

Daily Science Report

7/9/2019

Page 1

| | | | |
|------------------------|---|----------------------|----------------------------------|
| Client: | United States National Science Foundation | Contractor: | Lamont-Doherty Earth Observatory |
| Job No: | MGL1905 | Job No: | MGL1905 |
| Block: | Axial | Vessel: | Marcus G Langseth |
| Client Contact: | Adrien Arnulf | Supervisor: | Sean Higgins |
| Consultancy: | N/A | Party Chiefs: | Todd Jensvold |
| Job No: | | Client Reps: | Adrien Arnulf |

Daily Comment Summaries - Daily Summary

Tue 09 Jul


Start of cruise
Mob Ashore - Pier 91 Seattle
Rigging for 3D

Daily Comment Summaries - Plan for Tomorrow

Tue 09 Jul

Continue rig up for 3D operations

Timing Diary (Marcus G Langseth, MGL1905_Axial 3D)

| Category | Code | Start | End | Duration |
|--|-------|------------------|------------------|----------|
|  Mob Ashore | MB_MA | Tue 9. Jul 00:00 | Tue 9. Jul 24:00 | 24.000 |
| Mobilising Ashore. | | | | |

Timing Day By Day (Marcus G Langseth)

| 9-Jul | Hours | %Percent |
|-------------|-------|----------|
| Day's Total | 0.000 | 0.000 |

Timing Breakdown Summary - Project (Marcus G Langseth)

| Category | Hours | %Percent |
|----------|-------|----------|
| Total | 0.000 | |

Basic Project Details

| MGL1905_Axial 3D | | | | | |
|------------------|----------|------------------|----------|---------------------|-------------|
| General Details | | | | | |
| Record length: | 12000 ms | Sample rate: | 2 ms | Shotpoint interval: | 37.5 m |
| CoS to CNG: | 225 m | Fold Coverage: | 252 | | |
| Cable Details | | | | | |
| No of Cables: | 1 | Head Separation: | 150 m | Tail Separation: | 150 m |
| Chans Per Cable: | 1200 | Front Depth: | 12 m | Tail Depth: | 12 m |
| Length: | 15000 m | Group interval: | 12.5 m | | |
| Source Details | | | | | |
| No of Sources: | 1 | Separation: | 75 m | Total Volume: | 6600 cu ins |
| Depth: | 12 m | Pressure: | 1950 PSI | Volume: | 6600 |

Daily Science Report

7/9/2019

Page 2

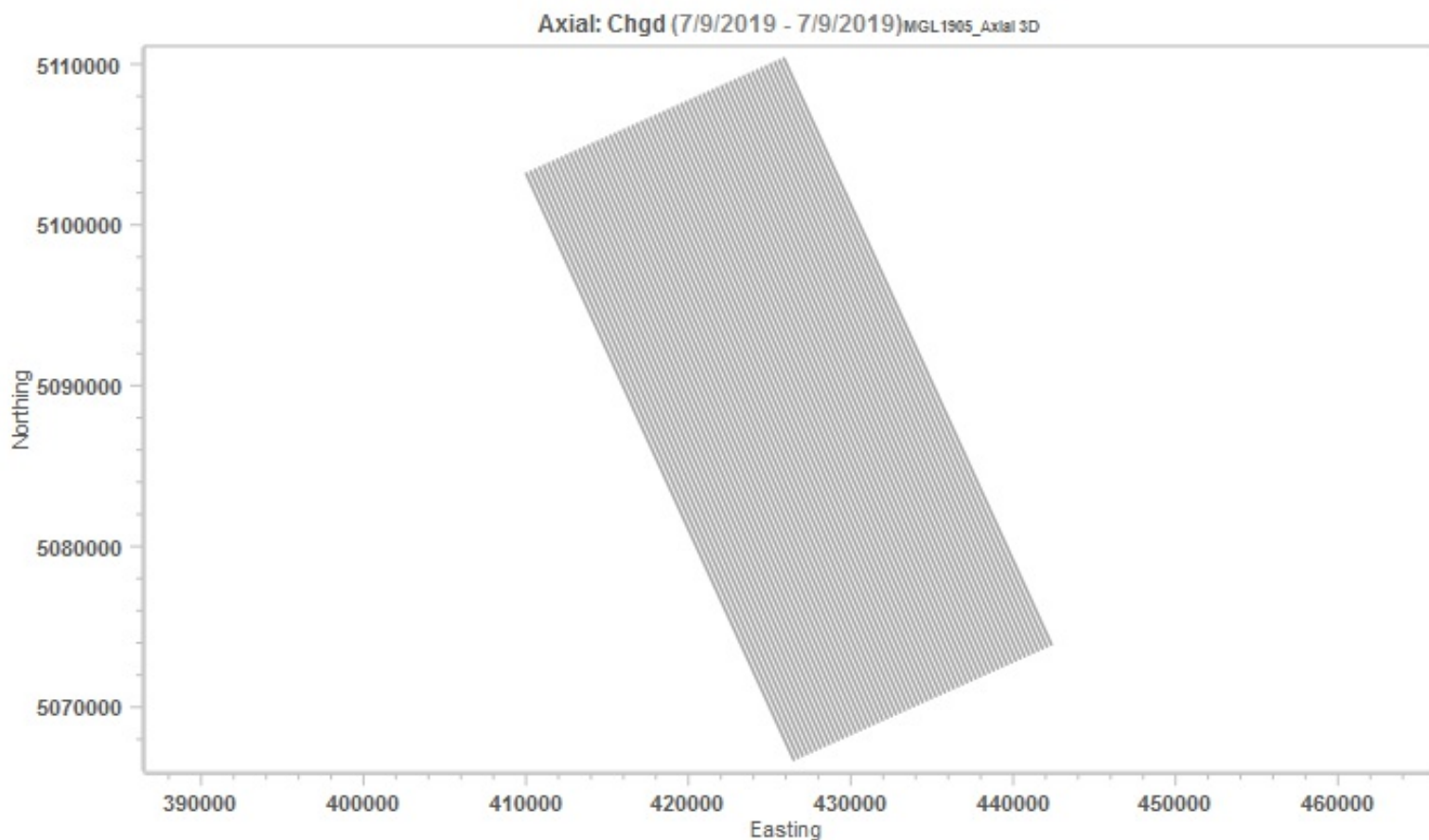
| MGL1905_Axial 3D | | | | | |
|---------------------|------|--------------------|------|----------------|------|
| Strings per source: | 4 | String Separation: | 6 m | String length: | 18 m |
| Binning | | | | | |
| Size Inline: | 50 m | Size XLine: | 75 m | | |

Production Listing (Accpt km) - Prime: Sail Line, Infill: Full Fold

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

Production Totals (Chgd km) - Prime: Sail Line, Infill: Full Fold

| Charged km | Day | Week | Month | Project |
|------------|------|------|-------|---------|
| Prime | 0.00 | 0.00 | 0.00 | 0.00 |
| Infill | 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 09 Jul

Navigation:

No Major Issues to Report

Information Technology (IT):

No Major Issues to Report

Acquisition (OBS):

No Major Issues to Report

Daily Science Report

7/9/2019

Page 3

Towing and Handling (Source):

No Major Issues to Report

General Purpose Science:

No Major Issues to Report

Daily Comment Summaries - Personnel Onboard

Tue 09 Jul

Technical Staff On-board the Langseth

Todd Jensvold L-DEO OMO Chief Science Officer
David Martinson L-DEO OMO Science Officer - Nav
Josh Kasinger L-DEO OMO Chief Source Mechanic
Tom Spoto L-DEO OMO Source Mechanic
Alan Thompson L-DEO OMO Marine Science Technician - Nav
Gilles Guerin L-DEO OMO Marine Science Technician - Obs
Shaun Shaver L-DEO OMO Marine Science Technician - Obs
Edmond St. Amant Contract Personnel Marine Science Technician - Source
Matt Dietrich Contract Personnel Marine Science Technician - Source
Chris Abdouch NCS SubSea Contract Nav Processor
Mike Jennings NCS SubSea Contract Nav Processor

PSO Staff On-board the Langseth

Amanda Dubuque RPS Lead PSO
Bianca Mares RPS PSO
Ana Hernandez RPS PSO
Lluvia Durantes RPS PSO
Alejandra Ramos RPS PSO

Science Party On-board the Langseth

Adrien Amulf UTIG - PI
Alistar Harding Scripps - PI
Steffen Saustrop UTIG - Tech
Michelle Lee LDEO - Student
Axelle Cap U de Bretagne - Student
Shelby Brandt U of Ottawa - Student
Morgan Goulain Mines of Paris Tech - Student
Victoire Lucas U de Bretagne - Student
Samual Mitchell U. of Bristol - Research Tech
Mathew Griffiths Carlton U. - Student
Massimo Stefano Belluci U de Bretagne - Student
Tanner Eischen East Carolina U. - Student
Brian Oller Scripps - Student

Daily Science Report

7/10/2019

Page 1

| | | | |
|------------------------|---|----------------------|----------------------------------|
| Client: | United States National Science Foundation | Contractor: | Lamont-Doherty Earth Observatory |
| Job No: | MGL1905 | Job No: | MGL1905 |
| Block: | Axial | Vessel: | Marcus G Langseth |
| Client Contact: | Adrien Arnulf | Supervisor: | Sean Higgins |
| Consultancy: | N/A | Party Chiefs: | Todd Jensvold |
| Job No: | | Client Reps: | Adrien Arnulf |

Daily Comment Summaries - Daily Summary

Wed 10 Jul


Rigging for 3D operations

Daily Comment Summaries - Plan for Tomorrow

Wed 10 Jul

Continue rigging
Scheduled to depart

Timing Diary (Marcus G Langseth, MGL1905_Axial 3D)

| Category | Code | Start | End | Duration |
|--|-------|-------------------|-------------------|----------|
|  Mob Ashore | MB_MA | Wed 10. Jul 00:00 | Wed 10. Jul 24:00 | 24.000 |
| Mobilising Ashore. | | | | |

Timing Day By Day (Marcus G Langseth, MGL1905_Axial 3D)

| 10-Jul | Hours | %Percent |
|---------------------|---------------|----------------|
| Mobilisation | 24.000 | 100.000 |
| Mob Ashore | 24.000 | 100.000 |
| Day's Total | 24.000 | 100.000 |

Timing Breakdown Summary - Project (Marcus G Langseth, MGL1905_Axial 3D)

| Category | Hours | %Percent |
|---------------------|---------------|----------------|
| Mobilisation | 48.000 | 100.000 |
| Mob Ashore | 48.000 | 100.000 |
| Total | 48.000 | |

Basic Project Details

| MGL1905_Axial 3D | | | | | |
|------------------|----------|------------------|--------|---------------------|--------|
| General Details | | | | | |
| Record length: | 12000 ms | Sample rate: | 2 ms | Shotpoint interval: | 37.5 m |
| CoS to CNG: | 225 m | Fold Coverage: | 252 | | |
| Cable Details | | | | | |
| No of Cables: | 1 | Head Separation: | 150 m | Tail Separation: | 150 m |
| Chans Per Cable: | 1200 | Front Depth: | 12 m | Tail Depth: | 12 m |
| Length: | 15000 m | Group interval: | 12.5 m | | |
| Source Details | | | | | |

Daily Science Report

7/10/2019

Page 2

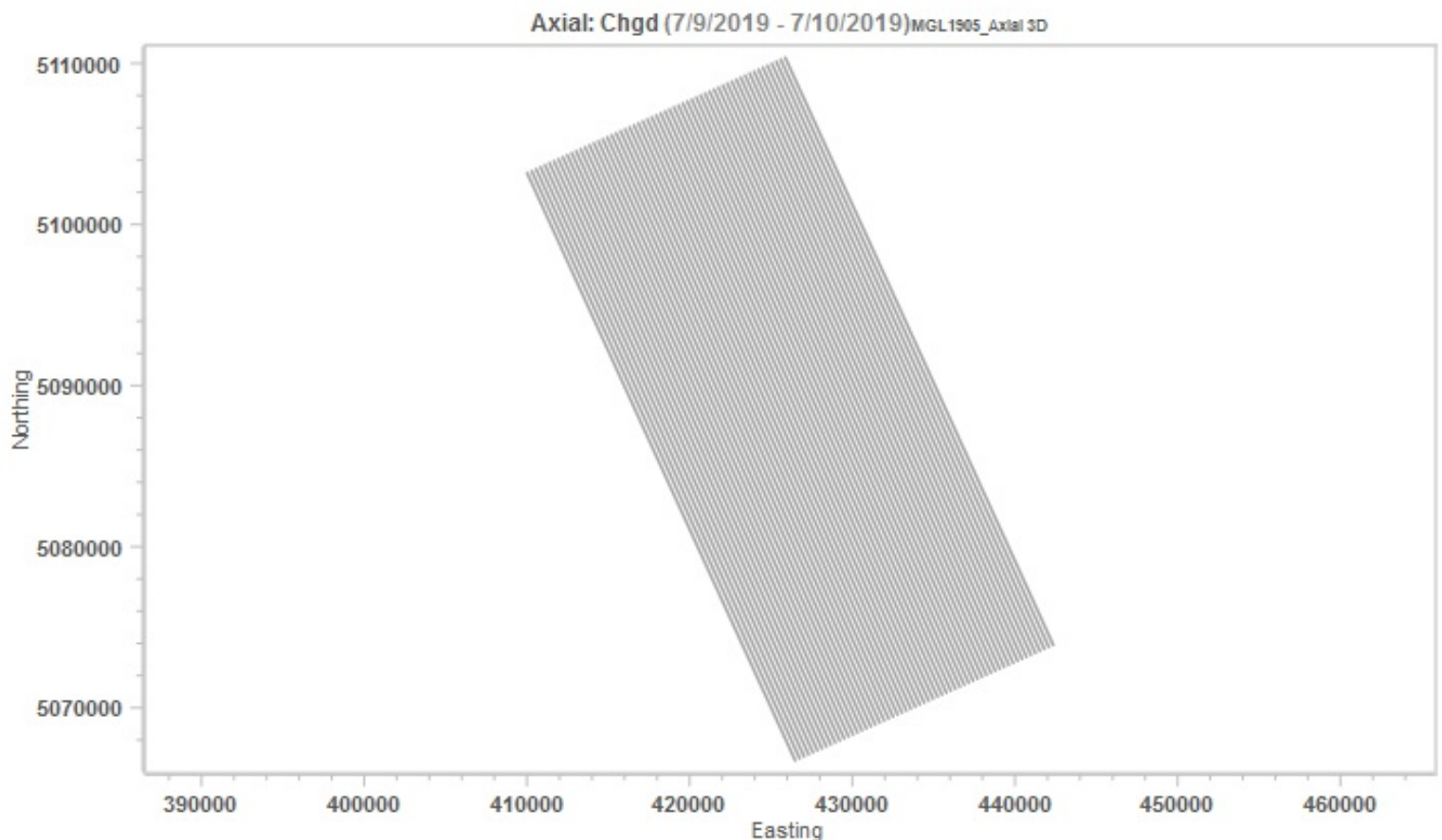
| MGL1905_Axial 3D | | | | | |
|---------------------|------|--------------------|----------|----------------|-------------|
| No of Sources: | 1 | Separation: | 75 m | Total Volume: | 6600 cu ins |
| Depth: | 12 m | Pressure: | 1950 PSI | Volume: | 6600 |
| Strings per source: | 4 | String Separation: | 6 m | String length: | 18 m |
| Binning | | | | | |
| Size Inline: | 50 m | Size XLine: | 75 m | | |

Production Listing (Accpt km) - Prime: Sail Line, Infill: Full Fold

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

Production Totals (Chgd km) - Prime: Sail Line, Infill: Full Fold

| Charged km | Day | Week | Month | Project |
|------------|------|------|-------|---------|
| Prime | 0.00 | 0.00 | 0.00 | 0.00 |
| Infill | 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

Wed 10 Jul

Navigation:

No Major Issues to Report

Information Technology (IT):

No Major Issues to Report

Daily Science Report

7/10/2019

Page 3

Acquisition (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

Wed 10 Jul

Technical Staff On-board the Langseth

Todd Jensvold L-DEO OMO Chief Science Officer
David Martinson L-DEO OMO Science Officer - Nav
Josh Kasinger L-DEO OMO Chief Source Mechanic
Tom Spoto L-DEO OMO Source Mechanic
Alan Thompson L-DEO OMO Marine Science Technician - Nav
Gilles Guerin L-DEO OMO Marine Science Technician - Obs
Shaun Shaver L-DEO OMO Marine Science Technician - Obs
Edmond St. Amant Contract Personnel Marine Science Technician - Source
Matt Dietrich Contract Personnel Marine Science Technician - Source
Chris Abdouch NCS SubSea Contract Nav Processor
Mike Jennings NCS SubSea Contract Nav Processor

PSO Staff On-board the Langseth

Amanda Dubuque RPS Lead PSO
Bianca Mares RPS PSO
Ana Hernandez RPS PSO
Lluvia Durantes RPS PSO
Alejandra Ramos RPS PSO

Science Party On-board the Langseth

Adrien Amulf UTIG - PI
Alistar Harding Scripps - PI
Steffen Sastrup UTIG - Tech
Michelle Lee LDEO - Student
Axelle Cap U de Bretagne - Student
Shelby Brandt U of Ottawa - Student
Morgan Goulain Mines of Paris Tech - Student
Victoire Lucas U de Bretagne - Student
Samual Mitchell U. of Bristol - Research Tech
Mathew Griffiths Carlton U. - Student
Massimo Stefano Belluci U de Bretagne - Student
Tanner Eischen East Carolina U. - Student
Brian Oller Scripps - Student

Daily Science Report

7/11/2019

Page 1

| | | | |
|------------------------|---|----------------------|----------------------------------|
| Client: | United States National Science Foundation | Contractor: | Lamont-Doherty Earth Observatory |
| Job No: | MGL1905 | Job No: | MGL1905 |
| Block: | Axial | Vessel: | Marcus G Langseth |
| Client Contact: | Adrien Arnulf | Supervisor: | Sean Higgins |
| Consultancy: | N/A | Party Chiefs: | Todd Jensvold |
| Job No: | | Client Reps: | Adrien Arnulf |

Daily Comment Summaries - Daily Summary

Thu 11 Jul

Continue rigging for 3D
Departed Seattle for job site

Daily Comment Summaries - Plan for Tomorrow

Thu 11 Jul

Transit to prospect.

Timing Diary (Marcus G Langseth, MGL1905_Axial 3D)

| Category | Code | Start | End | Duration |
|---|-------|-------------------|-------------------|----------|
|  Mob Ashore | MB_MA | Thu 11. Jul 00:00 | Thu 11. Jul 15:00 | 15.000 |
| Mobilising Ashore. | | | | |
|  Transit to Prospect | MB_TT | Thu 11. Jul 15:00 | Thu 11. Jul 24:00 | 9.000 |
| In transit to prospect, for mobilising deployment. | | | | |

Timing Day By Day (Marcus G Langseth, MGL1905_Axial 3D)

| 11-Jul | Hours | % Percent |
|---------------------|---------------|----------------|
| Mobilisation | 24.000 | 100.000 |
| Mob Ashore | 15.000 | 62.500 |
| Transit to Prospect | 9.000 | 37.500 |
| Day's Total | 24.000 | 100.000 |

Timing Breakdown Summary - Project (Marcus G Langseth, MGL1905_Axial 3D)

| Category | Hours | % Percent |
|---------------------|---------------|----------------|
| Mobilisation | 72.000 | 100.000 |
| Mob Ashore | 63.000 | 87.500 |
| Transit to Prospect | 9.000 | 12.500 |
| Total | 72.000 | |

Basic Project Details

| MGL1905_Axial 3D | | | | | |
|------------------|----------|----------------|------|---------------------|--------|
| General Details | | | | | |
| Record length: | 12000 ms | Sample rate: | 2 ms | Shotpoint interval: | 37.5 m |
| CoS to CNG: | 225 m | Fold Coverage: | 252 | | |

Daily Science Report

7/11/2019

Page 2

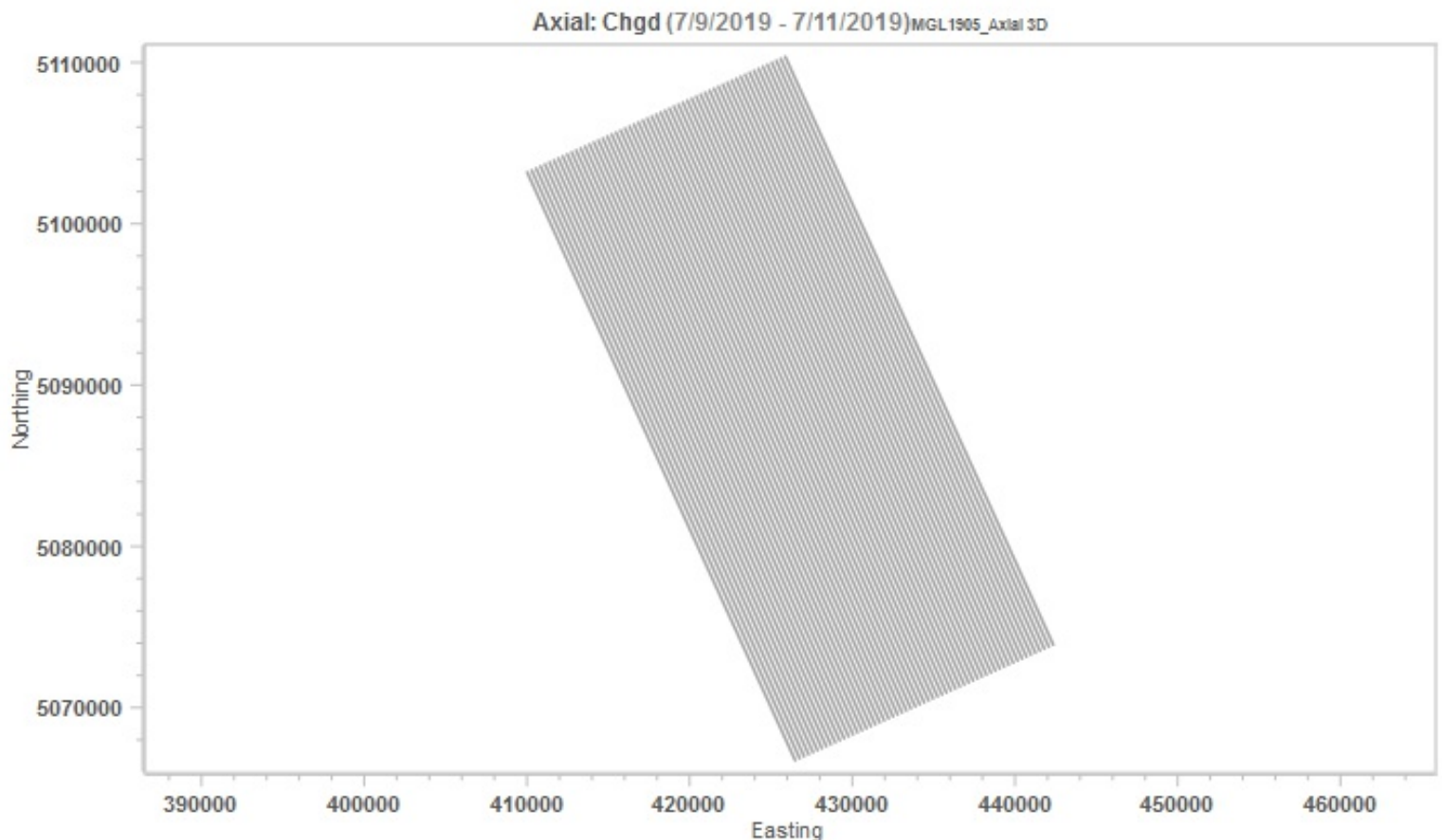
| MGL1905_Axial 3D | | | | | |
|---------------------|---------|--------------------|----------|------------------|-------------|
| Cable Details | | | | | |
| No of Cables: | 1 | Head Separation: | 150 m | Tail Separation: | 150 m |
| Chans Per Cable: | 1200 | Front Depth: | 12 m | Tail Depth: | 12 m |
| Length: | 15000 m | Group interval: | 12.5 m | | |
| Source Details | | | | | |
| No of Sources: | 1 | Separation: | 75 m | Total Volume: | 6600 cu ins |
| Depth: | 12 m | Pressure: | 1950 PSI | Volume: | 6600 |
| Strings per source: | 4 | String Separation: | 6 m | String length: | 18 m |
| Binning | | | | | |
| Size Inline: | 50 m | Size XLine: | 75 m | | |

Production Listing (Accpt km) - Prime: Sail Line, Infill: Full Fold

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

Production Totals (Chgd km) - Prime: Sail Line, Infill: Full Fold

| Charged km | Day | Week | Month | Project |
|------------|------|------|-------|---------|
| Prime | 0.00 | 0.00 | 0.00 | 0.00 |
| Infill | 0.00 | 0.00 | 0.00 | 0.00 |
| Combined | 0.00 | 0.00 | 0.00 | 0.00 |



Daily Science Report

7/11/2019

Page 3

Daily Comment Summaries - Daily Comments On Status of Equipment

Thu 11 Jul

Navigation:

No Major Issues to Report

Information Technology (IT):

No Major Issues to Report

Acquisition (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 11 Jul

Technical Staff On-board the Langseth

Todd Jensvold L-DEO OMO Chief Science Officer
David Martinson L-DEO OMO Science Officer - Nav
Josh Kasinger L-DEO OMO Chief Source Mechanic
Tom Spoto L-DEO OMO Source Mechanic
Alan Thompson L-DEO OMO Marine Science Technician - Nav
Gilles Guerin L-DEO OMO Marine Science Technician - Obs
Shaun Shaver L-DEO OMO Marine Science Technician - Obs
Edmond St. Amant Contract Personnel Marine Science Technician - Source
Matt Dietrich Contract Personnel Marine Science Technician - Source
Chris Abdouch NCS SubSea Contract Nav Processor
Mike Jennings NCS SubSea Contract Nav Processor

PSO Staff On-board the Langseth

Amanda Dubuque RPS Lead PSO
Bianca Mares RPS PSO
Ana Hernandez RPS PSO
Lluvia Durantes RPS PSO
Alejandra Ramos RPS PSO

Science Party On-board the Langseth

Adrien Amulf UTIG - PI
Alistar Harding Scripps - PI
Steffen Saustrup UTIG - Tech
Michelle Lee LDEO - Student
Axelle Cap U de Bretagne - Student
Shelby Brandt U of Ottawa - Student
Morgan Goulain Mines of Paris Tech - Student
Victoire Lucas U de Bretagne - Student
Samual Mitchell U. of Bristol - Research Tech
Mathew Griffiths Carlton U. - Student
Massimo Stefano Belluci U de Bretagne - Student
Tanner Eischen East Carolina U. - Student
Brian Oller Scripps - Student

Daily Science Report

7/12/2019

Page 1

| | | | |
|------------------------|---|----------------------|----------------------------------|
| Client: | United States National Science Foundation | Contractor: | Lamont-Doherty Earth Observatory |
| Job No: | MGL1905 | Job No: | MGL1905 |
| Block: | Axial | Vessel: | Marcus G Langseth |
| Client Contact: | Adrien Arnulf | Supervisor: | Sean Higgins |
| Consultancy: | N/A | Party Chiefs: | Todd Jensvold |
| Job No: | | Client Reps: | Adrien Arnulf |

Daily Comment Summaries - Daily Summary

Fri 12 Jul

Continue transit to prospect and rigging for 3D deployment
Shuffle streamer to build proper streamer lengths

Daily Comment Summaries - Plan for Tomorrow

Fri 12 Jul

Continue transit to work site, begin deployment with streamer 1

Timing Diary (Marcus G Langseth, MGL1905_Axial 3D)

| Category | Code | Start | End | Duration |
|---|-------|-------------------|-------------------|----------|
|  Transit to Prospect | MB_TT | Fri 12. Jul 00:00 | Fri 12. Jul 24:00 | 24.000 |
| In transit to prospect, for mobilising deployment. | | | | |

Timing Day By Day (Marcus G Langseth, MGL1905_Axial 3D)

| 12-Jul | Hours | %Percent |
|---------------------|---------------|----------------|
| Mobilisation | 24.000 | 100.000 |
| Transit to Prospect | 24.000 | 100.000 |
| Day's Total | 24.000 | 100.000 |

Timing Breakdown Summary - Project (Marcus G Langseth, MGL1905_Axial 3D)

| Category | Hours | %Percent |
|---------------------|---------------|----------------|
| Mobilisation | 96.000 | 100.000 |
| Mob Ashore | 63.000 | 65.625 |
| Transit to Prospect | 33.000 | 34.375 |
| Total | 96.000 | |

Basic Project Details

| MGL1905_Axial 3D | | | | | |
|------------------|----------|------------------|-------|---------------------|--------|
| General Details | | | | | |
| Record length: | 12000 ms | Sample rate: | 2 ms | Shotpoint interval: | 37.5 m |
| CoS to CNG: | 225 m | Fold Coverage: | 252 | | |
| Cable Details | | | | | |
| No of Cables: | 1 | Head Separation: | 150 m | Tail Separation: | 150 m |
| Chans Per Cable: | 1200 | Front Depth: | 12 m | Tail Depth: | 12 m |

Daily Science Report

7/12/2019

Page 2

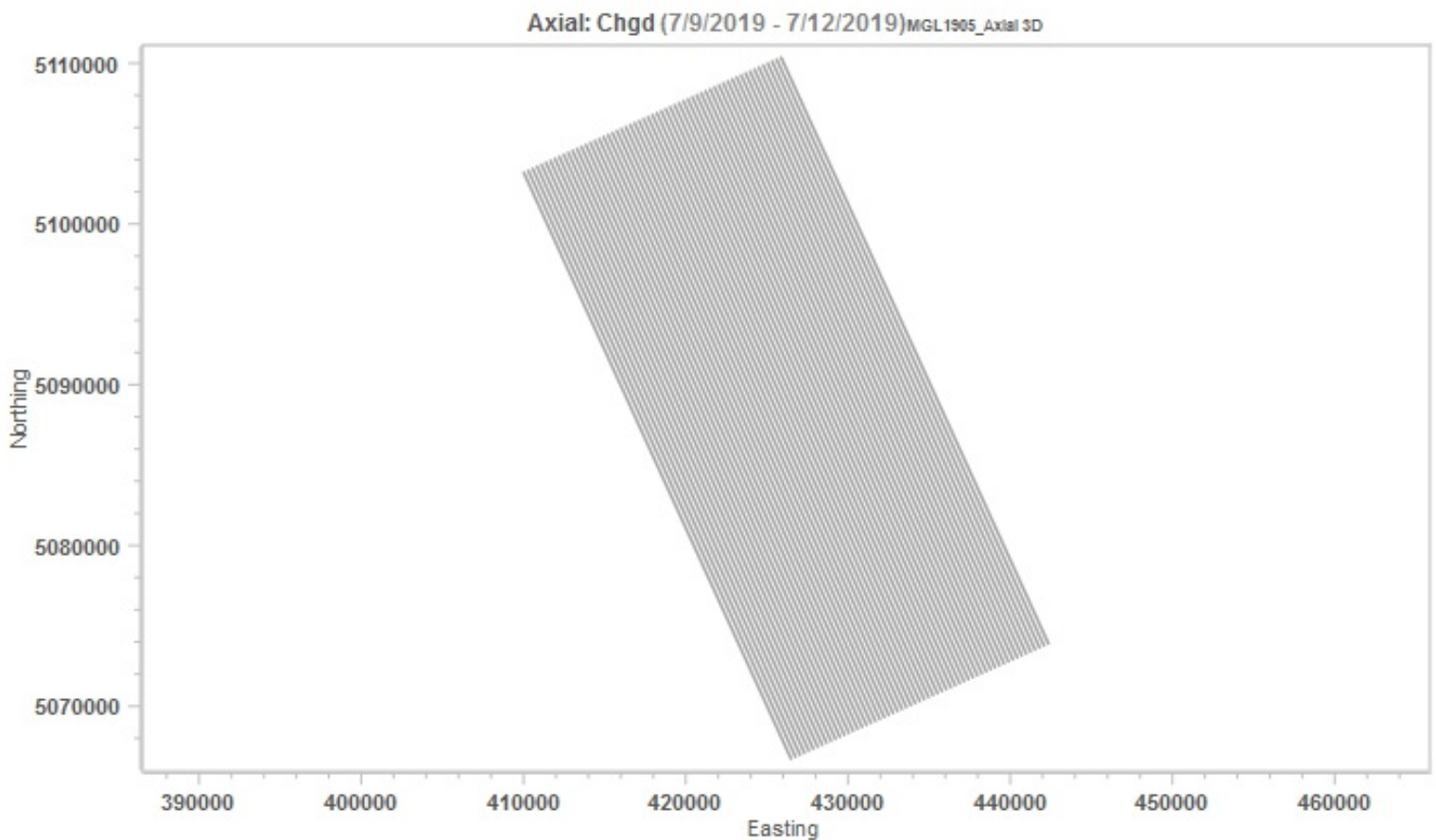
| MGL1905_Axial 3D | | | | | |
|---------------------|---------|--------------------|----------|----------------|-------------|
| Length: | 15000 m | Group interval: | 12.5 m | | |
| Source Details | | | | | |
| No of Sources: | 2 | Separation: | 75 m | Total Volume: | 6600 cu ins |
| Depth: | 12 m | Pressure: | 1950 PSI | Volume: | 3300 |
| Strings per source: | 2 | String Separation: | 6 m | String length: | 18 m |
| Binning | | | | | |
| Size Inline: | 50 m | Size XLine: | 37.5 m | | |

Production Listing (Accpt km) - Prime: Sail Line, Infill: Full Fold

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

Production Totals (Chgd km) - Prime: Sail Line, Infill: Full Fold

| Charged km | Day | Week | Month | Project |
|------------|------|------|-------|---------|
| Prime | 0.00 | 0.00 | 0.00 | 0.00 |
| Infill | 0.00 | 0.00 | 0.00 | 0.00 |
| Combined | 0.00 | 0.00 | 0.00 | 0.00 |



Daily Science Report

7/12/2019

Page 3

Daily Comment Summaries - Daily Comments On Status of Equipment

Fri 12 Jul

Navigation:

No Major Issues to Report

Information Technology (IT):

No Major Issues to Report

Acquisition (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 12 Jul

Technical Staff On-board the Langseth

Todd Jensvold L-DEO OMO Chief Science Officer
David Martinson L-DEO OMO Science Officer - Nav
Josh Kasinger L-DEO OMO Chief Source Mechanic
Tom Spoto L-DEO OMO Source Mechanic
Alan Thompson L-DEO OMO Marine Science Technician - Nav
Gilles Guerin L-DEO OMO Marine Science Technician - Obs
Shaun Shaver L-DEO OMO Marine Science Technician - Obs
Edmond St. Amant Contract Personnel Marine Science Technician - Source
Matt Dietrich Contract Personnel Marine Science Technician - Source
Chris Abdouch NCS SubSea Contract Nav Processor
Mike Jennings NCS SubSea Contract Nav Processor

PSO Staff On-board the Langseth

Amanda Dubuque RPS Lead PSO
Bianca Mares RPS PSO
Ana Hernandez RPS PSO
Lluvia Durantes RPS PSO
Alejandra Ramos RPS PSO

Science Party On-board the Langseth

Adrien Amulf UTIG - PI
Alistar Harding Scripps - PI
Steffen Saustrup UTIG - Tech
Michelle Lee LDEO - Student
Axelle Cap U de Bretagne - Student
Shelby Brandt U of Ottawa - Student
Morgan Goulain Mines of Paris Tech - Student
Victoire Lucas U de Bretagne - Student
Samual Mitchell U. of Bristol - Research Tech
Mathew Griffiths Carlton U. - Student
Massimo Stefano Belluci U de Bretagne - Student
Tanner Eischen East Carolina U. - Student
Brian Oller Scripps - Student

Daily Science Report

7/13/2019

Page 1

| | | | |
|------------------------|---|----------------------|----------------------------------|
| Client: | United States National Science Foundation | Contractor: | Lamont-Doherty Earth Observatory |
| Job No: | MGL1905 | Job No: | MGL1905 |
| Block: | Axial | Vessel: | Marcus G Langseth |
| Client Contact: | Adrien Arnulf | Supervisor: | Sean Higgins |
| Consultancy: | N/A | Party Chiefs: | Todd Jensvold |
| Job No: | | Client Reps: | Adrien Arnulf |

Daily Comment Summaries - Daily Summary

Sat 13 Jul

Began deploying streamer 1, had to be recover shortly after the start due to failure of tail buoy GPS. Streamer 1 lead in replaced, issues with slip-ring powering up but able to bypass. Deployed starboard barovane. Began deployment of streamer #4




Daily Comment Summaries - Plan for Tomorrow

Sat 13 Jul


Continue deployment of streamers and barovanes.

Timing Diary (Marcus G Langseth, MGL1905_Axial 3D)




| Category | Code | Start | End | Duration |
|---|-------|-------------------|-------------------|----------|
|  Transit to Prospect | MB_TT | Sat 13. Jul 00:00 | Sat 13. Jul 08:40 | 8.667 |
| In transit to prospect, for mobilising deployment. | | | | |
|  Deployment | MB_DP | Sat 13. Jul 08:40 | Sat 13. Jul 22:55 | 14.250 |
| Deploying streamer 1 and starboard barovane | | | | |
|  Deployment | MB_DP | Sat 13. Jul 22:55 | Sat 13. Jul 24:00 | 1.083 |
| Deploy streamer #4 and port barovane | | | | |

Timing Day By Day (Marcus G Langseth, MGL1905_Axial 3D)

| 13-Jul | Hours | %Percent |
|--|---------------|----------------|
|  Mobilisation | 24.000 | 100.000 |
| Deployment | 15.333 | 63.889 |
| Transit to Prospect | 8.667 | 36.111 |
| Day's Total | 24.000 | 100.000 |

Timing Breakdown Summary - Project (Marcus G Langseth, MGL1905_Axial 3D)

| Category | Hours | %Percent |
|--|----------------|----------|
|  Mobilisation | 120.000 | 100.000 |
| Deployment | 15.333 | 12.778 |
| Mob Ashore | 63.000 | 52.500 |
| Transit to Prospect | 41.667 | 34.722 |
| Total | 120.000 | |

Daily Science Report

7/13/2019

Page 2

Basic Project Details

| MGL1905_Axial 3D | | | | | |
|---------------------|----------|--------------------|----------|---------------------|-------------|
| General Details | | | | | |
| Record length: | 12000 ms | Sample rate: | 2 ms | Shotpoint interval: | 37.5 m |
| CoS to CNG: | 225 m | Fold Coverage: | 252 | | |
| Cable Details | | | | | |
| No of Cables: | 1 | Head Separation: | 150 m | Tail Separation: | 150 m |
| Chans Per Cable: | 1200 | Front Depth: | 12 m | Tail Depth: | 12 m |
| Length: | 15000 m | Group interval: | 12.5 m | | |
| Source Details | | | | | |
| No of Sources: | 2 | Separation: | 75 m | Total Volume: | 6600 cu ins |
| Depth: | 12 m | Pressure: | 1950 PSI | Volume: | 3300 |
| Strings per source: | 2 | String Separation: | 6 m | String length: | 18 m |
| Binning | | | | | |
| Size Inline: | 50 m | Size XLine: | 37.5 m | | |

Production Listing (Accpt km) - Prime: Sail Line, Infill: Full Fold

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

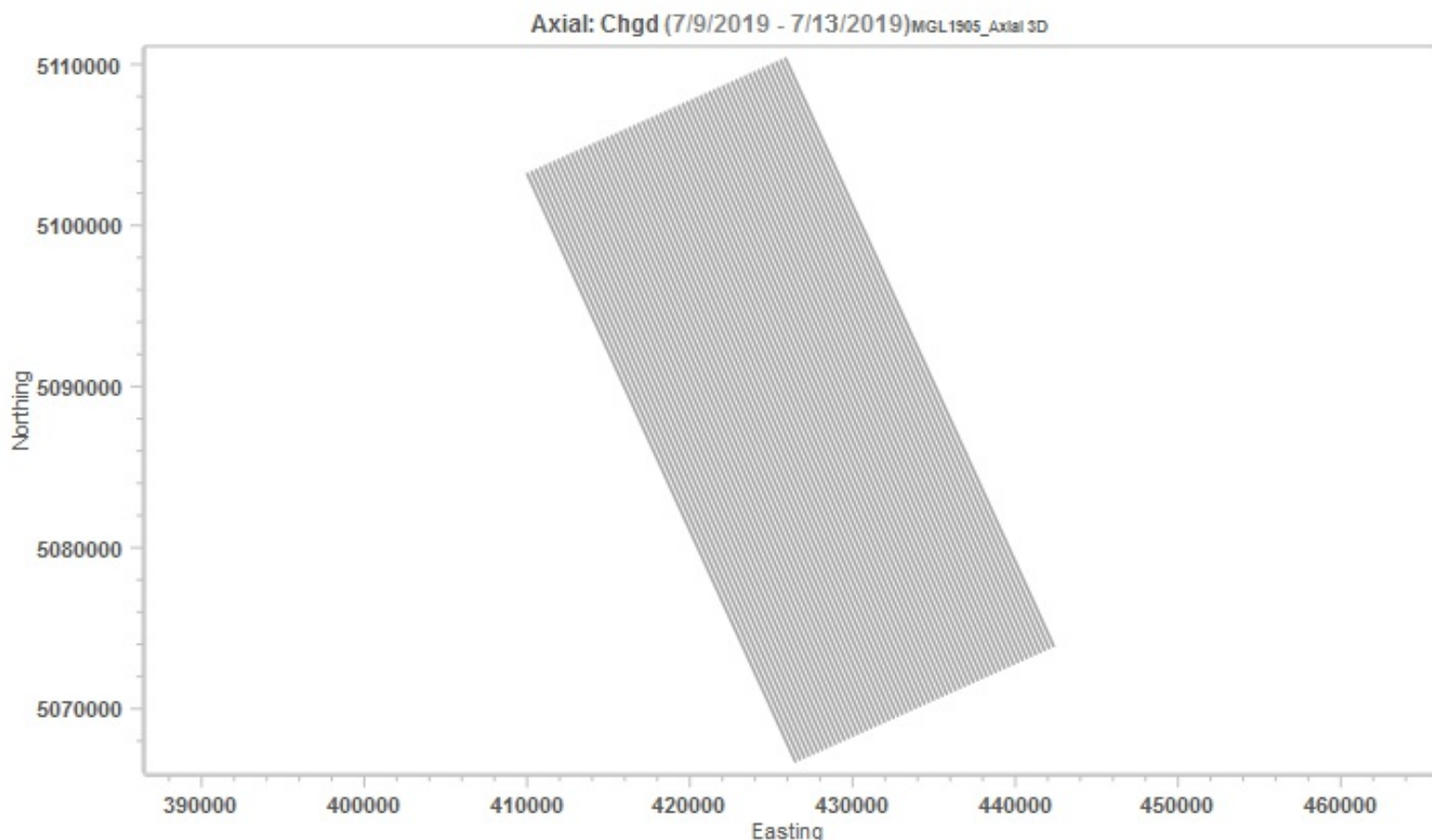
Production Totals (Chgd km) - Prime: Sail Line, Infill: Full Fold

| Charged km | Day | Week | Month | Project |
|------------|------|------|-------|---------|
| Prime | 0.00 | 0.00 | 0.00 | 0.00 |
| Infill | 0.00 | 0.00 | 0.00 | 0.00 |
| Combined | 0.00 | 0.00 | 0.00 | 0.00 |

Daily Science Report

7/13/2019

Page 3



Daily Comment Summaries - Daily Comments On Status of Equipment

Sat 13 Jul

Navigation:

No Major Issues to Report

Information Technology (IT):

No Major Issues to Report

Acquisition (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 13 Jul

Technical Staff On-board the Langseth

Todd Jensvold L-DEO OMO Chief Science Officer
David Martinson L-DEO OMO Science Officer - Nav
Josh Kasinger L-DEO OMO Chief Source Mechanic
Tom Spoto L-DEO OMO Source Mechanic
Alan Thompson L-DEO OMO Marine Science Technician - Nav
Gilles Guerin L-DEO OMO Marine Science Technician - Obs
Shaun Shaver L-DEO OMO Marine Science Technician - Obs
Edmond St. Amant Contract Personnel Marine Science Technician - Source
Matt Dietrich Contract Personnel Marine Science Technician - Source
Chris Abdouch NCS SubSea Contract Nav Processor
Mike Jennings NCS SubSea Contract Nav Processor

Daily Science Report

7/13/2019

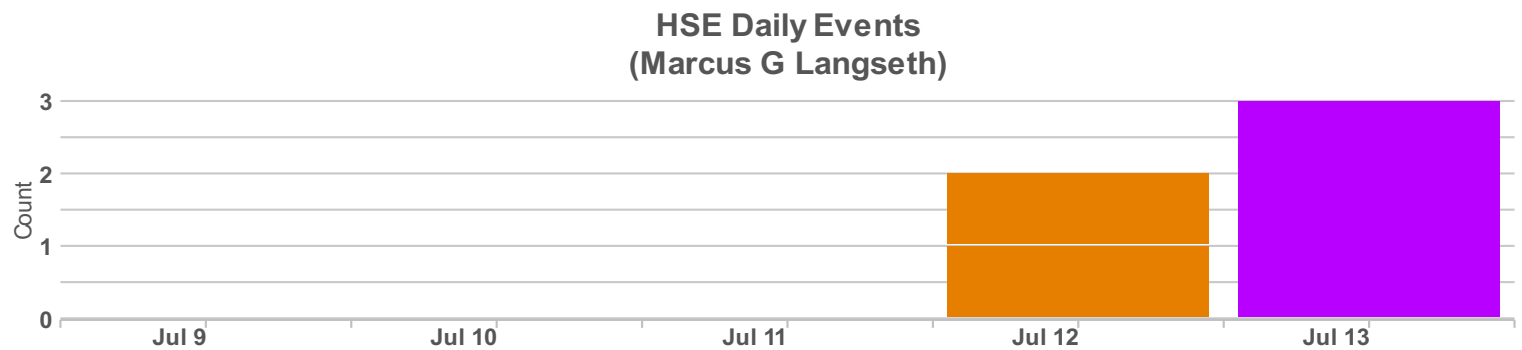
Page 4

PSO Staff On-board the Langseth

Amanda Dubuque RPS Lead PSO
Bianca Mares RPS PSO
Ana Hernandez RPS PSO
Lluvia Durantes RPS PSO
Alejandra Ramos RPS PSO

Science Party On-board the Langseth

Adrien Amulf UTIG - PI
Alistar Harding Scripps - PI
Steffen Saustrop UTIG - Tech
Michelle Lee LDEO - Student
Axelle Cap U de Bretagne - Student
Shelby Brandt U of Ottawa - Student
Morgan Goulain Mines of Paris Tech - Studen
Victoire Lucas U de Bretagne - Student
Samual Mitchell U. of Bristol - Research Tech
Mathew Griffiths Carlton U. - Student
Massimo Stefano Belluci U de Bretagne - Student
Tanner Eischen East Carolina U. - Student
Brian Oller Scripps - Student



Daily Science Report

7/14/2019

Page 1

| | | | |
|------------------------|---|----------------------|----------------------------------|
| Client: | United States National Science Foundation | Contractor: | Lamont-Doherty Earth Observatory |
| Job No: | MGL1905 | Job No: | MGL1905 |
| Block: | Axial | Vessel: | Marcus G Langseth |
| Client Contact: | Adrien Arnulf | Supervisor: | Sean Higgins |
| Consultancy: | N/A | Party Chiefs: | Todd Jensvold |
| Job No: | | Client Reps: | Adrien Arnulf |

Daily Comment Summaries - Daily Summary

Sun 14 Jul

Completed deployment of streamer #4 followed by deployment of the port barovane
Streamer 3 was deployed next followed by streamer 2.

Daily Comment Summaries - Plan for Tomorrow

Sun 14 Jul

Complete deployment of streamers followed by deployment of the 4 source sub-arrays

Timing Diary (Marcus G Langseth, MGL1905_Axial 3D)

| Category | Code | Start | End | Duration |
|-------------------------------------|-------|-------------------|-------------------|----------|
| Deployment | MB_DP | Sun 14. Jul 00:00 | Sun 14. Jul 07:26 | 7.433 |
| Deploy streamer 4 and port barovane | | | | |
| Deployment | MB_DP | Sun 14. Jul 07:26 | Sun 14. Jul 16:40 | 9.233 |
| Deploy streamer #3 | | | | |
| Deployment | MB_DP | Sun 14. Jul 16:40 | Sun 14. Jul 24:00 | 7.333 |
| Deploy streamer 2 | | | | |

Timing Day By Day (Marcus G Langseth, MGL1905_Axial 3D)

| 14-Jul | Hours | %Percent |
|--------------|--------|----------|
| Mobilisation | 24.000 | 100.000 |
| Deployment | 24.000 | 100.000 |
| Day's Total | 24.000 | 100.000 |

Timing Breakdown Summary - Project (Marcus G Langseth, MGL1905_Axial 3D)

| Category | Hours | %Percent |
|---------------------|---------|----------|
| Mobilisation | 144.000 | 100.000 |
| Deployment | 39.333 | 27.315 |
| Mob Ashore | 63.000 | 43.750 |
| Transit to Prospect | 41.667 | 28.935 |
| Total | 144.000 | |

Basic Project Details

| MGL1905_Axial 3D | | | | | |
|------------------|----------|--------------|------|---------------------|--------|
| General Details | | | | | |
| Record length: | 12000 ms | Sample rate: | 2 ms | Shotpoint interval: | 37.5 m |

Daily Science Report

7/14/2019

Page 2

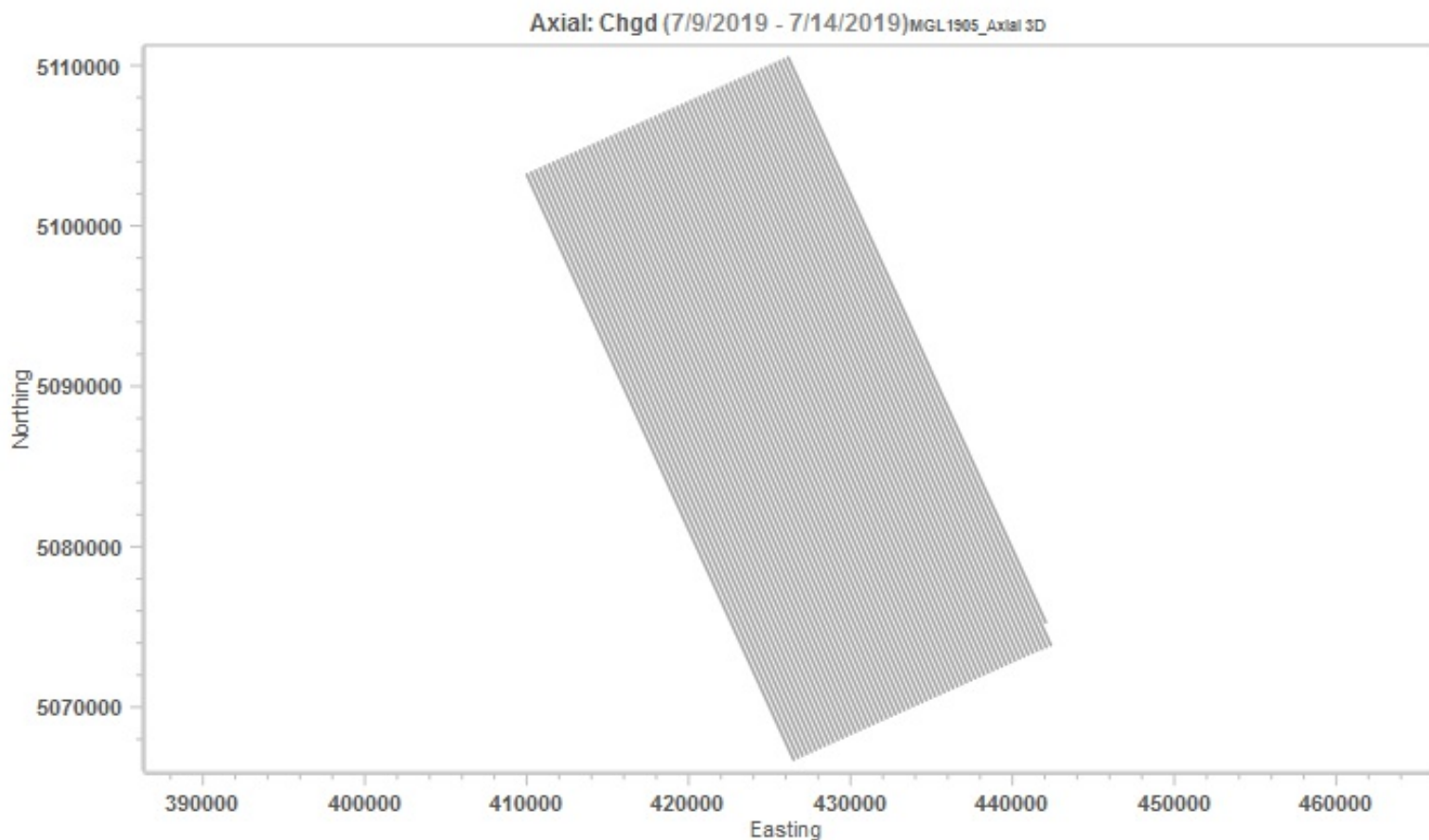
| MGL1905_Axial 3D | | | | | |
|---------------------|--------|--------------------|----------|------------------|-------------|
| CoS to CNG: | 225 m | Fold Coverage: | 252 | | |
| Cable Details | | | | | |
| No of Cables: | 4 | Head Separation: | 150 m | Tail Separation: | 150 m |
| Chans Per Cable: | 468 | Front Depth: | 16 m | Tail Depth: | 16 m |
| Length: | 5850 m | Group interval: | 12.5 m | | |
| Source Details | | | | | |
| No of Sources: | 2 | Separation: | 75 m | Total Volume: | 6600 cu ins |
| Depth: | 12 m | Pressure: | 1950 PSI | Volume: | 3300 |
| Strings per source: | 2 | String Separation: | 6 m | String length: | 18 m |
| Binning | | | | | |
| Size Inline: | 50 m | Size XLine: | 37.5 m | | |

Production Listing (Acpt km) - Prime: Sail Line, Infill: Full Fold

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

Production Totals (Chgd km) - Prime: Sail Line, Infill: Full Fold

| Charged km | Day | Week | Month | Project |
|------------|------|------|-------|---------|
| Prime | 0.00 | 0.00 | 0.00 | 0.00 |
| Infill | 0.00 | 0.00 | 0.00 | 0.00 |
| Combined | 0.00 | 0.00 | 0.00 | 0.00 |



Daily Science Report

7/14/2019

Page 3

Daily Comment Summaries - Daily Comments On Status of Equipment

Sun 14 Jul

Navigation:

No Major Issues to Report

Information Technology (IT):

No Major Issues to Report

Acquisition (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 14 Jul

Technical Staff On-board the Langseth

Todd Jensvold L-DEO OMO Chief Science Officer
David Martinson L-DEO OMO Science Officer - Nav
Josh Kasinger L-DEO OMO Chief Source Mechanic
Tom Spoto L-DEO OMO Source Mechanic
Alan Thompson L-DEO OMO Marine Science Technician - Nav
Gilles Guerin L-DEO OMO Marine Science Technician - Obs
Shaun Shaver L-DEO OMO Marine Science Technician - Obs
Edmond St. Amant Contract Personnel Marine Science Technician - Source
Matt Dietrich Contract Personnel Marine Science Technician - Source
Chris Abdouch NCS SubSea Contract Nav Processor
Mike Jennings NCS SubSea Contract Nav Processor

PSO Staff On-board the Langseth

Amanda Dubuque RPS Lead PSO
Bianca Mares RPS PSO
Ana Hernandez RPS PSO
Lluvia Durantes RPS PSO
Alejandra Ramos RPS PSO

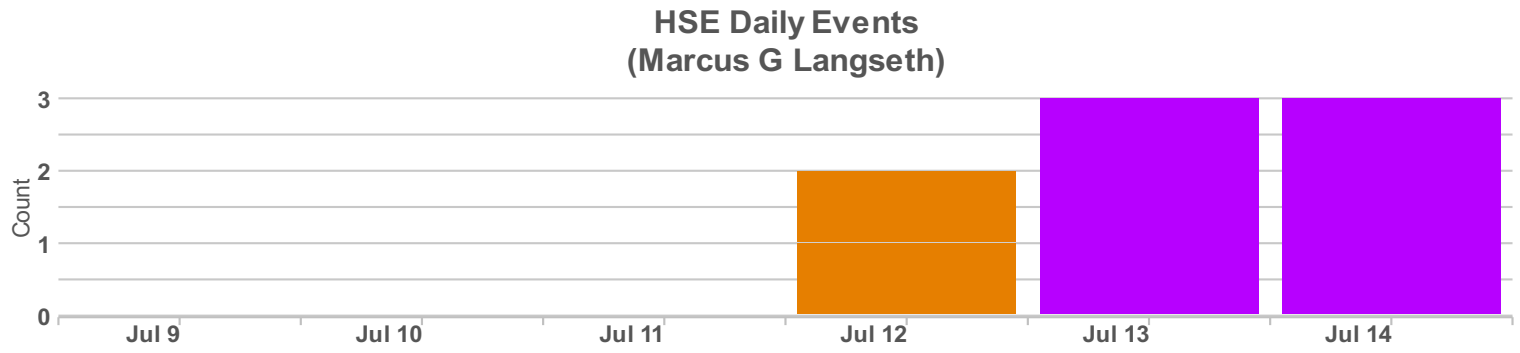
Science Party On-board the Langseth

Adrien Amulf UTIG - PI
Alistar Harding Scripps - PI
Steffen Saustrup UTIG - Tech
Michelle Lee LDEO - Student
Axelle Cap U de Bretagne - Student
Shelby Brandt U of Ottawa - Student
Morgan Goulain Mines of Paris Tech - Student
Victoire Lucas U de Bretagne - Student
Samual Mitchell U. of Bristol - Research Tech
Mathew Griffiths Carlton U. - Student
Massimo Stefano Belluci U de Bretagne - Student
Tanner Eischen East Carolina U. - Student
Brian Oller Scripps - Student

Daily Science Report

7/14/2019

Page 4



Daily Science Report

7/15/2019

Page 1

| | | | |
|------------------------|---|----------------------|----------------------------------|
| Client: | United States National Science Foundation | Contractor: | Lamont-Doherty Earth Observatory |
| Job No: | MGL1905 | Job No: | MGL1905 |
| Block: | Axial | Vessel: | Marcus G Langseth |
| Client Contact: | Adrien Arnulf | Supervisor: | Sean Higgins |
| Consultancy: | N/A | Party Chiefs: | Todd Jensvold |
| Job No: | | Client Reps: | Adrien Arnulf |

Daily Comment Summaries - Daily Summary

Mon 15 Jul

We had an early end of line for Seq #3 due to port main engine problems. We had to pick up the source arrays in order to power down the main engine for fuel injector repairs. Repairs are ongoing at the end of the UTC day.

Maintenance on all gun strings was performed.









Daily Comment Summaries - Plan for Tomorrow

Mon 15 Jul

Continue acquiring data after repairs are made.

