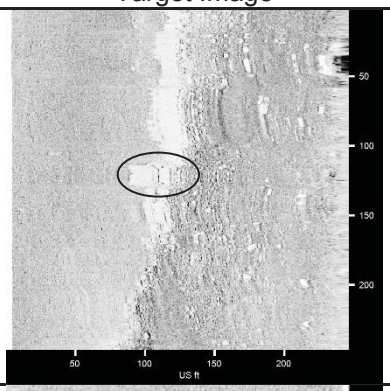
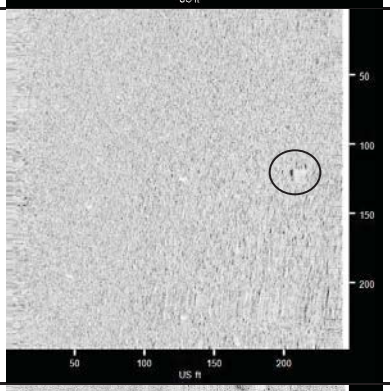
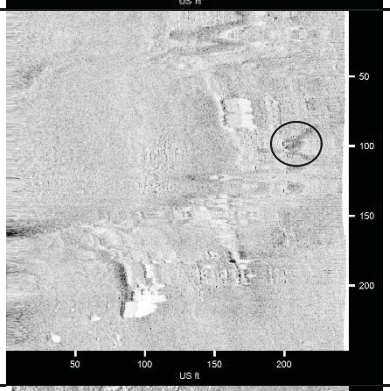
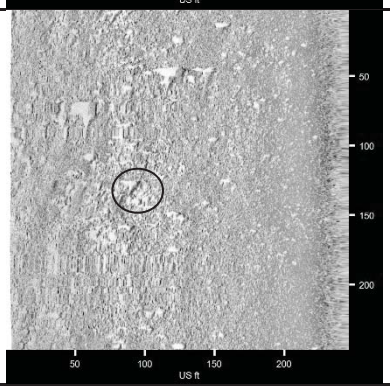
# Part 11 of 19 of Appendices for Resource Report No. 13 LNG

# APPENDIX A

# SIDE SONAR CONTACT TABLE

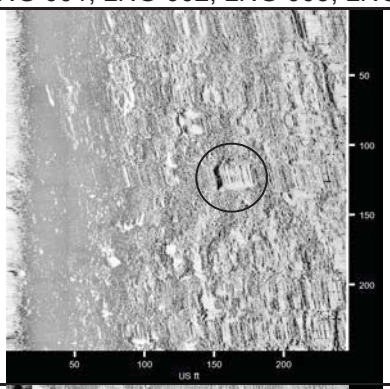
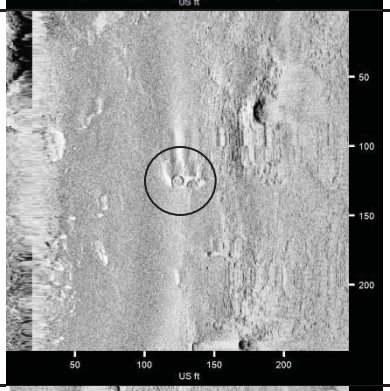
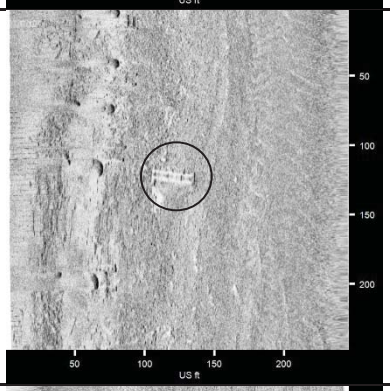
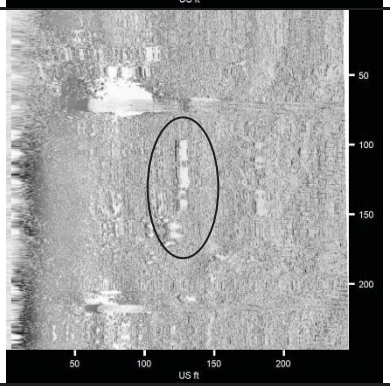
# Sonar Contact Table

Fugro Report No. 0410140334-5
Alaska LNG Report No. USAL-FG-GRZZZ-90-002015-010
LNG 001, LNG 002, LNG 003, LNG 004, and LNG 005

| Target Image | Target Info | User Entered Info |
|---|---|---|
|  | 1<br>• Click Position<br>60.7340950274 -151.4519092238 (WGS84)<br>(X) 1380570.65 (Y) 2463083.04 (Projected Coordinates)<br>• Map Projection: :AK83-4F-ExxonMobil<br>• Range to target: 137.92 US ft<br>• Area: LNG 005<br>• Line Name: TM05_042.002H | **Dimensions and attributes**<br>• Target Width: 7.46 US ft<br>• Target Height: 0.00 US ft<br>• Target Length: 17.22 US ft<br>• Target Shadow: 0.00 US ft<br>• Mag Anomaly: 87<br>• Description: Possible ferrous material (man-made) embedded in an outcrop (Mag Anomaly 87). |
|  | 2<br>• Click Position<br>60.7213653531 -151.4751929031 (WGS84)<br>(X) 1376299.49 (Y) 2458523.65 (Projected Coordinates)<br>• Map Projection: :AK83-4F-ExxonMobil<br>• Range to target: 206.16 US ft<br>• Area: LNG 005<br>• Line Name: TM05_036H | **Dimensions and attributes**<br>• Target Width: 3.14 US ft<br>• Target Height: 0.00 US ft<br>• Target Length: 10.87 US ft<br>• Target Shadow: 0.00 US ft<br>• Mag Anomaly: 76<br>• Description: Possible man-made object on the seafloor with magnetic variance from ambient magnetic field (Mag Anomaly 76). |
|  | 3<br>• Click Position<br>60.7204689186 -151.4801529816 (WGS84)<br>(X) 1375404.15 (Y) 2458216.01 (Projected Coordinates)<br>• Map Projection: :AK83-4F-ExxonMobil<br>• Range to target: 204.72 US ft<br>• Area: LNG 005<br>• Line Name: TM05_030.003H | **Dimensions and attributes**<br>• Target Width: 10.87 US ft<br>• Target Height: 0.00 US ft<br>• Target Length: 17.67 US ft<br>• Target Shadow: 0.00 US ft<br>• Mag Anomaly: 69<br>• Description: Unknown object with high reflectivity, exhibits magnetic deviation from ambient field (Mag Anomaly 69). |
|  | 4<br>• Click Position<br>60.7017037211 -151.4126889933 (WGS84)<br>(X) 1387334.57 (Y) 2451091.89 (Projected Coordinates)<br>• Map Projection: :AK83-4F-ExxonMobil<br>• Range to target: 149.45 US ft<br>• Area: LNG 034<br>• Line Name: TM34_014.001H | **Dimensions and attributes**<br>• Target Width: 4.96 US ft<br>• Target Height: 0.00 US ft<br>• Target Length: 49.74 US ft<br>• Target Shadow: 0.00 US ft<br>• Description: Linear sonar contact near dock structure. |

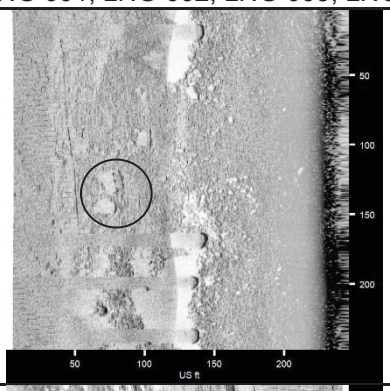
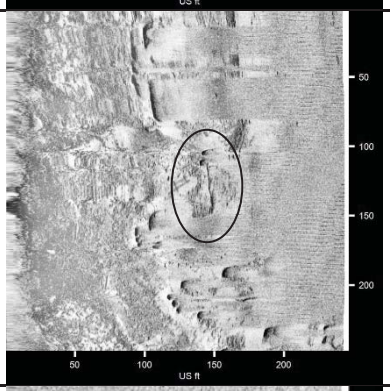
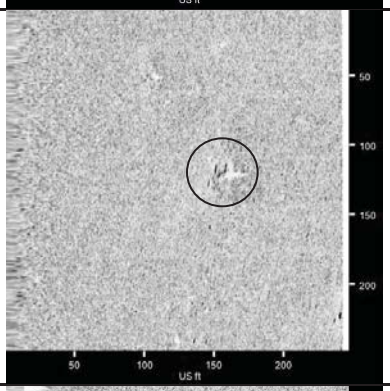
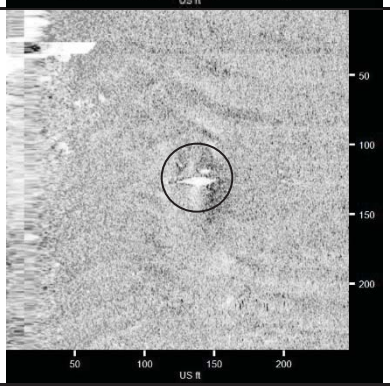
# Sonar Contact Table

Fugro Report No. 0410140334-5
Alaska LNG Report No. USAL-FG-GRZZZ-90-002015-010
LNG 001, LNG 002, LNG 003, LNG 004, and LNG 005

| | | |
|---|---|---|
|  | **5**<br>• Click Position<br>60.6868614205 -151.4038114765 (WGS84)<br>(X) 1388808.91 (Y) 2445633.38 (Projected Coordinates)<br>• Map Projection: :AK83-4F-ExxonMobil<br>• Range to target: 151.86 US ft<br>• Area: LNG 034<br>• Line Name: TM34_011.001H | **Dimensions and attributes**<br>• Target Width: 6.49 US ft<br>• Target Height: 0.00 US ft<br>• Target Length: 23.21 US ft<br>• Target Shadow: 0.00 US ft<br>• Description: Linear sonar contact below dock structure. |
|  | **6**<br>• Click Position<br>60.6843393065 -151.4000023089 (WGS84)<br>(X) 1389471.94 (Y) 2444697.06 (Projected Coordinates)<br>• Map Projection: :AK83-4F-ExxonMobil<br>• Range to target: 104.28 US ft<br>• Area: LNG 034<br>• Line Name: TM34_015.001H | **Dimensions and attributes**<br>• Target Width: 8.20 US ft<br>• Target Height: 0.00 US ft<br>• Target Length: 10.59 US ft<br>• Target Shadow: 0.00 US ft<br>• Description: Circular sonar contact beside dock structure. |
|  | **7**<br>• Click Position<br>60.6831892202 -151.3996117025 (WGS84)<br>(X) 1389532.99 (Y) 2444275.24 (Projected Coordinates)<br>• Map Projection: :AK83-4F-ExxonMobil<br>• Range to target: 122.06 US ft<br>• Area: LNG 034<br>• Line Name: TM34_014.001H | **Dimensions and attributes**<br>• Target Width: 9.28 US ft<br>• Target Height: 0.00 US ft<br>• Target Length: 31.14 US ft<br>• Target Shadow: 0.00 US ft<br>• Description: Linear sonar contact near dock structure, resembes ladder. |
|  | **8**<br>• Click Position<br>60.6789035679 -151.3971336417 (WGS84)<br>(X) 1389943.84 (Y) 2442699.51 (Projected Coordinates)<br>• Map Projection: :AK83-4F-ExxonMobil<br>• Range to target: 119.18 US ft<br>• Area: LNG 034<br>• Line Name: TM34_013.001H | **Dimensions and attributes**<br>• Target Width: 3.56 US ft<br>• Target Height: 0.00 US ft<br>• Target Length: 37.86 US ft<br>• Target Shadow: 0.00 US ft<br>• Description: Linear sonar contact beside dock structure. |

# Sonar Contact Table

Fugro Report No. 0410140334-5
Alaska LNG Report No. USAL-FG-GRZZZ-90-002015-010
LNG 001, LNG 002, LNG 003, LNG 004, and LNG 005

| | | |
|---|---|---|
|  | **9**<br>• Click Position<br>60.6772291665 -151.3962937119 (WGS84)<br>(X) 1390081.41 (Y) 2442084.37 (Projected Coordinates)<br>• Map Projection: :AK83-4F-ExxonMobil<br>• Range to target: 165.31 US ft<br>• Area: LNG 034<br>• Line Name: TM34_012.001H | **Dimensions and attributes**<br>• Target Width: 7.74 US ft<br>• Target Height: 0.00 US ft<br>• Target Length: 40.77 US ft<br>• Target Shadow: 0.00 US ft<br>• Description: Linear sonar contact beside dock structure. |
|  | **10**<br>• Click Position<br>60.6717967547 -151.3921024409 (WGS84)<br>(X) 1390790.71 (Y) 2440083.04 (Projected Coordinates)<br>• Map Projection: :AK83-4F-ExxonMobil<br>• Range to target: 126.39 US ft<br>• Area: LNG 034<br>• Line Name: TM34_013.001H | **Dimensions and attributes**<br>• Target Width: 5.77 US ft<br>• Target Height: 0.00 US ft<br>• Target Length: 37.11 US ft<br>• Target Shadow: 0.00 US ft<br>• Description: Linear sonar contact below dock structure. |
|  | **11**<br>• Click Position<br>60.4626310068 -151.5241656020 (WGS84)<br>(X) 1365340.63 (Y) 2364168.23 (Projected Coordinates)<br>• Map Projection: :AK83-4F-ExxonMobil<br>• Range to target: 152.34 US ft<br>• Area: LNG 001<br>• Line Name: TM01_067AL | **Dimensions and attributes**<br>• Target Width: 14.82 US ft<br>• Target Height: 3.16 US ft<br>• Target Length: 27.82 US ft<br>• Target Shadow: 11.39 US ft<br>• Description: Unidentified linear contact, with possible structural elements. |
|  | **12**<br>• Click Position<br>60.4618471865 -151.5020267086 (WGS84)<br>(X) 1369329.24 (Y) 2363789.96 (Projected Coordinates)<br>• Map Projection: :AK83-4F-ExxonMobil<br>• Range to target: 110.05 US ft<br>• Area: LNG 001<br>• Line Name: TM01_043L | **Dimensions and attributes**<br>• Target Width: 12.33 US ft<br>• Target Height: 7.90 US ft<br>• Target Length: 43.70 US ft<br>• Target Shadow: 21.56 US ft<br>• Mag Anomaly: 139<br>• Description: Irregular contact that is located near a large boulder pile that exhibits minor magnetic influence (Mag Anomaly 139). |

# APPENDIX B

## MAGNETIC ANOMALY TABLE
## MAGNETIC ANOMALY TABLE USER'S GUIDE
## NOMOGRAM

# MAGNETIC ANOMALY TABLE

Alaska LNG Facilities and Approach Survey 2015

Alaska LNG Report No. USAL-FG-GRZZZ-90-002015-010 | Fugro Report No. 04.10140334-5

| Anomaly No. | Area | Source | Line No. | Signature | Amplitude | Duration | NAD83Lat | NAD83Long | Y | X |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | LNG 005 | Cable | 1 | DIPOLE | 1116 | 984 | 60.73612178 | -151.4927209 | 2463987.50 | 1373284.20 |
| 2 | LNG 005 | Cable | 2 | DIPOLE | 1471 | 579 | 60.73602241 | -151.4917405 | 2463947.20 | 1373458.80 |
| 3 | LNG 005 | Cable | 3 | DIPOLE | 52 | 333 | 60.74203032 | -151.4829118 | 2466107.10 | 1375088.20 |
| 4 | LNG 005 | Cable | 3 | DIPOLE | 2931 | 576 | 60.73540624 | -151.4916393 | 2463721.60 | 1373471.80 |
| 5 | LNG 005 | Unknown | 3 | DIPOLE | 106 | 225 | 60.73453626 | -151.4926350 | 2463407.70 | 1373286.40 |
| 6 | LNG 005 | Cable | 4 | DIPOLE | 1445 | 679 | 60.73639386 | -151.4891434 | 2464072.40 | 1373926.60 |
| 7 | LNG 005 | Unknown | 4 | MONOPOLE | 22 | 316 | 60.73822757 | -151.4868352 | 2464733.20 | 1374354.80 |
| 8 | LNG 005 | Unknown | 4 | MONOPOLE | 24 | 229 | 60.73957210 | -151.4852358 | 2465218.10 | 1374652.10 |
| 9 | LNG 005 | Unknown | 4 | MONOPOLE | 35 | 242 | 60.74077873 | -151.4835337 | 2465652.20 | 1374966.60 |
| 10 | LNG 005 | Cable | 5 | DIPOLE | 2033 | 1219 | 60.73581538 | -151.4887769 | 2463859.50 | 1373987.40 |
| 11 | LNG 005 | Cable | 6 | DIPOLE | 14 | 166 | 60.74298086 | -151.4786270 | 2466437.20 | 1375862.60 |
| 12 | LNG 005 | Cable | 6 | DIPOLE | 2349 | 962 | 60.73565496 | -151.4880687 | 2463798.00 | 1374112.80 |
| 13 | LNG 005 | Cable | 7 | DIPOLE | 2054 | 382 | 60.73577816 | -151.4867303 | 2463837.60 | 1374353.30 |
| 14 | LNG 005 | Cable | 8 | MONOPOLE | 15 | 132 | 60.74403150 | -151.4750794 | 2466806.90 | 1376505.90 |
| 15 | LNG 005 | Unknown | 8 | MONOPOLE | 22 | 211 | 60.74062440 | -151.4794475 | 2465579.30 | 1375696.40 |
| 16 | LNG 005 | Cable | 8 | DIPOLE | 2219 | 1304 | 60.73596929 | -151.4853594 | 2463901.90 | 1374600.20 |
| 17 | LNG 005 | Cable | 9 | DIPOLE | 10 | 91 | 60.74435024 | -151.4734394 | 2466916.80 | 1376801.90 |
| 18 | LNG 005 | Unknown | 9 | MONOPOLE | 31 | 210 | 60.74086491 | -151.4779333 | 2465661.10 | 1375969.30 |
| 19 | LNG 005 | Cable | 9 | DIPOLE | 930 | 1225 | 60.73569931 | -151.4845852 | 2463800.10 | 1374736.50 |
| 20 | LNG 005 | Cable | 10 | DIPOLE | 966 | 683 | 60.73608926 | -151.4830742 | 2463936.50 | 1375010.10 |
| 21 | LNG 005 | Cable | 011A | DIPOLE | 3716 | 1499 | 60.73615768 | -151.4819831 | 2463957.10 | 1375205.90 |
| 22 | LNG 005 | Unknown | 011A | DIPOLE | 16 | 246 | 60.74227599 | -151.4739049 | 2466160.60 | 1376701.60 |
| 23 | LNG 005 | Cable | 011A | DIPOLE | 21 | 205 | 60.74503236 | -151.4704241 | 2467154.00 | 1377346.90 |
| 24 | LNG 005 | Cable | 12 | DIPOLE | 985 | 1245 | 60.73628929 | -151.4807452 | 2464000.20 | 1375428.50 |
| 25 | LNG 005 | Unknown | 12 | MONOPOLE | 25 | 350 | 60.74252640 | -151.4727051 | 2466247.30 | 1376918.30 |
| 26 | LNG 005 | Cable | 13 | MONOPOLE | 3145 | 1433 | 60.73629107 | -151.4795678 | 2463996.10 | 1375639.20 |
| 27 | LNG 005 | Cable | 13 | MONOPOLE | 15 | 296 | 60.74556005 | -151.4676627 | 2467335.80 | 1377845.20 |

| Anomaly No. | Area | Source | Line No. | Signature | Amplitude | Duration | NAD83Lat | NAD83Long | Y | X |
|---|---|---|---|---|---|---|---|---|---|---|
| 28 | LNG 005 | Cable | 014A | MONOPOLE | 1212 | 1338 | 60.73641862 | -151.4784224 | 2464038.10 | 1375845.20 |
| 29 | LNG 005 | Unknown | 014A | MONOPOLE | 13 | 283 | 60.74237416 | -151.4707200 | 2466183.70 | 1377272.20 |
| 30 | LNG 005 | Unknown | 014A | MONOPOLE | 12 | 231 | 60.74410843 | -151.4685176 | 2466808.70 | 1377680.40 |
| 31 | LNG 005 | Cable | 15 | DIPOLE | 1623 | 739 | 60.73642825 | -151.4772750 | 2464037.00 | 1376050.60 |
| 32 | LNG 005 | Unknown | 15 | MONOPOLE | 23 | 333 | 60.74264502 | -151.4692489 | 2466276.80 | 1377537.60 |
| 33 | LNG 005 | Cable | 15 | MONOPOLE | 30 | 365 | 60.74592467 | -151.4650704 | 2467458.70 | 1378311.90 |
| 34 | LNG 005 | Cable | 16 | DIPOLE | 1772 | 717 | 60.73637538 | -151.4762118 | 2464013.40 | 1376240.40 |
| 35 | LNG 005 | Cable | 17 | DIPOLE | 22 | 242 | 60.74592693 | -151.4628070 | 2467450.50 | 1378716.80 |
| 36 | LNG 005 | Cable | 17 | DIPOLE | 1170 | 1008 | 60.73601097 | -151.4757598 | 2463878.40 | 1376318.30 |
| 37 | LNG 005 | Cable | 18 | DIPOLE | 771 | 430 | 60.73631489 | -151.4741245 | 2463982.90 | 1376613.40 |
| 38 | LNG 005 | Cable | 18 | MONOPOLE | 31 | 582 | 60.74628379 | -151.4612709 | 2467574.80 | 1378994.50 |
| 39 | LNG 005 | Cable | 19 | DIPOLE | 1871 | 977 | 60.73590275 | -151.4735580 | 2463830.00 | 1376711.40 |
| 40 | LNG 005 | Cable | 019A | DIPOLE | 1855 | 970 | 60.73658173 | -151.4726994 | 2464074.70 | 1376870.60 |
| 41 | LNG 005 | Cable | 019A | DIPOLE | 26 | 381 | 60.74648246 | -151.4600126 | 2467642.40 | 1379221.20 |
| 42 | LNG 005 | Unknown | 20 | MONOPOLE | 19 | 329 | 60.74452323 | -151.4613535 | 2466931.70 | 1378965.40 |
| 43 | LNG 005 | Cable | 20 | DIPOLE | 1939 | 1238 | 60.73604530 | -151.4724122 | 2463877.50 | 1376917.60 |
| 44 | LNG 005 | Cable | 020A | DIPOLE | 1806 | 999 | 60.73652891 | -151.4716782 | 2464051.30 | 1377052.90 |
| 45 | LNG 005 | Unknown | 21 | DIPOLE | 28 | 301 | 60.74453554 | -151.4603233 | 2466932.10 | 1379149.80 |
| 46 | LNG 005 | Cable | 21 | DIPOLE | 1085 | 866 | 60.73596321 | -151.4713656 | 2463843.30 | 1377104.20 |
| 47 | LNG 005 | Cable | 022A | DIPOLE | 2279 | 841 | 60.73663411 | -151.4693207 | 2464080.30 | 1377475.60 |
| 48 | LNG 005 | Unknown | 022A | MONOPOLE | 20 | 450 | 60.74536092 | -151.4582986 | 2467225.70 | 1379518.70 |
| 49 | LNG 005 | Cable | 23 | MONOPOLE | 12 | 241 | 60.74662407 | -151.4554915 | 2467676.20 | 1380031.10 |
| 50 | LNG 005 | Cable | 23 | MONOPOLE | 750 | 1305 | 60.73610421 | -151.4690366 | 2463885.50 | 1377522.10 |
| 51 | LNG 005 | Unknown | 24 | MONOPOLE | 28 | 421 | 60.73081314 | -151.4747222 | 2461974.60 | 1376461.30 |
| 52 | LNG 005 | Cable | 24 | DIPOLE | 2815 | 1593 | 60.73660796 | -151.4672110 | 2464062.30 | 1377852.90 |
| 53 | LNG 005 | Unknown | 25 | MONOPOLE | 38 | 213 | 60.73008013 | -151.4745461 | 2461706.00 | 1376486.80 |
| 54 | LNG 005 | Cable | 25 | DIPOLE | 1603 | 1416 | 60.73680156 | -151.4659713 | 2464128.10 | 1378076.30 |
| 55 | LNG 005 | Unknown | 26 | MONOPOLE | 198 | 416 | 60.72669385 | -151.4778435 | 2460481.70 | 1375868.80 |
| 56 | LNG 005 | Unknown | 26 | MONOPOLE | 15 | 377 | 60.72997921 | -151.4735704 | 2461665.20 | 1376660.60 |
| 57 | LNG 005 | Cable | 26 | DIPOLE | 928 | 835 | 60.73670246 | -151.4649491 | 2464087.80 | 1378258.40 |

| Anomaly No. | Area | Source | Line No. | Signature | Amplitude | Duration | NAD83Lat | NAD83Long | Y | X |
|---|---|---|---|---|---|---|---|---|---|---|
| 58 | LNG 005 | Unknown | 27 | MONOPOLE | 12 | 257 | 60.72626675 | -151.4773451 | 2460323.60 | 1375954.50 |
| 59 | LNG 005 | Cable | 27 | MONOPOLE | 1108 | 1405 | 60.73655764 | -151.4641037 | 2464031.50 | 1378408.50 |
| 60 | LNG 005 | Unknown | 27 | MONOPOLE | 17 | 371 | 60.74481173 | -151.4534110 | 2467005.60 | 1380388.60 |
| 61 | LNG 005 | Cable | 28 | MONOPOLE | 3132 | 1014 | 60.73658014 | -151.4629445 | 2464035.10 | 1378616.10 |
| 62 | LNG 005 | Unknown | 29 | DIPOLE | 31 | 360 | 60.72692485 | -151.4743836 | 2460552.20 | 1376490.00 |
| 63 | LNG 005 | Unknown | 29 | MONOPOLE | 16 | 238 | 60.73159757 | -151.4682686 | 2462235.40 | 1377622.70 |
| 64 | LNG 005 | Cable | 29 | DIPOLE | 5291 | 1023 | 60.73683004 | -151.4615062 | 2464120.70 | 1378875.50 |
| 65 | LNG 005 | Unknown | 30 | DIPOLE | 15 | 185 | 60.73352457 | -151.4647769 | 2462925.70 | 1378263.30 |
| 66 | LNG 005 | Cable | 30 | DIPOLE | 1587 | 942 | 60.73714595 | -151.4600860 | 2464230.50 | 1379132.20 |
| 67 | LNG 005 | Cable | 31 | DIPOLE | 1868 | 554 | 60.73661988 | -151.4597497 | 2464036.90 | 1379188.10 |
| 68 | LNG 005 | Cable | 32 | DIPOLE | 1043 | 500 | 60.73651472 | -151.4586764 | 2463994.20 | 1379379.30 |
| 69 | LNG 005 | Unknown | 32 | MONOPOLE | 30 | 260 | 60.72025563 | -151.4797407 | 2458136.40 | 1375476.20 |
| 70 | LNG 005 | Unknown | 33 | MONOPOLE | 24 | 337 | 60.74179662 | -151.4508393 | 2465893.50 | 1380824.30 |
| 71 | LNG 005 | Cable | 33 | DIPOLE | 2379 | 1241 | 60.73653724 | -151.4577122 | 2463998.60 | 1379552.00 |
| 72 | LNG 005 | Unknown | 34 | MONOPOLE | 24 | 282 | 60.74122928 | -151.4504968 | 2465684.80 | 1380881.00 |
| 73 | LNG 005 | Cable | 34 | DIPOLE | 1921 | 990 | 60.73647186 | -151.4565273 | 2463970.00 | 1379763.50 |
| 74 | LNG 005 | Unknown | 035A | MONOPOLE | 23 | 601 | 60.74062842 | -151.4501924 | 2465464.00 | 1380930.60 |
| 75 | LNG 005 | Cable | 035A | DIPOLE | 1280 | 733 | 60.73627439 | -151.4557634 | 2463894.80 | 1379898.60 |
| 76 | LNG 005 | Unknown | 035A | MONOPOLE | 19 | 442 | 60.72140917 | -151.4750530 | 2458539.10 | 1376324.90 |
| 77 | LNG 005 | Cable | 36 | DIPOLE | 2518 | 1137 | 60.73655788 | -151.4543500 | 2463992.80 | 1380153.80 |
| 78 | LNG 005 | Unknown | 37 | MONOPOLE | 12 | 185 | 60.74349779 | -151.4442923 | 2466489.40 | 1382009.30 |
| 79 | LNG 005 | Cable | 37 | DIPOLE | 1135 | 869 | 60.73664322 | -151.4531406 | 2464019.20 | 1380370.90 |
| 80 | LNG 005 | Unknown | 37 | MONOPOLE | 26 | 321 | 60.72524184 | -151.4678450 | 2459910.90 | 1377646.60 |
| 81 | LNG 005 | Cable | 038_001 | DIPOLE | 1410 | 1023 | 60.73682374 | -151.4518086 | 2464079.90 | 1380610.70 |
| 82 | LNG 005 | Unknown | 39 | DIPOLE | 15 | 252 | 60.72686918 | -151.4635799 | 2460488.60 | 1378423.30 |
| 83 | LNG 005 | Unknown | 39 | MONOPOLE | 17 | 277 | 60.73234752 | -151.4565053 | 2462462.60 | 1379734.00 |
| 84 | LNG 005 | Cable | 39 | DIPOLE | 1415 | 695 | 60.73721637 | -151.4502420 | 2464217.20 | 1380894.20 |
| 85 | LNG 005 | Unknown | 40 | DIPOLE | 33 | 195 | 60.73229501 | -151.4553938 | 2462439.00 | 1379932.50 |
| 86 | LNG 005 | Cable | 40 | DIPOLE | 1057 | 745 | 60.73742767 | -151.4488689 | 2464289.00 | 1381141.60 |
| 87 | LNG 005 | Unknown | 41 | DIPOLE | 18 | 345 | 60.73419088 | -151.4519915 | 2463118.40 | 1380556.70 |

| Anomaly No. | Area | Source | Line No. | Signature | Amplitude | Duration | NAD83Lat | NAD83Long | Y | X |
|---|---|---|---|---|---|---|---|---|---|---|
| 88 | LNG 005 | Cable | 41 | DIPOLE | 776 | 837 | 60.73737960 | -151.4478730 | 2464267.50 | 1381319.40 |
| 89 | LNG 005 | Cable | 42 | DIPOLE | 398 | 497 | 60.73722616 | -151.4469032 | 2464207.60 | 1381491.70 |
| 90 | LNG 005 | Cable | 43 | DIPOLE | 1720 | 655 | 60.73717326 | -151.4459479 | 2464184.50 | 1381662.20 |
| 91 | LNG 005 | Cable | 44 | MONOPOLE | 885 | 677 | 60.73730450 | -151.4447132 | 2464227.60 | 1381884.20 |
| 92 | LNG 005 | Cable | 45 | DIPOLE | 1436 | 507 | 60.73676840 | -151.4443387 | 2464030.20 | 1381946.90 |
| 93 | LNG 005 | Cable | 46 | DIPOLE | 2125 | 395 | 60.73699397 | -151.4429561 | 2464107.20 | 1382196.10 |
| 94 | LNG 005 | Cable | 47 | DIPOLE | 2366 | 543 | 60.73695664 | -151.4418988 | 2464089.40 | 1382385.00 |
| 95 | LNG 005 | Cable | 48 | DIPOLE | 640 | 747 | 60.73704666 | -151.4404475 | 2464116.60 | 1382645.40 |
| 96 | LNG 005 | Cable | 49 | DIPOLE | 2283 | 512 | 60.73720351 | -151.4394218 | 2464169.90 | 1382830.20 |
| 97 | LNG 005 | Cable | 049A_001 | DIPOLE | 1883 | 520 | 60.73758412 | -151.4389113 | 2464307.00 | 1382924.60 |
| 98 | LNG 005 | Cable | 50 | MONOPOLE | 1943 | 479 | 60.73717621 | -151.4383710 | 2464155.80 | 1383018.00 |
| 99 | LNG 005 | Cable | 51 | MONOPOLE | 4337 | 618 | 60.73714828 | -151.4373515 | 2464141.60 | 1383200.20 |
| 100 | LNG 005 | Cable | 52 | MONOPOLE | 2403 | 627 | 60.73686840 | -151.4365309 | 2464036.10 | 1383344.80 |
| 101 | LNG 005 | Cable | 53 | DIPOLE | 1582 | 782 | 60.73698112 | -151.4354842 | 2464073.20 | 1383533.00 |
| 102 | LNG 005 | Cable | 54 | DIPOLE | 2901 | 576 | 60.73710646 | -151.4341524 | 2464113.80 | 1383772.30 |
| 103 | LNG 005 | Cable | 55 | DIPOLE | 2210 | 562 | 60.73725747 | -151.4328749 | 2464164.00 | 1384002.10 |
| 104 | LNG 005 | Cable | 56 | DIPOLE | 3458 | 586 | 60.73741960 | -151.4316062 | 2464218.30 | 1384230.40 |
| 105 | LNG 005 | Cable | 57 | DIPOLE | 2170 | 653 | 60.73810508 | -151.4295225 | 2464460.70 | 1384608.70 |
| 106 | LNG 005 | Cable | 58 | DIPOLE | 1268 | 557 | 60.73795298 | -151.4286724 | 2464401.80 | 1384759.60 |
| 107 | LNG 005 | Cable | 59 | DIPOLE | 6790 | 1131 | 60.73791815 | -151.4276778 | 2464385.20 | 1384937.30 |
| 108 | LNG 005 | Cable | 60 | DIPOLE | 3550 | 647 | 60.73790312 | -151.4266471 | 2464375.70 | 1385121.60 |
| 109 | LNG 005 | Cable | 61 | DIPOLE | 1465 | 720 | 60.73800015 | -151.4253699 | 2464406.20 | 1385350.90 |
| 110 | LNG 005 | Cable | Infill_005 | DIPOLE | 1624 | 534 | 60.73597715 | -151.4939392 | 2463939.60 | 1373065.00 |
| 111 | LNG 005 | Unknown | Infill_005 | MONOPOLE | 34 | 80 | 60.73683441 | -151.4928339 | 2464248.40 | 1373269.90 |
| 112 | LNG 005 | Cable | Infill_006 | DIPOLE | 1663 | 476 | 60.73601143 | -151.4718831 | 2463863.00 | 1377012.00 |
| 113 | LNG 034 | Unknown | 004A | MONOPOLE | 35 | 387 | 60.68086810 | -151.4045453 | 2443550.28 | 1388594.62 |
| 114 | LNG 034 | Unknown | 5 | MONOPOLE | 25 | 453 | 60.67697596 | -151.4012193 | 2441875.92 | 1389239.87 |
| 115 | LNG 034 | Unknown | 5 | MONOPOLE | 26 | 306 | 60.68157278 | -151.4044481 | 2443597.38 | 1388692.70 |
| 116 | LNG 034 | Unknown | 5 | MONOPOLE | 32 | 387 | 60.68488576 | -151.4067286 | 2444809.96 | 1388296.71 |
| 117 | LNG 034 | Unknown | 6 | MONOPOLE | 22 | 869 | 60.69015132 | -151.4100212 | 2447042.56 | 1387671.38 |

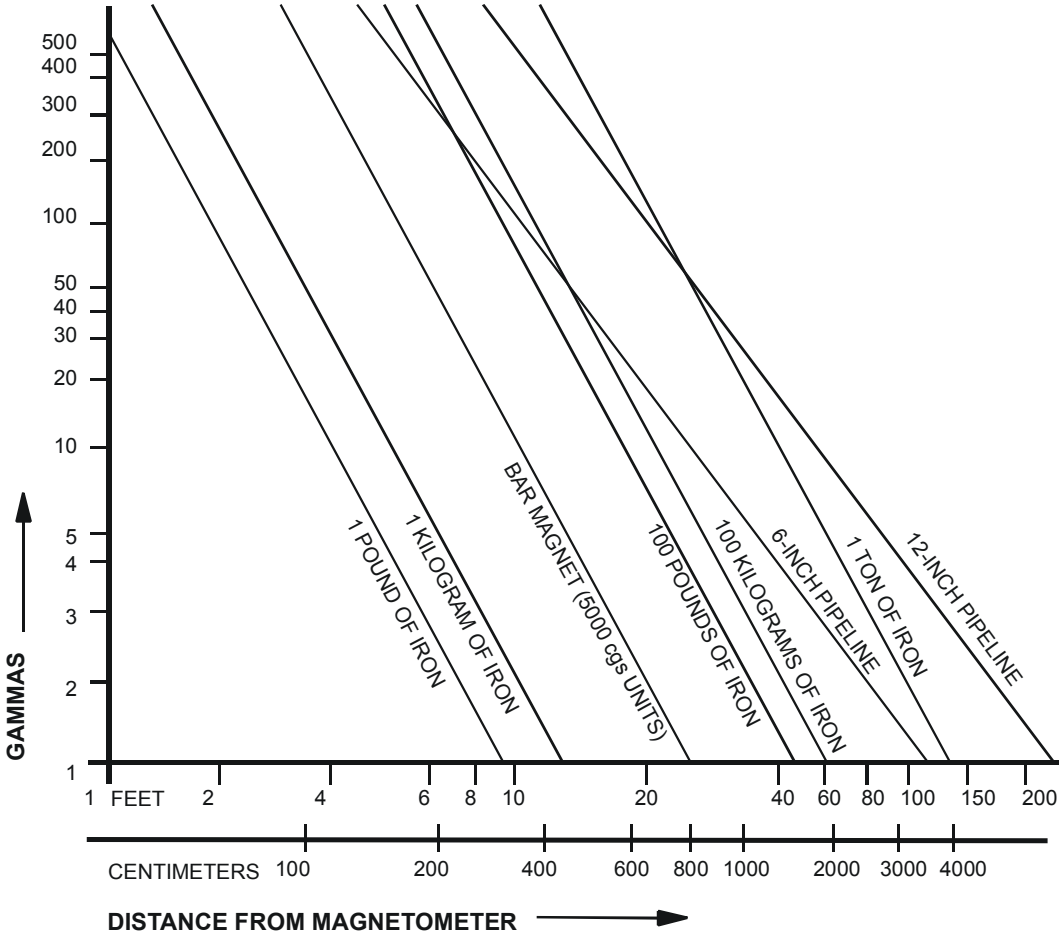
| Anomaly No. | Area | Source | Line No. | Signature | Amplitude | Duration | NAD83Lat | NAD83Long | Y | X |
|---|---|---|---|---|---|---|---|---|---|---|
| 118 | LNG 034 | Unknown | 6 | MONOPOLE | 28 | 350 | 60.68415773 | -151.4056934 | 2444774.34 | 1388407.77 |
| 119 | LNG 034 | Unknown | 6 | DIPOLE | 30 | 559 | 60.67621025 | -151.4000417 | 2441853.24 | 1389362.36 |
| 120 | LNG 034 | Unknown | 7 | MONOPOLE | 28 | 478 | 60.69171333 | -151.4105064 | 2447334.17 | 1387681.09 |
| 121 | LNG 034 | Unknown | 8 | MONOPOLE | 31 | 439 | 60.69070743 | -151.4092099 | 2447300.48 | 1387778.44 |
| 122 | LNG 002 | Unknown | TM02_026 | MONOPOLE | 88.1 | 33 | 60.48965601 | -151.4769261 | 2373850.29 | 1374086.99 |
| 123 | LNG 002 | Unknown | TM02_044 | MONOPOLE | 57.3 | 86 | 60.48210175 | -151.4665358 | 2371047.67 | 1375898.95 |
| 124 | LNG 001 | Cable | TM01_005 | MONOPOLE | 2 | 121 | 60.45308048 | -151.5633166 | 2360843.70 | 1358192.70 |
| 125 | LNG 001 | Cable | TM01_007 | MONOPOLE | 7 | 136 | 60.45539745 | -151.5599714 | 2361676.10 | 1358816.60 |
| 126 | LNG 001 | Cable | TM01_008 | MONOPOLE | 7 | 214 | 60.45683140 | -151.5581630 | 2362192.40 | 1359155.40 |
| 127 | LNG 001 | Cable | TM01_009 | MONOPOLE | 8 | 159 | 60.45790919 | -151.5565298 | 2362579.30 | 1359459.50 |
| 128 | LNG 001 | Cable | TM01_010 | DIPOLE | 7 | 134 | 60.45890584 | -151.5549540 | 2362936.80 | 1359752.50 |
| 129 | LNG 001 | Cable | TM01_012 | DIPOLE | 5 | 222 | 60.45987896 | -151.5524123 | 2363281.60 | 1360219.60 |
| 130 | LNG 001 | Cable | TM01_014 | DIPOLE | 8 | 178 | 60.46185622 | -151.5492650 | 2363990.80 | 1360804.60 |
| 131 | LNG 001 | Cable | TM01_015 | DIPOLE | 4 | 111 | 60.46284919 | -151.5477385 | 2364347.20 | 1361088.60 |
| 132 | LNG 001 | Cable | TM01_016 | DIPOLE | 18 | 188 | 60.46351902 | -151.5463745 | 2364586.20 | 1361340.50 |
| 133 | LNG 001 | Cable | TM01_017 | MONOPOLE | 9 | 165 | 60.46431819 | -151.5448979 | 2364872.00 | 1361613.80 |
| 134 | LNG 001 | Cable | TM01_018 | DIPOLE | 7 | 195 | 60.46523828 | -151.5433517 | 2365201.70 | 1361900.70 |
| 135 | LNG 001 | Cable | TM01_019 | DIPOLE | 11 | 179 | 60.46601259 | -151.5418926 | 2365478.50 | 1362170.60 |
| 136 | LNG 001 | Unknown | TM01_019 | MONOPOLE | 26 | 30 | 60.45738906 | -151.5473097 | 2362350.00 | 1361119.10 |
| 137 | LNG 001 | Unknown | TM01_023 | MONOPOLE | 9 | 295 | 60.46573752 | -151.5386054 | 2365364.10 | 1362761.40 |
| 138 | LNG 001 | Unknown | TM01_035 | MONOPOLE | 14 | 174 | 60.45029318 | -151.5365365 | 2359711.30 | 1363003.00 |
| 139 | LNG 001 | Unknown | TM01_043 | COMPLEX | 14 | 401 | 60.46250996 | -151.5022759 | 2364033.20 | 1369289.80 |
| 140 | LNG 001 | Unknown | TM01_047 | DIPOLE | 17 | 196 | 60.45706987 | -151.5095136 | 2362075.00 | 1367938.10 |
| 141 | LNG 001 | Unknown | TM01_065A | MONOPOLE | 21 | 576 | 60.44898541 | -151.5315958 | 2359212.60 | 1363883.80 |
| 142 | LNG 001 | Unknown | TM01_066A | DIPOLE | 16 | 623 | 60.44952135 | -151.5322248 | 2359411.10 | 1363774.80 |
| 143 | LNG 001 | Unknown | TM01_067A | DIPOLE | 13 | 627 | 60.44945832 | -151.5333989 | 2359393.00 | 1363562.30 |
| 144 | LNG 001 | Unknown | TM01_068 | DIPOLE | 16 | 565 | 60.44924121 | -151.5343359 | 2359317.60 | 1363391.30 |

## USER'S GUIDE TO MAGNETIC ANOMALY TABLE

**GLOSSARY OF TERMS:**

- **Anomaly No. -** The number that correlates to a particular magnetic anomaly.
- **Line No.** - The survey trackline followed by the survey vessel. On occasion a rerun of the Line may have been performed. All Lines will be posted on the Hazard map unless they would clutter hazard's presentation. Where matching anomalies are recorded, the larger gamma reading will be posted.
- **Recorded Position** - The Shot Point where the anomaly can be found on the original records. No towing setback is applied.
- **Corrected Position** - The Shot Point where the anomaly can be found on the Hazard Map. Setback from the navigation antenna is applied.
- **Amplitude in Gammas** - Maximum magnetic field deflection from crest to trough of an anomaly.
- **Width in Feet** - The distance from start of magnetic field deviation to end.
- **Monopole/Dipole/Complex** - Description of anomaly signature. Either it has a positive or negative field change (Monopole), the signature changes from positive to negative across a single anomaly (Dipole), or the signature changes from positive to negative several times across a single anomaly (Complex).
- **Sensor Height Off Bottom** - Determined with depth sensor attached near the magnetometer sensor. This elevation can be used on the Briener nomogram as minimum distance from ferrous source.
- **Description** - Source of anomaly, i.e., pipeline or structure. If source cannot be identified, the anomaly is quoted as DEBRIS. Broad signatures with low gamma amplitudes are quoted as GEOLOGIC SOURCE if they correlate to near-surface structural features.

# *NOMOGRAM FOR ESTIMATING ANOMALIES FROM TYPICAL OBJECTS (BREINER, 1973)*




**INSTRUCTIONS FOR USE:**

To use the nomogram, select a given weight or type of object from among the diagonal labeled lines. Then choose a distance along the bottom line (abscissa) of the graph and follow a vertical line upwards from that distance until it intersects the diagonal line of the selected object. At that point, move horizontally to the left to a value on the vertical axis (ordinate) of the graph and read the intensity in gammas.

At a given distance, the intensity is proportional to the weight of the object. Therefore, for an object whose weight is not precisely that of the labeled lines, simply multiply the intensity in gammas by the ratio of the desired weight to the labeled weight on the graph. If the distance desired does not appear on the graph, remember that for a typical object the intensity is inversely proportional to the cube of the distance and for a long pipeline the intensity is inversely proportional to the square of the distance between magnetometer sensor and object. Due to many uncertainties described herein the estimates derived from this nomogram may be larger or smaller by a factor of 2 to 5 or perhaps more.

# APPENDIX C

## M/V *QUALIFIER 105* WATER COLUMN VELOCITY DATA TABLE

**WATER COLUMN VELOCITY PROFILE DATA**
**COOK INLET NIKISKI, ALASKA**
**X & Y Coordinates in US feet (NAD83 NSRS2007 Alaska Zone 4)**

| Cast No. | Date | X Coordinate | Y Coordinate | No. of Points Taken | Depth in Feet | Depth in Msec | Depth in Meters | Interval Velocity (M/Sec) | Harmonic Mean (M/Sec) | Harmonic Mean (Ft/Sec) | Feet per Second (2way) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 08/27/15 | 1,386,105.90 | 2,441,062.67 | 34 | 114.83 | 46.94 | 35 | 1491.72 | 1491.36 | 4892.90 | 2.446451 |
| 2 | 08/28/15 | 1,390,383.82 | 2,427,888.89 | 19 | 65.62 | 26.82 | 20 | 1491.44 | 1491.34 | 4892.85 | 2.446427 |
| 3 | 08/29/15 | 1,393,508.46 | 2,431,745.82 | 12 | 42.65 | 17.42 | 13 | 1492.73 | 1492.56 | 4896.83 | 2.448417 |
| 4 | 08/30/15 | 1,377,676.27 | 2,393,100.72 | 17 | 59.05 | 24.14 | 18 | 1491.59 | 1491.49 | 4893.33 | 2.446666 |
| 5 | 09/01/15 | 1,378,506.56 | 2,395,161.81 | 22 | 75.46 | 30.83 | 23 | 1492.18 | 1491.88 | 4894.60 | 2.447301 |
| 12 | 10/05/15 | 1,384,013.22 | 2,427,156.86 | 14 | 49.21 | 20.27 | 15 | 1480.18 | 1479.88 | 4855.23 | 2.427613 |
| 13 | 10/06/15 | 1,381,688.52 | 2,400,811.59 | 19 | 65.62 | 27.00 | 20 | 1481.49 | 1481.32 | 4859.95 | 2.429976 |

# APPENDIX D

# EQUIPMENT SPECIFICATIONS

## EQUIPMENT SPECIFICATIONS

| | | | | | |
|---|---|---|---|---|---|
| **CLIENT** | Alaska LNG | | **FGSI JOB No:** | 2415-7058 | |
| **AREA/BLOCK** | Cook Inlet-Nikiski, Alaska | | **DATE:** | Sept. 23-30 & Oct. 1-22, 2015 | |
| **SURVEY VESSEL(S)** | **Qualifier 105** | | Lease or Chase Boat | N/A | |
| Navigation System CRP to Stern | 16.50 | Meters | Navigation System | Starfix | |
| Average On-Line Speed | 4 | Knots | Average On-Line Sea State | Small Wavelets | |
| Nav. Fix Interval | 6.25 | Meters | Beaufort Scale | 3 W=7-10 kts; S=1-3 ft | |
| Acoustic Positioning System | N/A | | Nav. Event Interval | 6.25 | Meters |
| Acoustic Pole Mounted | N/A | | Velocimeter | The CastAway-CTD | |
| **BATHYMETRY SYSTEM** | **Furuno FVC-1100L** | | Single Beam Echo Sounder | Used as back-up system | |
| Setback from CRP | 12 feet ahead of CRP | | Operating Frequency | Variable | |
| **EDGETECH 3200-XS SUBBOTTOM PROFILER** | | | Offset from CRP | -4.45 M | Port |
| Record Length | 100 | Milliseconds | Operating Frequency | 2 - 16 | kHz |
| Record Scale/Delay | 0 | Milliseconds | Power Output | 4 | Kilowatts |
| Record Divisions | 10 | Milliseconds | Heave Compensation? | Yes | |
| Setback from CRP | 9.58 M | Behind CRP | Transducer Depth BSL | 1.067 | Meters |
| **APPLIED ACOUTICS CSP-P BOOMER** | | | Offset from CRP | 0 Meters | |
| Record Length | 1024 | Milliseconds | Operating Frequency | 5 Hz - 8 kHz | |
| Record Divisions | 100 | Milliseconds | Power Output | 300 Joules | |
| Setback from CRP | 31.5 | Meters | Transducer Depth | 0.304 Meters | |
| **DIGITAL RECORDING** | **Chesapeake - Sonar Wiz** | | | | |
| Sonar Format | XTF | | Seismic Format | SEG-D 8048 | |
| **SEISMIC SYSTEM #1** | **Geometrics GeoEel (Digital)** | | Shot Interval | 1.56 | |
| Number of Channels | 24 | | Record Length (Sec.) | 0.5 & 1.0 | |
| Channel Spacing | 6.25 | Meters | Record Divisions | 10 | Milliseconds |
| Sound Source | 300 Joules | | Recording Format | SEG-D 8048 | |
| Source Setback from CRP | 31.50 | Meters | Sampling Rate | 0.250 | Seconds |
| Source Lateral Offset from CRP | 4.11 | Meters Port Side | System Recording Delay | | |
| Source Depth | .30 | Meters | Notch Filter | none | |
| Source Pressure | | | Low Cut Filter | | |
| Monitor Channel | 4 | | Low Cut Slope | | |
| Near Trace Setback from CRP | 57.60 | Meters | Pre-Amp Gain | 8 db | |
| Streamer Lateral Offset from CRP | 4.11 | Meters Starboard | High Cut Filter | 1000 | Hz |
| Streamer Depth | 1.5 | Meters | High Cut Slope | 0 | |
| Near Channel No. | 1 | | Far Channel No. | 24 | |
| Near Ch. Setback from Source | 26 | Meters | Far Ch. Setback from Source | 61.28 | Meters |
| Cable Length | 50 | Meters | Channel Group Length | 1.56 | Meters |
| Cable Manufacturer | GeoEel Digital Streamer | | Channel Set 1: | Seismic (Single Cable) | |
| | | | Channel Set 2: | N/A | |

Party Manager: Wayne Labrie

Ass't Party manager: Ted Tremblay

# APPENDIX E

# OPERATIONS REPORT (M/V *QUALIFIER 105*)

# OPERATIONS REPORT (*M/V QUALIFIER 105*)
# 2015 PRE-FEED ALASKA LNG CAMPAIGN
# RECONNAISSANCE SURVEY

## COOK INLET, ALASKA

**Report No. 2415-7058_OPS**

Client: ExxonMobil Alaska LNG LLC (EMALL)
10613 W. Sam Houston Pkwy N, Suite 500
Houston, TX, 77064

Date of Report: June 15, 2016

| | | | | |
|---|---|---|---|---|
| 0 | Issued as Draft | M. Blaes/B. DuVal | M. Savarino/Katherine Dalton | 12-2-15 |
| 1 | Issued as Final | Blaes/DuVal/Swanson | R.Blackmon | 6-15-16 |
| **Rev** | **Description** | **Prepared** | **Checked** | **Date** |

Fugro GeoServices, Inc. Report No. 2415-7058_OPS
June 15, 2016

200 Dulles Drive
P.O. Box 740010
Lafayette, Louisiana 70506
T (337) 237-2636
F (337) 268-3221

Exxon Mobil Alaska LNG LLC (EMALL)
10613 W. Sam Houston Pkwy N, Suite 500
Houston, TX, 77064

Attention: Patrick Wong
Geotechnical Engineer/Technical POC

**Operations Report**
**2015 Alaska LNG Program**
**Reconnaissance Survey**
**Cook Inlet, Alaska**

We are pleased to present this operations report detailing the survey operations during geophysical data collection aboard the *M/V Qualifier 105* performed for Alaska LNG during pre-feed reconnaissance surveys in Cook Inlet, Alaska. We appreciate the opportunity to work with you on this project and look forward to continuing as your geohazard consultants. Please contact us if you have any questions or if we can be of further assistance.

Sincerely,

**FUGRO GEOSERVICES, INC**

Michael R. Blaes
Senior Geologist

Barbara DuVal
Geologist

Eric Swanson, M.A., R.P.A.
Geoscientist/Project Marine Archaeologist

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1-F Lessons Learned/Constructive Comments for Future Improvements

1-G 2DHR Processing Report for Cook Inlet Survey (CGG)

# 1.0 Scope of Work

## 1.1 Purpose

Fugro GeoServices Inc. (FGSI) was contracted by Alaska LNG to conduct a high-resolution geophysical reconnaissance survey for two proposed pipelines and an LNG facility and approach area in Cook Inlet, Alaska. The LNG facility and approach survey area lies within the northern third of Cook Inlet near Nikiski, while the pipelines emanate near Boulder Point on the east and extend west across Cook Inlet to Tyonek for the proposed pipeline corridors.

The purpose of this survey was to perform reconnaissance to support siting and preliminary design of a pipeline crossing, marine terminal facility, turning basin, and construction dock for the Alaska LNG project. It was paramount to map any man-made debris or hazards and geologic conditions that may impact the construction activities for the proposed LNG facility and proposed pipelines. Acquired geophysical data types included GI air gun seismic, boomer seismic and sub-bottom profiler (SBP). These datasets resolve shallow geologic features to the level of detail required for engineering design and regulatory permitting of bottom-sited facilities associated with future field development.

## 1.2 Acronyms/Abbreviations

Acronyms and abbreviations specific to this report are presented in this section of the report.

| | |
|---|---|
| CORS | Continuously Operating Reference Stations |
| CRP | Common Reference Point |
| CRS | Coordinate Reference System |
| CTD | Conductivity Temperature Depth |
| DGNSS | Differential Global Navigation Satellite Systems |
| DGPS | Differential Global Positioning System |
| DTM | Digital Terrain Model |
| DPR | Daily Progress Report |
| FGSI | Fugro GeoServices, Inc. |
| GCS | Geographic Coordinate System |
| GI | Generator Injector |
| GNSS | Global Navigation Satellite System |
| GPS | Global Positioning System |
| GRS | Geodetic Reference System |
| HAZID | Hazard Identification |
| HOC | Hazard Observation Card |
| HSE | Health, Safety and Environmental |
| Hz | Hertz |
| JSA | Job Safety Analysis |
| JSEA | Job Safety Environmental Analysis |
| KHz | Kilohertz |

| | |
|---|---|
| kn | Nautical Mile |
| KWh | Kilowatts |
| LNG | Liquefied Natural Gas |
| MSL | Mean Sea Level |
| NAD83 | North American Datum of 1983 |
| NADCON | North American Datum Conversion |
| NSRS | National Spatial Reference system |
| OPS | Operation Report |
| OSHA | Occupational Safety and Health Administration |
| PSO | Protected Species Observers |
| SES | Smultea Environmental Sciences, L.L.C. |
| UTC | Coordinated Universal Time |
| UTM | Universal Transverse Mercator |
| WGS | World Geodetic System |
| WGS84 | World Geodetic System 1984 |
| XOM | ExxonMobil |

## 2.0 Operations

### 2.1 Survey Overview

FGSI conducted a high-resolution geophysical reconnaissance survey for two proposed pipelines and an LNG facility and approach area in Cook Inlet, Alaska. The survey was conducted aboard the *M/V Qualifier 105* from August 19 to October 22, 2015. Sea conditions during the survey varied from calm to moderate, with winds ranging from approximately 2 to 20 knots and seas from 1 to 4 feet.

Data collected during the survey include Generator Injector (GI) air gun seismic, boomer seismic, and sub-bottom profiler (SBP). Horizontal positioning of the survey vessel was accomplished with the FUGRO Starfix.G2 Global Navigation Satellite System (GNSS), which has a field accuracy of <1 meter. The description of the navigation system, along with all of the geophysical systems utilized during the survey, is included in Appendix 1-B of this report.

The survey grid was designed to cover a site area, an approach area, and two pipeline routes. Within the site area portion of the survey, a total of eighty-four (84) lines of data were collected. These lines include thirty-four (34) track lines (Lines S100–S129 and S200–S203) that were run with the short streamer air gun, thirty-eight (38) track lines (Lines SL100–SL130 and SL200–Sl206) that were run with the long streamer air gun, and twelve (12) track lines (Lines SB100, SB108, SB115, SB120, SB124, SB128, SB129, SB200, SB201, SB203, SB204, and SB206) that were run with the boomer. For the approach area of the survey, sixty-five (65) track lines (Lines 300–351 and 400–412) were run with the sub-bottom data. Within the pipeline area of the project, a total of 130 track lines were run with sub-bottom and include Lines 500–521, 600–642, 644–675, 700–710, 800–805, 811–819, 822, 824, 826, 830, 832, 833, and 836. Numerous lines were rerun, and rerun numbers are designated with an alpha notation following the original number, such that Line 836A is a first run of Line 836, and Line 836B is a second run of Line 836 and so on.

Alaska LNG requirements state that the coordinate system for reporting is the Geographic Coordinate System (GCS), NAD83 (NSRS 2007) Alaska Zone 4 (ft. US), further defined in Section 3.3. Survey navigation data were collected in North American Datum 1983 (NAD83), on GRS-1980 Ellipsoid, Universal Transverse Mercator Zone 5 (North), Grid Units in meters. Final deliverables were converted to NAD83 (NSRS 2007) Alaska Zone 4 (ft. US), Grid Units in US feet using Trimble's Terramodel software.

## 2.2 Offshore Project Personnel aboard the *Qualifier 105*

***Survey Personnel - August 19 to September 22, 2015***

| | |
|---|---|
| Wayne Labrie | Party Manager |
| Ted Tremblay | Assistant Party Manager/Technical Coordinator |
| Michael R. Blaes | FGSI QC Geologist |
| Zachary Bellone | Geophysical Operator |
| Freddie Wilson | Geophysical Operator |
| Phillip Daniels | FGSI Surveyor |
| Shannon Campbell | Seismic Processor |
| Ian Shirley (CGG) | Seismic Processor |
| Patti Hasse (SES) | Lead PSO |
| Vanessa James (SES) | PSO |
| Noel Rogers | Company Data QC Representative |
| David King | Company HSE Representative |
| David Mastolier | 1st Captain |
| Jared Bradshaw | 2nd Captain |
| Jeff Gregson | Mate |
| Todd Ostler | Chief Engineer |
| Kevin Anderson | Cook/Senior Deckhand |
| Ben Jantzi | Deckhand |

Note* Personnel changes during this interval included:
September 7th - Jared Bradshaw (2nd Captain) left the boat
September 7th - Eric Swanson (FGSI QC Geologist) got on the boat
September 9th - Michael Blaes (FGSI QC Geologist) left the boat.

***Survey Personnel - September 23 to October 6, 2015***

| | |
|---|---|
| Ted Tremblay | Party Manager/Technical Coordinator |
| Eric Swanson | FGSI QC Geologist |
| Barton Thibodeaux | Geophysical Operator |
| Freddie Wilson | Geophysical Operator |
| Phillip Daniels | FGSI Surveyor |
| Shannon Campbell | Seismic Processor |
| Ian Shirley (CGG) | Seismic Processor |
| Patti Hasse (SES) | Lead PSO |
| Kristine Lindberg | PSO |
| Niccole Van Hoey | PSO |
| Noel Rogers | Company Data QC Representative |
| David King | Company HSE Representative |
| Jared Bradshaw | 1st Captain |
| Jeff Gregson | 2nd Captain |
| Todd Ostler | Chief Engineer |

| | |
|---|---|
| Kevin Anderson | Cook/Senior Deckhand |
| Ben Jantzi | Deckhand |

Note* Personnel changes during this interval included:

August 24-25th – Ezrah Schraven came aboard to observe

October 1st - Kristine Lindberg replaced Niccole Van Hoey (PSO)

October 1st - Michael Berry replaced David King (Company HSE Representative)

***Survey Personnel- October 7, to October 22, 2015***

| | |
|---|---|
| Ted Tremblay | Party Manager/Technical Coordinator |
| Eric Swanson | FGSI QC Geologist |
| Barton Thibodeaux | Geophysical Operator |
| Matthew Broussard | Geophysical Operator |
| Robert Faragher | Geophysical Operator |
| Darrell Miller | FGSI Surveyor |
| Shannon Campbell | Seismic Processor |
| Ian Shirley (CGG) | Seismic Processor |
| Kristine Lindberg | Lead PSO |
| Tara Hanks | PSO |
| Noel Rogers | Company Data QC Representative |
| Michael Berry | Company HSE Representative |
| David Mastolier | 1st Captain |
| Jeff Gregson | 2nd Captain |
| Todd Ostler | Chief Engineer |
| Kevin Anderson | Cook/Senior Deckhand |
| Ben Jantzi | Deckhand |

## 2.3 Operations

The Daily Progress Reports (DPRs) for the dates referenced in this section are included in Appendix 1-A. The job safety analyses, safety meetings, and tool box meetings that took place during the survey are not contained in this report.

Offshore operations for the survey areas aboard the *M/V Qualifier 105* began August 19, 2015, and continued through October 22, 2015. Below is a summary of the survey operations. For more details, refer to the survey logs presented in Appendix 1-A.

*August 19, 2015:* Wayne Labrie and Ted Tremblay gathered gear at the Anchorage office and drove to Homer, Alaska, to meet up with the rest of the crew members.

*August 20, 2015:* An Induction Meeting was held at the Best Western motel from 08:30 to 13:00. At 18:30, the Conex was loaded onto the survey vessel and the crew began Mobilizing the systems.

*August 21, 2015:* Mobilizing activities continued through the entire day.

*August 22, 2015:* Mobilizing activities continued through the entire day.

*August 23, 2015:* Mobilizing activities continued through the entire day.

*August 24, 2015:* Mobilizing activities continued through the entire day. Ezrah Schraven arrived on the survey vessel for observation.

*August 25, 2015:* Mobilizing activities continued and Ezrah Schraven departed the survey vessel at 17:30. At 18:00, a Sailing Safety Meeting was held, and at 22:30, the survey vessel departed for the work area.

*August 26, 2015:* The survey vessel was heading to the work area and arrived at 09:45. At this time, the survey vessel went on weather stand-by. At 10:30, a safety meeting was held. At 17:00, the survey vessel was waiting on daylight so that the Protected Species Observers (PSO) could clear the area for deployment of the gear.

*August 27, 2015:* The survey vessel was waiting on daylight at the beginning of the day. At 09:00, a safety meeting on deployment and retrieval operations was held. At 09:15, the survey vessel headed to the deepest part of the survey area, and at 09:36, a velocity cast (Velo 1) was taken (Latitude 60.6761 and Longitude -151.4199). At 10:30, a Man Overboard Safety Drill was performed. At 11:00, the survey equipment was deployed and tuned. However, due to increasing winds and seas, at 16:00, the gear was retrieved and the survey vessel went on weather standby.

*August 28, 2015:* The survey vessel was on weather standby at the beginning of the day. At 10:10, the survey crew waited to hear from Conoco-Phillips and Tesoro on their exclusion zones. At 13:00, the survey vessel was in route to the velocity location, and at 13:33, a velocity cast (Velo 2) was taken (Latitude 60.6384 and Longitude -151.3929). At 13:35, the gear was deployed and the survey crew worked the rest of the day on extending the length of the cable so that it would reach the desired tow depth. At 22:30, the survey vessel was waiting on daylight so that the Protected Species Observers (PSO) could clear the area for deployment of the gear.

*August 29, 2015:* At the beginning of the day, the survey vessel was waiting on daylight so that the Protected Species Observers (PSO) could clear the area for deployment of the gear. A safety meeting on Deployment of Gear was held at 08:00. At 08:26, a velocity cast (Velo 3) was taken (Latitude 60.6492 and Longitude -151.3760). At 08:34, the gear was deployed; however, the streamer was not working correctly due to cable termination failure. The survey crew retrieved the streamer and tried several different procedures to get the streamer to work properly. At 18:35, it was determined that the tail stretch was bad and there were no spares on the vessel, so Charles Hall was notified. At 19:10, the survey vessel was in route to the anchor area and waited on the spare tail section.

*August 30, 2015:* At the beginning of the day the survey vessel was waiting on daylight and still waiting for the spare tail section. At 08:00, Charles Hall instructed the survey crew to rig the boomer and prepare to run Approach Lines. At 08:02, the survey crew rigged the boomer system with Starfix and GeoEel. At 11:30, a safety meeting on deployment of the boomer system and sub-bottom profiler was held. At 12:40, a velocity cast (Velo 4) was taken (Latitude 60.5431 and Longitude -151.4595). At 14:30, the gear was deployed after getting the okay from PSO. At 15:15, the survey vessel was headed to run several test lines, and Test Lines 300, 300a, 300b and 300c were collected. At 18:38, the sea state was increasing, so all the gear was retrieved and the survey vessel went on weather standby.

*August 31, 2015:* The survey vessel was on weather standby for the entire day.

*September 1, 2015:* The survey vessel was on weather standby until 08:40, and then the survey vessel was in route to the work area. At 09:28, a velocity cast (Velo 5) was taken (Latitude 60.5493 and Longitude -151.4550). At 09:35, the gear was deployed and the PSO gave clearance to start collecting data. At 10:00, test lines were run with the boomer data and included Lines 300, 400, 500, and 600. At 14:45, the technicians called Charles Hall to inform him of the data quality. He instructed the survey crew to go shoot the seismic portion of the survey instead. At 14:55, the survey vessel was in route to the seismic portion of the survey area, and the GI Gun and GeoEel streamer were deployed. At 16:51, data acquisition of the seismic portion of the survey began and continued until the end of the day. Survey Lines S100, S101, S104, and S102 were collected.

*September 2, 2015:* Data acquisition of the seismic portion of the survey continued until the end of the day, and Survey Lines S103, S105, S106, S107A, S107B, S108–S112, S114, S116, and S118 were collected. Survey Line S113 was started at 22:39.

*September 3, 2015:* Data acquisition of the seismic portion of the survey continued until 13:13. Survey Lines S113, S115–S117, and S119–S122 were collected. At 13:30, the seismic gear was retrieved and the JSA was reviewed. At 13:45, the boomer system was deployed. At 16:15, the boomer was being tuned in SonarWiz; however, the boomer power knocked out the wheelhouse navigation monitor. The boomer data were displaying interference from the sub-bottom profiler and the quality of the boomer data was not acceptable. At 19:45, the boomer system was retrieved and the seismic gear was deployed. At 21:03, data acquisition of the seismic portion of the survey began and continued until the end of the day. Survey Lines S124 and S123 were collected.

*September 4, 2015:* Data acquisition of the seismic portion of the survey continued until 04:29, and survey Lines S125 and S126 were collected. The seismic gear was retrieved and service on the GI Gun and compressors was completed at 06:00. The crew was waiting for the PSO to give clearance once daylight arrived, and at 06:50, the Weekly Fire Drill was performed. At 08:00, the seismic gear was deployed but there was a problem getting the starboard compressor to run. At 11:12, the seismic gear was retrieved and a problem was found with the tail section. At 12:30, the

replacement gear arrived and the new tail section was installed. At 13:45, the streamer cable was deployed, but there was still evidence of some leakage. At 16:30, the leakage was found in the tail swivel and remedied. At 19:30, it was noted the GeoEel units would not communicate with the larger streamer, so the survey vessel was headed to run some reruns with the small 1.56 grouping streamer.

*September 5, 2015:* The short streamer was deployed at the beginning of the day and data acquisition of the rerun lines continued until 16:54. Survey Lines S118A, S117A, S113A, S107C, S111A, and S110A were collected. At this time, the short streamer was swapped out with the long seismic cable and data acquisition continued until the end of the day. Survey Lines SL102, SL107, SL103, and SL105 were collected.

*September 6, 2015:* Data acquisition of the seismic portion of the survey continued until 12:18, and Survey Lines SL106, SL112, and SL114–SL118 were collected. Survey Line SL119 was started at 12:18, but was aborted at 12:44 because there were trees in the water, so the gear was retrieved. At 13:15, the survey vessel met up with the *My Marie* to get new gear installed on the boomer power supply. At 15:30, the boomer was deployed and Test Line SH107 was run. At 18:13, the boomer was retrieved and the seismic gear was deployed. At 19:17, data acquisition of the seismic portion of the survey continued to the end of the day and Lines SL104, SL113, and SL120 were collected.

*September 7, 2015:* Data acquisition of the seismic portion of the survey continued until 12:30, and Survey Lines SL122, SL124, SL124A, SL124B, SL125, and SL108 were collected. During this interval, several lines were aborted and include Line SL124 (because no serial string was detected), Line SL124A, (because bird no. 2 needed new batteries), and Line SL125 (because bird no. 1 was not responding). At 12:30, data acquisition of Line SL110 was started, but was aborted at 13:14 because debris was caught on the tail buoy. At 13:40, the seismic gear was retrieved and the survey vessel headed to the dock for a crew change and to pick up supplies. At 16:35, the survey vessel departed the dock and headed for the work location. At 17:00, the seismic gear was deployed and data acquisition of the seismic portion of the survey continued until the end of the day. Survey Lines SL125B, SL126, and SL123 were collected. Survey Line SL121 was started at 23:34.

*September 8, 2015:* The collection of Line SL121 was continued; however, it was aborted at 00:17, due to a navigation issue and was rerun. Data acquisition of the seismic portion of the survey continued until the end of the day, and Lines SL121A, SL122A, SL120A, SL121B, SL117A, SL206, SL116A, SL110A, SL205, SL109, SL111, SL116B, and SL103A were collected.

*September 9, 2015:* Data acquisition of the seismic portion of the survey continued until 10:19 and Lines SL101, SL100, SL120B, SL123A, and SL101A were collected. At 10:19, Line SL203 was started; however, it was aborted at 11:21 due to fishing buoys in the way. At 11:40, the seismic gear was picked up. The survey vessel headed to the dock for a crew change and to pick up supplies. At 18:00, the survey vessel was back at the work site and the seismic gear was

deployed. At 19:15, data acquisition started with Line SL127 and this line was completed. At 21:17, Line SL128 was attempted; however, winds and seas were increasing and the survey vessel went on weather standby until the end of the day.

*September 10, 2015:* Data acquisition of the seismic portion of the survey continued until 11:47. Survey Lines SL129, SL129A, SL130, SL129B, and SL105A were collected. During this interval, several lines were aborted and include Line SL129 (because cable levelers were out of spec due to the currents), Line SL129A (because the navigation stopped triggering), and Line SL130 (because a boat on anchor was in the way). At 11:47, Line SL202 was aborted due to increased winds and seas. At this time, the seismic gear was retrieved and the survey vessel went on weather standby. At 18:00, the sea state improved, and the gear was deployed and Survey Line SL114A was collected. At 21:30, the long streamer was swapped with the short streamer and Line S100A was collected. Line S101A was started at 23:46.

*September 11, 2015:* Data acquisition of the seismic portion of the survey continued until 06:32 and Survey Lines S101A, S104A, S120A, and S126A were collected. At 06:32, the seismic gear was retrieved and *My Marie* brought out boomer replacement parts. At 09:16, the gear was deployed and data acquisition of the seismic portion of the survey continued until 14:20. Survey Lines S127, S202, S201, and S200 were collected. At 14:20, the seismic gear was retrieved and the survey vessel headed to the dock to pick up a boomer plate and power cable. At 17:30, the boomer, with the new plate, was deployed and two test lines (Lines S117B and S117C) were run. At 18:58, the boomer was retrieved and a safety meeting was held. At 20:15, the seismic gear was deployed and data acquisition of the seismic portion of the survey continued until the end of the day. Lines S116, S128, and S129 were collected.

*September 12, 2015:* Data acquisition of the seismic portion of the survey continued until 03:05 and Line S203 was collected. At this point, the short streamer was retrieved. The batteries were changed on the cable levelers and the tow leader was attached to the long streamer, which was then put on a reel. At 04:00, the winds and seas picked up, so the survey vessel went on weather standby. At 18:00, the seismic gear was deployed; however, the air line in the gun umbilical was busted in four places, so the airline was replaced with a new hose. The survey vessel then waited on daylight and clearance from the PSO.

*September 13, 2015:* The survey vessel was waiting on daylight, and at 05:30, the PSO went on watch and gave clearance at 06:00. At 06:16, the seismic gear was deployed, and Survey Line SL200 was started. However, Survey Line SL200 was aborted at 06:35 due to the feather angel on the seismic cable. Rerun Line SL200A was started at 07:08, but was aborted at 07:56 due to the declining weather conditions. The survey vessel went on weather standby for the rest of the day.

*September 14, 2015:* The survey vessel was on weather standby until 12:30 when the gear was deployed. Data collection of Line 200B started at 13:41 and was completed at 14:45, at which time the gear was retrieved and the survey vessel went on weather standby until 18:00. At 18:06,

the survey vessel was in route to the first line on the approach portion of the survey. Data collection for the approach portion of the survey started at 18:18 and continued until the end of the day. Lines 334–337 were completed.

*September 15, 2015:* Data acquisition for the approach portion of the survey continued until the end of the day and Survey Lines 321–333 were completed.

*September 16, 2015:* Data acquisition for the approach portion of the survey continued until 12:00, and Lines 316–320, 400–402, 411, and 412 were completed. At 12:00, there were problems with channels 2, 10, and 18 on the streamer channel and the gear was retrieved. Supplies were picked up from the *My Marie,* and the technicians changed out the first A/D, the repeater, and the head isolation section on the streamer. The streamer channel was still having problems with channels 2, 10, and 18, so the vessel headed to the *My Marie* for more supplies. At 15:40, the gear was deployed and at 16:48, data collection for the approach portion of the survey continued until 21:52. Survey Lines 313–315 and 410 were collected. At 21:52, the collection of Survey Lines 409 and 312 were attempted; however, both lines were aborted due to strong currents and both lines needed to be rerun.

*September 17, 2015:* Data acquisition for the approach portion of the survey continued until 15:30, and Survey Lines 300–311, 307A, 307B, 403 and 404 were completed. The survey vessel went on weather standby from 15:30 to 19:37. At 19:37, the collection of Rerun Line 325A was attempted; however, it was aborted at 19:55 because the navigation locked up. At 20:20, the collection of Survey Line 325B was also attempted; however, there was a ship in the way, so this line was aborted at 20:40. At 21:00, data acquisition of the seismic portion of the survey started with an attempt to run Survey Line SB200, but it was aborted at 22:41. Data acquisition of Survey Line SB129 was started at 23:16.

*September 18, 2015:* Data acquisition of Survey Line SB129 was completed at 00:21. The survey vessel headed back to the approach portion of the survey, and data acquisition continued until 20:44. Survey Lines 338–351, 405–407, and 406A were collected. Data acquisition of rerun Lines 338A and 335A were attempted; however, both lines were aborted because the navigation locked up. Data acquisition of rerun Line 335B was started at 23:16.

*September 19, 2015:* Data acquisition of rerun lines in the approach portion of the survey continued until 23:22, and Survey Lines 335B, 333A, 327A, 325C, 318A, 313A, 313B, 312A, 311A, 315A, 318B, 409A, 409B, 338B, 318C, 409C, and 408A were collected. Data collection of rerun Line 406B was started at 23:22, but was aborted due to trees in the area and the feather angle on the streamer.

*September 20 2015:* Data acquisition of the rerun lines in the approach portion of the survey continued until 10:00, and Lines 318D, 315B, 409D, 406C, 307C, and 315D were collected. The survey vessel then headed to the seismic portion of the survey. Data acquisition started at 11:10 and continued until 19:00. Survey Lines SB100, SB206, SB108, SB115, SB120, and SB200A

were collected. At 19:00, the seismic gear was retrieved and the survey vessel did a data drop with *My Marie*. At 20:10, the seismic gear was deployed, and the survey vessel headed to the start of line. Data acquisition of the seismic portion of the survey started at 20:30 and continued until the end of the day. Survey Lines SB128 and SB124 were collected. Line SB204 was started at 23:23; however, the line had to be aborted due to fishing buoys in the way.

*September 21 2015:* Data acquisition of the seismic portion of the survey continued until 18:35, and Lines S124A, SB128A, SB203, SB120A, SB201, and SB201A were collected. At 18:35, the boomer and short streamer were retrieved, and the GI gun and long streamer were deployed. At 20:30, the survey vessel was waiting for the slack tide, and it was concluded that the seas were too rough in the direction of the tie lines.

*September 22, 2015:* Data acquisition of the seismic portion of the survey continued until 09:25, and Lines SL119A, SL200C, and SL204 were collected. The seismic portion of the project was complete. At 09:25, the gear was retrieved and the survey vessel was waiting on weather. At 11:30, the survey vessel was in route to Homer for supplies and a crew change.

*September 23, 2015:* The survey vessel was in Homer and the vessel obtained food, water, and fuel. At 15:00, a crew change took place. At 19:30, a Safety Drill on Loss of Power took place. At 19:40, the survey vessel was in route to the work location.

*September 24, 2015:* The survey vessel was in route to the work location at the beginning of the day. At 08:00, the pipeline portion of the survey was going to be collected, so the captain and geo crew discussed the scope of work. At 08:10, the water depths were checked with the fathometer before the gear was deployed. At 08:25, a velocity cast (Velo 6) was taken (Latitude 60.7880 and Longitude -151.2595). At 08:28, the gear was deployed and tuned. At 10:58, data acquisition began with survey Line 514; however, the GeoEel software locked up. Rerun Line 514A was started at 10:58, but this line was aborted due to lack of water depth. Several additional survey lines (Lines 515, 516, 517, 642, 512, and 512A) were attempted to be collected; however, these lines were also aborted due to lack of water depth. At 22:58, data acquisition of survey Line 510 was started.

*September 25, 2015:* Survey Line 510 was aborted at 01:06 because the navigation locked up. Between 10:06 and 06:10, several rerun lines were attempted (Lines 510A, 510B, and 510C); however, all were aborted because the navigation locked up. At 06:10, data acquisition continued until 15:15, and Survey Lines 508, 630–641, and 642A were collected. At 15:50, the seas began picking up so the gear was retrieved and secured. At 16:00, the survey vessel was in route to a protective area and anchored down in Nikiski Bay.

*September 26, 2015:* The survey vessel was waiting on daylight and to see if weather conditions were favorable. At 08:00, the PSO were observing for wildlife and the anchors were picked up. At 08:30, the PSO gave clearance to start collecting data and the gear was deployed. At 12:38, data acquisition started with Rerun Line 508A, but was aborted at 12:51 because the navigation was

locking up. At 13:13, data acquisition of Rerun Line 508B was attempted; however, this line was aborted at 14:40 because gunboats were shooting seismic in the area. The gear was retrieved and the survey vessel headed to the dock to pick up Robert Faragher. At 14:57, a velocity cast (Velo 7) was taken (Latitude 60.8452 and Longitude -151.2422). At 15:00, the survey vessel was in route to the ASRC Rig Tenders Terminal. When the survey vessel arrived at the Terminal, the seas were too high for the vessel to get along dockside, so the survey vessel headed back to the work area. At 19:00, the gear was deployed. The boomer power supply was not energizing, so it was swapped out to another spare unit (CSP-D). At this point, it was too late to mitigate the system, so the survey vessel was waiting on daylight.

*September 27, 2015:* The survey vessel was waiting on daylight to start and test the boomer. At 07:45, the CSP-D units high voltage fault light was on and the unit would not energize to high voltage. All the fuses were checked and all were good. At 08:15, the technician informed Charlie Hall of the problem and he suggested to check the unit again. The technician reconnected the CSP-P unit to recheck, but the unit still was not functioning. At 09:00, the technician spoke with Mike Barth and he said the CSP-D unit had a bad power supply inside and would not work until it was repaired. Since this unit and the original unit were bad, Charlie Hall was called so he could order another console unit. At 14:00, the gear was retrieved and the survey vessel headed to the Rig Tenders Terminal so Robert Faragher could get off the boat. At 17:30, the survey vessel was at the dock, and the transfer of Robert Faragher was complete. At 18:30, the survey vessel headed to the anchor area and anchored until the new boomer arrived.

*September 28, 2015:* The survey vessel was on anchor, waiting on equipment.

September 29, 2015: The survey vessel was on anchor, waiting on equipment. At 06:00, seas became rough and the survey vessel went on weather standby. At 14:30, the survey vessel headed to *My Marie* to pick up the new boomer console. At 15:30, the seas were still too rough to acquire data so the survey vessel headed back to the anchor area.

*September 30, 2015:* The survey vessel was waiting on *My Marie* to deliver the new boomer console. At 08:35, the boomer plate was launched in the water, the unit was tested, and it worked. At 09:19, the boomer plate was recovered and the vessel headed to the work area. At 09:30, the sub-bottom profiler was deployed. At 12:25, a velocity cast (Velo 8) was taken (Latitude 60.7956 and Longitude -151.2541). Deployment of the gear continued, and data acquisition of the pipeline portion of the survey started at 13:28 and continued until the end of the day. Most of the lines were aborted because either the navigation locked up or the water depths were too shallow. Survey Lines 508C, 508D, 510D, 510E, 518–521, 503, 503A, 672, and 671 were collected. Survey Line 503B was started at 23:30.

*October 1, 2015:* Data acquisition continued in the pipeline portion of the survey until 05:34. All survey lines collected were reruns because the navigation locked up, and include Lines 503B, 503C, 503D, 503E, 503F, and 503G. At 05.34, the gear was picked up, and at 05:58, a velocity cast (Velo 9) was taken (Latitude 60.9820 and Longitude -151.0213). At 06:15, the survey vessel

headed to Rig Tenders Terminal for a crew change at 09:00. At 10:15, the crew change was complete and the survey vessel was in route back to the work area. At 13:00, the gear was deployed, and at 13:08, a velocity cast (Velo 10) was taken (Latitude 60.8401 and Longitude -151.2726). At 14:17, data acquisition started and continued until the end of the day. Most of the survey lines were reruns and include Lines 508E, 508F, 508G, 508H, and 501. Survey Line 501A was started at 23:08.

*October 2, 2015:* Data acquisition continued in the pipeline portion of the survey until 18:19. Survey Lines 501A, 505, 505A, 653-656, 654A, 505B, 505C, 505D, 501B, 501C, 501D, 501E, 501F, 501G, 501H, 501I, 651 and 652 were collected. At 18:28, the survey vessel went on weather standby until the end of the day.

*October 3, 2015:* The survey vessel was on weather standby at the beginning of the day. Data acquisition in the pipeline portion of the survey started at 01:26 and continued until the end of the day. Survey Lines 614–629 and 658–666, and Rerun Lines 510F, 510G, 510H, 510I, 510J, 510K, 614B, 620A, 620B, 627A, 628A, and 663A were collected.

*October 4, 2015:* Data acquisition in the pipeline portion of the survey continued until the end of the day. Survey Lines 667–670, 673–675, and 707–710, and Rerun Lines 637A, 656A, 661A, 673A, 708A, 708B, 709A and 710A were collected. Survey Line 707A was started at 23:18.

*October 5, 2015:* Data acquisition in the pipeline portion of the survey continued until 14:21. Survey Lines 704–706 and Rerun Lines 704A, 704B, 704C, 706A, 707A, 707A, and 707B were collected. At 14:21, a velocity cast (Velo 11) was taken (Latitude 60.9178 and Longitude -151.1654). At 14:25, the gear was retrieved and the survey vessel was in route to the approach portion of the survey to rerun some lines. At 16:05, the vessel arrived in the work area and the gear was deployed. At 16:09, a velocity cast (Velo 12) was taken (Latitude 60.6376 and Longitude -151.4280). At 16:35, data acquisition started and continued until the end of the day. Rerun Lines 408B, 329A, 329B, 328B, and 328C were collected.

*October 6, 2015:* Data acquisition in the approach portion of the survey continued until 16:03. Rerun Lines 326A, 326B, 325D, 325E, 324A, 324B, 324C, 322A, 321A, 321B, 320A, 320B, and 320C were collected. At 16:03, a velocity cast (Velo 13) was taken (Latitude 60.5639 and Longitude -151.4380). At 16:06, the gear was retrieved and the survey vessel was headed to Homer.

*October 7, 2015:* The survey vessel arrived in Homer and spent the day getting food, water, and supplies. Also several crew changes took place at different times during the day.

*October 8, 2015:* The survey vessel was on standby for weather all day. The spare boomer console was brought aboard and the technicians set up the new navigational computer.

*October 9, 2015:* The survey vessel was on standby for weather all day. At 21:00, the survey vessel departed Homer for the work area.

*October 10, 2015:* Extra mileage was added to the pipeline portion of the survey, so the survey vessel was headed to this new pipeline area. At 08:15, a Man Overboard Drill was conducted. At 08:25, the gear was deployed and at 08:42, a velocity cast (Velo 14) was taken (Latitude 60.8416 and Longitude -151.1753). Data acquisition started at 10:04, and Lines 803 and 802 were attempted; however, the serial string was not detected in the GeoEel. The technicians troubleshot the GeoEel, but could not fix the problem. At 15:00, the computer was swapped out and all computers were rebooted. At 18:32, data acquisition within the new pipeline area started and continued until the end of the day. Lines 802A, 803A, and 801 were completed. Line 800 was started at 23:24.

*October 11, 2015:* Data acquisition within the new pipeline area continued until 03:26, and Line 800 was completed. Line 811 was attempted; however, the data were noisy and had to be rerun. At 03:36, the survey vessel went on weather standby. The gear was retrieved at 08:30, and the vessel headed to anchor near the shallow end of the survey area.

*October 12, 2015:* The weather conditions improved and the survey vessel was waiting on daylight to get PSO clearance. At 06:30, the PSO gave clearance and the engines were warmed up. At 07:15, a velocity cast (Velo 15) was taken (Latitude 60.7558 and Longitude -151.2983). At 07:25, the gear is deployed and a new database for the navigation is imported and named. Data acquisition within the new pipeline area started at 10:26 and continued until the end of the day. Survey Lines 804, 805, 815–819, 822, 824, and 826 were completed. The collection of Line 814 was started at 23:29.

*October 13, 2015:* Data acquisition within the new pipeline area continued until the end of the day. Survey Lines 812–814, IT01, 902, 833, 833A, 833B, 832, 832A, and 830 were collected. The collection of Line 830A was started at 22:52.

*October 14, 2015:* Data acquisition within the new pipeline area continued until 16:00. Survey Lines 830A, 830B, 830C, 836, 836A, 836B, 836C, 832B, 832C, and 832D were collected. Survey lines for the new pipeline area were complete. At 16:00, a velocity cast (Velo 16) was taken (Latitude 60.9996 and Longitude -151.0262). The sea state was increasing so at 16:10 the gear was retrieved. The vessel went on weather standby and headed to anchor off the south end of the survey area.

*October 15, 2015:* The survey vessel was on weather standby the entire day.

*October 16, 2015:* The survey vessel was on weather standby the entire day.

*October 17, 2015:* The survey vessel was on weather standby until 08:00. At 08:00, the gear was deployed while waiting for the PSO clearance. At 08:07, a velocity cast (Velo 17) was taken (Latitude 61.0109 and Longitude -151.1412). Data acquisition within the pipeline portion of the survey area started at 09:50 and continued until the end of the day. Survey Lines 500, 502, 503I, 503J, 506, 507, 510L, 511, 513, 601–610, and 644–647 were collected. The collection of Line 701 was started at 22:17.

*October 18, 2015:* Data acquisition within the pipeline portion of the survey area continued until the end of the day. Survey Lines 501J, 502A, 502B, 503K, 504, 508H, 509, 512D, 512E, 600, 611–613, 700, 701, and 703 were collected.

*October 19, 2015:* Data acquisition within the pipeline portion of the survey area continued until 19:25. Survey Lines 500A, 501K, 502C, 504A, 505E, 505F, 505G, 508I, 508J, 600A, 648–650, 609A, 610A, 611A, 700A, 701A, 702, 702A, and 702B were collected. All survey lines for this project was completed. At 19:25, a velocity cast (Velo 18) was taken (Latitude 60.0717 and Longitude -151.9897). The gear was retrieved and at 19:35, the survey vessel was in route to Homer.

*October 20, 2015:* The survey vessel was in route to Homer. At 08:00, the survey vessel reached the dock and the demobilization process was started. At noon, the PSOs and Client Representatives depart the vessel. At 19:35, the truck was loaded and departed for Palmer, Alaska.

*October 21, 2015:* The survey crew was cleaning up the vessel. At 08:00, the survey personnel began to depart the vessel and they left at different times during the day.

*October 22, 2015:* The survey equipment was sorted and Mr. Welder arrived in Homer to unweld all pads for the compressors, the streamer winch, and the mount for the sub-bottom profiler. At 18:00, the survey vessel was released.

## 2.4 Operational Problems

On August 28, 2015, from 13:35 to the end of the day, the survey crew worked on extending the length of the cable so that it would reach the desired tow depth.

At 08:34 on August 29, 2015, the streamer was not working properly due to cable termination failure. Several different procedures were tried to get the streamer to work properly. It was determined that the tail stretch was bad. There were no spares on the vessel, so Charles Hall was notified, and at 19:10, the survey vessel was in route to anchor area and waited on the spare tail section. On August 30, 2015, the survey crew was still waiting for the spare tail section to arrive at the anchor area. At 08:00, Charles Hall instructed the survey crew to rig the boomer and prepare to run approach lines instead of working on the seismic portion of the survey.

At 13:45 on September 3, 2015, the boomer system was deployed and tuned in SonarWiz; however, the boomer power knocked out the wheelhouse navigation monitor. The boomer data were displaying interference from the sub-bottom profiler, and the quality of the boomer data was not acceptable. At 19:45, the boomer system was retrieved.

At 08:00 on September 4, 2015, after the seismic gear was deployed, there was a problem getting the starboard compressor to run. The seismic gear was retrieved and it was found that there was a problem with the tail section. At 12:30, the new tail section arrived and was installed. The

streamer cable was deployed, but there was still was evidence of leakage. At 16:30, leakage was found in the tail swivel and this problem was resolved. Then at 19:30, it was noted the GeoEel units would not communicate with the larger streamer so it was decided that the survey vessel should run some reruns with the small 1.56 grouping streamer while the larger streamer was being fixed.

At 12:00 on September 16, 2015, the gear was retrieved since there was a problem with the streamer cable. The technicians changed out the first A/D, the repeater, and the head isolation section on the streamer. The streamer channel was still having problems with channels 2, 10, and 18, so additional supplies were picked up from the *My Marie*. At 15:40, the gear was deployed and was working.

At 19:00 on September 26, 2015, the boomer power supply was not energizing so it was swapped out to another spare unit (CSP-D). At this point it was too late to mitigate the system, so the survey vessel was waiting on daylight. At 07:45 on September 27, 2015, the boomer was tested, and the CSP-D units high voltage fault light was on and the unit would not energize to high voltage. All the fuses were checked and all were good. Charlie Hall was informed of the problem and he suggested to check the unit again. The technician reconnected the CSP-P unit to recheck, but the unit still was not functioning. It was determined that the CSP-D unit had a bad power supply inside and would not work until it was repaired. Since this unit and the original unit were bad, Charlie Hall ordered another console unit. The gear was retrieved and the survey vessel, after heading to the Rig Tenders Terminal for a crew change, remained in the anchor area until the new boomer arrived. On September 30, 2015, *My Marie* delivered the new boomer console. At 08:35, the boomer plate was launched in the water, the unit was tested, and it worked.

At 10:04 on October 10, 2015, data acquisition of Lines 803 and 802 were attempted; however, the serial string was not detected in the GeoEel. The header information was sent to the port and was viewed by a Tera Term Pro. The ports and cables were changed, the computer was rebooted, and a new GeoEel project was configured, but there still was no serial string detected. It was decided to swap out the computer, and all computers were rebooted. Data acquisition commenced at 18:32.

## 2.5 Summary of Weather Conditions

Weather conditions during data acquisition varied from calm to moderate. Sea conditions during the survey varied from calm to moderate with winds ranging from approximately 2 to 20 knots and seas from 1 to 4 feet. The quality of the collected geophysical data was good, and the data were suitable for interpretation. Daily logs describing day to day activities and detailed weather conditions are included in Appendix 1-A of this report.

Numerous periods of downtime due to weather conditions were experienced where the survey vessel had to go on weather standby. These are discussed in the daily operations above and in the daily logs and are summarized in the following list.

| *Date* | *Time* |
|---|---|
| August 26, 2015 | Most of the day |
| August 27, 2015 | From 16:00 to the end of the day |
| August 28, 2015 | From the beginning of the day until 13:00 |
| August 30, 2015 | From 18:38 to the end of the day |
| August 31, 2015 | The entire day |
| September 1, 2015 | From the beginning of the day until 08:40 |
| September 9, 2015 | From 21:17 to the end of the day |
| September 10, 2015 | From 11:47 to 18:00 |
| September 12, 2015 | From 04:00 to the end of the day |
| September 13, 2015 | From 07:56 to the end of the day |
| September 14, 2015 | From the beginning of the day until 12:30 |
| September 14, 2015 | From 14:45 to 18:00 |
| September 17, 2015 | From 15:30 to 19:37 |
| September 22, 2015 | From 09:25 to the end of the day |
| September 25, 2015 | From 16:00 to the end of the day |
| September 26, 2015 | From the beginning of the day until 08:00 |
| September 29, 2015 | From 06:00 to the end of the day |
| October 2, 2015 | From 18:28 to the end of the day |
| October 3, 2015 | From the beginning of the day until 01:26 |
| October 8, 2015 | All day |
| October 9, 2015 | All day |
| October 11, 2015 | From 03:36 to the end of the day |
| October 14, 2015 | From 16:10 to the end of the day |
| October 15, 2015 | All day |
| October 16, 2015 | All day |
| October 17, 2015 | From the beginning of the day until 08:00 |

## 2.6 Operational Limitations

On September 6, 2015, data acquisition was interrupted at 12:44 because there were trees in the water and the gear was retrieved.

On September 7, 2015, data acquisition was interrupted at 13:14 because debris was caught on the tail buoy and the gear was retrieved.

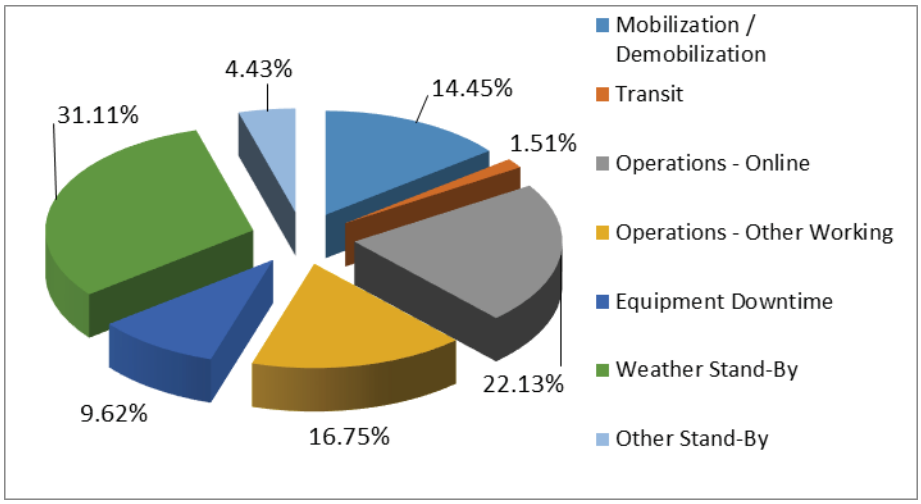
On September 9, 2015, Line SL203 was aborted at 11:21 due to fishing buoys in the way, so the gear was picked up and the survey vessel headed to the dock for a crew change and to pick up supplies.

At 21:52 on September 15, 2015, Lines 409 and 312 were aborted due to strong currents in the area.

## 2.7 Operational Statistics

The following table highlights various operational statistics held over the course of field acquisition.

| ACTIVITY | HOURS | PERCENTAGE OF PROJECT |
|---|---|---|
| Mobilization / Demobilization | 224.50 | 14.45% |
| Transit | 23.42 | 1.51% |
| Operations - Online | 343.97 | 22.13% |
| Operations - Working (Other) | 260.23 | 16.75% |
| Equipment Downtime | 149.48 | 9.62% |
| Stand-By (Weather) | 483.53 | 31.11% |
| Stand-By (Other) | 68.88 | 4.43% |
| Stand-By (No Crew) | 0.00 | 0.00% |
| Job Summary | 1554.01 | 100.00% |
| **Total Line Miles** | | **749.70** |



## 3.0 Navigation

### 3.1 Navigation Report

Horizontal positioning of the survey vessel *M/V Qualifier 105* was acquired with the Fugro Starfix.G2 Global Navigation Satellite System. The *M/V Qualifier 105* was outfitted with the Trimble 551 GNSS array. The antennas for these receivers are mounted on the vessel antenna farm, aft of the wheelhouse, with a clear and unobstructed view of all four quadrants of the sky. Both raw pseudo-range observations and dual-frequency carrier-phase corrections are recorded by the Trimble SPS551 receivers, producing a position with an accuracy of <1 meter. To demonstrate that the GNSS receivers on board the *M/V Qualifier 105* were performing according to specifications, DGPS/GNSS was continuously updated for accuracy.

### 3.2 Navigation Post Processing

The collected navigational data were downloaded to NavLab (Kongsberg Navigational Laboratory). Anomalous points were removed and the data were smoothed. The resulting smoothed navigational data and attitude (pitch, roll, and heading) were then merged with raw sensor data in Starfix.PROC (version 5.03.17). Navigational track lines were then created through Starfix.PROC in PPL formats then CAD post-plots. For conventional surveys, all navigation data is processed with Starfix.PROC.

### 3.3 Datum Conversions

Alaska LNG requirements stated that the coordinate system for reporting is the Geographic Coordinate System (GCS), NAD83 (NSRS 2007) Alaska Zone 4 (ft. US), further defined below.

Horizontal Datum: NAD83 (NSRS 2007)
Authority: EPSG Code: 4759
Ellipsoid (Spheroid): GRS 1980
Semi-major Axis: 6378137.00
Semi-minor Axis: 6356752.314140356
Inverse Flattening: 298.257222101

Vertical Datum (Orthometric Height): NAVD88
Authority: ExxonMobil (XOM)
EPSG Code: ExxonMobil Custom
Code TBD Geoid: GEOID06
Direction: Positive Up
Vertical Shift: 0.00
Linear Units: US Survey Feet

**Projection: NAD83 (NSRS 2007)/Alaska Zone 4 (ft. US)**
Projection Name: NAD83_NSRS2007 _AlaskaZone4_ftUS_54392
Projection Method: Transverse Mercator
Authority: ExxonMobil (XOM)
EPSG Code: ExxonMobil Custom Code 54392

False Easting: 1640416.66
False Northing: 0.0
Central Meridian: -150.000 Define,
Scale Factor: 0.9999
Latitude of Origin: 54.0
Linear Unit: US Survey Feet
Area of Use: 152° W to 148° W, Onshore

Transformation Parameters: NAD83 (NRS2007) to WGS 84
Method: Geocentric translations (geographic 2D domain)
Source CRS: NAD83 (NSRS2007)
Code: 4759
Target CRS: WGS84
Code: 4326
Parameter Values:
X axis translation= -1 .00584m
Y axis translation= +1 .051562m
Z axis translation= +0.304801 m

| COORDINATES | | | |
|---|---|---|---|
| **Datum** | **Latitude** | **Longitude** | **Ellipsoid Ht.** |
| NAD83 (SRS2007) | 60 40 26.18472 | -151 20 53.60534 | 46.127 |
| WGS84 | 60 40 26.17888 | -151 20 53.69788 | 46.578 |

## 4.0 Vessel and Equipment

### 4.1 Survey Vessel

The *M/V Qualifier 105* was employed to conduct survey operations for the LNG facility nearshore, as well as the two proposed pipeline routes. The *M/V Qualifier 105* is home ported in Homer, AK, where she has operated for three years as a marine research/survey platform. She was built in 1970 and was most recently refitted in 2000. The *M/V Qualifier* is 105 feet length overall, with a beam of 30 feet and a draught of 6 feet. She is powered by three Detroit D-60 marine diesel engines producing 1,200 HP with a maximum speed of 15 knots, and a cruising speed of 11 knots. Two lab spaces were utilized on the main deck for acquisition and processing centers. The *M/V Qualifier 105* has a fully equipped galley and accommodations for up to 30, plus five crew, in 12 cabins. A more complete description and specifications of the vessel is included in Appendix 1-B.

### 4.2 Sound Velocity Profiler

A Castaway velocimeter was utilized to produce water column profiles of electrical conductivity, temperature, and depth near the survey areas. There were a total of eighteen velocity casts acquired during the survey that were used during the bathymetry processing to correct for water column velocity variation throughout the survey area. The velocity casts acquired during the survey are presented in Appendix 1-C.

### 4.3 Geophysical Equipment

Three geophysical systems or configurations of equipment were utilized to collect sub-bottom data in the survey area. An Edgetech 3200-XS (version 216) Sub-bottom Profiler was utilized to accurately image the shallow subsurface sediments. Sub-bottom profiler data were acquired using a frequency range of 2 to 15 kHz and a record length of 100 milliseconds. The sub-bottom profiler was pole mounted on the port side of the vessel.

An Applied Acoustics Boomer plate with a CSP-P energy source in conjunction with a Geometrics GeoEel 24 Channel streamer were deployed for imaging “midrange” sediments and structures. The GeoEel 24 channel streamer with group spacing of 1.56 m and a length of 37.5 m was utilized to record the acoustic waves. Shots were fired every 3.125 m with 300 Joules of energy. The boomer system was deployed from the aft of the vessel.

A 60-inch GI air gun was deployed along with a Geometrics GeoEel 24 Channel streamer. A channel group length of 1.56 meters and a channel group length of 6.25 meters were used. The GI gun and the streamers were deployed from the aft of the vessel.

### 4.4 Data Quality Control

All geophysical data related to the survey were checked for quality by the onboard FGSI Staff and/or the company data QC representative as the survey progressed.

## 5.0 Summary of Results

### 5.1 Summary of Results for Sub-bottom Profiler

The EdgeTech 3200-XS chirp sub-bottom data were processed through SonarWiz and SEGY files were produced for the geologist to load and review for quality control. The majority of sub-bottom profiler data were generally limited in penetration depth to a foot or two below the seafloor, which may be attributable to the coarse materials found within the survey region. In limited areas, penetration up to approximately 85 feet below the seafloor was noted. These areas displayed channel-like in-fill sediments. The record length was 100 milliseconds and several seafloor multiples are displayed in the records.

### 5.2 Summary of Results for Boomer

The Applied Acoustics Boomer and the Geometrics GeoEel streamer data were processed on board by CGG processors, and SEGY files were produced for the geologist to load and review for quality control. Data quality was variable. In some instances the poor data are a reflection of the geologic and environmental conditions. Overall, the data were of acceptable and interpretable quality. The record length was 250 milliseconds, and several seafloor multiples are displayed in the records.

### 5.3 Summary of Results for 24-Channel Seismic

The GI 60-inch cubic air gun and Geometrics GeoEel streamer data were processed on board by CGG processors, and SEGY files were produced for the geologist to load and review for quality control. The 24 channel streamer had a group spacing set at 1.56 meters and 6.25 meters with a streamer length of 137 m. Data quality was generally good considering the conditions. Records were 2.0 seconds in length, and several seafloor multiples are displayed in the data.

## 6.0 Summary of Health, Safety, and Environmental Matters

### 6.1 Safety Meetings/Safety Drills

The Alaska LNG sail-away meeting was held on August 25, 2015, on-board the vessel to review objectives of the survey, safety requirements, and mitigation plans. Several safety meetings were held throughout the survey. At each shift change, a pre-shift meeting was held outlining any problems from the previous shift, the general plan for the upcoming shift, any changes in the scope of work, and discussions of any special safety precautions for the upcoming shift. Risk assessment meetings were held to outline all potential safety hazards prior to any major activity, such as deployment and retrieval of geophysical gear. Toolbox meetings were held right before an activity to specifically address that activity and assign personnel specific tasks. All involved personnel attended these meetings. A Job Safety Analysis (JSA), Job Safety Environmental Analysis (JSEA), and Hazard Identification (HAZID), may have been conducted during the pre-

shift, risk assessment or toolbox meetings. In total, a combined 82 Task Risk Assessments, 56 toolbox meetings, 10 safety meetings, and 7 safety drills were completed during the survey.

One incident report was filed on August 29, 2015, that concerned the streamer tail isolation, which had some damage. The incident report is found in Appendix 1-E.

## 6.2 Hazard Observation Cards

Fugro GeoServices, Inc. has a system in place for reporting near misses, unsafe conditions, or unsafe acts. Hazard Observations Cards (HOCs) are submitted for each incident detected. In addition to the HOCs being submitted to the Fugro GeoServices, Inc. HSE department, they were also reviewed with the crew during each evening shift change.

Thirty-nine HOCs were submitted during the survey, and the Hazard Observation Report listing all the HOCs is included in Appendix 1-E.

## 6.3 Health, Safety, and Environmental Summary

### 6.3.1 Purpose

A detailed Health, Safety, and Environmental (HSE) effort concerted by Alaska LNG and Fugro GeoServices, Inc. was put into place prior to the beginning of survey operations to mitigate potential hazards associated with this survey.

In an effort to achieve an accident-free survey campaign, both parties worked closely with one another analyzing risks, specifying the crew's training requirements, conducting kick-off meetings with the crew, and conducting safety meetings, boat drills, job safety analysis, and toolbox meetings throughout the job. These communications were carried out to minimize potential for incidents and to meet the goal of affecting no harm to people or the environment.

### 6.3.2 Scope

All crew members involved in the survey operations were committed to the HSE objective and contributed to making this project a success. The crew members participated in daily HSE requirements and safety topics that included pertinent information related to scheduled vessel drills and operational safety procedures detailing the deployment and retrieval of geophysical gear. All important events of the day were discussed. All safety meetings are documented and signed by all in attendance.

### 6.3.3 Conclusion

There were no injuries or illnesses reported during the survey. There were no environmental incidents or Occupational Safety and Health Administration (OSHA) recordable incidents. The survey operations were conducted in accordance with proper HSE guidelines.

# APPENDIX 1-A

# DAILY PROGRESS REPORTS (DPRs)

# FUGRO GEOSERVICES, INC.
## GEOPHYSICAL JOBLOG

ver 7.22.2010-B (Alaska)

| | |
|---|---|
| DATE: | 19-Aug-2015 Wed Julian Day: 231 |
| PROSPECT / SITE: | Seismic Airgun Portion |
| NAV. SYSTEM: | Starfix |
| FGSI JOB #: | 2415-7058 |
| JOB DAY #: | Day: 1 |
| CRP TO STERN: | 16.50 Meters |

| | |
|---|---|
| NAV. DIVIDE BY: | 1 |
| NAV. FIX DISTANCE: | 6.25 |
| SURVEY UNITS: | Meters |
| NAUTICAL MILE: | 6080.0 |

| | |
|---|---|
| CLIENT: | AKLNG |
| JOB DESCRIPTION: | Geophysical Site Investigation |
| AREA & BLOCK: | Cook Inlet |
| R/V: | Qualifier 105 |
| No. of SURVEY LINES: | 42 |
| ORIGINAL JOB TOTAL: | 250,150.00 |

250.15 Kilometers
0.0% Complete

**VESSEL MANAGER(S)**

| | |
|---|---|
| Party Manager: | Wayne Labrie |
| Ass't Party Manager: | Ted Tremblay |

**CLIENT REPRESENTATIVE(S)**

| | |
|---|---|
| QC Rep: | Noel Rogers |
| HSE Rep: | David King |
| Co. Rep: | |
| | |

| GEOPHYSICAL EQUIPMENT | EQUIP # |
|---|---|
| Geometrics GeoEel 24ch.(1.56 gr) | # 2 |
| Geometrics GeoEel 24ch.(6.25 gr) | # 1 |
| G.I. 60 ci Sleeve Gun | # 4198 |
| Castaway CTD Velocimeter | # 1 |
| Applied Acoutics Boomer | Rental |
| Edgetech 3200-XS SBP | # 1 |
| | |
| | |
| | |
| | |
| | |

**GEOPHYSICAL CREW**

| | |
|---|---|
| Technical Coordinator: | Ted Tremblay |
| Shift Supervisor: | |
| Operator: | Zachary Bellone |
| " | Freddie Wilson |
| " | |
| " | |
| FGSI Surveyor | Phillip Daniels |
| SES Field Lead PSO | Patti Haase |
| PSO | Vanessa James |
| " | |
| " | |

**VESSEL CREW**

| | |
|---|---|
| 1st Captain: | David Mastolier |
| 2nd Captain: | Jared Bradshaw |
| 1st Mate: | Jeff Gregson |
| Chief Engineer: | Todd Ostler |
| Cook/Senior Deckhand: | Kevin Anderson |
| Deckhand: | Ben Jantzi |
| | |
| | |

**DATA PROCESSORS**

| | |
|---|---|
| CGG Seismic Processor: | Shannon Campbell / Ian Shirley |
| FGSI QC Geophysicist: | Michael Blaes |

**WEATHER REPORT**

| Time | Sea State | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | | | |
| Wx - 1200: | | | |
| Wx - 1800: | | | |
| Wx - 2400: | | | |

**HSE Reporting (Place an "x" in the box, with brief description**

| HSE OFFICER: | Zachary Bellone | |
|---|---|---|
| Toolbox: | | |
| Shift Change: | | |
| Safety: | | |
| Pre/Post Job: | | |

| TIME FROM | TIME TO | OP CODE | LINE INFORMATION: LINE NUMBER | HEADING | BSP | ESP | Fath (ft) | | | | DNP |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0000 | 1700 | MD | | | | | | | | | |
| 1700 | 2400 | MD | | | | | | | | | |

**DETAILED SURVEY INFORMATION**

Labrie and Tremblay since Monday gather all gear and pack into conex at Anchorage office.
Conex is completely packed and ready to be trucked to Homer, Alaska. Labrie and Tremblay drive to Homer, Alaska to meet remaining crew membe

# FUGRO GEOSERVICES, INC.
## GEOPHYSICAL JOBLOG

ver 7.22.2010-B (Alaska)

| | |
|---|---|
| DATE: | 20-Aug-2015 Thu Julian Day: 232 |
| PROSPECT / SITE: | Seismic Airgun Portion |
| NAV. SYSTEM: | Starfix |
| FGSI JOB #: | 2415-7058 |
| JOB DAY #: | Day: 2 |
| CRP TO STERN: | 16.50 Meters |

| | |
|---|---|
| CLIENT: | AKLNG |
| JOB DESCRIPTION: | Geophysical Site Investigation |
| AREA & BLOCK: | Cook Inlet |
| R/V: | Qualifier 105 |
| No. of SURVEY LINES: | 42 — 250.15 Kilometers, 0.0% Complete |

**VESSEL MANAGER(S)**

| | |
|---|---|
| Party Manager: | Wayne Labrie |
| Ass't Party Manager: | Ted Tremblay |

**CLIENT REPRESENTATIVE(S)**

| | |
|---|---|
| QC Rep: | Noel Rogers |
| HSE Rep: | David King |
| Co. Rep: | |
| | |

| GEOPHYSICAL EQUIPMENT | EQUIP # |
|---|---|
| Geometrics GeoEel 24ch.(1.56 gr) | # 2 |
| Geometrics GeoEel 24ch.(6.25 gr) | # 1 |
| G.I. 60 ci Sleeve Gun | # 4198 |
| Castaway CTD Velocimeter | # 1 |
| Applied Acoutics Boomer | Rental |
| Edgetech 3200-XS SBP | # 1 |
| | |
| | |
| | |
| | |
| | |

**GEOPHYSICAL CREW**

| | |
|---|---|
| Technical Coordinator: | Ted Tremblay |
| Shift Supervisor: | |
| Operator: | Zachary Bellone |
| " | Freddie Wilson |
| " | |
| " | |
| FGSI Surveyor | Phillip Daniels |
| SES Field Lead PSO | Patti Haase |
| PSO | Vanessa James |
| " | |
| " | |

**VESSEL CREW**

| | |
|---|---|
| 1st Captain: | David Mastolier |
| 2nd Captain: | Jared Bradshaw |
| 1st Mate: | Jeff Gregson |
| Chief Engineer: | Todd Ostler |
| Cook/Senior Deckhand: | Kevin Anderson |
| Deckhand: | Ben Jantzi |
| | |
| | |

**DATA PROCESSORS**

| | |
|---|---|
| CGG Seismic Processor: | Shannon Campbell / Ian Shirley |
| FGSI QC Geophysicist: | Michael Blaes |

**WEATHER REPORT**

| Time | Sea State | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | | | |
| Wx - 1200: | | | |
| Wx - 1800: | | | |
| Wx - 2400: | | | |

**HSE Reporting (Place an "x" in the box, with brief description**

| HSE OFFICER: | Zachary Bellone | |
|---|---|---|
| Toolbox: | | |
| Shift Change: | | |
| Safety: | | |
| Pre/Post Job: | | |

| TIME FROM | TIME TO | OP CODE | LINE INFORMATION: LINE NUMBER | HEADING | BSP | ESP | Fath (ft) | | | | DNP |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0000 | 1830 | MD | | | | | | | | | |
| 1830 | 2200 | MD | | | | | | | | | |
| 2200 | 2400 | MD | | | | | | | | | |

**DETAILED SURVEY INFORMATION**

Induction meeeting at BEST WESTERN motel from 0830hrs to 1300hrs.
Conex arrives to dock. The conex is offloaded and loaded unto the vessel to begin mobbing of systms tomorrow.
Conex is emptied, Winch, compressors and silver bullet are offloaded from delivery truck. Conex and silver bullet and reloaded back on to the deliver
shipped to Nikiski, Alaska where the head quarters for project is located. There the conex and silver bullet will remain until end of survey.

