_Deployment)

Start	End	Category	Code	Duration (hrs)
00:00	24:00	<div></div> At Anchor	MB_AA	24.000
Mobilising, vessel at anchor in San Juan, Puerto Rico.				
Crew change, Slops, Provisions, Preparations				

Timing Day By Day (Marcus G Langseth, OBS\_Deployment)

20-Nov	Hours	% Percent
Mobilisation	24.000	100.000
At Anchor	24.000	100.000
Day's Total	24.000	100.000

Timing Breakdown Summary - Project (Marcus G Langseth, OBS\_Deployment)

Category	Hours	% Percent
Mobilisation	24.000	100.000
At Anchor	24.000	100.000
Total	24.000	

Basic Project Details

Source Only					
General Details					
Record length:	0 ms	Sample rate:	0 ms	Shotpoint interval:	400 m
Source Details					
No of Sources:	1	Total Volume:	6600 cu ins	Depth:	12
Pressure:	1950 PSI	Volume:	6600	Strings per source:	4
String Separation:	6 m	String length:	16 m		

Production Totals (Accpt Main km) - Prime: Full Fold, Infill: Unknown

OBS\_Deployment, Source Only

Accepted km	Day	Week	Month	Project
Prime	0.00	0.00	0.00	0.00
Combined	0.00	0.00	0.00	0.00

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Production Listing (Accpt Main km) - Prime: Full Fold, Infill: Unknown

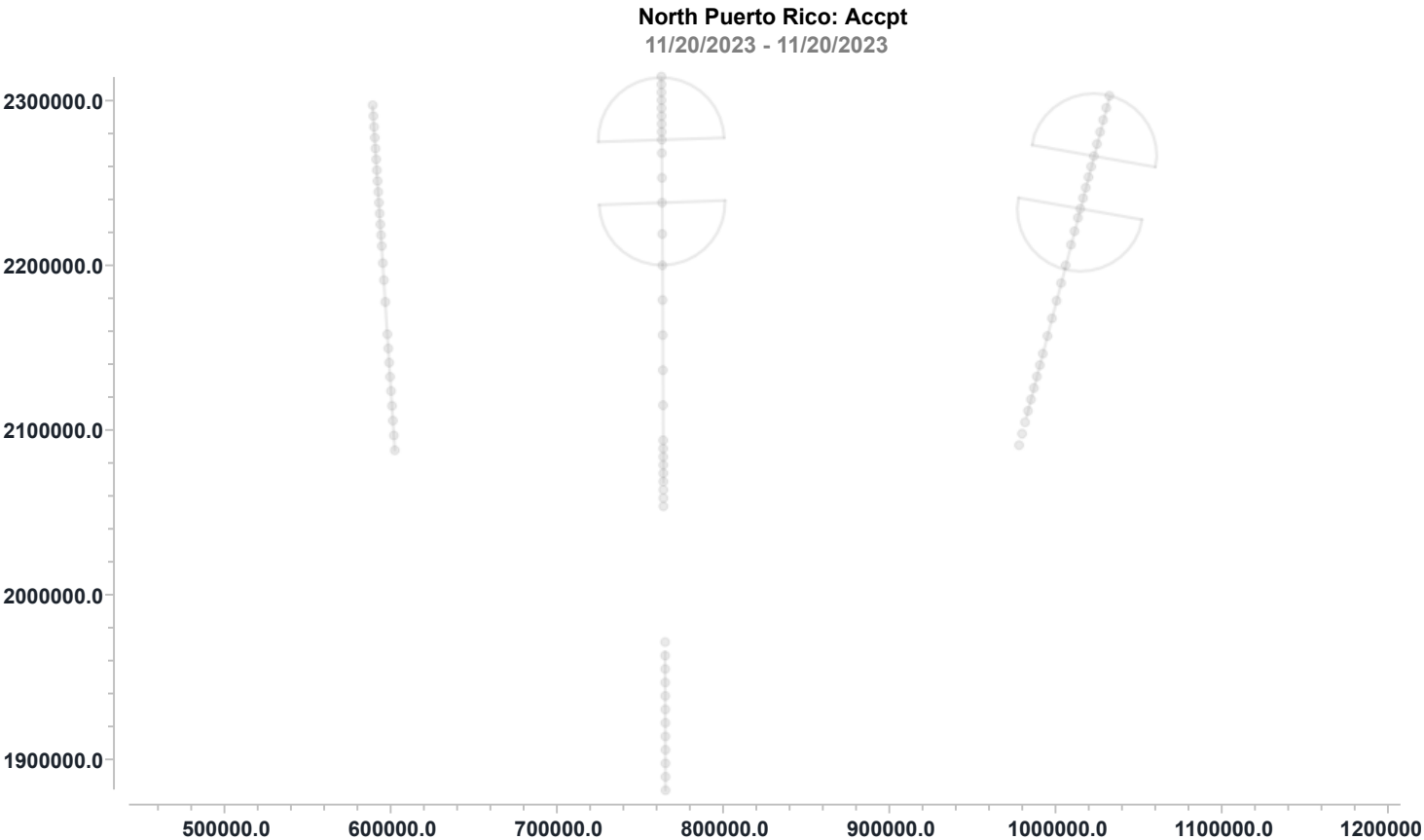
OBS\_Deployment, Source Only

Seq	Line	FGSP	LGSP	Prod Type	Production	Ave Knots	Seq Status	Line Status
Total					0.00			

Production Totals (Accpt Main km) - Prime: Full Fold, Infill: Unknown

OBS\_Deployment, Source Only

Accepted km	Day	Week	Month	Project
Prime	0.00	0.00	0.00	0.00
Combined	0.00	0.00	0.00	0.00



Daily Comment Summaries - Daily Comments On Status of Equipment

Mon 20 Nov

Navigation:

No Major Issues to Report

Information Technology (IT):

No Major Issues to Report

OBS:

No Major Issues to Report

Towing and Handling (Source):

No Major Issues to Report

General Purpose Science:

No Major issues to Report.

Daily Comment Summaries - Personnel Onboard

Mon 20 Nov

Technical Staff On-board the Langseth

Todd Jensvold L-DEO OMO Chief Science Officer  
Brian Agee L-DEO OMO Chief Source Mechanic  
Gilles Guerin - L-DEO OMO Observer  
Aaron Martin.- Contract Navigator  
Mark Walker - Contract Source Mechanic  
Ray Hatton - Contract Source Mechanic  
Jacob Greenberg - Contract Source Mechanic  
Sean Seekins - Contract Source Mechanic  
Ian Davis- Contract Tech

PSO Staff On-board the Langseth

Amanda Dubuque - RPS Lead PSO  
Cassandra Frey - RPS PSO  
Elizabeth Breton - RPS PSO  
Tiffany Ramdoo - RPS PSO  
Maria Sandoval - RPS PSO

OBSIC Team

Arne Shwenk- GeoMar  
Lisa Sokolkova-GeoMar  
Hannah Brewer-WHOI  
Tim Kane-WHOI  
Gavin McCarthy-WHOI  
Andrew Farmer-USGS

Science Party On-board the Langseth

J. Pablo Canales - Lead PI WHOI  
Nick Harmon Co-PI WHOI  
Liam Moser WHOI

HSE Events Diary (Marcus G Langseth)

Start	End	Category	Code
12:30	13:30	<div></div> Daily HSE Ops Meeting	Mtgs_DOps
HSE - Daily HSE Operation Meeting			
Discussed open THC Cards, Upcoming operations issues.			

HSE Event Period Totals - Project (Marcus G Langseth)

Category	Code	Day (num)	Week (num)	Month (num)	Project (num)	Proj Hours	Man Hours
<div></div> Meetings	Mtgs	1	1	1	1	1.000	7.000
<div></div> Daily HSE Ops Meeting	DOps	1	1	1	1	1.000	7.000

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Client:	Lamont-Doherty Earth Observatory	Contractor:	Lamont-Doherty Earth Observatory
Job No:	MGL2316	Job No:	MGL2316
Block:	North Puerto Rico	Vessel:	Marcus G Langseth
Client Contact:		Supervisor:	
Consultancy:		Party Chiefs:	Todd Jensvold
Job No:		Client Reps:	Dr. J. Pablo Canales

Daily Comment Summaries - Daily Summary

Tue 21 Nov

We departed the dock at approximately 7AM local time and began our transit around the island to begin deploying the OBS's at the most southerly location. We should arrive at this point at approximately 3AM local time tomorrow morning.

We conducted fire drill, MOB drill and a tutorial of the Markus Safety Net near the A-frame.

We held our Weekly Tech Meeting.

We reviewed some of the the gun parts with the manufacturing rep.

We audited the rails and other handling issues before beginning the prospect.

Daily Comment Summaries - Plan for Tomorrow

Tue 21 Nov

Begin deploying OBS's and perform an acoustic release mechanism test.

Timing Diary (Marcus G Langseth, Source Only, OBS\_Deployment)

Start	End	Category	Code	Duration (hrs)
00:00	05:15	Transit to Prospect	MB_TT	5.250
In transit to prospect, for mobilising deployment.				
00:00	01:00	Transit to Prospect	MB_TT	1.000
In transit to prospect, for mobilising deployment.				

Timing Day By Day (Marcus G Langseth, Source Only, OBS\_Deployment)

21-Nov	Hours	% Percent
Mobilisation	6.250	26.042
At Anchor	0.000	0.000
Transit to Prospect	6.250	26.042
Day's Total	6.250	26.042

Timing Breakdown Summary - Project (Marcus G Langseth, Source Only, OBS\_Deployment)

Category	Hours	% Percent
Mobilisation	30.250	100.000
Transit to Prospect	6.250	20.661
At Anchor	24.000	79.339
Total	30.250	

Basic Project Details

Source Only					
General Details					
Record length:	0 ms	Sample rate:	0 ms	Shotpoint interval:	400 m

Source Only					
Source Details					
No of Sources:	1	Total Volume:	6600 cu ins	Depth:	12
Pressure:	1950 PSI	Volume:	6600	Strings per source:	4
String Separation:	6 m	String length:	16 m		

Production Totals (Accept Main km) - Prime: Full Fold, Infill: Unknown

OBS\_Deployment, Source Only

Accepted km	Day	Week	Month	Project
Prime	0.00	0.00	0.00	0.00
Combined	0.00	0.00	0.00	0.00

Production Listing (Accept Main km) - Prime: Full Fold, Infill: Unknown

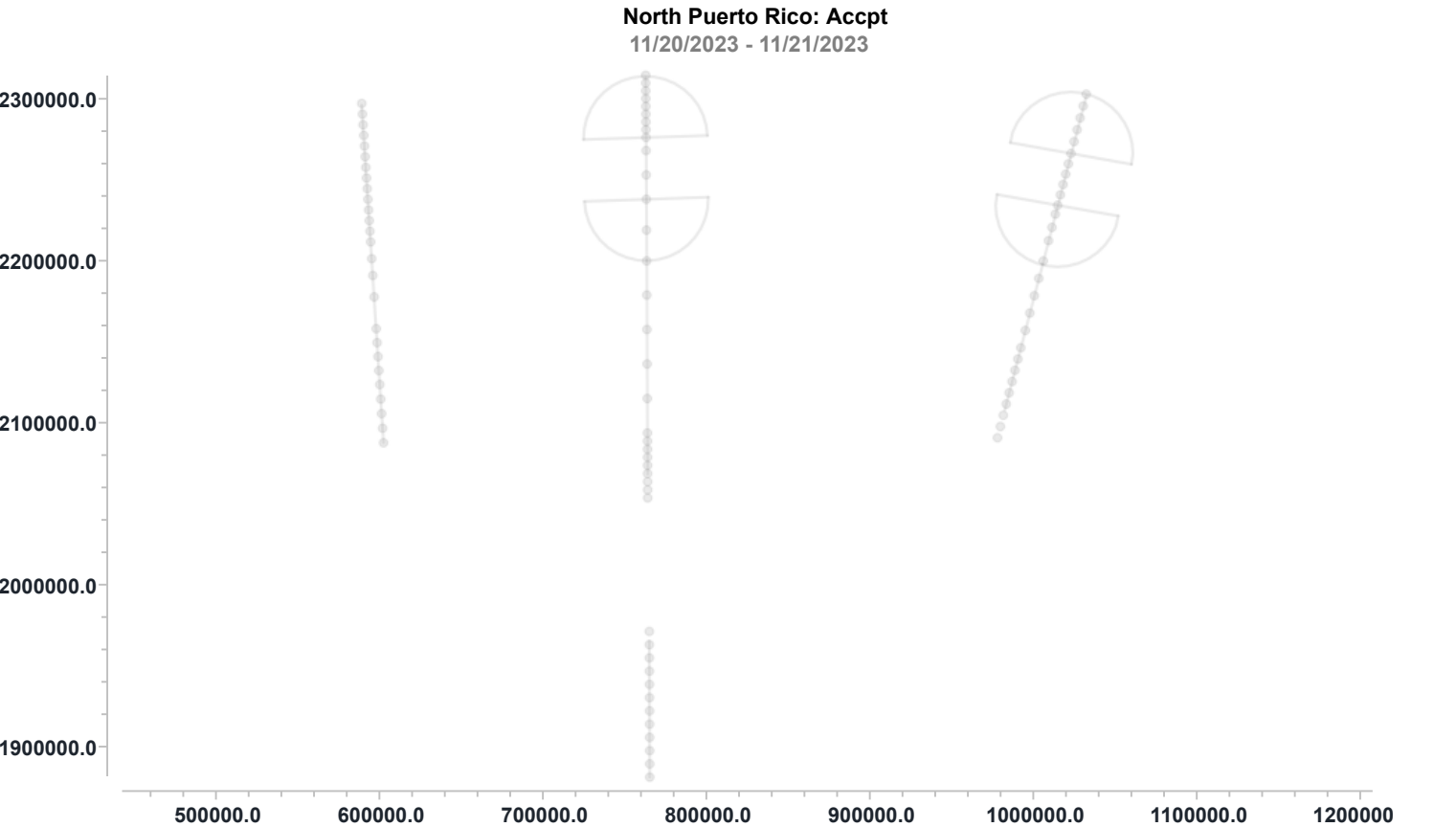
OBS\_Deployment, Source Only

Seq	Line	FGSP	LGSP	Prod Type	Production	Ave Knots	Seq Status	Line Status
Total					0.00			

Production Totals (Accept Main km) - Prime: Full Fold, Infill: Unknown

OBS\_Deployment, Source Only

Accepted km	Day	Week	Month	Project
Prime	0.00	0.00	0.00	0.00
Combined	0.00	0.00	0.00	0.00



Daily Comment Summaries - Daily Comments On Status of Equipment

Tue 21 Nov

Navigation:  
Preplots configured in Orca

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**Information Technology (IT):**  
No Major Issues to Report

**OBS:**  
No Major Issues to Report

**Towing and Handling (Source):**  
Assembled spare 360 cluster,  
Inspect gun rails and trollys

**General Purpose Science:**  
No Major issues to Report.

Daily Comment Summaries - Personnel Onboard

Tue 21 Nov

**Technical Staff On-board the Langseth**  
Todd Jensvold L-DEO OMO Chief Science Officer  
Brian Agee L-DEO OMO Chief Source Mechanic  
Gilles Guerin - L-DEO OMO Observer  
Aaron Martin.- Contract Navigator  
Mark Walker - Contract Source Mechanic  
Ray Hatton - Contract Source Mechanic  
Jacob Greenberg - Contract Source Mechanic  
Sean Seekins - Contract Source Mechanic  
Ian Davis- Contract Tech

**PSO Staff On-board the Langseth**  
Amanda Dubuque - RPS Lead PSO  
Cassandra Frey - RPS PSO  
Elizabeth Breton - RPS PSO  
Tiffany Ramdoo - RPS PSO  
Maria Sandoval - RPS PSO

**OBSIC Team**  
Arne Shwenk- GeoMar  
Lisa Sokolkova-GeoMar  
Hannah Brewer-WHOI  
Tim Kane-WHOI  
Gavin McCarthy-WHOI  
Andrew Farmer-USGS




**Science Party On-board the Langseth**  
J. Pablo Canales - Lead PI WHOI  
Nick Harmon Co-PI WHOI  
Liam Moser WHOI

HSE Events Diary (Marcus G Langseth)

Start	End	Category	Code
13:10	14:10	<div></div> Daily HSE Ops Meeting	Mtgs_DOps
HSE - Daily HSE Operation Meeting.			
Daily Ops Meeting			

HSE Event Period Totals - Project (Marcus G Langseth)

Category	Code	Day (num)	Week (num)	Month (num)	Project (num)	Proj Hours	Man Hours
<div></div> Training	Trng	0	1	1	1	1.000	9.000

Category	Code	Day (num)	Week (num)	Month (num)	Project (num)	Proj Hours	Man Hours
 Safety Induction Tours	SIT	0	1	1	1	1.000	9.000
 Meetings	Mtgs	1	2	2	2	2.000	12.000
 Daily HSE Ops Meeting	DOps	1	2	2	2	2.000	12.000

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**Job No:** MGL2316  
**Block:** North Puerto Rico  
**Client Contact:**  
**Consultancy:**  
**Job No:**

**Contractor:** Lamont-Doherty Earth Observatory  
**Job No:** MGL2316  
**Vessel:** Marcus G Langseth  
**Supervisor:**  
**Party Chiefs:** Todd Jensvold  
**Client Reps:** Dr. J. Pablo Canales

Daily Comment Summaries - Daily Summary

Wed 22 Nov

We have deployed all 12 of the southern OBS locations on the center line. We also took time to test the acoustic releases for the Geomar instruments. After some discussion we decided to run the wire through one of the new snatch blocks suspended from the utility winch on the a-frame. This block has a groove for a .322 wire much like the block that would normally be attached to the overhead on the a-frame. This worked well. We had some issues with he PLC in the doghouse, but a reboot seems to have solved our problems there.

We are transiting back around the island and should be in position to resume deploying OBS's on the North side at ~ 1pm local.

Work has begun on the #4 gun rail. We have a plan in place to repair the crack and modify the thickness that will keep everyone out of harms way.

The team is developing a good rhythm and working well together.

Daily Comment Summaries - Plan for Tomorrow

Timing Diary (Marcus G Langseth, OBS\_Deployment)



Start	End	Category	Code	Duration (hrs)
00:00	07:38	Transit to Prospect	MB_TT	7.633
In transit to prospect, for mobilising deployment. Begin deploying OBS 1				
07:38	08:08	Deployment	MB_DP	0.500
Deploy OBS 1				
08:08	08:41	Transit	SB_TRT	0.550
Transit to next OBS				
08:41	09:11	Deployment	MB_DP	0.500
Deploy OBS 2				
09:11	09:47	Transit	SB_TRT	0.600
Transit to next OBS				
09:47	10:17	Deployment	MB_DP	0.500
Deploy OBS 3				
10:17	10:46	Transit	SB_TRT	0.483
Transit to next OBS				
10:46	11:16	Deployment	MB_DP	0.500
Deploy OBS 4				
11:16	11:52	Transit	SB_TRT	0.600



Start	End	Category	Code	Duration (hrs)
Transit to next OBS				
11:52	12:22	<div></div> Deployment	MB_DP	0.500
Deploy OBS 5				
12:22	12:59	<div></div> Transit	SB_TRT	0.617
Transit to next OBS				
12:59	13:29	<div></div> Deployment	MB_DP	0.500
Deploy OBS 6				
13:29	13:53	<div></div> Transit	SB_TRT	0.400
Transit to next OBS				
13:53	14:23	<div></div> Deployment	MB_DP	0.500
Deploy OBS 7				
14:23	15:00	<div></div> Transit	SB_TRT	0.617
Transit to next OBS 7				
15:00	17:40	<div></div> Testing	MB_TE	2.667
Mobilisation - Testing				
Deploying acoustic releases for Geomar instruments. Cast cage to 2000 meters and recover.				
17:40	18:10	<div></div> Deployment	MB_DP	0.500
Deploy OBS 8				
18:10	19:06	<div></div> Transit	SB_TRT	0.933
Transit to next OBS				
19:06	19:36	<div></div> Deployment	MB_DP	0.500
Deploy OBS 9				
19:36	20:00	<div></div> Transit	SB_TRT	0.400
Transit to next OBS				
20:00	20:30	<div></div> Deployment	MB_DP	0.500
Deploy OBS 10				
20:30	20:54	<div></div> Transit	SB_TRT	0.400
Transit to next OBS				
20:54	21:24	<div></div> Deployment	MB_DP	0.500
Deploy OBS 11				
21:24	21:48	<div></div> Transit	SB_TRT	0.400
Transit to next OBS				
21:48	22:48	<div></div> Deployment	MB_DP	1.000
Deploy OBS 12				
22:48	24:00	<div></div> Transit	SB_TRT	1.200
Transit around island to next OBS (13)				

Timing Day By Day (Marcus G Langseth, OBS\_Deployment)

22-Nov	Hours	% Percent
Chargeable Standby	7.200	30.000

22-Nov	Hours	% Percent
Transit	7.200	30.000
Mobilisation	16.800	70.000
Deployment	6.500	27.083
Testing	2.667	11.111
Transit to Prospect	7.633	31.806
Day's Total	24.000	100.000

Timing Breakdown Summary - Project (Marcus G Langseth, OBS\_Deployment)

Category	Hours	% Percent
Mobilisation	64.800	90.000
Transit to Prospect	31.633	43.935
Deployment	6.500	9.028
At Anchor	24.000	33.333
Testing	2.667	3.704
Chargeable Standby	7.200	10.000
Transit	7.200	10.000
Total	72.000	

Basic Project Details

Source Only					
General Details					
Record length:	0 ms	Sample rate:	0 ms	Shotpoint interval:	400 m
Source Details					
No of Sources:	1	Total Volume:	6600 cu ins	Depth:	12
Pressure:	1950 PSI	Volume:	6600	Strings per source:	4
String Separation:	6 m	String length:	16 m		

Production Totals (Accpt Main km) - Prime: Full Fold, Infill: Unknown

OBS\_Deployment, Source Only

Accepted km	Day	Week	Month	Project
Prime	0.00	0.00	0.00	0.00
Combined	0.00	0.00	0.00	0.00

Production Listing (Accpt Main km) - Prime: Full Fold, Infill: Unknown

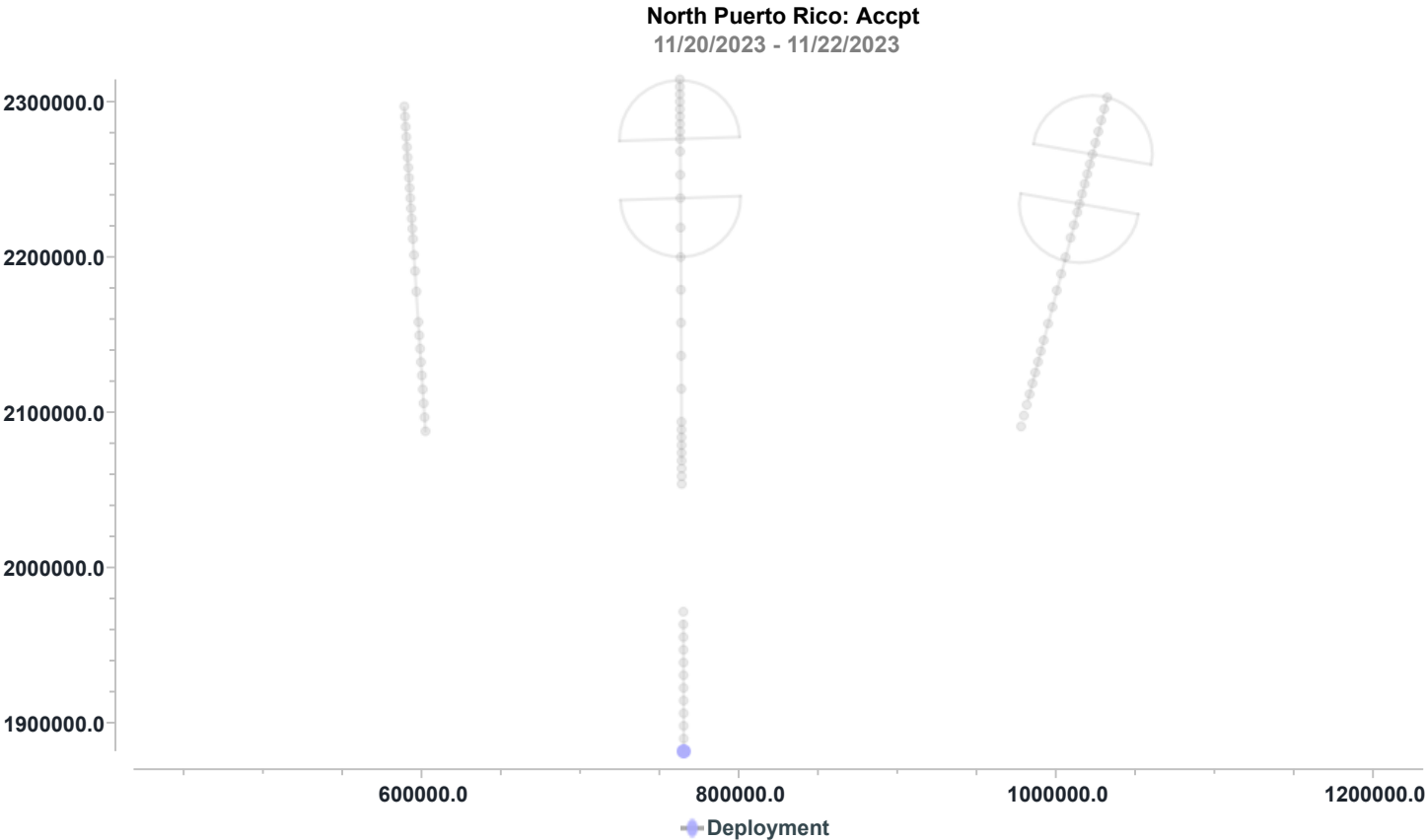
OBS\_Deployment, Source Only

Seq	Line	FGSP	LGSP	Prod Type	Production	Ave Knots	Seq Status	Line Status
Total					0.00			

Production Totals (Accpt Main km) - Prime: Full Fold, Infill: Unknown

OBS\_Deployment, Source Only

Accepted km	Day	Week	Month	Project
Prime	0.00	0.00	0.00	0.00
Combined	0.00	0.00	0.00	0.00



Daily Comment Summaries - Daily Comments On Status of Equipment

Daily Comment Summaries - Personnel Onboard

HSE Events Diary (Marcus G Langseth)

Start	End	Category	Code
17:25	18:25	Daily HSE Ops Meeting	Mtgs_DOps
Daily Operation Meeting with PI, CSO, Captain, Nav, PSO			

Daily Total Category	Code	Count
Toolbox Meetings	Mtgs_Tbox	6
Toolbox meetings to discuss OBS deployments on each shift		
Toolbox meeting to discuss gun rail #4 repairs		
Toolbox meeting to discuss radio coms		
Handover toolbox meetings		

HSE Event Period Totals - Project (Marcus G Langseth)

Category	Code	Day (num)	Week (num)	Month (num)	Project (num)	Proj Hours	Man Hours
Training	Trng	0	1	1	1	1.000	9.000
Safety Induction Tours	SIT	0	1	1	1	1.000	9.000
Meetings	Mtgs	7	9	9	9	3.000	18.000
Daily HSE Ops Meeting	DOps	1	3	3	3	3.000	18.000
Toolbox Meetings	Tbox	6	6	6	6		

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<b>Client:</b>	Lamont-Doherty Earth Observatory	<b>Contractor:</b>	Lamont-Doherty Earth Observatory
<b>Job No:</b>	MGL2316	<b>Job No:</b>	MGL2316
<b>Block:</b>	North Puerto Rico	<b>Vessel:</b>	Marcus G Langseth
<b>Client Contact:</b>		<b>Supervisor:</b>	
<b>Consultancy:</b>		<b>Party Chiefs:</b>	Todd Jensvold
<b>Job No:</b>		<b>Client Reps:</b>	Dr. J. Pablo Canales

Daily Comment Summaries - Daily Summary

Thu 23 Nov

We commenced deploying OBS's at approximately 10:20 AM local time. We have deployed 10 OBS's by the end of the Julian Day.

We have begun deploying the GEOMAR instruments without any drama. There has been a good rhythm all day aided by the very good food that was served for Thanksgiving. A special thank you to Chris and the entire galley staff and everyone who helped make this happen. Thank you! It really is appreciated by the entire crew.

We anticipate finishing the deployment of the OBS instruments on this first line by mid-afternoon tomorrow. We could be shooting by the end of the day tomorrow. (8pm local)

There was a delay in the progress repairing the #4 I-beam due to several people testing positive for Covid. We have shuffled the cards and swapped some responsibilities for the crew and will finish welding with the first engineer's steady hand. We intend to complete this repair around ~noon local and will then do a load test before deploying the guns.

We are missing a couple of nuts and hardware for the GEOMAR instruments, but hope to have a solution in place before we need them next week.

Happy Thanksgiving to all.

Daily Comment Summaries - Plan for Tomorrow

Thu 23 Nov

Complete the OBS deployments for the first line and begin deploying guns.




















Timing Diary (Marcus G Langseth, OBS\_Deployment)



Start	End	Category	Code	Duration (hrs)
00:00	14:22	Transit	SB_TRT	14.367
Transit around island to next OBS (13)				
14:22	14:52	Deployment	MB_DP	0.500
Deploy OBS 13				

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Start	End	Category	Code	Duration (hrs)
14:52	15:17	 Transit	SB_TRT	0.417
Transit to next OBS				
15:17	15:47	 Deployment	MB_DP	0.500
Deploy OBS 14				
15:47	16:06	 Transit	SB_TRT	0.317
Transit to next OBS				
16:06	16:36	 Deployment	MB_DP	0.500
Deploy OBS 15				
16:36	16:54	 Transit	SB_TRT	0.300
Transit to next OBS				
16:54	17:24	 Deployment	MB_DP	0.500
Deploy OBS 16				
17:24	17:43	 Transit	SB_TRT	0.317
Transit to next OBS				
17:43	18:13	 Deployment	MB_DP	0.500
Deploy OBS 17				
18:13	18:49	 Transit	SB_TRT	0.600
Transit to next OBS				
18:49	19:19	 Deployment	MB_DP	0.500
Deploy OBS 18				
19:19	19:34	 Transit	SB_TRT	0.250
Transit to next OBS				
19:34	20:04	 Deployment	MB_DP	0.500
Deploy OBS 19				
20:04	20:11	 Transit	SB_TRT	0.117
Transit to next OBS				
20:11	20:41	 Deployment	MB_DP	0.500
Deploy OBS 20				
20:41	20:54	 Transit	SB_TRT	0.217
Transit to next OBS				
20:54	21:24	 Deployment	MB_DP	0.500
Deploy OBS 21				
21:24	22:30	 Transit	SB_TRT	1.100
Transit to next OBS. Geomar				
22:30	23:00	 Deployment	MB_DP	0.500
Deploy OBS 22				
23:00	24:00	 Transit	SB_TRT	1.000
Transit to next OBS				

Timing Day By Day (Marcus G Langseth, OBS\_Deployment)

23-Nov	Hours	% Percent
Chargeable Standby	19.000	79.167
Transit	19.000	79.167
Mobilisation	5.000	20.833
Deployment	5.000	20.833
Day's Total	24.000	100.000

Timing Breakdown Summary - Project (Marcus G Langseth, OBS\_Deployment)

Category	Hours	% Percent
Mobilisation	69.800	72.708
Transit to Prospect	31.633	32.951
Deployment	11.500	11.979
At Anchor	24.000	25.000
Testing	2.667	2.778
Chargeable Standby	26.200	27.292
Transit	26.200	27.292
Total	96.000	

Basic Project Details

Source Only					
General Details					
Record length:	0 ms	Sample rate:	0 ms	Shotpoint interval:	400 m
Source Details					
No of Sources:	1	Total Volume:	6600 cu ins	Depth:	12
Pressure:	1950 PSI	Volume:	6600	Strings per source:	4
String Separation:	6 m	String length:	16 m		

Production Totals (Accpt Main km) - Prime: Full Fold, Infill: Unknown

OBS\_Deployment, Source Only

Accepted km	Day	Week	Month	Project
Prime	0.00	0.00	0.00	0.00
Combined	0.00	0.00	0.00	0.00

Production Listing (Accpt Main km) - Prime: Full Fold, Infill: Unknown

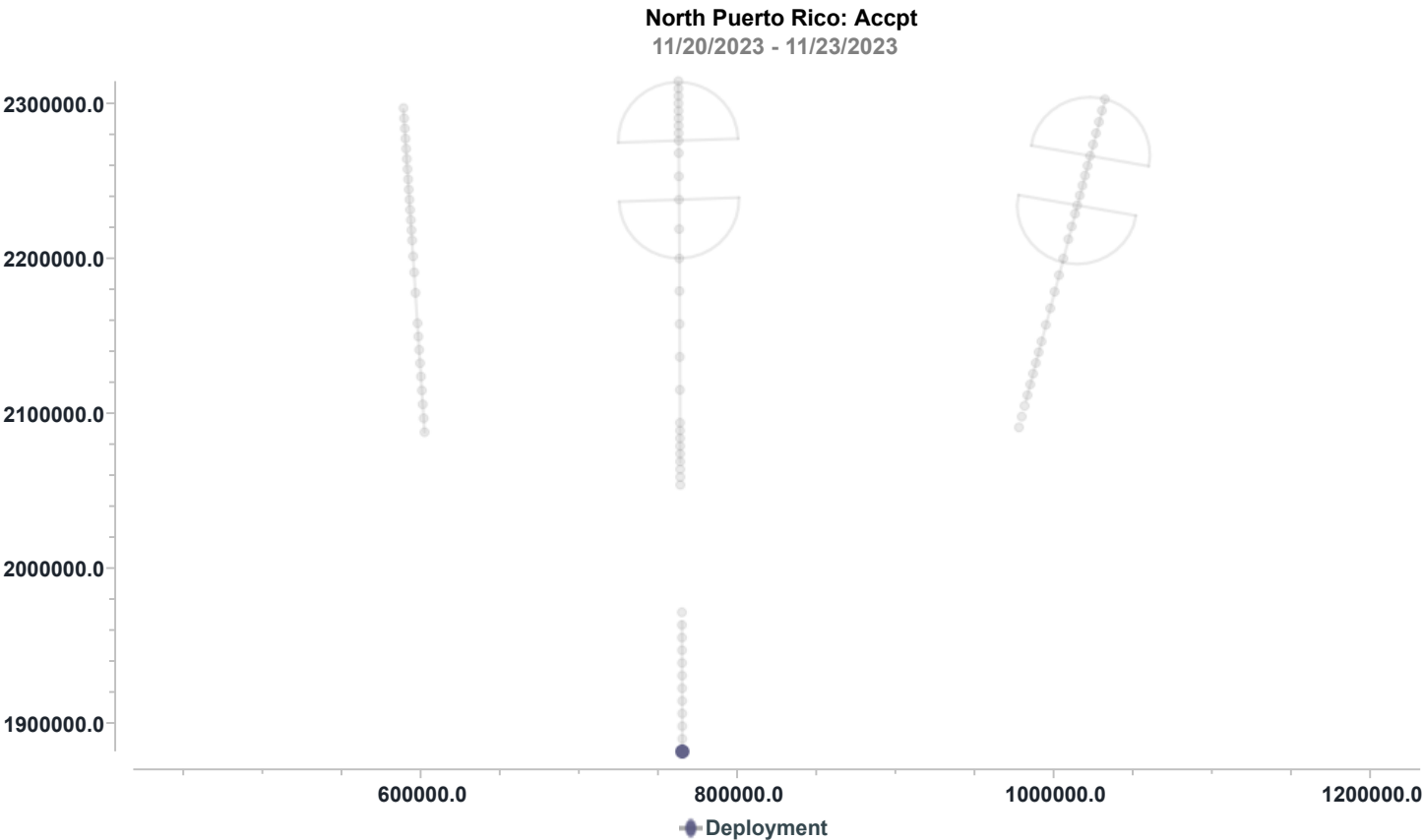
OBS\_Deployment, Source Only

Seq	Line	FGSP	LGSP	Prod Type	Production	Ave Knots	Seq Status	Line Status
Total					0.00			

Production Totals (Accpt Main km) - Prime: Full Fold, Infill: Unknown

OBS\_Deployment, Source Only

Accepted km	Day	Week	Month	Project
Prime	0.00	0.00	0.00	0.00
Combined	0.00	0.00	0.00	0.00



Daily Comment Summaries - Daily Comments On Status of Equipment

Thu 23 Nov

Navigation:

No Major Issues to Report

Information Technology (IT):

No Major Issues to Report

OBS:

No Major Issues to Report

Towing and Handling (Source):

No Major Issues to Report

General Purpose Science:

No Major issues to Report.

Daily Comment Summaries - Personnel Onboard

Thu 23 Nov

Technical Staff On-board the Langseth

Todd Jensvold L-DEO OMO Chief Science Officer  
Brian Agee L-DEO OMO Chief Source Mechanic  
Gilles Guerin - L-DEO OMO Observer  
Aaron Martin.- Contract Navigator  
Mark Walker - Contract Source Mechanic  
Ray Hatton - Contract Source Mechanic  
Jacob Greenberg - Contract Source Mechanic  
Sean Seekins - Contract Source Mechanic  
Ian Davis- Contract Tech

PSO Staff On-board the Langseth

Amanda Dubuque - RPS Lead PSO  
Cassandra Frey - RPS PSO  
Elizabeth Breton - RPS PSO  
Tiffany Ramdoo - RPS PSO  
Maria Sandoval - RPS PSO






**OBSIC Team**  
Arne Shwenk- GeoMar  
Lisa Sokolkova-GeoMar  
Hannah Brewer-WHOI  
Tim Kane-WHOI  
Gavin McCarthy-WHOI  
Andrew Farmer-USGS

**Science Party On-board the Langseth**  
J. Pablo Canales - Lead PI WHOI  
Nick Harmon Co-PI WHOI  
Liam Moser WHOI

HSE Events Diary (Marcus G Langseth)

Start	End	Category	Code
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HSE Event Period Totals - Project (Marcus G Langseth)

Category	Code	Day (num)	Week (num)	Month (num)	Project (num)	Proj Hours	Man Hours
 Training	Trng	0	1	1	1	1.000	9.000
 Safety Induction Tours	SIT	0	1	1	1	1.000	9.000
 Meetings	Mtgs	0	9	9	9	3.000	18.000
 Daily HSE Ops Meeting	DOps	0	3	3	3	3.000	18.000
 Toolbox Meetings	Tbox	0	6	6	6		



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**Client:** Lamont-Doherty Earth Observatory  
**Job No:** MGL2316  
**Block:** North Puerto Rico  
**Client Contact:**  
**Consultancy:**  
**Job No:**

**Contractor:** Lamont-Doherty Earth Observatory  
**Job No:** MGL2316  
**Vessel:** Marcus G Langseth  
**Supervisor:**  
**Party Chiefs:** Todd Jensvold  
**Client Reps:** Dr. J. Pablo Canales

Daily Comment Summaries - Daily Summary

Fri 24 Nov

We completed the deployment of the OBS's on the Center North Line today around 17:32 GMT. We had three bad data loggers for the Geomar instruments and only two spares, so we adjusted the deployment locations and "skipped" OBS 29.