Timing Diary (Marcus G Langseth, MGL1905_Axial 3D)





| Category | Code | Start | End | Duration |
|---|--------|-------------------|-------------------|----------|
|  Deployment | MB_DP | Mon 15. Jul 00:00 | Mon 15. Jul 00:16 | 0.267 |
| Deploy streamer 2 | | | | |
|  Deployment | MB_DP | Mon 15. Jul 00:16 | Mon 15. Jul 05:52 | 5.600 |
| Deploying Source sub arrays 1-4 | | | | |
|  Testing | MB_TE | Mon 15. Jul 05:52 | Mon 15. Jul 06:12 | 0.333 |
| Ramp up - using subarrays 3 and 4 | | | | |
|  Transit | SB_TRT | Mon 15. Jul 06:12 | Mon 15. Jul 06:28 | 0.267 |
| heading for start of line | | | | |
|  Production Prime | AC_PP | Mon 15. Jul 06:28 | Mon 15. Jul 10:21 | 3.883 |
| MGL1905P1004 | | | | |
|  Prime Line Change | AC_PLC | Mon 15. Jul 10:21 | Mon 15. Jul 12:27 | 2.100 |
| Nominal Prime line change. | | | | |
|  Production Prime | AC_PP | Mon 15. Jul 12:27 | Mon 15. Jul 17:34 | 5.117 |
| SOL Seq 2 Line:1116 Block=Axial FGSP=2117 Hdg=335.7° Prime EOL Seq 2 Line:1116 Block=Axial LGSP=921 Complete | | | | |
|  Prime Line Change | AC_PLC | Mon 15. Jul 17:34 | Mon 15. Jul 19:19 | 1.750 |
| Nominal Prime line change. | | | | |

Daily Science Report

7/15/2019

Page 2

| Category | Code | Start | End | Duration |
|---|-------|-------------------|-------------------|----------|
|  Production Prime | AC_PP | Mon 15. Jul 19:19 | Mon 15. Jul 21:11 | 1.867 |
| SOL Seq 3 Line:1012 Block=Axial FGSP=857 Hdg=155.7° Prime EOL Seq 3 Line:1012 Block=Axial LGSP=1303 Incomplete | | | | |
|  Vessel | DT_VE | Mon 15. Jul 21:11 | Mon 15. Jul 24:00 | 2.817 |
| Downtime due to port main engine failure | | | | |

Timing Day By Day (Marcus G Langseth, MGL1905_Axial 3D)

| 15-Jul | Hours | %Percent |
|---------------------------|---------------|----------------|
| Acquisition | 14.717 | 61.319 |
| Prime Line Change | 3.850 | 16.042 |
| Production Prime | 10.867 | 45.278 |
| Chargeable Standby | 0.267 | 1.111 |
| Transit | 0.267 | 1.111 |
| Downtime | 2.817 | 11.736 |
| Vessel | 2.817 | 11.736 |
| Mobilisation | 6.200 | 25.833 |
| Deployment | 5.867 | 24.444 |
| Testing | 0.333 | 1.389 |
| Day's Total | 24.000 | 100.000 |

Timing Breakdown Summary - Project (Marcus G Langseth, MGL1905_Axial 3D)

| Category | Hours | %Percent |
|---------------------------|----------------|---------------|
| Mobilisation | 150.200 | 89.405 |
| Deployment | 45.200 | 26.905 |
| Mob Ashore | 63.000 | 37.500 |
| Testing | 0.333 | 0.198 |
| Transit to Prospect | 41.667 | 24.802 |
| Acquisition | 14.717 | 8.760 |
| Prime Line Change | 3.850 | 2.292 |
| Production Prime | 10.867 | 6.468 |
| Chargeable Standby | 0.267 | 0.159 |
| Transit | 0.267 | 0.159 |
| Downtime | 2.817 | 1.677 |
| Vessel | 2.817 | 1.677 |
| Total | 168.000 | |

Basic Project Details

| MGL1905_Axial 3D | | | | | |
|------------------|----------|----------------|------|---------------------|--------|
| General Details | | | | | |
| Record length: | 12000 ms | Sample rate: | 2 ms | Shotpoint interval: | 37.5 m |
| CoS to CNG: | 225 m | Fold Coverage: | 252 | | |

Daily Science Report

7/15/2019

Page 3

| MGL1905_Axial 3D | | | | | |
|---------------------|--------|--------------------|----------|------------------|-------------|
| Cable Details | | | | | |
| No of Cables: | 4 | Head Separation: | 150 m | Tail Separation: | 150 m |
| Chans Per Cable: | 468 | Front Depth: | 16 m | Tail Depth: | 16 m |
| Length: | 5850 m | Group interval: | 12.5 m | | |
| Source Details | | | | | |
| No of Sources: | 2 | Separation: | 75 m | Total Volume: | 6600 cu ins |
| Depth: | 12 m | Pressure: | 1950 PSI | Volume: | 3300 |
| Strings per source: | 2 | String Separation: | 6 m | String length: | 18 m |
| Binning | | | | | |
| Size Inline: | 50 m | Size XLine: | 37.5 m | | |

Production Listing (Accpt km by interval) - Prime: Sail Line, Infill: Full Fold

| Seq | Line | Heading | FGSP | LGSP | Prod Type | Production | Ave Knots | Seq Status | Line Status |
|-------|------|---------|------|------|-----------|------------|-----------|------------|-------------|
| 1 | 1004 | 155.7 | 1221 | 2068 | Prime | 31.76 | 4.416 | Complete | Incomplete |
| 2 | 1116 | 335.7 | 2117 | 921 | Prime | 44.85 | 4.733 | Complete | Complete |
| 3 | 1012 | 155.7 | 857 | 1303 | Prime | 16.72 | 4.838 | Complete | Incomplete |
| Total | | | | | | 93.34 | | | |

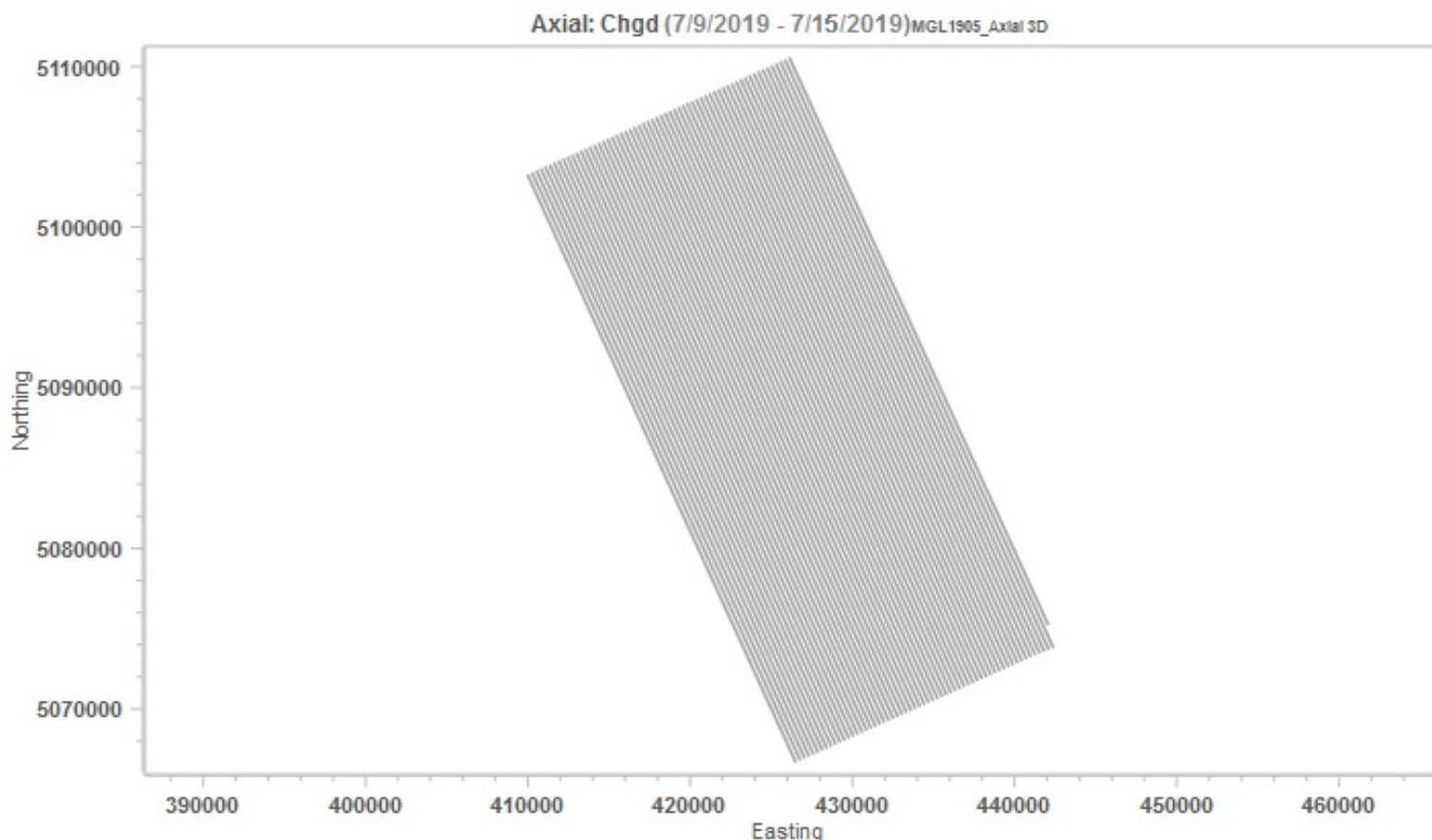
Production Totals (Chgd km by interval) - Prime: Sail Line, Infill: Full Fold

| Charged km | Day | Week | Month | Project |
|------------|------|------|-------|---------|
| Prime | 0.00 | 0.00 | 0.00 | 0.00 |
| Infill | 0.00 | 0.00 | 0.00 | 0.00 |
| Combined | 0.00 | 0.00 | 0.00 | 0.00 |

Daily Science Report

7/15/2019

Page 4



Daily Comment Summaries - Daily Comments On Status of Equipment

Mon 15 Jul

Navigation:

No Major Issues to Report

Information Technology (IT):

No Major Issues to Report

Acquisition (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 15 Jul

Technical Staff On-board the Langseth

Todd Jensvold L-DEO OMO Chief Science Officer

David Martinson L-DEO OMO Science Officer - Nav

Josh Kasinger L-DEO OMO Chief Source Mechanic

Tom Spoto L-DEO OMO Source Mechanic

Alan Thompson L-DEO OMO Marine Science Technician - Nav

Gilles Guerin L-DEO OMO Marine Science Technician - Obs

Shaun Shaver L-DEO OMO Marine Science Technician - Obs

Edmond St. Amant Contract Personnel Marine Science Technician - Source

Matt Dietrich Contract Personnel Marine Science Technician - Source

Chris Abdouch NCS SubSea Contract Nav Processor

Mike Jennings NCS SubSea Contract Nav Processor

Daily Science Report

7/15/2019

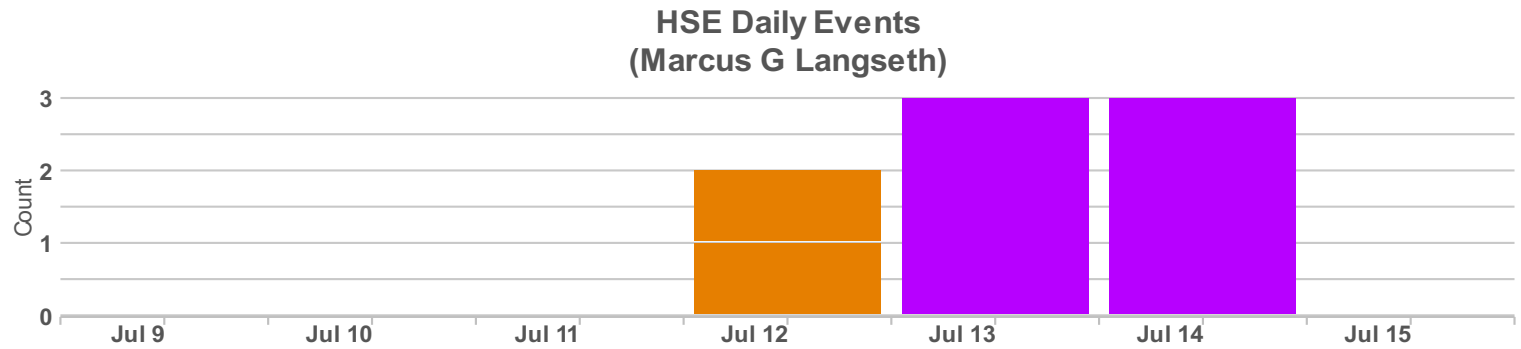
Page 5

PSO Staff On-board the Langseth

Amanda Dubuque RPS Lead PSO
Bianca Mares RPS PSO
Ana Hernandez RPS PSO
Lluvia Durantes RPS PSO
Alejandra Ramos RPS PSO

Science Party On-board the Langseth

Adrien Amulf UTIG - PI
Alistar Harding Scripps - PI
Steffen Saustrop UTIG - Tech
Michelle Lee LDEO - Student
Axelle Cap U de Bretagne - Student
Shelby Brandt U of Ottawa - Student
Morgan Goulain Mines of Paris Tech - Studen
Victoire Lucas U de Bretagne - Student
Samual Mitchell U. of Bristol - Research Tech
Mathew Griffiths Carlton U. - Student
Massimo Stefano Belluci U de Bretagne - Student
Tanner Eischen East Carolina U. - Student
Brian Oller Scripps - Student



Daily Science Report

7/16/2019

Page 1

| | | | |
|------------------------|---|----------------------|----------------------------------|
| Client: | United States National Science Foundation | Contractor: | Lamont-Doherty Earth Observatory |
| Job No: | MGL1905 | Job No: | MGL1905 |
| Block: | Axial | Vessel: | Marcus G Langseth |
| Client Contact: | Adrien Arnulf | Supervisor: | Sean Higgins |
| Consultancy: | N/A | Party Chiefs: | Todd Jensvold |
| Job No: | | Client Reps: | Adrien Arnulf |

Daily Comment Summaries - Daily Summary

Tue 16 Jul

After repairs were made to the port main engine, the source and PAM were redeployed. After PSO clearance, a night time ramp up was performed followed by immediately starting production on line P1124.

A man overboard drill was held midday: Science party was briefed on use of the Marcus Lifenet and the streamer deck single man life raft, as well as what to do if they witness a man overboard.

Production was acquired on lines: 1124, 1020, and 1132(midnight)







Daily Comment Summaries - Plan for Tomorrow

Tue 16 Jul

Complete acquisition of line 1132 and continue acquiring the race track.

Timing Diary (Marcus G Langseth, MGL1905_Axial 3D)



| Category | Code | Start | End | Duration |
|---|--------|-------------------|-------------------|----------|
|  Vessel | DT_VE | Tue 16. Jul 00:00 | Tue 16. Jul 07:19 | 7.317 |
| Downtime due to port main engine failure | | | | |
|  Production Prime | AC_PP | Tue 16. Jul 07:19 | Tue 16. Jul 09:26 | 2.117 |
| SOL Seq 4 Line:1124 Block=Axial FGSP=1382 Hdg=335.7° Prime EOL Seq 4 Line:1124 Block=Axial LGSP=921 Incomplete | | | | |
|  Prime Line Change | AC_PLC | Tue 16. Jul 09:26 | Tue 16. Jul 11:34 | 2.133 |
| Nominal Prime line change. | | | | |
|  Production Prime | AC_PP | Tue 16. Jul 11:34 | Tue 16. Jul 17:01 | 5.450 |
| SOL Seq 5 Line:1020 Block=Axial FGSP=958 Hdg=155.7° Prime EOL Seq 5 Line:1020 Block=Axial LGSP=2148 Complete | | | | |
|  Prime Line Change | AC_PLC | Tue 16. Jul 17:01 | Tue 16. Jul 19:05 | 2.067 |
| Nominal Prime line change. | | | | |
|  Production Prime | AC_PP | Tue 16. Jul 19:05 | Tue 16. Jul 24:00 | 4.917 |
| SOL Seq 6 Line:1132 Block=Axial FGSP=2148 Hdg=335.7° Prime MSP Seq 6 Line:1132 Block=Axial LGSP=1050 Midnight | | | | |

Timing Day By Day (Marcus G Langseth, MGL1905_Axial 3D)

| 16-Jul | Hours | %Percent |
|-------------------|--------|----------|
| Acquisition | 16.683 | 69.514 |
| Prime Line Change | 4.200 | 17.500 |

Daily Science Report

7/16/2019

Page 2

| 16-Jul | Hours | %Percent |
|--------------------|---------------|----------------|
| Production Prime | 12.483 | 52.014 |
| DownTime | 7.317 | 30.486 |
| Vessel | 7.317 | 30.486 |
| Day's Total | 24.000 | 100.000 |

Timing Breakdown Summary - Project (Marcus G Langseth, MGL1905_Axial 3D)

| Category | Hours | %Percent |
|---------------------------|----------------|---------------|
| Mobilisation | 150.200 | 78.229 |
| Deployment | 45.200 | 23.542 |
| Mob Ashore | 63.000 | 32.812 |
| Testing | 0.333 | 0.174 |
| Transit to Prospect | 41.667 | 21.701 |
| Acquisition | 31.400 | 16.354 |
| Prime Line Change | 8.050 | 4.193 |
| Production Prime | 23.350 | 12.161 |
| Chargeable Standby | 0.267 | 0.139 |
| Transit | 0.267 | 0.139 |
| DownTime | 10.133 | 5.278 |
| Vessel | 10.133 | 5.278 |
| Total | 192.000 | |

Basic Project Details

| MGL1905_Axial 3D | | | | | |
|---------------------|----------|--------------------|----------|---------------------|-------------|
| General Details | | | | | |
| Record length: | 12000 ms | Sample rate: | 2 ms | Shotpoint interval: | 37.5 m |
| CoS to CNG: | 225 m | Fold Coverage: | 252 | | |
| Cable Details | | | | | |
| No of Cables: | 4 | Head Separation: | 150 m | Tail Separation: | 150 m |
| Chans Per Cable: | 468 | Front Depth: | 16 m | Tail Depth: | 16 m |
| Length: | 5850 m | Group interval: | 12.5 m | | |
| Source Details | | | | | |
| No of Sources: | 2 | Separation: | 75 m | Total Volume: | 6600 cu ins |
| Depth: | 12 m | Pressure: | 1950 PSI | Volume: | 3300 |
| Strings per source: | 2 | String Separation: | 6 m | String length: | 18 m |
| Binning | | | | | |
| Size Inline: | 50 m | Size XLine: | 37.5 m | | |

Production Listing (Accept km by interval) - Prime: Sail Line, Infill: Full Fold

| Seq | Line | Heading | FGSP | LGSP | Prod Type | Production | Ave Knots | Seq Status | Line Status |
|-----|------|---------|------|------|-----------|------------|-----------|------------|-------------|
| 4 | 1124 | 335.7 | 1382 | 921 | Prime | 17.29 | 4.410 | Complete | Incomplete |
| 5 | 1020 | 155.7 | 958 | 2148 | Prime | 44.62 | 4.421 | Complete | Complete |

Daily Science Report

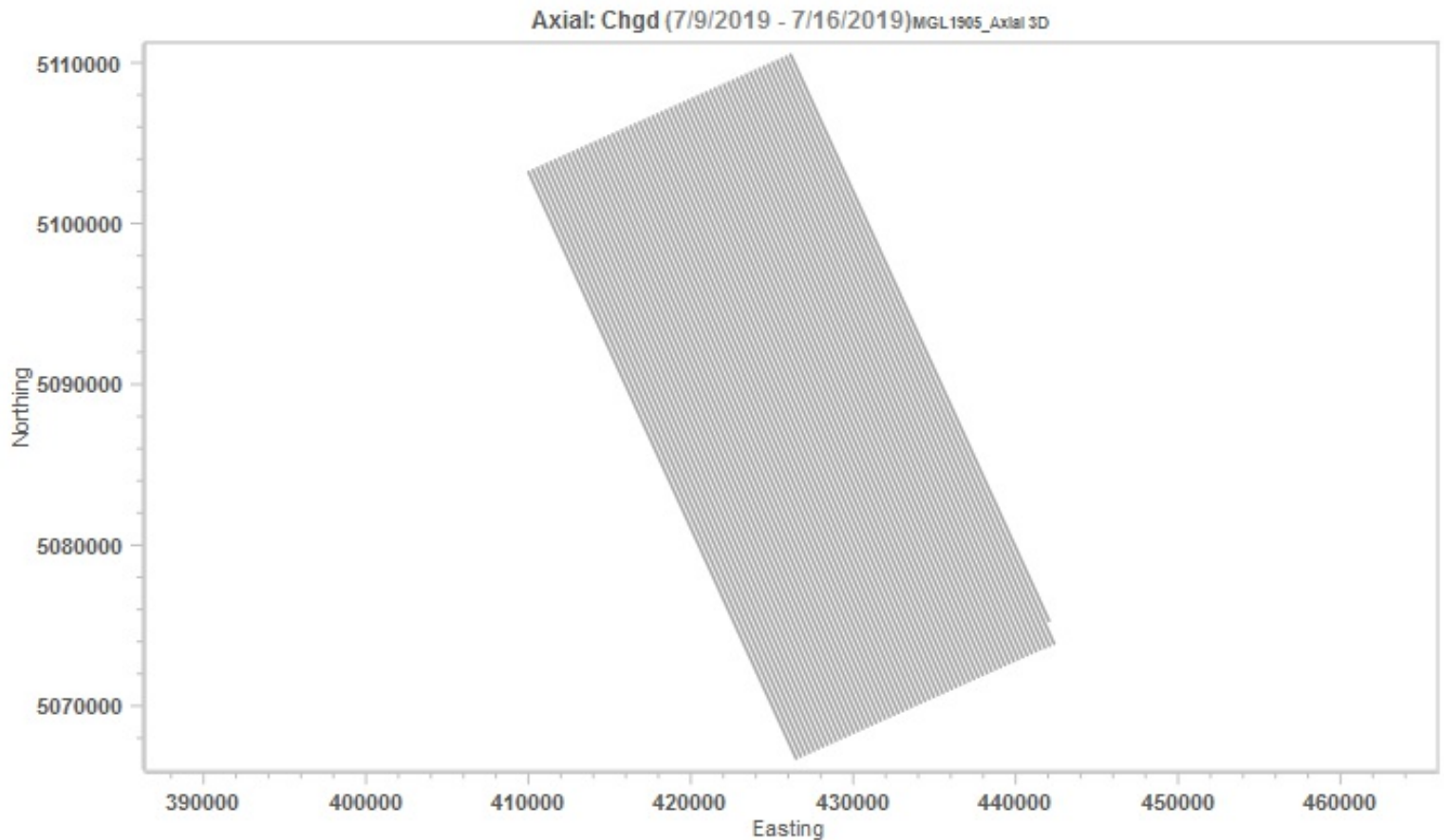
7/16/2019

Page 3

| Seq | Line | Heading | FGSP | LGSP | Prod Type | Production | Ave Knots | Seq Status | Line Status |
|--------------|------|---------|------|------|-----------|---------------|-----------|------------|-------------|
| 6 | 1132 | 335.7 | 2148 | 1050 | Prime | 41.17 | 4.522 | Part | Midnight |
| Total | | | | | | 103.09 | | | |

Production Totals (Chgd km by interval) - Prime: Sail Line, Infill: Full Fold

| Charged km | Day | Week | Month | Project |
|-----------------|-------------|-------------|-------------|-------------|
| Prime | 0.00 | 0.00 | 0.00 | 0.00 |
| Infill | 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 16 Jul

Navigation:

No Major Issues to Report

Information Technology (IT):

No Major Issues to Report

Acquisition (OBS):

No Major Issues to Report

Towing and Handling (Source):

No Major Issues to Report

General Purpose Science:

No Major Issues to Report

Daily Science Report

7/16/2019

Page 4

Daily Comment Summaries - Personnel Onboard

Tue 16 Jul

Technical Staff On-board the Langseth

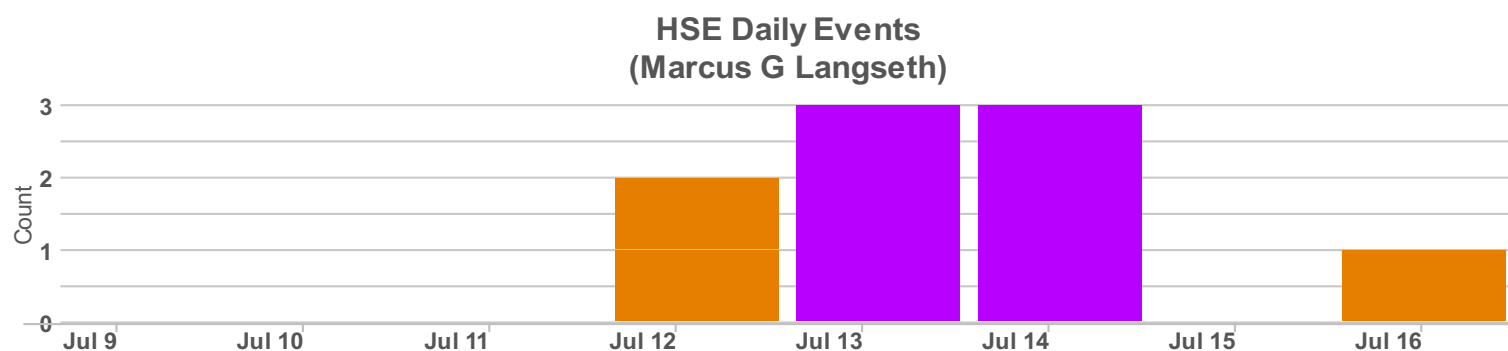
Todd Jensvold L-DEO OMO Chief Science Officer
David Martinson L-DEO OMO Science Officer - Nav
Josh Kasinger L-DEO OMO Chief Source Mechanic
Tom Spoto L-DEO OMO Source Mechanic
Alan Thompson L-DEO OMO Marine Science Technician - Nav
Gilles Guerin L-DEO OMO Marine Science Technician - Obs
Shaun Shaver L-DEO OMO Marine Science Technician - Obs
Edmond St. Amant Contract Personnel Marine Science Technician - Source
Matt Dietrich Contract Personnel Marine Science Technician - Source
Chris Abdouch NCS SubSea Contract Nav Processor
Mike Jennings NCS SubSea Contract Nav Processor

PSO Staff On-board the Langseth

Amanda Dubuque RPS Lead PSO
Bianca Mares RPS PSO
Ana Hernandez RPS PSO
Lluvia Durantes RPS PSO
Alejandra Ramos RPS PSO

Science Party On-board the Langseth

Adrien Amulf UTIG - PI
Alistar Harding Scripps - PI
Steffen Sastrup UTIG - Tech
Michelle Lee LDEO - Student
Axelle Cap U de Bretagne - Student
Shelby Brandt U of Ottawa - Student
Morgan Goulain Mines of Paris Tech - Student
Victoire Lucas U de Bretagne - Student
Samual Mitchell U. of Bristol - Research Tech
Mathew Griffiths Carlton U. - Student
Massimo Stefano Belluci U de Bretagne - Student
Tanner Eischen East Carolina U. - Student
Brian Oller Scripps - Student



Daily Science Report

7/17/2019

Page 1

| | | | |
|------------------------|---|----------------------|----------------------------------|
| Client: | United States National Science Foundation | Contractor: | Lamont-Doherty Earth Observatory |
| Job No: | MGL1905 | Job No: | MGL1905 |
| Block: | Axial | Vessel: | Marcus G Langseth |
| Client Contact: | Adrien Arnulf | Supervisor: | Sean Higgins |
| Consultancy: | N/A | Party Chiefs: | Todd Jensvold |
| Job No: | | Client Reps: | Adrien Arnulf |

Daily Comment Summaries - Daily Summary









Wed 17 Jul

Production was acquired on lines: 1132, 1028, 1140, and 1036
There was one whale sighting just before ramp up was to begin for line 1036. Once cleared, ramp up was performed and the line was started, no production was missed.

Daily Comment Summaries - Plan for Tomorrow

Wed 17 Jul

Timing Diary (Marcus G Langseth, MGL1905_Axial 3D)

| Category | Code | Start | End | Duration |
|---|--------|-------------------|-------------------|----------|
|  Production Prime | AC_PP | Wed 17. Jul 00:00 | Wed 17. Jul 00:33 | 0.550 |
| SOL Seq 6 Line:1132 Block=Axial FGSP=1049 Hdg=335.7° Prime EOL Seq 6 Line:1132 Block=Axial LGSP=921 Complete | | | | |
|  Prime Line Change | AC_PLC | Wed 17. Jul 00:33 | Wed 17. Jul 02:33 | 2.000 |
| Nominal Prime line change. | | | | |
|  Production Prime | AC_PP | Wed 17. Jul 02:33 | Wed 17. Jul 08:00 | 5.450 |
| SOL Seq 7 Line:1028 Block=Axial FGSP=925 Hdg=155.7° Prime EOL Seq 7 Line:1028 Block=Axial LGSP=2148 Complete | | | | |
|  Prime Line Change | AC_PLC | Wed 17. Jul 08:00 | Wed 17. Jul 10:28 | 2.467 |
| Nominal Prime line change. | | | | |
|  Production Prime | AC_PP | Wed 17. Jul 10:28 | Wed 17. Jul 16:00 | 5.533 |
| SOL Seq 8 Line:1140 Block=Axial FGSP=2100 Hdg=335.7° Prime EOL Seq 8 Line:1140 Block=Axial LGSP=921 Complete | | | | |
|  Prime Line Change | AC_PLC | Wed 17. Jul 16:00 | Wed 17. Jul 18:04 | 2.067 |
| Nominal Prime line change. | | | | |
|  Production Prime | AC_PP | Wed 17. Jul 18:04 | Wed 17. Jul 23:01 | 4.950 |
| SOL Seq 9 Line:1140 Block=Axial FGSP=982 Hdg=155.7° Prime EOL Seq 9 Line:1140 Block=Axial LGSP=2148 Complete | | | | |
|  Prime Line Change | AC_PLC | Wed 17. Jul 23:01 | Wed 17. Jul 24:00 | 0.983 |
| Nominal Prime line change. | | | | |

Daily Science Report

7/17/2019

Page 2

Timing Day By Day (Marcus G Langseth, MGL1905_Axial 3D)

| 17-Jul | Hours | %Percent |
|--------------------|---------------|----------------|
| Acquisition | 24.000 | 100.000 |
| Prime Line Change | 7.517 | 31.319 |
| Production Prime | 16.483 | 68.681 |
| Day's Total | 24.000 | 100.000 |

Timing Breakdown Summary - Project (Marcus G Langseth, MGL1905_Axial 3D)

| Category | Hours | %Percent |
|---------------------------|----------------|---------------|
| Mobilisation | 150.200 | 69.537 |
| Deployment | 45.200 | 20.926 |
| Mob Ashore | 63.000 | 29.167 |
| Testing | 0.333 | 0.154 |
| Transit to Prospect | 41.667 | 19.290 |
| Acquisition | 55.400 | 25.648 |
| Prime Line Change | 15.567 | 7.207 |
| Production Prime | 39.833 | 18.441 |
| Chargeable Standby | 0.267 | 0.123 |
| Transit | 0.267 | 0.123 |
| DownTime | 10.133 | 4.691 |
| Vessel | 10.133 | 4.691 |
| Total | 216.000 | |

Basic Project Details

| MGL1905_Axial 3D | | | | | |
|---------------------|----------|--------------------|----------|---------------------|-------------|
| General Details | | | | | |
| Record length: | 12000 ms | Sample rate: | 2 ms | Shotpoint interval: | 37.5 m |
| CoS to CNG: | 225 m | Fold Coverage: | 252 | | |
| Cable Details | | | | | |
| No of Cables: | 4 | Head Separation: | 150 m | Tail Separation: | 150 m |
| Chans Per Cable: | 468 | Front Depth: | 16 m | Tail Depth: | 16 m |
| Length: | 5850 m | Group interval: | 12.5 m | | |
| Source Details | | | | | |
| No of Sources: | 2 | Separation: | 75 m | Total Volume: | 6600 cu ins |
| Depth: | 12 m | Pressure: | 1950 PSI | Volume: | 3300 |
| Strings per source: | 2 | String Separation: | 6 m | String length: | 18 m |
| Binning | | | | | |
| Size Inline: | 50 m | Size XLine: | 37.5 m | | |

Daily Science Report

7/17/2019

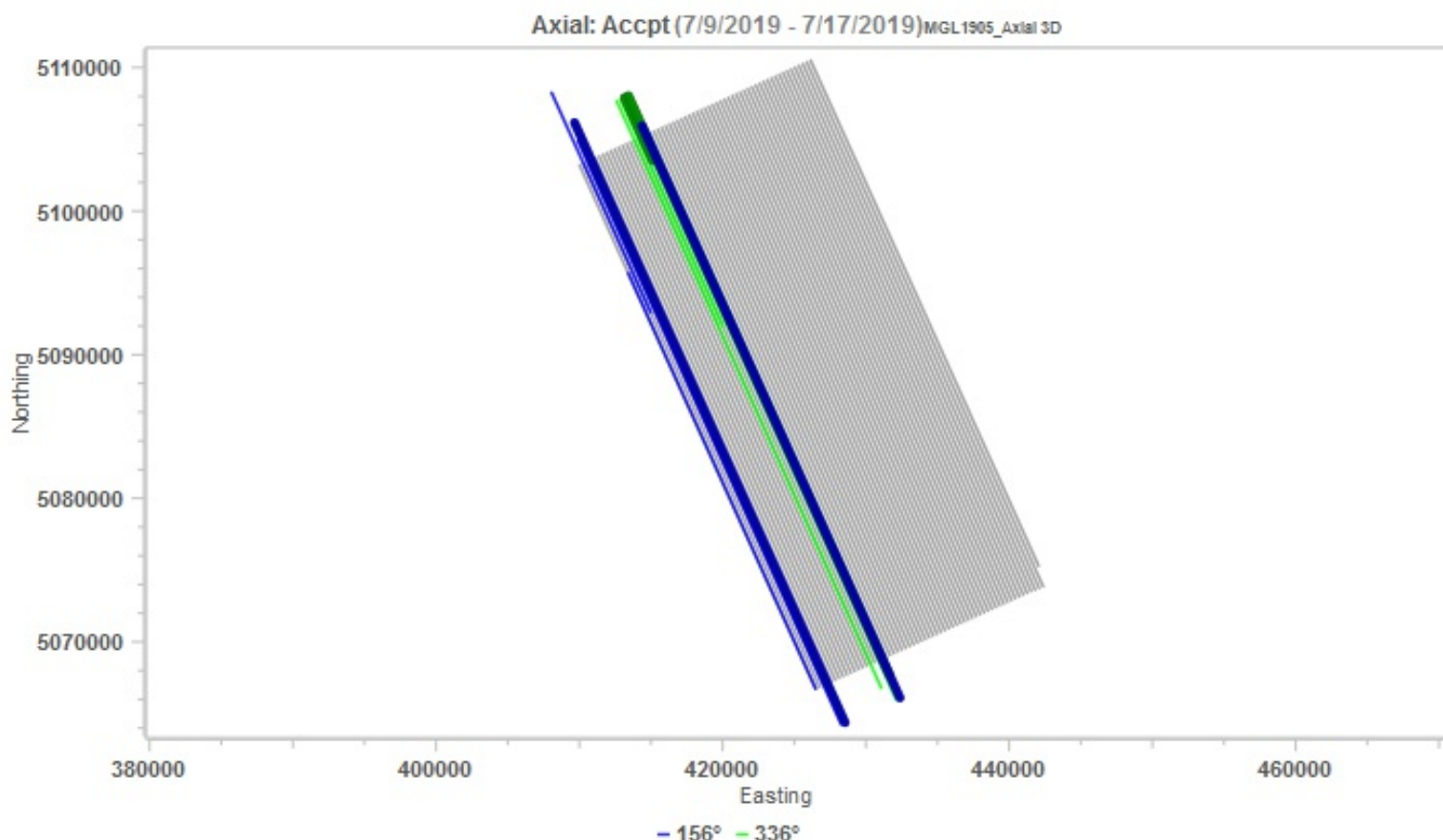
Page 3

Production Listing (Acct km by interval) - Prime: Sail Line, Infill: Full Fold

| Seq | Line | Heading | FGSP | LGSP | Prod Type | Production | Ave Knots | Seq Status | Line Status |
|--------------|------|---------|------|------|-----------|---------------|-----------|------------|-------------|
| 6 | 1132 | 335.7 | 1049 | 921 | Prime | 4.84 | 4.545 | Complete | Complete |
| 7 | 1028 | 155.7 | 925 | 2148 | Prime | 45.86 | 4.544 | Complete | Complete |
| 8 | 1140 | 335.7 | 2100 | 921 | Prime | 44.21 | 4.314 | Complete | Complete |
| 9 | 1140 | 155.7 | 982 | 2148 | Prime | 43.73 | 4.770 | Complete | Complete |
| Total | | | | | | 138.64 | | | |

Production Totals (Chgd km by interval) - Prime: Sail Line, Infill: Full Fold

| Charged km | Day | Week | Month | Project |
|-----------------|-------------|-------------|-------------|-------------|
| Prime | 0.00 | 0.00 | 0.00 | 0.00 |
| Infill | 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

Wed 17 Jul

Navigation:

No Major Issues to Report

Information Technology (IT):

No Major Issues to Report

Acquisition (OBS):

No Major Issues to Report

Towing and Handling (Source):

No Major Issues to Report

(UTC 00:00) UTC - Universal Time Coordinated

Generated on Wed Jul 17 2019 09:20p.m.

Page 3

Daily Science Report

7/17/2019

Page 4

General Purpose Science:

No Major Issues to Report

Daily Comment Summaries - Personnel Onboard

Wed 17 Jul

Technical Staff On-board the Langseth

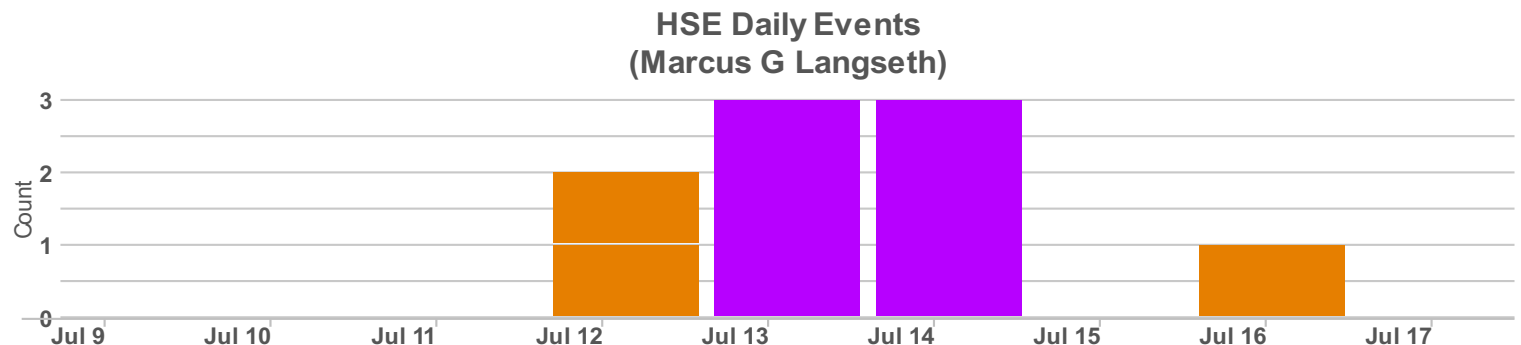
Todd Jensvold L-DEO OMO Chief Science Officer
David Martinson L-DEO OMO Science Officer - Nav
Josh Kasinger L-DEO OMO Chief Source Mechanic
Tom Spoto L-DEO OMO Source Mechanic
Alan Thompson L-DEO OMO Marine Science Technician - Nav
Gilles Guerin L-DEO OMO Marine Science Technician - Obs
Shaun Shaver L-DEO OMO Marine Science Technician - Obs
Edmond St. Amant Contract Personnel Marine Science Technician - Source
Matt Dietrich Contract Personnel Marine Science Technician - Source
Chris Abdouch NCS SubSea Contract Nav Processor
Mike Jennings NCS SubSea Contract Nav Processor

PSO Staff On-board the Langseth

Amanda Dubuque RPS Lead PSO
Bianca Mares RPS PSO
Ana Hernandez RPS PSO
Lluvia Durantes RPS PSO
Alejandra Ramos RPS PSO

Science Party On-board the Langseth

Adrien Amulf UTIG - PI
Alistar Harding Scripps - PI
Steffen Sastrup UTIG - Tech
Michelle Lee LDEO - Student
Axelle Cap U de Bretagne - Student
Shelby Brandt U of Ottawa - Student
Morgan Goulain Mines of Paris Tech - Student
Victoire Lucas U de Bretagne - Student
Samual Mitchell U. of Bristol - Research Tech
Mathew Griffiths Carlton U. - Student
Massimo Stefano Belluci U de Bretagne - Student
Tanner Eischen East Carolina U. - Student
Brian Oller Scripps - Student



Daily Science Report

7/18/2019

Page 1

| | | | |
|------------------------|---|----------------------|----------------------------------|
| Client: | United States National Science Foundation | Contractor: | Lamont-Doherty Earth Observatory |
| Job No: | MGL1905 | Job No: | MGL1905 |
| Block: | Axial | Vessel: | Marcus G Langseth |
| Client Contact: | Adrien Arnulf | Supervisor: | Sean Higgins |
| Consultancy: | N/A | Party Chiefs: | Todd Jensvold |
| Job No: | | Client Reps: | Adrien Arnulf |

Daily Comment Summaries - Daily Summary








Thu 18 Jul

Production was acquired on lines: 1148, 1044, 1156
The primary Digishot CIU failed during ramp up for line 1156, the spare was swapped in and reconfigured, SOL was slightly late.

Daily Comment Summaries - Plan for Tomorrow

Thu 18 Jul

Timing Diary (Marcus G Langseth, MGL1905_Axial 3D)

| Category | Code | Start | End | Duration |
|---|--------|-------------------|-------------------|----------|
|  Prime Line Change | AC_PLC | Thu 18. Jul 00:00 | Thu 18. Jul 01:24 | 1.400 |
| Nominal Prime line change. | | | | |
|  Production Prime | AC_PP | Thu 18. Jul 01:24 | Thu 18. Jul 06:51 | 5.450 |
| SOL Seq 10 Line:1148 Block=Axial FGSP=2066 Hdg=335.7° Prime EOL Seq 10 Line:1148 Block=Axial LGSP=921 Complete | | | | |
|  Prime Line Change | AC_PLC | Thu 18. Jul 06:51 | Thu 18. Jul 09:08 | 2.283 |
| Nominal Prime line change. | | | | |
|  Production Prime | AC_PP | Thu 18. Jul 09:08 | Thu 18. Jul 14:10 | 5.033 |
| SOL Seq 11 Line:1044 Block=Axial FGSP=968 Hdg=155.7° Prime EOL Seq 11 Line:1044 Block=Axial LGSP=2148 Complete | | | | |
|  Prime Line Change | AC_PLC | Thu 18. Jul 14:10 | Thu 18. Jul 16:46 | 2.600 |
| Nominal Prime line change. | | | | |
|  Production Prime | AC_PP | Thu 18. Jul 16:46 | Thu 18. Jul 22:17 | 5.517 |
| SOL Seq 12 Line:1156 Block=Axial FGSP=2062 Hdg=335.7° Prime EOL Seq 12 Line:1156 Block=Axial LGSP=921 Complete | | | | |
|  Production Prime | AC_PP | Thu 18. Jul 22:17 | Thu 18. Jul 24:00 | 1.717 |

Timing Day By Day (Marcus G Langseth, MGL1905_Axial 3D)

| 18-Jul | Hours | %Percent |
|-------------------|--------|----------|
| Acquisition | 24.000 | 100.000 |
| Prime Line Change | 6.283 | 26.181 |

Daily Science Report

7/18/2019

Page 2

| 18-Jul | Hours | %Percent |
|--------------------|---------------|----------------|
| Production Prime | 17.717 | 73.819 |
| Day's Total | 24.000 | 100.000 |

Timing Breakdown Summary - Project (Marcus G Langseth, MGL1905_Axial 3D)

| Category | Hours | %Percent |
|---------------------------|----------------|---------------|
| Mobilisation | 150.200 | 62.583 |
| Deployment | 45.200 | 18.833 |
| Mob Ashore | 63.000 | 26.250 |
| Testing | 0.333 | 0.139 |
| Transit to Prospect | 41.667 | 17.361 |
| Acquisition | 79.400 | 33.083 |
| Prime Line Change | 21.850 | 9.104 |
| Production Prime | 57.550 | 23.979 |
| Chargeable Standby | 0.267 | 0.111 |
| Transit | 0.267 | 0.111 |
| DownTime | 10.133 | 4.222 |
| Vessel | 10.133 | 4.222 |
| Total | 240.000 | |

Basic Project Details

| MGL1905_Axial 3D | | | | | |
|---------------------|----------|--------------------|----------|---------------------|-------------|
| General Details | | | | | |
| Record length: | 12000 ms | Sample rate: | 2 ms | Shotpoint interval: | 37.5 m |
| CoS to CNG: | 225 m | Fold Coverage: | 252 | | |
| Cable Details | | | | | |
| No of Cables: | 4 | Head Separation: | 150 m | Tail Separation: | 150 m |
| Chans Per Cable: | 468 | Front Depth: | 16 m | Tail Depth: | 16 m |
| Length: | 5850 m | Group interval: | 12.5 m | | |
| Source Details | | | | | |
| No of Sources: | 2 | Separation: | 75 m | Total Volume: | 6600 cu ins |
| Depth: | 12 m | Pressure: | 1950 PSI | Volume: | 3300 |
| Strings per source: | 2 | String Separation: | 6 m | String length: | 18 m |
| Binning | | | | | |
| Size Inline: | 50 m | Size XLine: | 37.5 m | | |

Production Listing (Accpt km by interval) - Prime: Sail Line, Infill: Full Fold

| Seq | Line | Heading | FGSP | LGSP | Prod Type | Production | Ave Knots | Seq Status | Line Status |
|--------------|------|---------|------|------|-----------|---------------|-----------|------------|-------------|
| 10 | 1148 | 335.7 | 2066 | 921 | Prime | 42.94 | 4.254 | Complete | Complete |
| 11 | 1044 | 155.7 | 968 | 2148 | Prime | 44.25 | 4.747 | Complete | Complete |
| 12 | 1156 | 335.7 | 2062 | 921 | Prime | 42.79 | 4.188 | Complete | Complete |
| Total | | | | | | 129.97 | | | |

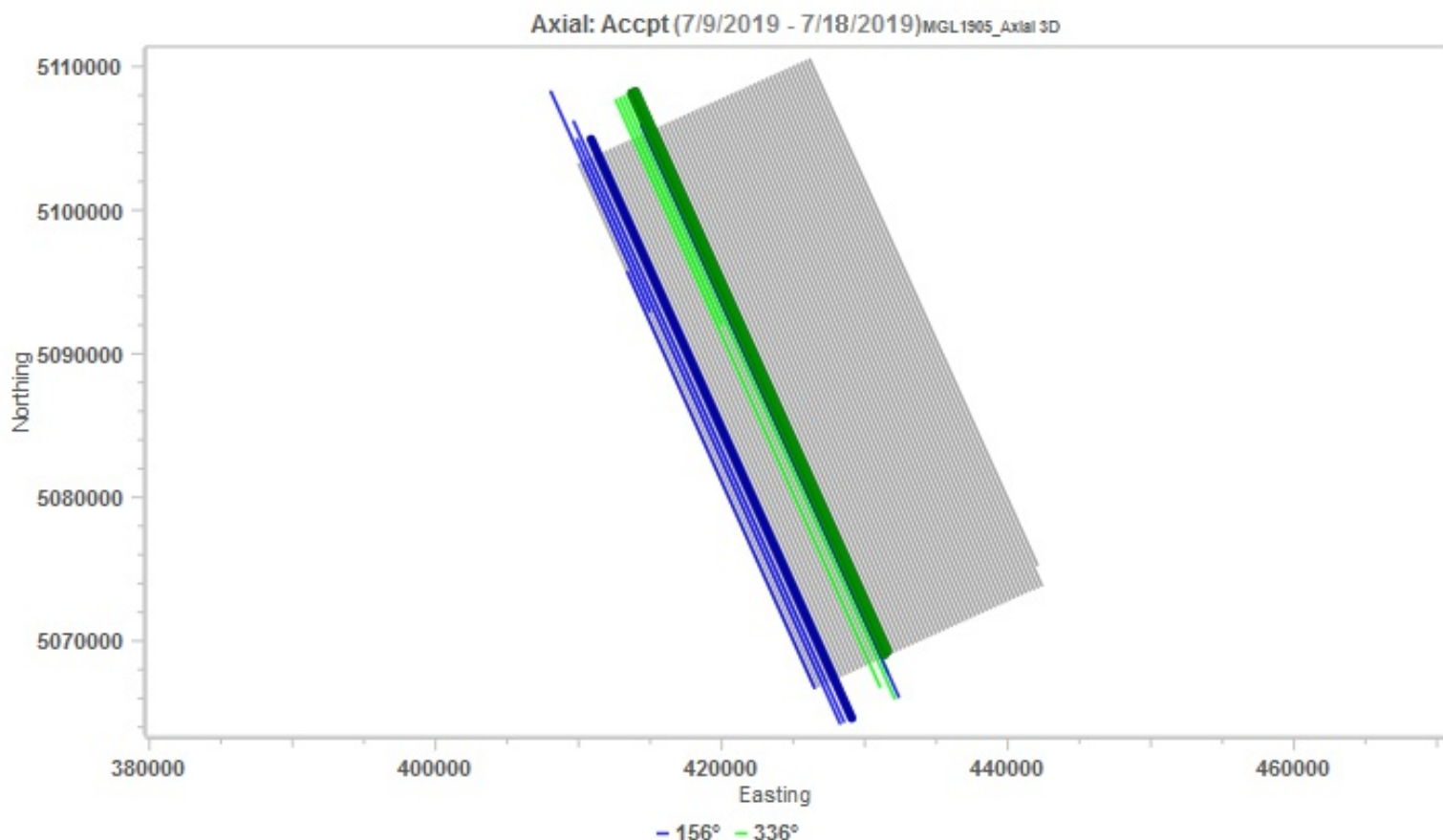
Daily Science Report

7/18/2019

Page 3

Production Totals (Accpt km by interval) - Prime: Sail Line, Infill: Full Fold

| Accepted km | Day | Week | Month | Project |
|-------------|--------|--------|--------|---------|
| Prime | 129.97 | 465.04 | 465.04 | 465.04 |
| Infill | 0.00 | 0.00 | 0.00 | 0.00 |
| Combined | 129.97 | 465.04 | 465.04 | 465.04 |



Daily Comment Summaries - Daily Comments On Status of Equipment

Thu 18 Jul

Navigation:

No Major Issues to Report

Information Technology (IT):

No Major Issues to Report

Acquisition (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 18 Jul

Technical Staff On-board the Langseth

Todd Jensvold L-DEO OMO Chief Science Officer

David Martinson L-DEO OMO Science Officer - Nav

Josh Kasinger L-DEO OMO Chief Source Mechanic

(UTC 00:00) UTC - Universal Time Coordinated

Generated on Thu Jul 18 2019 10:14p.m.

Page 3

Daily Science Report

7/18/2019

Page 4

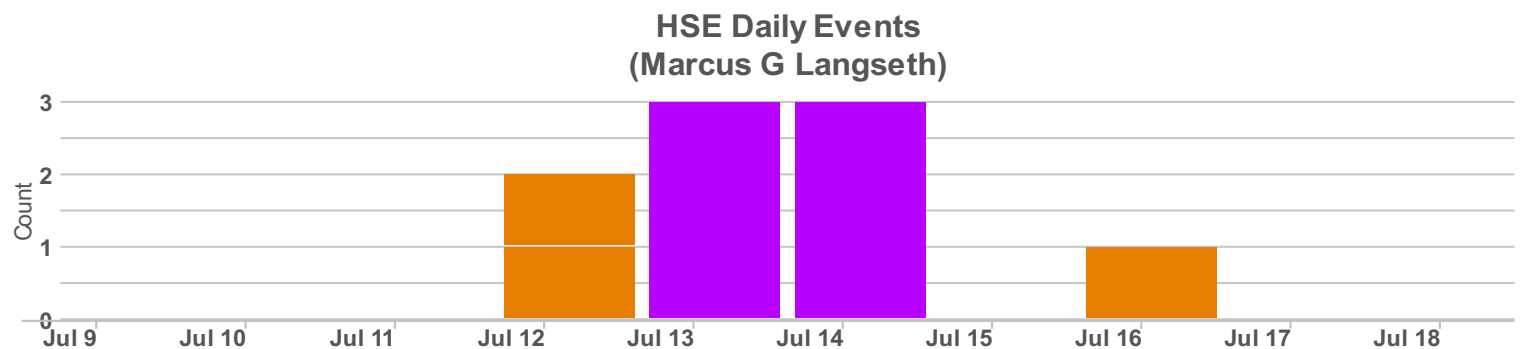
Tom Spoto L-DEO OMO Source Mechanic
Alan Thompson L-DEO OMO Marine Science Technician - Nav
Gilles Guerin L-DEO OMO Marine Science Technician - Obs
Shaun Shaver L-DEO OMO Marine Science Technician - Obs
Edmond St. Amant Contract Personnel Marine Science Technician - Source
Matt Dietrich Contract Personnel Marine Science Technician - Source
Chris Abdouch NCS SubSea Contract Nav Processor
Mike Jennings NCS SubSea Contract Nav Processor

PSO Staff On-board the Langseth

Amanda Dubuque RPS Lead PSO
Bianca Mares RPS PSO
Ana Hernandez RPS PSO
Lluvia Durantes RPS PSO
Alejandra Ramos RPS PSO

Science Party On-board the Langseth

Adrien Amulf UTIG - PI
Alistar Harding Scripps - PI
Steffen Saustrop UTIG - Tech
Michelle Lee LDEO - Student
Axelle Cap U de Bretagne - Student
Shelby Brandt U of Ottawa - Student
Morgan Goulain Mines of Paris Tech - Studen
Victoire Lucas U de Bretagne - Student
Samual Mitchell U. of Bristol - Research Tech
Mathew Griffiths Carlton U. - Student
Massimo Stefano Belluci U de Bretagne - Student
Tanner Eischen East Carolina U. - Student
Brian Oller Scripps - Student



Daily Science Report

7/19/2019

Page 1

| | | | |
|------------------------|---|----------------------|----------------------------------|
| Client: | United States National Science Foundation | Contractor: | Lamont-Doherty Earth Observatory |
| Job No: | MGL1905 | Job No: | MGL1905 |
| Block: | Axial | Vessel: | Marcus G Langseth |
| Client Contact: | Adrien Arnulf | Supervisor: | Sean Higgins |
| Consultancy: | N/A | Party Chiefs: | Todd Jensvold |
| Job No: | | Client Reps: | Adrien Arnulf |

Daily Comment Summaries - Daily Summary

Fri 19 Jul

Production was acquired on lines: 1052, 1164, 1060, 1172Partial

At the start of line P1052 a GPS issue caused Spectra to have issues, restarting of Spectra and the spectra hardware solved the problem

Line 1060 started late due to visual detection of a whale and calf in the area.









Daily Comment Summaries - Plan for Tomorrow

Fri 19 Jul

Continue acquisition.

Timing Diary (Marcus G Langseth, MGL1905_Axial 3D)

| | | | | | | | | | |
|--|--|--|--|--|--|--|--|--|--|
| | | | | | | | | | |
|--|--|--|--|--|--|--|--|--|--|

| Category | Code | Start | End | Duration |
|--|--------|-------------------|-------------------|----------|
|  Production Prime | AC_PP | Fri 19. Jul 00:00 | Fri 19. Jul 00:36 | 0.600 |
|  Production Prime | AC_PP | Fri 19. Jul 00:36 | Fri 19. Jul 05:52 | 5.267 |
| SOL Seq 13 Line:1052 Block=Axial FGSP=981 Hdg=155.7° Prime EOL Seq 13 Line:1052 Block=Axial LGSP=2148 Complete | | | | |
|  Prime Line Change | AC_PLC | Fri 19. Jul 05:52 | Fri 19. Jul 07:59 | 2.117 |
| Nominal Prime line change. | | | | |
|  Production Prime | AC_PP | Fri 19. Jul 07:59 | Fri 19. Jul 13:48 | 5.817 |
| SOL Seq 14 Line:1164 Block=Axial FGSP=2092 Hdg=335.7° Prime EOL Seq 14 Line:1164 Block=Axial LGSP=921 Complete | | | | |
|  Prime Line Change | AC_PLC | Fri 19. Jul 13:48 | Fri 19. Jul 16:52 | 3.067 |
| Nominal Prime line change. | | | | |
|  Production Prime | AC_PP | Fri 19. Jul 16:52 | Fri 19. Jul 21:24 | 4.533 |
| SOL Seq 15 Line:1060 Block=Axial FGSP=1171 Hdg=155.7° Prime EOL Seq 15 Line:1060 Block=Axial LGSP=2148 Complete | | | | |
|  Prime Line Change | AC_PLC | Fri 19. Jul 21:24 | Fri 19. Jul 23:17 | 1.883 |
| Nominal Prime line change. | | | | |
|  Production Prime | AC_PP | Fri 19. Jul 23:17 | Fri 19. Jul 24:00 | 0.717 |
| SOL Seq 16 Line:1172 Block=Axial FGSP=2161 Hdg=335.7° Prime MSP Seq 16 Line:1172 Block=Axial LGSP=2016 Midnight | | | | |

Daily Science Report

7/19/2019

Page 2

Timing Day By Day (Marcus G Langseth, MGL1905_Axial 3D)

| 19-Jul | Hours | %Percent |
|--------------------|---------------|----------------|
| Acquisition | 24.000 | 100.000 |
| Prime Line Change | 7.067 | 29.444 |
| Production Prime | 16.933 | 70.556 |
| Day's Total | 24.000 | 100.000 |

Timing Breakdown Summary - Project (Marcus G Langseth, MGL1905_Axial 3D)

| Category | Hours | %Percent |
|---------------------------|----------------|---------------|
| Mobilisation | 150.200 | 56.894 |
| Deployment | 45.200 | 17.121 |
| Mob Ashore | 63.000 | 23.864 |
| Testing | 0.333 | 0.126 |
| Transit to Prospect | 41.667 | 15.783 |
| Acquisition | 103.400 | 39.167 |
| Prime Line Change | 28.917 | 10.953 |
| Production Prime | 74.483 | 28.213 |
| Chargeable Standby | 0.267 | 0.101 |
| Transit | 0.267 | 0.101 |
| DownTime | 10.133 | 3.838 |
| Vessel | 10.133 | 3.838 |
| Total | 264.000 | |

Basic Project Details

| MGL1905_Axial 3D | | | | | |
|------------------------|----------|--------------------|----------|---------------------|-------------|
| General Details | | | | | |
| Record length: | 12000 ms | Sample rate: | 2 ms | Shotpoint interval: | 37.5 m |
| CoS to CNG: | 225 m | Fold Coverage: | 252 | | |
| Cable Details | | | | | |
| No of Cables: | 4 | Head Separation: | 150 m | Tail Separation: | 150 m |
| Chans Per Cable: | 468 | Front Depth: | 16 m | Tail Depth: | 16 m |
| Length: | 5850 m | Group interval: | 12.5 m | | |
| Source Details | | | | | |
| No of Sources: | 2 | Separation: | 75 m | Total Volume: | 6600 cu ins |
| Depth: | 12 m | Pressure: | 1950 PSI | Volume: | 3300 |
| Strings per source: | 2 | String Separation: | 6 m | String length: | 18 m |
| Binning | | | | | |
| Size Inline: | 50 m | Size XLine: | 37.5 m | | |

Daily Science Report

7/19/2019

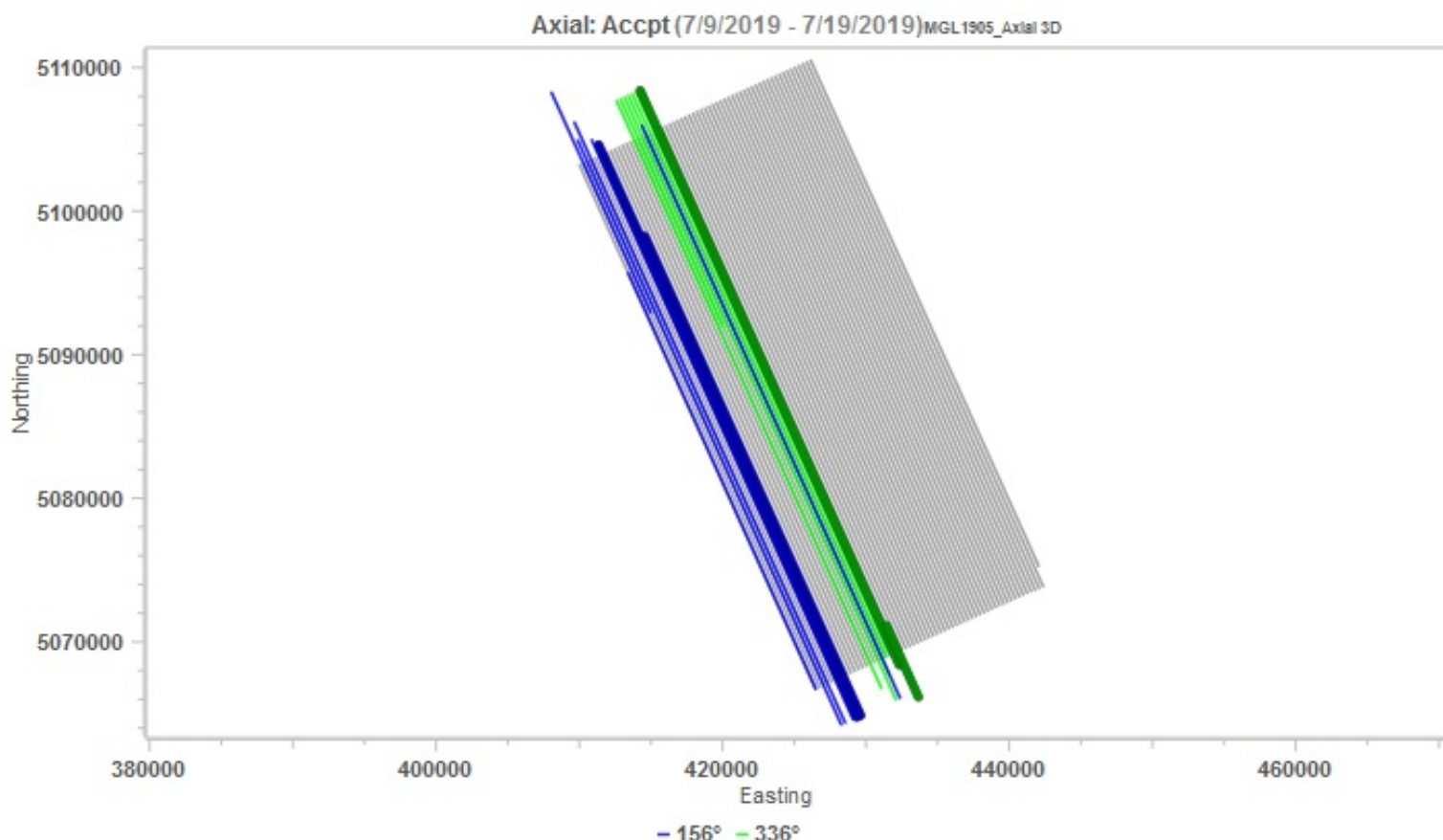
Page 3

Production Listing (Accpt km by interval) - Prime: Sail Line, Infill: Full Fold

| Seq | Line | Heading | FGSP | LGSP | Prod Type | Production | Ave Knots | Seq Status | Line Status |
|--------------|------|---------|------|------|-----------|---------------|-----------|------------|-------------|
| 13 | 1052 | 155.7 | 981 | 2148 | Prime | 43.76 | 4.487 | Complete | Complete |
| 14 | 1164 | 335.7 | 2092 | 921 | Prime | 43.91 | 4.076 | Complete | Complete |
| 15 | 1060 | 155.7 | 1171 | 2148 | Prime | 36.64 | 4.364 | Complete | Complete |
| 16 | 1172 | 335.7 | 2161 | 2016 | Prime | 5.44 | 4.097 | Part | Midnight |
| Total | | | | | | 129.75 | | | |

Production Totals (Accpt km by interval) - Prime: Sail Line, Infill: Full Fold

| Accepted km | Day | Week | Month | Project |
|-----------------|---------------|---------------|---------------|---------------|
| Prime | 129.75 | 594.79 | 594.79 | 594.79 |
| Infill | 0.00 | 0.00 | 0.00 | 0.00 |
| Combined | 129.75 | 594.79 | 594.79 | 594.79 |



Daily Comment Summaries - Daily Comments On Status of Equipment

Fri 19 Jul

Navigation:

No Major Issues to Report

Information Technology (IT):

No Major Issues to Report

Acquisition (OBS):

No Major Issues to Report

Towing and Handling (Source):

No Major Issues to Report

(UTC 00:00) UTC - Universal Time Coordinated

Generated on Fri Jul 19 2019 11:01p.m.