Alaska LNG

FUGRO

# FUGRO GEOSERVICES, INC.

## GEOPHYSICAL JOBLOG

ver 7.22.2010-B (Alaska)

| | |
|---|---|
| DATE: | 21-Aug-2015 Fri Julian Day: 233 |
| PROSPECT / SITE: | Seismic Airgun Portion |
| NAV. SYSTEM: | Starfix |
| FGSI JOB #: | 2415-7058 |
| JOB DAY #: | Day: 3 |
| CRP TO STERN: | 16.50 Meters |

| | |
|---|---|
| CLIENT: | AKLNG |
| JOB DESCRIPTION: | Geophysical Site Investigation |
| AREA & BLOCK: | Cook Inlet |
| R/V: | Qualifier 105 |
| No. of SURVEY LINES: | 42 — 250.15 Kilometers, 0.0% Complete |

**VESSEL MANAGER(S)**

| | |
|---|---|
| Party Manager: | Wayne Labrie |
| Ass't Party Manager: | Ted Tremblay |

**CLIENT REPRESENTATIVE(S)**

| | |
|---|---|
| QC Rep: | Noel Rogers |
| HSE Rep: | David King |
| Co. Rep: | |
| | |

| GEOPHYSICAL EQUIPMENT | EQUIP # |
|---|---|
| Geometrics GeoEel 24ch.(1.56 gr) | # 2 |
| Geometrics GeoEel 24ch.(6.25 gr) | # 1 |
| G.I. 60 ci Sleeve Gun | # 4198 |
| Castaway CTD Velocimeter | # 1 |
| Applied Acoutics Boomer | Rental |
| Edgetech 3200-XS SBP | # 1 |
| | |
| | |
| | |
| | |
| | |

**GEOPHYSICAL CREW**

| | |
|---|---|
| Technical Coordinator: | Ted Tremblay |
| Shift Supervisor: | |
| Operator: | Zachary Bellone |
| " | Freddie Wilson |
| " | |
| " | |
| FGSI Surveyor | Phillip Daniels |
| SES Field Lead PSO | Patti Haase |
| PSO | Vanessa James |
| " | |
| " | |

**VESSEL CREW**

| | |
|---|---|
| 1st Captain: | David Mastolier |
| 2nd Captain: | Jared Bradshaw |
| 1st Mate: | Jeff Gregson |
| Chief Engineer: | Todd Ostler |
| Cook/Senior Deckhand: | Kevin Anderson |
| Deckhand: | Ben Jantzi |
| | |
| | |

**DATA PROCESSORS**

| | |
|---|---|
| CGG Seismic Processor: | Shannon Campbell / Ian Shirley |
| FGSI QC Geophysicist: | Michael Blaes |

**WEATHER REPORT**

| Time | Sea State | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | | | |
| Wx - 1200: | | | |
| Wx - 1800: | | | |
| Wx - 2400: | | | |

**HSE Reporting (Place an "x" in the box, with brief description**

| HSE OFFICER: | Zachary Bellone | |
|---|---|---|
| Toolbox: | X | Safety PPE requirements Meeting |
| Shift Change: | | |
| Safety: | | |
| Pre/Post Job: | | |

| TIME FROM | TIME TO | OP CODE | LINE INFORMATION: LINE NUMBER | HEADING | BSP | ESP | Fath (ft) | | | | DNP |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0000 | 2400 | MD | | | | | | | | | |

**DETAILED SURVEY INFORMATION**

Mobbing of vessel continues.

Alaska LNG

FUGRO

# FUGRO GEOSERVICES, INC.

## GEOPHYSICAL JOBLOG

ver 7.22.2010-B (Alaska)

| | |
|---|---|
| DATE: | 22-Aug-2015 Sat Julian Day: 234 |
| PROSPECT / SITE: | Seismic Airgun Portion |
| NAV. SYSTEM: | Starfix |
| FGSI JOB #: | 2415-7058 |
| JOB DAY #: | Day: 4 |
| CRP TO STERN: | 16.50 Meters |

| | |
|---|---|
| CLIENT: | AKLNG |
| JOB DESCRIPTION: | Geophysical Site Investigation |
| AREA & BLOCK: | Cook Inlet |
| R/V: | Qualifier 105 |
| No. of SURVEY LINES: | 42 — 250.15 Kilometers — 0.0% Complete |

**VESSEL MANAGER(S)**

| | |
|---|---|
| Party Manager: | Wayne Labrie |
| Ass't Party Manager: | Ted Tremblay |

**CLIENT REPRESENTATIVE(S)**

| | |
|---|---|
| QC Rep: | Noel Rogers |
| HSE Rep: | David King |
| Co. Rep: | |
| | |

| GEOPHYSICAL EQUIPMENT | EQUIP # |
|---|---|
| Geometrics GeoEel 24ch.(1.56 gr) | # 2 |
| Geometrics GeoEel 24ch.(6.25 gr) | # 1 |
| G.I. 60 ci Sleeve Gun | # 4198 |
| Castaway CTD Velocimeter | # 1 |
| Applied Acoutics Boomer | Rental |
| Edgetech 3200-XS SBP | # 1 |
| | |
| | |
| | |
| | |
| | |

**GEOPHYSICAL CREW**

| | |
|---|---|
| Technical Coordinator: | Ted Tremblay |
| Shift Supervisor: | |
| Operator: | Zachary Bellone |
| " | Freddie Wilson |
| " | |
| " | |
| FGSI Surveyor | Phillip Daniels |
| SES Field Lead PSO | Patti Haase |
| PSO | Vanessa James |
| " | |
| " | |

**VESSEL CREW**

| | |
|---|---|
| 1st Captain: | David Mastolier |
| 2nd Captain: | Jared Bradshaw |
| 1st Mate: | Jeff Gregson |
| Chief Engineer: | Todd Ostler |
| Cook/Senior Deckhand: | Kevin Anderson |
| Deckhand: | Ben Jantzi |
| | |
| | |

**DATA PROCESSORS**

| | |
|---|---|
| CGG Seismic Processor: | Shannon Campbell / Ian Shirley |
| FGSI QC Geophysicist: | Michael Blaes |

**WEATHER REPORT**

| Time | Sea State | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | | | |
| Wx - 1200: | | | |
| Wx - 1800: | | | |
| Wx - 2400: | | | |

**HSE Reporting (Place an "x" in the box, with brief description**

| | | |
|---|---|---|
| HSE OFFICER: | Zachary Bellone | |
| Toolbox: | X | Progress Report Toolbox Meeting |
| Shift Change: | | |
| Safety: | | |
| Pre/Post Job: | | |

| TIME FROM | TIME TO | OP CODE | LINE INFORMATION: LINE NUMBER | HEADING | BSP | ESP | Fath (ft) | | | | DNP |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0000 | 2400 | MD | | | | | | | | | |

**DETAILED SURVEY INFORMATION**

Mobbing of vessel continues.

Alaska LNG

FUGRO

# FUGRO GEOSERVICES, INC.

## GEOPHYSICAL JOBLOG

ver 7.22.2010-B (Alaska)

| | |
|---|---|
| DATE: | 23-Aug-2015 Sun Julian Day: 235 |
| PROSPECT / SITE: | Seismic Airgun Portion |
| NAV. SYSTEM: | Starfix |
| FGSI JOB #: | 2415-7058 |
| JOB DAY #: | Day: 5 |
| CRP TO STERN: | 16.50 Meters |

| | |
|---|---|
| CLIENT: | AKLNG |
| JOB DESCRIPTION: | Geophysical Site Investigation |
| AREA & BLOCK: | Cook Inlet |
| R/V: | Qualifier 105 |
| No. of SURVEY LINES: | 42 — 250.15 Kilometers — 0.0% Complete |

**VESSEL MANAGER(S)**

| | |
|---|---|
| Party Manager: | Wayne Labrie |
| Ass't Party Manager: | Ted Tremblay |

**CLIENT REPRESENTATIVE(S)**

| | |
|---|---|
| QC Rep: | Noel Rogers |
| HSE Rep: | David King |
| Co. Rep: | |
| | |

| GEOPHYSICAL EQUIPMENT | EQUIP # |
|---|---|
| Geometrics GeoEel 24ch.(1.56 gr) | # 2 |
| Geometrics GeoEel 24ch.(6.25 gr) | # 1 |
| G.I. 60 ci Sleeve Gun | # 4198 |
| Castaway CTD Velocimeter | # 1 |
| Applied Acoutics Boomer | Rental |
| Edgetech 3200-XS SBP | # 1 |
| | |
| | |
| | |
| | |
| | |

**GEOPHYSICAL CREW**

| | |
|---|---|
| Technical Coordinator: | Ted Tremblay |
| Shift Supervisor: | |
| Operator: | Zachary Bellone |
| " | Freddie Wilson |
| " | |
| " | |
| FGSI Surveyor | Phillip Daniels |
| SES Field Lead PSO | Patti Haase |
| PSO | Vanessa James |
| " | |
| " | |

**VESSEL CREW**

| | |
|---|---|
| 1st Captain: | David Mastolier |
| 2nd Captain: | Jared Bradshaw |
| 1st Mate: | Jeff Gregson |
| Chief Engineer: | Todd Ostler |
| Cook/Senior Deckhand: | Kevin Anderson |
| Deckhand: | Ben Jantzi |
| | |
| | |

**DATA PROCESSORS**

| | |
|---|---|
| CGG Seismic Processor: | Shannon Campbell / Ian Shirley |
| FGSI QC Geophysicist: | Michael Blaes |

**WEATHER REPORT**

| Time | Sea State | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | | | |
| Wx - 1200: | | | |
| Wx - 1800: | | | |
| Wx - 2400: | | | |

**HSE Reporting (Place an "x" in the box, with brief description**

| HSE OFFICER: | Zachary Bellone | |
|---|---|---|
| Toolbox: | X | PPE While Mobbing |
| Shift Change: | | |
| Safety: | | |
| Pre/Post Job: | | |

| TIME FROM | TIME TO | OP CODE | LINE INFORMATION: LINE NUMBER | HEADING | BSP | ESP | Fath (ft) | | | | DNP |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0000 | 2400 | MD | | | | | | | | | |

**DETAILED SURVEY INFORMATION**

Mobbing of vessel continues.

# FUGRO GEOSERVICES, INC.
## GEOPHYSICAL JOBLOG

ver 7.22.2010-B (Alaska)

| | |
|---|---|
| DATE: | 24-Aug-2015 Mon Julian Day: 236 |
| PROSPECT / SITE: | Seismic Airgun Portion |
| NAV. SYSTEM: | Starfix |
| FGSI JOB #: | 2415-7058 |
| JOB DAY #: | Day: 6 |
| CRP TO STERN: | 16.50 Meters |

| | |
|---|---|
| CLIENT: | AKLNG |
| JOB DESCRIPTION: | Geophysical Site Investigation |
| AREA & BLOCK: | Cook Inlet |
| R/V: | Qualifier 105 |
| No. of SURVEY LINES: | 42 — 250.15 Kilometers, 0.0% Complete |

**VESSEL MANAGER(S)**

| | |
|---|---|
| Party Manager: | Wayne Labrie |
| Ass't Party Manager: | Ted Tremblay |

**CLIENT REPRESENTATIVE(S)**

| | |
|---|---|
| QC Rep: | Noel Rogers |
| HSE Rep: | David King |
| Co. Rep: | |
| | |

| GEOPHYSICAL EQUIPMENT | EQUIP # |
|---|---|
| Geometrics GeoEel 24ch.(1.56 gr) | # 2 |
| Geometrics GeoEel 24ch.(6.25 gr) | # 1 |
| G.I. 60 ci Sleeve Gun | # 4198 |
| Castaway CTD Velocimeter | # 1 |
| Applied Acoutics Boomer | Rental |
| Edgetech 3200-XS SBP | # 1 |
| | |
| | |
| | |
| | |
| | |

**GEOPHYSICAL CREW**

| | |
|---|---|
| Technical Coordinator: | Ted Tremblay |
| Shift Supervisor: | |
| Operator: | Zachary Bellone |
| " | Freddie Wilson |
| " | |
| " | |
| FGSI Surveyor | Phillip Daniels |
| SES Field Lead PSO | Patti Haase |
| PSO | Vanessa James |
| " | |
| Business Development Manager | Ezrah Schraven |

**VESSEL CREW**

| | |
|---|---|
| 1st Captain: | David Mastolier |
| 2nd Captain: | Jared Bradshaw |
| 1st Mate: | Jeff Gregson |
| Chief Engineer: | Todd Ostler |
| Cook/Senior Deckhand: | Kevin Anderson |
| Deckhand: | Ben Jantzi |
| | |
| | |

**DATA PROCESSORS**

| | |
|---|---|
| CGG Seismic Processor: | Shannon Campbell / Ian Shirley |
| FGSI QC Geophysicist: | Michael Blaes |

**WEATHER REPORT**

| Time | Sea State | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | | | |
| Wx - 1200: | | | |
| Wx - 1800: | | | |
| Wx - 2400: | | | |

**HSE Reporting (Place an "x" in the box, with brief description**

| HSE OFFICER: | Zachary Bellone | |
|---|---|---|
| Toolbox: | X | Driving Safety |
| Shift Change: | | |
| Safety: | | |
| Pre/Post Job: | | |

| TIME FROM | TIME TO | OP CODE | LINE INFORMATION: LINE NUMBER | HEADING | BSP | ESP | Fath (ft) | | | | DNP |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0000 | 2400 | MD | | | | | | | | | |

**DETAILED SURVEY INFORMATION**

Mobbing of vessel continues.
Ezrah Schraven arrives on vessel for observation.

# FUGRO GEOSERVICES, INC.
## GEOPHYSICAL JOBLOG

ver 7.22.2010-B (Alaska)

| | |
|---|---|
| DATE: | 25-Aug-2015 Tue Julian Day: 237 |
| PROSPECT / SITE: | Seismic Airgun Portion |
| NAV. SYSTEM: | Starfix |
| FGSI JOB #: | 2415-7058 |
| JOB DAY #: | Day: 7 |
| CRP TO STERN: | 16.50 Meters |

| | |
|---|---|
| CLIENT: | AKLNG |
| JOB DESCRIPTION: | Geophysical Site Investigation |
| AREA & BLOCK: | Cook Inlet |
| R/V: | Qualifier 105 |
| No. of SURVEY LINES: | 42 — 250.15 Kilometers, 0.0% Complete |

**VESSEL MANAGER(S)**

| | |
|---|---|
| Party Manager: | Wayne Labrie |
| Ass't Party Manager: | Ted Tremblay |

**CLIENT REPRESENTATIVE(S)**

| | |
|---|---|
| QC Rep: | Noel Rogers |
| HSE Rep: | David King |
| Co. Rep: | |
| | |

| GEOPHYSICAL EQUIPMENT | EQUIP # |
|---|---|
| Geometrics GeoEel 24ch.(1.56 gr) | # 2 |
| Geometrics GeoEel 24ch.(6.25 gr) | # 1 |
| G.I. 60 ci Sleeve Gun | # 4198 |
| Castaway CTD Velocimeter | # 1 |
| Applied Acoutics Boomer | Rental |
| Edgetech 3200-XS SBP | # 1 |
| | |
| | |
| | |
| | |
| | |

**GEOPHYSICAL CREW**

| | |
|---|---|
| Technical Coordinator: | Ted Tremblay |
| Shift Supervisor: | |
| Operator: | Zachary Bellone |
| " | Freddie Wilson |
| " | |
| " | |
| FGSI Surveyor | Phillip Daniels |
| SES Field Lead PSO | Patti Haase |
| PSO | Vanessa James |
| " | |
| Business Development Manager | Ezrah Schraven |

**VESSEL CREW**

| | |
|---|---|
| 1st Captain: | David Mastolier |
| 2nd Captain: | Jared Bradshaw |
| 1st Mate: | Jeff Gregson |
| Chief Engineer: | Todd Ostler |
| Cook/Senior Deckhand: | Kevin Anderson |
| Deckhand: | Ben Jantzi |
| | |
| | |

**DATA PROCESSORS**

| | |
|---|---|
| CGG Seismic Processor: | Shannon Campbell / Ian Shirley |
| FGSI QC Geophysicist: | Michael Blaes |

**WEATHER REPORT**

| Time | Sea State | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | | | |
| Wx - 1200: | | | |
| Wx - 1800: | | | |
| Wx - 2400: | | | |

**HSE Reporting (Place an "x" in the box, with brief description**

| | | |
|---|---|---|
| HSE OFFICER: | Zachary Bellone | |
| Toolbox: | | |
| Shift Change: | | |
| Safety: | | |
| Pre/Post Job: | X | Sail Away Meeting |

| TIME FROM | TIME TO | OP CODE | LINE INFORMATION: LINE NUMBER | HEADING | BSP | ESP | Fath (ft) | | | | DNP |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0000 | 2230 | MD | | | | | | | | | |
| 2230 | 2400 | IT | | | | | | | | | |

**DETAILED SURVEY INFORMATION**

Mobbing of vessel continues. Sail away meeting begins for 1800hrs.
Enroute to work area.
Ezrah Schraven departs vessel @ 1730hrs.

# FUGRO GEOSERVICES, INC.
## GEOPHYSICAL JOBLOG

ver 7.22.2010-B (Alaska)

| | |
|---|---|
| DATE: | 26-Aug-2015 Wed Julian Day: 238 |
| PROSPECT / SITE: | Seismic Airgun Portion |
| NAV. SYSTEM: | Starfix |
| FGSI JOB #: | 2415-7058 |
| JOB DAY #: | Day: 8 |
| CRP TO STERN: | 16.50 Meters |

| | |
|---|---|
| CLIENT: | AKLNG |
| JOB DESCRIPTION: | Geophysical Site Investigation |
| AREA & BLOCK: | Cook Inlet |
| R/V: | Qualifier 105 |
| No. of SURVEY LINES: | 42 — 250.15 Kilometers, 0.0% Complete |

**VESSEL MANAGER(S)**

| | |
|---|---|
| Party Manager: | Wayne Labrie |
| Ass't Party Manager: | Ted Tremblay |

**CLIENT REPRESENTATIVE(S)**

| | |
|---|---|
| QC Rep: | Noel Rogers |
| HSE Rep: | David King |
| Co. Rep: | |
| | |

| GEOPHYSICAL EQUIPMENT | EQUIP # |
|---|---|
| Geometrics GeoEel 24ch.(1.56 gr) | # 2 |
| Geometrics GeoEel 24ch.(6.25 gr) | # 1 |
| G.I. 60 ci Sleeve Gun | # 4198 |
| Castaway CTD Velocimeter | # 1 |
| Applied Acoutics Boomer | Rental |
| Edgetech 3200-XS SBP | # 1 |
| | |
| | |
| | |
| | |
| | |

**GEOPHYSICAL CREW**

| | |
|---|---|
| Technical Coordinator: | Ted Tremblay |
| Shift Supervisor: | |
| Operator: | Zachary Bellone |
| " | Freddie Wilson |
| " | |
| " | |
| FGSI Surveyor | Phillip Daniels |
| SES Field Lead PSO | Patti Haase |
| PSO | Vanessa James |
| " | |
| | |

**VESSEL CREW**

| | |
|---|---|
| 1st Captain: | David Mastolier |
| 2nd Captain: | Jared Bradshaw |
| 1st Mate: | Jeff Gregson |
| Chief Engineer: | Todd Ostler |
| Cook/Senior Deckhand: | Kevin Anderson |
| Deckhand: | Ben Jantzi |
| | |
| | |

**DATA PROCESSORS**

| | |
|---|---|
| CGG Seismic Processor: | Shannon Campbell / Ian Shirley |
| FGSI QC Geophysicist: | Michael Blaes |

**WEATHER REPORT**

| Time | Sea State | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | 4 - 6 ft | 20 - 25 kts | SW |
| Wx - 1200: | 5 - 7 ft | 40-45 kts | SW |
| Wx - 1800: | 2 - 4 ft | 10 - 15 kts | |
| Wx - 2400: | 2 - 4 ft | 10 - 15 kts | |

**HSE Reporting (Place an "x" in the box, with brief description**

| HSE OFFICER: | Zachary Bellone | |
|---|---|---|
| Toolbox: | X | TRA 114 |
| Shift Change: | | |
| Safety: | X | Weekly(Spill Response Med Emer. Drill) |
| Pre/Post Job: | | |

| TIME FROM | TIME TO | OP CODE | LINE INFORMATION: LINE NUMBER | HEADING | BSP | ESP | Fath (ft) | | | | DNP |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0000 | 0930 | IT | | | | | | | | | |
| 0930 | 0945 | WS | | | | | | | | | |
| 0945 | 1030 | WS | | | | | | | | | |
| 1030 | 1100 | SM | | | | | | | | | |
| 1100 | 1700 | WS | | | | | | | | | |
| 1700 | 2400 | WS | | | | | | | | | |

**DETAILED SURVEY INFORMATION**

En route to location
Arrive at location ( standing by for weather)
Comms check with M/V Norman O, Jub Skate 3, Eagle 1 and Marta
Safety Meeting
On anchor offshore not far from Nikiski Dock.
Waiting on daylight so PSO can clear area for deployment of gear.

# FUGRO GEOSERVICES, INC.
## GEOPHYSICAL JOBLOG

ver 7.22.2010-B (Alaska)

| | |
|---|---|
| DATE: | 27-Aug-2015 Thu Julian Day: 239 |
| PROSPECT / SITE: | Seismic Airgun Portion |
| NAV. SYSTEM: | Starfix |
| FGSI JOB #: | 2415-7058 |
| JOB DAY #: | Day: 9 |
| CRP TO STERN: | 16.50 Meters |

| | |
|---|---|
| CLIENT: | AKLNG |
| JOB DESCRIPTION: | Geophysical Site Investigation |
| AREA & BLOCK: | Cook Inlet |
| R/V: | Qualifier 105 |
| No. of SURVEY LINES: | 42 — 250.15 Kilometers — 0.0% Complete |

**VESSEL MANAGER(S)**

| | |
|---|---|
| Party Manager: | Wayne Labrie |
| Ass't Party Manager: | Ted Tremblay |

**CLIENT REPRESENTATIVE(S)**

| | |
|---|---|
| QC Rep: | Noel Rogers |
| HSE Rep: | David King |
| Co. Rep: | |
| | |

| GEOPHYSICAL EQUIPMENT | EQUIP # |
|---|---|
| Geometrics GeoEel 24ch.(1.56 gr) | # 2 |
| Geometrics GeoEel 24ch.(6.25 gr) | # 1 |
| G.I. 60 ci Sleeve Gun | # 4198 |
| Castaway CTD Velocimeter | # 1 |
| Applied Acoutics Boomer | Rental |
| Edgetech 3200-XS SBP | # 1 |
| | |
| | |
| | |
| | |
| | |

**GEOPHYSICAL CREW**

| | |
|---|---|
| Technical Coordinator: | Ted Tremblay |
| Shift Supervisor: | |
| Operator: | Zachary Bellone |
| " | Freddie Wilson |
| " | |
| " | |
| FGSI Surveyor | Phillip Daniels |
| SES Field Lead PSO | Patti Haase |
| PSO | Vanessa James |
| " | |
| | |

**VESSEL CREW**

| | |
|---|---|
| 1st Captain: | David Mastolier |
| 2nd Captain: | Jared Bradshaw |
| 1st Mate: | Jeff Gregson |
| Chief Engineer: | Todd Ostler |
| Cook/Senior Deckhand: | Kevin Anderson |
| Deckhand: | Ben Jantzi |
| | |
| | |

**DATA PROCESSORS**

| | |
|---|---|
| CGG Seismic Processor: | Shannon Campbell / Ian Shirley |
| FGSI QC Geophysicist: | Michael Blaes |

**WEATHER REPORT**

| Time | Sea State | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | 3 - 5 ft | 10 - 15 kts | W |
| Wx - 1200: | 0 - 2 ft | 5 kts | var |
| Wx - 1800: | 3 - 4 ft | 20 kts | N |
| Wx - 2400: | 1 - 2 ft | 22 kts | N |

**HSE Reporting (Place an "x" in the box, with brief description**

| HSE OFFICER: | Zachary Bellone | |
|---|---|---|
| Toolbox: | X | TRA-102 & GS-J-017 |
| Shift Change: | | |
| Safety: | X | Man Overboard Drill |
| Pre/Post Job: | | |

| TIME FROM | TIME TO | OP CODE | LINE INFORMATION: LINE NUMBER | HEADING | BSP | ESP | Fath (ft) | | | | DNP |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0000 | 0730 | WS | | | | | | | | | |
| 0730 | 0900 | WS | | | | | | | | | |
| 0900 | 0915 | SM | | | | | | | | | |
| 0915 | 0936 | OW | | | | | | | | | |
| 0936 | 0946 | VP | Velo 1 | | | | | | | | |
| 0946 | 1030 | SS | | | | | | | | | |
| 1030 | 1100 | SM | | | | | | | | | |
| 1100 | 1600 | DR | | | | | | | | | |
| 1600 | 1620 | DR | | | | | | | | | |
| 1620 | 2400 | WS | | | | | | | | | |

**DETAILED SURVEY INFORMATION**

Waiting on daylight to begin.
Engines cranked up to get warmed up.
Safety meeting with everyone about deployment and retrieval operations.
Heading to deepest part of survey area for a velocimeter cast.
Take Velo Cast Lat: 60.6761 Lon: -151.4199
Recon survey-tracking a shoal to investigate and take fixes on.
Man Overboard Safety Drill.
Deployment and Tuning Gear. Streamer of 24 ch 6.25 group deplayed with Subbottom. Working on comms with birds and nav.
Retrieve gear due to winds and seas increasing.
Weather Standby. Birds and Tailbuoy problems resolved with communication to navigation computer.

# FUGRO GEOSERVICES, INC.
## GEOPHYSICAL JOBLOG

ver 7.22.2010-B (Alaska)

| | |
|---|---|
| DATE: | 28-Aug-2015 Fri Julian Day: 240 |
| PROSPECT / SITE: | Seismic Airgun Portion |
| NAV. SYSTEM: | Starfix |
| FGSI JOB #: | 2415-7058 |
| JOB DAY #: | Day: 10 |
| CRP TO STERN: | 16.50 Meters |

| | |
|---|---|
| CLIENT: | AKLNG |
| JOB DESCRIPTION: | Geophysical Site Investigation |
| AREA & BLOCK: | Cook Inlet |
| R/V: | Qualifier 105 |
| No. of SURVEY LINES: | 42 — 250.15 Kilometers — 0.0% Complete |

**VESSEL MANAGER(S)**

| | |
|---|---|
| Party Manager: | Wayne Labrie |
| Ass't Party Manager: | Ted Tremblay |

**CLIENT REPRESENTATIVE(S)**

| | |
|---|---|
| QC Rep: | Noel Rogers |
| HSE Rep: | David King |
| Co. Rep: | |
| | |

| GEOPHYSICAL EQUIPMENT | EQUIP # |
|---|---|
| Geometrics GeoEel 24ch.(1.56 gr) | # 2 |
| Geometrics GeoEel 24ch.(6.25 gr) | # 1 |
| G.I. 60 ci Sleeve Gun | # 4198 |
| Castaway CTD Velocimeter | # 1 |
| Applied Acoutics Boomer | Rental |
| Edgetech 3200-XS SBP | # 1 |
| | |
| | |
| | |
| | |
| | |

**GEOPHYSICAL CREW**

| | |
|---|---|
| Technical Coordinator: | Ted Tremblay |
| Shift Supervisor: | |
| Operator: | Zachary Bellone |
| " | Freddie Wilson |
| " | |
| " | |
| FGSI Surveyor | Phillip Daniels |
| SES Field Lead PSO | Patti Haase |
| PSO | Vanessa James |
| " | |
| | |

**VESSEL CREW**

| | |
|---|---|
| 1st Captain: | David Mastolier |
| 2nd Captain: | Jared Bradshaw |
| 1st Mate: | Jeff Gregson |
| Chief Engineer: | Todd Ostler |
| Cook/Senior Deckhand: | Kevin Anderson |
| Deckhand: | Ben Jantzi |
| | |
| | |

**DATA PROCESSORS**

| | |
|---|---|
| CGG Seismic Processor: | Shannon Campbell / Ian Shirley |
| FGSI QC Geophysicist: | Michael Blaes |

**WEATHER REPORT**

| Time | Sea State | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | 2 - 3 ft. | 10-15 kts | N |
| Wx - 1200: | 2 - 3 ft. | 10-15 kts | N |
| Wx - 1800: | 0 - 2 ft. | 0 - 5 kts | N |
| Wx - 2400: | 0 - 2 ft. | 0 - 5 kts | N |

**HSE Reporting (Place an "x" in the box, with brief description**

| | | |
|---|---|---|
| HSE OFFICER: | Zachary Bellone | |
| Toolbox: | X | TRA-102,GS-J029,GS-J017 |
| HOC: | Yes | Two submitted HOC's |
| Safety: | | |
| Pre/Post Job: | | |

| TIME FROM | TIME TO | OP CODE | LINE INFORMATION: LINE NUMBER | HEADING | BSP | ESP | Fath (ft) | | | | DNP |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0000 | 0715 | WS | | | | | | | | | |
| 0715 | 0720 | OS | | | | | | | | | |
| 0720 | 1000 | OS | | | | | | | | | |
| 1000 | 1010 | OS | | | | | | | | | |
| 1010 | 1045 | OS | | | | | | | | | |
| 1045 | 1046 | OS | | | | | | | | | |
| 1046 | 1047 | OS | | | | | | | | | |
| 1047 | 1300 | OS | | | | | | | | | |
| 1300 | 1333 | VP | | | | | | | | | |
| 1333 | 1335 | VP | Velo 2 | | | | | | | | |
| 1335 | 1430 | DR | | | | | | | | | |
| 1430 | 1500 | OS | | | | | | | | | |
| 1500 | 1530 | OS | | | | | | | | | |
| 1530 | 1550 | OS | | | | | | | | | |
| 1550 | 1555 | OS | | | | | | | | | |
| 1555 | 1600 | OS | | | | | | | | | |
| 1600 | 1700 | OS | | | | | | | | | |
| 1700 | 1705 | OS | | | | | | | | | |
| 1705 | 2045 | OS | | | | | | | | | |
| 2045 | 2130 | OS | | | | | | | | | |
| 2130 | 2230 | OS | | | | | | | | | |
| 2230 | 2400 | OS | | | | | | | | | |

**DETAILED SURVEY INFORMATION**

Weather Standby.
Coms Check with the Westerly (Kelly Power)
Standing by for supplies
M/V: My Marie delivered supplies.
Standing by waiting to hear from Conoco-Phillips and Tesoro on their exclusion zones.
Spoke with Greg Visor with Conoco-Phillips. The exclusion zone is 1000ft from dock when there is a vessel docked. Also the exclusion zone is 500 feet from dock when there is no vessel docked.
Waiting for Tesoro's exclusion zone which is the same as Conoco-Phillips.
Enroute to velo location
Velo taken @ Lat: 60.6384 Lon: -151.3929
Deploy gear.
Trying to adjust cable levelers to obtain desired tow depth of cable. The tail cable leveler nearest the tail buoy rides on surface due to current.
Added weight to tail stretch section to help cable leveler. No luck. Will call Randy Lukasik to make a battery box attached to tail buoy to lengthen the distance from tail buoy from tail buoy to tail stretch. Right now it is only 50 ft due to the length of the power cable from tail buoy to tail stretch.
With the battery installed on tailbuoy, this elimates the power cable so that a rope can be used at a longer length to let that last active cable leveler sin and provide remote power to tail buoy for positioning. Call Marta Krynytzky to order supplies for this to happen.
Retrieve gear.
Charles Hall instructs us to make a power cable using spare firing line to tie into existing power cable to extend its length.
Making cable to extend to tail buoy power cable. Attach ends back to tailbuoy and tail section. Test tail buoy.
Fire up compressors and seal air leaks at joints.
Strengthen gun umbilical and test for leaks. Blow out air line for debris before attaching to gun. Test tail buoy and replace batteries.
Standing by for daylight hours so PSO can clear area.

# FUGRO GEOSERVICES, INC.
## GEOPHYSICAL JOBLOG

ver 7.22.2010-B (Alaska)

| | |
|---|---|
| DATE: | 29-Aug-2015 Sat Julian Day: 241 |
| PROSPECT / SITE: | Seismic Airgun Portion |
| NAV. SYSTEM: | Starfix |
| FGSI JOB #: | 2415-7058 |
| JOB DAY #: | Day: 11 |
| CRP TO STERN: | 16.50 Meters |

| | |
|---|---|
| CLIENT: | AKLNG |
| JOB DESCRIPTION: | Geophysical Site Investigation |
| AREA & BLOCK: | Cook Inlet |
| R/V: | Qualifier 105 |
| No. of SURVEY LINES: | 42 — 250.15 Kilometers, 0.0% Complete |

**VESSEL MANAGER(S)**

| | |
|---|---|
| Party Manager: | Wayne Labrie |
| Ass't Party Manager: | Ted Tremblay |

**CLIENT REPRESENTATIVE(S)**

| | |
|---|---|
| QC Rep: | Noel Rogers |
| HSE Rep: | David King |
| Co. Rep: | |
| | |

| GEOPHYSICAL EQUIPMENT | EQUIP # |
|---|---|
| Geometrics GeoEel 24ch.(1.56 gr) | # 2 |
| Geometrics GeoEel 24ch.(6.25 gr) | # 1 |
| G.I. 60 ci Sleeve Gun | # 4198 |
| Castaway CTD Velocimeter | # 1 |
| Applied Acoutics Boomer | Rental |
| Edgetech 3200-XS SBP | # 1 |
| | |
| | |
| | |
| | |
| | |

**GEOPHYSICAL CREW**

| | |
|---|---|
| Technical Coordinator: | Ted Tremblay |
| Shift Supervisor: | |
| Operator: | Zachary Bellone |
| " | Freddie Wilson |
| " | |
| " | |
| FGSI Surveyor | Phillip Daniels |
| SES Field Lead PSO | Patti Haase |
| PSO | Vanessa James |
| " | |
| | |

**VESSEL CREW**

| | |
|---|---|
| 1st Captain: | David Mastolier |
| 2nd Captain: | Jared Bradshaw |
| 1st Mate: | Jeff Gregson |
| Chief Engineer: | Todd Ostler |
| Cook/Senior Deckhand: | Kevin Anderson |
| Deckhand: | Ben Jantzi |
| | |
| | |

**DATA PROCESSORS**

| | |
|---|---|
| CGG Seismic Processor: | Shannon Campbell / Ian Shirley |
| FGSI QC Geophysicist: | Michael Blaes |

**WEATHER REPORT**

| Time | Sea State | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | 1 ft or less | var to 5 kts | |
| Wx - 1200: | 1 ft or less | var to 5 kts | |
| Wx - 1800: | 1 ft or less | var to 5 kts | |
| Wx - 2400: | 1 ft or less | var to 5 kts | |

**HSE Reporting (Place an "x" in the box, with brief description**

| | | |
|---|---|---|
| HSE OFFICER: | Zachary Bellone | |
| Toolbox: | X | TRA-106, GS-J-029, GS-J-017 |
| HOC: | Yes | 2 submitted HOC's |
| Safety: | | |
| Pre/Post Job: | | |

| TIME FROM | TIME TO | OP CODE | LINE INFORMATION: LINE NUMBER | HEADING | BSP | ESP | Fath (ft) | | | | DNP | DETAILED SURVEY INFORMATION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0000 | 0800 | OS | | | | | | | | | | Waiting on daylight so PSO can clear area. |
| 0800 | 0815 | SM | | | | | | | | | | Safety meeting on deployment of gear. |
| 0815 | 0826 | OW | | | | | | | | | | Pick up anchor and enroute to velocimeter cast area. Will deploy gear there also. |
| 0826 | 0834 | VP | Velo3 | | | | | | | | | Velo3 taken @ Lat:60.6492 Lon: -151.3760 |
| 0834 | 0930 | OW | | | | | | | | | | Deploy gear. |
| 0930 | 0945 | OW | | | | | | | | | | Seabuoy power not working, cable termination failure. A previous termination done to make the cable-not from yesterday. Retrieve streamer. |
| 0945 | 0950 | OW | | | | | | | | | | The rope must have stretched allowing for cable to take the tension. Rigging up battery with cable on tailbuoy to replace power cable from tail stretch. |
| 0950 | 1330 | OW | | | | | | | | | | Battery box mounted on tailbuoy. Replace batteries in birds, reconfigure bird lineup and deploy. |
| 1330 | 1430 | OW | | | | | | | | | | Redeploy streamer. |
| 1430 | 1445 | OW | | | | | | | | | | Tail buoy flips over-something has snagged tail stretch section. Back down vessel and pick up streamer. |
| 1445 | 1600 | OW | | | | | | | | | | Replace tail stretch section and attach bird collars. |
| 1600 | 1610 | OW | | | | | | | | | | Begin to deploy streamer and tailbuoy antenna reciever is working but no positioning coming in-pick up tail buoy. |
| 1610 | 1635 | OW | | | | | | | | | | Tail buoy back on deck. |
| 1635 | 1645 | OW | | | | | | | | | | Replacing antenna on tailbuoy to see if GPS electronics in antenna will provide positioning again. |
| 1645 | 1700 | OW | | | | | | | | | | Testing. Replaced Seatrax TBU 42626 with spare unit TBU 43205. Positioning coming in. |
| 1700 | 1730 | OW | | | | | | | | | | Redeploy streamer. |
| 1730 | 1735 | OW | | | | | | | | | | Streamer deployed. Leakage on streamer with tension. |
| 1735 | 1736 | OW | | | | | | | | | | Test deck leader -all good. |
| 1736 | 1755 | OW | | | | | | | | | | Test good thru towleader and head stretch. |
| 1755 | 1810 | OW | | | | | | | | | | Test good thru first active. |
| 1810 | 1820 | OW | | | | | | | | | | Test good thru second active. |
| 1820 | 1835 | OW | | | | | | | | | | Test good thru third active. |
| 1835 | 1900 | OW | | | | | | | | | | Tail stretch is bad. No more spares for tail stretch -100% backup of sections on vessel only. Charles Hall notified. He will look in conex on shore. |
| 1900 | 1910 | OW | | | | | | | | | | Raise subbottom profiler ram. |
| 1910 | 1950 | OW | | | | | | | | | | Enroute near shore to anchor area. |
| 1950 | 2000 | OW | | | | | | | | | | Anchor down. |
| 2000 | 2400 | OS | | | | | | | | | | Waiting on spare tail stretch and word from Charles Hall about the spare section. |

# FUGRO GEOSERVICES, INC.
## GEOPHYSICAL JOBLOG

ver 7.22.2010-B (Alaska)

| | |
|---|---|
| DATE: | 30-Aug-2015 Sun Julian Day: 242 |
| PROSPECT / SITE: | Approach Portion |
| NAV. SYSTEM: | Starfix |
| FGSI JOB #: | 2415-7058 |
| JOB DAY #: | Day: 12 |
| CRP TO STERN: | 16.50 Meters |

| | |
|---|---|
| CLIENT: | AKLNG |
| JOB DESCRIPTION: | Geophysical Site Investigation |
| AREA & BLOCK: | Cook Inlet |
| R/V: | Qualifier 105 |
| No. of SURVEY LINES: | 42 — 250.15 Kilometers — 0.0% Complete |

**VESSEL MANAGER(S)**

| | |
|---|---|
| Party Manager: | Wayne Labrie |
| Ass't Party Manager: | Ted Tremblay |

**CLIENT REPRESENTATIVE(S)**

| | |
|---|---|
| QC Rep: | Noel Rogers |
| HSE Rep: | David King |
| Co. Rep: | |
| | |

| GEOPHYSICAL EQUIPMENT | EQUIP # |
|---|---|
| Geometrics GeoEel 24ch.(1.56 gr) | # 2 |
| Geometrics GeoEel 24ch.(6.25 gr) | # 1 |
| G.I. 60 ci Sleeve Gun | # 4198 |
| Castaway CTD Velocimeter | # 1 |
| Applied Acoutics Boomer | Rental |
| Edgetech 3200-XS SBP | # 1 |
| | |
| | |
| | |
| | |
| | |

**GEOPHYSICAL CREW**

| | |
|---|---|
| Technical Coordinator: | Ted Tremblay |
| Shift Supervisor: | |
| Operator: | Zachary Bellone |
| " | Freddie Wilson |
| " | |
| " | |
| FGSI Surveyor | Phillip Daniels |
| SES Field Lead PSO | Patti Haase |
| PSO | Vanessa James |
| " | |
| | |

**VESSEL CREW**

| | |
|---|---|
| 1st Captain: | David Mastolier |
| 2nd Captain: | Jared Bradshaw |
| 1st Mate: | Jeff Gregson |
| Chief Engineer: | Todd Ostler |
| Cook/Senior Deckhand: | Kevin Anderson |
| Deckhand: | Ben Jantzi |
| | |
| | |

**DATA PROCESSORS**

| | |
|---|---|
| CGG Seismic Processor: | Shannon Campbell / Ian Shirley |
| FGSI QC Geophysicist: | Michael Blaes |

**WEATHER REPORT**

| Time | Sea State | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | 1 ft | 10 - 15 kts | NNW |
| Wx - 1200: | | | |
| Wx - 1800: | 2 - 4 ft with chop | 20 - 25 kts | W |
| Wx - 2400: | 2 - 4 ft | 15 ktrs | NW |

**HSE Reporting (Place an "x" in the box, with brief description**

| | | |
|---|---|---|
| HSE OFFICER: | Zachary Bellone | |
| Toolbox: | X | GS-J-029,GS-017,TRA-114 |
| HOC: | Yes | 1 submitted HOC |
| Safety: | | |
| Pre/Post Job: | | |

**LINE INFORMATION**

| TIME FROM | TIME TO | OP CODE | LINE NUMBER | HEADING | BSP | ESP | Fath (ft) | | | | DNP |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0000 | 0800 | OS | | | | | | | | | |
| 0800 | 0801 | OW | | | | | | | | | |
| 0801 | 0802 | OW | | | | | | | | | |
| 0802 | 1130 | OW | | | | | | | | | |
| 1130 | 1150 | SM | | | | | | | | | |
| 1150 | 1240 | OW | | | | | | | | | |
| 1240 | 1246 | VP | Velo 4 | | | | | | | | |
| 1246 | 1430 | DR | | | | | | | | | |
| 1430 | 1433 | OW | | | | | | | | | |
| 1433 | 1434 | OW | | | | | | | | | |
| 1434 | 1515 | OW | | | | | | | | | |
| 1515 | 1530 | OW | | | | | | | | | |
| 1530 | 1800 | OW | | | | | | | | | |
| 1800 | 1801 | OW | | | | | | | | | |
| 1801 | 1828 | OW | | | | | | | | | |
| 1828 | 1838 | OW | | | | | | | | | |
| 1838 | 1910 | WS | | | | | | | | | |
| 1910 | 2000 | WS | | | | | | | | | |
| 2000 | 2400 | WS | | | | | | | | | |

**DETAILED SURVEY INFORMATION**

Waiting on daylight.
Rigging up boomer system while we are still waiting on word about spare section. Charles Hall instructs to rig boomer and shoot boomer while the tide and current are so strong due to moon. Switching to Approach lines to run with boomer system.
Continue rigging boomer system with Starfix and GeoEel. Rigging does not refer to hardware on back deck that was put together during vessel mob. Safety meeting on deployment of boomer system and subbottom profiler.
Pick up anchor-heading to approach area.
Velo taken @ Lat: 60.5431 Lon: -151.4595
Deploying gear.
Gear deployed-tuning system. Got OK from PSO.
Pinger firing @ 1433hrs.
Setting up wiring.
Heading to a test line.
Running test lines 300,300a,300b.
Weather is 2-4ft seas.
Head to test line 300c.
Line test 300c. Seas are too rough for boomer.
Picking up all gear due to sea state.
Anchor down. Waiting on weather.

# FUGRO GEOSERVICES, INC.
## GEOPHYSICAL JOBLOG

ver 7.22.2010-B (Alaska)

| | |
|---|---|
| DATE: | 31-Aug-2015 Mon Julian Day: 243 |
| PROSPECT / SITE: | Approach Portion |
| NAV. SYSTEM: | Starfix |
| FGSI JOB #: | 2415-7058 |
| JOB DAY #: | Day: 13 |
| CRP TO STERN: | 16.50 Meters |

| | |
|---|---|
| CLIENT: | AKLNG |
| JOB DESCRIPTION: | Geophysical Site Investigation |
| AREA & BLOCK: | Cook Inlet |
| R/V: | Qualifier 105 |
| No. of SURVEY LINES: | 42 — 250.15 Kilometers — 0.0% Complete |

**VESSEL MANAGER(S)**

| | |
|---|---|
| Party Manager: | Wayne Labrie |
| Ass't Party Manager: | Ted Tremblay |

**CLIENT REPRESENTATIVE(S)**

| | |
|---|---|
| QC Rep: | Noel Rogers |
| HSE Rep: | David King |
| Co. Rep: | |
| | |

| GEOPHYSICAL EQUIPMENT | EQUIP # |
|---|---|
| Geometrics GeoEel 24ch.(1.56 gr) | # 2 |
| Geometrics GeoEel 24ch.(6.25 gr) | # 1 |
| G.I. 60 ci Sleeve Gun | # 4198 |
| Castaway CTD Velocimeter | # 1 |
| Applied Acoutics Boomer | Rental |
| Edgetech 3200-XS SBP | # 1 |
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**GEOPHYSICAL CREW**

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| Shift Supervisor: | |
| Operator: | Zachary Bellone |
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| FGSI Surveyor | Phillip Daniels |
| SES Field Lead PSO | Patti Haase |
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**VESSEL CREW**

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| Chief Engineer: | Todd Ostler |
| Cook/Senior Deckhand: | Kevin Anderson |
| Deckhand: | Ben Jantzi |
| | |
| | |

**DATA PROCESSORS**

| | |
|---|---|
| CGG Seismic Processor: | Shannon Campbell / Ian Shirley |
| FGSI QC Geophysicist: | Michael Blaes |

**WEATHER REPORT**

| Time | Sea State | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | 3 -4 ft | 20 kts | N |
| Wx - 1200: | 2 - 4 ft | 20 kts | N |
| Wx - 1800: | 4 - 5 ft | 20 - 25 | N |
| Wx - 2400: | | | |

**HSE Reporting (Place an "x" in the box, with brief description**

| | | |
|---|---|---|
| HSE OFFICER: | Zachary Bellone | |
| Toolbox: | X | TRA-106,TRA-107 |
| HOC: | Yes | 2 HOC's submitted |
| Safety: | | |
| Pre/Post Job: | | |

| TIME FROM | TIME TO | OP CODE | LINE INFORMATION: LINE NUMBER | HEADING | BSP | ESP | Fath (ft) | | | | DNP | DETAILED SURVEY INFORMATION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0000 | 0830 | WS | | | | | | | | | | Weather standby. |
| 0830 | 1100 | WS | | | | | | | | | | Changed engine oil. |
| 1100 | 2400 | WS | | | | | | | | | | Weather standby. |

# FUGRO GEOSERVICES, INC.
## GEOPHYSICAL JOBLOG

ver 7.22.2010-B (Alaska)

| | |
|---|---|
| DATE: | 01-Sep-2015 Tue Julian Day: 244 |
| PROSPECT / SITE: | Seismic Portion |
| NAV. SYSTEM: | Starfix |
| FGSI JOB #: | 2415-7058 |
| JOB DAY #: | Day: 14 |
| CRP TO STERN: | 16.50 Meters |

| | |
|---|---|
| CLIENT: | AKLNG |
| JOB DESCRIPTION: | Geophysical Site Investigation |
| AREA & BLOCK: | Cook Inlet |
| R/V: | Qualifier 105 |
| No. of SURVEY LINES: | 42 — 250.15 Kilometers, 9.8% Complete |

**VESSEL MANAGER(S)**

| | |
|---|---|
| Party Manager: | Wayne Labrie |
| Ass't Party Manager: | Ted Tremblay |

**CLIENT REPRESENTATIVE(S)**

| | |
|---|---|
| QC Rep: | Noel Rogers |
| HSE Rep: | David King |
| Co. Rep: | |
| | |

| GEOPHYSICAL EQUIPMENT | EQUIP # |
|---|---|
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| Geometrics GeoEel 24ch.(6.25 gr) | # 1 |
| G.I. 60 ci Sleeve Gun | # 4198 |
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| Applied Acoutics Boomer | Rental |
| Edgetech 3200-XS SBP | # 1 |
| | |
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| | |

**GEOPHYSICAL CREW**

| | |
|---|---|
| Technical Coordinator: | Ted Tremblay |
| Shift Supervisor: | |
| Operator: | Zachary Bellone |
| " | Freddie Wilson |
| " | |
| " | |
| FGSI Surveyor | Phillip Daniels |
| SES Field Lead PSO | Patti Haase |
| PSO | Vanessa James |
| " | |
| | |

**VESSEL CREW**

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| 1st Mate: | Jeff Gregson |
| Chief Engineer: | Todd Ostler |
| Cook/Senior Deckhand: | Kevin Anderson |
| Deckhand: | Ben Jantzi |
| | |
| | |

**DATA PROCESSORS**

| | |
|---|---|
| CGG Seismic Processor: | Shannon Campbell / Ian Shirley |
| FGSI QC Geophysicist: | Michael Blaes |

**WEATHER REPORT**

| Time | Sea State | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | 3 -4 ft | 25 Kts | NW |
| Wx - 1200: | 1 - 2 ft | 10 Kts | NW |
| Wx - 1800: | 1 - 2 ft | 10 kts | W |
| Wx - 2400: | 1 - 2 ft | 10 kts | W |

**HSE Reporting (Place an "x" in the box, with brief description**

| | | |
|---|---|---|
| HSE OFFICER: | Zachary Bellone | |
| Toolbox: | X | GS-J-029,GS-J-017,TRA-113 |
| HOC: | No | |
| Safety: | | |
| Pre/Post Job: | | |

**LINE INFORMATION**

| TIME FROM | TIME TO | OP CODE | LINE NUMBER | HEADING | BSP | ESP | Fath (ft) | | | | DNP |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0000 | 0800 | WS | | | | | | | | | |
| 0800 | 0840 | WS | | | | | | | | | |
| 0840 | 0925 | WS | | | | | | | | | |
| 0925 | 0928 | DR | | | | | | | | | |
| 0928 | 0935 | VP | Velo 5 | | | | | | | | |
| 0935 | 0949 | DR | | | | | | | | | |
| 0949 | 1000 | OW | | | | | | | | | |
| 1000 | 1058 | OW | 300 | 343.5° | 1986 | 1825 | | | | | |
| 1058 | 1111 | OW | | | | | | | | | |
| 1111 | 1125 | OW | 400 | 343.5° | 1986 | 1825 | | | | | |
| 1125 | 1141 | OW | | | | | | | | | |
| 1141 | 1154 | OW | 500 | 343.5° | 1986 | 1825 | | | | | |
| 1154 | 1347 | OW | | | | | | | | | |
| 1347 | 1400 | OW | 600 | 343.5° | 1986 | 1825 | | | | | |
| 1400 | 1445 | OW | | | | | | | | | |
| 1445 | 1450 | OW | | | | | | | | | |
| 1450 | 1455 | OW | | | | | | | | | |
| 1455 | 1651 | OW | | | | | | | | | |
| 1651 | 1853 | OL | S100 | 162.0° | 100 | 1082 | | | | | |
| 1853 | 1943 | LT | | | | | | | | | |
| 1943 | 2035 | OL | S101 | 162.0° | 100 | 1081 | 76.2 | | | | |
| 2035 | 2046 | LT | | | | | 72.0 | | | | |
| 2046 | 2138 | OL | S104 | 342.0° | 1080 | 100 | 59.0 | | | | |
| 2138 | 2230 | LT | | | | | 61.0 | | | | |
| 2230 | 2334 | OL | S102 | 342.0° | 1081 | 100 | 55.0 | | | | |
| 2334 | 2400 | LT | | | | | 55.0 | | | | |

**DETAILED SURVEY INFORMATION**

Waiting on weather.
Warming up engines.
Enroute to work area.
Put down subbottom OSM pole.
Velo Taken @: Lat: 60.5493 Lon: -151.4550
Deploy gear continues.
Heading to run line with Boomer as sound source. PSO gives clearance.
Sol Run this line with Boomer and Streamer depth set to 1 meter.
Eol GeoEel is not logging line. Continue running test line again. Line names are given in GeoEel to collect for best data.
Sol Recording again. Bird too high. Lowering Line names here are just the line number name that is assigned in GeoEel software -not nav.
Eol
Sol Collect data with boomer as source and monitoring ch 5. Boomer data shows first arrivals are all over the place.
Eol
Sol Shooting G.I. with streamer for comparison.
Eol Going out to get the way out of a tanker.
Charles Hall is called to inform him of what we have so far. We will go to Seismic portion and start shooting there.
Joblog will now reflect mileage from that area and Description will now change to Seismic Portion
Enroute to Seismic Portion with gear in tow.
Sol Seismic short streamer w/airgun Lost Nav. @ Sp 569 - 583 Low Pressure @ SP 770 (Data shift SP
Eol
Sol Water depth is noted in "Fath (ft.)" column from wheel house fathometer. @20:00 port compressor took 11 gallons, starboard took 12 gallons.
Eol Reviewed vessel tank to tank fuel transfer Tra-113. Missed shotpoints due to starport losing pps intermittently.
Sol Missed SP 448-420 due to starport losing 1pps intermittently.
Eol
Sol
Eol
Going to AKLNG_Joblog&DPR_2.

On the "Eq. Specs-Seismic Sys #1 & #2" tab of joblog, the only sensors accurately entered are the "EDGETECH 3200-XS SUBBOTTOM PROFILER and the "APPLIED ACOUTICS CSP-P BOOMER". The "Seismic Systems #1 and #2 Specs" page does not allow to enter the proper values for a aut calculation on "Seismic System #1 Specs" tab and " Seismic System #2" tab. So these values are manually entered correctly in those tabs along with the manual entering of values on tabs "Drawing-24(6.25)" and "Drawing-24(1.56)".

Alaska LNG

# FUGRO GEOSERVICES, INC.
## GEOPHYSICAL JOBLOG

ver 7.22.2010-B (Alaska)

| | | | |
|---|---|---|---|
| DATE: | 02-Sep-2015 Wed Julian Day: 245 | CLIENT: | Alaska LNG |
| PROSPECT / SITE: | Seismic Portion | JOB DESCRIPTION: | Seismic |
| NAV. SYSTEM: | Starfix | AREA & BLOCK: | Cook Inlet |
| FGSI JOB #: | 2415-7058 | R/V: | Qualifier 105 |
| JOB DAY #: | Day: 15 | No. of SURVEY LINES: | 42 — 250.15 Kilometers |
| CRP TO STERN: | 16.50 Meters | ORIGINAL JOB TOTAL: | 250,150.00 — 41.1% Complete |

| | |
|---|---|
| NAV. DIVIDE BY: | 1 |
| NAV. FIX DISTANCE: | 6.25 |
| SURVEY UNITS: | Meters |
| NAUTICAL MILE: | 6080.0 |

**VESSEL MANAGER(S)**

| | |
|---|---|
| Party Manager: | Wayne Labrie |
| Ass't Party Manager: | Ted Tremblay |

**CLIENT REPRESENTATIVE(S)**

| | |
|---|---|
| QC Rep: | Noel Rogers |
| HSE Rep: | David King |
| Client Rep #3: | |
| Client Rep #4: | |

| GEOPHYSICAL EQUIPMENT | EQUIP # |
|---|---|
| Geometrics GeoEel 24ch.(1.56 gr) | # 2 |
| Geometrics GeoEel 24ch.(6.25 gr) | # 1 |
| G.I. 60 ci Gun | # 4198 |
| Castaway CTD Velocimeter | # 1 |
| Applied Acoutics Boomer | Rental |
| Edgetech 3200-XS SBP | # 1 |
| | |
| | |
| | |
| | |
| | |

**GEOPHYSICAL CREW**

| | |
|---|---|
| Technical Coordinator: | Ted Tremblay |
| Shift Supervisor: | |
| Operator: | Zachary Bellone |
| " | Freddie Wilson |
| " | |
| " | |
| FGSI Surveyor: | Phillip Daniels |
| SES Field Lead PSO | Patti Haase |
| PSO | Vanessa James |
| " | |
| " | |

**VESSEL CREW**

| | |
|---|---|
| 1st Captain: | David Mastolier |
| 2nd Captain: | Jared Bradshaw |
| 1st Mate: | Jeff Gregson |
| Chief Engineer: | Todd Ostler |
| Cook/Senior Deckhand: | Kevin Anderson |
| Deckhand: | Ben Jantzi |
| Deckhand: | |
| Deckhand: | |

**DATA PROCESSORS**

| | |
|---|---|
| CGG Seismic Processor: | Shannon Campbell / Ian Shirley |
| FGSI QC Geophysicist: | Michael Blaes |

**WEATHER REPORT**

| Time | Sea State | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | 0-1 ft. | 0 - 5 kts | Var. |
| Wx - 1200: | 0-1 ft. | 0 - 5 kts | Var. |
| Wx - 1800: | 0-1 ft. | 0 - 5 kts | Var. |
| Wx - 2400: | | | |

**HSE Reporting (Place an "x" in the box, with brief description**

| | | |
|---|---|---|
| HSE OFFICER: | Zachary Bellone | |
| Toolbox: | X | TR113, GS-J051 |
| HOC: | Yes | 1 HOC submitted |
| Safety: | | |
| Pre/Post Job: | | |

**LINE INFORMATION**

| TIME FROM | TIME TO | OP CODE | LINE NUMBER | HEADING | BSP | ESP | Fath (ft) | | | | DNP |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0000 | 0001 | LT | | | | | | | | | |
| 0001 | 0002 | LT | | | | | | | | | |
| 0002 | 0003 | LT | | | | | | | | | |
| 0003 | 0018 | LT | | | | | | | | | |
| 0018 | 0118 | OL | S103 | 342.0° | 1080 | 100 | 38.0 | | | | |
| 0118 | 0200 | LT | | | | | 45.0 | | | | |
| 0200 | 0305 | OL | S105 | 342.0° | 1080 | 100 | 36.0 | | | | |
| 0305 | 0322 | LT | | | | | 46.0 | | | | |
| 0322 | 0353 | OL | S107 | 162.0° | 100 | 598 | 54.0 | | | | |
| 0353 | 0422 | WS | | | | | 31.0 | | | | |
| 0422 | 0427 | WS | S107A | 162.0° | 485 | 524 | 33.0 | | | | |
| 0427 | 0428 | WS | | | | | | | | | |
| 0428 | 0511 | WS | S107B | 162.0° | 485 | 598 | 33.0 | | | | |
| 0511 | 0628 | OLC | | | 598 | 1079 | | | | | |
| 0628 | 0714 | LT | | | | | 68.0 | | | | |
| 0714 | 0830 | OL | S106 | 162.0° | 100 | 1079 | 77.0 | | | | |
| 0830 | 0914 | LT | | | | | 64.0 | | | | |
| 0914 | 1000 | OL | S108 | 162.0° | 100 | 1078 | 74.0 | | | | |
| 1000 | 1012 | LT | | | | | 58.0 | | | | |
| 1012 | 1156 | OL | S110 | 342.0° | 1078 | 100 | 61.0 | | | | |
| 1156 | 1229 | LT | | | | | 44.0 | | | | |
| 1229 | 1400 | OL | S111 | 342.0° | 1077 | 100 | 51.0 | | | | |
| 1400 | 1434 | LT | | | | | 25.0 | | | | |
| 1434 | 1522 | OL | S109 | 342.0° | 1078 | 100 | 44.0 | | | | |
| 1522 | 1529 | LT | | | | | 56.0 | | | | |
| 1529 | 1620 | OL | S112 | 162.0° | 100 | 1077 | 35.0 | | | | |
| 1620 | 1708 | LT | | | | | 60.0 | | | | |
| 1708 | 1846 | OL | S114 | 162.0° | 100 | 1076 | 61.0 | | | | |
| 1846 | 1955 | LT | | | | | 79.0 | | | | |
| 1955 | 2052 | OL | S116 | 162.0° | 100 | 1075 | 111.0 | | | | |
| 2052 | 2140 | LT | | | | | 85.0 | | | | |
| 2140 | 2225 | OL | S118 | 162.0° | 100 | 1075 | 124.0 | | | | |
| 2225 | 2239 | LT | | | | | 76.0 | | | | |

**DETAILED SURVEY INFORMATION**

On the "Eq. Specs-Seismic Sys #1 & #2" tab of joblog, the only sensors accurately entered are the "EDGETECH 3200-XS SUBBOTTOM PROFILER and the "APPLIED ACOUTICS CSP-P BOOMER". The "Seismic Systems #1 and #2 Specs" page does not allow to enter the proper values for a aut calculation on "Seismic System #1 Specs" tab and " Seismic System #2" tab. So these values are manually entered correctly in those tabs along with the manual entering of values on tabs "Drawing-24(6.25)" and "Drawing-24(1.56)".

Sol Fathometer data is from the ship's fathometer. This information is just radioed to crew for processor at start, middle and end of each line.
Eol At shotpoint 220, ship went offline to avoid debris in water.
Sol
Eol
Sol At shotpoint 529, ship went offline going around debris,
Abort! At shotpoint 598, vessel caught in cross current. Turn around and reshoot portion starting @ shotpoint 485 on next attempt.
Sol
Abort! At shotpoint 524, vessel caught in cross current and went offline.
Sol Common shotpoints with original attempt to account for line distance.
Olc
Eol Fueled port compressor 19.4 gallons, starboard 29.3 gallons
Sol
Eol
Sol
Eol
Sol Lost navigational positioning at shotpoints 238 to 220.
Eol
Sol
Eol
Sol
Eol
Sol
Eol
Sol
Eol
Sol
Eol Refueled generators 25 gallons Port and 21 gallons Starboard.
Sol
Eol Ship went off course at SP 306-321 to avoid debris on line.
Sol
Eol Ship

Alaska LNG

# FUGRO GEOSERVICES, INC.
## GEOPHYSICAL JOBLOG

ver 7.22.2010-B (Alaska)

| | |
|---|---|
| DATE: | 02-Sep-2015 Wed Julian Day: 245 |
| PROSPECT / SITE: | Seismic Portion |
| NAV. SYSTEM: | Starfix |
| FGSI JOB #: | 2415-7058 |
| JOB DAY #: | Day: 15 |
| CRP TO STERN: | 16.50 Meters |
| NAV. DIVIDE BY: | 1 |
| NAV. FIX DISTANCE: | 6.25 |
| SURVEY UNITS: | Meters |
| NAUTICAL MILE: | 6080.0 |

| | |
|---|---|
| CLIENT: | Alaska LNG |
| JOB DESCRIPTION: | Seismic |
| AREA & BLOCK: | Cook Inlet |
| R/V: | Qualifier 105 |
| No. of SURVEY LINES: | 42 |
| ORIGINAL JOB TOTAL: | 250,150.00 |

250.15 Kilometers
41.1% Complete

**VESSEL MANAGER(S)**

| | |
|---|---|
| Party Manager: | Wayne Labrie |
| Ass't Party Manager: | Ted Tremblay |

**CLIENT REPRESENTATIVE(S)**

| | |
|---|---|
| QC Rep: | Noel Rogers |
| HSE Rep: | David King |
| Client Rep #3: | |
| Client Rep #4: | |

| TIME | | OP CODE | LINE INFORMATION | | | | | | | | | DETAILED SURVEY INFORMATION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FROM | TO | | LINE NUMBER | HEADING | BSP | ESP | Fath (ft) | | | | DNP | |
| 2239 | 2400 | OL | S113 | 342.0° | 1076 | 300 | 63.0 | | | | | Sol |

# FUGRO GEOSERVICES, INC.
## GEOPHYSICAL JOBLOG

ver 7.22.2010-B (Alaska)

| | |
|---|---|
| DATE: | 03-Sep-2015 Thu Julian Day: 246 |
| PROSPECT / SITE: | Seismic Portion |
| NAV. SYSTEM: | Starfix |
| FGSI JOB #: | 2415-7058 |
| JOB DAY #: | Day: 16 |
| CRP TO STERN: | 16.50 Meters |

| | |
|---|---|
| CLIENT: | Alaska LNG |
| JOB DESCRIPTION: | Seismic |
| AREA & BLOCK: | Cook Inlet |
| R/V: | Qualifier 105 |
| No. of SURVEY LINES: | 42 — 250.15 Kilometers, 61.0% Complete |

**VESSEL MANAGER(S)**

| | |
|---|---|
| Party Manager: | Wayne Labrie |
| Ass't Party Manager: | Ted Tremblay |

**CLIENT REPRESENTATIVE(S)**

| | |
|---|---|
| QC Rep: | Noel Rogers |
| HSE Rep: | David King |
| Client Rep #3: | |
| Client Rep #4: | |

| GEOPHYSICAL EQUIPMENT | EQUIP # |
|---|---|
| Geometrics GeoEel 24ch.(1.56 gr) | # 2 |
| Geometrics GeoEel 24ch.(6.25 gr) | # 1 |
| G.I. 60 ci Gun | # 4198 |
| Castaway CTD Velocimeter | # 1 |
| Applied Acoutics Boomer | Rental |
| Edgetech 3200-XS SBP | # 1 |

**GEOPHYSICAL CREW**

| | |
|---|---|
| Technical Coordinator: | Ted Tremblay |
| Shift Supervisor: | |
| Operator: | Zachary Bellone |
| " | Freddie Wilson |
| " | |
| " | |
| FGSI Surveyor: | Phillip Daniels |
| SES Field Lead PSO | Patti Haase |
| PSO | Vanessa James |
| " | |
| " | |

**VESSEL CREW**

| | |
|---|---|
| 1st Captain: | David Mastolier |
| 2nd Captain: | Jared Bradshaw |
| 1st Mate: | Jeff Gregson |
| Chief Engineer: | Todd Ostler |
| Cook/Senior Deckhand: | Kevin Anderson |
| Deckhand: | Ben Jantzi |
| Deckhand: | |
| Deckhand: | |

**DATA PROCESSORS**

| | |
|---|---|
| CGG Seismic Processor: | Shannon Campbell / Ian Shirley |
| FGSI QC Geophysicist: | Michael Blaes |

**WEATHER REPORT**

| Time | Sea State | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | Calm | 0-5 kts | Var. |
| Wx - 1200: | Calm | 0-5 kts | Var. |
| Wx - 1800: | 2-3ft | 10-15kts | NE |
| Wx - 2400: | 2-3ft | 5-10kts | NE |

**HSE Reporting (Place an "x" in the box, with brief description**

| HSE OFFICER: | Zachary Bellone | |
|---|---|---|
| Toolbox: | X | TRA-113. GS-J-029, GS-J-017 |
| HOC: | Yes | 3 HOC's submitted |
| Safety: | | GS-J-051, GS-J-014 |
| Pre/Post Job: | | |

**LINE INFORMATION**

| TIME FROM | TIME TO | OP CODE | LINE NUMBER | HEADING | BSP | ESP | Fath (ft) | | | | DNP | DETAILED SURVEY INFORMATION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0000 | 0022 | OLC | S113 | 342.0° | 300 | 100 | 73.0 | | | | | Olc |
| 0022 | 0056 | LT | | | | | | | | | | Eol |
| 0056 | 0239 | OL | S115 | 342.0° | 1076 | 100 | 62.0 | | | | | Sol |
| 0239 | 0311 | LT | | | | | 69.0 | | | | | Eol Streamer cable tests done in line turn. |
| 0311 | 0404 | OL | S117 | 342.0° | 1075 | 100 | 60.0 | | | | | Sol Noise window in GeoEel software has an average of 1200uBar. Unusually high since this survey began. |
| 0404 | 0405 | LT | | | | | 99.0 | | | | | Eol Gun fires and we are not losing pressure. Maybe hydrophone is gone bad. No fire error. Hydrophone bad??? |
| 0405 | 0522 | LT | | | | | | | | | | Noise on GeoEel software was false. It was restarted and the noise window value of 1200uBar went down to 16ubar. |
| 0522 | 0556 | OL | S120 | 162.0° | 100 | 460 | 117.0 | | | | | Sol Nav positioning is not updating or sending fixes for beginning of line out of area of boundry of survey. Starport suspect !!! |
| 0556 | 0649 | OLC | | | 460 | 1074 | | | | | | GeoEel software locks up and says a process has ended. Restart software. Creates 44 duplicate files. Possible rerun! |
| 0649 | 0846 | SE | | | | | 76.0 | | | | | Eol Hotshot display doesn't show generator or injector signals. Also fueled comp. 23 port 23 on starb. Picked up gun to service phone was unattache |
| 0846 | 0942 | OL | S122 | 162.0° | 100 | 1073 | 135.0 | | | | | Sol |
| 0942 | 0952 | LT | | | | | 77.0 | | | | | Eol |
| 0952 | 1042 | OL | S119 | 342.0° | 1074 | 100 | 80.0 | | | | | Sol |
| 1042 | 1122 | LT | | | | | 126.0 | | | | | Eol |
| 1122 | 1313 | OL | S121 | 342.0° | 1073 | 100 | 71.0 | | | | | Sol |
| 1313 | 1330 | LT | | | | | 112.0 | | | | | Eol |
| 1330 | 1345 | SM | | | | | | | | | | Reviewed JSA (Gear retrieval) |
| 1345 | 1400 | DR | | | | | | | | | | Deploying gear (Boomer ) |
| 1400 | 1615 | DR | | | | | | | | | | Setting up top side boomer |
| 1615 | 1800 | DR | | | | | | | | | | Tunning Boomer in sonarwiz |
| 1800 | 1900 | DR | | | | | | | | | | Boomer power knocking out wheelhouse Nav. Monitor |
| 1900 | 1945 | OW | | | | | | | | | | Can't tune Boomer from interference from subbottom profiler and the data is really bad. It doesn't detect any bottom- just first arrival and its multiple. |
| 1945 | 2011 | DR | | | | | | | | | | Picking up Boomer system out of water. Deploy G.I. gun and GeoEel streamer. |
| 2011 | 2103 | OW | | | | | | | | | | Heading to run more lines with G.I. gun and GeoEel streamer. |
| 2103 | 2204 | OL | S124 | 162.0° | 100 | 1072 | 152.0 | | | | | Sol Missed 9 SP @sol due to gun not firing. |
| 2204 | 2245 | LT | | | | | 69.0 | | | | | Eol Long line turn due to currents. |
| 2245 | 2353 | OL | S123 | 342.0° | 1072 | 100 | 72.0 | | | | | Sol |
| 2353 | 2400 | LT | | | | | 135.0 | | | | | Eol |

# FUGRO GEOSERVICES, INC.
## GEOPHYSICAL JOBLOG

ver 7.22.2010-B (Alaska)

| | |
|---|---|
| DATE: | 04-Sep-2015 Fri Julian Day: 247 |
| PROSPECT / SITE: | Seismic Portion |
| NAV. SYSTEM: | Starfix |
| FGSI JOB #: | 2415-7058 |
| JOB DAY #: | Day: 17 |
| CRP TO STERN: | 16.50 Meters |

| | |
|---|---|
| CLIENT: | Alaska LNG |
| JOB DESCRIPTION: | Seismic |
| AREA & BLOCK: | Cook Inlet |
| R/V: | Qualifier 105 |
| No. of SURVEY LINES: | 42 — 250.15 Kilometers, 65.9% Complete |

**VESSEL MANAGER(S)**

| | |
|---|---|
| Party Manager: | Wayne Labrie |
| Ass't Party Manager: | Ted Tremblay |

**CLIENT REPRESENTATIVE(S)**

| | |
|---|---|
| QC Rep: | Noel Rogers |
| HSE Rep: | David King |
| Client Rep #3: | |
| Client Rep #4: | |

| GEOPHYSICAL EQUIPMENT | EQUIP # |
|---|---|
| Geometrics GeoEel 24ch.(1.56 gr) | # 2 |
| Geometrics GeoEel 24ch.(6.25 gr) | # 1 |
| G.I. 60 ci Gun | # 4198 |
| Castaway CTD Velocimeter | # 1 |
| Applied Acoutics Boomer | Rental |
| Edgetech 3200-XS SBP | # 1 |
| | |
| | |
| | |
| | |
| | |

**GEOPHYSICAL CREW**

| | |
|---|---|
| Technical Coordinator: | Ted Tremblay |
| Shift Supervisor: | |
| Operator: | Zachary Bellone |
| " | Freddie Wilson |
| " | |
| " | |
| FGSI Surveyor: | Phillip Daniels |
| SES Field Lead PSO | Patti Haase |
| PSO | Vanessa James |
| " | |
| " | |

**VESSEL CREW**

| | |
|---|---|
| 1st Captain: | David Mastolier |
| 2nd Captain: | Jared Bradshaw |
| 1st Mate: | Jeff Gregson |
| Chief Engineer: | Todd Ostler |
| Cook/Senior Deckhand: | Kevin Anderson |
| Deckhand: | Ben Jantzi |
| Deckhand: | |
| Deckhand: | |

**DATA PROCESSORS**

| | |
|---|---|
| CGG Seismic Processor: | Shannon Campbell / Ian Shirley |
| FGSI QC Geophysicist: | Michael Blaes |

**WEATHER REPORT**

| Time | Sea State | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | Calm | | |
| Wx - 1200: | Calm | | |
| Wx - 1800: | Calm | | |
| Wx - 2400: | Calm | | |

**HSE Reporting (Place an "x" in the box, with brief description**

| | | |
|---|---|---|
| HSE OFFICER: | Zachary Bellone | |
| Toolbox: | X | GS-J-029,GS-J-017 |
| HOC: | None | |
| Safety: | Yes | Weekly Drill(Fire) |
| Pre/Post Job: | | |

**LINE INFORMATION**

| TIME FROM | TIME TO | OP CODE | LINE NUMBER | HEADING | BSP | ESP | Fath (ft) | | | | DNP | DETAILED SURVEY INFORMATION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0000 | 0031 | LT | | | | | | | | | | Line Turn continued. |
| 0031 | 0204 | OL | S125 | 342.0° | 1072 | 100 | 60.0 | | | | | Sol Missed 5 shots @sol due to line not being active in nav. |
| 0204 | 0246 | LT | | | | | 127.0 | | | | | Eol |
| 0246 | 0350 | OL | S126 | 342.0° | 1071 | 100 | 51.0 | | | | | Sol Nav went out from SP 251 to 213. No shots. |
| 0350 | 0429 | LT | | | | | 108.0 | | | | | Eol |
| 0429 | 0600 | SE | | | | | | | | | | Heading toward line and servicing gun and compressors. |
| 0600 | 0650 | E31 | | | | | | | | | | Service completed on G.I.gun. Waiting for PSO to give clearance once daylight arrives. |
| 0650 | 0730 | SM | | | | | | | | | | Weekly Drill-Fire. |
| 0730 | 0800 | SE | | | | | | | | | | Fueled Commperssors |
| 0800 | 1020 | DR | | | | | | | | | | Deployed GI gun. Had problem getting Starb.compressor to run ; called Sauer to get instructions on how to get into proper mode to run. Heading towa |
| 1020 | 1112 | WS | S121A | 162.0° | 100 | 1073 | 112.0 | | | | | Sol rerun due to current |
| 1112 | 1135 | DR | | | | | | | | | | Picked up gear |
| 1135 | 1230 | OW | | | | | | | | | | Standby for gear to be dropped off to us |
| 1230 | 1345 | DR | | | | | | | | | | Gear arrived ---Installed tail section - deploying streamer cable |
| 1345 | 1630 | E05 | | | | | | | | | | Cable deployed - still have leakage - trouble shooting cable for leakage |
| 1630 | 1900 | E05 | | | | | | | | | | Found leakage in the tail swivel |
| 1900 | 1930 | E05 | | | | | | | | | | Started cycling gun every 60 sec. |
| 1930 | 2300 | E05 | | | | | | | | | | Unable to commuicate with cans, change out repeaters and A/D cans. GeoEel units will not communicate with large streamer. |
| 2300 | 2400 | E05 | | | | | | | | | | Heading to run some reruns with the small 1.56 grouping streamer. |
| | | | S116 | | | | | | | | | |

# FUGRO GEOSERVICES, INC.
## GEOPHYSICAL JOBLOG

ver 7.22.2010-B (Alaska)

| | |
|---|---|
| DATE: | 05-Sep-2015 Sat Julian Day: 248 |
| PROSPECT / SITE: | Seismic Portion |
| NAV. SYSTEM: | Starfix |
| FGSI JOB #: | 2415-7058 |
| JOB DAY #: | Day: 18 |
| CRP TO STERN: | 16.50 Meters |

| | |
|---|---|
| CLIENT: | Alaska LNG |
| JOB DESCRIPTION: | Seismic |
| AREA & BLOCK: | Cook Inlet |
| R/V: | Qualifier 105 |
| No. of SURVEY LINES: | 42 — 250.15 Kilometers, 65.9% Complete |

**VESSEL MANAGER(S)**

| | |
|---|---|
| Party Manager: | Wayne Labrie |
| Ass't Party Manager: | Ted Tremblay |

**CLIENT REPRESENTATIVE(S)**

| | |
|---|---|
| QC Rep: | Noel Rogers |
| HSE Rep: | David King |
| Client Rep #3: | |
| Client Rep #4: | |

| GEOPHYSICAL EQUIPMENT | EQUIP # |
|---|---|
| Geometrics GeoEel 24ch.(1.56 gr) | # 2 |
| Geometrics GeoEel 24ch.(6.25 gr) | # 1 |
| G.I. 60 ci Gun | # 4198 |
| Castaway CTD Velocimeter | # 1 |
| Applied Acoutics Boomer | Rental |
| Edgetech 3200-XS SBP | # 1 |

| GEOPHYSICAL CREW | |
|---|---|
| Technical Coordinator: | Ted Tremblay |
| Shift Supervisor: | |
| Operator: | Zachary Bellone |
| " | Freddie Wilson |
| " | |
| " | |
| FGSI Surveyor: | Phillip Daniels |
| SES Field Lead PSO | Patti Haase |
| PSO | Vanessa James |
| " | |
| " | |

| VESSEL CREW | |
|---|---|
| 1st Captain: | David Mastolier |
| 2nd Captain: | Jared Bradshaw |
| 1st Mate: | Jeff Gregson |
| Chief Engineer: | Todd Ostler |
| Cook/Senior Deckhand: | Kevin Anderson |
| Deckhand: | Ben Jantzi |
| Deckhand: | |
| Deckhand: | |

| DATA PROCESSORS | |
|---|---|
| CGG Seismic Processor: | Shannon Campbell / Ian Shirley |
| FGSI QC Geophysicist: | Michael Blaes |

**WEATHER REPORT**

| Time | Sea State | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | Calm | 0-5kts | Var |
| Wx - 1200: | Calm | 0-5kts | Var |
| Wx - 1800: | Calm | 0-5kts | Var |
| Wx - 2400: | Calm | 0-5kts | Var |

**HSE Reporting (Place an "x" in the box, with brief description**

| HSE OFFICER: | Zachary Bellone | |
|---|---|---|
| Toolbox: | X | GS-J-029,017,051 and 057 |
| HOC: | Yes | 1 submitted HOC |
| Safety: | Yes | Weekly putting on gumby suit |
| Pre/Post Job: | | |

| TIME FROM | TIME TO | OP CODE | LINE INFORMATION: LINE NUMBER | HEADING | BSP | ESP | Fath (ft) | | | | DNP | DETAILED SURVEY INFORMATION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0000 | 0132 | WS | | | | | | | | | | Heading to line which is a rerun due to weather code. Deploying streamer, preparing for acquistion. |
| 0132 | 0316 | WS | S118A | 342.0° | 1075 | 100 | 71.0 | | | | | Sol This line is a rerun due to current and is coded as WS. |
| 0316 | 0349 | WS | | | | | 106.0 | | | | | Eol |
| 0349 | 0454 | WS | S117A | 342.0° | 1075 | 100 | 63.0 | | | | | Sol This line is a rerun due to current and is coded as WS. |
| 0454 | 0531 | WS | | | | | 94.0 | | | | | Eol |
| 0531 | 0622 | WS | S113A | 342.0° | 1076 | 100 | 51.0 | | | | | Sol This line is a rerun due to current and is coded as WS. |
| 0622 | 0646 | WS | | | | | 51.0 | | | | | Eol |
| 0646 | 0744 | WS | S107C | 162.0° | 100 | 1079 | 57.0 | | | | | Sol This line is a rerun due to current and is coded as WS. Weekly safety meeting |
| 0744 | 0820 | WS | | | | | 58.0 | | | | | Eol |
| 0820 | 0921 | WS | S111A | 162.0° | 100 | 1077 | 35.0 | | | | | Sol This line is a rerun due to currents |
| 0921 | 1013 | WS | | | | | 65.0 | | | | | Eol |
| 1013 | 1103 | E199 | S110A | 162.0° | 100 | 1078 | 65.0 | | | | | Sol this line is a rerun due to Nav. |
| 1103 | 1654 | OW | | | | | 65.0 | | | | | Eol Started troubleshooting long siesmic cable swaped out bad deck leader heading to line with long seismic cable |
| 1654 | 1745 | OW | SL102 | 342.0° | 1081 | 100 | 49.0 | | | | | Sol |
| 1745 | 1807 | OW | | | | | 56.0 | | | | | Eol |
| 1807 | 1902 | OW | SL107 | 162.0° | 100 | 1079 | 57.0 | | | | | Sol |
| 1902 | 1954 | OW | | | | | 60.0 | | | | | Eol |
| 1954 | 2118 | OW | SL103 | 162.0° | 100 | 1080 | 57.0 | | | | | Sol |
| 2118 | 2224 | OW | | | | | 59.0 | | | | | Eol Testing streamer with first bird out of water to see if it has effect on noise in channel 8 during line turn. Three channels 8,16, and 24 are effected |
| 2224 | 2318 | OW | SL105 | 162.0° | 100 | 1080 | 63.0 | | | | | Sol by water column. Those channels buzz with a bird on those channels. Cable is 100% with no leakage and a great capacitance test. |
| 2318 | 2400 | OW | | | | | 59.0 | | | | | Eol Going around debris field. |
| | | | S116 | | | | | | | | | |

# FUGRO GEOSERVICES, INC.
## GEOPHYSICAL JOBLOG

ver 7.22.2010-B (Alaska)

| | |
|---|---|
| DATE: | 06-Sep-2015 Sun Julian Day: 249 |
| PROSPECT / SITE: | Seismic Portion |
| NAV. SYSTEM: | Starfix |
| FGSI JOB #: | 2415-7058 |
| JOB DAY #: | Day: 19 |
| CRP TO STERN: | 16.50 Meters |

| | |
|---|---|
| CLIENT: | Alaska LNG |
| JOB DESCRIPTION: | Seismic |
| AREA & BLOCK: | Cook Inlet |
| R/V: | Qualifier 105 |
| No. of SURVEY LINES: | 42 — 250.15 Kilometers, 65.9% Complete |

**VESSEL MANAGER(S)**

| | |
|---|---|
| Party Manager: | Wayne Labrie |
| Ass't Party Manager: | Ted Tremblay |

**CLIENT REPRESENTATIVE(S)**

| | |
|---|---|
| QC Rep: | Noel Rogers |
| HSE Rep: | David King |
| Client Rep #3: | |
| Client Rep #4: | |

| GEOPHYSICAL EQUIPMENT | EQUIP # |
|---|---|
| Geometrics GeoEel 24ch.(1.56 gr) | # 2 |
| Geometrics GeoEel 24ch.(6.25 gr) | # 1 |
| G.I. 60 ci Gun | # 4198 |
| Castaway CTD Velocimeter | # 1 |
| Applied Acoutics Boomer | Rental |
| Edgetech 3200-XS SBP | # 1 |
| | |
| | |
| | |
| | |
| | |

**GEOPHYSICAL CREW**

| | |
|---|---|
| Technical Coordinator: | Ted Tremblay |
| Shift Supervisor: | |
| Operator: | Zachary Bellone |
| " | Freddie Wilson |
| " | |
| " | |
| FGSI Surveyor: | Phillip Daniels |
| SES Field Lead PSO | Patti Haase |
| PSO | Vanessa James |
| " | |
| " | |

**VESSEL CREW**

| | |
|---|---|
| 1st Captain: | David Mastolier |
| 2nd Captain: | Jared Bradshaw |
| 1st Mate: | Jeff Gregson |
| Chief Engineer: | Todd Ostler |
| Cook/Senior Deckhand: | Kevin Anderson |
| Deckhand: | Ben Jantzi |
| Deckhand: | |
| Deckhand: | |

**DATA PROCESSORS**

| | |
|---|---|
| CGG Seismic Processor: | Shannon Campbell / Ian Shirley |
| FGSI QC Geophysicist: | Michael Blaes |

**WEATHER REPORT**

| Time | Sea State | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | calm | calm | |
| Wx - 1200: | calm | calm | |
| Wx - 1800: | calm | calm | |
| Wx - 2400: | calm | calm | |

**HSE Reporting (Place an "x" in the box, with brief description**

| | | |
|---|---|---|
| HSE OFFICER: | Zachary Bellone | |
| Toolbox: | X | TRA-113, GS-J-014. GS-J-029 |
| HOC: | Yes | 3 submitted HOC's |
| Safety: | | |
| Pre/Post Job: | | |

| TIME FROM | TIME TO | OP CODE | LINE INFORMATION: LINE NUMBER | HEADING | BSP | ESP | Fath (ft) | | | | DNP | DETAILED SURVEY INFORMATION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0000 | 0004 | OW | | | | | | | | | | Line turn continued. |
| 0004 | 0053 | OW | SL106 | 162.0° | 100 | 1079 | 67.0 | | | | | Sol |
| 0053 | 0108 | OW | | | | | 58.0 | | | | | Eol |
| 0108 | 0214 | OW | SL112 | 342.0° | 1077 | 100 | 67.0 | | | | | Sol |
| 0214 | 0301 | OW | | | | | 48.0 | | | | | Eol |
| 0301 | 0432 | OW | SL114 | 342.0° | 1076 | 100 | 65.0 | | | | | Sol |
| 0432 | 0521 | OW | | | | | 52.0 | | | | | Eol |
| 0521 | 0620 | OW | SL116 | 342.0° | 1075 | 100 | 65.0 | | | | | Sol Missed SP 380-350 due to nav PPS error. |
| 0620 | 0707 | OW | | | | | 90.0 | | | | | Eol |
| 0707 | 0755 | OW | SL118 | 342.0° | 1075 | 100 | 65.0 | | | | | Sol |
| 0755 | 0833 | OW | | | | | 109.0 | | | | | Eol |
| 0833 | 0946 | OW | SL115 | 162.0° | 100 | 1075 | 79.0 | | | | | Sol |
| 0946 | 1030 | OW | | | | | 71.0 | | | | | Eol |
| 1030 | 1133 | OW | SL117 | 162.0° | 100 | 1075 | 107.0 | | | | | Sol |
| 1133 | 1218 | OW | | | | | 77.0 | | | | | Eol |
| 1218 | 1244 | OW | SL119 | 162.0° | 100 | 566 | 124.0 | | | | | Sol |
| 1244 | 1300 | OW | | | | | 91.0 | | | | | Aborted line do to trees in water. |
| 1300 | 1315 | DR | | | | | | | | | | Picked up gear . |
| 1315 | 1530 | OW | | | | | | | | | | Meet up with the My Marie to get new gear installed newboomer power supply. |
| 1530 | 1721 | DR | | | | | | | | | | Deplyed Boomer and short cable, tune in Boomer and head for line. |
| 1721 | 1813 | OW | SH107 | 342.0° | 1079 | 100 | 58.0 | | | | | Sol Doing test line with Boomer |
| 1813 | 1917 | DR | | | | | 54.0 | | | | | Picked up Boomer gear and deployed seismic gear Heading to line |
| 1917 | 2006 | OW | SL104 | 342.0° | 1080 | 100 | 43.0 | | | | | Sol File 1000 is SP1046 due to Geoeel error. SBP was set to wrong baud rate. Subbottom 1st nav fix @980 |
| 2006 | 2024 | OW | | | | | 53.0 | | | | | Eol. Magnetic declination is 16 degrees. Subtract from reading on birds. |
| 2024 | 2119 | OW | SL113 | 162.0° | 100 | 1076 | 53.0 | | | | | Sol |
| 2119 | 2212 | OW | | | | | 63.0 | | | | | Eol |
| 2212 | 2321 | OW | SL120 | 162.0° | 100 | 1074 | 123.0 | | | | | Sol Bird #2 and #3 is having problem staying at required depth due to boat speed and current. |
| 2321 | 2400 | OW | | | | | 75.0 | | | | | Eol |
| | | | | | | | | | | | | |
| | | | S116 | | | | | | | | | |

# FUGRO GEOSERVICES, INC.
## GEOPHYSICAL JOBLOG

ver 7.22.2010-B (Alaska)

| | |
|---|---|
| DATE: | 07-Sep-2015 Mon Julian Day: 250 |
| PROSPECT / SITE: | Seismic Portion |
| NAV. SYSTEM: | Starfix |
| FGSI JOB #: | 2415-7058 |
| JOB DAY #: | Day: 20 |
| CRP TO STERN: | 16.50 Meters |

| | |
|---|---|
| CLIENT: | Alaska LNG |
| JOB DESCRIPTION: | Seismic |
| AREA & BLOCK: | Cook Inlet |
| R/V: | Qualifier 105 |
| No. of SURVEY LINES: | 42 — 250.15 Kilometers, 65.9% Complete |

**VESSEL MANAGER(S)**

| | |
|---|---|
| Party Manager: | Wayne Labrie |
| Ass't Party Manager: | Ted Tremblay |

**CLIENT REPRESENTATIVE(S)**

| | |
|---|---|
| QC Rep: | Noel Rogers |
| HSE Rep: | David King |
| Client Rep #3: | |
| Client Rep #4: | |

| GEOPHYSICAL EQUIPMENT | EQUIP # |
|---|---|
| Geometrics GeoEel 24ch.(1.56 gr) | # 2 |
| Geometrics GeoEel 24ch.(6.25 gr) | # 1 |
| G.I. 60 ci Gun | # 4198 |
| Castaway CTD Velocimeter | # 1 |
| Applied Acoutics Boomer | Rental |
| Edgetech 3200-XS SBP | # 1 |

**GEOPHYSICAL CREW**

| | |
|---|---|
| Technical Coordinator: | Ted Tremblay |
| Shift Supervisor: | |
| Operator: | Zachary Bellone |
| " | Freddie Wilson |
| " | |
| " | |
| FGSI Surveyor: | Phillip Daniels |
| SES Field Lead PSO | Patti Haase |
| PSO | Vanessa James |
| " | |
| " | |

**VESSEL CREW**

| | |
|---|---|
| 1st Captain: | David Mastolier |
| 2nd Captain: | Jared Bradshaw |
| 1st Mate: | Jeff Gregson |
| Chief Engineer: | Todd Ostler |
| Cook/Senior Deckhand: | Kevin Anderson |
| Deckhand: | Ben Jantzi |
| Deckhand: | |
| Deckhand: | |

**DATA PROCESSORS**

| | |
|---|---|
| CGG Seismic Processor: | Shannon Campbell / Ian Shirley |
| FGSI QC Geophysicist: | Michael Blaes / Eric Swanson |

**WEATHER REPORT**

| Time | Sea State | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | calm | calm | |
| Wx - 1200: | calm | calm | |
| Wx - 1800: | calm | 5Knots | Var |
| Wx - 2400: | calm | 5Knots | Var |

**HSE Reporting (Place an "x" in the box, with brief description**

| HSE OFFICER: | Zachary Bellone | |
|---|---|---|
| Toolbox: | X | GS-J-017, GS-J-029, GS-J-051 |
| HOC: | Yes | 1 HOC submitted |
| Safety: | Yes | Dock to Vessel Transfer |
| Pre/Post Job: | | |

**LINE INFORMATION**

| TIME FROM | TIME TO | OP CODE | LINE NUMBER | HEADING | BSP | ESP | Fath (ft) | | | | DNP | DETAILED SURVEY INFORMATION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0000 | 0027 | OW | | | | | | | | | | Line turn continued |
| 0027 | 0119 | OW | SL122 | 162.0° | 100 | 1073 | 131.0 | | | | | Sol Went offline @SP480 to avoid debris. Back online @SP527. 1 PPS timed out, missed SP751 to SP772 |
| 0119 | 0204 | OW | | | | | 73.0 | | | | | Eol Long line turn due to debris and tide change. |
| 0204 | 0216 | OW | SL124 | 342.0° | 1072 | 831 | 68.0 | | | | | Sol |
| 0216 | 0251 | E199 | | | | | | | | | | Aborted! Line aborted due to no serial string detected. Circle around. |
| 0251 | 0310 | E199 | SL124A | 342.0° | 1072 | | 68.0 | | | | | Sol |
| 0310 | 0430 | WS | | | | | | | | | | Aborted! Bird #2 stuck at surface. Pick up cable and change out batteries. Debris found inbetween body and wing. It will not dive. |
| 0430 | 0507 | WS | | | | | | | | | | Change out bird and redeply. Heading for Sol. |
| 0507 | 0612 | OW | SL124B | 342.0° | 1072 | 100 | 68.0 | | | | | Sol |
| 0612 | 0658 | OW | | | | | 136.0 | | | | | Eol |
| 0658 | 0703 | OW | SL125 | 342.0° | 1072 | 1000 | 53.0 | | | | | Sol Aborted due to bird 1 not responding. |
| 0703 | 1031 | OW | | | | | | | | | | Eol Change out batteries in bird one. Swap out bird 2 three times. Heading to line. |
| 1031 | 1140 | OW | SL108 | 162.0° | 100 | 1078 | 64.0 | | | | | Sol |
| 1140 | 1230 | OW | | | | | 59.0 | | | | | Eol |
| 1230 | 1314 | OW | SL110 | 162.0° | 100 | 953 | 56.0 | | | | | Sol |
| 1314 | 1340 | WS | | | | | | | | | | Aborted due to debris caught on tail bouy- picked up gear. |
| 1340 | 1635 | OS | | | | | | | | | | Heading to dock for crew change and picking up supplies. Jared Bradshaw gets off and Eric Swanson gets on the boat. |
| 1635 | 1700 | OS | | | | | | | | | | Depart dock - heading for location. |
| 1700 | 1816 | DR | | | | | | | | | | deploy gear and heading for line. |
| 1816 | 1929 | OW | SL125B | 342.0° | 1072 | 100 | 61.0 | | | | | Sol |
| 1929 | 2015 | OW | | | | | 132.0 | | | | | Eol |
| 2015 | 2105 | OW | SL126 | 342.0° | 1071 | 100 | 58.0 | | | | | Sol |
| 2105 | 2149 | OW | | | | | 124.0 | | | | | Eol |
| 2149 | 2243 | OW | SL123 | 162.0° | 100 | 1072 | 132.0 | | | | | Sol |
| 2243 | 2334 | OW | | | | | 69.0 | | | | | Eol |
| 2334 | 2400 | OW | SL121 | 162.0° | 100 | 400 | 123.0 | | | | | Sol Missed shots from SP 301 to 320. |

# FUGRO GEOSERVICES, INC.
## GEOPHYSICAL JOBLOG

ver 7.22.2010-B (Alaska)

| | |
|---|---|
| DATE: | 08-Sep-2015 Tue Julian Day: 251 |
| PROSPECT / SITE: | Seismic Portion |
| NAV. SYSTEM: | Starfix |
| FGSI JOB #: | 2415-7058 |
| JOB DAY #: | Day: 21 |
| CRP TO STERN: | 16.50 Meters |

| | |
|---|---|
| CLIENT: | Alaska LNG |
| JOB DESCRIPTION: | Seismic |
| AREA & BLOCK: | Cook Inlet |
| R/V: | Qualifier 105 |
| No. of SURVEY LINES: | 42 — 248.77 Kilometers, 70.6% Complete |

1,381.25 Meters Deleted

**VESSEL MANAGER(S)**

| | |
|---|---|
| Party Manager: | Wayne Labrie |
| Ass't Party Manager: | Ted Tremblay |

**CLIENT REPRESENTATIVE(S)**

| | |
|---|---|
| QC Rep: | Noel Rogers |
| HSE Rep: | David King |
| Client Rep #3: | |
| Client Rep #4: | |

| GEOPHYSICAL EQUIPMENT | EQUIP # |
|---|---|
| Geometrics GeoEel 24ch.(1.56 gr) | # 2 |
| Geometrics GeoEel 24ch.(6.25 gr) | # 1 |
| G.I. 60 ci Gun | # 4198 |
| Castaway CTD Velocimeter | # 1 |
| Applied Acoutics Boomer | Rental |
| Edgetech 3200-XS SBP | # 1 |

**GEOPHYSICAL CREW**

| | |
|---|---|
| Technical Coordinator: | Ted Tremblay |
| Shift Supervisor: | |
| Operator: | Zachary Bellone |
| " | Freddie Wilson |
| " | |
| " | |
| FGSI Surveyor: | Phillip Daniels |
| SES Field Lead PSO | Patti Haase |
| PSO | Vanessa James |
| " | |
| " | |

**VESSEL CREW**

| | |
|---|---|
| 1st Captain: | David Mastolier |
| 2nd Captain: | |
| 1st Mate: | Jeff Gregson |
| Chief Engineer: | Todd Ostler |
| Cook/Senior Deckhand: | Kevin Anderson |
| Deckhand: | Ben Jantzi |
| Deckhand: | |
| Deckhand: | |

**DATA PROCESSORS**

| | |
|---|---|
| CGG Seismic Processor: | Shannon Campbell / Ian Shirley |
| FGSI QC Geophysicist: | Michael Blaes / Eric Swanson |

**WEATHER REPORT**

| Time | Sea State | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | calm | 5knts | N |
| Wx - 1200: | calm | 5knts | N |
| Wx - 1800: | calm | 5knts | N |
| Wx - 2400: | | | |

**HSE Reporting (Place an "x" in the box, with brief description**

| | | |
|---|---|---|
| HSE OFFICER: | Zachary Bellone | |
| Toolbox: | X | TRA-113. GS-J-017, GS-J-029 |
| HOC: | No | 0 |
| Safety: | | |
| Pre/Post Job: | | |

**LINE INFORMATION**

| TIME FROM | TIME TO | OP CODE | LINE NUMBER | HEADING | BSP | ESP | Fath (ft) | | | | DNP | DETAILED SURVEY INFORMATION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0000 | 0017 | OW | SL121 | 162.0° | 400 | 610 | 117.0 | | | | | Line Continues. Missed SP 401-426, and 582-607 due to nav issue. |
| 0017 | 0056 | OW | | | | | | | | | | Aborted! Line aborted due to too many missed shots. |
| 0056 | 0200 | E199 | SL121A | 162.0° | 100 | 1073 | 125.0 | | | | | Sol Missed shots at SP216 to Sp246, SP436-470, SP 859-941. Replaced "serial fix out" cable, put all cables on one starport. Swapped BNC |
| 0200 | 0250 | E199 | | | | | 76.0 | | | | | Eol output on GeoEel box to see if this will fix issue. |
| 0250 | 0345 | OW | SL122A | 162.0° | 100 | 1073 | 129.0 | | | | | Sol Coded as other working due to first attempt had to go offline to avoid debris. |
| 0345 | 0408 | OW | | | | | 72.0 | | | | | Eol |
| 0408 | 0515 | OW | SL120A | 342.0° | 1074 | 100 | 72.0 | | | | | Sol Coded as other working (OW) due to current giving bird issues on original line. |
| 0515 | 0609 | OW | | | | | 117.0 | | | | | Eol Missed Sp 1020-1018, 794-788, Sp 548-545 due to nav redrawing screens. |
| 0609 | 0735 | E199 | SL121B | 342.0° | 1073 | 100 | 66.0 | | | | | Sol Line being rerun due to missing SPs due to Nav freezing. |
| 0735 | 0814 | E199 | | | | | 110.0 | | | | | Eol |
| 0814 | 0909 | E199 | SL117A | 342.0° | 1075 | 100 | 65.0 | | | | | Sol Rerun due to missing shots from nav freezing on original attempt. |
| 0909 | 0950 | E199 | | | | | 94.0 | | | | | Eol |
| 0950 | 1027 | OL | SL206 | 089.6° | 100 | 960 | 77.0 | | | | | Sol Aborted line due to a line of fishing buoys in vessels path. |
| 1027 | 1142 | LT | | | | | 48.0 | | | | | Eol |
| 1142 | 1350 | E199 | SL116A | 162.0° | 100 | 1075 | 99.0 | | | | | Sol Rerun due to missing shots from nav freezing on original attempt. |
| 1350 | 1457 | E199 | | | | | 78.0 | | | | | Eol Line will have to be rerun due to amount of time it took to reach each fix. It averaged about 20 seconds due to current. |
| 1457 | 1555 | OW | SL110A | 162.0° | 100 | 1078 | 69.0 | | | | | Sol Rerun due to debris in vessels path on original attempt. |
| 1555 | 1629 | OW | | | | | 64.0 | | | | | Eol |
| 1629 | 1712 | OL | SL205 | 090.0° | 100 | 962 | 92.0 | | | | | Sol |
| 1712 | 1741 | LT | | | | | 34.0 | | | | | Eol |
| 1741 | 1856 | OW | SL109 | 342.0° | 1078 | 100 | 58.0 | | | | | Sol |
| 1856 | 1943 | OW | | | | | 63.0 | | | | | Eol |
| 1943 | 2049 | OW | SL111 | 342.0° | 1077 | 100 | 57.0 | | | | | Sol |
| 2049 | 2131 | OW | | | | | 30.0 | | | | | Eol |
| 2131 | 2222 | OW | SL116B | 342.0° | 1075 | 100 | 69.0 | | | | | Sol Rerun due to current making it take 20 seconds to reach next nav fix. |
| 2222 | 2251 | OW | | | | | 97.0 | | | | | Eol |
| 2251 | 2351 | OW | SL103A | 162.0° | 100 | 1080 | 55.0 | | | | | Sol Rerun due to gain change in data. |
| 2351 | 2400 | OW | | | | | 51.0 | | | | | Eol |

# FUGRO GEOSERVICES, INC.
## GEOPHYSICAL JOBLOG

ver 7.22.2010-B (Alaska)

| | |
|---|---|
| DATE: | 08-Sep-2015 Tue Julian Day: 251 |
| PROSPECT / SITE: | Seismic Portion |
| NAV. SYSTEM: | Starfix |
| FGSI JOB #: | 2415-7058 |
| JOB DAY #: | Day: 21 |
| CRP TO STERN: | 16.50 Meters |

| | |
|---|---|
| CLIENT: | Alaska LNG |
| JOB DESCRIPTION: | Seismic |
| AREA & BLOCK: | Cook Inlet |
| R/V: | Qualifier 105 |
| No. of SURVEY LINES: | 42 |

248.77 Kilometers
70.6% Complete

1,381.25 Meters Deleted

**VESSEL MANAGER(S)**

| | |
|---|---|
| Party Manager: | Wayne Labrie |
| Ass't Party Manager: | Ted Tremblay |

**CLIENT REPRESENTATIVE(S)**

| | |
|---|---|
| QC Rep: | Noel Rogers |
| HSE Rep: | David King |
| Client Rep #3: | |
| Client Rep #4: | |

| TIME | | OP CODE | LINE INFORMATION | | | | | | | | | DETAILED SURVEY INFORMATION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FROM | TO | | LINE NUMBER | HEADING | BSP | ESP | Fath (ft) | | | | DNP | |
| | | DM | SL206 | 089.6° | 960 | 1070 | | | | | | Deleted portion of this line due to a line of fishing buoys in vessels path. |
| | | DM | SL205 | 090.0° | 962 | 1073 | | | | | | Deleted portion of this line due to a line of fishing buoys in vessels path. |

# FUGRO GEOSERVICES, INC.
## GEOPHYSICAL JOBLOG

ver 7.22.2010-B (Alaska)

| | |
|---|---|
| DATE: | 09-Sep-2015 Wed Julian Day: 252 |
| PROSPECT / SITE: | Seismic Portion |
| NAV. SYSTEM: | Starfix |
| FGSI JOB #: | 2415-7058 |
| JOB DAY #: | Day: 22 |
| CRP TO STERN: | 16.50 Meters |

| | |
|---|---|
| CLIENT: | Alaska LNG |
| JOB DESCRIPTION: | Seismic |
| AREA & BLOCK: | Cook Inlet |
| R/V: | Qualifier 105 |
| No. of SURVEY LINES: | 42 — 248.16 Kilometers, 74.1% Complete |

1,993.75 Meters Deleted

**VESSEL MANAGER(S)**

| | |
|---|---|
| Party Manager: | Wayne Labrie |
| Ass't Party Manager: | Ted Tremblay |

**CLIENT REPRESENTATIVE(S)**

| | |
|---|---|
| QC Rep: | Noel Rogers |
| HSE Rep: | David King |
| Client Rep #3: | |
| Client Rep #4: | |

| GEOPHYSICAL EQUIPMENT | EQUIP # |
|---|---|
| Geometrics GeoEel 24ch.(1.56 gr) | # 2 |
| Geometrics GeoEel 24ch.(6.25 gr) | # 1 |
| G.I. 60 ci Gun | # 4198 |
| Castaway CTD Velocimeter | # 1 |
| Applied Acoutics Boomer | Rental |
| Edgetech 3200-XS SBP | # 1 |

| GEOPHYSICAL CREW | |
|---|---|
| Technical Coordinator: | Ted Tremblay |
| Shift Supervisor: | |
| Operator: | Zachary Bellone |
| " | Freddie Wilson |
| " | |
| " | |
| FGSI Surveyor: | Phillip Daniels |
| SES Field Lead PSO | Patti Haase |
| PSO | Vanessa James |
| " | |
| " | |

| VESSEL CREW | |
|---|---|
| 1st Captain: | David Mastolier |
| 2nd Captain: | |
| 1st Mate: | Jeff Gregson |
| Chief Engineer: | Todd Ostler |
| Cook/Senior Deckhand: | Kevin Anderson |
| Deckhand: | Ben Jantzi |
| Deckhand: | |
| Deckhand: | |

**DATA PROCESSORS**

| | |
|---|---|
| CGG Seismic Processor: | Shannon Campbell / Ian Shirley |
| FGSI QC Geophysicist: | Michael Blaes / Eric Swanson |

**WEATHER REPORT**

| Time | Sea State | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | calm | 5knts | |
| Wx - 1200: | calm | 5knts | |
| Wx - 1800: | calm | 5knts | |
| Wx - 2400: | 2 - 4 ft | 20 - 25 knts | NE |

**HSE Reporting (Place an "x" in the box, with brief description**

| | | |
|---|---|---|
| HSE OFFICER: | Zachary Bellone | |
| Toolbox: | | GS-J-17,GS-J-029,GS-J-062 |
| HOC: | Yes | 3 HOC's submitted |
| Safety: | | |
| Pre/Post Job: | | |

**LINE INFORMATION**

| TIME FROM | TIME TO | OP CODE | LINE NUMBER | HEADING | BSP | ESP | Fath (ft) | | | | DNP | DETAILED SURVEY INFORMATION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0000 | 0041 | OW | | | | | | | | | | Line turn continued. |
| 0041 | 0210 | OW | SL101 | 162.0° | 100 | 1081 | 70.0 | | | | | Sol |
| 0210 | 0306 | OW | | | | | 68.0 | | | | | Eol |
| 0306 | 0400 | OW | SL100 | 162.0° | 100 | 1082 | 77.0 | | | | | Sol Swerved to avoid floating tree parts around SP 850. |
| 0400 | 0435 | OW | | | | | 72.0 | | | | | Eol |
| 0435 | 0531 | OW | SL120B | 342.0° | 1074 | 100 | 75.0 | | | | | Sol Rerun due to other seismic noise in the data. |
| 0531 | 0623 | OW | | | | | 122.0 | | | | | Eol |
| 0623 | 0749 | OW | SL123A | 342.0° | 1072 | 100 | 65.0 | | | | | Sol Rerun due to missing shotpoints and other seismic noise in the data. |
| 0749 | 0825 | OW | | | | | 127.0 | | | | | Eol |
| 0825 | 0913 | OW | SL101A | 342.0° | 1081 | 100 | 54.0 | | | | | Sol Rerun due to high feather angle. |
| 0913 | 1019 | OW | | | | | 56.0 | | | | | Eol |
| 1019 | 1121 | OL | SL203 | 090.0° | 100 | 1440 | 90.0 | | | | | Sol |
| 1121 | 1140 | DR | | | | | 34.0 | | | | | Aborted due to fishing buoys Missed SP's 1441 to 1538 Pick up gear and head to dock. |
| 1140 | 1800 | OW | | | | | | | | | | Heading to dock for crew change and to pick up supplies. Michael Blaes departs the vessel. |
| 1800 | 1915 | DR | | | | | | | | | | Deploy gear and heading to line. |
| 1915 | 2033 | OW | SL127 | 342.0° | 1071 | 100 | 45.0 | | | | | Sol |
| 2033 | 2117 | OW | | | | | 121.0 | | | | | Eol |
| 2117 | 2219 | OW | SL128 | 342.0° | 1071 | 100 | 49.0 | | | | | Sol Winds and Seas are increasing. |
| 2219 | 2400 | OW | | | | | 107.0 | | | | | Eol Tried to run SL202, but sea state caused cavitation in subbottom acquisition. Moved to SL129 instead of causing another rerun for this line. |
| | | | S116 | | | | | | | | | |
| | | DM | SL203 | 342.0° | 1440 | 1538 | | | | | | Deleted portion of this line due to a line of fishing buoys in vessels path. |

# FUGRO GEOSERVICES, INC.
## GEOPHYSICAL JOBLOG

ver 7.22.2010-B (Alaska)

| | |
|---|---|
| DATE: | 10-Sep-2015 Thu Julian Day: 253 |
| PROSPECT / SITE: | Seismic Portion |
| NAV. SYSTEM: | Starfix |
| FGSI JOB #: | 2415-7058 |
| JOB DAY #: | Day: 23 |
| CRP TO STERN: | 16.50 Meters |

| | |
|---|---|
| CLIENT: | Alaska LNG |
| JOB DESCRIPTION: | Seismic |
| AREA & BLOCK: | Cook Inlet |
| R/V: | Qualifier 105 |
| No. of SURVEY LINES: | 42 — 248.16 Kilometers |
| | 78.6% Complete |

1,993.75 Meters Deleted

**VESSEL MANAGER(S)**

| | |
|---|---|
| Party Manager: | Wayne Labrie |
| Ass't Party Manager: | Ted Tremblay |

**CLIENT REPRESENTATIVE(S)**

| | |
|---|---|
| QC Rep: | Noel Rogers |
| HSE Rep: | David King |
| Client Rep #3: | |
| Client Rep #4: | |

| GEOPHYSICAL EQUIPMENT | EQUIP # |
|---|---|
| Geometrics GeoEel 24ch.(1.56 gr) | # 2 |
| Geometrics GeoEel 24ch.(6.25 gr) | # 1 |
| G.I. 60 ci Gun | # 4198 |
| Castaway CTD Velocimeter | # 1 |
| Applied Acoutics Boomer | Rental |
| Edgetech 3200-XS SBP | # 1 |
| | |
| | |
| | |
| | |
| | |

| GEOPHYSICAL CREW | |
|---|---|
| Technical Coordinator: | Ted Tremblay |
| Shift Supervisor: | |
| Operator: | Zachary Bellone |
| " | Freddie Wilson |
| " | |
| " | |
| FGSI Surveyor: | Phillip Daniels |
| SES Field Lead PSO | Patti Haase |
| PSO | Vanessa James |
| " | |
| " | |

| VESSEL CREW | |
|---|---|
| 1st Captain: | David Mastolier |
| 2nd Captain: | |
| 1st Mate: | Jeff Gregson |
| Chief Engineer: | Todd Ostler |
| Cook/Senior Deckhand: | Kevin Anderson |
| Deckhand: | Ben Jantzi |
| Deckhand: | |
| Deckhand: | |

| DATA PROCESSORS | |
|---|---|
| CGG Seismic Processor: | Shannon Campbell / Ian Shirley |
| FGSI QC Geophysicist: | Eric Swanson |

**WEATHER REPORT**

| Time | Sea State | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | 2 ft | 22knts | SE |
| Wx - 1200: | 2 ft | 22knts | SE |
| Wx - 1800: | 0-1 ft. | 5-6 kts | SSE |
| Wx - 2400: | 0-1 ft. | 5-6 kts | SSE |

**HSE Reporting (Place an "x" in the box, with brief description**

| | | |
|---|---|---|
| HSE OFFICER: | Zachary Bellone | |
| Toolbox: | X | TRA-113, GS-J-029, GS-J-017 |
| HOC: | Yes | 1 HOC submitted |
| Safety: | | |
| Pre/Post Job: | | |

**LINE INFORMATION**

| TIME FROM | TIME TO | OP CODE | LINE NUMBER | HEADING | BSP | ESP | Fath (ft) | | | | DNP |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0000 | 0004 | OW | | | | | | | | | |
| 0004 | 0010 | WS | SL129 | 342.0° | 1070 | 1000 | 68.0 | | | | |
| 0010 | 0519 | WS | | | | | | | | | |
| 0519 | 0614 | OL | SL129A | 342.0° | 1070 | 100 | 68.0 | | | | |
| 0614 | 0704 | LT | | | | | 112.0 | | | | |
| 0704 | 0717 | OW | SL130 | 342.0° | 1069 | 890 | 54.0 | | | | |
| 0717 | 0736 | LT | | | | | 54.0 | | | | |
| 0736 | 0858 | E199 | SL129B | 342.0° | 1070 | 100 | 60.0 | | | | |
| 0858 | 0939 | E199 | | | | | 102.0 | | | | |
| 0939 | 1035 | OW | SL105A | 342.0° | 1080 | 100 | 42.0 | | | | |
| 1035 | 1110 | OW | | | | | 47.0 | | | | |
| 1110 | 1147 | OL | SL202 | 090.0° | 100 | 926 | 74.0 | | | | |
| 1147 | 1300 | WS | | | | | | | | | |
| 1300 | 1730 | WS | | | | | | | | | |
| 1730 | 1800 | WS | | | | | | | | | |
| 1800 | 1929 | DR | | | | | | | | | |
| 1929 | 2113 | OW | SL114A | 342.0° | 1076 | 100 | 66.0 | | | | |
| 2113 | 2130 | DR | | | | | 56.0 | | | | |
| 2130 | 2145 | DR | | | | | | | | | |
| 2145 | 2213 | DR | | | | | | | | | |
| 2213 | 2230 | LT | | | | | | | | | |
| 2230 | 2320 | E199 | S100A | 342.0° | 1082 | 100 | 58.0 | | | | |
| 2320 | 2346 | E199 | | | | | 64.0 | | | | |
| 2346 | 2400 | E199 | S101A | 162.0° | 100 | 387 | 67.0 | | | | |
| | | | S116 | | | | | | | | |

**DETAILED SURVEY INFORMATION**

Line turn continues.
Sol
Aborted line due to current keeping cable levelers out of spec. Vessel circling, waiting for the next slack tide.
Sol Rerun due to weather on original line.
Eol Nav stopped triggering from SP 689-669, SP 445-438.
Sol
Aborted due to boat on anchor.
Sol
Eol
Sol Rerun of original line due to debris.
Eol
SOL
Abort line at SP 926 Missed Sp's 927 -1018 Pick up gear due to weather.
Standing by on anchor for weather.
Picking up anchor-- enroute to location.
Deploy gear and heading to line.
Sol Rerun of original line due to debris.
Eol Retrieve GeoEel 6.26group streamer and and coil on back deck so we can use the GeoEel 1.56 streamer on the same tow leader.
We will run some lines with short streamer to get more production accomplished since current and tide will keep us from complleting all long streamer lines at an acceptable rate to finish.
Heading to line.
Sol Rerun of original line due to nav issues.
Eol
Sol Rerun of original line due to PPS issues.