The guns were deployed at 21:27 and the soft start was completed shortly thereafter. We have one gun out due to a bad transducer. Gun 1-2.

We started acquiring the first line at 22:31 while on a long run-in towards the first pre-plotted line. I will update the actual production figures tomorrow after I change a few things in MultiSeis. We are currently shooting and in full production.

We picked up Gunstring #3 to the back of the ship to straighten out a steering rope and adjust the separation. This looks very good now. We continued to shoot with three gunstrings while making this adjustment. Approximately 20 minutes or 9 shotpoints at reduced volume.

A top job by the mechanics getting the guns in the water safely and deliberately!

The repairs to the #4 I-beam were successful. Brian and Ray were even able to perform the load cell testing of the repairs before beginning the deployment. A shout out to the Engine Dept and the 1st Engineer in particular for welding on this while off shift to keep things rolling. Thank you.

We adjusted the shotpoint spacing from 400 to 300 meters at the PI's request.

The WX is good and we anticipate completing the Center North Line in approximately three days. We'll transit to the South Center Line next.

Daily Comment Summaries - Plan for Tomorrow

Fri 24 Nov

Shoot on the Center North Line all day.



















Timing Diary (Marcus G Langseth, OBS\_Deployment)



Start	End	Category	Code	Duration (hrs)
00:00	00:04	Transit	SB_TRT	0.067
Transit to next OBS				
00:04	00:34	Deployment	MB_DP	0.500
Deploy OBS 23				
00:34	01:52	Transit	SB_TRT	1.300
Transit to next OBS				
01:52	02:22	Deployment	MB_DP	0.500
Deploy OBS 24				
02:22	04:00	Transit	SB_TRT	1.633
Transit to next OBS				
04:00	04:30	Deployment	MB_DP	0.500

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Start	End	Category	Code	Duration (hrs)
Deploy OBS 25				
04:30	06:01	 Transit	SB_TRT	1.517
Transit to next OBS				
06:01	06:31	 Deployment	MB_DP	0.500
Deploy OBS 26				
06:31	07:29	 Transit	SB_TRT	0.967
Transit to next OBS				
07:29	07:59	 Deployment	MB_DP	0.500
Deploy OBS 27				
07:59	08:36	 Transit	SB_TRT	0.617
Transit to next OBS				
08:36	09:06	 Deployment	MB_DP	0.500
Deploy OBS 28				
09:06	09:36	 IT	DT_IT	0.500
Canceled deployment of OBS 29 dt equipment failure.				
09:36	10:32	 Transit	SB_TRT	0.933
Transit to next OBS				
10:32	11:02	 Deployment	MB_DP	0.500
Deploy OBS 30				
11:02	11:21	 Transit	SB_TRT	0.317
Transit to next OBS				
11:21	11:51	 Deployment	MB_DP	0.500
Deploy OBS 31				
11:51	12:04	 Transit	SB_TRT	0.217
Chargeable standby d/t being in Transit				
12:04	12:34	 Deployment	MB_DP	0.500
Deploy OBS 32				
12:34	13:00	 Transit	SB_TRT	0.433
Transit to next OBS				
13:00	13:30	 Deployment	MB_DP	0.500
Deploy OBS 33				
13:30	13:52	 Transit	SB_TRT	0.367
Transit to next OBS				
13:52	14:22	 Deployment	MB_DP	0.500
Deploy OBS 34				
14:22	14:36	 Transit	SB_TRT	0.233
Transit to next OBS				
14:36	15:06	 Deployment	MB_DP	0.500
Deploy OBS 35				

Start	End	Category	Code	Duration (hrs)
15:06	15:19	<div></div> Transit	SB_TRT	0.217
Transit to next OBS				
15:19	15:49	<div></div> Deployment	MB_DP	0.500
Deploy OBS 36				
15:49	16:08	<div></div> Transit	SB_TRT	0.317
Transit to next OBS				
16:08	16:38	<div></div> Deployment	MB_DP	0.500
Deploy OBS 37				
16:38	16:49	<div></div> Transit	SB_TRT	0.183
Transit to next OBS				
16:49	17:19	<div></div> Deployment	MB_DP	0.500
Deploy OBS 38				
17:19	17:32	<div></div> Transit	SB_TRT	0.217
Transit to next OBS				
17:32	18:02	<div></div> Deployment	MB_DP	0.500
Deploy OBS 39				
18:02	18:22	<div></div> Deployment	MB_DP	0.333
Deploy PAM and MAGGIE				
18:22	18:57	<div></div> Deployment	MB_DP	0.583
Deploy Gunstring #1				
18:57	19:15	<div></div> Deployment	MB_DP	0.300
Deploy Gunstring #2				
19:15	19:41	<div></div> Equipment Handling	DT_EH	0.433
Deploy Gunstring #4 delayed for minor repair to solenoid				
19:41	20:57	<div></div> Deployment	MB_DP	1.267
Deploy Gunstring #4				
20:57	21:46	<div></div> Testing	MB_TE	0.817
Mobilisation - Testing				
Adjusting gunstrings and turning				
21:46	22:08	<div></div> Deployment	MB_DP	0.367
Softstart guns/softstart complete				
22:08	24:00	<div></div> Testing	MB_TE	1.867
Mobilisation - Testing				
MGLS2316001CF1P1 - FGSP 959				
We have started the prospect at 22:08				

Timing Day By Day (Marcus G Langseth, OBS\_Deployment)

24-Nov	Hours	% Percent
Chargeable Standby	9.533	39.722

24-Nov	Hours	% Percent
Transit	9.533	39.722
<b>DownTime</b>	<b>0.933</b>	<b>3.889</b>
Equipment Handling	0.433	1.806
IT	0.500	2.083
<b>Mobilisation</b>	<b>13.533</b>	<b>56.389</b>
Deployment	10.850	45.208
Testing	2.683	11.181
<b>Day's Total</b>	<b>24.000</b>	<b>100.000</b>

Timing Breakdown Summary - Project (Marcus G Langseth, OBS\_Deployment)

Category	Hours	% Percent
<b>DownTime</b>	<b>0.933</b>	<b>0.778</b>
Equipment Handling	0.433	0.361
IT	0.500	0.417
<b>Mobilisation</b>	<b>83.333</b>	<b>69.444</b>
Transit to Prospect	31.633	26.361
Deployment	22.350	18.625
At Anchor	24.000	20.000
Testing	5.350	4.458
<b>Chargeable Standby</b>	<b>35.733</b>	<b>29.778</b>
Transit	35.733	29.778
<b>Total</b>	<b>120.000</b>	

Basic Project Details

Source Only					
General Details					
Record length:	0 ms	Sample rate:	0 ms	Shotpoint interval:	400 m
Source Details					
No of Sources:	1	Total Volume:	6600 cu ins	Depth:	12
Pressure:	1950 PSI	Volume:	6600	Strings per source:	4
String Separation:	6 m	String length:	16 m		

Production Totals (Accpt Main km) - Prime: Full Fold, Infill: Unknown

OBS\_Deployment, Source Only

Accepted km	Day	Week	Month	Project
Prime	0.00	0.00	0.00	0.00
<b>Combined</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>

Production Listing (Accpt Main km) - Prime: Full Fold, Infill: Unknown

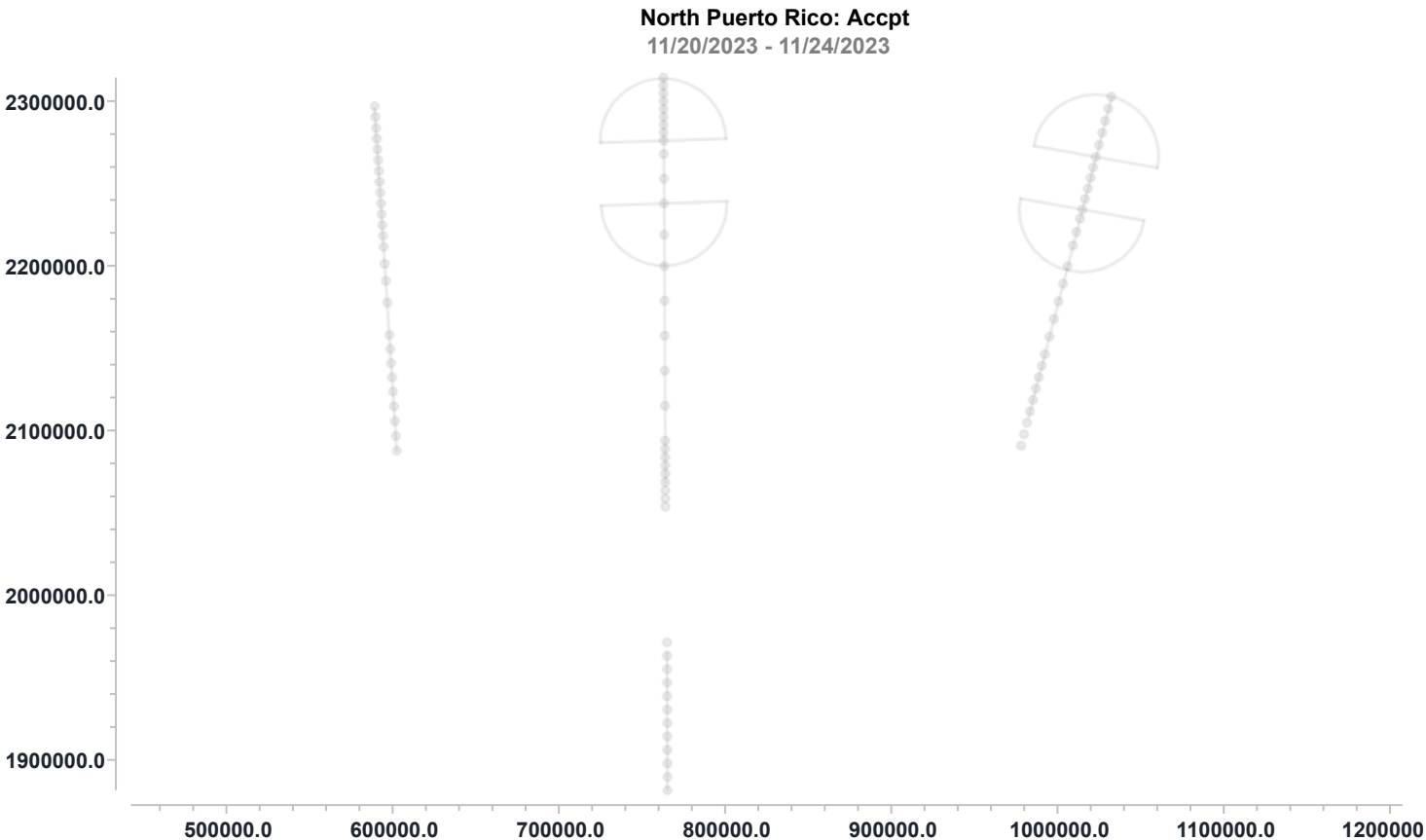
OBS\_Deployment, Source Only

Seq	Line	FGSP	LGSP	Prod Type	Production	Ave Knots	Seq Status	Line Status
<b>Total</b>					<b>0.00</b>			

Production Totals (Accpt Main km) - Prime: Full Fold, Infill: Unknown

OBS\_Deployment, Source Only

Accepted km	Day	Week	Month	Project
Prime	0.00	0.00	0.00	0.00
<b>Combined</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>



Daily Comment Summaries - Daily Comments On Status of Equipment

Fri 24 Nov

Navigation:

7 out of 8 gun pods are working. The front of gunstring #2 is out.

Information Technology (IT):

No Major Issues to Report

OBS:

No Major Issues to Report

Towing and Handling (Source):

Gun 1-2 has a bum transducer

General Purpose Science:

No Major issues to Report.

Daily Comment Summaries - Personnel Onboard

Fri 24 Nov

Technical Staff On-board the Langseth

Todd Jensvold L-DEO OMO Chief Science Officer  
Brian Agee L-DEO OMO Chief Source Mechanic  
Gilles Guerin - L-DEO OMO Observer  
Aaron Martin.- Contract Navigator  
Mark Walker - Contract Source Mechanic  
Ray Hatton - Contract Source Mechanic  
Jacob Greenberg - Contract Source Mechanic  
Sean Seekins - Contract Source Mechanic  
Ian Davis- Contract Tech

PSO Staff On-board the Langseth

Amanda Dubuque - RPS Lead PSO  
Cassandra Frey - RPS PSO  
Elizabeth Breton - RPS PSO  
Tiffany Ramdoo - RPS PSO  
Maria Sandoval - RPS PSO






**OBSIC Team**  
Arne Shwenk- GeoMar  
Lisa Sokolkova-GeoMar  
Hannah Brewer-WHOI  
Tim Kane-WHOI  
Gavin McCarthy-WHOI  
Andrew Farmer-USGS

**Science Party On-board the Langseth**  
J. Pablo Canales - Lead PI WHOI  
Nick Harmon Co-PI WHOI  
Liam Moser WHOI

HSE Events Diary (Marcus G Langseth)

Start	End	Category	Code
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HSE Event Period Totals - Project (Marcus G Langseth)

Category	Code	Day (num)	Week (num)	Month (num)	Project (num)	Proj Hours	Man Hours
 Training	Trng	0	1	1	1	1.000	9.000
 Safety Induction Tours	SIT	0	1	1	1	1.000	9.000
 Meetings	Mtgs	0	9	9	9	3.000	18.000
 Daily HSE Ops Meeting	DOps	0	3	3	3	3.000	18.000
 Toolbox Meetings	Tbox	0	6	6	6		

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**Client:** Lamont-Doherty Earth Observatory  
**Job No:** MGL2316  
**Block:** North Puerto Rico  
**Client Contact:**  
**Consultancy:**  
**Job No:**

**Contractor:** Lamont-Doherty Earth Observatory  
**Job No:** MGL2316  
**Vessel:** Marcus G Langseth  
**Supervisor:**  
**Party Chiefs:** Todd Jensvold  
**Client Reps:** Dr. J. Pablo Canales

Daily Comment Summaries - Daily Summary

Sat 25 Nov

We are currently shooting the 4th sequence. We have been shooting the source array for the entire 24 hours with only several small line changes. We are making good progress on the North Center Source Lines.

We anticipate finishing the source lines for North Center Line on Monday evening at approximately ~9pm local time.

The weather has been cooperative.

We discussed the environmental exclusion zone at the end of the last line and added this to Orca to make sure that we are all aware of the restrictions.

A very solid day.

Daily Comment Summaries - Plan for Tomorrow

Sat 25 Nov

Shoot on the Center North Line all day.

Timing Diary (Marcus G Langseth, Source Only)



Start	End	Category	Code	Duration (hrs)
00:00	07:17	Prime	AC_PP	7.283
Seq: 1 SOL Seq 1 Line:MGL2316001CF1P1 Preplot:CN_Fan_1 Block:North Puerto Rico FGSP:1249 FCSP:1249 Hdg:193.2° Prime EOL Seq 1 Line:MGL2316001CF1P1 Preplot:CN_Fan_1 Block:North Puerto Rico LGSP:1001 LCSP:1001 Complete				
07:17	07:33	Prime L/C	AC_PLC	0.267
Seq: 1 Line: MGL2316001CF1P1 Nominal Prime line change.				
07:33	16:03	Prime	AC_PP	8.500
Seq: 2 SOL Seq 2 Line:MGL2316002CF1P1 Preplot:CN_Fan_1_BL Block:North Puerto Rico FGSP:1001 FCSP:1001 Hdg:88.1° Prime EOL Seq 2 Line:MGL2316002CF1P1 Preplot:CN_Fan_1_BL Block:North Puerto Rico LGSP:1379 LCSP:1379 Complete				
16:03	16:16	Prime L/C	AC_PLC	0.217
Seq: 2 Line: MGL2316002CF1P1 Nominal Prime line change.				
16:16	21:42	Prime	AC_PP	5.433
Seq: 3 SOL Seq 3 Line:MGL2316003CF1P3 Preplot:CN_Fan_1 Block:North Puerto Rico FGSP:1594 FCSP:1594 Hdg:183.5° Prime EOL Seq 3 Line:MGL2316003CF1P3 Preplot:CN_Fan_1 Block:North Puerto Rico LGSP:1297 LCSP:1297 Complete				

Start	End	Category	Code	Duration (hrs)
21:42	22:12	<div></div> Infill L/C	AC_ILC	0.500
Seq: 3 Nominal line change.				
22:12	24:00	<div></div> Prime	AC_PP	1.800
Seq: 4 SOL Seq 4 Line:MGL2316004CNAP1 Preplot:CN_A Block:North Puerto Rico FGSP:1001 FCSP:1001 Hdg:179.6° Prime MSP Seq 4 Line:MGL2316004CNAP1 Preplot:CN_A Block:North Puerto Rico LGSP:1089 LCSP:1089 Midnight				

Timing Day By Day (Marcus G Langseth, Source Only, OBS\_Deployment)

25-Nov	Hours	% Percent
<b>Acquisition</b>	<b>24.000</b>	<b>100.000</b>
Infill L/C	0.500	2.083
Prime	23.017	95.903
Prime L/C	0.483	2.014
<b>Mobilisation</b>	<b>0.000</b>	<b>0.000</b>
Testing	0.000	0.000
<b>Day's Total</b>	<b>24.000</b>	<b>100.000</b>

Timing Breakdown Summary - Project (Marcus G Langseth, Source Only, OBS\_Deployment)

Category	Hours	% Percent
<b>Mobilisation</b>	<b>83.333</b>	<b>57.870</b>
At Anchor	24.000	16.667
Deployment	22.350	15.521
Testing	5.350	3.715
Transit to Prospect	31.633	21.968
<b>DownTime</b>	<b>0.933</b>	<b>0.648</b>
Equipment Handling	0.433	0.301
IT	0.500	0.347
<b>Acquisition</b>	<b>24.000</b>	<b>16.667</b>
Infill L/C	0.500	0.347
Prime	23.017	15.984
Prime L/C	0.483	0.336
<b>Chargeable Standby</b>	<b>35.733</b>	<b>24.815</b>
Transit	35.733	24.815
<b>Total</b>	<b>144.000</b>	

Basic Project Details

Source Only					
General Details					
Record length:	0 ms	Sample rate:	0 ms	Shotpoint interval:	400 m
Source Details					
No of Sources:	1	Total Volume:	6600 cu ins	Depth:	12
Pressure:	1950 PSI	Volume:	6600	Strings per source:	4
String Separation:	6 m	String length:	16 m		

Production Totals (Accpt Main km)

OBS\_Deployment, Source Only



Accepted km	Day	Week	Month	Project
Prime	406.00	425.60	425.60	425.60
Combined	406.00	425.60	425.60	425.60

Production Listing (Accpt Main km)

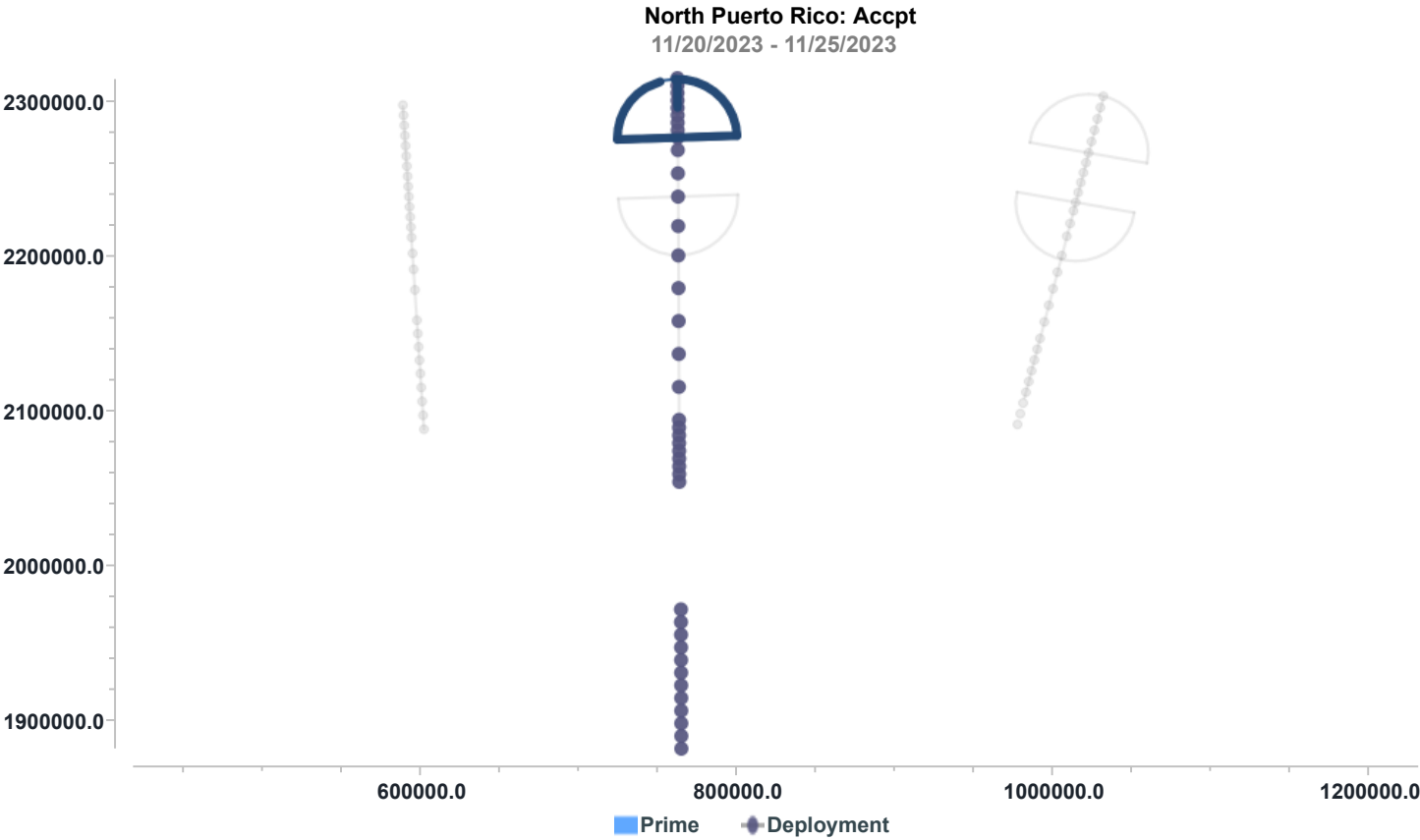
OBS\_Deployment, Source Only

Seq	Line	Heading	FGSP	LGSP	Prod Type	Production	Ave Knots	Seq Status	Line Status
1	MGL2316001CF1P1	193.2	1249	1001	Prime	99.60	7.317	Complete	Complete
2	MGL2316002CF1P1	88.1	1001	1379	Prime	151.60	9.605	Complete	Complete
3	MGL2316003CF1P3	183.5	1594	1297	Prime	119.20	11.806	Complete	Complete
4	MGL2316004CNAP1	179.6	1001	1089	Prime	35.60	10.559	Midnight	Part
Total						406.00			

Production Totals (Accpt Main km)

OBS\_Deployment, Source Only

Accepted km	Day	Week	Month	Project
Prime	406.00	425.60	425.60	425.60
Combined	406.00	425.60	425.60	425.60



Daily Comment Summaries - Daily Comments On Status of Equipment

Sat 25 Nov

Navigation:  
7 out of 8 gun pods are working. The front of gunstring #2 is out.

Information Technology (IT):  
No Major Issues to Report

OBS:

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No Major Issues to Report

Towing and Handling (Source):  
Gun 1-2 has a bum transducer

General Purpose Science:  
No Major issues to Report.

Daily Comment Summaries - Personnel Onboard

Sat 25 Nov

Technical Staff On-board the Langseth

Todd Jenvold L-DEO OMO Chief Science Officer  
Brian Agee L-DEO OMO Chief Source Mechanic  
Gilles Guerin - L-DEO OMO Observer  
Aaron Martin.- Contract Navigator  
Mark Walker - Contract Source Mechanic  
Ray Hatton - Contract Source Mechanic  
Jacob Greenberg - Contract Source Mechanic  
Sean Seekins - Contract Source Mechanic  
Ian Davis- Contract Tech

PSO Staff On-board the Langseth

Amanda Dubuque - RPS Lead PSO  
Cassandra Frey - RPS PSO  
Elizabeth Breton - RPS PSO  
Tiffany Ramdoo - RPS PSO  
Maria Sandoval - RPS PSO

OBSIC Team

Arne Shwenk- GeoMar  
Lisa Sokolkova-GeoMar  
Hannah Brewer-WHOI  
Tim Kane-WHOI  
Gavin McCarthy-WHOI  
Andrew Farmer-USGS

Science Party On-board the Langseth

J. Pablo Canales - Lead PI WHOI  
Nick Harmon Co-PI WHOI  
Liam Moser WHOI




HSE Events Diary (Marcus G Langseth)

Start	End	Category	Code
15:55	16:25	<div></div> Daily HSE Ops Meeting	Mtgs_DOps
Daily Operation Meeting with PI, CSO, Captain, Nav, PSO			

Daily Total Category	Code	Count
<div></div> Toolbox Meetings	Mtgs_Tbox	3
Shiftchange toolbox meetings		

HSE Event Period Totals - Project (Marcus G Langseth)

Category	Code	Day (num)	Week (num)	Month (num)	Project (num)	Proj Hours	Man Hours
<div></div> Meetings	Mtgs	4	18	18	18	3.500	12.917
<div></div> Daily HSE Ops Meeting	DOps	1	6	6	6	3.500	12.917

Category	Code	Day (num)	Week (num)	Month (num)	Project (num)	Proj Hours	Man Hours
 Toolbox Meetings	Tbox	3	12	12	12		
 Training	Trng	0	1	1	1	2.500	22.500
 Safety Induction Tours	SIT	0	1	1	1	2.500	22.500

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**Client:** Lamont-Doherty Earth Observatory  
**Job No:** MGL2316  
**Block:** North Puerto Rico  
**Client Contact:**  
**Consultancy:**  
**Job No:**

**Contractor:** Lamont-Doherty Earth Observatory  
**Job No:** MGL2316  
**Vessel:** Marcus G Langseth  
**Supervisor:**  
**Party Chiefs:** Todd Jensvold  
**Client Reps:** Dr. J. Pablo Canales

Daily Comment Summaries - Daily Summary

Sun 26 Nov

We are currently shooting Seq #6. We shot all day long, but a portion of Seq #5 was acquired while repairing gun string #2.

We recovered gun-string #2 to repair a timing issue on Gun 2-1. We continued shooting the line with a reduced gun volume while repairing gunstring #2. Source volume was 4590 in3 from SP 3115 to SP 3170. We continued shooting with 3 gunstrings during this repair event.

We ended up changing out both clusters and gun 2-5 before we re-deployed the gun-string. By the end of the day the mechs had rebuilt five guns. I feel like we actually dodged a bullet by making these repairs before they failed in the water. Great job by the gunners today.

We should finish the North Central Line by ~ 8PM tomorrow (Monday) and will recover all of the towed gear and transit around the island. We will be shooting again by Tuesday afternoon.

The starboard compressor failed around midnight local time. We missed 4 SPS and had to perform a soft start ramp up before going to full volume. Volume ramped up from SPS 1202-1208. SP 1208 was back to full original volume.

Solid day.





Daily Comment Summaries - Plan for Tomorrow

Sun 26 Nov

We will complete the North Center Line tomorrow ~ 8PM local time. We will then recover all of the towed gear and transit to the South Center Line.

Timing Diary (Marcus G Langseth, Source Only)



Start	End	Category	Code	Duration (hrs)
00:00	04:31	 Prime	AC_PP	4.517
Seq: 4 SOL Seq 4 Line:MGL2316004CNAP1 Preplot:CN_A Block:North Puerto Rico FGSP:1090 FCSP:1090 Hdg:179.6° Prime EOL Seq 4 Line:MGL2316004CNAP1 Preplot:CN_A Block:North Puerto Rico LGSP:1197 LCSP:1197 Incomplete				
04:31	04:44	 High Pressure	DT_HP	0.217
NTBP Seq 4 CN_A Block:North Puerto Rico FSP:1198 LSP:1201 Downtime for starboard generator. Missed 4 SPS and had to perform a softstart ramp up.				
04:44	10:45	 Prime	AC_PP	6.017
Seq: 4 SOL Seq 4 Line:MGL2316004CNAP1 Preplot:CN_A Block:North Puerto Rico FGSP:1202 FCSP:1202 Hdg:179.6° Prime EOL Seq 4 Line:MGL2316004CNAP1 Preplot:CN_A Block:North Puerto Rico LGSP:1378 LCSP:1378 Complete				
10:45	10:50	 Prime L/C	AC_PLC	0.083
Seq: 4 Line: MGL2316004CNAP1 Nominal Prime line change.				

Start	End	Category	Code	Duration (hrs)
10:50	18:27	<div></div> Prime	AC_PP	7.617
Seq: 5 SOL Seq 5 Line:MGL2316005CF2P1 Preplot:CN_Fan_2 Block:North Puerto Rico FGSP:1199 FCSP:1199 Hdg:172.8° Prime EOL Seq 5 Line:MGL2316005CF2P1 Preplot:CN_Fan_2 Block:North Puerto Rico LGSP:1001 LCSP:1001 Complete Reduced gun volume to repair gunstring #2. Source volume is 4590 in3 from SP 3115 to SP 3170. We continued shooting with 3 gunstrings during this repair event.				
18:27	18:41	<div></div> Prime L/C	AC_PLC	0.233
Seq: 5 Line: MGL2316005CF2P1 Nominal Prime line change.				
18:41	24:00	<div></div> Prime	AC_PP	5.317
Seq: 6 SOL Seq 6 Line:MGL2316006CF2P2 Preplot:CN_Fan_2_BL Block:North Puerto Rico FGSP:1001 FCSP:1001 Hdg:88° Prime MSP Seq 6 Line:MGL2316006CF2P2 Preplot:CN_Fan_2_BL Block:North Puerto Rico LGSP:1148 LCSP:1148 Midnight				

Timing Day By Day (Marcus G Langseth, Source Only)

26-Nov	Hours	% Percent
<b>Acquisition</b>	<b>23.783</b>	<b>99.097</b>
Prime	23.467	97.778
Prime L/C	0.317	1.319
<b>DownTime</b>	<b>0.217</b>	<b>0.903</b>
High Pressure	0.217	0.903
<b>Day's Total</b>	<b>24.000</b>	<b>100.000</b>

Timing Breakdown Summary - Project (Marcus G Langseth, Source Only, OBS\_Deployment)

Category	Hours	% Percent
<b>Mobilisation</b>	<b>83.333</b>	<b>49.603</b>
At Anchor	24.000	14.286
Deployment	22.350	13.304
Testing	5.350	3.185
Transit to Prospect	31.633	18.829
<b>DownTime</b>	<b>1.150</b>	<b>0.685</b>
Equipment Handling	0.433	0.258
High Pressure	0.217	0.129
IT	0.500	0.298
<b>Acquisition</b>	<b>47.783</b>	<b>28.442</b>
Infill L/C	0.500	0.298
Prime	46.483	27.669
Prime L/C	0.800	0.476
<b>Chargeable Standby</b>	<b>35.733</b>	<b>21.270</b>
Transit	35.733	21.270
<b>Total</b>	<b>168.000</b>	

Basic Project Details

Source Only					
General Details					
Record length:	0 ms	Sample rate:	0 ms	Shotpoint interval:	400 m
Source Details					

Source Only					
No of Sources:	1	Total Volume:	6600 cu ins	Depth:	12
Pressure:	1950 PSI	Volume:	6600	Strings per source:	4
String Separation:	6 m	String length:	16 m		

Production Totals (Accpt Main km)

OBS\_Deployment, Source Only

Accepted km	Day	Week	Month	Project
Prime	252.80	565.60	565.60	565.60
Combined	252.80	565.60	565.60	565.60

Production Listing (Accpt Main km)

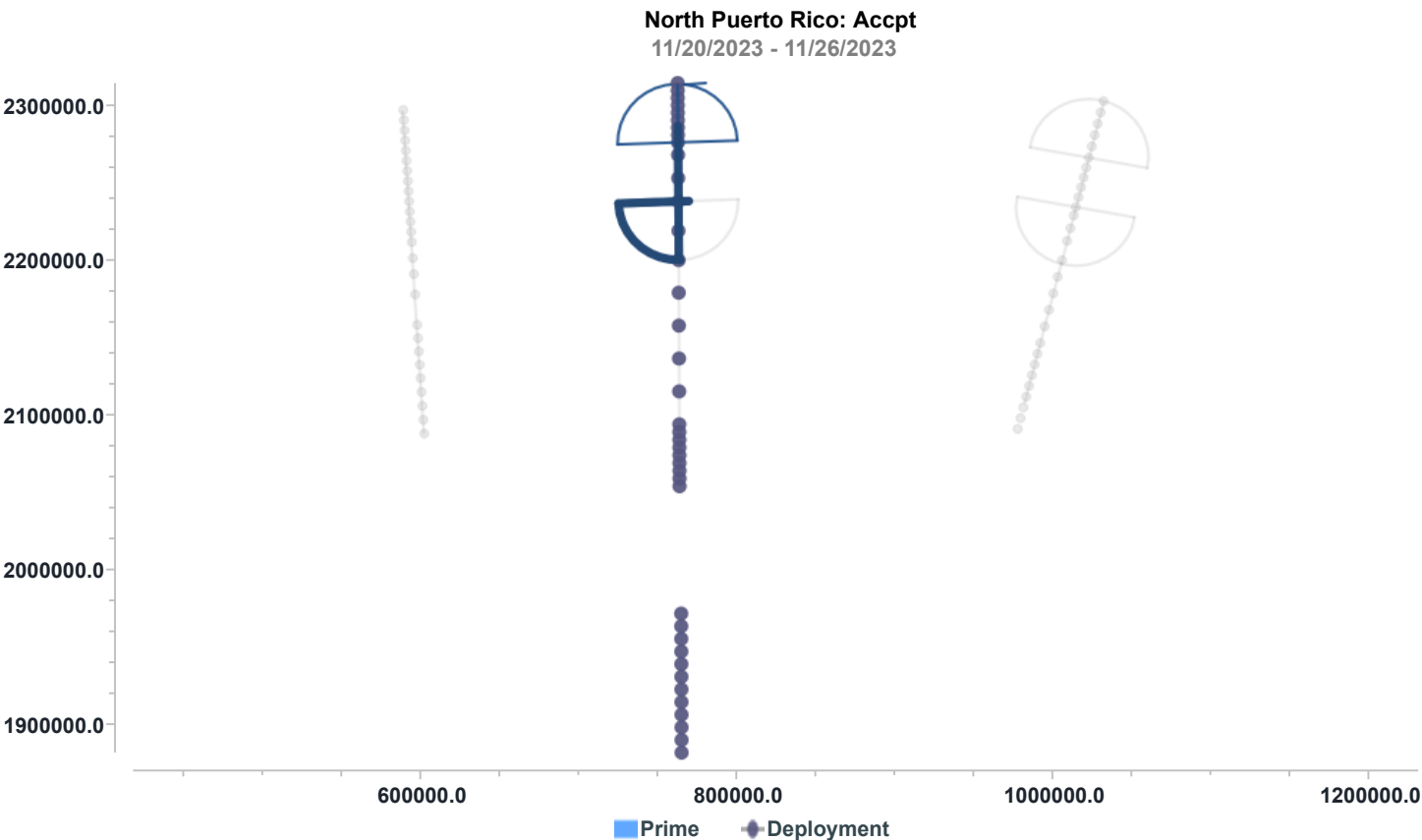
OBS\_Deployment, Source Only

Seq	Line	Heading	FGSP	LGSP	Prod Type	Production	Ave Knots	Seq Status	Line Status
4	MGL2316004CNAP1	179.6	1090	1378	Prime	114.00	6.515	Complete	Complete
NTBP: 1198 - 1201 (not chgd)									
5	MGL2316005CF2P1	172.8	1199	1001	Prime	79.60	5.615	Complete	Complete
6	MGL2316006CF2P2	88.0	1001	1148	Prime	59.20	5.972	Midnight	Part
Total						252.80			

Production Totals (Accpt Main km)

OBS\_Deployment, Source Only

Accepted km	Day	Week	Month	Project
Prime	252.80	565.60	565.60	565.60
Combined	252.80	565.60	565.60	565.60



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Daily Comment Summaries - Daily Comments On Status of Equipment

Sun 26 Nov

Navigation:

7 out of 8 gun pods are working. The tail of gunstring #2 is out.

Information Technology (IT):

No Major Issues to Report

OBS:

No Major Issues to Report

Towing and Handling (Source):

Gun 1-2 has a bum transducer

General Purpose Science:

No Major issues to Report.

Daily Comment Summaries - Personnel Onboard

Sun 26 Nov

Technical Staff On-board the Langseth

Todd Jensvold L-DEO OMO Chief Science Officer

Brian Agee L-DEO OMO Chief Source Mechanic

Gilles Guerin - L-DEO OMO Observer

Aaron Martin.- Contract Navigator

Mark Walker - Contract Source Mechanic

Ray Hatton - Contract Source Mechanic

Jacob Greenberg - Contract Source Mechanic

Sean Seekins - Contract Source Mechanic

Ian Davis- Contract Tech

PSO Staff On-board the Langseth

Amanda Dubuque - RPS Lead PSO

Cassandra Frey - RPS PSO

Elizabeth Breton - RPS PSO

Tiffany Ramdoo - RPS PSO

Maria Sandoval - RPS PSO

OBSIC Team

Arne Shwenk- GeoMar

Lisa Sokolkova-GeoMar

Hannah Brewer-WHOI

Tim Kane-WHOI

Gavin McCarthy-WHOI

Andrew Farmer-USGS

Science Party On-board the Langseth

J. Pablo Canales - Lead PI WHOI

Nick Harmon Co-PI WHOI





Liam Moser WHOI

HSE Events Diary (Marcus G Langseth)

Start	End	Category	Code
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HSE Event Period Totals - Project (Marcus G Langseth)

Category	Code	Day (num)	Week (num)	Month (num)	Project (num)	Proj Hours	Man Hours
Meetings	Mtgs	0	18	18	18	3.500	12.917

Category	Code	Day (num)	Week (num)	Month (num)	Project (num)	Proj Hours	Man Hours
 Daily HSE Ops Meeting	DOps	0	6	6	6	3.500	12.917
 Toolbox Meetings	Tbox	0	12	12	12		
 Training	Trng	0	1	1	1	2.500	22.500
 Safety Induction Tours	SIT	0	1	1	1	2.500	22.500



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Client:	Lamont-Doherty Earth Observatory	Contractor:	Lamont-Doherty Earth Observatory
Job No:	MGL2316	Job No:	MGL2316
Block:	North Puerto Rico	Vessel:	Marcus G Langseth
Client Contact:		Supervisor:	
Consultancy:		Party Chiefs:	Todd Jensvold
Job No:		Client Reps:	Dr. J. Pablo Canales

Daily Comment Summaries - Daily Summary

Mon 27 Nov

We finished shooting the North central Line today ~ 7PM local time. We recovered all of the towed gear and have begun our transit to the South Central Line.

The transit should take about ~12 hours. We will be re-deploying guns around breakfast time tomorrow and back into production around noon.

We swapped out the hydrophone on the PAM cable tonight to troubleshoot a little noise on the cable.