Page 3

Daily Science Report

7/19/2019

Page 4

General Purpose Science:

No Major Issues to Report

Daily Comment Summaries - Personnel Onboard

Fri 19 Jul

Technical Staff On-board the Langseth

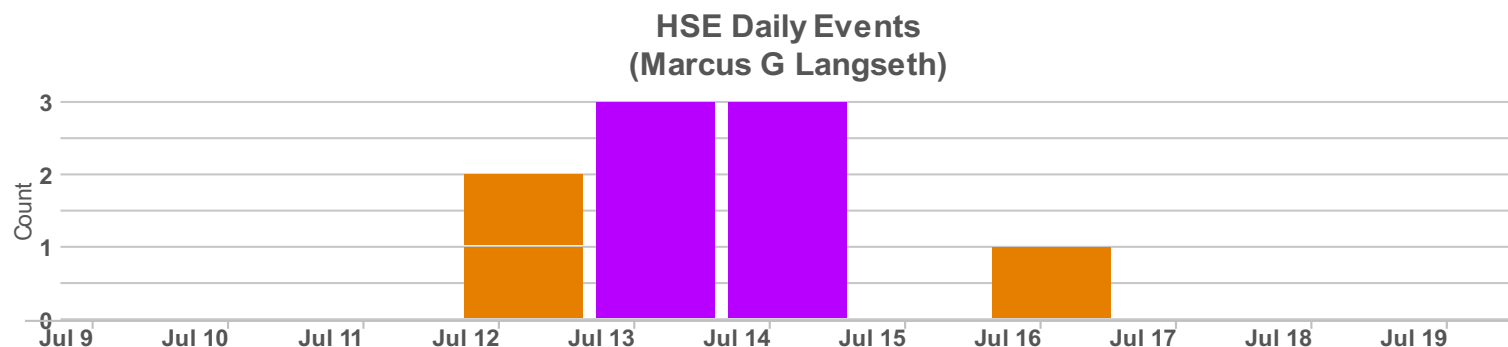
Todd Jensvold L-DEO OMO Chief Science Officer
David Martinson L-DEO OMO Science Officer - Nav
Josh Kasinger L-DEO OMO Chief Source Mechanic
Tom Spoto L-DEO OMO Source Mechanic
Alan Thompson L-DEO OMO Marine Science Technician - Nav
Gilles Guerin L-DEO OMO Marine Science Technician - Obs
Shaun Shaver L-DEO OMO Marine Science Technician - Obs
Edmond St. Amant Contract Personnel Marine Science Technician - Source
Matt Dietrich Contract Personnel Marine Science Technician - Source
Chris Abdouch NCS SubSea Contract Nav Processor
Mike Jennings NCS SubSea Contract Nav Processor

PSO Staff On-board the Langseth

Amanda Dubuque RPS Lead PSO
Bianca Mares RPS PSO
Ana Hernandez RPS PSO
Lluvia Durantes RPS PSO
Alejandra Ramos RPS PSO

Science Party On-board the Langseth

Adrien Amulf UTIG - PI
Alistar Harding Scripps - PI
Steffen Sastrup UTIG - Tech
Michelle Lee LDEO - Student
Axelle Cap U de Bretagne - Student
Shelby Brandt U of Ottawa - Student
Morgan Goulain Mines of Paris Tech - Student
Victoire Lucas U de Bretagne - Student
Samual Mitchell U. of Bristol - Research Tech
Mathew Griffiths Carlton U. - Student
Massimo Stefano Belluci U de Bretagne - Student
Tanner Eischen East Carolina U. - Student
Brian Oller Scripps - Student





Daily Science Report

7/20/2019

Page 1

| | | | |
|------------------------|---|----------------------|----------------------------------|
| Client: | United States National Science Foundation | Contractor: | Lamont-Doherty Earth Observatory |
| Job No: | MGL1905 | Job No: | MGL1905 |
| Block: | Axial | Vessel: | Marcus G Langseth |
| Client Contact: | Adrien Arnulf | Supervisor: | Sean Higgins |
| Consultancy: | N/A | Party Chiefs: | Todd Jensvold |
| Job No: | | Client Reps: | Adrien Arnulf |

Daily Comment Summaries - Daily Summary

Sat 20 Jul

Streamer 1 failed during line P1068 and couldnt be corrected onboard.
All gun strings and PAM were recovered for streamer work, port side streamers and vane were deployed further port to make room for recovering streamer 1 and 2.
Streamer 2 was moved to a parking point on the port side.
Streamer 1 was partially recovered and troubleshooting found a failure with the HAU module, once replaced streamer 1 was redeployed.
While trying to hook up the separation rope between 1 & 2 the tail buoys became entangled. After the tail buoys were untangled, the streamers were moved into their normal positions and began deploying the source.

Daily Comment Summaries - Plan for Tomorrow

Sat 20 Jul

Continue deploying source and PAM and continue acquisition.

Timing Diary (Marcus G Langseth, MGL1905_Axial 3D)



| Category | Code | Start | End | Duration |
|--|--------|-------------------|-------------------|----------|
| Production Prime | AC_PP | Sat 20. Jul 00:00 | Sat 20. Jul 05:19 | 5.317 |
| SOL Seq 16 Line:1172 Block=Axial FGSP=2015 Hdg=335.7° Prime EOL Seq 16 Line:1172 Block=Axial LGSP=921 Complete | | | | |
| Prime Line Change | AC_PLC | Sat 20. Jul 05:19 | Sat 20. Jul 07:16 | 1.950 |
| Nominal Prime line change. | | | | |
| Production Prime | AC_PP | Sat 20. Jul 07:16 | Sat 20. Jul 12:43 | 5.450 |
| SOL Seq 17 Line:1068 Block=Axial FGSP=972 Hdg=155.7° Prime EOL Seq 17 Line:1068 Block=Axial LGSP=2148 Complete | | | | |
| Streamers | DT_ST | Sat 20. Jul 12:43 | Sat 20. Jul 24:00 | 11.283 |
| Downtime due to streamer 1 failure. Recovering gun strings, PAM, and moving streamer 2 to port side to be able to recover streamer 1. Redeploy after changed out HAU module. Tail buoys tangled on redeployment but managed to untangle. | | | | |

Timing Day By Day (Marcus G Langseth, MGL1905_Axial 3D)

| 20-Jul | Hours | %Percent |
|--------------------|---------------|---------------|
| Acquisition | 12.717 | 52.986 |
| Prime Line Change | 1.950 | 8.125 |
| Production Prime | 10.767 | 44.861 |



7/20/2019

Page 2

| 20-Jul | Hours | %Percent |
|--------------------|---------------|----------------|
| DownTime | 11.283 | 47.014 |
| Streamers | 11.283 | 47.014 |
| Day's Total | 24.000 | 100.000 |

Timing Breakdown Summary - Project (Marcus G Langseth, MGL1905_Axial 3D)

| Category | Hours | %Percent |
|---------------------------|----------------|---------------|
| Mobilisation | 150.200 | 52.153 |
| Deployment | 45.200 | 15.694 |
| Mob Ashore | 63.000 | 21.875 |
| Testing | 0.333 | 0.116 |
| Transit to Prospect | 41.667 | 14.468 |
| Acquisition | 116.117 | 40.318 |
| Prime Line Change | 30.867 | 10.718 |
| Production Prime | 85.250 | 29.601 |
| DownTime | 21.417 | 7.436 |
| Streamers | 11.283 | 3.918 |
| Vessel | 10.133 | 3.519 |
| Chargeable Standby | 0.267 | 0.093 |
| Transit | 0.267 | 0.093 |
| Total | 288.000 | |

Basic Project Details

| MGL1905_Axial 3D | | | | | |
|---------------------|----------|--------------------|----------|---------------------|-------------|
| General Details | | | | | |
| Record length: | 12000 ms | Sample rate: | 2 ms | Shotpoint interval: | 37.5 m |
| CoS to CNG: | 225 m | Fold Coverage: | 252 | | |
| Cable Details | | | | | |
| No of Cables: | 4 | Head Separation: | 150 m | Tail Separation: | 150 m |
| Chans Per Cable: | 468 | Front Depth: | 16 m | Tail Depth: | 16 m |
| Length: | 5850 m | Group interval: | 12.5 m | | |
| Source Details | | | | | |
| No of Sources: | 2 | Separation: | 75 m | Total Volume: | 6600 cu ins |
| Depth: | 12 m | Pressure: | 1950 PSI | Volume: | 3300 |
| Strings per source: | 2 | String Separation: | 6 m | String length: | 18 m |
| Binning | | | | | |
| Size Inline: | 50 m | Size XLine: | 37.5 m | | |



7/20/2019

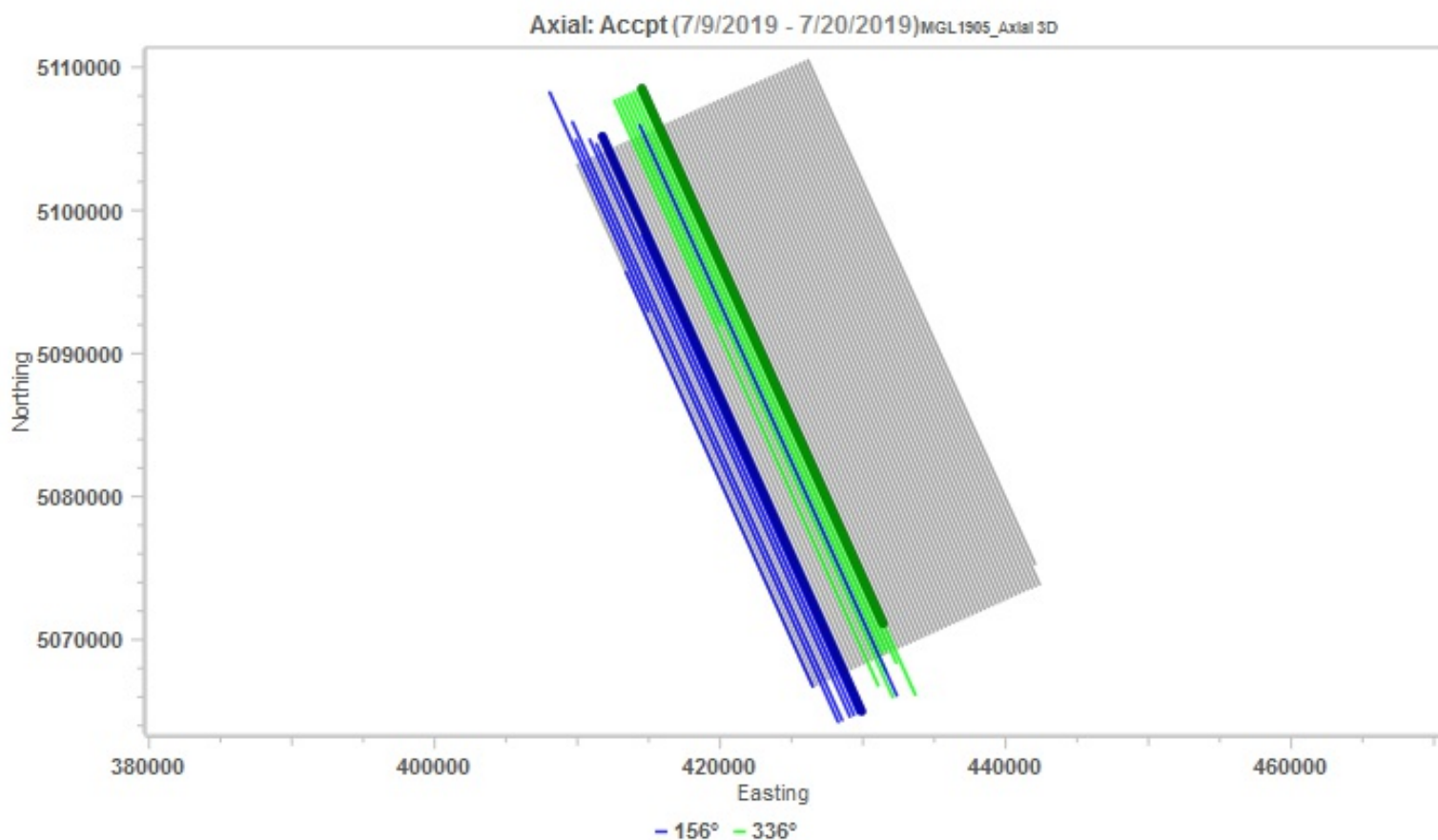
Page 3

Production Listing (Accpt km by interval) - Prime: Sail Line, Infill: Full Fold

| Seq | Line | Heading | FGSP | LGSP | Prod Type | Production | Ave Knots | Seq Status | Line Status |
|-------|------|---------|------|------|-----------|------------|-----------|------------|-------------|
| 16 | 1172 | 335.7 | 2015 | 921 | Prime | 41.06 | 4.162 | Complete | Complete |
| 17 | 1068 | 155.7 | 972 | 2148 | Prime | 44.10 | 4.369 | Complete | Complete |
| Total | | | | | | 85.16 | | | |

Production Totals (Accpt km by interval) - Prime: Sail Line, Infill: Full Fold

| Accepted km | Day | Week | Month | Project |
|-------------|-------|--------|--------|---------|
| Prime | 85.16 | 679.95 | 679.95 | 679.95 |
| Infill | 0.00 | 0.00 | 0.00 | 0.00 |
| Combined | 85.16 | 679.95 | 679.95 | 679.95 |



Daily Comment Summaries - Daily Comments On Status of Equipment

Sat 20 Jul

Navigation:

No Major Issues to Report

Information Technology (IT):

No Major Issues to Report

Acquisition (OBS):

No Major Issues to Report

Towing and Handling (Source):

No Major Issues to Report



7/20/2019

Page 4

General Purpose Science:

No Major Issues to Report

Daily Comment Summaries - Personnel Onboard

Sat 20 Jul

Technical Staff On-board the Langseth

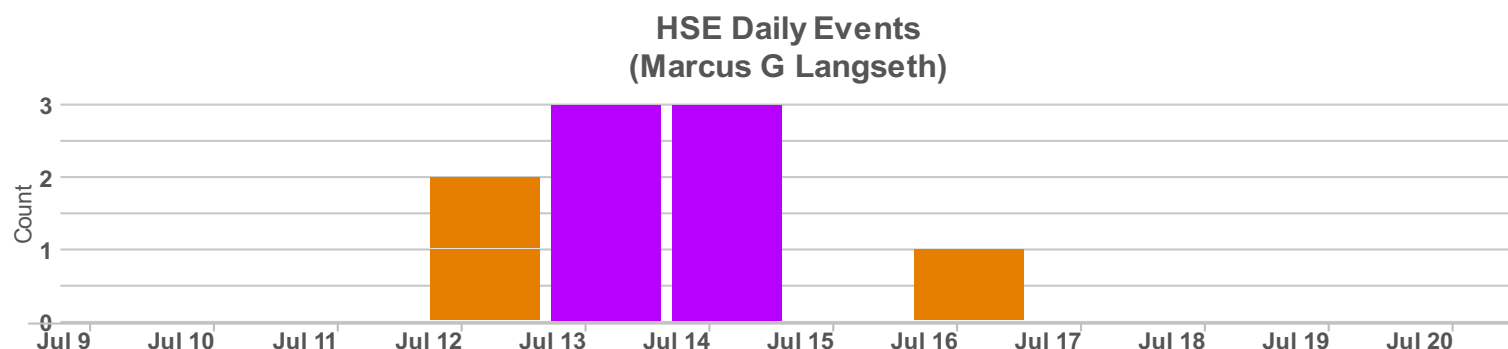
Todd Jensvold L-DEO OMO Chief Science Officer
David Martinson L-DEO OMO Science Officer - Nav
Josh Kasinger L-DEO OMO Chief Source Mechanic
Tom Spoto L-DEO OMO Source Mechanic
Alan Thompson L-DEO OMO Marine Science Technician - Nav
Gilles Guerin L-DEO OMO Marine Science Technician - Obs
Shaun Shaver L-DEO OMO Marine Science Technician - Obs
Edmond St. Amant Contract Personnel Marine Science Technician - Source
Matt Dietrich Contract Personnel Marine Science Technician - Source
Chris Abdouch NCS SubSea Contract Nav Processor
Mike Jennings NCS SubSea Contract Nav Processor

PSO Staff On-board the Langseth

Amanda Dubuque RPS Lead PSO
Bianca Mares RPS PSO
Ana Hernandez RPS PSO
Lluvia Durantes RPS PSO
Alejandra Ramos RPS PSO

Science Party On-board the Langseth

Adrien Amulf UTIG - PI
Alistar Harding Scripps - PI
Steffen Sastrup UTIG - Tech
Michelle Lee LDEO - Student
Axelle Cap U de Bretagne - Student
Shelby Brandt U of Ottawa - Student
Morgan Goulain Mines of Paris Tech - Student
Victoire Lucas U de Bretagne - Student
Samual Mitchell U. of Bristol - Research Tech
Mathew Griffiths Carlton U. - Student
Massimo Stefano Belluci U de Bretagne - Student
Tanner Eischen East Carolina U. - Student
Brian Oller Scripps - Student





Daily Science Report

7/21/2019

Page 1

| | | | |
|------------------------|---|----------------------|----------------------------------|
| Client: | United States National Science Foundation | Contractor: | Lamont-Doherty Earth Observatory |
| Job No: | MGL1905 | Job No: | MGL1905 |
| Block: | Axial | Vessel: | Marcus G Langseth |
| Client Contact: | Adrien Arnulf | Supervisor: | Sean Higgins |
| Consultancy: | N/A | Party Chiefs: | Todd Jensvold |
| Job No: | | Client Reps: | Adrien Arnulf |

Daily Comment Summaries - Daily Summary

Sun 21 Jul

Deployed source strings and PAM and performed a ramp up to ensure they were good then silenced until closer to line. Performed another ramp up prior to starting line P1076. During line P1076 - CRC errors with streamer 4 caused loss of comms and recording had to be stopped/started multiple times while troubleshooting. The ship side DCXU for streamer 4 was replaced with an alternate and streamer 4 is working again.

Daily Comment Summaries - Plan for Tomorrow

Sun 21 Jul

Continue acquisition

Timing Diary (Marcus G Langseth, MGL1905_Axial 3D)



| Category | Code | Start | End | Duration |
|--|--------|-------------------|-------------------|----------|
| Streamers | DT_ST | Sun 21. Jul 00:00 | Sun 21. Jul 02:09 | 2.150 |
| Downtime due to streamer 1 failure. Recovering gun strings, PAM, and moving streamer 2 to port side to be able to recover streamer 1. Redeploy after changed out HAU module. Tail buoys tangled on redeployment but managed to untangle. | | | | |
| Prime Line Change | AC_PLC | Sun 21. Jul 02:09 | Sun 21. Jul 03:26 | 1.283 |
| Nominal Prime line change. | | | | |
| Production Prime | AC_PP | Sun 21. Jul 03:26 | Sun 21. Jul 09:21 | 5.917 |
| SOL Seq 18 Line:1076 Block=Axial FGSP=911 Hdg=155.7° Prime EOL Seq 18 Line:1076 Block=Axial LGSP=2148 Complete Streamer 4 failures during line | | | | |
| Prime Line Change | AC_PLC | Sun 21. Jul 09:21 | Sun 21. Jul 11:18 | 1.950 |
| Nominal Prime line change. | | | | |
| Production Prime | AC_PP | Sun 21. Jul 11:18 | Sun 21. Jul 17:06 | 5.800 |
| SOL Seq 19 Line:1180 Block=Axial FGSP=2148 Hdg=335.7° Prime EOL Seq 19 Line:1180 Block=Axial LGSP=921 Complete | | | | |
| Prime Line Change | AC_PLC | Sun 21. Jul 17:06 | Sun 21. Jul 19:01 | 1.917 |
| Nominal Prime line change. | | | | |



7/21/2019

Page 2

| Category | Code | Start | End | Duration |
|---|-------|-------------------|-------------------|----------|
|  Production Prime | AC_PP | Sun 21. Jul 19:01 | Sun 21. Jul 24:00 | 4.983 |
| SOL Seq 20 Line:1084 Block=Axial FGSP=909 Hdg=155.7° Prime MSP Seq 20 Line:1084 Block=Axial LGSP=1980 Midnight | | | | |

Timing Day By Day (Marcus G Langseth, MGL1905_Axial 3D)

| 21-Jul | Hours | % Percent |
|--------------------|---------------|----------------|
| Acquisition | 21.850 | 91.042 |
| Prime Line Change | 5.150 | 21.458 |
| Production Prime | 16.700 | 69.583 |
| DownTime | 2.150 | 8.958 |
| Streamers | 2.150 | 8.958 |
| Day's Total | 24.000 | 100.000 |

Timing Breakdown Summary - Project (Marcus G Langseth, MGL1905_Axial 3D)

| Category | Hours | % Percent |
|---------------------------|----------------|---------------|
| Mobilisation | 150.200 | 48.141 |
| Deployment | 45.200 | 14.487 |
| Mob Ashore | 63.000 | 20.192 |
| Testing | 0.333 | 0.107 |
| Transit to Prospect | 41.667 | 13.355 |
| Acquisition | 137.967 | 44.220 |
| Prime Line Change | 36.017 | 11.544 |
| Production Prime | 101.950 | 32.676 |
| DownTime | 23.567 | 7.553 |
| Streamers | 13.433 | 4.306 |
| Vessel | 10.133 | 3.248 |
| Chargeable Standby | 0.267 | 0.085 |
| Transit | 0.267 | 0.085 |
| Total | 312.000 | |

Basic Project Details

| MGL1905_Axial 3D | | | | | |
|------------------|----------|------------------|--------|---------------------|--------|
| General Details | | | | | |
| Record length: | 12000 ms | Sample rate: | 2 ms | Shotpoint interval: | 37.5 m |
| CoS to CNG: | 225 m | Fold Coverage: | 252 | | |
| Cable Details | | | | | |
| No of Cables: | 4 | Head Separation: | 150 m | Tail Separation: | 150 m |
| Chans Per Cable: | 468 | Front Depth: | 16 m | Tail Depth: | 16 m |
| Length: | 5850 m | Group interval: | 12.5 m | | |
| Source Details | | | | | |



7/21/2019

Page 3

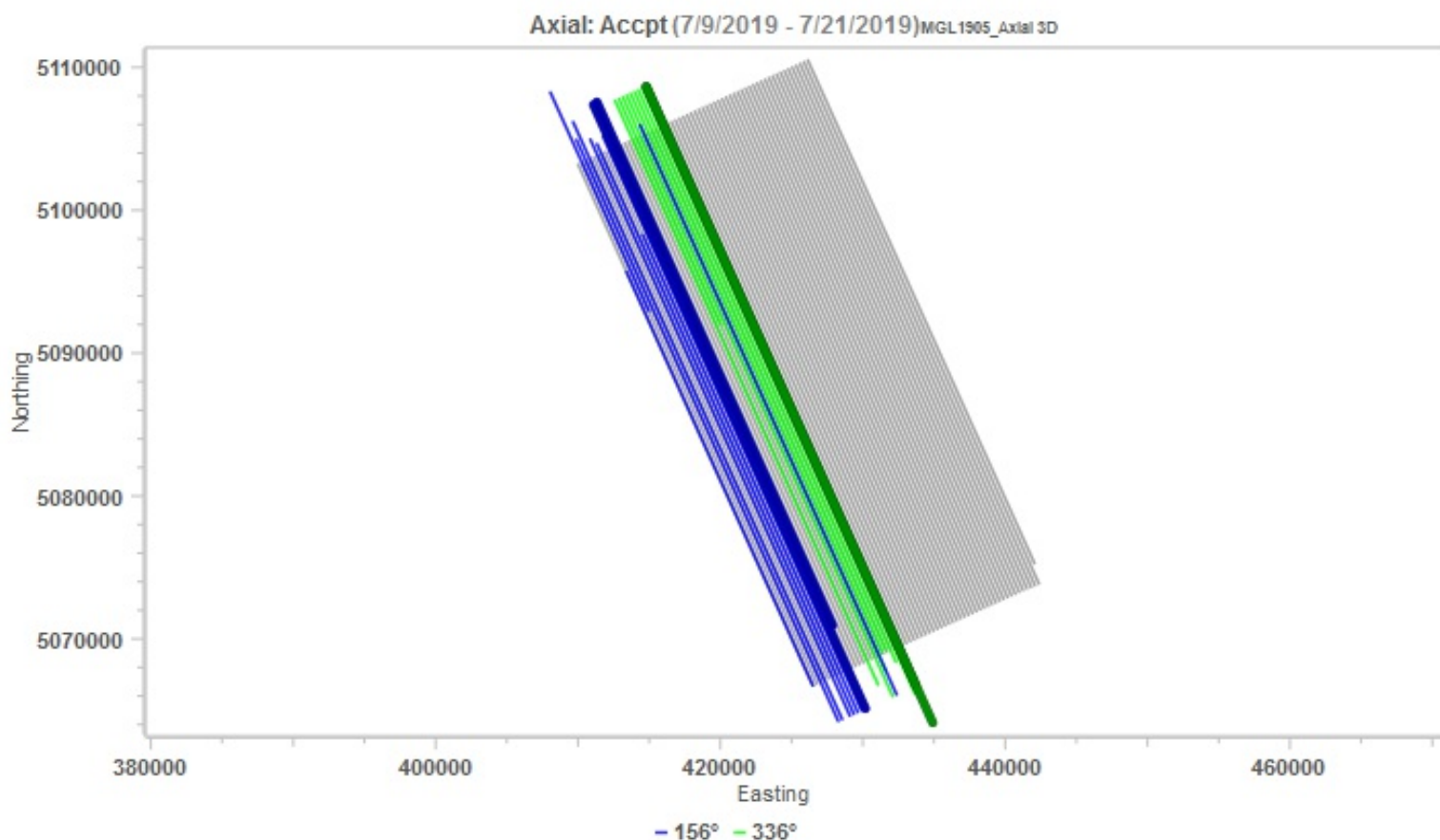
| MGL1905_Axial 3D | | | | | |
|---------------------|------|--------------------|----------|----------------|-------------|
| No of Sources: | 2 | Separation: | 75 m | Total Volume: | 6600 cu ins |
| Depth: | 12 m | Pressure: | 1950 PSI | Volume: | 3300 |
| Strings per source: | 2 | String Separation: | 6 m | String length: | 18 m |
| Binning | | | | | |
| Size Inline: | 50 m | Size XLine: | 37.5 m | | |

Production Listing (Accpt km by interval) - Prime: Sail Line, Infill: Full Fold

| Seq | Line | Heading | FGSP | LGSP | Prod Type | Production | Ave Knots | Seq Status | Line Status |
|--------------|------|---------|------|------|-----------|---------------|-----------|------------|-------------|
| 21 | 1180 | 335.7 | 2224 | 921 | Infill | 48.86 | 4.325 | Complete | Complete |
| 18 | 1076 | 155.7 | 911 | 2148 | Prime | 46.39 | 4.233 | Complete | Complete |
| 19 | 1180 | 335.7 | 2148 | 921 | Prime | 46.01 | 4.284 | Complete | Complete |
| 20 | 1084 | 155.7 | 909 | 1980 | Prime | 40.16 | 4.352 | Part | Midnight |
| Total | | | | | | 181.42 | | | |

Production Totals (Accpt km by interval) - Prime: Sail Line, Infill: Full Fold

| Accepted km | Day | Week | Month | Project |
|-----------------|---------------|---------------|---------------|---------------|
| Prime | 132.56 | 812.51 | 812.51 | 812.51 |
| Infill | 48.86 | 48.86 | 48.86 | 48.86 |
| Combined | 181.43 | 861.38 | 861.38 | 861.38 |





7/21/2019

Page 4

Daily Comment Summaries - Daily Comments On Status of Equipment

Sun 21 Jul

Navigation:

No Major Issues to Report

Information Technology (IT):

No Major Issues to Report

Acquisition (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 21 Jul

Technical Staff On-board the Langseth

Todd Jensvold L-DEO OMO Chief Science Officer
David Martinson L-DEO OMO Science Officer - Nav
Josh Kasinger L-DEO OMO Chief Source Mechanic
Tom Spoto L-DEO OMO Source Mechanic
Alan Thompson L-DEO OMO Marine Science Technician - Nav
Gilles Guerin L-DEO OMO Marine Science Technician - Obs
Shaun Shaver L-DEO OMO Marine Science Technician - Obs
Edmond St. Amant Contract Personnel Marine Science Technician - Source
Matt Dietrich Contract Personnel Marine Science Technician - Source
Chris Abdouch NCS SubSea Contract Nav Processor
Mike Jennings NCS SubSea Contract Nav Processor

PSO Staff On-board the Langseth

Amanda Dubuque RPS Lead PSO
Bianca Mares RPS PSO
Ana Hernandez RPS PSO
Lluvia Durantes RPS PSO
Alejandra Ramos RPS PSO

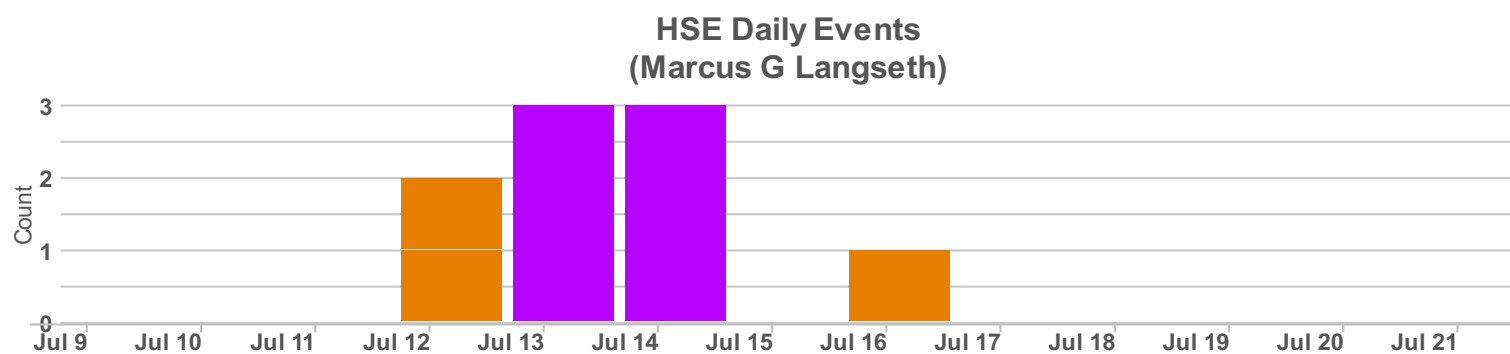
Science Party On-board the Langseth

Adrien Amulf UTIG - PI
Alistar Harding Scripps - PI
Steffen Sastrup UTIG - Tech
Michelle Lee LDEO - Student
Axelle Cap U de Bretagne - Student
Shelby Brandt U of Ottawa - Student
Morgan Goulain Mines of Paris Tech - Student
Victoire Lucas U de Bretagne - Student
Samual Mitchell U. of Bristol - Research Tech
Mathew Griffiths Carlton U. - Student
Massimo Stefano Belluci U de Bretagne - Student
Tanner Eischen East Carolina U. - Student
Brian Oller Scripps - Student



7/21/2019

Page 5





Daily Science Report

7/22/2019

Page 1

| | | | |
|------------------------|---|----------------------|----------------------------------|
| Client: | United States National Science Foundation | Contractor: | Lamont-Doherty Earth Observatory |
| Job No: | MGL1905 | Job No: | MGL1905 |
| Block: | Axial | Vessel: | Marcus G Langseth |
| Client Contact: | Adrien Arnulf | Supervisor: | Sean Higgins |
| Consultancy: | N/A | Party Chiefs: | Todd Jensvold |
| Job No: | | Client Reps: | Adrien Arnulf |

Daily Comment Summaries - Daily Summary

Mon 22 Jul

Acquired prime data on lines 1180 (infill), 1092, and 1188.

The CRC errors from streamer #4 were noted as returning and occurring at an increasing rate, signaling another possible failure.

Daily Comment Summaries - Plan for Tomorrow

Mon 22 Jul

Continue acquisition

Timing Diary (Marcus G Langseth, MGL1905_Axial 3D)



| Category | Code | Start | End | Duration |
|--|--------|-------------------|-------------------|----------|
| Production Prime | AC_PP | Mon 22. Jul 00:00 | Mon 22. Jul 00:43 | 0.717 |
| SOL Seq 20 Line:1084 Block=Axial FGSP=1981 Hdg=155.7° Prime EOL Seq 20 Line:1084 Block=Axial LGSP=2148 Incomplete | | | | |
| Prime Line Change | AC_PLC | Mon 22. Jul 00:43 | Mon 22. Jul 02:40 | 1.950 |
| Nominal Prime line change. | | | | |
| Production Infill | AC_PI | Mon 22. Jul 02:40 | Mon 22. Jul 08:49 | 6.150 |
| SOL Seq 21 Line:1180 Block=Axial FGSP=2224 Hdg=335.7° Infill EOL Seq 21 Line:1180 Block=Axial LGSP=921 Complete | | | | |
| Prime Line Change | AC_PLC | Mon 22. Jul 08:49 | Mon 22. Jul 10:44 | 1.917 |
| Nominal Prime line change. | | | | |
| Production Prime | AC_PP | Mon 22. Jul 10:44 | Mon 22. Jul 15:59 | 5.250 |
| SOL Seq 22 Line:1092 Block=Axial FGSP=939 Hdg=155.7° Prime EOL Seq 22 Line:1092 Block=Axial LGSP=2148 Complete | | | | |
| Prime Line Change | AC_PLC | Mon 22. Jul 15:59 | Mon 22. Jul 18:19 | 2.333 |
| Nominal Prime line change. | | | | |
| Production Prime | AC_PP | Mon 22. Jul 18:19 | Mon 22. Jul 24:00 | 5.683 |
| SOL Seq 23 Line:1188 Block=Axial FGSP=2153 Hdg=335.7° Prime MSP Seq 23 Line:1188 Block=Axial LGSP=964 Midnight | | | | |



7/22/2019

Page 2

Timing Day By Day (Marcus G Langseth, MGL1905_Axial 3D)

| 22-Jul | Hours | % Percent |
|--------------------|---------------|----------------|
| Acquisition | 24.000 | 100.000 |
| Prime Line Change | 6.200 | 25.833 |
| Production Infill | 6.150 | 25.625 |
| Production Prime | 11.650 | 48.542 |
| Day's Total | 24.000 | 100.000 |

Timing Breakdown Summary - Project (Marcus G Langseth, MGL1905_Axial 3D)

| Category | Hours | % Percent |
|---------------------------|----------------|---------------|
| Mobilisation | 150.200 | 44.702 |
| Deployment | 45.200 | 13.452 |
| Mob Ashore | 63.000 | 18.750 |
| Testing | 0.333 | 0.099 |
| Transit to Prospect | 41.667 | 12.401 |
| Acquisition | 161.967 | 48.204 |
| Prime Line Change | 42.217 | 12.564 |
| Production Infill | 6.150 | 1.830 |
| Production Prime | 113.600 | 33.810 |
| DownTime | 23.567 | 7.014 |
| Streamers | 13.433 | 3.998 |
| Vessel | 10.133 | 3.016 |
| Chargeable Standby | 0.267 | 0.079 |
| Transit | 0.267 | 0.079 |
| Total | 336.000 | |

Basic Project Details

| MGL1905_Axial 3D | | | | | |
|---------------------|----------|--------------------|----------|---------------------|-------------|
| General Details | | | | | |
| Record length: | 12000 ms | Sample rate: | 2 ms | Shotpoint interval: | 37.5 m |
| CoS to CNG: | 225 m | Fold Coverage: | 252 | | |
| Cable Details | | | | | |
| No of Cables: | 4 | Head Separation: | 150 m | Tail Separation: | 150 m |
| Chans Per Cable: | 468 | Front Depth: | 16 m | Tail Depth: | 16 m |
| Length: | 5850 m | Group interval: | 12.5 m | | |
| Source Details | | | | | |
| No of Sources: | 2 | Separation: | 75 m | Total Volume: | 6600 cu ins |
| Depth: | 12 m | Pressure: | 1950 PSI | Volume: | 3300 |
| Strings per source: | 2 | String Separation: | 6 m | String length: | 18 m |
| Binning | | | | | |



7/22/2019

Page 3

MGL1905_Axial 3D

| | | | | | |
|--------------|------|-------------|--------|--|--|
| Size Inline: | 50 m | Size XLine: | 37.5 m | | |
|--------------|------|-------------|--------|--|--|

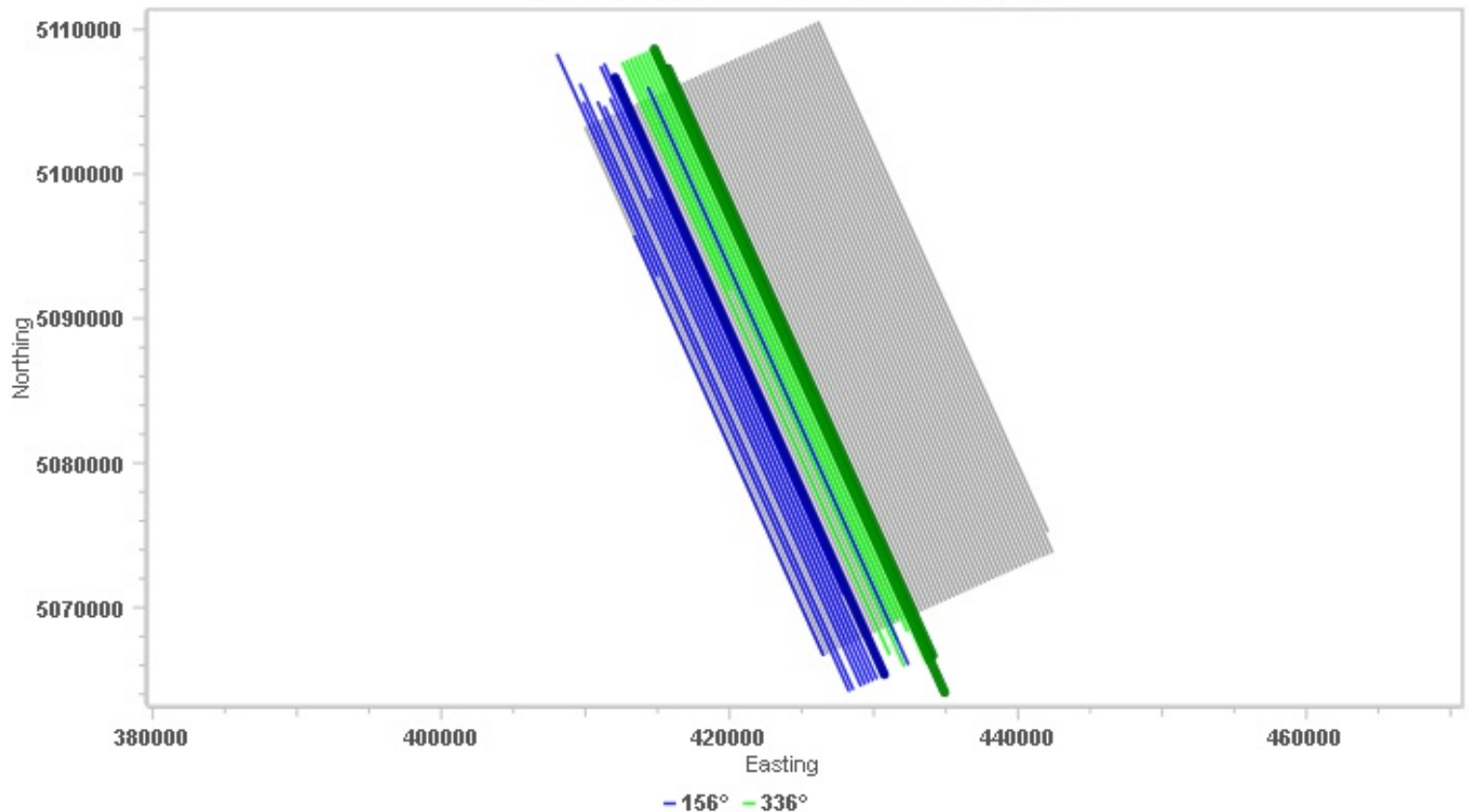
Production Listing (Accpt km by interval) - Prime: Sail Line, Infill: Full Fold

| Seq | Line | Heading | FGSP | LGSP | Prod Type | Production | Ave Knots | Seq Status | Line Status |
|--------------|------|---------|------|------|-----------|---------------|-----------|------------|-------------|
| 21 | 1180 | 335.7 | 2224 | 921 | Infill | 48.86 | 4.290 | Complete | Complete |
| 22 | 1092 | 155.7 | 939 | 2148 | Prime | 45.34 | 4.663 | Complete | Complete |
| 23 | 1188 | 335.7 | 2153 | 964 | Prime | 44.59 | 4.236 | Part | Midnight |
| Total | | | | | | 138.79 | | | |

Production Totals (Accpt km by interval) - Prime: Sail Line, Infill: Full Fold

| Accepted km | Day | Week | Month | Project |
|-----------------|---------------|---------------|---------------|---------------|
| Prime | 89.92 | 89.92 | 902.44 | 902.44 |
| Infill | 48.86 | 48.86 | 48.86 | 48.86 |
| Combined | 138.79 | 138.79 | 951.30 | 951.30 |

Axial: Accpt (7/9/2019 - 7/22/2019) MGL1905_Axial 3D



Daily Comment Summaries - Daily Comments On Status of Equipment

Mon 22 Jul

Navigation:

No Major Issues to Report

Information Technology (IT):

No Major Issues to Report



7/22/2019

Page 4

Acquisition (OBS):

CRC errors on streamer 4 still occurring after changing ship side box.

Towing and Handling (Source):

No Major Issues to Report

General Purpose Science:

EM122 reporting high CPU temperature

Daily Comment Summaries - Personnel Onboard

Mon 22 Jul

Technical Staff On-board the Langseth

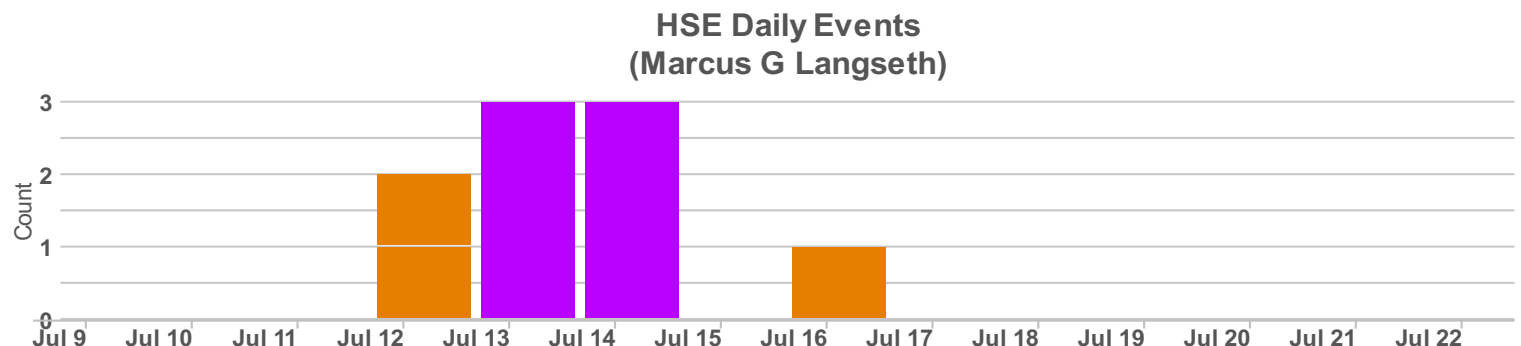
Todd Jensvold L-DEO OMO Chief Science Officer
David Martinson L-DEO OMO Science Officer - Nav
Josh Kasinger L-DEO OMO Chief Source Mechanic
Tom Spoto L-DEO OMO Source Mechanic
Alan Thompson L-DEO OMO Marine Science Technician - Nav
Gilles Guerin L-DEO OMO Marine Science Technician - Obs
Shaun Shaver L-DEO OMO Marine Science Technician - Obs
Edmond St. Amant Contract Personnel Marine Science Technician - Source
Matt Dietrich Contract Personnel Marine Science Technician - Source
Chris Abdouch NCS SubSea Contract Nav Processor
Mike Jennings NCS SubSea Contract Nav Processor

PSO Staff On-board the Langseth

Amanda Dubuque RPS Lead PSO
Bianca Mares RPS PSO
Ana Hernandez RPS PSO
Lluvia Durantes RPS PSO
Alejandra Ramos RPS PSO

Science Party On-board the Langseth

Adrien Amulf UTIG - PI
Alistar Harding Scripps - PI
Steffen Sastrup UTIG - Tech
Michelle Lee LDEO - Student
Axelle Cap U de Bretagne - Student
Shelby Brandt U of Ottawa - Student
Morgan Goulain Mines of Paris Tech - Student
Victoire Lucas U de Bretagne - Student
Samual Mitchell U. of Bristol - Research Tech
Mathew Griffiths Carlton U. - Student
Massimo Stefano Belluci U de Bretagne - Student
Tanner Eischen East Carolina U. - Student
Brian Oller Scripps - Student





Daily Science Report

7/23/2019

Page 1

| | | | |
|------------------------|---|----------------------|----------------------------------|
| Client: | United States National Science Foundation | Contractor: | Lamont-Doherty Earth Observatory |
| Job No: | MGL1905 | Job No: | MGL1905 |
| Block: | Axial | Vessel: | Marcus G Langseth |
| Client Contact: | Adrien Arnulf | Supervisor: | Sean Higgins |
| Consultancy: | N/A | Party Chiefs: | Todd Jensvold |
| Job No: | | Client Reps: | Adrien Arnulf |

Daily Comment Summaries - Daily Summary

Tue 23 Jul

Finished acquisition of line P1188 and I1092, once complete, began recovering gear to be able to troubleshoot streamer 4. Changed DCXU shipside for streamer 4, 6th active, and the LAUM module behind the 6th active. Shortly before SOL the vessel suffered major engine problems requiring all equipment to be recovered.

Daily Comment Summaries - Plan for Tomorrow

Tue 23 Jul

After repairs are complete we will redeploy the 3D array.

Timing Diary (Marcus G Langseth, MGL1905_Axial 3D)



| Category | Code | Start | End | Duration |
|--|--------|-------------------|-------------------|----------|
| Production Prime | AC_PP | Tue 23. Jul 00:00 | Tue 23. Jul 00:13 | 0.217 |
| SOL Seq 23 Line:1188 Block=Axial FGSP=963 Hdg=335.7° Prime EOL Seq 23 Line:1188 Block=Axial LGSP=921 Complete | | | | |
| Prime Line Change | AC_PLC | Tue 23. Jul 00:13 | Tue 23. Jul 02:32 | 2.317 |
| Nominal Prime line change. | | | | |
| Production Infill | AC_PI | Tue 23. Jul 02:32 | Tue 23. Jul 07:57 | 5.417 |
| SOL Seq 24 Line:1092 Block=Axial FGSP=996 Hdg=155.7° Infill EOL Seq 24 Line:1092 Block=Axial LGSP=2148 Complete | | | | |
| Streamers | DT_ST | Tue 23. Jul 07:57 | Tue 23. Jul 21:08 | 13.183 |
| Downtime due to failure of streamer 4 | | | | |
| Transit | SB_TRT | Tue 23. Jul 21:08 | Tue 23. Jul 22:53 | 1.750 |
| Transiting back to SOL | | | | |
| Vessel | DT_VE | Tue 23. Jul 22:53 | Tue 23. Jul 24:00 | 1.117 |
| Downtime due to vessel - cooling pipe burst that supplies both port and starboard main engines | | | | |

Timing Day By Day (Marcus G Langseth, MGL1905_Axial 3D)

| 23-Jul | Hours | %Percent |
|-------------------|-------|----------|
| Acquisition | 7.950 | 33.125 |
| Prime Line Change | 2.317 | 9.653 |
| Production Infill | 5.417 | 22.569 |



7/23/2019

Page 2

| 23-Jul | Hours | %Percent |
|---------------------------|---------------|----------------|
| Production Prime | 0.217 | 0.903 |
| Chargeable Standby | 1.750 | 7.292 |
| Transit | 1.750 | 7.292 |
| DownTime | 14.300 | 59.583 |
| Streamers | 13.183 | 54.931 |
| Vessel | 1.117 | 4.653 |
| Day's Total | 24.000 | 100.000 |

Timing Breakdown Summary - Project (Marcus G Langseth, MGL1905_Axial 3D)

| Category | Hours | %Percent |
|---------------------------|----------------|---------------|
| Mobilisation | 150.200 | 41.722 |
| Deployment | 45.200 | 12.556 |
| Mob Ashore | 63.000 | 17.500 |
| Testing | 0.333 | 0.093 |
| Transit to Prospect | 41.667 | 11.574 |
| Acquisition | 169.917 | 47.199 |
| Prime Line Change | 44.533 | 12.370 |
| Production Infill | 11.567 | 3.213 |
| Production Prime | 113.817 | 31.616 |
| DownTime | 37.867 | 10.519 |
| Streamers | 26.617 | 7.394 |
| Vessel | 11.250 | 3.125 |
| Chargeable Standby | 2.017 | 0.560 |
| Transit | 2.017 | 0.560 |
| Total | 360.000 | |

Basic Project Details

| MGL1905_Axial 3D | | | | | |
|---------------------|----------|--------------------|----------|---------------------|-------------|
| General Details | | | | | |
| Record length: | 12000 ms | Sample rate: | 2 ms | Shotpoint interval: | 37.5 m |
| CoS to CNG: | 225 m | Fold Coverage: | 252 | | |
| Cable Details | | | | | |
| No of Cables: | 4 | Head Separation: | 150 m | Tail Separation: | 150 m |
| Chans Per Cable: | 468 | Front Depth: | 16 m | Tail Depth: | 16 m |
| Length: | 5850 m | Group interval: | 12.5 m | | |
| Source Details | | | | | |
| No of Sources: | 2 | Separation: | 75 m | Total Volume: | 6600 cu ins |
| Depth: | 12 m | Pressure: | 1950 PSI | Volume: | 3300 |
| Strings per source: | 2 | String Separation: | 6 m | String length: | 18 m |



7/23/2019

Page 3

MGL1905_Axial 3D

Binning

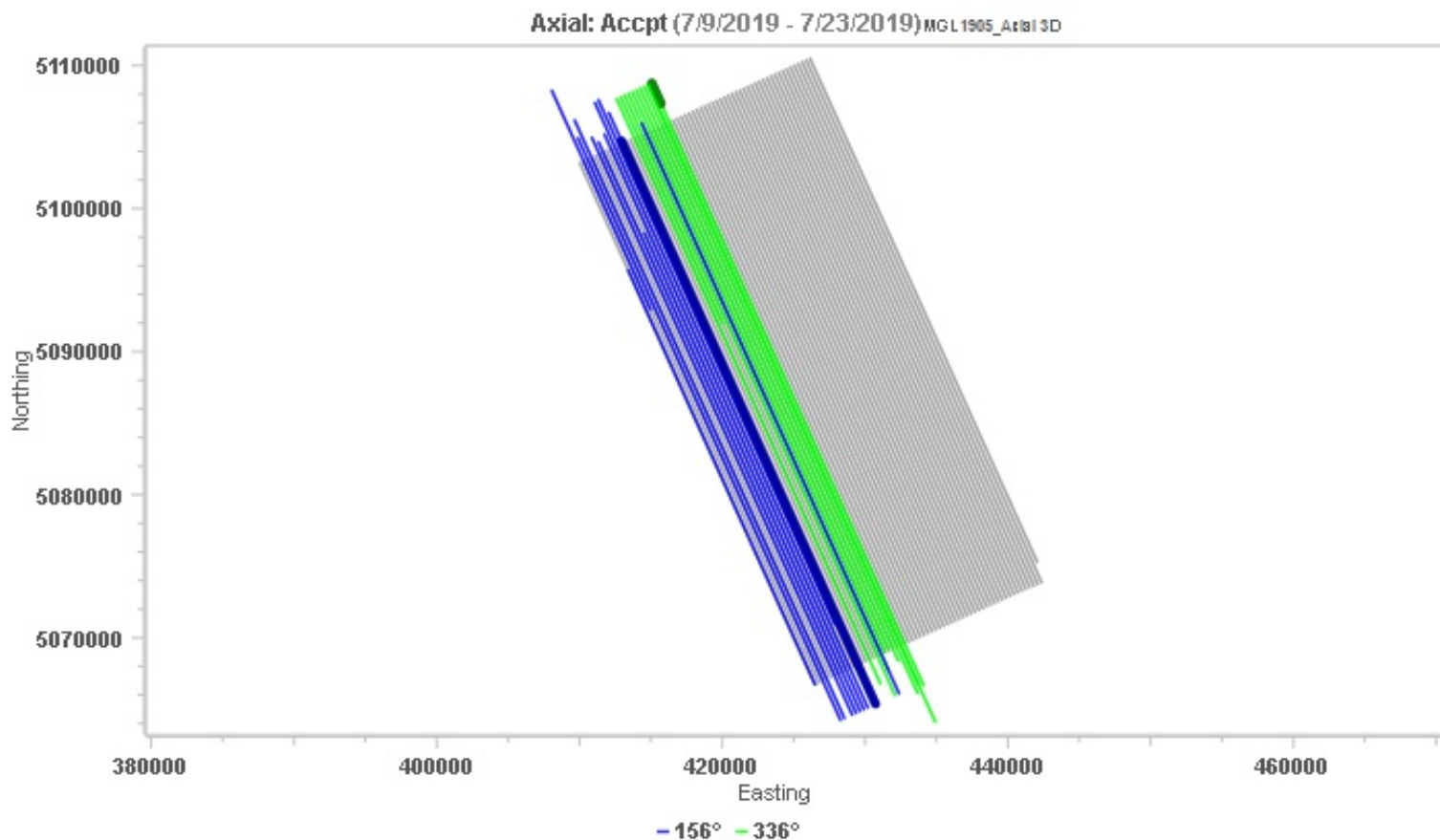
| | | | | | |
|--------------|------|-------------|--------|--|--|
| Size Inline: | 50 m | Size XLine: | 37.5 m | | |
|--------------|------|-------------|--------|--|--|

Production Listing (Accpt km by interval) - Prime: Sail Line, Infill: Full Fold

| Seq | Line | Heading | FGSP | LGSP | Prod Type | Production | Ave Knots | Seq Status | Line Status |
|-------|------|---------|------|------|-----------|------------|-----------|------------|-------------|
| 23 | 1188 | 335.7 | 963 | 921 | Prime | 1.61 | 4.228 | Complete | Complete |
| 24 | 1092 | 155.7 | 996 | 2148 | Infill | 43.20 | 4.306 | Complete | Complete |
| Total | | | | | | 44.81 | | | |

Production Totals (Accpt km by interval) - Prime: Sail Line, Infill: Full Fold

| Accepted km | Day | Week | Month | Project |
|-------------|-------|--------|--------|---------|
| Prime | 1.61 | 91.54 | 904.05 | 904.05 |
| Infill | 43.20 | 92.06 | 92.06 | 92.06 |
| Combined | 44.81 | 183.60 | 996.11 | 996.11 |



Daily Comment Summaries - Daily Comments On Status of Equipment

Tue 23 Jul

Navigation:

No Major Issues to Report

Information Technology (IT):

No Major Issues to Report



7/23/2019

Page 4

Acquisition (OBS):

CRC errors on streamer 4 still occurring after changing ship side box.

Towing and Handling (Source):

No Major Issues to Report

General Purpose Science:

EM122 reporting high CPU temperature

Daily Comment Summaries - Personnel Onboard

Tue 23 Jul

Technical Staff On-board the Langseth

Todd Jensvold L-DEO OMO Chief Science Officer
David Martinson L-DEO OMO Science Officer - Nav
Josh Kasinger L-DEO OMO Chief Source Mechanic
Tom Spoto L-DEO OMO Source Mechanic
Alan Thompson L-DEO OMO Marine Science Technician - Nav
Gilles Guerin L-DEO OMO Marine Science Technician - Obs
Shaun Shaver L-DEO OMO Marine Science Technician - Obs
Edmond St. Amant Contract Personnel Marine Science Technician - Source
Matt Dietrich Contract Personnel Marine Science Technician - Source
Chris Abdouch NCS SubSea Contract Nav Processor
Mike Jennings NCS SubSea Contract Nav Processor

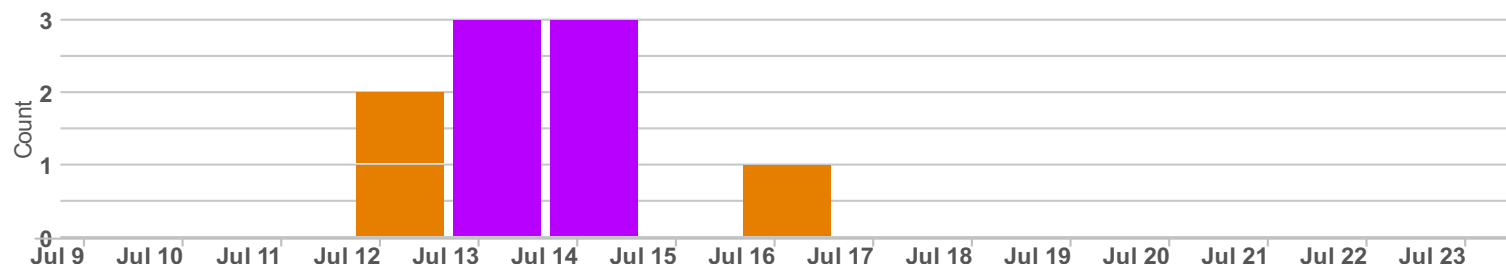
PSO Staff On-board the Langseth

Amanda Dubuque RPS Lead PSO
Bianca Mares RPS PSO
Ana Hernandez RPS PSO
Lluvia Durantes RPS PSO
Alejandra Ramos RPS PSO

Science Party On-board the Langseth

Adrien Amulf UTIG - PI
Alistar Harding Scripps - PI
Steffen Saustrup UTIG - Tech
Michelle Lee LDEO - Student
Axelle Cap U de Bretagne - Student
Shelby Brandt U of Ottawa - Student
Morgan Goulain Mines of Paris Tech - Student
Victoire Lucas U de Bretagne - Student
Samual Mitchell U. of Bristol - Research Tech
Mathew Griffiths Carlton U. - Student
Massimo Stefano Belluci U de Bretagne - Student
Tanner Eischen East Carolina U. - Student
Brian Oller Scripps - Student

HSE Daily Events
(Marcus G Langseth)





Daily Science Report

7/24/2019

Page 1

| | | | |
|------------------------|---|----------------------|----------------------------------|
| Client: | United States National Science Foundation | Contractor: | Lamont-Doherty Earth Observatory |
| Job No: | MGL1905 | Job No: | MGL1905 |
| Block: | Axial | Vessel: | Marcus G Langseth |
| Client Contact: | Adrien Arnulf | Supervisor: | Sean Higgins |
| Consultancy: | N/A | Party Chiefs: | Todd Jensvold |
| Job No: | | Client Reps: | Adrien Arnulf |

Daily Comment Summaries - Daily Summary

Wed 24 Jul

At start of UTC day, in the process of recovering source arrays. After source on board continue with recovery of streamers and barovanes. All equipment on board @ 08:11 UTC .
While repairs to engines were underway, maintenance was performed on tail buoys and to some streamer equipment. Deployment restarted @ 12:45 UTC and continued through the end of the UTC day.