# FUGRO GEOSERVICES, INC.
## GEOPHYSICAL JOBLOG

ver 7.22.2010-B (Alaska)

| | |
|---|---|
| DATE: | 11-Sep-2015 Fri Julian Day: 254 |
| PROSPECT / SITE: | Seismic Portion |
| NAV. SYSTEM: | Starfix |
| FGSI JOB #: | 2415-7058 |
| JOB DAY #: | Day: 24 |
| CRP TO STERN: | 16.50 Meters |

| | |
|---|---|
| CLIENT: | Alaska LNG |
| JOB DESCRIPTION: | Seismic |
| AREA & BLOCK: | Cook Inlet |
| R/V: | Qualifier 105 |
| No. of SURVEY LINES: | 42 — 248.16 Kilometers, 83.5% Complete |

1,993.75 Meters Deleted

**VESSEL MANAGER(S)**

| | |
|---|---|
| Party Manager: | Wayne Labrie |
| Ass't Party Manager: | Ted Tremblay |

**CLIENT REPRESENTATIVE(S)**

| | |
|---|---|
| QC Rep: | Noel Rogers |
| HSE Rep: | David King |
| Client Rep #3: | |
| Client Rep #4: | |

| GEOPHYSICAL EQUIPMENT | EQUIP # |
|---|---|
| Geometrics GeoEel 24ch.(1.56 gr) | # 2 |
| Geometrics GeoEel 24ch.(6.25 gr) | # 1 |
| G.I. 60 ci Gun | # 4198 |
| Castaway CTD Velocimeter | # 1 |
| Applied Acoutics Boomer | Rental |
| Edgetech 3200-XS SBP | # 1 |
| | |
| | |
| | |
| | |
| | |

**GEOPHYSICAL CREW**

| | |
|---|---|
| Technical Coordinator: | Ted Tremblay |
| Shift Supervisor: | |
| Operator: | Zachary Bellone |
| " | Freddie Wilson |
| " | |
| " | |
| FGSI Surveyor: | Phillip Daniels |
| SES Field Lead PSO | Patti Haase |
| PSO | Vanessa James |
| " | |
| " | |

**VESSEL CREW**

| | |
|---|---|
| 1st Captain: | David Mastolier |
| 2nd Captain: | |
| 1st Mate: | Jeff Gregson |
| Chief Engineer: | Todd Ostler |
| Cook/Senior Deckhand: | Kevin Anderson |
| Deckhand: | Ben Jantzi |
| Deckhand: | |
| Deckhand: | |

**DATA PROCESSORS**

| | |
|---|---|
| CGG Seismic Processor: | Shannon Campbell / Ian Shirley |
| FGSI QC Geophysicist: | Eric Swanson |

**WEATHER REPORT**

| Time | Sea State | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | Calm | 0-5 | NE |
| Wx - 1200: | Calm | 5 to 10knts | NNE |
| Wx - 1800: | 0-1 ft. | 5-10 kts | NNE |
| Wx - 2400: | 2-3 ft. | 20 knots | SE |

**HSE Reporting (Place an "x" in the box, with brief description**

| | | |
|---|---|---|
| HSE OFFICER: | Zachary Bellone | |
| Toolbox: | X | GS-J- 002(1), 017, 029, TRA 113 |
| HOC: | No | No HOC submitted |
| Safety: | Yes | Dock Activities |
| Pre/Post Job: | | |

**LINE INFORMATION**

| TIME FROM | TIME TO | OP CODE | LINE NUMBER | HEADING | BSP | ESP | Fath (ft) | | | | DNP | DETAILED SURVEY INFORMATION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0000 | 0038 | E199 | S101A | 162.0° | 387 | 1081 | 67.0 | | | | | Line contiued |
| 0038 | 0135 | E199 | | | | | 61.0 | | | | | Eol |
| 0135 | 0304 | E199 | S104A | 162.0° | 100 | 1080 | 60.0 | | | | | Sol Line rerun due to nav pps issue. Too many missed shotpoints in original line. |
| 0304 | 0358 | E199 | | | | | 59.0 | | | | | Eol |
| 0358 | 0455 | E199 | S120A | 162.0° | 100 | 1074 | 127.0 | | | | | Sol Line rerun due to nav pps issue. Too many missed shotpoints in original line. |
| 0455 | 0543 | E199 | | | | | 79.0 | | | | | Eol |
| 0543 | 0631 | E199 | S126A | 162.0° | 100 | 1071 | 128.0 | | | | | Sol Line rerun due to nav pps issue. Too many missed shotpoints in original line. |
| 0631 | 0632 | E199 | | | | | 64.0 | | | | | Eol |
| 0632 | 0815 | DR | | | | | | | | | | Picking up gear. (MY Marie bringing out boomer parts) |
| 0815 | 0916 | DR | | | | | | | | | | My Marie in for repairs, unable to deliver parts . Deplying gear, fueled compressors and heading to line. |
| 0916 | 1028 | OL | S127 | 342.0° | 1071 | 100 | 45.0 | | | | | Sol |
| 1028 | 1112 | OW | | | | | 110.0 | | | | | Eol |
| 1112 | 1150 | OW | S202 | 090.0° | 100 | 926 | 72.0 | | | | | Sol |
| 1150 | 1206 | OW | | | | | 95.0 | | | | | Abort line due to dock Missed SP's 927 to SP 1018 |
| 1206 | 1239 | OW | S201 | 270.0° | 850 | 100 | 95.0 | | | | | Sol Started line at SP 850 due to dock. Missed SP's 982 to 851 |
| 1239 | 1313 | OW | | | | | 78.0 | | | | | Eol |
| 1313 | 1420 | OW | S200 | 090.0° | 100 | 1272 | 90.0 | | | | | Sol |
| 1420 | 1455 | DR | | | | | 114.0 | | | | | Eol picking up gear. |
| 1455 | 1545 | OW | | | | | | | | | | waiting for clearance to go to ASRC dock to pick up boomer parts (plate & power cable) |
| 1545 | 1600 | OW | | | | | | | | | | Loaded boomer plate and power cable- depart dock |
| 1600 | 1730 | OW | | | | | | | | | | Enroute to line. |
| 1730 | 1745 | DR | | | | | | | | | | Deploy boomer with new plate. |
| 1745 | 1800 | OW | | | | | | | | | | Heading to test line. |
| 1800 | 1839 | OW | 117B | 162.0° | | | | | | | | Sol Shotpoint distance is 3.125m. Test new boomer plate. |
| 1839 | 1857 | OW | | | | | | | | | | Eol |
| 1857 | 1858 | OW | 117C | 162.0° | | | | | | | | Sol Changed shotpoint distance to 1.56m. Lost too many shots. |
| 1858 | 1915 | OW | | | | | | | | | | Eol Retrieve gear. |
| 1915 | 1930 | SM | | | | | | | | | | Safety Meeting. |
| 1930 | 2015 | OW | | | | | | | | | | Deploy and tune gear. |
| 2015 | 2054 | OW | S116 | | | | | | | | | Heading to run more lines with GeoEel(1.56) streamer. |
| 2054 | 2205 | OL | S128 | 342.0° | 1071 | 100 | 50.0 | | | | | Sol |
| 2205 | 2248 | LT | | | | | 107.0 | | | | | Eol |
| 2248 | 2344 | OW | S129 | 342.0° | 1070 | 100 | 53.0 | | | | | Sol |

# FUGRO GEOSERVICES, INC.
## GEOPHYSICAL JOBLOG

ver 7.22.2010-B (Alaska)

| | |
|---|---|
| DATE: | 11-Sep-2015 Fri Julian Day: 254 |
| PROSPECT / SITE: | Seismic Portion |
| NAV. SYSTEM: | Starfix |
| FGSI JOB #: | 2415-7058 |
| JOB DAY #: | Day: 24 |
| CRP TO STERN: | 16.50 Meters |

| | |
|---|---|
| CLIENT: | Alaska LNG |
| JOB DESCRIPTION: | Seismic |
| AREA & BLOCK: | Cook Inlet |
| R/V: | Qualifier 105 |
| No. of SURVEY LINES: | 42 — 248.16 Kilometers, 83.5% Complete |

1,993.75 Meters Deleted

**VESSEL MANAGER(S)**

| | |
|---|---|
| Party Manager: | Wayne Labrie |
| Ass't Party Manager: | Ted Tremblay |

**CLIENT REPRESENTATIVE(S)**

| | |
|---|---|
| QC Rep: | Noel Rogers |
| HSE Rep: | David King |
| Client Rep #3: | |
| Client Rep #4: | |

| TIME FROM | TIME TO | OP CODE | LINE INFORMATION: LINE NUMBER | HEADING | BSP | ESP | Fath (ft) | | | | DNP | DETAILED SURVEY INFORMATION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2344 | 2400 | OW | | | | | | | | | | Eol Heading to next line. Seas and winds have picked up. 2-3 ft. 20-25kts SSE. Missed SP607-629. |

Alaska LNG

FUGRO

# FUGRO GEOSERVICES, INC.

## GEOPHYSICAL JOBLOG

ver 7.22.2010-B (Alaska)

| | |
|---|---|
| DATE: | 12-Sep-2015 Sat Julian Day: 255 |
| PROSPECT / SITE: | Seismic Portion |
| NAV. SYSTEM: | Starfix |
| FGSI JOB #: | 2415-7058 |
| JOB DAY #: | Day: 25 |
| CRP TO STERN: | 16.50 Meters |

| | |
|---|---|
| CLIENT: | Alaska LNG |
| JOB DESCRIPTION: | Seismic |
| AREA & BLOCK: | Cook Inlet |
| R/V: | Qualifier 105 |
| No. of SURVEY LINES: | 42 — 248.16 Kilometers |
| | 83.5% Complete |
| | 1,993.75 Meters Deleted |

**VESSEL MANAGER(S)**

| | |
|---|---|
| Party Manager: | Wayne Labrie |
| Ass't Party Manager: | Ted Tremblay |

**CLIENT REPRESENTATIVE(S)**

| | |
|---|---|
| QC Rep: | Noel Rogers |
| HSE Rep: | David King |
| Client Rep #3: | |
| Client Rep #4: | |

| GEOPHYSICAL EQUIPMENT | EQUIP # |
|---|---|
| Geometrics GeoEel 24ch.(1.56 gr) | # 2 |
| Geometrics GeoEel 24ch.(6.25 gr) | # 1 |
| G.I. 60 ci Gun | # 4198 |
| Castaway CTD Velocimeter | # 1 |
| Applied Acoutics Boomer | Rental |
| Edgetech 3200-XS SBP | # 1 |
| | |
| | |
| | |
| | |
| | |

**GEOPHYSICAL CREW**

| | |
|---|---|
| Technical Coordinator: | Ted Tremblay |
| Shift Supervisor: | |
| Operator: | Zachary Bellone |
| " | Freddie Wilson |
| " | |
| " | |
| FGSI Surveyor: | Phillip Daniels |
| SES Field Lead PSO | Patti Haase |
| PSO | Vanessa James |
| " | |
| " | |

**VESSEL CREW**

| | |
|---|---|
| 1st Captain: | David Mastolier |
| 2nd Captain: | |
| 1st Mate: | Jeff Gregson |
| Chief Engineer: | Todd Ostler |
| Cook/Senior Deckhand: | Kevin Anderson |
| Deckhand: | Ben Jantzi |
| Deckhand: | |
| Deckhand: | |

**DATA PROCESSORS**

| | |
|---|---|
| CGG Seismic Processor: | Shannon Campbell / Ian Shirley |
| FGSI QC Geophysicist: | Eric Swanson |

**WEATHER REPORT**

| Time | Sea State | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | 2-3 ft. | 15-20 kts | S |
| Wx - 1200: | 3- 4 ft | 15 - 19 kts | SW |
| Wx - 1800: | | | |
| Wx - 2400: | | | |

**HSE Reporting (Place an "x" in the box, with brief description**

| | | |
|---|---|---|
| HSE OFFICER: | Zachary Bellone | |
| Toolbox: | X | GS-J-017,029,017 and 057 |
| HOC: | No | No HOC Submitted |
| Safety: | | |
| Pre/Post Job: | | |

| TIME FROM | TIME TO | OP CODE | LINE INFORMATION: LINE NUMBER | HEADING | BSP | ESP | Fath (ft) | | | | DNP |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0000 | 0057 | OW | | | | | | | | | |
| 0057 | 0206 | OW | S203 | 090.0° | 100 | 1399 | 103.0 | | | | |
| 0206 | 0305 | OW | | | | | 74.0 | | | | |
| 0305 | 0312 | DR | | | | | | | | | |
| 0312 | 0400 | OW | | | | | | | | | |
| 0400 | 0500 | WS | | | | | | | | | |
| 0500 | 1200 | WS | | | | | | | | | |
| 1200 | 1615 | WS | | | | | | | | | |
| 1615 | 1640 | WS | | | | | | | | | |
| 1640 | 1800 | WS | | | | | | | | | |
| 1800 | 1830 | DR | | | | | | | | | |
| 1830 | 2200 | DR | | | | | | | | | |
| 2200 | 2210 | E33 | | | | | | | | | |
| 2210 | 2215 | E33 | | | | | | | | | |
| 2215 | 2400 | OS | | | | | | | | | |

**DETAILED SURVEY INFORMATION**

Line turn continued
Sol
Eol
Retrieving short streamer and attach tow leader to long streamer and put streamer on reel. Change batteries on cable levelers.
Waiting for a vessel to berth at dock before deploying cable.
Retrieve sound source. Seas 3-5ft Winds; 25kts.
Waiting on weather.
standing by on anchor North of East Foreland point
Picking up Anchor and OTSM
En route to location.
Deploying gear--airline in gun umbilical busted
Gun airline has busted in four places, we cut out a four foot section and replace it with new hose;.
Gun in water with pressure applied to fifth swedged fitting. It is holding. Will monitor gun pressure while the gun is in water until it is time to put out streamer cable in anticipation of slack tide. Waiting for daylight. Can not mitigate at night without clearance.
Waiting for clearance in the morning.

# FUGRO GEOSERVICES, INC.
## GEOPHYSICAL JOBLOG

ver 7.22.2010-B (Alaska)

| | |
|---|---|
| DATE: | 13-Sep-2015 Sun Julian Day: 256 |
| PROSPECT / SITE: | Seismic Portion |
| NAV. SYSTEM: | Starfix |
| FGSI JOB #: | 2415-7058 |
| JOB DAY #: | Day: 26 |
| CRP TO STERN: | 16.50 Meters |

| | |
|---|---|
| CLIENT: | Alaska LNG |
| JOB DESCRIPTION: | Seismic |
| AREA & BLOCK: | Cook Inlet |
| R/V: | Qualifier 105 |
| No. of SURVEY LINES: | 42 — 248.16 Kilometers, 85.7% Complete |

1,993.75 Meters Deleted

**VESSEL MANAGER(S)**

| | |
|---|---|
| Party Manager: | Wayne Labrie |
| Ass't Party Manager: | Ted Tremblay |

**CLIENT REPRESENTATIVE(S)**

| | |
|---|---|
| QC Rep: | Noel Rogers |
| HSE Rep: | David King |
| Client Rep #3: | |
| Client Rep #4: | |

| GEOPHYSICAL EQUIPMENT | EQUIP # |
|---|---|
| Geometrics GeoEel 24ch.(1.56 gr) | # 2 |
| Geometrics GeoEel 24ch.(6.25 gr) | # 1 |
| G.I. 60 ci Gun | # 4198 |
| Castaway CTD Velocimeter | # 1 |
| Applied Acoutics Boomer | Rental |
| Edgetech 3200-XS SBP | # 1 |
| | |
| | |
| | |
| | |
| | |

**GEOPHYSICAL CREW**

| | |
|---|---|
| Technical Coordinator: | Ted Tremblay |
| Shift Supervisor: | |
| Operator: | Zachary Bellone |
| " | Freddie Wilson |
| " | |
| " | |
| FGSI Surveyor: | Phillip Daniels |
| SES Field Lead PSO | Patti Haase |
| PSO | Vanessa James |
| " | |
| " | |

**VESSEL CREW**

| | |
|---|---|
| 1st Captain: | David Mastolier |
| 2nd Captain: | |
| 1st Mate: | Jeff Gregson |
| Chief Engineer: | Todd Ostler |
| Cook/Senior Deckhand: | Kevin Anderson |
| Deckhand: | Ben Jantzi |
| Deckhand: | |
| Deckhand: | |

**DATA PROCESSORS**

| | |
|---|---|
| CGG Seismic Processor: | Shannon Campbell / Ian Shirley |
| FGSI QC Geophysicist: | Eric Swanson |

**WEATHER REPORT**

| Time | Sea State | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | 2 - 3 ft | 10 kts | S |
| Wx - 1200: | 4 - 5 ft | 20 - 22 kts | SSW |
| Wx - 1800: | 6 - 8 ft | 26 - 28 kts | SSW |
| Wx - 2400: | 10 ft | 32 - 38 kts | SW |

**HSE Reporting (Place an "x" in the box, with brief description**

| | | |
|---|---|---|
| HSE OFFICER: | Zachary Bellone | |
| Toolbox: | X | GS-J-027, GS-J-029, TRA 107 |
| HOC: | No | No HOC submitted |
| Safety: | | |
| Pre/Post Job: | | |

**LINE INFORMATION**

| TIME FROM | TIME TO | OP CODE | LINE NUMBER | HEADING | BSP | ESP | Fath (ft) | | | | DNP | DETAILED SURVEY INFORMATION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0000 | 0530 | OS | | | | | | | | | | Waiting for clearance. |
| 0530 | 0600 | OS | | | | | | | | | | PSO goes on watch. |
| 0600 | 0616 | LT | | | | | | | | | | Got clearance from PSO and entered into mitigation. Heading to line. |
| 0616 | 0635 | E199 | SL200 | 090.0° | 100 | 600 | 105.0 | | | | | Sol Aborted due to feather angel on seismic cable and missed shots with Nav. |
| 0635 | 0708 | E199 | | | | | | | | | | Aborted. |
| 0708 | 0756 | OL | SL200A | 090.0° | 100 | 958 | 97.0 | | | | | Sol |
| 0756 | 0830 | DR | | | | | | | | | | Aborted line due to weather Picked up gear. |
| 0830 | 2400 | WS | | | | | | | | | | Waiting for weather. |
| | | | S116 | | | | | | | | | |

# FUGRO GEOSERVICES, INC.
## GEOPHYSICAL JOBLOG

ver 7.22.2010-B (Alaska)

| | |
|---|---|
| DATE: | 14-Sep-2015 Mon Julian Day: 257 |
| PROSPECT / SITE: | Seismic Portion |
| NAV. SYSTEM: | Starfix |
| FGSI JOB #: | 2415-7058 |
| JOB DAY #: | Day: 27 |
| CRP TO STERN: | 16.50 Meters |

| | |
|---|---|
| CLIENT: | Alaska LNG |
| JOB DESCRIPTION: | Seismic |
| AREA & BLOCK: | Cook Inlet |
| R/V: | Qualifier 105 |
| No. of SURVEY LINES: | 42 — 218.65 Kilometers, 97.3% Complete |

31,500.00 Meters Deleted

**VESSEL MANAGER(S)**

| | |
|---|---|
| Party Manager: | Wayne Labrie |
| Ass't Party Manager: | Ted Tremblay |

**CLIENT REPRESENTATIVE(S)**

| | |
|---|---|
| QC Rep: | Noel Rogers |
| HSE Rep: | David King |
| Client Rep #3: | |
| Client Rep #4: | |

**GEOPHYSICAL EQUIPMENT**

| | EQUIP # |
|---|---|
| Geometrics GeoEel 24ch.(1.56 gr) | # 2 |
| Geometrics GeoEel 24ch.(6.25 gr) | # 1 |
| G.I. 60 ci Gun | # 4198 |
| Castaway CTD Velocimeter | # 1 |
| Applied Acoutics Boomer | Rental |
| Edgetech 3200-XS SBP | # 1 |

**GEOPHYSICAL CREW**

| | |
|---|---|
| Technical Coordinator: | Ted Tremblay |
| Shift Supervisor: | |
| Operator: | Zachary Bellone |
| " | Freddie Wilson |
| " | |
| " | |
| FGSI Surveyor: | Phillip Daniels |
| SES Field Lead PSO | Patti Haase |
| PSO | Vanessa James |
| " | |
| " | |

**VESSEL CREW**

| | |
|---|---|
| 1st Captain: | David Mastolier |
| 2nd Captain: | |
| 1st Mate: | Jeff Gregson |
| Chief Engineer: | Todd Ostler |
| Cook/Senior Deckhand: | Kevin Anderson |
| Deckhand: | Ben Jantzi |
| Deckhand: | |
| Deckhand: | |

**DATA PROCESSORS**

| | |
|---|---|
| CGG Seismic Processor: | Shannon Campbell / Ian Shirley |
| FGSI QC Geophysicist: | Eric Swanson |

**WEATHER REPORT**

| Time | Sea State | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | | | |
| Wx - 1200: | | | |
| Wx - 1800: | | | |
| Wx - 2400: | | | |

**HSE Reporting (Place an "x" in the box, with brief description**

| | | |
|---|---|---|
| HSE OFFICER: | Zachary Bellone | |
| Toolbox: | Yes | |
| HOC: | No | No HOC submitted. |
| Safety: | | |
| Pre/Post Job: | | |

**LINE INFORMATION**

| TIME FROM | TIME TO | OP CODE | LINE NUMBER | HEADING | BSP | ESP | Fath (ft) | | | | DNP | DETAILED SURVEY INFORMATION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0000 | 1230 | WS | | | | | | | | | | Waiting on weather. |
| 1230 | 1341 | DR | | | | | | | | | | Deploy gear heading to line. |
| 1341 | 1445 | OW | SL200B | 090.0° | 100 | 1355 | 84.0 | | | | | Sol |
| 1445 | 1800 | DR | | | | | 81.0 | | | | | Eol picked up long cable and went to short cable swapped out gun for boomer. |
| 1800 | | | | | | | | | | | | Going to AKLNG_Joblog&DPR_3 for the approach portion with boomer and short streamer cable. |
| | | | | | | | | | | | | |
| | | DM | S201 | | 100 | 982 | | | | | | This line scraped as a tie line to be collected with long streamer. |
| | | DM | S130 | | 100 | 1069 | | | | | | Too Close to Dock or Beach to run these lines. |
| | | DM | S131 | | 255 | 1070 | | | | | | Too Close to Dock or Beach to run these lines. |
| | | DM | S132 | | 410 | 1071 | | | | | | Too Close to Dock or Beach to run these lines. |
| | | DM | S133 | | 560 | 1074 | | | | | | Too Close to Dock or Beach to run these lines. |
| | | DM | S134 | | 710 | 1074 | | | | | | Too Close to Dock or Beach to run these lines. |
| | | DM | S202 | | 926 | 1018 | | | | | | Too close to buoys to complete this portion of line. |
| | | DM | S200 | | 958 | 1382 | | | | | | Too close to buoys to complete this portion of line. |

# FUGRO GEOSERVICES, INC.
## GEOPHYSICAL JOBLOG

ver 7.22.2010-B (Alaska)

| | |
|---|---|
| DATE: | 14-Sep-2015 Mon Julian Day: 257 |
| PROSPECT / SITE: | Approach Portion |
| NAV. SYSTEM: | Starfix |
| FGSI JOB #: | 2415-7058 |
| JOB DAY #: | Day: 29 |
| CRP TO STERN: | 16.50 Meters |

| | |
|---|---|
| NAV. DIVIDE BY: | 1 |
| NAV. FIX DISTANCE: | 3.125 |
| SURVEY UNITS: | Meters |
| NAUTICAL MILE: | 6080.0 |

| | |
|---|---|
| CLIENT: | Alaska LNG |
| JOB DESCRIPTION: | Subbotton Hazard Survey-Approach Channel |
| AREA & BLOCK: | Cook Inlet |
| R/V: | Qualifier 105 |
| No. of SURVEY LINES: | 70 |
| ORIGINAL JOB TOTAL: | 337,337.50 |

337.34 Kilometers
7.6% Complete

**VESSEL MANAGER(S)**

| | |
|---|---|
| Party Manager: | Wayne Labrie |
| Ass't Party Manager: | Ted Tremblay |

**CLIENT REPRESENTATIVE(S)**

| | |
|---|---|
| QC Rep: | Noel Rogers |
| HSE Rep: | David King |
| Client Rep #3: | |
| Client Rep #4: | |

| GEOPHYSICAL EQUIPMENT | EQUIP # |
|---|---|
| Geometrics GeoEel 24ch.(1.56 gr) | # 2 |
| Geometrics GeoEel 24ch.(6.25 gr) | # 1 |
| G.I. 60 ci Gun | # 4198 |
| Castaway CTD Velocimeter | # 1 |
| Applied Acoutics Boomer | Rental |
| Edgetech 3200-XS SBP | # 1 |
| | |
| | |
| | |
| | |
| | |

**GEOPHYSICAL CREW**

| | |
|---|---|
| Technical Coordinator: | Ted Tremblay |
| Shift Supervisor: | |
| Operator: | Zachary Bellone |
| " | Freddie Wilson |
| " | |
| " | |
| FGSI Surveyor: | Phillip Daniels |
| SES Field Lead PSO | Patti Haase |
| PSO | Vanessa James |
| " | |
| " | |

**VESSEL CREW**

| | |
|---|---|
| 1st Captain: | David Mastolier |
| 2nd Captain: | |
| 1st Mate: | Jeff Gregson |
| Chief Engineer: | Todd Ostler |
| Cook/Senior Deckhand: | Kevin Anderson |
| Deckhand: | Ben Jantzi |
| Deckhand: | |
| Deckhand: | |

**DATA PROCESSORS**

| | |
|---|---|
| CGG Seismic Processor: | Shannon Campbell / Ian Shirley |
| FGSI QC Geophysicist: | Eric Swanson |

**WEATHER REPORT**

| Time | Sea State | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | | | |
| Wx - 1200: | | | |
| Wx - 1800: | calm | calm | |
| Wx - 2400: | calm | calm | |

**HSE Reporting (Place an "x" in the box, with brief description**

| | | |
|---|---|---|
| HSE OFFICER: | Zachary Bellone | |
| Toolbox: | X | GS-J-029,GS-J-017, and TRA-107 |
| HOC: | No | No HOC submitted. |
| Safety: | | |
| Pre/Post Job: | | |

| TIME FROM | TIME TO | OP CODE | LINE INFORMATION LINE NUMBER | HEADING | BSP | ESP | Fath (ft) | | | | DNP | DETAILED SURVEY INFORMATION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1800 | 1801 | OW | | | | | | | | | | The nav shot point distance is 3.125 not 6.25 as the preplot database is made for so the shotpoints will be doubled. |
| 1801 | 1802 | OW | | | | | | | | | | On the "Eq. Specs-Seismic Sys #1 & #2" tab of joblog, the only sensors accurately entered are the "EDGETECH 3200-XS SUBBOTTOM PROFILER |
| 1802 | 1803 | OW | | | | | | | | | | and the "APPLIED ACOUTICS CSP-P BOOMER". The "Seismic Systems #1 and #2 Specs" page does not allow to enter the proper values for a aut |
| 1803 | 1804 | OW | | | | | | | | | | calculation on "Seismic System #1 Specs" tab and " Seismic System #2" tab. So these values are manually entered correctly in those tabs along |
| 1804 | 1805 | OW | | | | | | | | | | with the manual entering of values on tabs "Drawing-24(1.56)" and "Drawing-24(1.56)". Tabs for "Seismic System #1" have been deleted since we wi |
| 1805 | 1806 | OW | | | | | | | | | | not use the long streamer with G.I. gun as a sound source. "Seismic System #2" is now the Boomer as a sound source with short streamer. |
| 1806 | 1818 | LT | | | | | | | | | | Line turn. Enroute to first line on approach portion. |
| 1818 | 1913 | OL | 336 | 163.5° | 200 | 2233 | 82.0 | | | | | Sol |
| 1913 | 1925 | LT | | | | | 84.0 | | | | | Eol |
| 1925 | 2011 | OL | 337 | 343.5° | 2184 | 207 | 85.0 | | | | | Sol |
| 2011 | 2053 | LT | | | | | 81.0 | | | | | Eol |
| 2053 | 2129 | OL | 335 | 163.5° | 194 | 2281 | 64.0 | | | | | Sol |
| 2129 | 2155 | LT | | | | | 72.0 | | | | | Eol |
| 2155 | 2325 | OL | 334 | 343.5° | 2325 | 180 | 63.0 | | | | | Sol |
| 2325 | 2400 | LT | | | | | 55.0 | | | | | Eol Boomer power is set to 100Joules. This is too hopefully get rid of the ringing in the first 15ms of data. If this doesn't work then we will change c |

# FUGRO GEOSERVICES, INC.
## GEOPHYSICAL JOBLOG

ver 7.22.2010-B (Alaska)

| | |
|---|---|
| DATE: | 15-Sep-2015 Tue Julian Day: 258 |
| PROSPECT / SITE: | Approach Portion |
| NAV. SYSTEM: | Starfix |
| FGSI JOB #: | 2415-7058 |
| JOB DAY #: | Day: 30 |
| CRP TO STERN: | 16.50 Meters |

| | |
|---|---|
| CLIENT: | Alaska LNG |
| JOB DESCRIPTION: | Subbotton Hazard Survey-Approach Channel |
| AREA & BLOCK: | Cook Inlet |
| R/V: | Qualifier 105 |
| No. of SURVEY LINES: | 70 — 337.34 Kilometers — 38.2% Complete |

**VESSEL MANAGER(S)**

| | |
|---|---|
| Party Manager: | Wayne Labrie |
| Ass't Party Manager: | Ted Tremblay |

**CLIENT REPRESENTATIVE(S)**

| | |
|---|---|
| QC Rep: | Noel Rogers |
| HSE Rep: | David King |
| Client Rep #3: | |
| Client Rep #4: | |

| GEOPHYSICAL EQUIPMENT | EQUIP # |
|---|---|
| Geometrics GeoEel 24ch.(1.56 gr) | # 2 |
| Geometrics GeoEel 24ch.(6.25 gr) | # 1 |
| G.I. 60 ci Gun | # 4198 |
| Castaway CTD Velocimeter | # 1 |
| Applied Acoutics Boomer | Rental |
| Edgetech 3200-XS SBP | # 1 |
| | |
| | |
| | |
| | |
| | |

**GEOPHYSICAL CREW**

| | |
|---|---|
| Technical Coordinator: | Ted Tremblay |
| Shift Supervisor: | |
| Operator: | Zachary Bellone |
| " | Freddie Wilson |
| " | |
| " | |
| FGSI Surveyor: | Phillip Daniels |
| SES Field Lead PSO | Patti Haase |
| PSO | Vanessa James |
| " | |
| " | |

**VESSEL CREW**

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|---|---|
| 1st Captain: | David Mastolier |
| 2nd Captain: | |
| 1st Mate: | Jeff Gregson |
| Chief Engineer: | Todd Ostler |
| Cook/Senior Deckhand: | Kevin Anderson |
| Deckhand: | Ben Jantzi |
| Deckhand: | |
| Deckhand: | |

**DATA PROCESSORS**

| | |
|---|---|
| CGG Seismic Processor: | Shannon Campbell / Ian Shirley |
| FGSI QC Geophysicist: | Eric Swanson |

**WEATHER REPORT**

| Time | Sea State | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | calm | 5knts | E |
| Wx - 1200: | calm | calm | |
| Wx - 1800: | 2 to 3 ft | 10to15knts | NE |
| Wx - 2400: | 0-1 ft | 0-5 kts | NE |

**HSE Reporting (Place an "x" in the box, with brief description**

| | | |
|---|---|---|
| HSE OFFICER: | Zachary Bellone | |
| Toolbox: | | Tra-111 |
| HOC: | yes | 1 HOC Submitted |
| Safety: | Yes | Medical Emergency Drill |
| Pre/Post Job: | | |

| TIME FROM | TIME TO | OP CODE | LINE INFORMATION: LINE NUMBER | HEADING | BSP | ESP | Fath (ft) | | | | DNP | DETAILED SURVEY INFORMATION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0000 | 0031 | LT | | | | | | | | | | Line turn continues. |
| 0031 | 0127 | OL | 333 | 343.5° | 2381 | 180 | 54.0 | | | | | Sol |
| 0127 | 0316 | OS | | | | | 53.0 | | | | | Eol Increased power back to 300J on boomer power supply. Offset is now 26.126. Waiting for ship to pass before starting next line. |
| 0316 | 0435 | OL | 332 | 163.5° | 173 | 2432 | 61.0 | | | | | Sol The spec sheet and drawing sheet will now reflect the 26m offset. |
| 0435 | 0531 | LT | | | | | 71.0 | | | | | Eol The new offset has diminished the ringing. We will stay with this offset until processor processes the line for best quality. |
| 0531 | 0603 | E199 | | | | | | | | | | Navigational computer overheated and turned off. Circling up. |
| 0603 | 0704 | OL | 331 | 163.5° | 166 | 2481 | 74.0 | | | | | Sol Entered correct Segy settings for sonorwiz events |
| 0704 | 0716 | LT | | | | | 73.0 | | | | | Eol |
| 0716 | 0809 | OL | 330 | 343.5° | 2532 | 159 | 72.0 | | | | | Sol |
| 0809 | 0818 | LT | | | | | 67.0 | | | | | Eol |
| 0818 | 0912 | OL | 329 | 163.5° | 152 | 2581 | 67.0 | | | | | Sol |
| 0912 | 0924 | LT | | | | | 60.0 | | | | | Eol |
| 0924 | 1049 | OL | 328 | 343.5° | 2630 | 145 | 59.0 | | | | | Sol |
| 1049 | 1129 | LT | | | | | 42.0 | | | | | Eol |
| 1129 | 1238 | OL | 327 | 343.5° | 2680 | 139 | 48.0 | | | | | Sol |
| 1238 | 1320 | LT | | | | | 33.0 | | | | | Eol |
| 1320 | 1417 | OL | 326 | 343.5° | 2729 | 132 | 46.0 | | | | | Sol |
| 1417 | 1428 | LT | | | | | 31.0 | | | | | Eol |
| 1428 | 1552 | OL | 325 | 163.5° | 125 | 2780 | 45.0 | | | | | Sol |
| 1552 | 1643 | LT | | | | | 59.0 | | | | | Eol Missed 83 shots. Rerun line. |
| 1643 | 1804 | OL | 324 | 163.5° | 118 | 2829 | 62.0 | | | | | Sol |
| 1804 | 1853 | LT | | | | | 65.0 | | | | | Eol |
| 1853 | 1959 | OL | 323 | 163.5° | 111 | 2880 | 71.0 | | | | | Sol |
| 1959 | 2016 | LT | | | | | 61.0 | | | | | Eol |
| 2016 | 2128 | OL | 322 | 343.5° | 2929 | 149 | 62.0 | | | | | Sol |
| 2128 | 2228 | LT | | | | | 68.0 | | | | | Eol Nav froze @SP149 to Eol. No shots taken. |
| 2228 | 2400 | OL | 321 | 343.5° | 2977 | 100 | 50.0 | | | | | Sol Current and wind made boat swerve off line repeatedly. |
| | | | | | | | 61.0 | | | | | Eol |

# FUGRO GEOSERVICES, INC.
## GEOPHYSICAL JOBLOG

ver 7.22.2010-B (Alaska)

| | |
|---|---|
| DATE: | 16-Sep-2015 Wed Julian Day: 259 |
| PROSPECT / SITE: | Approach Portion |
| NAV. SYSTEM: | Starfix |
| FGSI JOB #: | 2415-7058 |
| JOB DAY #: | Day: 31 |
| CRP TO STERN: | 16.50 Meters |

| | |
|---|---|
| CLIENT: | Alaska LNG |
| JOB DESCRIPTION: | Subbotton Hazard Survey-Approach Channel |
| AREA & BLOCK: | Cook Inlet |
| R/V: | Qualifier 105 |
| No. of SURVEY LINES: | 70 — 336.68 Kilometers, 63.4% Complete |

656.25 Meters Deleted

**VESSEL MANAGER(S)**

| | |
|---|---|
| Party Manager: | Wayne Labrie |
| Ass't Party Manager: | Ted Tremblay |

**CLIENT REPRESENTATIVE(S)**

| | |
|---|---|
| QC Rep: | Noel Rogers |
| HSE Rep: | David King |
| Client Rep #3: | |
| Client Rep #4: | |

| GEOPHYSICAL EQUIPMENT | EQUIP # |
|---|---|
| Geometrics GeoEel 24ch.(1.56 gr) | # 2 |
| Geometrics GeoEel 24ch.(6.25 gr) | # 1 |
| G.I. 60 ci Gun | # 4198 |
| Castaway CTD Velocimeter | # 1 |
| Applied Acoutics Boomer | Rental |
| Edgetech 3200-XS SBP | # 1 |
| | |
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**GEOPHYSICAL CREW**

| | |
|---|---|
| Technical Coordinator: | Ted Tremblay |
| Shift Supervisor: | |
| Operator: | Zachary Bellone |
| " | Freddie Wilson |
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| FGSI Surveyor: | Phillip Daniels |
| SES Field Lead PSO | Patti Haase |
| PSO | Vanessa James |
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**VESSEL CREW**

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|---|---|
| 1st Captain: | David Mastolier |
| 2nd Captain: | |
| 1st Mate: | Jeff Gregson |
| Chief Engineer: | Todd Ostler |
| Cook/Senior Deckhand: | Kevin Anderson |
| Deckhand: | Ben Jantzi |
| Deckhand: | |
| Deckhand: | |

**DATA PROCESSORS**

| | |
|---|---|
| CGG Seismic Processor: | Shannon Campbell / Ian Shirley |
| FGSI QC Geophysicist: | Eric Swanson |

**WEATHER REPORT**

| Time | Sea State | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | 0-1 ft | 0-5 kts | NE |
| Wx - 1200: | calm | calm | |
| Wx - 1800: | calm | calm | |
| Wx - 2400: | | | |

**HSE Reporting (Place an "x" in the box, with brief description**

| | | |
|---|---|---|
| HSE OFFICER: | Zachary Bellone | |
| Toolbox: | Yes | GS-J-017, 029, 051 |
| HOC: | Yes | 1 HOC |
| Safety: | | |
| Pre/Post Job: | | |

| TIME FROM | TIME TO | OP CODE | LINE INFORMATION: LINE NUMBER | HEADING | BSP | ESP | Fath (ft) | | | | DNP | DETAILED SURVEY INFORMATION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0000 | 0101 | LT | | | | | | | | | | Line turn continued. |
| 0101 | 0210 | OL | 320 | 343.5° | 3019 | 100 | 44.0 | | | | | Sol |
| 0210 | 0243 | LT | | | | | 73.0 | | | | | Eol |
| 0243 | 0303 | OL | 412 | 253.5° | 898 | 199 | 59.0 | | | | | Sol |
| 0303 | 0322 | LT | | | | | 82.0 | | | | | Eol |
| 0322 | 0400 | OL | 411 | 073.5° | 100 | 1690 | 79.0 | | | | | Sol |
| 0400 | 0451 | LT | | | | | 58.0 | | | | | Eol |
| 0451 | 0622 | OL | 319 | 163.5° | 162 | 2999 | 86.0 | | | | | Sol |
| 0622 | 0641 | LT | | | | | 66.0 | | | | | Eol |
| 0641 | 0728 | OL | 318 | 343.5° | 2955 | 248 | 66.0 | | | | | Sol |
| 0728 | 0743 | LT | | | | | 90.0 | | | | | Eol |
| 0743 | 0839 | OL | 317 | 163.5° | 335 | 2912 | 91.0 | | | | | Sol Change record length to 225ms on geoeel. |
| 0839 | 0851 | LT | | | | | 62.0 | | | | | Eol |
| 0851 | 0905 | OL | 402 | 253.5° | 764 | 100 | 61.0 | | | | | Sol Change record length to 250ms on geoeel. |
| 0905 | 0914 | LT | | | | | 85.0 | | | | | Eol |
| 0914 | 0923 | OL | 401 | 073.5° | 100 | 518 | 77.0 | | | | | Sol |
| 0923 | 0934 | LT | | | | | 70.0 | | | | | Eol |
| 0934 | 0938 | OL | 400 | 274.0° | 274 | 100 | 69.0 | | | | | Sol |
| 0938 | 1030 | LT | | | | | 69.0 | | | | | Eol |
| 1030 | 1141 | OL | 316 | 343.5° | 2869 | 422 | 54.0 | | | | | Sol |
| 1141 | 1200 | LT | | | | | 75.0 | | | | | Eol |
| 1200 | 1330 | E104 | | | | | | | | | | Working on streamer cable (channels 2 , 10 , 18 ). |
| 1330 | 1400 | OW | | | | | | | | | | Picking up supplies from the My Marie. |
| 1400 | 1515 | E104 | | | | | | | | | | Change out first A/D , repeater and head Isolation section. |
| 1515 | 1530 | E104 | | | | | | | | | | Still have problems with channels 2, 10, 18). |
| 1530 | 1540 | OW | | | | | | | | | | More supplies from the My Marie. |
| 1540 | 1648 | DR | | | | | | | | | | Deploying cable heading for line. |
| 1648 | 1804 | OL | 315 | 163.5° | 509 | 2824 | 85.0 | | | | | Sol |
| 1804 | 1841 | LT | | | | | 65.0 | | | | | Eol |
| 1841 | 1944 | OL | 314 | 163.5° | 596 | 2781 | 88.0 | | | | | Sol |
| 1944 | 1959 | LT | | | | | 68.0 | | | | | Eol |
| 1959 | 2043 | OL | 313 | 343.5° | 2737 | 682 | 70.0 | | | | | Sol |
| 2043 | 2105 | LT | | | | | 83.0 | | | | | Eol Nav froze from SP 1539-1460, 755-724. Line will have to be reshot. |

# FUGRO GEOSERVICES, INC.
## GEOPHYSICAL JOBLOG

ver 7.22.2010-B (Alaska)

| | |
|---|---|
| DATE: | 16-Sep-2015 Wed Julian Day: 259 |
| PROSPECT / SITE: | Approach Portion |
| NAV. SYSTEM: | Starfix |
| FGSI JOB #: | 2415-7058 |
| JOB DAY #: | Day: 31 |
| CRP TO STERN: | 16.50 Meters |

| | |
|---|---|
| CLIENT: | Alaska LNG |
| JOB DESCRIPTION: | Subbotton Hazard Survey-Approach Channel |
| AREA & BLOCK: | Cook Inlet |
| R/V: | Qualifier 105 |
| No. of SURVEY LINES: | 70 — 336.68 Kilometers, 63.4% Complete |

656.25 Meters Deleted

**VESSEL MANAGER(S)**

| | |
|---|---|
| Party Manager: | Wayne Labrie |
| Ass't Party Manager: | Ted Tremblay |

**CLIENT REPRESENTATIVE(S)**

| | |
|---|---|
| QC Rep: | Noel Rogers |
| HSE Rep: | David King |
| Client Rep #3: | |
| Client Rep #4: | |

| TIME FROM | TIME TO | OP CODE | LINE INFORMATION: LINE NUMBER | HEADING | BSP | ESP | Fath (ft) | | | | DNP | DETAILED SURVEY INFORMATION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2105 | 2145 | OL | 410 | 073.5° | 100 | 1687 | 85.0 | | | | | Sol |
| 2145 | 2152 | LT | | | | | 70.0 | | | | | Eol |
| 2152 | 2154 | WS | 409 | 253.5° | 1675 | 1604 | 65.0 | | | | | Aborted. Couldn't get on line due to current. Attempting another line. |
| 2154 | 2240 | WS | | | | | | | | | | Eol Line will need to be rerun. |
| 2240 | 2350 | OL | 312 | 343.5° | 2692 | 769 | 60.0 | | | | | Sol |
| 2350 | 2400 | LT | | | | | 71.0 | | | | | Eol Nav stopped from 2023-2020, 1599-1541. Line needs to be rerun. |
| | | DM | 411 | | 1691 | 1901 | | | | | | Portion of line that cannot be run. |

Alaska LNG

FUGRO

# FUGRO GEOSERVICES, INC.
## GEOPHYSICAL JOBLOG

ver 7.22.2010-B (Alaska)

| | |
|---|---|
| DATE: | 17-Sep-2015 Thu Julian Day: 260 |
| PROSPECT / SITE: | Approach Portion |
| NAV. SYSTEM: | Starfix |
| FGSI JOB #: | 2415-7058 |
| JOB DAY #: | Day: 32 |
| CRP TO STERN: | 16.50 Meters |

| | |
|---|---|
| CLIENT: | Alaska LNG |
| JOB DESCRIPTION: | Subbotton Hazard Survey-Approach Channel |
| AREA & BLOCK: | Cook Inlet |
| R/V: | Qualifier 105 |
| No. of SURVEY LINES: | 70 — 336.68 Kilometers, 78.7% Complete |

656.25 Meters Deleted

**VESSEL MANAGER(S)**

| | |
|---|---|
| Party Manager: | Wayne Labrie |
| Ass't Party Manager: | Ted Tremblay |

**CLIENT REPRESENTATIVE(S)**

| | |
|---|---|
| QC Rep: | Noel Rogers |
| HSE Rep: | David King |
| Client Rep #3: | |
| Client Rep #4: | |

| GEOPHYSICAL EQUIPMENT | EQUIP # |
|---|---|
| Geometrics GeoEel 24ch.(1.56 gr) | # 2 |
| Geometrics GeoEel 24ch.(6.25 gr) | # 1 |
| G.I. 60 ci Gun | # 4198 |
| Castaway CTD Velocimeter | # 1 |
| Applied Acoutics Boomer | Rental |
| Edgetech 3200-XS SBP | # 1 |
| | |
| | |
| | |
| | |
| | |

**GEOPHYSICAL CREW**

| | |
|---|---|
| Technical Coordinator: | Ted Tremblay |
| Shift Supervisor: | |
| Operator: | Zachary Bellone |
| " | Freddie Wilson |
| " | |
| " | |
| FGSI Surveyor: | Phillip Daniels |
| SES Field Lead PSO | Patti Haase |
| PSO | Vanessa James |
| " | |
| " | |

**VESSEL CREW**

| | |
|---|---|
| 1st Captain: | David Mastolier |
| 2nd Captain: | |
| 1st Mate: | Jeff Gregson |
| Chief Engineer: | Todd Ostler |
| Cook/Senior Deckhand: | Kevin Anderson |
| Deckhand: | Ben Jantzi |
| Deckhand: | |
| Deckhand: | |

**DATA PROCESSORS**

| | |
|---|---|
| CGG Seismic Processor: | Shannon Campbell / Ian Shirley |
| FGSI QC Geophysicist: | Eric Swanson |

**WEATHER REPORT**

| Time | Sea State | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | 1 to 2 ft | 10knts | NE |
| Wx - 1200: | 1 to 2 ft | 10knts | NE |
| Wx - 1800: | 4 - 5 ft | 15 - 20 kts | NNE |
| Wx - 2400: | | | |

**HSE Reporting (Place an "x" in the box, with brief description**

| | | |
|---|---|---|
| HSE OFFICER: | Zachary Bellone | |
| Toolbox: | Yes | GS-J-014, 017, 029 |
| HOC: | | |
| Safety: | | |
| Pre/Post Job: | | |

| TIME FROM | TIME TO | OP CODE | LINE INFORMATION: LINE NUMBER | HEADING | BSP | ESP | Fath (ft) | | | | DNP | DETAILED SURVEY INFORMATION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0000 | 0035 | LT | | | | | | | | | | Line turn continued. |
| 0035 | 0131 | OL | 311 | 343.5° | 2649 | 856 | 57.0 | | | | | Sol |
| 0131 | 0222 | LT | | | | | 67.0 | | | | | Eol. Nav missed fixes 2257-2210. Line will need to be rerun. |
| 0222 | 0304 | OL | 310 | 343.5° | 2605 | 942 | 59.0 | | | | | Sol |
| 0304 | 0318 | LT | | | | | 71.0 | | | | | Eol |
| 0318 | 0357 | OL | 408 | 073.0° | 100 | 1661 | 73.0 | | | | | Sol |
| 0357 | 0447 | LT | | | | | 58.0 | | | | | Eol |
| 0447 | 0544 | OL | 309 | 163.5° | 1029 | 2562 | 80.0 | | | | | Sol |
| 0544 | 0623 | LT | | | | | 74.0 | | | | | Eol |
| 0623 | 0709 | OL | 308 | 163.5° | 1116 | 2517 | 87.0 | | | | | Sol |
| 0709 | 0742 | LT | | | | | 78.0 | | | | | Eol |
| 0742 | 0751 | E20 | 307 | 163.0° | 1203 | 1580 | 87.0 | | | | | Sol |
| 0751 | 0812 | E20 | | | | | | | | | | Aborted due to Swapping TTL+ to TTL- tring to fix droped shot points problem. |
| 0812 | 0821 | E199 | 307A | 163.5° | 1203 | 1588 | 88.0 | | | | | Sol |
| 0821 | 0833 | E199 | | | | | | | | | | Aborted due to Nav. |
| 0833 | 0856 | OL | 404 | 073.5° | 668 | 1805 | 90.0 | | | | | Sol |
| 0856 | 0909 | LT | | | | | 67.0 | | | | | Eol |
| 0909 | 0927 | OL | 403 | 253.5° | 1002 | 100 | 60.0 | | | | | Sol |
| 0927 | 0955 | LT | | | | | 91.0 | | | | | Eol |
| 0955 | 1035 | OL | 307B | 343.5° | 2472 | 1203 | 73.0 | | | | | Sol |
| 1035 | 1108 | LT | | | | | 80.0 | | | | | Eol |
| 1108 | 1149 | OL | 306 | 343.5° | 2430 | 1289 | 68.0 | | | | | Sol |
| 1149 | 1213 | LT | | | | | 77.0 | | | | | Eol |
| 1213 | 1246 | OL | 305 | 343.5° | 2384 | 1376 | 62.0 | | | | | Sol |
| 1246 | 1311 | LT | | | | | 75.0 | | | | | Eol |
| 1311 | 1336 | OL | 304 | 343.5° | 2339 | 1463 | 61.0 | | | | | Sol |
| 1336 | 1403 | LT | | | | | 70.0 | | | | | Eol |
| 1403 | 1421 | OL | 303 | 343.5° | 2296 | 1550 | 62.0 | | | | | Sol |
| 1421 | 1430 | LT | | | | | 77.0 | | | | | Eol |
| 1430 | 1443 | OL | 302 | 163.5° | 1636 | 2252 | 73.0 | | | | | Sol |
| 1443 | 1452 | LT | | | | | 62.0 | | | | | Eol |
| 1452 | 1503 | OL | 301 | 343.5° | 2207 | 1723 | 63.0 | | | | | Sol |
| 1503 | 1512 | LT | | | | | 75.0 | | | | | Eol |

Alaska LNG

FUGRO

# FUGRO GEOSERVICES, INC.
## GEOPHYSICAL JOBLOG

ver 7.22.2010-B (Alaska)

| | |
|---|---|
| DATE: | 17-Sep-2015 Thu Julian Day: 260 |
| PROSPECT / SITE: | Approach Portion |
| NAV. SYSTEM: | Starfix |
| FGSI JOB #: | 2415-7058 |
| JOB DAY #: | Day: 32 |
| CRP TO STERN: | 16.50 Meters |

| | |
|---|---|
| CLIENT: | Alaska LNG |
| JOB DESCRIPTION: | Subbotton Hazard Survey-Approach Channel |
| AREA & BLOCK: | Cook Inlet |
| R/V: | Qualifier 105 |
| No. of SURVEY LINES: | 70 — 336.68 Kilometers, 78.7% Complete |

656.25 Meters Deleted

**VESSEL MANAGER(S)**

| | |
|---|---|
| Party Manager: | Wayne Labrie |
| Ass't Party Manager: | Ted Tremblay |

**CLIENT REPRESENTATIVE(S)**

| | |
|---|---|
| QC Rep: | Noel Rogers |
| HSE Rep: | David King |
| Client Rep #3: | |
| Client Rep #4: | |

| TIME | | OP CODE | LINE INFORMATION | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| FROM | TO | | LINE NUMBER | HEADING | BSP | ESP | Fath (ft) | | | | DNP |
| 1512 | 1519 | OL | 300 | 163.5° | 1825 | 2147 | 67.0 | | | | |
| 1519 | 1530 | LT | | | | | 53.0 | | | | |
| 1530 | 1937 | WS | | | | | | | | | |
| 1937 | 1955 | E199 | 325A | 163.5° | 125 | 773 | 58.0 | | | | |
| 1955 | 2020 | E199 | | | | | | | | | |
| 2020 | 2040 | OW | 325B | 163.0° | 125 | 886 | 58.0 | | | | |
| 2040 | 2100 | OW | | | | | | | | | |
| 2100 | | | | | | | | | | | |

**DETAILED SURVEY INFORMATION**

Sol
Eol
Weather standby at location w/ gear out.
Sol
Aborted due to Nav. Lock up at SP773.
Sol
Aborted due to ship. Switching to AKLNG_Joblog&DPR_2, day 14, to run with boomer and short streamer.

# FUGRO GEOSERVICES, INC.
## GEOPHYSICAL JOBLOG

ver 7.22.2010-B (Alaska)

| | |
|---|---|
| DATE: | 17-Sep-2015 Thu Julian Day: 260 |
| PROSPECT / SITE: | Seismic Portion |
| NAV. SYSTEM: | Starfix |
| FGSI JOB #: | 2415-7058 |
| JOB DAY #: | Day: 28 |
| CRP TO STERN: | 16.50 Meters |

| | |
|---|---|
| CLIENT: | Alaska LNG |
| JOB DESCRIPTION: | Seismic |
| AREA & BLOCK: | Cook Inlet |
| R/V: | Qualifier 105 |
| No. of SURVEY LINES: | 42 — 218.65 Kilometers |
| | 97.3% Complete |

31,500.00 Meters Deleted

**VESSEL MANAGER(S)**

| | |
|---|---|
| Party Manager: | Wayne Labrie |
| Ass't Party Manager: | Ted Tremblay |

**CLIENT REPRESENTATIVE(S)**

| | |
|---|---|
| QC Rep: | Noel Rogers |
| HSE Rep: | David King |
| Client Rep #3: | |
| Client Rep #4: | |

| GEOPHYSICAL EQUIPMENT | EQUIP # |
|---|---|
| Geometrics GeoEel 24ch.(1.56 gr) | # 2 |
| Geometrics GeoEel 24ch.(6.25 gr) | # 1 |
| G.I. 60 ci Gun | # 4198 |
| Castaway CTD Velocimeter | # 1 |
| Applied Acoutics Boomer | Rental |
| Edgetech 3200-XS SBP | # 1 |
| | |
| | |
| | |
| | |
| | |

**GEOPHYSICAL CREW**

| | |
|---|---|
| Technical Coordinator: | Ted Tremblay |
| Shift Supervisor: | |
| Operator: | Zachary Bellone |
| " | Freddie Wilson |
| " | |
| " | |
| FGSI Surveyor: | Phillip Daniels |
| SES Field Lead PSO | Patti Haase |
| PSO | Vanessa James |
| " | |
| " | |

**VESSEL CREW**

| | |
|---|---|
| 1st Captain: | David Mastolier |
| 2nd Captain: | |
| 1st Mate: | Jeff Gregson |
| Chief Engineer: | Todd Ostler |
| Cook/Senior Deckhand: | Kevin Anderson |
| Deckhand: | Ben Jantzi |
| Deckhand: | |
| Deckhand: | |

**DATA PROCESSORS**

| | |
|---|---|
| CGG Seismic Processor: | Shannon Campbell / Ian Shirley |
| FGSI QC Geophysicist: | Eric Swanson |

**WEATHER REPORT**

| Time | Sea State | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | | | |
| Wx - 1200: | | | |
| Wx - 1800: | | | |
| Wx - 2400: | | 0-5 kt | var |

**HSE Reporting (Place an "x" in the box, with brief description**

| HSE OFFICER: | Zachary Bellone | |
|---|---|---|
| Toolbox: | | |
| HOC: | | |
| Safety: | | |
| Pre/Post Job: | | |

**LINE INFORMATION**

| TIME FROM | TIME TO | OP CODE | LINE NUMBER | HEADING | BSP | ESP | Fath (ft) | | | | DNP |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2100 | 2101 | LT | | | | | | | | | |
| 2101 | 2102 | LT | | | | | | | | | |
| 2102 | 2143 | LT | | | | | | | | | |
| 2143 | 2241 | OW | SB200 | 090.4° | 100 | ??? | 101.0 | | | | |
| 2241 | 2316 | OW | | | | | 108.0 | | | | |
| 2316 | 2400 | OW | SB129 | 162.0° | 2041 | 410 | 62.0 | | | | |

**DETAILED SURVEY INFORMATION**

Line turn continues, heading to line S200C. Shooting with boomer and short streamer.
Boomer is shot at 3.125m nav fix interval. This joblog is started at 6.25m shot interval so the BSP and ESP are the shots of from that preplot.
The true shot point numbers are listed in the Sol comment.
Sol From 100 to 2510 at Nav. Fix 3.125 short cable boomer / This line has been rename SB200 everywhere but Navigation. It was called S200C.
Aborted due to fishing buoys/beach.
Sol From 2041 to 773 at Nav. Fix 3.125 short cable boomer./ This line has been rename SB129 everywhere but Navigation. It was called S129C.
Switching to AKLNG_Joblog&DPR_4.

Any "???" in BSP or ESP columns
mean that the shotpoint is not known if aborted due to fact that the preplot databse sheets only have shotpoints listed for 6.25 nav fixes and we are nc
boomer at 3.125 nav fixes. So those shotpoints are written on the side of the Sol entry in the "Detailed Survey Information" section.

# FUGRO GEOSERVICES, INC.
## GEOPHYSICAL JOBLOG

ver 7.22.2010-B (Alaska)

| | |
|---|---|
| DATE: | 18-Sep-2015 Fri Julian Day: 261 |
| PROSPECT / SITE: | Seismic Portion |
| NAV. SYSTEM: | Starfix |
| FGSI JOB #: | 2415-7058 |
| JOB DAY #: | Day: 43 |
| CRP TO STERN: | 16.50 Meters |

| | |
|---|---|
| NAV. DIVIDE BY: | 1 |
| NAV. FIX DISTANCE: | 6.25 |
| SURVEY UNITS: | Meters |
| NAUTICAL MILE: | 6080.0 |

| | |
|---|---|
| CLIENT: | Alaska LNG |
| JOB DESCRIPTION: | Seisimic |
| AREA & BLOCK: | Cook Inlet |
| R/V: | Qualifier 105 |
| No. of SURVEY LINES: | 42 |
| ORIGINAL JOB TOTAL: | 250,150.00 |

218.65 Kilometers
97.3% Complete

31,500.00 Meters Deleted

**VESSEL MANAGER(S)**

| | |
|---|---|
| Party Manager: | Wayne Labrie |
| Ass't Party Manager: | Ted Tremblay |

**CLIENT REPRESENTATIVE(S)**

| | |
|---|---|
| QC Rep: | Noel Rogers |
| HSE Rep: | David King |
| Client Rep #3: | |
| Client Rep #4: | |

| GEOPHYSICAL EQUIPMENT | EQUIP # |
|---|---|
| Geometrics GeoEel 24ch.(1.56 gr) | # 2 |
| Geometrics GeoEel 24ch.(6.25 gr) | # 1 |
| G.I. 60 ci Sleeve Gun | # 4198 |
| Castaway CTD Velocimeter | # 1 |
| Applied Acoutics Boomer | Rental |
| Edgetech 3200-XS SBP | # 1 |
| | |
| | |
| | |
| | |
| | |

| GEOPHYSICAL CREW | |
|---|---|
| Technical Coordinator: | Ted Tremblay |
| Shift Supervisor: | |
| Operator: | Zachary Bellone |
| " | Freddie Wilson |
| " | |
| " | |
| FGSI Surveyor: | Phillip Daniels |
| SES Field Lead PSO | Patti Hasse |
| PSO | Vanessa James |
| " | |
| " | |

| VESSEL CREW | |
|---|---|
| 1st Captain: | David Mastolier |
| 2nd Captain: | |
| 1st Mate: | Jeff Gregson |
| Chief Engineer: | Todd Ostler |
| Cook/Senior Deckhand: | Kevin Anderson |
| Deckhand: | Ben Jantzi |
| Deckhand: | |
| Deckhand: | |

**DATA PROCESSORS**

| | |
|---|---|
| CGG Seismic Processor: | Shannon Campbell / Ian Shirley |
| FGSI QC Geophysicist: | Eric Swanson |

**WEATHER REPORT**

| Time | Sea State | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | | | |
| Wx - 1200: | | | |
| Wx - 1800: | | | |
| Wx - 2400: | | | |

**HSE Reporting (Place an "x" in the box, with brief description**

| HSE OFFICER: | Zachary Bellone | |
|---|---|---|
| Toolbox: | | |
| HOC: | | |
| Safety: | | |
| Pre/Post Job: | | |

| TIME FROM | TIME TO | OP CODE | LINE INFORMATION: LINE NUMBER | HEADING | BSP | ESP | Fath (ft) | | | | DNP |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0000 | 0021 | OW | SB129 | 342.0° | 410 | 100 | 101.0 | | | | |
| 0021 | 0100 | OW | | | | | 105.0 | | | | |
| 0100 | | | | | | | | | | | |

**DETAILED SURVEY INFORMATION**

Line continued from AKLNG_Joblog&DPR_2. Midnight shotpoint was 773.
EoI Going back to AKLNG_Joblog&DPR_3, approach section.

The boomer lines shot with short streamer are shot at 3.125 nav fix. This Seismic portion was shot @ 6.25 with long and short streamer.
The nav fix distance will not change on this joblog with boomer in order to calculate the percentage completion calculation. Also any "???" in BSP or I
mean that the shotpoint is not known if aborted due to fact that the preplot databse sheets only have shotpoints listed for 6.25 nav fixes and we are no
boomer at 3.125 nav fixes. So those shotpoints are written on the side of the SoI entry in the "Detailed Survey Information" section.

On the "Eq. Specs-Seismic Sys #1 & #2" tab of joblog, the only sensors accurately entered are the "EDGETECH 3200-XS SUBBOTTOM PROFILER"
and the "APPLIED ACOUTICS CSP-P BOOMER". The "Seismic Systems #1 and #2 Specs" page does not allow to enter the proper values for a aut
calculation on "Seismic System #1 Specs" tab and " Seismic System #2" tab. So these values are manually entered correctly in those tabs along
with the manual entering of values on tabs "Drawing-24(1.56)" and "Drawing-24(1.56)". Tabs for "Seismic System #1" have been deleted since we wi
not use the long streamer with G.I. gun as a sound source. "Seismic System #2" is now the Boomer as a sound source with short streamer.

Alaska LNG

FUGRO

# FUGRO GEOSERVICES, INC.
## GEOPHYSICAL JOBLOG

ver 7.22.2010-B (Alaska)

| | |
|---|---|
| DATE: | 18-Sep-2015 Fri Julian Day: 261 |
| PROSPECT / SITE: | Approach Portion |
| NAV. SYSTEM: | Starfix |
| FGSI JOB #: | 2415-7058 |
| JOB DAY #: | Day: 33 |
| CRP TO STERN: | 16.50 Meters |

| | |
|---|---|
| CLIENT: | Alaska LNG |
| JOB DESCRIPTION: | Subbotton Hazard Survey-Approach Channel |
| AREA & BLOCK: | Cook Inlet |
| R/V: | Qualifier 105 |
| No. of SURVEY LINES: | 70 — 331.60 Kilometers, 98.5% Complete |

5,740.63 Meters Deleted

**VESSEL MANAGER(S)**

| | |
|---|---|
| Party Manager: | Wayne Labrie |
| Ass't Party Manager: | Ted Tremblay |

**CLIENT REPRESENTATIVE(S)**

| | |
|---|---|
| QC Rep: | Noel Rogers |
| HSE Rep: | David King |
| Client Rep #3: | |
| Client Rep #4: | |

| GEOPHYSICAL EQUIPMENT | EQUIP # |
|---|---|
| Geometrics GeoEel 24ch.(1.56 gr) | # 2 |
| Geometrics GeoEel 24ch.(6.25 gr) | # 1 |
| G.I. 60 ci Gun | # 4198 |
| Castaway CTD Velocimeter | # 1 |
| Applied Acoutics Boomer | Rental |
| Edgetech 3200-XS SBP | # 1 |
| | |
| | |
| | |
| | |
| | |

**GEOPHYSICAL CREW**

| | |
|---|---|
| Technical Coordinator: | Ted Tremblay |
| Shift Supervisor: | |
| Operator: | Zachary Bellone |
| " | Freddie Wilson |
| " | |
| " | |
| FGSI Surveyor: | Phillip Daniels |
| SES Field Lead PSO | Patti Haase |
| PSO | Vanessa James |
| " | |
| " | |

**VESSEL CREW**

| | |
|---|---|
| 1st Captain: | David Mastolier |
| 2nd Captain: | |
| 1st Mate: | Jeff Gregson |
| Chief Engineer: | Todd Ostler |
| Cook/Senior Deckhand: | Kevin Anderson |
| Deckhand: | Ben Jantzi |
| Deckhand: | |
| Deckhand: | |

**DATA PROCESSORS**

| | |
|---|---|
| CGG Seismic Processor: | Shannon Campbell / Ian Shirley |
| FGSI QC Geophysicist: | Eric Swanson |

**WEATHER REPORT**

| Time | Sea State | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | 2-3 ft. | 10-15 kts | NE |
| Wx - 1200: | 1 ft | 5knts | E |
| Wx - 1800: | 1 ft | 5knts | E |
| Wx - 2400: | 1 ft | 5knts | E |

**HSE Reporting (Place an "x" in the box, with brief description**

| | | |
|---|---|---|
| HSE OFFICER: | Zachary Bellone | |
| Toolbox: | Yes | GS-J-014, 017, 029 |
| HOC: | | |
| Safety: | Yes | Review of Past Drills |
| Pre/Post Job: | | |

| TIME FROM | TIME TO | OP CODE | LINE INFORMATION: LINE NUMBER | HEADING | BSP | ESP | Fath (ft) | | | | DNP | DETAILED SURVEY INFORMATION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0100 | 0118 | OW | | | | | | | | | | Heading back to Approach portion from Seismic portion on AKLNG_Joblog&DPR_4. |
| 0118 | 0215 | OL | 338 | 343.5° | 2132 | 213 | 61.0 | | | | | Sol |
| 0215 | 0501 | OS | | | | | 69.0 | | | | | Eol. Long line turn due to ship docking. |
| 0501 | 0621 | OL | 339 | 163.5° | 213 | 2076 | 78.0 | | | | | Sol |
| 0621 | 0700 | LT | | | | | 67.0 | | | | | Eol |
| 0700 | 0756 | OL | 340 | 163.5° | 228 | 2033 | 81.0 | | | | | Sol |
| 0756 | 0831 | LT | | | | | 59.0 | | | | | Eol |
| 0831 | 0908 | OL | 341 | 163.5° | 234 | 1873 | 84.0 | | | | | Sol |
| 0908 | 0918 | LT | | | | | 62.0 | | | | | Eol |
| 0918 | 0951 | OL | 406 | 253.5° | 1635 | 100 | 56.0 | | | | | Sol |
| 0951 | 1001 | LT | | | | | 84.0 | | | | | Eol |
| 1001 | 1037 | OL | 405 | 073.5° | 100 | 1475 | 85.0 | | | | | Sol |
| 1037 | 1106 | LT | | | | | 78.0 | | | | | Eol |
| 1106 | 1200 | OL | 342 | 343.5° | 1716 | 241 | 54.0 | | | | | Sol |
| 1200 | 1230 | LT | | | | | 77.0 | | | | | Eol |
| 1230 | 1320 | OL | 343 | 343.5° | 1563 | 248 | 54.0 | | | | | Sol |
| 1320 | 1345 | LT | | | | | 72.0 | | | | | Eol |
| 1345 | 1423 | OL | 344 | 343.5° | 1410 | 255 | 54.0 | | | | | Sol |
| 1423 | 1446 | LT | | | | | 66.0 | | | | | Eol |
| 1446 | 1511 | OL | 345 | 343.5° | 1278 | 262 | 56.0 | | | | | Sol |
| 1511 | 1521 | LT | | | | | 64.0 | | | | | Eol |
| 1521 | 1538 | OL | 346 | 163.5° | 269 | 1117 | 66.0 | | | | | Sol |
| 1538 | 1559 | LT | | | | | 64.0 | | | | | Eol |
| 1559 | 1632 | OL | 407 | 253.5° | 1647 | 100 | 62.0 | | | | | Sol |
| 1632 | 1643 | LT | | | | | 77.0 | | | | | Eol |
| 1643 | 1717 | E199 | 406A | 073.5° | 100 | 1635 | 81.0 | | | | | Sol Rerun due to Nav. Missing shots |
| 1717 | 1750 | E199 | | | | | 52.0 | | | | | Eol |
| 1750 | 1813 | OL | 347 | 163.5° | 276 | 956 | 68.0 | | | | | Sol |
| 1813 | 1831 | LT | | | | | 70.0 | | | | | Eol |
| 1831 | 1850 | OL | 348 | 163.5° | 283 | 795 | 65.0 | | | | | Sol |
| 1850 | 1915 | LT | | | | | 76.0 | | | | | Eol Missed 12 SP @ sol due to high voltage tripping on boomer power supply. |
| 1915 | 1927 | OL | 349 | 163.5° | 290 | 642 | 64.0 | | | | | Sol |
| 1927 | 1948 | LT | | | | | 76.0 | | | | | Eol |

# FUGRO GEOSERVICES, INC.
## GEOPHYSICAL JOBLOG

ver 7.22.2010-B (Alaska)

| | |
|---|---|
| DATE: | 18-Sep-2015 Fri Julian Day: 261 |
| PROSPECT / SITE: | Approach Portion |
| NAV. SYSTEM: | Starfix |
| FGSI JOB #: | 2415-7058 |
| JOB DAY #: | Day: 33 |
| CRP TO STERN: | 16.50 Meters |

| | |
|---|---|
| CLIENT: | Alaska LNG |
| JOB DESCRIPTION: | Subbotton Hazard Survey-Approach Channel |
| AREA & BLOCK: | Cook Inlet |
| R/V: | Qualifier 105 |
| No. of SURVEY LINES: | 70 — 331.60 Kilometers, 98.5% Complete |

5,740.63 Meters Deleted

**VESSEL MANAGER(S)**

| | |
|---|---|
| Party Manager: | Wayne Labrie |
| Ass't Party Manager: | Ted Tremblay |

**CLIENT REPRESENTATIVE(S)**

| | |
|---|---|
| QC Rep: | Noel Rogers |
| HSE Rep: | David King |
| Client Rep #3: | |
| Client Rep #4: | |

| TIME | | OP | LINE INFORMATION | | | | | | | | | DETAILED SURVEY INFORMATION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FROM | TO | CODE | LINE NUMBER | HEADING | BSP | ESP | Fath (ft) | | | | DNP | |
| 1948 | 1957 | OL | 350 | 163.5° | 297 | 611 | 66.0 | | | | | Sol |
| 1957 | 2016 | LT | | | | | 73.0 | | | | | Eol |
| 2016 | 2022 | OL | 351 | 163.5° | 304 | 608 | 64.0 | | | | | Sol |
| 2022 | 2044 | LT | | | | | 73.0 | | | | | Eol |
| 2044 | 2130 | E199 | 338A | 163.5° | 213 | 2132 | 85.0 | | | | | Sol |
| 2130 | 2203 | E199 | | | | | 75.0 | | | | | Eol. Veered offline SP580-650, Nav froze SP 1092-1120. Need to rerun line. |
| 2203 | 2230 | E199 | 335A | 343.5° | 2281 | 1312 | 80.0 | | | | | Sol |
| 2230 | 2308 | E199 | | | | | | | | | | Aborted line because nav locked up. |
| 2308 | 2400 | E199 | 335B | 343.5° | 2281 | 540 | 77.0 | | | | | Sol |
| | | DM | 411 | | 1901 | 2000 | | | | | | This fixes typo of last sht point of portion we could not run. |
| | | OLC | 412 | 253.5° | 199 | 100 | | | | | | This fixes typo of ending line at SP 199 instead of 100. |
| | | DM | 352 | | 311 | 611 | | | | | | Cannot run line. Too close to beach and buoys. |
| | | DM | 353 | | 316 | 618 | | | | | | Cannot run line. Too close to beach and buoys. |
| | | DM | 354 | | 324 | 626 | | | | | | Cannot run line. Too close to beach and buoys. |
| | | DM | 355 | | 331 | 633 | | | | | | Cannot run line. Too close to beach and buoys. |
| | | DM | 356 | | 328 | 650 | | | | | | Cannot run line. Too close to beach and buoys. |

# FUGRO GEOSERVICES, INC.
## GEOPHYSICAL JOBLOG

ver 7.22.2010-B (Alaska)

| | |
|---|---|
| DATE: | 19-Sep-2015 Sat Julian Day: 262 |
| PROSPECT / SITE: | Approach Portion |
| NAV. SYSTEM: | Starfix |
| FGSI JOB #: | 2415-7058 |
| JOB DAY #: | Day: 34 |
| CRP TO STERN: | 16.50 Meters |

| | |
|---|---|
| CLIENT: | Alaska LNG |
| JOB DESCRIPTION: | Subbotton Hazard Survey-Approach Channel |
| AREA & BLOCK: | Cook Inlet |
| R/V: | Qualifier 105 |
| No. of SURVEY LINES: | 70 — 331.60 Kilometers, 98.5% Complete |

5,740.63 Meters Deleted

**VESSEL MANAGER(S)**

| | |
|---|---|
| Party Manager: | Wayne Labrie |
| Ass't Party Manager: | Ted Tremblay |

**CLIENT REPRESENTATIVE(S)**

| | |
|---|---|
| QC Rep: | Noel Rogers |
| HSE Rep: | David King |
| Client Rep #3: | |
| Client Rep #4: | |

| GEOPHYSICAL EQUIPMENT | EQUIP # |
|---|---|
| Geometrics GeoEel 24ch.(1.56 gr) | # 2 |
| Geometrics GeoEel 24ch.(6.25 gr) | # 1 |
| G.I. 60 ci Gun | # 4198 |
| Castaway CTD Velocimeter | # 1 |
| Applied Acoutics Boomer | Rental |
| Edgetech 3200-XS SBP | # 1 |
| | |
| | |
| | |
| | |
| | |

**GEOPHYSICAL CREW**

| | |
|---|---|
| Technical Coordinator: | Ted Tremblay |
| Shift Supervisor: | |
| Operator: | Zachary Bellone |
| " | Freddie Wilson |
| " | |
| " | |
| FGSI Surveyor: | Phillip Daniels |
| SES Field Lead PSO | Patti Haase |
| PSO | Vanessa James |
| " | |
| " | |

**VESSEL CREW**

| | |
|---|---|
| 1st Captain: | David Mastolier |
| 2nd Captain: | |
| 1st Mate: | Jeff Gregson |
| Chief Engineer: | Todd Ostler |
| Cook/Senior Deckhand: | Kevin Anderson |
| Deckhand: | Ben Jantzi |
| Deckhand: | |
| Deckhand: | |

**DATA PROCESSORS**

| | |
|---|---|
| CGG Seismic Processor: | Shannon Campbell / Ian Shirley |
| FGSI QC Geophysicist: | Eric Swanson |

**WEATHER REPORT**

| | Time | Sea State | Wind Speed | Dir. |
|---|---|---|---|---|
| Wx - 0600: | | 0-2 ft. | 5-6 kts | SE |
| Wx - 1200: | | | | |
| Wx - 1800: | | | | |
| Wx - 2400: | | 0-2 ft. | 5-6 kts | SE |

**HSE Reporting (Place an "x" in the box, with brief description**

| | | |
|---|---|---|
| HSE OFFICER: | Zachary Bellone | |
| Toolbox: | Yes | GS-J-017,029,051 |
| HOC: | Yes | 3 HOCs submitted |
| Safety: | | |
| Pre/Post Job: | | |

| TIME FROM | TIME TO | OP CODE | LINE INFORMATION: LINE NUMBER | HEADING | BSP | ESP | Fath (ft) | | | | DNP | DETAILED SURVEY INFORMATION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0000 | 0013 | E199 | 335B | 343.5° | 540 | 194 | 59.0 | | | | | Line continues. |
| 0013 | 0101 | E199 | | | | | 63.0 | | | | | Eol |
| 0101 | 0204 | OW | 333A | 343.5° | 2381 | 180 | 59.0 | | | | | Sol |
| 0204 | 0311 | OW | | | | | 54.0 | | | | | Eol |
| 0311 | 0410 | E199 | 327A | 343.5° | 2680 | 139 | 48.0 | | | | | Sol |
| 0410 | 0424 | E199 | | | | | 37.0 | | | | | Eol |
| 0424 | 0521 | OW | 325C | 163.5° | 125 | 2780 | 36.0 | | | | | Sol |
| 0521 | 0620 | OW | | | | | 54.0 | | | | | Eol. Missed 25 shots at SOL. |
| 0620 | 0829 | OS | | | | | | | | | | Waiting on 2 tankers to dock. Standby. |
| 0829 | 0908 | E199 | 318A | 163.5° | 248 | 1598 | 88.0 | | | | | Sol |
| 0908 | 0930 | E199 | | | | | | | | | | Abort due to Boomer stop firing. |
| 0930 | 0934 | E199 | 313A | 163.5° | 682 | 850 | 83.0 | | | | | Sol |
| 0934 | 1008 | E199 | | | | | | | | | | Abort due to Boomer stop firing. |
| 1008 | 1050 | E199 | 313B | 163.5° | 682 | 2737 | 82.0 | | | | | Sol |
| 1050 | 1058 | E199 | | | | | 63.0 | | | | | Eol |
| 1058 | 1147 | E199 | 312A | 343.5° | 2692 | 769 | 64.0 | | | | | Sol Floating Debris at SP 1100. |
| 1147 | 1235 | E199 | | | | | 77.0 | | | | | Eol |
| 1235 | 1329 | E199 | 311A | 343.0° | 2649 | 856 | 63.0 | | | | | Sol |
| 1329 | 1434 | E199 | | | | | 74.0 | | | | | Eol |
| 1434 | 1529 | E199 | 315A | 343.5° | 2824 | 509 | 50.0 | | | | | Eol |
| 1529 | 1544 | E199 | | | | | 75.0 | | | | | Sol |
| 1544 | 1555 | E199 | 318B | 163.5° | 248 | 780 | 77.0 | | | | | Sol |
| 1555 | 1611 | E199 | | | | | | | | | | Abort due to Boomer stop firing. |
| 1611 | 1616 | OW | 409A | 073.5° | 100 | 270 | 74.0 | | | | | Sol Reruning line due to currents. |
| 1616 | 1649 | OW | | | | | | | | | | Abort due to Nav locking up. |
| 1649 | 1723 | OW | 409B | 073.5° | 100 | 1675 | 76.0 | | | | | Sol |
| 1723 | 1747 | OW | | | | | 65.0 | | | | | Eol |
| 1747 | 1839 | E199 | 338B | 163.5° | 213 | 2132 | 79.0 | | | | | Sol |
| 1839 | 1922 | E199 | | | | | 74.0 | | | | | Eol |
| 1922 | 2037 | E199 | 318C | 163.0° | 248 | 2955 | 87.0 | | | | | Sol |
| 2037 | 2140 | E199 | | | | | 63.0 | | | | | Eol Went offline from SP 2350 to 2450 for debris. |
| 2140 | 2219 | OW | 409C | 073.5° | 100 | 1675 | 84.0 | | | | | Sol |
| 2219 | 2227 | OW | | | | | 73.0 | | | | | Eol Went offline from SP 670-700, 967-993 to avoid debris. Missed SP655-671 due to Nav freezing. |

# FUGRO GEOSERVICES, INC.
## GEOPHYSICAL JOBLOG

ver 7.22.2010-B (Alaska)

| | |
|---|---|
| DATE: | 19-Sep-2015 Sat Julian Day: 262 |
| PROSPECT / SITE: | Approach Portion |
| NAV. SYSTEM: | Starfix |
| FGSI JOB #: | 2415-7058 |
| JOB DAY #: | Day: 34 |
| CRP TO STERN: | 16.50 Meters |

| | |
|---|---|
| CLIENT: | Alaska LNG |
| JOB DESCRIPTION: | Subbotton Hazard Survey-Approach Channel |
| AREA & BLOCK: | Cook Inlet |
| R/V: | Qualifier 105 |
| No. of SURVEY LINES: | 70 — 331.60 Kilometers, 98.5% Complete |

5,740.63 Meters Deleted

| VESSEL MANAGER(S) | |
|---|---|
| Party Manager: | Wayne Labrie |
| Ass't Party Manager: | Ted Tremblay |
| **CLIENT REPRESENTATIVE(S)** | |
| QC Rep: | Noel Rogers |
| HSE Rep: | David King |
| Client Rep #3: | |
| Client Rep #4: | |

| TIME | | OP CODE | LINE INFORMATION | | | | | | | | | DETAILED SURVEY INFORMATION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FROM | TO | | LINE NUMBER | HEADING | BSP | ESP | Fath (ft) | | | | DNP | |
| 2227 | 2302 | E199 | 408A | 253.5° | 1661 | 100 | 67.0 | | | | | Sol |
| 2302 | 2322 | E199 | | | | | 79.0 | | | | | Eol |
| 2322 | 2328 | E199 | 406B | 073.5° | 100 | 308 | 83.0 | | | | | Sol |
| 2328 | 2345 | E199 | | | | | | | | | | Aborted due to trees and feather angle. |
| 2345 | 2400 | OS | | | | | | | | | | Waiting on ship traffic. |

# FUGRO GEOSERVICES, INC.
## GEOPHYSICAL JOBLOG

ver 7.22.2010-B (Alaska)

| | |
|---|---|
| DATE: | 20-Sep-2015 Sun Julian Day: 263 |
| PROSPECT / SITE: | Approach Portion |
| NAV. SYSTEM: | Starfix |
| FGSI JOB #: | 2415-7058 |
| JOB DAY #: | Day: 35 |
| CRP TO STERN: | 16.50 Meters |

| | |
|---|---|
| CLIENT: | Alaska LNG |
| JOB DESCRIPTION: | Subbotton Hazard Survey-Approach Channel |
| AREA & BLOCK: | Cook Inlet |
| R/V: | Qualifier 105 |
| No. of SURVEY LINES: | 70 — 331.60 Kilometers |
| | 100.0% Complete |
| | 5,740.63 Meters Deleted |

**VESSEL MANAGER(S)**

| | |
|---|---|
| Party Manager: | Wayne Labrie |
| Ass't Party Manager: | Ted Tremblay |

**CLIENT REPRESENTATIVE(S)**

| | |
|---|---|
| QC Rep: | Noel Rogers |
| HSE Rep: | David King |
| Client Rep #3: | |
| Client Rep #4: | |

| GEOPHYSICAL EQUIPMENT | EQUIP # |
|---|---|
| Geometrics GeoEel 24ch.(1.56 gr) | # 2 |
| Geometrics GeoEel 24ch.(6.25 gr) | # 1 |
| G.I. 60 ci Gun | # 4198 |
| Castaway CTD Velocimeter | # 1 |
| Applied Acoutics Boomer | Rental |
| Edgetech 3200-XS SBP | # 1 |
| | |
| | |
| | |
| | |
| | |

**GEOPHYSICAL CREW**

| | |
|---|---|
| Technical Coordinator: | Ted Tremblay |
| Shift Supervisor: | |
| Operator: | Zachary Bellone |
| " | Freddie Wilson |
| " | |
| " | |
| FGSI Surveyor: | Phillip Daniels |
| SES Field Lead PSO | Patti Haase |
| PSO | Vanessa James |
| " | |
| " | |

**VESSEL CREW**

| | |
|---|---|
| 1st Captain: | David Mastolier |
| 2nd Captain: | |
| 1st Mate: | Jeff Gregson |
| Chief Engineer: | Todd Ostler |
| Cook/Senior Deckhand: | Kevin Anderson |
| Deckhand: | Ben Jantzi |
| Deckhand: | |
| Deckhand: | |

**DATA PROCESSORS**

| | |
|---|---|
| CGG Seismic Processor: | Shannon Campbell / Ian Shirley |
| FGSI QC Geophysicist: | Eric Swanson |

**WEATHER REPORT**

| Time | Sea State | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | 2-3 ft. | 10 kts | NE |
| Wx - 1200: | | | |
| Wx - 1800: | | | |
| Wx - 2400: | | | |

**HSE Reporting (Place an "x" in the box, with brief description**

| HSE OFFICER: | Zachary Bellone | |
|---|---|---|
| Toolbox: | | |
| HOC: | | |
| Safety: | | |
| Pre/Post Job: | | |

| TIME FROM | TIME TO | OP CODE | LINE NUMBER | HEADING | BSP | ESP | Fath (ft) | | | | DNP | DETAILED SURVEY INFORMATION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0000 | 0112 | OS | | | | | | | | | | Waiting on ship traffic. |
| 0112 | 0229 | OW | 318D | 343.5° | 2955 | 248 | 54.0 | | | | | Sol |
| 0229 | 0322 | OW | | | | | 75.0 | | | | | Eol |
| 0322 | 0415 | E199 | 315B | 343.5° | 2824 | 509 | 48.0 | | | | | Sol |
| 0415 | 0458 | E199 | | | | | 72.0 | | | | | Eol |
| 0458 | 0528 | OL | 409D | 073.5° | 100 | 1675 | 71.0 | | | | | Sol |
| 0528 | 0548 | LT | | | | | 62.0 | | | | | Eol |
| 0548 | 0625 | E199 | 406C | 253.5° | 1635 | 100 | 46.0 | | | | | Sol |
| 0625 | 0654 | E199 | | | | | 73.0 | | | | | Eol Geoeel file number starts at 100 instead of 1000. |
| 0654 | 0730 | E199 | 307C | 163.5° | 1203 | 2472 | 79.0 | | | | | Sol |
| 0730 | 0828 | E199 | | | | | 69.0 | | | | | Eol |
| 0828 | 0932 | E199 | 315D | 163.5° | 509 | 2824 | 83.0 | | | | | Sol |
| 0932 | 1000 | E199 | | | | | 61.0 | | | | | Eol |
| 1000 | | | | | | | | | | | | Going to seismic portion. Stitching to AKLNG Joblog&DPR_4. |

# FUGRO GEOSERVICES, INC.
## GEOPHYSICAL JOBLOG

ver 7.22.2010-B (Alaska)

| | |
|---|---|
| DATE: | 20-Sep-2015 Sun Julian Day: 263 |
| PROSPECT / SITE: | Seismic Portion |
| NAV. SYSTEM: | Starfix |
| FGSI JOB #: | 2415-7058 |
| JOB DAY #: | Day: 44 |
| CRP TO STERN: | 16.50 Meters |

| | |
|---|---|
| CLIENT: | Alaska LNG |
| JOB DESCRIPTION: | Seisimic |
| AREA & BLOCK: | Cook Inlet |
| R/V: | Qualifier 105 |
| No. of SURVEY LINES: | 42 — 218.65 Kilometers |
| | 100.0% Complete |

31,500.00 Meters Deleted

**VESSEL MANAGER(S)**

| | |
|---|---|
| Party Manager: | Wayne Labrie |
| Ass't Party Manager: | Ted Tremblay |

**CLIENT REPRESENTATIVE(S)**

| | |
|---|---|
| QC Rep: | Noel Rogers |
| HSE Rep: | David King |
| Client Rep #3: | |
| Client Rep #4: | |

| GEOPHYSICAL EQUIPMENT | EQUIP # |
|---|---|
| Geometrics GeoEel 24ch.(1.56 gr) | # 2 |
| Geometrics GeoEel 24ch.(6.25 gr) | # 1 |
| G.I. 60 ci Sleeve Gun | # 4198 |
| Castaway CTD Velocimeter | # 1 |
| Applied Acoutics Boomer | Rental |
| Edgetech 3200-XS SBP | # 1 |

| GEOPHYSICAL CREW | |
|---|---|
| Technical Coordinator: | Ted Tremblay |
| Shift Supervisor: | |
| Operator: | Zachary Bellone |
| " | Freddie Wilson |
| " | |
| " | |
| FGSI Surveyor: | Phillip Daniels |
| SES Field Lead PSO | Patti Hasse |
| PSO | Vanessa James |
| " | |
| " | |

| VESSEL CREW | |
|---|---|
| 1st Captain: | David Mastolier |
| 2nd Captain: | |
| 1st Mate: | Jeff Gregson |
| Chief Engineer: | Todd Ostler |
| Cook/Senior Deckhand: | Kevin Anderson |
| Deckhand: | Ben Jantzi |
| Deckhand: | |
| Deckhand: | |

**DATA PROCESSORS**

| | |
|---|---|
| CGG Seismic Processor: | Shannon Campbell / Ian Shirley |
| FGSI QC Geophysicist: | Eric Swanson |

**WEATHER REPORT**

| Time | Sea State | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | 1-2 | 5-10 kts | NE |
| Wx - 1200: | calm | 5knts | NNE |
| Wx - 1800: | calm | 5knts | NNE |
| Wx - 2400: | calm | 5knts | NNE |

**HSE Reporting (Place an "x" in the box, with brief description**

| | | |
|---|---|---|
| HSE OFFICER: | Zachary Bellone | |
| Toolbox: | | GS-J-001, 017, 029 |
| HOC: | Yes | 3 HOC submitted |
| Safety: | | |
| Pre/Post Job: | | |

| TIME FROM | TIME TO | OP CODE | LINE NUMBER | HEADING | BSP | ESP | Fath (ft) | | | | DNP | DETAILED SURVEY INFORMATION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1000 | 1110 | IT | | | | | | | | | | Headed to seismic area |
| 1110 | 1148 | OW | SB100 | 162.2° | 100 | 2065 | 77.0 | | | | | Sol |
| 1148 | 1203 | OW | | | | | 72.0 | | | | | Eol |
| 1203 | 1243 | OW | SB206 | 089.6° | 100 | 2041 | 89.0 | | | | | Sol |
| 1243 | 1310 | OW | | | | | 57.0 | | | | | aborted due to fishing bouys |
| 1310 | 1421 | OW | SB108 | 342.0° | 2057 | 100 | 59.0 | | | | | Sol |
| 1421 | 1506 | OW | | | | | 62.0 | | | | | Eol |
| 1506 | 1611 | OW | SB115 | 342.0° | 2053 | 100 | 65.0 | | | | | Sol |
| 1611 | 1648 | OW | | | | | 83.0 | | | | | Eol |
| 1648 | 1730 | OW | SB120 | 342.0° | 2049 | 100 | 67.0 | | | | | Sol |
| 1730 | 1744 | OW | | | | | 118.0 | | | | | Eol |
| 1744 | 1844 | OW | SB200A | 270.4° | 2550 | 100 | 111.0 | | | | | Sol shot point 1734 feather angle went from 1.9 to 20 degrees |
| 1844 | 1900 | OW | | | | | 95.0 | | | | | Eol |
| 1900 | 1930 | DR | | | | | | | | | | Picking up gear for data drop with "My Marie". |
| 1930 | 1945 | OW | | | | | | | | | | Data drop. |
| 1945 | 2010 | DR | | | | | | | | | | Deploying gear, |
| 2010 | 2030 | OW | | | | | | | | | | Heading to line. |
| 2030 | 2126 | OW | SB128 | 162.0° | 100 | 2043 | 118.0 | | | | | Sol |
| 2126 | 2209 | OW | | | | | 62.0 | | | | | Eol |
| 2209 | 2242 | OW | SB124 | 162.0° | 100 | 1494 | 148.0 | | | | | Sol |
| 2242 | 2323 | OW | | | | | | | | | | Aborted due to too many missed shots. |
| 2323 | 2357 | OW | SB204 | 090.0° | 100 | 1583 | 93.0 | | | | | Sol |
| 2357 | 2400 | OW | | | | | 77.0 | | | | | Eol. Aborted due to beach/fishing buoys. |
| | | OL | SB204 | 090.0° | 100 | 1062 | | | | | | This line coded as OL to account for mileage on a 6.25 nav fix because line 204 was never ran before on a SXXX or SLXXX line. |

# FUGRO GEOSERVICES, INC.
## GEOPHYSICAL JOBLOG

ver 7.22.2010-B (Alaska)

| | |
|---|---|
| DATE: | 21-Sep-2015 Mon Julian Day: 264 |
| PROSPECT / SITE: | Seismic Portion |
| NAV. SYSTEM: | Starfix |
| FGSI JOB #: | 2415-7058 |
| JOB DAY #: | Day: 45 |
| CRP TO STERN: | 16.50 Meters |

| | |
|---|---|
| CLIENT: | Alaska LNG |
| JOB DESCRIPTION: | Seisimic |
| AREA & BLOCK: | Cook Inlet |
| R/V: | Qualifier 105 |
| No. of SURVEY LINES: | 42 — 217.27 Kilometers |
| | 100.6% Complete |

32,881.25 Meters Deleted

**VESSEL MANAGER(S)**

| | |
|---|---|
| Party Manager: | Wayne Labrie |
| Ass't Party Manager: | Ted Tremblay |

**CLIENT REPRESENTATIVE(S)**

| | |
|---|---|
| QC Rep: | Noel Rogers |
| HSE Rep: | David King |
| Client Rep #3: | |
| Client Rep #4: | |

| GEOPHYSICAL EQUIPMENT | EQUIP # |
|---|---|
| Geometrics GeoEel 24ch.(1.56 gr) | # 2 |
| Geometrics GeoEel 24ch.(6.25 gr) | # 1 |
| G.I. 60 ci Sleeve Gun | # 4198 |
| Castaway CTD Velocimeter | # 1 |
| Applied Acoutics Boomer | Rental |
| Edgetech 3200-XS SBP | # 1 |

**GEOPHYSICAL CREW**

| | |
|---|---|
| Technical Coordinator: | Ted Tremblay |
| Shift Supervisor: | |
| Operator: | Zachary Bellone |
| " | Freddie Wilson |
| " | |
| " | |
| FGSI Surveyor: | Phillip Daniels |
| SES Field Lead PSO | Patti Hasse |
| PSO | Vanessa James |
| " | |
| " | |

**VESSEL CREW**

| | |
|---|---|
| 1st Captain: | David Mastolier |
| 2nd Captain: | |
| 1st Mate: | Jeff Gregson |
| Chief Engineer: | Todd Ostler |
| Cook/Senior Deckhand: | Kevin Anderson |
| Deckhand: | Ben Jantzi |
| Deckhand: | |
| Deckhand: | |

**DATA PROCESSORS**

| | |
|---|---|
| CGG Seismic Processor: | Shannon Campbell / Ian Shirley |
| FGSI QC Geophysicist: | Eric Swanson |

**WEATHER REPORT**

| Time | Sea State | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | 1 -2 ft | 5 kts | E |
| Wx - 1200: | 1 -2 ft | 5 kts | E |
| Wx - 1800: | 1 -2 ft | 5 kts | NE |
| Wx - 2400: | 3-4 ft | 25 kts | NW |

**HSE Reporting (Place an "x" in the box, with brief description**

| | | |
|---|---|---|
| HSE OFFICER: | Zachary Bellone | |
| Toolbox: | | GS-J-17,29 |
| HOC: | X | No HOC's submitted. |
| Safety: | | |
| Pre/Post Job: | | |

**LINE INFORMATION**

| TIME FROM | TIME TO | OP CODE | LINE NUMBER | HEADING | BSP | ESP | Fath (ft) | | | | DNP | DETAILED SURVEY INFORMATION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0000 | 0018 | OW | | | | | | | | | | Line turn continued. |
| 0018 | 0115 | E199 | S124A | 342.0° | 2045 | 100 | 66.0 | | | | | Sol |
| 0115 | 0320 | E199 | | | | | 142.0 | | | | | Eol |
| 0320 | 0409 | WS | | | | | | | | | | Waiting for slack tide. Heading for rerun. |
| 0409 | 0459 | E199 | SB128A | 342.0° | 2043 | 100 | 47.0 | | | | | Sol |
| 0459 | 0554 | E199 | | | | | 105.0 | | | | | Eol |
| 0554 | 0652 | OW | SB203 | 090.0° | 100 | 2542 | 101.0 | | | | | Sol Current pushing cable levelor below expected depth from surface. |
| 0652 | 0725 | OW | | | | | 94.0 | | | | | Eol |
| 0725 | 0816 | OW | SB120A | 342.0° | 100 | 2049 | 115.0 | | | | | Sol |
| 0816 | 1240 | OS | | | | | 69.0 | | | | | Eol Extra long line turn due to waiting on slack tide. |
| 1240 | 1316 | OW | SB201 | 090.4° | 100 | 1715 | 86.0 | | | | | Sol |
| 1316 | 1318 | OW | | | | | 105.0 | | | | | Eol Extra long line turn due to waiting on slack tide |
| 1318 | 1759 | OS | | | | | | | | | | Waiting for slack tide. |
| 1759 | 1834 | OW | SB201A | 342.0° | 100 | 1715 | 81.0 | | | | | Sol |
| 1834 | 1835 | OW | | | | | 104.0 | | | | | Eol |
| 1835 | 2030 | DR | | | | | | | | | | Picked up boomer and short streamer. Deployed GI gun and long streamer. |
| 2030 | 2400 | OS | | | | | | | | | | Waiting for slack tide. Seas too rough on direction of tie line. Will attempt go to run SL119 again to complete it since it was aborted on orginal attem |
| | | DM | SL206 | 089.6° | 960 | 1070 | | | | | | Deleted portion of this line due to a line of fishing buoys in vessels path. |
| | | DM | SL205 | 090.0° | 962 | 1073 | | | | | | Deleted portion of this line due to a line of fishing buoys in vessels path. |

# FUGRO GEOSERVICES, INC.
## GEOPHYSICAL JOBLOG

ver 7.22.2010-B (Alaska)

| | |
|---|---|
| DATE: | 22-Sep-2015 Tue Julian Day: 265 |
| PROSPECT / SITE: | Seismic Portion |
| NAV. SYSTEM: | Starfix |
| FGSI JOB #: | 2415-7058 |
| JOB DAY #: | Day: 46 |
| CRP TO STERN: | 16.50 Meters |

| | |
|---|---|
| CLIENT: | Alaska LNG |
| JOB DESCRIPTION: | Seisimic |
| AREA & BLOCK: | Cook Inlet |
| R/V: | Qualifier 105 |
| No. of SURVEY LINES: | 42 — 217.27 Kilometers, 100.6% Complete |

32,881.25 Meters Deleted

**VESSEL MANAGER(S)**

| | |
|---|---|
| Party Manager: | Wayne Labrie |
| Ass't Party Manager: | Ted Tremblay |

**CLIENT REPRESENTATIVE(S)**

| | |
|---|---|
| QC Rep: | Noel Rogers |
| HSE Rep: | David King |
| Client Rep #3: | |
| Client Rep #4: | |

| GEOPHYSICAL EQUIPMENT | EQUIP # |
|---|---|
| Geometrics GeoEel 24ch.(1.56 gr) | # 2 |
| Geometrics GeoEel 24ch.(6.25 gr) | # 1 |
| G.I. 60 ci Sleeve Gun | # 4198 |
| Castaway CTD Velocimeter | # 1 |
| Applied Acoutics Boomer | Rental |
| Edgetech 3200-XS SBP | # 1 |

| GEOPHYSICAL CREW | |
|---|---|
| Technical Coordinator: | Ted Tremblay |
| Shift Supervisor: | |
| Operator: | Zachary Bellone |
| " | Freddie Wilson |
| " | |
| " | |
| FGSI Surveyor: | Phillip Daniels |
| SES Field Lead PSO | Patti Hasse |
| PSO | Vanessa James |
| " | |
| " | |

| VESSEL CREW | |
|---|---|
| 1st Captain: | David Mastolier |
| 2nd Captain: | |
| 1st Mate: | Jeff Gregson |
| Chief Engineer: | Todd Ostler |
| Cook/Senior Deckhand: | Kevin Anderson |
| Deckhand: | Ben Jantzi |
| Deckhand: | |
| Deckhand: | |

**DATA PROCESSORS**

| | |
|---|---|
| CGG Seismic Processor: | Shannon Campbell / Ian Shirley |
| FGSI QC Geophysicist: | Eric Swanson |

**WEATHER REPORT**

| Time | Sea State | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | 3 - 4 ft | 20-25 kts | |
| Wx - 1200: | | | |
| Wx - 1800: | | | |
| Wx - 2400: | | | |

**HSE Reporting (Place an "x" in the box, with brief description**

| HSE OFFICER: | Zachary Bellone | |
|---|---|---|
| Toolbox: | | |
| HOC: | | |
| Safety: | | |
| Pre/Post Job: | | |

| TIME FROM | TIME TO | OP CODE | LINE NUMBER | HEADING | BSP | ESP | Fath (ft) | | | | DNP |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0000 | 0049 | OS | | | | | | | | | |
| 0049 | 0138 | OW | SL119A | 342.0° | 1074 | 100 | 77.0 | | | | |
| 0138 | 0139 | OW | | | | | 120.0 | | | | |
| 0139 | 0702 | OS | | | | | | | | | |
| 0702 | 0754 | OW | SL200C | 089.0° | 100 | 1340 | 82.0 | | | | |
| 0754 | 0841 | OW | | | | | 83.0 | | | | |
| 0841 | 0919 | OW | SL204 | 090.4° | 100 | 921 | 85.0 | | | | |
| 0919 | 0925 | OW | | | | | 54.0 | | | | |
| 0925 | 0945 | DR | | | | | | | | | |
| 0945 | 1130 | WS | | | | | | | | | |
| 1130 | 1900 | WS | | | | | | | | | |
| 1900 | 2400 | WS | | | | | | | | | |

**DETAILED SURVEY INFORMATION**

Line turn continued.
Sol Original line was aborted due to trees in water on original line.
Eol.
Running circles til slack tide to do tie line.
Sol
Eol.
Sol
Eol.
Pickup gear.
Waiting on weather.
Enroute to Homer for water, food, crew change since the weather is bad. Labrie and Bellone will disembark and Thibodeaux will embark tomorrow
This completes the Seismic Portion of job. Switching to a new joblog called AKLNG_Joblog&DPR_5.

# FUGRO GEOSERVICES, INC.
## GEOPHYSICAL JOBLOG

ver 7.22.2010-B (Alaska)

| | |
|---|---|
| DATE: | 23-Sep-2015 Wed Julian Day: 266 |
| PROSPECT / SITE: | Pipeline Portion |
| NAV. SYSTEM: | Starfix |
| FGSI JOB #: | 2415-7058 |
| JOB DAY #: | Day: 1 |
| CRP TO STERN: | 16.50 Meters |

| | |
|---|---|
| NAV. DIVIDE BY: | 1 |
| NAV. FIX DISTANCE: | 3.125 |
| SURVEY UNITS: | Meters |
| NAUTICAL MILE: | 6080.0 |

| | |
|---|---|
| CLIENT: | Alaska LNG |
| JOB DESCRIPTION: | Pipeline Portion |
| AREA & BLOCK: | Cook Inlet |
| R/V: | Qualifier 105 |
| No. of SURVEY LINES: | 109 |
| ORIGINAL JOB TOTAL: | 479,550.00 |

479.55 Kilometers
0.0% Complete

**VESSEL MANAGER(S)**

| | |
|---|---|
| Party Manager: | Ted Tremblay |
| Ass't Party Manager: | |

**CLIENT REPRESENTATIVE(S)**

| | |
|---|---|
| QC Rep: | Noel Rogers |
| HSE Rep: | David King |
| Client Rep #3: | |
| Client Rep #4: | |

| GEOPHYSICAL EQUIPMENT | EQUIP # |
|---|---|
| Geometrics GeoEel 24ch.(1.56 gr) | # 2 |
| Geometrics GeoEel 24ch.(6.25 gr) | # 1 |
| G.I. 60 ci Sleeve Gun | # 4198 |
| Castaway CTD Velocimeter | # 1 |
| Applied Acoutics Boomer | Rental |
| Edgetech 3200-XS SBP | # 1 |
| | |
| | |
| | |
| | |
| | |

**GEOPHYSICAL CREW**

| | |
|---|---|
| Technical Coordinator: | Ted Tremblay |
| Shift Supervisor: | |
| Operator: | Barton Thibodeaux |
| " | Freddie Wilson |
| " | |
| " | |
| FGSI Surveyor: | Phillip Daniels |
| SES Field Lead PSO | Patti Hasse |
| PSO | Niccole Van Hoey |
| " | |
| " | |

**VESSEL CREW**

| | |
|---|---|
| 1st Captain: | Jared Bradshaw |
| 2nd Captain: | |
| 1st Mate: | Jeff Gregson |
| Chief Engineer: | Todd Ostler |
| Cook/Senior Deckhand: | Kevin Anderson |
| Deckhand: | Ben Jantzi |
| Deckhand: | |
| Deckhand: | |

**DATA PROCESSORS**

| | |
|---|---|
| CGG Seismic Processor: | Shannon Campbell / Ian Shirley |
| FGSI QC Geophysicist: | Eric Swanson |

**WEATHER REPORT**

| Time | Sea State | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | | | |
| Wx - 1200: | | | |
| Wx - 1800: | | | |
| Wx - 2400: | | | |

**HSE Reporting (Place an "x" in the box, with brief description**

| | | |
|---|---|---|
| HSE OFFICER: | Barton Thibodeaux | |
| Toolbox: | | |
| HOC: | No | No HOC's submitted |
| Safety: | Yes | Loss pf Power Safety Drill |
| Pre/Post Job: | | |

| TIME FROM | TIME TO | OP CODE | LINE INFORMATION: LINE NUMBER | HEADING | BSP | ESP | Fath (ft) | | | | DNP |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0000 | 0001 | WS | | | | | | | | | |
| 0001 | 0002 | WS | | | | | | | | | |
| 0002 | 0003 | WS | | | | | | | | | |
| 0003 | 0004 | WS | | | | | | | | | |
| 0004 | 0005 | WS | | | | | | | | | |
| 0005 | 0006 | WS | | | | | | | | | |
| 0006 | 1500 | WS | | | | | | | | | |
| 1500 | 1515 | WS | | | | | | | | | |
| 1515 | 1930 | WS | | | | | | | | | |
| 1930 | 1940 | WS | | | | | | | | | |
| 1940 | 2400 | WS | | | | | | | | | |

**DETAILED SURVEY INFORMATION**

The nav shot point distance is 3.125 not 6.25 as the preplot database is made for so the shotpoints will be doubled.
On the "Eq. Specs-Seismic Sys #1 & #2" tab of joblog, the only sensors accurately entered are the "EDGETECH 3200-XS SUBBOTTOM PROFILER
and the "APPLIED ACOUTICS CSP-P BOOMER". The "Seismic Systems #1 and #2 Specs" page does not allow to enter the proper values for a aut
calculation on "Seismic System #1 Specs" tab and " Seismic System #2" tab. So these values are manually entered correctly in those tabs along
with the manual entering of values on tabs "Drawing-24(1.56)" and "Drawing-24(1.56)". Tabs for "Seismic System #1" have been deleted since we wi
not use the long streamer with G.I. gun as a sound source. "Seismic System #2" is now the Boomer as a sound source with short streamer.
Vessel obtains food, water and fuel.
Crew change takes place. Wayne Labrie and Zachary Bellone is replaced with Barton Thibodeaux. Vanessa James is replaced with Niccole Van Ho
Captains crew change.
Safety Drill of the Week: Loss of Power
Enroute to work location.