We met today to discuss updating the MultiSies categories to tailor it to fit our needs a little better.

Mechs did a terrific job recovering the gunstrings this evening and work thru the night prepping things for a quick turnaround and re-deployment in the morning. The South Central Line will take approximately 13 hours to shoot and then we will pick everything back up and begin recovering the OBS's.

We had a strange RDF signal earlier today. The OBSIC crew went to the bridge to investigate the signal and decided that it was not any signal of our instruments. The cadence was unfamiliar but the frequency was similar. No action was taken and I believe that this was the correct decision.

The Vikes are struggling in the first half. Skol.

A good solid day of shooting again today.

Daily Comment Summaries - Plan for Tomorrow

Mon 27 Nov

Transit to South Central Line and re-deploy guns. Shoot the final source line on the south central line.

Timing Diary (Marcus G Langseth, Source Only)

Start	End	Category	Code	Duration (hrs)
00:00	03:20	Prime	AC_PP	3.333
Seq: 6 SOL Seq 6 Line:MGL2316006CF2P2 Preplot:CN_Fan_2_BL Block:North Puerto Rico FGSP:1149 FCSP:1149 Hdg:88° Prime EOL Seq 6 Line:MGL2316006CF2P2 Preplot:CN_Fan_2_BL Block:North Puerto Rico LGSP:1253 LCSP:1253 Complete				
03:20	03:22	Prime L/C	AC_PLC	0.033
Seq: 6 Line: MGL2316006CF2P2 Nominal Prime line change.				
03:22	09:25	Prime	AC_PP	6.050
Seq: 7 SOL Seq 7 Line:MGL2316007CF2P3 Preplot:CN_Fan_2 Block:North Puerto Rico FGSP:1397 FCSP:1397 Hdg:172.8° Prime EOL Seq 7 Line:MGL2316007CF2P3 Preplot:CN_Fan_2 Block:North Puerto Rico LGSP:1200 LCSP:1200 Complete				
09:25	09:33	Infill L/C	AC_ILC	0.133
Seq: 7				

Start	End	Category	Code	Duration (hrs)
Nominal line change.				
09:33	23:13	<div></div> Prime	AC_PP	13.667
Seq: 8 SOL Seq 8 Line:MGL2316008CNBP1 Preplot:CN_B Block:North Puerto Rico FGSP:1001 FCSP:1001 Hdg:179.8° Prime EOL Seq 8 Line:MGL2316008CNBP1 Preplot:CN_B Block:North Puerto Rico LGSP:1440 LCSP:1440 Complete This completes the North Central Line.				
23:13	24:00	<div></div> Transit	SB_TRT	0.783
Recovering Gunstrings to transit to South side of Island.				
Gunstring #3				

Timing Day By Day (Marcus G Langseth, Source Only)

27-Nov	Hours	% Percent
<b>Acquisition</b>	<b>23.217</b>	<b>96.736</b>
Infill L/C	0.133	0.556
Prime	23.050	96.042
Prime L/C	0.033	0.139
<b>Chargeable Standby</b>	<b>0.783</b>	<b>3.264</b>
Transit	0.783	3.264
<b>Day's Total</b>	<b>24.000</b>	<b>100.000</b>

Timing Breakdown Summary - Project (Marcus G Langseth, Source Only, OBS\_Deployment)

Category	Hours	% Percent
<b>Mobilisation</b>	<b>83.333</b>	<b>43.403</b>
At Anchor	24.000	12.500
Deployment	22.350	11.641
Testing	5.350	2.786
Transit to Prospect	31.633	16.476
<b>DownTime</b>	<b>1.150</b>	<b>0.599</b>
Equipment Handling	0.433	0.226
High Pressure	0.217	0.113
IT	0.500	0.260
<b>Acquisition</b>	<b>71.000</b>	<b>36.979</b>
Infill L/C	0.633	0.330
Prime	69.533	36.215
Prime L/C	0.833	0.434
<b>Chargeable Standby</b>	<b>36.517</b>	<b>19.019</b>
Transit	36.517	19.019
<b>Total</b>	<b>192.000</b>	

Basic Project Details

Source Only					
<b>General Details</b>					
Record length:	0 ms	Sample rate:	0 ms	Shotpoint interval:	400 m
<b>Source Details</b>					
No of Sources:	1	Total Volume:	6600 cu ins	Depth:	12
Pressure:	1950 PSI	Volume:	6600	Strings per source:	4

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Source Only					
String Separation:	6 m	String length:	16 m		

Production Totals (Accpt Main km)

OBS\_Deployment, Source Only

Accepted km	Day	Week	Month	Project
Prime	297.20	297.20	862.80	862.80
Combined	297.20	297.20	862.80	862.80

Production Listing (Accpt Main km)

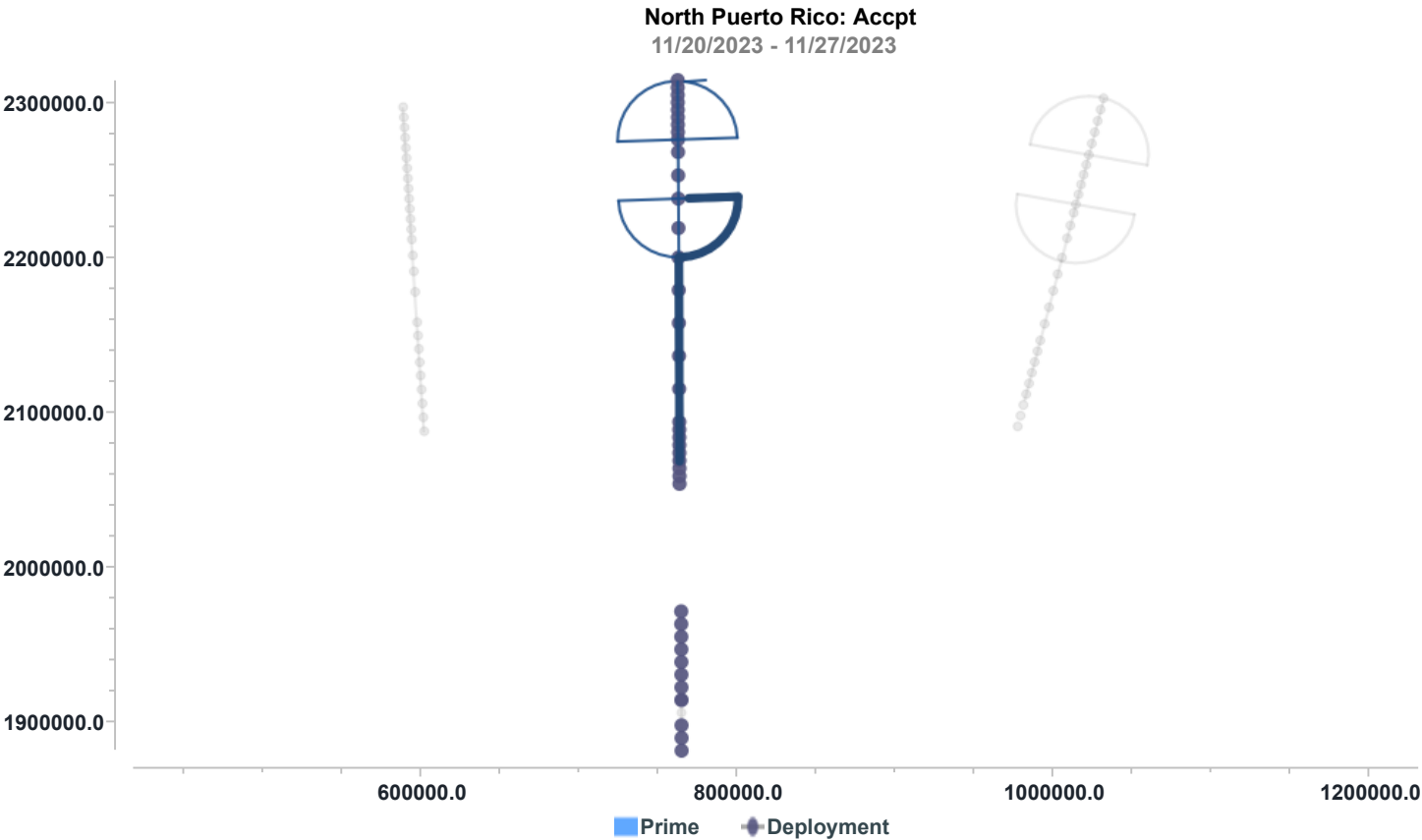
OBS\_Deployment, Source Only

Seq	Line	Heading	FGSP	LGSP	Prod Type	Production	Ave Knots	Seq Status	Line Status
6	MGL2316006CF2P2	88.0	1149	1253	Prime	42.00	6.292	Complete	Complete
7	MGL2316007CF2P3	172.8	1397	1200	Prime	79.20	7.033	Complete	Complete
8	MGL2316008CNBP1	179.8	1001	1440	Prime	176.00	6.938	Complete	Complete
Total						297.20			

Production Totals (Accpt Main km)

OBS\_Deployment, Source Only

Accepted km	Day	Week	Month	Project
Prime	297.20	297.20	862.80	862.80
Combined	297.20	297.20	862.80	862.80



Daily Comment Summaries - Daily Comments On Status of Equipment

Mon 27 Nov

Navigation:  
Gunstring GPS's down at the end of the day were:

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Gunstring 1: Front: Good Back: Good  
Gunstring 2: Front: Bad Back: Bad  
Gunstring 3: Front: Good Back: Bad  
Gunstring 4: Front: Good Back: Good

**Information Technology (IT):**  
Good meeting today to discuss new categories on MultiSeis database.

**OBS:**  
No Major Issues to Report

**Towing and Handling (Source):**  
Will fix Gun 1-2 during transit

**General Purpose Science:**  
Changed out the hydrophone on the PAM Cable when we recovered the towed gear.

Daily Comment Summaries - Personnel Onboard

Mon 27 Nov

**Technical Staff On-board the Langseth**  
Todd Jensvold L-DEO OMO Chief Science Officer  
Brian Agee L-DEO OMO Chief Source Mechanic  
Gilles Guerin - L-DEO OMO Observer  
Aaron Martin.- Contract Navigator  
Mark Walker - Contract Source Mechanic  
Ray Hatton - Contract Source Mechanic  
Jacob Greenberg - Contract Source Mechanic  
Sean Seekins - Contract Source Mechanic  
Ian Davis- Contract Tech

**PSO Staff On-board the Langseth**  
Amanda Dubuque - RPS Lead PSO  
Cassandra Frey - RPS PSO  
Elizabeth Breton - RPS PSO  
Tiffany Ramdoo - RPS PSO  
Maria Sandoval - RPS PSO

**OBSIC Team**  
Arne Shwenk- GeoMar  
Lisa Sokolkova-GeoMar  
Hannah Brewer-WHOI  
Tim Kane-WHOI  
Gavin McCarthy-WHOI  
Andrew Farmer-USGS






**Science Party On-board the Langseth**  
J. Pablo Canales - Lead PI WHOI  
Nick Harmon Co-PI WHOI  
Liam Moser WHOI

HSE Events Diary (Marcus G Langseth)

Start	End	Category	Code
16:05	17:05	Daily HSE Ops Meeting	Mtgs_DOps
Daily Operation Meeting with PI, CSO, Captain, Nav, PSO			
Daily Total Category		Code	Count
Toolbox Meetings		Mtgs_Tbox	4

Daily Total Category	Code	Count
Pre-source recovery toolbox meeting		
Shift change toolbox meetings		
PAM cable recovery toolbox meeting		
Decent THC reporting.		

HSE Event Period Totals - Project (Marcus G Langseth)

Category	Code	Day (num)	Week (num)	Month (num)	Project (num)	Proj Hours	Man Hours
 Meetings	Mtgs	5	5	24	24	5.500	24.917
 Daily HSE Ops Meeting	DOps	1	1	8	8	5.500	24.917
 Toolbox Meetings	Tbox	4	4	16	16		
 Training	Trng	0	0	1	1	2.500	22.500
 Safety Induction Tours	SIT	0	0	1	1	2.500	22.500

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**Client:** Lamont-Doherty Earth Observatory  
**Job No:** MGL2316  
**Block:** North Puerto Rico  
**Client Contact:**  
**Consultancy:**  
**Job No:**

**Contractor:** Lamont-Doherty Earth Observatory  
**Job No:** MGL2316  
**Vessel:** Marcus G Langseth  
**Supervisor:**  
**Party Chiefs:** Todd Jensvold  
**Client Reps:** Dr. J. Pablo Canales

Daily Comment Summaries - Daily Summary

Tue 28 Nov

We finished our transit to the South Central Line and re-deployed the gun-strings. We are back into full production.

We had to repair several air-leaks during the source deployments. This added about 2.5 hours of downtime to our deployment time. Gun string #1 was deployed and had to be recovered after another air-leak developed on the 360 cluster. It was fixed and re-deployed.

Gun string #2 developed an air-leak on the 360 cluster while still on the deck prior to deployment.

All of the guns strings were aired up and checked for air leaks several hours before deployment and then aired back down to secure the compressors. When we aired them back up, Gun strings 1,3,4 were fine and gun string #2 developed an air-leak prior to deployment. We deployed gun string #1 and started to repair gun string #2 on deck. Gun string #1 developed an air-leak in the water while we repaired #2. These clusters have been real buggers over the last month.

We had everything deployed and started shooting ~7PM local time.

We should finish the line tomorrow morning ~4:30AM and recover the towed gear and begin recovering the OBS's on the South Central line beginning with the most southerly location and working our way north. We have projected about ~2 hours per instrument average for these recoveries and are keen to see what the actual number will be. Safety and form will be paramount.

We had a crew safety meeting today in the mess room.

We had our Weekly Tech meeting today.

We have some new categories in MultiSeis today and anticipate having a couple more of the next week or two.

Steady progress..

Daily Comment Summaries - Plan for Tomorrow

Tue 28 Nov

Finish shooting the South Central line  
Recover the towed gear  
Begin recovering OBS's from the most southerly location first.

Timing Diary (Marcus G Langseth, Source Only)

Start	End	Category	Code	Duration (hrs)
00:00	01:16	Transit	AC_RDR_FF_TR	1.267
Recovering Gunstrings to transit to South side of Island.				
All gun strings onboard. Begin transit to South Central Line.				
01:16	14:54	Transit	AC_RDR_FF_TR	13.633
Transit around the island to South Central Line.				
14:54	15:20	Transit	AC_RDR_FF_TR	0.433
Deploying PAM and Maggie				

Start	End	Category	Code	Duration (hrs)
15:20	17:09	<div></div> Transit	AC_RDR_FF_TR	1.817
Deploying guns to complete transit. Gunstring #1 deployed.				
17:09	18:08	<div></div> Array Air leak	DT_SC_AAL	0.983
Gunstring #1 has an airleak in the water. Gunstring #2 has an airleak on front cluster while on deck. Making repairs on deck before recovering gunstring #1 for repairs.				
18:08	19:32	<div></div> Array Air leak	DT_SC_AAL	1.400
Recovering gunstring #1 to repair air leak. Repairing.				
19:32	19:46	<div></div> Array Air leak	DT_SC_AAL	0.233
Re-deploying gunstring #1 after rebuilding the front cluster. Deployed.				
19:46	20:33	<div></div> Transit	AC_RDR_FF_TR	0.783
Deploying gun string #2 to complete transit				
20:33	21:20	<div></div> Transit	AC_RDR_FF_TR	0.783
Deploying gun string #4 to complete transit. Turning back toward SOL				
21:20	21:58	<div></div> Transit	AC_RDR_FF_TR	0.633
Deploying gun string #3 to complete transit. Adjust separation rope on gun string #3				
21:58	22:20	<div></div> Transit	AC_RDR_FF_TR	0.367
Soft start ramp up after transit				
22:20	23:08	<div></div> Transit	AC_RDR_FF_TR	0.800
Transit to SOL after soft start ramp up. No Nav recorded.				
23:08	24:00	<div></div> Prime	AC_PP	0.867
Seq: 9 SOL Seq 9 Line:MGL2316009CSP1 Preplot:CS Block:North Puerto Rico FGSP:1001 FCSP:1001 Hdg:179.8° Prime MSP Seq 9 Line:MGL2316009CSP1 Preplot:CS Block:North Puerto Rico LGSP:1063 LCSP:1063 Midnight Seq 9 after transit. Gun Volume: 6240 in3. Gun 1-2 out				

Timing Day By Day (Marcus G Langseth, Source Only)

28-Nov	Hours	% Percent
Acquisition	21.383	89.097
Prime	0.867	3.611
Receiver Deployment/Recovery	20.517	85.486
Free Fall OBS	20.517	85.486
Transit	20.517	85.486
DownTime	2.617	10.903
Source	2.617	10.903
Array Air leak	2.617	10.903
Day's Total	24.000	100.000

Timing Breakdown Summary - Project (Marcus G Langseth, Source Only, OBS\_Deployment)

Category	Hours	% Percent
Mobilisation	83.333	38.580
At Anchor	24.000	11.111
Deployment	22.350	10.347
Testing	5.350	2.477
Transit to Prospect	31.633	14.645

Category	Hours	% Percent
<b>DownTime</b>	<b>3.767</b>	<b>1.744</b>
Equipment Handling	0.433	0.201
High Pressure	0.217	0.100
IT	0.500	0.231
Source	2.617	1.211
Array Air leak	2.617	1.211
<b>Acquisition</b>	<b>93.167</b>	<b>43.133</b>
Infill L/C	0.633	0.293
Prime	70.400	32.593
Prime L/C	0.833	0.386
Receiver Deployment/Recovery	21.300	9.861
Free Fall OBS	21.300	9.861
Transit	21.300	9.861
<b>Chargeable Standby</b>	<b>35.733</b>	<b>16.543</b>
Transit	35.733	16.543
<b>Total</b>	<b>216.000</b>	

Basic Project Details

Source Only					
General Details					
Record length:	0 ms	Sample rate:	0 ms	Shotpoint interval:	400 m
Source Details					
No of Sources:	1	Total Volume:	6600 cu ins	Depth:	12
Pressure:	1950 PSI	Volume:	6600	Strings per source:	4
String Separation:	6 m	String length:	16 m		

Production Totals (Accpt Main km)

OBS\_Deployment, Source Only

Accepted km	Day	Week	Month	Project
Prime	25.20	322.40	888.00	888.00
<b>Combined</b>	<b>25.20</b>	<b>322.40</b>	<b>888.00</b>	<b>888.00</b>

Production Listing (Accpt Main km)

OBS\_Deployment, Source Only

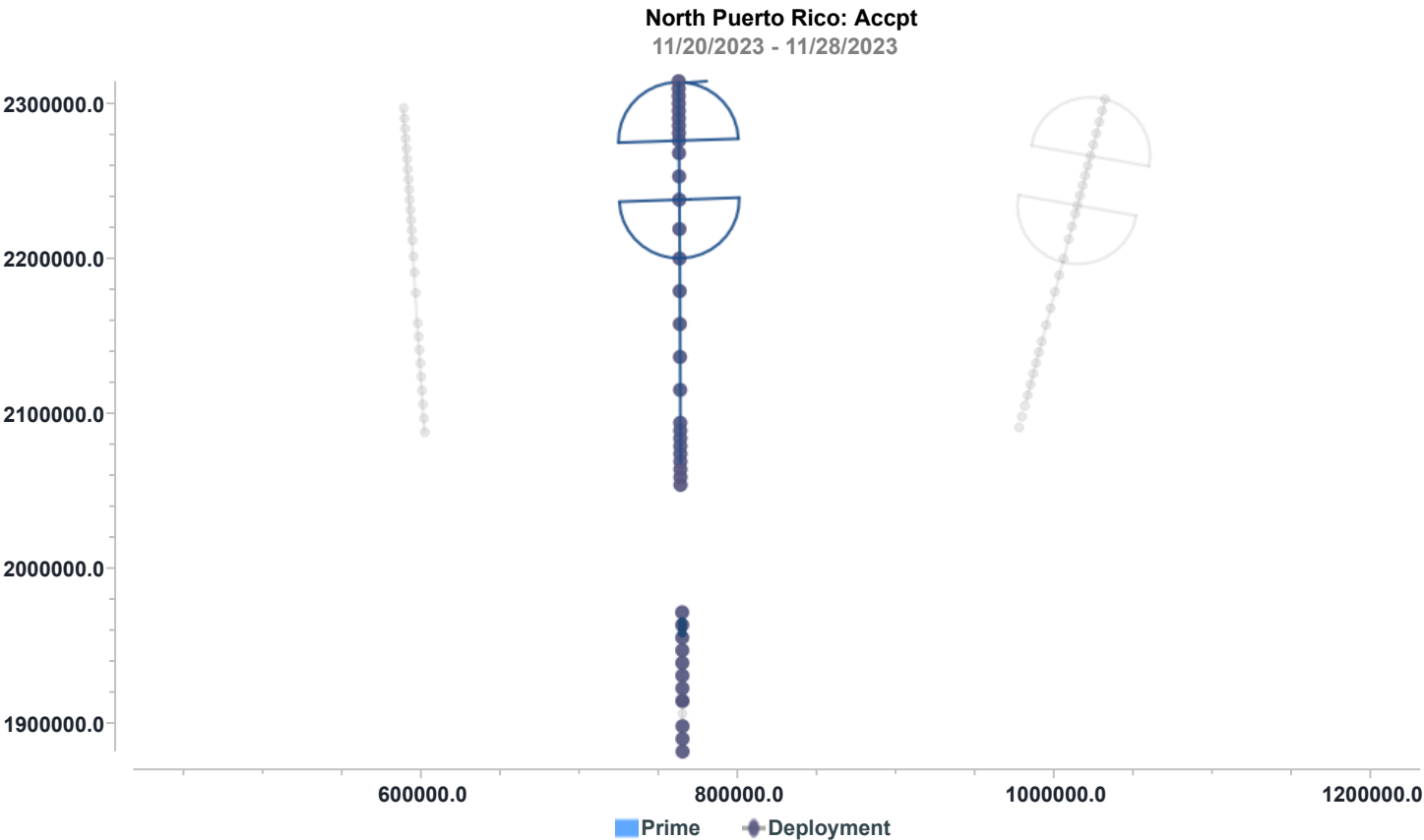
Seq	Line	Heading	FGSP	LGSP	Prod Type	Production	Ave Knots	Seq Status	Line Status
9	MGL2316009CSP1	179.8	1001	1063	Prime	25.20	15.451	Midnight	Part
<b>Total</b>						<b>25.20</b>			

Production Totals (Accpt Main km)

OBS\_Deployment, Source Only

Accepted km	Day	Week	Month	Project
Prime	25.20	322.40	888.00	888.00
<b>Combined</b>	<b>25.20</b>	<b>322.40</b>	<b>888.00</b>	<b>888.00</b>





Daily Comment Summaries - Daily Comments On Status of Equipment

Tue 28 Nov

**Navigation:**  
Source Pods are all working EXCEPT for the back of gunstring #1 and the front of gunstring #2

**Information Technology (IT):**  
No Major Issues to Report

**OBS:**  
No Major Issues to Report

**Towing and Handling (Source):**  
Airleaks on gunstring #1, gunstring #2 (360 clusters)

**General Purpose Science:**  
Repaired PAM cable. 100%  
Need to repair remote control for Maggie

Daily Comment Summaries - Personnel Onboard

Tue 28 Nov

**Technical Staff On-board the Langseth**  
Todd Jensvold L-DEO OMO Chief Science Officer  
Brian Agee L-DEO OMO Chief Source Mechanic  
Gilles Guerin - L-DEO OMO Observer  
Aaron Martin.- Contract Navigator  
Mark Walker - Contract Source Mechanic  
Ray Hatton - Contract Source Mechanic  
Jacob Greenberg - Contract Source Mechanic  
Sean Seekins - Contract Source Mechanic  
Ian Davis- Contract Tech

PSO Staff On-board the Langseth

Amanda Dubuque - RPS Lead PSO  
Cassandra Frey - RPS PSO  
Elizabeth Breton - RPS PSO  
Tiffany Ramdoo - RPS PSO  
Maria Sandoval - RPS PSO

OBSIC Team


Arne Shwenk- GeoMar  
Lisa Sokolkova-GeoMar  
Hannah Brewer-WHOI  
Tim Kane-WHOI  
Gavin McCarthy-WHOI  
Andrew Farmer-USGS

Science Party On-board the Langseth








J. Pablo Canales - Lead PI WHOI  
Nick Harmon Co-PI WHOI  
Liam Moser WHOI

HSE Events Diary (Marcus G Langseth)

Start	End	Category	Code
16:10	17:10	 Full Safety Meeting	Mtgs_FS
HSE - Full Safety Meeting in Mess			
17:10	18:00	 Chiefs Meeting	Mtgs_Chfs
HSE - Chiefs Meeting/ Weekly Safety Meeting on Zoom			
18:00	18:30	 Daily Ops Meeting	Mtgs_DOps
Daily Operation Meeting with PI, CSO, Captain, Nav, PSO			

Daily Total Category	Code	Count
 Toolbox Meetings	Mtgs_Tbox	5
Shiftchange toolbox meetings.		
Source deployment toolbox meeting.		
PAM deployment toolbox meeting.		
Source recovery toolbox meeting.		

HSE Event Period Totals - Project (Marcus G Langseth)

Category	Code	Day (num)	Week (num)	Month (num)	Project (num)	Proj Hours	Man Hours
 Meetings	Mtgs	8	13	32	32	7.833	63.750
 Chiefs Meeting	Chfs	1	1	1	1	0.833	5.833
 Daily Ops Meeting	DOps	1	2	9	9	6.000	27.917
 Full Safety Meeting	FS	1	1	1	1	1.000	30.000
 Toolbox Meetings	Tbox	5	9	21	21		
 Training	Trng	0	0	1	1	2.500	22.500
 Safety Induction Tours	SIT	0	0	1	1	2.500	22.500

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**Client:** Lamont-Doherty Earth Observatory  
**Job No:** MGL2316  
**Block:** North Puerto Rico  
**Client Contact:**  
**Consultancy:**  
**Job No:**

**Contractor:** Lamont-Doherty Earth Observatory  
**Job No:** MGL2316  
**Vessel:** Marcus G Langseth  
**Supervisor:**  
**Party Chiefs:** Todd Jensvold  
**Client Reps:** Dr. J. Pablo Canales

Daily Comment Summaries - Daily Summary

Wed 29 Nov

We recovered all of the towed gear starting at ~4:30 AM local time.

We have six OBS's onboard at the time of this log. We have six more to recover. We should be transiting back around the island after breakfast tomorrow.

The decks were re-arranged to optimize space for the Geomar OBS's after the recover. We are pre-building them to reduce the deployment times for these OBS's on the next Line.

The OBS recoveries are taking a little longer to recover than most early estimates. Hopefully, we can find a way to reduce the recovery times so that we can complete 100% of the mission goals before the end of the project. Otherwise, we will have to start making some decisions about what we want to leave unfinished.

The bridge crew is doing a terrific job getting us onto the OBS's when they hit the surface. The mechanics are on the spot with the A-frame operation. The overall deck ops are very smooth and safe. Radio coms are decent.

We started removing batteries from the Digicourse Birds from the MCS portion of the mission. We don't anticipate having any extra time at the end of the OBS work to re-deploy a streamer.

Steady progress.

Daily Comment Summaries - Plan for Tomorrow

Wed 29 Nov

We will recover the rest of OBS's on the South Central Line and then transit around the island and start recovering the OBS's on the North Central Line.

Timing Diary (Marcus G Langseth, Source Only, OBS\_Deployment)

Start	End	Category	Code	Duration (hrs)
00:00	08:34	<div></div> Prime	AC_PP	8.567
Seq: 9 SOL Seq 9 Line:MGL2316009CSP1 Preplot:CS Block:North Puerto Rico FGSP:1064 FCSP:1064 Hdg:179.8° Prime EOL Seq 9 Line:MGL2316009CSP1 Preplot:CS Block:North Puerto Rico LGSP:1700 LCSP:1700 Complete				
08:34	11:04	<div></div> Field Operations	SB_FO	2.500
Chargeable standby due to field operations. We recovered all towed gear and moved to the first OBS recovery				
11:04	24:00	<div></div> Recover	AC_SM_Re	12.933
Node operation Block:North Puerto Rico 2 Line:S01 Recovery Node operation Block:North Puerto Rico 2 Line:S02 Recovery Node operation Block:North Puerto Rico 2 Line:S03 Recovery Node operation Block:North Puerto Rico 2 Line:S04 Recovery Node operation Block:North Puerto Rico 2 Line:S05 Recovery				

Timing Day By Day (Marcus G Langseth, Source Only, OBS\_Deployment)

29-Nov	Hours	% Percent
Acquisition	21.500	89.583
Prime	8.567	35.694

29-Nov	Hours	% Percent
Swath Move	12.933	53.889
Recover	12.933	53.889
Chargeable Standby	2.500	10.417
Field Operations	2.500	10.417
Day's Total	24.000	100.000

Timing Breakdown Summary - Project (Marcus G Langseth, Source Only, OBS\_Deployment)

Category	Hours	% Percent
Mobilisation	83.333	34.722
At Anchor	24.000	10.000
Deployment	22.350	9.313
Testing	5.350	2.229
Transit to Prospect	31.633	13.181
DownTime	3.767	1.569
Equipment Handling	0.433	0.181
High Pressure	0.217	0.090
IT	0.500	0.208
Source	2.617	1.090
Array Air leak	2.617	1.090
Chargeable Standby	28.917	12.049
Field Operations	2.500	1.042
Transit	26.417	11.007
Acquisition	123.983	51.660
Infill L/C	0.633	0.264
Prime	78.967	32.903
Prime L/C	0.833	0.347
Receiver Deployment/Recovery	30.617	12.757
Free Fall OBS	30.617	12.757
Transit	30.617	12.757
Swath Move	12.933	5.389
Recover	12.933	5.389
Total	240.000	

Basic Project Details

Source Only					
General Details					
Record length:	0 ms	Sample rate:	0 ms	Shotpoint interval:	400 m
Source Details					
No of Sources:	1	Total Volume:	6600 cu ins	Depth:	12
Pressure:	1950 PSI	Volume:	6600	Strings per source:	4
String Separation:	6 m	String length:	16 m		

Production Totals (Accpt Main km)

OBS\_Deployment, Source Only

Accepted km	Day	Week	Month	Project
Prime	254.80	577.20	1142.80	1142.80

Accepted km	Day	Week	Month	Project
Combined	254.80	577.20	1142.80	1142.80

Production Listing (Accpt Main km)

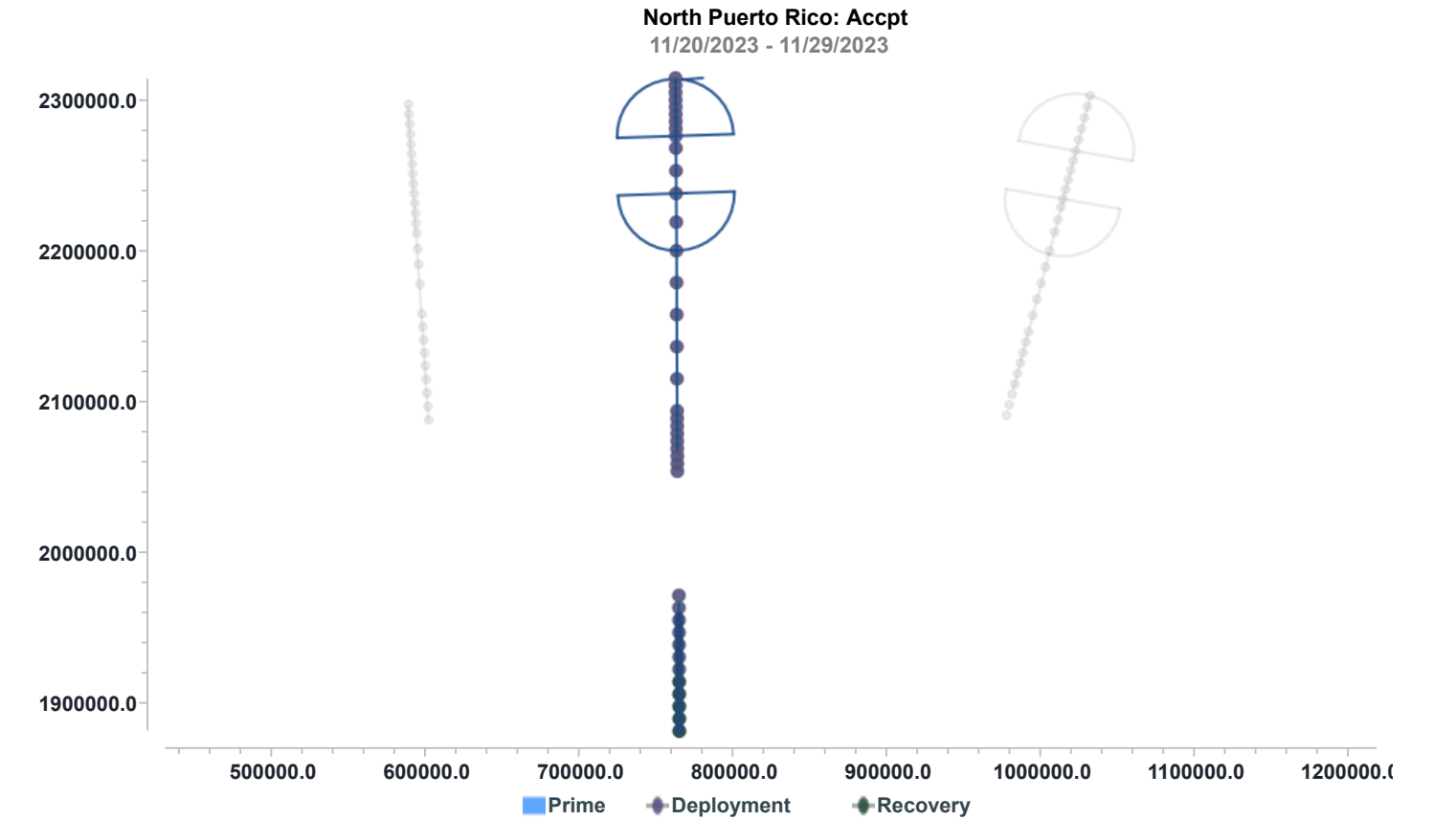
OBS\_Deployment, Source Only

Seq	Line	Heading	FGSP	LGSP	Prod Type	Production	Ave Knots	Seq Status	Line Status
9	MGL2316009CSP1	179.8	1064	1700	Prime	254.80	16.004	Complete	Complete
Total						254.80			

Production Totals (Accpt Main km)

OBS\_Deployment, Source Only

Accepted km	Day	Week	Month	Project
Prime	254.80	577.20	1142.80	1142.80
Combined	254.80	577.20	1142.80	1142.80



Daily Comment Summaries - Daily Comments On Status of Equipment

Wed 29 Nov

Navigation:  
No Major Issues to Report

Information Technology (IT):  
No Major Issues to Report

OBS:  
No Major Issues to Report

Towing and Handling (Source):  
No Major Issues to Report

General Purpose Science:

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No Major issues to Report.

Daily Comment Summaries - Personnel Onboard

Wed 29 Nov

Technical Staff On-board the Langseth

Todd Jensvold L-DEO OMO Chief Science Officer  
Brian Agee L-DEO OMO Chief Source Mechanic  
Gilles Guerin - L-DEO OMO Observer  
Aaron Martin.- Contract Navigator  
Mark Walker - Contract Source Mechanic  
Ray Hatton - Contract Source Mechanic  
Jacob Greenberg - Contract Source Mechanic  
Sean Seekins - Contract Source Mechanic  
Ian Davis- Contract Tech

PSO Staff On-board the Langseth

Amanda Dubuque - RPS Lead PSO  
Cassandra Frey - RPS PSO  
Elizabeth Breton - RPS PSO  
Tiffany Ramdoo - RPS PSO  
Maria Sandoval - RPS PSO

OBSIC Team

Arne Shwenk- GeoMar  
Lisa Sokolkova-GeoMar  
Hannah Brewer-WHOI  
Tim Kane-WHOI  
Gavin McCarthy-WHOI  
Andrew Farmer-USGS

Science Party On-board the Langseth

J. Pablo Canales - Lead PI WHOI  
Nick Harmon Co-PI WHOI  
Liam Moser WHOI




HSE Events Diary (Marcus G Langseth)

Start	End	Category	Code
16:30	17:30	Chiefs Meeting	Mtgs_Chfs
Daily Operation Meeting with PI, CSO, Captain, Nav, PSO			

Daily Total Category	Code	Count
Toolbox Meetings	Mtgs_Tbox	6
Source recovery toolbox meeting Shift change toolbox meetings OBS recovery toolbox meeting Deck layout discussion and toolbox meeting		

HSE Event Period Totals - Project (Marcus G Langseth)

Category	Code	Day (num)	Week (num)	Month (num)	Project (num)	Proj Hours	Man Hours
Meetings	Mtgs	7	20	39	39	8.833	69.750
Chiefs Meeting	Chfs	1	2	2	2	1.833	11.833
Daily Ops Meeting	DOps	0	2	9	9	6.000	27.917
Full Safety Meeting	FS	0	1	1	1	1.000	30.000

Category	Code	Day (num)	Week (num)	Month (num)	Project (num)	Proj Hours	Man Hours
 Toolbox Meetings	Tbox	6	15	27	27		
 Training	Trng	0	0	1	1	2.500	22.500
 Safety Induction Tours	SIT	0	0	1	1	2.500	22.500

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Client:	Lamont-Doherty Earth Observatory	Contractor:	Lamont-Doherty Earth Observatory
Job No:	MGL2316	Job No:	MGL2316
Block:	North Puerto Rico	Vessel:	Marcus G Langseth
Client Contact:		Supervisor:	
Consultancy:		Party Chiefs:	Todd Jensvold
Job No:		Client Reps:	Dr. J. Pablo Canales

Daily Comment Summaries - Daily Summary

Thu 30 Nov

We completed the recovery of the OBS's on the South Central line at ~ 13:31GMT. We are currently transiting back around the island to resume recovery ops on the North Central Line. We should begin picking up OBS 13 around midnight local time.

We discussed possible ways to improve recovery times at the Daily ops Meeting. Arne (Geomar) is happy to send their release commands much earlier than previously to reduce the recovery time of these instruments.

There are mid-trip room inspections scheduled for tomorrow. This gives us time to report or repair any deficiencies in the cabins before Norfolk.

We had one OBS come up to the surface a little slower than anticipated and it turned out to be a missing piece of that yellow flotation on the side of a SIO instrument.

There was a very impressive "no look" maneuver displayed by one of the senior OBSIC team recently. They used their years of practice and experience to finesse the OBS onto the A-frame hook. A marvel to witness.

We finished removing the batteries from the birds and made some repairs. A full detail of this in a separate email.

Located a padlock and clasp for PSO cabinet in A-deck storage area.

Daily Comment Summaries - Plan for Tomorrow

Thu 30 Nov

Recovery OBS's all day.

Cabin inspections.