Daily Comment Summaries - Plan for Tomorrow

Wed 24 Jul

Continue deploying streamers and source

Timing Diary (Marcus G Langseth, MGL1905_Axial 3D)

| Category | Code | Start | End | Duration |
|--|-------|-------------------|-------------------|----------|
| ■ Vessel | DT_VE | Wed 24. Jul 00:00 | Wed 24. Jul 24:00 | 24.000 |
| Downtime due to vessel - cooling pipe burst that supplies both port and starboard main engines. Recovered all in water equipment to allow for all stop of the vessel. Once repairs were complete began redeployment of all gear. | | | | |

Timing Day By Day (Marcus G Langseth, MGL1905_Axial 3D)

| 24-Jul | Hours | %Percent |
|--------------------|---------------|----------------|
| DownTime | 24.000 | 100.000 |
| Vessel | 24.000 | 100.000 |
| Day's Total | 24.000 | 100.000 |

Timing Breakdown Summary - Project (Marcus G Langseth, MGL1905_Axial 3D)

| Category | Hours | %Percent |
|---------------------|----------------|---------------|
| Mobilisation | 150.200 | 39.115 |
| Deployment | 45.200 | 11.771 |
| Mob Ashore | 63.000 | 16.406 |
| Testing | 0.333 | 0.087 |
| Transit to Prospect | 41.667 | 10.851 |
| Acquisition | 169.917 | 44.249 |
| Prime Line Change | 44.533 | 11.597 |
| Production Infill | 11.567 | 3.012 |



7/24/2019

Page 2

| Category | Hours | %Percent |
|---------------------------|----------------|---------------|
| Production Prime | 113.817 | 29.640 |
| DownTime | 61.867 | 16.111 |
| Streamers | 26.617 | 6.931 |
| Vessel | 35.250 | 9.180 |
| Chargeable Standby | 2.017 | 0.525 |
| Transit | 2.017 | 0.525 |
| Total | 384.000 | |

Basic Project Details

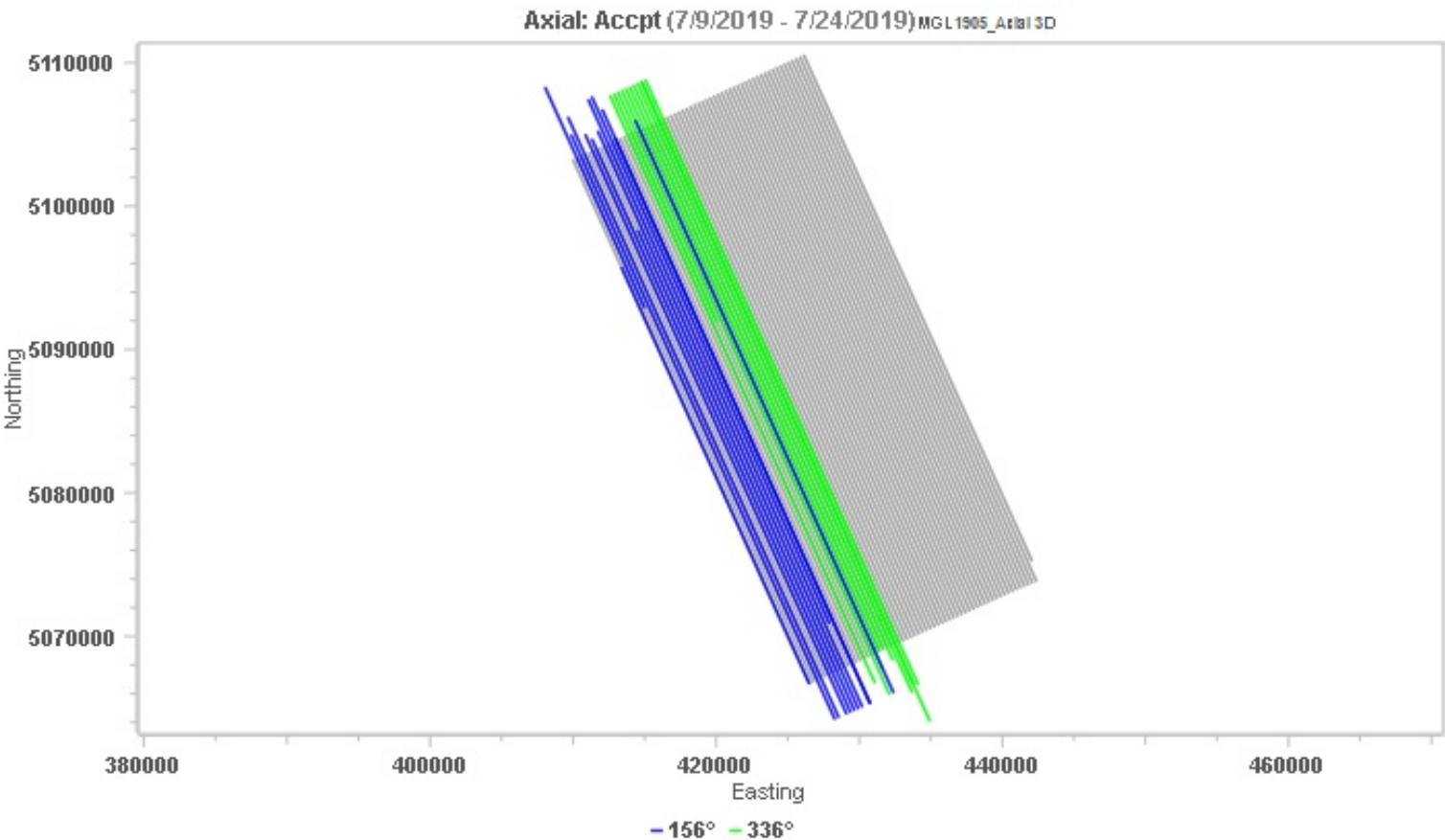
| MGL1905_Axial 3D | | | | | |
|---------------------|----------|--------------------|----------|---------------------|-------------|
| General Details | | | | | |
| Record length: | 12000 ms | Sample rate: | 2 ms | Shotpoint interval: | 37.5 m |
| CoS to CNG: | 225 m | Fold Coverage: | 252 | | |
| Cable Details | | | | | |
| No of Cables: | 4 | Head Separation: | 150 m | Tail Separation: | 150 m |
| Chans Per Cable: | 468 | Front Depth: | 16 m | Tail Depth: | 16 m |
| Length: | 5850 m | Group interval: | 12.5 m | | |
| Source Details | | | | | |
| No of Sources: | 2 | Separation: | 75 m | Total Volume: | 6600 cu ins |
| Depth: | 12 m | Pressure: | 1950 PSI | Volume: | 3300 |
| Strings per source: | 2 | String Separation: | 6 m | String length: | 18 m |
| Binning | | | | | |
| Size Inline: | 50 m | Size XLine: | 37.5 m | | |

Production Listing (Accpt km) - Prime: Sail Line, Infill: Full Fold

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

Production Totals (Accpt km by interval) - Prime: Sail Line, Infill: Full Fold

| Accepted km | Day | Week | Month | Project |
|-----------------|-------------|---------------|---------------|---------------|
| Prime | 0.00 | 91.54 | 904.05 | 904.05 |
| Infill | 0.00 | 92.06 | 92.06 | 92.06 |
| Combined | 0.00 | 183.60 | 996.11 | 996.11 |



Daily Comment Summaries - Daily Comments On Status of Equipment

Wed 24 Jul

Navigation:

No Major Issues to Report

Information Technology (IT):

No Major Issues to Report

Acquisition (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

Wed 24 Jul

Technical Staff On-board the Langseth

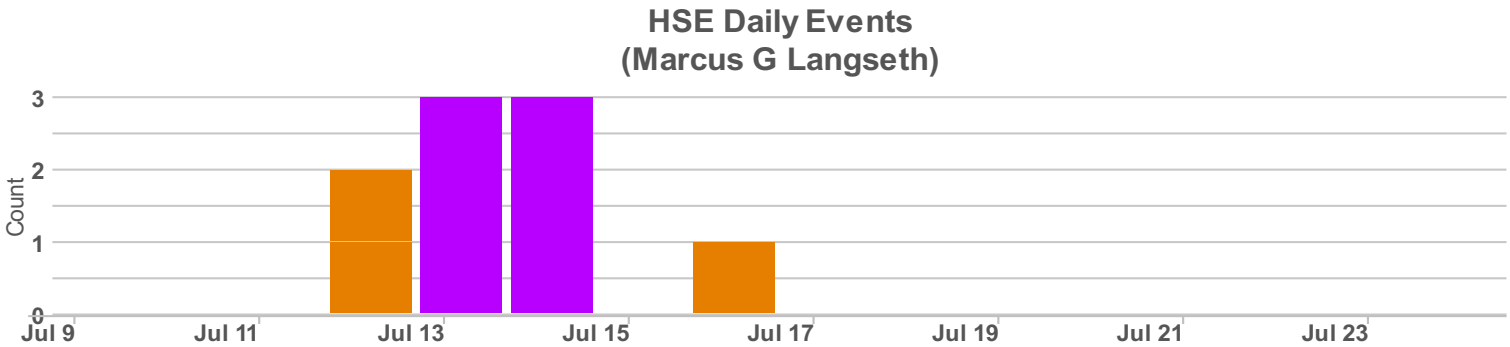
- Todd Jensvold L-DEO OMO Chief Science Officer
- David Martinson L-DEO OMO Science Officer - Nav
- Josh Kasinger L-DEO OMO Chief Source Mechanic
- Tom Spoto L-DEO OMO Source Mechanic
- Alan Thompson L-DEO OMO Marine Science Technician - Nav
- Gilles Guerin L-DEO OMO Marine Science Technician - Obs
- Shaun Shaver L-DEO OMO Marine Science Technician - Obs
- Edmond St. Amant Contract Personnel Marine Science Technician - Source
- Matt Dietrich Contract Personnel Marine Science Technician - Source
- Chris Abdouch NCS SubSea Contract Nav Processor



Mike Jennings NCS SubSea Contract Nav Processor

PSO Staff On-board the Langseth
Amanda Dubuque RPS Lead PSO
Bianca Mares RPS PSO
Ana Hernandez RPS PSO
Lluvia Durantes RPS PSO
Alejandra Ramos RPS PSO

Science Party On-board the Langseth
Adrien Amulf UTIG - PI
Alistar Harding Scripps - PI
Steffen Saustrop UTIG - Tech
Michelle Lee LDEO - Student
Axelle Cap U de Bretagne - Student
Shelby Brandt U of Ottawa - Student
Morgan Goulain Mines of Paris Tech - Studen
Victoire Lucas U de Bretagne - Student
Samual Mitchell U. of Bristol - Research Tech
Mathew Griffiths Carlton U. - Student
Massimo Stefano Belluci U de Bretagne - Student
Tanner Eischen East Carolina U. - Student
Brian Oller Scripps - Student





Daily Science Report

7/25/2019

Page 1

| | | | |
|------------------------|---|----------------------|----------------------------------|
| Client: | United States National Science Foundation | Contractor: | Lamont-Doherty Earth Observatory |
| Job No: | MGL1905 | Job No: | MGL1905 |
| Block: | Axial | Vessel: | Marcus G Langseth |
| Client Contact: | Adrien Arnulf | Supervisor: | Sean Higgins |
| Consultancy: | N/A | Party Chiefs: | Todd Jensvold |
| Job No: | | Client Reps: | Adrien Arnulf |

Daily Comment Summaries - Daily Summary

Thu 25 Jul

At start of UTC day, Deploying streamer 2 followed by source arrays.
Once all gear in position, ramp up was unable to be started due to fog making it impossible for PSO's to visually clear, resulting in a late start to line P1100.
Eventually P1100 was started part way down followed by also acquiring line P1196 before the end of UTC day.
Source controller continued to exhibit reboot issues.

Daily Comment Summaries - Plan for Tomorrow

Thu 25 Jul

Continue acquisition

Timing Diary (Marcus G Langseth, MGL1905_Axial 3D)



| Category | Code | Start | End | Duration |
|--|--------|-------------------|-------------------|----------|
| ■ Vessel | DT_VE | Thu 25. Jul 00:00 | Thu 25. Jul 06:11 | 6.183 |
| Downtime due to vessel - cooling pipe burst that supplies both port and starboard main engines. Recovered all in water equipment to allow for all stop of the vessel. Once repairs were complete began redeployment of all gear. | | | | |
| ■ Weather | SB_WX | Thu 25. Jul 06:11 | Thu 25. Jul 12:31 | 6.333 |
| PSO's unable to give source clearance d/t fog | | | | |
| ■ Production Prime | AC_PP | Thu 25. Jul 12:31 | Thu 25. Jul 16:03 | 3.533 |
| SOL Seq 25 Line:1100 Block=Axial FGSP=1363 Hdg=155.7° Prime EOL Seq 25 Line:1100 Block=Axial LGSP=2147 Incomplete | | | | |
| ■ Prime Line Change | AC_PLC | Thu 25. Jul 16:03 | Thu 25. Jul 18:12 | 2.150 |
| Nominal Prime line change. | | | | |
| ■ Production Prime | AC_PP | Thu 25. Jul 18:12 | Thu 25. Jul 23:39 | 5.450 |
| SOL Seq 26 Line:1196 Block=Axial FGSP=2138 Hdg=335.7° Prime EOL Seq 26 Line:1196 Block=Axial LGSP=921 Complete | | | | |
| ■ Prime Line Change | AC_PLC | Thu 25. Jul 23:39 | Thu 25. Jul 24:00 | 0.350 |
| Nominal Prime line change. | | | | |



7/25/2019

Page 2

Timing Day By Day (Marcus G Langseth, MGL1905_Axial 3D)

| 25-Jul | Hours | % Percent |
|---------------------------|---------------|----------------|
| Acquisition | 11.483 | 47.847 |
| Prime Line Change | 2.500 | 10.417 |
| Production Prime | 8.983 | 37.431 |
| Chargeable Standby | 6.333 | 26.389 |
| Weather | 6.333 | 26.389 |
| DownTime | 6.183 | 25.764 |
| Vessel | 6.183 | 25.764 |
| Day's Total | 24.000 | 100.000 |

Timing Breakdown Summary - Project (Marcus G Langseth, MGL1905_Axial 3D)

| Category | Hours | % Percent |
|---------------------------|----------------|---------------|
| Mobilisation | 150.200 | 36.814 |
| Deployment | 45.200 | 11.078 |
| Mob Ashore | 63.000 | 15.441 |
| Testing | 0.333 | 0.082 |
| Transit to Prospect | 41.667 | 10.212 |
| Acquisition | 181.400 | 44.461 |
| Prime Line Change | 47.033 | 11.528 |
| Production Infill | 11.567 | 2.835 |
| Production Prime | 122.800 | 30.098 |
| DownTime | 68.050 | 16.679 |
| Streamers | 26.617 | 6.524 |
| Vessel | 41.433 | 10.155 |
| Chargeable Standby | 8.350 | 2.047 |
| Transit | 2.017 | 0.494 |
| Weather | 6.333 | 1.552 |
| Total | 408.000 | |

Basic Project Details

| MGL1905_Axial 3D | | | | | |
|------------------|----------|------------------|--------|---------------------|-------------|
| General Details | | | | | |
| Record length: | 12000 ms | Sample rate: | 2 ms | Shotpoint interval: | 37.5 m |
| CoS to CNG: | 225 m | Fold Coverage: | 252 | | |
| Cable Details | | | | | |
| No of Cables: | 4 | Head Separation: | 150 m | Tail Separation: | 150 m |
| Chans Per Cable: | 468 | Front Depth: | 16 m | Tail Depth: | 16 m |
| Length: | 5850 m | Group interval: | 12.5 m | | |
| Source Details | | | | | |
| No of Sources: | 2 | Separation: | 75 m | Total Volume: | 6600 cu ins |



7/25/2019

Page 3

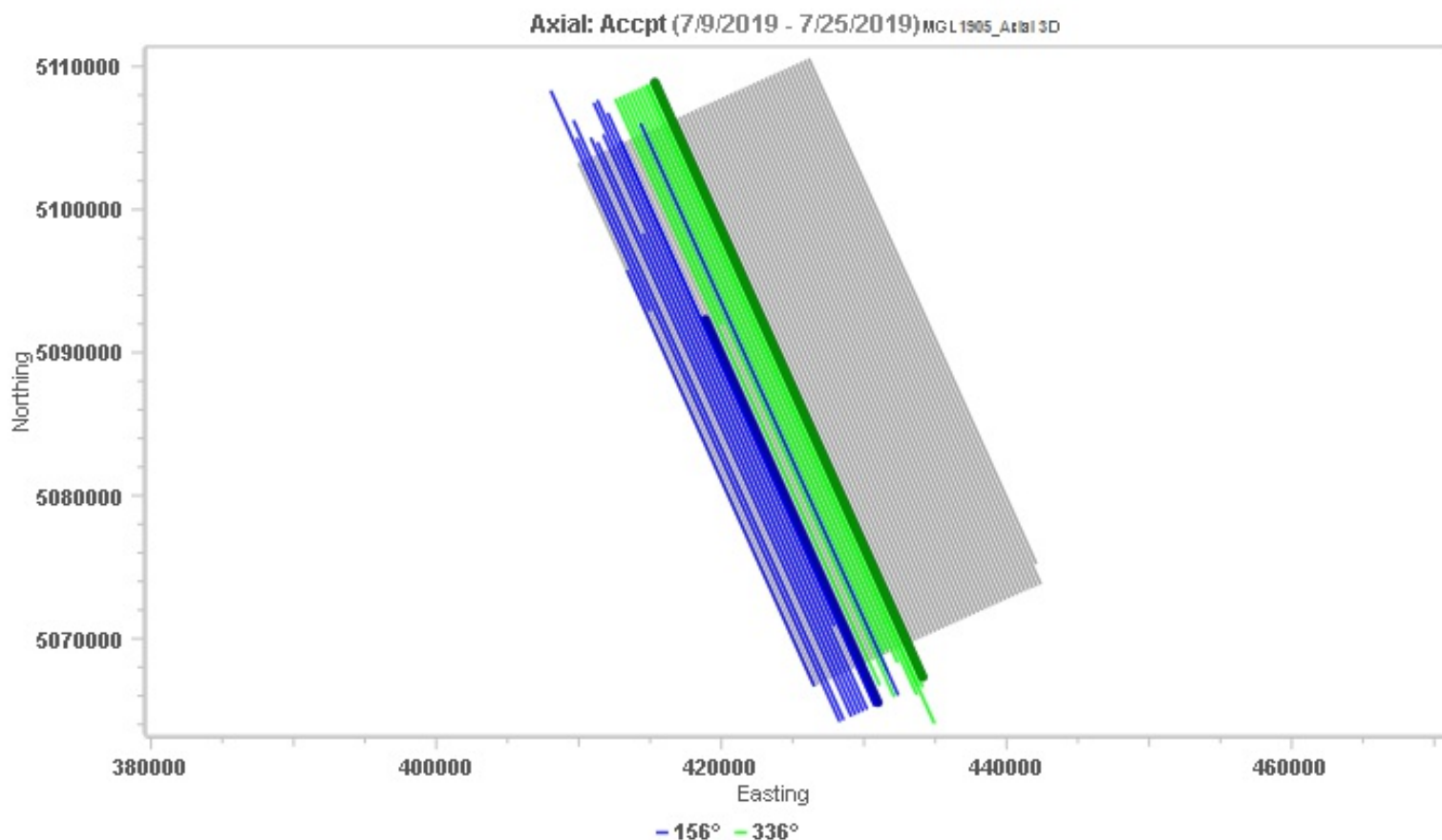
| MGL1905_Axial 3D | | | | | |
|---------------------|------|--------------------|----------|----------------|------|
| Depth: | 12 m | Pressure: | 1950 PSI | Volume: | 3300 |
| Strings per source: | 2 | String Separation: | 6 m | String length: | 18 m |
| Binning | | | | | |
| Size Inline: | 50 m | Size XLine: | 37.5 m | | |

Production Listing (Accpt km by interval) - Prime: Sail Line, Infill: Full Fold

| Seq | Line | Heading | FGSP | LGSP | Prod Type | Production | Ave Knots | Seq Status | Line Status |
|-------|------|---------|------|------|-----------|------------|-----------|------------|-------------|
| 25 | 1100 | 155.7 | 1363 | 2147 | Prime | 29.40 | 4.493 | Complete | Incomplete |
| 26 | 1196 | 335.7 | 2138 | 921 | Prime | 45.64 | 4.522 | Complete | Complete |
| Total | | | | | | 75.04 | | | |

Production Totals (Accpt km by interval) - Prime: Sail Line, Infill: Full Fold

| Accepted km | Day | Week | Month | Project |
|-------------|-------|--------|---------|---------|
| Prime | 75.04 | 166.57 | 979.09 | 979.09 |
| Infill | 0.00 | 92.06 | 92.06 | 92.06 |
| Combined | 75.04 | 258.64 | 1071.15 | 1071.15 |





7/25/2019

Page 4

Daily Comment Summaries - Daily Comments On Status of Equipment

Thu 25 Jul

Navigation:

No Major Issues to Report

Information Technology (IT):

No Major Issues to Report

Acquisition (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 25 Jul

Technical Staff On-board the Langseth

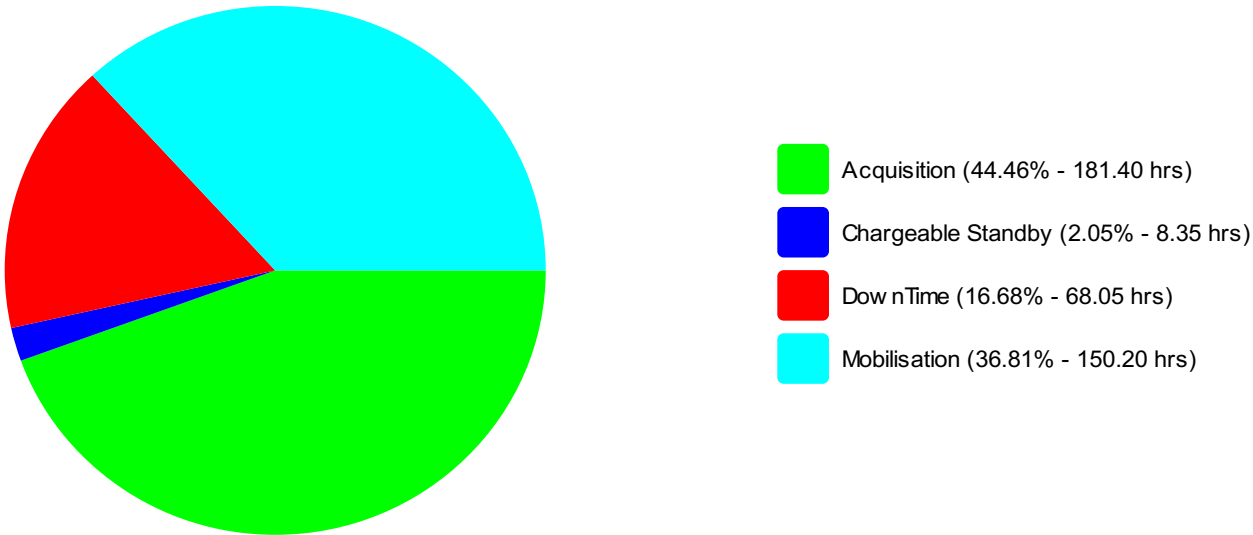
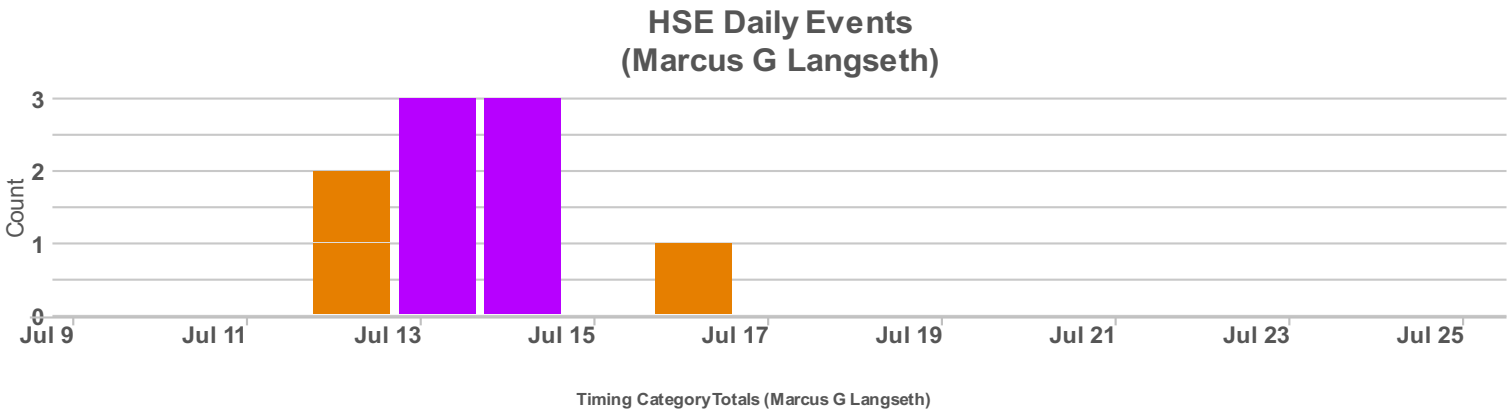
Todd Jensvold L-DEO OMO Chief Science Officer
David Martinson L-DEO OMO Science Officer - Nav
Josh Kasinger L-DEO OMO Chief Source Mechanic
Tom Spoto L-DEO OMO Source Mechanic
Alan Thompson L-DEO OMO Marine Science Technician - Nav
Gilles Guerin L-DEO OMO Marine Science Technician - Obs
Shaun Shaver L-DEO OMO Marine Science Technician - Obs
Edmond St. Amant Contract Personnel Marine Science Technician - Source
Matt Dietrich Contract Personnel Marine Science Technician - Source
Chris Abdouch NCS SubSea Contract Nav Processor
Mike Jennings NCS SubSea Contract Nav Processor

PSO Staff On-board the Langseth

Amanda Dubuque RPS Lead PSO
Bianca Mares RPS PSO
Ana Hernandez RPS PSO
Lluvia Durantes RPS PSO
Alejandra Ramos RPS PSO

Science Party On-board the Langseth

Adrien Amulf UTIG - PI
Alistar Harding Scripps - PI
Steffen Sastrup UTIG - Tech
Michelle Lee LDEO - Student
Axelle Cap U de Bretagne - Student
Shelby Brandt U of Ottawa - Student
Morgan Goulain Mines of Paris Tech - Student
Victoire Lucas U de Bretagne - Student
Samual Mitchell U. of Bristol - Research Tech
Mathew Griffiths Carlton U. - Student
Massimo Stefano Belluci U de Bretagne - Student
Tanner Eischen East Carolina U. - Student
Brian Oller Scripps - Student





7/26/2019

Page 1

| | | | |
|------------------------|---|----------------------|----------------------------------|
| Client: | United States National Science Foundation | Contractor: | Lamont-Doherty Earth Observatory |
| Job No: | MGL1905 | Job No: | MGL1905 |
| Block: | Axial | Vessel: | Marcus G Langseth |
| Client Contact: | Adrien Arnulf | Supervisor: | Sean Higgins |
| Consultancy: | N/A | Party Chiefs: | Todd Jensvold |
| Job No: | | Client Reps: | Adrien Arnulf |

Daily Comment Summaries - Daily Summary

Fri 26 Jul

At start of UTC day, on line change to P1108. During the day lines P1108, P1204, I1076.
Fog caused a delayed SOL I1076, but we were able to close the primary coverage gaps that were at the northern end of the line.

Daily Comment Summaries - Plan for Tomorrow

Fri 26 Jul

Continue acquisition - targeting coverage holes on current race track before moving on to second half of the survey.

Timing Diary (Marcus G Langseth, MGL1905_Axial 3D)

| Category | Code | Start | End | Duration |
|---|--------|-------------------|-------------------|----------|
| Prime Line Change | AC_PLC | Fri 26. Jul 00:00 | Fri 26. Jul 01:27 | 1.450 |
| Nominal Prime line change. | | | | |
| Production Prime | AC_PP | Fri 26. Jul 01:27 | Fri 26. Jul 06:52 | 5.417 |
| SOL Seq 27 Line:1108 Block=Axial FGSP=866 Hdg=155.7° Prime EOL Seq 27 Line:1108 Block=Axial LGSP=2148 Complete | | | | |
| Prime Line Change | AC_PLC | Fri 26. Jul 06:52 | Fri 26. Jul 09:13 | 2.350 |
| Nominal Prime line change. | | | | |
| Production Prime | AC_PP | Fri 26. Jul 09:13 | Fri 26. Jul 14:48 | 5.583 |
| SOL Seq 28 Line:1204 Block=Axial FGSP=2117 Hdg=335.7° Prime EOL Seq 28 Line:1204 Block=Axial LGSP=921 Complete | | | | |
| Prime Line Change | AC_PLC | Fri 26. Jul 14:48 | Fri 26. Jul 17:11 | 2.383 |
| Nominal Prime line change. | | | | |
| Production Infill | AC_PI | Fri 26. Jul 17:11 | Fri 26. Jul 17:22 | 0.183 |
| SOL Seq 29 Line:1076 Block=Axial FGSP=1030 Hdg=155.7° Infill EOL Seq 29 Line:1076 Block=Axial LGSP=1064 Complete | | | | |
| Production Prime | AC_PP | Fri 26. Jul 17:22 | Fri 26. Jul 17:35 | 0.217 |
| SOL Seq 29 Line:1076 Block=Axial FGSP=1065 Hdg=155.7° Prime | | | | |



| Category | Code | Start | End | Duration |
|---|--------|-------------------|-------------------|----------|
| EOL Seq 29 Line:1076 Block=Axial LGSP=1113 Complete | | | | |
| Production Infill | AC_PI | Fri 26. Jul 17:35 | Fri 26. Jul 18:52 | 1.283 |
| SOL Seq 29 Line:1076 Block=Axial FGSP=1114 Hdg=155.7° Infill EOL Seq 29 Line:1076 Block=Axial LGSP=1420 Complete | | | | |
| Production Prime | AC_PP | Fri 26. Jul 18:52 | Fri 26. Jul 19:17 | 0.417 |
| SOL Seq 29 Line:1076 Block=Axial FGSP=1421 Hdg=155.7° Prime EOL Seq 29 Line:1076 Block=Axial LGSP=1496 Complete | | | | |
| Production Infill | AC_PI | Fri 26. Jul 19:17 | Fri 26. Jul 21:54 | 2.617 |
| SOL Seq 29 Line:1076 Block=Axial FGSP=1497 Hdg=155.7° Infill EOL Seq 29 Line:1076 Block=Axial LGSP=2131 Complete | | | | |
| Prime Line Change | AC_PLC | Fri 26. Jul 21:54 | Fri 26. Jul 24:00 | 2.100 |
| Nominal Prime line change. | | | | |

Timing Day By Day (Marcus G Langseth, MGL1905_Axial 3D)

| 26-Jul | Hours | %Percent |
|-------------------|--------|----------|
| Acquisition | 24.000 | 100.000 |
| Prime Line Change | 8.283 | 34.514 |
| Production Infill | 4.083 | 17.014 |
| Production Prime | 11.633 | 48.472 |
| Day's Total | 24.000 | 100.000 |

Timing Breakdown Summary - Project (Marcus G Langseth, MGL1905_Axial 3D)

| Category | Hours | %Percent |
|---------------------|---------|----------|
| Mobilisation | 150.200 | 34.769 |
| Deployment | 45.200 | 10.463 |
| Mob Ashore | 63.000 | 14.583 |
| Testing | 0.333 | 0.077 |
| Transit to Prospect | 41.667 | 9.645 |
| Acquisition | 205.400 | 47.546 |
| Prime Line Change | 55.317 | 12.805 |
| Production Infill | 15.650 | 3.623 |
| Production Prime | 134.433 | 31.119 |
| DownTime | 68.050 | 15.752 |
| Streamers | 26.617 | 6.161 |
| Vessel | 41.433 | 9.591 |
| Chargeable Standby | 8.350 | 1.933 |
| Transit | 2.017 | 0.467 |
| Weather | 6.333 | 1.466 |
| Total | 432.000 | |



7/26/2019

Page 3

Basic Project Details

| MGL1905_Axial 3D | | | | | |
|---------------------|----------|--------------------|----------|---------------------|-------------|
| General Details | | | | | |
| Record length: | 12000 ms | Sample rate: | 2 ms | Shotpoint interval: | 37.5 m |
| CoS to CNG: | 225 m | Fold Coverage: | 252 | | |
| Cable Details | | | | | |
| No of Cables: | 4 | Head Separation: | 150 m | Tail Separation: | 150 m |
| Chans Per Cable: | 468 | Front Depth: | 16 m | Tail Depth: | 16 m |
| Length: | 5850 m | Group interval: | 12.5 m | | |
| Source Details | | | | | |
| No of Sources: | 2 | Separation: | 75 m | Total Volume: | 6600 cu ins |
| Depth: | 12 m | Pressure: | 1950 PSI | Volume: | 3300 |
| Strings per source: | 2 | String Separation: | 6 m | String length: | 18 m |
| Binning | | | | | |
| Size Inline: | 50 m | Size XLine: | 37.5 m | | |

Production Listing (Accept km by interval) - Prime: Sail Line, Infill: Full Fold

| Seq | Line | Heading | FGSP | LGSP | Prod Type | Production | Ave Knots | Seq Status | Line Status |
|-------|------|---------|------|------|----------------|------------|-----------|------------|-------------|
| 27 | 1108 | 155.7 | 866 | 2148 | Prime | 48.07 | 4.792 | Complete | Complete |
| 28 | 1204 | 335.7 | 2117 | 921 | Prime | 44.85 | 4.337 | Complete | Complete |
| 29 | 1076 | 155.7 | 1030 | 1064 | Infill | 1.27 | 3.755 | Complete | Complete |
| 29 | 1076 | 155.7 | 1065 | 1113 | Prime, Reshoot | 1.80 | 4.486 | Complete | Complete |
| 29 | 1076 | 155.7 | 1114 | 1420 | Infill | 11.47 | 4.828 | Complete | Complete |
| 29 | 1076 | 155.7 | 1421 | 1496 | Prime, Reshoot | 2.81 | 3.645 | Complete | Complete |
| 29 | 1076 | 155.7 | 1497 | 2131 | Infill | 23.77 | 4.906 | Complete | Complete |
| Total | | | | | | 134.06 | | | |

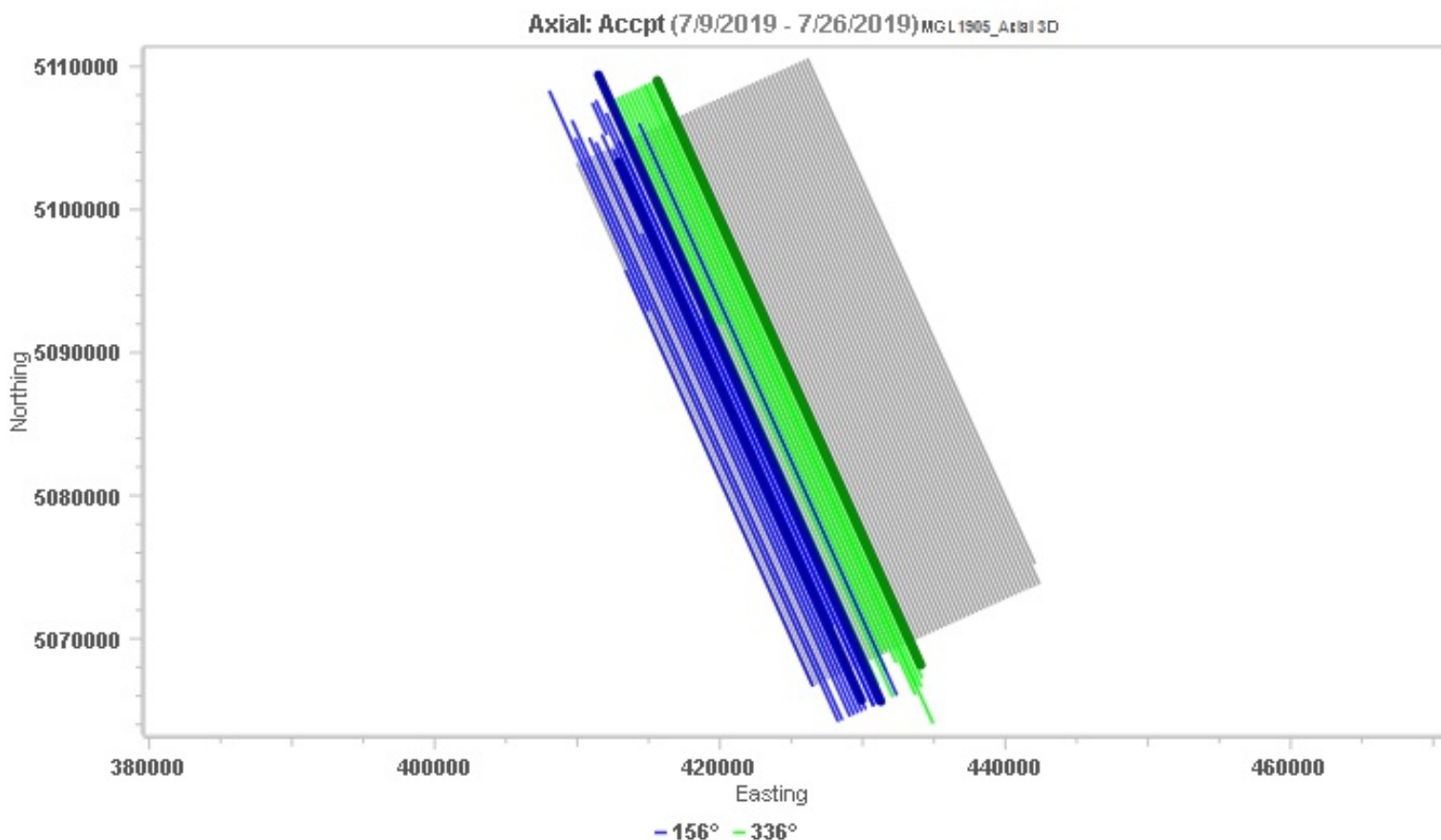
Production Totals (Accept km by interval) - Prime: Sail Line, Infill: Full Fold

| Accepted km | Day | Week | Month | Project |
|----------------|--------|--------|---------|---------|
| Prime | 92.92 | 259.50 | 1066.16 | 1066.16 |
| Infill | 36.52 | 128.59 | 128.59 | 128.59 |
| Prime, Reshoot | 4.61 | 4.61 | 4.61 | 4.61 |
| Combined | 134.06 | 392.70 | 1199.36 | 1199.36 |



7/26/2019

Page 4



Daily Comment Summaries - Daily Comments On Status of Equipment

Fri 26 Jul

Navigation:

No Major Issues to Report

Information Technology (IT):

No Major Issues to Report

Acquisition (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 26 Jul

Technical Staff On-board the Langseth

Todd Jensvold L-DEO OMO Chief Science Officer
David Martinson L-DEO OMO Science Officer - Nav
Josh Kasinger L-DEO OMO Chief Source Mechanic
Tom Spoto L-DEO OMO Source Mechanic
Alan Thompson L-DEO OMO Marine Science Technician - Nav
Gilles Guerin L-DEO OMO Marine Science Technician - Obs
Shaun Shaver L-DEO OMO Marine Science Technician - Obs
Edmond St. Amant Contract Personnel Marine Science Technician - Source
Matt Dietrich Contract Personnel Marine Science Technician - Source
Chris Abdouch NCS SubSea Contract Nav Processor



7/26/2019

Page 5

Mike Jennings NCS SubSea Contract Nav Processor

PSO Staff On-board the Langseth

Amanda Dubuque RPS Lead PSO

Bianca Mares RPS PSO

Ana Hernandez RPS PSO

Lluvia Durantes RPS PSO

Alejandra Ramos RPS PSO

Science Party On-board the Langseth

Adrien Amulf UTIG - PI

Alistar Harding Scripps - PI

Steffen Saustrop UTIG - Tech

Michelle Lee LDEO - Student

Axelle Cap U de Bretagne - Student

Shelby Brandt U of Ottawa - Student

Morgan Goulain Mines of Paris Tech - Student

Victoire Lucas U de Bretagne - Student

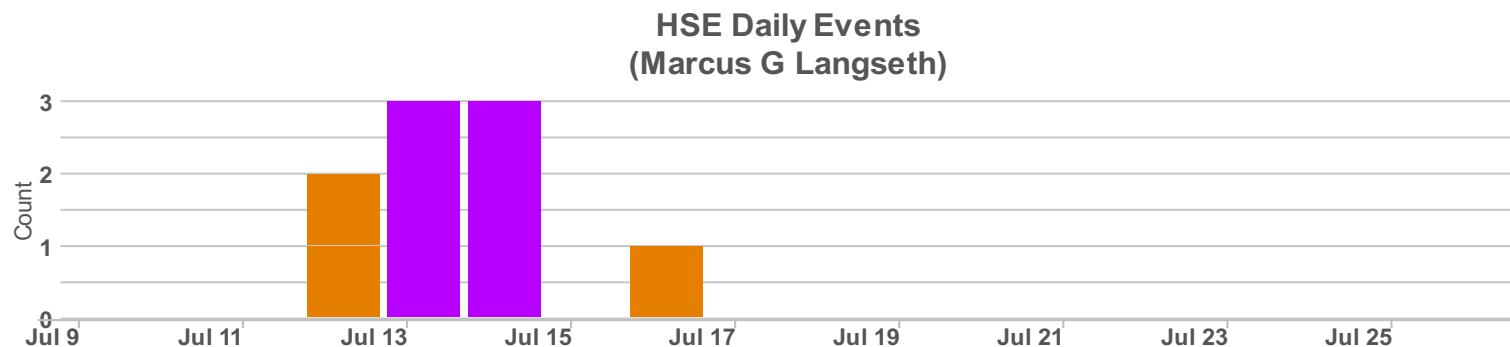
Samual Mitchell U. of Bristol - Research Tech

Mathew Griffiths Carlton U. - Student

Massimo Stefano Belluci U de Bretagne - Student

Tanner Eischen East Carolina U. - Student

Brian Oller Scripps - Student

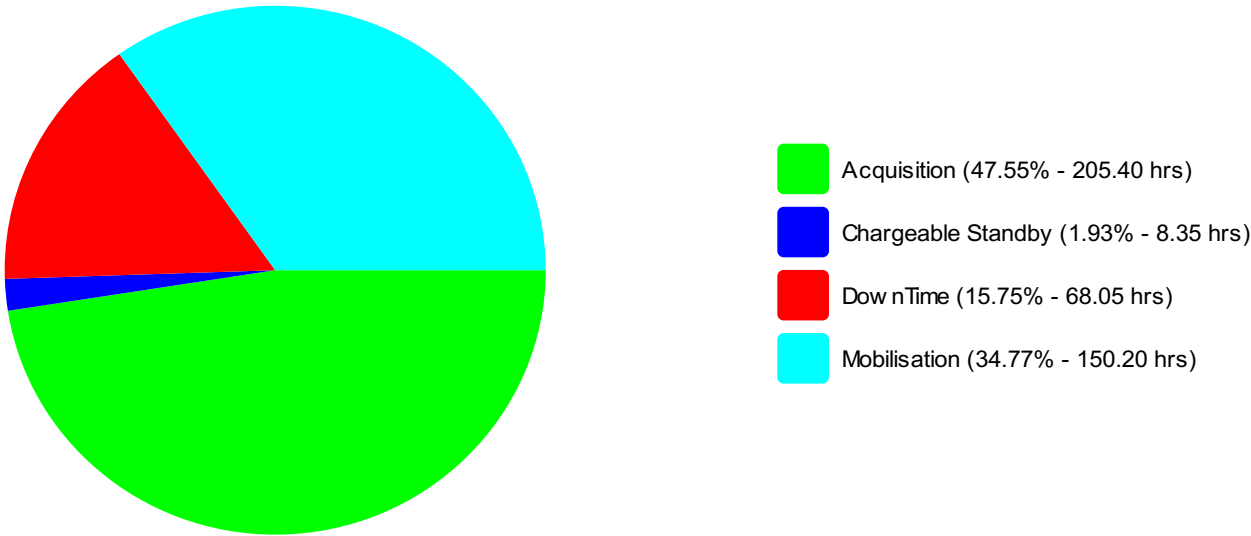




7/26/2019

Daily Science Report

Timing Category Totals (Marcus G Langseth)





Daily Science Report

7/27/2019

Page 1

| | | | |
|------------------------|---|----------------------|----------------------------------|
| Client: | United States National Science Foundation | Contractor: | Lamont-Doherty Earth Observatory |
| Job No: | MGL1905 | Job No: | MGL1905 |
| Block: | Axial | Vessel: | Marcus G Langseth |
| Client Contact: | Adrien Arnulf | Supervisor: | Sean Higgins |
| Consultancy: | N/A | Party Chiefs: | Todd Jensvold |
| Job No: | | Client Reps: | Adrien Arnulf |

Daily Comment Summaries - Daily Summary

Sat 27 Jul

During the UTC day the vessel acquired sequences 30-33(Partial) working towards finishing the first race track. A combination of prime and infill were shot on lines 1124, 1060+1012 in the same sequence, 1212, and 1100 (in progress @midnight UTC).

Daily Comment Summaries - Plan for Tomorrow

Sat 27 Jul

Complete infill on line 1100 and turn to line 1220 which will complete the first race track.

Timing Diary (Marcus G Langseth, MGL1905_Axial 3D)






| Category | Code | Start | End | Duration |
|---|--------|-------------------|-------------------|----------|
| Prime Line Change | AC_PLC | Sat 27. Jul 00:00 | Sat 27. Jul 00:06 | 0.100 |
| Nominal Prime line change. | | | | |
| Production Infill | AC_PI | Sat 27. Jul 00:06 | Sat 27. Jul 05:57 | 5.850 |
| SOL Seq 30 Line:1124 Block=Axial FGSP=2170 Hdg=335.7° Infill EOL Seq 30 Line:1124 Block=Axial LGSP=921 Complete | | | | |
| Prime Line Change | AC_PLC | Sat 27. Jul 05:57 | Sat 27. Jul 08:10 | 2.217 |
| Nominal Prime line change. | | | | |
| Production Prime | AC_PP | Sat 27. Jul 08:10 | Sat 27. Jul 09:19 | 1.150 |
| SOL Seq 31 Line:1060 Block=Axial FGSP=914 Hdg=155.7° Prime EOL Seq 31 Line:1060 Block=Axial LGSP=1170 Complete | | | | |
| Production Infill | AC_PI | Sat 27. Jul 09:19 | Sat 27. Jul 09:57 | 0.633 |
| SOL Seq 31 Line:1012 Block=Axial FGSP=1171 Hdg=155.7° Infill EOL Seq 31 Line:1012 Block=Axial LGSP=1303 Complete | | | | |
| Production Prime | AC_PP | Sat 27. Jul 09:57 | Sat 27. Jul 13:49 | 3.867 |
| SOL Seq 31 Line:1012 Block=Axial FGSP=1304 Hdg=155.7° Prime EOL Seq 31 Line:1012 Block=Axial LGSP=2148 Complete | | | | |
| Prime Line Change | AC_PLC | Sat 27. Jul 13:49 | Sat 27. Jul 15:48 | 1.983 |
| Nominal Prime line change. | | | | |



Daily Science Report

7/27/2019

Page 2

| Category | Code | Start | End | Duration |
|--|--------|-------------------|-------------------|----------|
|  Production Prime | AC_PP | Sat 27. Jul 15:48 | Sat 27. Jul 21:08 | 5.333 |
| SOL Seq 32 Line:1212 Block=Axial FGSP=2117 Hdg=335.7° Prime EOL Seq 32 Line:1212 Block=Axial LGSP=921 Complete | | | | |
|  Prime Line Change | AC_PLC | Sat 27. Jul 21:08 | Sat 27. Jul 22:56 | 1.800 |
| Nominal Prime line change. | | | | |
|  Production Infill | AC_PI | Sat 27. Jul 22:56 | Sat 27. Jul 24:00 | 1.067 |
| SOL Seq 33 Line:1100 Block=Axial FGSP=914 Hdg=155.7° Infill MSP Seq 33 Line:1100 Block=Axial LGSP=1162 Midnight | | | | |

Timing Day By Day (Marcus G Langseth, MGL1905_Axial 3D)

| 27-Jul | Hours | %Percent |
|--------------------|---------------|----------------|
| Acquisition | 24.000 | 100.000 |
| Prime Line Change | 6.100 | 25.417 |
| Production Infill | 7.550 | 31.458 |
| Production Prime | 10.350 | 43.125 |
| Day's Total | 24.000 | 100.000 |

Timing Breakdown Summary - Project (Marcus G Langseth, MGL1905_Axial 3D)

| Category | Hours | %Percent |
|---------------------------|----------------|---------------|
| Mobilisation | 150.200 | 32.939 |
| Deployment | 45.200 | 9.912 |
| Mob Ashore | 63.000 | 13.816 |
| Testing | 0.333 | 0.073 |
| Transit to Prospect | 41.667 | 9.137 |
| Acquisition | 229.400 | 50.307 |
| Prime Line Change | 61.417 | 13.469 |
| Production Infill | 23.200 | 5.088 |
| Production Prime | 144.783 | 31.751 |
| DownTime | 68.050 | 14.923 |
| Streamers | 26.617 | 5.837 |
| Vessel | 41.433 | 9.086 |
| Chargeable Standby | 8.350 | 1.831 |
| Transit | 2.017 | 0.442 |
| Weather | 6.333 | 1.389 |
| Total | 456.000 | |



7/27/2019

Page 3

Basic Project Details

| MGL1905_Axial 3D | | | | | |
|---------------------|----------|--------------------|----------|---------------------|-------------|
| General Details | | | | | |
| Record length: | 12000 ms | Sample rate: | 2 ms | Shotpoint interval: | 37.5 m |
| CoS to CNG: | 225 m | Fold Coverage: | 252 | | |
| Cable Details | | | | | |
| No of Cables: | 4 | Head Separation: | 150 m | Tail Separation: | 150 m |
| Chans Per Cable: | 468 | Front Depth: | 16 m | Tail Depth: | 16 m |
| Length: | 5850 m | Group interval: | 12.5 m | | |
| Source Details | | | | | |
| No of Sources: | 2 | Separation: | 75 m | Total Volume: | 6600 cu ins |
| Depth: | 12 m | Pressure: | 1950 PSI | Volume: | 3300 |
| Strings per source: | 2 | String Separation: | 6 m | String length: | 18 m |
| Binning | | | | | |
| Size Inline: | 50 m | Size XLine: | 37.5 m | | |

Production Listing (Accpt km by interval) - Prime: Sail Line, Infill: Full Fold

| Seq | Line | Heading | FGSP | LGSP | Prod Type | Production | Ave Knots | Seq Status | Line Status |
|--------------|------|---------|------|------|-----------|---------------|-----------|------------|-------------|
| 30 | 1124 | 335.7 | 2170 | 921 | Infill | 46.84 | 4.323 | Complete | Complete |
| 31 | 1060 | 155.7 | 914 | 1170 | Prime | 9.60 | 4.507 | Complete | Complete |
| 31 | 1012 | 155.7 | 1171 | 1303 | Infill | 4.95 | 4.220 | Complete | Complete |
| 31 | 1012 | 155.7 | 1304 | 2148 | Prime | 31.65 | 4.420 | Complete | Complete |
| 32 | 1212 | 335.7 | 2117 | 921 | Prime | 44.85 | 4.541 | Complete | Complete |
| 33 | 1100 | 155.7 | 914 | 1162 | Infill | 9.30 | 4.708 | Part | Midnight |
| Total | | | | | | 147.19 | | | |

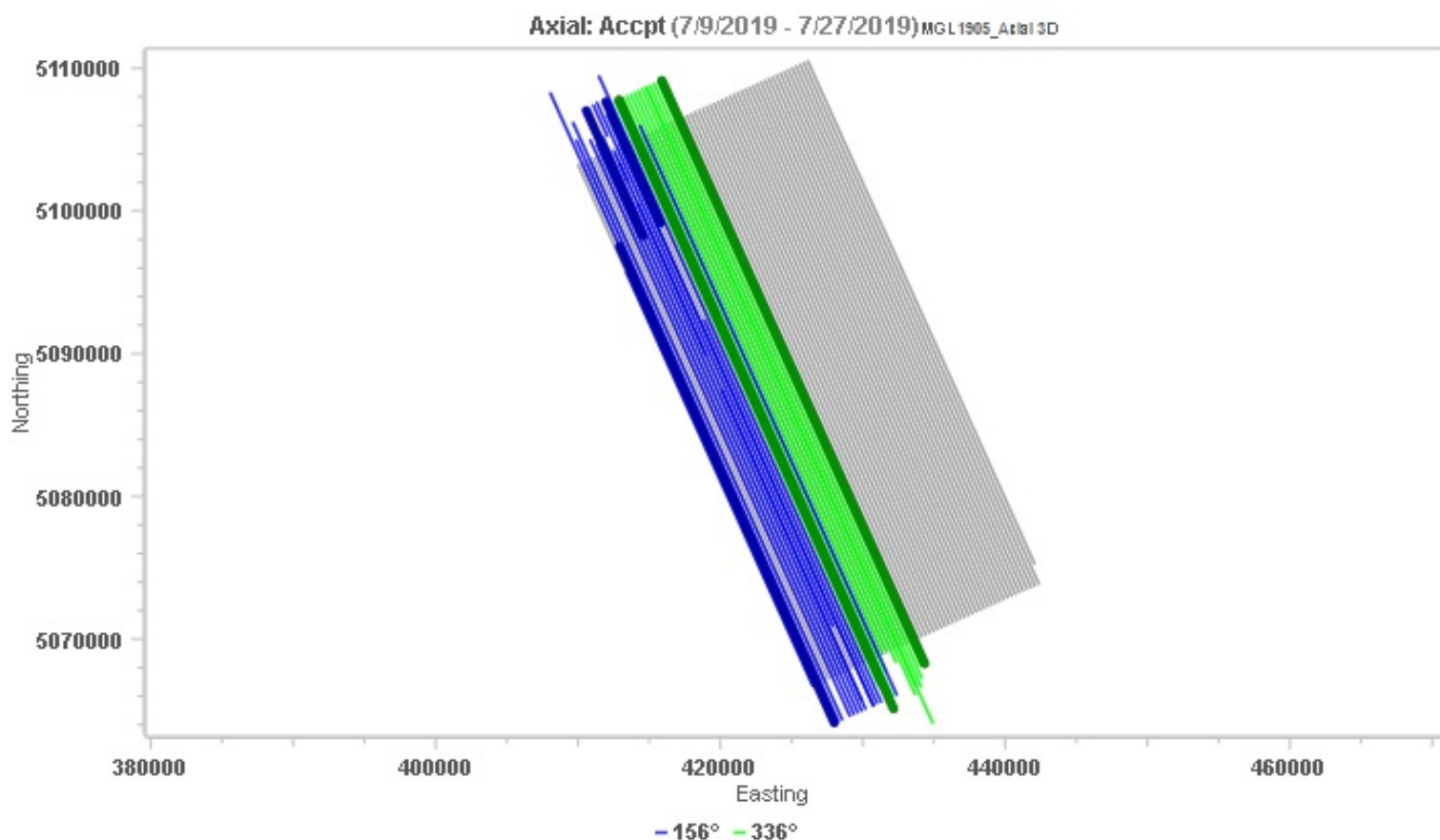
Production Totals (Accpt km by interval) - Prime: Sail Line, Infill: Full Fold

| Accepted km | Day | Week | Month | Project |
|-----------------|---------------|---------------|----------------|----------------|
| Prime | 86.10 | 345.60 | 1152.26 | 1152.26 |
| Infill | 61.09 | 189.68 | 189.68 | 189.68 |
| Prime, Reshoot | 0.00 | 4.61 | 4.61 | 4.61 |
| Combined | 147.19 | 539.89 | 1346.55 | 1346.55 |



7/27/2019

Page 4



Daily Comment Summaries - Daily Comments On Status of Equipment

Sat 27 Jul

Navigation:

Posnet having dropouts during certain parts of the day. Spectra was rejecting many acoustic ranges and had to be rebooted.

Information Technology (IT):

No Major Issues to Report

Acquisition (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 27 Jul

Technical Staff On-board the Langseth

Todd Jensvold L-DEO OMO Chief Science Officer
David Martinson L-DEO OMO Science Officer - Nav
Josh Kasinger L-DEO OMO Chief Source Mechanic
Tom Spoto L-DEO OMO Source Mechanic
Alan Thompson L-DEO OMO Marine Science Technician - Nav
Gilles Guerin L-DEO OMO Marine Science Technician - Obs
Shaun Shaver L-DEO OMO Marine Science Technician - Obs
Edmond St. Amant Contract Personnel Marine Science Technician - Source
Matt Dietrich Contract Personnel Marine Science Technician - Source
Chris Abdouch NCS SubSea Contract Nav Processor



7/27/2019

Page 5

Mike Jennings NCS SubSea Contract Nav Processor

PSO Staff On-board the Langseth

Amanda Dubuque RPS Lead PSO

Bianca Mares RPS PSO

Ana Hernandez RPS PSO

Lluvia Durantes RPS PSO

Alejandra Ramos RPS PSO

Science Party On-board the Langseth

Adrien Amulf UTIG - PI

Alistar Harding Scripps - PI

Steffen Saustrop UTIG - Tech

Michelle Lee LDEO - Student

Axelle Cap U de Bretagne - Student

Shelby Brandt U of Ottawa - Student

Morgan Goulain Mines of Paris Tech - Student

Victoire Lucas U de Bretagne - Student

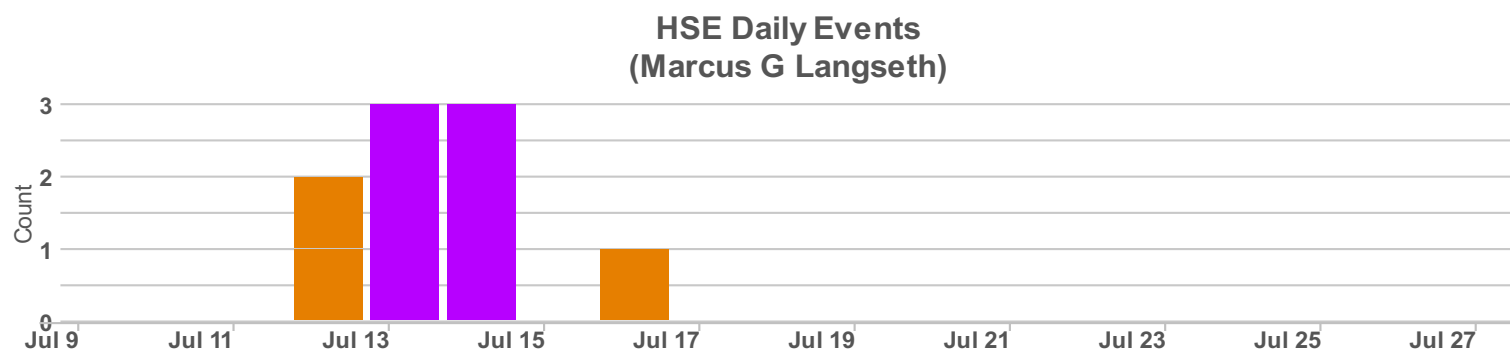
Samual Mitchell U. of Bristol - Research Tech

Mathew Griffiths Carlton U. - Student

Massimo Stefano Belluci U de Bretagne - Student

Tanner Eischen East Carolina U. - Student

Brian Oller Scripps - Student

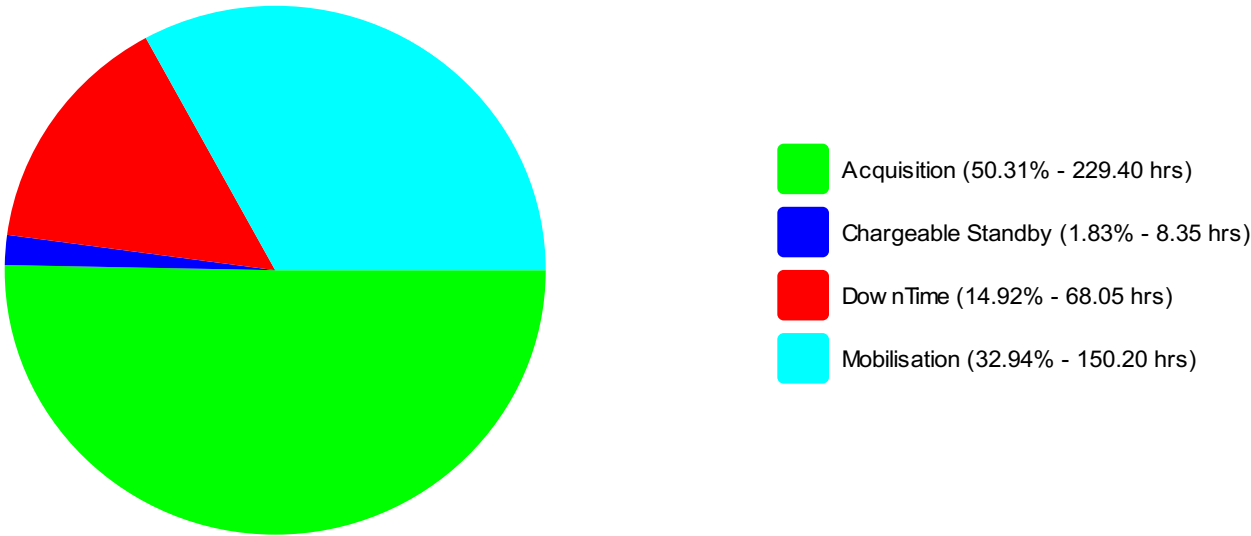




7/27/2019

Daily Science Report

Timing Category Totals (Marcus G Langseth)





Daily Science Report

7/28/2019

Page 1

| | | | |
|------------------------|---|----------------------|----------------------------------|
| Client: | United States National Science Foundation | Contractor: | Lamont-Doherty Earth Observatory |
| Job No: | MGL1905 | Job No: | MGL1905 |
| Block: | Axial | Vessel: | Marcus G Langseth |
| Client Contact: | Adrien Arnulf | Supervisor: | Sean Higgins |
| Consultancy: | N/A | Party Chiefs: | Todd Jensvold |
| Job No: | | Client Reps: | Adrien Arnulf |

Daily Comment Summaries - Daily Summary

Sun 28 Jul

The day started on sequence 33 line 1100I followed by line 1220 completing the first race track, followed by turning to starboard to line 1348 and beginning the second race track.
Continued in acquisition for the remainder of the day.