# FUGRO GEOSERVICES, INC.
## GEOPHYSICAL JOBLOG

ver 7.22.2010-B (Alaska)

| | |
|---|---|
| DATE: | 24-Sep-2015 Thu Julian Day: 267 |
| PROSPECT / SITE: | Pipeline Portion |
| NAV. SYSTEM: | Starfix |
| FGSI JOB #: | 2415-7058 |
| JOB DAY #: | Day: 2 |
| CRP TO STERN: | 16.50 Meters |

| | |
|---|---|
| CLIENT: | Alaska LNG |
| JOB DESCRIPTION: | Pipeline Portion |
| AREA & BLOCK: | Cook Inlet |
| R/V: | Qualifier 105 |
| No. of SURVEY LINES: | 109 — 470.46 Kilometers |
| | 8.7% Complete |
| | 9,087.50 Meters Deleted |

**VESSEL MANAGER(S)**

| | |
|---|---|
| Party Manager: | Ted Tremblay |
| Ass't Party Manager: | |

**CLIENT REPRESENTATIVE(S)**

| | |
|---|---|
| QC Rep: | Noel Rogers |
| HSE Rep: | David King |
| Client Rep #3: | |
| Client Rep #4: | |

| GEOPHYSICAL EQUIPMENT | EQUIP # |
|---|---|
| Geometrics GeoEel 24ch.(1.56 gr) | # 2 |
| Geometrics GeoEel 24ch.(6.25 gr) | # 1 |
| G.I. 60 ci Sleeve Gun | # 4198 |
| Castaway CTD Velocimeter | # 1 |
| Applied Acoutics Boomer | Rental |
| Edgetech 3200-XS SBP | # 1 |

| GEOPHYSICAL CREW | |
|---|---|
| Technical Coordinator: | Ted Tremblay |
| Shift Supervisor: | |
| Operator: | Barton Thibodeaux |
| " | Freddie Wilson |
| " | |
| " | |
| FGSI Surveyor: | Phillip Daniels |
| SES Field Lead PSO | Patti Hasse |
| PSO | Niccole Van Hoey |
| " | |
| " | |

| VESSEL CREW | |
|---|---|
| 1st Captain: | Jared Bradshaw |
| 2nd Captain: | |
| 1st Mate: | Jeff Gregson |
| Chief Engineer: | Todd Ostler |
| Cook/Senior Deckhand: | Kevin Anderson |
| Deckhand: | Ben Jantzi |
| Deckhand: | |
| Deckhand: | |

| DATA PROCESSORS | |
|---|---|
| CGG Seismic Processor: | Shannon Campbell / Ian Shirley |
| FGSI QC Geophysicist: | Eric Swanson |

**WEATHER REPORT**

| Time | Sea State | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | | | |
| Wx - 1200: | 1 - 2 ft | 5 - 10 kts | NNE |
| Wx - 1800: | | | |
| Wx - 2400: | calm | calm | |

**HSE Reporting (Place an "x" in the box, with brief description**

| | | |
|---|---|---|
| HSE OFFICER: | Barton Thibodeaux | |
| Toolbox: | X | GS-J029-GS-J051 |
| HOC: | No | No HOC's submitted |
| Safety: | | |
| Pre/Post Job: | Yes | Scope of Work/Dress for Weather |

| TIME FROM | TIME TO | OP CODE | LINE INFORMATION: LINE NUMBER | HEADING | BSP | ESP | Fath (ft) | | | | DNP | DETAILED SURVEY INFORMATION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0000 | 0800 | WS | | | | | | | | | | Enroute to work location. |
| 0800 | 0810 | SM | | | | | | | | | | Discuss scope of work with captain and geo crew. |
| 0810 | 0825 | SS | | | | | | | | | | Check out water depths with fathometer before deploying gear. |
| 0825 | 0828 | VP | Velo #6 | | | | | | | | | Velo 6 taken @: Lat: 60.7880 Lon: -151.2595. |
| 0828 | 0928 | DR | | | | | | | | | | Deploy gear. |
| 0928 | 1030 | DR | | | | | | | | | | Tune gear. |
| 1030 | 1058 | OW | | | | | | | | | | Heading for Sol. |
| 1058 | 1104 | E30 | 514 | 174.5° | 100 | 249 | 74.5 | | | | DNP | Sol |
| 1104 | 1133 | E30 | | | | | | | | | | Abort! GeoEel software locks up. |
| 1133 | 1150 | OL | 514A | 174.5° | 100 | 563 | 77.0 | | | | | Sol |
| 1150 | 1214 | LT | | | | | 42.0 | | | | | Abort due to lack of water depth. |
| 1214 | 1230 | OL | 515 | 174.5° | 100 | 545 | 75.0 | | | | | Sol |
| 1230 | 1254 | LT | | | | | 38.0 | | | | | Abort due to lack of water depth. |
| 1254 | 1309 | OL | 516 | 174.5° | 100 | 512 | 75.0 | | | | | Sol |
| 1309 | 1332 | LT | | | | | 38.0 | | | | | Abort due to lack of water depth. |
| 1332 | 1344 | OL | 517 | 174.5° | 100 | 489 | 73.0 | | | | | Sol |
| 1344 | 1403 | LT | | | | | 47.0 | | | | | Abort due to lack of water depth. |
| 1403 | 1413 | E199 | 642 | 084.8° | 1862 | 1330 | 84.0 | | | | | Sol |
| 1413 | 1520 | LT | | | | | 40.0 | | | | | Abort due to lack of water depth. Will try and run a primary route line heading North. Nav stopped sending shotpoints. |
| 1520 | 1538 | E30 | 512 | 354.0° | 14245 | 13431 | 67.0 | | | | DNP | Sol GeoEel not writing files. |
| 1538 | 1600 | E30 | | | | | | | | | | Abort! |
| 1600 | 2143 | OL | 512A | 355.0° | 14244 | 5390 | 65.0 | | | | | Sol |
| 2143 | 2258 | LT | | | | | 81.0 | | | | | Eol long line turn to let tide swap around |
| 2258 | 2400 | OL | 510 | 214.1° | 5316 | 7860 | 81.0 | | | | | Sol |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | DM | 512A | 355.0° | 14244 | 14683 | | | | | | Portion of line that can't be completed - heading towards beach. |
| | | DM | 642 | 084.8° | 1330 | 100 | | | | | | Portion of line that can't be completed - heading towards beach. |
| | | DM | 514A | 174.5° | 563 | 890 | | | | | | Portion of line that can't be completed - heading towards beach. |
| | | DM | 515 | 174.5° | 545 | 850 | | | | | | Portion of line that can't be completed - heading towards beach. |
| | | DM | 516 | 174.5° | 512 | 814 | | | | | | Portion of line that can't be completed - heading towards beach. |
| | | DM | 517 | 174.5° | 489 | 794 | | | | | | Portion of line that can't be completed - heading towards beach. |

# FUGRO GEOSERVICES, INC.
## GEOPHYSICAL JOBLOG

ver 7.22.2010-B (Alaska)

| | |
|---|---|
| DATE: | 25-Sep-2015 Fri Julian Day: 268 |
| PROSPECT / SITE: | Pipeline Portion |
| NAV. SYSTEM: | Starfix |
| FGSI JOB #: | 2415-7058 |
| JOB DAY #: | Day: 3 |
| CRP TO STERN: | 16.50 Meters |

| | |
|---|---|
| CLIENT: | Alaska LNG |
| JOB DESCRIPTION: | Pipeline Portion |
| AREA & BLOCK: | Cook Inlet |
| R/V: | Qualifier 105 |
| No. of SURVEY LINES: | 109 — 470.46 Kilometers, 15.4% Complete |

9,087.50 Meters Deleted

**VESSEL MANAGER(S)**

| | |
|---|---|
| Party Manager: | Ted Tremblay |
| Ass't Party Manager: | |

**CLIENT REPRESENTATIVE(S)**

| | |
|---|---|
| QC Rep: | Noel Rogers |
| HSE Rep: | David King |
| Client Rep #3: | |
| Client Rep #4: | |

| GEOPHYSICAL EQUIPMENT | EQUIP # |
|---|---|
| Geometrics GeoEel 24ch.(1.56 gr) | # 2 |
| Geometrics GeoEel 24ch.(6.25 gr) | # 1 |
| G.I. 60 ci Sleeve Gun | # 4198 |
| Castaway CTD Velocimeter | # 1 |
| Applied Acoutics Boomer | Rental |
| Edgetech 3200-XS SBP | # 1 |
| | |
| | |
| | |
| | |
| | |

**GEOPHYSICAL CREW**

| | |
|---|---|
| Technical Coordinator: | Ted Tremblay |
| Shift Supervisor: | |
| Operator: | Barton Thibodeaux |
| " | Freddie Wilson |
| " | |
| " | |
| FGSI Surveyor: | Phillip Daniels |
| SES Field Lead PSO | Patti Hasse |
| PSO | Niccole Van Hoey |
| " | |
| " | |

**VESSEL CREW**

| | |
|---|---|
| 1st Captain: | Jared Bradshaw |
| 2nd Captain: | |
| 1st Mate: | Jeff Gregson |
| Chief Engineer: | Todd Ostler |
| Cook/Senior Deckhand: | Kevin Anderson |
| Deckhand: | Ben Jantzi |
| Deckhand: | |
| Deckhand: | |

**DATA PROCESSORS**

| | |
|---|---|
| CGG Seismic Processor: | Shannon Campbell / Ian Shirley |
| FGSI QC Geophysicist: | Eric Swanson |

**WEATHER REPORT**

| Time | Sea State | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | 1 ft | 10 to 12knts | SSE |
| Wx - 1200: | 1 - 2 ft | 15-20kts | S |
| Wx - 1800: | 3 - 4 ft | 20-25 kts | S |
| Wx - 2400: | | | |

**HSE Reporting (Place an "x" in the box, with brief description**

| | | |
|---|---|---|
| HSE OFFICER: | Barton Thibodeaux | |
| Toolbox: | X | GS-J-017 |
| HOC: | No | No HOC's submitted. |
| Safety: | | |
| Pre/Post Job: | | |

| TIME FROM | TIME TO | OP CODE | LINE INFORMATION: LINE NUMBER | HEADING | BSP | ESP | Fath (ft) | | | | DNP | DETAILED SURVEY INFORMATION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0000 | 0009 | OLC | 510 | 214.1° | 7860 | 8167 | | | | | | on line |
| 0009 | 0106 | LT | | | | | 74.0 | | | | | Aborted line due nav locking up. |
| 0106 | 0111 | OW | 510A | 206.3° | 8065 | 8167 | 74.0 | | | | | Sol overlap of common shotpoints. |
| 0111 | 0406 | OLC | | | 8167 | 13510 | 74.0 | | | | | Olc At Shot point 9200 change SBP channel Configuration from 3 channel Envelope to 2 Channel heave compensated. |
| 0406 | 0443 | LT | | | | | 83.0 | | | | | Aborted line due nav locking up. |
| 0443 | 0448 | OW | 510B | 174.5° | 13327 | 13510 | 92.0 | | | | DNP | Sol overlap of common shotpoints. |
| 0448 | 0453 | OW | | | 13510 | 13785 | 83.0 | | | | | Olc. |
| 0453 | 0518 | LT | | | | | 84.0 | | | | | Aborted line due nav locking up. |
| 0518 | 0521 | OW | 510C | 174.5° | 13618 | 13785 | 82.0 | | | | DNP | Sol overlap of common shotpoints. |
| 0521 | 0522 | OW | | | 13785 | 13788 | 84.0 | | | | | Olc. |
| 0522 | 0610 | LT | | | | | 83.0 | | | | | Aborted due to to strong of a current. |
| 0610 | 0617 | OL | 641 | 084.5° | 100 | 256 | 79.0 | | | | | Sol |
| 0617 | 0647 | LT | | | | | 79.0 | | | | | Eol |
| 0647 | 0655 | OL | 640 | 084.5° | 100 | 256 | 84.0 | | | | | Sol |
| 0655 | 0727 | LT | | | | | 85.0 | | | | | Eol |
| 0727 | 0747 | OL | 642A | 084.8° | 1862 | 1342 | 76.0 | | | | | Sol |
| 0747 | 0847 | LT | | | | | 33.0 | | | | | Abort due to water depth. |
| 0847 | 0854 | OL | 639 | 084.8° | 100 | 256 | 73.0 | | | | | Sol |
| 0854 | 0915 | LT | | | | | 80.0 | | | | | Eol |
| 0915 | 0921 | OL | 638 | 107.6° | 100 | 256 | 72.0 | | | | | Sol |
| 0921 | 0943 | LT | | | | | 75.0 | | | | | Eol |
| 0943 | 0947 | OL | 637 | 122.8° | 100 | 256 | 68.0 | | | | | Sol |
| 0947 | 1004 | LT | | | | | 74.0 | | | | | Eol |
| 1004 | 1007 | OL | 636 | 302.8° | 256 | 100 | 80.0 | | | | | Sol |
| 1007 | 1029 | LT | | | | | 70.0 | | | | | Eol |
| 1029 | 1033 | OL | 635 | 122.8° | 100 | 256 | 68.0 | | | | | Sol - line file named 6325 by accident on GeoEel. Folder renamed to correct line name. |
| 1033 | 1110 | LT | | | | | 80.0 | | | | | Eol |
| 1110 | 1114 | OL | 634 | 302.8° | 256 | 100 | 77.0 | | | | | Sol |
| 1114 | 1128 | LT | | | | | 74.0 | | | | | Eol |
| 1128 | 1132 | OL | 633 | 122.8° | 100 | 244 | 73.0 | | | | | Sol |
| 1132 | 1146 | LT | | | | | 78.0 | | | | | Eol |
| 1146 | 1150 | OL | 632 | 302.8° | 256 | 100 | 64.0 | | | | | Sol |
| 1150 | 1206 | LT | | | | | 79.0 | | | | | Eol |

# FUGRO GEOSERVICES, INC.
## GEOPHYSICAL JOBLOG

ver 7.22.2010-B (Alaska)

| | |
|---|---|
| DATE: | 25-Sep-2015 Fri Julian Day: 268 |
| PROSPECT / SITE: | Pipeline Portion |
| NAV. SYSTEM: | Starfix |
| FGSI JOB #: | 2415-7058 |
| JOB DAY #: | Day: 3 |
| CRP TO STERN: | 16.50 Meters |

| | |
|---|---|
| CLIENT: | Alaska LNG |
| JOB DESCRIPTION: | Pipeline Portion |
| AREA & BLOCK: | Cook Inlet |
| R/V: | Qualifier 105 |
| No. of SURVEY LINES: | 109 — 470.46 Kilometers, 15.4% Complete |

9,087.50 Meters Deleted

**VESSEL MANAGER(S)**

| | |
|---|---|
| Party Manager: | Ted Tremblay |
| Ass't Party Manager: | |

**CLIENT REPRESENTATIVE(S)**

| | |
|---|---|
| QC Rep: | Noel Rogers |
| HSE Rep: | David King |
| Client Rep #3: | |
| Client Rep #4: | |

| TIME | | OP CODE | LINE INFORMATION | | | | | | | | | DETAILED SURVEY INFORMATION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FROM | TO | | LINE NUMBER | HEADING | BSP | ESP | Fath (ft) | | | | DNP | |
| 1206 | 1211 | OL | 631 | 122.8° | 100 | 256 | 79.0 | | | | | Sol |
| 1211 | 1249 | LT | | | | | 88.0 | | | | | Eol |
| 1249 | 1252 | OL | 630 | 123.5° | 100 | 256 | 85.0 | | | | | Sol |
| 1252 | 1340 | LT | | | | | 91.0 | | | | | Eol |
| 1340 | 1515 | OL | 508 | 206.3° | 8206 | 10220 | 72.0 | | | | | Sol |
| 1515 | 1600 | WS | | | | | 95.0 | | | | | Eol Will not shoot another line. Seas and Winds picking up. S 20-25kts 3-4 ft. Retrieve and secure gear. |
| 1600 | 1730 | WS | | | | | | | | | | Enroute to protected area. |
| 1730 | 2400 | WS | | | | | | | | | | Anchored down in Nikiski Bay. |

# FUGRO GEOSERVICES, INC.
## GEOPHYSICAL JOBLOG

ver 7.22.2010-B (Alaska)

| | |
|---|---|
| DATE: | 26-Sep-2015 Sat Julian Day: 269 |
| PROSPECT / SITE: | Pipeline Portion |
| NAV. SYSTEM: | Starfix |
| FGSI JOB #: | 2415-7058 |
| JOB DAY #: | Day: 4 |
| CRP TO STERN: | 16.50 Meters |

| | |
|---|---|
| CLIENT: | Alaska LNG |
| JOB DESCRIPTION: | Pipeline Portion |
| AREA & BLOCK: | Cook Inlet |
| R/V: | Qualifier 105 |
| No. of SURVEY LINES: | 109 — 470.46 Kilometers |
| | 15.4% Complete |
| | 9,087.50 Meters Deleted |

**VESSEL MANAGER(S)**

| | |
|---|---|
| Party Manager: | Ted Tremblay |
| Ass't Party Manager: | |

**CLIENT REPRESENTATIVE(S)**

| | |
|---|---|
| QC Rep: | Noel Rogers |
| HSE Rep: | David King |
| Client Rep #3: | |
| Client Rep #4: | |

| GEOPHYSICAL EQUIPMENT | EQUIP # |
|---|---|
| Geometrics GeoEel 24ch.(1.56 gr) | # 2 |
| Geometrics GeoEel 24ch.(6.25 gr) | # 1 |
| G.I. 60 ci Sleeve Gun | # 4198 |
| Castaway CTD Velocimeter | # 1 |
| Applied Acoutics Boomer | Rental |
| Edgetech 3200-XS SBP | # 1 |
| | |
| | |
| | |
| | |
| | |

| GEOPHYSICAL CREW | |
|---|---|
| Technical Coordinator: | Ted Tremblay |
| Shift Supervisor: | |
| Operator: | Barton Thibodeaux |
| " | Freddie Wilson |
| " | |
| " | |
| FGSI Surveyor: | Phillip Daniels |
| SES Field Lead PSO | Patti Hasse |
| PSO | Niccole Van Hoey |
| " | |
| " | |

| VESSEL CREW | |
|---|---|
| 1st Captain: | Jared Bradshaw |
| 2nd Captain: | |
| 1st Mate: | Jeff Gregson |
| Chief Engineer: | Todd Ostler |
| Cook/Senior Deckhand: | Kevin Anderson |
| Deckhand: | Ben Jantzi |
| Deckhand: | |
| Deckhand: | |

| DATA PROCESSORS | |
|---|---|
| CGG Seismic Processor: | Shannon Campbell / Ian Shirley |
| FGSI QC Geophysicist: | Eric Swanson |

**WEATHER REPORT**

| Time | Sea State | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | 5 - 10 kts | 1 ft | N |
| Wx - 1200: | 10 kts | 1 - 2 feet | NE |
| Wx - 1800: | 10 kts | 1-2 ft | N |
| Wx - 2400: | 10-15 kts | 1-2 ft | N |

**HSE Reporting (Place an "x" in the box, with brief description**

| HSE OFFICER: | Barton Thibodeaux | |
|---|---|---|
| Toolbox: | X | GS-J-17,29 |
| HOC: | | |
| Safety: | | |
| Pre/Post Job: | | |

| TIME FROM | TIME TO | OP CODE | LINE INFORMATION: LINE NUMBER | HEADING | BSP | ESP | Fath (ft) | | | | DNP | DETAILED SURVEY INFORMATION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0000 | 0730 | WS | | | | | | | | | | Waiting on daylight to see if weather is favorable once given clearance by PSO. |
| 0730 | 0800 | WS | | | | | | | | | | Warming up mains. |
| 0800 | 0830 | WS | | | | | | | | | | Picking up anchor and PSO starting to observe for wildlife. |
| 0830 | 0900 | DR | | | | | | | | | | Deploy Subbottom Profiler. |
| 0900 | 1000 | DR | | | | | | | | | | Deploy lboomer and streamer while heading to line. |
| 1000 | 1238 | LT | | | | | | | | | | Heading to continue running South on line 508 from yesterday where we left off. Gunboats began shooting seismic In the area at 11:30 |
| 1238 | 1243 | OW | 508A | 203.2° | 9980 | 10220 | 81.0 | | | | DNP | Sol. Overlap |
| 1243 | 1251 | OW | | 203.2° | 10220 | 10455 | 80.0 | | | | | Olc |
| 1251 | 1313 | E199 | | | | | | | | | | Aborted. Nav froze. Circle up and restart portion as 508B. |
| 1313 | 1321 | OW | 508B | 203.2° | 10050 | 10220 | 81.0 | | | | X | Sol. Overlap |
| 1321 | 1440 | OW | | | 10220 | 11700 | 80.0 | | | | | Sol . Gunboats in the area stopped shooting at 14:19 |
| 1440 | 1457 | DR | | | | | | | | | | Abort this section. Retrieve gear and head to dock to pick up Robert Faragher. Line has to be reshot because of alternate sound source. |
| 1457 | 1500 | VP | Velo#7 | | | | | | | | | Velo #7 taken @ Lat:60.8452 Lon: -151.2422. Depth= 25.63m. Avg. Vel=1479.8m/s. |
| 1500 | 1700 | OW | | | | | | | | | | Enroute to ASRC Rig Tenders Terminal. |
| 1700 | 1900 | OW | | | | | | | | | | Arrive at Terminal but swells are too high for vessel to get along dockside. Heading back to work area. |
| 1900 | 1945 | DR | | | | | | | | | | Deploy gear and slowly making way toward line to give gunboat time to finsh |
| 1945 | 2400 | OS | | | | | | | | | | Down because of boomer power supply not energizing. Swap out to another spare unit- CSP-D. Time has passed to test and mitigate system. |
| | | | | | | | | | | | | Waiting on daylight to see if spare unit will work. |

# FUGRO GEOSERVICES, INC.
## GEOPHYSICAL JOBLOG

ver 7.22.2010-B (Alaska)

| | |
|---|---|
| DATE: | 27-Sep-2015 Sun Julian Day: 270 |
| PROSPECT / SITE: | Pipeline Portion |
| NAV. SYSTEM: | Starfix |
| FGSI JOB #: | 2415-7058 |
| JOB DAY #: | Day: 5 |
| CRP TO STERN: | 16.50 Meters |

| | |
|---|---|
| CLIENT: | Alaska LNG |
| JOB DESCRIPTION: | Pipeline Portion |
| AREA & BLOCK: | Cook Inlet |
| R/V: | Qualifier 105 |
| No. of SURVEY LINES: | 109 — 470.46 Kilometers |
| | 15.4% Complete |
| | 9,087.50 Meters Deleted |

**VESSEL MANAGER(S)**

| | |
|---|---|
| Party Manager: | Ted Tremblay |
| Ass't Party Manager: | |

**CLIENT REPRESENTATIVE(S)**

| | |
|---|---|
| QC Rep: | Noel Rogers |
| HSE Rep: | David King |
| Client Rep #3: | |
| Client Rep #4: | |

| GEOPHYSICAL EQUIPMENT | EQUIP # |
|---|---|
| Geometrics GeoEel 24ch.(1.56 gr) | # 2 |
| Geometrics GeoEel 24ch.(6.25 gr) | # 1 |
| G.I. 60 ci Sleeve Gun | # 4198 |
| Castaway CTD Velocimeter | # 1 |
| Applied Acoutics Boomer | Rental |
| Edgetech 3200-XS SBP | # 1 |
| | |
| | |
| | |
| | |
| | |

| GEOPHYSICAL CREW | |
|---|---|
| Technical Coordinator: | Ted Tremblay |
| Shift Supervisor: | |
| Operator: | Barton Thibodeaux |
| " | Freddie Wilson |
| " | Robert Faragher |
| " | |
| FGSI Surveyor: | Phillip Daniels |
| SES Field Lead PSO | Patti Hasse |
| PSO | Niccole Van Hoey |
| " | |
| " | |

| VESSEL CREW | |
|---|---|
| 1st Captain: | Jared Bradshaw |
| 2nd Captain: | |
| 1st Mate: | Jeff Gregson |
| Chief Engineer: | Todd Ostler |
| Cook/Senior Deckhand: | Kevin Anderson |
| Deckhand: | Ben Jantzi |
| Deckhand: | |
| Deckhand: | |

**DATA PROCESSORS**

| | |
|---|---|
| CGG Seismic Processor: | Shannon Campbell / Ian Shirley |
| FGSI QC Geophysicist: | Eric Swanson |

**WEATHER REPORT**

| Time | Sea State | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | 1 ft | 10knts | NNW |
| Wx - 1200: | | | |
| Wx - 1800: | 2-3 | 15 kts | N |
| Wx - 2400: | | | |

**HSE Reporting (Place an "x" in the box, with brief description**

| | | |
|---|---|---|
| HSE OFFICER: | Barton Thibodeaux | |
| Toolbox: | X | GS-J-017 and MAR-TRA-102 |
| HOC: | Yes | 1 HOC submitted |
| Safety: | | |
| Pre/Post Job: | | |

| TIME FROM | TIME TO | OP CODE | LINE INFORMATION: LINE NUMBER | HEADING | BSP | ESP | Fath (ft) | | | | DNP | DETAILED SURVEY INFORMATION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0000 | 0745 | OS | | | | | | | | | | Waiting on daylight to start Boomer |
| 0745 | 0815 | OS | | | | | | | | | | New CSP-D unit will not energize to high voltage. High voltage fault light on. Check all fuses on units-Good. Inform Charlie Hall. |
| 0815 | 0830 | OS | | | | | | | | | | Reconnected CSP-P unit to recheck unit. Unit still not functioning. Waiting on decision from Charlie what to do next. |
| 0830 | 0900 | OS | | | | | | | | | | Speak with Mark Williams to get Mike Barth's telephone number. |
| 0900 | 0920 | OS | | | | | | | | | | Speak with Mike Barth. He says CSP-D unit has a bad power supply inside and will not work until reparied. The original unit CSP-P is bad also since |
| 0920 | 0925 | OS | | | | | | | | | | it will not discharge. Call back Charlie Hall and inform him so he can order another console unit. |
| 0925 | 1400 | OS | | | | | | | | | | Waiting on acall back from Fugro Nikiski office with a plan. |
| 1400 | 1430 | DR | | | | | | | | | | Pick up gear and head to Rig Tenders Terminal for Robert Faragher to embark. |
| 1430 | 1730 | OW | | | | | | | | | | Enroute to dock. |
| 1730 | 1830 | OW | | | | | | | | | | Transfer of Robert Faragher complete. |
| 1830 | 2000 | OS | | | | | | | | | | Heading to anchor area. |
| 2000 | 2400 | OS | | | | | | | | | | Anchored until new boomer arrives. |

# FUGRO GEOSERVICES, INC.
## GEOPHYSICAL JOBLOG

ver 7.22.2010-B (Alaska)

| | |
|---|---|
| DATE: | 28-Sep-2015 Mon Julian Day: 271 |
| PROSPECT / SITE: | Pipeline Portion |
| NAV. SYSTEM: | Starfix |
| FGSI JOB #: | 2415-7058 |
| JOB DAY #: | Day: 6 |
| CRP TO STERN: | 16.50 Meters |

| | |
|---|---|
| CLIENT: | Alaska LNG |
| JOB DESCRIPTION: | Pipeline Portion |
| AREA & BLOCK: | Cook Inlet |
| R/V: | Qualifier 105 |
| No. of SURVEY LINES: | 109 — 470.46 Kilometers |
| | 15.4% Complete |
| | 9,087.50 Meters Deleted |

**VESSEL MANAGER(S)**

| | |
|---|---|
| Party Manager: | Ted Tremblay |
| Ass't Party Manager: | |

**CLIENT REPRESENTATIVE(S)**

| | |
|---|---|
| QC Rep: | Noel Rogers |
| HSE Rep: | David King |
| Client Rep #3: | |
| Client Rep #4: | |

| GEOPHYSICAL EQUIPMENT | EQUIP # |
|---|---|
| Geometrics GeoEel 24ch.(1.56 gr) | # 2 |
| Geometrics GeoEel 24ch.(6.25 gr) | # 1 |
| G.I. 60 ci Sleeve Gun | # 4198 |
| Castaway CTD Velocimeter | # 1 |
| Applied Acoutics Boomer | Rental |
| Edgetech 3200-XS SBP | # 1 |
| | |
| | |
| | |
| | |
| | |

| GEOPHYSICAL CREW | |
|---|---|
| Technical Coordinator: | Ted Tremblay |
| Shift Supervisor: | |
| Operator: | Barton Thibodeaux |
| " | Freddie Wilson |
| " | Robert Faragher |
| " | |
| FGSI Surveyor: | Phillip Daniels |
| SES Field Lead PSO | Patti Hasse |
| PSO | Niccole Van Hoey |
| " | |
| " | |

| VESSEL CREW | |
|---|---|
| 1st Captain: | Jared Bradshaw |
| 2nd Captain: | |
| 1st Mate: | Jeff Gregson |
| Chief Engineer: | Todd Ostler |
| Cook/Senior Deckhand: | Kevin Anderson |
| Deckhand: | Ben Jantzi |
| Deckhand: | |
| Deckhand: | |

**DATA PROCESSORS**

| | |
|---|---|
| CGG Seismic Processor: | Shannon Campbell / Ian Shirley |
| FGSI QC Geophysicist: | Eric Swanson |

**WEATHER REPORT**

| Time | Sea State | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | | | |
| Wx - 1200: | | | |
| Wx - 1800: | | | |
| Wx - 2400: | | | |

**HSE Reporting (Place an "x" in the box, with brief description**

| HSE OFFICER: | Barton Thibodeaux | |
|---|---|---|
| Toolbox: | X | GS-J_057 and GS-J-057 |
| HOC: | | |
| Safety: | | |
| Pre/Post Job: | | |

| TIME FROM | TIME TO | OP CODE | LINE INFORMATION: LINE NUMBER | HEADING | BSP | ESP | Fath (ft) | | | | DNP |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0000 | 2400 | OS | | | | | | | | | |

**DETAILED SURVEY INFORMATION**

On Anchor-waiting on equipment.

# FUGRO GEOSERVICES, INC.
## GEOPHYSICAL JOBLOG

ver 7.22.2010-B (Alaska)

| | |
|---|---|
| DATE: | 29-Sep-2015 Tue Julian Day: 272 |
| PROSPECT / SITE: | Pipeline Portion |
| NAV. SYSTEM: | Starfix |
| FGSI JOB #: | 2415-7058 |
| JOB DAY #: | Day: 7 |
| CRP TO STERN: | 16.50 Meters |

| | |
|---|---|
| CLIENT: | Alaska LNG |
| JOB DESCRIPTION: | Pipeline Portion |
| AREA & BLOCK: | Cook Inlet |
| R/V: | Qualifier 105 |
| No. of SURVEY LINES: | 109 — 470.46 Kilometers |
| | 15.4% Complete |
| | 9,087.50 Meters Deleted |

**VESSEL MANAGER(S)**

| | |
|---|---|
| Party Manager: | Ted Tremblay |
| Ass't Party Manager: | |

**CLIENT REPRESENTATIVE(S)**

| | |
|---|---|
| QC Rep: | Noel Rogers |
| HSE Rep: | David King |
| Client Rep #3: | |
| Client Rep #4: | |

| GEOPHYSICAL EQUIPMENT | EQUIP # |
|---|---|
| Geometrics GeoEel 24ch.(1.56 gr) | # 2 |
| Geometrics GeoEel 24ch.(6.25 gr) | # 1 |
| G.I. 60 ci Sleeve Gun | # 4198 |
| Castaway CTD Velocimeter | # 1 |
| Applied Acoutics Boomer | Rental |
| Edgetech 3200-XS SBP | # 1 |
| | |
| | |
| | |
| | |
| | |

**GEOPHYSICAL CREW**

| | |
|---|---|
| Technical Coordinator: | Ted Tremblay |
| Shift Supervisor: | |
| Operator: | Barton Thibodeaux |
| " | Freddie Wilson |
| " | Robert Faragher |
| " | |
| FGSI Surveyor: | Phillip Daniels |
| SES Field Lead PSO | Patti Hasse |
| PSO | Niccole Van Hoey |
| " | |
| " | |

**VESSEL CREW**

| | |
|---|---|
| 1st Captain: | Jared Bradshaw |
| 2nd Captain: | |
| 1st Mate: | Jeff Gregson |
| Chief Engineer: | Todd Ostler |
| Cook/Senior Deckhand: | Kevin Anderson |
| Deckhand: | Ben Jantzi |
| Deckhand: | |
| Deckhand: | |

**DATA PROCESSORS**

| | |
|---|---|
| CGG Seismic Processor: | Shannon Campbell / Ian Shirley |
| FGSI QC Geophysicist: | Eric Swanson |

**WEATHER REPORT**

| Time | Sea State | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | 2 - 3 ft | 25 kts | NNW |
| Wx - 1200: | 3 - 4 ft | 25 - 30 kts | NNW |
| Wx - 1800: | 3 - 4 ft | 25 - 30 kts | NNW |
| Wx - 2400: | 2 - 3 ft | 10 - 15 kts | NNW |

**HSE Reporting (Place an "x" in the box, with brief description**

| | | |
|---|---|---|
| HSE OFFICER: | Barton Thibodeaux | |
| Toolbox: | X | GS-J-017 and 051 |
| HOC: | Yes | 1 HOC submitted |
| Safety: | | |
| Pre/Post Job: | | |

| TIME FROM | TIME TO | OP CODE | LINE INFORMATION: LINE NUMBER | HEADING | BSP | ESP | Fath (ft) | | | | DNP |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0000 | 0600 | OS | | | | | | | | | |
| 0600 | 1430 | WS | | | | | | | | | |
| 1430 | 1530 | WS | | | | | | | | | |
| 1530 | 1531 | WS | | | | | | | | | |
| 1531 | 1600 | WS | | | | | | | | | |
| 1600 | 2400 | WS | | | | | | | | | |

**DETAILED SURVEY INFORMATION**

On anchor awaiting equiptment.
Seas are too rough for acquisition.
Heading to rendez-vous with "My Marie" to pick up new boomer console.
The My Marie informs Captain that it is too rough for them to travel to us and that they would try again tomorrow. We can not go up the river to meet them so we will head back to our anchor area until tomorrow.
Anchored off.

# FUGRO GEOSERVICES, INC.
## GEOPHYSICAL JOBLOG

ver 7.22.2010-B (Alaska)

| | |
|---|---|
| DATE: | 30-Sep-2015 Wed Julian Day: 273 |
| PROSPECT / SITE: | Pipeline Portion |
| NAV. SYSTEM: | Starfix |
| FGSI JOB #: | 2415-7058 |
| JOB DAY #: | Day: 8 |
| CRP TO STERN: | 16.50 Meters |

| | |
|---|---|
| CLIENT: | Alaska LNG |
| JOB DESCRIPTION: | Pipeline Portion |
| AREA & BLOCK: | Cook Inlet |
| R/V: | Qualifier 105 |
| No. of SURVEY LINES: | 109 — 460.39 Kilometers, 20.1% Complete |

19,159.38 Meters Deleted

**VESSEL MANAGER(S)**

| | |
|---|---|
| Party Manager: | Ted Tremblay |
| Ass't Party Manager: | |

**CLIENT REPRESENTATIVE(S)**

| | |
|---|---|
| QC Rep: | Noel Rogers |
| HSE Rep: | David King |
| Client Rep #3: | |
| Client Rep #4: | |

| GEOPHYSICAL EQUIPMENT | EQUIP # |
|---|---|
| Geometrics GeoEel 24ch.(1.56 gr) | # 2 |
| Geometrics GeoEel 24ch.(6.25 gr) | # 1 |
| G.I. 60 ci Sleeve Gun | # 4198 |
| Castaway CTD Velocimeter | # 1 |
| Applied Acoutics Boomer | Rental |
| Edgetech 3200-XS SBP | # 1 |
| | |
| | |
| | |
| | |
| | |

**GEOPHYSICAL CREW**

| | |
|---|---|
| Technical Coordinator: | Ted Tremblay |
| Shift Supervisor: | |
| Operator: | Barton Thibodeaux |
| " | Freddie Wilson |
| " | Robert Faragher |
| " | |
| FGSI Surveyor: | Phillip Daniels |
| SES Field Lead PSO | Patti Hasse |
| PSO | Niccole Van Hoey |
| " | |
| " | |

**VESSEL CREW**

| | |
|---|---|
| 1st Captain: | Jared Bradshaw |
| 2nd Captain: | |
| 1st Mate: | Jeff Gregson |
| Chief Engineer: | Todd Ostler |
| Cook/Senior Deckhand: | Kevin Anderson |
| Deckhand: | Ben Jantzi |
| Deckhand: | |
| Deckhand: | |

**DATA PROCESSORS**

| | |
|---|---|
| CGG Seismic Processor: | Shannon Campbell / Ian Shirley |
| FGSI QC Geophysicist: | Eric Swanson |

**WEATHER REPORT**

| Time | Sea State | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | 2-3 ft | 10-15 Knts | SE |
| Wx - 1200: | | | |
| Wx - 1800: | | | |
| Wx - 2400: | 1 ft chop | calm | |

**HSE Reporting (Place an "x" in the box, with brief description**

| | | |
|---|---|---|
| HSE OFFICER: | Barton Thibodeaux | |
| Toolbox: | X | GS-J027 |
| HOC: | No | |
| Safety: | | |
| Pre/Post Job: | | |

| TIME FROM | TIME TO | OP CODE | LINE INFORMATION: LINE NUMBER | HEADING | BSP | ESP | Fath (ft) | | | | DNP | DETAILED SURVEY INFORMATION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0000 | 0800 | WS | | | | | | | | | | Anchored offshore, waiting for the "My Marie" to deliver boomer console. |
| 0800 | 0835 | WS | | | | | | | | | | Warming up mains. My Marie reports that she is on her way to deliver boomer. |
| 0835 | 0919 | OW | | | | | | | | | | Launch boomer plate in water. Connect and test unit. It works. |
| 0919 | 0925 | OW | | | | | | | | | | Recover boomer plate out of water. |
| 0925 | 0930 | OW | | | | | | | | | | Enroute to work area. |
| 0930 | 1225 | DR | | | | | | | | | | Deploy subbottom profiler. |
| 1225 | 1230 | VP | Velo #8 | | | | | | | | | Velo #8 taken @ Lat: 60.7956 Lon: -151.2541 Avg Vel = 1475.6m/s Depth = 17.07 m. |
| 1230 | 1300 | DR | | | | | | | | | | Continue to deploy gear. |
| 1300 | 1328 | OW | | | | | | | | | | Mitigation has begun-heading to Sol. |
| 1328 | 1404 | OLC | 508C | 354.5° | 14200 | 12900 | 50.0 | | | | | Sol |
| 1404 | 1417 | LT | | | | | 70.0 | | | | | Eol |
| 1417 | 1419 | OW | 508D | 354.5° | 13000 | 12900 | 70.0 | | | | | Sol Overlap of common shotpoints. |
| 1419 | 1454 | OLC | | | 12900 | 11590 | 70.0 | | | | | Olc |
| 1454 | 1555 | LT | | | | | 76.0 | | | | | Eol |
| 1555 | 1557 | OW | 510D | 174.5° | 13397 | 13400 | 78.0 | | | | | Sol Overlap of common shotpoints. |
| 1557 | 1608 | OLC | | | 13400 | 13633 | 78.0 | | | | | Olc |
| 1608 | 1632 | E199 | | | | | 78.0 | | | | | Abort due to nav lockup. Will circle up and continue down line. |
| 1632 | 1634 | OW | 510E | 174.5° | 13580 | 13633 | 75.0 | | | | | Sol Overlap of common shotpoints. Boomer first sp was 13590 for file 1000. |
| 1634 | 1703 | OLC | | | 13633 | 14300 | | | | | | Olc |
| 1703 | 1750 | LT | | | | | 40.0 | | | | | Abort due to shallow water. |
| 1750 | 1758 | OL | 518 | 207.4° | 100 | 326 | 60.0 | | | | | Sol |
| 1758 | 1810 | LT | | | | | 39.0 | | | | | Abort due to shallow water. |
| 1810 | 1816 | OL | 519 | 207.4° | 100 | 283 | 57.0 | | | | | Sol |
| 1816 | 1830 | LT | | | | | 40.0 | | | | | Abort due to shallow water. |
| 1830 | 1834 | OL | 520 | 207.4° | 100 | 240 | 62.0 | | | | | Sol |
| 1834 | 1851 | LT | | | | | 40.0 | | | | | Abort due to shallow water. |
| 1851 | 1856 | OL | 521 | 207.4° | 100 | 168 | 56.0 | | | | | Sol |
| 1856 | 1929 | LT | | | | | 40.0 | | | | | Abort due to shallow water. |
| 1929 | 1959 | OL | 503 | 207.4° | 11915 | 12786 | 70.0 | | | | | Sol |
| 1959 | 2020 | LT | | | | | 54.0 | | | | | Aborted due to braking line |
| 2020 | 2022 | OW | 503A | 207.4° | 12687 | 12768 | 55.0 | | | | | Sol Overlap of common shotpoints. |
| 2022 | 2033 | OLC | | | 12768 | 13265 | 54.0 | | | | | Olc |
| 2033 | 2150 | LT | | | | | 41.0 | | | | | Aborted due to shallow water. |

# FUGRO GEOSERVICES, INC.
## GEOPHYSICAL JOBLOG

ver 7.22.2010-B (Alaska)

| | |
|---|---|
| DATE: | 30-Sep-2015 Wed Julian Day: 273 |
| PROSPECT / SITE: | Pipeline Portion |
| NAV. SYSTEM: | Starfix |
| FGSI JOB #: | 2415-7058 |
| JOB DAY #: | Day: 8 |
| CRP TO STERN: | 16.50 Meters |

| | |
|---|---|
| CLIENT: | Alaska LNG |
| JOB DESCRIPTION: | Pipeline Portion |
| AREA & BLOCK: | Cook Inlet |
| R/V: | Qualifier 105 |
| No. of SURVEY LINES: | 109 |

460.39 Kilometers
20.1% Complete

19,159.38 Meters Deleted

**VESSEL MANAGER(S)**

| | |
|---|---|
| Party Manager: | Ted Tremblay |
| Ass't Party Manager: | |

**CLIENT REPRESENTATIVE(S)**

| | |
|---|---|
| QC Rep: | Noel Rogers |
| HSE Rep: | David King |
| Client Rep #3: | |
| Client Rep #4: | |

| TIME | | OP | LINE INFORMATION | | | | | | | | | DETAILED SURVEY INFORMATION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FROM | TO | CODE | LINE NUMBER | HEADING | BSP | ESP | Fath (ft) | | | | DNP | |
| 2150 | 2155 | OL | 672 | 117.4° | 256 | 100 | 64.0 | | | | | Sol Moved to tie line due to strong curent whiteing out SBP data. |
| 2155 | 2255 | LT | | | | | 67.0 | | | | | Eol |
| 2255 | 2301 | OL | 671 | 117.4° | 256 | 100 | 71.0 | | | | | Sol |
| 2301 | 2330 | LT | | | | | 45.0 | | | | | Eol |
| 2330 | 2335 | OW | 503B | 027.4° | 12015 | 11915 | 58.0 | | | | | Sol Overlap of common shotpoints. |
| 2335 | 2400 | OLC | | | 11915 | 11326 | 54.0 | | | | | Olc |
| | | DM | 521 | 207.4° | 168 | 792 | | | | | | Portion of line that can't be completed - heading towards beach. |
| | | DM | 519 | 207.4° | 283 | 822 | | | | | | Portion of line that can't be completed - heading towards beach. |
| | | DM | 518 | 207.4° | 326 | 866 | | | | | | Portion of line that can't be completed - heading towards beach. |
| | | DM | 508 | 203.2° | 14000 | 14597 | | | | | | Portion of line that can't be completed - heading towards beach. |
| | | DM | 510 | 174.5° | 14300 | 14641 | | | | | | Portion of line that can't be completed - heading towards beach. |
| | | DM | 520 | 207.4° | 240 | 822 | | | | | | Portion of line that can't be completed - heading towards beach. |

# FUGRO GEOSERVICES, INC.
## GEOPHYSICAL JOBLOG

ver 7.22.2010-B (Alaska)

| | |
|---|---|
| DATE: | 01-Oct-2015 Thu Julian Day: 274 |
| PROSPECT / SITE: | Pipeline Portion |
| NAV. SYSTEM: | Starfix |
| FGSI JOB #: | 2415-7058 |
| JOB DAY #: | Day: 9 |
| CRP TO STERN: | 16.50 Meters |

| | |
|---|---|
| CLIENT: | Alaska LNG |
| JOB DESCRIPTION: | Pipeline Portion |
| AREA & BLOCK: | Cook Inlet |
| R/V: | Qualifier 105 |
| No. of SURVEY LINES: | 109 — 460.39 Kilometers, 28.7% Complete |

19,159.38 Meters Deleted

**VESSEL MANAGER(S)**

| | |
|---|---|
| Party Manager: | Ted Tremblay |
| Ass't Party Manager: | |

**CLIENT REPRESENTATIVE(S)**

| | |
|---|---|
| QC Rep: | Noel Rogers |
| HSE Rep: | David King/Michael Berry |
| Client Rep #3: | |
| Client Rep #4: | |

| GEOPHYSICAL EQUIPMENT | EQUIP # |
|---|---|
| Geometrics GeoEel 24ch.(1.56 gr) | # 2 |
| Geometrics GeoEel 24ch.(6.25 gr) | # 1 |
| G.I. 60 ci Sleeve Gun | # 4198 |
| Castaway CTD Velocimeter | # 1 |
| Applied Acoutics Boomer | Rental |
| Edgetech 3200-XS SBP | # 1 |
| | |
| | |
| | |
| | |
| | |

**GEOPHYSICAL CREW**

| | |
|---|---|
| Technical Coordinator: | Ted Tremblay |
| Shift Supervisor: | |
| Operator: | Barton Thibodeaux |
| " | Freddie Wilson |
| " | Robert Faragher |
| " | |
| FGSI Surveyor: | Phillip Daniels |
| SES Field Lead PSO | Patti Hasse |
| PSO | Niccole Van Hoey/Kristine Lindberg |
| " | |
| " | |

**VESSEL CREW**

| | |
|---|---|
| 1st Captain: | Jared Bradshaw |
| 2nd Captain: | |
| 1st Mate: | Jeff Gregson |
| Chief Engineer: | Todd Ostler |
| Cook/Senior Deckhand: | Kevin Anderson |
| Deckhand: | Ben Jantzi |
| Deckhand: | |
| Deckhand: | |

**DATA PROCESSORS**

| | |
|---|---|
| CGG Seismic Processor: | Shannon Campbell / Ian Shirley |
| FGSI QC Geophysicist: | Eric Swanson |

**WEATHER REPORT**

| Time | Sea State | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | 1 ft | calm | |
| Wx - 1200: | calm | calm | |
| Wx - 1800: | calm | calm | |
| Wx - 2400: | 2 ft swell | calm | |

**HSE Reporting (Place an "x" in the box, with brief description**

| | | |
|---|---|---|
| HSE OFFICER: | Barton Thibodeaux | |
| Toolbox: | X | Mar-TAR-118/110 |
| HOC: | No | |
| Safety: | | |
| Pre/Post Job: | | |

| TIME FROM | TIME TO | OP CODE | LINE INFORMATION: LINE NUMBER | HEADING | BSP | ESP | Fath (ft) | | | | DNP | DETAILED SURVEY INFORMATION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0000 | 0035 | OLC | 503B | 027.4° | 11326 | 10585 | 69.0 | | | | | Olc |
| 0035 | 0110 | LT | | | | | 61.0 | | | | | Aborted due to braking up line. |
| 0110 | 0114 | OW | 503C | 027.4° | 10685 | 10585 | 65.0 | | | | | Sol Overlap of common shotpoints. |
| 0114 | 0201 | OLC | | | 10585 | 9495 | 61.0 | | | | | Olc |
| 0201 | 0227 | LT | | | | | 65.0 | | | | | Aborted due to Nav.locking up. |
| 0227 | 0231 | E199 | 503D | 027.4° | 9595 | 9495 | 64.0 | | | | DNP | Sol Overlap of common shotpoints. |
| 0231 | 0245 | E199 | | | 9495 | 9099 | 65.0 | | | | | Olc |
| 0245 | 0304 | E199 | | | | | | | | | | Aborted due to Nav.locking up. |
| 0304 | 0310 | E199 | 503E | 027.4° | 9595 | 9535 | 64.0 | | | | DNP | Sol Overlap of common shotpoints. |
| 0310 | 0324 | E199 | | | | | 65.0 | | | | | Aborted due to Nav.locking up. |
| 0324 | 0327 | OW | 503F | 027.0° | 9595 | 9454 | 64.0 | | | | | Sol Overlap of common shotpoints. |
| 0327 | 0412 | OLC | | | 9454 | 7745 | 65.0 | | | | | Olc |
| 0412 | 0506 | LT | | | | | 86.0 | | | | | Aborted due to tide. Going to run a line on North side of project. |
| 0506 | 0534 | OLC | 503G | 211.8° | 5220 | 6102 | 120.0 | | | | | Sol S.P. 5761 going around logs |
| 0534 | 0558 | DR | | | | | 130.0 | | | | | Abort! Picking up gear to be at Rig Tenders Terminal for crew change at 9 am. |
| 0558 | 0610 | VP | Velo#9 | | | | | | | | | Velo9 taken @ Lat: 60.9820 Lon: -151.0213 Depth = 43.22m Avg. Vel. = 1473.7m/s |
| 0610 | 0615 | DR | | | | | | | | | | Continue retrieving gear. |
| 0615 | 0935 | OW | | | | | | | | | | Enroute to dock. |
| 0935 | 1015 | OW | | | | | | | | | | Arrive at Terminal: prepare for crew change. |
| 1015 | 1025 | OW | | | | | | | | | | Crew change complete. Niccole Van Hoey and David King are replaced with Kristine Lindberg and Michael Berry. |
| 1025 | 1300 | OW | | | | | | | | | | Enroute back to work area. |
| 1300 | 1308 | DR | | | | | | | | | | Deploy gear. |
| 1308 | 1315 | VP | Velo#10 | | | | | | | | | Velo #10 taken @ Lat: 60.8401 Lon: -151.2726 Depth = 21.84m Avg Vel. = 1477.1m/s. |
| 1315 | 1330 | DR | | | | | | | | | | Continue deploying gear. |
| 1330 | 1417 | OW | | | | | | | | | | Heading to Sol. |
| 1417 | 1421 | OW | 508E | 032.8° | 11690 | 11590 | 71.0 | | | | | Sol Overlap of common shotpoints. |
| 1421 | 1503 | OLC | | | 11590 | 10220 | 71.0 | | | | | Olc |
| 1503 | 1506 | OW | | | 10220 | 10120 | 77.0 | | | | | Eol Overlap of common shotpoints. |
| 1506 | 1644 | OW | | | | | | | | | | Heading to Sol. |
| 1644 | 1805 | OLC | 508F | 214.1° | 5200 | 6669 | 87.0 | | | | | Sol Sp. 5460-5515 offline due to debris , offline appx. 75'. |
| 1805 | 1839 | LT | | | | | | | | | | Aborted due to boomer console timed out. |
| 1839 | 1848 | OW | 508G | 214.1° | 6570 | 6669 | 84.0 | | | | | Sol Overlap of common shotpoints. |
| 1848 | 2000 | OLC | | | 6669 | 8206 | | | | | | Olc |

# FUGRO GEOSERVICES, INC.
## GEOPHYSICAL JOBLOG

ver 7.22.2010-B (Alaska)

| | |
|---|---|
| DATE: | 01-Oct-2015 Thu Julian Day: 274 |
| PROSPECT / SITE: | Pipeline Portion |
| NAV. SYSTEM: | Starfix |
| FGSI JOB #: | 2415-7058 |
| JOB DAY #: | Day: 9 |
| CRP TO STERN: | 16.50 Meters |

| | |
|---|---|
| CLIENT: | Alaska LNG |
| JOB DESCRIPTION: | Pipeline Portion |
| AREA & BLOCK: | Cook Inlet |
| R/V: | Qualifier 105 |
| No. of SURVEY LINES: | 109 — 460.39 Kilometers, 28.7% Complete |

19,159.38 Meters Deleted

**VESSEL MANAGER(S)**

| | |
|---|---|
| Party Manager: | Ted Tremblay |
| Ass't Party Manager: | |

**CLIENT REPRESENTATIVE(S)**

| | |
|---|---|
| QC Rep: | Noel Rogers |
| HSE Rep: | David King/Michael Berry |
| Client Rep #3: | |
| Client Rep #4: | |

| TIME | | OP CODE | LINE INFORMATION | | | | | | | | | DETAILED SURVEY INFORMATION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FROM | TO | | LINE NUMBER | HEADING | BSP | ESP | Fath (ft) | | | | DNP | |
| 2000 | 2004 | OW | | | 8206 | 8300 | | | | | | Overlap of common shotpoints. |
| 2004 | 2049 | LT | | | | | 97.0 | | | | | Eol |
| 2049 | 2052 | OW | 503H | 195.2° | 6000 | 6102 | 146.0 | | | | | Sol Overlap of common shotpoints. |
| 2052 | 2136 | OLC | | | 6102 | 7745 | 143.0 | | | | | Olc |
| 2136 | 2139 | OW | | | 7745 | 7845 | 105.0 | | | | | Overlap of common shotpoints. |
| 2139 | 2206 | LT | | | | | 98.0 | | | | | Eol |
| 2206 | 2245 | OL | 501 | 009.0° | 8020 | 6655 | 96.0 | | | | | Sol |
| 2245 | 2308 | LT | | | | | 130.0 | | | | | Eol braking up line |
| 2308 | 2312 | OW | 501A | 009.0° | 6755 | 6655 | 125.0 | | | | | Sol Overlap of common shotpoints. |
| 2312 | 2400 | OLC | | | 6655 | 5712 | 130.0 | | | | | Olc |

# FUGRO GEOSERVICES, INC.
## GEOPHYSICAL JOBLOG

ver 7.22.2010-B (Alaska)

| | |
|---|---|
| DATE: | 02-Oct-2015 Fri Julian Day: 275 |
| PROSPECT / SITE: | Pipeline Portion |
| NAV. SYSTEM: | Starfix |
| FGSI JOB #: | 2415-7058 |
| JOB DAY #: | Day: 10 |
| CRP TO STERN: | 16.50 Meters |

| | |
|---|---|
| CLIENT: | Alaska LNG |
| JOB DESCRIPTION: | Pipeline Portion |
| AREA & BLOCK: | Cook Inlet |
| R/V: | Qualifier 105 |
| No. of SURVEY LINES: | 109 — 453.98 Kilometers, 39.5% Complete |

25,565.63 Meters Deleted

**VESSEL MANAGER(S)**

| | |
|---|---|
| Party Manager: | Ted Tremblay |
| Ass't Party Manager: | |

**CLIENT REPRESENTATIVE(S)**

| | |
|---|---|
| QC Rep: | Noel Rogers |
| HSE Rep: | Michael Berry |
| Client Rep #3: | |
| Client Rep #4: | |

| GEOPHYSICAL EQUIPMENT | EQUIP # |
|---|---|
| Geometrics GeoEel 24ch.(1.56 gr) | # 2 |
| Geometrics GeoEel 24ch.(6.25 gr) | # 1 |
| G.I. 60 ci Sleeve Gun | # 4198 |
| Castaway CTD Velocimeter | # 1 |
| Applied Acoutics Boomer | Rental |
| Edgetech 3200-XS SBP | # 1 |

**GEOPHYSICAL CREW**

| | |
|---|---|
| Technical Coordinator: | Ted Tremblay |
| Shift Supervisor: | |
| Operator: | Barton Thibodeaux |
| " | Freddie Wilson |
| " | Robert Faragher |
| " | |
| FGSI Surveyor: | Phillip Daniels |
| SES Field Lead PSO | Patti Hasse |
| PSO | Kristine Lindberg |
| " | |
| " | |

**VESSEL CREW**

| | |
|---|---|
| 1st Captain: | Jared Bradshaw |
| 2nd Captain: | |
| 1st Mate: | Jeff Gregson |
| Chief Engineer: | Todd Ostler |
| Cook/Senior Deckhand: | Kevin Anderson |
| Deckhand: | Ben Jantzi |
| Deckhand: | |
| Deckhand: | |

**DATA PROCESSORS**

| | |
|---|---|
| CGG Seismic Processor: | Shannon Campbell / Ian Shirley |
| FGSI QC Geophysicist: | Eric Swanson |

**WEATHER REPORT**

| Time | Sea State | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | 3 ft | 12 kts | SE |
| Wx - 1200: | calm | calm | |
| Wx - 1800: | 2 - 3 ft | 20 kts | N |
| Wx - 2400: | 2 - 3 ft | 5 - 10 kts | NNE |

**HSE Reporting (Place an "x" in the box, with brief description**

| | | |
|---|---|---|
| HSE OFFICER: | Barton Thibodeaux | |
| Toolbox: | X | GS-J-001/020 |
| HOC: | Yes | 2 HOCs Submitted |
| Safety: | Yes | Safety Drill: Loss of Steering |
| Pre/Post Job: | | |

| TIME FROM | TIME TO | OP CODE | LINE INFORMATION: LINE NUMBER | HEADING | BSP | ESP | Fath (ft) | | | | DNP | DETAILED SURVEY INFORMATION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0000 | 0022 | OLC | 501A | 018.6° | 5712 | 5440 | 120.0 | | | | | Olc |
| 0022 | 0121 | LT | | | | | 118.0 | | | | | Braking off line due to exclusion zone. |
| 0121 | 0214 | OL | 505 | 009.0° | 8138 | 6785 | 81.0 | | | | | Sol |
| 0214 | 0234 | LT | | | | | 119.0 | | | | | Brakeing off line for next section. |
| 0234 | 0238 | OW | 505A | 009.0° | 6885 | 6785 | 119.0 | | | | | Sol Overlap of common shotpoints. |
| 0238 | 0329 | OLC | | | 6785 | 5595 | 119.0 | | | | | Olc |
| 0329 | 0349 | LT | | | | | 112.0 | | | | | Braking off line due to exclusion zone. |
| 0349 | 0354 | OL | 653 | 099.0° | 100 | 256 | 104.0 | | | | | Sol |
| 0354 | 0414 | LT | | | | | 126.0 | | | | | Eol |
| 0414 | 0416 | E199 | 654 | 099.0° | 100 | 256 | 117.0 | | | | DNP | Sol |
| 0416 | 0434 | E199 | | | | | | | | | | Abort! Nav locked up. |
| 0434 | 0439 | OL | 654A | 099.0° | 100 | 256 | 118.0 | | | | | Sol |
| 0439 | 0449 | LT | | | | | 127.0 | | | | | Eol |
| 0449 | 0453 | OL | 655 | 279.0° | 256 | 100 | 124.0 | | | | | Sol |
| 0453 | 0525 | LT | | | | | 101.0 | | | | | Eol Waiting on a boat to pass. |
| 0525 | 0529 | OL | 656 | 099.0° | 100 | 256 | 113.0 | | | | | Sol |
| 0529 | 0615 | LT | | | | | 129.0 | | | | | Eol |
| 0615 | 0620 | OW | 505B | 189.0° | 8038 | 8138 | 85.0 | | | | | Sol Overlap of common shotpoints. |
| 0620 | 0732 | OLC | | | 8138 | 10000 | 85.0 | | | | | Olc |
| 0732 | 0747 | LT | | | | | 74.0 | | | | | Eol |
| 0747 | 0749 | OW | 505C | 207.4° | 9900 | 10000 | 80.0 | | | | | Sol Overlap of common shotpoints. |
| 0749 | 0841 | OLC | | | 10000 | 11800 | 80.0 | | | | | Olc |
| 0841 | 0853 | LT | | | | | 64.0 | | | | | Eol |
| 0853 | 0855 | OW | 505D | 207.4° | 11700 | 11800 | 63.0 | | | | | Sol Overlap of common shotpoints. |
| 0855 | 0934 | OLC | | | 11800 | 13276 | 63.0 | | | | | Olc |
| 0934 | 0956 | LT | | | | | 40.0 | | | | | Eol |
| 0956 | 1044 | OL | 501B | 027.4° | 13111 | 11550 | 64.0 | | | | | Sol |
| 1044 | 1102 | LT | | | | | 70.0 | | | | | Eol |
| 1102 | 1106 | OW | 501C | 027.4° | 11650 | 11550 | 60.0 | | | | | Sol Overlap of common shotpoints. |
| 1106 | 1151 | OLC | | | 11550 | 10623 | 60.0 | | | | | Olc |
| 1151 | 1224 | E199 | | | | | 76.0 | | | | | Abort! Nav stopped communicating its periferials from IOWIN. |
| 1224 | 1230 | OW | 501D | 027.4° | 10730 | 10623 | 72.0 | | | | | Sol Overlap of common shotpoints. |
| 1230 | 1318 | OLC | | | 10623 | 9750 | 72.0 | | | | | Olc |

# FUGRO GEOSERVICES, INC.
## GEOPHYSICAL JOBLOG

ver 7.22.2010-B (Alaska)

| | |
|---|---|
| DATE: | 02-Oct-2015 Fri Julian Day: 275 |
| PROSPECT / SITE: | Pipeline Portion |
| NAV. SYSTEM: | Starfix |
| FGSI JOB #: | 2415-7058 |
| JOB DAY #: | Day: 10 |
| CRP TO STERN: | 16.50 Meters |

| | |
|---|---|
| CLIENT: | Alaska LNG |
| JOB DESCRIPTION: | Pipeline Portion |
| AREA & BLOCK: | Cook Inlet |
| R/V: | Qualifier 105 |
| No. of SURVEY LINES: | 109 |

453.98 Kilometers
39.5% Complete

25,565.63 Meters Deleted

**VESSEL MANAGER(S)**

| | |
|---|---|
| Party Manager: | Ted Tremblay |
| Ass't Party Manager: | |

**CLIENT REPRESENTATIVE(S)**

| | |
|---|---|
| QC Rep: | Noel Rogers |
| HSE Rep: | Michael Berry |
| Client Rep #3: | |
| Client Rep #4: | |

| TIME | | OP | LINE INFORMATION | | | | | | | | | DETAILED SURVEY INFORMATION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FROM | TO | CODE | LINE NUMBER | HEADING | BSP | ESP | Fath (ft) | | | | DNP | |
| 1318 | 1338 | LT | | | | | 73.0 | | | | | Eol |
| 1338 | 1342 | OW | 501E | 027.4° | 9841 | 9750 | 77.0 | | | | | Sol Overlap of common shotpoints. |
| 1342 | 1453 | OLC | | | 9750 | 8100 | 77.0 | | | | | Olc |
| 1453 | 1507 | LT | | | | | 82.0 | | | | | Eol |
| 1507 | 1510 | OW | 501F | 018.8° | 8200 | 8020 | 75.0 | | | | | Sol Overlap of common shotpoints. |
| 1510 | 1532 | OLC | | | 8020 | 7560 | 75.0 | | | | | Olc |
| 1532 | 1548 | LT | | | | | 90.0 | | | | | Abort due to boomer timing out-will circle up and begin another section of line to complete. |
| 1548 | 1551 | OW | 501G | 009.0° | 7660 | 7560 | 84.0 | | | | | Sol Overlap of common shotpoints. Running this line section while heading North to complete line to exclusion zone. |
| 1551 | 1618 | OW | | | 7560 | 6600 | 84.0 | | | | | Olc @Sp. 7320-7340, went offline to avoid debris |
| 1618 | 1629 | LT | | | | | 115.0 | | | | | Eol |
| 1629 | 1633 | OW | 501H | 009.0° | 6760 | 6600 | 112.0 | | | | | Sol Overlap of common shotpoints. Running this line section while heading North to complete line to exclusion zone. |
| 1633 | 1652 | OW | | | 6600 | 5875 | 112.0 | | | | | Olc |
| 1652 | 1712 | LT | | | | | 118.0 | | | | | Eol |
| 1712 | 1715 | OW | 501I | 009.0° | 5975 | 5440 | 124.0 | | | | | Sol Overlap of common shotpoints. |
| 1715 | 1732 | OLC | | | 5440 | 5021 | 124.0 | | | | | Olc |
| 1732 | 1753 | LT | | | | | 98.0 | | | | | Eol |
| 1753 | 1757 | OL | 651 | 122.0° | 100 | 256 | 96.0 | | | | | Sol |
| 1757 | 1815 | LT | | | | | 132.0 | | | | | Eol |
| 1815 | 1819 | OL | 652 | 302.0° | 258 | 100 | 138.0 | | | | | Sol |
| 1819 | 1828 | LT | | | | | 104.0 | | | | | Eol |
| 1828 | 1915 | WS | | | | | | | | | | Shut down for weather, running weather patterns. |
| 1915 | 1930 | WS | | | | | | | | | | Loss of Steering Drill. |
| 1930 | 2124 | WS | | | | | | | | | | Shut down for weather, running weather patterns. |
| 2124 | 2129 | OL | 657 | 279.0° | 256 | 100 | 125.0 | | | | | Sol |
| 2129 | 2400 | WS | | | | | 120.0 | | | | | Eol down on weather still seeing weather in data |
| | | DM | 501 | 027.4° | 13111 | 13984 | | | | | | Portion of line that can't be completed - heading towards beach. |
| | | DM | 503 | 027.4° | 13265 | 13782 | | | | | | Portion of line that can't be completed - heading towards beach. |
| | | DM | 505 | 207.4° | 13276 | 13936 | | | | | | Portion of line that can't be completed - heading towards beach. |
| | | OLC | 508 | 354.5° | 14000 | 14200 | | | | | | Correction of typo for line 508 DM. It is supposed to say 14200 instead of 14000. |

# FUGRO GEOSERVICES, INC.
## GEOPHYSICAL JOBLOG

ver 7.22.2010-B (Alaska)

| | |
|---|---|
| DATE: | 03-Oct-2015 Sat Julian Day: 276 |
| PROSPECT / SITE: | Pipeline Portion |
| NAV. SYSTEM: | Starfix |
| FGSI JOB #: | 2415-7058 |
| JOB DAY #: | Day: 11 |
| CRP TO STERN: | 16.50 Meters |

| | |
|---|---|
| CLIENT: | Alaska LNG |
| JOB DESCRIPTION: | Pipeline Portion |
| AREA & BLOCK: | Cook Inlet |
| R/V: | Qualifier 105 |
| No. of SURVEY LINES: | 109 — 453.98 Kilometers, 42.2% Complete |

25,565.63 Meters Deleted

**VESSEL MANAGER(S)**

| | |
|---|---|
| Party Manager: | Ted Tremblay |
| Ass't Party Manager: | |

**CLIENT REPRESENTATIVE(S)**

| | |
|---|---|
| QC Rep: | Noel Rogers |
| HSE Rep: | Michael Berry |
| Client Rep #3: | |
| Client Rep #4: | |

| GEOPHYSICAL EQUIPMENT | EQUIP # |
|---|---|
| Geometrics GeoEel 24ch.(1.56 gr) | # 2 |
| Geometrics GeoEel 24ch.(6.25 gr) | # 1 |
| G.I. 60 ci Sleeve Gun | # 4198 |
| Castaway CTD Velocimeter | # 1 |
| Applied Acoutics Boomer | Rental |
| Edgetech 3200-XS SBP | # 1 |
| | |
| | |
| | |
| | |
| | |

**GEOPHYSICAL CREW**

| | |
|---|---|
| Technical Coordinator: | Ted Tremblay |
| Shift Supervisor: | |
| Operator: | Barton Thibodeaux |
| " | Freddie Wilson |
| " | Robert Faragher |
| " | |
| FGSI Surveyor: | Phillip Daniels |
| SES Field Lead PSO | Patti Hasse |
| PSO | Kristine Lindberg |
| " | |
| " | |

**VESSEL CREW**

| | |
|---|---|
| 1st Captain: | Jared Bradshaw |
| 2nd Captain: | |
| 1st Mate: | Jeff Gregson |
| Chief Engineer: | Todd Ostler |
| Cook/Senior Deckhand: | Kevin Anderson |
| Deckhand: | Ben Jantzi |
| Deckhand: | |
| Deckhand: | |

**DATA PROCESSORS**

| | |
|---|---|
| CGG Seismic Processor: | Shannon Campbell / Ian Shirley |
| FGSI QC Geophysicist: | Eric Swanson |

**WEATHER REPORT**

| Time | Sea State | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | 3 to 4 ft | 5 kts | NNE |
| Wx - 1200: | 3' swells | 3 kts | S |
| Wx - 1800: | 1' w/chop | 12 kts | NW |
| Wx - 2400: | 2 to 3 ft | 13kts | NNE |

**HSE Reporting (Place an "x" in the box, with brief description**

| | | |
|---|---|---|
| HSE OFFICER: | Barton Thibodeaux | |
| Toolbox: | X | MAR-TRA-101/ GS-J-014 |
| HOC: | No | |
| Safety: | | |
| Pre/Post Job: | | |

**LINE INFORMATION**

| TIME FROM | TIME TO | OP CODE | LINE NUMBER | HEADING | BSP | ESP | Fath (ft) | | | | DNP | DETAILED SURVEY INFORMATION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0000 | 0126 | WS | | | | | | | | | | Down on weather |
| 0126 | 0133 | OL | 658 | 099.0° | 100 | 256 | 105.0 | | | | | Sol |
| 0133 | 0209 | LT | | | | | 90.0 | | | | | Eol |
| 0209 | 0214 | OL | 659 | 099.0° | 100 | 256 | 88.0 | | | | | Sol |
| 0214 | 0247 | LT | | | | | 81.0 | | | | | Eol |
| 0247 | 0252 | OL | 660 | 099.0° | 100 | 256 | 76.0 | | | | | Sol |
| 0252 | 0347 | LT | | | | | 70.0 | | | | | Eol Long line turn due to heading to West pipe line route. |
| 0347 | 0411 | E199 | 510F | 026.3° | 8200 | 7540 | 60.0 | | | | | Sol Line Segment 510 original form 5316-8167 needs to be reran due to nav. We will have smaller line portions below to acquire this section. |
| 0411 | 0430 | E199 | | | | | 65.0 | | | | | Eol Nav. Locked up |
| 0430 | 0449 | E199 | 510G | 026.3° | 7640 | 7040 | 63.0 | | | | | Sol |
| 0449 | 0514 | E199 | | | | | 74.0 | | | | | Eol Nav. Locked up |
| 0514 | 0520 | E199 | 510H | 026.3° | 7140 | 6845 | 72.0 | | | | DNP | Sol |
| 0520 | 0635 | E199 | | | | | 75.0 | | | | | Eol Nav. Locked up. Ran up to north side due to curent. |
| 0635 | 0717 | E199 | 510I | 206.3° | 5315 | 6000 | 85.0 | | | | | Sol |
| 0717 | 0736 | E199 | | | | | 70.0 | | | | | Eol |
| 0736 | 0739 | E199 | 510J | 206.3° | 5900 | 6000 | 70.0 | | | | | Sol Covering common shot points. |
| 0739 | 0850 | E199 | | | 6000 | 7140 | 70.0 | | | | | Olc |
| 0850 | 0903 | LT | | | | | 90.0 | | | | | Eol |
| 0903 | 0909 | OL | 621 | 296.0° | 256 | 100 | 92.0 | | | | | Sol |
| 0909 | 0925 | LT | | | | | 88.0 | | | | | Eol |
| 0925 | 0929 | OL | 622 | 296.0° | 256 | 100 | 81.0 | | | | | Sol |
| 0929 | 0945 | LT | | | | | 91.0 | | | | | Eol |
| 0945 | 0949 | OL | 623 | 296.0° | 256 | 100 | 77.0 | | | | | Sol |
| 0949 | 1002 | LT | | | | | 83.0 | | | | | Eol |
| 1002 | 1006 | OL | 624 | 296.0° | 256 | 100 | 83.0 | | | | | Sol |
| 1006 | 1018 | LT | | | | | 83.0 | | | | | Eol |
| 1018 | 1022 | OL | 625 | 296.0° | 256 | 100 | 128.0 | | | | | Sol |
| 1022 | 1033 | LT | | | | | 99.0 | | | | | Eol |
| 1033 | 1037 | OL | 626 | 301.6° | 256 | 100 | 144.0 | | | | | Sol |
| 1037 | 1047 | LT | | | | | 140.0 | | | | | Eol |
| 1047 | 1049 | E30 | 627 | 303.5° | 256 | 100 | 134.0 | | | | DNP | Sol |
| 1049 | 1057 | E30 | | | | | | | | | | Aborted due to the boomer timed out at Sol. |
| 1057 | 1101 | OL | 627A | 303.5° | 256 | 100 | 134.0 | | | | | Sol |

# FUGRO GEOSERVICES, INC.
## GEOPHYSICAL JOBLOG

ver 7.22.2010-B (Alaska)

| | |
|---|---|
| DATE: | 03-Oct-2015 Sat Julian Day: 276 |
| PROSPECT / SITE: | Pipeline Portion |
| NAV. SYSTEM: | Starfix |
| FGSI JOB #: | 2415-7058 |
| JOB DAY #: | Day: 11 |
| CRP TO STERN: | 16.50 Meters |

| | |
|---|---|
| CLIENT: | Alaska LNG |
| JOB DESCRIPTION: | Pipeline Portion |
| AREA & BLOCK: | Cook Inlet |
| R/V: | Qualifier 105 |
| No. of SURVEY LINES: | 109 — 453.98 Kilometers, 42.2% Complete |

25,565.63 Meters Deleted

| VESSEL MANAGER(S) | |
|---|---|
| Party Manager: | Ted Tremblay |
| Ass't Party Manager: | |
| **CLIENT REPRESENTATIVE(S)** | |
| QC Rep: | Noel Rogers |
| HSE Rep: | Michael Berry |
| Client Rep #3: | |
| Client Rep #4: | |

| TIME FROM | TIME TO | OP CODE | LINE INFORMATION: LINE NUMBER | HEADING | BSP | ESP | Fath (ft) | | | | DNP | DETAILED SURVEY INFORMATION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1101 | 1118 | LT | | | | | 154.0 | | | | | Eol |
| 1118 | 1122 | OL | 629 | 123.5° | 100 | 256 | 109.0 | | | | | Sol |
| 1122 | 1135 | LT | | | | | 100.0 | | | | | Eol |
| 1135 | 1139 | E30 | 628 | 307.0° | 256 | 100 | 98.0 | | | | | Sol |
| 1139 | 1150 | E30 | | | | | 138.0 | | | | | Eol. We missed too many shot points, forcing a rerun due to boomer timing out. |
| 1150 | 1154 | OL | 628A | 127.0° | 100 | 256 | 138.0 | | | | | Sol |
| 1154 | 1354 | WS | | | | | 96.0 | | | | | Eol Cross-current is too strong to run tie lines. We are heading to run last rerun portion of line 510. |
| 1354 | 1431 | WS | 510K | 026.3° | 8300 | 7440 | 76.0 | | | | | Sol |
| 1431 | 1634 | WS | | | | | 77.0 | | | | | Eol Heading to line 614 on North end to see if cross-current will allow us to continue running tie lines to the South. |
| 1634 | 1639 | E30 | 614 | 124.1° | 100 | 256 | 77.0 | | | | DNP | Sol |
| 1639 | 1649 | E30 | | | | | 84.0 | | | | | Eol. We missed too many shot points, forcing a rerun due to boomer timing out. |
| 1649 | 1652 | OL | 614A | 304.0° | 256 | 100 | 84.0 | | | | | Sol |
| 1652 | 1705 | LT | | | | | 78.0 | | | | | Eol |
| 1705 | 1710 | OL | 615 | 124.1° | 100 | 256 | 85.0 | | | | | Sol |
| 1710 | 1729 | LT | | | | | 78.0 | | | | | Eol |
| 1729 | 1733 | OL | 616 | 116.3° | 100 | 256 | 81.0 | | | | | Sol |
| 1733 | 1748 | LT | | | | | 76.0 | | | | | Eol |
| 1748 | 1752 | OL | 617 | 116.3° | 100 | 256 | 66.0 | | | | | Sol |
| 1752 | 1806 | LT | | | | | 66.0 | | | | | Eol |
| 1806 | 1810 | OL | 618 | 116.3° | 100 | 256 | 80.0 | | | | | Sol |
| 1810 | 1825 | LT | | | | | 100.0 | | | | | Eol |
| 1825 | 1830 | OL | 619 | 296.3° | 256 | 100 | 80.0 | | | | | Sol |
| 1830 | 1831 | LT | | | | | 78.0 | | | | | Eol |
| 1831 | 1832 | E30 | 620 | 116.3° | 100 | 105 | | | | | | Aborted due to the boomer timed out at Sol. |
| 1832 | 1903 | E30 | | | | | | | | | | Eol |
| 1903 | 1909 | E199 | 620A | 296.3° | 256 | 100 | 80.0 | | | | | Sol |
| 1909 | 2020 | LT | | | | | 81.0 | | | | | Eol Waiting on ships to pass. |
| 2020 | 2027 | OL | 620B | 296.3° | 256 | 100 | 88.0 | | | | | Sol |
| 2027 | 2122 | LT | | | | | 89.0 | | | | | Eol |
| 2122 | 2126 | OL | 661 | 297.4° | 100 | 256 | 83.0 | | | | | Sol |
| 2126 | 2157 | LT | | | | | 83.0 | | | | | Eol |
| 2157 | 2201 | OL | 662 | 297.4° | 100 | 256 | 92.0 | | | | | Sol |
| 2201 | 2223 | LT | | | | | 92.0 | | | | | Eol |
| 2223 | 2224 | E199 | 663 | 297.4° | 100 | 133 | 87.0 | | | | DNP | Sol |
| 2224 | 2236 | E199 | | | | | 87.0 | | | | | Eol Nav locked up. |
| 2236 | 2240 | OL | 663A | 297.4° | 100 | 256 | 87.0 | | | | | Sol |
| 2240 | 2255 | LT | | | | | 97.0 | | | | | Eol |
| 2255 | 2300 | OL | 664 | 297.4° | 100 | 256 | 84.0 | | | | | Sol |
| 2300 | 2316 | LT | | | | | 86.0 | | | | | Eol |
| 2316 | 2320 | OL | 665 | 297.4° | 100 | 256 | 85.0 | | | | | Sol |
| 2320 | 2338 | LT | | | | | 93.0 | | | | | Eol |
| 2338 | 2342 | OL | 666 | 297.4° | 100 | 256 | 75.0 | | | | | Sol |
| 2342 | 2400 | LT | | | | | 84.0 | | | | | Eol |
| | | | | | | | | | | | | Sol |
| | | | | | | | | | | | | Eol |

# FUGRO GEOSERVICES, INC.
## GEOPHYSICAL JOBLOG

ver 7.22.2010-B (Alaska)

| | |
|---|---|
| DATE: | 04-Oct-2015 Sun Julian Day: 277 |
| PROSPECT / SITE: | Pipeline Portion |
| NAV. SYSTEM: | Starfix |
| FGSI JOB #: | 2415-7058 |
| JOB DAY #: | Day: 12 |
| CRP TO STERN: | 16.50 Meters |

| | |
|---|---|
| CLIENT: | Alaska LNG |
| JOB DESCRIPTION: | Pipeline Portion |
| AREA & BLOCK: | Cook Inlet |
| R/V: | Qualifier 105 |
| No. of SURVEY LINES: | 109 — 449.78 Kilometers, 50.7% Complete |

29,768.75 Meters Deleted

**VESSEL MANAGER(S)**

| | |
|---|---|
| Party Manager: | Ted Tremblay |
| Ass't Party Manager: | |

**CLIENT REPRESENTATIVE(S)**

| | |
|---|---|
| QC Rep: | Noel Rogers |
| HSE Rep: | Michael Berry |
| Client Rep #3: | |
| Client Rep #4: | |

| GEOPHYSICAL EQUIPMENT | EQUIP # |
|---|---|
| Geometrics GeoEel 24ch.(1.56 gr) | # 2 |
| Geometrics GeoEel 24ch.(6.25 gr) | # 1 |
| G.I. 60 ci Sleeve Gun | # 4198 |
| Castaway CTD Velocimeter | # 1 |
| Applied Acoutics Boomer | Rental |
| Edgetech 3200-XS SBP | # 1 |

**GEOPHYSICAL CREW**

| | |
|---|---|
| Technical Coordinator: | Ted Tremblay |
| Shift Supervisor: | |
| Operator: | Barton Thibodeaux |
| " | Freddie Wilson |
| " | Robert Faragher |
| " | |
| FGSI Surveyor: | Phillip Daniels |
| SES Field Lead PSO | Patti Hasse |
| PSO | Kristine Lindberg |
| " | |
| " | |

**VESSEL CREW**

| | |
|---|---|
| 1st Captain: | Jared Bradshaw |
| 2nd Captain: | |
| 1st Mate: | Jeff Gregson |
| Chief Engineer: | Todd Ostler |
| Cook/Senior Deckhand: | Kevin Anderson |
| Deckhand: | Ben Jantzi |
| Deckhand: | |
| Deckhand: | |

**DATA PROCESSORS**

| | |
|---|---|
| CGG Seismic Processor: | Shannon Campbell / Ian Shirley |
| FGSI QC Geophysicist: | Eric Swanson |

**WEATHER REPORT**

| Time | Sea State | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | 1 to 2 ft | 10 kts | NE |
| Wx - 1200: | 1 to 2 ft | 10 kts | NE |
| Wx - 1800: | | | |
| Wx - 2400: | 1 ft | 10 kts | NE |

**HSE Reporting (Place an "x" in the box, with brief description**

| | | |
|---|---|---|
| HSE OFFICER: | Barton Thibodeaux | |
| Toolbox: | X | GS-J-027/057 |
| HOC: | Yes | 1 HOC submitted |
| Safety: | Yes | Weekly Safety: Complacency |
| Pre/Post Job: | | |

| TIME FROM | TIME TO | OP CODE | LINE INFORMATION: LINE NUMBER | HEADING | BSP | ESP | Fath (ft) | | | | DNP | DETAILED SURVEY INFORMATION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0000 | 0126 | WS | | | | | | | | | | Weather standby due to current. We can't go slow enough from east to west and to much sea noise on pinger going west to east. |
| 0126 | 0134 | OL | 667 | 117.4° | 256 | 100 | 69.0 | | | | | Sol |
| 0134 | 0319 | WS | | | | | 67.0 | | | | | Eol Weather standby due to current. We can't go slow enough from east to west and to much sea noise on pinger going west to east. |
| 0319 | 0324 | OL | 668 | 117.4° | 256 | 100 | 66.0 | | | | | Sol |
| 0324 | 0352 | LT | | | | | 61.0 | | | | | Eol |
| 0352 | 0358 | OL | 669 | 117.4° | 256 | 100 | 62.0 | | | | | Sol |
| 0358 | 0423 | LT | | | | | 61.0 | | | | | Eol |
| 0423 | 0428 | OL | 670 | 117.4° | 256 | 100 | 64.0 | | | | | Sol |
| 0428 | 0502 | LT | | | | | 55.0 | | | | | Eol |
| 0502 | 0507 | OL | 673 | 117.4° | 256 | 100 | 55.0 | | | | | Sol |
| 0507 | 0646 | OW | | | | | 33.0 | | | | | Eol Waiting for daylight to catch lines close to shore. |
| 0646 | 0705 | OL | 708 | 282.3° | 3605 | 2935 | 54.0 | | | | | Sol Aborted line due to the boomer timing out. |
| 0705 | 0740 | E30 | | | | | 60.0 | | | | | Eol |
| 0740 | 0743 | OW | 708A | 282.3° | 3115 | 2935 | 63.0 | | | | | Sol Covering common shot points. |
| 0743 | 0859 | OLC | | | 2935 | 1496 | 63.0 | | | | | Olc |
| 0859 | 0918 | E30 | | | | | 82.0 | | | | | Eol Aborted line due to the boomer timing out. |
| 0918 | 0921 | OW | 708B | 282.3° | 1700 | 1496 | 78.0 | | | | | Sol Covering common shot points. |
| 0921 | 1025 | OLC | | | 1496 | 100 | 78.0 | | | | | Olc |
| 1025 | 1126 | LT | | | | | 105.0 | | | | | Eol Headed towards 673A. |
| 1126 | 1130 | WS | 673A | 297.4° | 100 | 256 | 53.0 | | | | | Sol |
| 1130 | 1140 | LT | | | | | 74.0 | | | | | Eol |
| 1140 | 1144 | OL | 674 | 117.4° | 256 | 100 | 52.0 | | | | | Sol |
| 1144 | 1152 | LT | | | | | 52.0 | | | | | Eol |
| 1152 | 1156 | OL | 675 | 297.4° | 100 | 256 | 50.0 | | | | | Sol |
| 1156 | 1251 | LT | | | | | 49.0 | | | | | Eol Headed to line 710. |
| 1251 | 1411 | OL | 710 | 108.9° | 100 | 1603 | 84.0 | | | | | Sol |
| 1411 | 1452 | E199 | | | | | 59.0 | | | | | Aborted line due to nav locking up. |
| 1452 | 1458 | OW | 710A | 108.9° | 1500 | 1603 | 59.0 | | | | | Sol Covering common shot points. |
| 1458 | 1504 | OLC | | | 1603 | 1794 | 59.0 | | | | | Olc |
| 1504 | 1543 | LT | | | | | 40.0 | | | | | Eol. Headed over to 637A . |
| 1543 | 1548 | WS | 637A | 122.8° | 100 | 256 | 77.0 | | | | | Sol |
| 1548 | 1624 | LT | | | | | 83.0 | | | | | Eol |
| 1624 | 1641 | OL | 709 | 108.8° | 100 | 410 | 83.0 | | | | | Sol |

# FUGRO GEOSERVICES, INC.
## GEOPHYSICAL JOBLOG

ver 7.22.2010-B (Alaska)

| | |
|---|---|
| DATE: | 04-Oct-2015 Sun Julian Day: 277 |
| PROSPECT / SITE: | Pipeline Portion |
| NAV. SYSTEM: | Starfix |
| FGSI JOB #: | 2415-7058 |
| JOB DAY #: | Day: 12 |
| CRP TO STERN: | 16.50 Meters |

| | |
|---|---|
| CLIENT: | Alaska LNG |
| JOB DESCRIPTION: | Pipeline Portion |
| AREA & BLOCK: | Cook Inlet |
| R/V: | Qualifier 105 |
| No. of SURVEY LINES: | 109 — 449.78 Kilometers, 50.7% Complete |

29,768.75 Meters Deleted

**VESSEL MANAGER(S)**

| | |
|---|---|
| Party Manager: | Ted Tremblay |
| Ass't Party Manager: | |

**CLIENT REPRESENTATIVE(S)**

| | |
|---|---|
| QC Rep: | Noel Rogers |
| HSE Rep: | Michael Berry |
| Client Rep #3: | |
| Client Rep #4: | |

| TIME | | OP | LINE INFORMATION | | | | | | | | | DETAILED SURVEY INFORMATION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FROM | TO | CODE | LINE NUMBER | HEADING | BSP | ESP | Fath (ft) | | | | DNP | |
| 1641 | 1701 | E199 | | | | | 76.0 | | | | | Eol. Aborted due to Nav Locking up. |
| 1701 | 1704 | OW | 709A | 108.8° | 310 | 410 | 77.0 | | | | | Sol. Covering common shot points. |
| 1704 | 1801 | OLC | | | 410 | 2957 | 77.0 | | | | | Olc |
| 1801 | 1958 | LT | | | | | 40.0 | | | | | Eol Extra long line turn due to passing ship |
| 1958 | 2002 | WS | 661A | 297.4° | 100 | 256 | 75.0 | | | | | Sol Reruning line due to rough seas on original attempt. |
| 2002 | 2037 | WS | | | | | 82.0 | | | | | Eol |
| 2037 | 2041 | WS | 656A | 279.0° | 256 | 100 | 135.0 | | | | | Sol Reruning line due to rough seas on original attempt. |
| 2041 | 2150 | WS | | | | | 120.0 | | | | | Eol |
| 2150 | 2218 | OL | 707 | 285.0° | 3943 | 2919 | 75.0 | | | | | Sol |
| 2218 | 2318 | LT | | | | | 88.0 | | | | | Aborted due to Nav.locking up. Extra long line turn due to passing ship. |
| 2318 | 2321 | OW | 707A | 285.0° | 3019 | 2919 | 97.0 | | | | | Sol Overlap of common shotpoints. |
| 2321 | 2400 | OLC | | | 2919 | 1480 | 88.0 | | | | | Olc |
| | | DM | 710 | 108.9° | 1794 | 3139 | | | | | | Portion of line that could not be run due to boulder field. |

# FUGRO GEOSERVICES, INC.
## GEOPHYSICAL JOBLOG

ver 7.22.2010-B (Alaska)

| | |
|---|---|
| DATE: | 05-Oct-2015 Mon Julian Day: 278 |
| PROSPECT / SITE: | Pipeline Portion |
| NAV. SYSTEM: | Starfix |
| FGSI JOB #: | 2415-7058 |
| JOB DAY #: | Day: 13 |
| CRP TO STERN: | 16.50 Meters |

| | |
|---|---|
| CLIENT: | Alaska LNG |
| JOB DESCRIPTION: | Pipeline Portion |
| AREA & BLOCK: | Cook Inlet |
| R/V: | Qualifier 105 |
| No. of SURVEY LINES: | 109 — 449.78 Kilometers, 60.0% Complete |

29,768.75 Meters Deleted

**VESSEL MANAGER(S)**

| | |
|---|---|
| Party Manager: | Ted Tremblay |
| Ass't Party Manager: | |

**CLIENT REPRESENTATIVE(S)**

| | |
|---|---|
| QC Rep: | Noel Rogers |
| HSE Rep: | Michael Berry |
| Client Rep #3: | |
| Client Rep #4: | |

| GEOPHYSICAL EQUIPMENT | EQUIP # |
|---|---|
| Geometrics GeoEel 24ch.(1.56 gr) | # 2 |
| Geometrics GeoEel 24ch.(6.25 gr) | # 1 |
| G.I. 60 ci Sleeve Gun | # 4198 |
| Castaway CTD Velocimeter | # 1 |
| Applied Acoutics Boomer | Rental |
| Edgetech 3200-XS SBP | # 1 |

| GEOPHYSICAL CREW | |
|---|---|
| Technical Coordinator: | Ted Tremblay |
| Shift Supervisor: | |
| Operator: | Barton Thibodeaux |
| " | Freddie Wilson |
| " | Robert Faragher |
| " | |
| FGSI Surveyor: | Phillip Daniels |
| SES Field Lead PSO | Patti Hasse |
| PSO | Kristine Lindberg |
| " | |
| " | |

| VESSEL CREW | |
|---|---|
| 1st Captain: | Jared Bradshaw |
| 2nd Captain: | |
| 1st Mate: | Jeff Gregson |
| Chief Engineer: | Todd Ostler |
| Cook/Senior Deckhand: | Kevin Anderson |
| Deckhand: | Ben Jantzi |
| Deckhand: | |
| Deckhand: | |

| DATA PROCESSORS | |
|---|---|
| CGG Seismic Processor: | Shannon Campbell / Ian Shirley |
| FGSI QC Geophysicist: | Eric Swanson |

**WEATHER REPORT**

| Time | Sea State | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | 1ft | 8 kts | N |
| Wx - 1200: | 1 ft | 5 kts | NW |
| Wx - 1800: | | | |
| Wx - 2400: | | | |

**HSE Reporting (Place an "x" in the box, with brief description**

| HSE OFFICER: | Barton Thibodeaux | |
|---|---|---|
| Toolbox: | | |
| HOC: | | |
| Safety: | | |
| Pre/Post Job: | | |

| TIME FROM | TIME TO | OP CODE | LINE INFORMATION: LINE NUMBER | HEADING | BSP | ESP | Fath (ft) | | | | DNP | DETAILED SURVEY INFORMATION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0000 | 0033 | OLC | 707A | 285.0° | 1480 | 100 | 83.0 | | | | | Olc |
| 0033 | 0113 | LT | | | | | 105.0 | | | | | Eol |
| 0113 | 0228 | OL | 706 | 103.9° | 100 | 2930 | 179.0 | | | | | Sol |
| 0228 | 0251 | LT | | | | | 136.0 | | | | | Aborted due to nav. locking up |
| 0251 | 0254 | OW | 706A | 103.9° | 2830 | 2930 | 125.0 | | | | | Sol Overlap of common shotpoints. |
| 0254 | 0333 | OLC | | | 2930 | 4123 | 136.0 | | | | | Olc |
| 0333 | 0606 | LT | | | | | 63.0 | | | | | Eol Long line turn due to having to travel to the other side of project to run line west to east because of curent and passing ship. |
| 0606 | 0804 | OL | 705 | 109.9° | 100 | 4239 | 95.0 | | | | | Sol |
| 0804 | 0843 | LT | | | | | 52.0 | | | | | Eol |
| 0843 | 0853 | OL | 704 | 291.5° | 3969 | 3715 | 53.0 | | | | | Sol |
| 0853 | 0913 | E199 | | | | | 53.0 | | | | | Eol Nav locked up so we had to abort line. |
| 0913 | 0920 | OW | 704A | 291.5° | 3805 | 3715 | 63.0 | | | | | Sol Overlap of common shotpoints. |
| 0920 | 0938 | OLC | | | 3715 | 3202 | 115.0 | | | | | Olc.Abort line due to nav locking up . |
| 0938 | 0958 | E199 | | | | | 115.0 | | | | | Turning back around to meet common shot points after nav lock up. |
| 0958 | 1002 | OW | 704B | 291.5° | 3291 | 3202 | 98.0 | | | | | Sol Overlap of common shotpoints. |
| 1002 | 1127 | OLC | | | 3202 | 1251 | 98.0 | | | | | Olc Abort line due to nav locking up. |
| 1127 | 1143 | E199 | | | | | 113.0 | | | | | Turning back around to meet common shot points after nav lock up. |
| 1143 | 1147 | OW | 704C | 291.5° | 1350 | 1251 | 87.0 | | | | | Sol Overlap of common shotpoints. |
| 1147 | 1222 | OLC | | | 1251 | 100 | 87.0 | | | | | Olc |
| 1222 | 1356 | LT | | | | | 99.0 | | | | | Eol |
| 1356 | 1357 | WS | 707B | 105.0° | 1000 | 1095 | 122.0 | | | | | Sol Overlap of common shotpoints. |
| 1357 | 1359 | WS | | | 1095 | 1110 | 122.0 | | | | | Olc |
| 1359 | 1402 | WS | | | 1110 | 1200 | 122.0 | | | | | Overlap of common shotpoints |
| 1402 | 1421 | DR | | | | | 106.0 | | | | | Eol Retrieve gear. |
| 1421 | 1425 | VP | Velo #11 | | | | | | | | | Velo #11 taken @ Lat: 60.9178 Lon: -151.1654 Depth = 35.65m Avg. Vel. = 1476.2m/s. |
| 1425 | 1430 | DR | | | | | | | | | | Continue retrieving gear. |
| 1430 | 1600 | IT | | | | | | | | | | Enroute to approach portion to rerun some lines. Going to AKLNG_Joblog&DPR_3. October 5th tab. |
| 1600 | | | | | | | | | | | | |

# FUGRO GEOSERVICES, INC.
## GEOPHYSICAL JOBLOG

ver 7.22.2010-B (Alaska)

| | |
|---|---|
| DATE: | 05-Oct-2015 Mon Julian Day: 278 |
| PROSPECT / SITE: | Approach Portion |
| NAV. SYSTEM: | Starfix |
| FGSI JOB #: | 2415-7058 |
| JOB DAY #: | Day: 36 |
| CRP TO STERN: | 16.50 Meters |

| | |
|---|---|
| CLIENT: | Alaska LNG |
| JOB DESCRIPTION: | Subbotton Hazard Survey-Approach Channel |
| AREA & BLOCK: | Cook Inlet |
| R/V: | Qualifier 105 |
| No. of SURVEY LINES: | 70 — 331.60 Kilometers |
| | 100.0% Complete |

5,740.63 Meters Deleted

**VESSEL MANAGER(S)**

| | |
|---|---|
| Party Manager: | Ted Tremblay |
| Ass't Party Manager: | |

**CLIENT REPRESENTATIVE(S)**

| | |
|---|---|
| QC Rep: | Noel Rogers |
| HSE Rep: | Michael Berry |
| Client Rep #3: | |
| Client Rep #4: | |

| GEOPHYSICAL EQUIPMENT | EQUIP # |
|---|---|
| Geometrics GeoEel 24ch.(1.56 gr) | # 2 |
| Geometrics GeoEel 24ch.(6.25 gr) | # 1 |
| G.I. 60 ci Gun | # 4198 |
| Castaway CTD Velocimeter | # 1 |
| Applied Acoutics Boomer | Rental |
| Edgetech 3200-XS SBP | # 1 |

| GEOPHYSICAL CREW | |
|---|---|
| Technical Coordinator: | Ted Tremblay |
| Shift Supervisor: | |
| Operator: | Barton Thibodeaux |
| " | Freddie Wilson |
| " | |
| " | |
| FGSI Surveyor: | Phillip Daniels |
| SES Field Lead PSO | Patti Haase |
| PSO | Kristine Lindberg |
| " | |
| " | |

| VESSEL CREW | |
|---|---|
| 1st Captain: | Jarod Bradshaw |
| 2nd Captain: | |
| 1st Mate: | Jeff Gregson |
| Chief Engineer: | Todd Ostler |
| Cook/Senior Deckhand: | Kevin Anderson |
| Deckhand: | Ben Jantzi |
| Deckhand: | |
| Deckhand: | |

| DATA PROCESSORS | |
|---|---|
| CGG Seismic Processor: | Shannon Campbell / Ian Shirley |
| FGSI QC Geophysicist: | Eric Swanson |

**WEATHER REPORT**

| Time | Sea State | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | | | |
| Wx - 1200: | | | |
| Wx - 1800: | | | |
| Wx - 2400: | 1 ft | 8knts | N |

**HSE Reporting (Place an "x" in the box, with brief description**

| | | |
|---|---|---|
| HSE OFFICER: | Barton Thibodeaux | |
| Toolbox: | X | J-057/017 |
| HOC: | No | No HOC submitted. |
| Safety: | | |
| Pre/Post Job: | | |

| TIME FROM | TIME TO | OP CODE | LINE INFORMATION: LINE NUMBER | HEADING | BSP | ESP | Fath (ft) | | | | DNP | DETAILED SURVEY INFORMATION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1600 | 1605 | IT | | | | | | | | | | Enroute to work area. Continued this day from AKLNG_Joblog&DPR_5 (pipeline portion). |
| 1605 | 1609 | WS | | | | | | | | | | Deploy gear. |
| 1609 | 1616 | WS | Velo #12 | | | | | | | | | Velo #12 taken @ Lat: 60.6376 Lon: -151.4280 Depth: 15.4m Avg. Velo. = 1479.9m/s |
| 1616 | 1635 | WS | | | | | | | | | | Continue deploying gear. |
| 1635 | 1756 | WS | 408B | 073.5° | 100 | 1661 | 75.0 | | | | | Sol Re-running this line due to weather from the first attempt. Boomer sling is hung up stern railing making source 1 meter closer to stern and crp. |
| 1756 | 1939 | WS | | | | | 56.0 | | | | | Eol Unhung boomer sling from railing. |
| 1939 | 2008 | WS | 329A | 163.5° | 152 | 1286 | 57.0 | | | | | Sol Re-running this line due to weather from the first attempt. |
| 2008 | 2028 | WS | | | | | 55.0 | | | | | Aborted due to nav locking up. |
| 2028 | 2108 | WS | 329B | 163.5° | 1186 | 2581 | 55.0 | | | | | Sol Re-running this line due to weather from the first attempt. |
| 2108 | 2151 | WS | | | | | 51.0 | | | | | Eol |
| 2151 | 2204 | WS | 328B | 163.5° | 145 | 516 | 50.0 | | | | | Sol Re-running this line due to weather from the first attempt. |
| 2204 | 2221 | WS | | | | | 60.0 | | | | | Aborted due to nav locking up. |
| 2221 | 2324 | WS | 328C | 163.5° | 416 | 2630 | 60.0 | | | | | Sol Re-running this line due to weather from the first attempt. |
| 2324 | 2400 | WS | | | | | 64.0 | | | | | Eol |

# FUGRO GEOSERVICES, INC.
## GEOPHYSICAL JOBLOG

ver 7.22.2010-B (Alaska)

| | |
|---|---|
| DATE: | 06-Oct-2015 Tue Julian Day: 279 |
| PROSPECT / SITE: | Approach Portion |
| NAV. SYSTEM: | Starfix |
| FGSI JOB #: | 2415-7058 |
| JOB DAY #: | Day: 37 |
| CRP TO STERN: | 16.50 Meters |

| | |
|---|---|
| CLIENT: | Alaska LNG |
| JOB DESCRIPTION: | Subbotton Hazard Survey-Approach Channel |
| AREA & BLOCK: | Cook Inlet |
| R/V: | Qualifier 105 |
| No. of SURVEY LINES: | 70 — 331.60 Kilometers |
| | 100.0% Complete |

5,740.63 Meters Deleted

**VESSEL MANAGER(S)**

| | |
|---|---|
| Party Manager: | Ted Tremblay |
| Ass't Party Manager: | |

**CLIENT REPRESENTATIVE(S)**

| | |
|---|---|
| QC Rep: | Noel Rogers |
| HSE Rep: | Michael Berry |
| Client Rep #3: | |
| Client Rep #4: | |

| GEOPHYSICAL EQUIPMENT | EQUIP # |
|---|---|
| Geometrics GeoEel 24ch.(1.56 gr) | # 2 |
| Geometrics GeoEel 24ch.(6.25 gr) | # 1 |
| G.I. 60 ci Gun | # 4198 |
| Castaway CTD Velocimeter | # 1 |
| Applied Acoutics Boomer | Rental |
| Edgetech 3200-XS SBP | # 1 |

**GEOPHYSICAL CREW**

| | |
|---|---|
| Technical Coordinator: | Ted Tremblay |
| Shift Supervisor: | |
| Operator: | Barton Thibodeaux |
| " | Freddie Wilson |
| " | |
| " | |
| FGSI Surveyor: | Phillip Daniels |
| SES Field Lead PSO | Patti Haase |
| PSO | Kristine Lindberg |
| " | |
| " | |

**VESSEL CREW**

| | |
|---|---|
| 1st Captain: | Jarod Bradshaw |
| 2nd Captain: | |
| 1st Mate: | Jeff Gregson |
| Chief Engineer: | Todd Ostler |
| Cook/Senior Deckhand: | Kevin Anderson |
| Deckhand: | Ben Jantzi |
| Deckhand: | |
| Deckhand: | |

**DATA PROCESSORS**

| | |
|---|---|
| CGG Seismic Processor: | Shannon Campbell / Ian Shirley |
| FGSI QC Geophysicist: | Eric Swanson |

**WEATHER REPORT**

| Time | Sea State | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | 1 ft | 10 kts | SSE |
| Wx - 1200: | 1 - 2 ft | 15 kts | NNE |
| Wx - 1800: | 2 - 3 ft. | 15-20kts | NNE |
| Wx - 2400: | | | |

**HSE Reporting (Place an "x" in the box, with brief description**

| | | |
|---|---|---|
| HSE OFFICER: | Barton Thibodeaux | |
| Toolbox: | X | GS-J-017 |
| HOC: | No | |
| Safety: | | |
| Pre/Post Job: | | |

**LINE INFORMATION**

| TIME FROM | TIME TO | OP CODE | LINE NUMBER | HEADING | BSP | ESP | Fath (ft) | | | | DNP | DETAILED SURVEY INFORMATION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0000 | 0014 | WS | | | | | | | | | | Continue line turn. |
| 0014 | 0052 | WS | 326A | 163.5° | 132 | 1462 | 42.0 | | | | | Sol Re-running this line due to weather from the first attempt. |
| 0052 | 0112 | E199 | | | | | 58.0 | | | | | Aborted due to nav locking up. |
| 0112 | 0147 | WS | 326B | 163.5° | 1362 | 2729 | 57.0 | | | | | Sol Continueing to run line. |
| 0147 | 0205 | WS | | | | | 58.0 | | | | | Eol |
| 0205 | 0243 | WS | 325D | 343.5° | 2780 | 1488 | 57.0 | | | | | Sol Re-running this line due to weather from the first attempt. |
| 0243 | 0306 | E199 | | | | | 52.0 | | | | | Aborted due to nav locking up. |
| 0306 | 0350 | WS | 325E | 343.5° | 1588 | 125 | 52.0 | | | | | Sol Continueing to run line. |
| 0350 | 0440 | WS | | | | | 47.0 | | | | | Eol |
| 0440 | 0501 | WS | 324A | 343.5° | 2836 | 2124 | 50.0 | | | | | Sol Re-running this line due to weather from the first attempt. |
| 0501 | 0557 | E199 | | | | | 49.0 | | | | | Aborted due to nav locking up. The bird was upside down on surface and a drift wood was stuck on boomer. Correct issues and going to restart line f |
| 0557 | 0655 | WS | 324B | 343.5° | 2836 | 716 | 47.0 | | | | | Sol Continueing to run line. |
| 0655 | 0711 | E199 | | | | | 51.0 | | | | | Aborted due to boomer timing out. |
| 0711 | 0713 | WS | 324C | 343.5° | 825 | 126 | 49.0 | | | | | Sol, covering common shot points from 825-716. |
| 0713 | 0756 | WS | | | | | 50.0 | | | | | Eol |
| 0756 | 0917 | WS | 322A | 163.5° | 104 | 2929 | 59.0 | | | | | Sol Re-running this line due to weather from the first attempt. |
| 0917 | 1014 | WS | | | | | 52.0 | | | | | Eol |
| 1014 | 1044 | WS | 321A | 343.5° | 100 | 922 | 72.0 | | | | | Sol Re-running this line due to weather from the first attempt. |
| 1044 | 1100 | E199 | | | | | 72.0 | | | | | Aborted due to nav locking up. |
| 1100 | 1128 | WS | | | | | | | | | | Flipping the bird right side up because it was upside down. |
| 1128 | 1232 | WS | 321B | 343.5° | 825 | 2977 | 75.0 | | | | | Sol Continueing to run line. |
| 1232 | 1324 | WS | | | | | 60.0 | | | | | Eol |
| 1324 | 1341 | WS | 320A | 344.3° | 100 | 648 | 87.0 | | | | | Sol Re-running this line due to weather from the first attempt. |
| 1341 | 1414 | E199 | | | | | 81.0 | | | | | Aborted due to nav locking up. |
| 1414 | 1501 | WS | 320B | 344.3° | 550 | 2397 | 80.0 | | | | | Sol Continueing to run line. |
| 1501 | 1521 | E199 | | | | | 61.0 | | | | | Aborted due to nav locking up. |
| 1521 | 1544 | WS | 320C | 167.3° | 3019 | 2259 | 59.0 | | | | | Sol Continueing to run line. |
| 1544 | 1603 | WS | | | | | 62.0 | | | | | Eol |
| 1603 | 1606 | WS | Velo #13 | | | | | | | | | Velo #13 taken @ Lat: 60.5639 Lon: -151.4380 Depth: 20.35m Avg. Vel. = 1481.4m/s. |
| 1606 | 1610 | WS | | | | | | | | | | Retrieving gear. |
| 1610 | 2400 | WS | | | | | | | | | | Enroute to Homer. Switching to AKLNG_Joblog&DPR_5. Oct.7th Tab. |

# FUGRO GEOSERVICES, INC.
## GEOPHYSICAL JOBLOG

ver 7.22.2010-B (Alaska)

| | |
|---|---|
| DATE: | 07-Oct-2015 Wed Julian Day: 280 |
| PROSPECT / SITE: | Pipeline Portion |
| NAV. SYSTEM: | Starfix |
| FGSI JOB #: | 2415-7058 |
| JOB DAY #: | Day: 14 |
| CRP TO STERN: | 16.50 Meters |

| | |
|---|---|
| CLIENT: | Alaska LNG |
| JOB DESCRIPTION: | Pipeline Portion |
| AREA & BLOCK: | Cook Inlet |
| R/V: | Qualifier 105 |
| No. of SURVEY LINES: | 109 — 449.78 Kilometers, 60.0% Complete |

29,768.75 Meters Deleted

**VESSEL MANAGER(S)**

| | |
|---|---|
| Party Manager: | Ted Tremblay |
| Ass't Party Manager: | |

**CLIENT REPRESENTATIVE(S)**

| | |
|---|---|
| QC Rep: | Noel Rogers |
| HSE Rep: | Michael Berry |
| Client Rep #3: | |
| Client Rep #4: | |

| GEOPHYSICAL EQUIPMENT | EQUIP # |
|---|---|
| Geometrics GeoEel 24ch.(1.56 gr) | # 2 |
| Geometrics GeoEel 24ch.(6.25 gr) | # 1 |
| G.I. 60 ci Sleeve Gun | # 4198 |
| Castaway CTD Velocimeter | # 1 |
| Applied Acoutics Boomer | Rental |
| Edgetech 3200-XS SBP | # 1 |

| GEOPHYSICAL CREW | |
|---|---|
| Technical Coordinator: | Ted Tremblay |
| Shift Supervisor: | |
| Operator: | Barton Thibodeaux |
| " | Freddie Wilson / Matthew Broussard |
| " | Robert Faragher |
| " | |
| FGSI Surveyor: | Phillip Daniels/ Darrell Miller |
| SES Field Lead PSO | Patti Hasse |
| PSO | Kristine Lindberg |
| " | |
| " | |

| VESSEL CREW | |
|---|---|
| 1st Captain: | Jarel Bradshaw/ David Mastolier |
| 2nd Captain: | Jeff Gregson |
| 1st Mate: | |
| Chief Engineer: | Todd Ostler |
| Cook/Senior Deckhand: | Kevin Anderson |
| Deckhand: | Ben Jantzi |
| Deckhand: | |
| Deckhand: | |

| DATA PROCESSORS | |
|---|---|
| CGG Seismic Processor: | Shannon Campbell / Ian Shirley |
| FGSI QC Geophysicist: | Eric Swanson |

**WEATHER REPORT**

| Time | Sea State | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | 2 - 3 ft | 15 - 20 kts | NE |
| Wx - 1200: | 2 - 3 ft | 15 - 20 kts | NE |
| Wx - 1800: | 2 - 3 ft | 15 - 20 kts | NE |
| Wx - 2400: | 2 - 3 ft | 15 - 20 kts | NE |

**HSE Reporting (Place an "x" in the box, with brief description**

| HSE OFFICER: | Barton Thibodeaux | |
|---|---|---|
| Toolbox: | Yes | Good Housekeeping |
| HOC: | No | No HOC's submitted |
| Safety: | | |
| Pre/Post Job: | | |

| TIME FROM | TIME TO | OP CODE | LINE INFORMATION: LINE NUMBER | HEADING | BSP | ESP | Fath (ft) | | | | DNP |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0000 | 2400 | WS | | | | | | | | | |

**DETAILED SURVEY INFORMATION**

Arrive in Homer. Will crew change today and get food, water and supplies.
Crew change takes place at different times of day. Bradshaw and Mastolier, Daniels and Miller, Wilson and Broussard and finally Hasse with a replacement that will arrive tomorrow. Switching to AKLNG_Joblog&DPR_6.

Alaska LNG

# FUGRO GEOSERVICES, INC.
## GEOPHYSICAL JOBLOG

ver 7.22.2010-B (Alaska)

| | |
|---|---|
| DATE: | 08-Oct-2015 Thu Julian Day: 281 |
| PROSPECT / SITE: | Pipeline Portion |
| NAV. SYSTEM: | Starfix |
| FGSI JOB #: | 2415-7058 |
| JOB DAY #: | Day: 15 |
| CRP TO STERN: | 16.50 Meters |

| | |
|---|---|
| NAV. DIVIDE BY: | 1 |
| NAV. FIX DISTANCE: | 3.125 |
| SURVEY UNITS: | Meters |
| NAUTICAL MILE: | 6080.0 |

| | |
|---|---|
| CLIENT: | Alaska LNG |
| JOB DESCRIPTION: | Pipeline Portion |
| AREA & BLOCK: | Cook Inlet |
| R/V: | Qualifier 105 |
| No. of SURVEY LINES: | 109 |
| ORIGINAL JOB TOTAL: | 479,550.00 |

449.78 Kilometers
60.0% Complete

29,768.75 Meters Deleted

**VESSEL MANAGER(S)**

| | |
|---|---|
| Party Manager: | Ted Tremblay |
| Ass't Party Manager: | |

**CLIENT REPRESENTATIVE(S)**

| | |
|---|---|
| QC Rep: | Noel Rogers |
| HSE Rep: | Michael Berry |
| Client Rep #3: | |
| Client Rep #4: | |

**GEOPHYSICAL EQUIPMENT**

| | EQUIP # |
|---|---|
| Geometrics GeoEel 24ch.(1.56 gr) | # 2 |
| Geometrics GeoEel 24ch.(6.25 gr) | # 1 |
| G.I. 60 ci Sleeve Gun | # 4198 |
| Castaway CTD Velocimeter | # 1 |
| Applied Acoutics Boomer | Rental |
| Edgetech 3200-XS SBP | # 1 |

**GEOPHYSICAL CREW**

| | |
|---|---|
| Technical Coordinator: | Ted Tremblay |
| Shift Supervisor: | |
| Operator: | Barton Thibodeaux |
| " | Matthew Broussard |
| " | Robert Faragher |
| " | |
| FGSI Surveyor: | Darrell Miller |
| SES Field Lead PSO | Kristine Lindberg |
| PSO | Tara Hanks |
| " | |
| " | |

**VESSEL CREW**

| | |
|---|---|
| 1st Captain: | David Mastolier |
| 2nd Captain: | Jeff Gregson |
| 1st Mate: | |
| Chief Engineer: | Todd Ostler |
| Cook/Senior Deckhand: | Kevin Anderson |
| Deckhand: | Ben Jantzi |
| Deckhand: | |
| Deckhand: | |

**DATA PROCESSORS**

| | |
|---|---|
| CGG Seismic Processor: | Shannon Campbell / Ian Shirley |
| FGSI QC Geophysicist: | Eric Swanson |

**WEATHER REPORT**

| Time | Sea State | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | 5 - 6 ft | 20-25 kts | NNE |
| Wx - 1200: | 5 - 6 ft | 20-25 kts | NNE |
| Wx - 1800: | 5 - 6 ft | 20-25 kts | NNE |
| Wx - 2400: | 5 ft | 20 kts | NNE |

**HSE Reporting (Place an "x" in the box, with brief description**

| HSE OFFICER: | Barton Thibodeaux | |
|---|---|---|
| Toolbox: | Yes | Notification of Whereabouts |
| HOC: | Yes | 1 HOC submitted |
| Safety: | | |
| Pre/Post Job: | | |

**LINE INFORMATION**

| TIME FROM | TIME TO | OP CODE | LINE NUMBER | HEADING | BSP | ESP | Fath (ft) | | | | DNP |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0000 | 0001 | WS | | | | | | | | | |
| 0001 | 0002 | WS | | | | | | | | | |
| 0002 | 0003 | WS | | | | | | | | | |
| 0003 | 0004 | WS | | | | | | | | | |
| 0004 | 0005 | WS | | | | | | | | | |
| 0005 | 0006 | WS | | | | | | | | | |
| 0006 | 0800 | WS | | | | | | | | | |
| 0800 | 1500 | WS | | | | | | | | | |
| 1500 | 2400 | WS | | | | | | | | | |

**DETAILED SURVEY INFORMATION**

The nav shot point distance is 3.125 not 6.25 as the preplot database is made for so the shotpoints will be doubled.
On the "Eq. Specs-Seismic Sys #1 & #2" tab of joblog, the only sensors accurately entered are the "EDGETECH 3200-XS SUBBOTTOM PROFILER and the "APPLIED ACOUTICS CSP-P BOOMER". The "Seismic Systems #1 and #2 Specs" page does not allow to enter the proper values for a aut calculation on "Seismic System #1 Specs" tab and " Seismic System #2" tab. So these values are manually entered correctly in those tabs along with the manual entering of values on tabs "Drawing-24(1.56)" and "Drawing-24(1.56)". Tabs for "Seismic System #1" have been deleted since we wi not use the long streamer with G.I. gun as a sound source. "Seismic System #2" is now the Boomer as a sound source with short streamer.
Waiting on weather. Tara Hanks has replaced Patty Hasse.
New Navigational computer setup and running. Spare boomer console and towleader brought aboard.
Waiting on weather.

# FUGRO GEOSERVICES, INC.
## GEOPHYSICAL JOBLOG

ver 7.22.2010-B (Alaska)

| | |
|---|---|
| DATE: | 09-Oct-2015 Fri Julian Day: 282 |
| PROSPECT / SITE: | Pipeline Portion |
| NAV. SYSTEM: | Starfix |
| FGSI JOB #: | 2415-7058 |
| JOB DAY #: | Day: 16 |
| CRP TO STERN: | 16.50 Meters |

| | |
|---|---|
| CLIENT: | Alaska LNG |
| JOB DESCRIPTION: | Pipeline Portion |
| AREA & BLOCK: | Cook Inlet |
| R/V: | Qualifier 105 |
| No. of SURVEY LINES: | 109 — 449.78 Kilometers, 60.0% Complete |

29,768.75 Meters Deleted

**VESSEL MANAGER(S)**

| | |
|---|---|
| Party Manager: | Ted Tremblay |
| Ass't Party Manager: | |

**CLIENT REPRESENTATIVE(S)**

| | |
|---|---|
| QC Rep: | Noel Rogers |
| HSE Rep: | Michael Berry |
| Client Rep #3: | |
| Client Rep #4: | |

| GEOPHYSICAL EQUIPMENT | EQUIP # |
|---|---|
| Geometrics GeoEel 24ch.(1.56 gr) | # 2 |
| Geometrics GeoEel 24ch.(6.25 gr) | # 1 |
| G.I. 60 ci Sleeve Gun | # 4198 |
| Castaway CTD Velocimeter | # 1 |
| Applied Acoutics Boomer | Rental |
| Edgetech 3200-XS SBP | # 1 |

| GEOPHYSICAL CREW | |
|---|---|
| Technical Coordinator: | Ted Tremblay |
| Shift Supervisor: | |
| Operator: | Barton Thibodeaux |
| " | Matthew Broussard |
| " | Robert Faragher |
| " | |
| FGSI Surveyor: | Darrell Miller |
| SES Field Lead PSO | Kristine Lindberg |
| PSO | Tara Hanks |
| " | |
| " | |

| VESSEL CREW | |
|---|---|
| 1st Captain: | David Mastolier |
| 2nd Captain: | Jeff Gregson |
| 1st Mate: | |
| Chief Engineer: | Todd Ostler |
| Cook/Senior Deckhand: | Kevin Anderson |
| Deckhand: | Ben Jantzi |
| Deckhand: | |
| Deckhand: | |

**DATA PROCESSORS**

| | |
|---|---|
| CGG Seismic Processor: | Shannon Campbell / Ian Shirley |
| FGSI QC Geophysicist: | Eric Swanson |

**WEATHER REPORT**

| Time | Sea State | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | | | |
| Wx - 1200: | | | |
| Wx - 1800: | | | |
| Wx - 2400: | 1 - 3 ft | 10 - 15 kts | NNE |

**HSE Reporting (Place an "x" in the box, with brief description**

| | | |
|---|---|---|
| HSE OFFICER: | Barton Thibodeaux | |
| Toolbox: | Yes | Slips,Trips,& Falls Around Dock |
| HOC: | No | No HOC's submitted |
| Safety: | | |
| Pre/Post Job: | | |

| TIME FROM | TIME TO | OP CODE | LINE NUMBER | HEADING | BSP | ESP | Fath (ft) | | | | DNP |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0000 | 2100 | WS | | | | | | | | | |
| 2100 | 2101 | WS | | | | | | | | | |
| 2101 | 2400 | WS | | | | | | | | | |

**DETAILED SURVEY INFORMATION**

Waiting on weather.
Depart Homer for work area.
Enroute to work area.
Switching to AKLNG_Joblog&DPR_7(Oct 10th Tab).