Timing Diary (Marcus G Langseth, OBS\_Deployment)

Start	End	Category	Code	Duration (hrs)
00:00	13:31	<div></div> Recover	AC_SM_Re	13.517
Node operation Block:North Puerto Rico 2 Line:S01 Recovery Node operation Block:North Puerto Rico 2 Line:S02 Recovery Node operation Block:North Puerto Rico 2 Line:S03 Recovery Node operation Block:North Puerto Rico 2 Line:S04 Recovery Node operation Block:North Puerto Rico 2 Line:S05 Recovery Node operation Block:North Puerto Rico 2 Line:S06 Recovery Node operation Block:North Puerto Rico 2 Line:S07 Recovery Node operation Block:North Puerto Rico 2 Line:S08 Recovery Node operation Block:North Puerto Rico 2 Line:S09 Recovery Node operation Block:North Puerto Rico 2 Line:S10 Recovery Node operation Block:North Puerto Rico 2 Line:S10 Recovery Node operation Block:North Puerto Rico 2 Line:S11 Recovery Node operation Block:North Puerto Rico 2 Line:S12 Recovery We recovered OBS 6-12 today				
13:31	24:00	<div></div> Transit	AC_RDR_FF_TR	10.483



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Start	End	Category	Code	Duration (hrs)
Transit around the island to resumed OBS recoveries on North Central Line				

Timing Day By Day (Marcus G Langseth, OBS\_Deployment)

30-Nov	Hours	% Percent
Acquisition	24.000	100.000
Receiver Deployment/Recovery	10.483	43.681
Free Fall OBS	10.483	43.681
Transit	10.483	43.681
Swath Move	13.517	56.319
Recover	13.517	56.319
Day's Total	24.000	100.000

Timing Breakdown Summary - Project (Marcus G Langseth, Source Only, OBS\_Deployment)

Category	Hours	% Percent
DownTime	3.767	1.427
Equipment Handling	0.433	0.164
High Pressure	0.217	0.082
IT	0.500	0.189
Source	2.617	0.991
Array Air leak	2.617	0.991
Mobilisation	83.333	31.566
At Anchor	24.000	9.091
Deployment	22.350	8.466
Testing	5.350	2.027
Transit to Prospect	31.633	11.982
Chargeable Standby	2.500	0.947
Field Operations	2.500	0.947
Acquisition	174.400	66.061
Infill L/C	0.633	0.240
Prime	78.967	29.912
Prime L/C	0.833	0.316
Receiver Deployment/Recovery	67.517	25.574
Free Fall OBS	67.517	25.574
Transit	67.517	25.574
Swath Move	26.450	10.019
Recover	26.450	10.019
Total	264.000	

Basic Project Details

Source Only					
General Details					
Record length:	0 ms	Sample rate:	0 ms	Shotpoint interval:	400 m
Source Details					
No of Sources:	1	Total Volume:	6600 cu ins	Depth:	12
Pressure:	1950 PSI	Volume:	6600	Strings per source:	4
String Separation:	6 m	String length:	16 m		

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Production Totals (Accpt Main km)

OBS\_Deployment, Source Only

Accepted km	Day	Week	Month	Project
Prime	0.00	577.20	1142.80	1142.80
Combined	0.00	577.20	1142.80	1142.80

Production Listing (Accpt Main km) - Prime: Full Fold, Infill: Unknown

OBS\_Deployment, Source Only

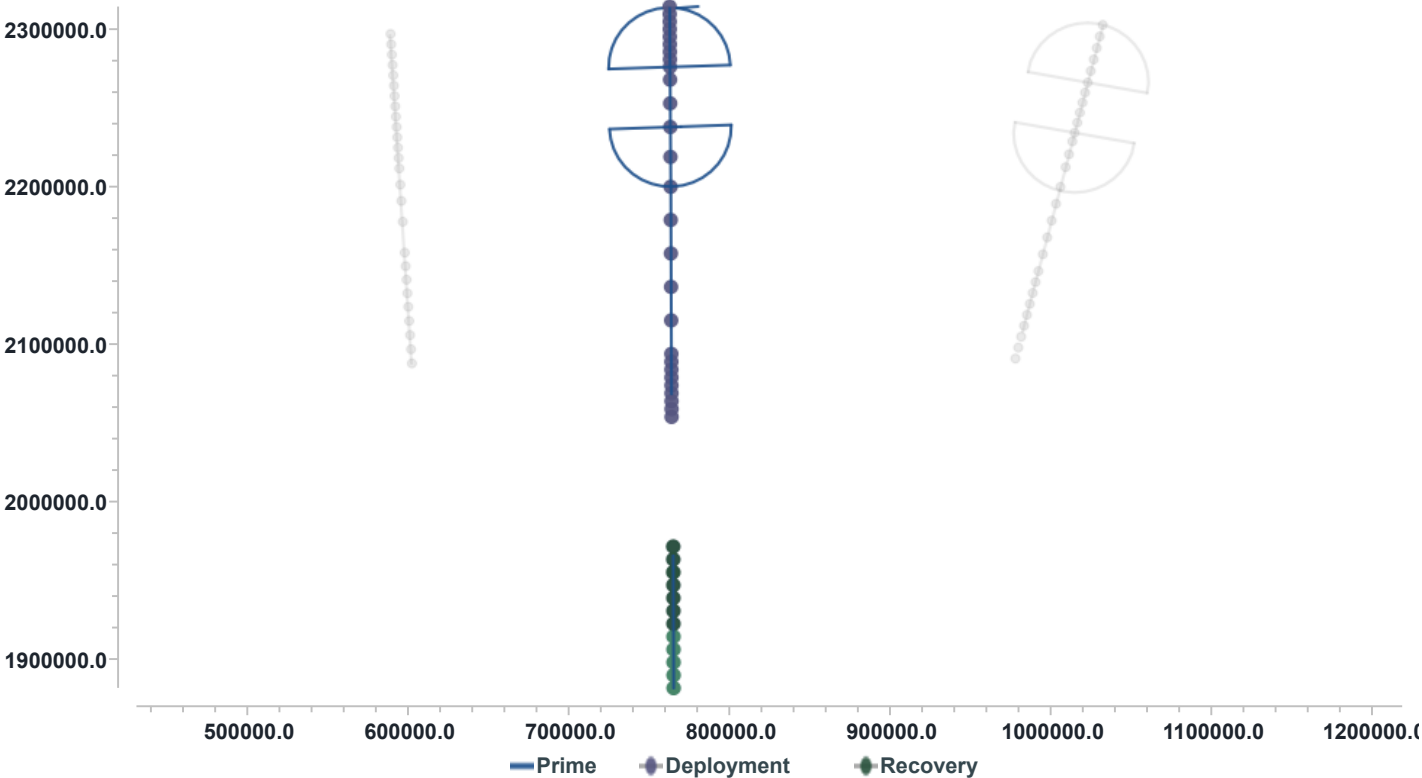
Seq	Line	FGSP	LGSP	Prod Type	Production	Ave Knots	Seq Status	Line Status
Total					0.00			

Production Totals (Accpt Main km)

OBS\_Deployment, Source Only

Accepted km	Day	Week	Month	Project
Prime	0.00	577.20	1142.80	1142.80
Combined	0.00	577.20	1142.80	1142.80

North Puerto Rico: Accpt  
11/20/2023 - 11/30/2023



Daily Comment Summaries - Daily Comments On Status of Equipment

Thu 30 Nov

Navigation:

No Major Issues to Report

Information Technology (IT):

No Major Issues to Report

OBS:

No Major Issues to Report

Towing and Handling (Source):

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No Major Issues to Report

**General Purpose Science:**  
No Major issues to Report.

Daily Comment Summaries - Personnel Onboard

Thu 30 Nov

Technical Staff On-board the Langseth

Todd Jensvold L-DEO OMO Chief Science Officer  
Brian Agee L-DEO OMO Chief Source Mechanic  
Gilles Guerin - L-DEO OMO Observer  
Aaron Martin.- Contract Navigator  
Mark Walker - Contract Source Mechanic  
Ray Hatton - Contract Source Mechanic  
Jacob Greenberg - Contract Source Mechanic  
Sean Seekins - Contract Source Mechanic  
Ian Davis- Contract Tech

PSO Staff On-board the Langseth

Amanda Dubuque - RPS Lead PSO  
Cassandra Frey - RPS PSO  
Elizabeth Breton - RPS PSO  
Tiffany Ramdoo - RPS PSO  
Maria Sandoval - RPS PSO

OBSIC Team

Arne Shwenk- GeoMar  
Lisa Sokolkova-GeoMar  
Hannah Brewer-WHOI  
Tim Kane-WHOI  
Gavin McCarthy-WHOI  
Andrew Farmer-USGS








Science Party On-board the Langseth

J. Pablo Canales - Lead PI WHOI  
Nick Harmon Co-PI WHOI  
Liam Moser WHOI

HSE Events Diary (Marcus G Langseth)

Start	End	Category	Code
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HSE Event Period Totals - Project (Marcus G Langseth)

Category	Code	Day (num)	Week (num)	Month (num)	Project (num)	Proj Hours	Man Hours
 Meetings	Mtgs	0	20	39	39	8.833	69.750
 Chiefs Meeting	Chfs	0	2	2	2	1.833	11.833
 Daily Ops Meeting	DOPs	0	2	9	9	6.000	27.917
 Full Safety Meeting	FS	0	1	1	1	1.000	30.000
 Toolbox Meetings	Tbox	0	15	27	27		
 Training	Trng	0	0	1	1	2.500	22.500
 Safety Induction Tours	SIT	0	0	1	1	2.500	22.500

12/1/2023

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<b>Client:</b>	Lamont-Doherty Earth Observatory	<b>Contractor:</b>	Lamont-Doherty Earth Observatory
<b>Job No:</b>	MGL2316	<b>Job No:</b>	MGL2316
<b>Block:</b>	North Puerto Rico	<b>Vessel:</b>	Marcus G Langseth
<b>Client Contact:</b>		<b>Supervisor:</b>	
<b>Consultancy:</b>		<b>Party Chiefs:</b>	Todd Jensvold
<b>Job No:</b>		<b>Client Reps:</b>	Dr. J. Pablo Canales

Daily Comment Summaries - Daily Summary

Fri 01 Dec

We recovered sixteen OBS's today, from instrument # 7 thru instrument # 22.

The mid-trip room inspections were completed today. Will follow up with a separate email.

The mechanics have been busy over the last few days. They have rebuilt several guns and spare clusters while they continue rebuilding solenoids. Tons of misc.

The weather picked up a little over the last day or so, but not enough to slowdown the operation.

We walked through the lab spaces today to audit them for usability in upcoming missions. Will follow up with a separate email.

It was a very productive day. Safe and deliberate. The entire OBSIC crew is doing a terrific job. All of them.

Aaron has all eight gun pods working on the deck at the moment.

Daily Comment Summaries - Plan for Tomorrow

Fri 01 Dec

We will continue recovering OBS's on the North Central Line.

Timing Diary (Marcus G Langseth, OBS\_Deployment)

Start	End	Category	Code	Duration (hrs)
00:00	04:38	Transit	AC_RDR_FF_TR	4.633
Transit around the island to resumed OBS recoveries on North Central Line				
04:38	24:00	Recover	AC_SM_Re	19.367
Node operation Block:North Puerto Rico 3 Line:S13 Recovery Node operation Block:North Puerto Rico 3 Line:S14 Recovery Node operation Block:North Puerto Rico 3 Line:S15 Recovery Node operation Block:North Puerto Rico 3 Line:S16 Recovery Node operation Block:North Puerto Rico 3 Line:S17 Recovery Node operation Block:North Puerto Rico 3 Line:S18 Recovery Node operation Block:North Puerto Rico 3 Line:S19 Recovery Node operation Block:North Puerto Rico 3 Line:S20 Recovery Node operation Block:North Puerto Rico 3 Line:S21 Recovery Node operation Block:North Puerto Rico 3 Line:S22 Recovery Node operation Block:North Puerto Rico 3 Line:S23 Recovery				

Timing Day By Day (Marcus G Langseth, OBS\_Deployment)

1-Dec	Hours	% Percent
Acquisition	24.000	100.000
Receiver Deployment/Recovery	4.633	19.306
Free Fall OBS	4.633	19.306
Transit	4.633	19.306
Swath Move	19.367	80.694
Recover	19.367	80.694

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1-Dec	Hours	% Percent
Day's Total	24.000	100.000

Timing Breakdown Summary - Project (Marcus G Langseth, Source Only, OBS\_Deployment)

Category	Hours	% Percent
<b>DownTime</b>	<b>3.767</b>	<b>1.308</b>
Equipment Handling	0.433	0.150
High Pressure	0.217	0.075
IT	0.500	0.174
Source	2.617	0.909
Array Air leak	2.617	0.909
<b>Mobilisation</b>	<b>83.333</b>	<b>28.935</b>
At Anchor	24.000	8.333
Deployment	22.350	7.760
Testing	5.350	1.858
Transit to Prospect	31.633	10.984
<b>Chargeable Standby</b>	<b>2.500</b>	<b>0.868</b>
Field Operations	2.500	0.868
<b>Acquisition</b>	<b>198.400</b>	<b>68.889</b>
Infill L/C	0.633	0.220
Prime	78.967	27.419
Prime L/C	0.833	0.289
Receiver Deployment/Recovery	72.150	25.052
Free Fall OBS	72.150	25.052
Transit	72.150	25.052
Swath Move	45.817	15.909
Recover	45.817	15.909
<b>Total</b>	<b>288.000</b>	

Basic Project Details

Source Only					
General Details					
Record length:	0 ms	Sample rate:	0 ms	Shotpoint interval:	400 m
Source Details					
No of Sources:	1	Total Volume:	6600 cu ins	Depth:	12
Pressure:	1950 PSI	Volume:	6600	Strings per source:	4
String Separation:	6 m	String length:	16 m		

Production Totals (Accpt Main km)

OBS\_Deployment, Source Only

Accepted km	Day	Week	Month	Project
Prime	0.00	577.20	0.00	1142.80
Combined	0.00	577.20	0.00	1142.80

Production Listing (Accpt Main km) - Prime: Full Fold, Infill: Unknown

OBS\_Deployment, Source Only

Seq	Line	FGSP	LGSP	Prod Type	Production	Ave Knots	Seq Status	Line Status
Total					0.00			

12/1/2023

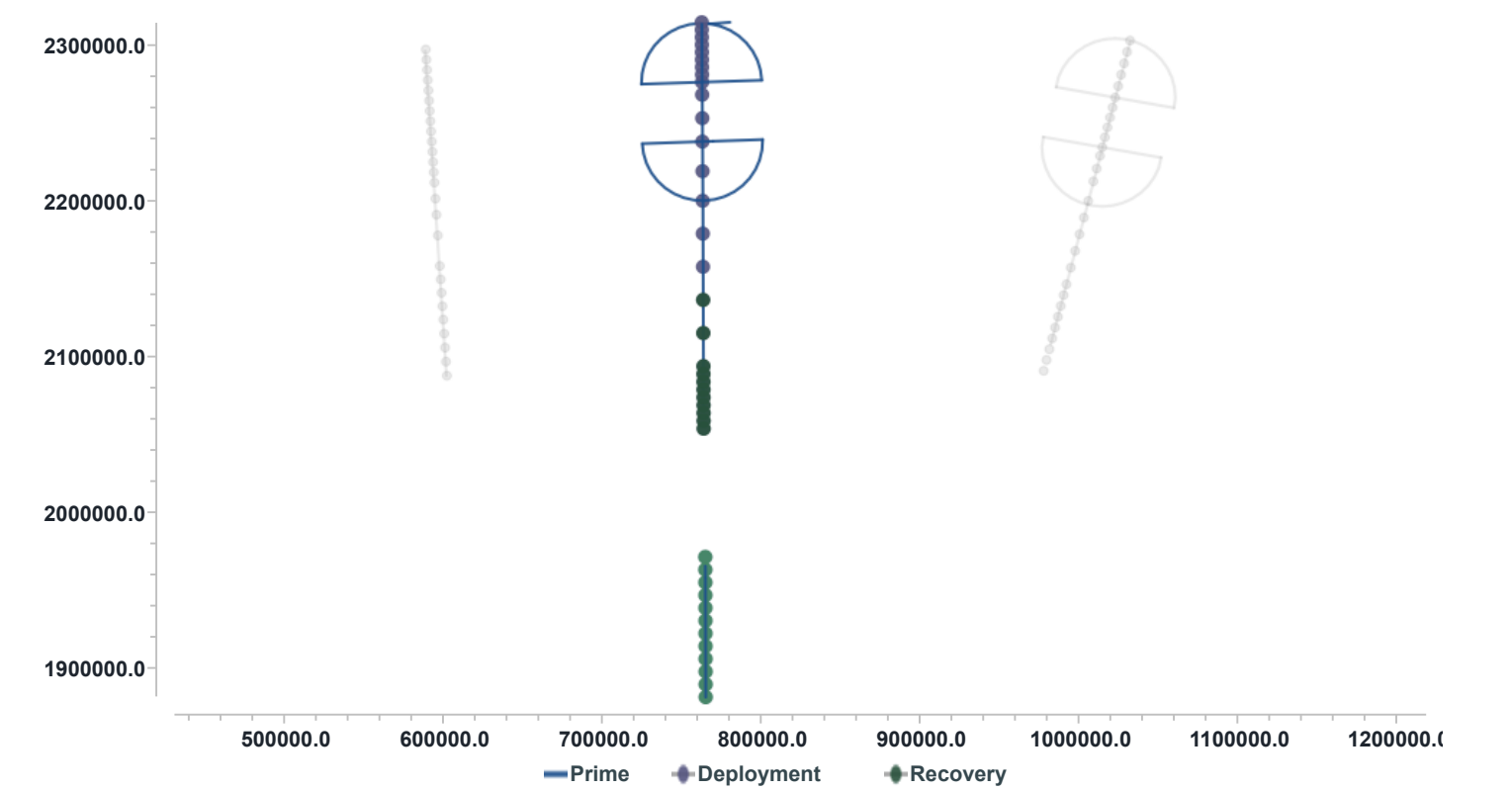
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Production Totals (Accpt Main km)

OBS\_Deployment, Source Only

Accepted km	Day	Week	Month	Project
Prime	0.00	577.20	0.00	1142.80
Combined	0.00	577.20	0.00	1142.80

North Puerto Rico: Accpt  
11/20/2023 - 12/1/2023



Daily Comment Summaries - Daily Comments On Status of Equipment

Fri 01 Dec

**Navigation:**  
All of the gun pods are working at the moment!

**Information Technology (IT):**  
No Major Issues to Report

**OBS:**  
No Major Issues to Report

**Towing and Handling (Source):**  
No Major Issues to Report

**General Purpose Science:**  
No Major issues to Report.

Daily Comment Summaries - Personnel Onboard

Fri 01 Dec

**Technical Staff On-board the Langseth**  
Todd Jensvold L-DEO OMO Chief Science Officer  
Brian Agee L-DEO OMO Chief Source Mechanic  
Gilles Guerin - L-DEO OMO Observer  
Aaron Martin.- Contract Navigator

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Mark Walker - Contract Source Mechanic  
Ray Hatton - Contract Source Mechanic  
Jacob Greenberg - Contract Source Mechanic  
Sean Seekins - Contract Source Mechanic  
Ian Davis- Contract Tech

PSO Staff On-board the Langseth

Amanda Dubuque - RPS Lead PSO  
Cassandra Frey - RPS PSO  
Elizabeth Breton - RPS PSO  
Tiffany Ramdoo - RPS PSO  
Maria Sandoval - RPS PSO

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Lisa Sokolkova-GeoMar  
Hannah Brewer-WHOI  
Tim Kane-WHOI  
Gavin McCarthy-WHOI  
Andrew Farmer-USGS

Science Party On-board the Langseth

J. Pablo Canales - Lead PI WHOI  
Nick Harmon Co-PI WHOI  
Liam Moser WHOI

HSE Events Diary (Marcus G Langseth)

Start	End	Category	Code
16:05	17:05	<div></div> Daily Ops Meeting	Mtgs_DOps
Daily Operation Meeting with PI, CSO, Captain, Nav, PSO			
Daily Total Category		Code	Count
<div></div> Toolbox Meetings		Mtgs_Tbox	3
Shiftchange toolbox meetings.			

HSE Event Period Totals - Project (Marcus G Langseth)

Category	Code	Day (num)	Week (num)	Month (num)	Project (num)	Proj Hours	Man Hours
<div></div> Meetings	Mtgs	4	25	4	44	10.833	69.750
<div></div> Chiefs Meeting	Chfs	0	2	0	2	1.833	11.833
<div></div> Daily Ops Meeting	DOps	1	4	1	11	8.000	27.917
<div></div> Full Safety Meeting	FS	0	1	0	1	1.000	30.000
<div></div> Toolbox Meetings	Tbox	3	18	3	30		
<div></div> Training	Trng	0	0	0	1	2.500	22.500
<div></div> Safety Induction Tours	SIT	0	0	0	1	2.500	22.500

12/2/2023

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Client:	Lamont-Doherty Earth Observatory	Contractor:	Lamont-Doherty Earth Observatory
Job No:	MGL2316	Job No:	MGL2316
Block:	North Puerto Rico	Vessel:	Marcus G Langseth
Client Contact:		Supervisor:	
Consultancy:		Party Chiefs:	Todd Jensvold
Job No:		Client Reps:	Dr. J. Pablo Canales

Daily Comment Summaries - Daily Summary

Sat 02 Dec

We recovered seven OBS's today. These were the very deep variety. All but one of these were the Geomar instruments. Positions 23 thru 30. (#29 was not deployed) We had a failure with the #23 instrument. The pressure tube was missing upon recovery and is being investigated. There was a total loss of data for this instrument. It was deployed in ~7600 meters of water. This unit will not be used again on this hitch.

We de-rigged most of the tailbuoy and head float today. We will complete the mast and AIS when the seas lay down a little. The seas have made things a little more challenging today. One of the OBS bumped the hull today during the a-frame recovery.

We are currently transiting top recover OBS #31. We anticipate having all of the OBS's onboard by ~7pm local time tomorrow. We will then begin an approximately ~14 hour transit to the starting point on the Eastern Line. This is the second line.

The PSO's have made great progress migrating some of their equipment and supplies to the A-deck storage cabinet.

Gun Link inventory, containing card positions, status, serial numbers etc. are updated

Found back D-batteries for OBS techs

Good steady progress.

Daily Comment Summaries - Plan for Tomorrow

Sat 02 Dec

Recover the rest of the OBS's on the North central line and begin transit to deploy them on the East line.

Timing Diary (Marcus G Langseth, OBS\_Deployment)

Start	End	Category	Code	Duration (hrs)
00:00	24:00	<div></div> Recover	AC_SM_Re	24.000
Node operation Block:North Puerto Rico 3 Line:S13 Recovery Node operation Block:North Puerto Rico 3 Line:S14 Recovery Node operation Block:North Puerto Rico 3 Line:S15 Recovery Node operation Block:North Puerto Rico 3 Line:S16 Recovery Node operation Block:North Puerto Rico 3 Line:S17 Recovery Node operation Block:North Puerto Rico 3 Line:S18 Recovery Node operation Block:North Puerto Rico 3 Line:S19 Recovery Node operation Block:North Puerto Rico 3 Line:S20 Recovery Node operation Block:North Puerto Rico 3 Line:S21 Recovery Node operation Block:North Puerto Rico 3 Line:S22 Recovery Node operation Block:North Puerto Rico 3 Line:S23 Recovery Node operation Block:North Puerto Rico 3 Line:S24 Recovery Node operation Block:North Puerto Rico 3 Line:S25 Recovery Node operation Block:North Puerto Rico 3 Line:S26 Recovery Node operation Block:North Puerto Rico 3 Line:S27 Recovery Node operation Block:North Puerto Rico 3 Line:S28 Recovery Node operation Block:North Puerto Rico 3 Line:S30 Recovery				

Timing Day By Day (Marcus G Langseth, OBS\_Deployment)



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2-Dec	Hours	% Percent
Acquisition	24.000	100.000
Swath Move	24.000	100.000
Recover	24.000	100.000
Day's Total	24.000	100.000

Timing Breakdown Summary - Project (Marcus G Langseth, Source Only, OBS\_Deployment)

Category	Hours	% Percent
DownTime	3.767	1.207
Equipment Handling	0.433	0.139
High Pressure	0.217	0.069
IT	0.500	0.160
Source	2.617	0.839
Array Air leak	2.617	0.839
Mobilisation	83.333	26.709
At Anchor	24.000	7.692
Deployment	22.350	7.163
Testing	5.350	1.715
Transit to Prospect	31.633	10.139
Chargeable Standby	2.500	0.801
Field Operations	2.500	0.801
Acquisition	222.400	71.282
Infill L/C	0.633	0.203
Prime	78.967	25.310
Prime L/C	0.833	0.267
Receiver Deployment/Recovery	72.150	23.125
Free Fall OBS	72.150	23.125
Transit	72.150	23.125
Swath Move	69.817	22.377
Recover	69.817	22.377
Total	312.000	

Basic Project Details

Source Only					
General Details					
Record length:	0 ms	Sample rate:	0 ms	Shotpoint interval:	400 m
Source Details					
No of Sources:	1	Total Volume:	6600 cu ins	Depth:	12
Pressure:	1950 PSI	Volume:	6600	Strings per source:	4
String Separation:	6 m	String length:	16 m		

Production Totals (Accpt Main km)

OBS\_Deployment, Source Only

Accepted km	Day	Week	Month	Project
Prime	0.00	577.20	0.00	1142.80
Combined	0.00	577.20	0.00	1142.80

12/2/2023

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Production Listing (Accpt Main km) - Prime: Full Fold, Infill: Unknown

OBS\_Deployment, Source Only

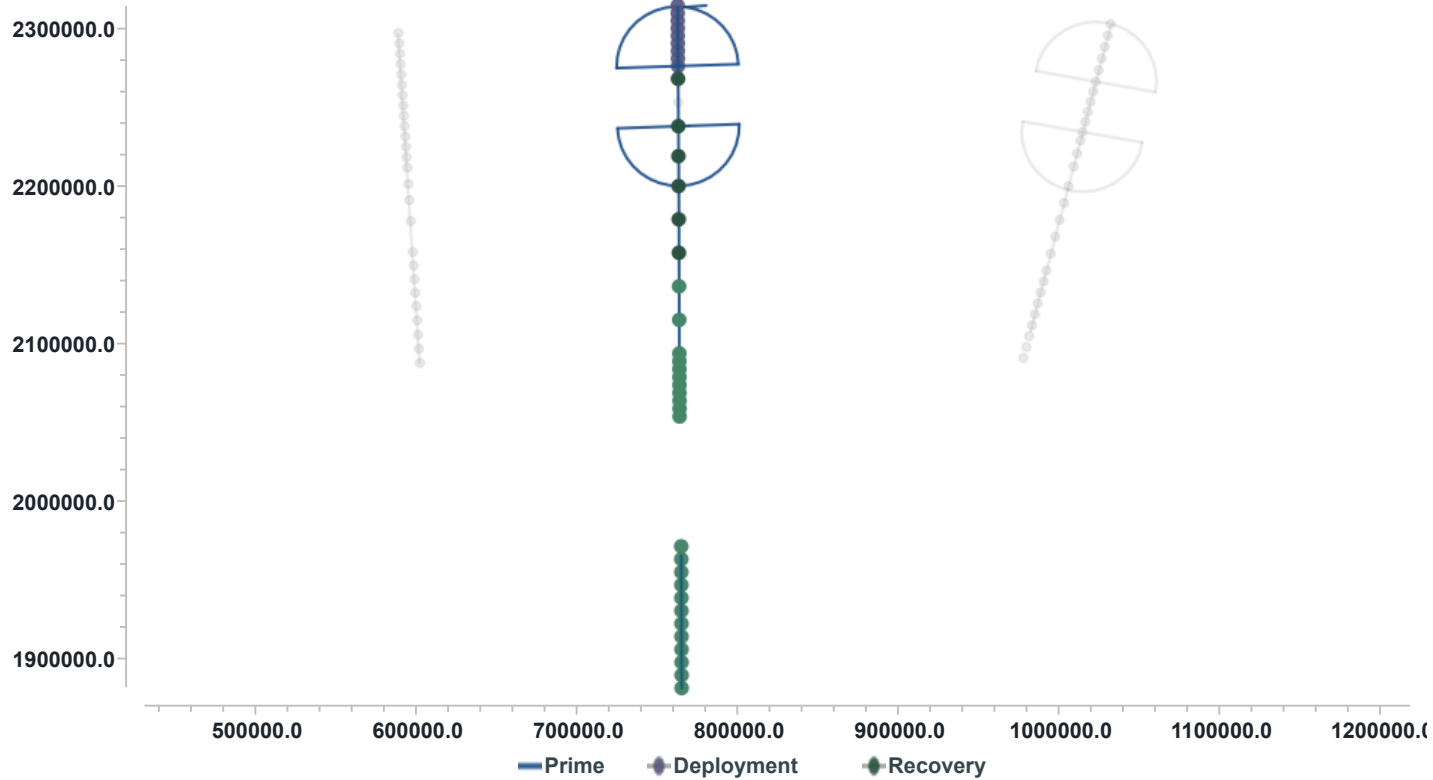
Seq	Line	FGSP	LGSP	Prod Type	Production	Ave Knots	Seq Status	Line Status
Total					0.00			

Production Totals (Accpt Main km)

OBS\_Deployment, Source Only

Accepted km	Day	Week	Month	Project
Prime	0.00	577.20	0.00	1142.80
Combined	0.00	577.20	0.00	1142.80

North Puerto Rico: Accpt  
11/20/2023 - 12/2/2023



Daily Comment Summaries - Daily Comments On Status of Equipment

Sat 02 Dec

Navigation:

No Major Issues to Report

Information Technology (IT):

No Major Issues to Report

OBS:

One OBS instrument was recovered from 7600 meters damaged.

Towing and Handling (Source):

No Major Issues to Report

General Purpose Science:

No Major issues to Report.

Daily Comment Summaries - Personnel Onboard

Sat 02 Dec

Technical Staff On-board the Langseth

Todd Jensvold L-DEO OMO Chief Science Officer  
Brian Agee L-DEO OMO Chief Source Mechanic  
Gilles Guerin - L-DEO OMO Observer  
Aaron Martin.- Contract Navigator  
Mark Walker - Contract Source Mechanic  
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Lisa Sokolkova-GeoMar  
Hannah Brewer-WHOI  
Tim Kane-WHOI  
Gavin McCarthy-WHOI  
Andrew Farmer-USGS

Science Party On-board the Langseth

J. Pablo Canales - Lead PI WHOI  
Nick Harmon Co-PI WHOI  
Liam Moser WHOI



HSE Events Diary (Marcus G Langseth)

Start	End	Category	Code
16:05	16:35	<div></div> Daily Ops Meeting	Mtgs_DOps
Daily Operation Meeting with PI, CSO, Captain, Nav, PSO			

Daily Total Category	Code	Count
<div></div> Toolbox Meetings	Mtgs_Tbox	4
Shift change toolbox meetings		
OBS recovery toolbox to discuss recovering damaged OBS's		
TB demob toolbox meeting		

HSE Event Period Totals - Project (Marcus G Langseth)

Category	Code	Day (num)	Week (num)	Month (num)	Project (num)	Proj Hours	Man Hours
<div></div> Meetings	Mtgs	5	30	9	49	11.333	69.750
<div></div> Chiefs Meeting	Chfs	0	2	0	2	1.833	11.833
<div></div> Daily Ops Meeting	DOps	1	5	2	12	8.500	27.917
<div></div> Full Safety Meeting	FS	0	1	0	1	1.000	30.000
<div></div> Toolbox Meetings	Tbox	4	22	7	34		

Category	Code	Day (num)	Week (num)	Month (num)	Project (num)	Proj Hours	Man Hours
 Training	Trng	0	0	0	1	2.500	22.500
 Safety Induction Tours	SIT	0	0	0	1	2.500	22.500

12/3/2023

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**Client:** Lamont-Doherty Earth Observatory  
**Job No:** MGL2316  
**Block:** North Puerto Rico  
**Client Contact:**  
**Consultancy:**  
**Job No:**

**Contractor:** Lamont-Doherty Earth Observatory  
**Job No:** MGL2316  
**Vessel:** Marcus G Langseth  
**Supervisor:**  
**Party Chiefs:** Todd Jensvold  
**Client Reps:** Dr. J. Pablo Canales

Daily Comment Summaries - Daily Summary

Sun 03 Dec

We completed recovering the OBS on the North Central Line. We are currently transiting to re-deploy the instruments on the East Line.

The last OBS was recovered at 21:11 GMT. We will begin deploying around ~7am tomorrow morning. We will deploy 28 OBS's onto the next line and should be done around 7AM on Tuesday morning, roughly 24 hours. Then we will deploy the guns and start shooting.

We will need to get a firm strategy ahead of us soon in order to start planning several possible scenarios for maximum efficiency and the best possible data set for the time remaining.

There was a lot of work done on the gear over the day in preparation of the next phase.

Good weather and good progress.



Daily Comment Summaries - Plan for Tomorrow

Sun 03 Dec

Transit top East Line and deploy OBS's all day.

Timing Diary (Marcus G Langseth, OBS\_Deployment)



Start	End	Category	Code	Duration (hrs)
00:00	21:11	 Recover	AC_SM_Re	21.183
Node operation Block:North Puerto Rico 3 Line:S13 Recovery Node operation Block:North Puerto Rico 3 Line:S14 Recovery Node operation Block:North Puerto Rico 3 Line:S15 Recovery Node operation Block:North Puerto Rico 3 Line:S16 Recovery Node operation Block:North Puerto Rico 3 Line:S17 Recovery Node operation Block:North Puerto Rico 3 Line:S18 Recovery Node operation Block:North Puerto Rico 3 Line:S19 Recovery Node operation Block:North Puerto Rico 3 Line:S20 Recovery Node operation Block:North Puerto Rico 3 Line:S21 Recovery Node operation Block:North Puerto Rico 3 Line:S22 Recovery Node operation Block:North Puerto Rico 3 Line:S23 Recovery Node operation Block:North Puerto Rico 3 Line:S24 Recovery Node operation Block:North Puerto Rico 3 Line:S25 Recovery Node operation Block:North Puerto Rico 3 Line:S26 Recovery Node operation Block:North Puerto Rico 3 Line:S27 Recovery Node operation Block:North Puerto Rico 3 Line:S28 Recovery Node operation Block:North Puerto Rico 3 Line:S30 Recovery Node operation Block:North Puerto Rico 3 Line:S31 Recovery Node operation Block:North Puerto Rico 3 Line:S32 Recovery Node operation Block:North Puerto Rico 3 Line:S33 Recovery Node operation Block:North Puerto Rico 3 Line:S34 Recovery Node operation Block:North Puerto Rico 3 Line:S35 Recovery Node operation Block:North Puerto Rico 3 Line:S36 Recovery Node operation Block:North Puerto Rico 3 Line:S37 Recovery Node operation Block:North Puerto Rico 3 Line:S38 Recovery Node operation Block:North Puerto Rico 3 Line:S39 Recovery				
21:11	24:00	 Transit	AC_RDR_FF_TR	2.817

Start	End	Category	Code	Duration (hrs)
Transit to East line to deploy OBS from N to S				

Timing Day By Day (Marcus G Langseth, OBS\_Deployment)

3-Dec	Hours	% Percent
Acquisition	24.000	100.000
Receiver Deployment/Recovery	2.817	11.736
Free Fall OBS	2.817	11.736
Transit	2.817	11.736
Swath Move	21.183	88.264
Recover	21.183	88.264
Day's Total	24.000	100.000

Timing Breakdown Summary - Project (Marcus G Langseth, Source Only, OBS\_Deployment)

Category	Hours	% Percent
DownTime	3.767	1.121
Equipment Handling	0.433	0.129
High Pressure	0.217	0.064
IT	0.500	0.149
Source	2.617	0.779
Array Air leak	2.617	0.779
Mobilisation	83.333	24.802
At Anchor	24.000	7.143
Deployment	22.350	6.652
Testing	5.350	1.592
Transit to Prospect	31.633	9.415
Chargeable Standby	2.500	0.744
Field Operations	2.500	0.744
Acquisition	246.400	73.333
Infill L/C	0.633	0.188
Prime	78.967	23.502
Prime L/C	0.833	0.248
Receiver Deployment/Recovery	74.967	22.312
Free Fall OBS	74.967	22.312
Transit	74.967	22.312
Swath Move	91.000	27.083
Recover	91.000	27.083
Total	336.000	

Basic Project Details

Source Only					
General Details					
Record length:	0 ms	Sample rate:	0 ms	Shotpoint interval:	400 m
Source Details					
No of Sources:	1	Total Volume:	6600 cu ins	Depth:	12
Pressure:	1950 PSI	Volume:	6600	Strings per source:	4
String Separation:	6 m	String length:	16 m		

12/3/2023

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Production Totals (Accpt Main km)

OBS\_Deployment, Source Only

Accepted km	Day	Week	Month	Project
Prime	0.00	577.20	0.00	1142.80
Combined	0.00	577.20	0.00	1142.80

Production Listing (Accpt Main km) - Prime: Full Fold, Infill: Unknown

OBS\_Deployment, Source Only

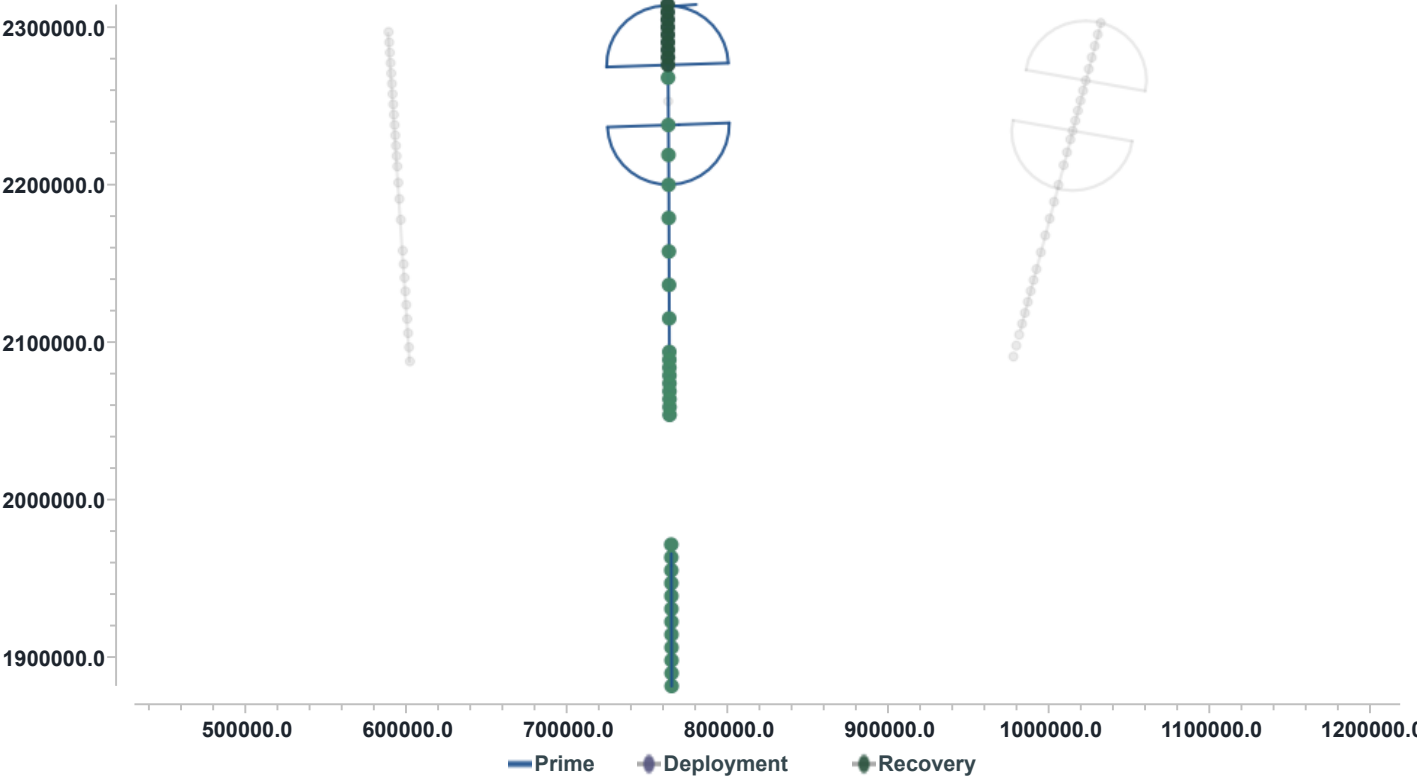
Seq	Line	FGSP	LGSP	Prod Type	Production	Ave Knots	Seq Status	Line Status
Total					0.00			

Production Totals (Accpt Main km)

OBS\_Deployment, Source Only

Accepted km	Day	Week	Month	Project
Prime	0.00	577.20	0.00	1142.80
Combined	0.00	577.20	0.00	1142.80

North Puerto Rico: Accpt  
11/20/2023 - 12/3/2023



Daily Comment Summaries - Daily Comments On Status of Equipment

Sun 03 Dec

Navigation:

Tidied pods

Information Technology (IT):

No Major Issues to Report

OBS:

Repaired several birds

Towing and Handling (Source):

12/3/2023

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Replaced and repaired bands on gun floats and repaired several low pressure floats.