Daily Comment Summaries - Plan for Tomorrow

Sun 28 Jul

Continue acquisition on race track 2

Timing Diary (Marcus G Langseth, MGL1905_Axial 3D)



| Category | Code | Start | End | Duration |
|---|--------|-------------------|-------------------|----------|
| Production Infill | AC_PI | Sun 28. Jul 00:00 | Sun 28. Jul 04:17 | 4.283 |
| SOL Seq 33 Line:1100 Block=Axial FGSP=1163 Hdg=155.7° Infill EOL Seq 33 Line:1100 Block=Axial LGSP=2148 Complete | | | | |
| Prime Line Change | AC_PLC | Sun 28. Jul 04:17 | Sun 28. Jul 06:02 | 1.750 |
| Nominal Prime line change. | | | | |
| Production Prime | AC_PP | Sun 28. Jul 06:02 | Sun 28. Jul 11:21 | 5.317 |
| SOL Seq 34 Line:1220 Block=Axial FGSP=2141 Hdg=335.7° Prime EOL Seq 34 Line:1220 Block=Axial LGSP=921 Complete | | | | |
| Prime Line Change | AC_PLC | Sun 28. Jul 11:21 | Sun 28. Jul 13:17 | 1.933 |
| Nominal Prime line change. | | | | |
| Production Prime | AC_PP | Sun 28. Jul 13:17 | Sun 28. Jul 18:09 | 4.867 |
| SOL Seq 35 Line:1348 Block=Axial FGSP=977 Hdg=155.7° Prime EOL Seq 35 Line:1348 Block=Axial LGSP=2148 Complete | | | | |
| Prime Line Change | AC_PLC | Sun 28. Jul 18:09 | Sun 28. Jul 20:10 | 2.017 |
| Nominal Prime line change. | | | | |
| Production Prime | AC_PP | Sun 28. Jul 20:10 | Sun 28. Jul 24:00 | 3.833 |
| SOL Seq 36 Line:1228 Block=Axial FGSP=2169 Hdg=335.7° Prime MSP Seq 36 Line:1228 Block=Axial LGSP=1260 Midnight | | | | |



7/28/2019

Page 2

Timing Day By Day (Marcus G Langseth, MGL1905_Axial 3D)

| 28-Jul | Hours | %Percent |
|--------------------|---------------|----------------|
| Acquisition | 24.000 | 100.000 |
| Prime Line Change | 5.700 | 23.750 |
| Production Infill | 4.283 | 17.847 |
| Production Prime | 14.017 | 58.403 |
| Day's Total | 24.000 | 100.000 |

Timing Breakdown Summary - Project (Marcus G Langseth, MGL1905_Axial 3D)

| Category | Hours | %Percent |
|---------------------------|----------------|---------------|
| Mobilisation | 150.200 | 31.292 |
| Deployment | 45.200 | 9.417 |
| Mob Ashore | 63.000 | 13.125 |
| Testing | 0.333 | 0.069 |
| Transit to Prospect | 41.667 | 8.681 |
| Acquisition | 253.400 | 52.792 |
| Prime Line Change | 67.117 | 13.983 |
| Production Infill | 27.483 | 5.726 |
| Production Prime | 158.800 | 33.083 |
| DownTime | 68.050 | 14.177 |
| Streamers | 26.617 | 5.545 |
| Vessel | 41.433 | 8.632 |
| Chargeable Standby | 8.350 | 1.740 |
| Transit | 2.017 | 0.420 |
| Weather | 6.333 | 1.319 |
| Total | 480.000 | |

Basic Project Details

| MGL1905_Axial 3D | | | | | |
|---------------------|----------|--------------------|----------|---------------------|-------------|
| General Details | | | | | |
| Record length: | 12000 ms | Sample rate: | 2 ms | Shotpoint interval: | 37.5 m |
| CoS to CNG: | 225 m | Fold Coverage: | 252 | | |
| Cable Details | | | | | |
| No of Cables: | 4 | Head Separation: | 150 m | Tail Separation: | 150 m |
| Chans Per Cable: | 468 | Front Depth: | 16 m | Tail Depth: | 16 m |
| Length: | 5850 m | Group interval: | 12.5 m | | |
| Source Details | | | | | |
| No of Sources: | 2 | Separation: | 75 m | Total Volume: | 6600 cu ins |
| Depth: | 12 m | Pressure: | 1950 PSI | Volume: | 3300 |
| Strings per source: | 2 | String Separation: | 6 m | String length: | 18 m |



7/28/2019

Page 3

MGL1905_Axial 3D

Binning

| | | | | | |
|--------------|------|-------------|--------|--|--|
| Size Inline: | 50 m | Size XLine: | 37.5 m | | |
|--------------|------|-------------|--------|--|--|

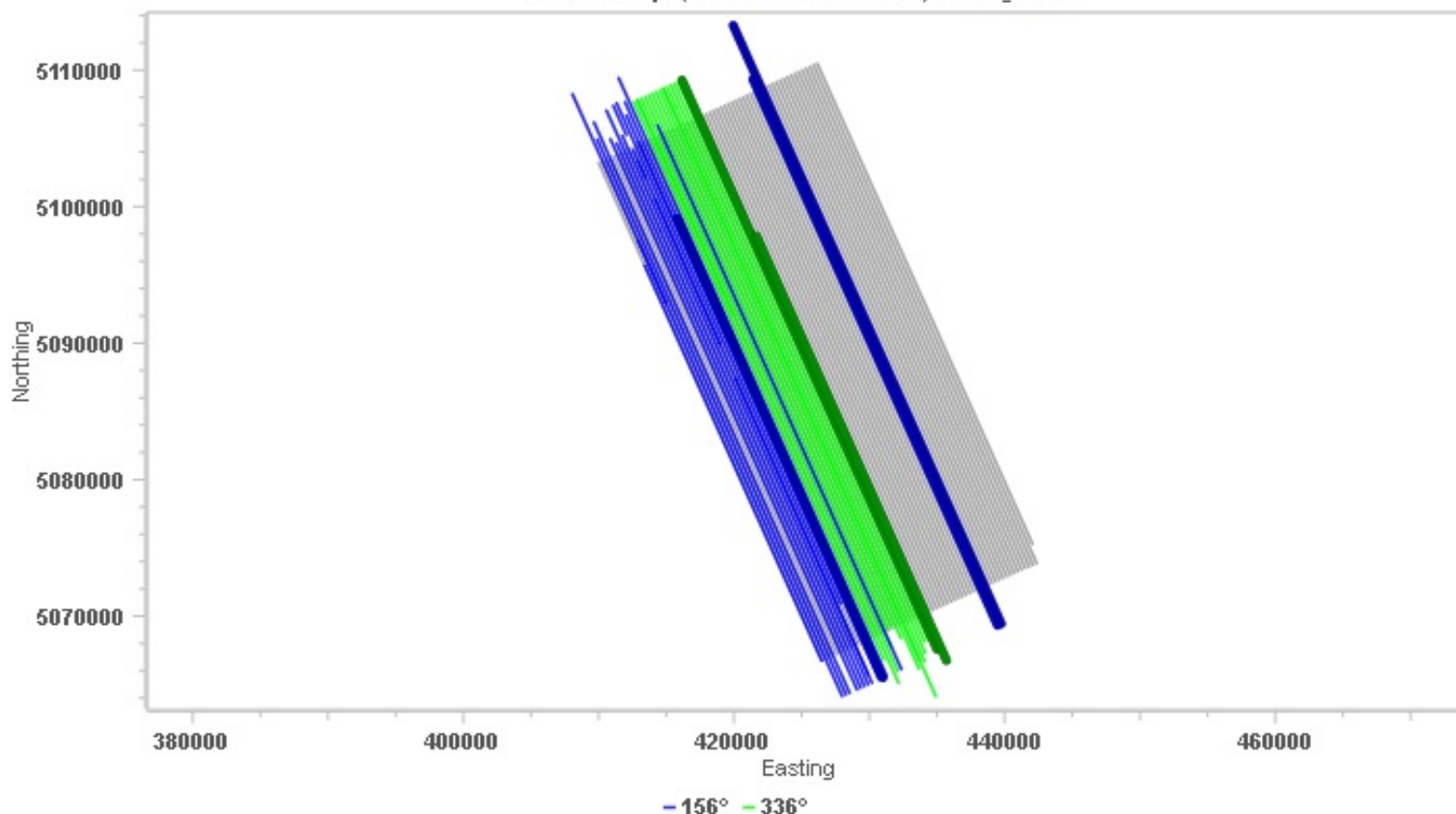
Production Listing (Accpt km by interval) - Prime: Sail Line, Infill: Full Fold

| Seq | Line | Heading | FGSP | LGSP | Prod Type | Production | Ave Knots | Seq Status | Line Status |
|-------|------|---------|------|------|-----------|------------|-----------|------------|-------------|
| 33 | 1100 | 155.7 | 1163 | 2148 | Infill | 36.98 | 4.670 | Complete | Complete |
| 37 | 1356 | 155.7 | 865 | 2148 | Prime | 48.11 | 4.871 | Complete | Complete |
| 34 | 1220 | 335.7 | 2141 | 921 | Prime | 45.75 | 4.646 | Complete | Complete |
| 35 | 1348 | 155.7 | 977 | 2148 | Prime | 43.91 | 4.872 | Complete | Complete |
| 36 | 1228 | 335.7 | 2169 | 1260 | Prime | 34.09 | 4.802 | Part | Midnight |
| Total | | | | | | 208.84 | | | |

Production Totals (Accpt km by interval) - Prime: Sail Line, Infill: Full Fold

| Accepted km | Day | Week | Month | Project |
|----------------|--------|--------|---------|---------|
| Prime | 171.86 | 517.46 | 1324.12 | 1324.12 |
| Infill | 36.98 | 226.65 | 226.65 | 226.65 |
| Prime, Reshoot | 0.00 | 4.61 | 4.61 | 4.61 |
| Combined | 208.84 | 748.72 | 1555.39 | 1555.39 |

Axial: Accpt (7/9/2019 - 7/28/2019) MGL1905_Axial 3D





7/28/2019

Page 4

Daily Comment Summaries - Daily Comments On Status of Equipment

Sun 28 Jul

Navigation:

No Major Issues to Report

Information Technology (IT):

No Major Issues to Report

Acquisition (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 28 Jul

Technical Staff On-board the Langseth

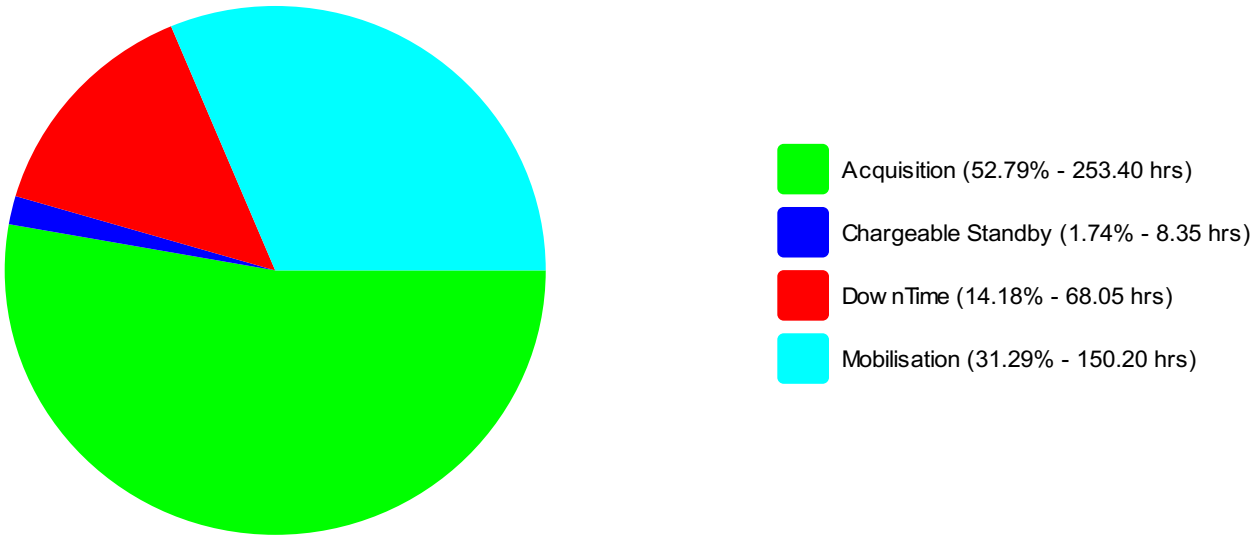
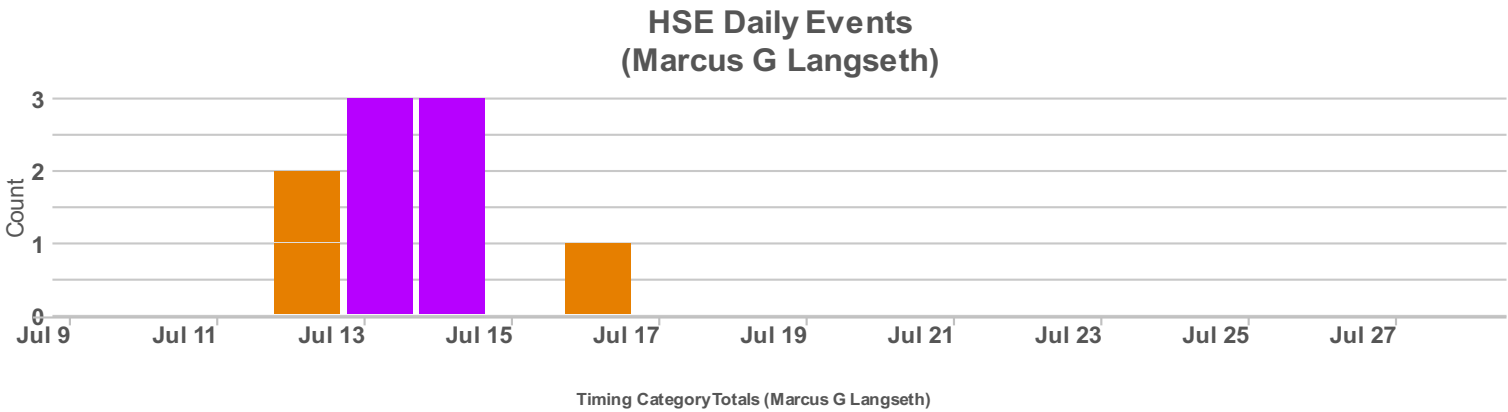
Todd Jensvold L-DEO OMO Chief Science Officer
David Martinson L-DEO OMO Science Officer - Nav
Josh Kasinger L-DEO OMO Chief Source Mechanic
Tom Spoto L-DEO OMO Source Mechanic
Alan Thompson L-DEO OMO Marine Science Technician - Nav
Gilles Guerin L-DEO OMO Marine Science Technician - Obs
Shaun Shaver L-DEO OMO Marine Science Technician - Obs
Edmond St. Amant Contract Personnel Marine Science Technician - Source
Matt Dietrich Contract Personnel Marine Science Technician - Source
Chris Abdouch NCS SubSea Contract Nav Processor
Mike Jennings NCS SubSea Contract Nav Processor

PSO Staff On-board the Langseth

Amanda Dubuque RPS Lead PSO
Bianca Mares RPS PSO
Ana Hernandez RPS PSO
Lluvia Durantes RPS PSO
Alejandra Ramos RPS PSO

Science Party On-board the Langseth

Adrien Amulf UTIG - PI
Alistar Harding Scripps - PI
Steffen Sastrup UTIG - Tech
Michelle Lee LDEO - Student
Axelle Cap U de Bretagne - Student
Shelby Brandt U of Ottawa - Student
Morgan Goulain Mines of Paris Tech - Student
Victoire Lucas U de Bretagne - Student
Samual Mitchell U. of Bristol - Research Tech
Mathew Griffiths Carlton U. - Student
Massimo Stefano Belluci U de Bretagne - Student
Tanner Eischen East Carolina U. - Student
Brian Oller Scripps - Student





Daily Science Report

7/29/2019

Page 1

| | | | |
|------------------------|---|----------------------|----------------------------------|
| Client: | United States National Science Foundation | Contractor: | Lamont-Doherty Earth Observatory |
| Job No: | MGL1905 | Job No: | MGL1905 |
| Block: | Axial | Vessel: | Marcus G Langseth |
| Client Contact: | Adrien Arnulf | Supervisor: | Sean Higgins |
| Consultancy: | N/A | Party Chiefs: | Todd Jensvold |
| Job No: | | Client Reps: | Adrien Arnulf |

Daily Comment Summaries - Daily Summary

Mon 29 Jul

Acquired lines for the day, remainder of 1228, 1356, 1236, and 1364.

Daily Comment Summaries - Plan for Tomorrow

Mon 29 Jul

Continue acquisition.

Timing Diary (Marcus G Langseth, MGL1905_Axial 3D)



| Category | Code | Start | End | Duration |
|---|--------|-------------------|-------------------|----------|
| Production Prime | AC_PP | Mon 29. Jul 00:00 | Mon 29. Jul 01:27 | 1.450 |
| SOL Seq 36 Line:1228 Block=Axial FGSP=1259 Hdg=335.7° Prime EOL Seq 36 Line:1228 Block=Axial LGSP=921 Complete | | | | |
| Prime Line Change | AC_PLC | Mon 29. Jul 01:27 | Mon 29. Jul 02:55 | 1.467 |
| Nominal Prime line change. | | | | |
| Production Prime | AC_PP | Mon 29. Jul 02:55 | Mon 29. Jul 08:14 | 5.317 |
| SOL Seq 37 Line:1356 Block=Axial FGSP=865 Hdg=155.7° Prime EOL Seq 37 Line:1356 Block=Axial LGSP=2148 Complete | | | | |
| Prime Line Change | AC_PLC | Mon 29. Jul 08:14 | Mon 29. Jul 10:14 | 2.000 |
| Nominal Prime line change. | | | | |
| Production Prime | AC_PP | Mon 29. Jul 10:14 | Mon 29. Jul 15:35 | 5.350 |
| SOL Seq 38 Line:1236 Block=Axial FGSP=2150 Hdg=335.7° Prime EOL Seq 38 Line:1236 Block=Axial LGSP=921 Complete | | | | |
| Prime Line Change | AC_PLC | Mon 29. Jul 15:35 | Mon 29. Jul 17:35 | 2.000 |
| Nominal Prime line change. | | | | |
| Production Prime | AC_PP | Mon 29. Jul 17:35 | Mon 29. Jul 22:26 | 4.850 |
| SOL Seq 39 Line:1364 Block=Axial FGSP=964 Hdg=155.7° Prime EOL Seq 39 Line:1364 Block=Axial LGSP=2148 Complete | | | | |
| Prime Line Change | AC_PLC | Mon 29. Jul 22:26 | Mon 29. Jul 24:00 | 1.567 |



7/29/2019

Page 2

| Category | Code | Start | End | Duration |
|----------------------------|------|-------|-----|----------|
| Nominal Prime line change. | | | | |

Timing Day By Day (Marcus G Langseth, MGL1905_Axial 3D)

| 29-Jul | Hours | % Percent |
|--------------------|---------------|----------------|
| Acquisition | 24.000 | 100.000 |
| Prime Line Change | 7.033 | 29.306 |
| Production Prime | 16.967 | 70.694 |
| Day's Total | 24.000 | 100.000 |

Timing Breakdown Summary - Project (Marcus G Langseth, MGL1905_Axial 3D)

| Category | Hours | % Percent |
|---------------------------|----------------|---------------|
| Mobilisation | 150.200 | 29.802 |
| Deployment | 45.200 | 8.968 |
| Mob Ashore | 63.000 | 12.500 |
| Testing | 0.333 | 0.066 |
| Transit to Prospect | 41.667 | 8.267 |
| Acquisition | 277.400 | 55.040 |
| Prime Line Change | 74.150 | 14.712 |
| Production Infill | 27.483 | 5.453 |
| Production Prime | 175.767 | 34.874 |
| DownTime | 68.050 | 13.502 |
| Streamers | 26.617 | 5.281 |
| Vessel | 41.433 | 8.221 |
| Chargeable Standby | 8.350 | 1.657 |
| Transit | 2.017 | 0.400 |
| Weather | 6.333 | 1.257 |
| Total | 504.000 | |

Basic Project Details

| MGL1905_Axial 3D | | | | | |
|------------------|----------|------------------|----------|---------------------|-------------|
| General Details | | | | | |
| Record length: | 12000 ms | Sample rate: | 2 ms | Shotpoint interval: | 37.5 m |
| CoS to CNG: | 225 m | Fold Coverage: | 252 | | |
| Cable Details | | | | | |
| No of Cables: | 4 | Head Separation: | 150 m | Tail Separation: | 150 m |
| Chans Per Cable: | 468 | Front Depth: | 16 m | Tail Depth: | 16 m |
| Length: | 5850 m | Group interval: | 12.5 m | | |
| Source Details | | | | | |
| No of Sources: | 2 | Separation: | 75 m | Total Volume: | 6600 cu ins |
| Depth: | 12 m | Pressure: | 1950 PSI | Volume: | 3300 |



7/29/2019

Page 3

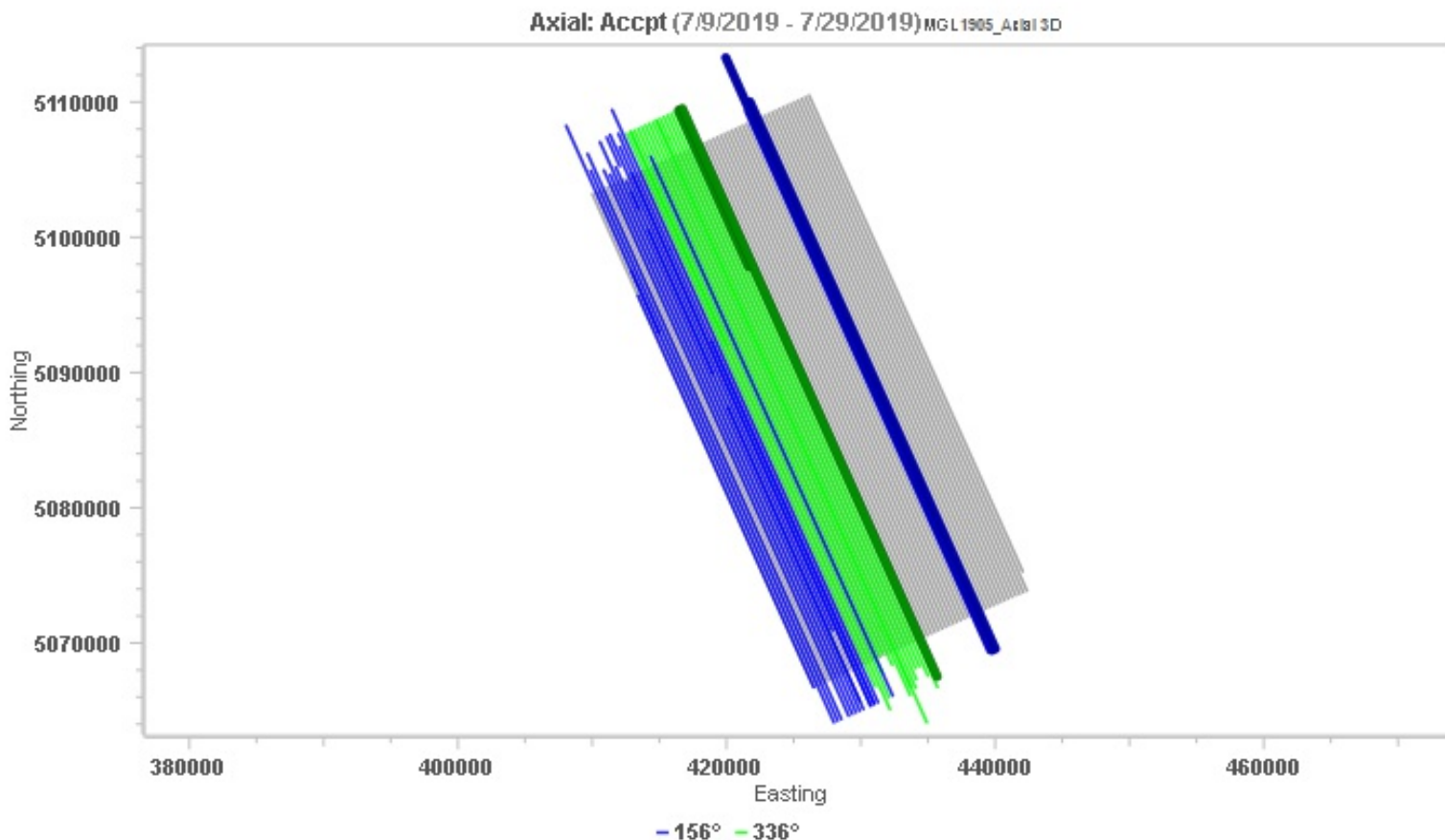
| MGL1905_Axial 3D | | | | | |
|---------------------|------|--------------------|--------|----------------|------|
| Strings per source: | 2 | String Separation: | 6 m | String length: | 18 m |
| Binning | | | | | |
| Size Inline: | 50 m | Size XLine: | 37.5 m | | |

Production Listing (Accpt km by interval) - Prime: Sail Line, Infill: Full Fold

| Seq | Line | Heading | FGSP | LGSP | Prod Type | Production | Ave Knots | Seq Status | Line Status |
|-------|------|---------|------|------|-----------|------------|-----------|------------|-------------|
| 36 | 1228 | 335.7 | 1259 | 921 | Prime | 12.71 | 4.783 | Complete | Complete |
| 37 | 1356 | 155.7 | 865 | 2148 | Prime | 48.11 | 4.886 | Complete | Complete |
| 38 | 1236 | 335.7 | 2150 | 921 | Prime | 46.09 | 4.651 | Complete | Complete |
| 39 | 1364 | 155.7 | 964 | 2148 | Prime | 44.40 | 4.943 | Complete | Complete |
| Total | | | | | | 151.31 | | | |

Production Totals (Accpt km by interval) - Prime: Sail Line, Infill: Full Fold

| Accepted km | Day | Week | Month | Project |
|----------------|--------|--------|---------|---------|
| Prime | 151.31 | 151.31 | 1427.33 | 1427.33 |
| Infill | 0.00 | 0.00 | 226.65 | 226.65 |
| Prime, Reshoot | 0.00 | 0.00 | 4.61 | 4.61 |
| Combined | 151.31 | 151.31 | 1658.59 | 1658.59 |





7/29/2019

Page 4

Daily Comment Summaries - Daily Comments On Status of Equipment

Mon 29 Jul

Navigation:

Redrawing acoustic network to aid nav processing.
Posnet system having issues.

Information Technology (IT):

No Major Issues to Report

Acquisition (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 29 Jul

Technical Staff On-board the Langseth

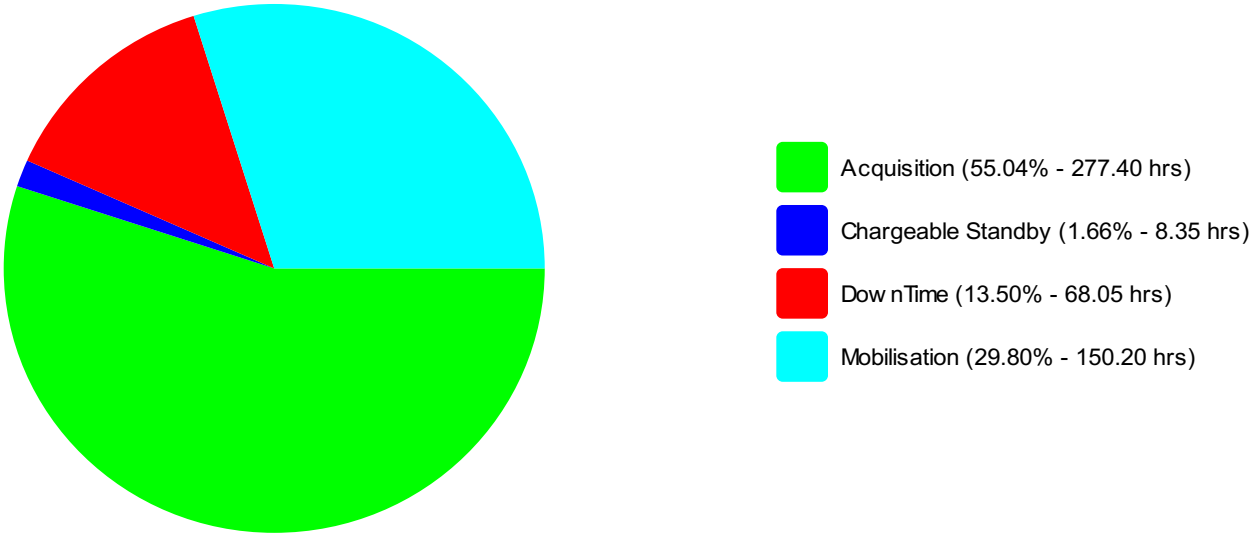
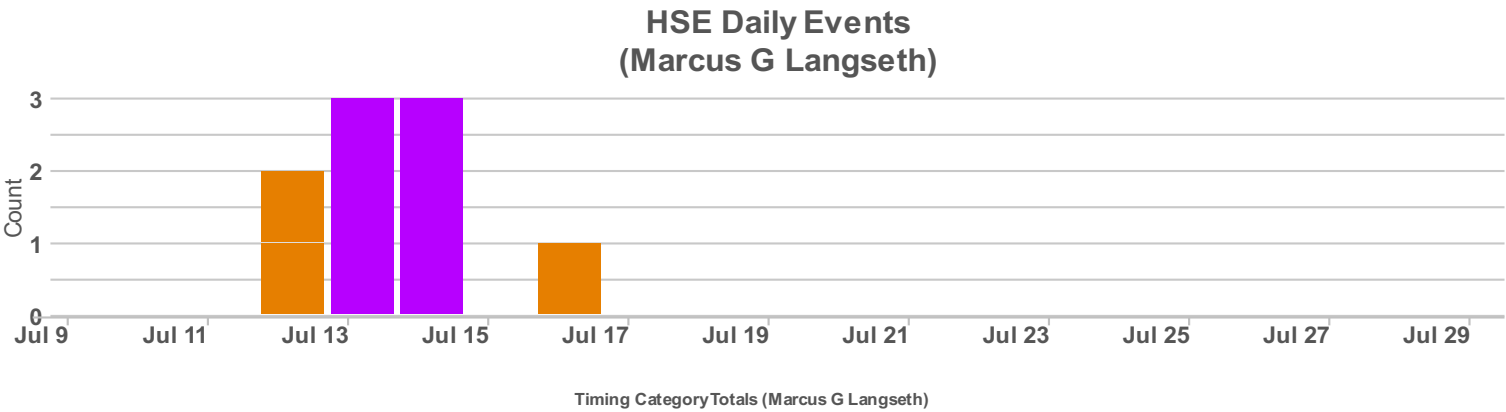
Todd Jensvold L-DEO OMO Chief Science Officer
David Martinson L-DEO OMO Science Officer - Nav
Josh Kasinger L-DEO OMO Chief Source Mechanic
Tom Spoto L-DEO OMO Source Mechanic
Alan Thompson L-DEO OMO Marine Science Technician - Nav
Gilles Guerin L-DEO OMO Marine Science Technician - Obs
Shaun Shaver L-DEO OMO Marine Science Technician - Obs
Edmond St. Amant Contract Personnel Marine Science Technician - Source
Matt Dietrich Contract Personnel Marine Science Technician - Source
Chris Abdouch NCS SubSea Contract Nav Processor
Mike Jennings NCS SubSea Contract Nav Processor

PSO Staff On-board the Langseth

Amanda Dubuque RPS Lead PSO
Bianca Mares RPS PSO
Ana Hernandez RPS PSO
Lluvia Durantes RPS PSO
Alejandra Ramos RPS PSO

Science Party On-board the Langseth

Adrien Amulf UTIG - PI
Alistar Harding Scripps - PI
Steffen Sastrup UTIG - Tech
Michelle Lee LDEO - Student
Axelle Cap U de Bretagne - Student
Shelby Brandt U of Ottawa - Student
Morgan Goulain Mines of Paris Tech - Student
Victoire Lucas U de Bretagne - Student
Samual Mitchell U. of Bristol - Research Tech
Mathew Griffiths Carlton U. - Student
Massimo Stefano Belluci U de Bretagne - Student
Tanner Eischen East Carolina U. - Student
Brian Oller Scripps - Student





Daily Science Report

7/30/2019

Page 1

| | | | |
|------------------------|---|----------------------|----------------------------------|
| Client: | United States National Science Foundation | Contractor: | Lamont-Doherty Earth Observatory |
| Job No: | MGL1905 | Job No: | MGL1905 |
| Block: | Axial | Vessel: | Marcus G Langseth |
| Client Contact: | Adrien Arnulf | Supervisor: | Sean Higgins |
| Consultancy: | N/A | Party Chiefs: | Todd Jensvold |
| Job No: | | Client Reps: | Adrien Arnulf |

Daily Comment Summaries - Daily Summary

Tue 30 Jul

Acquired lines for the day: 1244, 1372, 1252, and 1380 (partial at midnight).
There was one shutdown for a marine mammal on line 1252.

Daily Comment Summaries - Plan for Tomorrow

Tue 30 Jul

Continue acquisition.

Timing Diary (Marcus G Langseth, MGL1905_Axial 3D)



| Category | Code | Start | End | Duration |
|--|--------|-------------------|-------------------|----------|
| Prime Line Change | AC_PLC | Tue 30. Jul 00:00 | Tue 30. Jul 00:23 | 0.383 |
| Nominal Prime line change. | | | | |
| Production Prime | AC_PP | Tue 30. Jul 00:23 | Tue 30. Jul 05:47 | 5.400 |
| SOL Seq 40 Line:1244 Block=Axial FGSP=2170 Hdg=335.7° Prime EOL Seq 40 Line:1244 Block=Axial LGSP=921 Complete | | | | |
| Prime Line Change | AC_PLC | Tue 30. Jul 05:47 | Tue 30. Jul 07:56 | 2.150 |
| Nominal Prime line change. | | | | |
| Production Prime | AC_PP | Tue 30. Jul 07:56 | Tue 30. Jul 13:04 | 5.133 |
| SOL Seq 41 Line:1372 Block=Axial FGSP=958 Hdg=155.7° Prime EOL Seq 41 Line:1372 Block=Axial LGSP=2148 Complete | | | | |
| Prime Line Change | AC_PLC | Tue 30. Jul 13:04 | Tue 30. Jul 15:03 | 1.983 |
| Nominal Prime line change. | | | | |
| Production Prime | AC_PP | Tue 30. Jul 15:03 | Tue 30. Jul 16:56 | 1.883 |
| SOL Seq 42 Line:1252 Block=Axial FGSP=2183 Hdg=335.7° Prime EOL Seq 42 Line:1252 Block=Axial LGSP=1789 Complete | | | | |
| Production Prime | AC_PP | Tue 30. Jul 17:26 | Tue 30. Jul 20:56 | 3.500 |
| SOL Seq 42 Line:1252 Block=Axial FGSP=1675 Hdg=335.7° Prime EOL Seq 42 Line:1252 Block=Axial LGSP=921 Complete | | | | |
| Prime Line Change | AC_PLC | Tue 30. Jul 20:56 | Tue 30. Jul 22:33 | 1.617 |



7/30/2019

Page 2

| Category | Code | Start | End | Duration |
|---|-------|-------------------|-------------------|----------|
| Nominal Prime line change. | | | | |
|  Production Prime | AC_PP | Tue 30. Jul 22:33 | Tue 30. Jul 24:00 | 1.450 |
| SOL Seq 43 Line:1380 Block=Axial FGSP=888 Hdg=155.7° Prime MSP Seq 43 Line:1380 Block=Axial LGSP=1195 Midnight | | | | |

Timing Day By Day (Marcus G Langseth, MGL1905_Axial 3D)

| 30-Jul | Hours | %Percent |
|--------------------|---------------|---------------|
| Acquisition | 23.500 | 97.917 |
| Prime Line Change | 6.133 | 25.556 |
| Production Prime | 17.367 | 72.361 |
| Day's Total | 23.500 | 97.917 |

Timing Breakdown Summary - Project (Marcus G Langseth, MGL1905_Axial 3D)

| Category | Hours | %Percent |
|---------------------------|----------------|---------------|
| Mobilisation | 150.200 | 28.474 |
| Deployment | 45.200 | 8.569 |
| Mob Ashore | 63.000 | 11.943 |
| Testing | 0.333 | 0.063 |
| Transit to Prospect | 41.667 | 7.899 |
| Acquisition | 300.900 | 57.043 |
| Prime Line Change | 80.283 | 15.220 |
| Production Infill | 27.483 | 5.210 |
| Production Prime | 193.133 | 36.613 |
| DownTime | 68.050 | 12.900 |
| Streamers | 26.617 | 5.046 |
| Vessel | 41.433 | 7.855 |
| Chargeable Standby | 8.350 | 1.583 |
| Transit | 2.017 | 0.382 |
| Weather | 6.333 | 1.201 |
| Total | 527.500 | |

Basic Project Details

| MGL1905_Axial 3D | | | | | |
|------------------|----------|------------------|--------|---------------------|--------|
| General Details | | | | | |
| Record length: | 12000 ms | Sample rate: | 2 ms | Shotpoint interval: | 37.5 m |
| CoS to CNG: | 225 m | Fold Coverage: | 252 | | |
| Cable Details | | | | | |
| No of Cables: | 4 | Head Separation: | 150 m | Tail Separation: | 150 m |
| Chans Per Cable: | 468 | Front Depth: | 16 m | Tail Depth: | 16 m |
| Length: | 5850 m | Group interval: | 12.5 m | | |



7/30/2019

Page 3

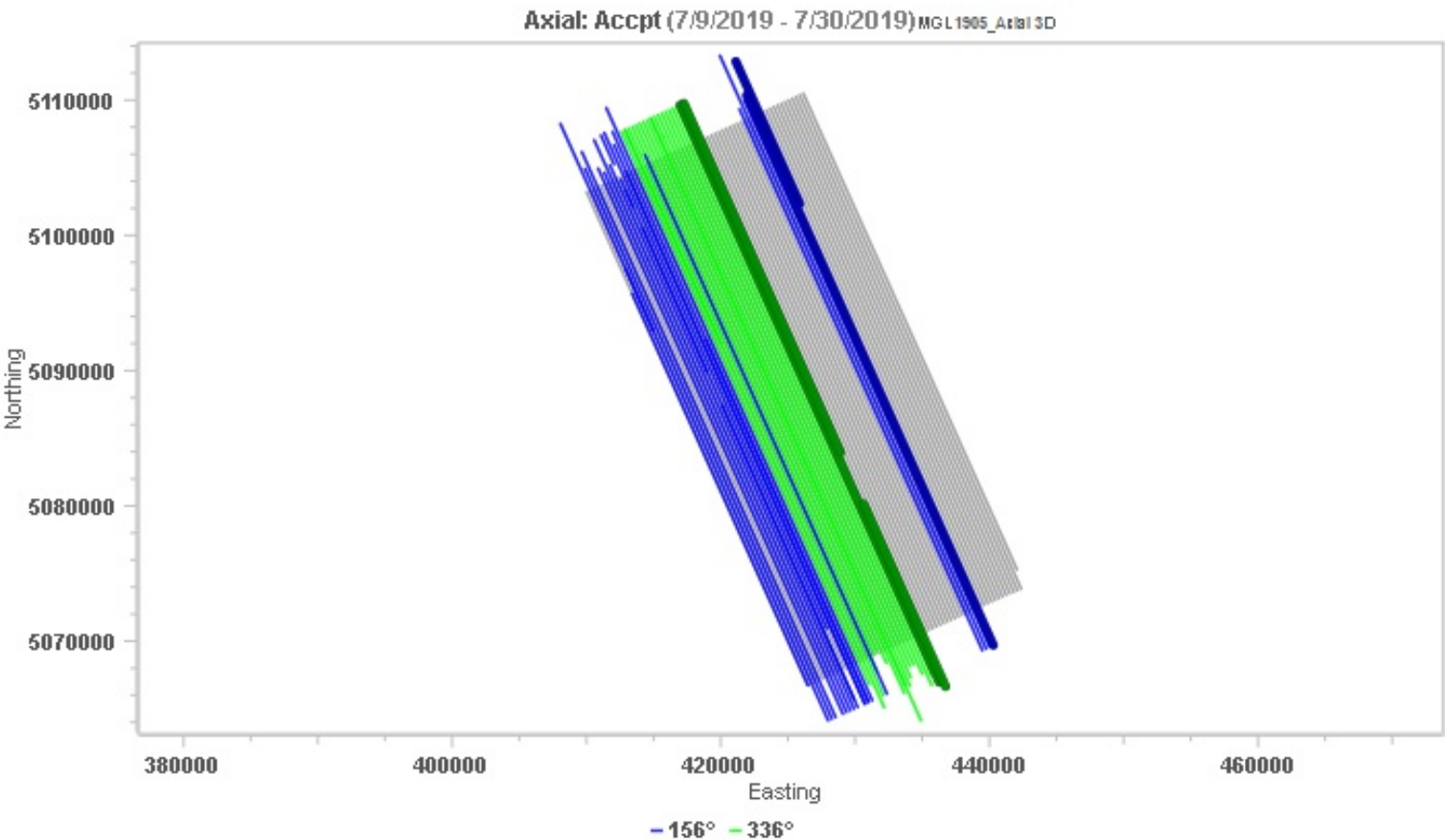
| MGL1905_Axial 3D | | | | | |
|---------------------|------|--------------------|----------|----------------|-------------|
| Source Details | | | | | |
| No of Sources: | 2 | Separation: | 75 m | Total Volume: | 6600 cu ins |
| Depth: | 12 m | Pressure: | 1950 PSI | Volume: | 3300 |
| Strings per source: | 2 | String Separation: | 6 m | String length: | 18 m |
| Binning | | | | | |
| Size Inline: | 50 m | Size XLine: | 37.5 m | | |

Production Listing (Accpt km by interval) - Prime: Sail Line, Infill: Full Fold

| Seq | Line | Heading | FGSP | LGSP | Prod Type | Production | Ave Knots | Seq Status | Line Status |
|------------------------------|------|---------|------|------|-----------|------------|-----------|------------|-------------|
| 40 | 1244 | 335.7 | 2170 | 921 | Prime | 46.84 | 4.683 | Complete | Complete |
| 41 | 1372 | 155.7 | 958 | 2148 | Prime | 44.62 | 4.694 | Complete | Complete |
| 42 | 1252 | 335.7 | 2183 | 921 | Prime | 43.12 | 4.326 | Complete | Complete |
| NTBP: 1788 - 1676 (not chgd) | | | | | | | | | |
| 43 | 1380 | 155.7 | 888 | 1195 | Prime | 11.51 | 4.287 | Part | Midnight |
| Total | | | | | | 146.10 | | | |

Production Totals (Accpt km by interval) - Prime: Sail Line, Infill: Full Fold

| Accepted km | Day | Week | Month | Project |
|----------------|--------|--------|---------|---------|
| Prime | 146.10 | 297.41 | 1573.43 | 1573.43 |
| Infill | 0.00 | 0.00 | 226.65 | 226.65 |
| Prime, Reshoot | 0.00 | 0.00 | 4.61 | 4.61 |
| Combined | 146.10 | 297.41 | 1804.69 | 1804.69 |



Daily Comment Summaries - Daily Comments On Status of Equipment

Tue 30 Jul

Navigation:

No Major Issues to Report

Information Technology (IT):

No Major Issues to Report

Acquisition (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 30 Jul

Technical Staff On-board the Langseth

- Todd Jensvold L-DEO OMO Chief Science Officer
- David Martinson L-DEO OMO Science Officer - Nav
- Josh Kasinger L-DEO OMO Chief Source Mechanic
- Tom Spoto L-DEO OMO Source Mechanic
- Alan Thompson L-DEO OMO Marine Science Technician - Nav
- Gilles Guerin L-DEO OMO Marine Science Technician - Obs
- Shaun Shaver L-DEO OMO Marine Science Technician - Obs
- Edmond St. Amant Contract Personnel Marine Science Technician - Source
- Matt Dietrich Contract Personnel Marine Science Technician - Source
- Chris Abdouch NCS SubSea Contract Nav Processor



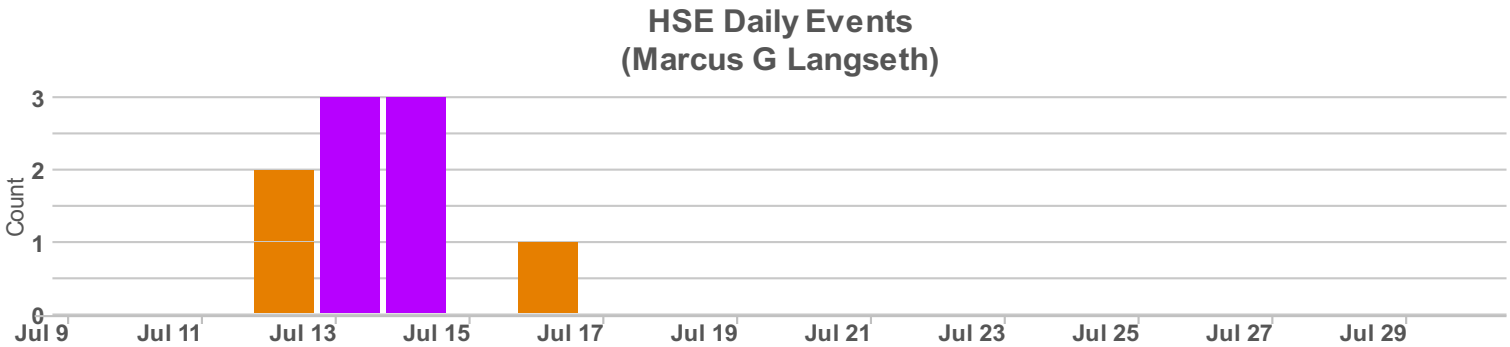
Mike Jennings NCS SubSea Contract Nav Processor

PSO Staff On-board the Langseth

- Amanda Dubuque RPS Lead PSO
- Bianca Mares RPS PSO
- Ana Hernandez RPS PSO
- Lluvia Durantes RPS PSO
- Alejandra Ramos RPS PSO

Science Party On-board the Langseth

- Adrien Amulf UTIG - PI
- Alistar Harding Scripps - PI
- Steffen Saustrop UTIG - Tech
- Michelle Lee LDEO - Student
- Axelle Cap U de Bretagne - Student
- Shelby Brandt U of Ottawa - Student
- Morgan Goulain Mines of Paris Tech - Studen
- Victoire Lucas U de Bretagne - Student
- Samual Mitchell U. of Bristol - Research Tech
- Mathew Griffiths Carlton U. - Student
- Massimo Stefano Belluci U de Bretagne - Student
- Tanner Eischen East Carolina U. - Student
- Brian Oller Scripps - Student





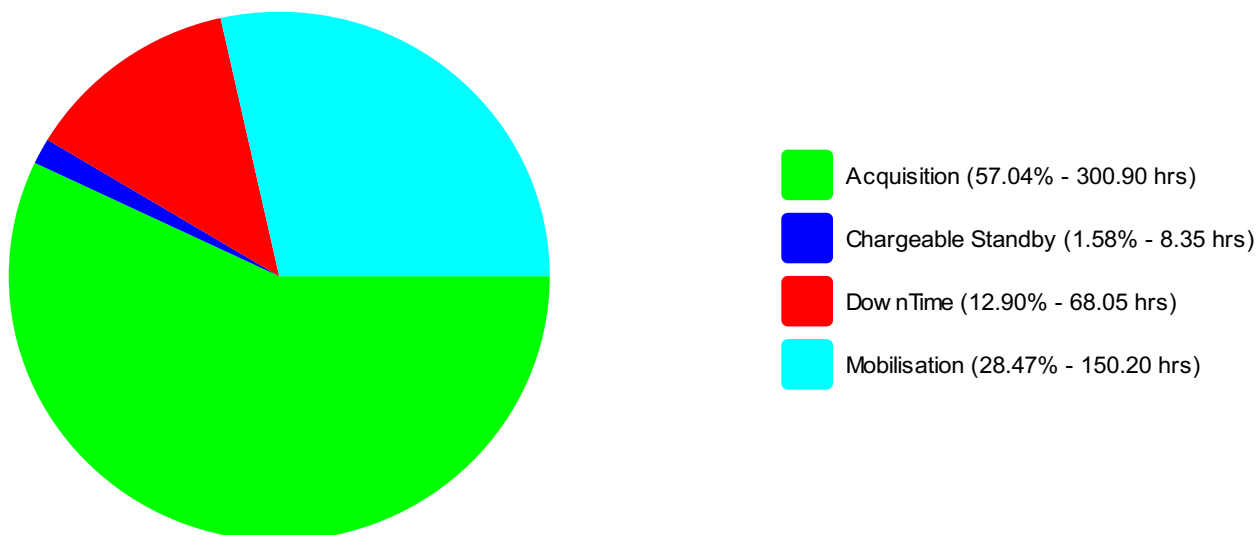
7/30/2019

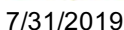
Daily Science Report

Lamont-Doherty Earth Observatory
COLUMBIA UNIVERSITY | EARTH INSTITUTE

Page 6

Timing Category Totals (Marcus G Langseth)





Daily Science Report

Page 1

| | | | |
|------------------------|---|----------------------|----------------------------------|
| Client: | United States National Science Foundation | Contractor: | Lamont-Doherty Earth Observatory |
| Job No: | MGL1905 | Job No: | MGL1905 |
| Block: | Axial | Vessel: | Marcus G Langseth |
| Client Contact: | Adrien Arnulf | Supervisor: | Sean Higgins |
| Consultancy: | N/A | Party Chiefs: | Todd Jensvold |
| Job No: | | Client Reps: | Adrien Arnulf |

Daily Comment Summaries - Daily Summary

Wed 31 Jul

During line change from sequence 43 to 44 the ship lost propulsion on the starboard engine and the compressor due to a computer or possible sensor failure.

The engine room took local control and brought the ships speed back to safe operations and are investigating the failure.








Lines acquired on UTC day: continuation of 1380 from previous day, 1260, 1388, and on 1268 at midnight utc.

Daily Comment Summaries - Plan for Tomorrow

Wed 31 Jul

Continue acquisition

Timing Diary (Marcus G Langseth, MGL1905_Axial 3D)

| Category | Code | Start | End | Duration |
|--|--------|-------------------|-------------------|----------|
|  Production Prime | AC_PP | Wed 31. Jul 00:00 | Wed 31. Jul 04:13 | 4.217 |
| SOL Seq 43 Line:1380 Block=Axial FGSP=1196 Hdg=155.7° Prime EOL Seq 43 Line:1380 Block=Axial LGSP=2148 Incomplete | | | | |
|  Prime Line Change | AC_PLC | Wed 31. Jul 04:13 | Wed 31. Jul 07:22 | 3.150 |
| Nominal Prime line change. | | | | |
|  Production Prime | AC_PP | Wed 31. Jul 07:22 | Wed 31. Jul 13:06 | 5.733 |
| SOL Seq 44 Line:1260 Block=Axial FGSP=2111 Hdg=335.7° Prime EOL Seq 44 Line:1260 Block=Axial LGSP=921 Complete | | | | |
|  Prime Line Change | AC_PLC | Wed 31. Jul 13:06 | Wed 31. Jul 15:04 | 1.967 |
| Nominal Prime line change. | | | | |
|  Production Prime | AC_PP | Wed 31. Jul 15:04 | Wed 31. Jul 20:06 | 5.033 |
| SOL Seq 45 Line:1388 Block=Axial FGSP=958 Hdg=155.7° Prime EOL Seq 45 Line:1388 Block=Axial LGSP=2148 Complete | | | | |
|  Prime Line Change | AC_PLC | Wed 31. Jul 20:06 | Wed 31. Jul 22:05 | 1.983 |
| Nominal Prime line change. | | | | |
|  Production Prime | AC_PP | Wed 31. Jul 22:05 | Wed 31. Jul 24:00 | 1.917 |
| SOL Seq 46 Line:1268 Block=Axial FGSP=2156 Hdg=335.7° Prime | | | | |



7/31/2019

Page 2

| Category | Code | Start | End | Duration |
|---|------|-------|-----|----------|
| MSP Seq 46 Line:1268 Block=Axial LGSP=1745 Midnight | | | | |

Timing Day By Day (Marcus G Langseth, MGL1905_Axial 3D)

| 31-Jul | Hours | % Percent |
|--------------------|---------------|----------------|
| Acquisition | 24.000 | 100.000 |
| Prime Line Change | 7.100 | 29.583 |
| Production Prime | 16.900 | 70.417 |
| Day's Total | 24.000 | 100.000 |

Timing Breakdown Summary - Project (Marcus G Langseth, MGL1905_Axial 3D)

| Category | Hours | % Percent |
|---------------------------|----------------|---------------|
| DownTime | 68.550 | 12.418 |
| Cetacean | 0.500 | 0.091 |
| Streamers | 26.617 | 4.822 |
| Vessel | 41.433 | 7.506 |
| Mobilisation | 150.200 | 27.210 |
| Deployment | 45.200 | 8.188 |
| Mob Ashore | 63.000 | 11.413 |
| Testing | 0.333 | 0.060 |
| Transit to Prospect | 41.667 | 7.548 |
| Acquisition | 324.900 | 58.859 |
| Prime Line Change | 87.383 | 15.830 |
| Production Infill | 27.483 | 4.979 |
| Production Prime | 210.033 | 38.050 |
| Chargeable Standby | 8.350 | 1.513 |
| Transit | 2.017 | 0.365 |
| Weather | 6.333 | 1.147 |
| Total | 552.000 | |

Basic Project Details

| MGL1905_Axial 3D | | | | | |
|------------------------|----------|------------------|--------|---------------------|-------------|
| General Details | | | | | |
| Record length: | 12000 ms | Sample rate: | 2 ms | Shotpoint interval: | 37.5 m |
| CoS to CNG: | 225 m | Fold Coverage: | 252 | | |
| Cable Details | | | | | |
| No of Cables: | 4 | Head Separation: | 150 m | Tail Separation: | 150 m |
| Chans Per Cable: | 468 | Front Depth: | 16 m | Tail Depth: | 16 m |
| Length: | 5850 m | Group interval: | 12.5 m | | |
| Source Details | | | | | |
| No of Sources: | 2 | Separation: | 75 m | Total Volume: | 6600 cu ins |



7/31/2019

Page 3

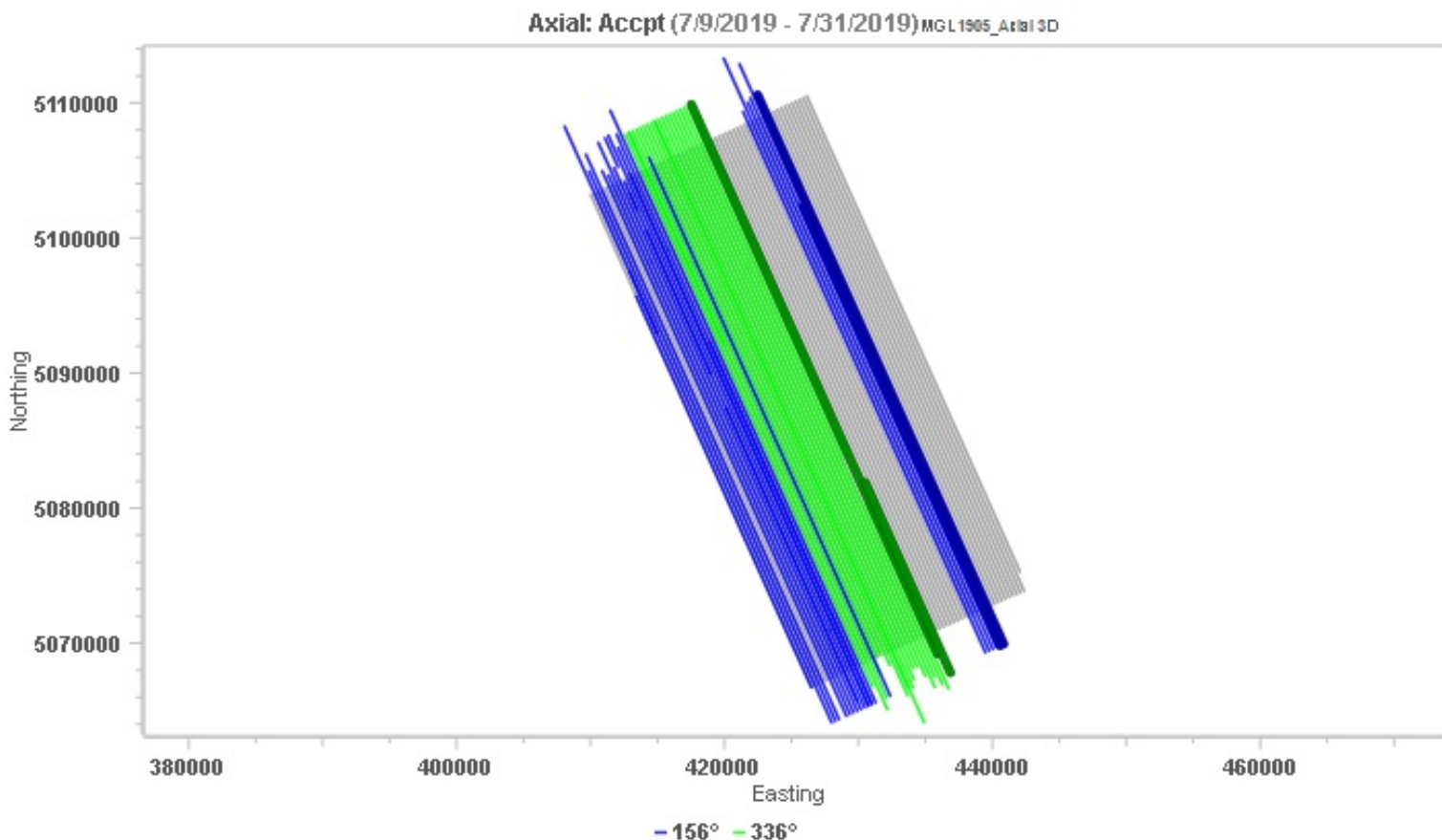
| MGL1905_Axial 3D | | | | | |
|---------------------|------|--------------------|----------|----------------|------|
| Depth: | 12 m | Pressure: | 1950 PSI | Volume: | 3300 |
| Strings per source: | 2 | String Separation: | 6 m | String length: | 18 m |
| Binning | | | | | |
| Size Inline: | 50 m | Size XLine: | 37.5 m | | |

Production Listing (Accpt km by interval) - Prime: Sail Line, Infill: Full Fold

| Seq | Line | Heading | FGSP | LGSP | Prod Type | Production | Ave Knots | Seq Status | Line Status |
|-------|------|---------|------|------|-----------|------------|-----------|------------|-------------|
| 43 | 1380 | 155.7 | 1196 | 2148 | Prime | 35.74 | 4.502 | Complete | Complete |
| 44 | 1260 | 335.7 | 2111 | 921 | Prime | 44.62 | 4.203 | Complete | Complete |
| 45 | 1388 | 155.7 | 958 | 2148 | Prime | 44.62 | 4.787 | Complete | Complete |
| 46 | 1268 | 335.7 | 2156 | 1745 | Prime | 15.41 | 4.342 | Part | Midnight |
| Total | | | | | | 140.40 | | | |

Production Totals (Accpt km by interval) - Prime: Sail Line, Infill: Full Fold

| Accepted km | Day | Week | Month | Project |
|----------------|--------|--------|---------|---------|
| Prime | 140.40 | 437.81 | 1720.12 | 1720.12 |
| Infill | 0.00 | 0.00 | 226.65 | 226.65 |
| Prime, Reshoot | 0.00 | 0.00 | 4.61 | 4.61 |
| Combined | 140.40 | 437.81 | 1951.39 | 1951.39 |





7/31/2019

Page 4

Daily Comment Summaries - Daily Comments On Status of Equipment

Wed 31 Jul

Navigation:

No Major Issues to Report

Information Technology (IT):

No Major Issues to Report

Acquisition (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

Wed 31 Jul

Technical Staff On-board the Langseth

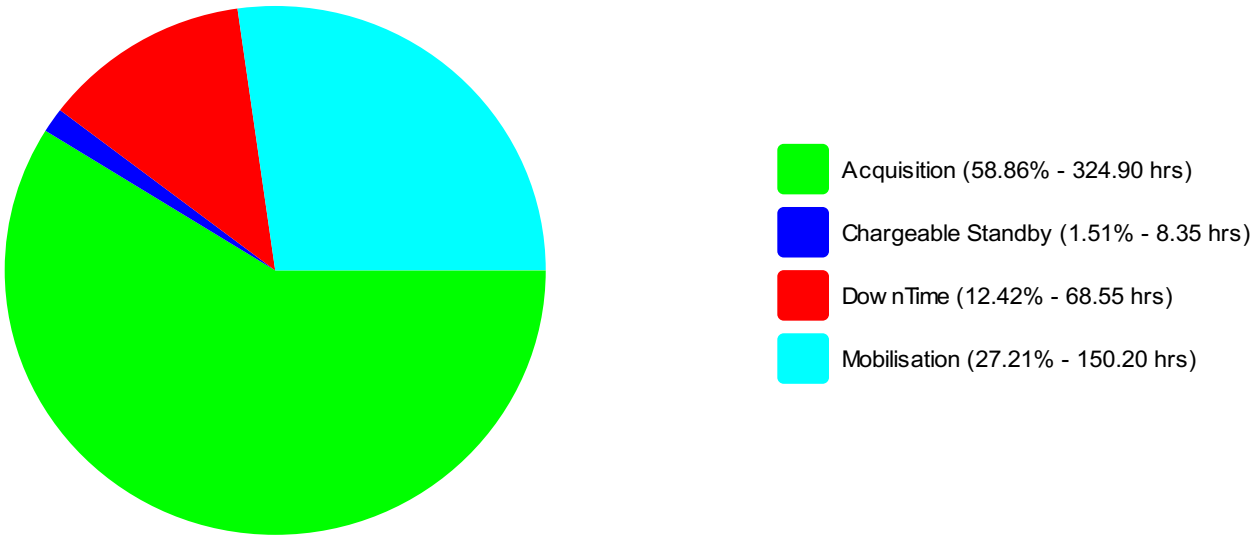
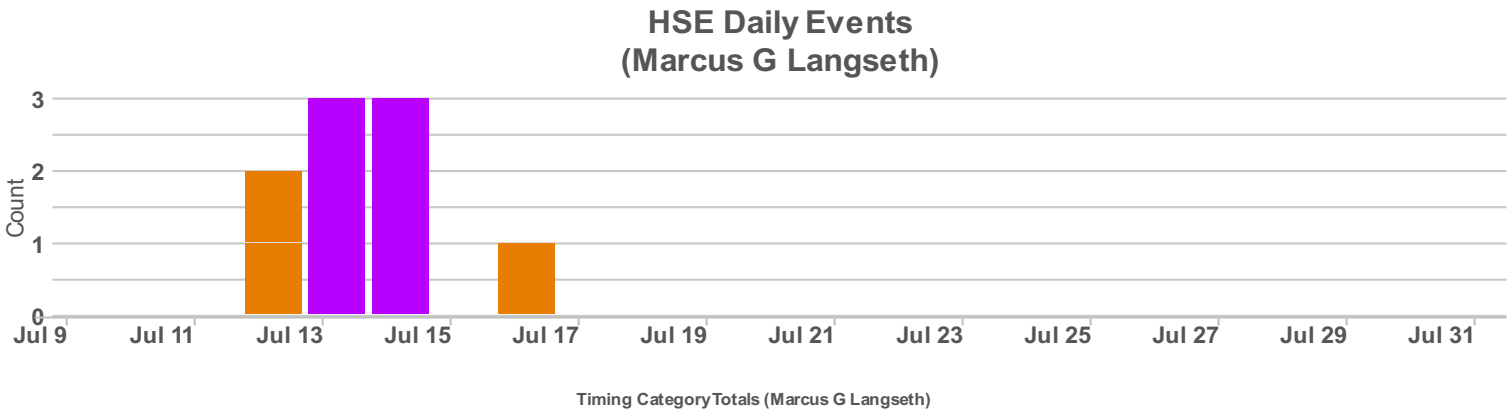
Todd Jensvold L-DEO OMO Chief Science Officer
David Martinson L-DEO OMO Science Officer - Nav
Josh Kasinger L-DEO OMO Chief Source Mechanic
Tom Spoto L-DEO OMO Source Mechanic
Alan Thompson L-DEO OMO Marine Science Technician - Nav
Gilles Guerin L-DEO OMO Marine Science Technician - Obs
Shaun Shaver L-DEO OMO Marine Science Technician - Obs
Edmond St. Amant Contract Personnel Marine Science Technician - Source
Matt Dietrich Contract Personnel Marine Science Technician - Source
Chris Abdouch NCS SubSea Contract Nav Processor
Mike Jennings NCS SubSea Contract Nav Processor

PSO Staff On-board the Langseth

Amanda Dubuque RPS Lead PSO
Bianca Mares RPS PSO
Ana Hernandez RPS PSO
Lluvia Durantes RPS PSO
Alejandra Ramos RPS PSO

Science Party On-board the Langseth

Adrien Amulf UTIG - PI
Alistar Harding Scripps - PI
Steffen Sastrup UTIG - Tech
Michelle Lee LDEO - Student
Axelle Cap U de Bretagne - Student
Shelby Brandt U of Ottawa - Student
Morgan Goulain Mines of Paris Tech - Student
Victoire Lucas U de Bretagne - Student
Samual Mitchell U. of Bristol - Research Tech
Mathew Griffiths Carlton U. - Student
Massimo Stefano Belluci U de Bretagne - Student
Tanner Eischen East Carolina U. - Student
Brian Oller Scripps - Student





Daily Science Report

8/1/2019

Page 1

| | | | |
|------------------------|---|----------------------|----------------------------------|
| Client: | United States National Science Foundation | Contractor: | Lamont-Doherty Earth Observatory |
| Job No: | MGL1905 | Job No: | MGL1905 |
| Block: | Axial | Vessel: | Marcus G Langseth |
| Client Contact: | Adrien Arnulf | Supervisor: | Sean Higgins |
| Consultancy: | N/A | Party Chiefs: | Todd Jensvold |
| Job No: | | Client Reps: | Adrien Arnulf |

Daily Comment Summaries - Daily Summary

Thu 01 Aug

Streamer 4 had a partial failure during line 1396 resulting in approximately every 2 channels recording. On the line change to line 1276 streamer 4 completely failed, due to weather conditions at the time, it was decided to complete acquisition until the weather comes down to allow for troubleshooting. After acquiring 1276 recovery of streamer 4 began, streamer issue found to be the lead-in and unable to replace during the cruise.