# FUGRO GEOSERVICES, INC.
## GEOPHYSICAL JOBLOG

ver 7.22.2010-B (Alaska)

| | | | |
|---|---|---|---|
| DATE: | 10-Oct-2015 Sat Julian Day: 283 | CLIENT: | Alaska LNG |
| PROSPECT / SITE: | Pipeline Portion Added Mileage | JOB DESCRIPTION: | Pipeline Portion - Janet Sowers Addition |
| NAV. SYSTEM: | Starfix | AREA & BLOCK: | Cook Inlet |
| FGSI JOB #: | 2415-7058 | R/V: | Qualifier 105 |
| JOB DAY #: | Day: 1 | No. of SURVEY LINES: | 28 — 347.20 Kilometers |
| CRP TO STERN: | 16.50 Meters | ORIGINAL JOB TOTAL: | 331,067.00 — 4.6% Complete |
| NAV. DIVIDE BY: | 1 | | 16,131.25 Meters Added |
| NAV. FIX DISTANCE: | 3.125 | | |
| SURVEY UNITS: | Meters | | |
| NAUTICAL MILE: | 6080.0 | | |

**VESSEL MANAGER(S)**

| | |
|---|---|
| Party Manager: | Ted Tremblay |
| Ass't Party Manager: | |

**CLIENT REPRESENTATIVE(S)**

| | |
|---|---|
| QC Rep: | Noel Rogers |
| HSE Rep: | Michael Berry |
| Client Rep #3: | |
| Client Rep #4: | |

**GEOPHYSICAL EQUIPMENT**

| | EQUIP # |
|---|---|
| Geometrics GeoEel 24ch.(1.56 gr) | # 2 |
| Geometrics GeoEel 24ch.(6.25 gr) | # 1 |
| G.I. 60 ci Sleeve Gun | # 4198 |
| Castaway CTD Velocimeter | # 1 |
| Applied Acoutics Boomer | Rental |
| Edgetech 3200-XS SBP | # 1 |

**GEOPHYSICAL CREW**

| | |
|---|---|
| Technical Coordinator: | Ted Tremblay |
| Shift Supervisor: | |
| Operator: | Barton Thibodeaux |
| " | Matt Broussard |
| " | Robert Faragher |
| " | |
| FGSI Surveyor: | Darrell Miller |
| SES Field Lead PSO | Kristine Lindberg |
| PSO | Tara Hanks |
| " | |
| " | |

**VESSEL CREW**

| | |
|---|---|
| 1st Captain: | David Mastolier |
| 2nd Captain: | Jeff Gregson |
| 1st Mate: | |
| Chief Engineer: | Todd Ostler |
| Cook/Senior Deckhand: | Kevin Anderson |
| Deckhand: | Ben Jantzi |
| Deckhand: | |
| Deckhand: | |

**DATA PROCESSORS**

| | |
|---|---|
| CGG Seismic Processor: | Shannon Campbell / Ian Shirley |
| FGSI QC Geophysicist: | Eric Swanson |

**WEATHER REPORT**

| Time | Sea State | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | 1 ft | 5 kts | NE |
| Wx - 1200: | 1 ft | 5 kts | N |
| Wx - 1800: | 1 ft | 10 kts | NW |
| Wx - 2400: | 2-3 ft | 15 kts | NE |

**HSE Reporting (Place an "x" in the box, with brief description**

| | | |
|---|---|---|
| HSE OFFICER: | Barton Thibodeaux | |
| Toolbox: | X | GS-J-014,017 |
| HOC: | No | No HOCS submitted |
| Safety: | Yes | Weekly Drill-Man Overboard |
| Pre/Post Job: | | |

| TIME FROM | TIME TO | OP CODE | LINE INFORMATION: LINE NUMBER | HEADING | BSP | ESP | Fath (ft) | | | | DNP | DETAILED SURVEY INFORMATION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0000 | 0001 | WS | | | | | | | | | | Read below. |
| 0001 | 0002 | WS | | | | | | | | | | On the "Eq. Specs-Seismic Sys #1 & #2" tab of joblog, the only sensors accurately entered are the "EDGETECH 3200-XS SUBBOTTOM PROFILER |
| 0002 | 0003 | WS | | | | | | | | | | and the "APPLIED ACOUTICS CSP-P BOOMER". The "Seismic Systems #1 and #2 Specs" page does not allow to enter the proper values for a aut |
| 0003 | 0004 | WS | | | | | | | | | | calculation on "Seismic System #1 Specs" tab and " Seismic System #2" tab. So these values are manually entered correctly in those tabs along |
| 0004 | 0005 | WS | | | | | | | | | | with the manual entering of values on tabs "Drawing-24(1.56)" and "Drawing-24(1.56)". Tabs for "Seismic System #1" have been deleted since we wi |
| 0005 | 0006 | WS | | | | | | | | | | not use the long streamer with G.I. gun as a sound source. "Seismic System #2" is now the Boomer as a sound source with short streamer. |
| 0006 | 0007 | WS | | | | | | | | | | |
| 0007 | 0008 | WS | | | | | | | | | | This joblog is a special added mileage addition in the Pipeline Portion. This day is the next day following AKLNG_Joblog&DPR_6(Oct 9th Tab). |
| 0008 | 0500 | WS | | | | | | | | | | Enroute to work area. |
| 0500 | 0815 | WS | | | | | | | | | | Waiting on daylight so PSO can give clearance to begin mitigation. |
| 0815 | 0825 | WS | | | | | | | | | | Man Overboard Drill |
| 0825 | 0842 | DR | | | | | | | | | | Deploy gear. |
| 0842 | 0852 | VP | Velo #14 | | | | | | | | | Velo #14 Lat: 60.8416 Lon: -151.1753 Depth16.31m Ave. Vel.: 1473.8m/s |
| 0852 | 1004 | DR | | | | | | | | | | Continue deploying and tuning gear. |
| 1004 | 1029 | AM | 803 | 354.0° | 2032 | 2844 | | | | | | Sol |
| 1029 | 1105 | LT | | | | | 70.0 | | | | | Eol serial string not detected in Geoeel. Line name.nav.txt file is not populated |
| 1105 | 1136 | AM | 802 | 354.0° | 1643 | 2844 | 41.0 | | | | | Sol |
| 1136 | 1200 | E199 | | | | | 79.0 | | | | | Eol serial string not detected in Geoeel. Line name.nav.txt file is not populated |
| 1200 | 1215 | E199 | | | | | | | | | | GeoEel device in IOWIN not there to select. |
| 1215 | 1230 | E199 | | | | | | | | | | Copy DLL from original computer. |
| 1230 | 1300 | E199 | | | | | | | | | | No-luck. Call Barry from Lafayette-make sure the device is listed in Devices.ini. |
| 1300 | 1330 | E199 | | | | | | | | | | List it-no luck. Copy the Devices.xml file over. |
| 1330 | 1400 | E199 | | | | | | | | | | GeoEel device now in IOWIN-configure IOWIN device. |
| 1400 | 1415 | E199 | | | | | | | | | | GeoEel reports no serial string detected. The header info. Is coming into the port and can be viewed by Tera Term Pro. |
| 1415 | 1430 | E199 | | | | | | | | | | After changing ports and cables and rebooting computer and configuring a new GeoEel project, there is still no serial string detected. |
| 1430 | 1500 | E199 | | | | | | | | | | Call Doug Bowlus for advice. He has not seen this problem before. Will try to swap out computer. |
| 1500 | 1630 | E199 | | | | | | | | | | Setup Backup GeoEel computer with new project. |
| 1630 | 1700 | E199 | | | | | | | | | | Still not being detected by GeoEel but I can see the string come in on the port. |
| 1700 | 1730 | E199 | | | | | | | | | | Nav string still not detected. Reboot all computers. |
| 1730 | 1832 | E199 | | | | | | | | | | Heading for line. |
| 1832 | 1905 | E199 | 802A | 354.0° | 1651 | 2844 | 60.0 | | | | | Sol |
| 1905 | 1954 | E199 | | | | | 93.0 | | | | | Eol |
| 1954 | 2022 | E199 | 803A | 354.5° | 2025 | 2839 | 47.0 | | | | | Sol |

# FUGRO GEOSERVICES, INC.
## GEOPHYSICAL JOBLOG

ver 7.22.2010-B (Alaska)

| | |
|---|---|
| DATE: | 10-Oct-2015 Sat Julian Day: 283 |
| PROSPECT / SITE: | Pipeline Portion Added Mileage |
| NAV. SYSTEM: | Starfix |
| FGSI JOB #: | 2415-7058 |
| JOB DAY #: | Day: 1 |
| CRP TO STERN: | 16.50 Meters |
| NAV. DIVIDE BY: | 1 |
| NAV. FIX DISTANCE: | 3.125 |
| SURVEY UNITS: | Meters |
| NAUTICAL MILE: | 6080.0 |

| | |
|---|---|
| CLIENT: | Alaska LNG |
| JOB DESCRIPTION: | Pipeline Portion - Janet Sowers Addition |
| AREA & BLOCK: | Cook Inlet |
| R/V: | Qualifier 105 |
| No. of SURVEY LINES: | 28 |
| ORIGINAL JOB TOTAL: | 331,067.00 |

347.20 Kilometers
4.6% Complete
16,131.25 Meters Added

**VESSEL MANAGER(S)**

| | |
|---|---|
| Party Manager: | Ted Tremblay |
| Ass't Party Manager: | |

**CLIENT REPRESENTATIVE(S)**

| | |
|---|---|
| QC Rep: | Noel Rogers |
| HSE Rep: | Michael Berry |
| Client Rep #3: | |
| Client Rep #4: | |

| TIME | | OP | LINE INFORMATION | | | | | | | | | DETAILED SURVEY INFORMATION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FROM | TO | CODE | LINE NUMBER | HEADING | BSP | ESP | Fath (ft) | | | | DNP | |
| 2022 | 2134 | LT | | | | | 79.0 | | | | | Eol |
| 2134 | 2241 | AM | 801 | 354.5° | 1008 | 2839 | 38.0 | | | | | Sol |
| 2241 | 2324 | LT | | | | | 72.0 | | | | | Eol |
| 2324 | 2400 | AM | 800 | 354.5° | 712 | 2030 | 25.0 | | | | | Sol |

# FUGRO GEOSERVICES, INC.
## GEOPHYSICAL JOBLOG

ver 7.22.2010-B (Alaska)

| | |
|---|---|
| DATE: | 11-Oct-2015 Sun Julian Day: 284 |
| PROSPECT / SITE: | Pipeline Portion Added Mileage |
| NAV. SYSTEM: | Starfix |
| FGSI JOB #: | 2415-7058 |
| JOB DAY #: | Day: 2 |
| CRP TO STERN: | 16.50 Meters |

| | |
|---|---|
| CLIENT: | Alaska LNG |
| JOB DESCRIPTION: | Pipeline Portion - Janet Sowers Addition |
| AREA & BLOCK: | Cook Inlet |
| R/V: | Qualifier 105 |
| No. of SURVEY LINES: | 28 — 356.07 Kilometers, 7.0% Complete, 25,000.00 Meters Added |

**VESSEL MANAGER(S)**

| | |
|---|---|
| Party Manager: | Ted Tremblay |
| Ass't Party Manager: | |

**CLIENT REPRESENTATIVE(S)**

| | |
|---|---|
| QC Rep: | Noel Rogers |
| HSE Rep: | Michael Berry |
| Client Rep #3: | |
| Client Rep #4: | |

| GEOPHYSICAL EQUIPMENT | EQUIP # |
|---|---|
| Geometrics GeoEel 24ch.(1.56 gr) | # 2 |
| Geometrics GeoEel 24ch.(6.25 gr) | # 1 |
| G.I. 60 ci Sleeve Gun | # 4198 |
| Castaway CTD Velocimeter | # 1 |
| Applied Acoutics Boomer | Rental |
| Edgetech 3200-XS SBP | # 1 |

**GEOPHYSICAL CREW**

| | |
|---|---|
| Technical Coordinator: | Ted Tremblay |
| Shift Supervisor: | |
| Operator: | Barton Thibodeaux |
| " | Matt Broussard |
| " | Robert Faragher |
| " | |
| FGSI Surveyor: | Darrell Miller |
| SES Field Lead PSO | Kristine Lindberg |
| PSO | Tara Hanks |
| " | |
| " | |

**VESSEL CREW**

| | |
|---|---|
| 1st Captain: | David Mastolier |
| 2nd Captain: | Jeff Gregson |
| 1st Mate: | |
| Chief Engineer: | Todd Ostler |
| Cook/Senior Deckhand: | Kevin Anderson |
| Deckhand: | Ben Jantzi |
| Deckhand: | |
| Deckhand: | |

**DATA PROCESSORS**

| | |
|---|---|
| CGG Seismic Processor: | Shannon Campbell / Ian Shirley |
| FGSI QC Geophysicist: | Eric Swanson |

**WEATHER REPORT**

| Time | Sea State | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | 3 ft | 15kts | N |
| Wx - 1200: | 2 - 3 ft | 18 - 20 kts | NE |
| Wx - 1800: | 3 ft | 15kts | N |
| Wx - 2400: | 2 ft | 10 kts | N |

**HSE Reporting (Place an "x" in the box, with brief description**

| | | |
|---|---|---|
| HSE OFFICER: | Barton Thibodeaux | |
| Toolbox: | X | GS-J-017 |
| HOC: | Yes | 1 HOC Submitted. |
| Safety: | | |
| Pre/Post Job: | | |

| TIME FROM | TIME TO | OP CODE | LINE INFORMATION: LINE NUMBER | HEADING | BSP | ESP | Fath (ft) | | | | DNP |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0000 | 0010 | AMC | 800 | 345.5° | 2030 | 2404 | 78.0 | | | | |
| 0010 | 0124 | LT | | | | | 70.0 | | | | |
| 0124 | 0326 | AM | 811 | 287.6° | 2569 | 105 | 44.0 | | | | |
| 0326 | 0830 | WS | | | | | 94.0 | | | | |
| 0830 | 0930 | WS | | | | | | | | | |
| 0930 | 0945 | WS | | | | | | | | | |
| 0945 | 2400 | WS | | | | | | | | | |

**DETAILED SURVEY INFORMATION**

Olc
Eol
Sol Data is too noisy after processing. This line will have to be reran.
Eol On weather standby.
Retrieve gear.
Going to anchor near shallow end of surey area.
Anchored.

# FUGRO GEOSERVICES, INC.
## GEOPHYSICAL JOBLOG

ver 7.22.2010-B (Alaska)

| | |
|---|---|
| DATE: | 12-Oct-2015 Mon Julian Day: 285 |
| PROSPECT / SITE: | Pipeline Portion Added Mileage |
| NAV. SYSTEM: | Starfix |
| FGSI JOB #: | 2415-7058 |
| JOB DAY #: | Day: 3 |
| CRP TO STERN: | 16.50 Meters |

| | |
|---|---|
| CLIENT: | Alaska LNG |
| JOB DESCRIPTION: | Pipeline Portion - Janet Sowers Addition |
| AREA & BLOCK: | Cook Inlet |
| R/V: | Qualifier 105 |
| No. of SURVEY LINES: | 28 — 396.55 Kilometers, 16.5% Complete, 65,487.50 Meters Added |

**VESSEL MANAGER(S)**

| | |
|---|---|
| Party Manager: | Ted Tremblay |
| Ass't Party Manager: | |

**CLIENT REPRESENTATIVE(S)**

| | |
|---|---|
| QC Rep: | Noel Rogers |
| HSE Rep: | Michael Berry |
| Client Rep #3: | |
| Client Rep #4: | |

| GEOPHYSICAL EQUIPMENT | EQUIP # |
|---|---|
| Geometrics GeoEel 24ch.(1.56 gr) | # 2 |
| Geometrics GeoEel 24ch.(6.25 gr) | # 1 |
| G.I. 60 ci Sleeve Gun | # 4198 |
| Castaway CTD Velocimeter | # 1 |
| Applied Acoutics Boomer | Rental |
| Edgetech 3200-XS SBP | # 1 |

**GEOPHYSICAL CREW**

| | |
|---|---|
| Technical Coordinator: | Ted Tremblay |
| Shift Supervisor: | |
| Operator: | Barton Thibodeaux |
| " | Matt Broussard |
| " | Robert Faragher |
| " | |
| FGSI Surveyor: | Darrell Miller |
| SES Field Lead PSO | Kristine Lindberg |
| PSO | Tara Hanks |
| " | |
| " | |

**VESSEL CREW**

| | |
|---|---|
| 1st Captain: | David Mastolier |
| 2nd Captain: | Jeff Gregson |
| 1st Mate: | |
| Chief Engineer: | Todd Ostler |
| Cook/Senior Deckhand: | Kevin Anderson |
| Deckhand: | Ben Jantzi |
| Deckhand: | |
| Deckhand: | |

**DATA PROCESSORS**

| | |
|---|---|
| CGG Seismic Processor: | Shannon Campbell / Ian Shirley |
| FGSI QC Geophysicist: | Eric Swanson |

**WEATHER REPORT**

| Time | Sea State | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | 1 ft | 5 kts | SE |
| Wx - 1200: | 1 ft | 5 kts | SE |
| Wx - 1800: | 1 ft | 5 kts | N |
| Wx - 2400: | 1ft | 10kts | N |

**HSE Reporting (Place an "x" in the box, with brief description**

| | | |
|---|---|---|
| HSE OFFICER: | Barton Thibodeaux | |
| Toolbox: | X | JS-J-27 &JS-J-51 |
| HOC: | No | No HOC submitted. |
| Safety: | | |
| Pre/Post Job: | | |

**LINE INFORMATION**

| TIME FROM | TIME TO | OP CODE | LINE NUMBER | HEADING | BSP | ESP | Fath (ft) | | | | DNP | DETAILED SURVEY INFORMATION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0000 | 0630 | WS | | | | | | | | | | Weather has calmed down. Now waiting on daylight to begin surveying again after PSO clearance.. |
| 0630 | 0715 | WS | | | | | | | | | | Engines are being warmed up. |
| 0715 | 0725 | VP | Velo #15 | | | | | | | | | Velo#15 taken @ Lat: 60.7558 Lon: -151.2983 Depth: 8.94m Ave. Vel: 1475.4m/s. |
| 0725 | 0735 | DR | | | | | | | | | | Deploying subbottom OTSM. |
| 0735 | 0800 | DR | | | | | | | | | | Pulling up anchor-heading North to deploy streamer. New database emailed today. Will create dxf and create that new database for nav. |
| 0800 | 0910 | OW | | | | | | | | | | Nav database lines imported and named, while enroute to highest priority lines. Mitigation begins. |
| 0910 | 1026 | OW | | | | | | | | | | Heading to line. |
| 1026 | 1124 | AM | 816 | 085.0° | 100 | 1766 | 80.0 | | | | | Sol Channels 8,9, and 10 are noisy. Capacitance and Leakage test pass. Inform office. Continue shooting since this is only visable in raw shots. |
| 1124 | 1142 | LT | | | | | 45.0 | | | | | Eol These channels also are by a cable leveler. It is less noticiable going North or South. Still cant rule out how current may effect cable. |
| 1142 | 1220 | AM | 822 | 355.0° | 100 | 1358 | 50.0 | | | | | Sol |
| 1220 | 1245 | LT | | | | | 78.0 | | | | | Eol |
| 1245 | 1321 | AM | 824 | 175.0° | 1358 | 137 | 72.0 | | | | | Sol |
| 1321 | 1352 | LT | | | | | 39.0 | | | | | Eol |
| 1352 | 1415 | AM | 826 | 175.0° | 1362 | 653 | 65.0 | | | | | Sol |
| 1415 | 1438 | LT | | | | | 35.0 | | | | | Eol |
| 1438 | 1455 | AM | 804 | 175.0° | 1843 | 1252 | 64.0 | | | | | Sol |
| 1455 | 1513 | LT | | | | | 48.0 | | | | | Eol |
| 1513 | 1541 | AM | 805 | 175.0° | 1843 | 842 | 55.0 | | | | | Sol |
| 1541 | 1607 | LT | | | | | 45.0 | | | | | Eol |
| 1607 | 1733 | AM | 815 | 288.0° | 100 | 3022 | 53.0 | | | | | Sol |
| 1733 | 1813 | LT | | | | | 102.0 | | | | | Eol |
| 1813 | 1843 | AM | 819 | 175.0° | 1362 | 125 | 90.0 | | | | | Sol SP 520- Offline due to barge. SP 467- Back online. |
| 1843 | 1910 | LT | | | | | 39.0 | | | | | Eol |
| 1910 | 1938 | AM | 818 | 083.0° | 100 | 931 | 81.0 | | | | | Sol |
| 1938 | 2020 | LT | | | | | 67.0 | | | | | Eol |
| 2020 | 2107 | AM | 817 | 084.8° | 100 | 790 | 81.0 | | | | | Sol |
| 2107 | 2329 | LT | | | | | 80.0 | | | | | Eol |
| 2329 | 2400 | AM | 814 | 104.1° | 100 | 930 | 140.0 | | | | | Sol |

# FUGRO GEOSERVICES, INC.
## GEOPHYSICAL JOBLOG

ver 7.22.2010-B (Alaska)

| | |
|---|---|
| DATE: | 13-Oct-2015 Tue Julian Day: 286 |
| PROSPECT / SITE: | Pipeline Portion Added Mileage |
| NAV. SYSTEM: | Starfix |
| FGSI JOB #: | 2415-7058 |
| JOB DAY #: | Day: 4 |
| CRP TO STERN: | 16.50 Meters |

| | |
|---|---|
| CLIENT: | Alaska LNG |
| JOB DESCRIPTION: | Pipeline Portion - Janet Sowers Addition |
| AREA & BLOCK: | Cook Inlet |
| R/V: | Qualifier 105 |
| No. of SURVEY LINES: | 28 — 479.81 Kilometers |
| | 31.0% Complete |
| | 148,743.75 Meters Added |

**VESSEL MANAGER(S)**

| | |
|---|---|
| Party Manager: | Ted Tremblay |
| Ass't Party Manager: | |

**CLIENT REPRESENTATIVE(S)**

| | |
|---|---|
| QC Rep: | Noel Rogers |
| HSE Rep: | Michael Berry |
| Client Rep #3: | |
| Client Rep #4: | |

| GEOPHYSICAL EQUIPMENT | EQUIP # |
|---|---|
| Geometrics GeoEel 24ch.(1.56 gr) | # 2 |
| Geometrics GeoEel 24ch.(6.25 gr) | # 1 |
| G.I. 60 ci Sleeve Gun | # 4198 |
| Castaway CTD Velocimeter | # 1 |
| Applied Acoutics Boomer | Rental |
| Edgetech 3200-XS SBP | # 1 |
| | |
| | |
| | |
| | |
| | |

**GEOPHYSICAL CREW**

| | |
|---|---|
| Technical Coordinator: | Ted Tremblay |
| Shift Supervisor: | |
| Operator: | Barton Thibodeaux |
| " | Matt Broussard |
| " | Robert Faragher |
| " | |
| FGSI Surveyor: | Darrell Miller |
| SES Field Lead PSO | Kristine Lindberg |
| PSO | Tara Hanks |
| " | |
| " | |

**VESSEL CREW**

| | |
|---|---|
| 1st Captain: | David Mastolier |
| 2nd Captain: | Jeff Gregson |
| 1st Mate: | |
| Chief Engineer: | Todd Ostler |
| Cook/Senior Deckhand: | Kevin Anderson |
| Deckhand: | Ben Jantzi |
| Deckhand: | |
| Deckhand: | |

**DATA PROCESSORS**

| | |
|---|---|
| CGG Seismic Processor: | Shannon Campbell / Ian Shirley |
| FGSI QC Geophysicist: | Eric Swanson |

**WEATHER REPORT**

| Time | Sea State | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | 1 ft | 5-10kts | N |
| Wx - 1200: | 1 ft | 10 kts | N |
| Wx - 1800: | 2ft | 10kts | NNE |
| Wx - 2400: | 2ft | 12kts | NNE |

**HSE Reporting (Place an "x" in the box, with brief description**

| | | |
|---|---|---|
| HSE OFFICER: | Barton Thibodeaux | |
| Toolbox: | X | GS-J-057 |
| HOC: | Yes | 1 HOC submitted. |
| Safety: | | |
| Pre/Post Job: | | |

**LINE INFORMATION**

| TIME FROM | TIME TO | OP CODE | LINE NUMBER | HEADING | BSP | ESP | Fath (ft) | | | | DNP | DETAILED SURVEY INFORMATION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0000 | 0102 | AMC | 814 | 104.1° | 930 | 3040 | 83.0 | | | | | Olc |
| 0102 | 0217 | LT | | | | | 35.0 | | | | | Eol |
| 0217 | 0442 | AM | 813 | 282.8° | 3929 | 107 | 68.0 | | | | | Sol |
| 0442 | 0604 | LT | | | | | 166.0 | | | | | Eol |
| 0604 | 0750 | AM | 812 | 284.3° | 4146 | 100 | 77.0 | | | | | Sol |
| 0750 | 0825 | LT | | | | | 115.0 | | | | | Eol |
| 0825 | 1004 | AM | IT01 | 069.0° | 100 | 2659 | 98.0 | | | | | Sol |
| 1004 | 1110 | LT | | | | | 145.0 | | | | | Eol |
| 1110 | 1149 | OS | | | | | NA | | | | | Waiting for barge and tug to move. |
| 1149 | 1232 | AM | 902 | 108.0° | 100 | 1477 | 85.0 | | | | | Sol Line name changed due to seismic processing scripts report to many errors. |
| 1232 | 1345 | WS | | | | | 127.0 | | | | | Eol Waiting on a slack in the tide to begin the next line. |
| 1345 | 1434 | AM | 833 | 207.0° | 7652 | 5808 | 88.0 | | | | | Sol Cable leveler is around 4.5 meters due to current |
| 1434 | 1503 | AMC | | | 5807 | 4861 | 92.0 | | | | | Cable leveler back in specs |
| 1503 | 1522 | LT | | | | | 79.0 | | | | | Eol |
| 1522 | 1526 | AMC | 833A | 207.0° | 4960 | 4861 | 77.0 | | | | | Sol. Covering common shotpoints. |
| 1526 | 1727 | AMC | | | 4860 | 1540 | 82.0 | | | | | Amc |
| 1727 | 1742 | LT | | | | | 88.0 | | | | | Eol |
| 1742 | 1746 | AMC | 833B | 207.0° | 1640 | 1540 | 90.0 | | | | | Sol. Covering common shotpoints. |
| 1746 | 1822 | AMC | | | 1539 | 100 | 91.0 | | | | | Amc |
| 1822 | 1843 | LT | | | | | 91.0 | | | | | Eol |
| 1843 | 1923 | AM | 832 | 027.0° | 100 | 1630 | 92.0 | | | | | Sol Cable leveler is around 6 meters due to current. |
| 1923 | 1947 | LT | | | | | 89.0 | | | | | Eol |
| 1947 | 1950 | AMC | 832A | 027.0° | 1530 | 1630 | 85.0 | | | | | Sol. Covering common shotpoints. |
| 1950 | 1955 | AMC | | | 1630 | 1780 | 85.0 | | | | | Amc |
| 1955 | 2045 | LT | | | | | 92.0 | | | | | Eol |
| 2045 | 2223 | AM | 830 | 027.0° | 100 | 2000 | 84.0 | | | | | Sol |
| 2223 | 2247 | LT | | | | | 79.0 | | | | | Eol |
| 2247 | 2252 | AMC | 830A | 027.0° | 1900 | 2000 | 78.0 | | | | | Sol. Covering common shotpoints. |
| 2252 | 2400 | AMC | | | 2000 | 3200 | 79.0 | | | | | Amc |
| | | | | | | | 126.0 | | | | | |

# FUGRO GEOSERVICES, INC.
## GEOPHYSICAL JOBLOG

ver 7.22.2010-B (Alaska)

| | |
|---|---|
| DATE: | 14-Oct-2015 Wed Julian Day: 287 |
| PROSPECT / SITE: | Pipeline Portion Added Mileage |
| NAV. SYSTEM: | Starfix |
| FGSI JOB #: | 2415-7058 |
| JOB DAY #: | Day: 5 |
| CRP TO STERN: | 16.50 Meters |

| | |
|---|---|
| CLIENT: | Alaska LNG |
| JOB DESCRIPTION: | Pipeline Portion - Janet Sowers Addition |
| AREA & BLOCK: | Cook Inlet |
| R/V: | Qualifier 105 |
| No. of SURVEY LINES: | 28 — 541.94 Kilometers, 38.9% Complete, 210,875.00 Meters Added |

**VESSEL MANAGER(S)**

| | |
|---|---|
| Party Manager: | Ted Tremblay |
| Ass't Party Manager: | |

**CLIENT REPRESENTATIVE(S)**

| | |
|---|---|
| QC Rep: | Noel Rogers |
| HSE Rep: | Michael Berry |
| Client Rep #3: | |
| Client Rep #4: | |

| GEOPHYSICAL EQUIPMENT | EQUIP # |
|---|---|
| Geometrics GeoEel 24ch.(1.56 gr) | # 2 |
| Geometrics GeoEel 24ch.(6.25 gr) | # 1 |
| G.I. 60 ci Sleeve Gun | # 4198 |
| Castaway CTD Velocimeter | # 1 |
| Applied Acoutics Boomer | Rental |
| Edgetech 3200-XS SBP | # 1 |

| GEOPHYSICAL CREW | |
|---|---|
| Technical Coordinator: | Ted Tremblay |
| Shift Supervisor: | |
| Operator: | Barton Thibodeaux |
| " | Matt Broussard |
| " | Robert Faragher |
| " | |
| FGSI Surveyor: | Darrell Miller |
| SES Field Lead PSO | Kristine Lindberg |
| PSO | Tara Hanks |
| " | |
| " | |

| VESSEL CREW | |
|---|---|
| 1st Captain: | David Mastolier |
| 2nd Captain: | Jeff Gregson |
| 1st Mate: | |
| Chief Engineer: | Todd Ostler |
| Cook/Senior Deckhand: | Kevin Anderson |
| Deckhand: | Ben Jantzi |
| Deckhand: | |
| Deckhand: | |

**DATA PROCESSORS**

| | |
|---|---|
| CGG Seismic Processor: | Shannon Campbell / Ian Shirley |
| FGSI QC Geophysicist: | Eric Swanson |

**WEATHER REPORT**

| Time | Sea State | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | Calm | Calm | |
| Wx - 1200: | 1 ft | 12 kts | N |
| Wx - 1800: | 3 - 4 ft | 15 kts | NNE |
| Wx - 2400: | 3 - 4 ft | 15 kts | NNE |

**HSE Reporting (Place an "x" in the box, with brief description**

| | | |
|---|---|---|
| HSE OFFICER: | Barton Thibodeaux | |
| Toolbox: | X | GS-J-017,017 |
| HOC: | No | No HOC submitted. |
| Safety: | | |
| Pre/Post Job: | | |

| TIME FROM | TIME TO | OP CODE | LINE INFORMATION: LINE NUMBER | HEADING | BSP | ESP | Fath (ft) | | | | DNP | DETAILED SURVEY INFORMATION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0000 | 0115 | AMC | 830A | 027.0° | 3200 | 5300 | 126.0 | | | | | Amc |
| 0115 | 0200 | LT | | | | | 110.0 | | | | | Eol |
| 0200 | 0203 | AMC | 830B | 027.0° | 5200 | 5300 | 117.0 | | | | | Sol. Covering common shot points. |
| 0203 | 0251 | AMC | | | 5300 | 7190 | 110.0 | | | | | Amc |
| 0251 | 0319 | LT | | | | | 88.0 | | | | | Eol |
| 0319 | 0420 | AMC | 830C | 207.0° | 8338 | 7190 | 137.0 | | | | | Sol |
| 0420 | 0426 | AMC | | | 7190 | 7090 | 106.0 | | | | | covering common shot points |
| 0426 | 0517 | LT | | | | | 103.0 | | | | | Eol |
| 0517 | 0708 | AM | 836 | 207.0° | 8100 | 5470 | 76.0 | | | | | Sol |
| 0708 | 0724 | LT | | | | | 90.0 | | | | | Eol |
| 0724 | 0726 | AMC | 836A | 207.0° | 5570 | 5470 | 88.0 | | | | | Common shotpoints |
| 0726 | 0845 | AMC | | | 5469 | 2169 | 92.0 | | | | | Sol |
| 0845 | 0925 | LT | | | | | 69.0 | | | | | Eol |
| 0925 | 0956 | AMC | 836B | 027.0° | 128 | 1055 | 42.0 | | | | | Sol SP 440 to SP 460, offline to avoid bolder |
| 0956 | 1012 | LT | | | | | 64.0 | | | | | Eol |
| 1012 | 1015 | AMC | 836C | 027.0° | 955 | 1055 | 43.0 | | | | | Sol Common Shotpoints |
| 1015 | 1051 | AMC | | | 1056 | 2168 | 60.0 | | | | | Amc |
| 1051 | 1055 | AMC | | | 2169 | 2255 | 65.0 | | | | | Common Shotpoints |
| 1055 | 1132 | LT | | | | | 78.0 | | | | | Eol |
| 1132 | 1140 | AMC | 832B | 027.0° | 1580 | 1780 | 74.0 | | | | | Sol Common Shotpoints |
| 1140 | 1209 | AMC | | | 1781 | 2450 | 75.0 | | | | | Amc |
| 1209 | 1228 | LT | | | | | 76.0 | | | | | Eol |
| 1228 | 1232 | AMC | 832C | 027.0° | 2350 | 2450 | 69.0 | | | | | Sol Common Shotpoints |
| 1232 | 1359 | AMC | | | 2451 | 4937 | 75.0 | | | | | Amc |
| 1359 | 1411 | LT | | | | | 68.0 | | | | | Eol |
| 1411 | 1414 | AMC | 832D | 027.0° | 4840 | 4937 | 66.0 | | | | | Sol Common Shotpoints |
| 1414 | 1526 | AMC | | | 4938 | 7675 | 68.0 | | | | | Amc |
| 1526 | 1600 | WS | | | | | 89.0 | | | | | Eol Seas are 2 ft with chop. Will retrieve gear. |
| 1600 | 1610 | WS | Velo #16 | | | | | | | | | Velo #16 taken @ Lat: 60.9996 Lon: -151.0262 Depth: 28.18m. Avg. Vel.: 1467.3m/s. |
| 1610 | 1615 | WS | | | | | | | | | | Continue retrieveing gear. |
| 1615 | 1845 | WS | | | | | | | | | | Enroute to anchor off on South end of survey area. |
| 1845 | 2400 | WS | | | | | | | | | | Anchored! Lines 809,829,831,834,and 835 were never ran. Line 815 is the rerun of 811. Total 28 lines accounted for. |

# FUGRO GEOSERVICES, INC.
## GEOPHYSICAL JOBLOG

ver 7.22.2010-B (Alaska)

| | |
|---|---|
| DATE: | 15-Oct-2015 Thu Julian Day: 288 |
| PROSPECT / SITE: | Pipeline Portion Added Mileage |
| NAV. SYSTEM: | Starfix |
| FGSI JOB #: | 2415-7058 |
| JOB DAY #: | Day: 6 |
| CRP TO STERN: | 16.50 Meters |

| | |
|---|---|
| CLIENT: | Alaska LNG |
| JOB DESCRIPTION: | Pipeline Portion - Janet Sowers Addition |
| AREA & BLOCK: | Cook Inlet |
| R/V: | Qualifier 105 |
| No. of SURVEY LINES: | 28 — 541.94 Kilometers |
| | 38.9% Complete |
| | 210,875.00 Meters Added |

**VESSEL MANAGER(S)**

| | |
|---|---|
| Party Manager: | Ted Tremblay |
| Ass't Party Manager: | |

**CLIENT REPRESENTATIVE(S)**

| | |
|---|---|
| QC Rep: | Noel Rogers |
| HSE Rep: | Michael Berry |
| Client Rep #3: | |
| Client Rep #4: | |

| GEOPHYSICAL EQUIPMENT | EQUIP # |
|---|---|
| Geometrics GeoEel 24ch.(1.56 gr) | # 2 |
| Geometrics GeoEel 24ch.(6.25 gr) | # 1 |
| G.I. 60 ci Sleeve Gun | # 4198 |
| Castaway CTD Velocimeter | # 1 |
| Applied Acoutics Boomer | Rental |
| Edgetech 3200-XS SBP | # 1 |
| | |
| | |
| | |
| | |
| | |

**GEOPHYSICAL CREW**

| | |
|---|---|
| Technical Coordinator: | Ted Tremblay |
| Shift Supervisor: | |
| Operator: | Barton Thibodeaux |
| " | Matt Broussard |
| " | Robert Faragher |
| " | |
| FGSI Surveyor: | Darrell Miller |
| SES Field Lead PSO | Kristine Lindberg |
| PSO | Tara Hanks |
| " | |
| " | |

**VESSEL CREW**

| | |
|---|---|
| 1st Captain: | David Mastolier |
| 2nd Captain: | Jeff Gregson |
| 1st Mate: | |
| Chief Engineer: | Todd Ostler |
| Cook/Senior Deckhand: | Kevin Anderson |
| Deckhand: | Ben Jantzi |
| Deckhand: | |
| Deckhand: | |

**DATA PROCESSORS**

| | |
|---|---|
| CGG Seismic Processor: | Shannon Campbell / Ian Shirley |
| FGSI QC Geophysicist: | Eric Swanson |

**WEATHER REPORT**

| Time | Sea State | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | 4 - 5 ft | 15 kts | NNE |
| Wx - 1200: | 4 - 5 ft | 15 kts | NNE |
| Wx - 1800: | 5 ft | 20 kts | NNE |
| Wx - 2400: | 5 ft | 20 kts | NNE |

**HSE Reporting (Place an "x" in the box, with brief description**

| | | |
|---|---|---|
| HSE OFFICER: | Barton Thibodeaux | |
| Toolbox: | | |
| HOC: | Yes | 1 HOC submitted. |
| Safety: | Yes | Three Points of Contact |
| Pre/Post Job: | | |

| TIME FROM | TIME TO | OP CODE | LINE INFORMATION: LINE NUMBER | HEADING | BSP | ESP | Fath (ft) | | | | DNP |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0000 | 2400 | WS | | | | | | | | | |

**DETAILED SURVEY INFORMATION**

Standing by for weather.
Switching back to AKLNG_Joblog&DPR_6(Tab Oct.16th).

# FUGRO GEOSERVICES, INC.
## GEOPHYSICAL JOBLOG

ver 7.22.2010-B (Alaska)

| | |
|---|---|
| DATE: | 16-Oct-2015 Fri Julian Day: 289 |
| PROSPECT / SITE: | Pipeline Portion |
| NAV. SYSTEM: | Starfix |
| FGSI JOB #: | 2415-7058 |
| JOB DAY #: | Day: 17 |
| CRP TO STERN: | 16.50 Meters |

| | |
|---|---|
| CLIENT: | Alaska LNG |
| JOB DESCRIPTION: | Pipeline Portion |
| AREA & BLOCK: | Cook Inlet |
| R/V: | Qualifier 105 |
| No. of SURVEY LINES: | 109 — 449.78 Kilometers, 60.0% Complete |

29,768.75 Meters Deleted

**VESSEL MANAGER(S)**

| | |
|---|---|
| Party Manager: | Ted Tremblay |
| Ass't Party Manager: | |

**CLIENT REPRESENTATIVE(S)**

| | |
|---|---|
| QC Rep: | Noel Rogers |
| HSE Rep: | Michael Berry |
| Client Rep #3: | |
| Client Rep #4: | |

| GEOPHYSICAL EQUIPMENT | EQUIP # |
|---|---|
| Geometrics GeoEel 24ch.(1.56 gr) | # 2 |
| Geometrics GeoEel 24ch.(6.25 gr) | # 1 |
| G.I. 60 ci Sleeve Gun | # 4198 |
| Castaway CTD Velocimeter | # 1 |
| Applied Acoutics Boomer | Rental |
| Edgetech 3200-XS SBP | # 1 |

| GEOPHYSICAL CREW | |
|---|---|
| Technical Coordinator: | Ted Tremblay |
| Shift Supervisor: | |
| Operator: | Barton Thibodeaux |
| " | Matthew Broussard |
| " | Robert Faragher |
| " | |
| FGSI Surveyor: | Darrell Miller |
| SES Field Lead PSO | Kristine Lindberg |
| PSO | Tara Hanks |
| " | |
| " | |

| VESSEL CREW | |
|---|---|
| 1st Captain: | David Mastolier |
| 2nd Captain: | Jeff Gregson |
| 1st Mate: | |
| Chief Engineer: | Todd Ostler |
| Cook/Senior Deckhand: | Kevin Anderson |
| Deckhand: | Ben Jantzi |
| Deckhand: | |
| Deckhand: | |

**DATA PROCESSORS**

| | |
|---|---|
| CGG Seismic Processor: | Shannon Campbell / Ian Shirley |
| FGSI QC Geophysicist: | Eric Swanson |

**WEATHER REPORT**

| Time | Sea State | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | 4 - 5 ft | 20 kts | NNE |
| Wx - 1200: | 4 - 5 ft | 20 kts | NNE |
| Wx - 1800: | 4 - 5 ft | 20 kts | NNE |
| Wx - 2400: | 4 - 5 ft | 20 kts | NNE |

**HSE Reporting (Place an "x" in the box, with brief description**

| HSE OFFICER: | Barton Thibodeaux | |
|---|---|---|
| Toolbox: | X | GS-J-099, 01 |
| HOC: | No | No HOC submitted. |
| Safety: | | |
| Pre/Post Job: | | |

| TIME FROM | TIME TO | OP CODE | LINE INFORMATION: LINE NUMBER | HEADING | BSP | ESP | Fath (ft) | | | | DNP |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0000 | 2400 | WS | | | | | | | | | |

**DETAILED SURVEY INFORMATION**

Standing by for weather. Switching back from Pipeline Additon Portion-AKLNG_Joblog& DPR_7.

# FUGRO GEOSERVICES, INC.
## GEOPHYSICAL JOBLOG

ver 7.22.2010-B (Alaska)

| | |
|---|---|
| DATE: | 17-Oct-2015 Sat Julian Day: 290 |
| PROSPECT / SITE: | Pipeline Portion |
| NAV. SYSTEM: | Starfix |
| FGSI JOB #: | 2415-7058 |
| JOB DAY #: | Day: 18 |
| CRP TO STERN: | 16.50 Meters |

| | |
|---|---|
| CLIENT: | Alaska LNG |
| JOB DESCRIPTION: | Pipeline Portion |
| AREA & BLOCK: | Cook Inlet |
| R/V: | Qualifier 105 |
| No. of SURVEY LINES: | 109 — 442.42 Kilometers, 72.6% Complete |

37,128.13 Meters Deleted

**VESSEL MANAGER(S)**

| | |
|---|---|
| Party Manager: | Ted Tremblay |
| Ass't Party Manager: | |

**CLIENT REPRESENTATIVE(S)**

| | |
|---|---|
| QC Rep: | Noel Rogers |
| HSE Rep: | Michael Berry |
| Client Rep #3: | |
| Client Rep #4: | |

| GEOPHYSICAL EQUIPMENT | EQUIP # |
|---|---|
| Geometrics GeoEel 24ch.(1.56 gr) | # 2 |
| Geometrics GeoEel 24ch.(6.25 gr) | # 1 |
| G.I. 60 ci Sleeve Gun | # 4198 |
| Castaway CTD Velocimeter | # 1 |
| Applied Acoutics Boomer | Rental |
| Edgetech 3200-XS SBP | # 1 |
| | |
| | |
| | |
| | |
| | |

**GEOPHYSICAL CREW**

| | |
|---|---|
| Technical Coordinator: | Ted Tremblay |
| Shift Supervisor: | |
| Operator: | Barton Thibodeaux |
| " | Matthew Broussard |
| " | Robert Faragher |
| " | |
| FGSI Surveyor: | Darrell Miller |
| SES Field Lead PSO | Kristine Lindberg |
| PSO | Tara Hanks |
| " | |
| " | |

**VESSEL CREW**

| | |
|---|---|
| 1st Captain: | David Mastolier |
| 2nd Captain: | Jeff Gregson |
| 1st Mate: | |
| Chief Engineer: | Todd Ostler |
| Cook/Senior Deckhand: | Kevin Anderson |
| Deckhand: | Ben Jantzi |
| Deckhand: | |
| Deckhand: | |

**DATA PROCESSORS**

| | |
|---|---|
| CGG Seismic Processor: | Shannon Campbell / Ian Shirley |
| FGSI QC Geophysicist: | Eric Swanson |

**WEATHER REPORT**

| Time | Sea State | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | 1-2 ft. | 10 kts. | NE |
| Wx - 1200: | 1 ft. | 5 kts. | NE |
| Wx - 1800: | 1 ft. | 10 kts. | N |
| Wx - 2400: | 2 ft. | 10 kts. | NE |

**HSE Reporting (Place an "x" in the box, with brief description**

| | | |
|---|---|---|
| HSE OFFICER: | Barton Thibodeaux | |
| Toolbox: | X | GS-J-20,29 |
| HOC: | Yes | 1 HOC Submitted |
| Safety: | | |
| Pre/Post Job: | | |

| TIME FROM | TIME TO | OP CODE | LINE INFORMATION: LINE NUMBER | HEADING | BSP | ESP | Fath (ft) | | | | DNP | DETAILED SURVEY INFORMATION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0000 | 0600 | WS | | | | | | | | | | Standing by for weather. |
| 0600 | 0800 | WS | | | | | | | | | | Pick up anchor and enroute to job area. |
| 0800 | 0807 | WS | | | | | | | | | | Deploying gear while waiting for PSO clearance. |
| 0807 | 0815 | WS | Velo #17 | | | | | | | | | Velo #17 taken @ Lat: 61.0109 Lon: -151.1412 Depth: 16.99m Avg. Vel.: 1470.3m/s. |
| 0815 | 0900 | WS | | | | | | | | | | Continue to deploy gear. |
| 0900 | 0950 | WS | | | | | | | | | | Clearance given-mitigation beglins. Heading to line |
| 0950 | 0955 | OW | 510L | 034.0° | 5415 | 5316 | 104.0 | | | | | Sol Common Shotpoints |
| 0955 | 1209 | OLC | | | 5316 | 450 | 103.0 | | | | | Olc |
| 1209 | 1229 | LT | | | | | 31.0 | | | | | Eol |
| 1229 | 1318 | OLC | 503I | 123.0° | 450 | 1955 | 31.0 | | | | | Sol |
| 1318 | 1336 | LT | | | | | 70.0 | | | | | Aborted due to current pushing vessel causing high feather angle. |
| 1336 | 1349 | OL | 604 | 065.0° | 100 | 328 | 75.0 | | | | | Sol Boomer timed out and missed first 5 shots. |
| 1349 | 1402 | LT | | | | | 77.0 | | | | | Eol |
| 1402 | 1416 | OL | 605 | 065.0° | 100 | 320 | 90.0 | | | | | Sol |
| 1416 | 1436 | LT | | | | | 88.0 | | | | | Eol |
| 1436 | 1445 | OL | 606 | 069.0° | 100 | 256 | 95.0 | | | | | Sol Boomer timed out and missed first 5 shots. |
| 1445 | 1457 | LT | | | | | 96.0 | | | | | Eol |
| 1457 | 1505 | OL | 607 | 061.0° | 100 | 256 | 104.0 | | | | | Sol |
| 1505 | 1516 | LT | | | | | 98.0 | | | | | Eol |
| 1516 | 1521 | OL | 608 | 092.0° | 100 | 256 | 102.0 | | | | | Sol |
| 1521 | 1529 | LT | | | | | 85.0 | | | | | Eol |
| 1529 | 1533 | OL | 644 | 061.0° | 100 | 256 | 90.0 | | | | | Sol |
| 1533 | 1544 | LT | | | | | 99.0 | | | | | Eol |
| 1544 | 1549 | OL | 609 | 114.0° | 100 | 256 | 89.0 | | | | | Sol |
| 1549 | 1601 | LT | | | | | 85.0 | | | | | Eol |
| 1601 | 1606 | OL | 610 | 124.0° | 100 | 256 | 87.0 | | | | | Sol |
| 1606 | 1643 | LT | | | | | 97.0 | | | | | Eol |
| 1643 | 1652 | OW | 503J | 032.0° | 5620 | 5220 | 127.0 | | | | | Sol Common Shotpoints.. Typo on Oct 1 for line 503G. It is supposed to say shot point 5520-not 5220, so actual overlapping is 5520-5620. |
| 1652 | 1712 | OLC | | | 5220 | 4220 | 125.0 | | | | | Olc |
| 1712 | 1725 | LT | | | | | 93.0 | | | | | Aborted due to current. Starting to miss to many shotpoints due to vessel going too fast. Will rerun remainder of line restarting at Shotpoint 4420. |
| 1725 | 1729 | OL | 647 | 122.0° | 100 | 256 | 102.0 | | | | | Sol |
| 1729 | 1743 | LT | | | | | 100.0 | | | | | Eol |
| 1743 | 1747 | OL | 646 | 262.0° | 256 | 100 | 107.0 | | | | | Sol |

# FUGRO GEOSERVICES, INC.
## GEOPHYSICAL JOBLOG

ver 7.22.2010-B (Alaska)

| | |
|---|---|
| DATE: | 17-Oct-2015 Sat Julian Day: 290 |
| PROSPECT / SITE: | Pipeline Portion |
| NAV. SYSTEM: | Starfix |
| FGSI JOB #: | 2415-7058 |
| JOB DAY #: | Day: 18 |
| CRP TO STERN: | 16.50 Meters |

| | |
|---|---|
| CLIENT: | Alaska LNG |
| JOB DESCRIPTION: | Pipeline Portion |
| AREA & BLOCK: | Cook Inlet |
| R/V: | Qualifier 105 |
| No. of SURVEY LINES: | 109 — 442.42 Kilometers, 72.6% Complete |

37,128.13 Meters Deleted

| VESSEL MANAGER(S) | |
|---|---|
| Party Manager: | Ted Tremblay |
| Ass't Party Manager: | |
| **CLIENT REPRESENTATIVE(S)** | |
| QC Rep: | Noel Rogers |
| HSE Rep: | Michael Berry |
| Client Rep #3: | |
| Client Rep #4: | |

| TIME | | OP CODE | LINE INFORMATION | | | | | | | | | DETAILED SURVEY INFORMATION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FROM | TO | | LINE NUMBER | HEADING | BSP | ESP | Fath (ft) | | | | DNP | |
| 1747 | 1801 | LT | | | | | 93.0 | | | | | Eol |
| 1801 | 1806 | OL | 645 | 241.0° | 256 | 100 | 111.0 | | | | | Sol |
| 1806 | 1840 | LT | | | | | 115.0 | | | | | Eol |
| 1840 | 1848 | OL | 603 | 241.0° | 360 | 100 | 80.0 | | | | | Sol |
| 1848 | 1909 | LT | | | | | 96.0 | | | | | Eol |
| 1909 | 1916 | OL | 602 | 235.1° | 350 | 100 | 89.0 | | | | | Sol |
| 1916 | 1940 | LT | | | | | 86.0 | | | | | Eol |
| 1940 | 1950 | OL | 601 | 227.8° | 476 | 100 | 78.0 | | | | | Sol |
| 1950 | 2005 | LT | | | | | 58.0 | | | | | Eol |
| 2005 | 2020 | OL | 500 | 313.3° | 998 | 403 | 66.0 | | | | | Sol |
| 2020 | 2024 | LT | | | | | 37.0 | | | | | Eol |
| 2024 | 2034 | OL | 506 | 122.6° | 400 | 818 | 30.0 | | | | | Sol |
| 2034 | 2052 | LT | | | | | 46.0 | | | | | Eol |
| 2052 | 2110 | OL | 513 | 322.6° | 1188 | 485 | 82.0 | | | | | Sol |
| 2110 | 2113 | LT | | | | | 37.0 | | | | | Eol |
| 2113 | 2123 | OL | 507 | 142.6° | 441 | 922 | 32.0 | | | | | Sol |
| 2123 | 2136 | LT | | | | | 48.0 | | | | | Eol |
| 2136 | 2155 | OL | 511 | 322.6° | 1172 | 482 | 80.0 | | | | | Sol |
| 2155 | 2201 | LT | | | | | 36.0 | | | | | Eol |
| 2201 | 2203 | WS | 502 | 122.6° | 417 | 523 | 33.0 | | | | DNP | Sol |
| 2203 | 2217 | WS | | | | | 45.0 | | | | | Eol. Aborted line due to current. |
| 2217 | 2400 | OL | 701 | 102.9° | 100 | 3530 | 38.0 | | | | | Sol |
| | | DM | 513 | | 100 | 400 | | | | | | Deleted portion of line due to shallow water depth. |
| | | DM | 506 | | 100 | 485 | | | | | | Deleted portion of line due to shallow water depth. |
| | | DM | 511 | | 482 | 108 | | | | | | Deleted portion of line due to shallow water depth. |
| | | DM | 507 | | 441 | 124 | | | | | | Deleted portion of line due to shallow water depth. |
| | | DM | 500 | | 400 | 106 | | | | | | Deleted portion of line due to shallow water depth. |
| | | DM | 503 | | 450 | 103 | | | | | | Deleted portion of line due to shallow water depth. |
| | | DM | 510 | | 450 | 112 | | | | | | Deleted portion of line due to shallow water depth. |

# FUGRO GEOSERVICES, INC.
## GEOPHYSICAL JOBLOG

ver 7.22.2010-B (Alaska)

| | |
|---|---|
| DATE: | 18-Oct-2015 Sun Julian Day: 291 |
| PROSPECT / SITE: | Pipeline Portion |
| NAV. SYSTEM: | Starfix |
| FGSI JOB #: | 2415-7058 |
| JOB DAY #: | Day: 19 |
| CRP TO STERN: | 16.50 Meters |

| | |
|---|---|
| CLIENT: | Alaska LNG |
| JOB DESCRIPTION: | Pipeline Portion |
| AREA & BLOCK: | Cook Inlet |
| R/V: | Qualifier 105 |
| No. of SURVEY LINES: | 109 — 436.40 Kilometers, 91.4% Complete |

43,146.88 Meters Deleted

**VESSEL MANAGER(S)**

| | |
|---|---|
| Party Manager: | Ted Tremblay |
| Ass't Party Manager: | |

**CLIENT REPRESENTATIVE(S)**

| | |
|---|---|
| QC Rep: | Noel Rogers |
| HSE Rep: | Michael Berry |
| Client Rep #3: | |
| Client Rep #4: | |

| GEOPHYSICAL EQUIPMENT | EQUIP # |
|---|---|
| Geometrics GeoEel 24ch.(1.56 gr) | # 2 |
| Geometrics GeoEel 24ch.(6.25 gr) | # 1 |
| G.I. 60 ci Sleeve Gun | # 4198 |
| Castaway CTD Velocimeter | # 1 |
| Applied Acoutics Boomer | Rental |
| Edgetech 3200-XS SBP | # 1 |
| | |
| | |
| | |
| | |
| | |

**GEOPHYSICAL CREW**

| | |
|---|---|
| Technical Coordinator: | Ted Tremblay |
| Shift Supervisor: | |
| Operator: | Barton Thibodeaux |
| " | Matthew Broussard |
| " | Robert Faragher |
| " | |
| FGSI Surveyor: | Darrell Miller |
| SES Field Lead PSO | Kristine Lindberg |
| PSO | Tara Hanks |
| " | |
| " | |

**VESSEL CREW**

| | |
|---|---|
| 1st Captain: | David Mastolier |
| 2nd Captain: | Jeff Gregson |
| 1st Mate: | |
| Chief Engineer: | Todd Ostler |
| Cook/Senior Deckhand: | Kevin Anderson |
| Deckhand: | Ben Jantzi |
| Deckhand: | |
| Deckhand: | |

**DATA PROCESSORS**

| | |
|---|---|
| CGG Seismic Processor: | Shannon Campbell / Ian Shirley |
| FGSI QC Geophysicist: | Eric Swanson |

**WEATHER REPORT**

| Time | Sea State | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | 1-2 Ft | 8-9kts | N |
| Wx - 1200: | 1 Ft | 10 kts | NW |
| Wx - 1800: | 1 FT | 5 kts | SSW |
| Wx - 2400: | 1-2Ft | 15kts | SSE |

**HSE Reporting (Place an "x" in the box, with brief description**

| | | |
|---|---|---|
| HSE OFFICER: | Barton Thibodeaux | |
| Toolbox: | X | TRA-112, GS-J-51 |
| HOC: | No | No HOC's submitted. |
| Safety: | | |
| Pre/Post Job: | | |

| TIME FROM | TIME TO | OP CODE | LINE INFORMATION: LINE NUMBER | HEADING | BSP | ESP | Fath (ft) | | | | DNP | DETAILED SURVEY INFORMATION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0000 | 0006 | OLC | 701 | 102.9° | 3530 | 3679 | 97.0 | | | | | Olc |
| 0006 | 0230 | LT | | | | | 97.0 | | | | | Eol |
| 0230 | 0350 | OLC | 503K | 031.8° | 4420 | 1955 | 77.0 | | | | | Sol |
| 0350 | 0520 | OW | | | 1955 | 1849 | 64.0 | | | | | Common shotpoints. |
| 0520 | 0522 | LT | | | | | | | | | | Eol |
| 0522 | 0544 | OW | 512D | 142.6° | 5483 | 5390 | 78.0 | | | | | Sol Common shotpoints. |
| 0544 | 0738 | OLC | | | 5390 | 1500 | | | | | | Olc Note: 512B and 512C do not exist. |
| 0738 | 0803 | LT | . | | | | 91.0 | | | | | Eol |
| 0803 | 0807 | OL | 613 | 304.0° | 256 | 100 | 95.0 | | | | | Sol |
| 0807 | 0825 | LT | . | | | | 95.0 | | | | | Eol |
| 0825 | 0830 | OL | 612 | 304.0° | 256 | 100 | 109.0 | | | | | Sol |
| 0830 | 0841 | LT | . | | | | 110.0 | | | | | Eol |
| 0841 | 0846 | OL | 611 | 304.0° | 256 | 100 | 109.0 | | | | | Sol |
| 0846 | 0925 | LT | . | | | | 105.0 | | | | | Eol |
| 0925 | 0930 | WS | 502A | 313.0° | 1012 | 905 | 68.0 | | | | | Sol |
| 0930 | 0949 | LT | . | | | | 50.0 | | | | | Aborted due to current pushing vessel offline. |
| 0949 | 1005 | OL | 600 | 040.0° | 712 | 100 | 36.0 | | | | | Sol |
| 1005 | 1014 | LT | . | | | | 38.0 | | | | | Eol |
| 1014 | 1032 | OL | 502B | 123.0° | 400 | 1008 | 35.0 | | | | | Sol |
| 1032 | 1039 | LT | . | | | | 73.0 | | | | | Eol |
| 1039 | 1058 | OL | 504 | 313.0° | 1030 | 400 | 72.0 | | | | | Sol |
| 1058 | 1106 | LT | . | | | | 35.0 | | | | | Eol |
| 1106 | 1128 | OL | 509 | 143.0° | 450 | 1160 | 34.0 | | | | | Sol |
| 1128 | 1145 | LT | . | | | | 77.0 | | | | | Eol |
| 1145 | 1148 | OW | 512E | 324.0° | 1600 | 1500 | 93.0 | | | | | Sol Common Shotpoint |
| 1148 | 1222 | OLC | . | | 1500 | 400 | 92.0 | | | | | Olc |
| 1222 | 1305 | LT | . | | | | 27.0 | | | | | Eol |
| 1305 | 1416 | OL | 700 | 101.0° | 802 | 2801 | 30.0 | | | | | Sol |
| 1416 | 1531 | LT | . | | | | 86.0 | | | | | Eol |
| 1531 | 1534 | OW | 501J | 032.0° | 5120 | 5021 | 105.0 | | | | | Sol Common Shotpoint |
| 1534 | 1744 | OLC | | | 5021 | 639 | 101.0 | | | | | Olc |
| 1744 | 1750 | LT | | | | | 30.0 | | | | | Aborted due to low tide. We will reattempt at high tide. |
| 1750 | 2031 | OLC | 508H | 143.0° | 753 | 5200 | 30.0 | | | | | Sol Streamer straight behind the boat at shotpoint 800. Shotpoint 1830 to 2100 vessel couldn't hold line due to current. |

# FUGRO GEOSERVICES, INC.
## GEOPHYSICAL JOBLOG

ver 7.22.2010-B (Alaska)

| | |
|---|---|
| DATE: | 18-Oct-2015 Sun Julian Day: 291 |
| PROSPECT / SITE: | Pipeline Portion |
| NAV. SYSTEM: | Starfix |
| FGSI JOB #: | 2415-7058 |
| JOB DAY #: | Day: 19 |
| CRP TO STERN: | 16.50 Meters |

| | |
|---|---|
| CLIENT: | Alaska LNG |
| JOB DESCRIPTION: | Pipeline Portion |
| AREA & BLOCK: | Cook Inlet |
| R/V: | Qualifier 105 |
| No. of SURVEY LINES: | 109 — 436.40 Kilometers, 91.4% Complete |

43,146.88 Meters Deleted

| VESSEL MANAGER(S) | |
|---|---|
| Party Manager: | Ted Tremblay |
| Ass't Party Manager: | |
| **CLIENT REPRESENTATIVE(S)** | |
| QC Rep: | Noel Rogers |
| HSE Rep: | Michael Berry |
| Client Rep #3: | |
| Client Rep #4: | |

| TIME | | OP CODE | LINE INFORMATION | | | | | | | | | DETAILED SURVEY INFORMATION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FROM | TO | | LINE NUMBER | HEADING | BSP | ESP | Fath (ft) | | | | DNP | |
| 2031 | 2035 | OW | | | 5200 | 5300 | 100.0 | | | | | Common Shotpoints |
| 2035 | 2135 | LT | | | | | 103.0 | | | | | Eol |
| 2135 | 2305 | OL | 703 | 289.9° | 3631 | 190 | 115.0 | | | | | Sol |
| 2305 | 2400 | LT | | | | | 63.0 | | | | | Eol |
| | | DM | 700 | | 802 | 100 | | | | | | Deleted portion of line due to shallow water depth. |
| | | DM | 512 | | 104 | 400 | | | | | | Deleted portion of line due to shallow water depth. |
| | | DM | 509 | | 450 | 116 | | | | | | Deleted portion of line due to shallow water depth. |
| | | DM | 504 | | 102 | 400 | | | | | | Deleted portion of line due to shallow water depth. |
| | | DM | 502 | | 400 | 104 | | | | | | Deleted portion of line due to shallow water depth. |

Alaska LNG

FUGRO

# FUGRO GEOSERVICES, INC.
## GEOPHYSICAL JOBLOG

ver 7.22.2010-B (Alaska)

| | |
|---|---|
| DATE: | 19-Oct-2015 Mon Julian Day: 292 |
| PROSPECT / SITE: | Pipeline Portion |
| NAV. SYSTEM: | Starfix |
| FGSI JOB #: | 2415-7058 |
| JOB DAY #: | Day: 20 |
| CRP TO STERN: | 16.50 Meters |

| | |
|---|---|
| CLIENT: | Alaska LNG |
| JOB DESCRIPTION: | Pipeline Portion |
| AREA & BLOCK: | Cook Inlet |
| R/V: | Qualifier 105 |
| No. of SURVEY LINES: | 109 — 432.43 Kilometers, 99.8% Complete |

47,118.75 Meters Deleted

**VESSEL MANAGER(S)**

| | |
|---|---|
| Party Manager: | Ted Tremblay |
| Ass't Party Manager: | |

**CLIENT REPRESENTATIVE(S)**

| | |
|---|---|
| QC Rep: | Noel Rogers |
| HSE Rep: | Michael Berry |
| Client Rep #3: | |
| Client Rep #4: | |

| GEOPHYSICAL EQUIPMENT | EQUIP # |
|---|---|
| Geometrics GeoEel 24ch.(1.56 gr) | # 2 |
| Geometrics GeoEel 24ch.(6.25 gr) | # 1 |
| G.I. 60 ci Sleeve Gun | # 4198 |
| Castaway CTD Velocimeter | # 1 |
| Applied Acoutics Boomer | Rental |
| Edgetech 3200-XS SBP | # 1 |
| | |
| | |
| | |
| | |
| | |

**GEOPHYSICAL CREW**

| | |
|---|---|
| Technical Coordinator: | Ted Tremblay |
| Shift Supervisor: | |
| Operator: | Barton Thibodeaux |
| " | Matthew Broussard |
| " | Robert Faragher |
| " | |
| FGSI Surveyor: | Darrell Miller |
| SES Field Lead PSO | Kristine Lindberg |
| PSO | Tara Hanks |
| " | |
| " | |

**VESSEL CREW**

| | |
|---|---|
| 1st Captain: | David Mastolier |
| 2nd Captain: | Jeff Gregson |
| 1st Mate: | |
| Chief Engineer: | Todd Ostler |
| Cook/Senior Deckhand: | Kevin Anderson |
| Deckhand: | Ben Jantzi |
| Deckhand: | |
| Deckhand: | |

**DATA PROCESSORS**

| | |
|---|---|
| CGG Seismic Processor: | Shannon Campbell / Ian Shirley |
| FGSI QC Geophysicist: | Eric Swanson |

**WEATHER REPORT**

| Time | Sea State | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | 2-3ft | 15kts | S |
| Wx - 1200: | 1 ft. | 5 kts | S |
| Wx - 1800: | 1-2 ft. | 15 kts | N |
| Wx - 2400: | | | |

**HSE Reporting (Place an "x" in the box, with brief description**

| | | |
|---|---|---|
| HSE OFFICER: | Barton Thibodeaux | |
| Toolbox: | X | TRA-106 and GS-J-051 |
| HOC: | No | No HOC submitted. |
| Safety: | | |
| Pre/Post Job: | | |

| TIME FROM | TIME TO | OP CODE | LINE INFORMATION: LINE NUMBER | HEADING | BSP | ESP | Fath (ft) | | | | DNP | DETAILED SURVEY INFORMATION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0000 | 0008 | LT | | | | | | | | | | Line turn continues. |
| 0008 | 0012 | OW | 505E | 022.1° | 5695 | 5595 | 100.0 | | | | | Sol. Common shotpoints covered. |
| 0012 | 0213 | OLC | | | 5595 | 1100 | 100.0 | | | | | Olc |
| 0213 | 0231 | LT | | | | | 56.0 | | | | | Eol |
| 0231 | 0305 | WS | 702 | 108.7° | 824 | 1844 | 70.0 | | | | DNP | Sol. Abort due to sea conditions. |
| 0305 | 0405 | WS | | | | | 70.0 | | | | | Eol |
| 0405 | 0412 | WS | 508I | 335.2° | 2100 | 1830 | 62.0 | | | | | Olc |
| 0412 | 0825 | WS | | | | | 64.0 | | | | | Eol Down on weather. |
| 0825 | 0828 | OW | 505F | 331.0° | 1200 | 1100 | 77.0 | | | | | Sol Common Shotpoints |
| 0828 | 0846 | OLC | | | 1100 | 400 | 70.0 | | | | | Ollc |
| 0846 | 0903 | LT | | | | | 28.0 | | | | | Eol |
| 0903 | 0905 | OW | 501K | 303.0° | 739 | 639 | 41.0 | | | | | Sol Common Shotpoints |
| 0905 | 0911 | OLC | | | 639 | 400 | 37.0 | | | | | Olc |
| 0911 | 0933 | LT | | | | | 33.0 | | | | | Eol |
| 0933 | 0950 | WS | 500A | 303.0° | 998 | 391 | 63.0 | | | | | Sol Rerunning due to current on original attempt. |
| 0950 | 0954 | WS | | | | | 35.0 | | | | | Eol |
| 0954 | 1011 | WS | 502C | 123.0° | 400 | 1012 | 34.0 | | | | | Sol Rerunning due to current on previous attempt. |
| 1011 | 1021 | WS | | | | | 71.0 | | | | | Eol |
| 1021 | 1037 | OLC | 508J | 323.0° | 753 | 400 | 43.0 | | | | | Sol Rerunning due to current on previous attempt. Shotpoints 853-753 is overlap. |
| 1037 | 1049 | WS | | | | | 31.0 | | | | | Eol |
| 1049 | 1106 | WS | 600A | 220.0° | 712 | 100 | 35.0 | | | | | Sol Rerunning due to current on original attempt. |
| 1106 | 1116 | WS | | | | | 36.0 | | | | | Eol |
| 1116 | 1130 | WS | 701A | 103.0° | 100 | 640 | 36.0 | | | | | Sol Rerunning due to current on original attempt. |
| 1130 | 1145 | WS | | | | | 53.0 | | | | | Eol |
| 1145 | 1205 | WS | 505G | 313.0° | 1400 | 700 | 95.0 | | | | | Sol Rerunning due to current on previous attempt. |
| 1205 | 1217 | WS | | | | | 43.0 | | | | | Eol |
| 1217 | 1234 | WS | 504A | 123.0° | 400 | 1030 | 35.0 | | | | | Sol Rerunning due to current on original attempt. |
| 1234 | 1307 | WS | | | | | 72.0 | | | | | Eol |
| 1307 | 1323 | WS | 700A | 101.0° | 700 | 1217 | 28.0 | | | | | Sol Rerunning due to current on original attempt. |
| 1323 | 1401 | WS | | | | | 50.0 | | | | | Eol |
| 1401 | 1538 | OL | 702A | 109.0° | 236 | 2903 | 34.0 | | | | | Sol Rerunning due to current on original attempt. Vessel not strait on line untill after first 20 shots. Offline at Shotpoint 2612 due to structure PH-CI-A. |
| 1538 | 1626 | E30 | | | | | 113.0 | | | | | Aborted due to Boomer stopped triggering for an unknown reason. |
| 1626 | 1629 | E30 | 702B | 109.0° | 2800 | 2903 | 118.0 | | | | | Sol Overlap due to Boomer stopped triggering for an unknown reason. |

# FUGRO GEOSERVICES, INC.
## GEOPHYSICAL JOBLOG

ver 7.22.2010-B (Alaska)

| | |
|---|---|
| DATE: | 19-Oct-2015 Mon Julian Day: 292 |
| PROSPECT / SITE: | Pipeline Portion |
| NAV. SYSTEM: | Starfix |
| FGSI JOB #: | 2415-7058 |
| JOB DAY #: | Day: 20 |
| CRP TO STERN: | 16.50 Meters |

| | |
|---|---|
| CLIENT: | Alaska LNG |
| JOB DESCRIPTION: | Pipeline Portion |
| AREA & BLOCK: | Cook Inlet |
| R/V: | Qualifier 105 |
| No. of SURVEY LINES: | 109 — 432.43 Kilometers, 99.8% Complete |

47,118.75 Meters Deleted

**VESSEL MANAGER(S)**

| | |
|---|---|
| Party Manager: | Ted Tremblay |
| Ass't Party Manager: | |

**CLIENT REPRESENTATIVE(S)**

| | |
|---|---|
| QC Rep: | Noel Rogers |
| HSE Rep: | Michael Berry |
| Client Rep #3: | |
| Client Rep #4: | |

| TIME FROM | TIME TO | OP CODE | LINE INFORMATION: LINE NUMBER | HEADING | BSP | ESP | Fath (ft) | | | | DNP | DETAILED SURVEY INFORMATION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1629 | 1710 | OLC | 702B | 109.0° | 2903 | 4339 | 118.0 | | | | | Olc |
| 1710 | 1747 | LT | | | | | 75.0 | | | | | Eol |
| 1747 | 1750 | OL | 648 | 302.0° | 256 | 100 | 100.0 | | | | | Sol |
| 1750 | 1800 | LT | | | | | 97.0 | | | | | Eol |
| 1800 | 1804 | OL | 649 | 122.0° | 100 | 256 | 83.0 | | | | | Sol |
| 1804 | 1813 | LT | | | | | 108.0 | | | | | Eol |
| 1813 | 1817 | OL | 650 | 302.0° | 256 | 100 | 125.0 | | | | | Sol |
| 1817 | 1833 | LT | | | | | 85.0 | | | | | Eol |
| 1833 | 1837 | WS | 611A | 304.0° | 256 | 100 | 100.0 | | | | | Sol Rerunning due to current on original attempt. |
| 1837 | 1845 | WS | | | | | 95.0 | | | | | Eol |
| 1845 | 1849 | WS | 610A | 124.0° | 100 | 256 | 87.0 | | | | | Sol Rerunning due to current on original attempt. |
| 1849 | 1858 | WS | | | | | 101.0 | | | | | Eol |
| 1858 | 1903 | WS | 609A | 294.3° | 256 | 100 | 84.0 | | | | | Sol Rerunning due to current on original attempt. |
| 1903 | 1925 | DR | | | | | 92.0 | | | | | Eol Retrieve gear. |
| 1925 | 1930 | VP | Velo #18 | | | | | | | | | Velo #18 taken @ Lat: 61.0717 Lon: -150.9897 Depth: 25.95m Avg. Vel.: 1464.4 m/s. |
| 1930 | 1935 | DR | | | | | | | | | | Continue retrieving gear. |
| 1935 | 2400 | IT | | | | | | | | | | Enroute to Homer for demobilization phase. |
| | | DM | 508 | | 120 | 400 | | | | | | Deleted portion of line due to shallow water depth. |
| | | DM | 709 | | 2957 | 3087 | | | | | | Deleted portion of line due to shallow water depth. |
| | | DM | 703 | | 100 | 190 | | | | | | Deleted portion of line due to shallow water depth. |
| | | DM | 503F | | 9454 | 9495 | | | | | | Typo on Oct.1, Line 503F is supposed to have 9495 to 7745 as OLC. So the overlap OLC for 503F is too much. |
| | | DM | 702 | | 100 | 236 | | | | | | Deleted portion of line due to shallow water depth. |
| | | DM | 501K | | 105 | 400 | | | | | | Deleted portion of line due to shallow water depth. |
| | | DM | 505F | | 101 | 400 | | | | | | Deleted portion of line due to shallow water depth. |

# FUGRO GEOSERVICES, INC.
## GEOPHYSICAL JOBLOG

ver 7.22.2010-B (Alaska)

| | |
|---|---|
| DATE: | 20-Oct-2015 Tue Julian Day: 293 |
| PROSPECT / SITE: | Pipeline Portion |
| NAV. SYSTEM: | Starfix |
| FGSI JOB #: | 2415-7058 |
| JOB DAY #: | Day: 21 |
| CRP TO STERN: | 16.50 Meters |

| | |
|---|---|
| CLIENT: | Alaska LNG |
| JOB DESCRIPTION: | Pipeline Portion |
| AREA & BLOCK: | Cook Inlet |
| R/V: | Qualifier 105 |
| No. of SURVEY LINES: | 109 — 432.43 Kilometers |
| | 99.8% Complete |
| | 47,118.75 Meters Deleted |

**VESSEL MANAGER(S)**

| | |
|---|---|
| Party Manager: | Ted Tremblay |
| Ass't Party Manager: | |

**CLIENT REPRESENTATIVE(S)**

| | |
|---|---|
| QC Rep: | Noel Rogers |
| HSE Rep: | Michael Berry |
| Client Rep #3: | |
| Client Rep #4: | |

| GEOPHYSICAL EQUIPMENT | EQUIP # |
|---|---|
| Geometrics GeoEel 24ch.(1.56 gr) | # 2 |
| Geometrics GeoEel 24ch.(6.25 gr) | # 1 |
| G.I. 60 ci Sleeve Gun | # 4198 |
| Castaway CTD Velocimeter | # 1 |
| Applied Acoutics Boomer | Rental |
| Edgetech 3200-XS SBP | # 1 |
| | |
| | |
| | |
| | |
| | |

**GEOPHYSICAL CREW**

| | |
|---|---|
| Technical Coordinator: | Ted Tremblay |
| Shift Supervisor: | |
| Operator: | Barton Thibodeaux |
| " | Matthew Broussard |
| " | Robert Faragher |
| " | Fred Wilson |
| FGSI Surveyor: | Darrell Miller |
| SES Field Lead PSO | Kristine Lindberg |
| PSO | Tara Hanks |
| " | |
| " | |

**VESSEL CREW**

| | |
|---|---|
| 1st Captain: | David Mastolier |
| 2nd Captain: | Jeff Gregson |
| 1st Mate: | |
| Chief Engineer: | Todd Ostler |
| Cook/Senior Deckhand: | Kevin Anderson |
| Deckhand: | Ben Jantzi |
| Deckhand: | |
| Deckhand: | |

**DATA PROCESSORS**

| | |
|---|---|
| CGG Seismic Processor: | Shannon Campbell / Ian Shirley |
| FGSI QC Geophysicist: | Eric Swanson |

**WEATHER REPORT**

| Time | Sea State | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | | | |
| Wx - 1200: | | | |
| Wx - 1800: | | | |
| Wx - 2400: | | | |

**HSE Reporting (Place an "x" in the box, with brief description**

| HSE OFFICER: | Barton Thibodeaux | |
|---|---|---|
| Toolbox: | | |
| HOC: | | |
| Safety: | | |
| Pre/Post Job: | | |

| TIME FROM | TIME TO | OP CODE | LINE INFORMATION: LINE NUMBER | HEADING | BSP | ESP | Fath (ft) | | | | DNP |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0000 | 0800 | IT | | | | | | | | | |
| 0800 | 1935 | MD | | | | | | | | | |
| 1935 | 2010 | MD | | | | | | | | | |
| 2010 | 2400 | MD | | | | | | | | | |

**DETAILED SURVEY INFORMATION**

Enroute to Homer for demobilization phase.
Begin demobbing the vessel.
Truck is loaded and departs for Palmer, Alaska.

All PSO"s and Client Rep. depart vessel at noon. CGG processors depart vessel for hotel until their flight tomorrow evening.
Fred Wilson arrives from Lafayette to help with demobilization of all trucked equiptment once it arrives in Anchorage.

# FUGRO GEOSERVICES, INC.
## GEOPHYSICAL JOBLOG

ver 7.22.2010-B (Alaska)

| | |
|---|---|
| DATE: | 21-Oct-2015 Wed Julian Day: 294 |
| PROSPECT / SITE: | Pipeline Portion |
| NAV. SYSTEM: | Starfix |
| FGSI JOB #: | 2415-7058 |
| JOB DAY #: | Day: 22 |
| CRP TO STERN: | 16.50 Meters |

| | |
|---|---|
| CLIENT: | Alaska LNG |
| JOB DESCRIPTION: | Pipeline Portion |
| AREA & BLOCK: | Cook Inlet |
| R/V: | Qualifier 105 |
| No. of SURVEY LINES: | 109 — 432.43 Kilometers, 99.8% Complete |

47,118.75 Meters Deleted

**VESSEL MANAGER(S)**

| | |
|---|---|
| Party Manager: | Ted Tremblay |
| Ass't Party Manager: | |

**CLIENT REPRESENTATIVE(S)**

| | |
|---|---|
| QC Rep: | Noel Rogers |
| HSE Rep: | Michael Berry |
| Client Rep #3: | |
| Client Rep #4: | |

| GEOPHYSICAL EQUIPMENT | EQUIP # |
|---|---|
| Geometrics GeoEel 24ch.(1.56 gr) | # 2 |
| Geometrics GeoEel 24ch.(6.25 gr) | # 1 |
| G.I. 60 ci Sleeve Gun | # 4198 |
| Castaway CTD Velocimeter | # 1 |
| Applied Acoutics Boomer | Rental |
| Edgetech 3200-XS SBP | # 1 |

| GEOPHYSICAL CREW | |
|---|---|
| Technical Coordinator: | Ted Tremblay |
| Shift Supervisor: | |
| Operator: | Barton Thibodeaux |
| " | Matthew Broussard |
| " | Robert Faragher |
| " | Fred Wilson |
| FGSI Surveyor: | Darrell Miller |
| SES Field Lead PSO | Kristine Lindberg |
| PSO | Tara Hanks |
| " | |
| " | |

| VESSEL CREW | |
|---|---|
| 1st Captain: | David Mastolier |
| 2nd Captain: | Jeff Gregson |
| 1st Mate: | |
| Chief Engineer: | Todd Ostler |
| Cook/Senior Deckhand: | Kevin Anderson |
| Deckhand: | Ben Jantzi |
| Deckhand: | |
| Deckhand: | |

| DATA PROCESSORS | |
|---|---|
| CGG Seismic Processor: | Shannon Campbell / Ian Shirley |
| FGSI QC Geophysicist: | Eric Swanson |

**WEATHER REPORT**

| Time | Sea State | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | | | |
| Wx - 1200: | | | |
| Wx - 1800: | | | |
| Wx - 2400: | | | |

**HSE Reporting (Place an "x" in the box, with brief description**

| HSE OFFICER: | Barton Thibodeaux | |
|---|---|---|
| Toolbox: | | |
| HOC: | | |
| Safety: | | |
| Pre/Post Job: | | |

| TIME FROM | TIME TO | OP CODE | LINE INFORMATION: LINE NUMBER | HEADING | BSP | ESP | Fath (ft) | | | | DNP |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0000 | 0800 | MD | | | | | | | | | |
| 0800 | 1000 | MD | | | | | | | | | |
| 1000 | 1230 | MD | | | | | | | | | |
| 1230 | 1300 | MD | | | | | | | | | |
| 1300 | 1925 | MD | | | | | | | | | |
| 1925 | 2400 | MD | | | | | | | | | |

**DETAILED SURVEY INFORMATION**

Clean up vessel.
Trucker arrives with equipment at Anchorage office.
Wilson departs Anchorage to pick up Broussard, Faragher, Miller and Wilson.
Thibodeaux, Swanson and Tremblay depart back to Lafayette.
Brousssard, Faragher, Miller and Wilson depart Homer. They will drive to Anchorage to unpack all trucked equipment.
Brousssard, Faragher, Miller and Wilson arrive in Anchorage to start unpacking trucked equipment tomorrow.

# FUGRO GEOSERVICES, INC.
## GEOPHYSICAL JOBLOG

ver 7.22.2010-B (Alaska)

| | |
|---|---|
| DATE: | 22-Oct-2015 Thu Julian Day: 295 |
| PROSPECT / SITE: | Pipeline Portion |
| NAV. SYSTEM: | Starfix |
| FGSI JOB #: | 2415-7058 |
| JOB DAY #: | Day: 23 |
| CRP TO STERN: | 16.50 Meters |

| | |
|---|---|
| CLIENT: | Alaska LNG |
| JOB DESCRIPTION: | Pipeline Portion |
| AREA & BLOCK: | Cook Inlet |
| R/V: | Qualifier 105 |
| No. of SURVEY LINES: | 109 — 432.43 Kilometers, 99.8% Complete |

47,118.75 Meters Deleted

**VESSEL MANAGER(S)**

| | |
|---|---|
| Party Manager: | Ted Tremblay |
| Ass't Party Manager: | |

**CLIENT REPRESENTATIVE(S)**

| | |
|---|---|
| QC Rep: | Noel Rogers |
| HSE Rep: | Michael Berry |
| Client Rep #3: | |
| Client Rep #4: | |

| GEOPHYSICAL EQUIPMENT | EQUIP # |
|---|---|
| Geometrics GeoEel 24ch.(1.56 gr) | # 2 |
| Geometrics GeoEel 24ch.(6.25 gr) | # 1 |
| G.I. 60 ci Sleeve Gun | # 4198 |
| Castaway CTD Velocimeter | # 1 |
| Applied Acoutics Boomer | Rental |
| Edgetech 3200-XS SBP | # 1 |
| | |
| | |
| | |
| | |
| | |

| GEOPHYSICAL CREW | |
|---|---|
| Technical Coordinator: | Ted Tremblay |
| Shift Supervisor: | |
| Operator: | Barton Thibodeaux |
| " | Matthew Broussard |
| " | Robert Faragher |
| " | Fred Wilson |
| FGSI Surveyor: | Darrell Miller |
| SES Field Lead PSO | Kristine Lindberg |
| PSO | Tara Hanks |
| " | |
| " | |

| VESSEL CREW | |
|---|---|
| 1st Captain: | David Mastolier |
| 2nd Captain: | Jeff Gregson |
| 1st Mate: | |
| Chief Engineer: | Todd Ostler |
| Cook/Senior Deckhand: | Kevin Anderson |
| Deckhand: | Ben Jantzi |
| Deckhand: | |
| Deckhand: | |

**DATA PROCESSORS**

| | |
|---|---|
| CGG Seismic Processor: | Shannon Campbell / Ian Shirley |
| FGSI QC Geophysicist: | Eric Swanson |

**WEATHER REPORT**

| | Time | Sea State | Wind Speed | Dir. |
|---|---|---|---|---|
| Wx - 0600: | | | | |
| Wx - 1200: | | | | |
| Wx - 1800: | | | | |
| Wx - 2400: | | | | |

**HSE Reporting (Place an "x" in the box, with brief description**

| | | |
|---|---|---|
| HSE OFFICER: | Barton Thibodeaux | |
| Toolbox: | | |
| HOC: | | |
| Safety: | | |
| Pre/Post Job: | | |

| TIME FROM | TIME TO | OP CODE | LINE INFORMATION: LINE NUMBER | HEADING | BSP | ESP | Fath (ft) | | | | DNP |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0000 | 1800 | MD | | | | | | | | | |
| 1800 | | | | | | | | | | | |

**DETAILED SURVEY INFORMATION**

Brousssard, Faragher, Miller and Wilson unpack and sort equipment.
Welder arrives in Homer to unweld all pads for compressors,streamer winch and mount for subottom profiler.
Vessel is released.

# APPENDIX 1-B

## EQUIPMENT SPECIFICAITONS
## BOAT SETBACK DIAGRAM
## *M/V QUALIFIER 105*
## EQUIPMENT DESCRIPTIONS

## EQUIPMENT SPECIFICATIONS

| | | | | | |
|---|---|---|---|---|---|
| **CLIENT** | Alaska LNG | | **FGSI JOB No:** | 2415-7058 | |
| **AREA/BLOCK** | Cook Inlet-Nikiski, Alaska | | **DATE:** | August 19 to October 22, 2015 | |
| **SURVEY VESSEL(S)** | **Qualifier 105** | | Lease or Chase Boat | N/A | |
| Navigation System CRP to Stern | 16.50 | Meters | Navigation System | Starfix | |
| Average On-Line Speed | 4 | Knots | Average On-Line Sea State | Small Wavelets | |
| Nav. Fix Interval | 6.25 | Meters | Beaufort Scale | 3 W=7-10 kts; S=1-3 ft | |
| Acoustic Positioning System | N/A | | Nav. Event Interval | 6.25 | Meters |
| Acoustic Pole Mounted | N/A | | Velocimeter | The CastAway-CTD | |
| **BATHYMETRY SYSTEM** | **Furuno FVC-1100L** | | Single Beam Echo Sounder | Used as back-up system | |
| Setback from CRP | 12 feet ahead of CRP | | Operating Frequency | Variable | |
| **EDGETECH 3200-XS SUBBOTTOM PROFILER** | | | Offset from CRP | -4.45 M | Port |
| Record Length | 100 | Milliseconds | Operating Frequency | 2 - 16 | kHz |
| Record Scale/Delay | 0 | Milliseconds | Power Output | 4 | Kilowatts |
| Record Divisions | 10 | Milliseconds | Heave Compensation? | Yes | |
| Setback from CRP | -9.58 M | Behind CRP | Transducer Depth BSL | 1.067 | Meters |
| **APPLIED ACOUTICS CSP-P BOOMER** | | | Offset from CRP | 0 Meters | |
| Record Length | 250 | Milliseconds | Operating Frequency | 5 Hz - 8 kHz | |
| Record Divisions | 100 | Milliseconds | Power Output | 300 Joules | |
| Setback from CRP | 31.5 | Meters | Transducer Depth | 0.304 Meters | |
| **DIGITAL RECORDING** | **Chesapeake - Sonar Wiz** | | | | |
| Sonar Format | XTF | | Seismic Format | SEG-D 8048 | |
| **SEISMIC SYSTEM #1** | **Geometrics GeoEel (Digital)** | | Shot Interval | 6.25 | Meters |
| Number of Channels | 24 | | Record Length (Sec.) | 0.5 & 1.0 | |
| Channel Spacing | 6.25 | Meters | Record Divisions | 10 | Milliseconds |
| Sound Source | | Boomer | Recording Format | SEG-D 8048 | |
| Source Setback from CRP | 31.50 | Meters | Sampling Rate | 0.250 | Seconds |
| Source Lateral Offset from CRP | 4.11 | Meters Port Side | System Recording Delay | | |
| Source Depth | .30 | Meters | Notch Filter | none | |
| Source Energy | 300 | Joules | Low Cut Filter | | |
| Monitor Channel | 4 | | Low Cut Slope | | |
| Near Trace Setback from CRP | 58.60 | Meters | Pre-Amp Gain | 8 db | |
| Streamer Lateral Offset from CRP | 4.11 | Meters Starboard | High Cut Filter | 1000 | Hz |
| Streamer Depth | 1.5 | Meters | High Cut Slope | 0 | |
| Near Channel No. | 1 | | Far Channel No. | 24 | |
| Near Ch. Setback from Source | 5 | Meters | Far Ch. Setback from Source | 61.28 | Meters |
| Cable Length | 37.5 | Meters | Channel Group Length | 1.56 | Meters |
| Cable Manufacturer | GeoEel Digital Streamer | | Channel Set 1: | Seismic (Single Cable) | |
| | | | Channel Set 2: | N/A | |

## EQUIPMENT SPECIFICATIONS

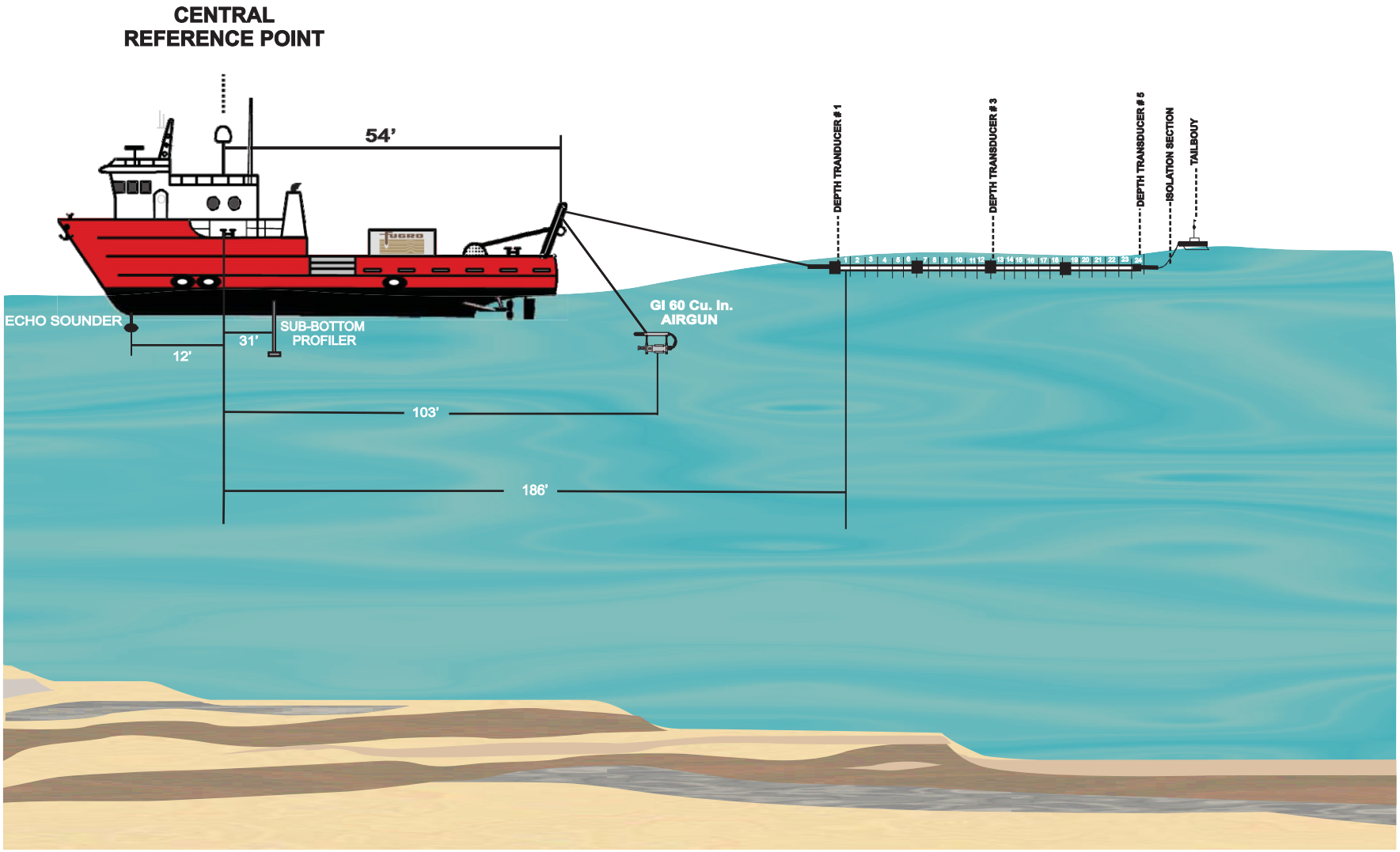
| | | | |
|---|---|---|---|
| **CLIENT** | Alaska LNG | **FGSI JOB No:** | 2415-7058 |
| **AREA/BLOCK** | Cook Inlet-Nikiski, Alaska | **DATE:** | August 19 to October 22, 2015 |

| **SEISMIC SYSTEM #2** | **Geometrics GeoEel (Digital)** | | | Shot Interval | 6.25 | Meters |
|---|---|---|---|---|---|---|
| Number of Channels | 24 | | | Record Length (Sec.) | 2000 | Milliseconds |
| Channel Spacing | 6.25 | Meters | | Record Divisions (M/sec) | 100 | Milliseconds |
| Sound Source | 160 cu.in. | G.I. Airgun | | Recording Format | SEG-D 8048 | |
| Source Setback from CRP | 31.50 | Meters | | Sampling Rate | .250 | Milliseconds |
| Source Lateral Offset from CRP | 4.11 | Meters | Port Side | System Recording Delay | 15 | Milliseconds |
| Source Depth | 1.5 | Meters | | Notch Filter | None | |
| Source Pressure | 2000 | PSI | | Low Cut Filter | 0 | |
| Monitor Channel | 4 | | | Low Cut Slope | 0 | |
| Near Trace Setback from CRP | 56.84 | Meters | | Pre-Amp Gain | 8db | |
| Streamer Lateral Offset from CRP | 4.11 | Meters | Stbd Side | High Cut Filter | 1000 Hz | |
| Streamer Depth | 1.5 | Meters | | High Cut Slope | 0 | |
| Near Channel No. | 1 | | | Far Channel No. | 24 | |
| Near Ch. Setback from Source | 26.13 | Meters | | Far Ch. Setback from Source | 61.28 | Meters |
| Cable Length | 57.5 | Meters | | Channel Group Length | 1.56 | Meters |
| Cable Manufacturer | GeoEel Digital Streamer | | | Channel Set 1: | Seismic (Single Cable) | |
| | | | | Channel Set 2: | N/A | |

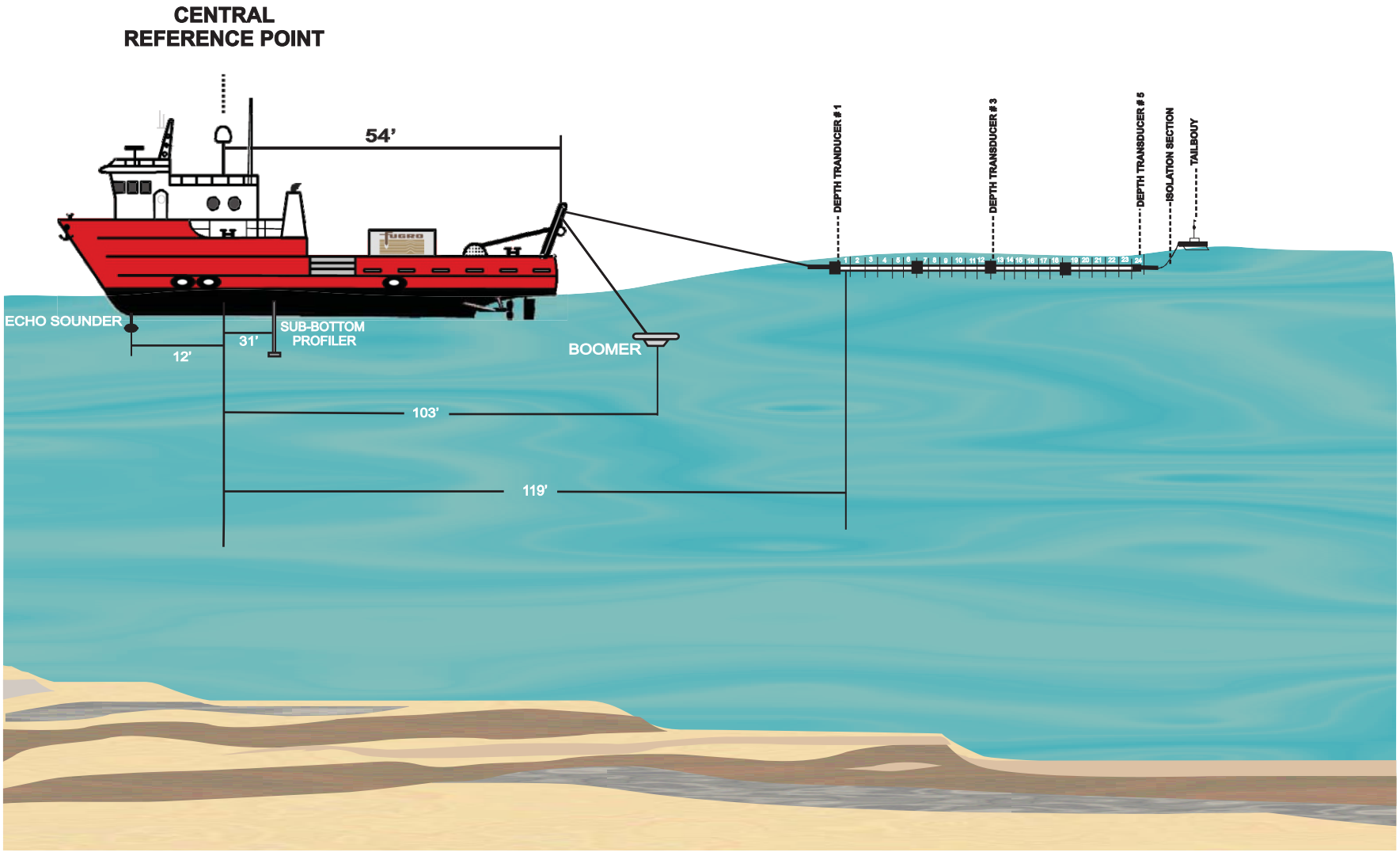
Party Manager: Wayne Labrie

Ass't Party manager: Ted Tremblay

ALASKA LNG
SEISMIC PORTION-COOK INLET-NIKISKI, ALASKA
*QUALIFIER 105*
AUGUST 19-SEPTEMBER 14 &17, 2015
OCTOBER 18 & 20-22, 2015



ALASKA LNG
APPROACH CHANNEL-COOK INLET-NIKISKI, ALASKA
*QUALIFIER 105*
SEPTEMBER 14-20, 2015
OCTOBER 5-6, 2015

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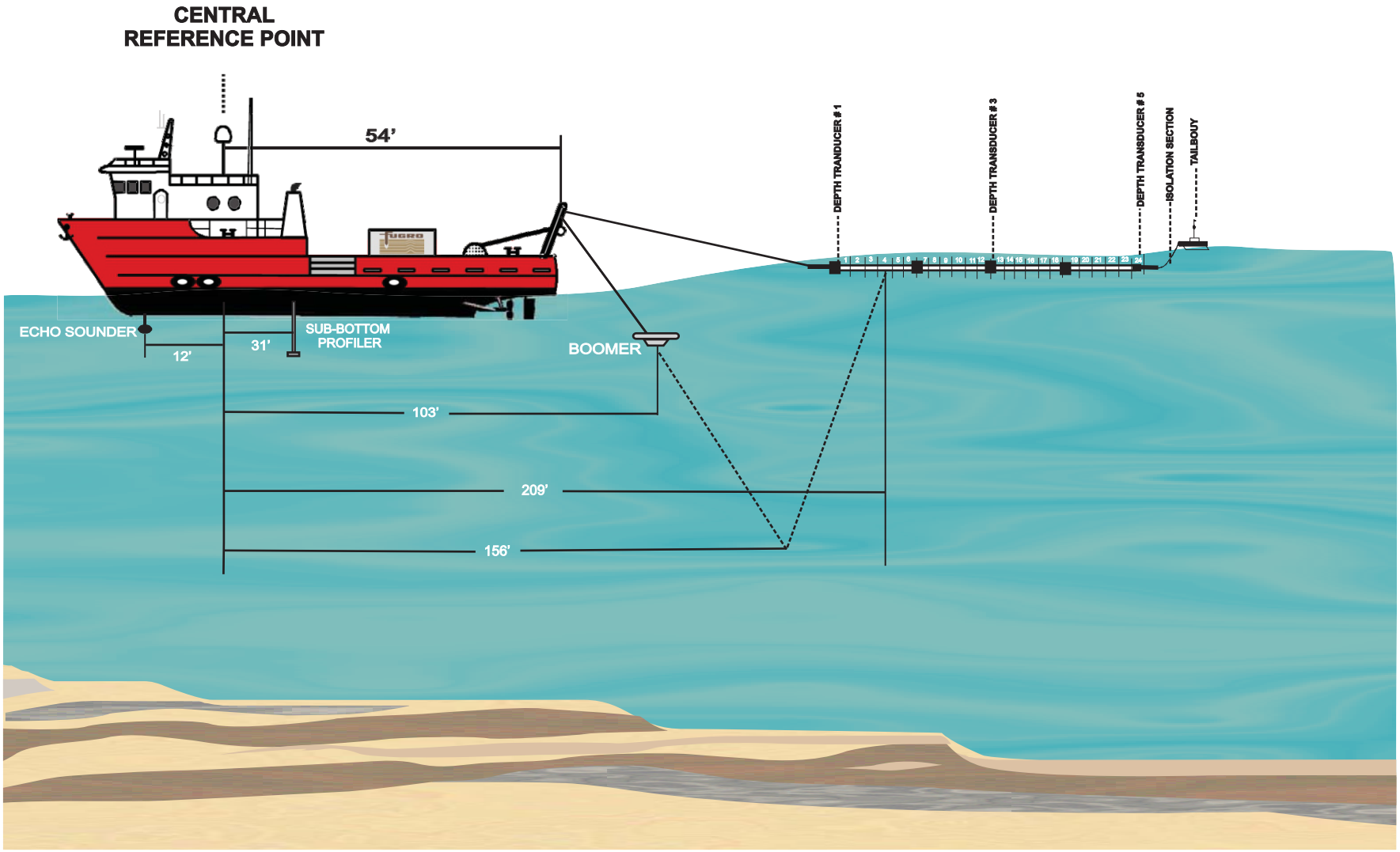
LNG Facilities
Marine Geophysical Survey Report
USAL-FG-GRZZZ-90-002015-010 Rev.0
15-Jun-2016

Alaska LNG

FUGRO

ALASKA LNG
PIPELINE SURVEY-COOK INLET-NIKISKI, ALASKA
*QUALIFIER 105*
SEPTEMBER 23-30, 2015
OCTOBER 1-22, 2015



# QUALIFIER 105

Overview | Specs | Photo Gallery

The Qualifier 105 has unique qualifications and proven itself as a very capable SURVEY, RESEARCH, and HOUSING vessel. It has a long history of providing quality long range service (4000 miles) for large groups over extended periods of time. It is capable of surveying 24/7 for up to 30 days or more onsite.

The Q105 is shallow draft (6 ft.), 105 feet in length, with an amazingly stable 30 ft. beam and very economical to operate. It is U.S. Coast Guard certificated to operate 200 miles offshore with 36 overnight passengers. The interior can be configured to accommodate 1 to 2 enclosed offices (with a built in server rack and Ethernet cables in place). It is equipped with A-Frame, crane, davit, and a survey skiff.

Safety is number one priority aboard the Qualifier and its long list of safety features demonstrates our commitment to safety. We have a Zero Harm policy of "Manage risk so no injuries to employees or property damage, environmental impact, community, or customer harm occur while doing work." With three main engines, covered life rafts for 45 persons, doubled up electronics for redundancy, U.S. Coast Guard inspected every year, and a long list of other safety features, you can be assured you and your employees are on a safe operating vessel.

The Qualifier 105, with its spacious interior and large aft deck (27' x 24' of clear, unobstructed deck space) is clearly a unique vessel that is able to support many types of operations such as oil exploration, mining exploration, environmental clean-up, oceanographic research, site hazard surveys, and many other maritime operations. It is an outstanding platform for a command center, housing, transporting passengers and gear/equipment, towing research equipment, etc.

# QUALIFIER 105

Overview | Specs | Photo Gallery

## Specs

USCG C.O.I., 200 Mile Offshore Certification
Flag of Registry: USA
Hull: Aluminum
Hull Shape: Semi-Planing (Shallow Draft)

## Dimensions

LOA: 105 ft.
Beam: 30 ft.
Draft: 6 ft.

## Engines (3)

Engine(s): DETROIT D-60
Engine(s) Total Power: 1,200 HP
Cruising Speed: 11 knots (23 gph)
Survey Speed: 3 to 5 Knots (9 gph)
Maximum Speed: 15 knots
Range: 4,000 nm
Meets Tier 2 emission standards

## Interior Features

Offices: 2 (Ethernet cables in place, built in Server Rack)
Cabins: 12
Marine Heads: 4 (5 showers)
Berths: up to 30+ 5 Crew

## Deck Equipment

6 Ton Deck Crane
A-Frame
Davit
Survey Skiff
Tender

## Tankage

Freshwater: 4,000 gal.
Fuel: 12,000 gal.
Holding Tank: 200 gal.

## Electrical

(2) 103 KW Generators 120/208 three phase

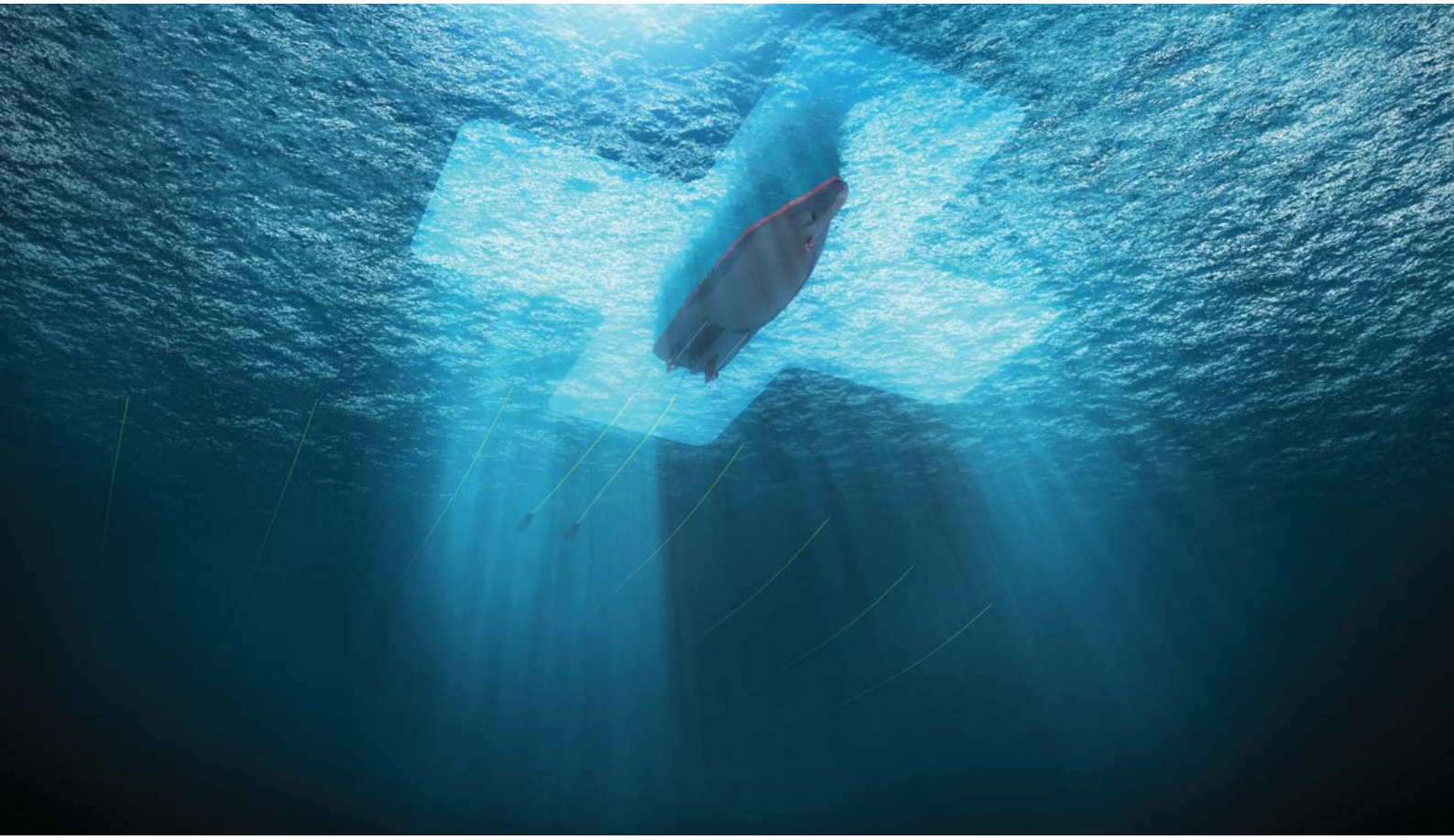
## Electronics

Full range of navigation equipment
Forward/side scanning sonar

## Additional Equipment

Water maker(s) (2 Desalinators)
Satellite phone/data (Iridium)
Washers and dryers
Marine Sanitation Device (USCG/Marpol Compliant)

**FUGRO** SATELLITE POSITIONING



# STARFIX. G2+

## AN ULTRA HIGH ACCURACY SERVICE FOR OFFSHORE APPLICATIONS

**Starfix.G2+ is a further advancement in the field of GNSS augmentation, which delivers ultra-high accuracy positioning to our customers.**

The Starfix.G2+ is a further advancement in the field of GNSS augmentation, which delivers ultra-high accuracy positioning to our customers.

This new positioning service is based on advanced Integer Ambiguity Resolution (IAR) technology which is a further development of Precise Point Positioning (PPP). The basis of the IAR technique is the derivation an additional set of carrier-phase corrections from the Fugro reference station network (known as Uncalibrated Phase Delays or UPD).

The implementation of the UPD corrections in the Fugro StarPack software results in the carrier-phase ambiguities being resolved (fixed to integer values) resulting in a positioning accuracy at the centimetre level.

When the Starfix.G2+ service is enabled, the Fugro StarPack software will compute a centimetre Starfix.G2+ position. If for some reason the carrier-phase ambiguities cannot be resolved then the solution will fall back to a standard decimetre PPP solution.

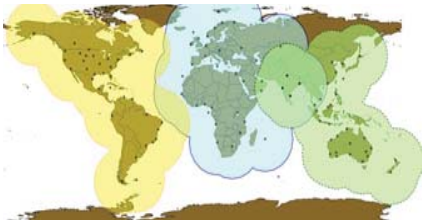
The Starfix.G2+ corrections are supplied to our customers via L-Band satellite links to give global coverage.

The UPD Corrections are generated for 3 geographical regions as these provide significantly better results when compared to a single global set of corrections.

These regions are:

1. North and South America
2. Europe, Africa and Middle East
3. Asia and Australia

Although the corrections are divided into regions, our customers do not need to be inside the region in order for the service to work, but should always choose the region closest to their work location.



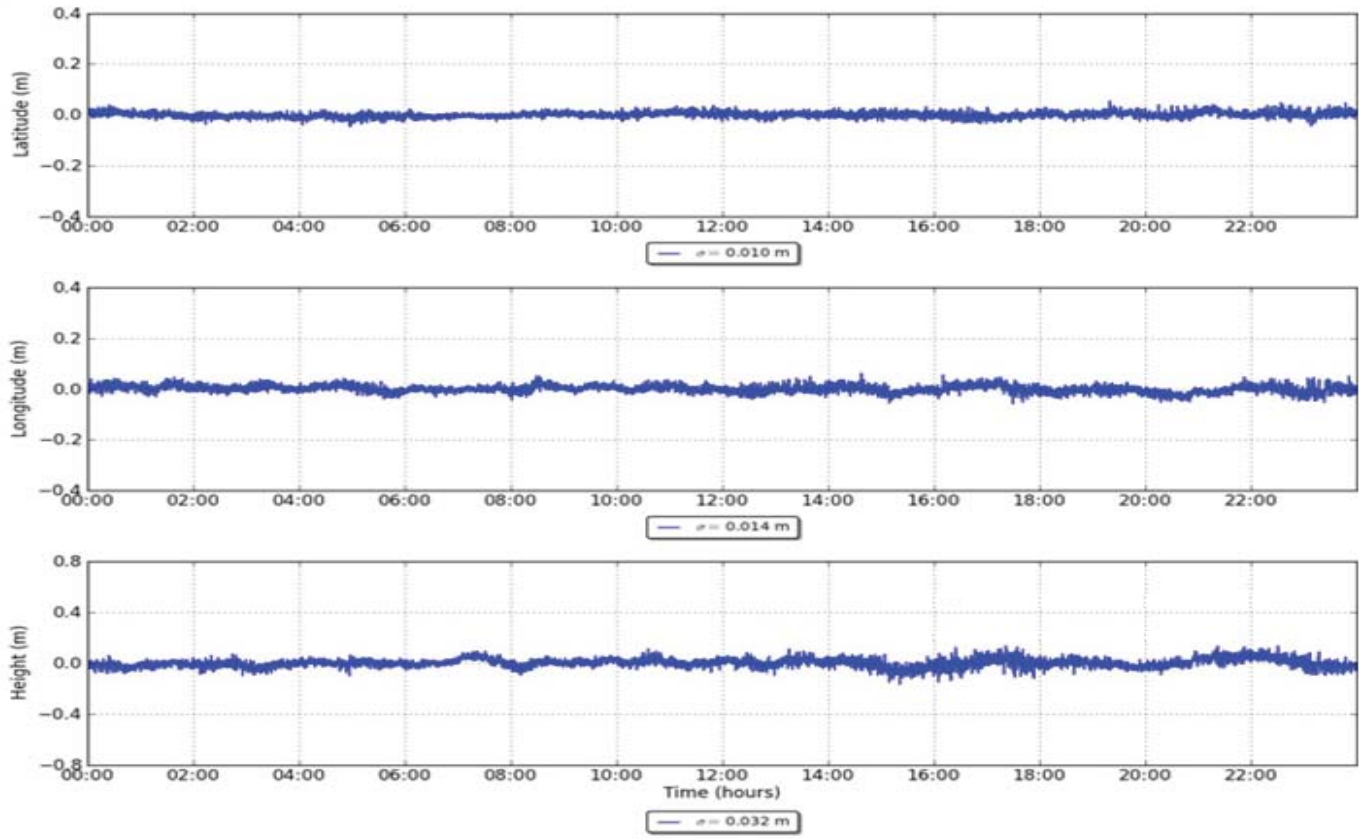
# **FUGRO** SATELLITE POSITIONING

Solution accuracy; the following table illustrates Starfix.G2+ accuracy over 24 hours over 2 days from four locations

| | E (SD) | N (SD) | H (SD) |
|---|---|---|---|
| Bergen (14/03/2015) | 0.014 m | 0.010 m | 0.032 m |
| Bergen (15/03/2015) | 0.016 m | 0.013 m | 0.034 m |
| Brownsville (14/03/2015) | 0.012 m | 0.011 m | 0.037 m |
| Brownsville (15/03/2015) | 0.011 m | 0.010 m | 0.027 m |
| Houston (14/03/2015) | 0.013 m | 0.011 m | 0.032 m |
| Houston (15/03/2015) | 0.011 m | 0.010 m | 0.029 m |
| Leidschendam (14/03/2015) | 0.013 m | 0.010 m | 0.028 m |
| Leidschendam (15/03/2015) | 0.014 m | 0.012 m | 0.032 m |

The Starfix.G2+ service is currently available to customers using Fugro's StarPack GNSS systems.

Starfix.G2+ performance plots for Bergen, on 14th March 2015.

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N-5165 Laksevaag, Norway
Telephone: +47 55 34 94 00
Email: starfix@fugro.no
www.starfix.com

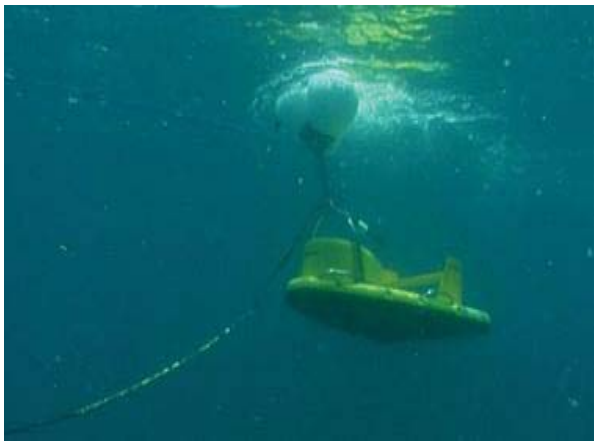
# EdgeTech 3200 Sub-bottom Profiling System

## *High Penetration Sub-bottom Profiler*

The EdgeTech 3200 Sub-bottom Profiling System is a wideband Frequency Modulated (FM) sub-bottom profiler utilizing EdgeTech's proprietary Full Spectrum CHIRP technology. The 3200 generates high-resolution images of the sub-bottom stratigraphy in oceans, lakes, and rivers and provides penetration of up to 200m.

The 3200 comes available with a choice of three stable, low drag towfish that operate at different frequencies and can be used at depths of up to 300m. The selection of towfish depends on the sub bottom characteristics as well as the resolution and penetration requirements.