Moved TB and demob.

General Purpose Science:  
No Major issues to Report.

Daily Comment Summaries - Personnel Onboard

Sun 03 Dec

Technical Staff On-board the Langseth  
Todd Jensvold L-DEO OMO Chief Science Officer  
Brian Agee L-DEO OMO Chief Source Mechanic  
Gilles Guerin - L-DEO OMO Observer  
Aaron Martin.- Contract Navigator  
Mark Walker - Contract Source Mechanic  
Ray Hatton - Contract Source Mechanic  
Jacob Greenberg - Contract Source Mechanic  
Sean Seekins - Contract Source Mechanic  
Ian Davis- Contract Tech

PSO Staff On-board the Langseth  
Amanda Dubuque - RPS Lead PSO  
Cassandra Frey - RPS PSO  
Elizabeth Breton - RPS PSO  
Tiffany Ramdoo - RPS PSO  
Maria Sandoval - RPS PSO

OBSIC Team  
Arne Shwenk- GeoMar  
Lisa Sokolkova-GeoMar  
Hannah Brewer-WHOI  
Tim Kane-WHOI  
Gavin McCarthy-WHOI  
Andrew Farmer-USGS

Science Party On-board the Langseth  
J. Pablo Canales - Lead PI WHOI  
Nick Harmon Co-PI WHOI  
Liam Moser WHOI

HSE Events Diary (Marcus G Langseth)







Start	End	Category	Code
16:15	17:15	Daily Ops Meeting	Mtgs_DOps
Daily Operation Meeting with PI, CSO, Captain, Nav, PSO			

Daily Total Category	Code	Count
Toolbox Meetings	Mtgs_Tbox	5
Toolbox to discuss moving/demobing the TB Shiftchange toolbox meetings. Toolbox meeting to discuss the PC02 airline routes.		

HSE Event Period Totals - Project (Marcus G Langseth)

Category	Code	Day (num)	Week (num)	Month (num)	Project (num)	Proj Hours	Man Hours
Meetings	Mtgs	6	36	15	55	12.333	69.750



Category	Code	Day (num)	Week (num)	Month (num)	Project (num)	Proj Hours	Man Hours
 Chiefs Meeting	Chfs	0	2	0	2	1.833	11.833
 Daily Ops Meeting	DOps	1	6	3	13	9.500	27.917
 Full Safety Meeting	FS	0	1	0	1	1.000	30.000
 Toolbox Meetings	Tbox	5	27	12	39		
 Training	Trng	0	0	0	1	2.500	22.500
 Safety Induction Tours	SIT	0	0	0	1	2.500	22.500

12/4/2023

Page 1

<b>Client:</b>	Lamont-Doherty Earth Observatory	<b>Contractor:</b>	Lamont-Doherty Earth Observatory
<b>Job No:</b>	MGL2316	<b>Job No:</b>	MGL2316
<b>Block:</b>	North Puerto Rico	<b>Vessel:</b>	Marcus G Langseth
<b>Client Contact:</b>		<b>Supervisor:</b>	
<b>Consultancy:</b>		<b>Party Chiefs:</b>	Todd Jensvold
<b>Job No:</b>		<b>Client Reps:</b>	Dr. J. Pablo Canales

Daily Comment Summaries - Daily Summary

Mon 04 Dec

We finished our transit to the East Line and began deploying OBS instruments at ~8:30 local time this morning. We have fifteen of these deployed by the time of this log. There are ten more to go. The final OBS should be deployed around ~10AM local tomorrow. The OBSIC crew and Mech team are operating together like a finely oiled machine. We will immediately begin deploying the guns and towed gear to get into position to start shooting when the last OBS is deployed.

We have modified our acquisition strategy to maximize the data set and take advantage of the time we have remaining. The two fan shapes on this source line have been redesigned slightly to form a single racetrack or oval rather than two separate designs. This should save ~9-10 hours of shooting and retain the original objectives of these fans. We have also adjusted the OBS deployment locations and the number of units. We eliminated the southern three positions on this line.

There has been a shift away from doing the most westerly line, so that we can re-deploy the ultra deepwater OBS's on the North Central Line where there were some deficiencies in the coverage due to various reasons on the first deployments. The current plan is to deploy ~a dozen instruments across the trench. This will include all seven of the Geomar instruments and another four or five SIO and/or WHOI units depending on the amount of time we have left. We will make any needed adjustments to this plan "on the fly" as the crystal ball becomes clearer and the actual times are revealed.

We have adjusted our end of survey time so that we will arrive into port in San Juan early on the morning of the 15th in order to reach these objectives.

We had one OBS (D2 model) where the sensor had deployed prematurely today but was quickly recovered by the seasoned veterans. The loss of time was negligible because of their cat like reflexes.

We are putting together a hazardous waste shipment for the upcoming port call in Norfolk.

There were several organizational meetings today to discuss both ongoing and upcoming operations.

Daily Comment Summaries - Plan for Tomorrow

Mon 04 Dec

Deploy the rest of the OBS instruments onto the East Line and begin shooting.

Timing Diary (Marcus G Langseth, OBS\_Deployment)

Start	End	Category	Code	Duration (hrs)
00:00	11:31	Transit	AC_RDR_FF_TR	11.517
Transit to East line to deploy OBS from N to S				
11:31	24:00	Deploy	AC_SM_De	12.483
Node operation Block:North Puerto Rico 4 Line:S93 Deployment Node operation Block:North Puerto Rico 4 Line:S92 Deployment Node operation Block:North Puerto Rico 4 Line:S91 Deployment Node operation Block:North Puerto Rico 4 Line:S90 Deployment Node operation Block:North Puerto Rico 4 Line:S89 Deployment Node operation Block:North Puerto Rico 4 Line:S88 Deployment Node operation Block:North Puerto Rico 4 Line:S87 Deployment Node operation Block:North Puerto Rico 4 Line:S86 Deployment Node operation Block:North Puerto Rico 4 Line:S85 Deployment Node operation Block:North Puerto Rico 4 Line:S84 Deployment Node operation Block:North Puerto Rico 4 Line:S83 Deployment				

Start	End	Category	Code	Duration (hrs)
Node operation Block:North Puerto Rico 4 Line:S82 Deployment				
Node operation Block:North Puerto Rico 4 Line:S81 Deployment				
Node operation Block:North Puerto Rico 4 Line:S80 Deployment				

Timing Day By Day (Marcus G Langseth, OBS\_Deployment)

4-Dec	Hours	% Percent
Acquisition	24.000	100.000
Receiver Deployment/Recovery	11.517	47.986
Free Fall OBS	11.517	47.986
Transit	11.517	47.986
Swath Move	12.483	52.014
Deploy	12.483	52.014
Day's Total	24.000	100.000

Timing Breakdown Summary - Project (Marcus G Langseth, Source Only, OBS\_Deployment)

Category	Hours	% Percent
DownTime	3.767	1.046
Equipment Handling	0.433	0.120
High Pressure	0.217	0.060
IT	0.500	0.139
Source	2.617	0.727
Array Air leak	2.617	0.727
Mobilisation	83.333	23.148
At Anchor	24.000	6.667
Deployment	22.350	6.208
Testing	5.350	1.486
Transit to Prospect	31.633	8.787
Acquisition	270.400	75.111
Infill L/C	0.633	0.176
Prime	78.967	21.935
Prime L/C	0.833	0.231
Receiver Deployment/Recovery	86.483	24.023
Free Fall OBS	86.483	24.023
Transit	86.483	24.023
Swath Move	103.483	28.745
Deploy	12.483	3.468
Recover	91.000	25.278
Chargeable Standby	2.500	0.694
Field Operations	2.500	0.694
Total	360.000	

Basic Project Details

Source Only					
General Details					
Record length:	0 ms	Sample rate:	0 ms	Shotpoint interval:	400 m
Source Details					

Source Only					
No of Sources:	1	Total Volume:	6600 cu ins	Depth:	12
Pressure:	1950 PSI	Volume:	6600	Strings per source:	4
String Separation:	6 m	String length:	16 m		

Production Totals (Accpt Main km)

OBS\_Deployment, Source Only

Accepted km	Day	Week	Month	Project
Prime	0.00	0.00	0.00	1142.80
Combined	0.00	0.00	0.00	1142.80

Production Listing (Accpt Main km) - Prime: Full Fold, Infill: Unknown

OBS\_Deployment, Source Only

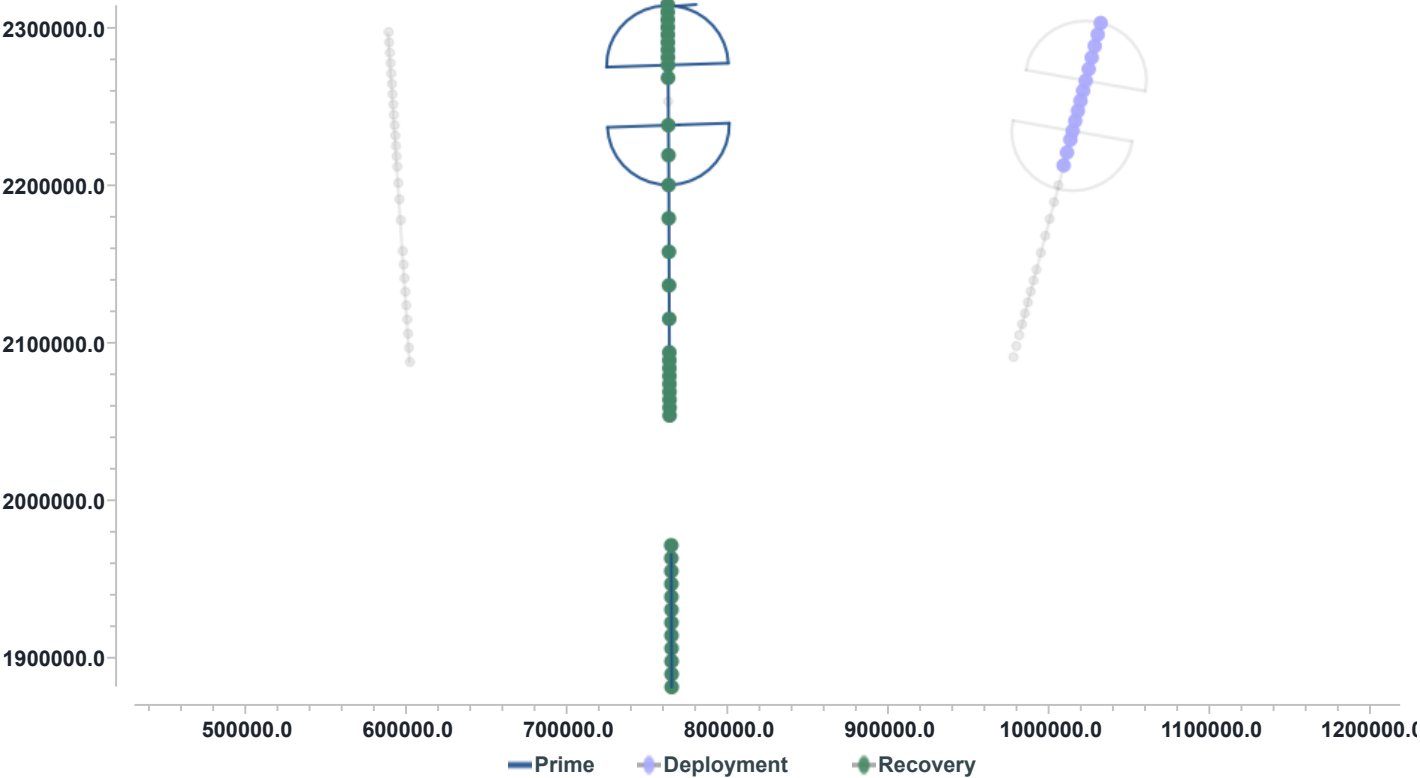
Seq	Line	FGSP	LGSP	Prod Type	Production	Ave Knots	Seq Status	Line Status
Total					0.00			

Production Totals (Accpt Main km)

OBS\_Deployment, Source Only

Accepted km	Day	Week	Month	Project
Prime	0.00	0.00	0.00	1142.80
Combined	0.00	0.00	0.00	1142.80

North Puerto Rico: Accpt  
11/20/2023 - 12/4/2023



Daily Comment Summaries - Daily Comments On Status of Equipment

Mon 04 Dec

Navigation:

No Major Issues to Report

12/4/2023

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**Information Technology (IT):**  
No Major Issues to Report

**OBS:**  
No Major Issues to Report

**Towing and Handling (Source):**  
No Major Issues to Report

**General Purpose Science:**  
No Major issues to Report.

Daily Comment Summaries - Personnel Onboard

Mon 04 Dec

Technical Staff On-board the Langseth

Todd Jensvold L-DEO OMO Chief Science Officer  
Brian Agee L-DEO OMO Chief Source Mechanic  
Gilles Guerin - L-DEO OMO Observer  
Aaron Martin.- Contract Navigator  
Mark Walker - Contract Source Mechanic  
Ray Hatton - Contract Source Mechanic  
Jacob Greenberg - Contract Source Mechanic  
Sean Seekins - Contract Source Mechanic  
Ian Davis- Contract Tech

PSO Staff On-board the Langseth

Amanda Dubuque - RPS Lead PSO  
Cassandra Frey - RPS PSO  
Elizabeth Breton - RPS PSO  
Tiffany Ramdoo - RPS PSO  
Maria Sandoval - RPS PSO

OBSIC Team

Arne Shwenk- GeoMar  
Lisa Sokolkova-GeoMar  
Hannah Brewer-WHOI  
Tim Kane-WHOI  
Gavin McCarthy-WHOI  
Andrew Farmer-USGS

Science Party On-board the Langseth








J. Pablo Canales - Lead PI WHOI  
Nick Harmon Co-PI WHOI  
Liam Moser WHOI

HSE Events Diary (Marcus G Langseth)

Start	End	Category	Code
16:00	16:30	<div></div> Daily Ops Meeting	Mtgs_DOps
Daily Operation Meeting with PI, CSO, Captain, Nav, PSO			

Daily Total Category	Code	Count
<div></div> Toolbox Meetings	Mtgs_Tbox	5
Shiftchange toolbox meetings. Toolbox to discuss recovering a descending OBS. Toolbox meeting to discuss water and air requirements for several lab spaces.		

HSE Event Period Totals - Project (Marcus G Langseth)

Category	Code	Day (num)	Week (num)	Month (num)	Project (num)	Proj Hours	Man Hours
 Meetings	Mtgs	6	6	21	61	12.833	72.250
 Chiefs Meeting	Chfs	0	0	0	2	1.833	11.833
 Daily Ops Meeting	DOps	1	1	4	14	10.000	30.417
 Full Safety Meeting	FS	0	0	0	1	1.000	30.000
 Toolbox Meetings	Tbox	5	5	17	44		
 Training	Trng	0	0	0	1	2.500	22.500
 Safety Induction Tours	SIT	0	0	0	1	2.500	22.500

12/5/2023

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Client:	Lamont-Doherty Earth Observatory	Contractor:	Lamont-Doherty Earth Observatory
Job No:	MGL2316	Job No:	MGL2316
Block:	North Puerto Rico	Vessel:	Marcus G Langseth
Client Contact:		Supervisor:	
Consultancy:		Party Chiefs:	Todd Jensvold
Job No:		Client Reps:	Dr. J. Pablo Canales

Daily Comment Summaries - Daily Summary

Tue 05 Dec

We finished deploying the OBS instruments at ~5:30AM local time. The guns, PAM and Maggie were deployed by ~9:30AM

After we ramped up and made a short transit and started the source line shooting south to north. SOL was 11:30 local with a full 6600 cubic inches of gun volume and it remains full at the time of this log. Seven out of eight GPS pods are working.

We are currently shooting the Eastern line MGL2316010EP1. We will complete this line around 11AM tomorrow morning and will transition into the fan lines almost immediately. These fan lines will take another 36 hours.

The Weekly Tech Meeting was held today. A sense of urgency has joined the team in several areas.

There was a slight delay during the source deployment due to an airleak on the SSE gun on gunstring #3

Steady progress.

Daily Comment Summaries - Plan for Tomorrow











Tue 05 Dec

We will complete this line around 11AM tomorrow morning and will transition into the fan lines almost immediately. These fan lines will take another 36 hours.

Timing Diary (Marcus G Langseth, Source Only, OBS\_Deployment)



Start	End	Category	Code	Duration (hrs)
00:00	09:32	Deploy	AC_SM_De	9.533
Node operation Block:North Puerto Rico 4 Line:S93 Deployment Node operation Block:North Puerto Rico 4 Line:S92 Deployment Node operation Block:North Puerto Rico 4 Line:S91 Deployment Node operation Block:North Puerto Rico 4 Line:S90 Deployment Node operation Block:North Puerto Rico 4 Line:S89 Deployment Node operation Block:North Puerto Rico 4 Line:S88 Deployment Node operation Block:North Puerto Rico 4 Line:S87 Deployment Node operation Block:North Puerto Rico 4 Line:S86 Deployment Node operation Block:North Puerto Rico 4 Line:S85 Deployment Node operation Block:North Puerto Rico 4 Line:S84 Deployment Node operation Block:North Puerto Rico 4 Line:S83 Deployment Node operation Block:North Puerto Rico 4 Line:S82 Deployment Node operation Block:North Puerto Rico 4 Line:S81 Deployment Node operation Block:North Puerto Rico 4 Line:S80 Deployment Node operation Block:North Puerto Rico 4 Line:S79 Deployment Node operation Block:North Puerto Rico 4 Line:S78 Deployment Node operation Block:North Puerto Rico 4 Line:S77 Deployment Node operation Block:North Puerto Rico 4 Line:S76 Deployment Node operation Block:North Puerto Rico 4 Line:S75 Deployment Node operation Block:North Puerto Rico 4 Line:S74 Deployment Node operation Block:North Puerto Rico 4 Line:S73 Deployment Node operation Block:North Puerto Rico 4 Line:S72 Deployment Node operation Block:North Puerto Rico 4 Line:S71 Deployment Node operation Block:North Puerto Rico 4 Line:S70 Deployment				

Start	End	Category	Code	Duration (hrs)
Node operation Block:North Puerto Rico 4 Line:S69 Deployment				
09:32	10:18	 Transit	AC_RDR_FF_TR	0.767
Deploying PAM and Magnetometer				
10:18	11:02	 Transit	AC_RDR_FF_TR	0.733
Deploy gunstring 1				
11:02	11:51	 Array Air leak	DT_SC_AAL	0.817
Replacing gun on string 2				
11:51	12:18	 Transit	AC_RDR_FF_TR	0.450
Deploying gunstring 2				
12:18	12:59	 Transit	AC_RDR_FF_TR	0.683
Deploying gun string 4				
12:59	13:25	 Array Air leak	DT_SC_AAL	0.433
Fixing air leak on string 3				
13:25	13:51	 Transit	AC_RDR_FF_TR	0.433
Deploying gun string 3				
13:51	14:20	 Transit	AC_RDR_FF_TR	0.483
Source Ramp Up				
14:20	15:34	 Transit	AC_RDR_FF_TR	1.233
Transit to SOL				
15:34	24:00	 Prime	AC_PP	8.433
Seq: 10 SOL Seq 10 Line:East Block:North Puerto Rico FGSP:993 FCSP:993 Hdg:14.3° Prime MSP Seq 10 Line:East Block:North Puerto Rico LGSP:1250 LCSP:1250 Midnight				

Timing Day By Day (Marcus G Langseth, Source Only, OBS\_Deployment)

5-Dec	Hours	% Percent
Acquisition	22.750	94.792
Prime	8.433	35.139
Receiver Deployment/Recovery	4.783	19.931
Free Fall OBS	4.783	19.931
Transit	4.783	19.931
Swath Move	9.533	39.722
Deploy	9.533	39.722
DownTime	1.250	5.208
Source	1.250	5.208
Array Air leak	1.250	5.208
Day's Total	24.000	100.000

Timing Breakdown Summary - Project (Marcus G Langseth, Source Only, OBS\_Deployment)

Category	Hours	% Percent
DownTime	5.017	1.306
Equipment Handling	0.433	0.113
High Pressure	0.217	0.056



Category	Hours	% Percent
IT	0.500	0.130
Source	3.867	1.007
Array Air leak	3.867	1.007
Mobilisation	55.633	14.488
At Anchor	24.000	6.250
Transit to Prospect	31.633	8.238
Acquisition	318.183	82.860
Infill L/C	0.633	0.165
Prime	87.400	22.760
Prime L/C	0.833	0.217
Receiver Deployment/Recovery	116.300	30.286
Free Fall OBS	116.300	30.286
Receiver deployment	19.500	5.078
Transit	96.800	25.208
Swath Move	113.017	29.431
Deploy	22.017	5.734
Recover	91.000	23.698
Chargeable Standby	5.167	1.345
Field Operations	2.500	0.651
Tests	2.667	0.694
Total	384.000	

Basic Project Details

Source Only					
General Details					
Record length:	0 ms	Sample rate:	0 ms	Shotpoint interval:	400 m
Source Details					
No of Sources:	1	Total Volume:	6600 cu ins	Depth:	12
Pressure:	1950 PSI	Volume:	6600	Strings per source:	4
String Separation:	6 m	String length:	16 m		

Production Totals (Accpt Main km)

OBS\_Deployment, Source Only

Accepted km	Day	Week	Month	Project
Prime	100.00	100.00	100.00	1242.80
Combined	100.00	100.00	100.00	1242.80

Production Listing (Accpt Main km)

OBS\_Deployment, Source Only

Seq	Line	Heading	FGSP	LGSP	Prod Type	Production	Ave Knots	Seq Status	Line Status
10	East	14.3	1001	1250	Prime	100.00	6.377	Midnight	Part
Total						100.00			

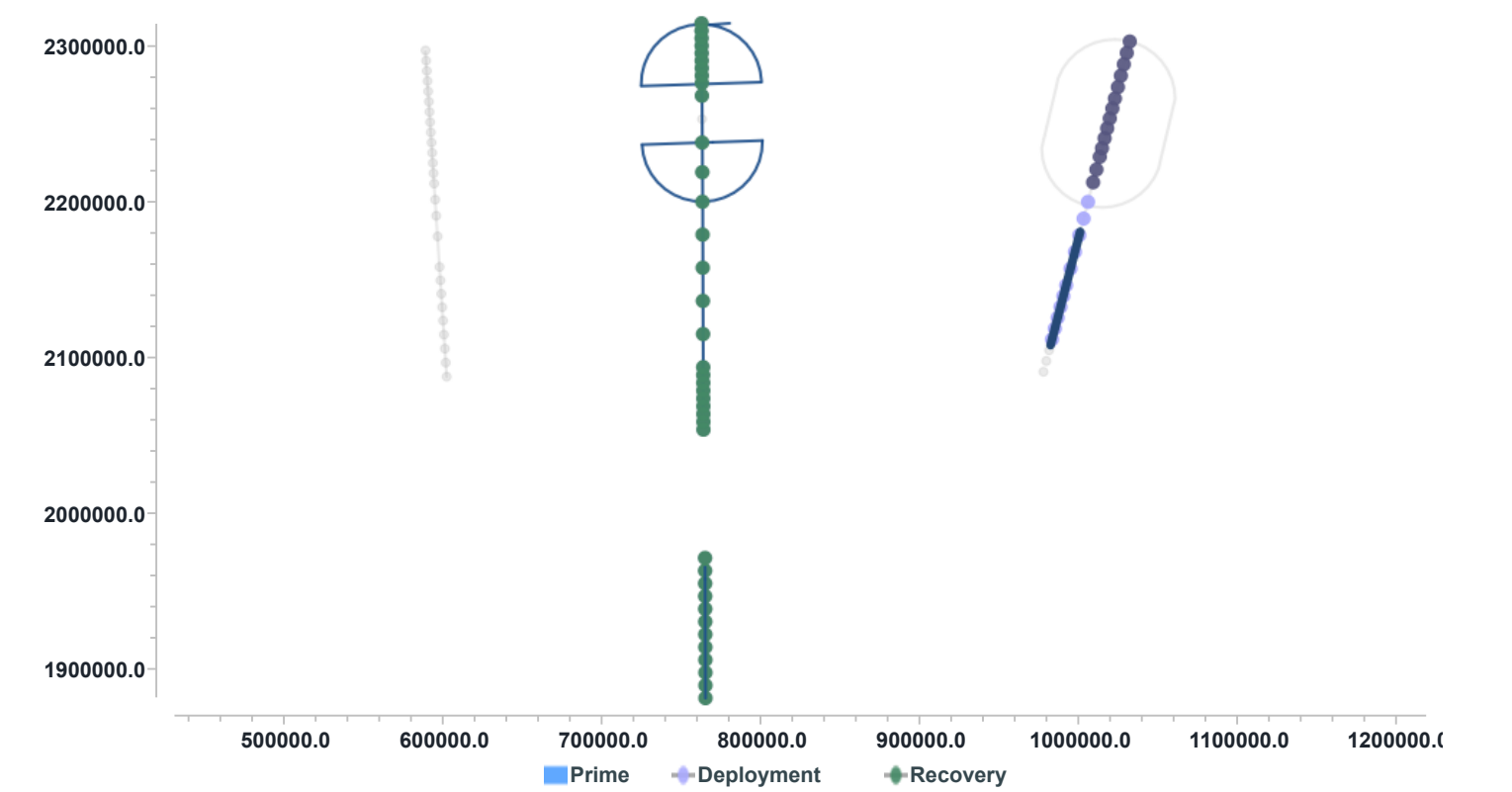
Production Totals (Accpt Main km)

OBS\_Deployment, Source Only

Accepted km	Day	Week	Month	Project
Prime	100.00	100.00	100.00	1242.80

Accepted km	Day	Week	Month	Project
Combined	100.00	100.00	100.00	1242.80

North Puerto Rico: Acpt  
11/20/2023 - 12/5/2023



Daily Comment Summaries - Daily Comments On Status of Equipment

Tue 05 Dec

Navigation:  
No Major Issues to Report

Information Technology (IT):  
No Major Issues to Report

OBS:  
No Major Issues to Report

Towing and Handling (Source):  
No Major Issues to Report

General Purpose Science:  
No Major issues to Report.

Daily Comment Summaries - Personnel Onboard

Tue 05 Dec

Technical Staff On-board the Langseth  
Todd Jensvold L-DEO OMO Chief Science Officer  
Brian Agee L-DEO OMO Chief Source Mechanic  
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Aaron Martin.- Contract Navigator  
Mark Walker - Contract Source Mechanic  
Ray Hatton - Contract Source Mechanic  
Jacob Greenberg - Contract Source Mechanic  
Sean Seekins - Contract Source Mechanic

12/5/2023  
Ian Davis- Contract Tech

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Amanda Dubuque - RPS Lead PSO  
Cassandra Frey - RPS PSO  
Elizabeth Breton - RPS PSO  
Tiffany Ramdoo - RPS PSO  
Maria Sandoval - RPS PSO

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Hannah Brewer-WHOI  
Tim Kane-WHOI  
Gavin McCarthy-WHOI  
Andrew Farmer-USGS

**Science Party On-board the Langseth**  
J. Pablo Canales - Lead PI WHOI  
Nick Harmon Co-PI WHOI  
Liam Moser WHOI

HSE Events Diary (Marcus G Langseth)

Start	End	Category	Code
16:00	17:00	Daily Ops Meeting	Mtgs_DOps
Daily Operation Meeting with PI, CSO, Captain, Nav, PSO			

Daily Total Category	Code	Count
Toolbox Meetings	Mtgs_Tbox	3
Shiftchaneg toolbox meetings		

HSE Event Period Totals - Project (Marcus G Langseth)

Category	Code	Day (num)	Week (num)	Month (num)	Project (num)	Proj Hours	Man Hours
Meetings	Mtgs	4	10	25	65	13.833	78.250
Chiefs Meeting	Chfs	0	0	0	2	1.833	11.833
Daily Ops Meeting	DOps	1	2	5	15	11.000	36.417
Full Safety Meeting	FS	0	0	0	1	1.000	30.000
Toolbox Meetings	Tbox	3	8	20	47		
Training	Trng	0	0	0	1	2.500	22.500
Safety Induction Tours	SIT	0	0	0	1	2.500	22.500

12/6/2023

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**Client:** Lamont-Doherty Earth Observatory  
**Job No:** MGL2316  
**Block:** North Puerto Rico  
**Client Contact:**  
**Consultancy:**  
**Job No:**

**Contractor:** Lamont-Doherty Earth Observatory  
**Job No:** MGL2316  
**Vessel:** Marcus G Langseth  
**Supervisor:**  
**Party Chiefs:** Todd Jensvold  
**Client Reps:** Dr. J. Pablo Canales

Daily Comment Summaries - Daily Summary

Wed 06 Dec

We completed the north-south line at approximately noon today. We are currently shooting the modified fin racetrack. We will complete the racetrack and begin recovering guns around midnight tomorrow night.

We lost about an hour and a half when we circled for the clean power generator. Around ten PM local time last night the monitors, data logger, Gunlink, internet and CCTV dropped out. The guns shut down for six shot points before we could get switched over to ships power and bring the systems back up. No one in the main lab heard the UPS alarms and no one on-board the ship was aware that generator had quit running until the UPS's started to tip. The decision was made to circle back and re-shoot these six shots while ramping back up with the guns. The clean power generator was swapped over and everything was resolved rather quickly. We shot the entire line at full gun volume in the end. There has been a lot of discussion on this. A more detailed account is in a separate email and forthcoming on a THC card with a solution to keep this from recurring.

We are making very good progress and should have all of the OBS's recovered by ~noon on the 9th. Then we will transit ~14 hours to begin re-deploying through the trench on the North Central Line.

Good THC reporting.

Daily Comment Summaries - Plan for Tomorrow

Wed 06 Dec

Finish shooting the eastern line racetrack. Begin recovering OBS ~ midnight local tomorrow night.

Timing Diary (Marcus G Langseth, Source Only)



Start	End	Category	Code	Duration (hrs)
00:00	01:35	Prime	AC_PP	1.583
Seq: 10 SOL Seq 10 Line:MGL2316010EP1 Preplot:East Block:North Puerto Rico FGSP:1244 FCSP:1244 Hdg:14.3° Prime EOL Seq 10 Line:MGL2316010EP1 Preplot:East Block:North Puerto Rico LGSP:1297 LCSP:1297 Complete				
01:35	02:55	Generators	DT_GE	1.333
Downtime due to generators. Clean power generator failed, subsequently gunlink failed. Circled for missed shots.				
02:55	16:15	Prime	AC_PP	13.333
Seq: 11 SOL Seq 11 Line:MGL2316011E2P1 Preplot:East Block:North Puerto Rico FGSP:1298 FCSP:1298 Hdg:14.3° Prime EOL Seq 11 Line:MGL2316011E2P1 Preplot:East Block:North Puerto Rico LGSP:1671 LCSP:1671 Complete				
16:15	16:20	Prime L/C	AC_PLC	0.083
Seq: 11 Line: MGL2316011E2P1 Nominal Prime line change.				
16:20	24:00	Prime	AC_PP	7.667
Seq: 12 SOL Seq 12 Line:MGL2316012EFP1 Preplot:EF Block:North Puerto Rico FGSP:1001 FCSP:1001 Hdg:192.4° Prime MSP Seq 12 Line:MGL2316012EFP1 Preplot:EF Block:North Puerto Rico LGSP:1216 LCSP:1216 Midnight				

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Timing Day By Day (Marcus G Langseth, Source Only)

6-Dec	Hours	% Percent
Acquisition	22.667	94.444
Prime	22.583	94.097
Prime L/C	0.083	0.347
DownTime	1.333	5.556
Generators	1.333	5.556
Day's Total	24.000	100.000

Timing Breakdown Summary - Project (Marcus G Langseth, Source Only, OBS\_Deployment)

Category	Hours	% Percent
DownTime	6.350	1.556
Equipment Handling	0.433	0.106
Generators	1.333	0.327
High Pressure	0.217	0.053
IT	0.500	0.123
Source	3.867	0.948
Array Air leak	3.867	0.948
Mobilisation	55.633	13.636
At Anchor	24.000	5.882
Transit to Prospect	31.633	7.753
Acquisition	343.350	84.154
Infill L/C	0.633	0.155
Prime	109.983	26.957
Prime L/C	0.917	0.225
Receiver Deployment/Recovery	118.800	29.118
Free Fall OBS	118.800	29.118
Receiver deployment	19.500	4.779
Transit	99.300	24.338
Swath Move	113.017	27.700
Deploy	22.017	5.396
Recover	91.000	22.304
Chargeable Standby	2.667	0.654
Tests	2.667	0.654
Total	408.000	

Basic Project Details

Source Only					
General Details					
Record length:	0 ms	Sample rate:	0 ms	Shotpoint interval:	400 m
Source Details					
No of Sources:	1	Total Volume:	6600 cu ins	Depth:	12
Pressure:	1950 PSI	Volume:	6600	Strings per source:	4
String Separation:	6 m	String length:	16 m		

Production Totals (Accpt Main km)

OBS\_Deployment, Source Only

Accepted km	Day	Week	Month	Project
Prime	257.60	354.80	354.80	1497.60
Combined	257.60	354.80	354.80	1497.60

Production Listing (Accpt Main km)

OBS\_Deployment, Source Only

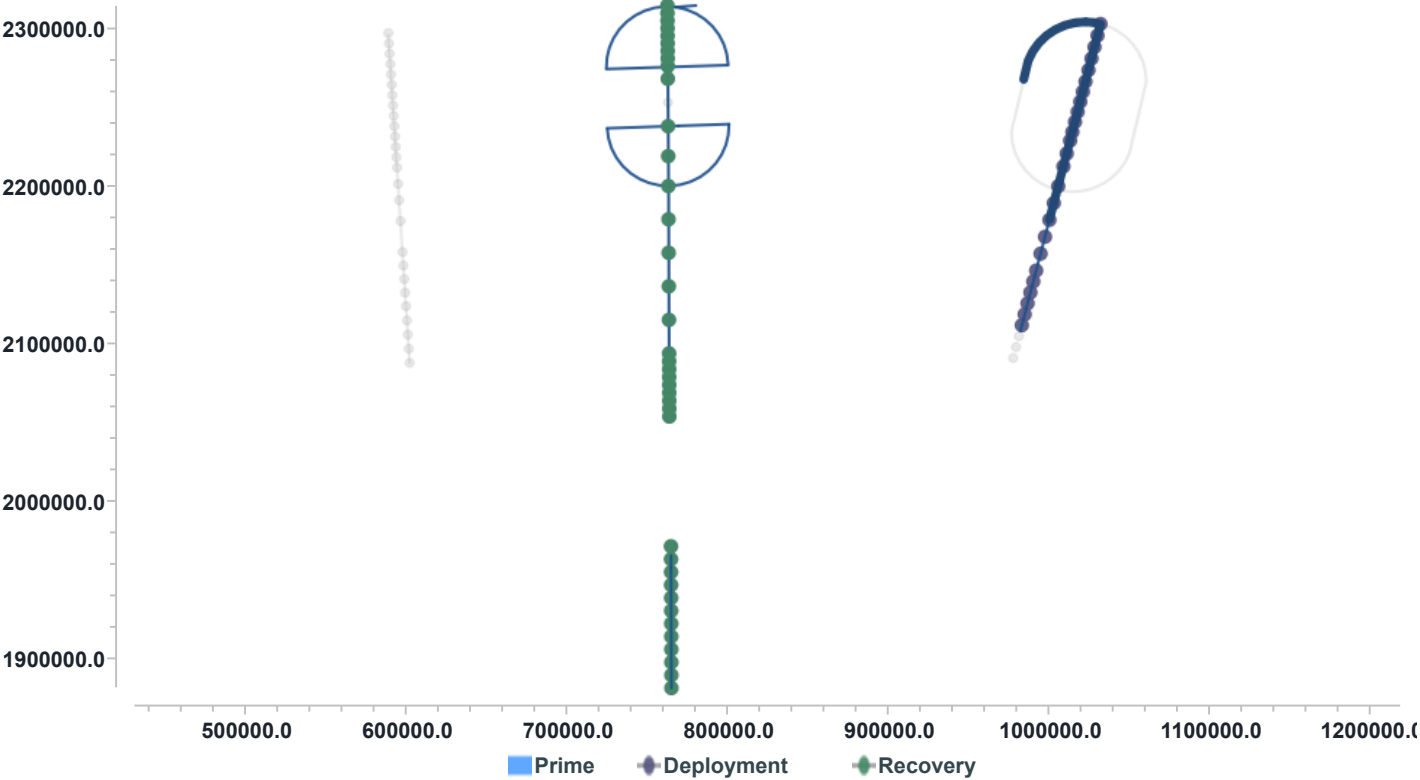
Seq	Line	Heading	FGSP	LGSP	Prod Type	Production	Ave Knots	Seq Status	Line Status
10	MGL2316010EP1	14.3	1244	1297	Prime	21.60	6.382	Complete	Complete
11	MGL2316011E2P1	14.3	1298	1671	Prime	149.60	6.042	Complete	Complete
12	MGL2316012EFP1	192.4	1001	1216	Prime	86.40	6.057	Midnight	Part
Total						257.60			

Production Totals (Accpt Main km)

OBS\_Deployment, Source Only

Accepted km	Day	Week	Month	Project
Prime	257.60	354.80	354.80	1497.60
Combined	257.60	354.80	354.80	1497.60

North Puerto Rico: Accpt  
11/20/2023 - 12/6/2023



Daily Comment Summaries - Daily Comments On Status of Equipment

Wed 06 Dec

Navigation:  
& out of 8 Pods working. Front GPS on #2 failed

Information Technology (IT):  
No Major Issues to Report

OBS:  
No Major Issues to Report

**Towing and Handling (Source):**  
Oil leak on Maggie winch

**General Purpose Science:**  
Clean Power Gen shutdown. Circle.

Daily Comment Summaries - Personnel Onboard

Wed 06 Dec

**Technical Staff On-board the Langseth**  
Todd Jensvold L-DEO OMO Chief Science Officer  
Brian Agee L-DEO OMO Chief Source Mechanic  
Gilles Guerin - L-DEO OMO Observer  
Aaron Martin.- Contract Navigator  
Mark Walker - Contract Source Mechanic  
Ray Hatton - Contract Source Mechanic  
Jacob Greenberg - Contract Source Mechanic  
Sean Seekins - Contract Source Mechanic  
Ian Davis- Contract Tech

**PSO Staff On-board the Langseth**  
Amanda Dubuque - RPS Lead PSO  
Cassandra Frey - RPS PSO  
Elizabeth Breton - RPS PSO  
Tiffany Ramdoo - RPS PSO  
Maria Sandoval - RPS PSO

**OBSIC Team**  
Arne Shwenk- GeoMar  
Lisa Sokolkova-GeoMar  
Hannah Brewer-WHOI  
Tim Kane-WHOI  
Gavin McCarthy-WHOI  
Andrew Farmer-USGS

**Science Party On-board the Langseth**  
J. Pablo Canales - Lead PI WHOI  
Nick Harmon Co-PI WHOI  
Liam Moser WHOI





HSE Events Diary (Marcus G Langseth)

Start	End	Category	Code
16:00	17:00	Daily Ops Meeting	Mtgs_DOps
Daily Operation Meeting with PI, CSO, Captain, Nav, PSO			

Daily Total Category	Code	Count
Toolbox Meetings	Mtgs_Tbox	3
Shiftchange toolbox meetings		

HSE Event Period Totals - Project (Marcus G Langseth)

Category	Code	Day (num)	Week (num)	Month (num)	Project (num)	Proj Hours	Man Hours
Meetings	Mtgs	4	14	29	69	14.833	84.250
Chiefs Meeting	Chfs	0	0	0	2	1.833	11.833
Daily Ops Meeting	DOps	1	3	6	16	12.000	42.417

Category	Code	Day (num)	Week (num)	Month (num)	Project (num)	Proj Hours	Man Hours
 Full Safety Meeting	FS	0	0	0	1	1.000	30.000
 Toolbox Meetings	Tbox	3	11	23	50		
 Training	Trng	0	0	0	1	2.500	22.500
 Safety Induction Tours	SIT	0	0	0	1	2.500	22.500



12/7/2023

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<b>Client:</b>	Lamont-Doherty Earth Observatory	<b>Contractor:</b>	Lamont-Doherty Earth Observatory
<b>Job No:</b>	MGL2316	<b>Job No:</b>	MGL2316
<b>Block:</b>	North Puerto Rico	<b>Vessel:</b>	Marcus G Langseth
<b>Client Contact:</b>		<b>Supervisor:</b>	
<b>Consultancy:</b>		<b>Party Chiefs:</b>	Todd Jensvold
<b>Job No:</b>		<b>Client Reps:</b>	Dr. J. Pablo Canales

Daily Comment Summaries - Daily Summary

Thu 07 Dec

We have been shooting steadily all day. Gun 1-1 was disabled after multiple firing errors - starting at SP 7230: 35 guns - 6240 in3 new volume

We had 8 shots with low pressure due to a faulty valve. A valve handle vibrated off and was partially closed. This was on one of the bottles near the Fischer valves on the half high. The pressure dropped to ~1400 PSI. We disabled one of the strings briefly to keep the pressure up. There were 8 shot-points over 19 minutes that were NOT full volume and 2000psi. We did not have to circle or soft-start. Good job by the crew hitting this curve ball.