Daily Comment Summaries - Plan for Tomorrow

Thu 01 Aug

Finish redeploying the equipment and begin acquisition again, overlapping of coverage to remove streamer 4 CMP's.

Timing Diary (Marcus G Langseth, MGL1905_Axial 3D)



| Category | Code | Start | End | Duration |
|---|--------|------------------|------------------|----------|
|  Production Prime | AC_PP | Thu 1. Aug 00:00 | Thu 1. Aug 03:35 | 3.583 |
| SOL Seq 46 Line:1268 Block=Axial FGSP=1744 Hdg=335.7° Prime EOL Seq 46 Line:1268 Block=Axial LGSP=921 Complete | | | | |
|  Prime Line Change | AC_PLC | Thu 1. Aug 03:35 | Thu 1. Aug 05:24 | 1.817 |
| Nominal Prime line change. | | | | |
|  Production Prime | AC_PP | Thu 1. Aug 05:24 | Thu 1. Aug 11:13 | 5.817 |
| SOL Seq 47 Line:1396 Block=Axial FGSP=924 Hdg=155.7° Prime EOL Seq 47 Line:1396 Block=Axial LGSP=2148 Complete | | | | |
|  Prime Line Change | AC_PLC | Thu 1. Aug 11:13 | Thu 1. Aug 13:18 | 2.083 |
| Nominal Prime line change. | | | | |
|  Production Prime | AC_PP | Thu 1. Aug 13:18 | Thu 1. Aug 18:56 | 5.633 |
| SOL Seq 48 Line:1276 Block=Axial FGSP=2112 Hdg=335.7° Prime EOL Seq 48 Line:1276 Block=Axial LGSP=921 Complete | | | | |
|  Streamers | DT_ST | Thu 1. Aug 18:56 | Thu 1. Aug 24:00 | 5.067 |
| Recovering streamer 4 to investigate failure | | | | |

Timing Day By Day (Marcus G Langseth, MGL1905_Axial 3D)

| 1-Aug | Hours | %Percent |
|-------------------|--------|----------|
| Acquisition | 18.933 | 78.889 |
| Prime Line Change | 3.900 | 16.250 |



8/1/2019

Page 2

| 1-Aug | Hours | %Percent |
|--------------------|---------------|----------------|
| Production Prime | 15.033 | 62.639 |
| DownTime | 5.067 | 21.111 |
| Streamers | 5.067 | 21.111 |
| Day's Total | 24.000 | 100.000 |

Timing Breakdown Summary - Project (Marcus G Langseth, MGL1905_Axial 3D)

| Category | Hours | %Percent |
|---------------------------|----------------|---------------|
| DownTime | 73.617 | 12.781 |
| Cetacean | 0.500 | 0.087 |
| Streamers | 31.683 | 5.501 |
| Vessel | 41.433 | 7.193 |
| Mobilisation | 150.200 | 26.076 |
| Deployment | 45.200 | 7.847 |
| Mob Ashore | 63.000 | 10.938 |
| Testing | 0.333 | 0.058 |
| Transit to Prospect | 41.667 | 7.234 |
| Acquisition | 343.833 | 59.693 |
| Prime Line Change | 91.283 | 15.848 |
| Production Infill | 27.483 | 4.771 |
| Production Prime | 225.067 | 39.074 |
| Chargeable Standby | 8.350 | 1.450 |
| Transit | 2.017 | 0.350 |
| Weather | 6.333 | 1.100 |
| Total | 576.000 | |

Basic Project Details

| MGL1905_Axial 3D | | | | | |
|---------------------|----------|--------------------|----------|---------------------|-------------|
| General Details | | | | | |
| Record length: | 12000 ms | Sample rate: | 2 ms | Shotpoint interval: | 37.5 m |
| CoS to CNG: | 225 m | Fold Coverage: | 252 | | |
| Cable Details | | | | | |
| No of Cables: | 4 | Head Separation: | 150 m | Tail Separation: | 150 m |
| Chans Per Cable: | 468 | Front Depth: | 16 m | Tail Depth: | 16 m |
| Length: | 5850 m | Group interval: | 12.5 m | | |
| Source Details | | | | | |
| No of Sources: | 2 | Separation: | 75 m | Total Volume: | 6600 cu ins |
| Depth: | 12 m | Pressure: | 1950 PSI | Volume: | 3300 |
| Strings per source: | 2 | String Separation: | 6 m | String length: | 18 m |
| Binning | | | | | |



8/1/2019

Page 3

MGL1905_Axial 3D

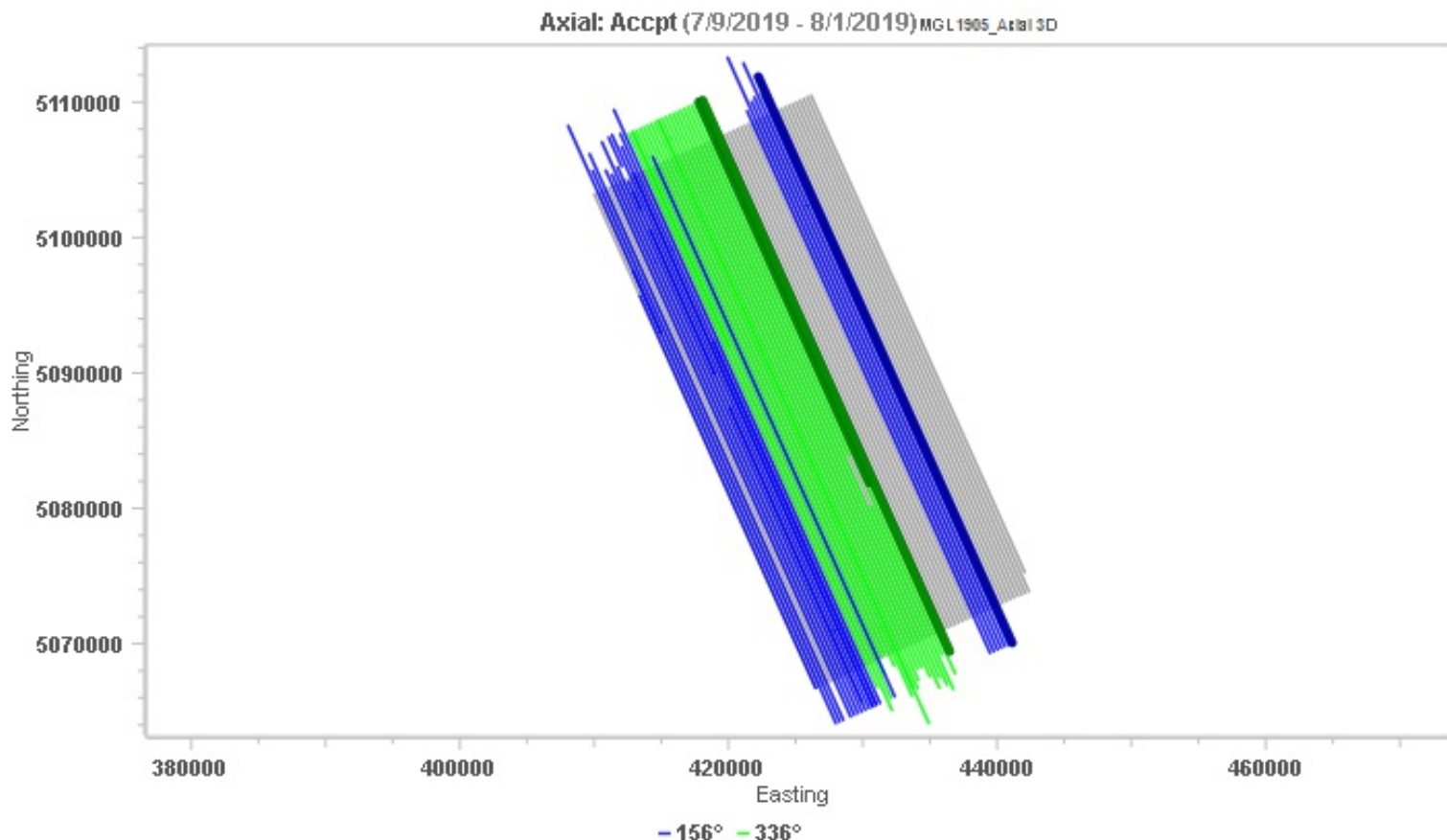
| | | | | | |
|--------------|------|-------------|--------|--|--|
| Size Inline: | 50 m | Size XLine: | 37.5 m | | |
|--------------|------|-------------|--------|--|--|

Production Listing (Accpt km by interval) - Prime: Sail Line, Infill: Full Fold

| Seq | Line | Heading | FGSP | LGSP | Prod Type | Production | Ave Knots | Seq Status | Line Status |
|-------|------|---------|------|------|-----------|------------|-----------|------------|-------------|
| 46 | 1268 | 335.7 | 1744 | 921 | Prime | 30.90 | 4.547 | Complete | Complete |
| 47 | 1396 | 155.7 | 924 | 2148 | Prime | 45.90 | 4.261 | Complete | Complete |
| 48 | 1276 | 335.7 | 2112 | 921 | Prime | 44.66 | 4.281 | Complete | Complete |
| Total | | | | | | 121.46 | | | |

Production Totals (Accpt km by interval) - Prime: Sail Line, Infill: Full Fold

| Accepted km | Day | Week | Month | Project |
|----------------|--------|--------|--------|---------|
| Prime | 121.46 | 559.27 | 121.46 | 1841.59 |
| Infill | 0.00 | 0.00 | 0.00 | 226.65 |
| Prime, Reshoot | 0.00 | 0.00 | 0.00 | 4.61 |
| Combined | 121.46 | 559.27 | 121.46 | 2072.85 |



Daily Comment Summaries - Daily Comments On Status of Equipment

Thu 01 Aug

Navigation:

No Major Issues to Report

Information Technology (IT):

(UTC 00:00) UTC - Universal Time Coordinated

Generated on Thu Aug 1 2019 11:09p.m.

Page 3



8/1/2019

Page 4

No Major Issues to Report

Acquisition (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 01 Aug

Technical Staff On-board the Langseth

Todd Jenvold L-DEO OMO Chief Science Officer
David Martinson L-DEO OMO Science Officer - Nav
Josh Kasinger L-DEO OMO Chief Source Mechanic
Tom Spoto L-DEO OMO Source Mechanic
Alan Thompson L-DEO OMO Marine Science Technician - Nav
Gilles Guerin L-DEO OMO Marine Science Technician - Obs
Shaun Shaver L-DEO OMO Marine Science Technician - Obs
Edmond St. Amant Contract Personnel Marine Science Technician - Source
Matt Dietrich Contract Personnel Marine Science Technician - Source
Chris Abdouch NCS SubSea Contract Nav Processor
Mike Jennings NCS SubSea Contract Nav Processor

PSO Staff On-board the Langseth

Amanda Dubuque RPS Lead PSO
Bianca Mares RPS PSO
Ana Hernandez RPS PSO
Lluvia Durantes RPS PSO
Alejandra Ramos RPS PSO

Science Party On-board the Langseth

Adrien Amulf UTIG - PI
Alistar Harding Scripps - PI
Steffen Saustrop UTIG - Tech
Michelle Lee LDEO - Student
Axelle Cap U de Bretagne - Student
Shelby Brandt U of Ottawa - Student
Morgan Goulain Mines of Paris Tech - Student
Victoire Lucas U de Bretagne - Student
Samual Mitchell U. of Bristol - Research Tech
Mathew Griffiths Carlton U. - Student
Massimo Stefano Belluci U de Bretagne - Student
Tanner Eischen East Carolina U. - Student
Brian Oller Scripps - Student

**HSE Daily Events
(Marcus G Langseth)**

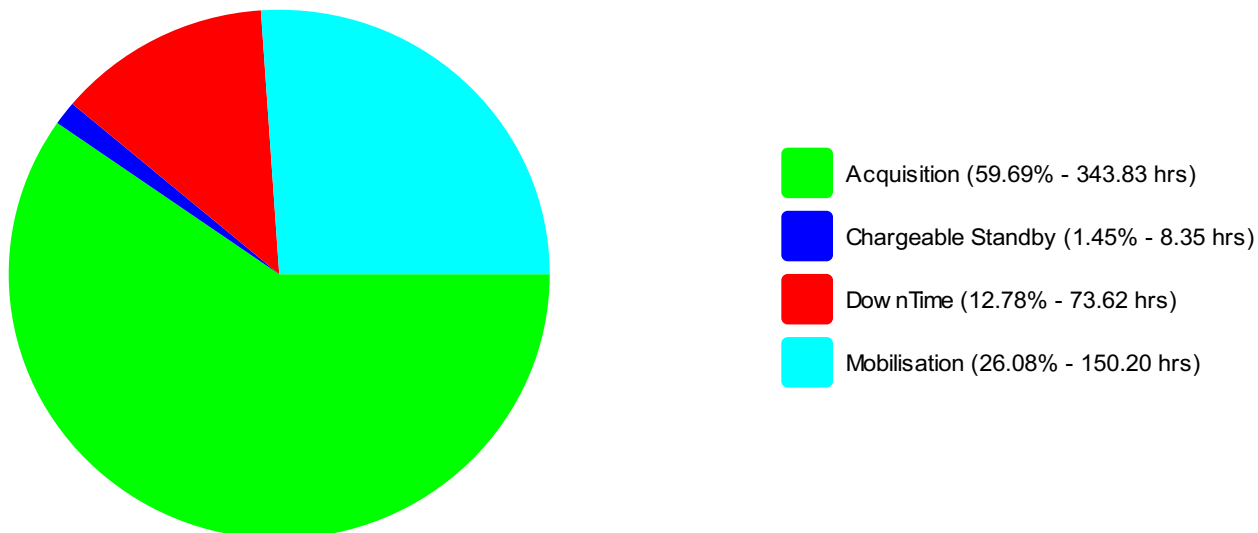




8/1/2019

Page 5

Timing Category Totals (Marcus G Langseth)





8/2/2019

Page 2

Timing Day By Day (Marcus G Langseth, MGL1905_Axial 3D)

| 2-Aug | Hours | % Percent |
|---------------------------|---------------|----------------|
| Acquisition | 13.217 | 55.069 |
| Prime Line Change | 3.867 | 16.111 |
| Production Prime | 9.350 | 38.958 |
| Chargeable Standby | 4.833 | 20.139 |
| Weather | 4.833 | 20.139 |
| DownTime | 5.950 | 24.792 |
| Streamers | 5.950 | 24.792 |
| Day's Total | 24.000 | 100.000 |

Timing Breakdown Summary - Project (Marcus G Langseth, MGL1905_Axial 3D)

| Category | Hours | % Percent |
|---------------------------|----------------|---------------|
| DownTime | 79.567 | 13.261 |
| Cetacean | 0.500 | 0.083 |
| Streamers | 37.633 | 6.272 |
| Vessel | 41.433 | 6.906 |
| Mobilisation | 150.200 | 25.033 |
| Deployment | 45.200 | 7.533 |
| Mob Ashore | 63.000 | 10.500 |
| Testing | 0.333 | 0.056 |
| Transit to Prospect | 41.667 | 6.944 |
| Acquisition | 357.050 | 59.508 |
| Prime Line Change | 95.150 | 15.858 |
| Production Infill | 27.483 | 4.581 |
| Production Prime | 234.417 | 39.069 |
| Chargeable Standby | 13.183 | 2.197 |
| Transit | 2.017 | 0.336 |
| Weather | 11.167 | 1.861 |
| Total | 600.000 | |

Basic Project Details

| MGL1905_Axial 3D | | | | | |
|------------------|----------|------------------|--------|---------------------|--------|
| General Details | | | | | |
| Record length: | 12000 ms | Sample rate: | 2 ms | Shotpoint interval: | 37.5 m |
| CoS to CNG: | 225 m | Fold Coverage: | 252 | | |
| Cable Details | | | | | |
| No of Cables: | 4 | Head Separation: | 150 m | Tail Separation: | 150 m |
| Chans Per Cable: | 468 | Front Depth: | 16 m | Tail Depth: | 16 m |
| Length: | 5850 m | Group interval: | 12.5 m | | |
| Source Details | | | | | |



8/2/2019

Page 3

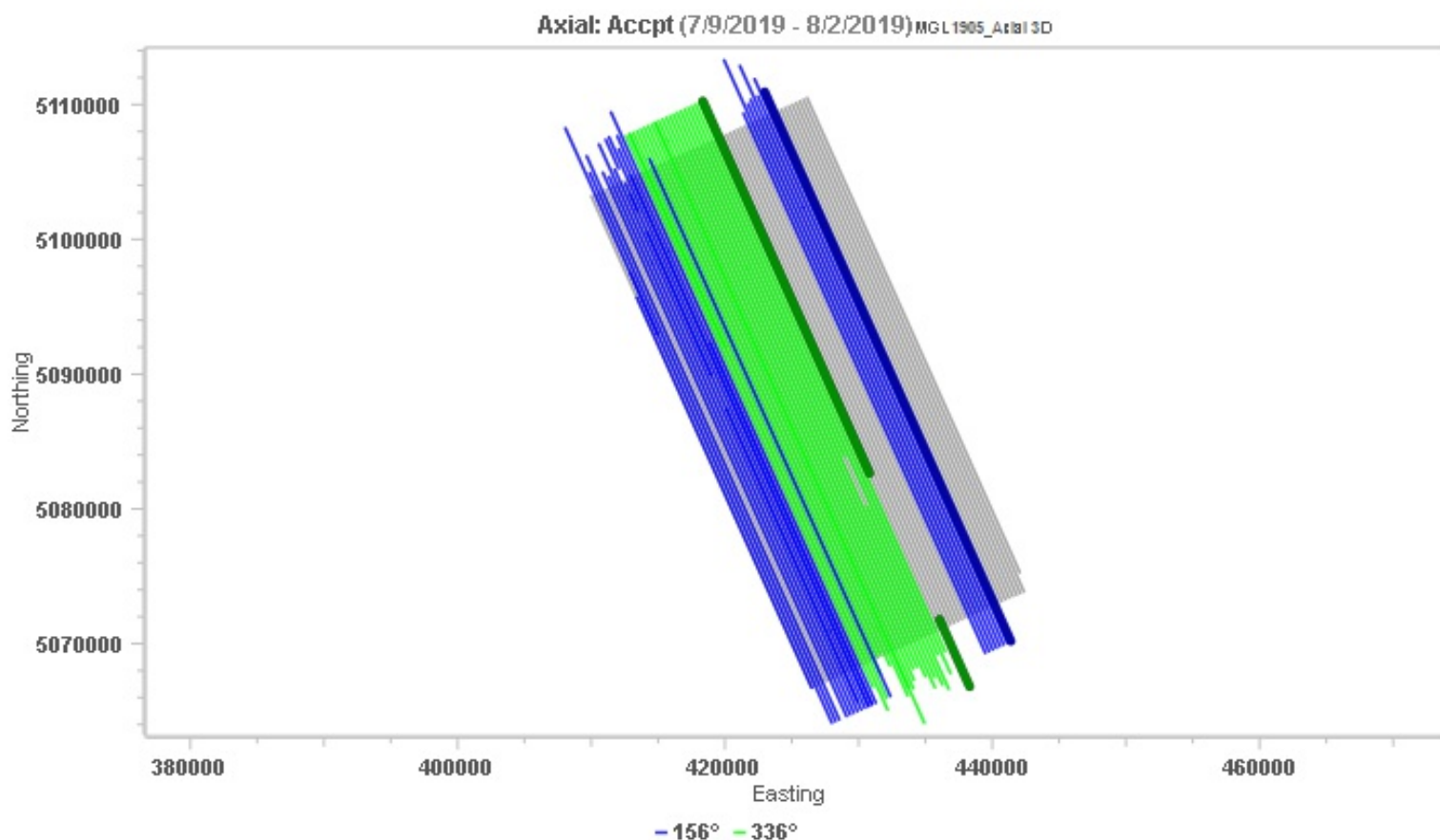
| MGL1905_Axial 3D | | | | | |
|---------------------|------|--------------------|----------|----------------|-------------|
| No of Sources: | 2 | Separation: | 75 m | Total Volume: | 6600 cu ins |
| Depth: | 12 m | Pressure: | 1950 PSI | Volume: | 3300 |
| Strings per source: | 2 | String Separation: | 6 m | String length: | 18 m |
| Binning | | | | | |
| Size Inline: | 50 m | Size XLine: | 37.5 m | | |

Production Listing (Accpt km by interval) - Prime: Sail Line, Infill: Full Fold

| Seq | Line | Heading | FGSP | LGSP | Prod Type | Production | Ave Knots | Seq Status | Line Status |
|--------------|------|---------|------|------|-----------|--------------|-----------|------------|-------------|
| 49 | 1284 | 335.7 | 1729 | 921 | Prime | 30.30 | 4.524 | Complete | Complete |
| 50 | 1404 | 155.7 | 955 | 2148 | Prime | 44.74 | 4.783 | Complete | Complete |
| 51 | 1292 | 335.7 | 2196 | 2051 | Prime | 5.44 | 4.297 | Part | Midnight |
| Total | | | | | | 80.47 | | | |

Production Totals (Accpt km by interval) - Prime: Sail Line, Infill: Full Fold

| Accepted km | Day | Week | Month | Project |
|-----------------|--------------|---------------|---------------|----------------|
| Prime | 80.47 | 639.75 | 201.94 | 1922.06 |
| Infill | 0.00 | 0.00 | 0.00 | 226.65 |
| Prime, Reshoot | 0.00 | 0.00 | 0.00 | 4.61 |
| Combined | 80.47 | 639.75 | 201.94 | 2153.33 |





8/2/2019

Page 4

Daily Comment Summaries - Daily Comments On Status of Equipment

Fri 02 Aug

Navigation:

No Major Issues to Report

Information Technology (IT):

No Major Issues to Report

Acquisition (OBS):

Streamer 4 failure.

Towing and Handling (Source):

No Major Issues to Report

General Purpose Science:

No Major Issues to Report

Daily Comment Summaries - Personnel Onboard

Fri 02 Aug

Technical Staff On-board the Langseth

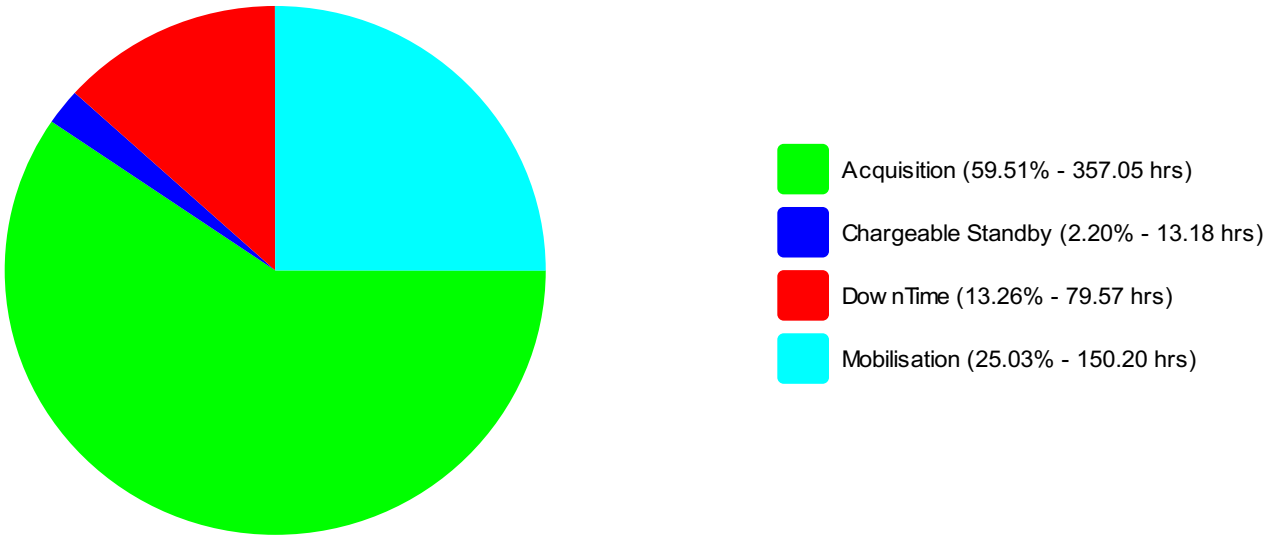
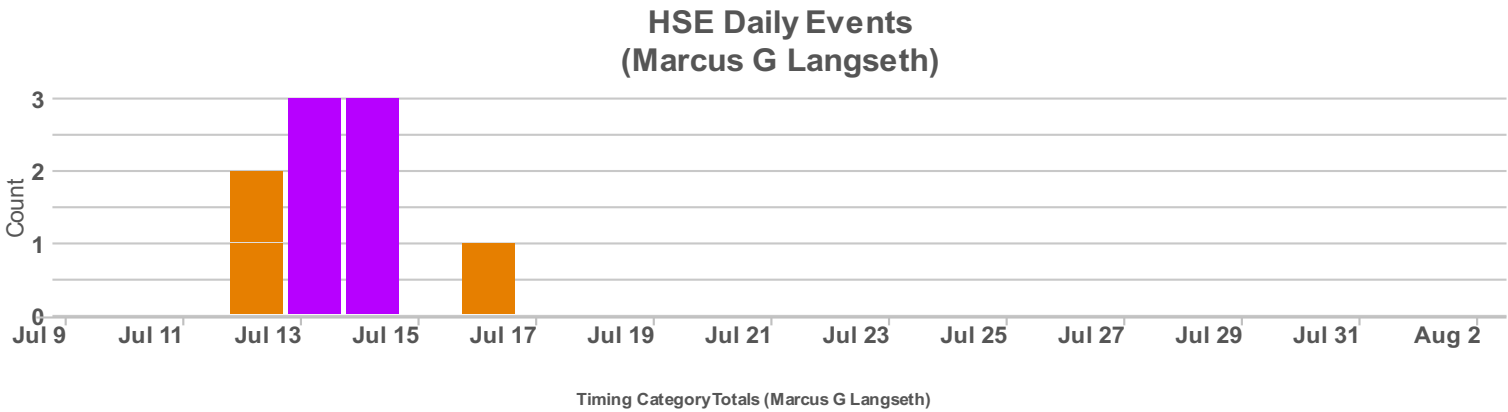
Todd Jensvold L-DEO OMO Chief Science Officer
David Martinson L-DEO OMO Science Officer - Nav
Josh Kasinger L-DEO OMO Chief Source Mechanic
Tom Spoto L-DEO OMO Source Mechanic
Alan Thompson L-DEO OMO Marine Science Technician - Nav
Gilles Guerin L-DEO OMO Marine Science Technician - Obs
Shaun Shaver L-DEO OMO Marine Science Technician - Obs
Edmond St. Amant Contract Personnel Marine Science Technician - Source
Matt Dietrich Contract Personnel Marine Science Technician - Source
Chris Abdouch NCS SubSea Contract Nav Processor
Mike Jennings NCS SubSea Contract Nav Processor

PSO Staff On-board the Langseth

Amanda Dubuque RPS Lead PSO
Bianca Mares RPS PSO
Ana Hernandez RPS PSO
Lluvia Durantes RPS PSO
Alejandra Ramos RPS PSO

Science Party On-board the Langseth

Adrien Amulf UTIG - PI
Alistar Harding Scripps - PI
Steffen Sastrup UTIG - Tech
Michelle Lee LDEO - Student
Axelle Cap U de Bretagne - Student
Shelby Brandt U of Ottawa - Student
Morgan Goulain Mines of Paris Tech - Student
Victoire Lucas U de Bretagne - Student
Samual Mitchell U. of Bristol - Research Tech
Mathew Griffiths Carlton U. - Student
Massimo Stefano Belluci U de Bretagne - Student
Tanner Eischen East Carolina U. - Student
Brian Oller Scripps - Student





Daily Science Report

8/3/2019

Page 1

| | | | |
|------------------------|---|----------------------|----------------------------------|
| Client: | United States National Science Foundation | Contractor: | Lamont-Doherty Earth Observatory |
| Job No: | MGL1905 | Job No: | MGL1905 |
| Block: | Axial | Vessel: | Marcus G Langseth |
| Client Contact: | Adrien Arnulf | Supervisor: | Sean Higgins |
| Consultancy: | N/A | Party Chiefs: | Todd Jensvold |
| Job No: | | Client Reps: | Adrien Arnulf |

Daily Comment Summaries - Daily Summary

Sat 03 Aug

Acquired lines: P1292(Midnight), 1404, infill pass on 1292 (catch up coverage from loss of streamer 4), infill pass on 1412 (catch up coverage from loss of streamer 4)
Downtime for a whale and calf left a 1.5 hour gap on line P1292.

Daily Comment Summaries - Plan for Tomorrow

Sat 03 Aug

Continue acquisition.

Timing Diary (Marcus G Langseth, MGL1905_Axial 3D)



| Category | Code | Start | End | Duration |
|--|--------|------------------|------------------|----------|
| Production Prime | AC_PP | Sat 3. Aug 00:00 | Sat 3. Aug 02:01 | 2.017 |
| SOL Seq 51 Line:1292 Block=Axial FGSP=2050 Hdg=335.7° Prime EOL Seq 51 Line:1292 Block=Axial LGSP=1608 Incomplete | | | | |
| Cetacean | DT_CT | Sat 3. Aug 02:01 | Sat 3. Aug 03:06 | 1.083 |
| NTBP Seq 51 A_A_1292 Block=Axial FSP=1607 LSP=1303 | | | | |
| Production Prime | AC_PP | Sat 3. Aug 03:06 | Sat 3. Aug 05:08 | 2.033 |
| SOL Seq 51 Line:1292 Block=Axial FGSP=1302 Hdg=335.7° Prime EOL Seq 51 Line:1292 Block=Axial LGSP=921 Incomplete | | | | |
| Prime Line Change | AC_PLC | Sat 3. Aug 05:08 | Sat 3. Aug 07:19 | 2.183 |
| Nominal Prime line change. | | | | |
| Production Prime | AC_PP | Sat 3. Aug 07:19 | Sat 3. Aug 12:24 | 5.083 |
| SOL Seq 52 Line:1412 Block=Axial FGSP=956 Hdg=155.7° Prime EOL Seq 52 Line:1412 Block=Axial LGSP=2148 Complete | | | | |
| Prime Line Change | AC_PLC | Sat 3. Aug 12:24 | Sat 3. Aug 14:31 | 2.117 |
| Nominal Prime line change. | | | | |
| Production Infill | AC_PI | Sat 3. Aug 14:31 | Sat 3. Aug 20:05 | 5.567 |
| SOL Seq 53 Line:1292 Block=Axial FGSP=2206 Hdg=335.7° Infill EOL Seq 53 Line:1292 Block=Axial LGSP=1001 Complete | | | | |
| Prime Line Change | AC_PLC | Sat 3. Aug 20:05 | Sat 3. Aug 22:00 | 1.917 |




Daily Science Report

Lamont-Doherty Earth Observatory
COLUMBIA UNIVERSITY | EARTH INSTITUTE

8/3/2019

Page 2

| Category | Code | Start | End | Duration |
|--|-------|------------------|------------------|----------|
| Nominal Prime line change. | | | | |
|  Production Infill | AC_PI | Sat 3. Aug 22:00 | Sat 3. Aug 24:00 | 2.000 |
| SOL Seq 54 Line:1412 Block=Axial FGSP=971 Hdg=155.7° Infill MSP Seq 54 Line:1412 Block=Axial LGSP=1460 Midnight | | | | |

Timing Day By Day (Marcus G Langseth, MGL1905_Axial 3D)

| 3-Aug | Hours | %Percent |
|--------------------|---------------|----------------|
| Acquisition | 22.917 | 95.486 |
| Prime Line Change | 6.217 | 25.903 |
| Production Infill | 7.567 | 31.528 |
| Production Prime | 9.133 | 38.056 |
| DownTime | 1.083 | 4.514 |
| Cetacean | 1.083 | 4.514 |
| Day's Total | 24.000 | 100.000 |

Timing Breakdown Summary - Project (Marcus G Langseth, MGL1905_Axial 3D)

| Category | Hours | %Percent |
|---------------------------|----------------|---------------|
| DownTime | 80.650 | 12.925 |
| Cetacean | 1.583 | 0.254 |
| Streamers | 37.633 | 6.031 |
| Vessel | 41.433 | 6.640 |
| Mobilisation | 150.200 | 24.071 |
| Deployment | 45.200 | 7.244 |
| Mob Ashore | 63.000 | 10.096 |
| Testing | 0.333 | 0.053 |
| Transit to Prospect | 41.667 | 6.677 |
| Acquisition | 379.967 | 60.892 |
| Prime Line Change | 101.367 | 16.245 |
| Production Infill | 35.050 | 5.617 |
| Production Prime | 243.550 | 39.030 |
| Chargeable Standby | 13.183 | 2.113 |
| Transit | 2.017 | 0.323 |
| Weather | 11.167 | 1.790 |
| Total | 624.000 | |

Basic Project Details

| MGL1905_Axial 3D | | | | | |
|------------------|----------|----------------|------|---------------------|--------|
| General Details | | | | | |
| Record length: | 12000 ms | Sample rate: | 2 ms | Shotpoint interval: | 37.5 m |
| CoS to CNG: | 225 m | Fold Coverage: | 252 | | |



8/3/2019

Page 3

| MGL1905_Axial 3D | | | | | |
|---------------------|--------|--------------------|----------|------------------|-------------|
| Cable Details | | | | | |
| No of Cables: | 4 | Head Separation: | 150 m | Tail Separation: | 150 m |
| Chans Per Cable: | 468 | Front Depth: | 16 m | Tail Depth: | 16 m |
| Length: | 5850 m | Group interval: | 12.5 m | | |
| Source Details | | | | | |
| No of Sources: | 2 | Separation: | 75 m | Total Volume: | 6600 cu ins |
| Depth: | 12 m | Pressure: | 1950 PSI | Volume: | 3300 |
| Strings per source: | 2 | String Separation: | 6 m | String length: | 18 m |
| Binning | | | | | |
| Size Inline: | 50 m | Size XLine: | 37.5 m | | |

Production Listing (Accpt km by interval) - Prime: Sail Line, Infill: Full Fold

| Seq | Line | Heading | FGSP | LGSP | Prod Type | Production | Ave Knots | Seq Status | Line Status |
|------------------------------|------|---------|------|------|-----------|------------|-----------|------------|-------------|
| 51 | 1292 | 335.7 | 2050 | 921 | Prime | 30.98 | 4.154 | Complete | Incomplete |
| NTBP: 1607 - 1303 (not chgd) | | | | | | | | | |
| 52 | 1412 | 155.7 | 956 | 2148 | Prime | 44.70 | 4.748 | Complete | Complete |
| 53 | 1292 | 335.7 | 2206 | 1001 | Infill | 45.19 | 4.383 | Complete | Complete |
| 54 | 1412 | 155.7 | 971 | 1460 | Infill | 18.34 | 4.951 | Part | Midnight |
| Total | | | | | | 139.20 | | | |

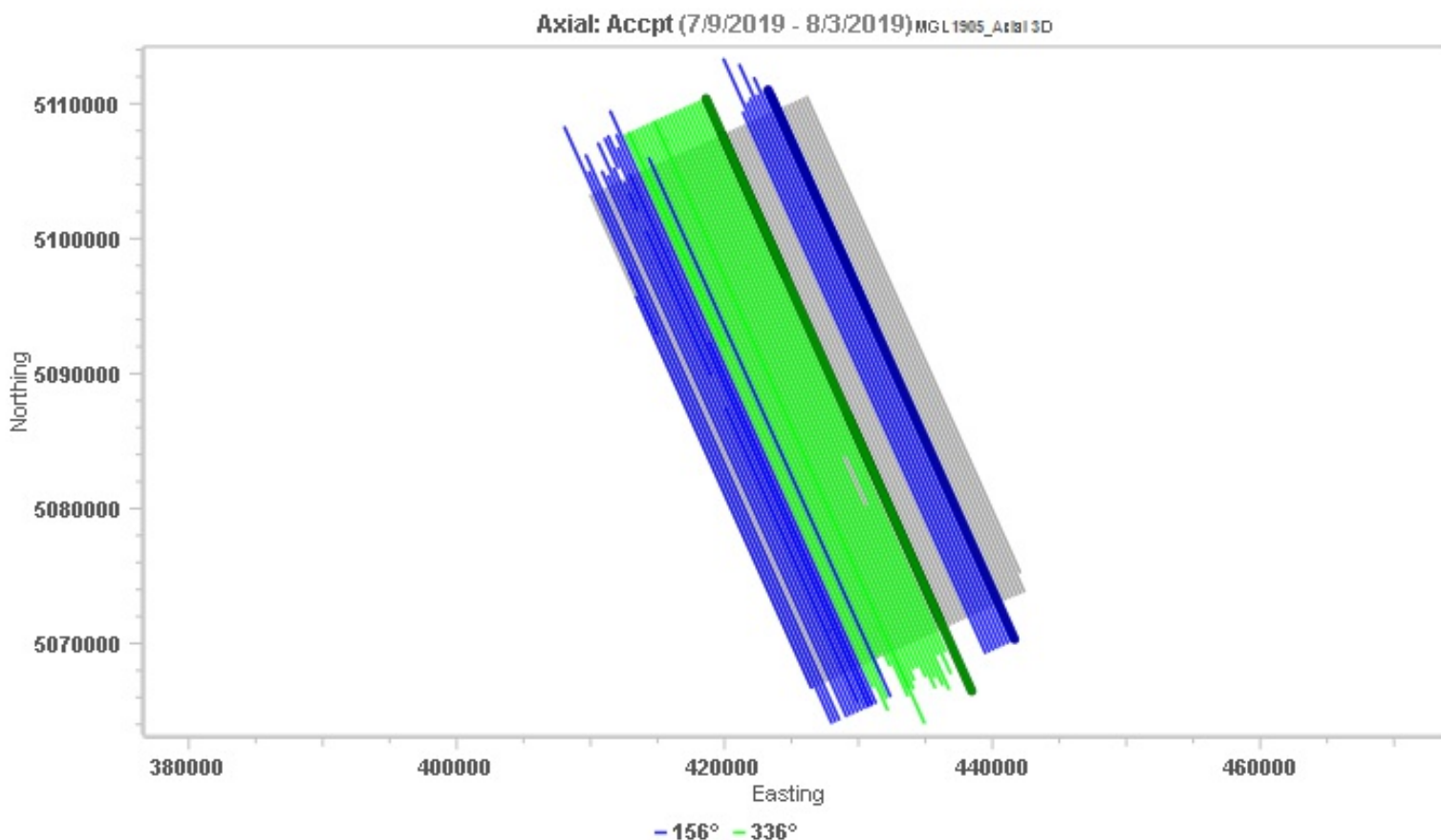
Production Totals (Accpt km by interval) - Prime: Sail Line, Infill: Full Fold

| Accepted km | Day | Week | Month | Project |
|----------------|--------|--------|--------|---------|
| Prime | 75.67 | 715.42 | 277.61 | 1997.74 |
| Infill | 63.52 | 63.52 | 63.52 | 290.17 |
| Prime, Reshoot | 0.00 | 0.00 | 0.00 | 4.61 |
| Combined | 139.20 | 778.95 | 341.14 | 2292.53 |



8/3/2019

Page 4



Daily Comment Summaries - Daily Comments On Status of Equipment

Sat 03 Aug

Navigation:

No Major Issues to Report

Information Technology (IT):

No Major Issues to Report

Acquisition (OBS):

Streamer 4 failure.

Towing and Handling (Source):

No Major Issues to Report

General Purpose Science:

No Major Issues to Report

Daily Comment Summaries - Personnel Onboard

Sat 03 Aug

Technical Staff On-board the Langseth

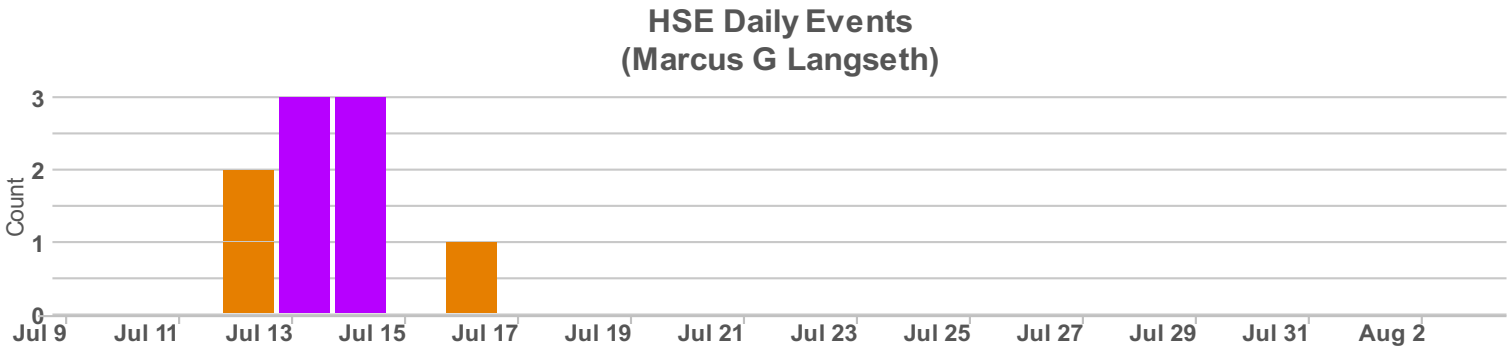
Todd Jensvold L-DEO OMO Chief Science Officer
David Martinson L-DEO OMO Science Officer - Nav
Josh Kasinger L-DEO OMO Chief Source Mechanic
Tom Spoto L-DEO OMO Source Mechanic
Alan Thompson L-DEO OMO Marine Science Technician - Nav
Gilles Guerin L-DEO OMO Marine Science Technician - Obs
Shaun Shaver L-DEO OMO Marine Science Technician - Obs
Edmond St. Amant Contract Personnel Marine Science Technician - Source
Matt Dietrich Contract Personnel Marine Science Technician - Source
Chris Abdouch NCS SubSea Contract Nav Processor



Mike Jennings NCS SubSea Contract Nav Processor

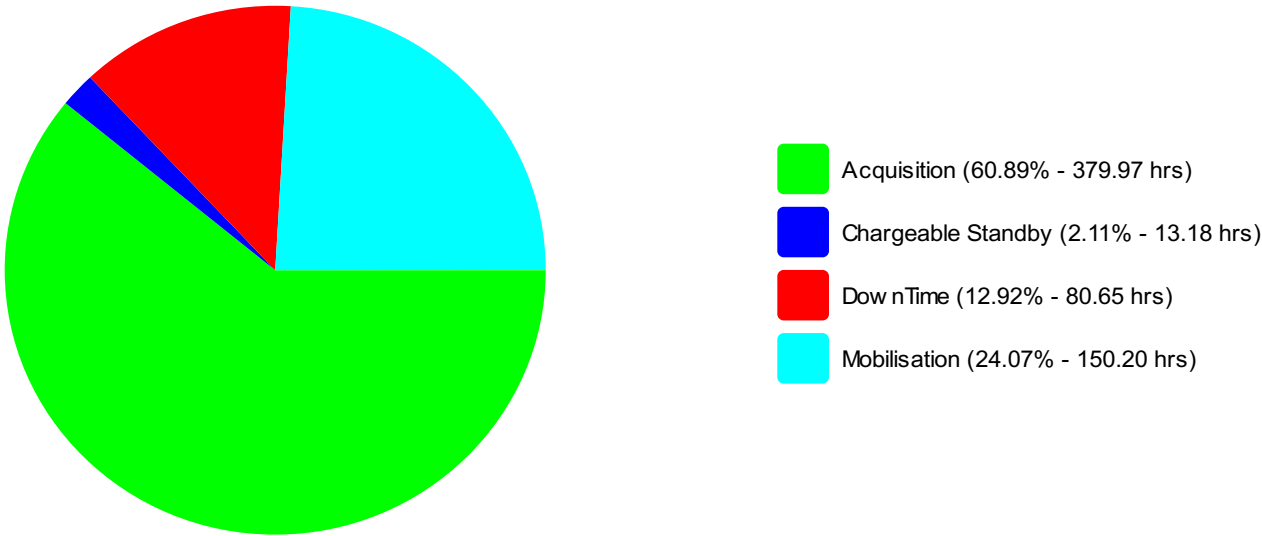
PSO Staff On-board the Langseth
Amanda Dubuque RPS Lead PSO
Bianca Mares RPS PSO
Ana Hernandez RPS PSO
Lluvia Durantes RPS PSO
Alejandra Ramos RPS PSO

Science Party On-board the Langseth
Adrien Amulf UTIG - PI
Alistar Harding Scripps - PI
Steffen Saustrop UTIG - Tech
Michelle Lee LDEO - Student
Axelle Cap U de Bretagne - Student
Shelby Brandt U of Ottawa - Student
Morgan Goulain Mines of Paris Tech - Studen
Victoire Lucas U de Bretagne - Student
Samual Mitchell U. of Bristol - Research Tech
Mathew Griffiths Carlton U. - Student
Massimo Stefano Belluci U de Bretagne - Student
Tanner Eischen East Carolina U. - Student
Brian Oller Scripps - Student





Timing CategoryTotals (Marcus G Langseth)





Daily Science Report

8/4/2019

Page 1

| | | | |
|------------------------|---|----------------------|----------------------------------|
| Client: | United States National Science Foundation | Contractor: | Lamont-Doherty Earth Observatory |
| Job No: | MGL1905 | Job No: | MGL1905 |
| Block: | Axial | Vessel: | Marcus G Langseth |
| Client Contact: | Adrien Arnulf | Supervisor: | Sean Higgins |
| Consultancy: | N/A | Party Chiefs: | Todd Jensvold |
| Job No: | | Client Reps: | Adrien Arnulf |

Daily Comment Summaries - Daily Summary

Sun 04 Aug

Acquired lines: I1412(Midnight), 1300, 1420, 1308 (Midnight).
Source sub-array 1 had to be recovered on line change from 1420 to 1308 due to an air leak.

Daily Comment Summaries - Plan for Tomorrow

Sun 04 Aug

Continue acquisition.

Timing Diary (Marcus G Langseth, MGL1905_Axial 3D)



| Category | Code | Start | End | Duration |
|---|--------|------------------|------------------|----------|
| Production Infill | AC_PI | Sun 4. Aug 00:00 | Sun 4. Aug 02:51 | 2.850 |
| SOL Seq 54 Line:1412 Block=Axial FGSP=1461 Hdg=155.7° Infill EOL Seq 54 Line:1412 Block=Axial LGSP=2068 Complete | | | | |
| Prime Line Change | AC_PLC | Sun 4. Aug 02:51 | Sun 4. Aug 04:41 | 1.833 |
| Nominal Prime line change. | | | | |
| Production Prime | AC_PP | Sun 4. Aug 04:41 | Sun 4. Aug 10:12 | 5.517 |
| SOL Seq 55 Line:1300 Block=Axial FGSP=2157 Hdg=335.7° Prime EOL Seq 55 Line:1300 Block=Axial LGSP=921 Complete | | | | |
| Prime Line Change | AC_PLC | Sun 4. Aug 10:12 | Sun 4. Aug 12:07 | 1.917 |
| Nominal Prime line change. | | | | |
| Production Prime | AC_PP | Sun 4. Aug 12:07 | Sun 4. Aug 16:58 | 4.850 |
| SOL Seq 56 Line:1420 Block=Axial FGSP=972 Hdg=155.7° Prime EOL Seq 56 Line:1420 Block=Axial LGSP=2068 Complete | | | | |
| Prime Line Change | AC_PLC | Sun 4. Aug 16:58 | Sun 4. Aug 19:06 | 2.133 |
| Nominal Prime line change. | | | | |
| Production Prime | AC_PP | Sun 4. Aug 19:06 | Sun 4. Aug 24:00 | 4.900 |
| SOL Seq 57 Line:1308 Block=Axial FGSP=2098 Hdg=335.7° Prime MSP Seq 57 Line:1308 Block=Axial LGSP=975 Midnight | | | | |



8/4/2019

Page 2

Timing Day By Day (Marcus G Langseth, MGL1905_Axial 3D)

| 4-Aug | Hours | %Percent |
|--------------------|---------------|----------------|
| Acquisition | 24.000 | 100.000 |
| Prime Line Change | 5.883 | 24.514 |
| Production Infill | 2.850 | 11.875 |
| Production Prime | 15.267 | 63.611 |
| Day's Total | 24.000 | 100.000 |

Timing Breakdown Summary - Project (Marcus G Langseth, MGL1905_Axial 3D)

| Category | Hours | %Percent |
|---------------------------|----------------|---------------|
| DownTime | 80.650 | 12.446 |
| Cetacean | 1.583 | 0.244 |
| Streamers | 37.633 | 5.808 |
| Vessel | 41.433 | 6.394 |
| Mobilisation | 150.200 | 23.179 |
| Deployment | 45.200 | 6.975 |
| Mob Ashore | 63.000 | 9.722 |
| Testing | 0.333 | 0.051 |
| Transit to Prospect | 41.667 | 6.430 |
| Acquisition | 403.967 | 62.341 |
| Prime Line Change | 107.250 | 16.551 |
| Production Infill | 37.900 | 5.849 |
| Production Prime | 258.817 | 39.941 |
| Chargeable Standby | 13.183 | 2.034 |
| Transit | 2.017 | 0.311 |
| Weather | 11.167 | 1.723 |
| Total | 648.000 | |

Basic Project Details

| MGL1905_Axial 3D | | | | | |
|------------------|----------|------------------|----------|---------------------|-------------|
| General Details | | | | | |
| Record length: | 12000 ms | Sample rate: | 2 ms | Shotpoint interval: | 37.5 m |
| CoS to CNG: | 225 m | Fold Coverage: | 252 | | |
| Cable Details | | | | | |
| No of Cables: | 4 | Head Separation: | 150 m | Tail Separation: | 150 m |
| Chans Per Cable: | 468 | Front Depth: | 16 m | Tail Depth: | 16 m |
| Length: | 5850 m | Group interval: | 12.5 m | | |
| Source Details | | | | | |
| No of Sources: | 2 | Separation: | 75 m | Total Volume: | 6600 cu ins |
| Depth: | 12 m | Pressure: | 1950 PSI | Volume: | 3300 |



8/4/2019

Page 3

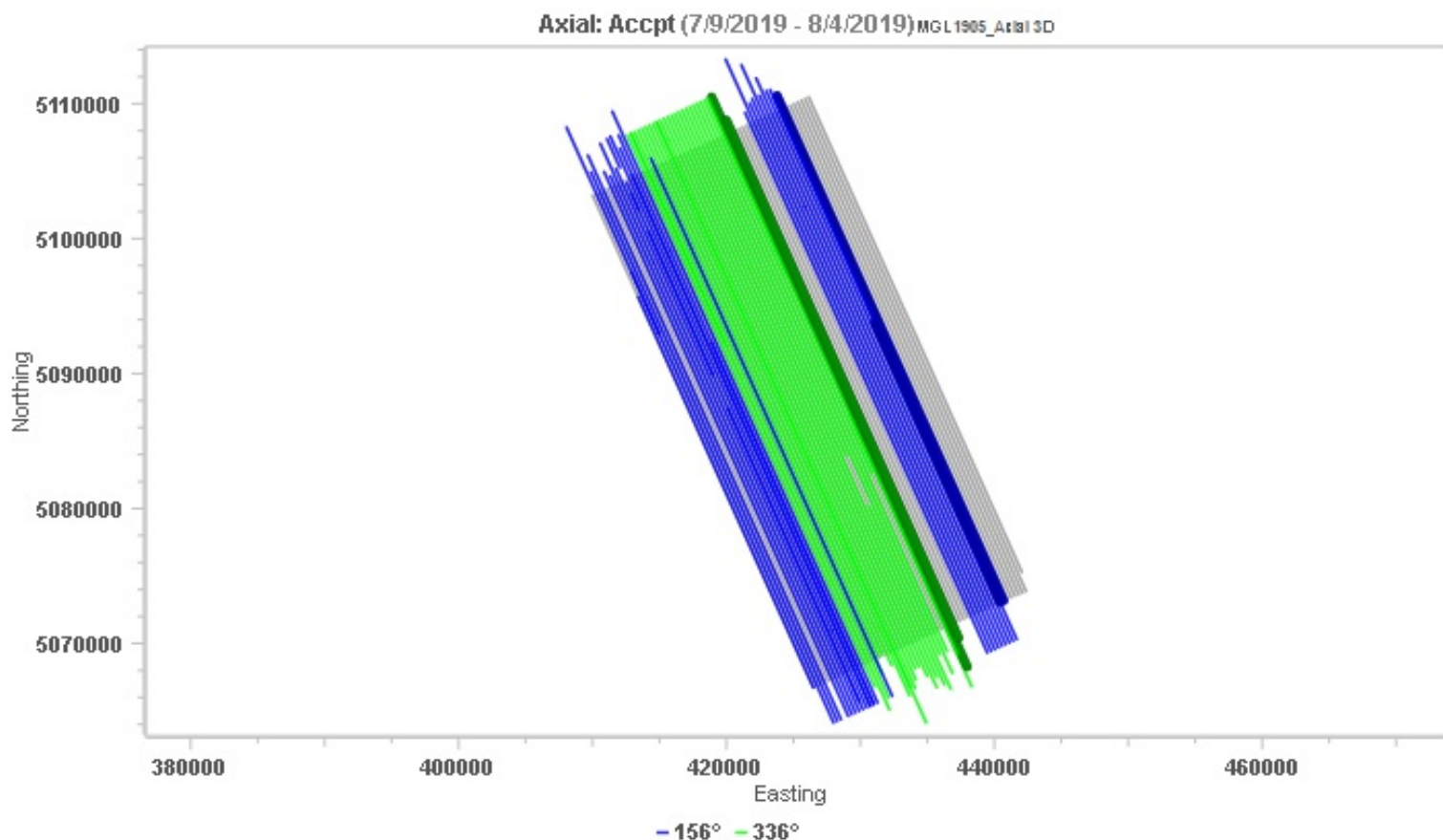
| MGL1905_Axial 3D | | | | | |
|---------------------|------|--------------------|--------|----------------|------|
| Strings per source: | 2 | String Separation: | 6 m | String length: | 18 m |
| Binning | | | | | |
| Size Inline: | 50 m | Size XLine: | 37.5 m | | |

Production Listing (Accpt km by interval) - Prime: Sail Line, Infill: Full Fold

| Seq | Line | Heading | FGSP | LGSP | Prod Type | Production | Ave Knots | Seq Status | Line Status |
|--------------|------|---------|------|------|-----------|---------------|-----------|------------|-------------|
| 54 | 1412 | 155.7 | 1461 | 2068 | Infill | 22.80 | 4.580 | Complete | Complete |
| 55 | 1300 | 335.7 | 2157 | 921 | Prime | 46.35 | 4.537 | Complete | Complete |
| 56 | 1420 | 155.7 | 972 | 2068 | Prime | 41.10 | 4.576 | Complete | Complete |
| 57 | 1308 | 335.7 | 2098 | 975 | Prime | 42.11 | 4.641 | Part | Midnight |
| Total | | | | | | 152.36 | | | |

Production Totals (Accpt km by interval) - Prime: Sail Line, Infill: Full Fold

| Accepted km | Day | Week | Month | Project |
|-----------------|---------------|---------------|---------------|----------------|
| Prime | 129.56 | 844.99 | 407.18 | 2127.30 |
| Infill | 22.80 | 86.33 | 86.33 | 312.97 |
| Prime, Reshoot | 0.00 | 0.00 | 0.00 | 4.61 |
| Combined | 152.36 | 931.31 | 493.50 | 2444.89 |





8/4/2019

Page 4

Daily Comment Summaries - Daily Comments On Status of Equipment

Sun 04 Aug

Navigation:

No Major Issues to Report

Information Technology (IT):

No Major Issues to Report

Acquisition (OBS):

Streamer 4 failure.