Along with a towfish, a standard 3200 systems comes with a topside processor running EdgeTech's DISCOVER sub-bottom acquisition & processing software as well as a customer-specified length of tow cable. Additional optional sensors are also available

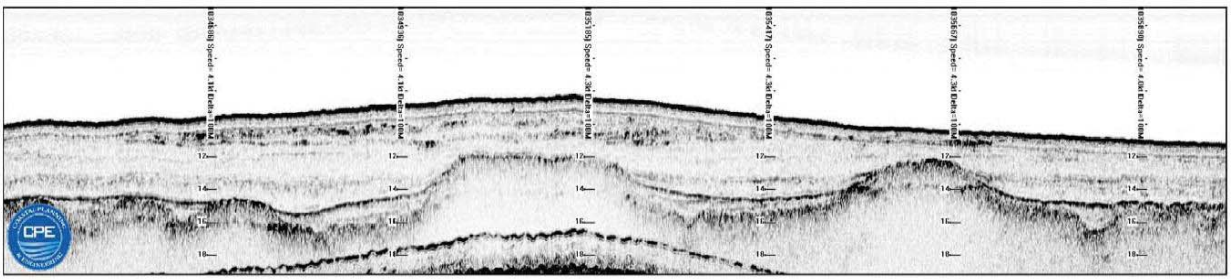


## FEATURES:

- Choice of 3 towfish depending on the application
- Low frequency for greater penetration
- Pole mount option for shallow water surveys

## APPLICATIONS:

- Geological Surveys
- Geohazard surveys
- Sediment Classification
- EEZ Resource Development
- Buried Object Location
- Bridge/Shoreline Scour Surveys
- Mining/Dredging Surveys



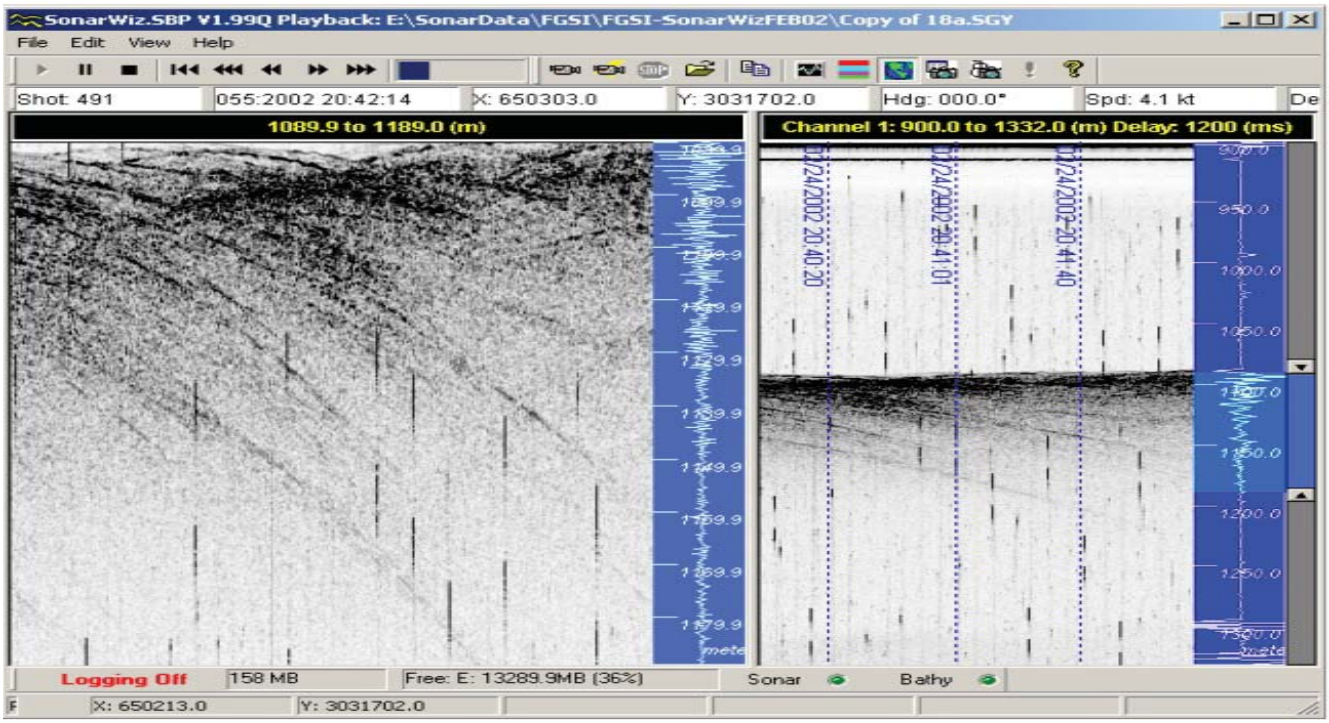
*EdgeTech 3200XS 512i System data example*

| TOWFISH | SB-0512i | SB-216S | SB-424 |
|---|---|---|---|
| Frequency Range | 500 Hz - 12 kHz | 2-16 kHz | 4-24 kHz |
| Vertical Resolution (depends on pulse selected | 8-20 cm | 6-10 cm | 4-8 cm |
| Penetration (typical) | | | |
| In coarse calcareous sand | 20 meters | 6 meters | 2 meters |
| In Clay | 200 meters | 80 meters | 40 meters |
| Length | 160 cm | 105 cm | 77 cm |
| Width | 124 cm | 67 cm | 50cm |
| Height | 47 cm | 40 cm | 34 cm |
| Weight in Air | 204 kg | 76 kg | 45 kg |
| Depth Rating | 68 kg | 32 kg | 18 kg |
| Weight in Water | 300 meters | | |
| **TOPSIDE PROCESSOR** | | | |
| Hardware | Standard 19 inch rack mount with portable aluminum enclosure for transport | | |
| Operating System | Windows XP | | |
| Display | High resolution 21 inch flat panel display | | |
| Archive | Hard drive and/or DVD-R/W | | |
| File Format | Native JSF or SEG-Y | | |
| Output | Ethernet | | |
| Power Input | 120/220 VAC | | |
| **SYSTEMS OPTIONS** | | | |
| | Integrated depth sensor, USBL acoustic tracking system | | |

Alaska LNG

FUGRO

## **EQUIPMENT SHEET** OFFSHORE SURVEY




# FUGRO
# SONARWIZ SUB-BOTTOM PROFILER

The SonarWiz Sub-bottom Profiler, by Chesapeake Technology, Inc., is a high resolution sub-bottom profiling system that is dependable and precise, yet simple to use. SonarWiz.SBP digitizes sub-bottom profiler signals and integrates navigation inputs to produce high-quality georeferenced SEG-Y data.

SonarWiz.SBP interfaces with most analog and digital sub-bottom profilers. It includes support for thermal plotters for hardcopy output in real-time and playback, and features text annotation support, cleverly stored in a user-defined area of the SEG-Y trace header for subsequent playback. The SonarWiz. SBP offers a redundant data recording option, color and contrast controls and a built-in deep water delay. It interfaces with Hypack, NMEA-.0183, and contains custom navigation interfaces, while working in meters, feet, or milliseconds.

SonarWiz.SBP continues to be the most versatile and preferred choice for high quality sonar data acquisition and processing software.

**Features**

- Real time seismic data display and play back
- Amplitude scope trace monitor
- Digital recording in 16-bit SEG-Y format
- Flexible internal or external event generation
- Built in deep water delay
- Multi-ping support for high resolution coverage in deep water
- 64, 32 or 20kHz sampling rate with 16-bit resolution

APPLIED ACOUSTICS
Underwater Technology

**Applied Acoustic Engineering Ltd**
Marine House, Marine Park, Gapton Hall Road, Great Yarmouth, NR31 0NB, United Kingdom

# CSP-P Seismic Energy Source

**The CSP-P** is a small, light 350 Joule power source intended primarily as a boomer power supply but it can be used with small sparkers.

Recently upgraded, the CSP-P now incorporates dual-voltage technology that allows the operator to tune the sound source to a particular application for improved data quality.

## Key Features

- Incorporates dual-voltage technology for exceptional versatility
- Variable Input Power Circuitry for 'soft start'
- Proprietary pulse shaping circuitry for high resolution data
- Additional safety/protection features
- All settings externally selectable
- LED fault indicators
- High current and voltage solid state (semi-conductor) discharge method
- Meets EC emissions regulations enabling interference-free field use
- Supplied in robust transit case, with HV junction box, mains lead and HV connector plug

## Technical Specification

PHYSICAL

| | |
|---|---|
| Size | Transit Case (4U) with cover in place and handles flat: 29cm(H) x 56cm(W) x 56cm(D) |
| Weight | CSP-P, case and cover: 35kg |

ELECTRICAL SPECIFICATION

| | |
|---|---|
| Mains Input | 110 or 240Vac (fixed) 45-65Hz@2.0kVA single phase. 3 pin connector<br>Variable Input Power Circuitry (AVIP) 'soft start' circuitry |
| Voltage Output | 2500 to 3950 Vdc, 4 pin interlocked connector<br>Solid state semi-conductor discharge method |
| Output Energy | Easy switch selectable in increments<br>50,100,150,200,300 and 350 Joules |

## CSP-P Technical Specification continued…

| | |
|---|---|
| Charging Rate | 1500J/second for continuous operation at 0-45°C ambient |
| Capacitance | 48µF at $10^8$ shot life |
| Trigger | +ve key opto isolated or isolated closure set by front panel switch<br>BNC connector on front panel and remote box (optional) |
| Repetition rate | 6pps max<br>Limited by charge rate, energy level and sound source rating |
| Earth | M8 stainless steel stud on front panel |

SAFETY FEATURES

Main electronic control circuits and secondary layer of safety circuitry
Specially designed HV connector with interlock
High speed dump resistors for high voltage components
Capacitor bleed resistors
Open circuit shutdown
Timer shutdown
Output current monitor and shutdown
Over temperature shut-down
Cover and connector interlocks
HV fault indicator for internal temperature, low input voltage or capacitor fault
Remote control available for triggering and operation

*The unit's internal design has a modular construction for ease of servicing and capacitor replacement. However, for safety reasons, only Applied Acoustics trained engineers should attempt a repair.*

COMPATIBLE SOUND SOURCES

AA201, AA251 and AA301 Boomer plates
Squid 501 Sparker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THE QUEEN'S AWARDS FOR ENTERPRISE: INTERNATIONAL TRADE 2010

Registration No. U6447
BS: EN: ISO9001

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W www.appliedacoustics.com

Alaska LNG

FUGRO

APPLIED ACOUSTICS
Underwater Technology

: Technical Specification

# AA200 and AA300 Seismic Sound Source, Boomer Plates

The two boomer plates, the AA200 and AA300, produce a sharp, repeatable "industry standard" single pulse. Both models are field proven and differ in detail specification.

The Model AA200 is the 'small format' transducer which can be towed on either the CAT100 or CAT200 surface tow vehicles. It is ideal for inshore surveys for high resolution sediment analysis with the CSP-L energy source or as a higher penetration device with the CSP300-P and CSP-D models.

The Model AA300 is designed for higher power applications and has the extra advantage of use as a variable frequency boomer when used with the CSP-D range of energy sources. This allows wide ranging pulse widths not formerly available. The lengthening of the pulse width ensures even greater penetration whilst maintaining a high quality single pulse.

AA200

# Technical Specification - Boomer Plates

## MODEL TYPES - PHYSICAL SPECIFICATION

| | Size | Weight air/water | Fixing Centres |
|---|---|---|---|
| **Model AA200** | 38cm x 38cm | 18kg/10kg | 31.5cm$^2$ |
| **Model AA300** | 62cm x 52cm | 25kg/14kg | 40.6cm$^2$ |

## ELECTRICAL INPUT

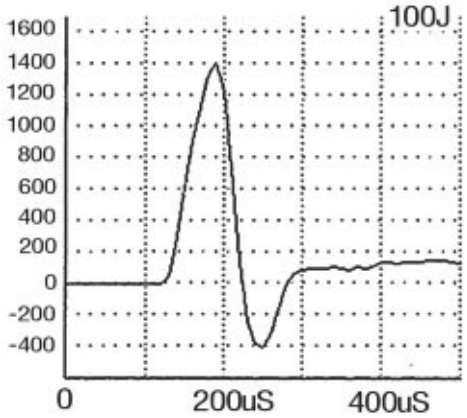
| | |
|---|---|
| Recommended Power | AA200, 50 – 200J/shot<br>AA300, 100 – 300J/shot |
| Maximum Energy Input | AA200, 300J/shot<br>AA300, 350J/shot |
| Maximum power Input | AA200, 600J/second<br>AA300, 1000J/shot |

## SOUND OUTPUT

| | |
|---|---|
| Source level | AA200, 215 dB re 1 µPa at 1 metre with 200J<br>AA300, 218 dB re 1 µPa at 1 metre with 300J |
| Pulse Length | AA200, 120/150/180 mS at 50/100/200J<br>AA300, 150 – 400 mS depending on energy setting of CSP-D |
| Reverberation | AA200, <1/10 x initial pulse<br>AA300, < 1/10 x initial pulse |
| Connector type | Enhanced Joy Plugs. Models AA201 and AA301 fitted with RMK type |

## COMPATIBILITY*

| | |
|---|---|
| Energy Source | AA200, CSP-L; CSP300P;CSP-D<br>AA300, CSP300P;CSP-D |
| Catamaran | AA200, CAT100; CAT200<br>AA300, CAT200 |




AA200 PULSE SHAPE

* Also compatible with older model CSP units.

Certificate No. 6447
BS: EN: ISO9001 : 2000

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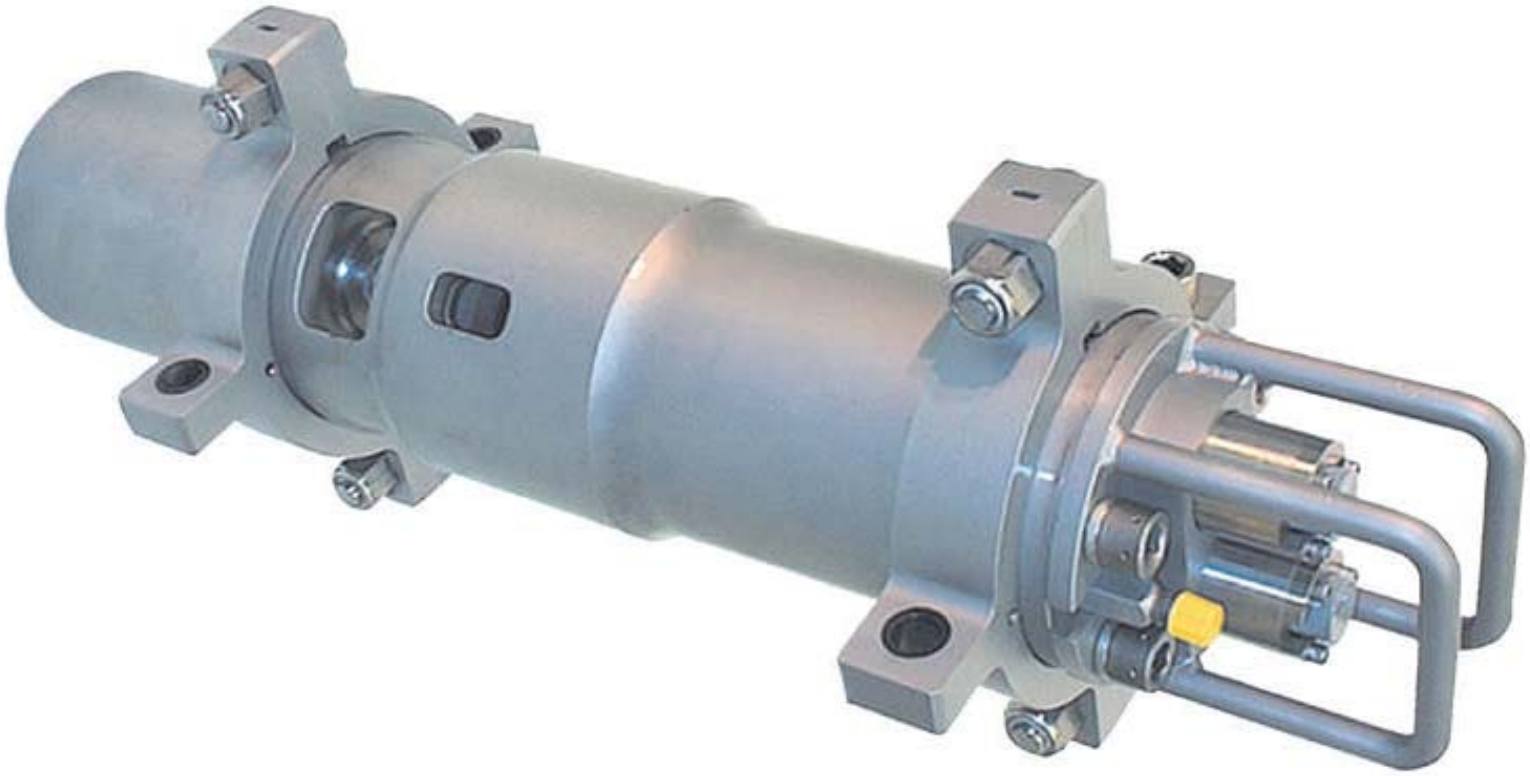
**EQUIPMENT SHEET** OFFSHORE SURVEY



# FUGRO
# GI GUN

**The GI GUN® produced by Sercel, Inc. is a pneumatic seismic source that is made of two independent air guns within the same body.**

The first gun (the Generator) produces the primary pulse, while the second air gun (the Injector) is used to control the oscillation of the bubble produced by the Generator. After the Generator is fired, the Injector fires when the bubble is near its maximum size. The injected volume of air reduces and reshapes the bubble oscillation.

## APPLICATION

The volume of both the Generator and Injector can be easily changed from 45 to 105 cubic inches, as can the duration of the injection or its timing. This adaptability allows the GI GUN® to operate in different modes to achieve different objectives. In "GI Mode," the injection is optimally tuned to totally suppress the oscillation of the bubble. A "Harmonic Mode" allows the injection to be willingly detuned to reshape and selectively adjust the oscillations of the bubble. For instance, a partial injection can be used to produce a signature having a smooth and reduced oscillation with a greatly improved primary to bubble ratio. The reshaped signatures open a wide range of applications such as the design of compact and efficient subarrays of 2 or 3 independent guns, use of single gun for high resolution, or the replacement of troublesome air gun clusters. The "Air Gun Mode" allows both the Generator and the Injector to be fired simultaneously or separately, which provides a volume range from 45 to 210 cubic inches with optimum efficiency.

During field operations, the gun (or array) is fired every 12.5 meters for the recording of 12 or 24 fold data. A gun phone, located inside the air bubble, provides the time break and signals the "start record" command to the recording devices. A 2,000 psi air supply is typically maintained for peak performance.

System capabilities include the following:

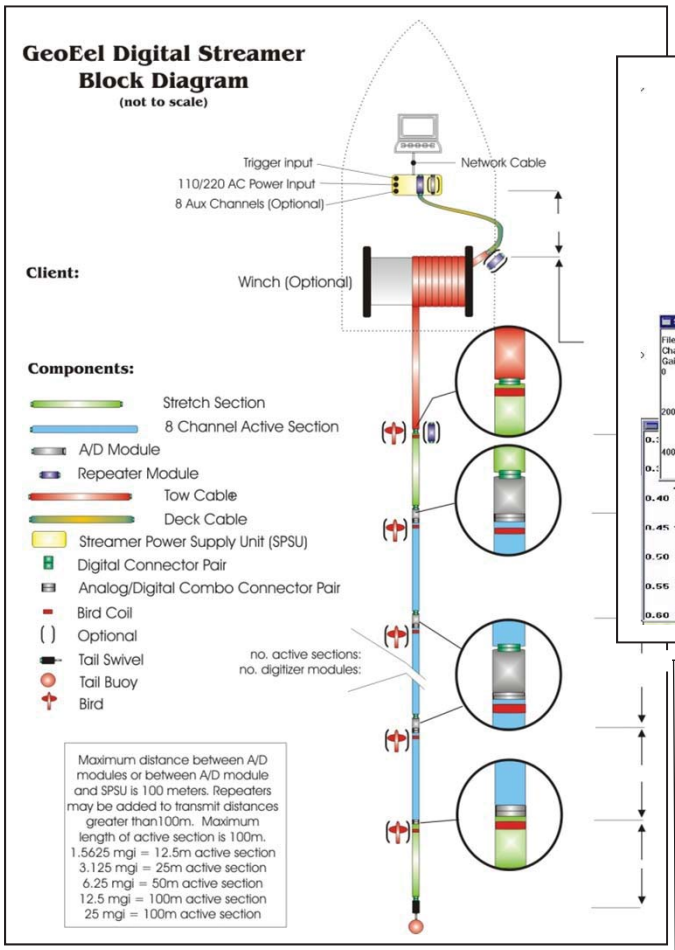
- High resolution 2D seismic surveys
- Continuous operation up to 3,000 psi air pressure
- Reduction of bubble oscillations of a single air gun
- Generation of shear waves in marine surveys
- Use of small arrays for shallow water and transition zone surveys
- Use of large arrays for conventional and 3D deep seismic surveys

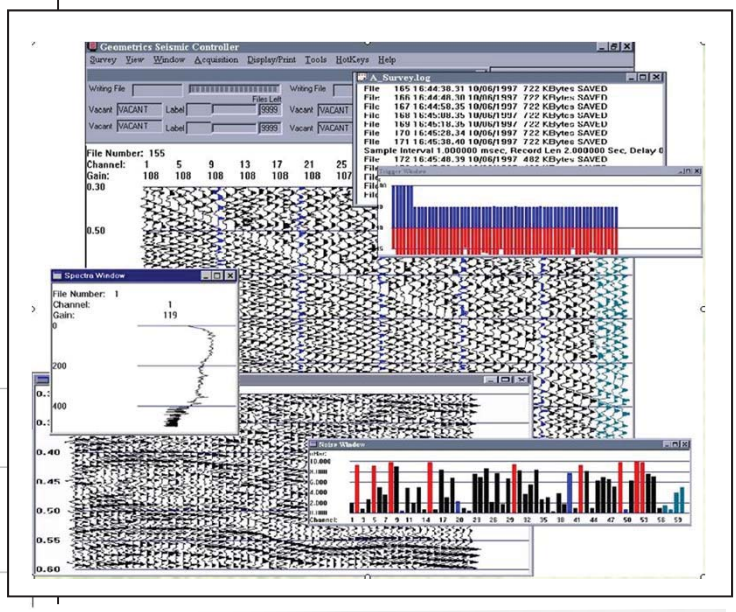
# Seismic Profiler – Geometrics GeoEel

**The Geometrics GeoEel digital towed hydrophone streamer is the first narrow diameter array meeting the performance standards of larger systems. With a diameter of only 41 mm, the GeoEel is easy to deploy, easy to transport, and can be shipped by air. Separate 8 channel modules coupled with unique slim active-section design yield noise levels under 5 microbars and make the GeoEel immune from the electronic interference, leakage, and ground loops that plague the installation of analog streamers.**

GeoEel active sections are filled with inert silicone oil, making them environmentally safe and non-flammable. A 1/8-inch thick abrasion resistant polyurethane makes the streamer extremely rugged but still flexible enough to deploy on small boats. Acquisition is controlled with PC-based Geometrics CNT-2 software.

Features include: multiple shot and gather windows, bar graph noise displays, windows for shot timing, gun energy, brute stack, tape status, spectral analysis; sure-save software that protects against data loss even with total storage device failure; sequentially-ordered file saving; auto-switching between storage device, dual tape writing; multiple printer support; parameter change logs; and integrated navigation, gun, and bird parameters into an SEG-D, SEG-Y or SEG-2 header.



## Seismic Profiler – Geometrics GeoEel

| **A/D Converter Canister Specifications** | |
|---|---|
| Channels Per A/D Canister | 8 |
| Sample Rates | 1/16, 1/8, 1/4, 1/2, 1, 2, 4 ms |
| Bandwidth | 5 Hz to 8 kHz |
| Programmable Gain | 0 dB, 6 dB, 18 dB, 30 dB, 42 dB |
| Anti-Alias Filter | set by sample interval, down 135 dB at stop band |
| Maximum Input Range | ±2.25V |
| Resolution | 24 bits including sign |
| Input Impedance | 126.8 K Ohms, paralleled by 2.4 nF |
| Dynamic Range | 120 dB Typical @ 1ms |
| Common Mode Rejection | >110 dB |
| Record Length | Up To 40 sec in shot synch mode |
| Dead Time | 100 ms |
| Continuous Recording Mode | Enabled with GPS synchronization |
| Noise Floor | 0.1 uV at 2 ms |
| QC Tests | Leakage and capacitance of hydrophone elements, noise, offset, harmonic distortion and gain similarity |
| Power Consumption | Approximately 100 mA at 48 VDC |
| Calibration Oscillator | 10 Hz to 2 kHz, 1 ?V to 100 mV AC RMS |
| Dimensions | 44 mm diameter x 33 cm long (1.75” by 11”) |
| Weight | 900 grams (2.0 lbs) |
| Packaging Material | Titanium body |
| Connectors | Waterproof high density stainless steel, 41 pin |
| **Stretch and Vibration Isolation Section Specifications** | |
| Length | 10, 25 or 50 meters standard |
| Construction | Similar to active section |
| Outer Diameter | 41 mm (1.6 inches) |
| Stretch Ratio | Approximately 15% for stretch section |
| Compass/Bird Coil | I/O Model 587, isolation section Only |
| Break Strength | over 2200 kg (5000 lbs), Vectran strain members |
| Depth Transducer | Available only on isolation section |

## Seismic Profiler – Geometrics GeoEel

| **Hydrophone Section Specifications** | |
|---|---|
| Number of Channels | 8 per section |
| Hydrophones per group | 16 typical at 12.5m |
| Hydrophone Type | Benthos RDA Geopoint, or AQ-1 |
| Jacket Material | Clear polyurethane, 70 Duro, 3.18 mm (1/8 inch) wall thickness |
| Outer Diameter | 41 mm (1.6 inches) |
| Ballast Fluid | Inert, non-polluting silicone oil, 100 cSt |
| Weight | ~135 kg (300 lbs) / 8 channels @12.5 mg |
| Break Strength | over 2200 kg (5000 lbs), Vectran strain members |
| Maximum Tow Speed | ~8 knots recording, ~10 knots steaming, depending on configuration and sea state |
| Minimum Bend Radius | 75 cm (30 inches) |
| Compass/Bird Coil | IO Model 587 |
| Depth Transducer | One per section (optional) |
| **Streamer Power Supply Unit Specifications** | |
| Power Requirements | 115/230 VAC, 3/1.5 Amp max, 50/60 Hz |
| Voltage to Streamer | 36- 72 VDC |
| I/O Communications | 100 Base TX Fast Ethernet, IEEE 802.3 compliant |
| Trigger Requirements | Isolated Input, Positive or Negative TTL, software selectable |
| Testing | Cable leakage and resistance, Ethernet for faults and collisions |
| Optional Auxiliary Inputs | 8 analog channels with 24-bit resolution |
| Ethernet Connection | RJ-45 |
| Trigger Connection | BNC |
| **Tow Cable Specifications** | |
| Electrical conductors | 10 twisted pair shielded |
| Weight | ~ 25 kg (55 lbs) for 50 meters |
| Strain member | Kevlar |
| Break strength | over 2200 kg (5000 lbs) |
| Diameter | 20 mm |

## Seismic Profiler – Geometrics GeoEel

| **GeoEel Convertible Acquisition Channel Specifications** | |
|---|---|
| Maximum Channels | 240 per chassis |
| Channel per card set | 8 |
| Sample Rates | 1/16, 1/8, 1/4, 1/2, 1, 2, 4 ms |
| Bandwidth | 5 Hz to 8 kHz |
| Programmable Gain | 0 dB, 6 dB, 18 dB, 30 dB, 42 dB |
| Anti-Alias Filter s | et by sample interval, down 135 dB at stop band |
| Maximum Input Range | ±2.25V |
| Resolution | 24 bits including sign |
| Input Impedance | 126.8K Ohms, paralleled by 2.4 nF |
| Dynamic Range | 120dB Typical @ 1ms |
| Common Mode Rejection | >110 dB |
| Record Length | Up to 40 sec |
| **Charge Amplifier** | |
| Configurations | 24 to 120 channels in groups of 24 |
| Frequency response | 5 Hz to > 300 Hz, by streamer capacitance |
| Output Impedance | 1000 ohms |
| Dimensions | 7U Chassis, 12.5”hx19”wx14”d |
| Power Consumption | 115/220 VAC, 50/60 Hz, 1 Amp |
| Weight | 33.5 lbs |
| Operating Temperature | -10 to +40 degrees C |
| Relative Humidity | 80% max, non-condensing |
| Input Impedance | virtual ground |
| Transducers | piezoelectric ceramic element |
| Channel Output D.C. Offset | 3mV (Differential) nominal |
| Channel Maximum Output | 4V P-P open circuit |
| Channel Dynamic Range | >100dB |
| Channel Output Distortion | < 0.005% THD |
| Channel Output Sensitivity Precision | +/- 2% |
| Channel Low Frequency Cutoff | 4Hz |
| Common Mode Rejection | >40 dB (Balanced Input) |
| Communication Interface (Option) | 10/100 Base T Ethernet |

Alaska LNG

FUGRO

CastAway CTD

*The CastAway-CTD*
*Accurate, reliable data in the palm of your hand!*

**APPLICATIONS**:

- Coastal Oceanography
- Hydrology
- Aquaculture/Fisheries
- Saltwater Intrusion
- Surveying/Hydrography
- Sound Velocity Profiles
- Field Sensor Verification
- Estuarine Research

# The CastAway®-CTD

## *with profiling and analysis software*

The CastAway-CTD is a lightweight, easy to use instrument designed for quick and accurate conductivity, temperature, and depth profiles. Starting with a unique six-electrode conductivity cell and fast response thermistor the CastAway makes use of modern technology to provide state of the art CTD measurements.

*The CastAway incorporates the most modern technology available yet is simple to use. It is designed for profiling down to 100 m and is easy to deploy.*

The palm-sized CastAway-CTD can easily be deployed from small boats. Each cast is referenced with both time and location using its built-in GPS receiver. Plots of conductivity, temperature, salinity and sound speed versus depth can be viewed immediately on the CastAway's integrated color LCD screen in the field.

The rugged, non-corrosive housing, AA battery power and tool-free operation reflect the technician-friendly pedigree of the CastAway-CTD. Profile data is easily downloaded via Bluetooth to a Windows computer for detailed analysis and/or export. The CastAway software displays profiles of the casts in addition to mapping the locations of the data collection points. Data can also be exported to Hypack or Matlab and integrates with RiverSurveyor software for applying sound speed corrections.

HIGHLIGHTS:

- *5Hz response and sampling rate*
- *Accurate to 0.1 PSU, 0.05°C*
- *Internal GPS*
- *Bluetooth wireless data download*
- *No user calibration required*
- *No tools, computers or cables required*

The CastAway-CTD is fully compatible with the RiverSurveyor S5/M9

sontek.com/castaway

# CastAway CTD Specifications

To order, or for more information, contact SonTek at inquiry@sontek.com

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sontek.com/castaway

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ISO 9001
ISO 14001
San Diego, California, USA

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CE

Sound Principles.
Good Advice.

*Memory* 15 MB (750+ casts based on typical usage)

*Communications* Bluetooth class II, up to 10 m range

*Power* 2 "AA" alkaline batteries, 40 hours continuous use

*Data Output Format*
- ASCII (CSV)
- Hypack
- Matlab

*Environmental*
- Depth range: 0-100 m
- Use temperature: -5° to 45° C
- Storage temperature: -10° to 50° C

*Sampling Modes*
- Casting (up/down)
- Point sample (moving the unit back and forth)

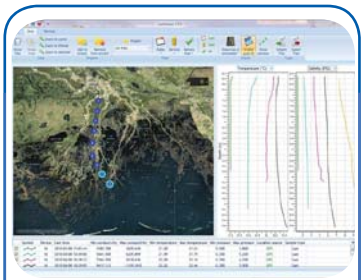
*Software*
- Windows XP/Vista/7
- Geo-referenced
- Multi-language
- Data plots, filtering, import/export

*Accessories*
- Rugged plastic storage/shipping case
- Polyurethane jacket
- 15m deployment line
- Bluetooth dongle
- Two locking carabiners
- Three magnetic stylus pens
- Cleaning brush

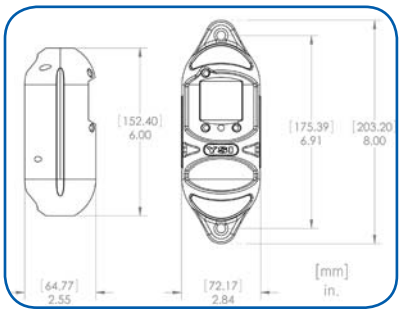
*Thermistor Response* Less than 200 ms (5 Hz)

*Sampling Rate* 5 Hz

*Weight* In air: 1.0 lb (0.45 kg)
In water: 0.06 lbs (0.03 kg)



*A screen capture of data from a river delta in Louisiana acquired using a CastAway-CTD. 21 casts were collected in less than 3.5 hours.*



*Each CastAway ships in this rugged plastic case, complete with accessories and quick start guide.*

## The CastAway-CTD Output Parameters

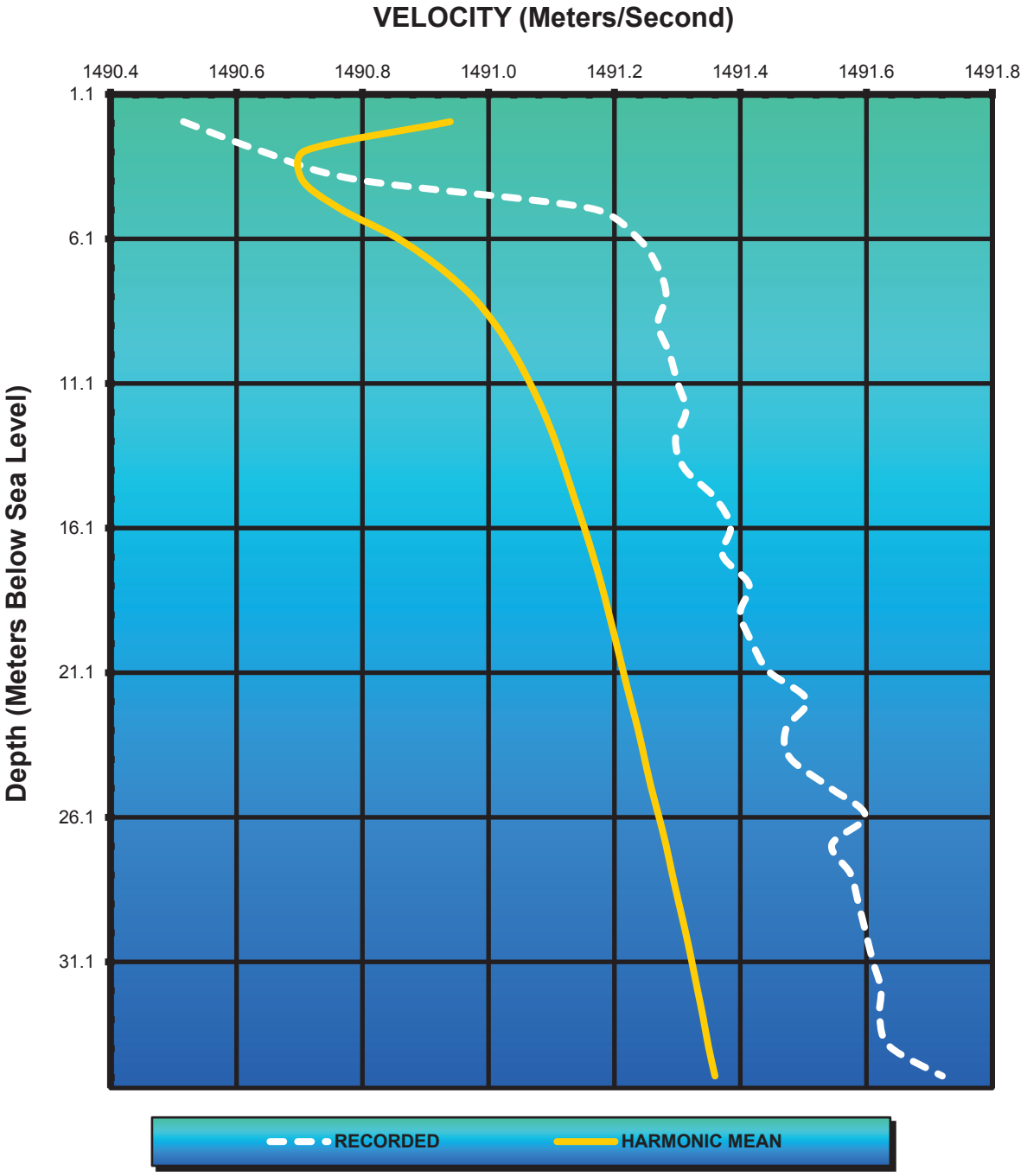
| | Range | Resolution | Accuracy | Measured or Derived |
|---|---|---|---|---|
| Conductivity | 0 to 100,000 µS/cm | 1µS/cm | ± 0.25% ± 5 µS/cm | Measured |
| Temperature | -5° - 45° C | 0.01° C | ± 0.05° C | Measured |
| Pressure | 0 to 100 dBar | 0.01 dBar | ± 0.25% FS | Measured |
| Salinity | Up to 42 (PSS-78) | 0.01 (PSS-78) | ± 0.1 (PSS-78) | PSS-78[3] |
| Sound Speed | 1400 - 1730 m/s | 0.01 m/s | ± 0.15 m/s | Chen-Millero[4] |
| Density[1] | 990 to 1035 kg/m$^3$ | 0.004 kg/m$^3$ | ± 0.02 kg/m$^3$ | EOS80[5] |
| Depth | 0 to 100 m | 0.01m | ± 0.25% FS | EOS80[5] |
| Specific Conductivity[2] | 0 to 250,000 µS/cm | 1µS/cm | ± 0.25% ±5 µS/cm | EOS80[5] |
| GPS | | | 10 m | |

[1]Based on temperature resolution and accuracy.
[2]Based on 100,000 µS/cm at -5° C.
[3]1978 Practical Salinity Scale.
[4]Chen-Millero, 1977. Speed-of-sound in sea water at high pressures.
[5]International Equation of State for sea water (EOS-80).

# APPENDIX 1-C

# WATER COLUMN VELOCITY PROFILES

# WATER COLUMN VELOCITY PROFILES
# ALASKA LNG
# COOK INLET-NIKISKI, ALASKA

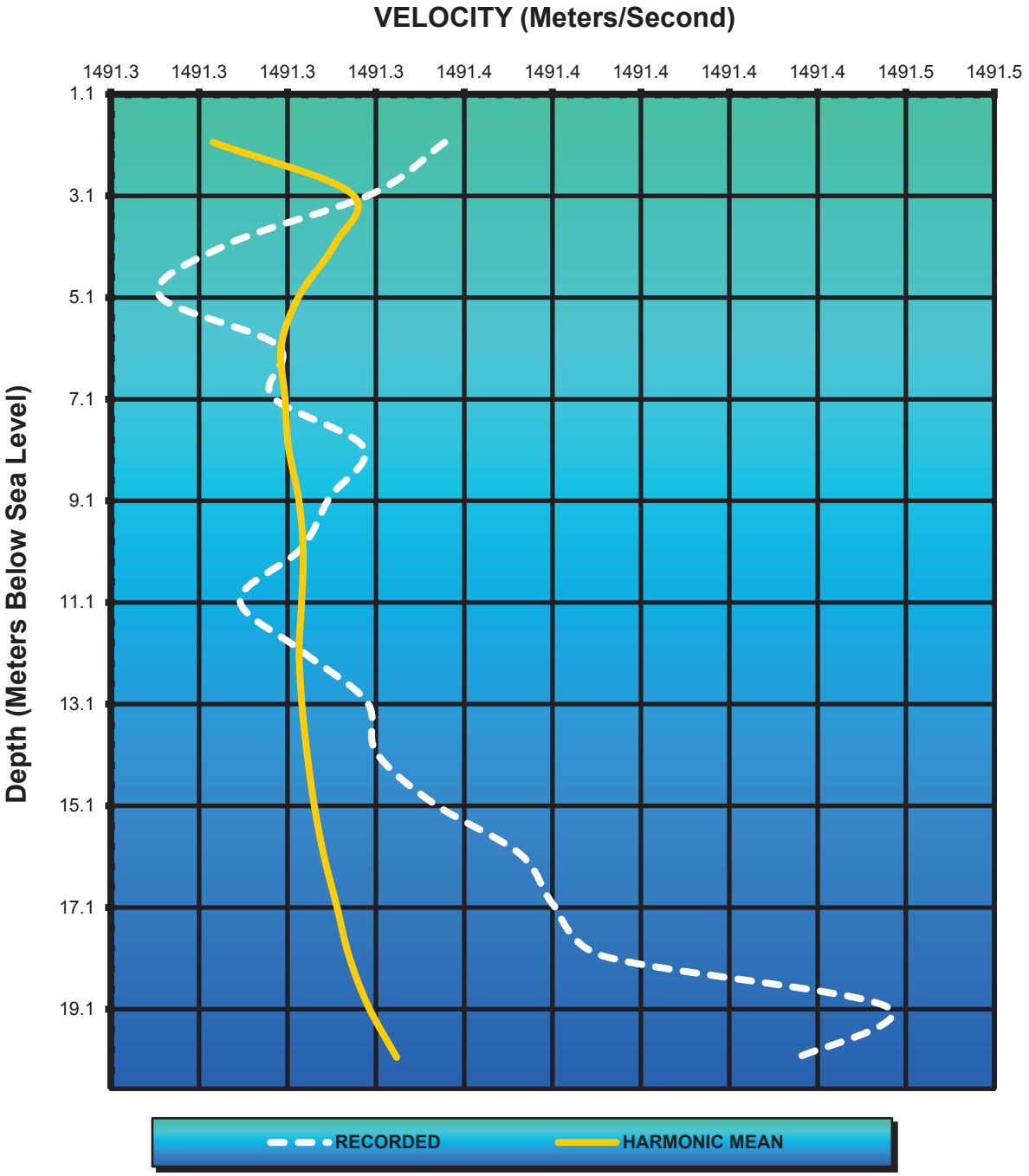


# WATER COLUMN VELOCITY PROFILE DATA

COOK INLET NIKISKI, ALASKA
LOCATION: X=1386105.896, Y=2441062.665 NAD83_NSRS2007_AlaskaZone4_ftUS
27-Aug-15

| PTS. | DEPTH (Feet) | DEPTH (Msec) | DEPTH (Meters) | INT. VELOCITY (M/Sec) | HARM. MEAN (M/Sec) | HARM. MEAN (Ft/Sec) | FEET/MSEC (2-Way) |
|---|---|---|---|---|---|---|---|
| 1 | 6.56 | 2.68 | 2 | 1490.52 | 1490.94 | 4891.52 | 2.445762 |
| 2 | 9.84 | 4.02 | 3 | 1490.64 | 1490.71 | 4890.77 | 2.445385 |
| 3 | 13.12 | 5.37 | 4 | 1490.79 | 1490.70 | 4890.75 | 2.445375 |
| 4 | 16.40 | 6.71 | 5 | 1491.16 | 1490.76 | 4890.95 | 2.445474 |
| 5 | 19.68 | 8.05 | 6 | 1491.24 | 1490.85 | 4891.24 | 2.445621 |
| 6 | 22.97 | 9.39 | 7 | 1491.27 | 1490.92 | 4891.46 | 2.445730 |
| 7 | 26.25 | 10.73 | 8 | 1491.28 | 1490.97 | 4891.63 | 2.445816 |
| 8 | 29.53 | 12.07 | 9 | 1491.27 | 1491.01 | 4891.76 | 2.445878 |
| 9 | 32.81 | 13.41 | 10 | 1491.29 | 1491.04 | 4891.85 | 2.445927 |
| 10 | 36.09 | 14.75 | 11 | 1491.30 | 1491.07 | 4891.94 | 2.445968 |
| 11 | 39.37 | 16.10 | 12 | 1491.31 | 1491.09 | 4892.01 | 2.446004 |
| 12 | 42.65 | 17.44 | 13 | 1491.30 | 1491.11 | 4892.07 | 2.446034 |
| 13 | 45.93 | 18.78 | 14 | 1491.31 | 1491.12 | 4892.12 | 2.446060 |
| 14 | 49.21 | 20.12 | 15 | 1491.36 | 1491.14 | 4892.17 | 2.446085 |
| 15 | 52.49 | 21.46 | 16 | 1491.38 | 1491.15 | 4892.22 | 2.446110 |
| 16 | 55.77 | 22.80 | 17 | 1491.37 | 1491.17 | 4892.27 | 2.446134 |
| 17 | 59.05 | 24.14 | 18 | 1491.41 | 1491.18 | 4892.31 | 2.446155 |
| 18 | 62.34 | 25.48 | 19 | 1491.40 | 1491.19 | 4892.35 | 2.446175 |
| 19 | 65.62 | 26.82 | 20 | 1491.42 | 1491.20 | 4892.39 | 2.446194 |
| 20 | 68.90 | 28.16 | 21 | 1491.44 | 1491.21 | 4892.42 | 2.446212 |
| 21 | 72.18 | 29.51 | 22 | 1491.51 | 1491.23 | 4892.46 | 2.446231 |
| 22 | 75.46 | 30.85 | 23 | 1491.47 | 1491.24 | 4892.50 | 2.446250 |
| 23 | 78.74 | 32.19 | 24 | 1491.48 | 1491.25 | 4892.53 | 2.446267 |
| 24 | 82.02 | 33.53 | 25 | 1491.54 | 1491.26 | 4892.57 | 2.446285 |
| 25 | 85.30 | 34.87 | 26 | 1491.60 | 1491.27 | 4892.61 | 2.446305 |
| 26 | 88.58 | 36.21 | 27 | 1491.55 | 1491.28 | 4892.65 | 2.446324 |
| 27 | 91.86 | 37.55 | 28 | 1491.57 | 1491.29 | 4892.68 | 2.446340 |
| 28 | 95.14 | 38.89 | 29 | 1491.59 | 1491.30 | 4892.71 | 2.446357 |
| 29 | 98.42 | 40.23 | 30 | 1491.60 | 1491.31 | 4892.75 | 2.446374 |
| 30 | 101.71 | 41.57 | 31 | 1491.61 | 1491.32 | 4892.78 | 2.446390 |
| 31 | 104.99 | 42.91 | 32 | 1491.62 | 1491.33 | 4892.81 | 2.446405 |
| 32 | 108.27 | 44.26 | 33 | 1491.62 | 1491.34 | 4892.84 | 2.446421 |
| 33 | 111.55 | 45.60 | 34 | 1491.64 | 1491.35 | 4892.87 | 2.446434 |
| 34 | 114.83 | 46.94 | 35 | 1491.72 | 1491.36 | 4892.90 | 2.446451 |

# WATER COLUMN VELOCITY PROFILES
# ALASKA LNG
# COOK INLET-NIKISKI, ALASKA

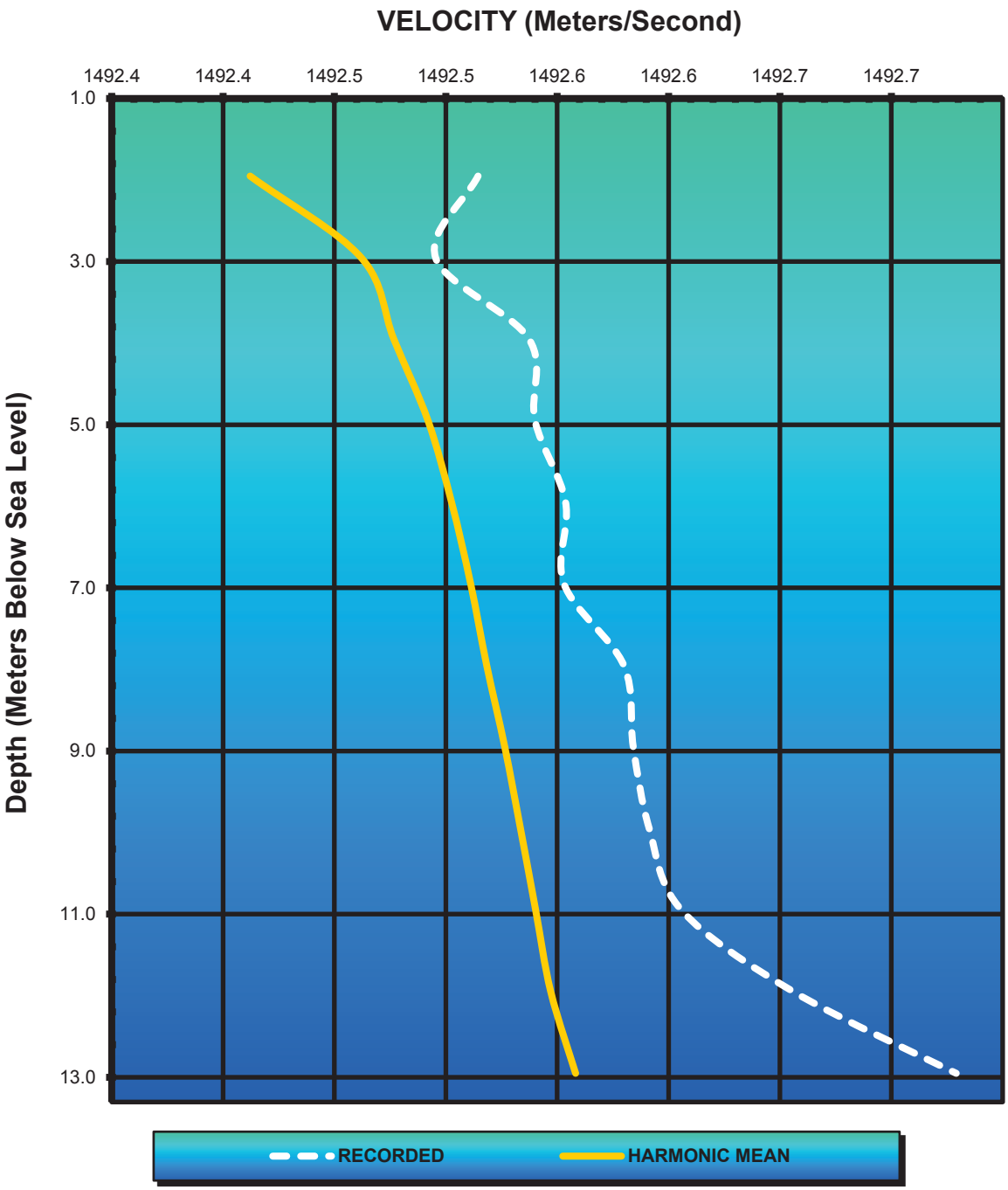


# WATER COLUMN VELOCITY PROFILE DATA

COOK INLET NIKISKI, ALASKA
LOCATION: X=1390383.82, Y=2427888.89 NAD83_NSRS2007_AlaskaZone4_ftUS
28-Aug-15

| PTS. | DEPTH (Feet) | DEPTH (Msec) | DEPTH (Meters) | INT. VELOCITY (M/Sec) | HARM. MEAN (M/Sec) | HARM. MEAN (Ft/Sec) | FEET/MSEC (2-Way) |
|---|---|---|---|---|---|---|---|
| 1 | 6.56 | 2.68 | 2 | 1491.36 | 1491.30 | 4892.72 | 2.446359 |
| 2 | 9.84 | 4.02 | 3 | 1491.34 | 1491.33 | 4892.82 | 2.446410 |
| 3 | 13.12 | 5.36 | 4 | 1491.31 | 1491.33 | 4892.81 | 2.446404 |
| 4 | 16.40 | 6.71 | 5 | 1491.29 | 1491.32 | 4892.78 | 2.446391 |
| 5 | 19.68 | 8.05 | 6 | 1491.32 | 1491.32 | 4892.77 | 2.446384 |
| 6 | 22.97 | 9.39 | 7 | 1491.32 | 1491.32 | 4892.77 | 2.446385 |
| 7 | 26.25 | 10.73 | 8 | 1491.34 | 1491.32 | 4892.77 | 2.446387 |
| 8 | 29.53 | 12.07 | 9 | 1491.33 | 1491.32 | 4892.78 | 2.446390 |
| 9 | 32.81 | 13.41 | 10 | 1491.32 | 1491.32 | 4892.78 | 2.446392 |
| 10 | 36.09 | 14.75 | 11 | 1491.31 | 1491.32 | 4892.78 | 2.446391 |
| 11 | 39.37 | 16.09 | 12 | 1491.32 | 1491.32 | 4892.78 | 2.446391 |
| 12 | 42.65 | 17.43 | 13 | 1491.34 | 1491.32 | 4892.78 | 2.446391 |
| 13 | 45.93 | 18.78 | 14 | 1491.34 | 1491.32 | 4892.79 | 2.446393 |
| 14 | 49.21 | 20.12 | 15 | 1491.35 | 1491.33 | 4892.79 | 2.446396 |
| 15 | 52.49 | 21.46 | 16 | 1491.37 | 1491.33 | 4892.80 | 2.446400 |
| 16 | 55.77 | 22.80 | 17 | 1491.38 | 1491.33 | 4892.81 | 2.446404 |
| 17 | 59.05 | 24.14 | 18 | 1491.39 | 1491.33 | 4892.82 | 2.446409 |
| 18 | 62.34 | 25.48 | 19 | 1491.46 | 1491.34 | 4892.83 | 2.446416 |
| 19 | 65.62 | 26.82 | 20 | 1491.44 | 1491.34 | 4892.85 | 2.446427 |

# WATER COLUMN VELOCITY PROFILES
# ALASKA LNG
# COOK INLET-NIKISKI, ALASKA



# WATER COLUMN VELOCITY PROFILE DATA

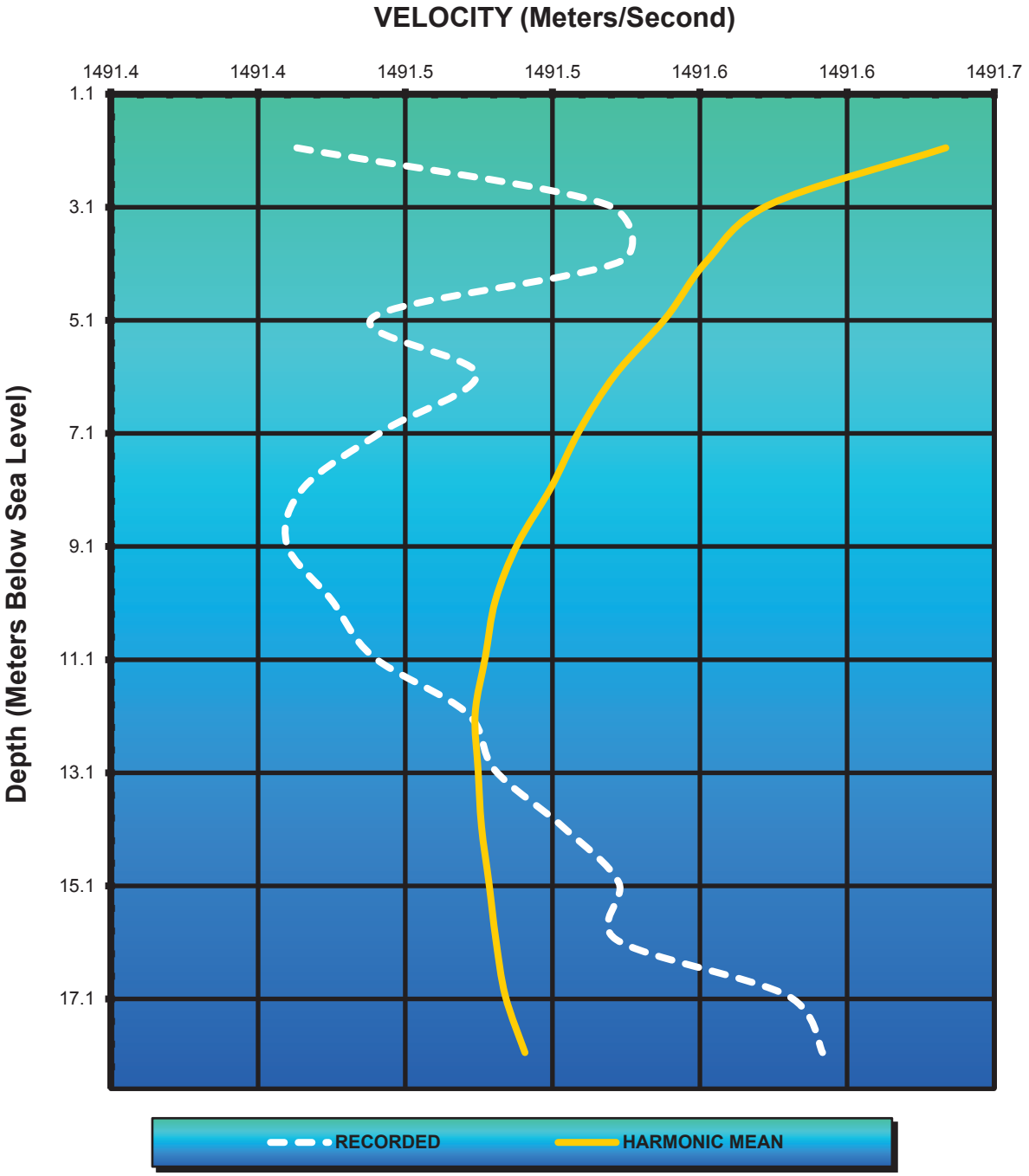
COOK INLET NIKISKI, ALASKA

LOCATION: X=1393508.457, Y=2431745.818 NAD83_NSRS2007_AlaskaZone4_ftUS

29-Aug-15

| PTS. | DEPTH (Feet) | DEPTH (Msec) | DEPTH (Meters) | INT. VELOCITY (M/Sec) | HARM. MEAN (M/Sec) | HARM. MEAN (Ft/Sec) | FEET/MSEC (2-Way) |
|---|---|---|---|---|---|---|---|
| 1 | 6.56 | 2.68 | 2 | 1492.51 | 1492.41 | 4896.36 | 2.448178 |
| 2 | 9.84 | 4.02 | 3 | 1492.50 | 1492.46 | 4896.52 | 2.448260 |
| 3 | 13.12 | 5.36 | 4 | 1492.54 | 1492.48 | 4896.57 | 2.448284 |
| 4 | 16.40 | 6.70 | 5 | 1492.54 | 1492.49 | 4896.62 | 2.448309 |
| 5 | 19.68 | 8.04 | 6 | 1492.55 | 1492.50 | 4896.65 | 2.448326 |
| 6 | 22.97 | 9.38 | 7 | 1492.55 | 1492.51 | 4896.68 | 2.448340 |
| 7 | 26.25 | 10.72 | 8 | 1492.58 | 1492.52 | 4896.70 | 2.448352 |
| 8 | 29.53 | 12.06 | 9 | 1492.58 | 1492.53 | 4896.73 | 2.448365 |
| 9 | 32.81 | 13.40 | 10 | 1492.59 | 1492.53 | 4896.75 | 2.448377 |
| 10 | 36.09 | 14.74 | 11 | 1492.61 | 1492.54 | 4896.78 | 2.448388 |
| 11 | 39.37 | 16.08 | 12 | 1492.66 | 1492.55 | 4896.80 | 2.448399 |
| 12 | 42.65 | 17.42 | 13 | 1492.73 | 1492.56 | 4896.83 | 2.448417 |

# WATER COLUMN VELOCITY PROFILES
# ALASKA LNG
# COOK INLET-NIKISKI, ALASKA

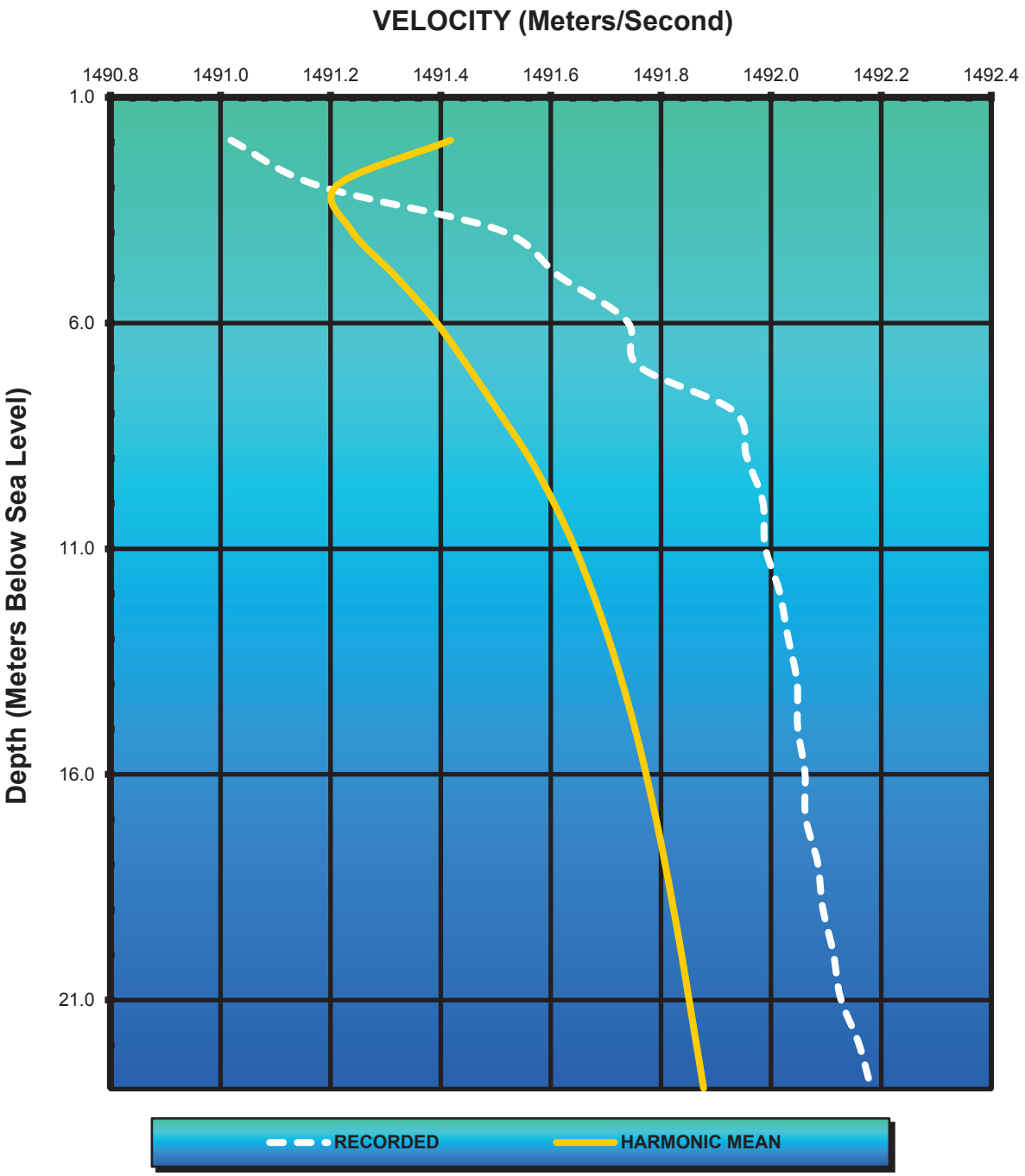


# WATER COLUMN VELOCITY PROFILE DATA

COOK INLET NIKISKI, ALASKA
LOCATION: X=1377676.272, Y=2393100.715 NAD83_NSRS2007_AlaskaZone4_ftUS
30-Aug-15

| PTS. | DEPTH (Feet) | DEPTH (Msec) | DEPTH (Meters) | INT. VELOCITY (M/Sec) | HARM. MEAN (M/Sec) | HARM. MEAN (Ft/Sec) | FEET/MSEC (2-Way) |
|---|---|---|---|---|---|---|---|
| 1 | 6.56 | 2.68 | 2 | 1491.41 | 1491.63 | 4893.80 | 2.446901 |
| 2 | 9.84 | 4.02 | 3 | 1491.52 | 1491.57 | 4893.61 | 2.446803 |
| 3 | 13.12 | 5.36 | 4 | 1491.52 | 1491.55 | 4893.53 | 2.446767 |
| 4 | 16.40 | 6.70 | 5 | 1491.44 | 1491.54 | 4893.49 | 2.446745 |
| 5 | 19.68 | 8.05 | 6 | 1491.47 | 1491.52 | 4893.43 | 2.446717 |
| 6 | 22.97 | 9.39 | 7 | 1491.44 | 1491.51 | 4893.39 | 2.446696 |
| 7 | 26.25 | 10.73 | 8 | 1491.42 | 1491.50 | 4893.36 | 2.446681 |
| 8 | 29.53 | 12.07 | 9 | 1491.41 | 1491.49 | 4893.32 | 2.446662 |
| 9 | 32.81 | 13.41 | 10 | 1491.43 | 1491.48 | 4893.30 | 2.446650 |
| 10 | 36.09 | 14.75 | 11 | 1491.44 | 1491.48 | 4893.29 | 2.446644 |
| 11 | 39.37 | 16.09 | 12 | 1491.47 | 1491.47 | 4893.28 | 2.446638 |
| 12 | 42.65 | 17.43 | 13 | 1491.48 | 1491.47 | 4893.28 | 2.446640 |
| 13 | 45.93 | 18.77 | 14 | 1491.50 | 1491.48 | 4893.28 | 2.446642 |
| 14 | 49.21 | 20.11 | 15 | 1491.52 | 1491.48 | 4893.29 | 2.446646 |
| 15 | 52.49 | 21.46 | 16 | 1491.52 | 1491.48 | 4893.30 | 2.446650 |
| 16 | 55.77 | 22.80 | 17 | 1491.58 | 1491.48 | 4893.31 | 2.446655 |
| 17 | 59.05 | 24.14 | 18 | 1491.59 | 1491.49 | 4893.33 | 2.446666 |

# WATER COLUMN VELOCITY PROFILES
# ALASKA LNG
# COOK INLET-NIKISKI, ALASKA

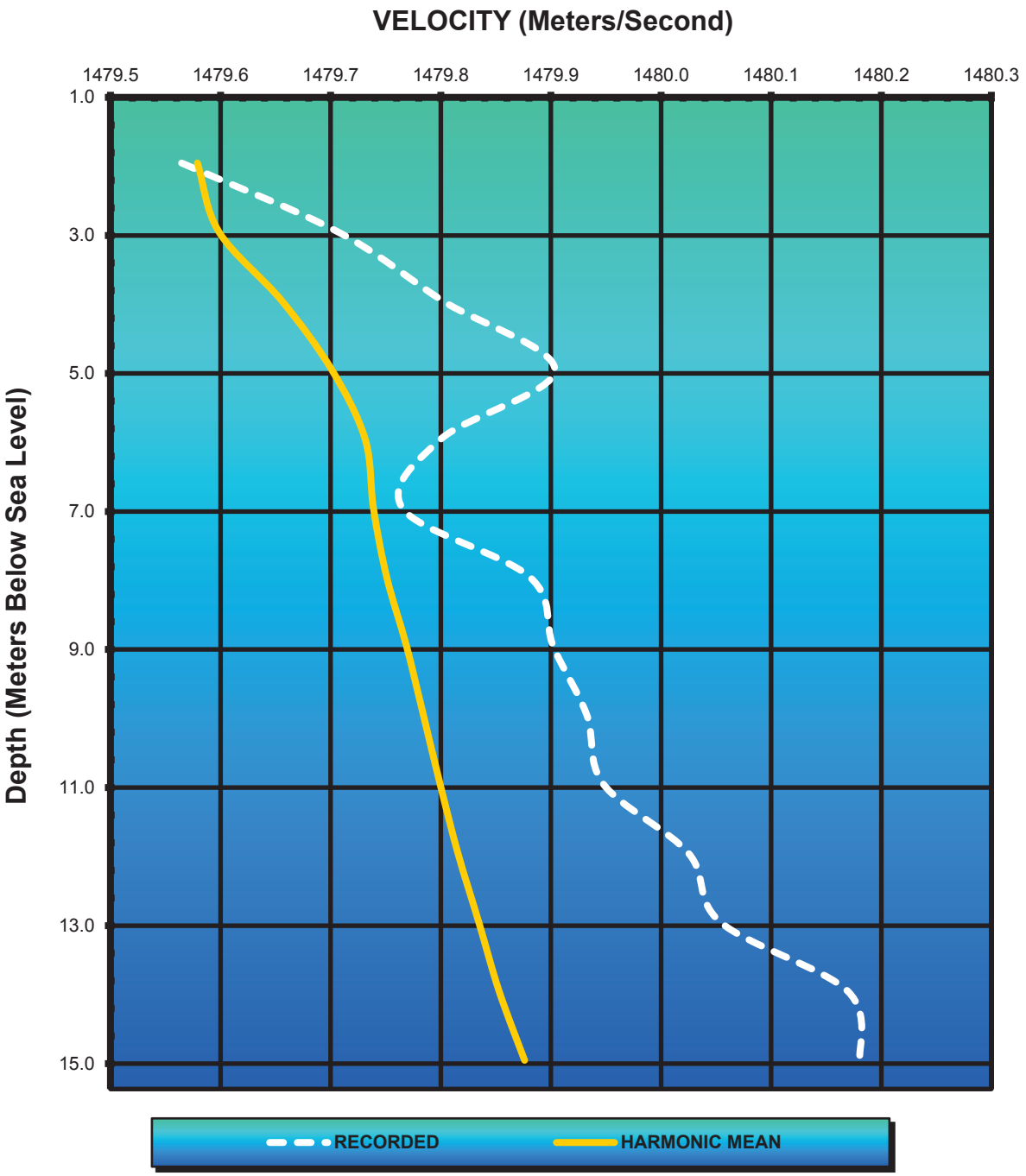


# WATER COLUMN VELOCITY PROFILE DATA

COOK INLET NIKISKI, ALASKA
LOCATION: X=1378506.556, Y=2395161.812 NAD83_NSRS2007_AlaskaZone4_ftUS
1-Sep-15

| PTS. | DEPTH (Feet) | DEPTH (Msec) | DEPTH (Meters) | INT. VELOCITY (M/Sec) | HARM. MEAN (M/Sec) | HARM. MEAN (Ft/Sec) | FEET/MSEC (2-Way) |
|---|---|---|---|---|---|---|---|
| 1 | 6.56 | 2.68 | 2 | 1491.02 | 1491.42 | 4893.09 | 2.446547 |
| 2 | 9.84 | 4.02 | 3 | 1491.18 | 1491.21 | 4892.42 | 2.446209 |
| 3 | 13.12 | 5.36 | 4 | 1491.51 | 1491.24 | 4892.50 | 2.446251 |
| 4 | 16.40 | 6.71 | 5 | 1491.61 | 1491.32 | 4892.76 | 2.446381 |
| 5 | 19.68 | 8.05 | 6 | 1491.74 | 1491.39 | 4893.00 | 2.446500 |
| 6 | 22.97 | 9.39 | 7 | 1491.76 | 1491.45 | 4893.19 | 2.446597 |
| 7 | 26.25 | 10.73 | 8 | 1491.93 | 1491.50 | 4893.38 | 2.446689 |
| 8 | 29.53 | 12.07 | 9 | 1491.96 | 1491.56 | 4893.56 | 2.446779 |
| 9 | 32.81 | 13.41 | 10 | 1491.98 | 1491.60 | 4893.70 | 2.446852 |
| 10 | 36.09 | 14.75 | 11 | 1491.99 | 1491.64 | 4893.83 | 2.446916 |
| 11 | 39.37 | 16.09 | 12 | 1492.02 | 1491.68 | 4893.94 | 2.446969 |
| 12 | 42.65 | 17.43 | 13 | 1492.03 | 1491.70 | 4894.03 | 2.447016 |
| 13 | 45.93 | 18.77 | 14 | 1492.05 | 1491.73 | 4894.12 | 2.447058 |
| 14 | 49.21 | 20.11 | 15 | 1492.05 | 1491.75 | 4894.19 | 2.447095 |
| 15 | 52.49 | 21.45 | 16 | 1492.06 | 1491.77 | 4894.26 | 2.447128 |
| 16 | 55.77 | 22.79 | 17 | 1492.06 | 1491.79 | 4894.32 | 2.447158 |
| 17 | 59.05 | 24.13 | 18 | 1492.08 | 1491.81 | 4894.37 | 2.447185 |
| 18 | 62.34 | 25.47 | 19 | 1492.09 | 1491.82 | 4894.42 | 2.447210 |
| 19 | 65.62 | 26.81 | 20 | 1492.11 | 1491.84 | 4894.47 | 2.447234 |
| 20 | 68.90 | 28.15 | 21 | 1492.13 | 1491.85 | 4894.51 | 2.447256 |
| 21 | 72.18 | 29.49 | 22 | 1492.16 | 1491.86 | 4894.56 | 2.447279 |
| 22 | 75.46 | 30.83 | 23 | 1492.18 | 1491.88 | 4894.60 | 2.447301 |

# WATER COLUMN VELOCITY PROFILES
# ALASKA LNG
# COOK INLET-NIKISKI, ALASKA



# WATER COLUMN VELOCITY PROFILE DATA

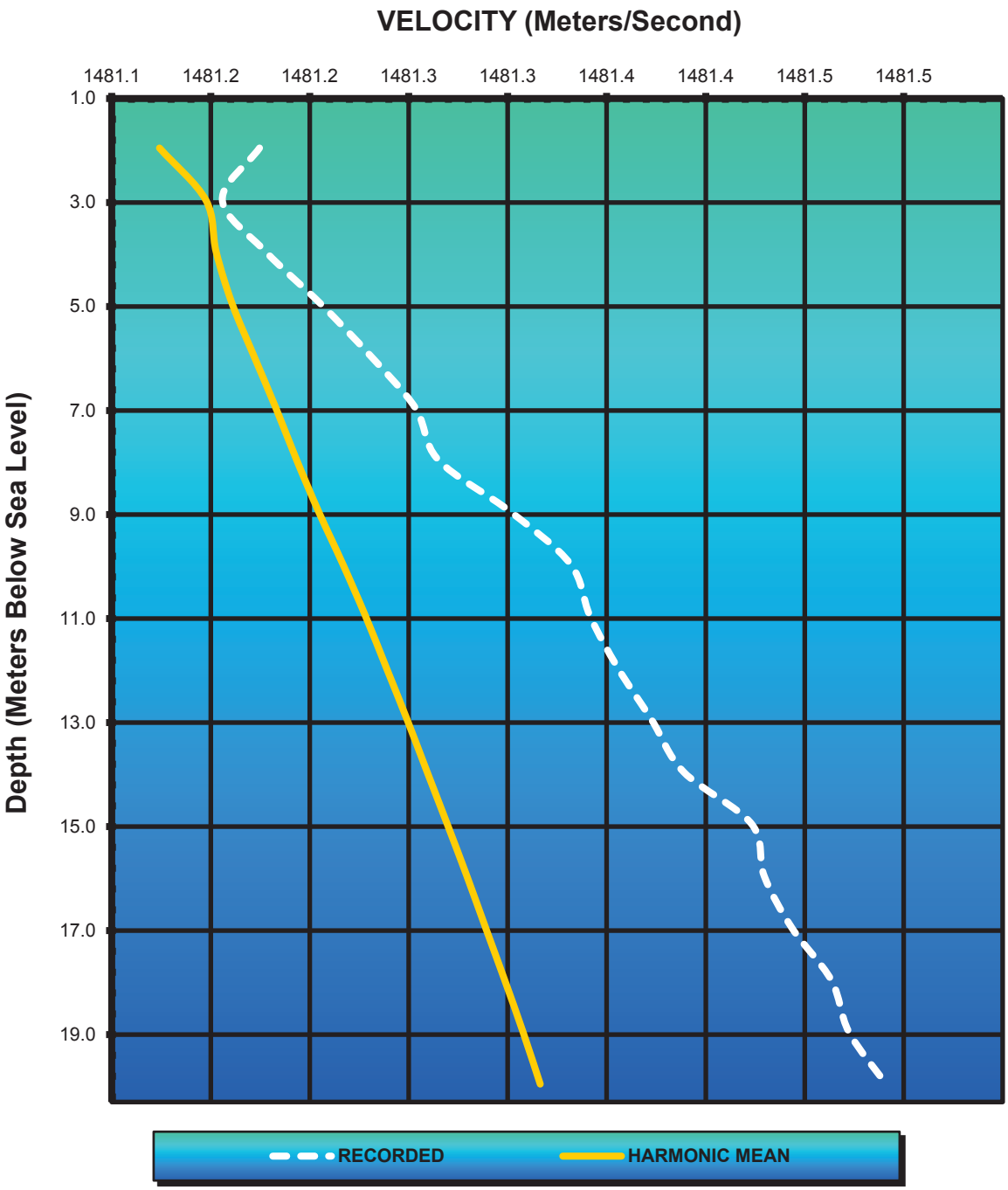
COOK INLET NIKISKI, ALASKA

LOCATION: X=1384013.223, Y=2427156.862 NAD83_NSRS2007_AlaskaZone4_ftUS

5-Oct-15

| PTS. | DEPTH (Feet) | DEPTH (Msec) | DEPTH (Meters) | INT. VELOCITY (M/Sec) | HARM. MEAN (M/Sec) | HARM. MEAN (Ft/Sec) | FEET/MSEC (2-Way) |
|---|---|---|---|---|---|---|---|
| 1 | 6.56 | 2.70 | 2 | 1479.56 | 1479.58 | 4854.25 | 2.427126 |
| 2 | 9.84 | 4.06 | 3 | 1479.71 | 1479.60 | 4854.32 | 2.427158 |
| 3 | 13.12 | 5.41 | 4 | 1479.80 | 1479.66 | 4854.50 | 2.427252 |
| 4 | 16.40 | 6.76 | 5 | 1479.90 | 1479.70 | 4854.65 | 2.427326 |
| 5 | 19.68 | 8.11 | 6 | 1479.80 | 1479.73 | 4854.75 | 2.427376 |
| 6 | 22.97 | 9.46 | 7 | 1479.77 | 1479.74 | 4854.78 | 2.427388 |
| 7 | 26.25 | 10.81 | 8 | 1479.88 | 1479.75 | 4854.82 | 2.427408 |
| 8 | 29.53 | 12.16 | 9 | 1479.90 | 1479.77 | 4854.88 | 2.427438 |
| 9 | 32.81 | 13.52 | 10 | 1479.93 | 1479.78 | 4854.93 | 2.427463 |
| 10 | 36.09 | 14.87 | 11 | 1479.95 | 1479.80 | 4854.98 | 2.427488 |
| 11 | 39.37 | 16.22 | 12 | 1480.02 | 1479.82 | 4855.03 | 2.427514 |
| 12 | 42.65 | 17.57 | 13 | 1480.05 | 1479.83 | 4855.09 | 2.427545 |
| 13 | 45.93 | 18.92 | 14 | 1480.17 | 1479.85 | 4855.15 | 2.427575 |
| 14 | 49.21 | 20.27 | 15 | 1480.18 | 1479.88 | 4855.23 | 2.427613 |

# WATER COLUMN VELOCITY PROFILES
# ALASKA LNG
# COOK INLET-NIKISKI, ALASKA



# WATER COLUMN VELOCITY PROFILE DATA

COOK INLET NIKISKI, ALASKA
LOCATION: X=1381688.52, Y=2400811.593 NAD83_NSRS2007_AlaskaZone4_ftUS
6-Oct-15

| PTS. | DEPTH (Feet) | DEPTH (Msec) | DEPTH (Meters) | INT. VELOCITY (M/Sec) | HARM. MEAN (M/Sec) | HARM. MEAN (Ft/Sec) | FEET/MSEC (2-Way) |
|---|---|---|---|---|---|---|---|
| 1 | 6.56 | 2.70 | 2 | 1481.17 | 1481.12 | 4859.32 | 2.429661 |
| 2 | 9.84 | 4.05 | 3 | 1481.16 | 1481.15 | 4859.40 | 2.429699 |
| 3 | 13.12 | 5.40 | 4 | 1481.18 | 1481.15 | 4859.42 | 2.429708 |
| 4 | 16.40 | 6.75 | 5 | 1481.21 | 1481.16 | 4859.44 | 2.429721 |
| 5 | 19.68 | 8.10 | 6 | 1481.23 | 1481.17 | 4859.48 | 2.429739 |
| 6 | 22.97 | 9.45 | 7 | 1481.25 | 1481.18 | 4859.51 | 2.429757 |
| 7 | 26.25 | 10.80 | 8 | 1481.27 | 1481.19 | 4859.55 | 2.429774 |
| 8 | 29.53 | 12.15 | 9 | 1481.30 | 1481.20 | 4859.59 | 2.429793 |
| 9 | 32.81 | 13.50 | 10 | 1481.33 | 1481.22 | 4859.63 | 2.429813 |
| 10 | 36.09 | 14.85 | 11 | 1481.34 | 1481.23 | 4859.66 | 2.429831 |
| 11 | 39.37 | 16.20 | 12 | 1481.36 | 1481.24 | 4859.70 | 2.429849 |
| 12 | 42.65 | 17.55 | 13 | 1481.37 | 1481.25 | 4859.73 | 2.429866 |
| 13 | 45.93 | 18.90 | 14 | 1481.39 | 1481.26 | 4859.77 | 2.429883 |
| 14 | 49.21 | 20.25 | 15 | 1481.42 | 1481.27 | 4859.80 | 2.429899 |
| 15 | 52.49 | 21.60 | 16 | 1481.43 | 1481.28 | 4859.83 | 2.429915 |
| 16 | 55.77 | 22.95 | 17 | 1481.44 | 1481.29 | 4859.86 | 2.429931 |
| 17 | 59.05 | 24.30 | 18 | 1481.46 | 1481.30 | 4859.89 | 2.429947 |
| 18 | 62.34 | 25.65 | 19 | 1481.47 | 1481.31 | 4859.92 | 2.429962 |
| 19 | 65.62 | 27.00 | 20 | 1481.49 | 1481.32 | 4859.95 | 2.429976 |

# APPENDIX 1-D

# MONTHLY OPERATIONAL STATISTICS

Alaska LNG

FUGRO

# GEOPHYSICAL VESSEL LOG

**VESSEL: Qualifier 105** **MONTH/YEAR: August / 2015** **PAGE 1 of 1**

| DATE | Kilometers Shot | Mobe / Demobe | Working Hours | Transit Time | Other Working | Down Time | W.O.W. | Other S/By | Stand-By No Crew | JOB # | JOB TYPE | JOB DESCRIPTION *Client - Area | Field Sup |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1-Aug | | | | | | | | | | | | | |
| 2-Aug | | | | | | | | | | | | | |
| 3-Aug | | | | | | | | | | | | | |
| 4-Aug | | | | | | | | | | | | | |
| 5-Aug | | | | | | | | | | | | | |
| 6-Aug | | | | | | | | | | | | | |
| 7-Aug | | | | | | | | | | | | | |
| 8-Aug | | | | | | | | | | | | | |
| 9-Aug | | | | | | | | | | | | | |
| 10-Aug | | | | | | | | | | | | | |
| 11-Aug | | | | | | | | | | | | | |
| 12-Aug | | | | | | | | | | | | | |
| 13-Aug | | | | | | | | | | | | | |
| 14-Aug | | | | | | | | | | | | | |
| 15-Aug | | | | | | | | | | | | | |
| 16-Aug | | | | | | | | | | | | | |
| 17-Aug | | | | | | | | | | | | | |
| 18-Aug | | | | | | | | | | | | | |
| 19-Aug | | 24.00 | | | | | | | | 2415-7058 | 24 CH | AKLNG - Cook Inlet - Seismic Portion | WL |
| 20-Aug | | 24.00 | | | | | | | | 2415-7058 | 24 CH | AKLNG - Cook Inlet - Seismic Portion | WL |
| 21-Aug | | 24.00 | | | | | | | | 2415-7058 | 24 CH | AKLNG - Cook Inlet - Seismic Portion | WL |
| 22-Aug | | 24.00 | | | | | | | | 2415-7058 | 24 CH | AKLNG - Cook Inlet - Seismic Portion | WL |
| 23-Aug | | 24.00 | | | | | | | | 2415-7058 | 24 CH | AKLNG - Cook Inlet - Seismic Portion | WL |
| 24-Aug | | 24.00 | | | | | | | | 2415-7058 | 24 CH | AKLNG - Cook Inlet - Seismic Portion | WL |
| 25-Aug | | 22.50 | | 1.50 | | | | | | 2415-7058 | 24 CH | AKLNG - Cook Inlet - Seismic Portion | WL |
| 26-Aug | | | | 9.50 | 0.50 | | 14.00 | | | 2415-7058 | 24 CH | AKLNG - Cook Inlet - Seismic Portion | WL |
| 27-Aug | | | | | 7.33 | | 16.67 | | | 2415-7058 | 24 CH | AKLNG - Cook Inlet - Seismic Portion | WL |
| 28-Aug | | | | | 1.50 | | 7.25 | 15.25 | | 2415-7058 | 24 CH | AKLNG - Cook Inlet - Seismic Portion | WL |
| 29-Aug | | | | | 12.00 | | | 12.00 | | 2415-7058 | 24 CH | AKLNG - Cook Inlet - Seismic Portion | WL |
| 30-Aug | | | | | 10.63 | | 5.37 | 8.00 | | 2415-7058 | 24 CH | AKLNG - Cook Inlet - Seismic Portion | WL |
| 31-Aug | | | | | | | 24.00 | | | 2415-7058 | 24 CH | AKLNG - Cook Inlet - Seismic Portion | WL |
| TOTALS | 0.00 | 166.50 | 0.00 | 11.00 | 31.96 | 0.00 | 67.29 | 35.25 | 0.00 | | | *ver 1.1.98* | |

* All times in Hours

# GEOPHYSICAL VESSEL LOG

**VESSEL: Qualifier 105** **MONTH/YEAR: September / 2015** **PAGE 1 of 1**

| DATE | Kilometers Shot | Mobe / Demobe | Working Hours | Transit Time | Other Working | Down Time | W.O.W. | Other S/By | Stand-By No Crew | JOB # | JOB TYPE | JOB DESCRIPTION *Client - Area | Field Sup |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1-Sep | 24.53 | | 7.15 | | 6.85 | | 10.00 | | | 2415-7058 | 24 CH | AKLNG - Cook Inlet - Seismic Portion | WL |
| 2-Sep | 78.18 | | 22.70 | | | | 1.30 | | | 2415-7058 | 24 CH | AKLNG - Cook Inlet - Seismic Portion | WL |
| 3-Sep | 49.93 | | 14.50 | | 9.50 | | | | | 2415-7058 | 24 CH | AKLNG - Cook Inlet - Seismic Portion | WL |
| 4-Sep | 12.40 | | 4.48 | | 7.57 | 11.08 | 0.87 | | | 2415-7058 | 24 CH | AKLNG - Cook Inlet - Seismic Portion | WL |
| 5-Sep | | | | | 12.95 | 0.83 | 10.22 | | | 2415-7058 | 24 CH | AKLNG - Cook Inlet - Seismic Portion | WL |
| 6-Sep | | | | | 24.00 | | | | | 2415-7058 | 24 CH | AKLNG - Cook Inlet - Seismic Portion | WL |
| 7-Sep | | | | | 17.39 | 0.90 | 2.38 | 3.33 | | 2415-7058 | 24 CH | AKLNG - Cook Inlet - Seismic Portion | WL |
| 8-Sep | 10.76 | | 3.07 | | 12.10 | 8.83 | | | | 2415-7058 | 24 CH | AKLNG - Cook Inlet - Seismic Portion | WL |
| 9-Sep | 8.38 | | 1.03 | | 22.97 | | | | | 2415-7058 | 24 CH | AKLNG - Cook Inlet - Seismic Portion | WL |
| 10-Sep | 11.80 | | 2.97 | | 6.02 | 3.55 | 11.47 | | | 2415-7058 | 24 CH | AKLNG - Cook Inlet - Seismic Portion | WL |
| 11-Sep | 6.07 | | 1.90 | | 15.57 | 6.53 | | | | 2415-7058 | 24 CH | AKLNG - Cook Inlet - Seismic Portion | WL |
| 12-Sep | | | | | 8.00 | 0.25 | 14.00 | 1.75 | | 2415-7058 | 24 CH | AKLNG - Cook Inlet - Seismic Portion | WL |
| 13-Sep | 5.36 | | 1.07 | | 0.57 | 0.86 | 15.50 | 6.00 | | 2415-7058 | 24 CH | AKLNG - Cook Inlet - Seismic Portion | WL |
| 14-Sep | | | | | 5.50 | | 12.50 | | | 2415-7058 | 24 CH | AKLNG - Cook Inlet - Approach Portion | WL |
| 14-Sep | | | 5.90 | | 0.10 | | | | | 2415-7058 | 24 CH | AKLNG - Cook Inlet - Approach Portion | WL |
| 15-Sep | 103.10 | | 21.65 | | | 0.53 | | 1.82 | | 2415-7058 | 24 CH | AKLNG - Cook Inlet - Approach Portion | WL |
| 16-Sep | 84.68 | | 18.40 | | 1.80 | 3.00 | 0.80 | | | 2415-7058 | 24 CH | AKLNG - Cook Inlet - Approach Portion | WL |
| 17-Sep | 51.41 | | 14.65 | | 0.67 | 1.56 | 4.12 | | | 2415-7058 | 24 CH | AKLNG - Cook Inlet - Approach Portion | WL |
| 17-Sep | | | 0.72 | | 2.28 | | | | | 2415-7058 | 24 CH | AKLNG - Cook Inlet - Seismic Portion | WL |
| 18-Sep | | | | | 1.00 | | | | | 2415-7058 | 24 CH | AKLNG - Cook Inlet - Seismic Portion | WL |
| 18-Sep | 61.73 | | 15.55 | | 0.30 | 4.38 | | 2.77 | | 2415-7058 | 24 CH | AKLNG - Cook Inlet - Approach Portion | WL |
| 19-Sep | | | | | 6.48 | 15.12 | | 2.40 | | 2415-7058 | 24 CH | AKLNG - Cook Inlet - Approach Portion | WL |
| 20-Sep | 4.92 | | 0.83 | | 2.17 | 5.80 | | 1.20 | | 2415-7058 | 24 CH | AKLNG - Cook Inlet - Approach Portion | WL |
| 20-Sep | 6.01 | | | | 14.00 | | | | | 2415-7058 | 24 CH | AKLNG - Cook Inlet - Seismic Portion | WL |
| 21-Sep | | | | | 5.82 | 4.78 | 13.40 | | | 2415-7058 | 24 CH | AKLNG - Cook Inlet - Seismic Portion | WL |
| 22-Sep | | | | | 3.55 | | 20.45 | | | 2415-7058 | 24 CH | AKLNG - Cook Inlet - Pipeline Portion | TT |
| 23-Sep | | | | | | | 24.00 | | | 2415-7058 | 24 CH | AKLNG - Cook Inlet - Pipeline Portion | TT |
| 24-Sep | 40.96 | | 11.62 | | 2.97 | 1.41 | 8.00 | | | 2415-7058 | 24 CH | AKLNG - Cook Inlet - Pipeline Portion | TT |
| 25-Sep | 31.39 | | 14.93 | | 0.32 | | 8.75 | | | 2415-7058 | 24 CH | AKLNG - Cook Inlet - Pipeline Portion | TT |
| 26-Sep | | | 2.63 | | 8.25 | 0.37 | 8.50 | 4.25 | | 2415-7058 | 24 CH | AKLNG - Cook Inlet - Pipeline Portion | TT |
| 27-Sep | | | | | | 16.25 | | 7.75 | | 2415-7058 | 24 CH | AKLNG - Cook Inlet - Pipeline Portion | TT |
| 28-Sep | | | | | | 24.00 | | | | 2415-7058 | 24 CH | AKLNG - Cook Inlet - Pipeline Portion | TT |
| 29-Sep | | | | | | 14.50 | 9.50 | | | 2415-7058 | 24 CH | AKLNG - Cook Inlet - Pipeline Portion | TT |
| 30-Sep | 19.99 | | 9.92 | | 5.10 | 0.40 | 8.58 | | | 2415-7058 | 24 CH | AKLNG - Cook Inlet - Pipeline Portion | TT |
| | | | | | | | | | | | | | |
| TOTALS | 611.60 | 0.00 | 175.67 | 0.00 | 203.80 | 124.93 | 184.34 | 31.27 | 0.00 | | | #REF! | |

* All times in Hours

# GEOPHYSICAL VESSEL LOG

**VESSEL: Qualifier 105** **MONTH/YEAR: October / 2015** **PAGE 1 of 1**

| DATE | Kilometers Shot | Mobe / Demobe | Working Hours | Transit Time | Other Working | Down Time | W.O.W. | Other S/By | Stand-By No Crew | JOB # | JOB TYPE | JOB DESCRIPTION *Client - Area | Field Sup |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1-Oct | 39.84 | | 12.08 | | 10.97 | 0.95 | | | | 2415-7058 | 24 CH | AKLNG - Cook Inlet - Pipeline Portion | TT |
| 2-Oct | 47.30 | | 15.70 | | 1.43 | 0.88 | 5.46 | 0.53 | | 2415-7058 | 24 CH | AKLNG - Cook Inlet - Pipeline Portion | TT |
| 3-Oct | 12.19 | | 10.15 | | | 6.57 | 6.10 | 1.18 | | 2415-7058 | 24 CH | AKLNG - Cook Inlet - Pipeline Portion | TT |
| 4-Oct | 36.28 | | 14.93 | | 1.95 | 1.92 | 5.20 | | | 2415-7058 | 24 CH | AKLNG - Cook Inlet - Pipeline Portion | TT |
| 5-Oct | 41.91 | | 12.70 | | 2.27 | 0.93 | 0.10 | | | 2415-7058 | 24 CH | AKLNG - Cook Inlet - Pipeline Portion | TT |
| 5-Oct | | | | | 0.08 | 0.62 | 7.30 | | | 2415-7058 | 24 CH | AKLNG - Cook Inlet - Approach Portion | TT |
| 6-Oct | | | | | | 3.07 | 20.93 | | | 2415-7058 | 24 CH | AKLNG - Cook Inlet - Approach Portion | TT |
| 7-Oct | | | | | | | 24.00 | | | 2415-7058 | 24 CH | AKLNG - Cook Inlet - Pipeline Portion | TT |
| 8-Oct | | | | | | | 24.00 | | | 2415-7058 | 24 CH | AKLNG - Cook Inlet - Pipeline Portion | TT |
| 9-Oct | | | | | | | 24.00 | | | 2415-7058 | 24 CH | AKLNG - Cook Inlet - Pipeline Portion | TT |
| 10-Oct | 16.13 | | 5.17 | | 1.65 | 8.76 | 8.42 | | | 2415-7058 | 24 CH | AKLNG - Cook Inlet - Pipeline Addition Portion | TT |
| 11-Oct | 8.87 | | 3.43 | | | | 20.57 | | | 2415-7058 | 24 CH | AKLNG - Cook Inlet - Pipeline Addition Portion | TT |
| 12-Oct | 40.49 | | 13.57 | | 3.18 | | 7.25 | | | 2415-7058 | 24 CH | AKLNG - Cook Inlet - Pipeline Addition Portion | TT |
| 13-Oct | 83.26 | | 22.13 | | | | 1.22 | 0.65 | | 2415-7058 | 24 CH | AKLNG - Cook Inlet - Pipeline Addition Portion | TT |
| 14-Oct | 62.13 | | 15.43 | | | | 8.57 | | | 2415-7058 | 24 CH | AKLNG - Cook Inlet - Pipeline Addition Portion | TT |
| 15-Oct | | | | | | | 24.00 | | | 2415-7058 | 24 CH | AKLNG - Cook Inlet - Pipeline Addition Portion | TT |
| 16-Oct | | | | | | | 24.00 | | | 2415-7058 | 24 CH | AKLNG - Cook Inlet - Pipeline Portion | TT |
| 17-Oct | 51.33 | | 13.67 | | 0.23 | | 10.10 | | | 2415-7058 | 24 CH | AKLNG - Cook Inlet - Pipeline Portion | TT |
| 18-Oct | 77.82 | | 21.89 | | 2.03 | | 0.08 | | | 2415-7058 | 24 CH | AKLNG - Cook Inlet - Pipeline Portion | TT |
| 19-Oct | 32.37 | | 7.45 | 4.42 | 0.68 | 0.85 | 10.60 | | | 2415-7058 | 24 CH | AKLNG - Cook Inlet - Pipeline Portion | TT |
| 20-Oct | | 16.00 | | 8.00 | | | | | | 2415-7058 | 24 CH | AKLNG - Cook Inlet - Pipeline Portion | TT |
| 21-Oct | | 24.00 | | | | | | | | 2415-7058 | 24 CH | AKLNG - Cook Inlet - Pipeline Portion | TT |
| 22-Oct | | 18.00 | | | | | | | | 2415-7058 | 24 CH | AKLNG - Cook Inlet - Pipeline Portion | TT |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| TOTALS | 549.92 | 58.00 | 168.30 | 12.42 | 24.47 | 24.55 | 231.90 | 2.36 | 0.00 | | | *ver 1.1.98* | |

* All times in Hours

# APPENDIX 1-E

## INCIDENT REPORTS
## PSO REPORT
## HAZARD OBSERVATION REPORT

Alaska LNG

Fugro Companies:
FCI, FGSI, FSI, & JCLS

# INCIDENT REPORT

**Company Involved:**

**Fugro Chance Inc.** ☐ **Fugro GeoServices, Inc.** ☑
**John Chance Land Surveys, Inc.** ☐ **Fugro Seismic Imaging, Inc.** ☐

**Type of Incident:**

**Injury/Illness** ☐ **Property Damage** ☑ **Environmental** ☐

(1) Name of person claiming incident, injury or illness:

Wayne (First) Anthony (Middle) Labrie (Last)

(2) Home Address:

386 Plantation Rd. (Street) Opelousas (City/Town) LA. (State) 70570 (ZIP)

(3) Telephone Number: (337) 258-7977 (4) Cell Number: (337) 258-7977

(5) Date of Birth: _____ (6) SSN: - - (7) Date of Hire: _____

(8) Division of company: OSD (9) Job title: Party Manager

(10) Date of incident: 8/29/2015 (11) Time of incident: 8/29/2015

(12) Hours on duty at time of incident: 9hrs (13) Days on specific job at time of incident: 9

(14) Date/Time Reported: 19:00 hrs (15) Who received notice: Charlie Hall

(16) Incident location (Area/Block; Town/State): Cook Inlet (17) Vessel: Qualifier 105

(18) Client: AKLNG (19) Reported to client: (Yes / No)

(20) Weather Conditions: Visibility: Clear Sea State: 1-2 ft.
Wind Speed / Direction: _____ Other: 4 Kt Current

(21) ***Detailed*** description of incident, including what happened just before, during, and after.

Deployed 24ch. streamer cable (4 Kt. Current). We notice tail buoy going underwater and streamer becoming very tight. Called bridge (Via Radio UHF) to go all stop on both engines. We were able to Retrive streamer, tail Isolation had some damage. Replace section with a new one. Also seatrac Gps Antenna had some water damage.
Reported water Depth 54'

Alaska LNG

Fugro Companies:
FCI, FGSI, FSI, & JCLS

(22) Was treatment received for injury or illness? If so, please describe treatment.

(23) Was a JSEA developed ***prior to*** the task being performed? Yes / No _____ **If yes, attach a copy.**

(24) Name(s) of eyewitness: _____

***Note: Witnesses must fill out the witness statement on next page.***

**I hereby consent to the release of any of my wage information in connection with a claim for compensation that might result from this incident. I further understand that my employment history, wage information, and medical records may be used by my employer, its insurers, vocational rehabilitation practitioners, counsel or experts retained by the insurer in connection with a claim for benefits. This release is only for use in connection with a claim filed as a result of this incident.**

(25) Reported By: Wayne A. Labrie (Name) Wayne Labrie (Signature) 8/29/2015 (Date)

(26) Injured/Involved: _____ (Name) (Signature) (Date)

(27) Supervisor: _____ (Name) (Signature) (Date)

(28) Captain/Party Mgr: _____ (Name) (Signature) (Date)

(29) Operations Manager: _____ (Name) (Signature) (Date)

(30) Safety Representative: _____ (Name) (Signature) (Date)

(31) Received by HSE Dept.: _____ (Name) (Signature) (Date)

## Documentation to be attached to this report:

- JSEA for the task being performed at the time of the incident.
- Witness statement(s) from all who witnessed the incident.
- Anatomical Chart indicating bodily injury.

**NOTE: After completing this report and additional documents, submit it to your Supervisor and HSE department immediately.**

# Draft Technical Report for Marine Mammal Monitoring and Mitigation during ExxonMobil Alaska LNG LLC. 2015 Alaska LNG Project Geophysical & Geotechnical Program in Cook Inlet

Report Date 17 December 2015

**Prepared for:**

**National Marine Fisheries Service**
Permits and Conservation Division
Office of Protected Resources
1315 East-West Highway
Silver Spring, MD 20910

**National Marine Fisheries Service, Alaska Region**
Protected Resources Division
222 W. 7th Ave, #43
Anchorage, AK 99513

**Submitted by:**

**ExxonMobil Alaska LNG LLC.**
**Anchorage, AK**

**Prepared by: Kate Lomac-MacNair and Greg Campbell**

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Citation for this report as follows:

Lomac-MacNair, K., and G. Campbell. 2015. NMFS Draft Technical Report for Marine Mammal Monitoring and Mitigation during the 2015 Alaska LNG Project Geophysical & Geotechnical Program in Cook Inlet, 26 August-19 October 2015. Prepared for ExxonMobil Alaska LNG LLC., Anchorage AK 99501. Prepared by Smultea Environmental Sciences, LLC., P.O. Box 256, Preston, WA 98050.

# Executive Summary

Smultea Environmental Sciences, LLC. (Smultea Sciences) was contracted by Fugro Pelagos Inc. (Fugro) to provide Protected Species Observer (PSO) services to ExxonMobil Alaska LNG LLC. (EMALL) during EMALL's Cook Inlet Geophysical & Geotechnical Surveys. Survey operations took place in Cook Inlet, began August 26, 2015 and continued until October 19th with demobilization on October 20th, 2015. One vessel, the *R/V Qualifier 105*, operated during the surveys. PSOs monitored from the vessel during all daylight survey operations and most daylight non-survey operations. The total PSO monitoring effort for the project was 611.4 hr, including 448.0 hr during survey effort and 163.4 hr during non-survey activity.

A total of 63 sightings (i.e. groups) consisting of 85 estimated individuals were recorded between August 26 and October 19, 2015. Marine mammal sightings included 1 sighting of a single harbor porpoise (1 individual), 21 sightings of harbor seals (21 individuals), 6 sightings of humpback whales (15 individuals), and 35 sightings of sea otters (48 individuals). Of these total sightings, nine occurred during survey operations, including 1 harbor porpoise and 8 harbor seals.

Mitigation measures identified in the Incidental Harassment Authorization (IHA) were incorporated into the PSO field protocol and implemented during the survey. Prior to starting survey operations from a shutdown lasting more than 10 minutes (min), the full Exclusion Zone (EZ) and Disturbance Zone (DZ) was monitored for marine mammals for 30 min. No shut down procedures were implemented since no marine mammals approached or entered the applicable zones.

A total of six marine mammals were confirmed visually within the Level B (160 dB) DZ, resulting in six potential Level B exposures. There were no marine mammals observed within the Level A exposure zones.

On October 5, 2015, a harbor seal carcass was observed in a state of advanced decomposition. A stranding report was submitted to NMFS for this observation (which was unrelated to Project activities) on October 6, 2015, within 24 hours of the sighting.

As required by National Marine Fisheries Service (NMFS), weekly and monthly reports were submitted during the survey. The reports summarized operations, total number of sightings, behavioral reactions, weather and sea conditions, number and type of mitigation measures implemented per sighting, and the number of exposures per species (corresponding to the number of individuals seen within the EZ and DZ).

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# Acronyms and Abbreviations

| | |
|---|---|
| 4MP | Marine Mammal Mitigation and Monitoring Program |
| BMP | Best Management Practices |
| Bft | Beaufort Sea State |
| CPA | Closest Point of Approach |
| DZ | Disturbance Zone |
| EMALL | ExxonMobil Alaska LNG LLC. |
| ESA | Endangered Species Act |
| EZ | Exclusion Zone |
| G&G | Geophysical and Geotechnical |
| HSE | Health Safety and Environment |
| IHA | Incidental Harassment Authorization |
| ITS | Incidental Take Statement |
| LNG | Liquefied Natural Gas |
| MLLW | Mean Lower Low Water |
| MMPA | Marine Mammal Protection Act |
| MWCP | Marine Wildlife Contingency Plan |
| NMFS | National Marine Fisheries Service |
| NOAA | National Oceanic and Atmospheric Agency |
| POC | Point of Contact |
| PSO | Protected Species Observer |
| USFWS | U.S. Fish and Wildlife Service |

# 1 Introduction

The National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service (NMFS) issued ExxonMobil Alaska LNG LLC. (EMALL) an Incidental Harassment Authorization (IHA) on August 14, 2015, under the authority of section 101(a)(5)(D) of the Marine Mammal Protection Act (16 U.S.C. 1361 *et seq*.) to harass small numbers of marine mammals, by Level B harassment, incidental to the 2015 Alaska LNG Project Geophysical & Geotechnical Program in Cook Inlet, Alaska, hereafter EMALL's 2015 Cook Inlet G&G Surveys. NMFS's IHA authorized a small number of takes from August 14, 2015-August 13, 2016 for the following species: beluga whale (*Delphinapterus leucas*), killer whale (*Orcinus orca*), harbor porpoise (*Phocoena phocoena*), and harbor seal (*Phoca vitulina*).

Smultea Environmental Sciences, LLC. (Smultea Sciences) was contracted by Fugro Pelagos, Inc. (Fugro) to provide Protected Species Observer (PSO) services to EMALL during EMALL's Cook Inlet G&G surveys. PSOs' responsibilities included monitoring for protected marine species (e.g., marine mammals) and implementing mitigation measures to avoid and minimize potential adverse impacts to marine mammals from the use of geophysical equipment, which included a sub-bottom chirp, sub-bottom boomer and a small airgun. Although geotechnical surveying with a vibracore was planned and permitted in the IHA, no vibracore operations occurred during EMALL's Cook Inlet G&G Surveys.

EMALL's Cook Inlet G&G Surveys began on August 26, 2015 and continued until October 19$^{th}$ with demobilization on October 20$^{th}$, 2015. This draft 90-day technical report presents information required by the IHA with regards to survey operations/activities, marine mammal monitoring and mitigation measures implemented according to the IHA and Incidental Take Statement (ITS).

# 2 Summary of Survey Activities

The project area for EMALL's Cook Inlet G&G Surveys was in Cook Inlet waters between Beluga on the west side of the inlet to Nikiski and Kenai on the east side (Figure 1). A total of 1,206.52 line kilometers of survey lines were completed during the 2015 season. Mobilization of the project vessel began in late August in Homer and demobilization occurred in late October after project completion. From August 26 through October 19, 2015, G&G data acquisition was conducted from the primary source vessel, the *R/V Qualifier 105*, which is 105 feet in length (Figure 2).

Geophysical data was collected using three geophysical systems:

1) Small airgun 0.983 L (60 $in^3$) with multichannel digital streamer
2) Boomer sub-bottom profiler with multichannel digital streamer
3) Spread spectrum (chirp) sub-bottom profiler

While geotechnical data collection using a vibracore was planned and authorized under the IHA, ultimately vibracoring operations did not occur. Thus only operations that utilized the three geophysical systems referenced above are covered in this report.

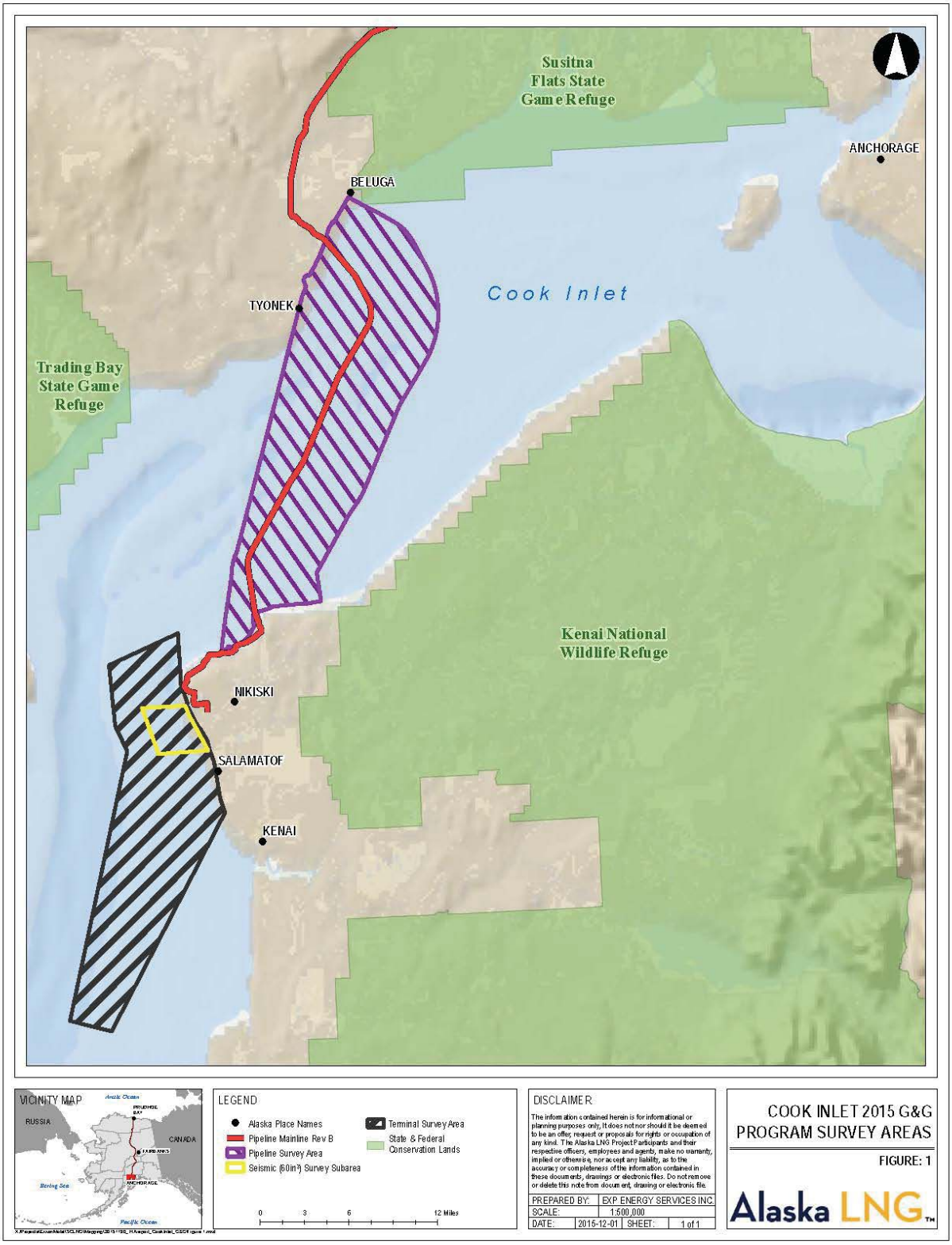



**Figure 1. Planned survey area for EMALL's Cook Inlet 2015 G&G Program.**

**Figure 2.** ***R/V Qualifier 105.***

# 3 Marine Mammal Monitoring and Mitigation Program

This section describes the marine mammal monitoring and mitigation measures implemented to address requirements specified in the NMFS-issued IHA.

## 3.1 Protected Species Observers

EMALL's *Cook Inlet G&G Surveys* deployed trained vessel-based Protected Species Observers (PSOs) for marine mammal monitoring and mitigation. The PSO team had two primary areas of responsibility:

1) Monitoring: Recording numbers, behavior, and locations of marine mammals both during, and in absence of, G&G survey activity. Documenting animal reactions (when applicable). Documenting selected environmental variables that may affect the ability to sight marine mammals.
2) Mitigation: Detecting marine mammals within, or about to enter, the applicable Exclusion Zone (EZ) and initiating immediate shutdown or power down of the geophysical equipment. Using visual monitoring to estimate the number of marine mammals potentially exposed to geophysical equipment sounds at specified levels.

All PSOs had previous experience in marine mammal research and/or monitoring and their credentials were provided to NMFS prior to the start of their field observations for the project. PSOs were trained on specific project details and requirements, and were provided with sighting information for marine mammals occurring in the project area prior to going to the project site.

## 3.2 Visual Observations

Two PSOs were stationed on the source vessel to watch for marine mammals prior to, during, and after G&G activity. Observations also occurred during periods when G&G activity did not occur. PSOs on the vessel rotated observation shifts every 2-4 hours to effectively monitor the project area, implement mitigation measures, and avoid observer fatigue. Observations occurred during all daylight hours prior to, during, and after G&G operations, unless precluded by weather conditions (e.g., fog, ice, high sea states). Vessel-based observers watched for marine mammals from the best available vantage point on the bridge of the *R/V Qualifier 105*. While on watch, PSOs systematically scanned the area around the vessel during all vessel activities in a sweeping pattern: usually alternating scan sweeps between reticle binoculars (Fujinon™ 7 × 50) and the unaided eye. Long-range binoculars (40x80) were made available to PSOs however not utilized due to the difficulty of stabilization on a moving vessel. Observations focused forward and to the sides of the vessel in an arc of ~180º as well as regular monitoring behind the vessel to cover 360º.

## 3.3 Exclusion/Disturbance Zones and Monitoring Program

Exclusion Zones (EZ) and Disturbance Zones (DZ) are identified in the NMFS-issued IHA and were applied under the project Marine Mammal Mitigation and Monitoring Plan, as proposed in the project IHA application. EZs are based on current NMFS guidelines (e.g., 65 FR 16374) indicating that the EZ for marine mammals around G&G operations are defined as the distances within which received pulse levels are ≥ 180 dB for cetaceans and ≥ 190 dB for pinnipeds. These criteria assume that in water sound pulses at lower received levels will not injure these animals (e.g., impair their hearing ability), but that higher received levels could potentially have such effects. In addition, NMFS assumes that marine mammals exposed to ≥ 160 dB (rms) are potentially subject to behavioral disturbance and thus defines the 160 dB (rms) as the DZ. Marine mammals observed in their respective DZ were reported as a potential Level B exposures to NMFS in weekly and monthly reports.

Under the MMPA, NMFS has defined two levels of harassment for marine mammals:

1) Level A harassment is defined as "…any act of pursuit, torment, or annoyance which has the potential to injure a marine mammal or marine mammal stock in the wild."
2) Level B harassment is defined as "…any act of pursuit, torment, or annoyance which has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering."

Prior to the start of survey operations, PSOs established and cleared the following EZ and DZ for a period of 30 minutes:

- 190 dB Level A for pinnipeds;
- 180 dB Level A for cetaceans; and
- 160 dB Level B for all marine mammals.

If any marine mammal was observed within or approaching their respective EZ or DZ, operations did not commence until the mammal either left the EZ/DZ or was not seen for 30 minutes. PSOs established these same monitoring zones (EZ and DZ) of 190 dB, 180 dB, and 160 dB for the chirp, boomer, and airgun (Table 1).

**Table 1. PSO monitoring Exclusion & Disturbance Zones in meters (m) for G&G equipment implemented during EMALL's Cook Inlet G&G 2015 Surveys.**

| | | | | Exclusion Zone (EZ) Radii | | Disturbance Zone (DZ) Radii |
|---|---|---|---|---|---|---|
| **Type** | **Model** | **Operating Frequency (kHz)** | **Source Level[4] (dB re 1 µPa-m [rms])** | **Pinnipeds Level A 190 dB radius m (ft)** | **Cetaceans Level A 180 dB radius m (ft)** | **Marine Mammals Level B 160 dB radius m (ft)** |
| Sub-bottom profiler – (Chirp) | EdgeTech™ 3200 | 2-16[1] | 202[5] | 5 (16) | 6 (20) | 184(604) |
| Sub-bottom profiler – (Boomer) | Applied Acoustics™ AA301 | 0.5-6[2] | 205[5] | 7 (23) | 23 (75) | 263 (863) |
| Airgun | 0.983 L (60 in$^3$) | <1[2] | 206[6] | 8 (26) | 26 (85) | 300 (984) |

[1]Source: Manufacturer brochure. [2]Source: Richardson et al. 1995. [3]Source: Chorney et al. 2011. [4]rms = root mean square. [5]Manufacturer provided peak value converted to rms (using a -10 dB offset). [6]O'Neill et al. 2010

## 3.4 Survey Mitigation Measures

### 3.4.1 Shutdown

A *shutdown* procedure was defined as implementation of the full stop of all geophysical survey equipment due to a marine mammal sighting within or closely approaching their respective EZ. However, since no marine mammals were observed approaching their respective EZs, no shut down procedures were necessary.