The Chief and Mark W was able to locate the problem and open the valve back open relatively quickly. It has been properly secured so we won't see this again. A separate email will provide more detail along with a THC card.

We will complete shooting the eastern line at approximately ~midnight local time. The source arrays, PAM and Maggie will be recovered so we can start to pick up the OBS instruments. We will recover OBS's for the rest of the day and longer.

We continue to discuss our completion plans and exit strategy with the short turn-around time in San Juan. The OBSIC crew has a good plan to get everything secured, prepped for de-mob in Norfolk, and documented by Friday morning.

Good progress all day.

Daily Comment Summaries - Plan for Tomorrow

Thu 07 Dec

Complete the source line. Recover the towed gear. Begin recovering OBS instruments.

Timing Diary (Marcus G Langseth, Source Only)

Start	End	Category	Code	Duration (hrs)
00:00	24:00	Prime	AC_PP	24.000
Seq: 12 SOL Seq 12 Line:MGL2316012EFP1 Preplot:EF Block:North Puerto Rico FGSP:1217 FCSP:1217 Hdg:192.4° Prime MSP Seq 12 Line:MGL2316012EFP1 Preplot:EF Block:North Puerto Rico LGSP:1890 LCSP:1890 Midnight				

Timing Day By Day (Marcus G Langseth, Source Only)

7-Dec	Hours	% Percent
Acquisition	24.000	100.000
Prime	24.000	100.000
Day's Total	24.000	100.000

Timing Breakdown Summary - Project (Marcus G Langseth, Source Only, OBS\_Deployment)

Category	Hours	% Percent
DownTime	9.967	2.240
Equipment Handling	0.433	0.097
Generators	1.333	0.300
High Pressure	0.217	0.049
Receiver Deployment/Recovery	4.117	0.925

Category	Hours	% Percent
Node Receiver not ready	1.500	0.337
Node Receiver unresponsive	1.533	0.345
Node Vessel position	1.083	0.243
Source	3.867	0.869
Array Air leak	3.867	0.869
Mobilisation	54.633	12.277
At Anchor	34.000	7.640
Transit to Prospect	20.633	4.637
Acquisition	363.733	81.738
Prime	133.983	30.109
Prime L/C	1.550	0.348
Receiver Deployment/Recovery	204.500	45.955
Free Fall OBS	204.500	45.955
Receiver deployment	19.500	4.382
Receiver Rising	54.000	12.135
Transit	131.000	29.438
Swath Move	23.700	5.326
Deploy	12.883	2.895
Recover	10.817	2.431
Non-Chargeable StandBy	14.000	3.146
Health and Safety	14.000	3.146
Chargeable Standby	2.667	0.599
Tests	2.667	0.599
Total	445.000	

Basic Project Details

Source Only					
General Details					
Record length:	0 ms	Sample rate:	0 ms	Shotpoint interval:	400 m
Source Details					
No of Sources:	1	Total Volume:	6600 cu ins	Depth:	12
Pressure:	1950 PSI	Volume:	6600	Strings per source:	4
String Separation:	6 m	String length:	16 m		

Production Totals (Accpt Main km)

OBS\_Deployment, Source Only

Accepted km	Day	Week	Month	Project
Prime	269.60	624.40	624.40	1767.20
Combined	269.60	624.40	624.40	1767.20

Production Listing (Accpt Main km)

OBS\_Deployment, Source Only

Seq	Line	Heading	FGSP	LGSP	Prod Type	Production	Ave Knots	Seq Status	Line Status
12	MGL2316012EFP1	192.4	1217	1890	Prime	269.60	6.128	Midnight	Part
Total						269.60			

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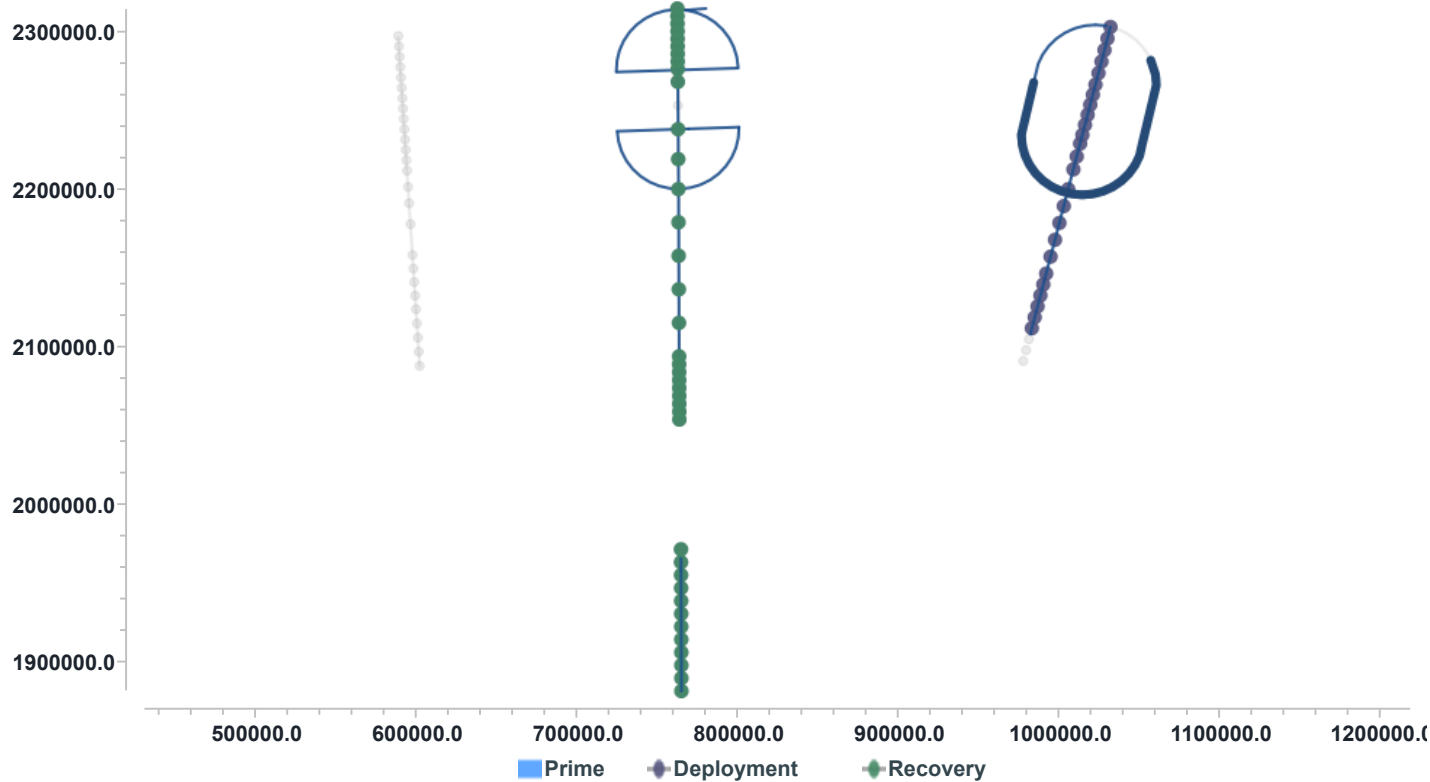
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Production Totals (Accpt Main km)

OBS\_Deployment, Source Only

Accepted km	Day	Week	Month	Project
Prime	269.60	624.40	624.40	1767.20
Combined	269.60	624.40	624.40	1767.20

North Puerto Rico: Accpt  
11/19/2023 - 12/7/2023



Daily Comment Summaries - Daily Comments On Status of Equipment

Thu 07 Dec

**Navigation:**  
POD 2-1 not working. The other 7 are working.

**Information Technology (IT):**  
No Major Issues to Report

**OBS:**  
No Major Issues to Report

**Towing and Handling (Source):**  
Gun 1-1 disabled

**General Purpose Science:**  
No Major issues to Report.

Daily Comment Summaries - Personnel Onboard

Thu 07 Dec

**Technical Staff On-board the Langseth**  
Todd Jensvold L-DEO OMO Chief Science Officer  
Brian Agee L-DEO OMO Chief Source Mechanic  
Gilles Guerin - L-DEO OMO Observer  
Aaron Martin.- Contract Navigator

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Mark Walker - Contract Source Mechanic  
Ray Hatton - Contract Source Mechanic  
Jacob Greenberg - Contract Source Mechanic  
Sean Seekins - Contract Source Mechanic  
Ian Davis- Contract Tech

PSO Staff On-board the Langseth

Amanda Dubuque - RPS Lead PSO  
Cassandra Frey - RPS PSO  
Elizabeth Breton - RPS PSO  
Tiffany Ramdoo - RPS PSO  
Maria Sandoval - RPS PSO

OBSIC Team

Arne Shwenk- GeoMar  
Lisa Sokolkova-GeoMar  
Hannah Brewer-WHOI  
Tim Kane-WHOI  
Gavin McCarthy-WHOI  
Andrew Farmer-USGS

Science Party On-board the Langseth

J. Pablo Canales - Lead PI WHOI  
Nick Harmon Co-PI WHOI  
Liam Moser WHOI

HSE Events Diary (Marcus G Langseth)

Start	End	Category	Code
16:00	17:00	<div></div> Daily Ops Meeting	Mtgs_DOps
Daily Operation Meeting with PI, CSO, Captain, Nav, PSO, OBSIC			
Daily Total Category		Code	Count
<div></div> Toolbox Meetings		Mtgs_Tbox	5
Shiftchange toolbox meetings Crane lift toolbox meeting Securing the deck toolbox meeting (including measuring decks)			

HSE Event Period Totals - Project (Marcus G Langseth)

Category	Code	Day (num)	Week (num)	Month (num)	Project (num)	Proj Hours	Man Hours
<div></div> Meetings	Mtgs	6	20	35	75	15.833	90.250
<div></div> Chiefs Meeting	Chfs	0	0	0	2	1.833	11.833
<div></div> Daily Ops Meeting	DOps	1	4	7	17	13.000	48.417
<div></div> Full Safety Meeting	FS	0	0	0	1	1.000	30.000
<div></div> Toolbox Meetings	Tbox	5	16	28	55		
<div></div> Training	Trng	0	0	0	1	2.500	22.500
<div></div> Safety Induction Tours	SIT	0	0	0	1	2.500	22.500

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**Client:** Lamont-Doherty Earth Observatory  
**Job No:** MGL2316  
**Block:** North Puerto Rico  
**Client Contact:**  
**Consultancy:**  
**Job No:**

**Contractor:** Lamont-Doherty Earth Observatory  
**Job No:** MGL2316  
**Vessel:** Marcus G Langseth  
**Supervisor:**  
**Party Chiefs:** Todd Jensvold  
**Client Reps:** Dr. J. Pablo Canales

Daily Comment Summaries - Daily Summary

Fri 08 Dec

We completed the source line just before midnight local time and recovered all of the guns and the Maggie and PAM in less than three hours. Top job by the Mechs on this.

One of the gps mounting brackets was broken upon recovery, which explains why the forward gps pod wasn't working! There was a considerable amount of fishing gear in the guns this time. Small nets and other plastic debris.

We have 5 OBS instruments on-board at the time of this log. One of the instruments was unresponsive. OBS #87 was a SIO unit deployed in ~5000 meters of water. We attempted to send burn commands and communicate with it from different vantages without luck. We are considering it as lost at sea. This the second SIO unit that didn't respond. Both of them at similar depths.

Discussed crew change at ops meeting. The agent will arrange transport to the airport for the off-signers. There is a significant roll today from a cross-swell sea state. It hasn't slowed things down, but we have needed to add additional tag-lines to the OBS's being recovered. Discussed the importance of keeping things secured in your workspaces and cabins. More than a few of us had some items come off of the desks and counters today.

Repaired solenoid on gun 1-1 and overhauled gun 2-3. Normal maintenance and preparations on gun-strings.

Steady progress.

Daily Comment Summaries - Plan for Tomorrow

Fri 08 Dec

Recover OBS instruments on east line all day.

Timing Diary (Marcus G Langseth, Source Only, OBS\_Deployment)



Start	End	Category	Code	Duration (hrs)
00:00	03:49	Prime	AC_PP	3.817
Seq: 12 SOL Seq 12 Line:MGL2316012EFP1 Preplot:EF Block:North Puerto Rico FGSP:1888 FCSP:1888 Hdg:192.4° Prime EOL Seq 12 Line:MGL2316012EFP1 Preplot:EF Block:North Puerto Rico LGSP:2013 LCSP:2013 Complete				
03:49	04:11	Transit	AC_RDR_FF_TR	0.367
Slowing vessel to prepare for gun retrieval, toolbox meeting				
04:11	04:31	Transit	AC_RDR_FF_TR	0.333
Retrieving gun string 3				
04:31	05:00	Transit	AC_RDR_FF_TR	0.483
Retrieving gun string 4				
05:00	05:40	Transit	AC_RDR_FF_TR	0.667
Recovering gun string 2				
05:40	06:14	Transit	AC_RDR_FF_TR	0.567
Retrieving gun string 1				

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Start	End	Category	Code	Duration (hrs)
06:14	06:23	 Transit	AC_RDR_FF_TR	0.150
Recovering PAM and Maggie				
06:23	06:55	 Transit	AC_RDR_FF_TR	0.533
Approach OBS S93				
06:55	08:49	 Receiver Rising	AC_RDR_FF_RRis	1.900
OBS 93				
08:49	09:03	 Recover	AC_SM_Re	0.233
Node operation Block:North Puerto Rico 5 Line:S93 Recovery				
09:03	09:24	 Transit	AC_RDR_FF_TR	0.350
Approach OBS S92				
09:24	11:40	 Receiver Rising	AC_RDR_FF_RRis	2.267
OBS 92				
11:40	12:06	 Recover	AC_SM_Re	0.433
Node operation Block:North Puerto Rico 5 Line:S92 Recovery				
12:06	12:27	 Transit	AC_RDR_FF_TR	0.350
Approach OBS 91				
12:27	14:56	 Receiver Rising	AC_RDR_FF_RRis	2.483
OBS 91				
14:56	15:13	 Recover	AC_SM_Re	0.283
Node operation Block:North Puerto Rico 5 Line:S91 Recovery				
15:13	15:35	 Transit	AC_RDR_FF_TR	0.367
Approach OBS 90				
15:35	17:09	 Receiver Rising	AC_RDR_FF_RRis	1.567
OBS 90				
17:09	17:34	 Recover	AC_SM_Re	0.417
Node operation Block:North Puerto Rico 5 Line:S90 Recovery				
17:34	18:05	 Transit	AC_RDR_FF_TR	0.517
Approach OBS 89				
18:05	19:48	 Receiver Rising	AC_RDR_FF_RRis	1.717
OBS 89				
19:48	20:01	 Recover	AC_SM_Re	0.217
Node operation Block:North Puerto Rico 5 Line:S89 Recovery				
20:01	20:17	 Transit	AC_RDR_FF_TR	0.267
Approach OBS 88				
20:17	21:46	 Receiver Rising	AC_RDR_FF_RRis	1.483
OBS 88				
21:46	21:56	 Recover	AC_SM_Re	0.167
Node operation Block:North Puerto Rico 5 Line:S88 Recovery				
21:56	22:15	 Transit	AC_RDR_FF_TR	0.317

Start	End	Category	Code	Duration (hrs)
Approach OBS 87				
22:15	23:45	<div></div> Receiver Rising	AC_RDR_FF_RRis	1.500
Command sent, no response, OBS 87 assumed rising				
23:45	24:00	<div></div> Node Receiver unresponsive	DT_RDR_RU	0.250
OBS S87 did not respond, lost at sea ~5000m				

Timing Day By Day (Marcus G Langseth, Source Only, OBS\_Deployment)

8-Dec	Hours	% Percent
<b>Acquisition</b>	<b>23.750</b>	<b>98.958</b>
Prime	3.817	15.903
Receiver Deployment/Recovery	18.183	75.764
Free Fall OBS	18.183	75.764
Receiver Rising	12.917	53.819
Transit	5.267	21.944
Swath Move	1.750	7.292
Recover	1.750	7.292
<b>DownTime</b>	<b>0.250</b>	<b>1.042</b>
Receiver Deployment/Recovery	0.250	1.042
Node Receiver unresponsive	0.250	1.042
<b>Day's Total</b>	<b>24.000</b>	<b>100.000</b>

Timing Breakdown Summary - Project (Marcus G Langseth, Source Only, OBS\_Deployment)

Category	Hours	% Percent
<b>DownTime</b>	<b>10.217</b>	<b>2.178</b>
Equipment Handling	0.433	0.092
Generators	1.333	0.284
High Pressure	0.217	0.046
Receiver Deployment/Recovery	4.367	0.931
Node Receiver not ready	1.500	0.320
Node Receiver unresponsive	1.783	0.380
Node Vessel position	1.083	0.231
Source	3.867	0.824
Array Air leak	3.867	0.824
<b>Mobilisation</b>	<b>54.633</b>	<b>11.649</b>
At Anchor	34.000	7.249
Transit to Prospect	20.633	4.399
<b>Acquisition</b>	<b>387.483</b>	<b>82.619</b>
Prime	137.800	29.382
Prime L/C	1.550	0.330
Receiver Deployment/Recovery	222.683	47.480
Free Fall OBS	222.683	47.480
Receiver deployment	19.500	4.158
Receiver Rising	66.917	14.268
Transit	136.267	29.055
Swath Move	25.450	5.426

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Category	Hours	% Percent
Deploy	12.883	2.747
Recover	12.567	2.679
Non-Chargeable StandBy	14.000	2.985
Health and Safety	14.000	2.985
Chargeable Standby	2.667	0.569
Tests	2.667	0.569
Total	469.000	

Basic Project Details

Source Only					
General Details					
Record length:	0 ms	Sample rate:	0 ms	Shotpoint interval:	400 m
Source Details					
No of Sources:	1	Total Volume:	6600 cu ins	Depth:	12
Pressure:	1950 PSI	Volume:	6600	Strings per source:	4
String Separation:	6 m	String length:	16 m		

Production Totals (Accpt Main km)

OBS\_Deployment, Source Only

Accepted km	Day	Week	Month	Project
Prime	50.40	673.60	673.60	1816.40
Combined	50.40	673.60	673.60	1816.40

Production Listing (Accpt Main km)

OBS\_Deployment, Source Only

Seq	Line	Heading	FGSP	LGSP	Prod Type	Production	Ave Knots	Seq Status	Line Status
12	MGL2316012EFP1	192.4	1888	2013	Prime	50.40	6.160	Complete	Complete
Total						50.40			

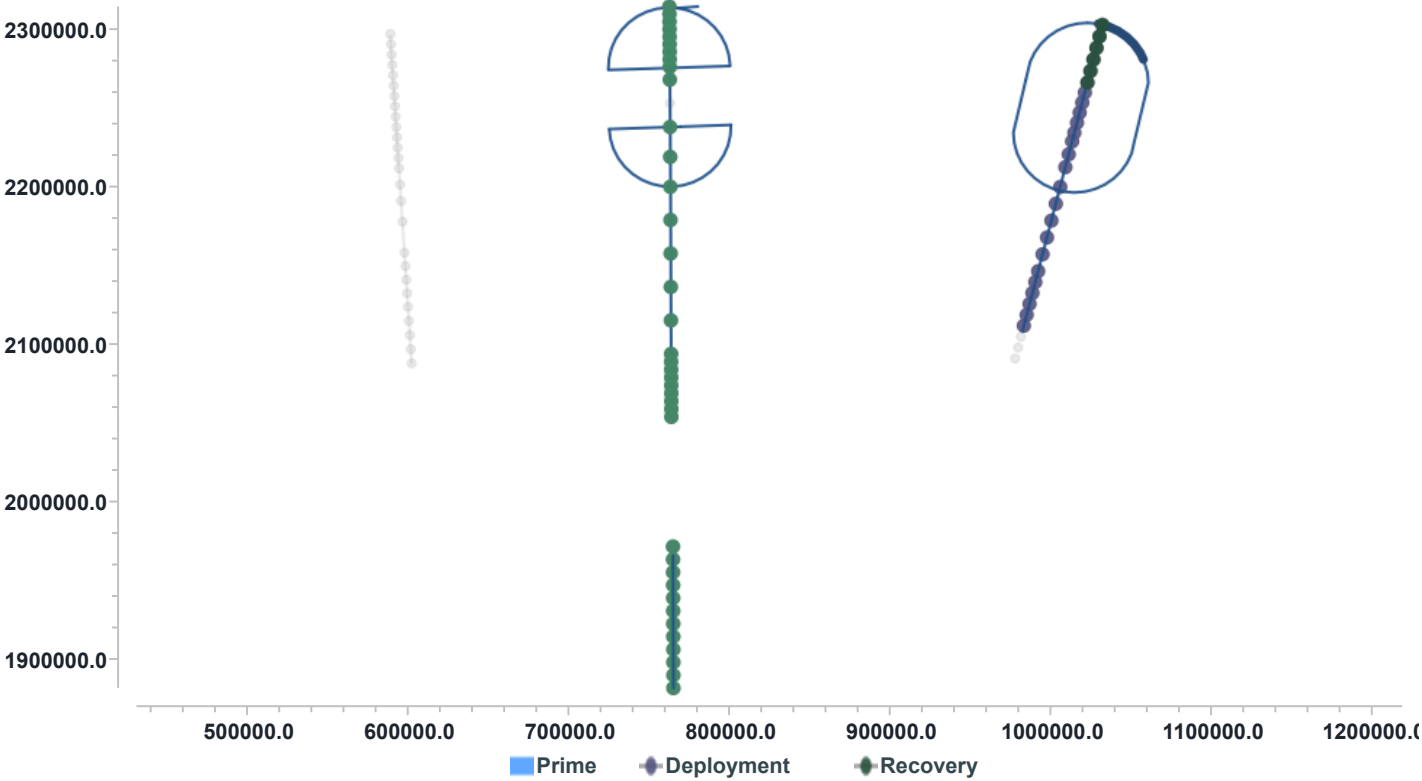
Production Totals (Accpt Main km)

OBS\_Deployment, Source Only

Accepted km	Day	Week	Month	Project
Prime	50.40	673.60	673.60	1816.40
Combined	50.40	673.60	673.60	1816.40



North Puerto Rico: Accpt  
11/19/2023 - 12/8/2023



Daily Comment Summaries - Daily Comments On Status of Equipment

Fri 08 Dec

**Navigation:**  
POD 2-1 not working. The other 7 are working.

**Information Technology (IT):**  
No Major Issues to Report

**OBS:**  
No Major Issues to Report

**Towing and Handling (Source):**  
Repaired guns 1-1 and 2-3

**General Purpose Science:**  
No Major issues to Report.

Daily Comment Summaries - Personnel Onboard

Fri 08 Dec

**Technical Staff On-board the Langseth**  
Todd Jensvold L-DEO OMO Chief Science Officer  
Brian Agee L-DEO OMO Chief Source Mechanic  
Gilles Guerin - L-DEO OMO Observer  
Aaron Martin.- Contract Navigator  
Mark Walker - Contract Source Mechanic  
Ray Hatton - Contract Source Mechanic  
Jacob Greenberg - Contract Source Mechanic  
Sean Seekins - Contract Source Mechanic  
Ian Davis- Contract Tech

12/8/2023

PSO Staff On-board the Langseth

Amanda Dubuque - RPS Lead PSO  
Cassandra Frey - RPS PSO  
Elizabeth Breton - RPS PSO  
Tiffany Ramdoo - RPS PSO  
Maria Sandoval - RPS PSO

OBSIC Team

Arne Shwenk- GeoMar  
Lisa Sokolkova-GeoMar  
Hannah Brewer-WHOI  
Tim Kane-WHOI  
Gavin McCarthy-WHOI  
Andrew Farmer-USGS








Science Party On-board the Langseth

J. Pablo Canales - Lead PI WHOI  
Nick Harmon Co-PI WHOI  
Liam Moser WHOI

HSE Events Diary (Marcus G Langseth)

Start	End	Category	Code
-------	-----	----------	------

HSE Event Period Totals - Project (Marcus G Langseth)

Category	Code	Day (num)	Week (num)	Month (num)	Project (num)	Proj Hours	Man Hours
 Meetings	Mtgs	0	20	35	75	15.833	90.250
 Chiefs Meeting	Chfs	0	0	0	2	1.833	11.833
 Daily Ops Meeting	DOps	0	4	7	17	13.000	48.417
 Full Safety Meeting	FS	0	0	0	1	1.000	30.000
 Toolbox Meetings	Tbox	0	16	28	55		
 Training	Trng	0	0	0	1	2.500	22.500
 Safety Induction Tours	SIT	0	0	0	1	2.500	22.500

12/9/2023

Page 1

**Client:** Lamont-Doherty Earth Observatory  
**Job No:** MGL2316  
**Block:** North Puerto Rico  
**Client Contact:**  
**Consultancy:**  
**Job No:**

**Contractor:** Lamont-Doherty Earth Observatory  
**Job No:** MGL2316  
**Vessel:** Marcus G Langseth  
**Supervisor:**  
**Party Chiefs:** Todd Jensvold  
**Client Reps:** Dr. J. Pablo Canales

Daily Comment Summaries - Daily Summary

Sat 09 Dec

We picked up OBS instruments all day. We recovered 10 and have 8 more to go on this line. We should have these on-board by ~noon tomorrow and will begin our transit over to the North Central sequel. The transit to the first deployment location is approximately ~14 hours.

The ship is rolling considerably, but hasn't caused too much of a slow down today.

Prepared gunstrings for the final countdown. Made repairs to the broken GPS mount of gun-string #3

Started prepping OBS batteries for offloading and disposal. We are taping them so that they don't create any shorting during storage or shipping.

Normal end of survey activities and crew change planning.

Working on HSE reporting, departmental hand-overs and inventories.

There were several misses today while recovering the OBS instruments alongside.

Daily Comment Summaries - Plan for Tomorrow

Sat 09 Dec

Finish recovering OBS on east line and start transit to NC line.

Timing Diary (Marcus G Langseth, OBS\_Deployment)



Start	End	Category	Code	Duration (hrs)
00:00	00:31	<div></div> Transit	AC_RDR_FF_TR	0.517
Approach OBS S86				
00:31	02:07	<div></div> Receiver Rising	AC_RDR_FF_RRis	1.600
OBS S86				
02:07	02:35	<div></div> Node Vessel position	DT_RDR_VP	0.467
Missed OBS S86 twice				
02:35	02:58	<div></div> Recover	AC_SM_Re	0.383
Node operation Block:North Puerto Rico 5 Line:S86 Recovery				
02:58	03:10	<div></div> Transit	AC_RDR_FF_TR	0.200
Approach OBS S85				
03:10	05:05	<div></div> Receiver Rising	AC_RDR_FF_RRis	1.917
OBS S85				
05:05	05:23	<div></div> Recover	AC_SM_Re	0.300
Node operation Block:North Puerto Rico 5 Line:S85 Recovery				
05:23	05:40	<div></div> Transit	AC_RDR_FF_TR	0.283
Approach OBS S84				

Start	End	Category	Code	Duration (hrs)
05:40	07:12	 Receiver Rising	AC_RDR_FF_RRis	1.533
OBS S84				
07:12	07:38	 Node Vessel position	DT_RDR_VP	0.433
Missed OBS S84 twice				
07:38	07:49	 Recover	AC_SM_Re	0.183
Node operation Block:North Puerto Rico 5 Line:S84 Recovery				
07:49	08:35	 Transit	AC_RDR_FF_TR	0.767
Approach OBS S83				
08:35	09:29	 Receiver Rising	AC_RDR_FF_RRis	0.900
OBS S83				
09:29	09:43	 Recover	AC_SM_Re	0.233
Node operation Block:North Puerto Rico 5 Line:S83 Recovery				
09:43	10:17	 Transit	AC_RDR_FF_TR	0.567
Approach OBS S82				
10:17	11:31	 Receiver Rising	AC_RDR_FF_RRis	1.233
OBS S82				
11:31	11:43	 Recover	AC_SM_Re	0.200
Node operation Block:North Puerto Rico 5 Line:S82 Recovery				
11:43	11:53	 Transit	AC_RDR_FF_TR	0.167
Approach OBS S81				
11:53	14:13	 Receiver Rising	AC_RDR_FF_RRis	2.333
OBS S81				
14:13	14:22	 Recover	AC_SM_Re	0.150
Node operation Block:North Puerto Rico 5 Line:S81 Recovery				
14:22	15:01	 Transit	AC_RDR_FF_TR	0.650
Approach OBS S80				
15:01	17:10	 Receiver Rising	AC_RDR_FF_RRis	2.150
OBS S80				
17:10	17:22	 Recover	AC_SM_Re	0.200
Node operation Block:North Puerto Rico 5 Line:S80 Recovery				
17:22	17:44	 Transit	AC_RDR_FF_TR	0.367
Approach OBS S79				
17:44	19:24	 Receiver Rising	AC_RDR_FF_RRis	1.667
OBS S79				
19:24	19:31	 Recover	AC_SM_Re	0.117
Node operation Block:North Puerto Rico 5 Line:S79 Recovery				
19:31	20:07	 Transit	AC_RDR_FF_TR	0.600
Approach OBS S78				
20:07	21:47	 Receiver Rising	AC_RDR_FF_RRis	1.667

Start	End	Category	Code	Duration (hrs)
OBS S78				
21:47	22:02	<div></div> Recover	AC_SM_Re	0.250
Node operation Block:North Puerto Rico 5 Line:S78 Recovery				
22:02	22:44	<div></div> Transit	AC_RDR_FF_TR	0.700
Approach OBS S77				
22:44	24:00	<div></div> Receiver Rising	AC_RDR_FF_RRis	1.267
OBS S77				

Timing Day By Day (Marcus G Langseth, OBS\_Deployment)

9-Dec	Hours	% Percent
<b>Acquisition</b>	<b>23.100</b>	<b>96.250</b>
Receiver Deployment/Recovery	21.083	87.847
Free Fall OBS	21.083	87.847
Receiver Rising	16.267	67.778
Transit	4.817	20.069
Swath Move	2.017	8.403
Recover	2.017	8.403
<b>DownTime</b>	<b>0.900</b>	<b>3.750</b>
Receiver Deployment/Recovery	0.900	3.750
Node Receiver unresponsive	0.000	0.000
Node Vessel position	0.900	3.750
<b>Day's Total</b>	<b>24.000</b>	<b>100.000</b>

Timing Breakdown Summary - Project (Marcus G Langseth, Source Only, OBS\_Deployment)

Category	Hours	% Percent
<b>DownTime</b>	<b>11.117</b>	<b>2.255</b>
Equipment Handling	0.433	0.088
Generators	1.333	0.270
High Pressure	0.217	0.044
Receiver Deployment/Recovery	5.267	1.068
Node Receiver not ready	1.500	0.304
Node Receiver unresponsive	1.783	0.362
Node Vessel position	1.983	0.402
Source	3.867	0.784
Array Air leak	3.867	0.784
<b>Mobilisation</b>	<b>54.633</b>	<b>11.082</b>
At Anchor	34.000	6.897
Transit to Prospect	20.633	4.185
<b>Acquisition</b>	<b>410.583</b>	<b>83.283</b>
Prime	137.800	27.951
Prime L/C	1.550	0.314
Receiver Deployment/Recovery	243.767	49.446
Free Fall OBS	243.767	49.446
Receiver deployment	19.500	3.955

Category	Hours	% Percent
Receiver Rising	83.183	16.873
Transit	141.083	28.617
Swath Move	27.467	5.571
Deploy	12.883	2.613
Recover	14.583	2.958
Non-Chargeable StandBy	14.000	2.840
Health and Safety	14.000	2.840
Chargeable Standby	2.667	0.541
Tests	2.667	0.541
Total	493.000	

Basic Project Details

Source Only					
General Details					
Record length:	0 ms	Sample rate:	0 ms	Shotpoint interval:	400 m
Source Details					
No of Sources:	1	Total Volume:	6600 cu ins	Depth:	12
Pressure:	1950 PSI	Volume:	6600	Strings per source:	4
String Separation:	6 m	String length:	16 m		

Production Totals (Accpt Main km)

OBS\_Deployment, Source Only

Accepted km	Day	Week	Month	Project
Prime	0.00	673.60	673.60	1816.40
Combined	0.00	673.60	673.60	1816.40

Production Listing (Accpt Main km) - Prime: Full Fold, Infill: Unknown

OBS\_Deployment, Source Only

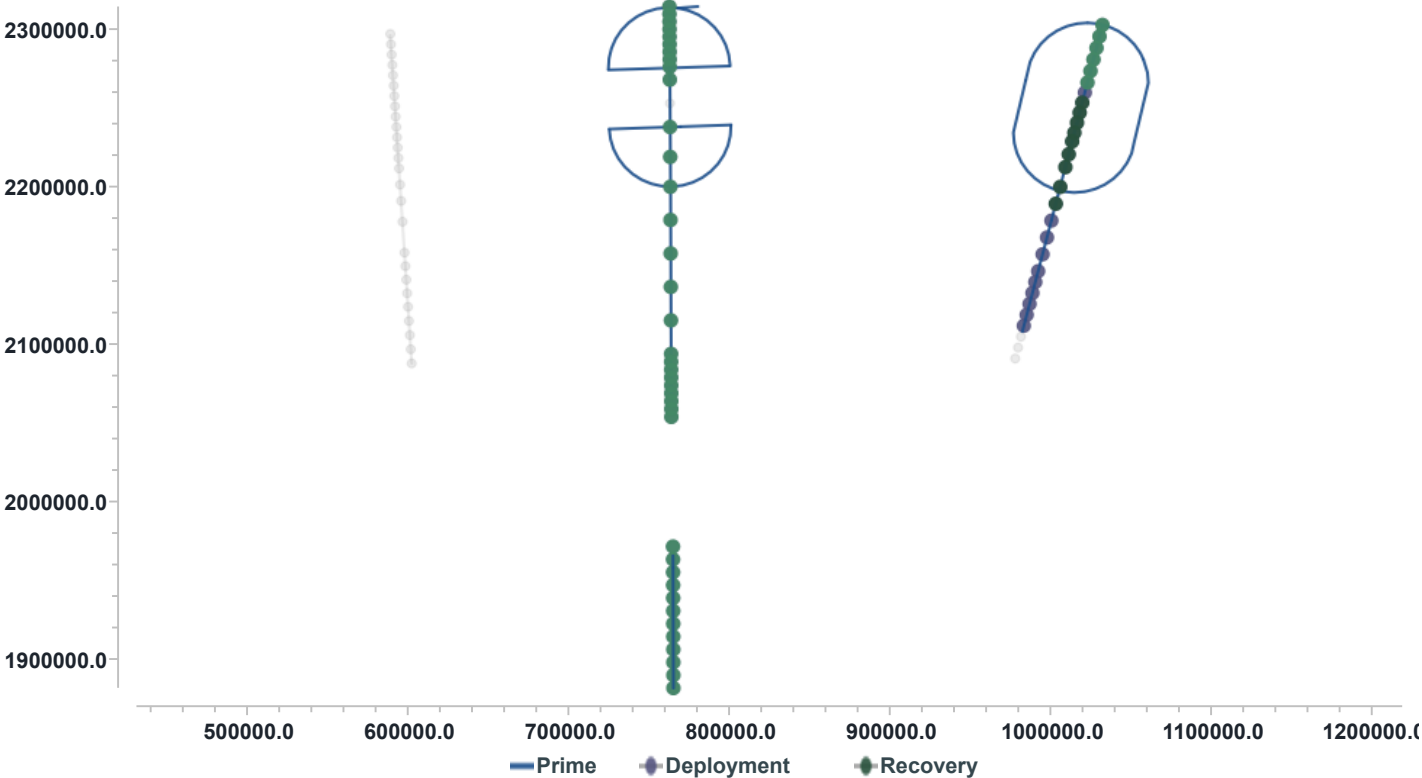
Seq	Line	FGSP	LGSP	Prod Type	Production	Ave Knots	Seq Status	Line Status
Total					0.00			

Production Totals (Accpt Main km)

OBS\_Deployment, Source Only

Accepted km	Day	Week	Month	Project
Prime	0.00	673.60	673.60	1816.40
Combined	0.00	673.60	673.60	1816.40

North Puerto Rico: Accpt  
11/19/2023 - 12/9/2023



Daily Comment Summaries - Daily Comments On Status of Equipment

Sat 09 Dec

Navigation:  
No Major Issues to Report

Information Technology (IT):  
No Major Issues to Report

OBS:  
No Major Issues to Report

Towing and Handling (Source):  
No Major Issues to Report

General Purpose Science:  
No Major issues to Report.