Towing and Handling (Source):

No Major Issues to Report

General Purpose Science:

No Major Issues to Report

Daily Comment Summaries - Personnel Onboard

Sun 04 Aug

Technical Staff On-board the Langseth

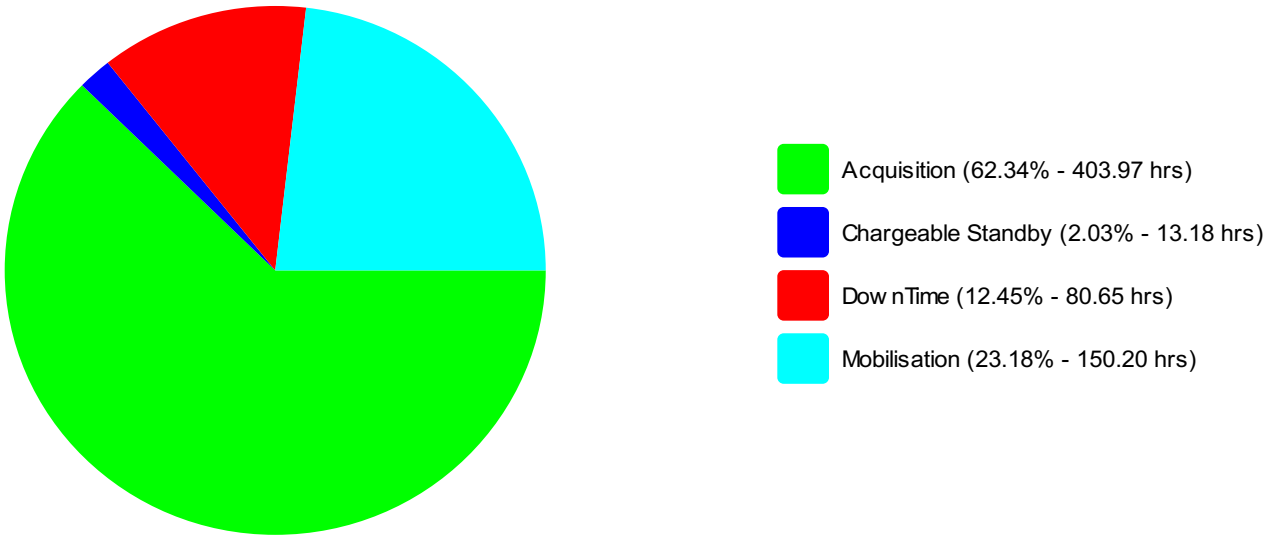
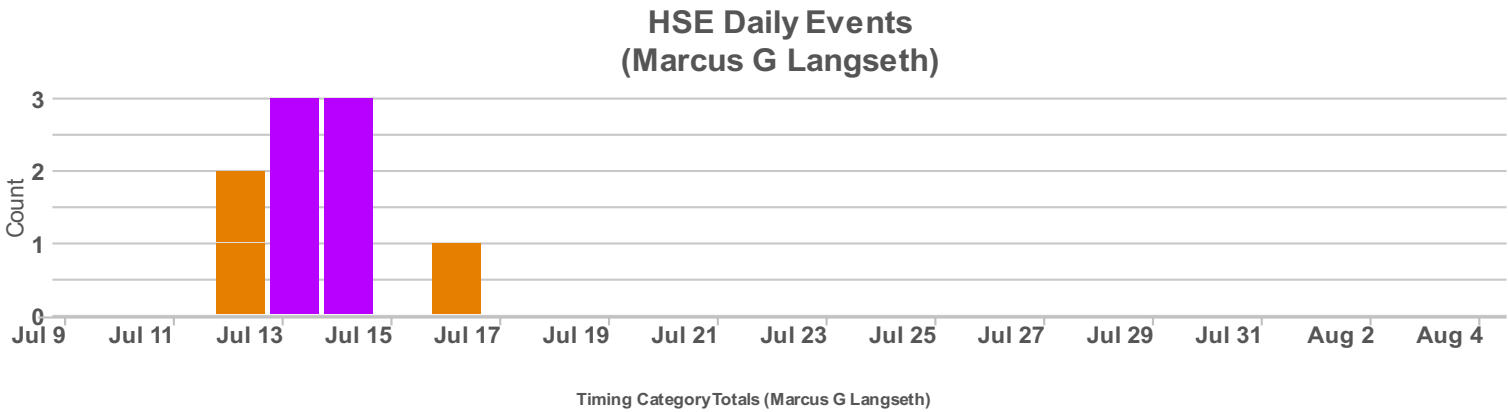
Todd Jensvold L-DEO OMO Chief Science Officer
David Martinson L-DEO OMO Science Officer - Nav
Josh Kasinger L-DEO OMO Chief Source Mechanic
Tom Spoto L-DEO OMO Source Mechanic
Alan Thompson L-DEO OMO Marine Science Technician - Nav
Gilles Guerin L-DEO OMO Marine Science Technician - Obs
Shaun Shaver L-DEO OMO Marine Science Technician - Obs
Edmond St. Amant Contract Personnel Marine Science Technician - Source
Matt Dietrich Contract Personnel Marine Science Technician - Source
Chris Abdouch NCS SubSea Contract Nav Processor
Mike Jennings NCS SubSea Contract Nav Processor

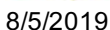
PSO Staff On-board the Langseth

Amanda Dubuque RPS Lead PSO
Bianca Mares RPS PSO
Ana Hernandez RPS PSO
Lluvia Durantes RPS PSO
Alejandra Ramos RPS PSO

Science Party On-board the Langseth

Adrien Amulf UTIG - PI
Alistar Harding Scripps - PI
Steffen Sastrup UTIG - Tech
Michelle Lee LDEO - Student
Axelle Cap U de Bretagne - Student
Shelby Brandt U of Ottawa - Student
Morgan Goulain Mines of Paris Tech - Student
Victoire Lucas U de Bretagne - Student
Samual Mitchell U. of Bristol - Research Tech
Mathew Griffiths Carlton U. - Student
Massimo Stefano Belluci U de Bretagne - Student
Tanner Eischen East Carolina U. - Student
Brian Oller Scripps - Student





Daily Science Report

Page 1

| | | | |
|------------------------|---|----------------------|----------------------------------|
| Client: | United States National Science Foundation | Contractor: | Lamont-Doherty Earth Observatory |
| Job No: | MGL 1905 | Job No: | MGL 1905 |
| Block: | Axial | Vessel: | Marcus G Langseth |
| Client Contact: | Adrien Arnulf | Supervisor: | Sean Higgins |
| Consultancy: | N/A | Party Chiefs: | Todd Jensvold |
| Job No: | | Client Reps: | Adrien Arnulf |

Daily Comment Summaries - Daily Summary

Mon 05 Aug

Acquired lines:1308(Midnight), 1428, 1316, 1436, R1284(midnight)
R1284 - is infill as well as closing gaps at the start of 1284 and part way down 1292 d/t Fog and Whale sightings.
Subarray 1 was recovered d/t an air leak.









Daily Comment Summaries - Plan for Tomorrow

Mon 05 Aug

Continue acquisition.

Timing Diary (Marcus G Langseth, MGL1905_Axial 3D)

[illegible]

| Category | Code | Start | End | Duration |
|---|--------|------------------|------------------|----------|
|  Production Prime | AC_PP | Mon 5. Aug 00:00 | Mon 5. Aug 00:15 | 0.250 |
| SOL Seq 57 Line:1308 Block=Axial FGSP=974 Hdg=335.7° Prime EOL Seq 57 Line:1308 Block=Axial LGSP=921 Complete | | | | |
|  Prime Line Change | AC_PLC | Mon 5. Aug 00:15 | Mon 5. Aug 02:07 | 1.867 |
| Nominal Prime line change. | | | | |
|  Production Prime | AC_PP | Mon 5. Aug 02:07 | Mon 5. Aug 07:02 | 4.917 |
| SOL Seq 58 Line:1428 Block=Axial FGSP=960 Hdg=155.7° Prime EOL Seq 58 Line:1428 Block=Axial LGSP=2148 Complete | | | | |
|  Prime Line Change | AC_PLC | Mon 5. Aug 07:02 | Mon 5. Aug 09:05 | 2.050 |
| Nominal Prime line change. | | | | |
|  Production Prime | AC_PP | Mon 5. Aug 09:05 | Mon 5. Aug 14:14 | 5.150 |
| SOL Seq 59 Line:1316 Block=Axial FGSP=2122 Hdg=335.7° Prime EOL Seq 59 Line:1316 Block=Axial LGSP=921 Complete | | | | |
|  Prime Line Change | AC_PLC | Mon 5. Aug 14:14 | Mon 5. Aug 16:08 | 1.900 |
| Nominal Prime line change. | | | | |
|  Production Prime | AC_PP | Mon 5. Aug 16:08 | Mon 5. Aug 21:01 | 4.883 |
| SOL Seq 60 Line:1436 Block=Axial FGSP=972 Hdg=155.7° Prime EOL Seq 60 Line:1436 Block=Axial LGSP=2148 Complete | | | | |
|  Prime Line Change | AC_PLC | Mon 5. Aug 21:01 | Mon 5. Aug 22:54 | 1.883 |




Daily Science Report

Lamont-Doherty Earth Observatory
COLUMBIA UNIVERSITY | EARTH INSTITUTE

8/5/2019

Page 2

| Category | Code | Start | End | Duration |
|--|-------|------------------|------------------|----------|
| Nominal Prime line change. | | | | |
|  Production Prime | AC_PP | Mon 5. Aug 22:54 | Mon 5. Aug 24:00 | 1.100 |
| SOL Seq 61 Line:1284 Block=Axial FGSP=2147 Hdg=335.7° Prime MSP Seq 61 Line:1284 Block=Axial LGSP=1893 Midnight | | | | |

Timing Day By Day (Marcus G Langseth, MGL1905_Axial 3D)

| 5-Aug | Hours | %Percent |
|--------------------|---------------|----------------|
| Acquisition | 24.000 | 100.000 |
| Prime Line Change | 7.700 | 32.083 |
| Production Prime | 16.300 | 67.917 |
| Day's Total | 24.000 | 100.000 |

Timing Breakdown Summary - Project (Marcus G Langseth, MGL1905_Axial 3D)

| Category | Hours | %Percent |
|---------------------------|----------------|---------------|
| DownTime | 80.650 | 12.001 |
| Cetacean | 1.583 | 0.236 |
| Streamers | 37.633 | 5.600 |
| Vessel | 41.433 | 6.166 |
| Mobilisation | 150.200 | 22.351 |
| Deployment | 45.200 | 6.726 |
| Mob Ashore | 63.000 | 9.375 |
| Testing | 0.333 | 0.050 |
| Transit to Prospect | 41.667 | 6.200 |
| Acquisition | 427.967 | 63.686 |
| Prime Line Change | 114.950 | 17.106 |
| Production Infill | 37.900 | 5.640 |
| Production Prime | 275.117 | 40.940 |
| Chargeable Standby | 13.183 | 1.962 |
| Transit | 2.017 | 0.300 |
| Weather | 11.167 | 1.662 |
| Total | 672.000 | |

Basic Project Details

| MGL1905_Axial 3D | | | | | |
|------------------|----------|------------------|-------|---------------------|--------|
| General Details | | | | | |
| Record length: | 12000 ms | Sample rate: | 2 ms | Shotpoint interval: | 37.5 m |
| CoS to CNG: | 225 m | Fold Coverage: | 252 | | |
| Cable Details | | | | | |
| No of Cables: | 4 | Head Separation: | 150 m | Tail Separation: | 150 m |
| Chans Per Cable: | 468 | Front Depth: | 16 m | Tail Depth: | 16 m |



8/5/2019

Page 3

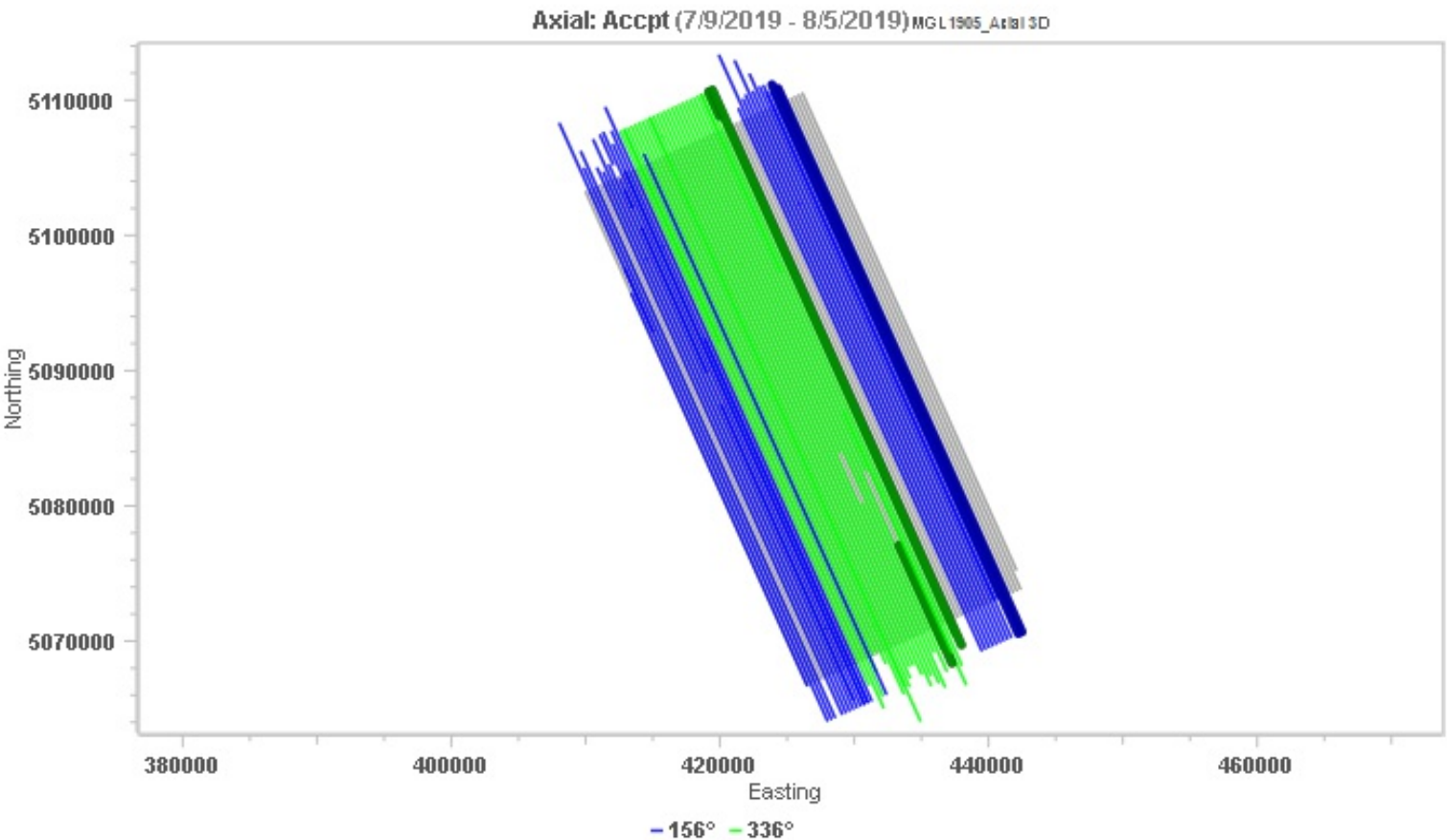
| MGL1905_Axial 3D | | | | | |
|---------------------|--------|--------------------|----------|----------------|-------------|
| Length: | 5850 m | Group interval: | 12.5 m | | |
| Source Details | | | | | |
| No of Sources: | 2 | Separation: | 75 m | Total Volume: | 6600 cu ins |
| Depth: | 12 m | Pressure: | 1950 PSI | Volume: | 3300 |
| Strings per source: | 2 | String Separation: | 6 m | String length: | 18 m |
| Binning | | | | | |
| Size Inline: | 50 m | Size XLine: | 37.5 m | | |

Production Listing (Accpt km by interval) - Prime: Sail Line, Infill: Full Fold

| Seq | Line | Heading | FGSP | LGSP | Prod Type | Production | Ave Knots | Seq Status | Line Status |
|-------|------|---------|------|------|----------------|------------|-----------|------------|-------------|
| 57 | 1308 | 335.7 | 974 | 921 | Prime | 2.02 | 4.628 | Complete | Complete |
| 58 | 1428 | 155.7 | 960 | 2148 | Prime | 44.55 | 4.893 | Complete | Complete |
| 59 | 1316 | 335.7 | 2122 | 921 | Prime | 45.04 | 4.722 | Complete | Complete |
| 60 | 1436 | 155.7 | 972 | 2148 | Prime | 44.10 | 4.876 | Complete | Complete |
| 61 | 1284 | 335.7 | 2147 | 1893 | Prime, Reshoot | 9.53 | 4.676 | Part | Midnight |
| Total | | | | | | 145.24 | | | |

Production Totals (Accpt km by interval) - Prime: Sail Line, Infill: Full Fold

| Accepted km | Day | Week | Month | Project |
|----------------|--------|--------|--------|---------|
| Prime | 135.71 | 135.71 | 542.89 | 2263.01 |
| Infill | 0.00 | 0.00 | 86.33 | 312.97 |
| Prime, Reshoot | 9.53 | 9.53 | 9.53 | 14.14 |
| Combined | 145.24 | 145.24 | 638.74 | 2590.12 |



Daily Comment Summaries - Daily Comments On Status of Equipment

Mon 05 Aug

Navigation:
No Major Issues to Report

Information Technology (IT):
No Major Issues to Report

Acquisition (OBS):
Streamer 4 failure.

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

General Purpose Science:
No Major Issues to Report

Daily Comment Summaries - Personnel Onboard

Mon 05 Aug

- Technical Staff On-board the Langseth**
Todd Jensvold L-DEO OMO Chief Science Officer
David Martinson L-DEO OMO Science Officer - Nav
Josh Kasinger L-DEO OMO Chief Source Mechanic
Tom Spoto L-DEO OMO Source Mechanic
Alan Thompson L-DEO OMO Marine Science Technician - Nav
Gilles Guerin L-DEO OMO Marine Science Technician - Obs
Shaun Shaver L-DEO OMO Marine Science Technician - Obs
Edmond St. Amant Contract Personnel Marine Science Technician - Source
Matt Dietrich Contract Personnel Marine Science Technician - Source
Chris Abdouch NCS SubSea Contract Nav Processor



8/5/2019

Page 5

Mike Jennings NCS SubSea Contract Nav Processor

PSO Staff On-board the Langseth

Amanda Dubuque RPS Lead PSO
Bianca Mares RPS PSO
Ana Hernandez RPS PSO
Lluvia Durantes RPS PSO
Alejandra Ramos RPS PSO

Science Party On-board the Langseth

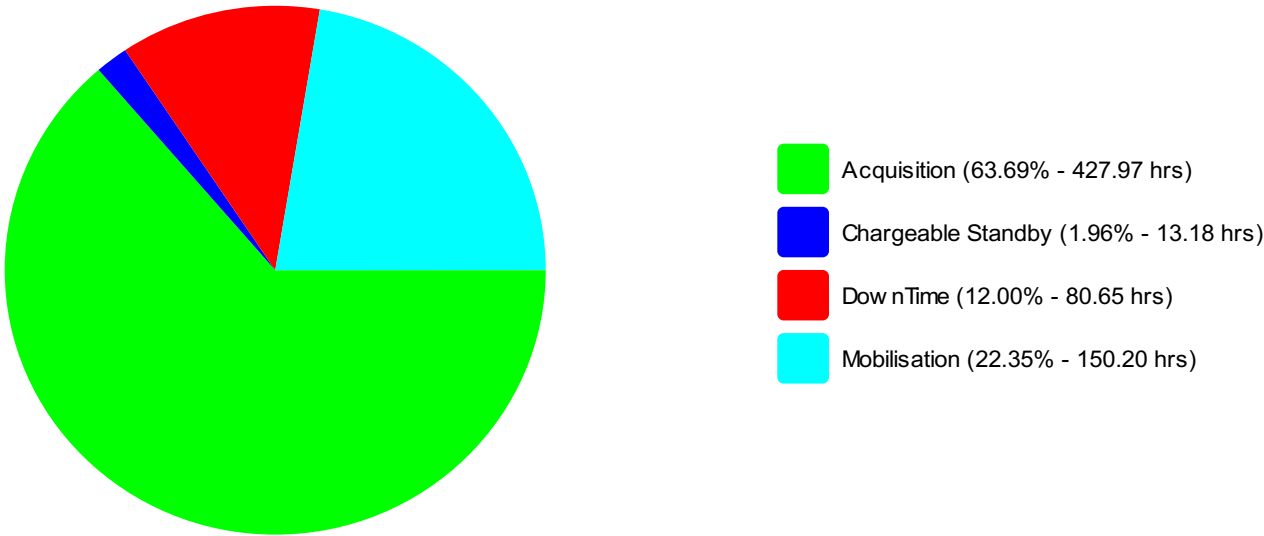
Adrien Amulf UTIG - PI
Alistar Harding Scripps - PI
Steffen Saustrop UTIG - Tech
Michelle Lee LDEO - Student
Axelle Cap U de Bretagne - Student
Shelby Brandt U of Ottawa - Student
Morgan Goulain Mines of Paris Tech - Studen
Victoire Lucas U de Bretagne - Student
Samual Mitchell U. of Bristol - Research Tech
Mathew Griffiths Carlton U. - Student
Massimo Stefano Belluci U de Bretagne - Student
Tanner Eischen East Carolina U. - Student
Brian Oller Scripps - Student

HSE Daily Events
(Marcus G Langseth)





Timing CategoryTotals (Marcus G Langseth)





Daily Science Report

8/6/2019

Page 1

| | | | |
|------------------------|---|----------------------|----------------------------------|
| Client: | United States National Science Foundation | Contractor: | Lamont-Doherty Earth Observatory |
| Job No: | MGL1905 | Job No: | MGL1905 |
| Block: | Axial | Vessel: | Marcus G Langseth |
| Client Contact: | Adrien Arnulf | Supervisor: | Sean Higgins |
| Consultancy: | N/A | Party Chiefs: | Todd Jensvold |
| Job No: | | Client Reps: | Adrien Arnulf |

Daily Comment Summaries - Daily Summary

Tue 06 Aug

Acquired lines: R1284(midnight), I1348, I1252, A1348(midnight)
Streamer 4 failing further - leakage faults and loss of compass telemetry
BGM3 getting DNV errors related to one of it's gyros.

Daily Comment Summaries - Plan for Tomorrow

Tue 06 Aug

Continue acquisition.

Timing Diary (Marcus G Langseth, MGL1905_Axial 3D)





| Category | Code | Start | End | Duration |
|---|--------|------------------|------------------|----------|
| Production Prime | AC_PP | Tue 6. Aug 00:00 | Tue 6. Aug 00:47 | 0.783 |
| SOL Seq 61 Line:1284 Block=Axial FGSP=1892 Hdg=335.7° Prime EOL Seq 61 Line:1284 Block=Axial LGSP=1715 Complete | | | | |
| Production Infill | AC_PI | Tue 6. Aug 00:47 | Tue 6. Aug 01:10 | 0.383 |
| SOL Seq 61 Line:1284 Block=Axial FGSP=1714 Hdg=335.7° Infill EOL Seq 61 Line:1284 Block=Axial LGSP=1632 Complete | | | | |
| Production Prime | AC_PP | Tue 6. Aug 01:10 | Tue 6. Aug 02:37 | 1.450 |
| SOL Seq 61 Line:1292 Block=Axial FGSP=1631 Hdg=335.7° Prime EOL Seq 61 Line:1292 Block=Axial LGSP=1303 Complete | | | | |
| Production Infill | AC_PI | Tue 6. Aug 02:37 | Tue 6. Aug 04:14 | 1.617 |
| SOL Seq 61 Line:1292 Block=Axial FGSP=1302 Hdg=335.7° Infill EOL Seq 61 Line:1292 Block=Axial LGSP=921 Complete | | | | |
| Prime Line Change | AC_PLC | Tue 6. Aug 04:14 | Tue 6. Aug 06:05 | 1.850 |
| Nominal Prime line change. | | | | |
| Production Infill | AC_PI | Tue 6. Aug 06:05 | Tue 6. Aug 11:14 | 5.150 |
| SOL Seq 62 Line:1348 Block=Axial FGSP=946 Hdg=335.7° Infill EOL Seq 62 Line:1348 Block=Axial LGSP=2148 Complete | | | | |
| Prime Line Change | AC_PLC | Tue 6. Aug 11:14 | Tue 6. Aug 13:10 | 1.933 |
| Nominal Prime line change. | | | | |
| Production Infill | AC_PI | Tue 6. Aug 13:10 | Tue 6. Aug 18:36 | 5.433 |



Daily Science Report

8/6/2019

Page 2

| Category | Code | Start | End | Duration |
|--|--------|------------------|------------------|----------|
| SOL Seq 63 Line:1252 Block=Axial FGSP=2135 Hdg=335.7° Infill EOL Seq 63 Line:1252 Block=Axial LGSP=921 Complete | | | | |
|  Prime Line Change | AC_PLC | Tue 6. Aug 18:36 | Tue 6. Aug 20:38 | 2.033 |
| Nominal Prime line change. | | | | |
|  Production Infill | AC_PI | Tue 6. Aug 20:38 | Tue 6. Aug 24:00 | 3.367 |
| SOL Seq 64 Line:1348 Block=Axial FGSP=944 Hdg=335.7° Infill MSP Seq 64 Line:1348 Block=Axial LGSP=1736 Midnight | | | | |

Timing Day By Day (Marcus G Langseth, MGL1905_Axial 3D)

| 6-Aug | Hours | %Percent |
|--------------------|---------------|----------------|
| Acquisition | 24.000 | 100.000 |
| Prime Line Change | 5.817 | 24.236 |
| Production Infill | 15.950 | 66.458 |
| Production Prime | 2.233 | 9.306 |
| Day's Total | 24.000 | 100.000 |

Timing Breakdown Summary - Project (Marcus G Langseth, MGL1905_Axial 3D)

| Category | Hours | %Percent |
|---------------------------|----------------|---------------|
| DownTime | 80.650 | 11.588 |
| Cetacean | 1.583 | 0.227 |
| Streamers | 37.633 | 5.407 |
| Vessel | 41.433 | 5.953 |
| Mobilisation | 150.200 | 21.580 |
| Deployment | 45.200 | 6.494 |
| Mob Ashore | 63.000 | 9.052 |
| Testing | 0.333 | 0.048 |
| Transit to Prospect | 41.667 | 5.987 |
| Acquisition | 451.967 | 64.938 |
| Prime Line Change | 120.767 | 17.352 |
| Production Infill | 53.850 | 7.737 |
| Production Prime | 277.350 | 39.849 |
| Chargeable Standby | 13.183 | 1.894 |
| Transit | 2.017 | 0.290 |
| Weather | 11.167 | 1.604 |
| Total | 696.000 | |

Basic Project Details

| MGL1905_Axial 3D | | | | | |
|------------------|----------|--------------|------|---------------------|--------|
| General Details | | | | | |
| Record length: | 12000 ms | Sample rate: | 2 ms | Shotpoint interval: | 37.5 m |



Daily Science Report

8/6/2019

Page 3

| MGL1905_Axial 3D | | | | | |
|---------------------|--------|--------------------|----------|------------------|-------------|
| CoS to CNG: | 225 m | Fold Coverage: | 252 | | |
| Cable Details | | | | | |
| No of Cables: | 4 | Head Separation: | 150 m | Tail Separation: | 150 m |
| Chans Per Cable: | 468 | Front Depth: | 16 m | Tail Depth: | 16 m |
| Length: | 5850 m | Group interval: | 12.5 m | | |
| Source Details | | | | | |
| No of Sources: | 2 | Separation: | 75 m | Total Volume: | 6600 cu ins |
| Depth: | 12 m | Pressure: | 1950 PSI | Volume: | 3300 |
| Strings per source: | 2 | String Separation: | 6 m | String length: | 18 m |
| Binning | | | | | |
| Size Inline: | 50 m | Size XLine: | 37.5 m | | |

Production Listing (Acctpt km by interval) - Prime: Sail Line, Infill: Full Fold

| Seq | Line | Heading | FGSP | LGSP | Prod Type | Production | Ave Knots | Seq Status | Line Status |
|--------------|------|---------|------|------|----------------|---------------|-----------|------------|-------------|
| 61 | 1284 | 335.7 | 1892 | 1715 | Prime, Reshoot | 6.67 | 4.645 | Complete | Complete |
| 61 | 1284 | 335.7 | 1714 | 1632 | Infill | 3.07 | 4.331 | Complete | Complete |
| 61 | 1292 | 335.7 | 1631 | 1303 | Prime, Reshoot | 12.30 | 4.580 | Complete | Complete |
| 61 | 1292 | 335.7 | 1302 | 921 | Infill | 14.29 | 4.772 | Complete | Complete |
| 62 | 1348 | 335.7 | 946 | 2148 | Infill | 45.07 | 4.726 | Complete | Complete |
| 63 | 1252 | 335.7 | 2135 | 921 | Infill | 45.52 | 4.524 | Complete | Complete |
| 64 | 1348 | 335.7 | 944 | 1736 | Infill | 29.70 | 4.763 | Part | Midnight |
| Total | | | | | | 156.64 | | | |

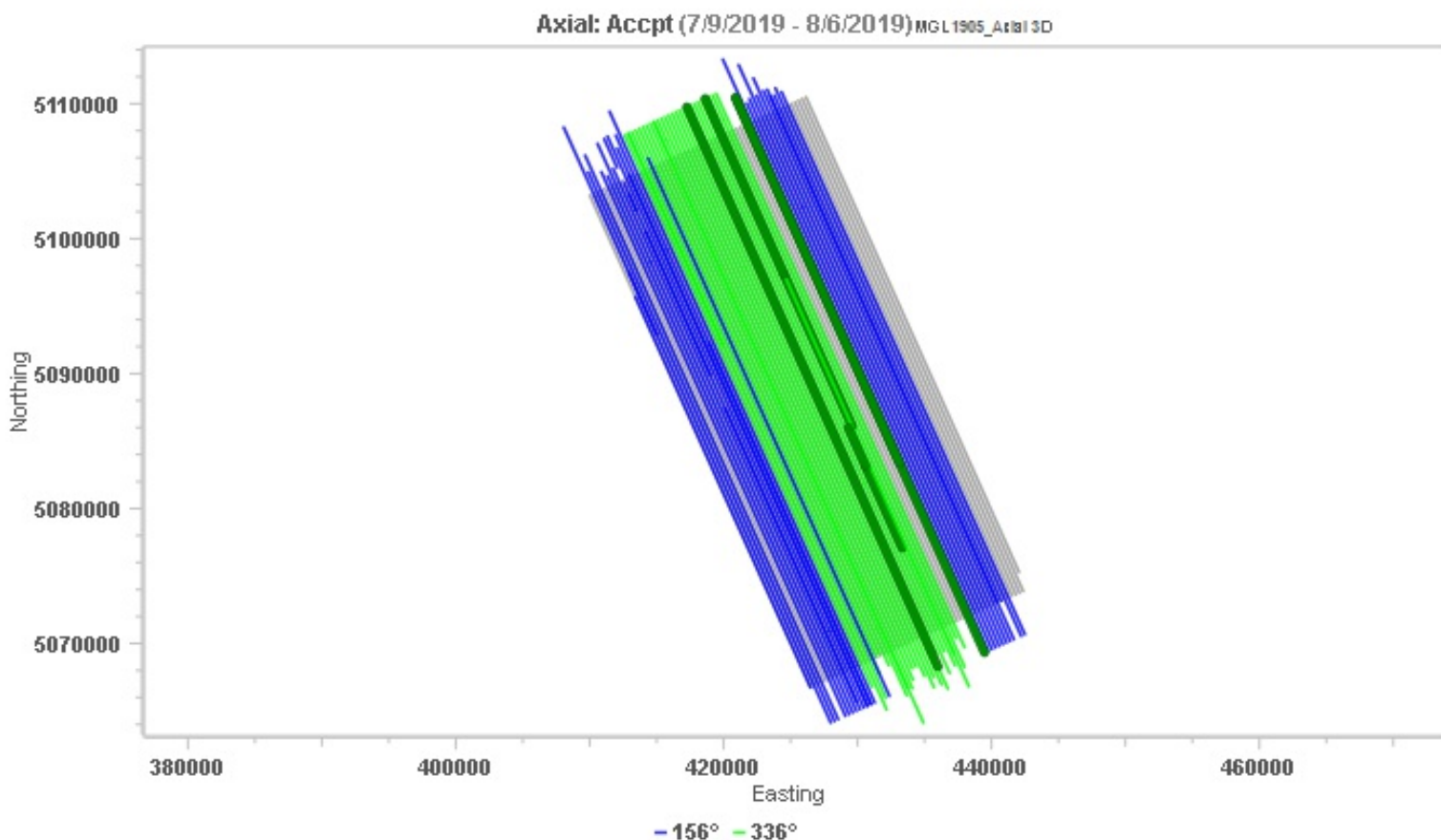
Production Totals (Acctpt km by interval) - Prime: Sail Line, Infill: Full Fold

| Accepted km | Day | Week | Month | Project |
|-----------------|---------------|---------------|---------------|----------------|
| Prime | 0.00 | 135.71 | 542.89 | 2263.01 |
| Infill | 137.66 | 137.66 | 223.99 | 450.64 |
| Prime, Reshoot | 18.97 | 28.50 | 28.50 | 33.11 |
| Combined | 156.64 | 301.88 | 795.38 | 2746.76 |



8/6/2019

Page 4



Daily Comment Summaries - Daily Comments On Status of Equipment

Tue 06 Aug

Navigation:
No Major Issues to Report

Information Technology (IT):
No Major Issues to Report

Acquisition (OBS):
Streamer 4 failure.

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

General Purpose Science:
BGM Gyro errors

Daily Comment Summaries - Personnel Onboard

Tue 06 Aug

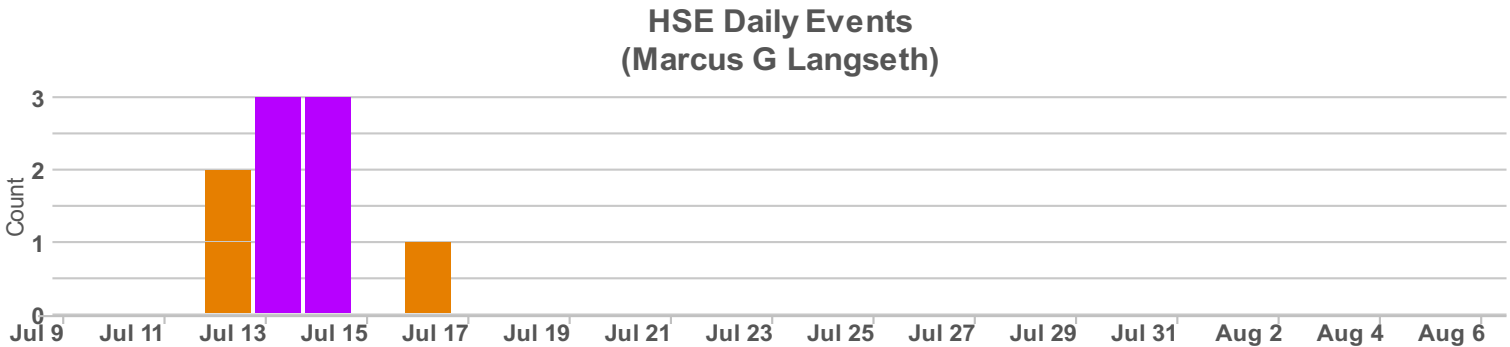
Technical Staff On-board the Langseth
Todd Jensvold L-DEO OMO Chief Science Officer
David Martinson L-DEO OMO Science Officer - Nav
Josh Kasinger L-DEO OMO Chief Source Mechanic
Tom Spoto L-DEO OMO Source Mechanic
Alan Thompson L-DEO OMO Marine Science Technician - Nav
Gilles Guerin L-DEO OMO Marine Science Technician - Obs
Shaun Shaver L-DEO OMO Marine Science Technician - Obs
Edmond St. Amant Contract Personnel Marine Science Technician - Source
Matt Dietrich Contract Personnel Marine Science Technician - Source
Chris Abdouch NCS SubSea Contract Nav Processor



Mike Jennings NCS SubSea Contract Nav Processor

PSO Staff On-board the Langseth
Amanda Dubuque RPS Lead PSO
Bianca Mares RPS PSO
Ana Hernandez RPS PSO
Lluvia Durantes RPS PSO
Alejandra Ramos RPS PSO

Science Party On-board the Langseth
Adrien Amulf UTIG - PI
Alistar Harding Scripps - PI
Steffen Saustrop UTIG - Tech
Michelle Lee LDEO - Student
Axelle Cap U de Bretagne - Student
Shelby Brandt U of Ottawa - Student
Morgan Goulain Mines of Paris Tech - Studen
Victoire Lucas U de Bretagne - Student
Samual Mitchell U. of Bristol - Research Tech
Mathew Griffiths Carlton U. - Student
Massimo Stefano Belluci U de Bretagne - Student
Tanner Eischen East Carolina U. - Student
Brian Oller Scripps - Student

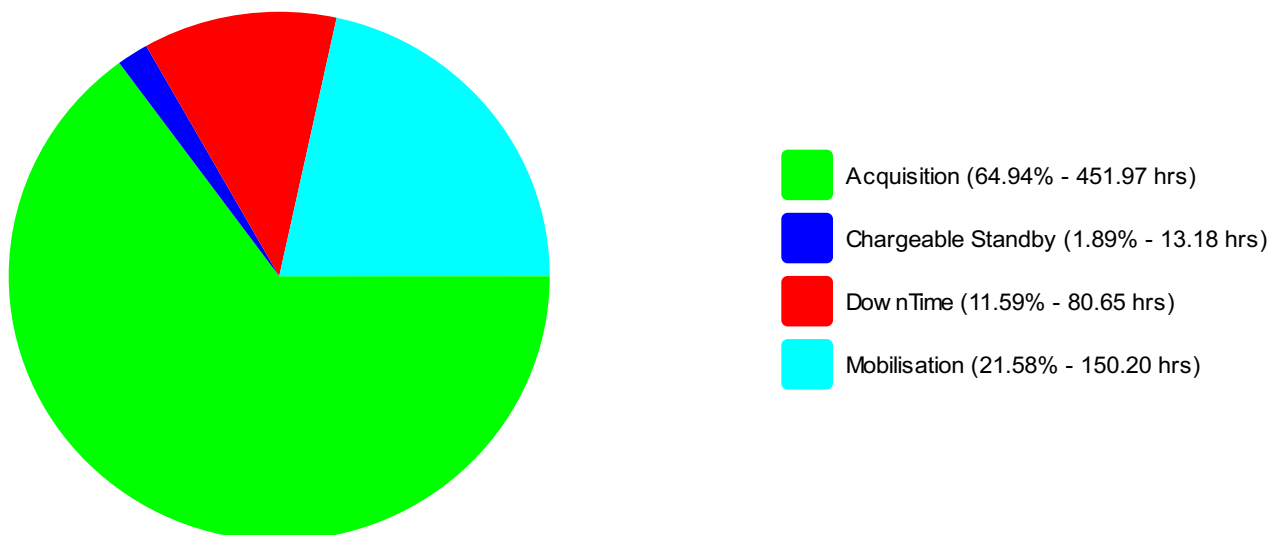




8/6/2019

Page 6

Timing Category Totals (Marcus G Langseth)





8/7/2019

Page 1

| | | | |
|------------------------|---|----------------------|----------------------------------|
| Client: | United States National Science Foundation | Contractor: | Lamont-Doherty Earth Observatory |
| Job No: | MGL1905 | Job No: | MGL1905 |
| Block: | Axial | Vessel: | Marcus G Langseth |
| Client Contact: | Adrien Arnulf | Supervisor: | Sean Higgins |
| Consultancy: | N/A | Party Chiefs: | Todd Jensvold |
| Job No: | | Client Reps: | Adrien Arnulf |

Daily Comment Summaries - Daily Summary

Wed 07 Aug

Acquired lines: A1348(midnight), partial P1324 streamer 4 parted, partial B1348 (whale sighting)

Streamer 4 completely separated from lead-in during line P1324.

All source arrays and PAM were recovered.

While pulling in streamers 3,4 and the port vane, streamer 4 was found to still be attached to the head float.

It was decided to move streamer 3 to center and recover streamer 4 and the port vane.

At the start of recovery streamer 4 was plugged into deck bypass and the streamer birds were set shallow to allow for recovery.

Once streamer 4 was recovered, it was decided to redeploy the port vane with a separation rope to streamer 3 to continue acquisition of the last few lines.

The PAM tow leader was changed during the down time due to electrical issues from old unit.

Late start for line B1348 due to having to change tow cables.

Starboard main engine failed during line B1348 - the currents allowed for finishing the line and then delayed turn until after repairs completed.

Daily Comment Summaries - Plan for Tomorrow

Wed 07 Aug

Continue acquisition.

Timing Diary (Marcus G Langseth, MGL1905_Axial 3D)




| Category | Code | Start | End | Duration |
|--|--------|------------------|------------------|----------|
| Production Prime | AC_PP | Wed 7. Aug 00:00 | Wed 7. Aug 01:41 | 1.683 |
| SOL Seq 64 Line:1340 Block=Axial FGSP=1737 Hdg=335.7° Prime EOL Seq 64 Line:1340 Block=Axial LGSP=2148 Complete | | | | |
| Prime Line Change | AC_PLC | Wed 7. Aug 01:41 | Wed 7. Aug 04:43 | 3.033 |
| Nominal Prime line change. | | | | |
| Production Prime | AC_PP | Wed 7. Aug 04:43 | Wed 7. Aug 06:57 | 2.233 |
| SOL Seq 65 Line:1324 Block=Axial FGSP=2173 Hdg=335.7° Prime EOL Seq 65 Line:1324 Block=Axial LGSP=1678 Incomplete | | | | |
| Streamers | DT_ST | Wed 7. Aug 06:57 | Wed 7. Aug 18:20 | 11.383 |
| Downtime due to towing loss of streamer 4 | | | | |
| Production Prime | AC_PP | Wed 7. Aug 18:20 | Wed 7. Aug 21:27 | 3.117 |
| SOL Seq 66 Line:1332 Block=Axial FGSP=1115 Hdg=155.7° Prime | | | | |



Daily Science Report

8/7/2019

Page 2

| Category | Code | Start | End | Duration |
|--|--------|------------------|------------------|----------|
| EOL Seq 66 Line:1332 Block=Axial LGSP=1858 Complete | | | | |
|  Cetacean | DT_CT | Wed 7. Aug 21:27 | Wed 7. Aug 22:25 | 0.967 |
| NTBP Seq 66 A_A_1332 Block=Axial FSP=1859 LSP=2065 | | | | |
|  Production Prime | AC_PP | Wed 7. Aug 22:25 | Wed 7. Aug 22:57 | 0.533 |
| SOL Seq 66 Line:1332 Block=Axial FGSP=2066 Hdg=155.7° Prime EOL Seq 66 Line:1332 Block=Axial LGSP=2148 Complete | | | | |
|  Prime Line Change | AC_PLC | Wed 7. Aug 22:57 | Wed 7. Aug 24:00 | 1.050 |
| Long line change due to loss of starboard main engine | | | | |

Timing Day By Day (Marcus G Langseth, MGL1905_Axial 3D)

| 7-Aug | Hours | %Percent |
|--------------------|---------------|----------------|
| Acquisition | 11.650 | 48.542 |
| Prime Line Change | 4.083 | 17.014 |
| Production Prime | 7.567 | 31.528 |
| DownTime | 12.350 | 51.458 |
| Cetacean | 0.967 | 4.028 |
| Streamers | 11.383 | 47.431 |
| Day's Total | 24.000 | 100.000 |

Timing Breakdown Summary - Project (Marcus G Langseth, MGL1905_Axial 3D)

| Category | Hours | %Percent |
|---------------------------|----------------|---------------|
| DownTime | 93.000 | 12.917 |
| Cetacean | 2.550 | 0.354 |
| Streamers | 49.017 | 6.808 |
| Vessel | 41.433 | 5.755 |
| Mobilisation | 150.200 | 20.861 |
| Deployment | 45.200 | 6.278 |
| Mob Ashore | 63.000 | 8.750 |
| Testing | 0.333 | 0.046 |
| Transit to Prospect | 41.667 | 5.787 |
| Acquisition | 463.617 | 64.391 |
| Prime Line Change | 124.850 | 17.340 |
| Production Infill | 50.483 | 7.012 |
| Production Prime | 288.283 | 40.039 |
| Chargeable Standby | 13.183 | 1.831 |
| Transit | 2.017 | 0.280 |
| Weather | 11.167 | 1.551 |
| Total | 720.000 | |



8/7/2019

Page 3

Basic Project Details

| MGL1905_Axial 3D | | | | | |
|---------------------|----------|--------------------|----------|---------------------|-------------|
| General Details | | | | | |
| Record length: | 12000 ms | Sample rate: | 2 ms | Shotpoint interval: | 37.5 m |
| CoS to CNG: | 225 m | Fold Coverage: | 252 | | |
| Cable Details | | | | | |
| No of Cables: | 4 | Head Separation: | 150 m | Tail Separation: | 150 m |
| Chans Per Cable: | 468 | Front Depth: | 16 m | Tail Depth: | 16 m |
| Length: | 5850 m | Group interval: | 12.5 m | | |
| Source Details | | | | | |
| No of Sources: | 2 | Separation: | 75 m | Total Volume: | 6600 cu ins |
| Depth: | 12 m | Pressure: | 1950 PSI | Volume: | 3300 |
| Strings per source: | 2 | String Separation: | 6 m | String length: | 18 m |
| Binning | | | | | |
| Size Inline: | 50 m | Size XLine: | 37.5 m | | |

Production Listing (Accpt km by interval) - Prime: Sail Line, Infill: Full Fold

| Seq | Line | Heading | FGSP | LGSP | Prod Type | Production | Ave Knots | Seq Status | Line Status |
|------------------------------|------|---------|------|------|-----------|--------------|-----------|------------|-------------|
| 64 | 1340 | 335.7 | 1737 | 2148 | Prime | 15.45 | 4.828 | Complete | Complete |
| 65 | 1324 | 335.7 | 2173 | 1678 | Prime | 18.56 | 4.488 | Complete | Incomplete |
| 66 | 1332 | 155.7 | 1115 | 2148 | Prime | 31.01 | 4.588 | Complete | Complete |
| NTBP: 1859 - 2065 (not chgd) | | | | | | | | | |
| Total | | | | | | 65.03 | | | |

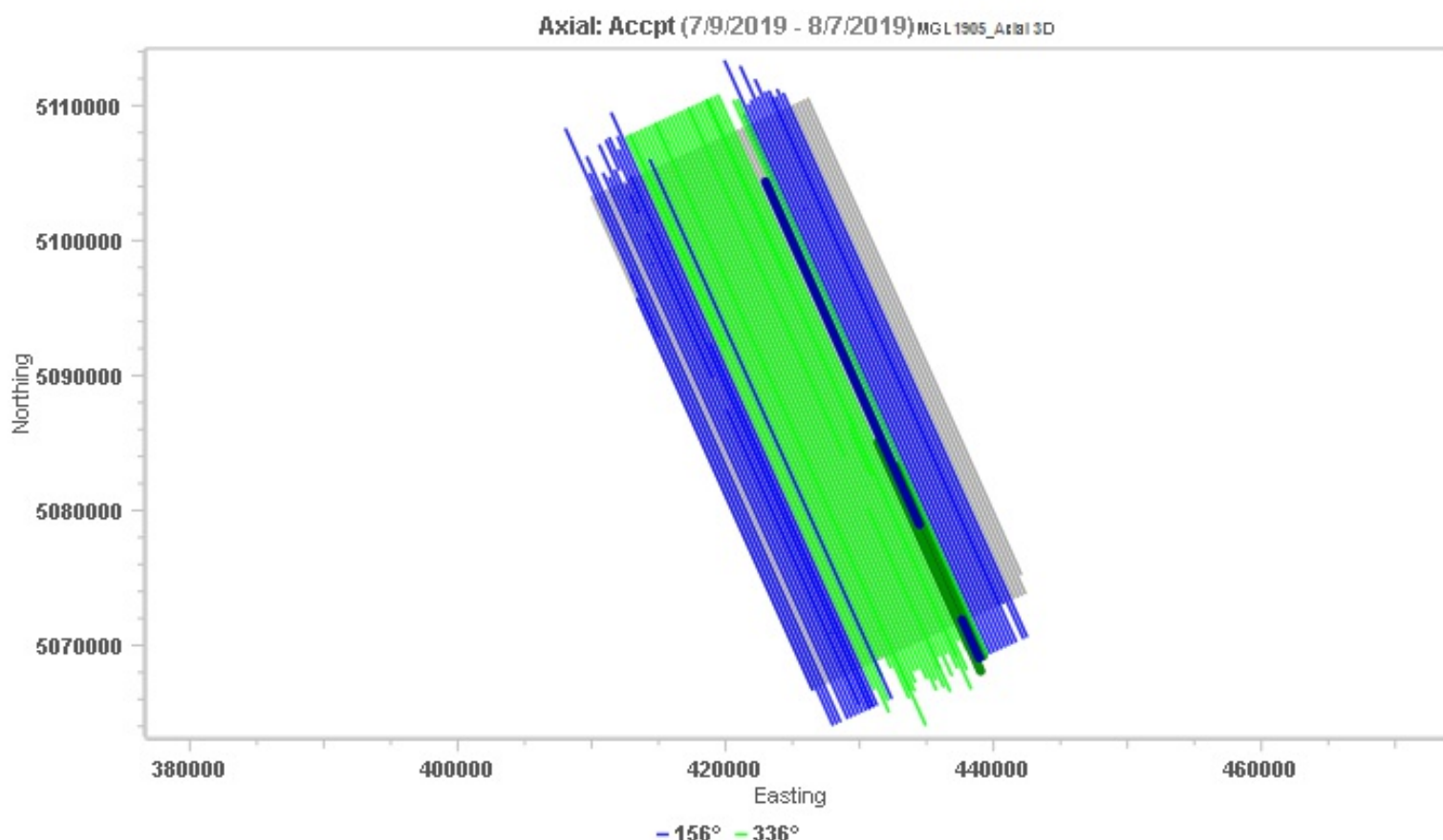
Production Totals (Accpt km by interval) - Prime: Sail Line, Infill: Full Fold

| Accepted km | Day | Week | Month | Project |
|-----------------|--------------|---------------|---------------|----------------|
| Prime | 65.03 | 230.44 | 637.61 | 2357.74 |
| Infill | 0.00 | 107.96 | 194.29 | 420.94 |
| Prime, Reshoot | 0.00 | 28.50 | 28.50 | 33.11 |
| Combined | 65.03 | 366.90 | 860.40 | 2811.79 |



8/7/2019

Page 4



Daily Comment Summaries - Daily Comments On Status of Equipment

Wed 07 Aug

Navigation:

No Major Issues to Report

Information Technology (IT):

No Major Issues to Report

Acquisition (OBS):

Streamer 4 failure.

Towing and Handling (Source):

No Major Issues to Report

General Purpose Science:

BGM Gyro errors

Daily Comment Summaries - Personnel Onboard

Wed 07 Aug

Technical Staff On-board the Langseth

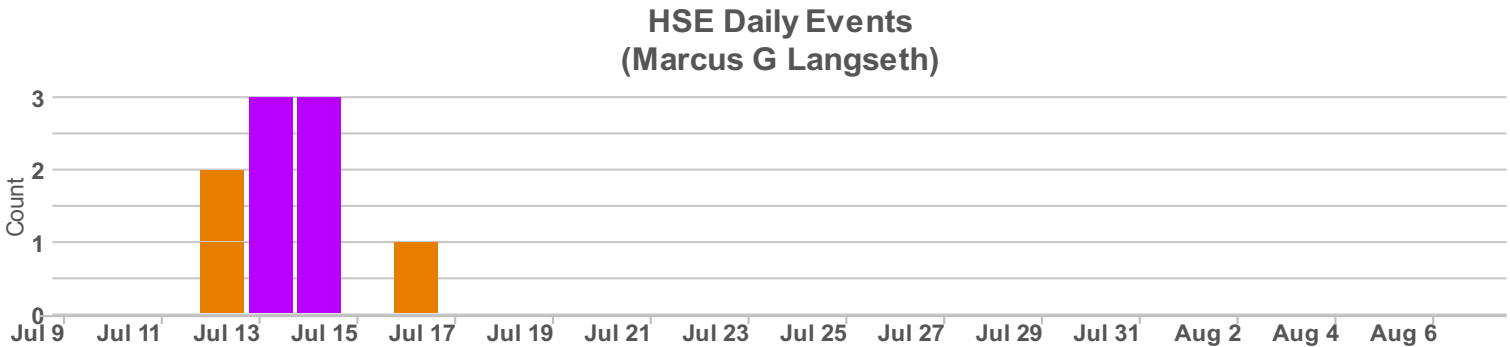
Todd Jensvold L-DEO OMO Chief Science Officer
David Martinson L-DEO OMO Science Officer - Nav
Josh Kasinger L-DEO OMO Chief Source Mechanic
Tom Spoto L-DEO OMO Source Mechanic
Alan Thompson L-DEO OMO Marine Science Technician - Nav
Gilles Guerin L-DEO OMO Marine Science Technician - Obs
Shaun Shaver L-DEO OMO Marine Science Technician - Obs
Edmond St. Amant Contract Personnel Marine Science Technician - Source
Matt Dietrich Contract Personnel Marine Science Technician - Source
Chris Abdouch NCS SubSea Contract Nav Processor



Mike Jennings NCS SubSea Contract Nav Processor

PSO Staff On-board the Langseth
Amanda Dubuque RPS Lead PSO
Bianca Mares RPS PSO
Ana Hernandez RPS PSO
Lluvia Durantes RPS PSO
Alejandra Ramos RPS PSO

Science Party On-board the Langseth
Adrien Amulf UTIG - PI
Alistar Harding Scripps - PI
Steffen Saustrop UTIG - Tech
Michelle Lee LDEO - Student
Axelle Cap U de Bretagne - Student
Shelby Brandt U of Ottawa - Student
Morgan Goulain Mines of Paris Tech - Studen
Victoire Lucas U de Bretagne - Student
Samual Mitchell U. of Bristol - Research Tech
Mathew Griffiths Carlton U. - Student
Massimo Stefano Belluci U de Bretagne - Student
Tanner Eischen East Carolina U. - Student
Brian Oller Scripps - Student

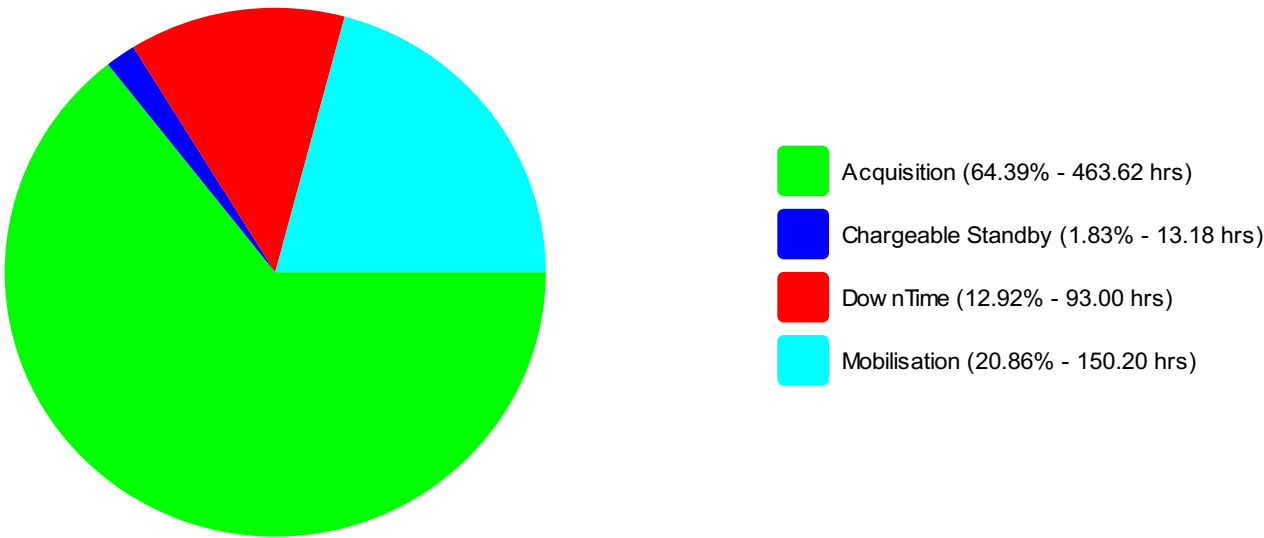




8/7/2019

Daily Science Report

Timing Category Totals (Marcus G Langseth)





Daily Science Report

8/8/2019

Page 1

| | | | |
|------------------------|---|----------------------|----------------------------------|
| Client: | United States National Science Foundation | Contractor: | Lamont-Doherty Earth Observatory |
| Job No: | MGL1905 | Job No: | MGL1905 |
| Block: | Axial | Vessel: | Marcus G Langseth |
| Client Contact: | Adrien Arnulf | Supervisor: | Sean Higgins |
| Consultancy: | N/A | Party Chiefs: | Todd Jensvold |
| Job No: | | Client Reps: | Adrien Arnulf |

Daily Comment Summaries - Daily Summary

Thu 08 Aug

Acquired lines: R1324, and C1348 completing the 3D grid.
After completion the science techs began recovering the in water gear to reconfigure for 2D lines.
Recovery was in progress through midnight UTC.








Daily Comment Summaries - Plan for Tomorrow

Thu 08 Aug

Transition from 3D to 2D and begin 2D acquisition.