### 3.4.2 Poor Visibility and Night Conditions

Marine geophysical surveys were permitted to continue into night and low-light hours if the survey was initiated when the entire EZ and DZ could effectively be monitored visually. No initiation of G&G survey operations was permitted following a shutdown at night or during low-light conditions (heavy fog or rain).

### 3.4.3 Vessel Strike Avoidance

If a marine mammal was observed within 275 m (300 yards) of the vessel, vessel operators and crews were to slow down, change direction, stop their vessel, and/or disengage vessel engines as directed by PSOs (or during other occasions as relevant) to avoid close encounters that could result in striking protected species, unless safety concerns overrule these measures. The use of speed or course alteration was permitted during survey operations if a marine mammal, based on its position and relative motion, appeared likely to enter the relevant EZ. If speed or course alteration was not safe or practicable, or if after alteration the marine mammal still appeared likely to enter the EZ, further mitigation measures, such as a shutdown, could be taken.

When marine mammals were sighted near the vessel within 45 m (50 yards) while the vessel was underway, the vessel captain was requested to:

- Attempt to remain parallel to the animal's course.
- Avoid excessive speed or abrupt changes in direction until the animal(s) was beyond this distance, as applicable.
- If the marine mammal was observed in the vessel's path, vessel speed would be reduced and the engine shifted to neutral if the vessel path could not be changed to avoid the marine mammal. Engines could not be re-engaged until the marine mammal(s) was clear of the distance identified above.

# 4 Marine Mammal Monitoring and Mitigation Analyses

Data analysis methods and estimates of the number of marine mammals exposed to survey operations during EMALL's Cook Inlet G&G Surveys are presented below (for definitions see Table 2).

**Table 2. Definitions of data collection and analysis terminology.**

| | |
|---|---|
| **Survey Effort** | Periods when at least one PSO was on watch while survey equipment (i.e. |
| **Non-Survey Effort** | Periods when no survey equipment (i.e. chirp, boomer, airgun) were |
| **Group (i.e., Sighting)** | One or more individuals seen close together and coordinated in a similar |
| **Sighting Rate** | The number of marine mammal groups (or individuals) seen per hour of PSO effort, separated by sightings occurring within the survey area and outside |

## 4.1 Effort and Sighting Summary Methods

PSO effort and data included all sightings and effort during both survey and non-survey periods. Data on the number of marine mammal sightings are presented to the species level whenever possible in species summary tables.

Marine mammal movement relative to the vessel, as well as initial and secondary behavior states/events were recorded for each marine mammal sighting based on pre-defined protocol and ethograms provided to the PSOs. Initial behaviors included swim, look, dive, sink, rest, surface active, mill, and unknown/other. Behaviors specific to sea otters included float/rest, travel/swim, and pup on mom. These behavioral descriptions followed those described in numerous other 90-day reports associated with geophysical survey operations (e.g., Aerts et al. 2008; Blees et al. 2010; Lomac-MacNair et al. 2013).

The distribution of sightings relative to the source vessel was assessed using several variables including bearing and distance, initial and subsequent re-sight distances, and Closest (observed) Point of Approach (CPA) of the animal(s) to the source vessel.

## 4.2 Methods for Calculating Sighting Rates Sightings

Sighting rates of marine mammals were calculated as the number of groups seen per hour of effort. Hours were used for this analysis because distance (i.e., km) was not considered appropriate in this case, given the survey lines were spaced closely together in the small region. Sighting rates for both survey and non-survey activities were calculated based on the sighting and effort data collected during these pre-defined periods (survey and non-

survey). Sighting rates were separated by species observed within and outside the survey area.

## 4.3 Methods for Estimating Number of Exposures

NMFS and U.S. Fish and Wildlife Service (USFWS) consider exposures of cetaceans and pinnipeds to anthropogenic received sound levels ≥ 160 dB (rms) to be a “take by harassment” (Level B harassment) that could potentially result in disturbance of these animals (NMFS 2005, 71 FR 50027). The number of potential exposures during EMALL’s Cook Inlet G&G Surveys was based on direct observations/counts of cetaceans and pinnipeds within the DZ during geophysical survey activities.

# 5 Results

## 5.1 Monitoring Effort and Environmental Conditions

### 5.1.1 Monitoring Effort

The total PSO monitoring effort for the project was 611.4 hr, including 448.0 hr (73 %) during survey effort and 163.4 hr (27 %) during non-survey activity (Table 3). The chirp, boomer and airgun often were in operation simultaneously, thus the total effort hours are smaller than the sum of the hours with individual operating equipment (Table 4).

**Table 3. Total number of PSO monitoring survey and non-survey effort hours and km.**

| Survey Effort | Non-Survey Effort | Total |
|---|---|---|
| 448 hr | 163.4 hr | 611.4 hr |
| 3168.6 km | 873.6 km | 4042.2 km |

**Table 4. PSO Monitoring effort (hr and km) by G&G equipment survey type.**

| G&G Equipment | PSO Effort (hr) | PSO Effort (km) |
|---|---|---|
| Chirp | 447:46:57 | 3167.937 |
| Boomer | 280:17:27 | 2054.753 |
| Airgun | 109:02:01 | 842.536 |

### 5.1.2 Environmental Conditions

In general, the environmental conditions were conducive to appropriately monitor marine mammals during EMALL's Cook Inlet G&G Surveys. Overall the Beaufort Sea State (Bft) ranged from 1-3 with the occasional Bft 4-7 (Figure 3). PSO monitoring effort occurred most during Bft 2 (34%) followed by Bft 3 (25%) and Bft 1 (23%). Beaufort Sea State was at a Bft 2 or less ~56-59% of the PSO monitoring effort. Visibility was greater than 3 km ~87-88% of the time and glare was 25% or less ~98-99% of the time. Cook Inlet was ice free during the period that the survey activity took place. If weather conditions were poor (i.e. beyond a Bft 6) survey activity could not be initiated from a full shut down of survey equipment until conditions improved and were more conducive for monitoring effort.

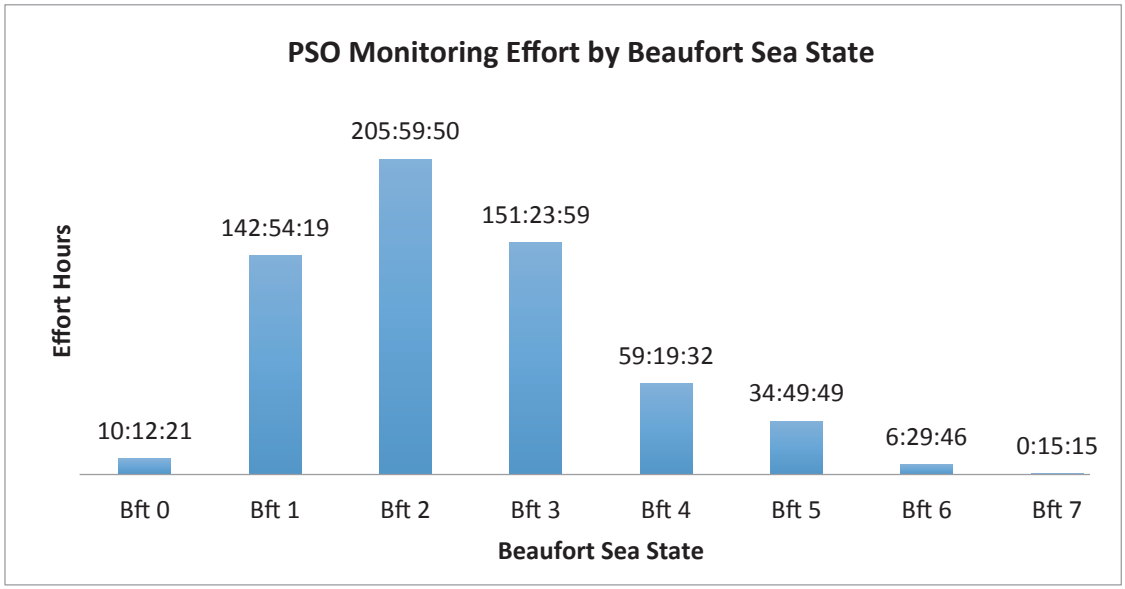



**Figure 3. PSO monitoring effort by Beaufort Sea State.**

### 5.1.3 Effort Tracklines

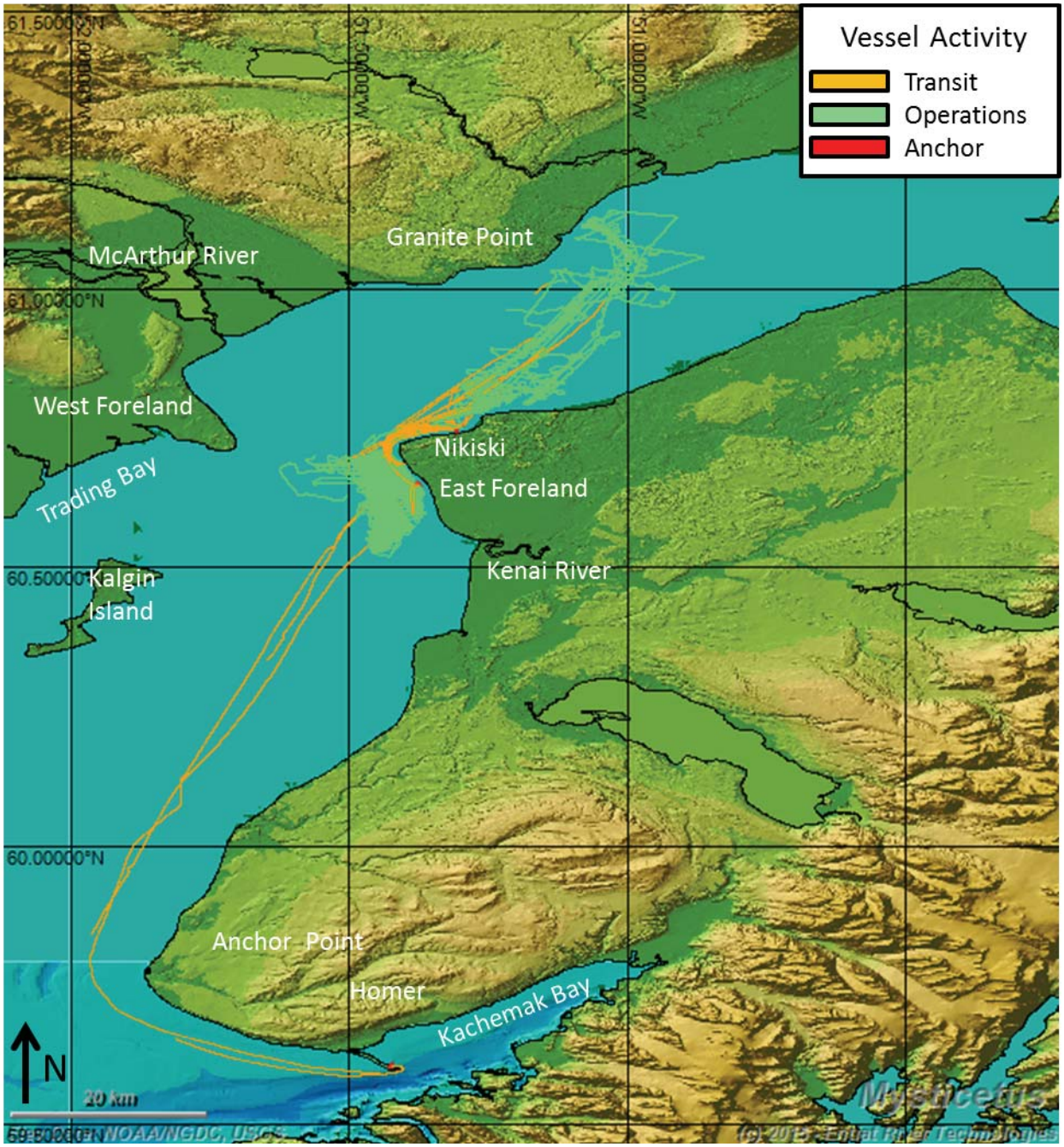



**Figure 4. Qualifier 105 tracklines during the PSO monitoring effort for the Cook Inlet 2015 G&G Survey Program.**

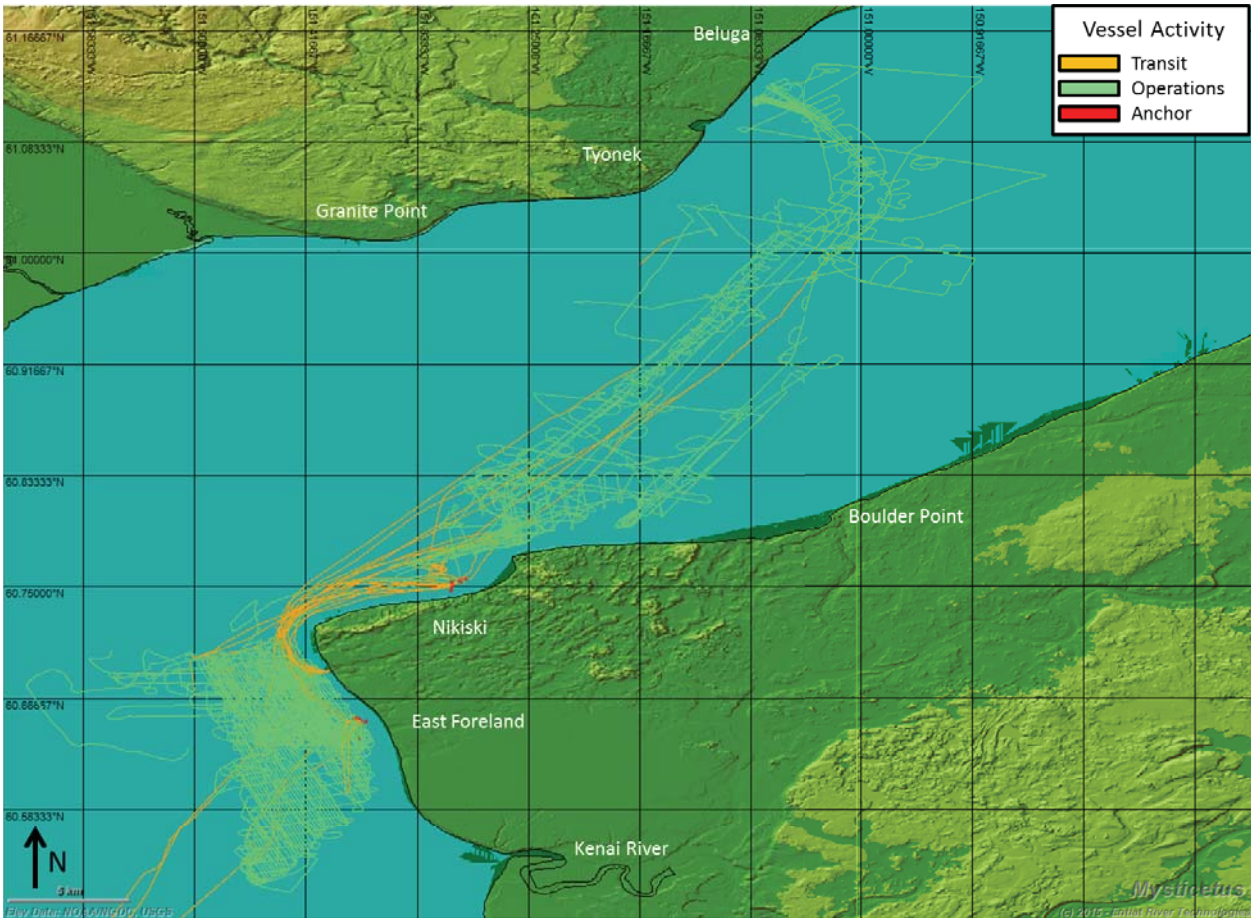



**Figure 5. Qualifier 105 tracklines (zoomed into survey area) during the PSO monitoring effort for the Cook Inlet 2015 G&G Survey Program.**

## *5.2 Visual Observations*

### 5.2.1 Marine Mammal Sightings

During EMALL's Cook Inlet G&G Surveys, there were a total of 63 sightings consisting of 85 estimated individuals (**Table 5** Figure 6). Marine mammal sightings included 1 sighting of a single harbor porpoise (1 individual), 21 sightings of harbor seals (21 individuals) (**Figure 7**), 6 sightings of humpback whales (15 individuals), and 35 sightings of sea otters (48 individuals) (**Table 5**, Figure 6). During survey operations, there were a total of nine sightings including 1 harbor porpoise and 8 harbor seals (**Table 5**, Figure 6). Sightings of humpback whales and sea otters were observed exclusively during transit to/from Kachemak Bay and Homer (outside of the survey areas; **Figure 8**). Five of the 21 harbor seal sightings were observed while on anchor at the Port of Homer in Kachemak Bay (**Figure 8**).

Of the 63 total sightings, 9 occurred during survey periods (i.e. when the chirp, boom or airgun was being operated), including 1 harbor porpoise and 8 harbor seals (Table 6). The remaining 54 sightings occurred during non-survey periods. Behavioral reactions were recorded for six harbor seals; all reactions included looking at the vessel. There were no other reactions observed (Table 6).

**Table 5. Total number of marine mammal sightings and individuals observed during survey and non-survey periods for EMALL's Cook Inlet G&G Surveys.**

| Species Common Name | Species Scientific Name | Number of Sightings* | Estimated No. of Individuals Observed |
|---|---|---|---|
| Harbor Porpoise | *Phocoena phocoena* | 1 | 1 |
| Harbor Seal | *Phoca vitulina* | 21 | 21 |
| Humpback Whale | *Megaptera novaeangliae* | 6 | 15 |
| Sea Otter | *Enhydra lutris* | 35 | 48 |
| **Total** | | **63** | **85** |

*One sighting equals one group

**Table 6. Total number of sightings and marine mammal behavior during survey and non-survey periods for EMALL's Cook Inlet G&G Surveys.**

| Species | No. Sightings during Non-Survey Activity (163.4 effort hr) | No. Sightings during Survey Activity (448.0 effort hr) | Total No. of Sightings | No. Behavioral Reactions | Type of Behavioral Reactions |
|---|---|---|---|---|---|
| Harbor Porpoise | 0 | 1 | 1 | 0 | NA |
| Harbor Seal | 13 | 8 | 21 | 6 | Look |
| Humpback Whale | 6 | 0 | 6 | 0 | NA |
| Sea Otter | 35 | 0 | 35 | 0 | NA |
| **Total** | **54** | **9** | **63** | **6** | **NA** |

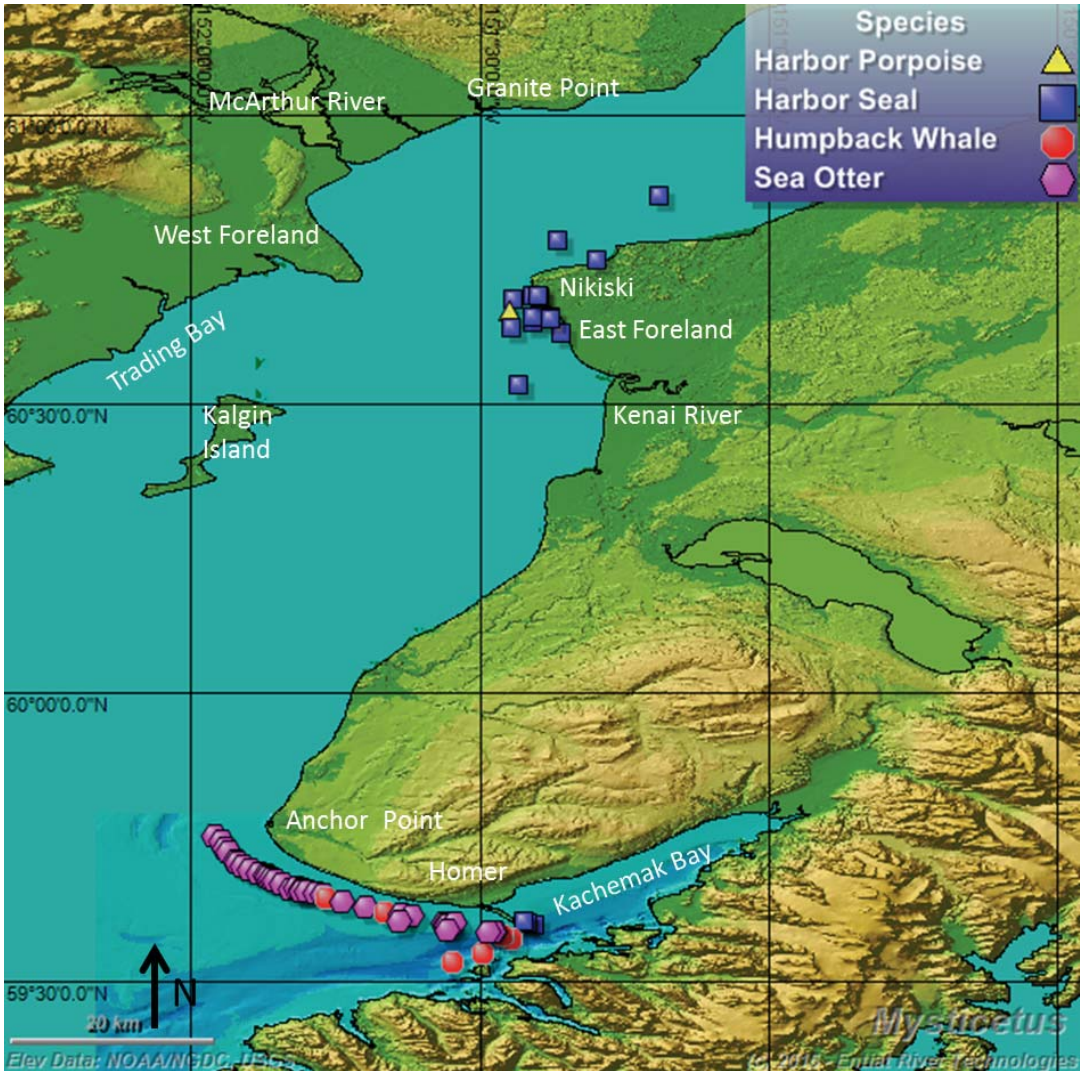



**Figure 6. Marine mammal sightings during survey and non-survey periods for EMALL's Cook Inlet G&G Surveys.**

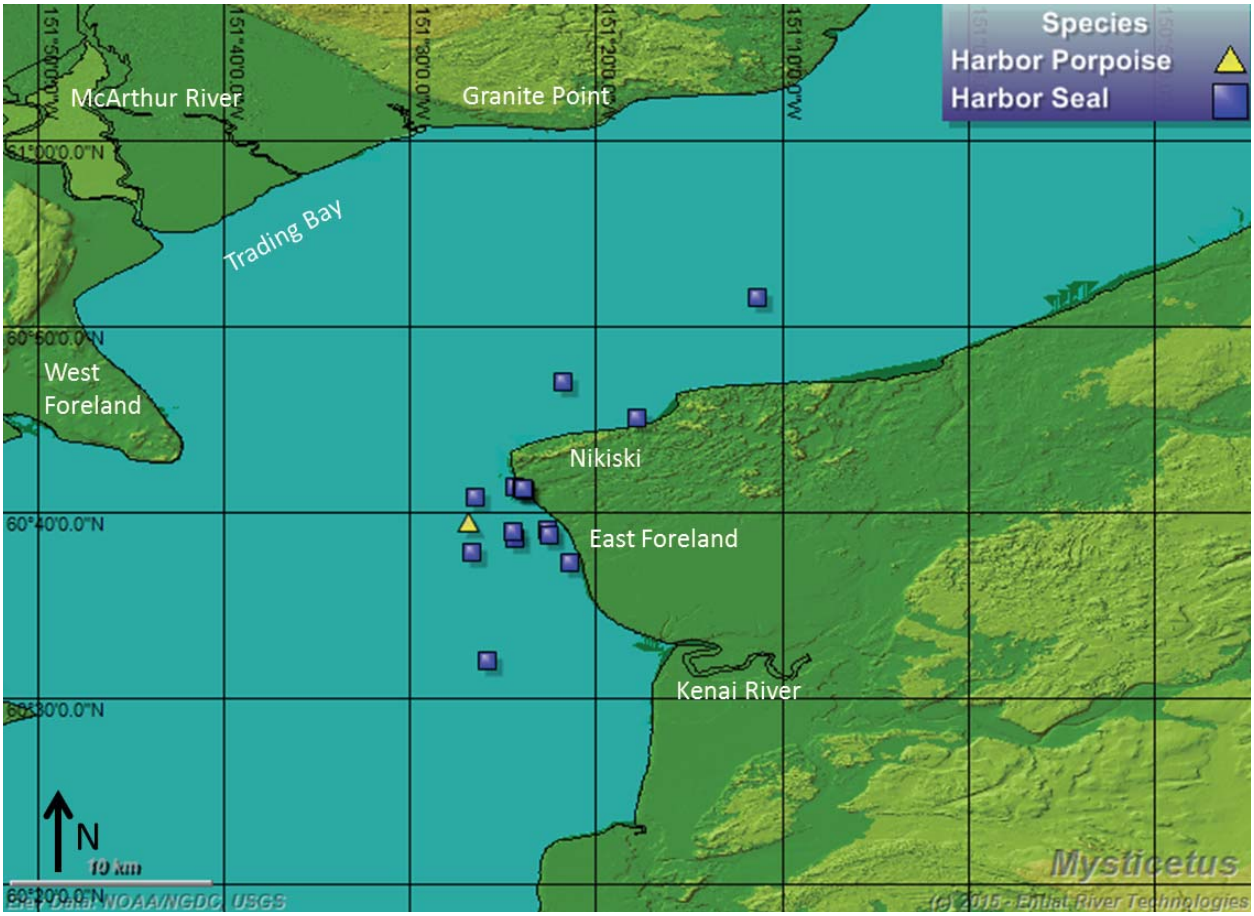



**Figure 7. Harbor porpoise (yellow) and harbor seal (blue) sightings near East Foreland (Nikiski) during EMALL's Cook Inlet G&G Surveys (within the survey area)**

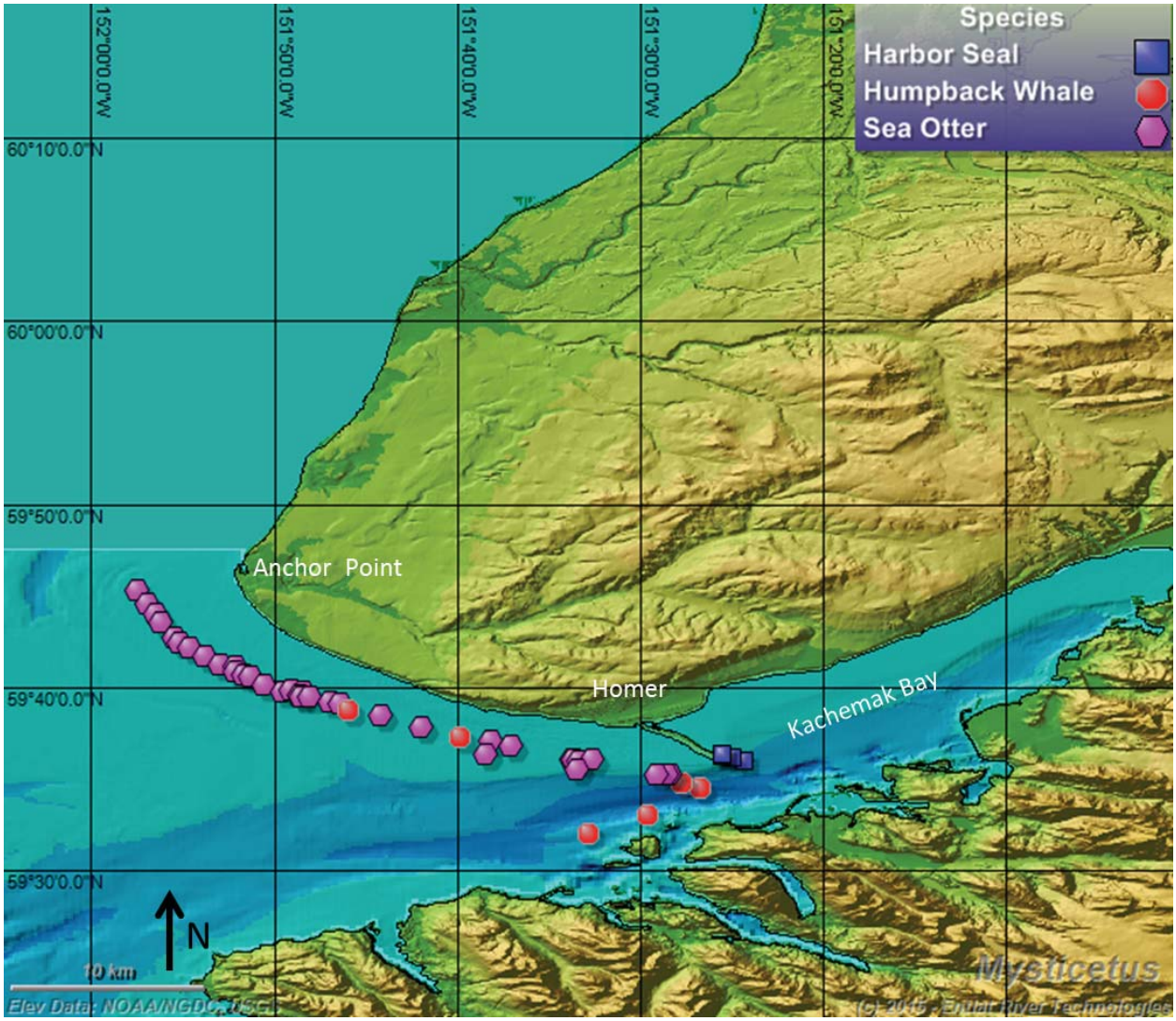



**Figure 8. Marine mammal sightings including harbor seal (blue), humpback whale (red), and sea otter (pink) observed during transit to/from Kachemak Bay and Homer during EMALL's Cook Inlet G&G Surveys (outside the survey area).**

### 5.2.2 Marine Mammal Sighting Rates

All sea otter and humpback whale sightings occurred during transit to and from the survey areas or while on anchor when at port (i.e. near Kachemak Bay; Figure 8). There were no sea otter or humpback whale sightings within the survey area (Figure 8). Of the 21 total harbor seal sightings, 5 occurred outside the survey area while on anchor at port (Figure 8). Sighting rates were separated by within the survey area and outside the survey area.

#### *5.2.2.1 Sighting Rates Within Survey Area*

Within the survey area sighting rates were highest for harbor seals (0.026 sighting/hr) followed by harbor porpoise (0.002 sighting/hr) (Table 7; Figure 9). Harbor seal sighting rates were greater during periods of non-survey activity than during periods of survey activity. No other species occurred during periods of both survey and non-survey activity which precluded a comparative analysis.

**Table 7. Total number of sightings during applicable activities (chirp, boomer or airgun), and sighting rates (sighting/hr) during survey and non-survey PSO effort during EMALL's Cook Inlet G&G Surveys**.

| Species | No. Sightings during Non-Survey Activity (163.4 effort hrs) | Sighting Rate during Non-Survey Activity | No. Sightings during Survey Activity (448.0 effort hrs) | Sighting Rate during Survey Activity | Total No. Sightings (Survey and Non-Survey Activity (611.4 effort hrs) | Overall Sighting Rate |
|---|---|---|---|---|---|---|
| Harbor Porpoise | 0 | 0.000 | 1 | 0.002 | 1 | 0.002 |
| Harbor Seal | 8 | 0.049 | 8 | 0.018 | 16 | 0.026 |
| **Total** | **8** | 0.049 | **9** | 0.020 | **17** | 0.028 |

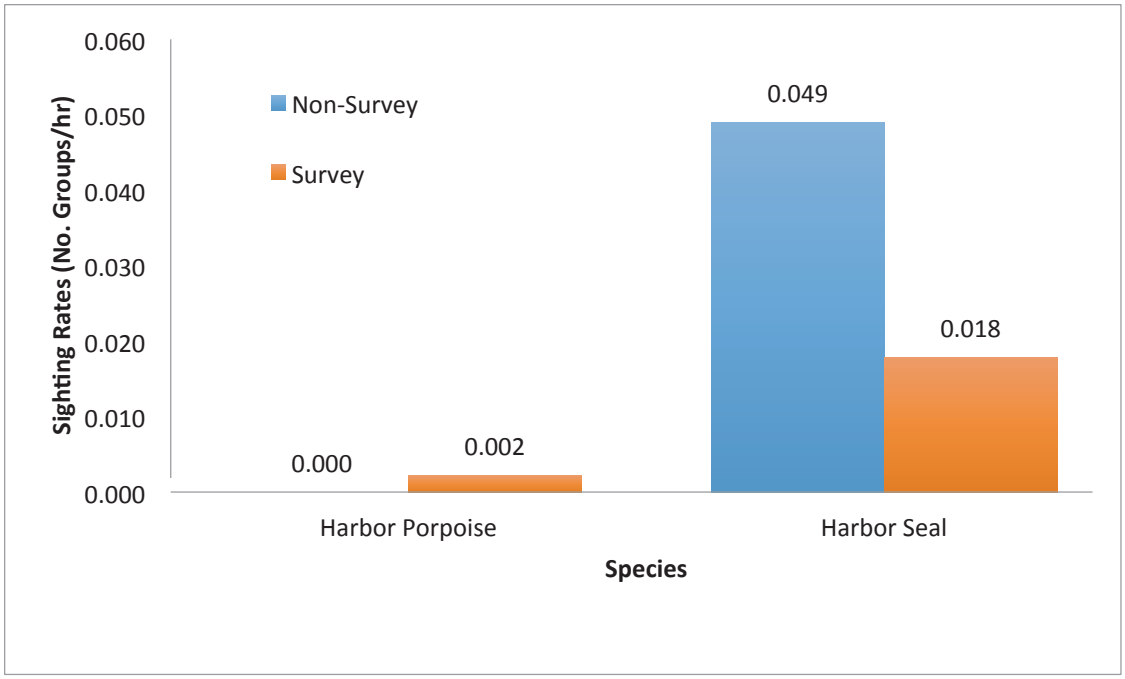



**Figure 9. Sighting rates (number of sightings per effort hour) for all marine mammals during survey and non-survey periods observed within the survey area.**

#### *5.2.2.2 Sighting Rates Outside Survey Area*

Outside the survey area sighting rates were highest for sea otters (0.214 sighting/hr) followed by humpback whales (0.037 sighting/hr) and harbor seals (0.031 sighting/hr; Figure 10).

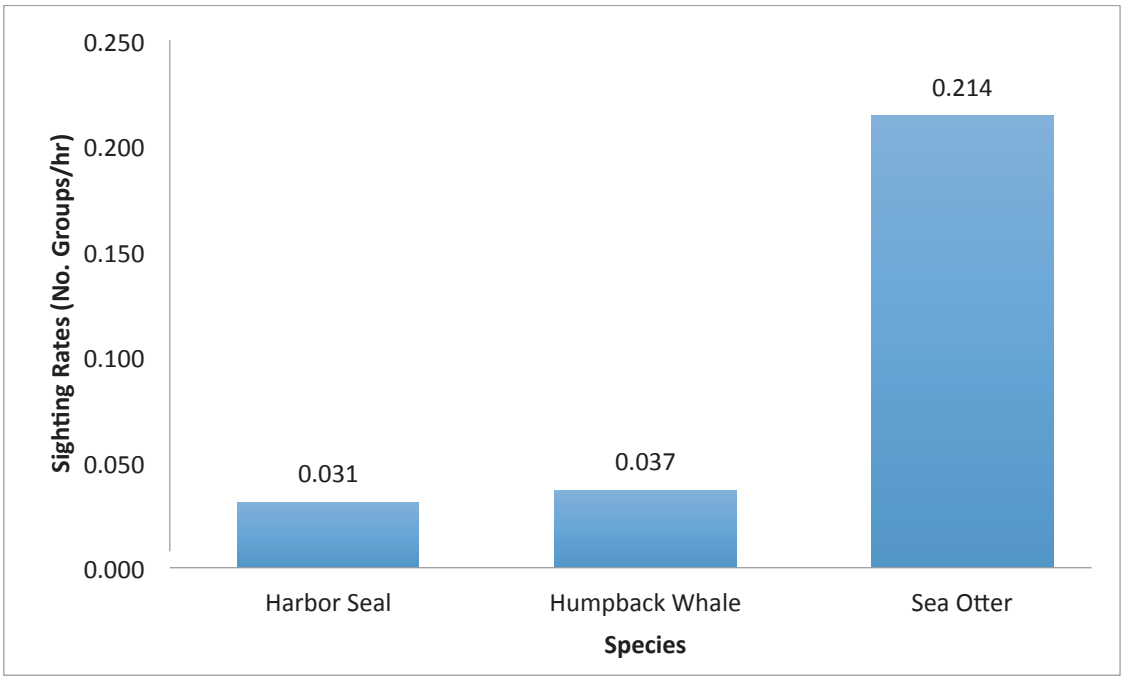



**Figure 10. Sighting rates (number of sightings per effort hour) for marine mammals observed outside the survey area.**

### 5.2.3 Marine Mammal Behavior

Behavior, sightings, and sighting rates by survey and non-survey periods are described separately below for harbor porpoise, harbor seals, humpback whales, and sea otters. Behavior was recorded for 50 sightings (79%) of the total 63 marine mammal sightings (i.e. groups) observed. No behavior was recorded for the remaining 13 sightings (21%), because behavior was difficult to determine for distant sightings or because viewing conditions were limited at the time (e.g., high Bf sea state).

#### *5.2.3.1 Harbor Porpoise*

A single harbor porpoise was observed during survey activity. The behavior state observed for the harbor porpoise was travel. There was no behavioral reaction observed.

#### *5.2.3.2 Harbor Seal*

A total of 21 harbor seal sightings (21 individuals) were observed during EMALL's Cook Inlet G&G Surveys. Of the 21 total sightings, 13 (62%) were observed during non-survey periods. Behavior states observed during non-survey periods included mill (3 sightings, 3 individuals), rest (1 sighting, 1 individual), surface active-mill (1 sighting, 1 individual), travel (1 sighting, 1 individual), unknown (1 sighting, 4 individuals) and dead (1 sighting, 1 individual; Figure 11)

A total of 8 sightings (38%) occurred during survey periods. Behavior states observed during survey periods included rest (1 sighting, 1 individual), surface active-travel (1 sighting, 1 individual), travel (1 sighting, 1 individual), and unknown (5 sightings, 5

individuals; Figure 11).

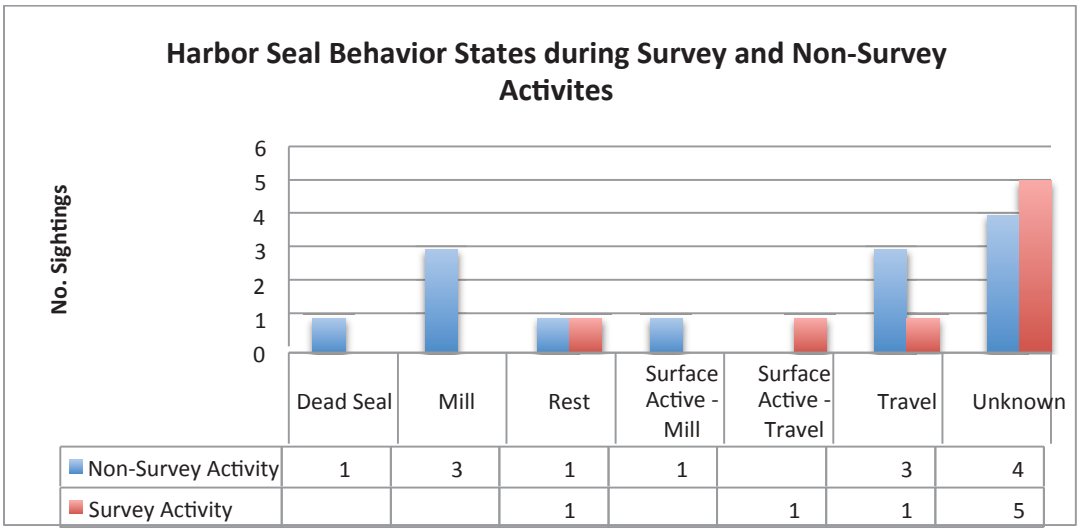



**Figure 11. Harbor seal behavior states observed during survey and non-survey periods.**

#### *5.2.3.3 Humpback Whale*

A total of 6 humpback whale sightings (15 individuals) were observed during EMALL's Cook Inlet G&G Surveys. All humpback whale sightings occurred during non-survey periods thus behavior and reactions are based only on non-survey observations. Of the 6 humpback whale sightings 1 sighting (4 individuals) was observed in the behavior state of surface-active mill, 2 sightings (2 individuals) were observed traveling, and 3 sightings the behavior was unknown (9 individuals). There were no behavioral reactions observed for humpback whale sightings (Figure 12).

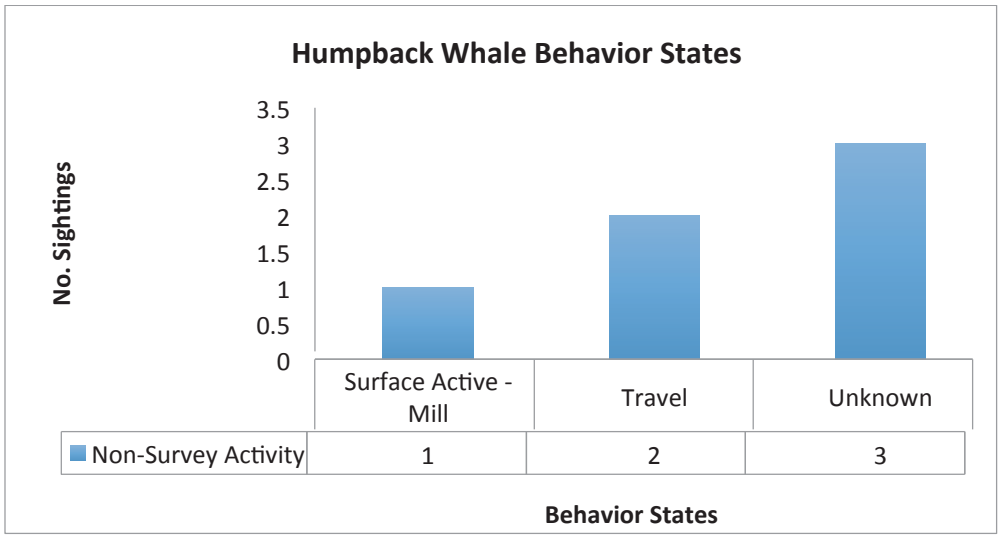



**Figure 12. Humpback whale behavior states observed.**

#### 5.2.3.4 Sea Otters

A total of 35 sea otter sightings (48 individuals) were observed from the vessel during EMALL's Cook Inlet G&G Surveys. All sea otter groups were observed during non-survey periods thus behavior and reactions are based only on non-survey observations. Of the total 35 sea otter sightings, 21 sightings (31 individuals) were observed in the behavior state float/rest, 3 sightings (6 individuals) were observed with the pup on mom, and 10 sightings (10 individuals) were observed traveling (Figure 13). There were no behavioral reactions observed for sea otter sightings.

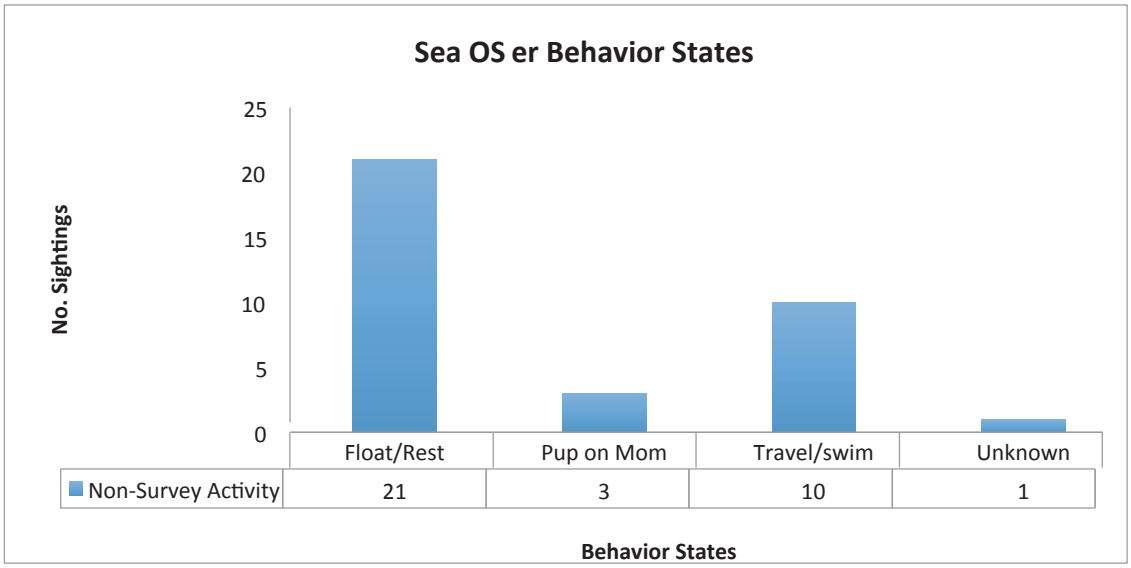



**Figure 13. Sea otter behavior states observed.**

### 5.2.4 Closest Point of Approach

The CPA was calculated for all marine mammal sightings (Figure 14).

- The single harbor porpoise (observed during G&G survey period) was observed at 301 – 400 m.
- Humpback whales, all observed during non-survey periods, were observed at 201 – 300 m, 401 – 500 m and >1000 m.
- Harbor seals were mostly observed within 200 m (<100 m and 101-200 m) of the source vessel, however there was no clear difference between survey vs. non-survey periods.
- Sea otters were seen at varying distances up to 400 m, but most commonly at 101-200 m.

CPA for harbor seals and sea otters are provided in Figure 15 and Figure 16, respectively.

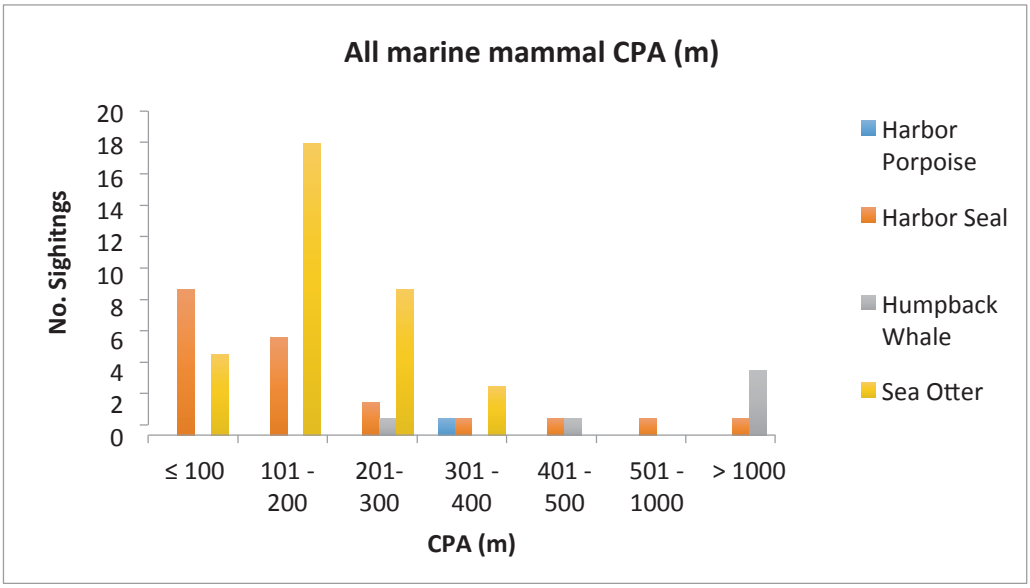



**Figure 14. Closest point of approach for all marine mammal sightings (m).**

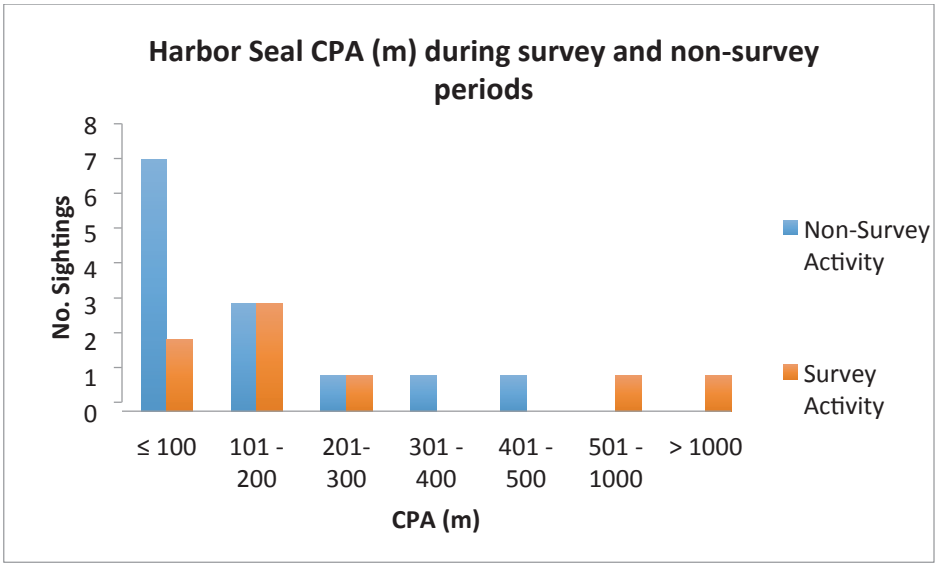



**Figure 15. Harbor seal CPA (m) during survey and non-survey periods.**

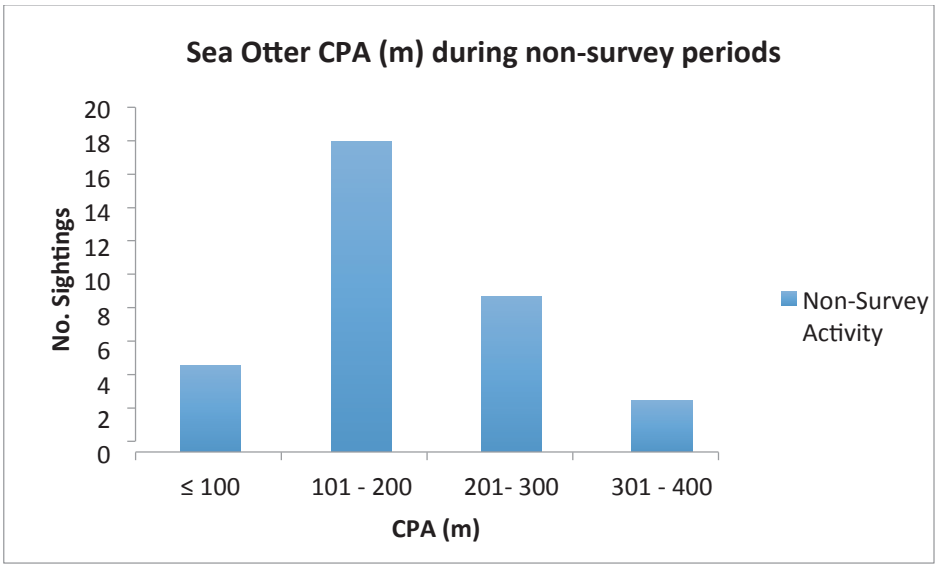



**Figure 16. Sea otter CPA (m) non-survey periods.**

### 5.2.5 Marine Mammal Exposures

During EMALL's Cook Inlet G&G Surveys, a total of six marine mammals (all were harbor seals) were confirmed visually within the Level B (160 dB) zones, resulting in six potential Level B exposures (Table 8, Table 9). Details on the Level B exposures are provided in Appendix C.

There were no marine mammals visually observed within the Level A exclusion zones. A sighting of a harbor seal carcass prompted the submission of a stranding report to NMFS, but it was unrelated to the survey activities (see Section 5.5).

**Table 8. Number of pinniped exposures per species.**

| Species | No. of Level A Exposures* | No. of Level B Exposures** | 120 dB re 1 µPa-m (rms) Exposures | No. of Cumulative Exposures |
|---|---|---|---|---|
| Harbor Seal | 0 | 6 | 0 | 6 |
| **Total** | **0** | **6** | **0** | **6** |

*Level A exposures for pinnipeds are ≥190 dB re 1 µPa-m (rms)
**Level B exposures for pinnipeds are ≥160 dB re 1 µPa-m (rms)

**Table 9. Number of cetacean exposures per species.**

| Species | No. of Level A Exposures* | No. of Level B Exposures** | 120 dB re 1 µPa-m (rms) Exposures | No. of Cumulative Exposures |
|---|---|---|---|---|
| N/A | 0 | 0 | 0 | 0 |
| **Total** | **0** | **0** | **0** | **0** |

*Level A exposures for cetaceans are ≥180 dB re 1 µPa-m (rms)
**Level B exposures for cetaceans are ≥160 dB re 1 µPa-m (rms)

## *5.3 Implemented Mitigation Measures*

**Table 10. Number and type of mitigation measures implemented.**

| Mitigation Measure | *R/V Qualifier 105* |
|---|---|
| Clearing Safety Zone[1] | 37 |
| Power Down | 0 |
| Shut Down | 0 |
| Speed/Course Alteration | 0 |

[1]Clearing the safety zone occurred at the start of all operations after an extended shut down, number is not representative of a sighting of a marine mammal.

## *5.4 Implementation of Terms and Conditions*

EMALL's Cook Inlet G&G Surveys requirements set forth in the IHA and ITS were effectively implemented, minimizing the potential for adverse effects of the survey activity on ESA-listed and non-ESA listed marine mammals in Cook Inlet. Survey activities resulted in only 6 observations of potential Level B exposure for harbor seals during the dates of August 26 –

October 19, 2015.

EMALL complied with all monitoring and mitigation requirements as described in the IHA during the survey activities. PSOs were stationed onboard the survey vessel and implemented mitigation measures described in the Marine Mammal Monitoring and Mitigation Plan. Before the start of operations, the Level A and Level B zones were "cleared" by the PSOs for the full 30-minute period. Observations of marine mammals were recorded and reported weekly and monthly to NMFS according to the requirements of the IHA. The program avoided areas of high beluga whale density.

EMALL's Cook Inlet G&G Surveys complied with and effectively implemented the following terms and conditions of the ITS:

11.1 Amount or Extent of Take.

- EMALL did not observe Cook Inlet beluga whales in the vicinity of the survey, and therefore the survey activity did not meet or exceed the 24 non-lethal incidental takes of beluga whales issued by NMFS in the IHA, nor did the survey activities result in authorized harassment.

11.2 Reasonable and Prudent Measures.

- EMALL conducted operations in a manner to minimize potential impacts to Cook Inlet beluga whales by refraining from survey activities in the vicinity of the Susitna Delta between April 15 and October 15, and implemented a comprehensive monitoring and reporting program.

11.3 Terms and Conditions.

- All project activity complied with the terms, conditions, and requirements of the IHA and the ITS (RPM 1.1). PSOs were stationed onboard the sound source vessel *R/V Qualifier 105* to observe disturbance zones for 30 minutes prior to initiating acoustic operations as required by RPM 1.2.
- PSOs were prepared to report Level A harassment of marine mammals (RPM 1.3). On October 6, 2015 EMALL submitted a stranding report to NMFS for a a sighting of a harbor seal carcass unrelated to the survey activities.
- Mitigation measures described in RPM 2 and RPM 3.1 were not applicable to the acoustic operations described in the IHA; the geotechnical borings for which those requirements are applicable were not conducted due to weather conditions prohibiting safe operations.
- EMALL implemented the requirements of RPM 3.2 and 3.3, which included filing weekly, monthly, and end of survey reports to NMFS AKR and NMFS PR1. EMALL initiated investigation of the technical feasibility of implementing a passive acoustic monitoring program in the area adjacent to the proposed Marine Terminal and Liquefaction Plant as described in the conservation recommendations of the Biological Opinion. EMALL continues to investigate opportunities to implement this recommendation.
- EMALL directed the PSOs stationed onboard the survey vessel to monitor the full area visible to them (including but not limited to the Level A and Level B zones) for presence of marine mammals while on watch. The extent of visibility was beyond the Level A and B zones, but not the full extent of 6.4 km described in the conservation recommendation. There were no observations of Cook Inlet beluga

whales within or beyond the Level A and Level B zones during EMALL's Cook Inlet G&G Surveys.

## 5.5 Stranding Reports

On October 5, 2015 a harbor seal carcass was observed in a state of advanced decomposition. This event was unrelated to survey activities. A stranding report was submitted to NMFS on October 6, 2015, within 24 hours of the sighting (Appendix D).

# 6 Literature Cited

Aerts, L., M. Blees, S. Blackwell, C. Greene, K. Kim, D. Hannay and M. Austin. 2008. Marine mammal monitoring and mitigation during BPXA Liberty OBC seismic survey in Foggy Island Bay, Beaufort Sea, July-August 2008: 90- day report. LGL Rep. P1011-1. Prepared by LGL Alaska Research Associates Inc., LGL Ltd., Greeneridge Sciences Inc., and JASCO Research Ltd. for BP Exploration Alaska, Anchorage, AK.

Blees, M.K., K.G. Hartin, D.S. Ireland, and D. Hannay. 2010. Marine mammal monitoring and mitigation during open water seismic exploration by Statoil USA E&P Inc. in the Chukchi Sea, August-October 2010: 90-day Report. LGL Report P1119. Prepared by LGL Alaska Research Associates Inc., LGL Ltd., and JASCO Research Ltd. for by Statoil USA E&P Inc., National Marine Fisheries Service, and U.S. Fish and Wildlife Service. 102 pp., plus appendices.

Chorney, N.E., G. Warner, J. MacDonnell, A. McCrodan, T. Deveau, C. McPherson, C.O'Neill, D. Hannay, and B. Rideout. 2011. Underwater Sound Measurements. Chapter 3 In Reiser, C.M, D.W. Funk, R. Rodrigues, and D. Hannay. (eds.) 2011. Marine mammal monitoring and mitigation during marine geophysical surveys by Shell Offshore, Inc. in the Alaskan Chukchi and Beaufort seas, July–October 2010: 90-day report. LGL Rep. P1171E–1. Rep. from LGL Alaska Research Associates Inc., Anchorage, AK, and JASCO Applied Sciences, Victoria, BC for Shell Offshore Inc, Houston, TX, Nat. Mar. Fish. Serv., Silver Spring, MD, and U.S. Fish and Wild. Serv., Anchorage, AK.

Lomac-MacNair, K., M.A. Smultea and G. Campbell. 2014. Draft NMFS 90-Day Report for Marine Mammal Monitoring and Mitigation during Apache's Cook Inlet 2014 Seismic Survey, 2 April – 27 June 2014. Prepared for Apache Alaska Corporation, 510 L Street #310, Anchorage AK 99501. Prepared by Smultea Environmental Sciences (SES), P.O. Box 256, Preston, WA 98050

O'Neill, C., D. Leary, and A. McCrodan. (2010). Sound Source Verification. (Chapter 3) In Blees, M. K., K. G. Hartin, D. S. Ireland, and D. Hannay. (eds.) Marine mammal monitoring and mitigation during open water seismic exploration by Statoil USA E&P Inc. in the Chukchi Sea, August–October 2010: 90-day report. LGL Report P1119. Prepared by LGL Alaska Research Associates Inc., LGL Ltd., and JASCO Applied Sciences Ltd. for Statoil USA E&P Inc., Nat. Mar. Fish. Serv., and U.S. Fish and Wildlife Service. 3-1, 3-34 p.

Richardson, W.J. 1995. Documented Disturbance Reactions. Pages 241-324 in Marine mammals and noise, edited by. W.J. Richardson, C.R. Greene, Jr., C.I. Malme, and D.H. Thomson. Academic Press, San Diego.

# Appendix A Incidental Harassment Authorization and Take Statement

Begins on next page.

UNITED STATES DEPARTMENT OF COMMERCE

National Oceanic and Atrnoapharic Adminiatration

NATIONAL MARINE FISHERIES SERVICE

Sliver Spring, MO 2091O

AUG 1 4 2015

Charlie Kominas

Alaska LNG Safety, Security, Health, and Environment Manager

ExxonMobil Development Company

3201 C Street; Suite 506

Anchorage, AK 99501

Dear Mr. Kominas:

Enclosed is an Incidental Harassment Authorization (IHA) issued to the ExxonMobil Alaska LNG LLC under the authority of section 101(a)(5)(D) of the Marine Mammal Protection Act (16 U.S.C. 1361 *et seq.),* to harass small numbers of marine mammals, by Level B harassment, incidental to the marine geotechnical and geophysical survey in Cook Inlet from August 14, 2015 through August 13, 2016.

You are required to comply with the conditions contained in the IHA. In addition, you must submit reports to the National Marine Fisheries Service's (NMFS) Office of Protected Resources on a weekly and monthly basis during the survey and within 90 days of its completion. The IHA requires monitoring of marine mammals by qualified individuals before, during, and after seismic activities and reporting of marine mammal observations, including species, numbers, and behavioral modifications potentially resulting from this activity.

If you have any questions concerning the IHA or its requirements, please contact Sara Young, Office of Protected Resources, NMFS, at 301-427-8484.

Sincerely,

Donna S. Wieting
Director
Office of Protected Resources

Enclosures

UNITED STATES DEPARTMENT OF CDMMERCE

National Oceanic and Atmaepheric Adminietratian

NATIONAL MARINE FISHERIES SERVICE

Silver Spring, MO 20910

AUG 14 2015

Incidental Harassment Authorization

Exxon Mobil Alaska LNG LLC (EMALL), 3201 C Street; Suite 506, Anchorage, Alaska 99501, is hereby authorized under section 101(a)(5)(D) of the Marine Mammal Protection Act (MMPA; 16 U.S.C. 1371(a)(5)(D)), to harass small numbers of marine mammals incidental to specified activities associated with a marine geophysical and geotechnical survey in Cook Inlet, Alaska, contingent upon the following conditions:

1. This Authorization is valid from August 14, 2015, through August 13, 2016.
2. This Authorization is valid only for EMALL's activities associated with survey operations that shall occur within the areas denoted as Marine Terminal Survey Area and Pipeline Survey Area as depicted in the attached Figure 1 of EMALL's April 2015 application to the National Marine Fisheries Service (airgun, chirp, boomer, vibracore).
3. Species Authorized and Level of Take
   (a) The incidental taking of marine mammals, by Level B harassment only, is limited to the following species in the waters of Cook Inlet:
      (i) Odontocetes: see Table 1 (attached) for authorized species and take numbers.
      (ii) Pinnipeds: see Table 1 (attached) for authorized species and take numbers.
      (iii) If any marine mammal species are encountered during activities that are not listed in Table 1 (attached) for authorized taking and are likely to be exposed to sound pressure levels (SPLs) greater than or equal to 160 dB re 1 μPa (rms) for impulsive sound or 120 dB re 1μPa (rms) for continuous sound, then the Holder of this Authorization must alter speed or course or shut-down the sound source to avoid take.
   (b) The taking by injury (Level A harassment), serious injury, or death of any of the species listed in Table 1 or the taking of any other species of marine mammal is prohibited and may result in the modification, suspension or revocation of this Authorization.

(c) If the number of detected takes of any marine mammal species listed in Table 1 is met or exceeded, EMALL shall immediately cease survey operations involving the use of active sound sources (e.g., airguns, boomer, chirp, and vibracore) and notify NMFS.

4. The authorization for taking by harassment is limited to the following acoustic sources (or sources with comparable frequency and intensity) absent an amendment to this Authorization:

   (a) EdgeTech3200 Sub-bottom profiler chirp;

   (b) Applied Acoustics AA301 Sub-bottom profiler boomer;

   (c) A 60 in' airgun;

   (d) Alpine vibracore

5. The taking of any marine mammal in a manner prohibited under this Authorization must be reported immediately to the Chief, Permits and Conservation Division, Office of Protected Resources, NMFS or her designee at (301) 427-8401.

6. The holder of this Authorization must notify the Chief of the Permits and Conservation Division, Office of Protected Resources, or her designee at least 48 hours prior to the start of survey activities (unless constrained by the date of issuance of this Authorization in which case notification shall be made as soon as possible) at 301-427-8484 or to Sara.Young@noaa.gov.

7. Mitigation and Monitoring Requirements: The Holder of this Authorization is required to implement the following mitigation and monitoring requirements when conducting the specified activities to achieve the least practicable impact on affected marine mammal species or stocks:

   (a) Utilize a minimum of two NMFS- qualified PSOs per source vessel (one on duty and one off-duty) to visually watch for and monitor marine mammals near the aforementioned acoustic source vessels during daytime operations (from nautical twilight-dawn to nautical twilight-dusk) and before and during start-ups of sound sources day or night, and also continuing for 30 minutes after sound sources shut down. PSOs shall have access to reticle binoculars (7x50) and long-range binoculars (40x80). PSO shifts shall last no longer than 4 hours at a time. PSOs shall also make observations during daytime periods when the sound sources are not operating for comparison of animal abundance and behavior, when feasible. When practicable, as an additional means of visual observation, EMALL's vessel crew may also assist in detecting marine mammals.

   (b) Record the following information when a marine mammal is sighted:

      (i) Species, group size, age/size/sex categories (if determinable), behavior when first sighted and after initial sighting, heading (if consistent), bearing and distance from source vessel, sighting cue, apparent reaction to the airguns or vessel (e.g., none, avoidance, approach, paralleling, etc.), and behavioral pace;

(ii) Time, location, heading, speed, activity of the vessel (including type of equipment operating), Beaufort sea state and wind force, visibility, and sun glare; and

(iii) The data listed under Condition 7(d)(ii) shall also be recorded at the start and end of each observation watch and during a watch whenever there is a change in one or more of the variables.

(c) Establish the relevant 120 dB or 160 dB re 1 μPa (rms) "disturbance zone" for belugas, and groups of five or more harbor porpoises and killer whales as well as a 180 dB re 1μPa (rms) and 190 dB re 1 μPa (rms) "exclusion zone" (EZ) for cetaceans and pinnipeds respectively before equipment is in operation.

(d) Visually observe the entire extent of the EZ (180 dB re 1 μPa [rms] for cetaceans and 190 dB re 1 μPa [rms] for pinnipeds) using NMFS-qualified PSOs, for at least 30 minutes (min) prior to starting the survey (day or night) or extended shutdown periods of 15 minutes or greater. If the PSO finds a marine mammal within the EZ, EMALL must delay the authorized acoustic sources until the marine mammal(s) has left the area. If the PSO sees a marine mammal that surfaces, then dives below the surface, the PSO shall wait 30 min. If the PSO sees no marine mammals during that time, they should assume that the animal has moved beyond the EZ. If for any reason the entire radius cannot be seen for the entire 30 min (i.e., rough seas, fog, darkness), or if marine mammals are near, approaching, or in the EZ, the sound sources may not be started.

(e) Alter speed or course during survey operations if a marine mammal, based on its position and relative motion, appears likely to enter the relevant EZ. If speed or course alteration is not safe or practicable, or if after alteration the marine mammal still appears likely to enter the EZ, further mitigation measures, such as a shutdown, shall be taken.

(f) Shutdown the sound source(s) if a marine mammal is detected within, approaches, or enters the relevant EZ. A shutdown means all operating sound sources are shut down (i.e., turned off).

(g) Survey activity shall not resume until the PSO has visually observed the marine mammal(s) exiting the EZ and is not likely to return, or has not been seen within the EZ for 15 min for species with shorter dive durations (small odontocetes and pinnipeds) or 30 min for species with longer dive durations (large odontocetes, including killer whales and beluga whales).

(h) Marine geophysical surveys may continue into night and low-light hours if such segment(s) of the survey is initiated when the entire relevant EZs can be effectively monitored visually (i.e., PSO(s) must be able to see the extent of the entire relevant EZ).

(i) No initiation of survey operations involving the use of sound sources is permitted from a shutdown position at night or during low-light hours (such as in dense fog or heavy rain).

(j) If a beluga whale is visually sighted approaching or within the relevant 120-dB or 160- dB disturbance zone, survey activity will not commence or the sound source(s) shall be shut down until the animals are no longer present within the relevant 120-dB or 160-dB zone.

(h) Whenever aggregations or groups of killer whales and/or harbor porpoises are detected approaching or within the 160-dB disturbance zone, survey activity will not commence or the sound source(s) shall be shut-down until the animals are no longer present within the 160- dB zone. An aggregation or group of whales/porpoises shall consist of five or more individuals of any age/sex class.

(i) EMALL must not operate within 10 miles (16 km) of the mean lower low water (MLLW) line of the Susitna Delta (Beluga River to the Little Susitna River) between April 15 and October 15 (to avoid any effects to belugas in an important feeding and breeding area).

(j) Survey operations involving the use of airguns, sub-bottom profiler chirp and boomer, or vibracore must cease if takes of any marine mammal are met or exceeded.

8. Reporting Requirements: The Holder of this Authorization is required to:

(a) Submit a weekly field report, no later than close of business (Alaska time) each Thursday during the weeks when in-water survey activities take place. The field reports will summarize species detected, in-water activity occurring at the time of the sighting, behavioral reactions to in-water activities, and the number of marine mammals taken.

(b) Submit a monthly report, no later than the 15th of each month, to NMFS' Permits and Conservation Division for all months during which authorized in-water survey activities occur. These reports must contain and summarize the following information:

(i) Dates, times, locations, heading, speed, weather, sea conditions (including Beaufort sea state and wind force), and associated activities during all operations and marine mammal sightings;

(ii) Species, number, location, distance from the vessel, and behavior of any marine mammals, as well as associated activity (type of equipment in use and number of shutdowns), observed throughout all monitoring activities;

(iii) An estimate of the number (by species) of: (A) pinnipeds that have been exposed to the activity (based on visual observation) at received levels greater than or equal to relevant 120dB or 160 dB re 1 μPa (rms) and/or 190 dB re 1 μPa (rms) with a discussion of any specific behaviors those individuals exhibited; and (B) cetaceans that have been exposed to the activity (based on visual observation) at received levels greater than or equal to 120 dB or 160 dB re 1 μPa (rms) and/or 180 dB re 1 μPa (rms) with a discussion of any specific behaviors those individuals exhibited.

(iv) A description of the implementation and effectiveness of the: (A) terms and conditions of the Biological Opinion's Incidental Take Statement; and (B) mitigation measures of this Authorization. For the Biological Opinion, the report shall confirm the implementation of each Term and Condition, as well as any conservation recommendations, and describe their effectiveness, for minimizing the adverse effects of the action on Endangered Species Act-listed marine mammals.

(c) Submit a draft Technical Report on all activities and monitoring results to NMFS' Permits and Conservation Division within 90 days of the completion of the survey. The Technical Report will include the following information:

(i) Summaries of monitoring effort (e.g., total hours, total distances, and marine mammal distribution through the study period, accounting for sea state and other factors affecting visibility and detectability of marine mammals);

(ii) Analyses of the effects of various factors influencing detectability of marine mammals (e.g., sea state, number of observers, and fog/glare);

(iii) Species composition, occurrence, and distribution of marine mammal sightings, including date, water depth, numbers, age/size/gender categories (if determinable), group sizes, and ice cover;

(iv) Analyses of the effects of survey operations; and

(v) Sighting rates of marine mammals during periods with and without survey activities (and other variables that could affect detectability), such as: (A) initial sighting distances versus survey activity state; (B) closest point of approach versus survey activity state; (C) observed behaviors and types of movements versus survey activity state; (D) numbers of sightings/individuals seen versus survey activity state; (E) distribution around the source vessels versus survey activity state; and (F) estimates of take by Level B harassment based on presence in the relevant l 20 dB or 160 dB harassment zone.

(d) Submit a final report to the Chief, Permits and Conservation Division, Office of Protected Resources, NMFS, within 30 days after receiving comments from NMFS on the draft report. If NMFS decides that the draft report needs no comments, the draft report shall be considered to be the final report.

(e) EMALL must immediately report to NMFS if 10 belugas are detected within the relevant 120 dB or 160 dB re 1 μPa (rms) disturbance zone during survey operations to allow NMFS to consider making necessary adjustments to monitoring and mitigation.

9. (a) In the unanticipated event that the specified activity clearly causes the take of a marine mammal in a manner prohibited by this Authorization, such as an injury (Level A harassment), serious injury or mortality (e.g., ship-strike, gear interaction, and/or entanglement), EMALL shall immediately cease the specified activities and immediately report the incident to the Chief of the Permits and Conservation Division, Office of Protected Resources, NMFS, or her designees by phone or email (telephone: 301-427-8401 or Sara.Young@noaa.gov), the Alaska Regional Office (telephone: 907-271-1332

or Barbara.Mahoney @noaa.gov), and the Alaska Regional Stranding Coordinators (telephone: 907-586-7248 or Aleria.Jensen@noaa.gov or Barbara.Mahoney@noaa.gov). The report must include the following information:

(i) Time, date, and location (latitude/longitude) of the incident;

(ii) The name and type of vessel involved;

(iii) The vessel's speed during and leading up to the incident;

(iv) Description of the incident;

(v) Status of all sound source use in the 24 hours preceding the incident;

(vi) Water depth;

(vii) Environmental conditions (e.g., wind speed and direction, Beaufort sea state, cloud cover, and visibility);

(viii) Description of marine mammal observations in the 24 hours preceding the incident

(ix) Species identification or description of the animals(s) involved;

(x) The fate of the animal(s) involved;

(xi) Photographs or video footage of the animal (if equipment is available)

Activities shall not resume until NMFS is able to review the circumstances of the prohibited take. NMFS shall work with EMALL to determine what is necessary to minimize the likelihood of further prohibited take and ensure MMPA compliance. EMALL may not resume their activities until notified by NMFS via letter or email, or telephone.

(b) In the event that EMALL discovers an injured or dead marine mammal, and the lead PSO determines that the cause of the injury or death is unknown and the death is relatively recent (i.e., in less than a moderate state of decomposition as described in the next paragraph), EMALL will immediately report the incident to the Chief of the Permits and Conservation Division, Office of Protected Resources, NMFS, her designees, and the NMFS Alaska Stranding Hotline (see contact information in Condition 9(a)). The report must include the same information identified in the Condition 9(a) above. Activities may continue while NMFS reviews the circumstances of the incident. NMFS will work with EMALL to determine whether modifications in the activities are appropriate.

(c) In the event that EMALL discovers an injured or dead marine mammal, and the lead PSO determines that the injury or death is not associated with or related to the activities authorized in Condition 2 of this Authorization (e.g., previously wounded animal, carcass with moderate to advanced decomposition, or scavenger damage), EMALL shall report the incident to the Chief of the Permits and Conservation Division, Office of Protected Resources, NMFS, her designees, the NMFS Alaska Stranding Hotline (1-877-925-7773), and the Alaska Regional Stranding Coordinators within 24 hours of the discovery (see contact information in Condition 9(a)). EMALL shall provide photographs or video footage (if available) or other

documentation of the stranded animal sighting to NMFS and the Marine Mammal Stranding Network. Activities may continue while NMFS reviews the circumstances of the incident.

10. EMALL is required to comply with the Reasonable and Prudent Measures and Terms and Conditions of the ITS corresponding to NMFS' Biological Opinion issued to both U.S. Army Corps of Engineers and NMFS' Office of Protected Resources.

11. A copy of this Authorization and the ITS must be in the possession of all contractors and PSOs operating under the authority of this Incidental Harassment Authorization.

12. Penalties and Permit Sanctions: Any person who violates any provision of this Incidental Harassment Authorization is subject to civil and criminal penalties, permit sanctions, and forfeiture as authorized under the MMPA.

13. This Authorization may be modified, suspended or withdrawn if the Holder fails to abide by the conditions prescribed herein or if the authorized taking is having more than a negligible impact on the species or stock of affected marine mammals, or if there is an unmitigable adverse impact on the availability of such species or stocks for subsistence uses.

for Donna S. Wieting

D G 1 4 2015

Director, Office of Protected Resources
National Marine Fisheries Service

**Table 1. Authorized Take Numbers for Each Marine Mammal Species in Cook Inlet**

| **Species** | **Authorized Take in the Cook Inlet Action Area** |
|---|---|
| **Odontocetes** | |
| Beluga whale<br><br>*(Delphinapterus leucas)* | 24 |
| Killer whale<br><br>*(Orcinus orca)* | 5 |
| Harbor porpoise<br><br>*(Phocoena phocoena )* | 20 |
| **Pinnipeds** | |
| Harbor seal *(Phoca vitulina richardsi)* | 1168 |

# Appendix B Sightings Table

**Table 11. Sighting summary table.**

| Id | Date/ Time (AKDT) | Species | Sighting Latitude (N) | Sighting Longitude (W) | Count | Precip | Bft | Vessel Speed (COG) | In use | Chirp | Boomer | Airgun | Source (km) | Vessel (km) | Behavior | Exposure Level | Reaction Observed |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S1-001 | 9/5/15 9:51 | Harbor Seal | 60.68046 | -151.44152 | 1 | None | 1 | 340.36 | Yes | Yes | No | Yes | 0.071 | 0.06 | Unknown | B | None |
| S1-002 | 9/6/15 11:27 | Harbor Seal | 60.6427 | -151.40684 | 1 | Fog | 0 | 166.2 | Yes | Yes | No | Yes | 0.18 | 0.15 | Unknown | B | None |
| S1-3 | 9/7/15 14:38 | Harbor Seal | 60.68782 | -151.40068 | 1 | None | 1 | 93.89 | No | No | No | No | 0.046 | 0.08 | Unknown | - | None |
| S1-4 | 9/7/15 15:02 | Harbor Seal | 60.68618 | -151.39679 | 1 | None | 1 | 165.41 | No | No | No | No | 0.234 | 0.2 | Unknown | - | None |
| S1-5 | 9/8/15 18:02 | Harbor Porpoise | 60.65589 | -151.44813 | 1 | Light Rain | 1 | 340.75 | Yes | Yes | No | Yes | 0.344 | 0.35 | Travel | - | None |
| S1-6 | 9/9/15 17:02 | Harbor Seal | 60.68904 | -151.40675 | 1 | None | 1 | 201.32 | No | No | No | No | 0.421 | 0.45 | Unknown | - | Unknown |
| S1-7 | 9/11/15 7:33 | Harbor Seal | 60.64973 | -151.40851 | 1 | None | 2 | 0.03 | Yes | Yes | No | No | 0.11 | 0.08 | Unknown | B | Look |
| S1-8 | 9/11/15 15:33 | Harbor Seal | 60.68761 | -151.40003 | 1 | None | 2 | 199.16 | No | No | No | No | 0.067 | 0.05 | Travel | - | Swim Towards |
| S1-9 | 9/15/15 19:02 | Harbor Seal | 60.63153 | -151.44545 | 1 | Light Rain | 3 | 163.22 | Yes | Yes | Yes | No | 0.106 | 0.075 | Unknown | B | Look |
| S1-10 | 9/16/15 9:58 | Harbor Seal | 60.53404 | -151.43185 | 1 | Light Rain | 2 | 55.71 | Yes | Yes | Yes | No | 0.233 | 0.2 | Rest | B | Look |
| S1-11 | 9/18/15 15:30 | Harbor Seal | 60.62232 | -151.35754 | 1 | None | 2 | 160.7 | Yes | Yes | Yes | No | 1.53 | 1.5 | Unknown | - | Look |
| S1-12 | 9/22/15 16:38 | Sea Otter | 59.75517 | -151.95907 | 3 | None | 3 | 162.94 | No | No | No | No | 0.112 | 0.075 | Otter - Float/Rest | - | Otter - Not Significant |

| Id | Date/ Time (AKDT) | Species | Sighting Latitude (N) | Sighting Longitude (W) | Count | Precip | Bft | Vessel Speed (COG) | In use | Chirp | Boomer | Airgun | Source (km) | Vessel (km) | Behavior | Exposure Level | Reaction Observed |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S1-13 | 9/22/15 16:42 | Sea Otter | 59.7439 | -151.94855 | 1 | None | 3 | 159.21 | No | No | No | No | 0.172 | 0.15 | Otter - Travel/swim | - | Otter - Not Significant |
| S1-14 | 9/22/15 16:46 | Sea Otter | 59.73358 | -151.94136 | 2 | None | 3 | 157.42 | No | No | No | No | 0.128 | 0.1 | Otter - Float/Rest | - | Otter - Not Significant |
| S1-15 | 9/22/15 16:48 | Sea Otter | 59.72572 | -151.93665 | 1 | None | 3 | 156.68 | No | No | No | No | 0.237 | 0.2 | Otter - Float/Rest | - | Otter - Not Significant |
| S1-16 | 9/22/15 16:53 | Sea Otter | 59.71163 | -151.92437 | 2 | None | 3 | 157.85 | No | No | No | No | 0.237 | 0.2 | Otter - Pup on mom | - | Otter - Not Significant |
| S1-17 | 9/22/15 16:55 | Sea Otter | 59.70817 | -151.91934 | 1 | None | 3 | 149.09 | No | No | No | No | 0.214 | 0.18 | Otter - Float/Rest | - | Otter - Not Significant |
| S1-18 | 9/22/15 16:57 | Sea Otter | 59.7024 | -151.90989 | 3 | None | 3 | 136.87 | No | No | No | No | 0.286 | 0.25 | Otter - Float/Rest | - | Otter - Not Significant |
| S1-19 | 9/22/15 17:01 | Sea Otter | 59.69492 | -151.8971 | 1 | None | 3 | 134.2 | No | No | No | No | 0.134 | 0.1 | Otter - Travel/swim | - | Otter - Significant |
| S1-20 | 9/22/15 17:04 | Sea Otter | 59.68781 | -151.88318 | 1 | None | 4 | 131.33 | No | No | No | No | 0.109 | 0.075 | Otter - Travel/swim | - | Otter - Not Significant |

| Id | Date/ Time (AKDT) | Species | Sighting Latitude (N) | Sighting Longitude (W) | Count | Precip | Bft | Vessel Speed (COG) | In use | Chirp | Boomer | Airgun | Source (km) | Vessel (km) | Behavior | Exposure Level | Reaction Observed |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S1-21 | 9/22/15 17:07 | Sea Otter | 59.68561 | -151.86966 | 2 | None | 4 | 130.17 | No | No | No | No | 0.309 | 0.3 | Otter - Pup on mom | - | Otter - Not Significant |
| S1-22 | 9/22/15 17:08 | Sea Otter | 59.68191 | -151.86837 | 1 | None | 4 | 127.51 | No | No | No | No | 0.133 | 0.1 | Otter - Travel/swim | - | Otter - Significant |
| S1-23 | 9/22/15 17:09 | Sea Otter | 59.67901 | -151.86132 | 1 | None | 4 | 126.75 | No | No | No | No | 0.137 | 0.1 | Otter - Travel/swim | - | Otter - Significant |
| S1-24 | 9/22/15 17:10 | Sea Otter | 59.6769 | -151.8552 | 1 | None | 4 | 142.83 | No | No | No | No | 0.182 | 0.15 | Otter - Travel/swim | - | Otter - Significant |
| S1-25 | 9/22/15 17:14 | Sea Otter | 59.66983 | -151.84199 | 1 | None | 4 | 126.09 | No | No | No | No | 0.13 | 0.1 | Otter - Float/Rest | - | Otter - Not Significant |
| S1-26 | 9/22/15 17:18 | Sea Otter | 59.66273 | -151.82642 | 1 | None | 4 | 122.59 | No | No | No | No | 0.317 | 0.3 | Otter - Float/Rest | - | Otter - Not Significant |
| S1-27 | 9/22/15 17:19 | Sea Otter | 59.66389 | -151.81865 | 1 | None | 4 | 116.95 | No | No | No | No | 0.105 | 0.075 | Otter - Float/Rest | - | Otter - Not Significant |
| S1-28 | 9/22/15 17:20 | Sea Otter | 59.66236 | -151.80785 | 1 | None | 4 | 119.11 | No | No | No | No | 0.357 | 0.325 | Otter - Float/Rest | - | Otter - Not Significant |
| S1-29 | 9/22/15 17:21 | Sea Otter | 59.65945 | -151.81017 | 1 | None | 4 | 122.4 | No | No | No | No | 0.227 | 0.2 | Otter - Float/Rest | - | Otter - Not Significant |

| Id | Date/ Time (AKDT) | Species | Sighting Latitude (N) | Sighting Longitude (W) | Count | Precip | Bft | Vessel Speed (COG) | In use | Chirp | Boomer | Airgun | Source (km) | Vessel (km) | Behavior | Exposure Level | Reaction Observed |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S1-30 | 9/22/15 17:21 | Sea Otter | 59.65889 | -151.80818 | 1 | None | 4 | 120.78 | No | No | No | No | 0.2 | 0.175 | Otter - Float/Rest | - | Otter - Not Significant |
| S1-31 | 9/22/15 17:22 | Sea Otter | 59.65795 | -151.80068 | 1 | None | 4 | 113.98 | No | No | No | No | 0.237 | 0.2 | Otter - Travel/swim | - | Otter - Significant |
| S1-33 | 9/22/15 17:26 | Sea Otter | 59.6541 | -151.78319 | 1 | None | 4 | 116.22 | No | No | No | No | 0.236 | 0.2 | Otter - Float/Rest | - | Otter - Not Significant |
| S1-34 | 9/22/15 17:28 | Sea Otter | 59.65156 | -151.77275 | 1 | None | 4 | 116.19 | No | No | No | No | 0.131 | 0.1 | Otter - Travel/swim | - | Otter - Not Significant |
| S1-32 | 9/22/15 17:29 | Humpback Whale | 59.64685 | -151.76494 | 1 | None | 4 | 113.98 | No | No | No | No | 0.434 | 0.4 | Travel | - | None |
| S1-35 | 9/22/15 17:35 | Sea Otter | 59.64132 | -151.7369 | 1 | None | 4 | 118.6318754 | No | No | No | No | 0.237 | 0.2 | Otter - Travel/swim | - | None |
| S1-36 | 9/22/15 17:43 | Sea Otter | 59.63064 | -151.69908 | 1 | None | 5 | 119.287165 | No | No | No | No | 0.287 | 0.25 | Otter - Float/Rest | - | Otter - Not Significant |
| S1-37 | 9/22/15 17:50 | Humpback Whale | 59.62192 | -151.66348 | 1 | None | 5 | 89.8 | No | No | No | No | 0.287 | 0.25 | Travel | - | None |
| S1-38 | 9/22/15 17:56 | Sea Otter | 59.61784 | -151.63643 | 1 | None | 5 | 115.11 | No | No | No | No | 0.153 | 0.12 | Otter - Travel/swim | - | None |
| S1-39 | 9/22/15 18:00 | Sea Otter | 59.61396 | -151.61801 | 2 | None | 5 | 113.46 | No | No | No | No | 0.102 | 0.1 | Otter - Pup on mom | - | None |

| Id | Date/ Time (AKDT) | Species | Sighting Latitude (N) | Sighting Longitude (W) | Count | Precip | Bft | Vessel Speed (COG) | In use | Chirp | Boomer | Airgun | Source (km) | Vessel (km) | Behavior | Exposure Level | Reaction Observed |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S1-41 | 9/22/15 18:11 | Sea Otter | 59.6017 | -151.56179 | 3 | None | 5 | 99.81 | No | No | No | No | 0.083 | 0.05 | Otter - Float/Rest | - | Otter - Significant |
| S1-42 | 9/22/15 18:11 | Sea Otter | 59.60093 | -151.56002 | 1 | None | 5 | 99.1 | No | No | No | No | 0.109 | 0.075 | Otter - Float/Rest | - | None |
| S1-43 | 9/22/15 18:12 | Sea Otter | 59.59954 | -151.55571 | 2 | None | 5 | 98.42 | No | No | No | No | 0.165 | 0.15 | Otter - Float/Rest | - | None |
| S1-44 | 9/22/15 18:14 | Sea Otter | 59.60142 | -151.54298 | 3 | None | 5 | 96.84 | No | No | No | No | 0.19 | 0.2 | Otter - Float/Rest | - | Otter - Not Significant |
| S1-40 | 9/22/15 18:23 | Humpback Whale | 59.55006 | -151.49287 | 4 | None | 5 | 98.33 | No | No | No | No | 5.006 | 5 | Other | - | None |
| S1-45 | 9/22/15 18:40 | Harbor Seal | 59.59989 | -151.40517 | 1 | None | 3 | 91.24507731 | No | No | No | No | 0.129 | 0.1 | Rest | - | None |
| S1-46 | 9/22/15 18:45 | Harbor Seal | 59.60358 | -151.41617 | 1 | None | 3 | 87.85275447 | No | No | No | No | 0.136 | 0.1 | Unknown | - | None |
| S1-47 | 9/22/15 18:55 | Harbor Seal | 59.60542 | -151.42488 | 1 | None | 1 | 22.88057447 | No | No | No | No | 0.013 | 0.05 | Mill | - | None |
| S1-48 | 9/22/15 19:02 | Harbor Seal | 59.60522 | -151.4249 | 1 | None | 1 | 86.31880147 | No | No | No | No | 0.034 | 0.07 | Mill | - | None |
| S1-49 | 9/23/15 19:02 | Harbor Seal | 59.60546 | -151.42444 | 1 | None | 1 | 160.22 | No | No | No | No | 0.084 | 0.05 | Mill | - | None |
| S1-50 | 9/23/15 19:18 | Humpback Whale | 59.57477 | -151.4445 | 3 | None | 1 | 251.81 | No | No | No | No | 2.595 | 2.564 | Unknown | - | None |
| S1-52 | 9/23/15 19:25 | Humpback Whale | 59.53386 | -151.54652 | 2 | None | 1 | 265.31 | No | No | No | No | 8.232 | 8.203 | Unknown | - | None |
| S1-51 | 9/23/15 19:26 | Humpback Whale | 59.57996 | -151.46177 | 4 | None | 1 | 265.55 | No | No | No | No | 1.017 | 1 | Surface Active - Mill | - | None |
| S1-53 | 9/23/15 19:30 | Sea Otter | 59.58744 | -151.47232 | 1 | None | 3 | 255.85 | No | No | No | No | 0.136 | 0.1 | Otter - Float/Rest | - | None |
| S1-54 | 9/23/15 19:30 | Sea Otter | 59.58775 | -151.47599 | 1 | None | 3 | 267.74 | No | No | No | No | 0.084 | 0.05 | Otter - Float/Rest | - | None |

| Id | Date/ Time (AKDT) | Species | Sighting Latitude (N) | Sighting Longitude (W) | Count | Precip | Bft | Vessel Speed (COG) | In use | Chirp | Boomer | Airgun | Source (km) | Vessel (km) | Behavior | Exposure Level | Reaction Observed |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S1-55 | 9/23/15 19:32 | Sea Otter | 59.58739 | -151.4857 | 1 | None | 3 | 262.41 | No | No | No | No | 0.086 | 0.05 | Otter - Float/Rest | - | None |
| S1-56 | 9/23/15 19:52 | Sea Otter | 59.59178 | -151.55729 | 1 | None | 4 | 287.03 | No | No | No | No | 0.087 | 0.05 | Unknown | - | None |
| S1-57 | 9/23/15 20:09 | Sea Otter | 59.60556 | -151.64077 | 1 | None | 4 | 285.09 | No | No | No | No | 0.094 | 0.07 | Otter - Float/Rest | - | None |
| S1-58 | 9/27/15 18:14 | Harbor Seal | 60.68738 | -151.3996 | 1 | Light Rain | 1 | 131.79 | No | No | No | No | 0.03 | 0.03 | Travel | - | None |
| S1-59 | 9/29/15 13:05 | Harbor Seal | 60.65145 | -151.3769 | 1 | Light Rain | 2 | 60.36 | No | No | No | No | 0.132 | 0.1 | Travel | - | None |
| S1-60 | 10/5/15 15:24 | Harbor Seal | 60.78345219 | -151.3633866 | 1 | None | 2 | N/A | No | No | No | No | 310 | 300 | Dead Seal | - | None |
| S1-61 | 10/12/15 18:40 | Harbor Seal | 60.7506979 | -151.2978034 | 1 | None | 1 | 174.37 | Yes | Yes | No | No | 637 | 600 | Travel | - | None |
| S1-62 | 10/14/15 11:25 | Harbor Seal | 60.85968494 | -151.189798 | 1 | None | 0 | 34.33 | Yes | Yes | No | No | 71 | 75 | Surface Active - Travel | B | Look |
| S1-63 | 10/16/15 14:33 | Harbor Seal | 60.64715883 | -151.3760557 | 1 | None | 4 | 277.77 | No | No | No | No | 84 | 100 | Surface Active - Mill | - | None |

# Appendix C Exposure Summary

**Table 12. Summary table of exposure sightings including date, time, species, count, distance to source, array volume, Level A or B exposure zone, mitigation activity, behavior at the time of sighting and a reaction if observed.**

| Date/Time | Species | Sighting Latitude (N) | Sighting Longitude (W) | Count | Calves | Equipment in Use | Distance to Equipment (m) | Level A or B | Mitigation Activity | Behavior State | Reaction | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2015-09-05 09:51 AKDT | Harbor Seal | 60.68046 | -151.442 | 1 | 0 | SBP Chirp, Airgun | 70.7 | B | None | Swim/sink | None | Low-swimming seal that sank soon after visual detection |
| 2015-09-06 11:27 AKDT | Harbor Seal | 60.6427 | -151.407 | 1 | 0 | SBP Chirp, Airgun | 179.8 | B | None | Swim/sink | None | Head low at the surface for only a few seconds and then sank |
| 2015-09-11 07:33 AKDT | Harbor Seal | 60.64973 | -151.409 | 1 | 0 | SBP Chirp | 110.1 | B | None | Look/sink | Look | Bottlenosing and looked at the boat and sank. |
| 2015-09-15 19:02 AKDT | Harbor Seal | 60.63153 | -151.445 | 1 | 0 | SBP Boomer | 106.3 | B | None | Look/sink | Look | Looked at the vessel and sank. |
| 2015-09-16 09:58 AKDT | Harbor Seal | 60.53404 | -151.432 | 1 | 0 | SBP Chirp & SBP Boomer | 233 | B | None | Rest | Look | Looked at vessel, looked around, then sank. Exposed to Level B boomer. |

| Date/Time | Species | Sighting Latitude (N) | Sighting Longitude (W) | Count | Calves | Equipment in Use | Distance to Equipment (m) | Level A or B | Mitigation Activity | Behavior State | Reaction | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2015-10-14 11:25 AKDT | Harbor Seal | 60.8596 | -151.1897 | 1 | 0 | SBP Chirp & SBP Boomer | 70.7 | B | None | Surface Active Travel | Look | Seal swam past the boat in the opposite direction, traveling towards shore, looking at the tall buoy several times as we passed. At last sighting, the seal was ~350m away. |

# Appendix D Stranding Reports

Begins on next page.

## MARINE MAMMAL STRANDING REPORT - LEVEL A DATA

FIELD #: _____ NMFS REGIONAL #: _____ (NMFS USE) NATIONAL DATABASE#: _____ (NMFS USE)

COMMON NAME: Harbor Seal GENUS: Phoca SPECIES: vitulina

EXAMINER Name: Kristine Lindberg Affiliation: PSO - Simultea Sciences

Address: _____ Phone: Kate Lomac-MacNair, Supervisor-907-306-7870

Stranding Agreement or Authority: _____

**LOCATION OF INITIAL OBSERVATION**

State: AK County: Kenai peninsula

City: Nikiski / Osk dock

Body of Water: Cook Inlet

Locality Details: Outside Osk dock

Lat (DD): 60 . 78345 N

Long (DD): 151 . 31339 W

☒ Actual ☐ Estimated

How Determined: (check ONE)

☒ GPS ☐ Map ☒ Internet/Software

**OCURRENCE DETAILS** ☐ Restrand GE# _____ (NMFS Use)

**Group Event:** ☐ YES ☐ NO

If Yes, Type: ☐ Cow/Calf Pair ☐ Mass Stranding # Animals: 1 ☒ Actual ☐ Estimated

**Findings of Human Interaction:** ☐ YES ☐ NO ☒ Could Not Be Determined (CBD)

If Yes, Choose one or more: ☐ 1. Boat Collision ☐ 2. Shot ☐ 3. Fishery Interaction

☐ 4. Other Human Interaction: _____

How Determined (Check one or more): ☐ External Exam ☐ Internal Exam ☐ Necropsy

☐ Other: _____

Gear Collected? ☐ YES ☐ NO Gear Disposition: _____

**Other Findings Upon Level A:** ☐ YES ☐ NO ☐ Could Not Be Determined (CBD)

If Yes, Choose one or more: ☐ 1. Illness ☐ 2. Injury ☐ 3. Pregnant ☐ 4.Other: _____

How Determined (Check one or more): ☐ External Exam ☐ Internal Exam ☐ Necropsy

☐ Other: _____

**INITIAL OBSERVATION**

Date: Year: 2015 Month: 10 Day: 05

First Observed: ☐ Beach or Land ☒ Floating ☐ Swimming

**CONDITION AT INITIAL OBSERVATION** (Check ONE)

☐ 1. Alive ☒ 4. Advanced Decomposition

☐ 2. Fresh dead ☐ 5. Mummified/Skeletal

☐ 3. Moderate decomposition ☐ 6. Condition Unknown

**LEVEL A EXAMINATION** ☒ Not Able to Examine

Date: Year: _____ Month: _____ Day: _____

**CONDITION AT EXAMINATION** (Check ONE)

☐ 1. Alive ☐ 4. Advanced Decomposition

☐ 2. Fresh dead ☐ 5. Mummified/Skeletal

☐ 3. Moderate decomposition ☐ 6. Unknown

**INITIAL LIVE ANIMAL DISPOSITION** (Check one or more)

☐ 1. Left at Site ☐ 6. Euthanized at Site

☐ 2. Immediate Release at Site ☐ 7. Transferred to Rehabilitation:

☐ 3. Relocated Date: Year:_____ Month:_____ Day:_____ Facility:_____

☐ 4. Disentangled ☐ 8. Died during Transport

☐ 5. Died at Site ☐ 9. Euthanized during Transport

☐ 10. Other: _____

**CONDITION/DETERMINATION** (Check one or more)

☐ 1. Sick 7. Location Hazardous

☐ 2. Injured ☐ a. To animal

☐ 3. Out of Habitat ☐ b. To public

☐ 4. Deemed Releasable ☐ 8. Unknown/CBD

☐ 5. Abandoned/Orphaned ☐ 9.Other_____

☐ 6. Inaccessible _____

**MORPHOLOGICAL DATA**

**SEX** (Check ONE)

☐ 1. Male

☐ 2. Female

☒ 3. Unknown

**AGE CLASS** (Check ONE)

☐ 1. Adult ☐ 4. Pup/Calf

☐ 2. Subadult ☒ 5. Unknown

☐ 3. Yearling

☐ Whole Carcass ☐ Partial Carcass

Straight length:_____ ☐ cm ☐ in ☐ actual ☐ estimated

Weight:_____ ☐ kg ☐ lb ☐ actual ☐ estimated

**PHOTOS/VIDEOS TAKEN:** ☒ YES ☐ NO

Photo/Video Disposition: One small phone photo taken as vessel passed animal, ~100 m away.

**TAG DATA** Tags Were:

Present at Time of Stranding (Pre-existing): ☐ YES ☐ NO

Applied during Stranding Response: ☐ YES ☐ NO

| ID# | Color | Type | Placement* (Circle ONE) | Applied | Present |
|---|---|---|---|---|---|
| | | | D DF L LF LR RF RR | ☐ | ☐ |
| | | | D DF L LF LR RF RR | ☐ | ☐ |
| | | | D DF L LF LR RF RR | ☐ | ☐ |

* D= Dorsal, DF= Dorsal Fin; L= Lateral Body
LF= Left Front; LR= Left Rear; RF= Right Front; RR= Right Rear

**CARCASS STATUS** (Check one or more)

☒ 1. Left at Site ☐ 4. Towed: Lat_____ Long_____ ☐ 7. Landfill

☐ 2. Buried ☐ 5. Sunk: Lat_____ Long_____ ☐ 8. Unknown

☐ 3. Rendered ☐ 6. Frozen for Later Examination ☐ 9. Other_____

**SPECIMEN DISPOSITION** (Check one or more)

☐ 1. Scientific collection ☐ 2. Educational collection

☐ 3. Other: _____

Comments: _____

**NECROPSIED** ☒ NO ☐ YES ☐ Limited ☐ Complete

☐ Carcass Fresh ☐ Carcass Frozen/Thawed

**NECROPSIED BY:** _____

**Date: Year:** _____ **Month:** _____ **Day:** _____

NOAA Form 89-864; OMB Control No.0648-0178; Expiration Date 01/31/2017

PLEASE USE THE BACK SIDE OF THIS FORM FOR ADDITIONAL REMARKS

## ADDITIONAL REMARKS

**ADDITIONAL IDENTIFIER:** _____ (If animal is restranded, please indicate any previous field numbers here)

Sighted with seagull riding & feeding on body. Seal was floating south with the tide ~~[illegible]~~ outside the OSK area. We observed it as we passed in our survey boat, ~100m away.

**DISCLAIMER**

THESE DATA SHOULD NOT BE USED OUT OF CONTEXT OR WITHOUT VERIFICATION. THIS SHOULD BE STRICTLY ENFORCED WHEN REPORTING SIGNS OF HUMAN INTERACTION DATA.

**DATA ACCESS FOR LEVEL A DATA**

UPON WRITTEN REQUEST, CERTAIN FIELDS OF THE LEVEL A DATA SHEET WILL BE RELEASED TO THE REQUESTOR PROVIDED THAT THE REQUESTOR CREDIT THE STRANDING NETWORK AND THE NATIONAL MARINE FISHERIES SERVICE. THE NATIONAL MARINE FISHERIES SERVICE WILL NOTIFY THE CONTRIBUTING STRANDING NETWORK MEMBERS THAT THESE DATA HAVE BEEN REQUESTED AND THE INTENT OF USE. ALL OTHER DATA WILL BE RELEASED TO THE REQUESTOR PROVIDED THAT THE REQUESTOR OBTAIN PERMISSION FROM THE CONTRIBUTING STRANDING NETWORK AND THE NATIONAL MARINE FISHERIES SERVICE.

**PAPERWORK REDUCTION ACT INFORMATION**

PUBLIC REPORTING BURDEN FOR THE COLLECTION OF INFORMATION IS ESTIMATED TO AVERAGE 30 MINUTES PER RESPONSE, INCLUDING THE TIME FOR REVIEWING INSTRUCTIONS, SEARCHING EXISTING DATA SOURCES, GATHERING AND MAINTAINING THE DATA NEEDED, AND COMPLETING AND REVIEWING THE COLLECTION OF INFORMATION. SEND COMMENTS REGARDING THIS BURDEN ESTIMATE OR ANY OTHER ASPECT OF THE COLLECTION INFORMATION, INCLUDING SUGGESTIONS FOR REDUCING THE BURDEN TO: CHIEF, MARINE MAMMAL AND SEA TURTLE CONSERVATION DIVISION, OFFICE OF PROTECTED RESOURCES, NOAA FISHERIES, 1315 EAST-WEST HIGHWAY, SILVER SPRING, MARYLAND 20910. NOT WITHSTANDING ANY OTHER PROVISION OF THE LAW, NO PERSON IS REQUIRED TO RESPOND, NOR SHALL ANY PERSON BE SUBJECTED TO A PENALTY FOR FAILURE TO COMPLY WITH, A COLLECTION OF INFORMATION SUBJECT TO THE REQUIREMENTS OF THE PAPERWORK REDUCTION ACT, UNLESS THE COLLECTION OF INFORMATION DISPLAYS A CURRENTLY VALID OFFICE OF MANAGEMENT AND BUDGET (OMB) CONTROL NUMBER.

NOAA Form 89-864, OMB Control No 0648-0178; Expiration Date 01/31/2017

| HOC ID | Date | Assessment Title | Location | Observation (HOC) (White - Unsafe Act or Condition) (Green - Safe Act or Condition) | Observer Name (HOC) | HOC Coordinator (HOC) | Immediate Action Taken (HOC) | Status (HOC) |
|---|---|---|---|---|---|---|---|---|
| 113597 | 08/20/15 | Trip Hazard | Instrument room | Entry door to instrument room has full frame with 2x4 at the floor. This is a trip hazard for people entering room. | Ted Tremblay | Charles Hall | Made everyone aware of the hazard and posted sign about hazard. Further action would be cutting out 2x4 on floor to eliminate hazard completely. | Closed |
| 113598 | 08/21/15 | Trip Hazard | Instrument room | Trip hazard at entry to instrument room, 2x4 door frame on deck. | Michael Blaes | Charles Hall | Informed others of hazard. Suggest marking deck with yellow/black hazard tape. | Closed |
| 113599 | 08/21/15 | Wet Deck in Head | Accommo-dation | Wet deck in head, in front of showers. | Michael Blaes | Charles Hall | Wiped up deck with towel. Further action suggestion to put non-skid in front of showers. | Closed |
| 113601 | 08/26/15 | Good Job by Fugro | Back Deck | Congratulations on a good mob operations. Air & Electrical lines covered eliminating trip hazards. All work at height accomplished with fall protection. | David King | Charles Hall | Good job by Fugro on mobilization of the Q105. | Closed |
| 113602 | 08/28/15 | Fasten PFD | Back Deck | Person was on back deck with PFD fastened properly. | Kevin Anderson | Charles Hall | Told person on deck to fasten PFD. | Closed |
| 113720 | 09/02/15 | Thanks Boat Crew | Back Deck | Boat crew always has PPE on, very helpful and watches our back. Helps with deployment of gear. Deck is always neat and clean, everything in its place. | Freddie Wilson | Charles Hall | | Closed |
| 113721 | 09/02/15 | Work Station | Galley Kitchen Mess | Dining table in galley is a non-ergonomic work station. | Michael Blaes | Charles Hall | Action taken - take breaks and stretch. Use lumbar support pillows. | Closed |
| 113723 | 09/02/15 | Hoses on deck | Back Deck | Hoses not tied down on deck. | Todd Oster | Charles Hall | Talked about strapping down to post. | Closed |
| 113724 | 09/03/15 | Poo Streaks | Accommo-dation | Poo streaks in toilet / on lid. | Michael Blaes | Charles Hall | Wipe off / clean. | Closed |

| HOC ID | Date | Assessment Title | Location | Observation (HOC) (White - Unsafe Act or Condition) (Green - Safe Act or Condition) | Observer Name (HOC) | HOC Coordinator (HOC) | Immediate Action Taken (HOC) | Status (HOC) |
|---|---|---|---|---|---|---|---|---|
| 113966 | 09/04/15 | Empty Pockets | Accommo-dation | Found stainless screw in washer/dryer. | Michael Blaes | Charles Hall | Removed screw. Remind others to empty pockets before washing. | Closed |
| 113968 | 09/05/15 | Recognition | Instrument room | Observed Fred & Wayne diligently trouble shooting seismic streamer cable until issues were resolved. Great job guys. | Michael Blaes | Charles Hall | Thanks for doing a job. Recognition for perseverance. | Closed |
| 113969 | 09/06/15 | Muster List | Galley/Kitchen/Mess | Muster list should be a hard copy - not on an erasable white board. | Michael Blase | Charles Hall | None. | Closed |
| 113970 | 09/04/15 | Escape Hatch | Accommo-dation | To climb out of escape hatch there is no bar or handle to grab onto to yourself out off of ladder. Grabbing carpet on floor makes you slide down ladder & loose balance. It is impeding the escape. | Ted Tremblay | Charles Hall | Informed vessel crew of situation. Suggested putting a bar or handle on floor to right hand side of hatch, next to wall. | Closed |
| 113971 | 09/07/15 | Water Depth | Boat Vessel | Get depth profile of docking area My Marie or the Westerly before going to collect provisions. | Ian Shirley | Charles Hall | Notify Captain. Suggest do not dock vessel during low tide. | Closed |
| 114428 | 09/07/15 | HOC Resolution | Boat Vessel | HOC's should be accepted / rejected / acted upon and shared amongst others when / if applicable. (and to boat crew) | Michael Blaes | Charles Hall | No action / Communication on previous HOC"S. | Closed |
| 114429 | 09/08/15 | Burning smell | Galley Kitchen Mess | Smelled burning fibers or electronics. | Eric Swanson | Charles Hall | Searched for source, could not find it. Crew member identified it as the heater. Noticed people store equipment next to heater, may accidentally turn on. | Closed |
| 114431 | 09/07/15 | Fishing buoys | Quayside Wharf | Buoys for the fishing net cables are not marked offshore of the ASRC dock. They are not marked with Norwegian buoy or a waypoint. Vessel water hazard. | Noel Rogers | Charles Hall | Informed PC. | Closed |

| HOC ID | Date | Assessment Title | Location | Observation (HOC) (White - Unsafe Act or Condition) (Green - Safe Act or Condition) | Observer Name (HOC) | HOC Coordinator (HOC) | Immediate Action Taken (HOC) | Status (HOC) |
|---|---|---|---|---|---|---|---|---|
| 114434 | 09/09/15 | Cutting Tool | Back Deck | Employee on back deck was having trouble splitting chaffing guard with a knife. Fred Wilson used safety cutter to finish job. It was much better suited to the task. | Zack Bellone | Charles Hall | Used safety knife instead of regular knife to complete task. | Closed |
| 115204 | 09/28/15 | Crane operation | Aft deck | Using crane to lower pinger OTSM. A sign was placed in front of the back door stating "hard hat area, crane in use" One person crossed into area without proper PPE | Wayne Labrie | Roy Pickett | Had person removed from area. Posted someone next to door during crane operations | Closed |
| 115484 | 09/26/15 | Standing in bite of cable | Back Deck | While deploying boomer, I stepped into the bite of the cable. Fred Wilson noticed and pointed it out to me. | Bart Thibodeaux | Charles Hall | Removed body from bite of cable. | Closed |
| 115485 | 09/18/15 | Safety Signs | Deck | Safety signs being ignored and not being followed properly. | Ben Jantzi | Charles Hall | Brought up at the safety meeting. Be more vigilant of all signs and act accordingly. Do not ignore. | Closed |
| 115486 | 09/20/15 | HOC cards | Boat Vessel | Pressured to put in HOC cards. If it works don't fix it. Personnel are felling over pressured to come up with HOC cards. | Dave Mastolier | Charles Hall | | Closed |
| 115510 | 09/19/15 | Fluorescent Blub Storage | Boat Vessel | Fluorescent bulb spares stored overhead. Tall individuals strike heads on the elements and Breakable sections of bulbs. | Eric Swanson | Charles Hall | Notified crew members, bulbs moved. | Closed |
| 115511 | 09/26/15 | Safe Behavior | Boat Vessel | New survey crew member proactively volunteered to take heavy equipment on he reached back deck. Safe handoff. | Eric Swanson | Charles Hall | None needed, continued safe behavior. | Closed |

| HOC ID | Date | Assessment Title | Location | Observation (HOC) (White - Unsafe Act or Condition) (Green - Safe Act or Condition) | Observer Name (HOC) | HOC Coordinator (HOC) | Immediate Action Taken (HOC) | Status (HOC) |
|---|---|---|---|---|---|---|---|---|
| 115513 | 09/16/15 | Dirty Deck | Boat Vessel | Loose metal shards on deck around gangway from earlier task. Gangway not secured, loose on deck. shards present cutting hazard. Loose gangway presents crushing hazard. | Ian Shirley | Charles Hall | Notified bridge of hazards. Crew cleaned up debris and secured gangway. | Closed |
| 115514 | 09/16/15 | Deck Cables | Back Deck Cable | Cables need to be on the deck not at knee high so that access is available. Lay cables on the deck. | Kevin Anderson | Charles Hall | None | Closed |
| 115515 | 09/20/15 | Healthy Food | Galley Kitchen Mess | Thanks to Kevin for preparing lots of healthier options throughout the day- oatmeal & raw veggies. | Patti Haase | Charles Hall | Eating healthier. | Closed |
| 115517 | 09/26/15 | Standing in bite of cable | Back Deck Cable | While deploying boomer warned person paying out cable of standing inside loop. | Phillip Daniels | Charles Hall | Person stepped outside of loop. | Closed |
| 115519 | 09/20/15 | Flip Flops | Back Deck | No one should walk outside with flip flops with bare feet. This is a work environment. If walking outside everyone needs to wear closed toe shoes. | Ted Tremblay | Charles Hall | Tell everyone the safety rules. | Closed |
| 117812 | 10/01/15 | Safe Act | Bridge | While working on wheelhouse changing antenna cables personnel wore all appropriate PPE, including fall restraint. | Bart Thibodeaux | Charles Hall | None | Closed |
| 117813 | 10/15/15 | Snag Hazard | Galley Kitchen Mess | Eric Swanson noticed a staple sticking out of the side of the bench. | Bart Thibodeaux | Charles Hall | Eric notified a member of the vessel crew who removed the staple. | Closed |
| 117814 | 10/12/15 | DOT Truck | Office Building | Andi Hagen with Seacore is driving a rental truck with DOT registration on side | Charles Hall | Charles Hall | Notified project lead of the situation and need for CDL and logbook. | Closed |
| 117815 | 10/17/15 | Low Freon | Galley Kitchen Mess | Sight glass on refrigeration compressor shows Freon is a little low. | Darrell Miller | Charles Hall | Informed captain of the situation. | Closed |

| HOC ID | Date | Assessment Title | Location | Observation (HOC) (White - Unsafe Act or Condition) (Green - Safe Act or Condition) | Observer Name (HOC) | HOC Coordinator (HOC) | Immediate Action Taken (HOC) | Status (HOC) |
|---|---|---|---|---|---|---|---|---|
| 117816 | 10/13/15 | Slip Hazard | Back Deck | Saw plastic debris on back deck that posed a slip/trip hazard. | Darrell Miller | Charles Hall | Picked up debris and disposed in proper recycle bin. | Closed |
| 117817 | 10/01/15 | Loose Threads | Instrument room | Loose threads on surveyor's shirt. | Eric Swanson | Charles Hall | Used safety knife to prevent injury while trimming threads. | Closed |
| 117818 | 10/11/15 | Hard Hat | Back Deck | Hard hat was removed while crane working overhead. | Eric Swanson | Charles Hall | Alerted crew to put hard hat back on. Hard hat was replaced. | Closed |
| 117819 | 10/04/15 | Good job crew | Boat Vessel | All crew are concerned about looking out for one another and keeping it safe. | Noel Rodgers | Charles Hall | Good job. Informed PC. | Closed |
| 117820 | 10/02/15 | Good job | Boat Vessel | Todd is always very aware of everything going on, on board the vessel. He recently saw the tow line for the boomer was too tight. He took care of it himself. | Patti Haase | Charles Hall | Todd loosened line to prevent chafe. | Closed |
| 117821 | 10/08/15 | Shoe Laces | Galley Kitchen Mess | Walking back to my seat and noticed that my left shoelace was undone. | Robert Faragher | Charles Hall | Stopped and laced my shoe back up in order to prevent myself from tripping and falling over | Closed |

# APPENDIX 1-F

## LESSONS LEARNED/CONSTRUCTIVE COMMENTS FOR FUTURE IMPROVEMENT

## LESSONS LEARNED LOG

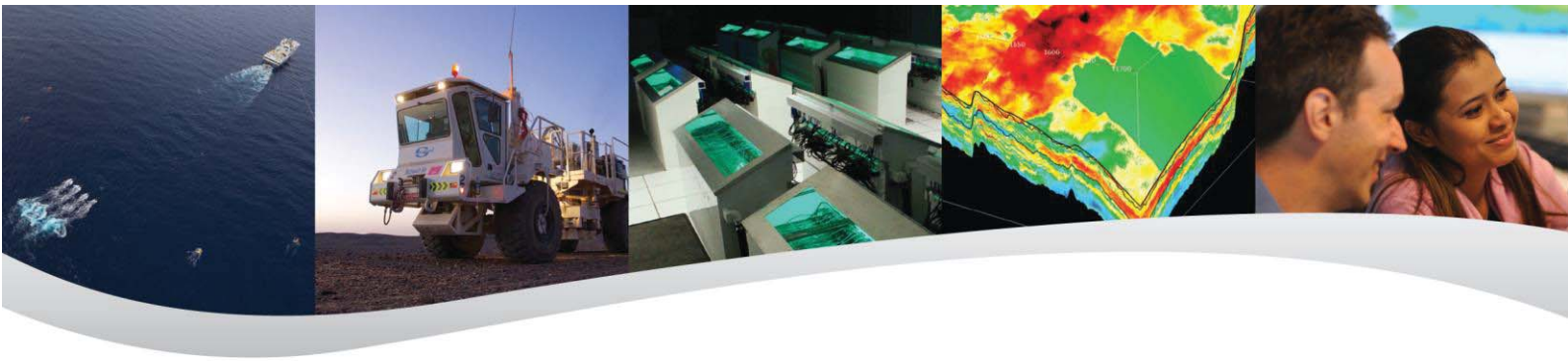
| Project | Alaska LNG | Project Manager | Abhishek Shethji |
|---|---|---|---|

**Description:** The event, process, procedure, actions etc. that: substantially helped meet (did not meet) project objectives; should be (not be) used on the project; went well; went badly; could be improved. Include the reasons.
**Project Phase:** Phase in the project applicable to the Lessons Learned, i.e. Pre Project, Start Up, Implementation, Handover & Close Out, Evaluation. Can be used for analysis to target where improvements can be applied.
**Topic:** e.g. Management of the project, contract, proposal, cost, time scales, equipment, personnel, training, methods, quality procedures, management of risk.
**Impact:** Actual or potential; positive or negative effect on the project from the; event, process, procedure. Can be expressed in loss of benefit, time, cost, quality and client relations
**Action Taken:** What did the project do (not do) that resulted in a positive or negative event, action etc.
**Recommendation:** Implemented or proposed including what should be done differently the next time. Include measurements and data that can be applied to: the current project, future projects, passed to other Opcos.

| No. | Date | Description | Project Phase | Topic | Impact | Action Taken | Recommendation. |
|---|---|---|---|---|---|---|---|
| 14 | 10-Aug | Mission planning problems with 6.25 & 3.125 m shot spacing. Large number of shot points bogs down line planning. | Line Planning, Mobilization | Application | extended time to complete mission plan. | Divided up mission plan and re-combined before delivery. | Further development with the FGSI Pre-plot Tools. |
| 15 | 30-Nov | No clearly defined scope of work regarding systems used in the field, parameters for the appropriate settings with these systems, processing workflow, data deliverable requirements. Present Scope of Work was irrelevant to the project, and not clear on these things | Project Planning/Implementation | Management/ Method | Led to unanswered questions about the systems used for the project, and data limitations and targets for project acquisition staff, processing staff, QC staff, and reporting staff to deliver a consistent product. | Used the current scope of work to the best of the team's abilities, acquired data that could have been better. | Develop a scope of work that outlines (ahead of the project) appropriate boundaries for acquisition, charting deliverables, processing requirements for seismic quality and target depths, include the systems that were actually employed in the field, and not a cut-and-paste document that conflicted with verbal/email changes in the survey plan on a consistent basis. |
| 16 | 30-Nov | Lack of direct communication between project management team. | Project Planning/Execution | Management/ Method | A lack of uniform convergence of ideas and relation of project goals and direction led to constant questions and misinformed decision making on the fly which usually resulted in restructuring of project activities and deliverables throughout the project. | Acquisition, processing, and interpretation teams followed the last direct statements by project management/client representatives, often resulting in other management individuals to change the direction of action. | Having meetings that address project goals and objectives, outlining these articles prior to mobilization would reduce lost time and energy spent on activities that would have to be repeated several times. |
| 17 | 30-Nov | Recommendation: Consultation with science team prior to project start | Project Planning | Management/ Method | Structuring the project for hazards analysis and planning saves time, and energy. | Have discussions with team members on the capabilities of equipment and design of survey goals. | If everyone works together to discuss the project, or people familiar with the project, we can work together for a better product. This also includes providing all client-driven data and previous information relevant to the survey so that we may use it to produce superior charts. |

# APPENDIX 1-G

## 2DHR PROCESSING REPORT FOR COOK INLET SURVEY (CGG)



# 2DHR Processing Report

# for

# Cook Inlet Survey

## Survey ID :SS15166

## Client :
## Fugro Geoservices for AKLNG

## FGSI Job Number: 24157058

### Report Number: SS15166-IS

| Rev | Description | Prepared | Checked | Date |
|---|---|---|---|---|
| 0 | 1st draft | Ian Shirley | | 17/11/15 |
| **1** | 2nd draft | Ian Shirley | | 25/11/15 |
| **2** | Final Draft | Ian Shirley | | 25/11/15 |

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# INTRODUCTION

## General

This report describes the processing of approximately 220.05 kilometres of 2D High Resolution marine seismic data, acquired by Qualifier 105 located in the Cook Inlet using the Long streamer data (Figure 1).