Daily Comment Summaries - Personnel Onboard

Sat 09 Dec

Technical Staff On-board the Langseth  
Todd Jensvold L-DEO OMO Chief Science Officer  
Brian Agee L-DEO OMO Chief Source Mechanic  
Gilles Guerin - L-DEO OMO Observer  
Aaron Martin.- Contract Navigator  
Mark Walker - Contract Source Mechanic  
Ray Hatton - Contract Source Mechanic  
Jacob Greenberg - Contract Source Mechanic  
Sean Seekins - Contract Source Mechanic  
Ian Davis- Contract Tech

PSO Staff On-board the Langseth

12/9/2023

Amanda Dubuque - RPS Lead PSO  
Cassandra Frey - RPS PSO  
Elizabeth Breton - RPS PSO  
Tiffany Ramdoo - RPS PSO  
Maria Sandoval - RPS PSO

OBSIC Team

Arne Shwenk- GeoMar  
Lisa Sokolkova-GeoMar  
Hannah Brewer-WHOI  
Tim Kane-WHOI  
Gavin McCarthy-WHOI  
Andrew Farmer-USGS

Science Party On-board the Langseth

J. Pablo Canales - Lead PI WHOI  
Nick Harmon Co-PI WHOI  
Liam Moser WHOI

HSE Events Diary (Marcus G Langseth)

Start	End	Category	Code
16:00	17:00	<div></div> Daily Ops Meeting	Mtgs_DOps
Daily Operation Meeting with PI, CSO, Captain, Nav, PSO, OBSIC			

Daily Total Category	Code	Count
<div></div> Toolbox Meetings	Mtgs_Tbox	3
Shiftchange toolbox meetings		

HSE Event Period Totals - Project (Marcus G Langseth)

Category	Code	Day (num)	Week (num)	Month (num)	Project (num)	Proj Hours	Man Hours
<div></div> Meetings	Mtgs	4	25	40	80	17.833	96.250
<div></div> Chiefs Meeting	Chfs	0	0	0	2	1.833	11.833
<div></div> Daily Ops Meeting	DOps	1	6	9	19	15.000	54.417
<div></div> Full Safety Meeting	FS	0	0	0	1	1.000	30.000
<div></div> Toolbox Meetings	Tbox	3	19	31	58		
<div></div> Training	Trng	0	0	0	1	2.500	22.500
<div></div> Safety Induction Tours	SIT	0	0	0	1	2.500	22.500



12/10/2023

Page 1

Client:	Lamont-Doherty Earth Observatory	Contractor:	Lamont-Doherty Earth Observatory
Job No:	MGL2316	Job No:	MGL2316
Block:	North Puerto Rico	Vessel:	Marcus G Langseth
Client Contact:		Supervisor:	
Consultancy:		Party Chiefs:	Todd Jensvold
Job No:		Client Reps:	Dr. J. Pablo Canales

Daily Comment Summaries - Daily Summary

Sun 10 Dec

We completed the last OBS recovery on the eastern line at approximately ~3pm this afternoon.

We are currently transiting to the North Central line to deploy the twelve OBS instruments.

The main lab and rack room were very warm while the AC's were being serviced. Temps were over 90 F degrees for several hours. The accommodations stayed cool.

We will deploy the first OBS around 5AM tomorrow morning local time.

Crew change preparations are under way.

We reviewed our timing for the last deployment (and recovery) and we are on target to be at the pilot at 8AM Friday morning.

Daily Comment Summaries - Plan for Tomorrow

Sun 10 Dec

Deploy OBS instruments all day.

Timing Diary (Marcus G Langseth, OBS\_Deployment)



Start	End	Category	Code	Duration (hrs)
00:00	00:17	Receiver Rising	AC_RDR_FF_RRis	0.283
OBS S77				
00:17	00:26	Recover	AC_SM_Re	0.150
Node operation Block:North Puerto Rico 5 Line:S77 Recovery				
00:26	00:52	Transit	AC_RDR_FF_TR	0.433
Approach OBS S76				
00:52	02:29	Receiver Rising	AC_RDR_FF_RRis	1.617
OBS S76				
02:29	03:04	Recover	AC_SM_Re	0.583
Node operation Block:North Puerto Rico 5 Line:S76 Recovery				
03:04	03:37	Transit	AC_RDR_FF_TR	0.550
Approach OBS S75				
03:37	05:26	Receiver Rising	AC_RDR_FF_RRis	1.817
OBS S75				
05:26	05:39	Recover	AC_SM_Re	0.217
Node operation Block:North Puerto Rico 5 Line:S75 Recovery				
05:39	05:49	Transit	AC_RDR_FF_TR	0.167
Approach OBS S74				

Start	End	Category	Code	Duration (hrs)
05:49	07:30	<div></div> Receiver Rising	AC_RDR_FF_RRis	1.683
OBS S74				
07:30	07:47	<div></div> Recover	AC_SM_Re	0.283
Node operation Block:North Puerto Rico 5 Line:S74 Recovery				
07:47	08:02	<div></div> Transit	AC_RDR_FF_TR	0.250
Approach OBS S73				
08:02	09:56	<div></div> Receiver Rising	AC_RDR_FF_RRis	1.900
OBS S73				
09:56	10:43	<div></div> Recover	AC_SM_Re	0.783
Node operation Block:North Puerto Rico 5 Line:S73 Recovery				
10:43	10:50	<div></div> Transit	AC_RDR_FF_TR	0.117
Approach OBS S72				
10:50	12:35	<div></div> Receiver Rising	AC_RDR_FF_RRis	1.750
OBS S72				
12:35	12:45	<div></div> Recover	AC_SM_Re	0.167
Node operation Block:North Puerto Rico 5 Line:S72 Recovery				
12:45	13:11	<div></div> Transit	AC_RDR_FF_TR	0.433
Approach OBS S71				
13:11	15:01	<div></div> Receiver Rising	AC_RDR_FF_RRis	1.833
OBS S71				
15:01	15:17	<div></div> Recover	AC_SM_Re	0.267
Node operation Block:North Puerto Rico 5 Line:S71 Recovery				
15:17	15:41	<div></div> Transit	AC_RDR_FF_TR	0.400
Approach OBS S70				
15:41	17:03	<div></div> Receiver Rising	AC_RDR_FF_RRis	1.367
OBS S70				
17:03	17:13	<div></div> Recover	AC_SM_Re	0.167
Node operation Block:North Puerto Rico 5 Line:S70 Recovery				
17:13	17:31	<div></div> Transit	AC_RDR_FF_TR	0.300
Approach OBS S69				
17:31	18:53	<div></div> Receiver Rising	AC_RDR_FF_RRis	1.367
OBS S69				
18:53	19:05	<div></div> Recover	AC_SM_Re	0.200
Node operation Block:North Puerto Rico 5 Line:S69 Recovery				
19:05	24:00	<div></div> Transit	AC_RDR_FF_TR	4.917
Transit to north end of line CNR to deploy OBS units from North to South				

Timing Day By Day (Marcus G Langseth, OBS\_Deployment)

10-Dec	Hours	% Percent
Acquisition	24.000	100.000

10-Dec	Hours	% Percent
Receiver Deployment/Recovery	21.183	88.264
Free Fall OBS	21.183	88.264
Receiver Rising	13.617	56.736
Transit	7.567	31.528
Swath Move	2.817	11.736
Recover	2.817	11.736
Day's Total	24.000	100.000

Timing Breakdown Summary - Project (Marcus G Langseth, Source Only, OBS\_Deployment)

Category	Hours	% Percent
DownTime	11.117	2.150
Equipment Handling	0.433	0.084
Generators	1.333	0.258
High Pressure	0.217	0.042
Receiver Deployment/Recovery	5.267	1.019
Node Receiver not ready	1.500	0.290
Node Receiver unresponsive	1.783	0.345
Node Vessel position	1.983	0.384
Source	3.867	0.748
Array Air leak	3.867	0.748
Mobilisation	54.633	10.567
At Anchor	34.000	6.576
Transit to Prospect	20.633	3.991
Acquisition	434.583	84.059
Prime	137.800	26.654
Prime L/C	1.550	0.300
Receiver Deployment/Recovery	264.950	51.248
Free Fall OBS	264.950	51.248
Receiver deployment	19.500	3.772
Receiver Rising	96.800	18.723
Transit	148.650	28.752
Swath Move	30.283	5.858
Deploy	12.883	2.492
Recover	17.400	3.366
Non-Chargeable StandBy	14.000	2.708
Health and Safety	14.000	2.708
Chargeable Standby	2.667	0.516
Tests	2.667	0.516
Total	517.000	

Basic Project Details

Source Only					
General Details					
Record length:	0 ms	Sample rate:	0 ms	Shotpoint interval:	400 m
Source Details					

Source Only					
No of Sources:	1	Total Volume:	6600 cu ins	Depth:	12
Pressure:	1950 PSI	Volume:	6600	Strings per source:	4
String Separation:	6 m	String length:	16 m		

Production Totals (Accpt Main km)

OBS\_Deployment, Source Only

Accepted km	Day	Week	Month	Project
Prime	0.00	673.60	673.60	1816.40
Combined	0.00	673.60	673.60	1816.40

Production Listing (Accpt Main km) - Prime: Full Fold, Infill: Unknown

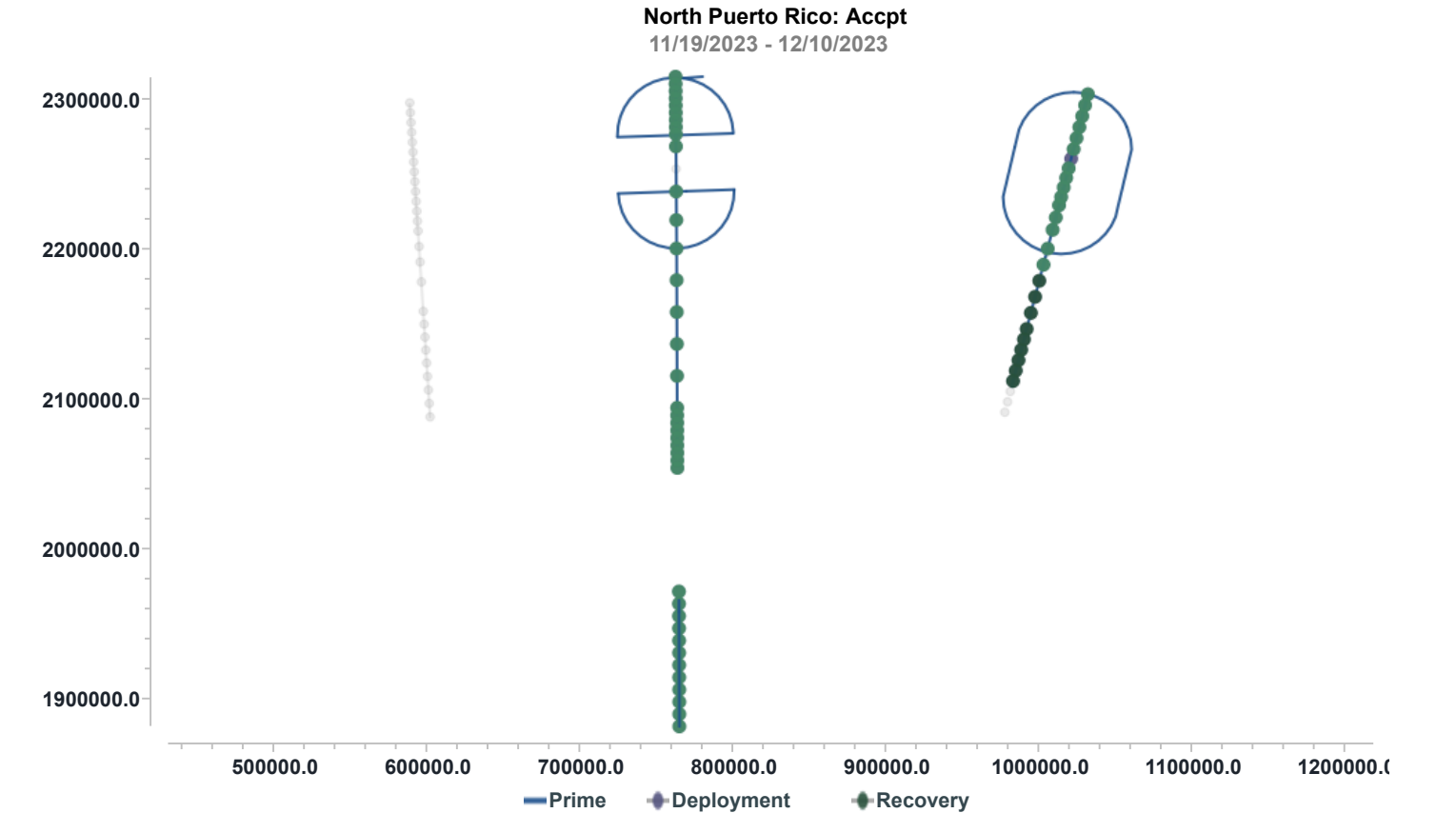
OBS\_Deployment, Source Only

Seq	Line	FGSP	LGSP	Prod Type	Production	Ave Knots	Seq Status	Line Status
Total					0.00			

Production Totals (Accpt Main km)

OBS\_Deployment, Source Only

Accepted km	Day	Week	Month	Project
Prime	0.00	673.60	673.60	1816.40
Combined	0.00	673.60	673.60	1816.40



Daily Comment Summaries - Daily Comments On Status of Equipment

Sun 10 Dec

Navigation:

No Major Issues to Report

12/10/2023

Page 5

Information Technology (IT):  
No Major Issues to Report

OBS:  
No Major Issues to Report

Towing and Handling (Source):  
No Major Issues to Report

General Purpose Science:  
No Major issues to Report.

Daily Comment Summaries - Personnel Onboard

Sun 10 Dec

Technical Staff On-board the Langseth  
Todd Jensvold L-DEO OMO Chief Science Officer  
Brian Agee L-DEO OMO Chief Source Mechanic  
Gilles Guerin - L-DEO OMO Observer  
Aaron Martin.- Contract Navigator  
Mark Walker - Contract Source Mechanic  
Ray Hatton - Contract Source Mechanic  
Jacob Greenberg - Contract Source Mechanic  
Sean Seekins - Contract Source Mechanic  
Ian Davis- Contract Tech

PSO Staff On-board the Langseth  
Amanda Dubuque - RPS Lead PSO  
Cassandra Frey - RPS PSO  
Elizabeth Breton - RPS PSO  
Tiffany Ramdoo - RPS PSO  
Maria Sandoval - RPS PSO

OBSIC Team  
Arne Shwenk- GeoMar  
Lisa Sokolkova-GeoMar  
Hannah Brewer-WHOI  
Tim Kane-WHOI  
Gavin McCarthy-WHOI  
Andrew Farmer-USGS








Science Party On-board the Langseth  
J. Pablo Canales - Lead PI WHOI  
Nick Harmon Co-PI WHOI  
Liam Moser WHOI

HSE Events Diary (Marcus G Langseth)

Start	End	Category	Code
16:05	17:05	Daily Ops Meeting	Mtgs_DOps
Daily Operation Meeting with PI, CSO, Captain, Nav, PSO, OBSIC			

Daily Total Category	Code	Count
Toolbox Meetings	Mtgs_Tbox	3
Shiftchange toolbox meetings		

HSE Event Period Totals - Project (Marcus G Langseth)

Category	Code	Day (num)	Week (num)	Month (num)	Project (num)	Proj Hours	Man Hours
 Meetings	Mtgs	4	29	44	84	18.833	110.250
 Chiefs Meeting	Chfs	0	0	0	2	1.833	11.833
 Daily Ops Meeting	DOps	1	7	10	20	16.000	68.417
 Full Safety Meeting	FS	0	0	0	1	1.000	30.000
 Toolbox Meetings	Tbox	3	22	34	61		
 Training	Trng	0	0	0	1	2.500	22.500
 Safety Induction Tours	SIT	0	0	0	1	2.500	22.500

12/11/2023

Page 1

Client:	Lamont-Doherty Earth Observatory	Contractor:	Lamont-Doherty Earth Observatory
Job No:	MGL2316	Job No:	MGL2316
Block:	North Puerto Rico	Vessel:	Marcus G Langseth
Client Contact:		Supervisor:	
Consultancy:		Party Chiefs:	Todd Jensvold
Job No:		Client Reps:	Dr. J. Pablo Canales

Daily Comment Summaries - Daily Summary

Mon 11 Dec

We deployed the last OBS at ~7:45PM local time. (23:45GMT)

We currently have all four gun-strings deployed and are performing the 30 min pre-watch to begin the soft-start. The gun-strings went out smoothly. We will shoot a short bonus line as we transit to the SOL.

This line will take just over 24 hours to shoot and then we will recover all the gear and head to town!

Crew change preparation and hand overs are in full swing.

Steady progress. Good THC reporting. HBD Aaron.

Daily Comment Summaries - Plan for Tomorrow

Mon 11 Dec

Shoot all day!

Crew change preparations.

Weekly Tech Meeting.

Timing Diary (Marcus G Langseth, OBS\_Deployment)

Start	End	Category	Code	Duration (hrs)
00:00	08:38	Transit	AC_RDR_FF_TR	8.633
Transit to north end of line CNR to deploy OBS units from North to South				
08:38	09:08	Deploy	AC_SM_De	0.500
Node operation Block:North Puerto Rico 6 Line:S51 Deployment				
09:08	09:41	Transit	AC_RDR_FF_TR	0.550
Approach OBS S50				
09:41	10:11	Deploy	AC_SM_De	0.500
Node operation Block:North Puerto Rico 6 Line:S50 Deployment				
10:11	10:46	Transit	AC_RDR_FF_TR	0.583
Approach OBS S49				
10:46	11:16	Deploy	AC_SM_De	0.500
Node operation Block:North Puerto Rico 6 Line:S49 Deployment				
11:16	12:46	Transit	AC_RDR_FF_TR	1.500
Approach OBS S48				
12:46	13:16	Deploy	AC_SM_De	0.500
Node operation Block:North Puerto Rico 6 Line:S48 Deployment				
13:16	13:46	Transit	AC_RDR_FF_TR	0.500

Start	End	Category	Code	Duration (hrs)
Approach OBS S47				
13:46	14:16	 Deploy	AC_SM_De	0.500
Node operation Block:North Puerto Rico 6 Line:S47 Deployment				
14:16	17:49	 Transit	AC_RDR_FF_TR	3.550
Approach OBS S46				
17:49	18:19	 Deploy	AC_SM_De	0.500
Node operation Block:North Puerto Rico 6 Line:S46 Deployment				
18:19	18:46	 Transit	AC_RDR_FF_TR	0.450
Approach OBS S45				
18:46	19:16	 Deploy	AC_SM_De	0.500
Node operation Block:North Puerto Rico 6 Line:S45 Deployment				
19:16	19:38	 Transit	AC_RDR_FF_TR	0.367
Approach OBS S44				
19:38	20:08	 Deploy	AC_SM_De	0.500
Node operation Block:North Puerto Rico 6 Line:S44 Deployment				
20:08	21:01	 Transit	AC_RDR_FF_TR	0.883
Approach OBS S43				
21:01	21:31	 Deploy	AC_SM_De	0.500
Node operation Block:North Puerto Rico 6 Line:S43 Deployment				
21:31	21:58	 Transit	AC_RDR_FF_TR	0.450
Approach OBS S42				
21:58	22:28	 Deploy	AC_SM_De	0.500
Node operation Block:North Puerto Rico 6 Line:S42 Deployment				
22:28	22:33	 Transit	AC_RDR_FF_TR	0.083
Approach OBS S41				
22:33	23:03	 Deploy	AC_SM_De	0.500
Node operation Block:North Puerto Rico 6 Line:S41 Deployment				
23:03	23:18	 Transit	AC_RDR_FF_TR	0.250
Approach OBS S40				
23:18	23:35	 Deploy	AC_SM_De	0.283
Node operation Block:North Puerto Rico 6 Line:S40 Deployment				
23:35	24:00	 Transit	AC_RDR_FF_TR	0.417
Transit South to SOL then turn due East into the seas to deploy all gear				

Timing Day By Day (Marcus G Langseth, OBS\_Deployment)

11-Dec	Hours	% Percent
Acquisition	24.000	100.000
Receiver Deployment/Recovery	18.217	75.903
Free Fall OBS	18.217	75.903
Transit	18.217	75.903



11-Dec	Hours	% Percent
Swath Move	5.783	24.097
Deploy	5.783	24.097
Day's Total	24.000	100.000

Timing Breakdown Summary - Project (Marcus G Langseth, Source Only, OBS\_Deployment)

Category	Hours	% Percent
<b>DownTime</b>	<b>11.117</b>	<b>2.055</b>
Equipment Handling	0.433	0.080
Generators	1.333	0.246
High Pressure	0.217	0.040
Receiver Deployment/Recovery	5.267	0.974
Node Receiver not ready	1.500	0.277
Node Receiver unresponsive	1.783	0.330
Node Vessel position	1.983	0.367
Source	3.867	0.715
Array Air leak	3.867	0.715
<b>Mobilisation</b>	<b>54.633</b>	<b>10.099</b>
At Anchor	34.000	6.285
Transit to Prospect	20.633	3.814
<b>Acquisition</b>	<b>458.583</b>	<b>84.766</b>
Prime	137.800	25.471
Prime L/C	1.550	0.287
Receiver Deployment/Recovery	283.167	52.341
Free Fall OBS	283.167	52.341
Receiver deployment	19.500	3.604
Receiver Rising	96.800	17.893
Transit	166.867	30.844
Swath Move	36.067	6.667
Deploy	18.667	3.450
Recover	17.400	3.216
<b>Non-Chargeable StandBy</b>	<b>14.000</b>	<b>2.588</b>
Health and Safety	14.000	2.588
<b>Chargeable Standby</b>	<b>2.667</b>	<b>0.493</b>
Tests	2.667	0.493
Total	541.000	

Basic Project Details

Source Only					
General Details					
Record length:	0 ms	Sample rate:	0 ms	Shotpoint interval:	400 m
Source Details					
No of Sources:	1	Total Volume:	6600 cu ins	Depth:	12
Pressure:	1950 PSI	Volume:	6600	Strings per source:	4
String Separation:	6 m	String length:	16 m		

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Production Totals (Accpt Main km)

OBS\_Deployment, Source Only

Accepted km	Day	Week	Month	Project
Prime	0.00	0.00	673.60	1816.40
Combined	0.00	0.00	673.60	1816.40

Production Listing (Accpt Main km) - Prime: Full Fold, Infill: Unknown

OBS\_Deployment, Source Only

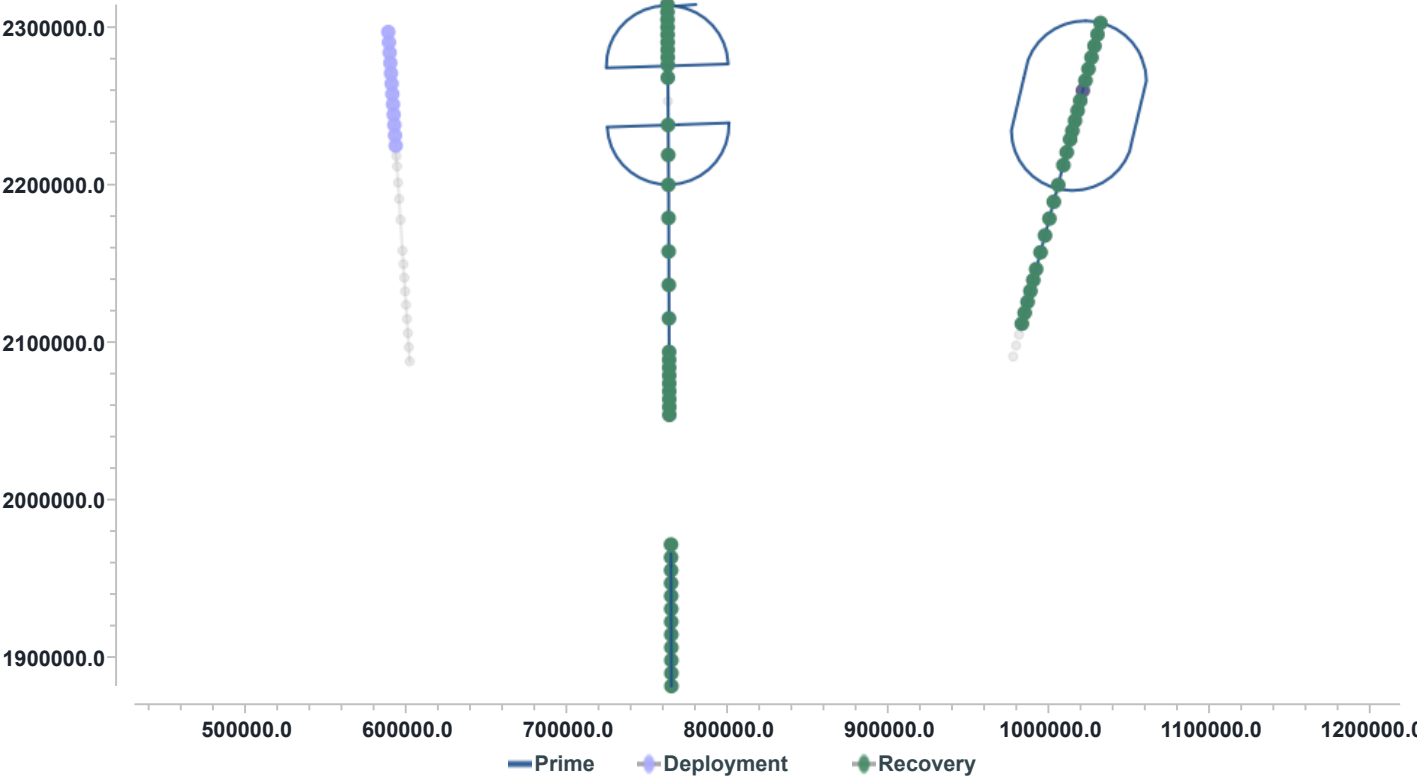
Seq	Line	FGSP	LGSP	Prod Type	Production	Ave Knots	Seq Status	Line Status
Total					0.00			

Production Totals (Accpt Main km)

OBS\_Deployment, Source Only

Accepted km	Day	Week	Month	Project
Prime	0.00	0.00	673.60	1816.40
Combined	0.00	0.00	673.60	1816.40

North Puerto Rico: Accpt  
11/19/2023 - 12/11/2023



Daily Comment Summaries - Daily Comments On Status of Equipment

Mon 11 Dec

Navigation:  
7 out of 8 GPS pods working. Front of #2 out.

Information Technology (IT):  
No Major Issues to Report

OBS:  
No Major Issues to Report

Towing and Handling (Source):

General Purpose Science:  
No Major issues to Report.

Daily Comment Summaries - Personnel Onboard

Mon 11 Dec

Technical Staff On-board the Langseth  
Todd Jensvold L-DEO OMO Chief Science Officer  
Brian Agee L-DEO OMO Chief Source Mechanic  
Gilles Guerin - L-DEO OMO Observer  
Aaron Martin.- Contract Navigator  
Mark Walker - Contract Source Mechanic  
Ray Hatton - Contract Source Mechanic  
Jacob Greenberg - Contract Source Mechanic  
Sean Seekins - Contract Source Mechanic  
Ian Davis- Contract Tech

PSO Staff On-board the Langseth  
Amanda Dubuque - RPS Lead PSO  
Cassandra Frey - RPS PSO  
Elizabeth Breton - RPS PSO  
Tiffany Ramdoo - RPS PSO  
Maria Sandoval - RPS PSO

OBSIC Team  
Arne Shwenk- GeoMar  
Lisa Sokolkova-GeoMar  
Hannah Brewer-WHOI  
Tim Kane-WHOI  
Gavin McCarthy-WHOI  
Andrew Farmer-USGS

Science Party On-board the Langseth  
J. Pablo Canales - Lead PI WHOI  
Nick Harmon Co-PI WHOI  
Liam Moser WHOI





HSE Events Diary (Marcus G Langseth)

Start	End	Category	Code
16:00	17:00	<div></div> Daily Ops Meeting	Mtgs_DOps
Daily Operation Meeting with PI, CSO, Captain, Nav, PSO, OBSIC			

Daily Total Category	Code	Count
<div></div> Toolbox Meetings	Mtgs_Tbox	5
Gunstring deployment toolbox PAM_Maggie deployment toolbox Shiftchange toolbox meeting		

HSE Event Period Totals - Project (Marcus G Langseth)

Category	Code	Day (num)	Week (num)	Month (num)	Project (num)	Proj Hours	Man Hours
<div></div> Meetings	Mtgs	6	6	50	90	19.833	117.250
<div></div> Chiefs Meeting	Chfs	0	0	0	2	1.833	11.833
<div></div> Daily Ops Meeting	DOps	1	1	11	21	17.000	75.417

Category	Code	Day (num)	Week (num)	Month (num)	Project (num)	Proj Hours	Man Hours
 Full Safety Meeting	FS	0	0	0	1	1.000	30.000
 Toolbox Meetings	Tbox	5	5	39	66		
 Training	Trng	0	0	0	1	2.500	22.500
 Safety Induction Tours	SIT	0	0	0	1	2.500	22.500

12/12/2023

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Client:	Lamont-Doherty Earth Observatory	Contractor:	Lamont-Doherty Earth Observatory
Job No:	MGL2316	Job No:	MGL2316
Block:	North Puerto Rico	Vessel:	Marcus G Langseth
Client Contact:		Supervisor:	
Consultancy:		Party Chiefs:	Todd Jensvold
Job No:		Client Reps:	Dr. J. Pablo Canales

Daily Comment Summaries - Daily Summary

Tue 12 Dec

We shot the final line all day long with full gun volume and seven working pods. The shooting speed was terrific and the guns were singing. One crewman thought that he heard harps.

The Weekly Tech Meeting was held online.

Everyone is working on handover, end of job tasks and crew change items.

We will finish the last shotpoint ~1AM local time and begin recovering all of the towed gear. OBS recoveries will follow.

We picked up the Maggie this afternoon because it was reporting bogus data. We will re-deploy it while transiting between OBS recoveries to do a little troubleshooting without having the gun-strings deployed. We want to confirm if the problem was the position of the towfish relative to the gun-strings, the actual tow magnetometer or something else, like the lead-in, slip ring or the connection.

We will perform a couple of XBT's during the OBS recovery operation.

Daily Comment Summaries - Plan for Tomorrow

Tue 12 Dec

We will recover the towed gear and begin recovering the OBS's.

Timing Diary (Marcus G Langseth, Source Only, OBS\_Deployment)



Start	End	Category	Code	Duration (hrs)
00:00	00:22	Transit	AC_RDR_FF_TR	0.367
Transit South to SOL then turn due East into the seas to deploy all gear				
00:22	00:30	Transit	AC_RDR_FF_TR	0.133
Deploy Magnetometer and PAM				
00:30	00:49	Transit	AC_RDR_FF_TR	0.317
Deploy gun string 1				
00:49	01:07	Transit	AC_RDR_FF_TR	0.300
Deploy gun string 2				
01:07	02:01	Transit	AC_RDR_FF_TR	0.900
Deploy gun string 4				
02:01	02:41	Transit	AC_RDR_FF_TR	0.667
Deploy gun string 3				
02:41	03:12	Transit	AC_RDR_FF_TR	0.517
PSO prewatch				
03:12	04:34	Prime	AC_PP	1.367
Seq: 13 SOL Seq 13 Line:MGL2316013TESTP1 Preplot:TEST Block:North Puerto Rico FGSP:8111 FCSP:8111 Hdg:269.2° Prime				

Start	End	Category	Code	Duration (hrs)
EOL Seq 13 Line:MGL2316013TESTP1 Preplot:TEST Block:North Puerto Rico LGSP:8216 LCSP:8216 Complete				
04:34	04:38	<div></div> Prime L/C	AC_PLC	0.067
Seq: 13 Line: MGL2316013TESTP1 Nominal Prime line change.				
04:38	24:00	<div></div> Prime	AC_PP	19.367
Seq: 14 SOL Seq 14 Line:CNR Block:North Puerto Rico FGSP:1013 FCSP:1013 Hdg:179.7° Prime MSP Seq 14 Line:CNR Block:North Puerto Rico LGSP:2854 LCSP:2854 Midnight				

Timing Day By Day (Marcus G Langseth, Source Only, OBS\_Deployment)

12-Dec	Hours	% Percent
Acquisition	24.000	100.000
Prime	20.733	86.389
Prime L/C	0.067	0.278
Receiver Deployment/Recovery	3.200	13.333
Free Fall OBS	3.200	13.333
Transit	3.200	13.333
Day's Total	24.000	100.000

Timing Breakdown Summary - Project (Marcus G Langseth, Source Only, OBS\_Deployment)

Category	Hours	% Percent
DownTime	11.117	1.968
Equipment Handling	0.433	0.077
Generators	1.333	0.236
High Pressure	0.217	0.038
Receiver Deployment/Recovery	5.267	0.932
Node Receiver not ready	1.500	0.265
Node Receiver unresponsive	1.783	0.316
Node Vessel position	1.983	0.351
Source	3.867	0.684
Array Air leak	3.867	0.684
Mobilisation	54.633	9.670
At Anchor	34.000	6.018
Transit to Prospect	20.633	3.652
Acquisition	482.583	85.413
Prime	158.533	28.059
Prime L/C	1.617	0.286
Receiver Deployment/Recovery	286.367	50.684
Free Fall OBS	286.367	50.684
Receiver deployment	19.500	3.451
Receiver Rising	96.800	17.133
Transit	170.067	30.100
Swath Move	36.067	6.383
Deploy	18.667	3.304
Recover	17.400	3.080

Category	Hours	% Percent
Non-Chargeable StandBy	14.000	2.478
Health and Safety	14.000	2.478
Chargeable Standby	2.667	0.472
Tests	2.667	0.472
Total	565.000	

Basic Project Details

Source Only					
General Details					
Record length:	0 ms	Sample rate:	0 ms	Shotpoint interval:	400 m
Source Details					
No of Sources:	1	Total Volume:	6600 cu ins	Depth:	12
Pressure:	1950 PSI	Volume:	6600	Strings per source:	4
String Separation:	6 m	String length:	16 m		

Production Totals (Accpt Main km)

OBS\_Deployment, Source Only

Accepted km	Day	Week	Month	Project
Prime	779.20	779.20	1452.80	2595.60
Combined	779.20	779.20	1452.80	2595.60

Production Listing (Accpt Main km)

OBS\_Deployment, Source Only

Seq	Line	Heading	FGSP	LGSP	Prod Type	Production	Ave Knots	Seq Status	Line Status
13	MGL2316013TESTP1	269.2	8111	8216	Prime	42.40	16.594	Complete	Complete
14	MGL2316014CNRP1	179.7	1013	2854	Prime	736.80	20.531	Midnight	Part
Total						779.20			

Production Totals (Accpt Main km)

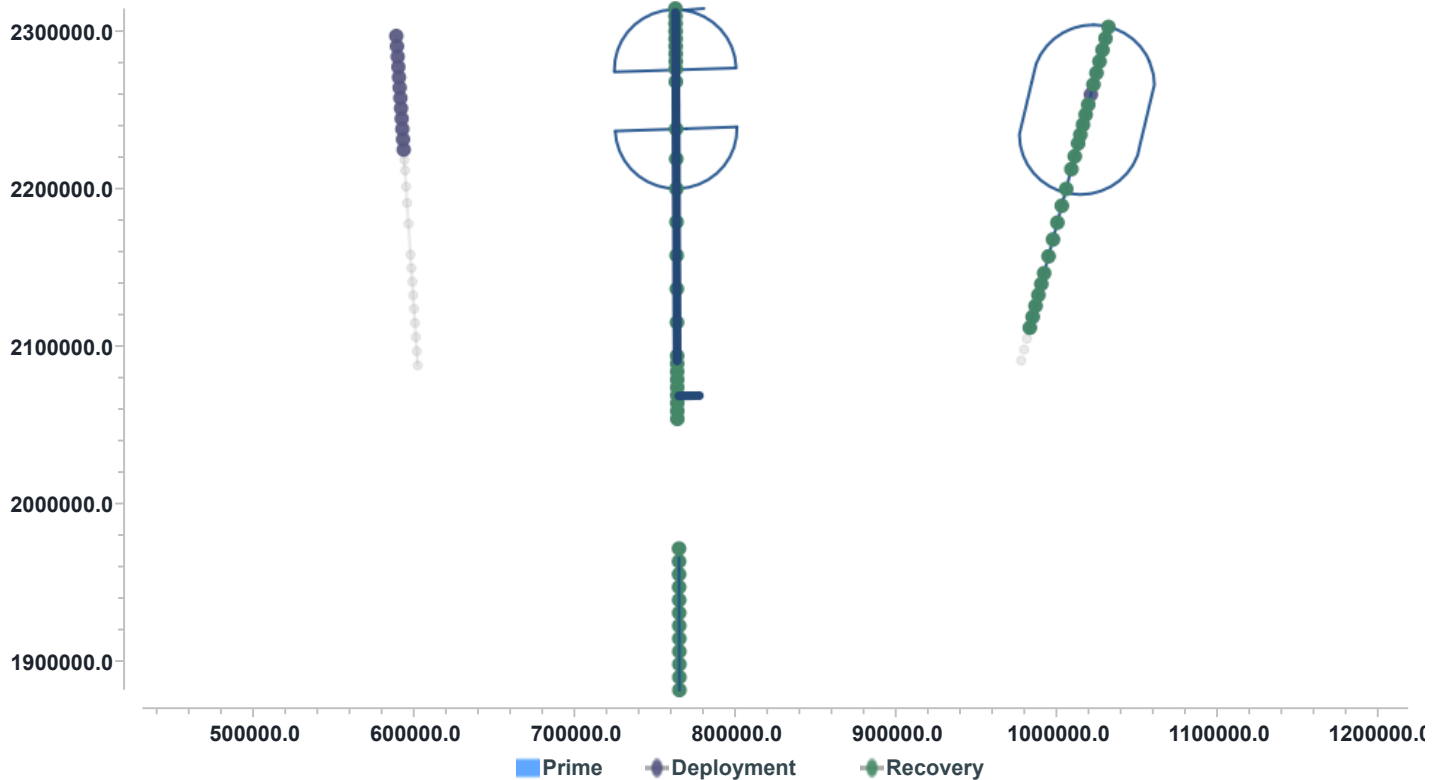
OBS\_Deployment, Source Only

Accepted km	Day	Week	Month	Project
Prime	779.20	779.20	1452.80	2595.60
Combined	779.20	779.20	1452.80	2595.60

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## North Puerto Rico: Accpt 11/19/2023 - 12/12/2023



## Daily Comment Summaries - Daily Comments On Status of Equipment

Tue 12 Dec

### Navigation:

7 out of 8 working.