Timing Diary (Marcus G Langseth, MGL1905_Axial 3D)



| Category | Code | Start | End | Duration |
|---|-----------|------------------|------------------|----------|
|  Prime Line Change | AC_PLC | Thu 8. Aug 00:00 | Thu 8. Aug 03:09 | 3.150 |
| Long line change due to loss of starboard main engine | | | | |
|  Production Infill | AC_PI | Thu 8. Aug 03:09 | Thu 8. Aug 08:36 | 5.450 |
| SOL Seq 67 Line:1324 Block=Axial FGSP=2182 Hdg=335.7° Infill EOL Seq 67 Line:1324 Block=Axial LGSP=921 Complete | | | | |
|  Prime Line Change | AC_PLC | Thu 8. Aug 08:36 | Thu 8. Aug 11:04 | 2.467 |
| Nominal Prime line change. | | | | |
|  Production Infill | AC_PI | Thu 8. Aug 11:04 | Thu 8. Aug 14:48 | 3.733 |
| SOL Seq 68 Line:1332 Block=Axial FGSP=971 Hdg=155.7° Infill EOL Seq 68 Line:1332 Block=Axial LGSP=1858 Complete | | | | |
|  Production Prime | AC_PP | Thu 8. Aug 14:48 | Thu 8. Aug 15:40 | 0.867 |
| SOL Seq 68 Line:1332 Block=Axial FGSP=1859 Hdg=155.7° Prime EOL Seq 68 Line:1332 Block=Axial LGSP=2065 Complete | | | | |
|  Production Infill | AC_PI | Thu 8. Aug 15:40 | Thu 8. Aug 16:01 | 0.350 |
| SOL Seq 68 Line:1332 Block=Axial FGSP=2066 Hdg=155.7° Infill EOL Seq 68 Line:1332 Block=Axial LGSP=2148 Complete | | | | |
|  Streamer Reconfig | SB_REC_SR | Thu 8. Aug 16:01 | Thu 8. Aug 24:00 | 7.983 |
| Chargeable standby due to re-configuring streamer and source from 3D to 2D | | | | |



8/8/2019

Page 2

Timing Day By Day (Marcus G Langseth, MGL1905_Axial 3D)

| 8-Aug | Hours | % Percent |
|---------------------------|---------------|----------------|
| Acquisition | 16.017 | 66.736 |
| Prime Line Change | 5.617 | 23.403 |
| Production Infill | 9.533 | 39.722 |
| Production Prime | 0.867 | 3.611 |
| Chargeable Standby | 7.983 | 33.264 |
| Reconfiguration | 7.983 | 33.264 |
| Streamer Reconfig | 7.983 | 33.264 |
| Day's Total | 24.000 | 100.000 |

Timing Breakdown Summary - Project (Marcus G Langseth, MGL1905_Axial 3D)

| Category | Hours | % Percent |
|---------------------------|----------------|---------------|
| DownTime | 93.000 | 12.501 |
| Cetacean | 2.550 | 0.343 |
| Streamers | 49.017 | 6.589 |
| Vessel | 41.433 | 5.569 |
| Mobilisation | 150.200 | 20.189 |
| Deployment | 45.200 | 6.076 |
| Mob Ashore | 63.000 | 8.468 |
| Testing | 0.333 | 0.045 |
| Transit to Prospect | 41.667 | 5.601 |
| Acquisition | 479.600 | 64.465 |
| Prime Line Change | 130.433 | 17.532 |
| Production Infill | 60.017 | 8.067 |
| Production Prime | 289.150 | 38.866 |
| Chargeable Standby | 21.167 | 2.845 |
| Reconfiguration | 7.983 | 1.073 |
| Streamer Reconfig | 7.983 | 1.073 |
| Transit | 2.017 | 0.271 |
| Weather | 11.167 | 1.501 |
| Total | 743.967 | |

Basic Project Details

| MGL1905_Axial 3D | | | | | |
|------------------|----------|------------------|-------|---------------------|--------|
| General Details | | | | | |
| Record length: | 12000 ms | Sample rate: | 2 ms | Shotpoint interval: | 37.5 m |
| CoS to CNG: | 225 m | Fold Coverage: | 252 | | |
| Cable Details | | | | | |
| No of Cables: | 4 | Head Separation: | 150 m | Tail Separation: | 150 m |
| Chans Per Cable: | 468 | Front Depth: | 16 m | Tail Depth: | 16 m |



8/8/2019

Page 3

| MGL1905_Axial 3D | | | | | |
|---------------------|--------|--------------------|----------|----------------|-------------|
| Length: | 5850 m | Group interval: | 12.5 m | | |
| Source Details | | | | | |
| No of Sources: | 2 | Separation: | 75 m | Total Volume: | 6600 cu ins |
| Depth: | 12 m | Pressure: | 1950 PSI | Volume: | 3300 |
| Strings per source: | 2 | String Separation: | 6 m | String length: | 18 m |
| Binning | | | | | |
| Size Inline: | 50 m | Size XLine: | 37.5 m | | |

Production Listing (Accpt km by interval) - Prime: Sail Line, Infill: Full Fold

| Seq | Line | Heading | FGSP | LGSP | Prod Type | Production | Ave Knots | Seq Status | Line Status |
|-------|------|---------|------|------|-----------|------------|-----------|------------|-------------|
| 67 | 1324 | 335.7 | 2182 | 921 | Infill | 47.29 | 4.685 | Complete | Complete |
| 68 | 1332 | 155.7 | 971 | 1858 | Infill | 33.26 | 4.811 | Complete | Complete |
| 68 | 1332 | 155.7 | 1859 | 2065 | Prime | 7.72 | 4.813 | Complete | Complete |
| 68 | 1332 | 155.7 | 2066 | 2148 | Infill | 3.07 | 4.744 | Complete | Complete |
| Total | | | | | | 91.35 | | | |

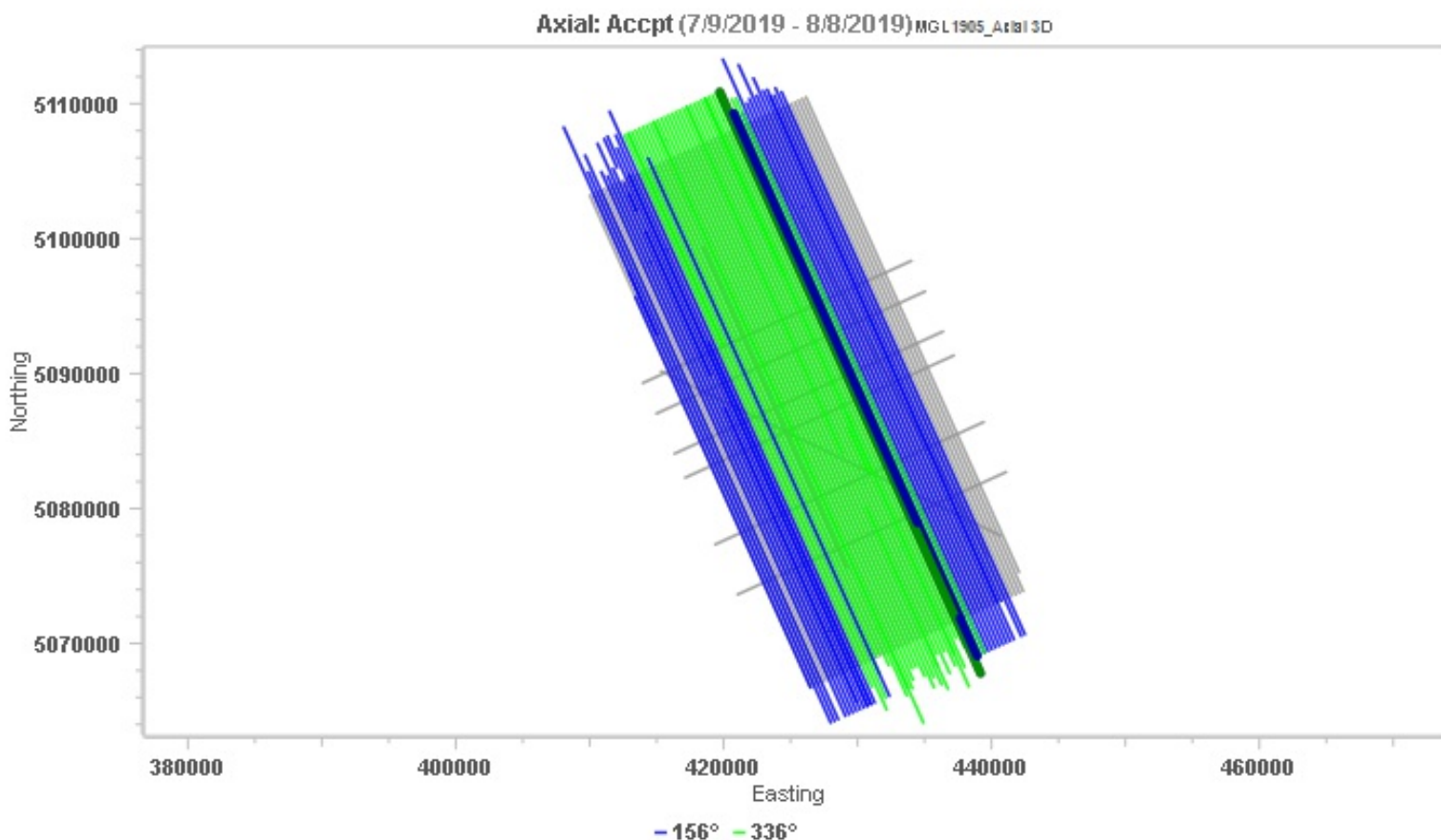
Production Totals (Accpt km by interval) - Prime: Sail Line, Infill: Full Fold

| Accepted km | Day | Week | Month | Project |
|----------------|-------|--------|--------|---------|
| Prime | 7.72 | 238.16 | 645.34 | 2365.46 |
| Infill | 83.62 | 191.59 | 277.91 | 504.56 |
| Prime, Reshoot | 0.00 | 28.50 | 28.50 | 33.11 |
| Combined | 91.35 | 458.25 | 951.75 | 2903.14 |



8/8/2019

Page 4



Daily Comment Summaries - Daily Comments On Status of Equipment

Thu 08 Aug

Navigation:

No Major Issues to Report

Information Technology (IT):

No Major Issues to Report

Acquisition (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 08 Aug

Technical Staff On-board the Langseth

Todd Jensvold L-DEO OMO Chief Science Officer
David Martinson L-DEO OMO Science Officer - Nav
Josh Kasinger L-DEO OMO Chief Source Mechanic
Tom Spoto L-DEO OMO Source Mechanic
Alan Thompson L-DEO OMO Marine Science Technician - Nav
Gilles Guerin L-DEO OMO Marine Science Technician - Obs
Shaun Shaver L-DEO OMO Marine Science Technician - Obs
Edmond St. Amant Contract Personnel Marine Science Technician - Source
Matt Dietrich Contract Personnel Marine Science Technician - Source
Chris Abdouch NCS SubSea Contract Nav Processor



8/8/2019

Page 5

Mike Jennings NCS SubSea Contract Nav Processor

PSO Staff On-board the Langseth

Amanda Dubuque RPS Lead PSO

Bianca Mares RPS PSO

Ana Hernandez RPS PSO

Lluvia Durantes RPS PSO

Alejandra Ramos RPS PSO

Science Party On-board the Langseth

Adrien Amulf UTIG - PI

Alistar Harding Scripps - PI

Steffen Saustrop UTIG - Tech

Michelle Lee LDEO - Student

Axelle Cap U de Bretagne - Student

Shelby Brandt U of Ottawa - Student

Morgan Goulain Mines of Paris Tech - Student

Victoire Lucas U de Bretagne - Student

Samual Mitchell U. of Bristol - Research Tech

Mathew Griffiths Carlton U. - Student

Massimo Stefano Belluci U de Bretagne - Student

Tanner Eischen East Carolina U. - Student

Brian Oller Scripps - Student

HSE Daily Events (Marcus G Langseth)

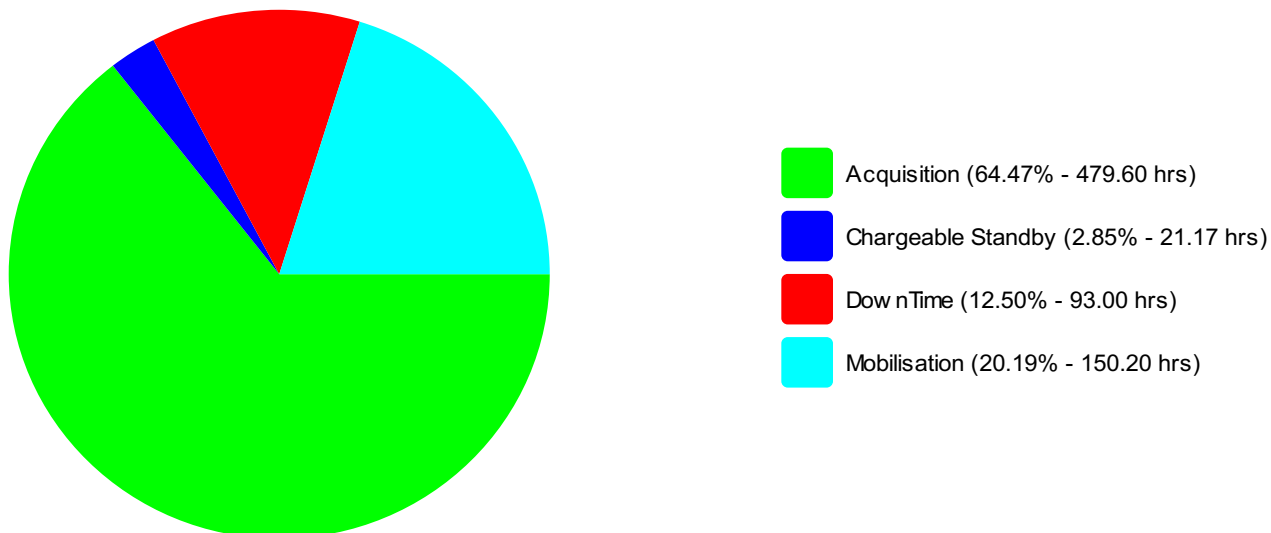




8/8/2019

Page 6

Timing Category Totals (Marcus G Langseth)





Daily Science Report

8/9/2019

Page 1

| | | | |
|------------------------|---|----------------------|----------------------------------|
| Client: | United States National Science Foundation | Contractor: | Lamont-Doherty Earth Observatory |
| Job No: | MGL1905 | Job No: | MGL1905 |
| Block: | Axial | Vessel: | Marcus G Langseth |
| Client Contact: | Adrien Arnulf | Supervisor: | Sean Higgins |
| Consultancy: | N/A | Party Chiefs: | Todd Jensvold |
| Job No: | | Client Reps: | Adrien Arnulf |

Daily Comment Summaries - Daily Summary

Fri 09 Aug

Completed reconfiguration from 3D to 2D streamer and source.
Began acquisition of 2D lines.
Acquired lines 2007 and 2008.
Record length shortened from 14 seconds to 12 seconds due to streamer length recording telemetry issues.

Daily Comment Summaries - Plan for Tomorrow

Fri 09 Aug

Continue 2D Acquisition

Timing Diary (Marcus G Langseth, MGL1905_Axial 3D)



| Category | Code | Start | End | Duration |
|---|-----------|------------------|------------------|----------|
| Streamer Reconfig | SB_REC_SR | Fri 9. Aug 00:00 | Fri 9. Aug 08:27 | 8.450 |
| Chargeable standby due to re-configuring streamer and source from 3D to 2D | | | | |
| Production Prime | AC_PP | Fri 9. Aug 08:27 | Fri 9. Aug 09:07 | 0.667 |
| SOL Seq 69 Line:2007 Block=Axial FGSP=681 Hdg=330.6° Prime EOL Seq 69 Line:2007 Block=Axial LGSP=827 Complete | | | | |
| Streamer Reconfig | SB_REC_SR | Fri 9. Aug 09:07 | Fri 9. Aug 09:11 | 0.067 |
| Changing record length | | | | |
| Production Prime | AC_PP | Fri 9. Aug 09:11 | Fri 9. Aug 15:01 | 5.833 |
| SOL Seq 70 Line:2007 Block=Axial FGSP=842 Hdg=335.7° Prime EOL Seq 70 Line:2007 Block=Axial LGSP=2124 Complete | | | | |
| Prime Line Change | AC_PLC | Fri 9. Aug 15:01 | Fri 9. Aug 16:44 | 1.717 |
| Nominal Prime line change. | | | | |
| Production Prime | AC_PP | Fri 9. Aug 16:44 | Fri 9. Aug 22:16 | 5.533 |
| SOL Seq 71 Line:2008 Block=Axial FGSP=826 Hdg=150.6° Prime EOL Seq 71 Line:2008 Block=Axial LGSP=2034 Complete | | | | |
| Prime Line Change | AC_PLC | Fri 9. Aug 22:16 | Fri 9. Aug 24:00 | 1.733 |
| Nominal Prime line change. | | | | |



8/9/2019

Page 2

Timing Day By Day (Marcus G Langseth, MGL1905_Axial 3D)

| 9-Aug | Hours | % Percent |
|---------------------------|---------------|----------------|
| Acquisition | 15.483 | 64.514 |
| Prime Line Change | 3.450 | 14.375 |
| Production Prime | 12.033 | 50.139 |
| Chargeable Standby | 8.517 | 35.486 |
| Reconfiguration | 8.517 | 35.486 |
| Streamer Reconfig | 8.517 | 35.486 |
| Day's Total | 24.000 | 100.000 |

Timing Breakdown Summary - Project (Marcus G Langseth, MGL1905_Axial 3D)

| Category | Hours | % Percent |
|---------------------------|----------------|---------------|
| DownTime | 93.000 | 12.110 |
| Cetacean | 2.550 | 0.332 |
| Streamers | 49.017 | 6.383 |
| Vessel | 41.433 | 5.395 |
| Mobilisation | 150.200 | 19.558 |
| Deployment | 45.200 | 5.886 |
| Mob Ashore | 63.000 | 8.203 |
| Testing | 0.333 | 0.043 |
| Transit to Prospect | 41.667 | 5.426 |
| Acquisition | 495.083 | 64.467 |
| Prime Line Change | 133.883 | 17.433 |
| Production Infill | 60.017 | 7.815 |
| Production Prime | 301.183 | 39.218 |
| Chargeable Standby | 29.683 | 3.865 |
| Reconfiguration | 16.500 | 2.149 |
| Streamer Reconfig | 16.500 | 2.149 |
| Transit | 2.017 | 0.263 |
| Weather | 11.167 | 1.454 |
| Total | 767.967 | |

Basic Project Details

| MGL1905_Axial 3D | | | | | |
|------------------|----------|------------------|--------|---------------------|--------|
| General Details | | | | | |
| Record length: | 12000 ms | Sample rate: | 2 ms | Shotpoint interval: | 37.5 m |
| CoS to CNG: | 225 m | Fold Coverage: | 252 | | |
| Cable Details | | | | | |
| No of Cables: | 4 | Head Separation: | 150 m | Tail Separation: | 150 m |
| Chans Per Cable: | 468 | Front Depth: | 16 m | Tail Depth: | 16 m |
| Length: | 5850 m | Group interval: | 12.5 m | | |



8/9/2019

Page 3

MGL1905_Axial 3D

Source Details

| | | | | | |
|---------------------|------|--------------------|----------|----------------|-------------|
| No of Sources: | 2 | Separation: | 75 m | Total Volume: | 6600 cu ins |
| Depth: | 12 m | Pressure: | 1950 PSI | Volume: | 3300 |
| Strings per source: | 2 | String Separation: | 6 m | String length: | 18 m |

Binning

| | | | | | |
|--------------|------|-------------|--------|--|--|
| Size Inline: | 50 m | Size XLine: | 37.5 m | | |
|--------------|------|-------------|--------|--|--|

Production Listing (Acpt km by interval) - Prime: Sail Line, Infill: Full Fold

| Seq | Line | Heading | FGSP | LGSP | Prod Type | Production | Ave Knots | Seq Status | Line Status |
|-------|------|---------|------|------|-----------|------------|-----------|------------|-------------|
| 69 | 2007 | 335.7 | 681 | 827 | Prime | 5.47 | 4.434 | Complete | Complete |
| 70 | 2007 | 335.7 | 842 | 2124 | Prime | 48.07 | 4.450 | Complete | Complete |
| 71 | 2008 | 150.6 | 826 | 2034 | Prime | 45.30 | 4.420 | Complete | Complete |
| Total | | | | | | 98.85 | | | |

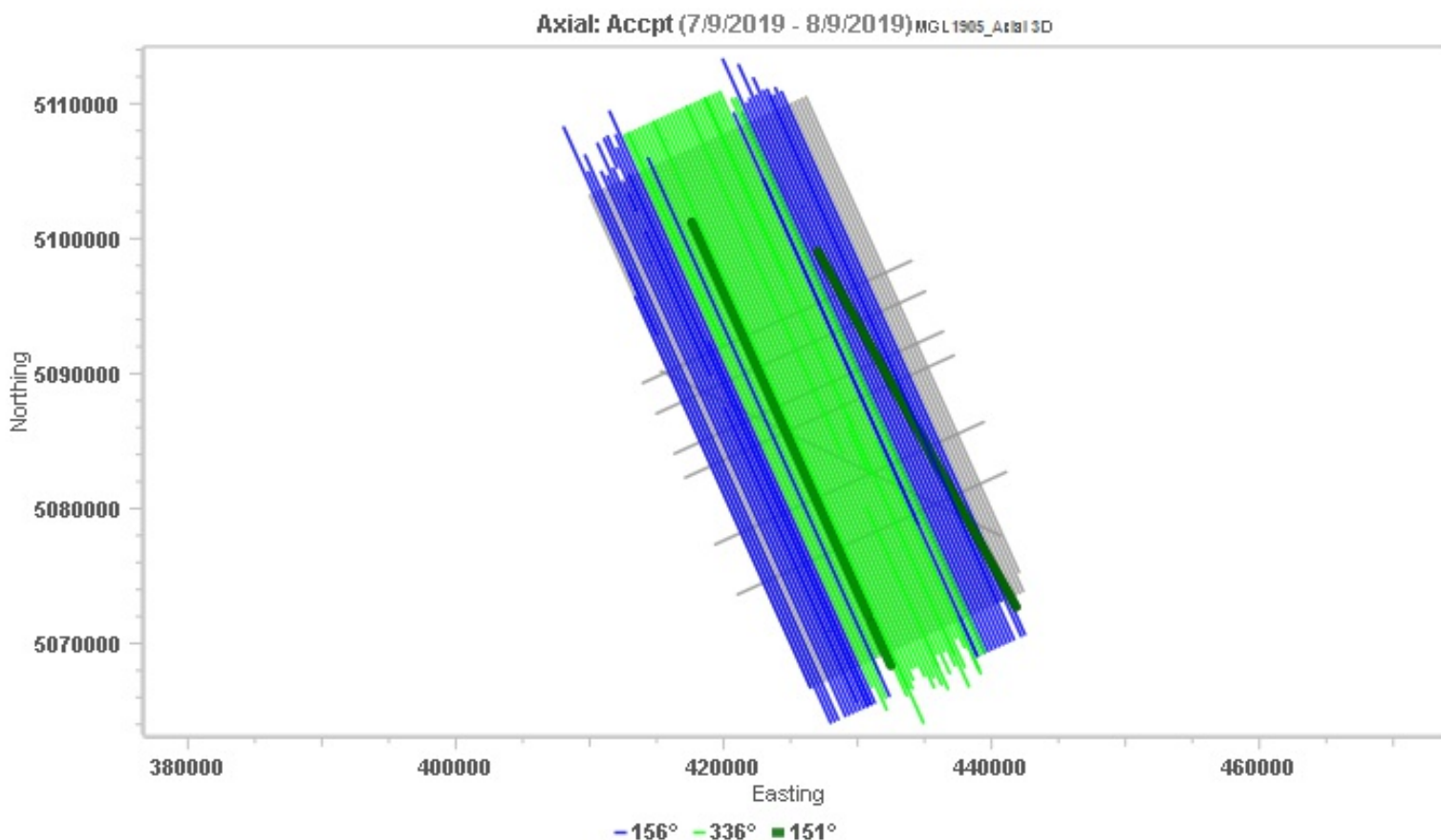
Production Totals (Acpt km by interval) - Prime: Sail Line, Infill: Full Fold

| Accepted km | Day | Week | Month | Project |
|----------------|-------|--------|---------|---------|
| Prime | 98.85 | 337.01 | 744.19 | 2464.31 |
| Infill | 0.00 | 191.59 | 277.91 | 504.56 |
| Prime, Reshoot | 0.00 | 28.50 | 28.50 | 33.11 |
| Combined | 98.85 | 557.10 | 1050.60 | 3001.99 |



8/9/2019

Page 4



Daily Comment Summaries - Daily Comments On Status of Equipment

Fri 09 Aug

Navigation:

No Major Issues to Report

Information Technology (IT):

No Major Issues to Report

Acquisition (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 09 Aug

Technical Staff On-board the Langseth

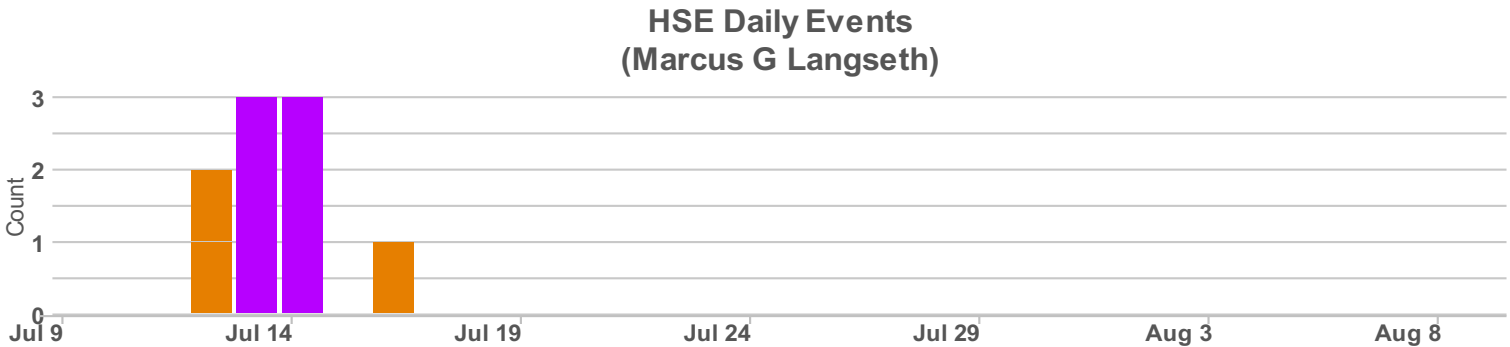
Todd Jensvold L-DEO OMO Chief Science Officer
David Martinson L-DEO OMO Science Officer - Nav
Josh Kasinger L-DEO OMO Chief Source Mechanic
Tom Spoto L-DEO OMO Source Mechanic
Alan Thompson L-DEO OMO Marine Science Technician - Nav
Gilles Guerin L-DEO OMO Marine Science Technician - Obs
Shaun Shaver L-DEO OMO Marine Science Technician - Obs
Edmond St. Amant Contract Personnel Marine Science Technician - Source
Matt Dietrich Contract Personnel Marine Science Technician - Source
Chris Abdouch NCS SubSea Contract Nav Processor



Mike Jennings NCS SubSea Contract Nav Processor

PSO Staff On-board the Langseth
Amanda Dubuque RPS Lead PSO
Bianca Mares RPS PSO
Ana Hernandez RPS PSO
Lluvia Durantes RPS PSO
Alejandra Ramos RPS PSO

Science Party On-board the Langseth
Adrien Amulf UTIG - PI
Alistar Harding Scripps - PI
Steffen Saustrop UTIG - Tech
Michelle Lee LDEO - Student
Axelle Cap U de Bretagne - Student
Shelby Brandt U of Ottawa - Student
Morgan Goulain Mines of Paris Tech - Studen
Victoire Lucas U de Bretagne - Student
Samual Mitchell U. of Bristol - Research Tech
Mathew Griffiths Carlton U. - Student
Massimo Stefano Belluci U de Bretagne - Student
Tanner Eischen East Carolina U. - Student
Brian Oller Scripps - Student

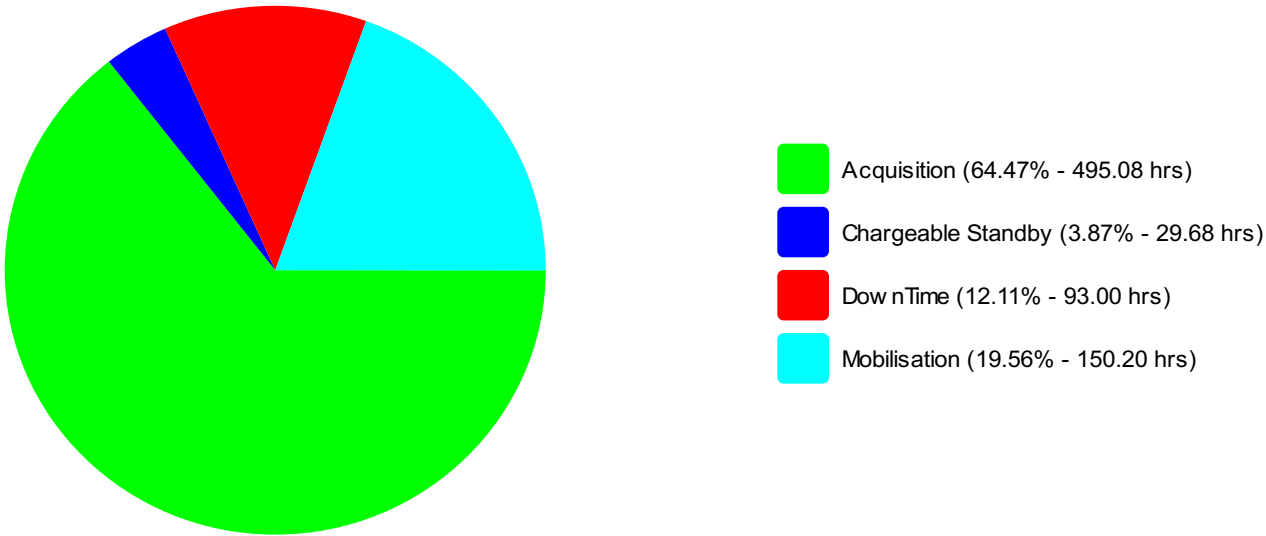




8/9/2019

Daily Science Report

Timing Category Totals (Marcus G Langseth)





8/10/2019

Page 2

| Category | Code | Start | End | Duration |
|---|------|-------|-----|----------|
| MSP Seq 75 Line:2005 Block=Axial LGSP=1140 Midnight | | | | |

Timing Day By Day (Marcus G Langseth, MGL1905_Axial 3D)

| 10-Aug | Hours | %Percent |
|--------------------|---------------|----------------|
| Acquisition | 24.000 | 100.000 |
| Prime Line Change | 10.133 | 42.222 |
| Production Prime | 13.867 | 57.778 |
| Day's Total | 24.000 | 100.000 |

Timing Breakdown Summary - Project (Marcus G Langseth, MGL1905_Axial 3D)

| Category | Hours | %Percent |
|---------------------------|----------------|---------------|
| DownTime | 93.000 | 11.742 |
| Cetacean | 2.550 | 0.322 |
| Streamers | 49.017 | 6.189 |
| Vessel | 41.433 | 5.231 |
| Mobilisation | 150.200 | 18.965 |
| Deployment | 45.200 | 5.707 |
| Mob Ashore | 63.000 | 7.955 |
| Testing | 0.333 | 0.042 |
| Transit to Prospect | 41.667 | 5.261 |
| Acquisition | 519.117 | 65.545 |
| Prime Line Change | 144.050 | 18.188 |
| Production Infill | 60.017 | 7.578 |
| Production Prime | 315.050 | 39.779 |
| Chargeable Standby | 29.683 | 3.748 |
| Reconfiguration | 16.500 | 2.083 |
| Streamer Reconfig | 16.500 | 2.083 |
| Transit | 2.017 | 0.255 |
| Weather | 11.167 | 1.410 |
| Total | 792.000 | |

Basic Project Details

| MGL1905_Axial 3D | | | | | |
|------------------------|----------|------------------|--------|---------------------|--------|
| General Details | | | | | |
| Record length: | 12000 ms | Sample rate: | 2 ms | Shotpoint interval: | 37.5 m |
| CoS to CNG: | 225 m | Fold Coverage: | 252 | | |
| Cable Details | | | | | |
| No of Cables: | 4 | Head Separation: | 150 m | Tail Separation: | 150 m |
| Chans Per Cable: | 468 | Front Depth: | 16 m | Tail Depth: | 16 m |
| Length: | 5850 m | Group interval: | 12.5 m | | |



8/10/2019

Page 3

MGL1905_Axial 3D

Source Details

| | | | | | |
|---------------------|------|--------------------|----------|----------------|-------------|
| No of Sources: | 2 | Separation: | 75 m | Total Volume: | 6600 cu ins |
| Depth: | 12 m | Pressure: | 1950 PSI | Volume: | 3300 |
| Strings per source: | 2 | String Separation: | 6 m | String length: | 18 m |

Binning

| | | | | | |
|--------------|------|-------------|--------|--|--|
| Size Inline: | 50 m | Size XLine: | 37.5 m | | |
|--------------|------|-------------|--------|--|--|

Production Listing (Accpt km by interval) - Prime: Sail Line, Infill: Full Fold

| Seq | Line | Heading | FGSP | LGSP | Prod Type | Production | Ave Knots | Seq Status | Line Status |
|-------|------|---------|------|------|-----------|------------|-----------|------------|-------------|
| 72 | 2009 | 295.7 | 1814 | 840 | Prime | 36.52 | 4.449 | Complete | Complete |
| 73 | 2006 | 65.7 | 881 | 1907 | Prime | 38.48 | 4.452 | Complete | Complete |
| 74 | 2004 | 245.7 | 1847 | 840 | Prime | 37.76 | 5.319 | Complete | Complete |
| 75 | 2005 | 65.7 | 936 | 1140 | Prime | 7.65 | 4.426 | Part | Midnight |
| Total | | | | | | 120.41 | | | |

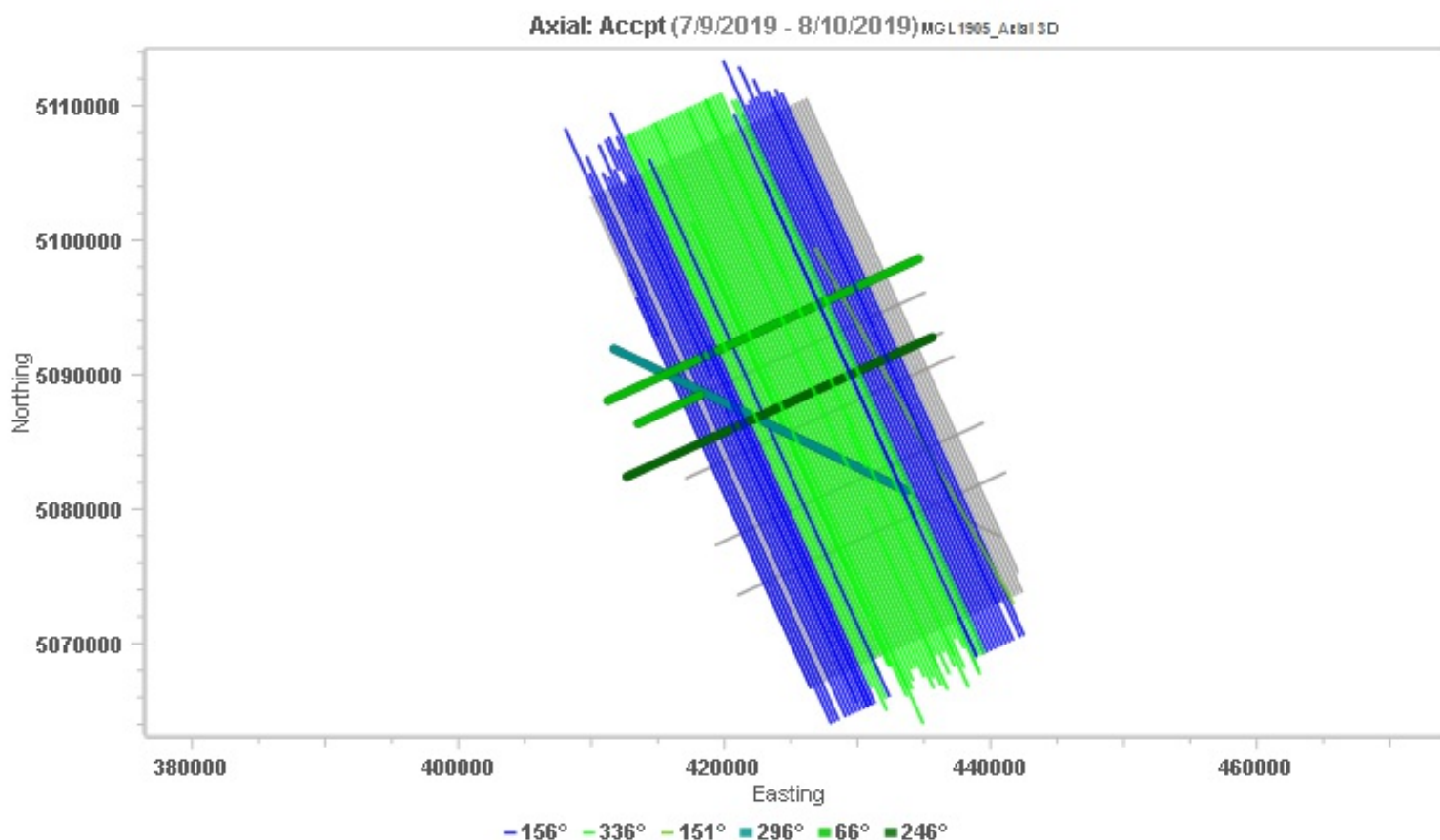
Production Totals (Accpt km by interval) - Prime: Sail Line, Infill: Full Fold

| Accepted km | Day | Week | Month | Project |
|----------------|--------|--------|---------|---------|
| Prime | 120.41 | 457.50 | 864.68 | 2584.80 |
| Infill | 0.00 | 191.59 | 277.91 | 504.56 |
| Prime, Reshoot | 0.00 | 28.50 | 28.50 | 33.11 |
| Combined | 120.41 | 677.59 | 1171.09 | 3122.47 |



8/10/2019

Page 4



Daily Comment Summaries - Daily Comments On Status of Equipment

Sat 10 Aug

Navigation:

No Major Issues to Report

Information Technology (IT):

No Major Issues to Report

Acquisition (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 10 Aug

Technical Staff On-board the Langseth

Todd Jensvold L-DEO OMO Chief Science Officer
David Martinson L-DEO OMO Science Officer - Nav
Josh Kasinger L-DEO OMO Chief Source Mechanic
Tom Spoto L-DEO OMO Source Mechanic
Alan Thompson L-DEO OMO Marine Science Technician - Nav
Gilles Guerin L-DEO OMO Marine Science Technician - Obs
Shaun Shaver L-DEO OMO Marine Science Technician - Obs
Edmond St. Amant Contract Personnel Marine Science Technician - Source
Matt Dietrich Contract Personnel Marine Science Technician - Source
Chris Abdouch NCS SubSea Contract Nav Processor



8/10/2019

Page 5

Mike Jennings NCS SubSea Contract Nav Processor

PSO Staff On-board the Langseth

Amanda Dubuque RPS Lead PSO

Bianca Mares RPS PSO

Ana Hernandez RPS PSO

Lluvia Durantes RPS PSO

Alejandra Ramos RPS PSO

Science Party On-board the Langseth

Adrien Amulf UTIG - PI

Alistar Harding Scripps - PI

Steffen Saustrop UTIG - Tech

Michelle Lee LDEO - Student

Axelle Cap U de Bretagne - Student

Shelby Brandt U of Ottawa - Student

Morgan Goulain Mines of Paris Tech - Student

Victoire Lucas U de Bretagne - Student

Samual Mitchell U. of Bristol - Research Tech

Mathew Griffiths Carlton U. - Student

Massimo Stefano Belluci U de Bretagne - Student

Tanner Eischen East Carolina U. - Student

Brian Oller Scripps - Student

HSE Daily Events (Marcus G Langseth)

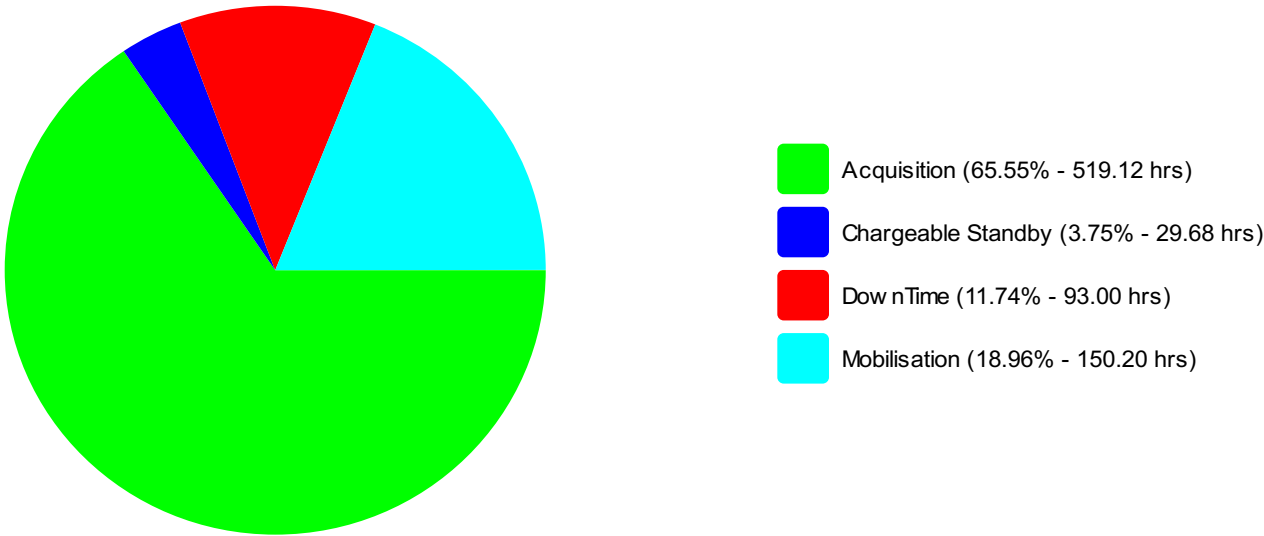




8/10/2019

Daily Science Report

Timing Category Totals (Marcus G Langseth)





Daily Science Report

8/11/2019

Page 1

| | | | |
|------------------------|---|----------------------|----------------------------------|
| Client: | United States National Science Foundation | Contractor: | Lamont-Doherty Earth Observatory |
| Job No: | MGL1905 | Job No: | MGL1905 |
| Block: | Axial | Vessel: | Marcus G Langseth |
| Client Contact: | Adrien Arnulf | Supervisor: | Sean Higgins |
| Consultancy: | N/A | Party Chiefs: | Todd Jensvold |
| Job No: | | Client Reps: | Adrien Arnulf |

Daily Comment Summaries - Daily Summary

Sun 11 Aug

Acquired 2D lines: 2005, 2003, 2002, and 2001 - completing the 2D survey.
After line 2001 was completed the science crew began recovering in water equipment, this continued through the end of the UTC day.

Daily Comment Summaries - Plan for Tomorrow

Sun 11 Aug

Complete recovery of in water equipment and transit to dock.

Timing Diary (Marcus G Langseth, MGL1905_Axial 3D)



| Category | Code | Start | End | Duration |
|--|--------|-------------------|-------------------|----------|
| Production Prime | AC_PP | Sun 11. Aug 00:00 | Sun 11. Aug 02:53 | 2.883 |
| SOL Seq 75 Line:2005 Block=Axial FGSP=1141 Hdg=65.7° Prime EOL Seq 75 Line:2005 Block=Axial LGSP=1777 Complete | | | | |
| Prime Line Change | AC_PLC | Sun 11. Aug 02:53 | Sun 11. Aug 05:46 | 2.883 |
| Nominal Prime line change. | | | | |
| Production Prime | AC_PP | Sun 11. Aug 05:46 | Sun 11. Aug 09:52 | 4.100 |
| SOL Seq 76 Line:2003 Block=Axial FGSP=1881 Hdg=245.7° Prime EOL Seq 76 Line:2003 Block=Axial LGSP=756 Complete | | | | |
| Prime Line Change | AC_PLC | Sun 11. Aug 09:52 | Sun 11. Aug 12:19 | 2.450 |
| Nominal Prime line change. | | | | |
| Production Prime | AC_PP | Sun 11. Aug 12:19 | Sun 11. Aug 16:17 | 3.967 |
| SOL Seq 77 Line:2002 Block=Axial FGSP=871 Hdg=65.7° Prime EOL Seq 77 Line:2002 Block=Axial LGSP=1959 Complete | | | | |
| Prime Line Change | AC_PLC | Sun 11. Aug 16:17 | Sun 11. Aug 19:24 | 3.117 |
| Nominal Prime line change. | | | | |
| Production Prime | AC_PP | Sun 11. Aug 19:24 | Sun 11. Aug 22:14 | 2.833 |
| SOL Seq 78 Line:2001 Block=Axial FGSP=1881 Hdg=245.6° Prime EOL Seq 78 Line:2001 Block=Axial LGSP=1001 Complete | | | | |
| Recovery | DM_RC | Sun 11. Aug 22:14 | Sun 11. Aug 24:00 | 1.767 |



8/11/2019

Page 2

| Category | Code | Start | End | Duration |
|---|------|-------|-----|----------|
| Demobilising offshore, recovering outboard equipment. | | | | |

Timing Day By Day (Marcus G Langseth, MGL1905_Axial 3D)

| 11-Aug | Hours | %Percent |
|-----------------------|---------------|----------------|
| Acquisition | 22.233 | 92.639 |
| Prime Line Change | 8.450 | 35.208 |
| Production Prime | 13.783 | 57.431 |
| Demobilisation | 1.767 | 7.361 |
| Recovery | 1.767 | 7.361 |
| Day's Total | 24.000 | 100.000 |

Timing Breakdown Summary - Project (Marcus G Langseth, MGL1905_Axial 3D)

| Category | Hours | %Percent |
|---------------------------|----------------|---------------|
| DownTime | 93.000 | 11.397 |
| Cetacean | 2.550 | 0.312 |
| Streamers | 49.017 | 6.007 |
| Vessel | 41.433 | 5.078 |
| Mobilisation | 150.200 | 18.407 |
| Deployment | 45.200 | 5.539 |
| Mob Ashore | 63.000 | 7.721 |
| Testing | 0.333 | 0.041 |
| Transit to Prospect | 41.667 | 5.106 |
| Acquisition | 541.350 | 66.342 |
| Prime Line Change | 152.500 | 18.689 |
| Production Infill | 60.017 | 7.355 |
| Production Prime | 328.833 | 40.298 |
| Demobilisation | 1.767 | 0.217 |
| Recovery | 1.767 | 0.217 |
| Chargeable Standby | 29.683 | 3.638 |
| Reconfiguration | 16.500 | 2.022 |
| Streamer Reconfig | 16.500 | 2.022 |
| Transit | 2.017 | 0.247 |
| Weather | 11.167 | 1.368 |
| Total | 816.000 | |

Basic Project Details

| MGL1905_Axial 3D | | | | | |
|------------------|----------|----------------|------|---------------------|--------|
| General Details | | | | | |
| Record length: | 12000 ms | Sample rate: | 2 ms | Shotpoint interval: | 37.5 m |
| CoS to CNG: | 225 m | Fold Coverage: | 252 | | |



8/11/2019

Page 3

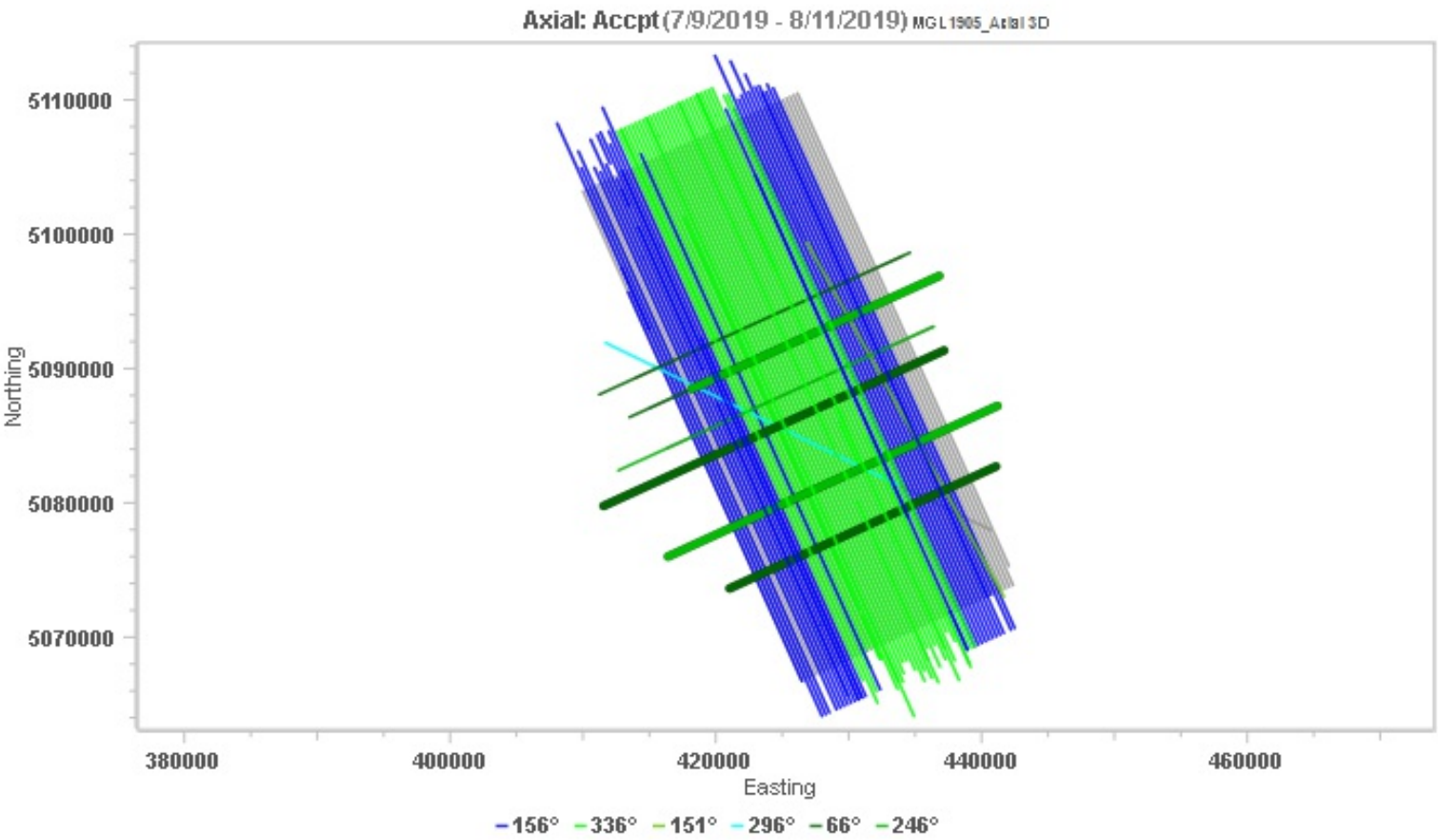
| MGL1905_Axial 3D | | | | | |
|---------------------|--------|--------------------|----------|------------------|-------------|
| Cable Details | | | | | |
| No of Cables: | 4 | Head Separation: | 150 m | Tail Separation: | 150 m |
| Chans Per Cable: | 468 | Front Depth: | 16 m | Tail Depth: | 16 m |
| Length: | 5850 m | Group interval: | 12.5 m | | |
| Source Details | | | | | |
| No of Sources: | 2 | Separation: | 75 m | Total Volume: | 6600 cu ins |
| Depth: | 12 m | Pressure: | 1950 PSI | Volume: | 3300 |
| Strings per source: | 2 | String Separation: | 6 m | String length: | 18 m |
| Binning | | | | | |
| Size Inline: | 50 m | Size XLine: | 37.5 m | | |

Production Listing (Accpt km by interval) - Prime: Sail Line, Infill: Full Fold

| Seq | Line | Heading | FGSP | LGSP | Prod Type | Production | Ave Knots | Seq Status | Line Status |
|-------|------|---------|------|------|-----------|------------|-----------|------------|-------------|
| 75 | 2005 | 65.7 | 1141 | 1959 | Prime | 30.71 | 5.427 | Complete | Complete |
| 76 | 2003 | 245.7 | 1881 | 756 | Prime | 42.19 | 5.556 | Complete | Complete |
| 77 | 2002 | 65.7 | 871 | 1959 | Prime | 40.80 | 5.554 | Complete | Complete |
| 78 | 2001 | 245.6 | 1881 | 1001 | Prime | 33.00 | 6.289 | Complete | Complete |
| Total | | | | | | 146.70 | | | |

Production Totals (Accpt km by interval) - Prime: Sail Line, Infill: Full Fold

| Accepted km | Day | Week | Month | Project |
|----------------|--------|--------|---------|---------|
| Prime | 146.70 | 605.44 | 1012.61 | 2732.74 |
| Infill | 0.00 | 191.59 | 277.91 | 504.56 |
| Prime, Reshoot | 0.00 | 28.50 | 28.50 | 33.11 |
| Combined | 146.70 | 825.52 | 1319.03 | 3270.41 |



Daily Comment Summaries - Daily Comments On Status of Equipment

Sun 11 Aug

Navigation:
No Major Issues to Report

Information Technology (IT):
No Major Issues to Report

Acquisition (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 11 Aug

- Technical Staff On-board the Langseth
- Todd Jensvold L-DEO OMO Chief Science Officer
 - David Martinson L-DEO OMO Science Officer - Nav
 - Josh Kasinger L-DEO OMO Chief Source Mechanic
 - Tom Spoto L-DEO OMO Source Mechanic
 - Alan Thompson L-DEO OMO Marine Science Technician - Nav
 - Gilles Guerin L-DEO OMO Marine Science Technician - Obs
 - Shaun Shaver L-DEO OMO Marine Science Technician - Obs
 - Edmond St. Amant Contract Personnel Marine Science Technician - Source
 - Matt Dietrich Contract Personnel Marine Science Technician - Source
 - Chris Abdouch NCS SubSea Contract Nav Processor



8/11/2019

Page 5

Mike Jennings NCS SubSea Contract Nav Processor

PSO Staff On-board the Langseth

Amanda Dubuque RPS Lead PSO
Bianca Mares RPS PSO
Ana Hernandez RPS PSO
Lluvia Durantes RPS PSO
Alejandra Ramos RPS PSO

Science Party On-board the Langseth

Adrien Amulf UTIG - PI
Alistar Harding Scripps - PI
Steffen Saustrop UTIG - Tech
Michelle Lee LDEO - Student
Axelle Cap U de Bretagne - Student
Shelby Brandt U of Ottawa - Student
Morgan Goulain Mines of Paris Tech - Student
Victoire Lucas U de Bretagne - Student
Samual Mitchell U. of Bristol - Research Tech
Mathew Griffiths Carlton U. - Student
Massimo Stefano Belluci U de Bretagne - Student
Tanner Eischen East Carolina U. - Student
Brian Oller Scripps - Student

HSE Daily Events
(Marcus G Langseth)

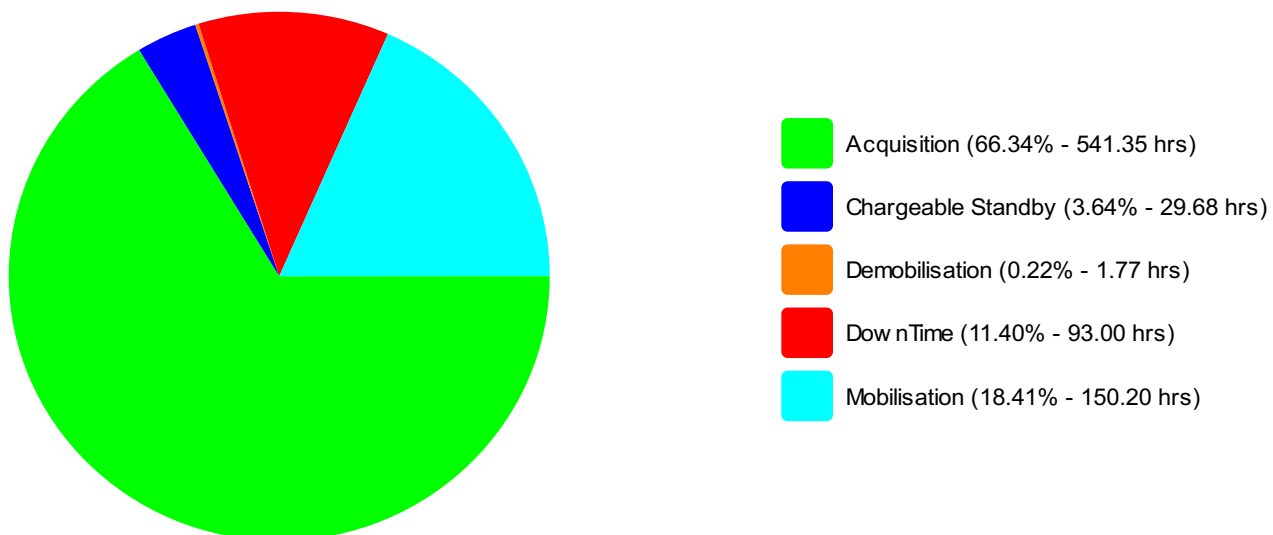




8/11/2019

Page 6

Timing Category Totals (Marcus G Langseth)





Daily Science Report

8/12/2019

Page 1

| | | | |
|------------------------|---|----------------------|----------------------------------|
| Client: | United States National Science Foundation | Contractor: | Lamont-Doherty Earth Observatory |
| Job No: | MGL1905 | Job No: | MGL1905 |
| Block: | Axial | Vessel: | Marcus G Langseth |
| Client Contact: | Adrien Arnulf | Supervisor: | Sean Higgins |
| Consultancy: | N/A | Party Chiefs: | Todd Jensvold |
| Job No: | | Client Reps: | Adrien Arnulf |

Daily Comment Summaries - Daily Summary

Mon 12 Aug

Once streamer recovery was completed and deck secured, the vessel began transiting to Seattle and was en route through the remainder of the day.
The day was spent tidying and testing of equipment.

Daily Comment Summaries - Plan for Tomorrow

Mon 12 Aug

Continue transit and arrive at dock

Timing Diary (Marcus G Langseth, MGL1905_Axial 3D)

| Category | Code | Start | End | Duration |
|---|-------|-------------------|-------------------|----------|
|  Recovery | DM_RC | Mon 12. Aug 00:00 | Mon 12. Aug 04:39 | 4.650 |
| Demobilising offshore, recovering outboard equipment. | | | | |
|  Transit From Prospect | DM_TF | Mon 12. Aug 04:39 | Mon 12. Aug 24:00 | 19.350 |
| Demobilising, In Transit from prospect for demobilisation ashore. | | | | |

Timing Day By Day (Marcus G Langseth, MGL1905_Axial 3D)

| 12-Aug | Hours | %Percent |
|-----------------------|---------------|----------------|
| Demobilisation | 24.000 | 100.000 |
| Recovery | 4.650 | 19.375 |
| Transit From Prospect | 19.350 | 80.625 |
| Day's Total | 24.000 | 100.000 |

Timing Breakdown Summary - Project (Marcus G Langseth, MGL1905_Axial 3D)

| Category | Hours | %Percent |
|---------------------|----------------|---------------|
| DownTime | 93.000 | 11.071 |
| Cetacean | 2.550 | 0.304 |
| Streamers | 49.017 | 5.835 |
| Vessel | 41.433 | 4.933 |
| Mobilisation | 150.200 | 17.881 |
| Deployment | 45.200 | 5.381 |
| Mob Ashore | 63.000 | 7.500 |
| Testing | 0.333 | 0.040 |



8/12/2019

Page 2

| Category | Hours | %Percent |
|---------------------------|----------------|---------------|
| Transit to Prospect | 41.667 | 4.960 |
| Acquisition | 541.350 | 64.446 |
| Prime Line Change | 152.500 | 18.155 |
| Production Infill | 60.017 | 7.145 |
| Production Prime | 328.833 | 39.147 |
| Demobilisation | 25.767 | 3.067 |
| Recovery | 6.417 | 0.764 |
| Transit From Prospect | 19.350 | 2.304 |
| Chargeable Standby | 29.683 | 3.534 |
| Reconfiguration | 16.500 | 1.964 |
| Streamer Reconfig | 16.500 | 1.964 |
| Transit | 2.017 | 0.240 |
| Weather | 11.167 | 1.329 |
| Total | 840.000 | |

Basic Project Details

| MGL1905_Axial 3D | | | | | |
|---------------------|----------|--------------------|----------|---------------------|-------------|
| General Details | | | | | |
| Record length: | 12000 ms | Sample rate: | 2 ms | Shotpoint interval: | 37.5 m |
| CoS to CNG: | 225 m | Fold Coverage: | 252 | | |
| Cable Details | | | | | |
| No of Cables: | 4 | Head Separation: | 150 m | Tail Separation: | 150 m |
| Chans Per Cable: | 468 | Front Depth: | 16 m | Tail Depth: | 16 m |
| Length: | 5850 m | Group interval: | 12.5 m | | |
| Source Details | | | | | |
| No of Sources: | 2 | Separation: | 75 m | Total Volume: | 6600 cu ins |
| Depth: | 12 m | Pressure: | 1950 PSI | Volume: | 3300 |
| Strings per source: | 2 | String Separation: | 6 m | String length: | 18 m |
| Binning | | | | | |
| Size Inline: | 50 m | Size XLine: | 37.5 m | | |

Production Listing (Accept km) - Prime: Sail Line, Infill: Full Fold

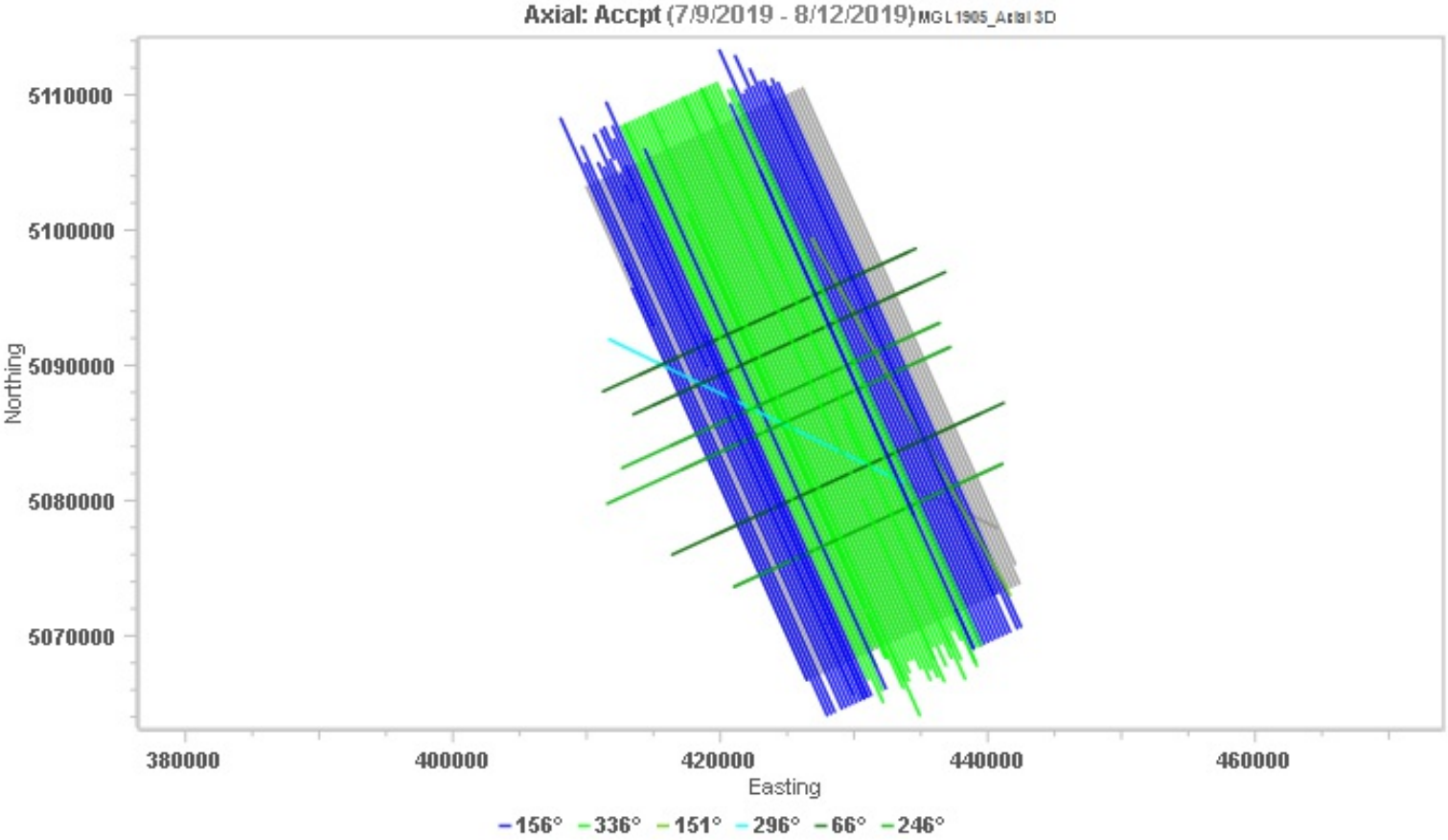
| Seq | Line | FGSP | LGSP | Prod Type | Production | Ave Knots | Seq Status | Line Status |
|--------------|------|------|------|-----------|-------------|-----------|------------|-------------|
| Total | | | | | 0.00 | | | |

Production Totals (Accept km by interval) - Prime: Sail Line, Infill: Full Fold

| Accepted km | Day | Week | Month | Project |
|-------------|------|------|---------|---------|
| Prime | 0.00 | 0.00 | 1012.61 | 2732.74 |
| Infill | 0.00 | 0.00 | 277.91 | 504.56 |



| Accepted km | Day | Week | Month | Project |
|----------------|------|------|---------|---------|
| Prime, Reshoot | 0.00 | 0.00 | 28.50 | 33.11 |
| Combined | 0.00 | 0.00 | 1319.03 | 3270.41 |



Daily Comment Summaries - Daily Comments On Status of Equipment

Mon 12 Aug

Navigation:

No Major Issues to Report

Information Technology (IT):

No Major Issues to Report

Acquisition (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 12 Aug

Technical Staff On-board the Langseth

- Todd Jensvold L-DEO OMO Chief Science Officer
- David Martinson L-DEO OMO Science Officer - Nav
- Josh Kasinger L-DEO OMO Chief Source Mechanic
- Tom Spoto L-DEO OMO Source Mechanic



8/12/2019

Page 4

Alan Thompson L-DEO OMO Marine Science Technician - Nav
Gilles Guerin L-DEO OMO Marine Science Technician - Obs
Shaun Shaver L-DEO OMO Marine Science Technician - Obs
Edmond St. Amant Contract Personnel Marine Science Technician - Source
Matt Dietrich Contract Personnel Marine Science Technician - Source
Chris Abdouch NCS SubSea Contract Nav Processor
Mike Jennings NCS SubSea Contract Nav Processor

PSO Staff On-board the Langseth

Amanda Dubuque RPS Lead PSO
Bianca Mares RPS PSO
Ana Hernandez RPS PSO
Lluvia Durantes RPS PSO
Alejandra Ramos RPS PSO

Science Party On-board the Langseth

Adrien Amulf UTIG - PI
Alistar Harding Scripps - PI
Steffen Sastrup UTIG - Tech
Michelle Lee LDEO - Student
Axelle Cap U de Bretagne - Student
Shelby Brandt U of Ottawa - Student
Morgan Goulain Mines of Paris Tech - Student
Victoire Lucas U de Bretagne - Student
Samual Mitchell U. of Bristol - Research Tech
Mathew Griffiths Carlton U. - Student
Massimo Stefano Belluci U de Bretagne - Student
Tanner Eischen East Carolina U. - Student
Brian Oller Scripps - Student

HSE Daily Events (Marcus G Langseth)





8/12/2019

Page 5

Timing Category Totals (Marcus G Langseth)