### Information Technology (IT):

No Major Issues to Report

### OBS:

No Major Issues to Report

### Towing and Handling (Source):

Harps.

### General Purpose Science:

Maggie was recovered due to crummy data. More troubleshooting coming.

## Daily Comment Summaries - Personnel Onboard

Tue 12 Dec

### Technical Staff On-board the Langseth

Todd Jensvold L-DEO OMO Chief Science Officer

Brian Agee L-DEO OMO Chief Source Mechanic

Gilles Guerin - L-DEO OMO Observer

Aaron Martin - Contract Navigator

Mark Walker - Contract Source Mechanic

Ray Hatton - Contract Source Mechanic

Jacob Greenberg - Contract Source Mechanic

Sean Seekins - Contract Source Mechanic

Ian Davis - Contract Tech

### PSO Staff On-board the Langseth



12/12/2023

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Amanda Dubuque - RPS Lead PSO  
Cassandra Frey - RPS PSO  
Elizabeth Breton - RPS PSO  
Tiffany Ramdoo - RPS PSO  
Maria Sandoval - RPS PSO

**OBSIC Team**  
Arne Shwenk- GeoMar  
Lisa Sokolkova-GeoMar  
Hannah Brewer-WHOI  
Tim Kane-WHOI  
Gavin McCarthy-WHOI  
Andrew Farmer-USGS

**Science Party On-board the Langseth**  
J. Pablo Canales - Lead PI WHOI  
Nick Harmon Co-PI WHOI  
Liam Moser WHOI

HSE Events Diary (Marcus G Langseth)

Start	End	Category	Code
16:00	17:00	<div></div> Daily Ops Meeting	Mtgs_DOps
Daily Operation Meeting with PI, CSO, Captain, Nav, PSO, OBSIC			

Daily Total Category	Code	Count
<div></div> Toolbox Meetings	Mtgs_Tbox	3
Shiftchange toolbox		

HSE Event Period Totals - Project (Marcus G Langseth)

Category	Code	Day (num)	Week (num)	Month (num)	Project (num)	Proj Hours	Man Hours
<div></div> Meetings	Mtgs	4	10	54	94	20.833	124.250
<div></div> Chiefs Meeting	Chfs	0	0	0	2	1.833	11.833
<div></div> Daily Ops Meeting	DOps	1	2	12	22	18.000	82.417
<div></div> Full Safety Meeting	FS	0	0	0	1	1.000	30.000
<div></div> Toolbox Meetings	Tbox	3	8	42	69		
<div></div> Training	Trng	0	0	0	1	2.500	22.500
<div></div> Safety Induction Tours	SIT	0	0	0	1	2.500	22.500

12/13/2023

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Client:	Lamont-Doherty Earth Observatory	Contractor:	Lamont-Doherty Earth Observatory
Job No:	MGL2316	Job No:	MGL2316
Block:	North Puerto Rico	Vessel:	Marcus G Langseth
Client Contact:		Supervisor:	
Consultancy:		Party Chiefs:	Todd Jensvold
Job No:		Client Reps:	Dr. J. Pablo Canales

Daily Comment Summaries - Daily Summary

Wed 13 Dec

We finished shooting the last line early this morning approximately ~2:20 AM local. We turned into a substantial sea and recovered the gun-strings and towed gear. The towed gear was onboard ~5AM.

The first OBS was recovered around 10AM. We have five instruments on board at the time of this log.

The weather and sea state have been challenging for recovering OBS's. We have added some deck bits and an extra tagline to manage the OBS's. We have reinforced the need to stay focused and prepared during the marginal weather. None of the crew working on the deck have any reservations about continuing the operations at this point.

There were several online meetings today and a lot of busyness in preparation for the Penske style crew change.

The mechanics sprayed all the guns down with fresh water and mystery oil. Then sealed them for demob.

We will do a LMRA prior to the next Geomar recovery.

Daily Comment Summaries - Plan for Tomorrow

Wed 13 Dec

Recover OBS's all day.

Timing Diary (Marcus G Langseth, Source Only, OBS\_Deployment)



Start	End	Category	Code	Duration (hrs)
00:00	06:22	Prime	AC_PP	6.367
Seq: 14 SOL Seq 14 Line:MGL2316014CNRP1 Preplot:CNR Block:North Puerto Rico FGSP:1503 FCSP:1503 Hdg:359.7° Prime EOL Seq 14 Line:MGL2316014CNRP1 Preplot:CNR Block:North Puerto Rico LGSP:1001 LCSP:1001 Complete				
06:22	07:14	Transit	AC_RDR_FF_TR	0.867
Recovering gun string 3				
07:14	07:52	Transit	AC_RDR_FF_TR	0.633
Recover gun string 4				
07:52	08:24	Transit	AC_RDR_FF_TR	0.533
Recover gun string 2				
08:24	08:32	Transit	AC_RDR_FF_TR	0.133
Recover gun string 1				
08:32	08:50	Transit	AC_RDR_FF_TR	0.300
Recover PAM				
08:50	12:06	Transit	AC_RDR_FF_TR	3.267
Approach OBS S51				
12:06	13:51	Receiver Rising	AC_RDR_FF_RRis	1.750
OBS 51				

Start	End	Category	Code	Duration (hrs)
13:51	14:09	<div></div> Recover	AC_SM_Re	0.300
Node operation Block:North Puerto Rico 7 Line:S51 Recovery				
14:09	14:17	<div></div> Transit	AC_RDR_FF_TR	0.133
Approach OBS S50				
14:17	16:17	<div></div> Receiver Rising	AC_RDR_FF_RRis	2.000
OBS S50				
16:17	16:27	<div></div> Recover	AC_SM_Re	0.167
Node operation Block:North Puerto Rico 7 Line:S50 Recovery				
16:27	17:28	<div></div> Transit	AC_RDR_FF_TR	1.017
Approach OBS S49				
17:28	18:34	<div></div> Receiver Rising	AC_RDR_FF_RRis	1.100
OBS S49				
18:34	18:46	<div></div> Recover	AC_SM_Re	0.200
Node operation Block:North Puerto Rico 7 Line:S49 Recovery				
18:46	20:22	<div></div> Transit	AC_RDR_FF_TR	1.600
Approach OBS S48				
20:22	21:53	<div></div> Receiver Rising	AC_RDR_FF_RRis	1.517
OBS S48				
21:53	22:04	<div></div> Recover	AC_SM_Re	0.183
Node operation Block:North Puerto Rico 7 Line:S49 Recovery				
22:04	22:37	<div></div> Transit	AC_RDR_FF_TR	0.550
Approach OBS S47				
22:37	24:00	<div></div> Receiver Rising	AC_RDR_FF_RRis	1.383
OBS S47				

Timing Day By Day (Marcus G Langseth, Source Only, OBS\_Deployment)

13-Dec	Hours	% Percent
Acquisition	24.000	100.000
Prime	6.367	26.528
Receiver Deployment/Recovery	16.783	69.931
Free Fall OBS	16.783	69.931
Receiver Rising	7.750	32.292
Transit	9.033	37.639
Swath Move	0.850	3.542
Recover	0.850	3.542
Day's Total	24.000	100.000

Timing Breakdown Summary - Project (Marcus G Langseth, Source Only, OBS\_Deployment)

Category	Hours	% Percent
DownTime	11.117	1.887
Equipment Handling	0.433	0.074
Generators	1.333	0.226

Category	Hours	% Percent
High Pressure	0.217	0.037
Receiver Deployment/Recovery	5.267	0.894
Node Receiver not ready	1.500	0.255
Node Receiver unresponsive	1.783	0.303
Node Vessel position	1.983	0.337
Source	3.867	0.656
Array Air leak	3.867	0.656
Mobilisation	54.633	9.276
At Anchor	34.000	5.772
Transit to Prospect	20.633	3.503
Acquisition	506.583	86.007
Prime	164.900	27.997
Prime L/C	1.617	0.274
Receiver Deployment/Recovery	303.150	51.469
Free Fall OBS	303.150	51.469
Receiver deployment	19.500	3.311
Receiver Rising	104.550	17.750
Transit	179.100	30.407
Swath Move	36.917	6.268
Deploy	18.667	3.169
Recover	18.250	3.098
Non-Chargeable StandBy	14.000	2.377
Health and Safety	14.000	2.377
Chargeable Standby	2.667	0.453
Tests	2.667	0.453
Total	589.000	

Basic Project Details

Source Only					
General Details					
Record length:	0 ms	Sample rate:	0 ms	Shotpoint interval:	400 m
Source Details					
No of Sources:	1	Total Volume:	6600 cu ins	Depth:	12
Pressure:	1950 PSI	Volume:	6600	Strings per source:	4
String Separation:	6 m	String length:	16 m		

Production Totals (Accpt Main km)

OBS\_Deployment, Source Only

Accepted km	Day	Week	Month	Project
Prime	201.20	858.80	1532.40	2675.20
Combined	201.20	858.80	1532.40	2675.20

Production Listing (Accpt Main km)

OBS\_Deployment, Source Only

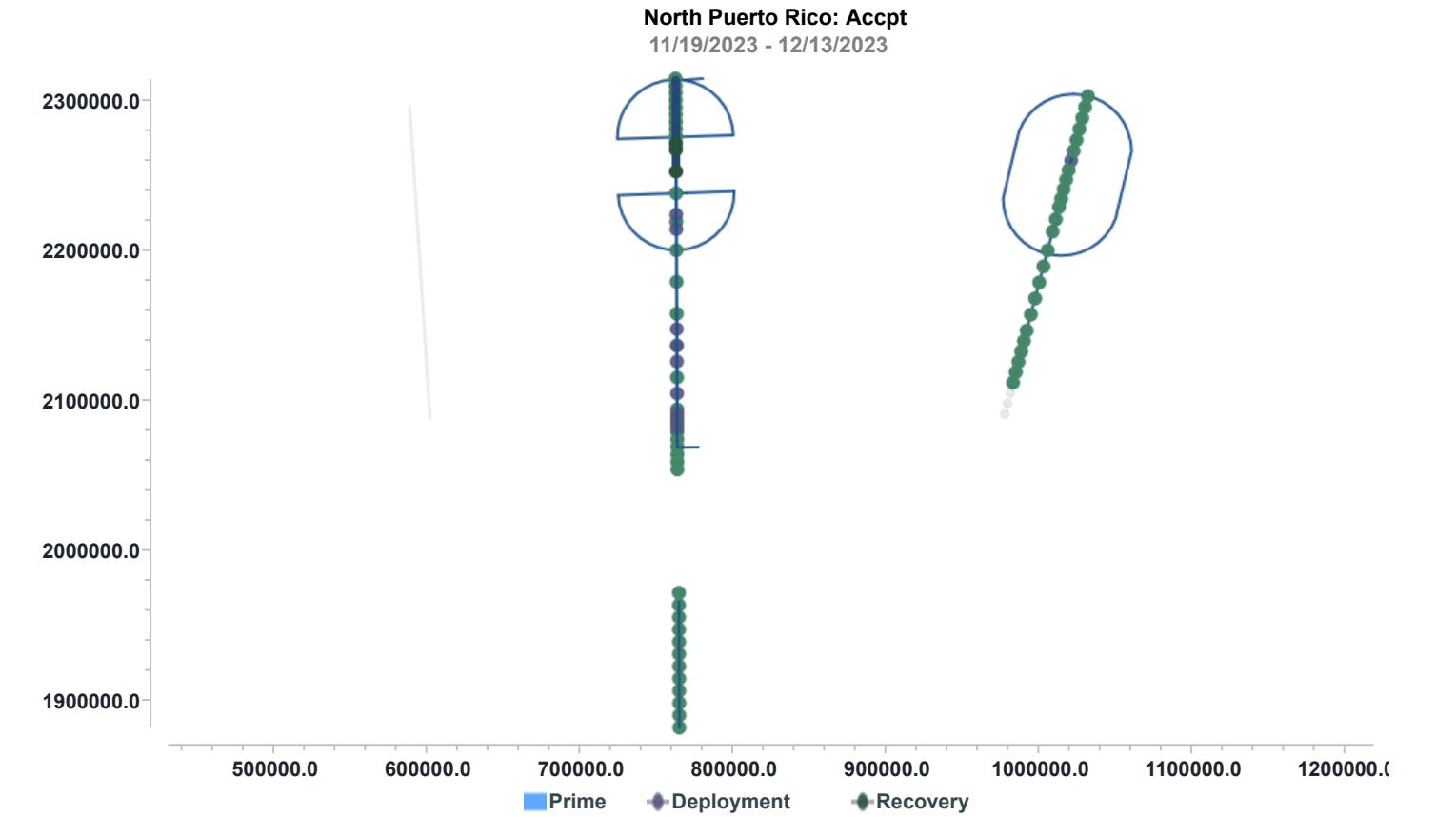
Seq	Line	Heading	FGSP	LGSP	Prod Type	Production	Ave Knots	Seq Status	Line Status
14	MGL2316014CNRP1	359.7	1503	1001	Prime	201.20	17.122	Complete	Complete

Seq	Line	Heading	FGSP	LGSP	Prod Type	Production	Ave Knots	Seq Status	Line Status
Total						201.20			

Production Totals (Accpt Main km)

OBS\_Deployment, Source Only

Accepted km	Day	Week	Month	Project
Prime	201.20	858.80	1532.40	2675.20
Combined	201.20	858.80	1532.40	2675.20



Daily Comment Summaries - Daily Comments On Status of Equipment

Wed 13 Dec

**Navigation:**  
Removed all of the GPS pods on the gunstrings.

**Information Technology (IT):**  
No Major Issues to Report

**OBS:**  
No Major Issues to Report

**Towing and Handling (Source):**  
Secured and prepped for transit.

**General Purpose Science:**  
No Major issues to Report.

Daily Comment Summaries - Personnel Onboard

Wed 13 Dec

Technical Staff On-board the Langseth

Todd Jensvold L-DEO OMO Chief Science Officer  
Brian Agee L-DEO OMO Chief Source Mechanic  
Gilles Guerin - L-DEO OMO Observer  
Aaron Martin.- Contract Navigator  
Mark Walker - Contract Source Mechanic  
Ray Hatton - Contract Source Mechanic  
Jacob Greenberg - Contract Source Mechanic  
Sean Seekins - Contract Source Mechanic  
Ian Davis- Contract Tech

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Amanda Dubuque - RPS Lead PSO  
Cassandra Frey - RPS PSO  
Elizabeth Breton - RPS PSO  
Tiffany Ramdoo - RPS PSO  
Maria Sandoval - RPS PSO

OBSIC Team

Arne Shwenk- GeoMar  
Lisa Sokolkova-GeoMar  
Hannah Brewer-WHOI  
Tim Kane-WHOI  
Gavin McCarthy-WHOI  
Andrew Farmer-USGS

Science Party On-board the Langseth

J. Pablo Canales - Lead PI WHOI  
Nick Harmon Co-PI WHOI  
Liam Moser WHOI

HSE Events Diary (Marcus G Langseth)

Start	End	Category	Code
16:00	17:00	<div></div> Daily Ops Meeting	Mtgs_DOps
Daily Operation Meeting with PI, CSO, Captain, Nav, PSO, OBSIC			

Daily Total Category	Code	Count
<div></div> Toolbox Meetings	Mtgs_Tbox	7
Several OBS recovery toolboxes. WX toolbox Source recovery toolbox Shift change toolboxes		

HSE Event Period Totals - Project (Marcus G Langseth)

Category	Code	Day (num)	Week (num)	Month (num)	Project (num)	Proj Hours	Man Hours
<div></div> Meetings	Mtgs	8	18	62	102	21.833	124.250
<div></div> Chiefs Meeting	Chfs	0	0	0	2	1.833	11.833
<div></div> Daily Ops Meeting	DOps	1	3	13	23	19.000	82.417
<div></div> Full Safety Meeting	FS	0	0	0	1	1.000	30.000
<div></div> Toolbox Meetings	Tbox	7	15	49	76		
<div></div> Training	Trng	0	0	0	1	2.500	22.500
<div></div> Safety Induction Tours	SIT	0	0	0	1	2.500	22.500

12/14/2023

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Client:	Lamont-Doherty Earth Observatory	Contractor:	Lamont-Doherty Earth Observatory
Job No:	MGL2316	Job No:	MGL2316
Block:	North Puerto Rico	Vessel:	Marcus G Langseth
Client Contact:		Supervisor:	
Consultancy:		Party Chiefs:	Todd Jensvold
Job No:		Client Reps:	Dr. J. Pablo Canales

Daily Comment Summaries - Daily Summary

Thu 14 Dec

The final OBS on MGL2316 was recovered at ~4:30pm local time. The crew did a fantastic job throughout the trip. The last few days have been a more than a little choppy. Recovering OBS's and trying to get everything stowed and secured for relatively short crew change tomorrow morning was challenging. A special shout out to the WHOI OBSIC team and Geomar team.

Congratulations to Pablo and his entire team for a safe and successful trip! Well done!

We spent much of the day securing equipment, re-arranging the decks and packing equipment for an orderly demob in Norfolk.

We re-deployed the Maggie that we recovered early on the last source line to trouble shoot the dodgy data it was giving us. When we deployed the unit without the guns deployed the data looked good. We think that it may have gotten fouled up with the gun umbilical(s) during the turn in rough seas. The unit is working fine.

We will secure the sonars and peripheral equipment prior to getting into port. We intend to run the sonar's remotely during the transit so we will leave the equipment powered on, but turned off,

We had several toolbox meetings during the day to evaluate and re-evaluate the sea state and OBS recoveries. Top job by the bridge for putting us on the OBS's and making it possible.

There is a lot of misc crew change activity and hangovers occurring today.

We will meet the pilot ~8-9AM.

We are currently standing by offshore waiting to meet the pilot in the morning for port call/ crew change.

A cruise party is developing as we speak..

Daily Comment Summaries - Plan for Tomorrow

Thu 14 Dec

Crew change

Timing Diary (Marcus G Langseth, OBS\_Deployment)



Start	End	Category	Code	Duration (hrs)
00:00	00:06	Receiver Rising	AC_RDR_FF_RRis	0.100
OBS S47				
00:06	00:21	Recover	AC_SM_Re	0.250
Node operation Block:North Puerto Rico 7 Line:S47 Recovery				
00:21	04:21	Transit	AC_RDR_FF_TR	4.000
Approach OBS S46				
04:21	06:22	Receiver Rising	AC_RDR_FF_RRis	2.017
OBS S46				
06:22	06:58	Recover	AC_SM_Re	0.600
Node operation Block:North Puerto Rico 7 Line:S46 Recovery				

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Start	End	Category	Code	Duration (hrs)
06:58	07:41	 Transit	AC_RDR_FF_TR	0.717
Approach OBS S45				
07:41	09:26	 Receiver Rising	AC_RDR_FF_RRis	1.750
OBS S45				
09:26	09:55	 Recover	AC_SM_Re	0.483
Node operation Block:North Puerto Rico 7 Line:S45 Recovery				
09:55	10:31	 Transit	AC_RDR_FF_TR	0.600
Approach OBS S44				
10:31	12:22	 Receiver Rising	AC_RDR_FF_RRis	1.850
OBS S44				
12:22	12:53	 Recover	AC_SM_Re	0.517
Node operation Block:North Puerto Rico 7 Line:S44 Recovery				
12:53	14:23	 Transit	AC_RDR_FF_TR	1.500
Approach OBS S43				
14:23	15:23	 Receiver Rising	AC_RDR_FF_RRis	1.000
OBS S43				
15:23	15:39	 Recover	AC_SM_Re	0.267
Node operation Block:North Puerto Rico 7 Line:S43 Recovery				
15:39	16:23	 Transit	AC_RDR_FF_TR	0.733
Approach OBS S42				
16:23	17:48	 Receiver Rising	AC_RDR_FF_RRis	1.417
OBS S42				
17:48	17:56	 Recover	AC_SM_Re	0.133
Node operation Block:North Puerto Rico 7 Line:S42 Recovery				
17:56	18:05	 Transit	AC_RDR_FF_TR	0.150
Approach OBS S41				
18:05	19:19	 Receiver Rising	AC_RDR_FF_RRis	1.233
OBS S41				
19:19	19:27	 Recover	AC_SM_Re	0.133
Node operation Block:North Puerto Rico 7 Line:S41 Recovery				
19:27	19:34	 Transit	AC_RDR_FF_TR	0.117
Approach OBS S40				
19:34	20:22	 Receiver Rising	AC_RDR_FF_RRis	0.800
OBS S40				
20:22	20:32	 Recover	AC_SM_Re	0.167
Node operation Block:North Puerto Rico 7 Line:S40 Recovery				
20:32	24:00	 Transit From Prospect	DM_TF	3.467
Demobilising, In Transit from prospect for demobilisation ashore.				



Timing Day By Day (Marcus G Langseth, OBS\_Deployment)

14-Dec	Hours	% Percent
Acquisition	20.533	85.556
Receiver Deployment/Recovery	17.983	74.931
Free Fall OBS	17.983	74.931
Receiver Rising	10.167	42.361
Transit	7.817	32.569
Swath Move	2.550	10.625
Recover	2.550	10.625
Demobilisation	3.467	14.444
Transit From Prospect	3.467	14.444
Day's Total	24.000	100.000

Timing Breakdown Summary - Project (Marcus G Langseth, Source Only, OBS\_Deployment)

Category	Hours	% Percent
DownTime	11.117	1.813
Equipment Handling	0.433	0.071
Generators	1.333	0.218
High Pressure	0.217	0.035
Receiver Deployment/Recovery	5.267	0.859
Node Receiver not ready	1.500	0.245
Node Receiver unresponsive	1.783	0.291
Node Vessel position	1.983	0.324
Source	3.867	0.631
Array Air leak	3.867	0.631
Mobilisation	54.633	8.912
At Anchor	34.000	5.546
Transit to Prospect	20.633	3.366
Acquisition	527.117	85.990
Prime	164.900	26.900
Prime L/C	1.617	0.264
Receiver Deployment/Recovery	321.133	52.387
Free Fall OBS	321.133	52.387
Receiver deployment	19.500	3.181
Receiver Rising	114.717	18.714
Transit	186.917	30.492
Swath Move	39.467	6.438
Deploy	18.667	3.045
Recover	20.800	3.393
Non-Chargeable StandBy	14.000	2.284
Health and Safety	14.000	2.284
Chargeable Standby	2.667	0.435
Tests	2.667	0.435
Demobilisation	3.467	0.566
Transit From Prospect	3.467	0.566
Total	613.000	

Basic Project Details

Source Only					
General Details					
Record length:	0 ms	Sample rate:	0 ms	Shotpoint interval:	400 m
Source Details					
No of Sources:	1	Total Volume:	6600 cu ins	Depth:	12
Pressure:	1950 PSI	Volume:	6600	Strings per source:	4
String Separation:	6 m	String length:	16 m		

Production Totals (Accpt Main km)

OBS\_Deployment, Source Only

Accepted km	Day	Week	Month	Project
Prime	0.00	858.80	1532.40	2675.20
Combined	0.00	858.80	1532.40	2675.20

Production Listing (Accpt Main km) - Prime: Full Fold, Infill: Unknown

OBS\_Deployment, Source Only

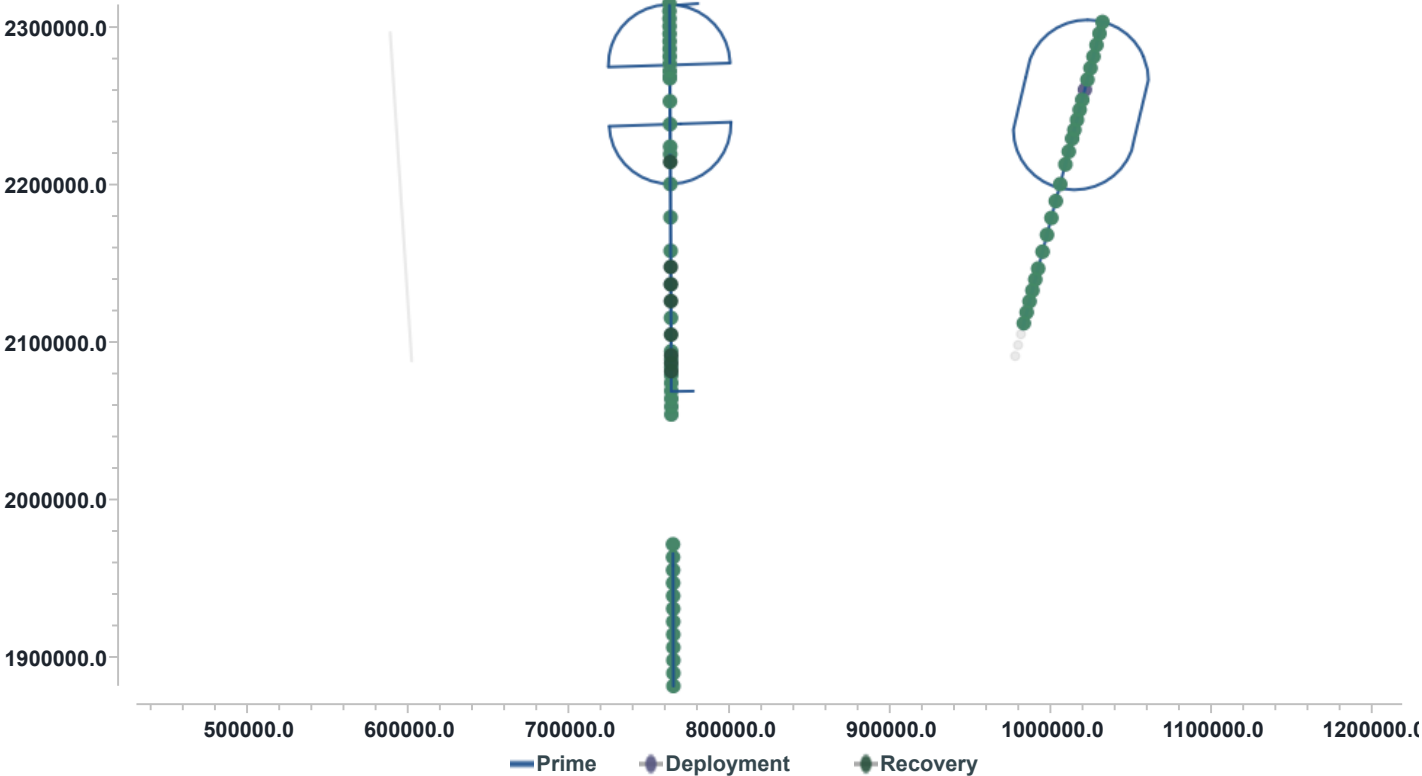
Seq	Line	FGSP	LGSP	Prod Type	Production	Ave Knots	Seq Status	Line Status
Total					0.00			

Production Totals (Accpt Main km)

OBS\_Deployment, Source Only

Accepted km	Day	Week	Month	Project
Prime	0.00	858.80	1532.40	2675.20
Combined	0.00	858.80	1532.40	2675.20

North Puerto Rico: Accpt  
11/19/2023 - 12/14/2023



12/14/2023

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## Daily Comment Summaries - Daily Comments On Status of Equipment

Thu 14 Dec

## Navigation:

No Major Issues to Report

## Information Technology (IT):

No Major Issues to Report

## OBS:

No Major Issues to Report

## Towing and Handling (Source):

No Major Issues to Report

## General Purpose Science:

No Major issues to Report.

## Daily Comment Summaries - Personnel Onboard

Thu 14 Dec

## Technical Staff On-board the Langseth

Todd Jensvold L-DEO OMO Chief Science Officer

Brian Agee L-DEO OMO Chief Source Mechanic

Gilles Guerin - L-DEO OMO Observer

Aaron Martin.- Contract Navigator

Mark Walker - Contract Source Mechanic

Ray Hatton - Contract Source Mechanic

Jacob Greenberg - Contract Source Mechanic

Sean Seekins - Contract Source Mechanic

Ian Davis- Contract Tech

## PSO Staff On-board the Langseth

Amanda Dubuque - RPS Lead PSO

Cassandra Frey - RPS PSO

Elizabeth Breton - RPS PSO

Tiffany Ramdoo - RPS PSO

Maria Sandoval - RPS PSO

## OBSIC Team

Arne Shwenk- GeoMar

Lisa Sokolkova-GeoMar

Hannah Brewer-WHOI

Tim Kane-WHOI

Gavin McCarthy-WHOI

Andrew Farmer-USGS


## Science Party On-board the Langseth

J. Pablo Canales - Lead PI WHOI








Nick Harmon Co-PI WHOI

Liam Moser WHOI

## HSE Events Diary (Marcus G Langseth)

Start	End	Category	Code
Daily Total Category		Code	Count
	Toolbox Meetings	Mtgs_Tbox	5
We had several toolbox meetings during the day to evaluate and re-evaluate the sea state and OBS recoveries.			

HSE Event Period Totals - Project (Marcus G Langseth)

Category	Code	Day (num)	Week (num)	Month (num)	Project (num)	Proj Hours	Man Hours
 Meetings	Mtgs	5	23	67	107	21.833	124.250
 Chiefs Meeting	Chfs	0	0	0	2	1.833	11.833
 Daily Ops Meeting	DOps	0	3	13	23	19.000	82.417
 Full Safety Meeting	FS	0	0	0	1	1.000	30.000
 Toolbox Meetings	Tbox	5	20	54	81		
 Training	Trng	0	0	0	1	2.500	22.500
 Safety Induction Tours	SIT	0	0	0	1	2.500	22.500

12/15/2023

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Client:

Job No:

Block:

Client Contact:

Consultancy:

Job No:

Lamont-Doherty Earth Observatory

MGL2316

North Puerto Rico

Contractor:

Job No:

Vessel:

Supervisor:

Party Chiefs:

Client Reps:

Lamont-Doherty Earth Observatory

MGL2316

Marcus G Langseth

Todd Jensvold

Dr. J. Pablo Canales

Daily Comment Summaries - Daily Summary

Fri 15 Dec

CREW CHANGE

GOOD JOB EVERYONE!

Daily Comment Summaries - Plan for Tomorrow

Timing Diary (Marcus G Langseth, OBS\_Deployment)

Start	End	Category	Code	Duration (hrs)
00:00	13:00	<div>Transit From Prospect</div>	DM_TF	13.000
Demobilising, In Transit from prospect for demobilisation ashore.				
13:00	15:00	<div>At Anchor</div>	DM_AA	2.000
Crew change and provisions.				
GOOD JOB EVERYONE!				

Timing Day By Day (Marcus G Langseth, OBS\_Deployment)

15-Dec	Hours	% Percent
<div>Demobilisation</div>	15.000	62.500
At Anchor	2.000	8.333
Transit From Prospect	13.000	54.167
Day's Total	15.000	62.500

Timing Breakdown Summary - Project (Marcus G Langseth, Source Only, OBS\_Deployment)

Category	Hours	% Percent
<div>DownTime</div>	11.117	1.770
Equipment Handling	0.433	0.069
Generators	1.333	0.212
High Pressure	0.217	0.035
Receiver Deployment/Recovery	5.267	0.839
Node Receiver not ready	1.500	0.239
Node Receiver unresponsive	1.783	0.284
Node Vessel position	1.983	0.316
Source	3.867	0.616
Array Air leak	3.867	0.616
<div>Demobilisation</div>	18.467	2.941
At Anchor	2.000	0.318
Transit From Prospect	16.467	2.622
<div>Mobilisation</div>	54.633	8.700
At Anchor	34.000	5.414
Transit to Prospect	20.633	3.286

Category	Hours	% Percent
Acquisition	527.117	83.936
Prime	164.900	26.258
Prime L/C	1.617	0.257
Receiver Deployment/Recovery	321.133	51.136
Free Fall OBS	321.133	51.136
Receiver deployment	19.500	3.105
Receiver Rising	114.717	18.267
Transit	186.917	29.764
Swath Move	39.467	6.285
Deploy	18.667	2.972
Recover	20.800	3.312
Non-Chargeable StandBy	14.000	2.229
Health and Safety	14.000	2.229
Chargeable Standby	2.667	0.425
Tests	2.667	0.425
Total	628.000	

Basic Project Details

Source Only					
General Details					
Record length:	0 ms	Sample rate:	0 ms	Shotpoint interval:	400 m
Source Details					
No of Sources:	1	Total Volume:	6600 cu ins	Depth:	12
Pressure:	1950 PSI	Volume:	6600	Strings per source:	4
String Separation:	6 m	String length:	16 m		

Production Totals (Accpt Main km)

OBS\_Deployment, Source Only

Accepted km	Day	Week	Month	Project
Prime	0.00	858.80	1532.40	2675.20
Combined	0.00	858.80	1532.40	2675.20

Production Listing (Accpt Main km) - Prime: Full Fold, Infill: Unknown

OBS\_Deployment, Source Only

Seq	Line	FGSP	LGSP	Prod Type	Production	Ave Knots	Seq Status	Line Status
Total					0.00			

Production Totals (Accpt Main km)

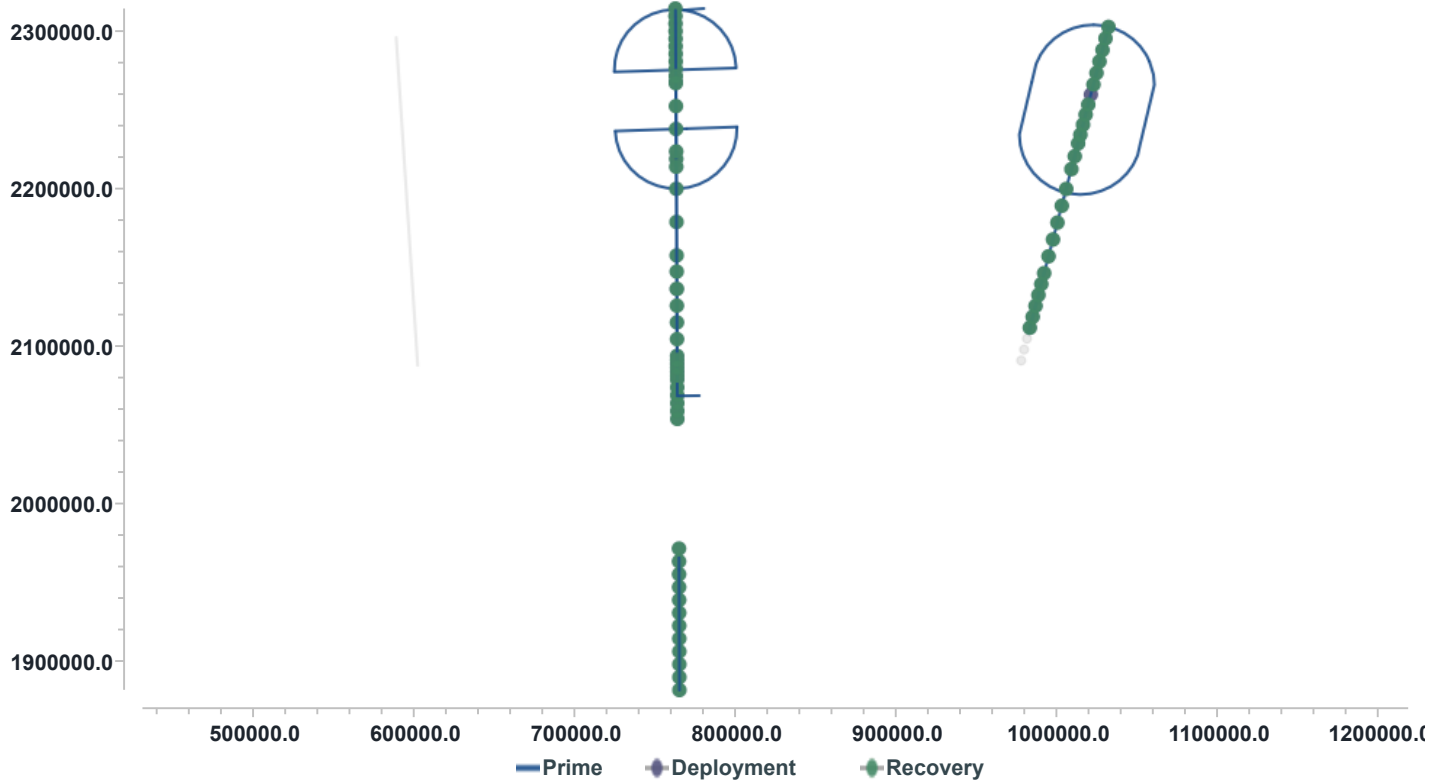
OBS\_Deployment, Source Only

Accepted km	Day	Week	Month	Project
Prime	0.00	858.80	1532.40	2675.20
Combined	0.00	858.80	1532.40	2675.20

12/15/2023

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## North Puerto Rico: Acpt 11/19/2023 - 12/15/2023



## Daily Comment Summaries - Daily Comments On Status of Equipment

## Daily Comment Summaries - Personnel Onboard

Fri 15 Dec

### Technical Staff On-board the Langseth

Todd Jensvold L-DEO OMO Chief Science Officer  
Brian Agee L-DEO OMO Chief Source Mechanic  
Gilles Guerin - L-DEO OMO Observer  
Aaron Martin.- Contract Navigator  
Mark Walker - Contract Source Mechanic  
Ray Hatton - Contract Source Mechanic  
Jacob Greenberg - Contract Source Mechanic  
Sean Seekins - Contract Source Mechanic  
Ian Davis- Contract Tech

### PSO Staff On-board the Langseth

Amanda Dubuque - RPS Lead PSO  
Cassandra Frey - RPS PSO  
Elizabeth Breton - RPS PSO  
Tiffany Ramdoo - RPS PSO  
Maria Sandoval - RPS PSO

### OBSIC Team

Arne Shwenk- GeoMar  
Lisa Sokolkova-GeoMar  
Hannah Brewer-WHOI  
Tim Kane-WHOI  
Gavin McCarthy-WHOI  
Andrew Farmer-USGS








### Science Party On-board the Langseth

J. Pablo Canales - Lead PI WHOI  
Nick Harmon Co-PI WHOI  
Liam Moser WHOI

HSE Events Diary (Marcus G Langseth)

Start	End	Category	Code
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HSE Event Period Totals - Project (Marcus G Langseth)

Category	Code	Day (num)	Week (num)	Month (num)	Project (num)	Proj Hours	Man Hours
 Meetings	Mtgs	0	23	67	107	21.833	124.250
 Chiefs Meeting	Chfs	0	0	0	2	1.833	11.833
 Daily Ops Meeting	DOps	0	3	13	23	19.000	82.417
 Full Safety Meeting	FS	0	0	0	1	1.000	30.000
 Toolbox Meetings	Tbox	0	20	54	81		
 Training	Trng	0	0	0	1	2.500	22.500
 Safety Induction Tours	SIT	0	0	0	1	2.500	22.500