The data were processed on-board the Qualifier 105 by CGG, using CGG's proprietary software, 'Uniseis'

Acquisition consisted of 3 different methods:

1. Long streamer with 6.25 group spacing for 24 channels and a 60 cu. in. airgun. Acquiring 220.05km of data

2. Short streamer with 1.56 group spacing for 24 channels and a 60 cu. in. airgun. Acquiring 299.7km of data.

3. Short streamer with 1.56 group spacing for 24 channels and a 300 joule boomer. Acquiring 145.8km for the Boomer LNG site, 284.14km for the approach section, 465.97km for the pipeline section and 203.2km in added data to the pipeline section.

## Objectives

The objective of this processing was to obtain a set of 2D data of the highest possible resolution in time and space, to assist the client in the identification of potential geohazards for a gas pipeline and processing dock using three different datasets comprised of short and long streamer airgun data and multichannel boomer data. **For the purpose of this report we will show the processing flow used with the long streamer airgun data. The short streamer airgun and boomer data followed a similar flow.**

## SCOPE OF WORK

The survey is comprised of 36 lines including main lines (bearing 162°/342°), and cross lines (bearing 90°). Water depths in the area are approximately 21m to 36m. See Figure 1 for line plan.

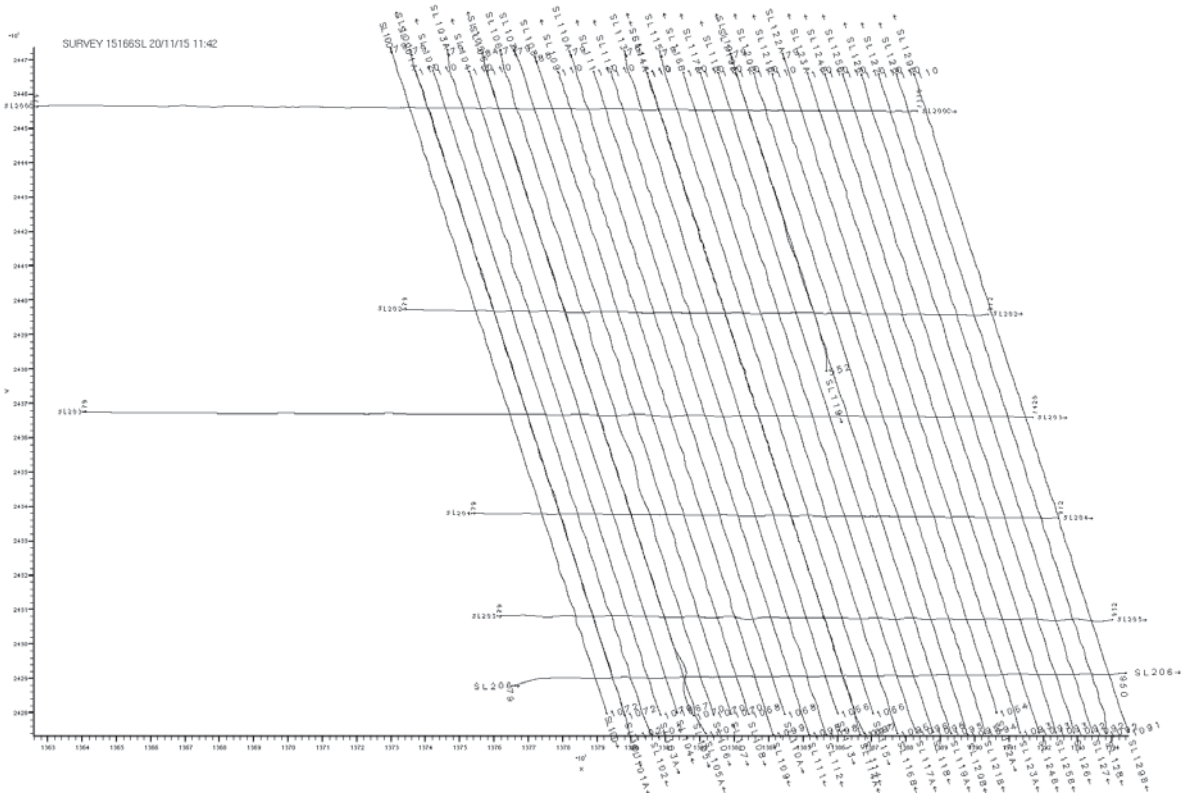



Figure 1: Digital Line Plan derived from Navigation

## ACQUISITION CONFIGURATION

### Long Streamer Airgun

#### Seismic Source Array

| | |
|---|---|
| Type I/O | G.I. Gun |
| Array Volume | 60 cu. in. |
| Array Configuration | Single 60 cu. In. G.I. Gun |
| Energy | 2000psi |
| Tow depth | 2m +/- 1m |
| Shot point interval | 6.25m |

#### Seismic Sensor Array

| | |
|---|---|
| Streamer Type | GEO-EEL |
| Active Streamer Length | 200m |
| Number of Channels | 24 |
| Group Interval | 6.25m |
| Tow Depth | 2m +/- 1.0m |
| Fold | 12 |
| Offset Source-Near Group | 24m |

#### Seismic Recording Instrument

| | |
|---|---|
| Recorder Type | GEO-EEL |
| Recording Medium | Disk |
| Format | SEG-D 8058 |
| Sample Interval | 0.5ms |
| Record Length | 2s |
| Data Repeater Module | Off |
| Filters | 0Hz Low Cut, 1000Hz High Cut |
| Recording Instrument Delay Time | -20ms |

### Short Streamer Airgun

#### Seismic Source Array

| | |
|---|---|
| Type I/O | G.I. Gun |
| Array Volume | 60 cu. in. |
| Array Configuration | Single 60 cu. In. G.I. Gun |
| Energy | 2000psi |
| Tow depth | 2m +/- 1m |
| Shot point interval | 6.25m |

#### Seismic Sensor Array

| | |
|---|---|
| Streamer Type | GEO-EEL |
| Active Streamer Length | 37.5m |
| Number of Channels | 24 |
| Group Interval | 1.5625m |
| Tow Depth | 2m +/- 1m |
| Fold | 3 |
| Offset Source-Near Group | 27m |

**Seismic Recording Instrument**

| | |
|---|---|
| Recorder Type | GEO-EEL |
| Recording Medium | Disk |
| Format | SEG-D 8058 |
| Sample Interval | 0.25ms |
| Record Length | 1s |
| Data Repeater Module | Off |
| Filters | 0Hz Low Cut, 1000Hz High Cut |
| Recording Instrument Delay Time | -25ms |

**Boomer**

**Seismic Source Array**

| | |
|---|---|
| Type I/O | Boomer |
| Array Volume | N/A. |
| Array Configuration | Single Boomer |
| Energy | 300 Joules |
| Tow depth | .304m +/- 0.5m |
| Shot point interval | 3.125m |

**Seismic Sensor Array**

| | |
|---|---|
| Streamer Type | GEO-EEL |
| Active Streamer Length | 37.5m |
| Number of Channels | 24 |
| Group Interval | 1.5625m |
| Tow Depth | 2m +/- 1.0m |
| Fold | 6 |
| Offset Source-Near Group | 24m |

**Seismic Recording Instrument**

| | |
|---|---|
| Recorder Type | GEO-EEL |
| Recording Medium | Disk |
| Format | SEG-D 8058 |
| Sample Interval | 0.25ms |
| Record Length | 0.225s/0.25s/0.5s |
| Auxiliary Channels Types | 1 |
| Data Repeater Module | Off |
| Filters | 0Hz Low Cut, 2000Hz High Cut |
| Recording Instrument Delay Time | -6ms |

**PROCESSING HARDWARE AND SOFTWARE CONFIGURATION**

**Primary/Secondary (Backup) Machine:**

Onboard Machine: HP Z420 WorkStation
Screens: 2 x 30”
CPU Type: Intel Xeon Processor E5-1650 (6cores, 3.5 GHz Turbo Processors)
RAM: 32 GB in Total
Hard Disk: 1Tb Storage, 256 GB SSHD

Software: CGG's proprietary processing software Uniseis (Version 1309 – most recent)

## PROCESSING TESTS

The field data were recorded in SEG-D 8058 format, and transferred to the on-board processing workstation electronically.

## PRE STACK

The data were reformatted and converted into CGG's internal processing format. The data were recorded as 24 channel, 2s record length with a 0.5ms sample interval for the long streamer airgun data. At this stage the data were QC'd for dropped shots, bad channels and noisy records.

A -20ms bulk shift was applied to the data to compensate for the delay in the GEO-EEL recording system (Figure 2).

Pre-stack testing was principally performed on Line SL102.

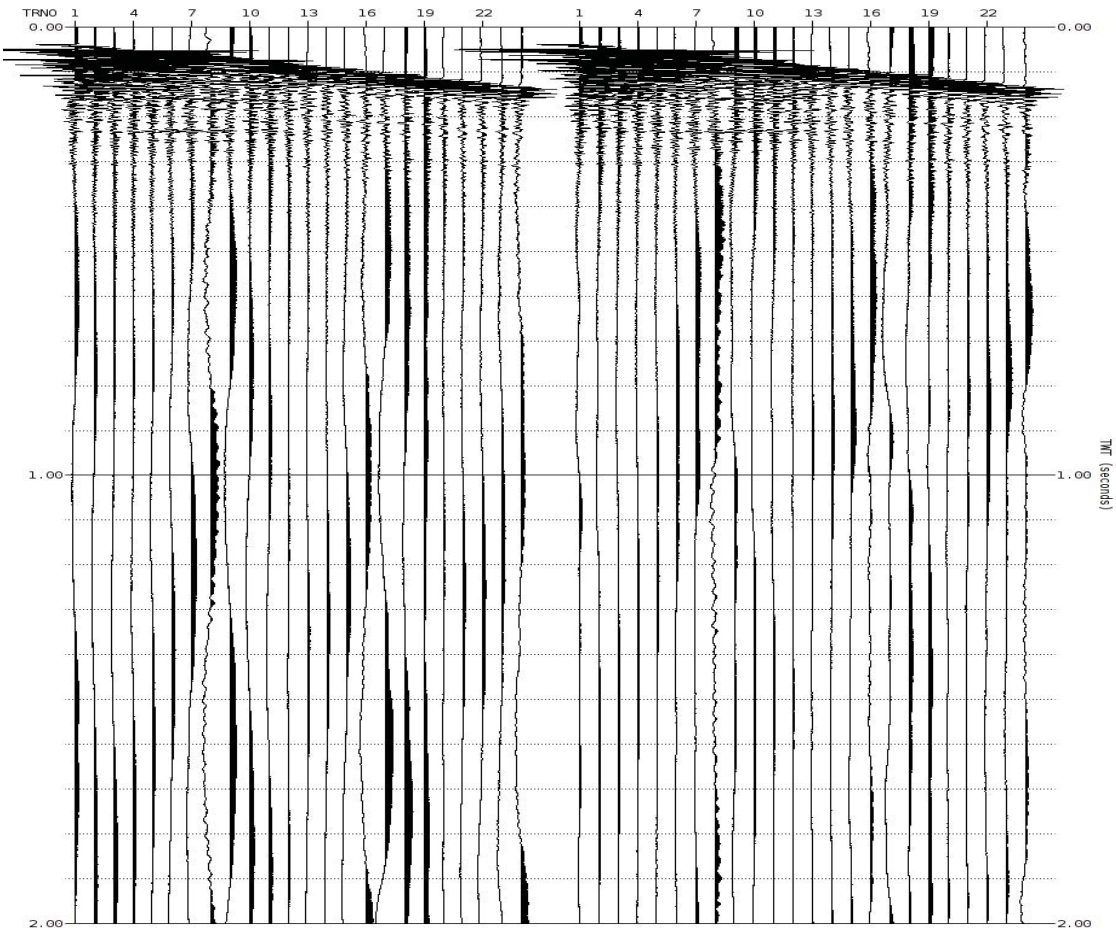



Figure 2: Raw Shots

## Amplitude Recovery

A single T- squared amplitude compensation algorithm was applied to all lines in the survey (Figure 3-5).

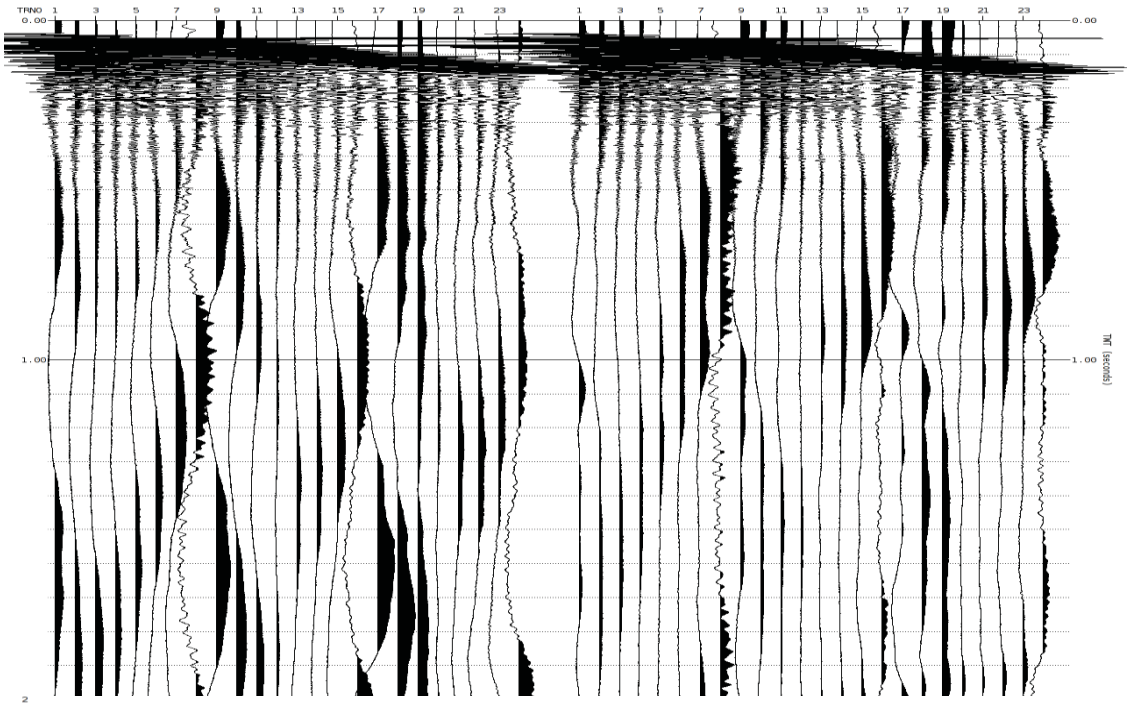



Figure 3: Raw shots

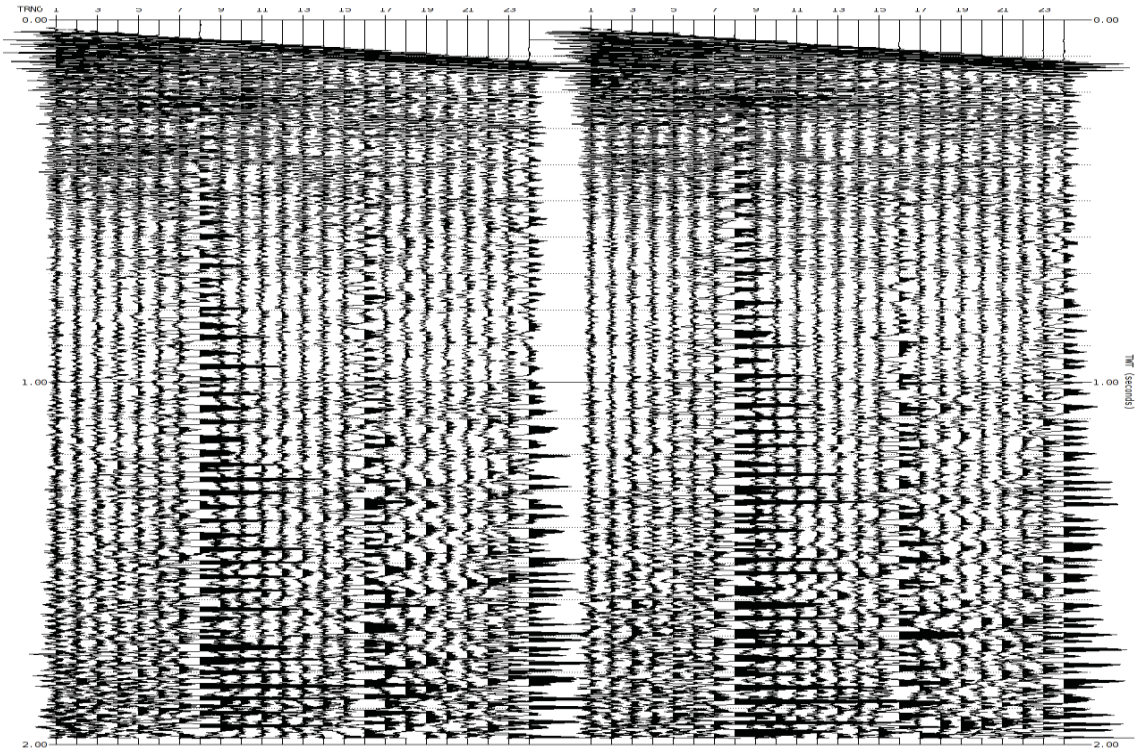



Figure 4: Filtered Shots with $T^2$ Gain Recovery

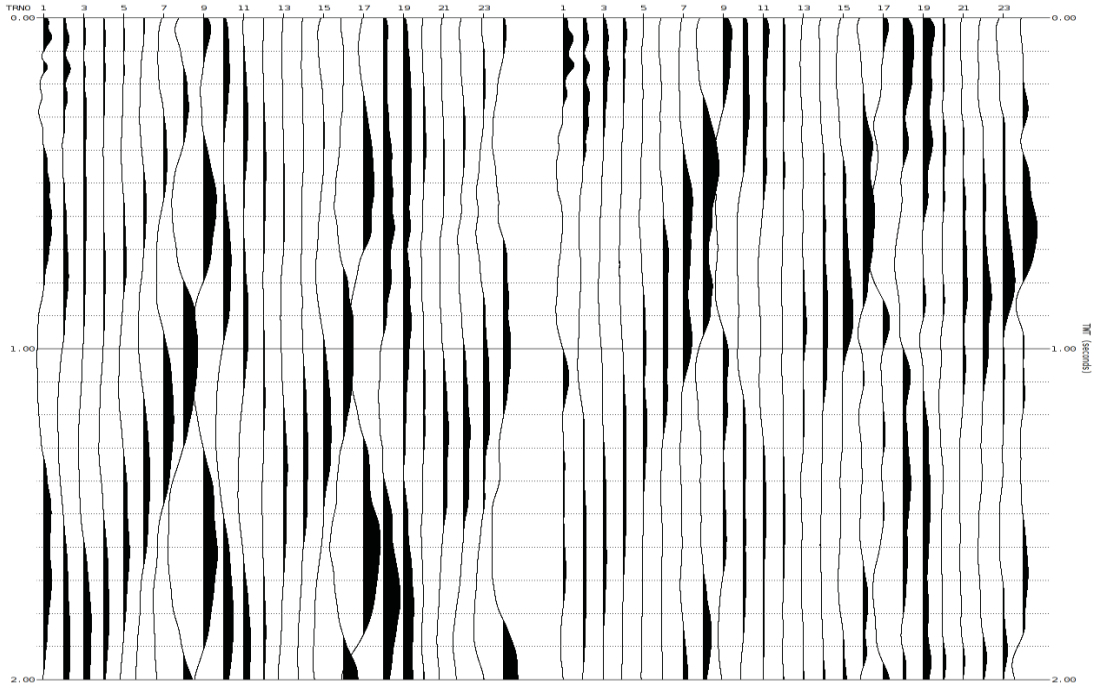



Figure 5: Difference Plot, Raw Shots - Filtered Shots with $T^2$ Gain Recovery

**Sort**

The data were sorted into 12-fold common midpoint gathers (CMP's). A brute stack display (Figure 6) was produced for QC purposes using a brute velocity function.

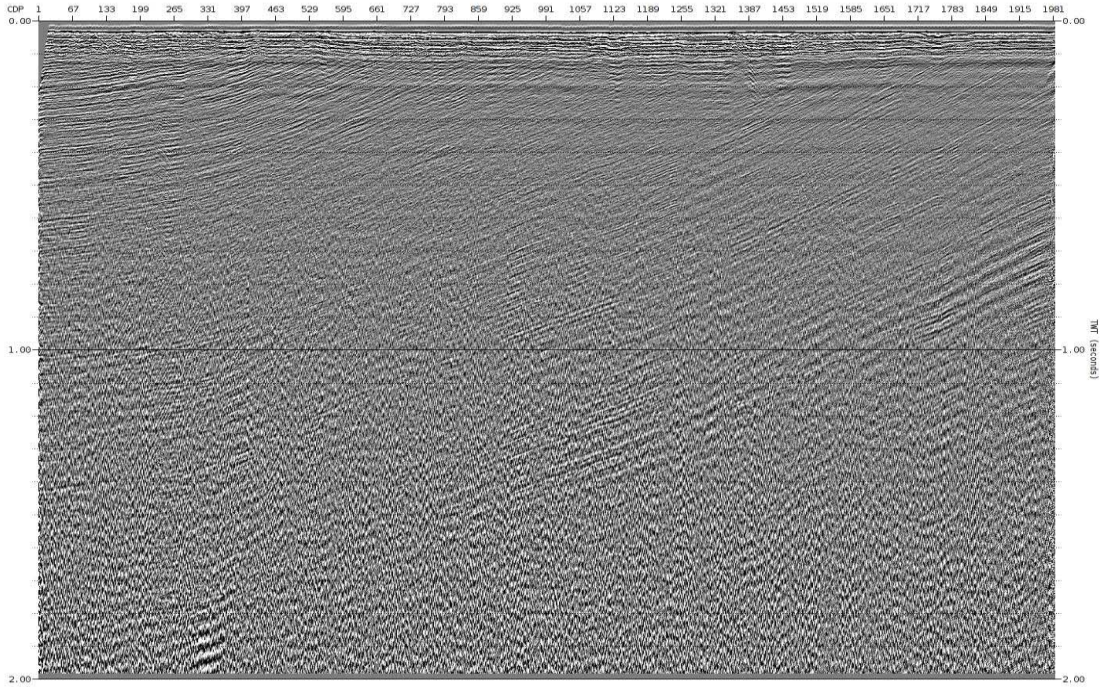



Figure 5: Brute Stack (Low-cut Filtered and stacked with Brute Velocity Function)

## Swell Noise Attenuation

Remnant swell noise was effectively attenuated using the Uniseis module SWELL. This simple algorithm makes use of the fact that unlike an impulsive source such as a shot, the amplitude of the swell noise does not decay with time, because it is being continuously generated during record. An initial pass of de-swell was applied to frequencies up to 20Hz. The process decomposes the trace into signal and noise components; down-weighting the noise to leave a clean trace (Figures 7-9).

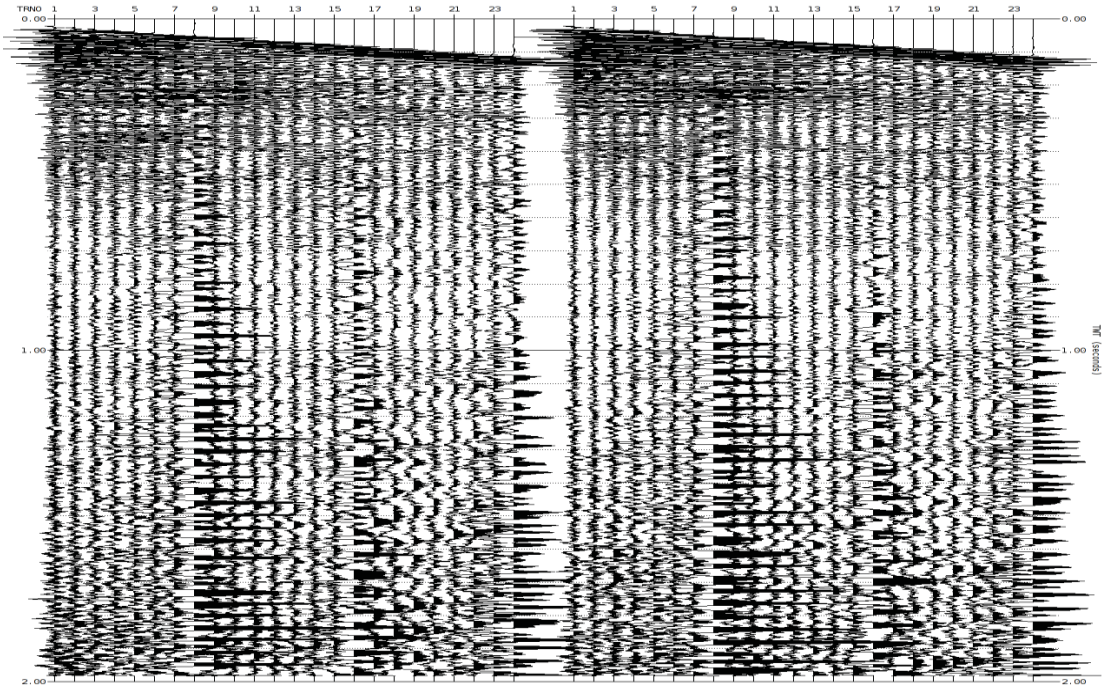



Figure 6: Shots before Swell Noise Attenuation

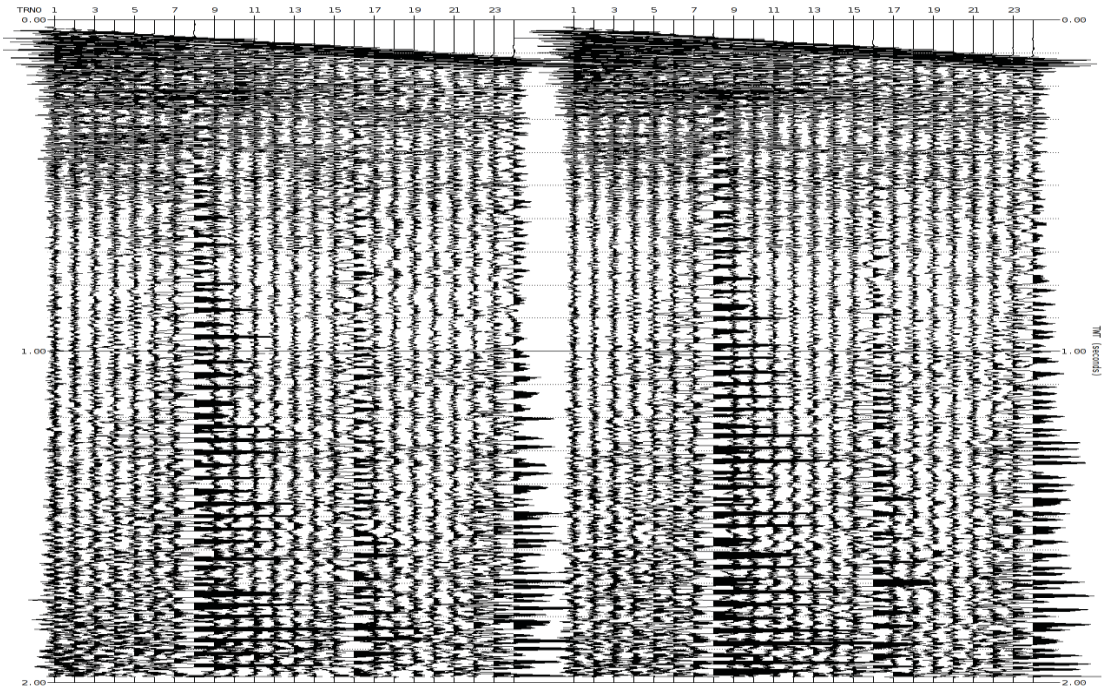



Figure 7: Shots with Swell Noise Attenuation

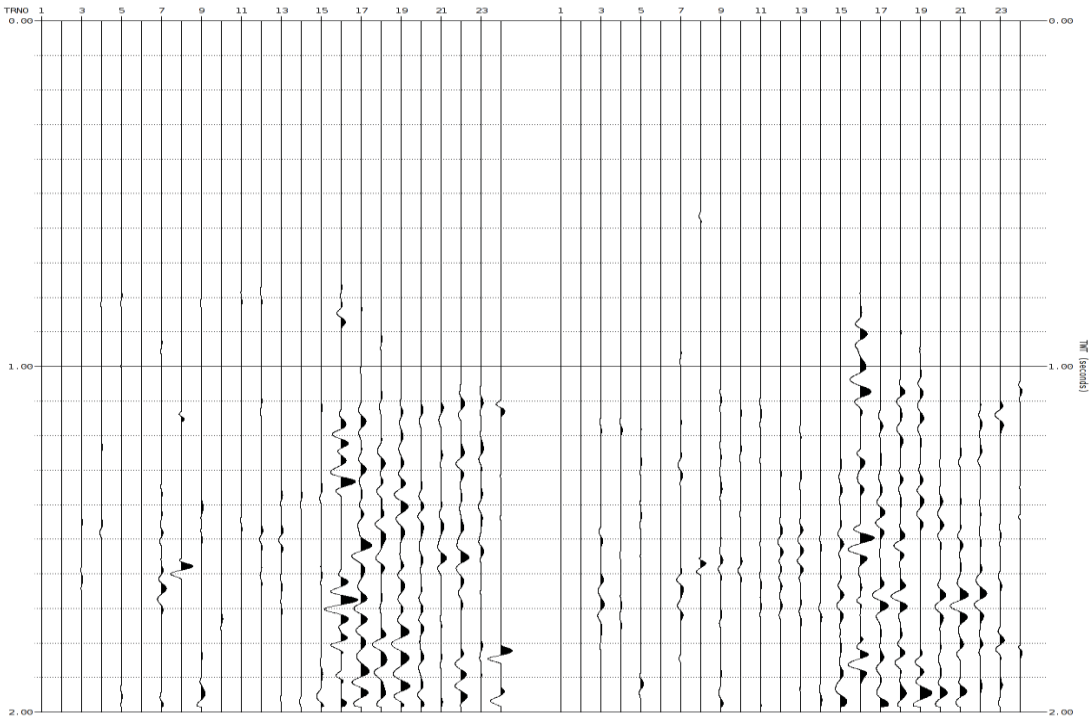



Figure 9: Difference Plot, Filtered Shots - Swell Noise Attenuation Stack

## Time Frequency Denoise

TFDN (time/frequency de-noise) is a general purpose noise reduction tool. Each trace is transformed to the frequency domain in short sliding time windows. For each frequency, the amplitude of a given trace is compared to the amplitude of its neighbours. Frequency components larger than the median value of neighbouring traces are attenuated. For this survey one pass of TFDN in the common shot domain was used to suppress seismic interference and any residual swell noise (Figures 10-12).

| | |
|---|---|
| **Start Time** | 300ms |
| **Frequency Range** | 0 – 175Hz |
| **No. of Traces** | 10 |
| **Time Window** | 250ms,<br>8 ms move-up |
| **Threshold** | Median 3 |

Table 1: Common shot domain TFDN parameters

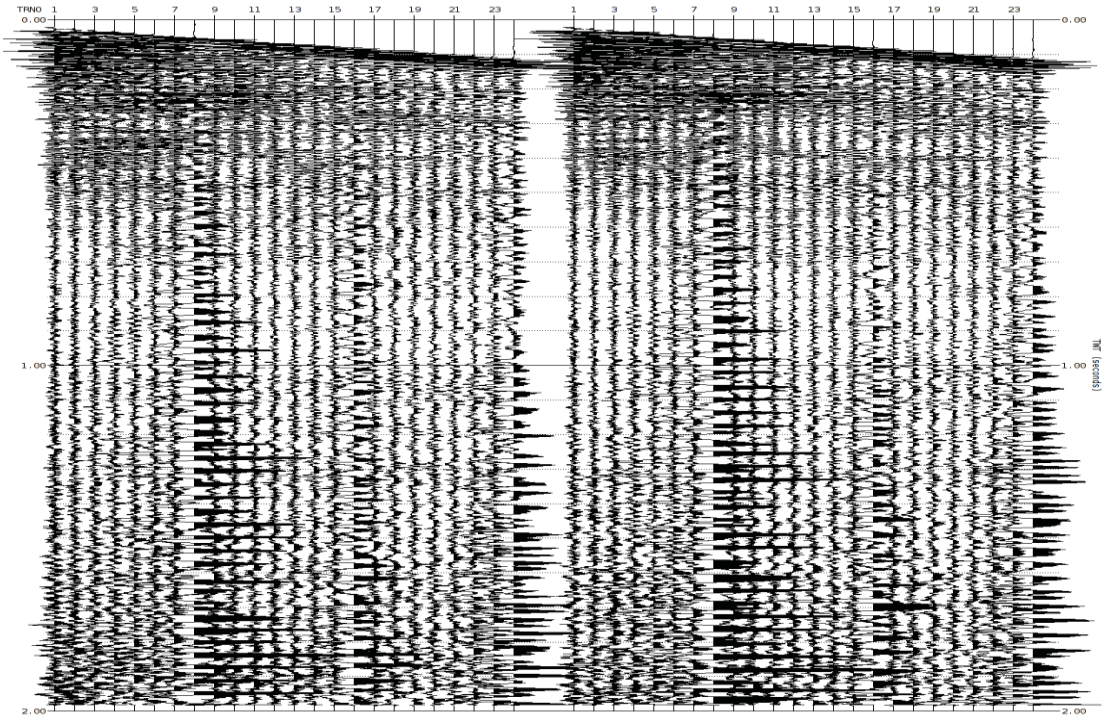



Figure 10: Input Shots for TFDN and FK filter

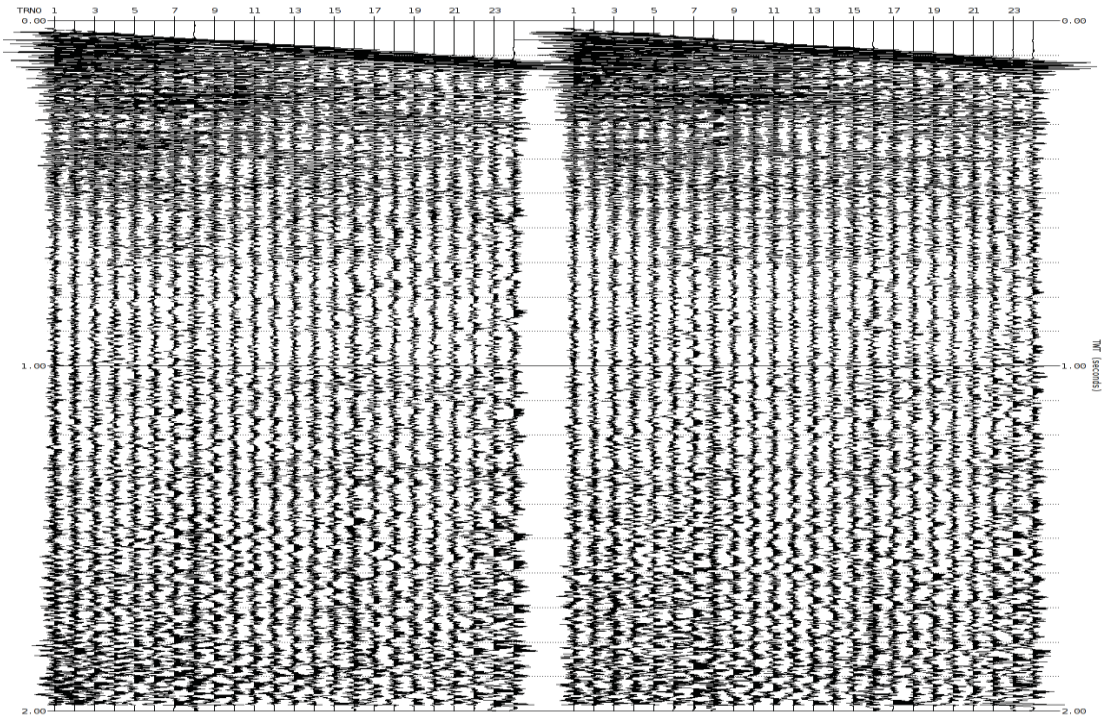



Figure 11: Shots After TFDN

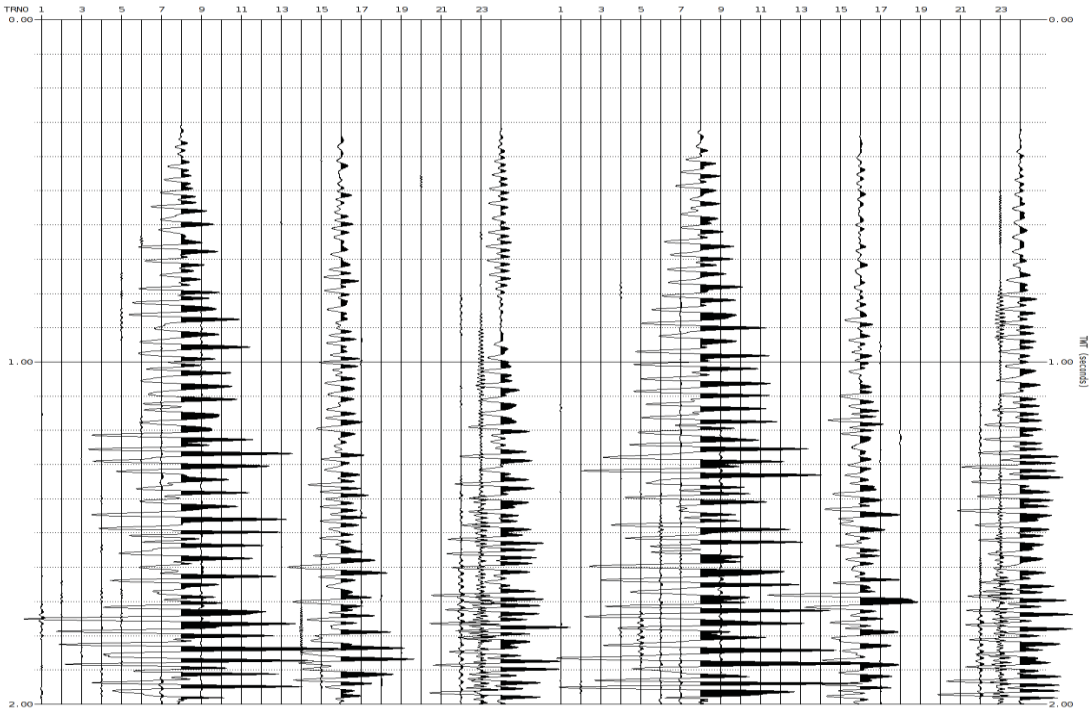



Figure 12: Difference Plot, Input Shots – TFDN Shots

**FK Filter**

F-k filtering is a 2-D data processing technique that is based on a relationship between two domains: a time-space (t-x) domain and its Fourier dual, an f-k domain. This technique filters coherent noise for wavefield separation using a 1D K-filter at +/-0.45 K-Nyquist to produce better quality data. F-k filtering relies on signal and noise separation via the 2-D Fourier Transform. The region in the f-k domain where noise is present is set to be zero and the signal region is set to be one. Then the filtered shot record is restored by the inverse Fourier transform. (Figure 13)

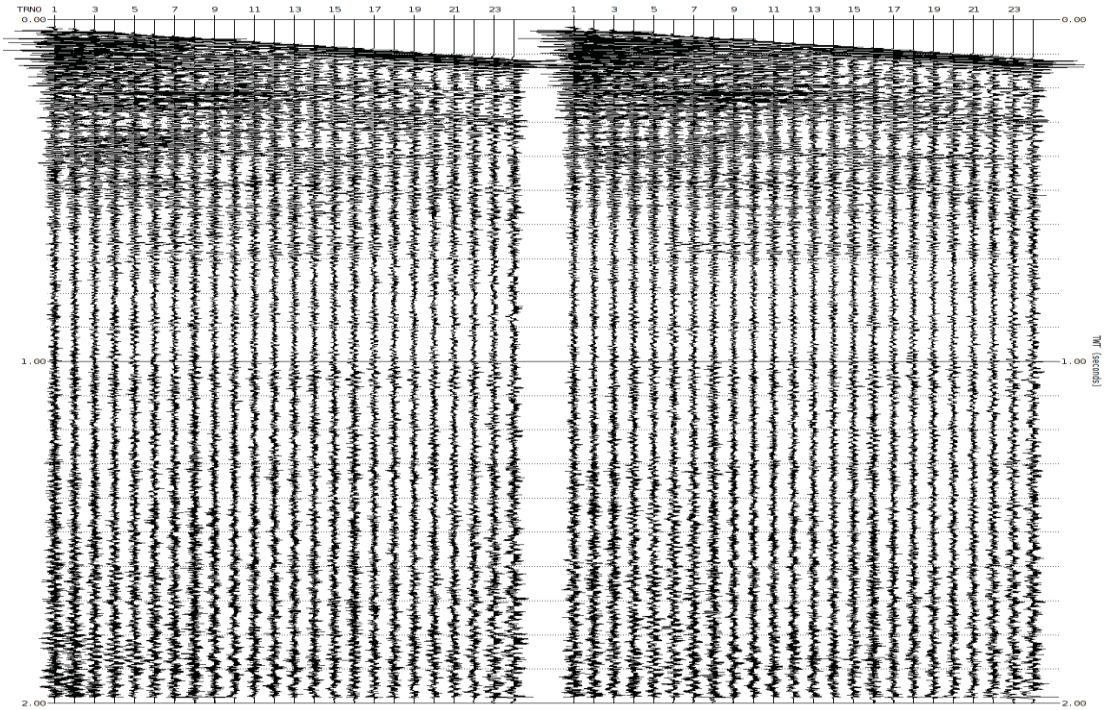



Figure 13: Shots after FK Filter

## Demultiple

### Surface Related Multiple Elimination (SRME)

SRME was applied using a 2D approach. SRME uses the geometry of shot recording to estimate all possible multiples that can be generated by the surface. One order of surface related multiples is predicted using auto-convolutions of the input data. The predicted multiple energy is then adaptively subtracted from the input gathers. This is done during two passes of adaptive matching, the first pass in the common offset domain, and the second pass on shot gathers.

Water bottoms were picked manually before running this process. 2D SRME was found to be effective in attenuating multiple energy, while preserving primary events, and was applied to all lines (Figures 14-16).

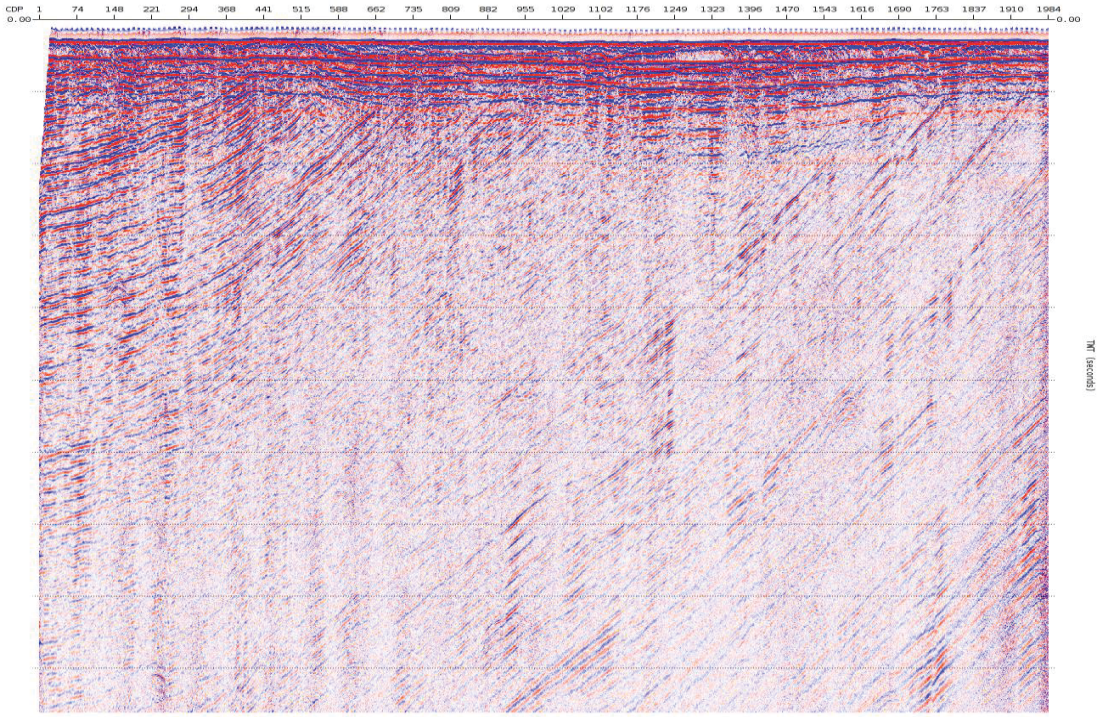



Figure 14: Time Frequency Denoise Stack (Shown from 0ms-1000ms TWT)

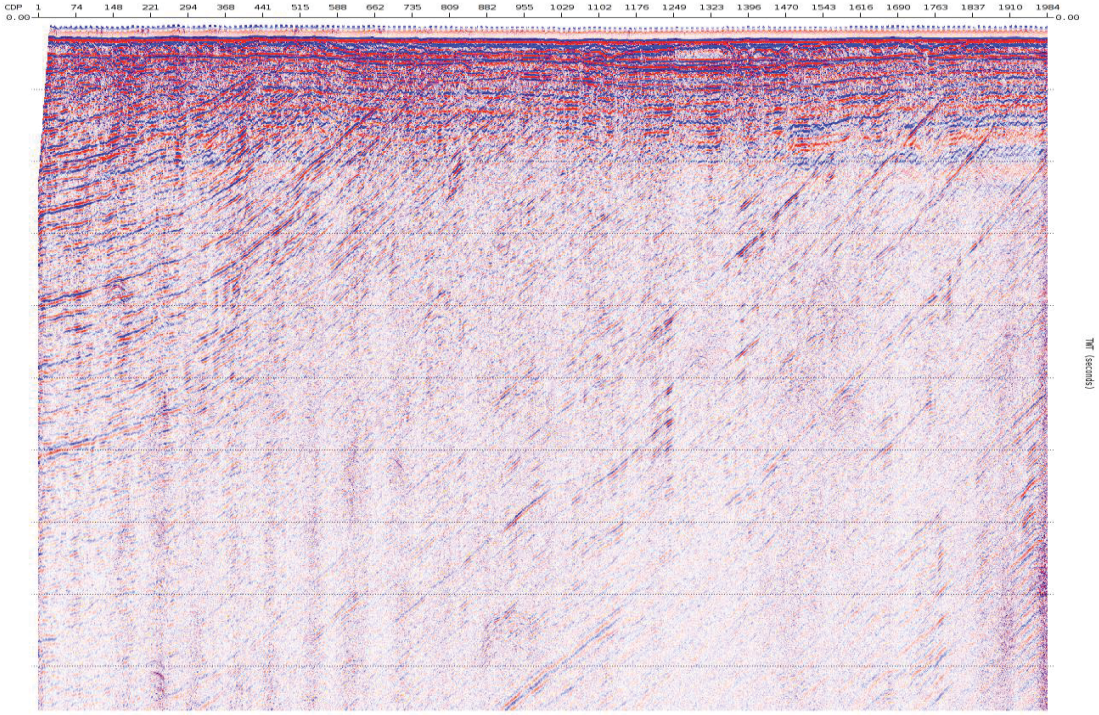



Figure 15: SRME Stack (Shown from 0ms-1000ms TWT)

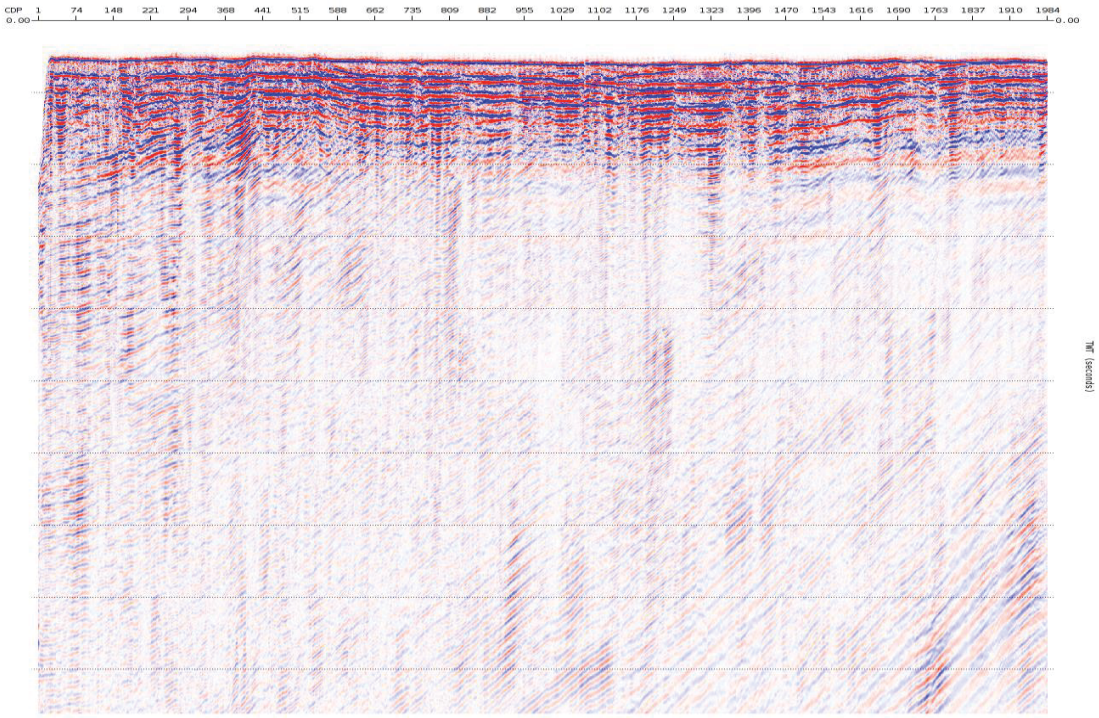



Figure 16: Difference Plot, Time Frequency Denoise Stack - SRME Stack

### Velocity Analysis

A velocity field was picked at 500m intervals on each line, using SRME gathers as input. Velocity analysis was carried out using CGG's 'MGIVA' interactive velocity analysis tool. Velocities were picked using NMO corrected CMP gathers, multi velocity scans and semblance displays (Figure 19).

### Residual Time Frequency Denoise & Surface Wave Noise Attenuation

Remnant diffraction noise was apparent at the first, second and third water bottom multiple. A noise model was made and subtracted from the data, sorted in TX domain, in order to attenuate noise while preserving primary. A combination of two passes of TFDN and a SWNA filter were used to create the noise model. (Figures 17-19). TFDN parameters are listed in Table 2.

| | 1st Pass | 2nd Pass |
|---|---|---|
| **Start Time** | 200ms | 250ms |
| **Frequency Range** | 600 – 750Hz | 0 – 250Hz |
| **No. of Traces** | 12 | 12 |
| **Time Window** | 250ms,<br>8 ms move-up | 250ms,<br>8 ms move-up |
| **Threshold** | LQT 3.0 | Median 2.0 |

Table 2: CMP Gather TFDN Parameters

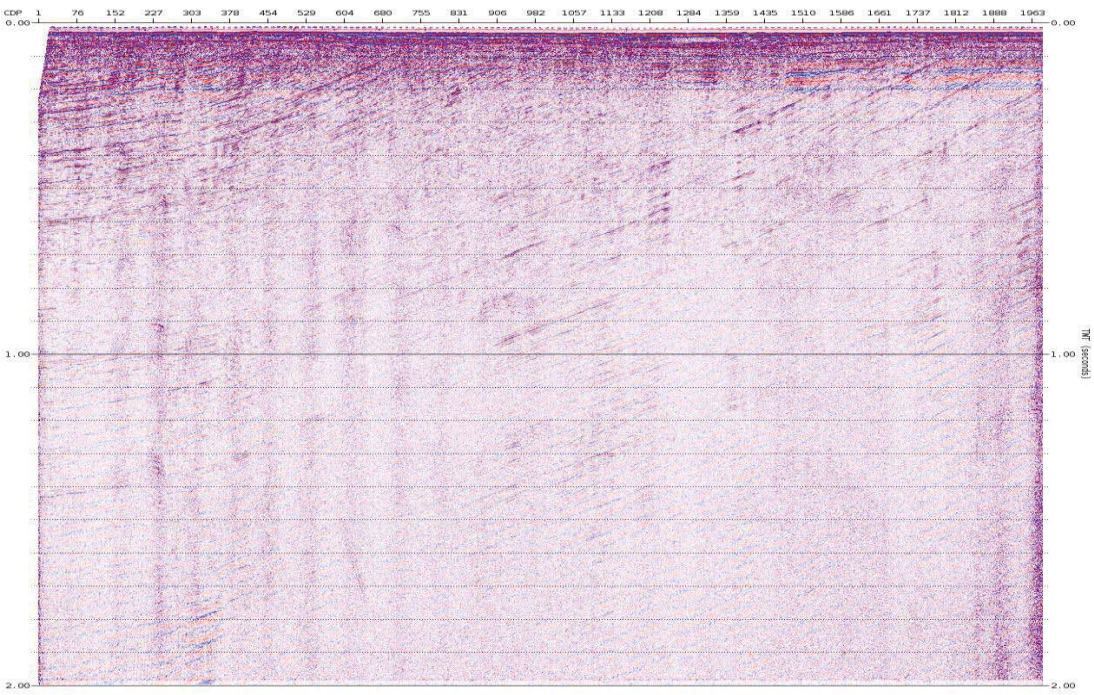



Figure 17: SRME Stack with Initial Velocity Analysis

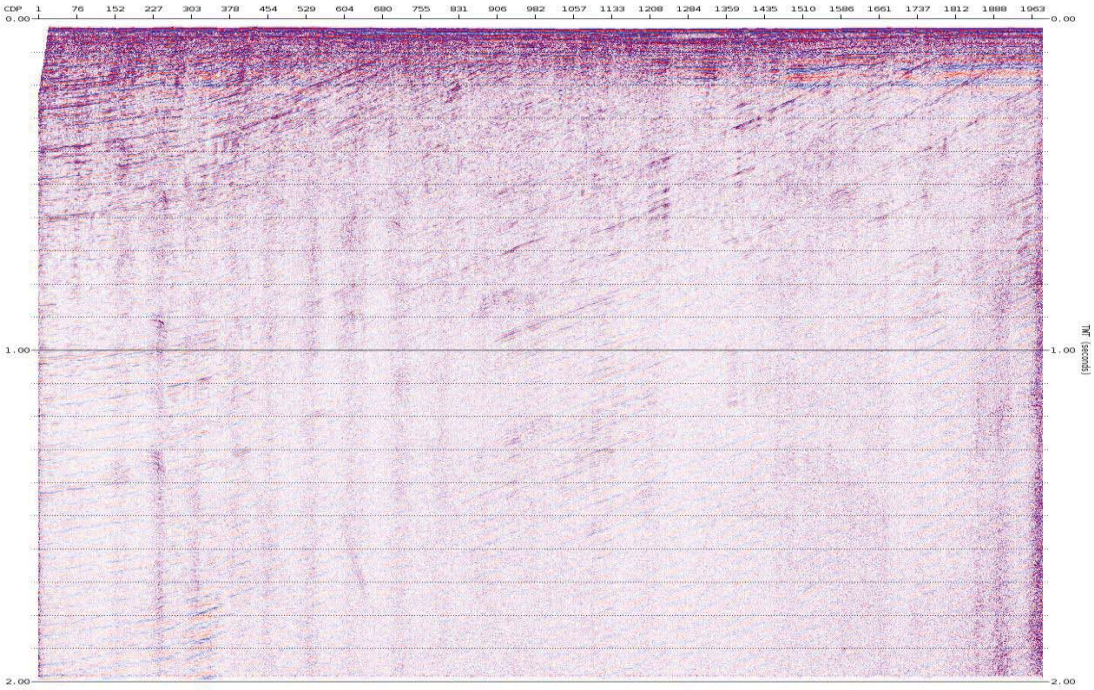



Figure 18: Stack after Residual TFDN and SWNA

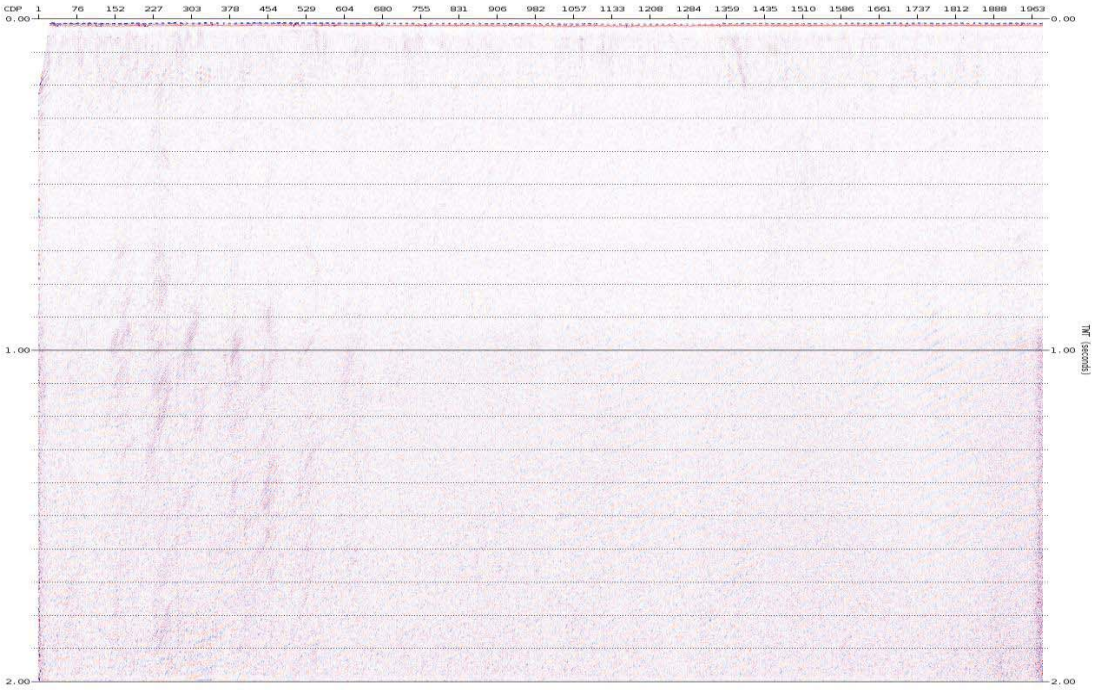



Figure 19: Difference Plot, SRME - Residual TFDN and SWNA stack

**Deconvolution Before Stack**

Deconvolution is designed to effectively attenuate interbed multiple by prediction of non-random signal content in a seismic trace. Data were sorted to CMP gathers prior to filter application. An operator designed from 240 traces with a 56 trace move-up gate and with a length of 5 traces was applied to attenuate any remaining random noise. (Figure 20-21)

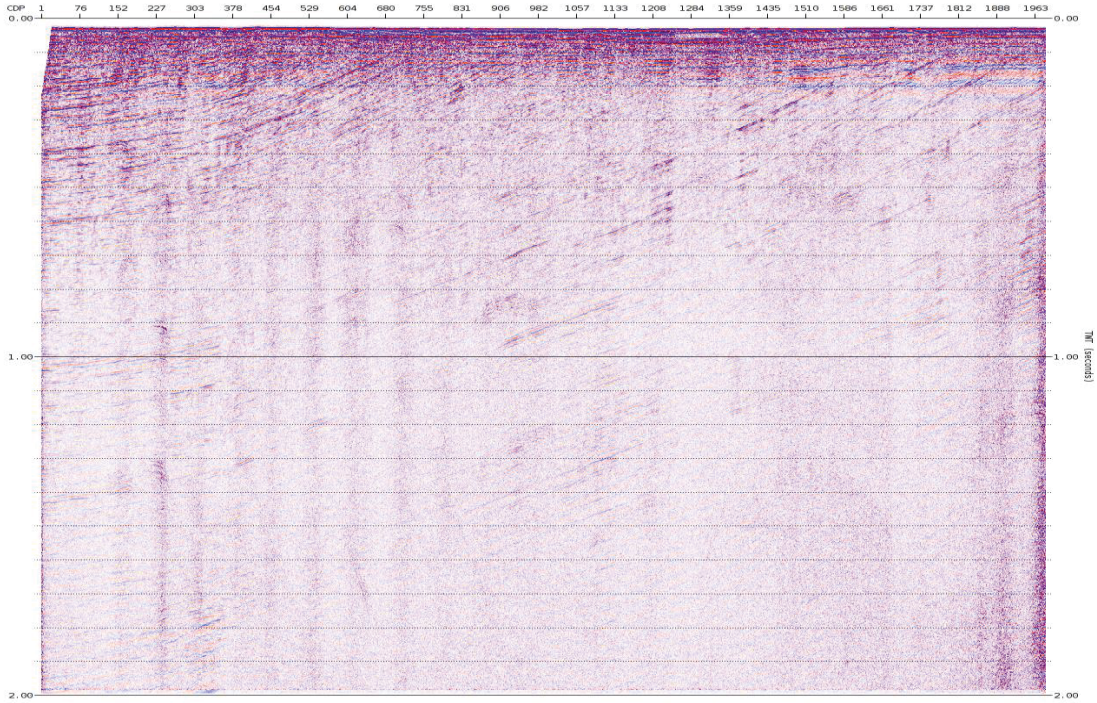



Figure 20: Deconvolution Stack

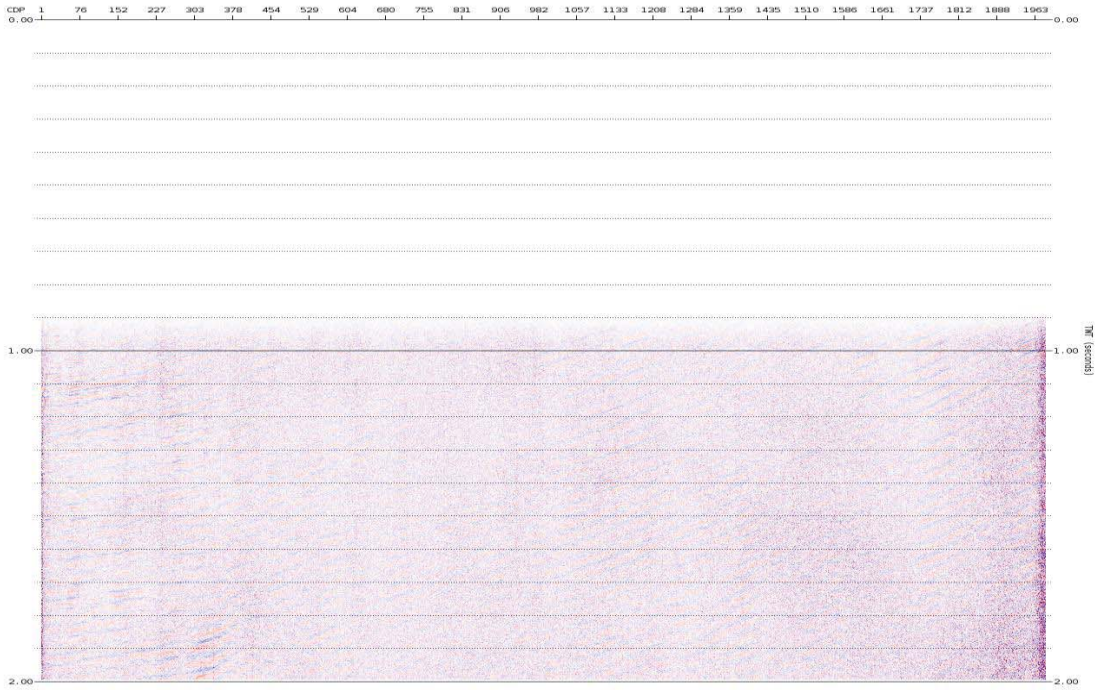



Figure 21: Difference Plot, Residual TFDN and SWNA - Deconvolution Stack

**Mute**

An outer trace mute was applied to remove NMO stretch and therefore maximize the resolution of the shallow data The mute was chosen by examining short panels of stacked data with increasing multiplicity, and on screen displays of NMO corrected CMP gathers. The mute was applied with a 10ms taper.

**Stack**

After NMO correction using the picked velocity function, the data were stacked using the chosen mute to improve data resolution. The stacked trace amplitude was compensated for mute on a 1/(root N) basis. Figure 21 shows the stack with pre migration velocities and chosen mute.

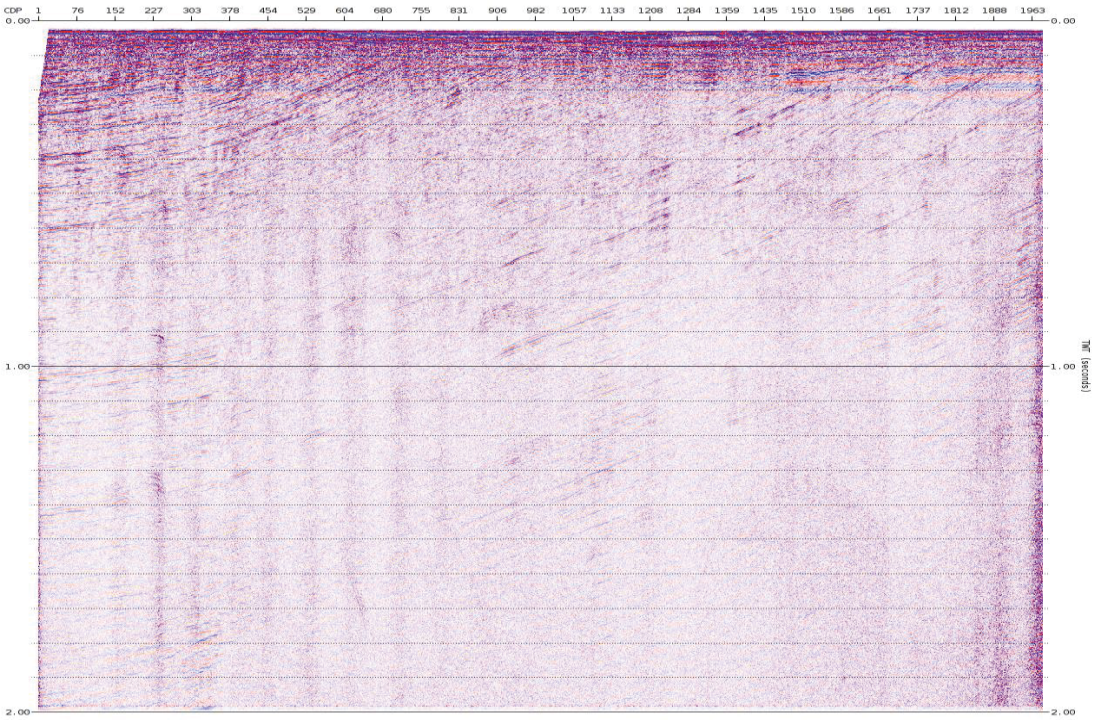



Figure 21: Final Stack

## POST STACK

### Designature and Post Stack Time Migration

The data were converted to zero phase prior to migration. A zero phase filter, designed from test line SL102, was derived from the water bottom pulse and applied to the data.

Kirchhoff migration was tested using 90, 95, 100, 105 and 110% of the stacking velocity field. Different migration apertures were also tested. Diffractions were most effectively collapsed and fault planes delineated by using the 100% stacking velocity function, and a migration aperture of 120 traces per half scan (Figure 22).

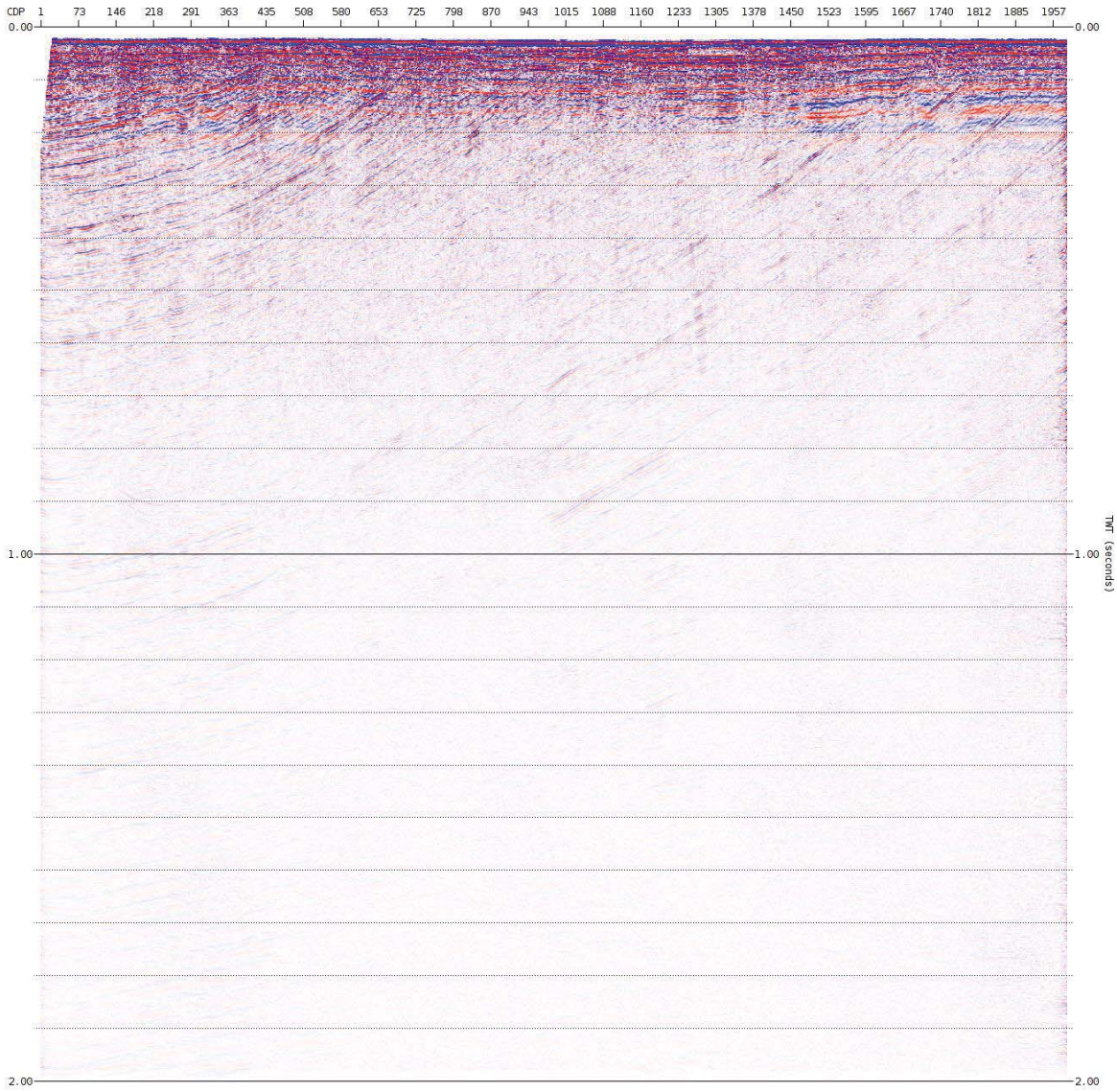



Figure 22: Pre Stack Time Migration

### Gun and Cable Statics

A static shift of +2.8ms was applied to the data at this point in the processing sequence to correct for the gun and streamer depths.

### Amplitude Balancing

A user defined time variant gain correction was applied to the data to provide a more balanced true amplitude volume. Figure 23 display the final stack.

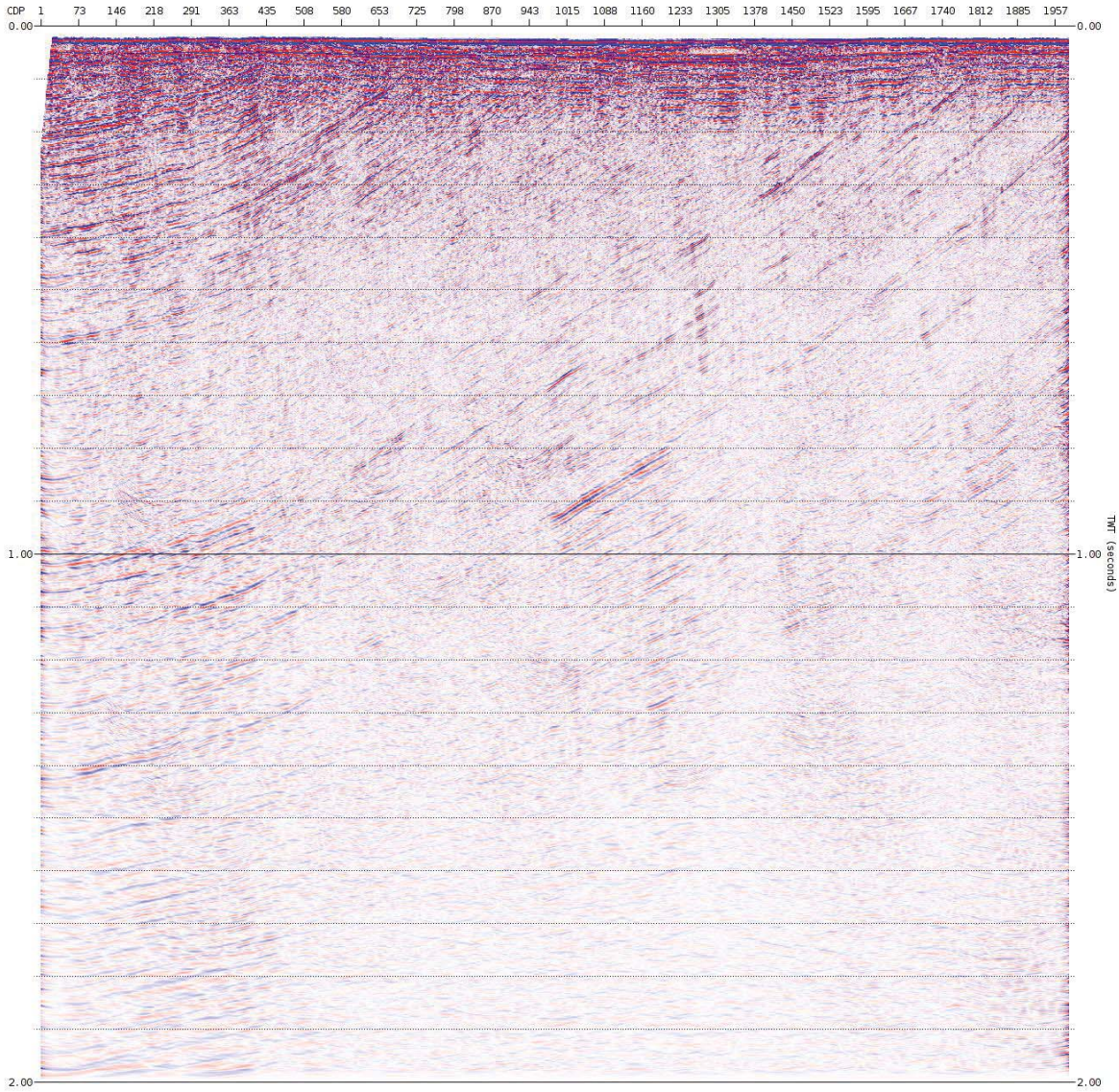



Figure 23: Final Scaled Stack

### Output to SEGY

The navigation data were provided in the form of a CMP position UKOOA P190 format file and merged with the seismic data prior to output to SEGY format. The final migrated SEGY format files were electronically transferred to the interpretation workstation on-board. The full set of deliverables as listed in Appendix 3 were delivered on an external USB hard drive.

## QUALITY CONTROL PROCEDURES

Displays were checked at each stage of processing for data quality in accordance with the quality control work instructions, which comply with the ISO 9001:2000 standard. This involved examining raw data gathers every thirtieth shot, a near trace gather and brute stacks.

Velocity picks for each line were checked using iso-velocity contour display and NMO corrected Common Mid-Point Gather. Stacks were checked carefully after each step of the processing flow. Pre-stack QC was concluded with the production of PSTM stacks.

Post stack, QC was concluded by checking the final SEGY dataset, and the associated trace headers.

The processing flow used in production was checked and approved by the project supervisor.

## OBSERVATIONS, SPECIAL PROBLEMS AND ADDITIONAL PROCESSING

The processing of the data proceeded through to completion with no major problems.

## PROCESSING SEQUENCE

**Long Streamer Airgun – Processing Sequence**

Input media: SEG-D format data electronically imported from the recording unit (GEO-EEL).

**Transcription**
From shot ordered data in SEG-D format, 24 channels. Output 4000 samples at 0.5ms sample interval.

**Start of Data to T0 Correction**
-20ms

**Amplitude Compensation**
Spherical divergence correction (Time squared)

**Swell Noise Attenuation**
Frequency range 0 – 20Hz

**Time Frequency Denoise**
Sorted to Common Offset, Frequency Range 0 – 175Hz

**FK Filter**

**2D Surface Related Multiple Elimination (SRME)**

**4$^{th}$ Order NMO Correction**
Using picking 0.5km velocity field.

**Surface Wave Noise Attenuation**

**Time Frequency Denoise – Two Passes**
In CMP, Frequency Range 0 – 250Hz, 600 – 750Hz

**Deconvolution Before Stack**

**CDP Gather**
24 channels, 12 fold at 3.125m CDP interval

**Mute**

**Stack**
1/RN amplitude compensation for stack fold

**Conversion to Zero-Phase**

**Post-Stack Time Migration**
Kirchhoff algorithm with migration velocities, 100% of stack velocities

**Datum Static Correction**
+2.68ms, for Source and Streamer depths at water velocity

**Post Stack Scaling**

**Navigation Merge**

**SEGY**

## Short Streamer Airgun – Processing Sequence

Input media: SEG-D format data electronically imported from the recording unit (GEO-EEL).

**Transcription**
From shot ordered data in SEG-D format, 24 channels. Output 4000 samples at 0.25ms sample interval.

**Start of Data to T0 Correction**
-25ms

**Amplitude Compensation**
Spherical divergence correction (Time squared)

**Swell Noise Attenuation**
Frequency range 0 – 20Hz

**Time Frequency Denoise**
Sorted to Common Offset, Frequency Range 0 – 150Hz

**FK Filter**

**2D Surface Related Multiple Elimination (SRME)**

**4$^{th}$ Order NMO Correction**
Using picking 0.5km velocity field.

**Surface Wave Noise Attenuation**

**Time Frequency Denoise – Two Passes**
In CMP, Frequency Range 0 – 850Hz, 400 – 800Hz

**Deconvolution Before Stack**

**CDP Gather**
24 channels, 3 fold at 0.78125m CDP interval

**Mute**

**Stack**
1/RN amplitude compensation for stack fold

**Conversion to Zero-Phase**

**Post-Stack Time Migration**
Kirchhoff algorithm with migration velocities, 100% of stack velocities

**Datum Static Correction**
+2.68ms, for Source and Streamer depths at water velocity

**Post Stack Scaling**

**Navigation Merge**

**SEGY**

**Boomer – Processing Sequence**

Input media: SEG-D format data electronically imported from the recording unit (GEO-EEL). For the boomer data a number of lines that were first acquired were acquired at different record lengths 0.225s/0.250s/0.5s. All numbers shows as a/b/c will be given respectively.

**Transcription**
From shot ordered data in SEG-D format, 24 channels. Output 900/1000/2000 samples at 0.25ms sample interval.

**Amplitude Compensation**
Spherical divergence correction (Time squared)

**Time Frequency Denoise**
Sorted to Common Offset, Frequency Range 400 – 1000Hz

**2D Surface Related Multiple Elimination (SRME)**

**4th Order NMO Correction**
Using picking 0.5km velocity field.

**FK Filter**

**Time Frequency Denoise – Two Passes**
In CMP, Frequency Range 200 – 850Hz, 400 – 800Hz

**Deconvolution Before Stack**

**CDP Gather**
24 channels, 6 fold at 0.78125m CDP interval

**Mute**

**Stack**
1/RN amplitude compensation for stack fold

**Post-Stack Time Migration**
Kirchhoff algorithm with migration velocities, 100% of stack velocities

**Datum Static Correction**
+1ms, for Source and Streamer depths at water velocity

**Post Stack Scaling**

**Navigation Merge**

**SEGY**

## Appendix 1

**Key Dates**

1. Start of Survey

   25th August 2015

2. Initial testing commenced

   25th August 2015

3. Production processing commenced

   29th August 2015

4. Production processing complete

   20th October 2015

## Appendix 2- Line listing

**Long Streamer Airgun**

| Line | FSP | LSP | Distance (km) | Line | FSP | LSP | Distance (km) |
|---|---|---|---|---|---|---|---|
| SL102 | 1081 | 100 | 6.1375 | SL109 | 1078 | 100 | 6.11875 |
| SL107 | 100 | 1079 | 6.125 | SL111 | 1077 | 100 | 6.1125 |
| SL106 | 100 | 1079 | 6.125 | SL116B | 1075 | 100 | 6.1 |
| SL112 | 1077 | 100 | 6.1125 | SL103A | 100 | 1080 | 6.13125 |
| SL114 | 1076 | 101 | 6.1 | SL100 | 100 | 1082 | 6.14375 |
| SL118 | 1075 | 100 | 6.1 | SL120B | 1074 | 100 | 6.09375 |
| SL115 | 100 | 1076 | 6.10625 | SL123A | 1072 | 100 | 6.08125 |
| SL104 | 1046 | 100 | 5.91875 | SL101A | 1081 | 100 | 6.1375 |
| SL113 | 100 | 1076 | 6.10625 | SL203 | 100 | 1438 | 8.36875 |
| SL124B | 1072 | 100 | 6.08125 | SL127 | 1071 | 100 | 6.075 |
| SL108 | 109 | 1078 | 6.0625 | SL128 | 1071 | 100 | 6.075 |
| SL125B | 1072 | 100 | 6.08125 | SL129B | 1070 | 100 | 6.06875 |
| SL126 | 1071 | 101 | 6.06875 | SL105A | 1080 | 100 | 6.13125 |
| SL122A | 100 | 1073 | 6.0875 | SL202 | 100 | 921 | 5.1375 |
| SL121B | 1073 | 101 | 6.08125 | SL119A | 1074 | 100 | 6.09375 |
| SL117A | 1075 | 100 | 6.1 | SL200C | 100 | 1340 | 7.75625 |
| SL110A | 100 | 1078 | 6.11875 | SL204 | 100 | 921 | 5.1375 |
| SL205 | 100 | 962 | 5.39375 | SL206 | 100 | 960 | 5.38125 |

**Short Streamer Airgun**

| Line | FSP | LSP | Distance (km) | Line | FSP | LSP | Distance (km) |
|---|---|---|---|---|---|---|---|
| S102 | 1081 | 100 | 6.1375 | S100A | 1082 | 100 | 6.14375 |
| S103 | 1080 | 100 | 6.13125 | S101A | 100 | 1081 | 6.1375 |
| S105 | 1080 | 100 | 6.13125 | S104A | 100 | 1080 | 6.13125 |
| S106 | 100 | 1079 | 6.125 | S120A | 100 | 1074 | 6.09375 |
| S108 | 100 | 1078 | 6.11875 | S126A | 100 | 1071 | 6.075 |
| S109 | 1078 | 100 | 6.11875 | S127 | 1071 | 100 | 6.075 |
| S112 | 100 | 1077 | 6.1125 | S202 | 110 | 926 | 5.10625 |
| S114 | 100 | 1076 | 6.10625 | S201 | 850 | 100 | 4.69375 |
| S116 | 100 | 1075 | 6.1 | S200 | 100 | 1273 | 7.3375 |
| S118 | 100 | 1075 | 6.1 | S128 | 1071 | 100 | 6.075 |
| S115 | 1076 | 100 | 6.10625 | S121A | 100 | 1073 | 6.0875 |
| S122 | 100 | 1073 | 6.0875 | S117A | 1074 | 100 | 6.09375 |
| S119 | 1071 | 100 | 6.075 | S113A | 1076 | 100 | 6.10625 |
| S124 | 108 | 1072 | 6.03125 | S107C | 102 | 1079 | 6.1125 |
| S123 | 1072 | 100 | 6.08125 | S111A | 100 | 1077 | 6.1125 |
| S125 | 1067 | 100 | 6.05 | S110A | 100 | 1078 | 6.11875 |

**Boomer LNG Site**

| Line | FSP | LSP | Distance (km) | Line | FSP | LSP | Distance (km) |
|---|---|---|---|---|---|---|---|
| SB129 | 2041 | 100 | 12.1375 | SB204 | 99 | 1583 | 9.28125 |
| SB100 | 99 | 2064 | 12.2875 | SB124A | 2046 | 101 | 12.1625 |
| SB206 | 99 | 1780 | 10.5125 | SB128A | 2044 | 101 | 12.15 |
| SB108 | 2058 | 101 | 12.2375 | SB203 | 99 | 2541 | 15.26875 |
| SB115 | 2047 | 101 | 12.16875 | SB120A | 100 | 2049 | 12.1875 |
| SB200A | 2551 | 101 | 15.31875 | SB201A | 102 | 1715 | 10.0875 |

**Boomer Approach Section**

| Line | FSP | LSP | Distance (km) | Line | FSP | LSP | Distance (km) |
|---|---|---|---|---|---|---|---|
| 336 | 205 | 2233 | 6.340625 | 303 | 2296 | 1550 | 2.334375 |
| 337 | 2182 | 207 | 6.175 | 302 | 1636 | 2252 | 1.928125 |
| 334 | 2325 | 180 | 6.70625 | 301 | 2207 | 1723 | 1.515625 |
| 332 | 173 | 2432 | 7.0625 | 300 | 1825 | 2147 | 1.009375 |
| 331 | 166 | 2481 | 7.2375 | 339 | 219 | 2076 | 5.80625 |
| 330 | 2528 | 159 | 7.40625 | 340 | 236 | 2033 | 5.61875 |
| 329A | 145 | 1281 | 3.55313 | 341 | 234 | 1873 | 5.125 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 329B | 1176 | 2572 | 4.36563 | 405 | 100 | 1475 | 4.3 |
| 328B | 136 | 511 | 1.175 | 342 | 1716 | 241 | 4.6125 |
| 328C | 407 | 2625 | 6.93438 | 343 | 1563 | 248 | 4.1125 |
| 326A | 122 | 1457 | 4.175 | 344 | 1410 | 255 | 3.6125 |
| 326B | 1354 | 2724 | 4.28438 | 345 | 1278 | 262 | 3.178125 |
| 324B | 2846 | 729 | 6.61875 | 346 | 270 | 1116 | 2.646875 |
| 324C | 835 | 130 | 2.20625 | 407 | 1647 | 100 | 4.8375 |
| 323 | 111 | 2880 | 8.65625 | 347 | 276 | 956 | 2.128125 |
| 322A | 95 | 2924 | 8.84375 | 348 | 289 | 795 | 1.584375 |
| 321A | 90 | 915 | 2.58125 | 349 | 290 | 642 | 1.103125 |
| 321B | 815 | 2972 | 6.74375 | 350 | 297 | 611 | 0.984375 |
| 320A | 92 | 642 | 1.72188 | 351 | 304 | 608 | 0.953125 |
| 320B | 540 | 2342 | 5.63438 | 335B | 2281 | 194 | 6.525 |
| 320C | 3029 | 104 | 9.14375 | 333A | 2381 | 180 | 6.88125 |
| 412 | 898 | 100 | 2.496875 | 327A | 2680 | 150 | 7.909375 |
| 411 | 100 | 1690 | 4.971875 | 325D | 2788 | 1492 | 4.05313 |
| 319 | 162 | 2999 | 8.86875 | 325E | 1597 | 129 | 4.59063 |
| 317 | 335 | 2912 | 8.05625 | 313B | 685 | 2737 | 6.415625 |
| 402 | 763 | 103 | 2.065625 | 312A | 2692 | 769 | 6.0125 |
| 401 | 100 | 508 | 1.278125 | 311A | 2649 | 883 | 5.521875 |
| 400 | 274 | 100 | 0.546875 | 338B | 213 | 2132 | 6 |
| 316 | 2869 | 422 | 7.65 | 408B | 90 | 1656 | 4.89688 |
| 314 | 596 | 2781 | 6.83125 | 318D | 2955 | 248 | 8.4625 |
| 406 | 1645 | 104 | 4.81875 | 409D | 100 | 1675 | 4.925 |
| 410 | 100 | 1687 | 4.9625 | 307C | 1203 | 2472 | 3.96875 |
| 310 | 2605 | 942 | 5.2 | 315D | 509 | 2824 | 7.2375 |
| 309 | 1029 | 2562 | 4.79375 | 306 | 2430 | 1289 | 3.56875 |
| 308 | 1116 | 2517 | 4.38125 | 305 | 2384 | 1376 | 3.153125 |
| 404 | 676 | 1805 | 3.53125 | 304 | 2339 | 1463 | 2.740625 |
| 403 | 1002 | 100 | 2.821875 | | | | |

**Boomer Pipeline Section**

| Line | FSP | LSP | Distance (km) | Line | FSP | LSP | Distance (km) |
|---|---|---|---|---|---|---|---|
| 514A | 102 | 563 | 1.44375 | 709 | 100 | 412 | 0.978125 |
| 515 | 100 | 545 | 1.39375 | 709A | 310 | 2957 | 8.275 |
| 516 | 100 | 513 | 1.29375 | 661A | 100 | 256 | 0.490625 |
| 517 | 102 | 488 | 1.209375 | 656A | 255 | 100 | 0.4875 |
| 512A | 14244 | 5390 | 27.67188 | 707 | 3943 | 2919 | 3.203125 |
| 510A | 8069 | 13427 | 16.74688 | 707A | 3019 | 100 | 9.125 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 641 | 105 | 256 | 0.475 | 706 | 102 | 2930 | 8.840625 |
| 640 | 100 | 256 | 0.490625 | 706A | 2830 | 4123 | 4.04375 |
| 642A | 1862 | 1520 | 1.071875 | 705 | 100 | 4239 | 12.9375 |
| 639 | 100 | 256 | 0.490625 | 704 | 3969 | 3716 | 0.79375 |
| 638 | 100 | 256 | 0.490625 | 704A | 3805 | 3203 | 1.884375 |
| 636 | 256 | 100 | 0.490625 | 704B | 3292 | 1251 | 6.38125 |
| 635 | 100 | 256 | 0.490625 | 704C | 1350 | 100 | 3.909375 |
| 634 | 256 | 100 | 0.490625 | 707B | 1000 | 1201 | 0.63125 |
| 633 | 100 | 244 | 0.453125 | 510L | 5414 | 450 | 15.51563 |
| 632 | 256 | 100 | 0.490625 | 503I | 451 | 1954 | 4.7 |
| 631 | 100 | 256 | 0.490625 | 604 | 104 | 328 | 0.703125 |
| 630 | 100 | 256 | 0.490625 | 605 | 100 | 320 | 0.690625 |
| 508 | 8206 | 10220 | 6.296875 | 606 | 104 | 256 | 0.478125 |
| 508C | 14199 | 12901 | 4.059375 | 607 | 100 | 256 | 0.490625 |
| 508D | 13000 | 11590 | 4.409375 | 608 | 101 | 256 | 0.4875 |
| 510D | 13397 | 13632 | 0.7375 | 644 | 102 | 255 | 0.48125 |
| 510E | 13590 | 14298 | 2.215625 | 503J | 5614 | 4220 | 4.359375 |
| 518 | 104 | 325 | 0.69375 | 647 | 100 | 256 | 0.490625 |
| 519 | 100 | 278 | 0.559375 | 646 | 256 | 100 | 0.490625 |
| 520 | 103 | 232 | 0.40625 | 645 | 256 | 100 | 0.490625 |
| 521 | 100 | 171 | 0.225 | 603 | 360 | 100 | 0.815625 |
| 503 | 11915 | 12786 | 2.725 | 602 | 350 | 100 | 0.784375 |
| 503A | 12687 | 13265 | 1.809375 | 601 | 476 | 100 | 1.178125 |
| 672 | 256 | 100 | 0.490625 | 500 | 997 | 403 | 1.859375 |
| 671 | 256 | 100 | 0.490625 | 506 | 401 | 818 | 1.30625 |
| 503B | 12015 | 10585 | 4.471875 | 513 | 1188 | 485 | 2.2 |
| 503C | 10685 | 9495 | 3.721875 | 507 | 441 | 922 | 1.50625 |
| 503F | 9587 | 7745 | 5.759375 | 511 | 1172 | 482 | 2.159375 |
| 503G | 5520 | 6102 | 1.821875 | 701 | 100 | 3678 | 11.18438 |
| 508E | 11690 | 10120 | 4.909375 | 503K | 4420 | 1847 | 8.04375 |
| 508F | 5202 | 6669 | 4.5875 | 512D | 1500 | 5483 | 12.45 |
| 508G | 6571 | 8300 | 5.40625 | 613 | 256 | 100 | 0.490625 |
| 503H | 6000 | 7848 | 5.778125 | 612 | 256 | 100 | 0.490625 |
| 501 | 8020 | 6655 | 4.26875 | 509 | 451 | 1160 | 2.21875 |
| 501A | 6755 | 5440 | 4.1125 | 512E | 1600 | 400 | 3.753125 |
| 505 | 8138 | 6785 | 4.23125 | 700 | 802 | 2801 | 6.25 |
| 505A | 6885 | 5595 | 4.034375 | 501J | 5120 | 639 | 14.00625 |
| 653 | 100 | 256 | 0.490625 | 508H | 763 | 5291 | 14.15313 |
| 654A | 100 | 256 | 0.490625 | 703 | 3631 | 190 | 10.75625 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 655 | 254 | 100 | 0.484375 | 505E | 5695 | 1099 | 14.36563 |
| 505B | 8045 | 9999 | 6.109375 | 508I | 2100 | 1829 | 0.85 |
| 505C | 9900 | 11798 | 5.934375 | 505F | 1200 | 400 | 2.503125 |
| 505D | 11700 | 13276 | 4.928125 | 501K | 739 | 399 | 1.065625 |
| 501B | 13111 | 11551 | 4.878125 | 500A | 996 | 391 | 1.89375 |
| 501C | 11650 | 10623 | 3.2125 | 502C | 400 | 1012 | 1.915625 |
| 501D | 10730 | 9751 | 3.0625 | 508J | 853 | 400 | 1.41875 |
| 501E | 9842 | 8101 | 5.44375 | 600A | 712 | 100 | 1.915625 |
| 501F | 8200 | 7560 | 2.003125 | 701A | 100 | 641 | 1.69375 |
| 501G | 7660 | 6601 | 3.3125 | 505G | 1400 | 700 | 2.190625 |
| 501H | 6760 | 5875 | 2.76875 | 504A | 400 | 1030 | 1.971875 |
| 501I | 5975 | 5020 | 2.9875 | 700A | 710 | 1217 | 1.5875 |
| 651 | 100 | 256 | 0.490625 | 702A | 260 | 2903 | 8.2625 |
| 652 | 256 | 100 | 0.490625 | 702B | 2801 | 4339 | 4.809375 |
| 657 | 249 | 100 | 0.46875 | 648 | 256 | 100 | 0.490625 |
| 658 | 100 | 256 | 0.490625 | 649 | 100 | 256 | 0.490625 |
| 659 | 105 | 256 | 0.475 | 650 | 256 | 100 | 0.490625 |
| 660 | 108 | 256 | 0.465625 | 611A | 256 | 100 | 0.490625 |
| 510F | 8200 | 7540 | 2.065625 | 610A | 100 | 255 | 0.4875 |
| 510G | 7640 | 7040 | 1.878125 | 609A | 252 | 100 | 0.478125 |
| 510I | 5315 | 5999 | 2.140625 | 662 | 103 | 256 | 0.48125 |
| 510J | 5900 | 7138 | 3.871875 | 663A | 100 | 256 | 0.490625 |
| 621 | 256 | 100 | 0.490625 | 664 | 102 | 256 | 0.484375 |
| 622 | 256 | 100 | 0.490625 | 665 | 102 | 256 | 0.484375 |
| 623 | 256 | 100 | 0.490625 | 666 | 106 | 256 | 0.471875 |
| 624 | 256 | 100 | 0.490625 | 667 | 256 | 101 | 0.4875 |
| 625 | 256 | 100 | 0.490625 | 668 | 256 | 101 | 0.4875 |
| 626 | 255 | 100 | 0.4875 | 669 | 256 | 100 | 0.490625 |
| 627A | 254 | 100 | 0.484375 | 670 | 255 | 100 | 0.4875 |
| 629 | 100 | 256 | 0.490625 | 708 | 3602 | 3015 | 1.8375 |
| 628A | 100 | 256 | 0.490625 | 708A | 3113 | 1496 | 5.05625 |
| 510K | 8300 | 7441 | 2.6875 | 708B | 1700 | 100 | 5.003125 |
| 614A | 255 | 100 | 0.4875 | 673A | 100 | 256 | 0.490625 |
| 615 | 100 | 255 | 0.4875 | 674 | 255 | 100 | 0.4875 |
| 616 | 100 | 256 | 0.490625 | 675 | 100 | 255 | 0.4875 |
| 617 | 100 | 256 | 0.490625 | 710 | 100 | 1611 | 4.725 |
| 618 | 100 | 256 | 0.490625 | 710A | 1500 | 1794 | 0.921875 |
| 619 | 256 | 101 | 0.4875 | 637A | 101 | 256 | 0.4875 |
| 620B | 253 | 100 | 0.48125 | | | | |

**Boomer Pipeline Additional Lines**

| Line | FSP | LSP | Distance (km) |
|---|---|---|---|
| 802A | 1654 | 2844 | 3.721875 |
| 803A | 2025 | 2839 | 2.546875 |
| 801 | 1008 | 2839 | 5.725 |
| 800 | 712 | 2404 | 5.290625 |
| 816 | 100 | 1760 | 5.190625 |
| 822 | 111 | 1358 | 3.9 |
| 824 | 1358 | 138 | 3.815625 |
| 826 | 1362 | 653 | 2.21875 |
| 804 | 1843 | 1252 | 1.85 |
| 805 | 1843 | 842 | 3.13125 |
| 815 | 100 | 3022 | 9.134375 |
| 819 | 1361 | 126 | 3.8625 |
| 818 | 100 | 931 | 2.6 |
| 817 | 100 | 790 | 2.159375 |
| 814 | 100 | 3040 | 9.190625 |
| 813 | 3929 | 107 | 11.94688 |
| 812 | 4146 | 100 | 12.64688 |
| IT01 | 100 | 2659 | 8 |
| 902 | 100 | 1477 | 4.30625 |
| 833 | 7648 | 4861 | 8.7125 |
| 833A | 4960 | 1540 | 10.69063 |
| 833B | 1640 | 100 | 4.815625 |
| 832 | 100 | 1630 | 4.784375 |
| 832A | 1530 | 1780 | 0.784375 |
| 830 | 100 | 2000 | 5.940625 |
| 830A | 1904 | 5300 | 10.61563 |
| 830B | 5200 | 7190 | 6.221875 |
| 830C | 8336 | 7091 | 3.89375 |
| 836 | 8100 | 5470 | 8.221875 |
| 836A | 5570 | 2165 | 10.64375 |
| 836B | 128 | 1055 | 2.9 |
| 836C | 955 | 2255 | 4.065625 |
| 832B | 1580 | 2450 | 2.721875 |
| 832C | 2350 | 4937 | 8.0875 |
| 832D | 4840 | 7675 | 8.8625 |

## Appendix 3

### Final Deliverables

| SURVEY | DATA | No. of LINES | FORMAT |
|---|---|---|---|
| Cook Inlet | Long Streamer Airgun Final Migrated Stacks | 36 | SEGY |
| Cook Inlet | Short Streamer Airgun Final Migrated Stacks | 32 | SEGY |
| Cook Inlet | Boomer Approach Section | 73 | SEGY |
| Cook Inlet | Boomer Pipeline Section | 167 | SEGY |
| Cook Inlet | Boomer LNG | 12 | SEGY |
| Cook Inlet | Pipeline Addition | 35 | SEGY |
| Cook Inlet | Final Processing Report | One Copy | Pdf Format |

# APPENDIX F

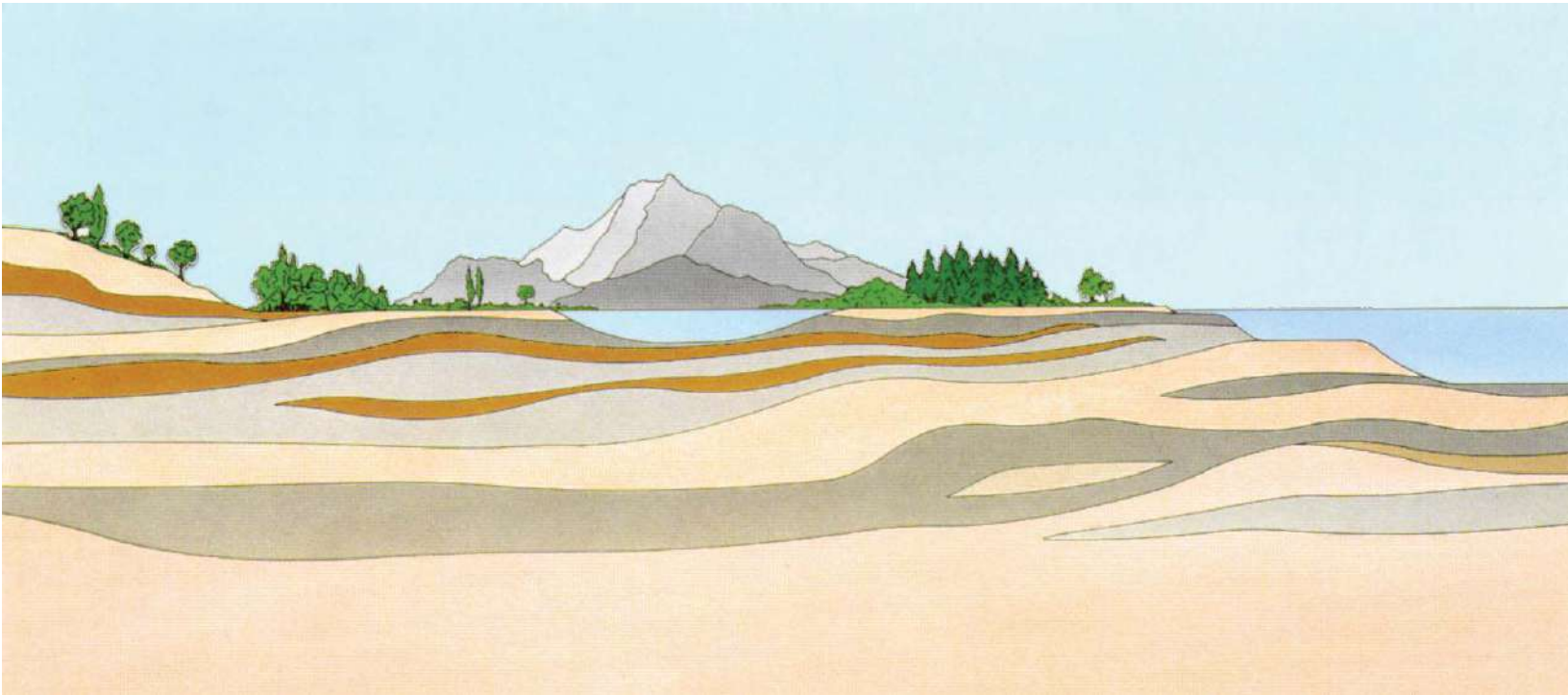
# OPERATIONS REPORT (R/V *WESTERLY*)

# R/V WESTERLY OPERATIONS REPORT

# 2015 MARINE SEAFLOOR MAPPING SURVEY

PRE-FEED LEVEL
FIELD EXPLORATION PROGRAM
ALASKA LNG PROJECT
NIKISKI, ALASKA

| | | | | | |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | | | | | |
| 0 | Issued as Final | MIK | JBG | | December 4, 2015 |
| **Rev** | **Description** | **Prepared** | **Checked** | **Approved** | **Date** |



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# 1. SCOPE OF WORK

## 1.1 Purpose

Fugro was contracted by Alaska LNG to conduct a high-resolution seafloor mapping reconnaissance survey for two proposed pipelines, and five areas associated with the Liquid Natural Gas (LNG) Terminal Landing and Approach Channel in Cook Inlet, Alaska. The scope of this survey was to acquire data to supplement similar data acquired in 2014. The LNG facility and approach survey areas lies within the northern third of Cook Inlet near Nikiski while the pipelines emanate near Boulder Point on the east and extend west across Cook Inlet to Tyonek for the proposed pipeline corridors.

The purpose of this survey was to perform reconnaissance to support preliminary design of a pipeline crossing, marine terminal facility, turning basin and marine offload facility for the Alaska LNG project. It was paramount to map any man-made debris or hazards and geologic conditions that may impact the construction activities for the proposed LNG facility and proposed pipelines. Acquired seafloor survey data types included: multibeam echosounder (MBES), side scan sonar (SSS) and magnetometer.

## 1.2 Acronyms / Abbreviations

Acronyms and abbreviations specific to this report are presented in this section of the report.

| | |
|---|---|
| AML | Applied Microsystems Limited |
| BM | Bench Mark |
| DGPS | Differential Global Positioning System |
| DRP | Daily Progress Reports |
| FT | Foot or Feet |
| GAMS | GPS Azimuth Measurement Subsystem |
| GCS | Geographic Coordinate System |
| GeoTIFF | Geostationary Earth Orbit Tagged Image File Format |
| GNSS | Global Navigation Satellite System |
| GPS | Global Positioning System |
| GRS | Geodetic Reference System |
| HDOP | Horizontal Dilution of Precision |
| HOC | Hazard Observation Cards |
| HSE | Health, Safety and Environmental |
| IMU | Inertial Measurement Unit |
| INS | Inertial Navigation system |
| JHA | Job Hazard Analysis |
| LNG | Liquefied Natural Gas |
| M/V | Motor Vessel |
| MBES | Multibeam Echosounder |
| MLLW | Mean Lower Low Water |
| NAD27 | North American Datum of 1927 |

| | |
|---|---|
| NAD83 | North American Datum of 1983 |
| NADCON | North American Datum Conversion |
| NAVD88 | North American Vertical Datum of 1988 |
| NSRS | National Spatial Reference System |
| OPUS | Online Positioning User Service |
| PDOP | Position Dilution of Precision |
| PPK | Post Processed Kinematic |
| QC | Quality Control |
| R/V | Research Vessel |
| SBET | Smoothed Best Estimated Trajectory |
| SIM | Sonar Interface Module |
| SSS | Side Scan Sonar |
| TRA | Task Risk Assessments |
| USBL | Ultra-Short Baseline |
| UTM | Universal Transverse Mercator |
| UTV | Utility Task Vehicle |
| WGS | World Geodetic System |
| WGS83 | World Geodetic System 1984 |

# 2. OPERATIONS

## 2.1 Survey Overview

Fugro conducted a high-resolution seafloor survey for two proposed pipelines, and five areas associated with the LNG facility and approach area in Cook Inlet, Alaska. The survey was conducted aboard the R/V Westerly from June 1 to September 27, 2015.

Data collected during the survey include multibeam echosounder (MBES), side scan sonar (SSS), and magnetometer. Horizontal positioning of the survey vessel was accomplished via Post Processed Kinematic (PPK) technologies, which has a field accuracy of <1 foot. Descriptions of the seafloor mapping systems, along with the other remote sensing systems utilized during the survey, are included in Appendix 2-D of this report.

The survey grid was designed to cover all sites with 100% multibeam echosounder data with approximately 30% overlap. The survey was designed for all lines to be run with all three systems operating concurrently, however a small number of nearshore lines could not be completed with the towed systems (SSS and magnetometer). These lines were acquired with multibeam only to reduce the risk of entanglement or grounding of the towed systems.

Survey areas were divided into two catagories. The first category encompasses five survey blocks associated with the LNG terminal, approach channel and related areas. The second category encompasses eight survey blocks associated with the pipeline crossing areas. Appendix G includes charts of both sets of survey blocks.

Alaska LNG requirements stated that the coordinate system for reporting is the Geographic Coordinate System (GCS), North American Datum 1983 (NSRS 2007) Alaska Zone 4 (ft US), further defined in Section 3.3. Survey navigation data were collected in NAD83, on GRS-1980 Ellipsoid, Universal Transverse Mercator (UTM) Zone 5 (North), Grid Units in meters. Final deliverables were converted to NAD83 (NSRS 2007) Alaska Zone 4 (ft US), Grid Units in US Feet using Trimble's Terramodel software.

## 2.2 Project Personnel

The R/V Westerly was supported by both offshore and onshore project personnel. Offshore project personnel went out daily on the R/V Westerly to acquire data and conduct survey operations. Onshore project personnel completed data processing, data management, and project/vessel management. Please see table below for project personnel and roles. Note personnel were rotated for breaks and relief throughout the project, for information on which personnel were onsite for specific dates, please refer to vessel Daily Progress Reports (DPRs) in Appendix 2-A.

| Offshore Personnel | |
|---|---|
| Party Chief | Kelly Power / Douglas Bowlus |
| Hydrographic Surveyor | David Wise / Katie Conrad |
| Geophysical Surveyor | Richie Carmichael / Katie Conrad |
| Vessel Captain | Ryan Braget / John Valikonis |
| Client Representative | Ron Eckhardt / Kent Simpson |
| **Onshore Personnel** | |
| Offshore Site Manager | Jim Grant / Charlie Hall / Marta Krynytzky |
| Assistant Offshore Site Manager | Marta Krynytzky / Eddie Stutts / Charlie Hall |
| Data Manager | Chuck Chamberlain / Lance Woods |
| Side Scan Sonar Data Processor | Lance Woods / Katie Conrad |
| Multibeam Echosounder Data Processor | Cody Gibson / Marta Krynytzky / Katie Conrad |
| Senior Hydrographer | Gilbert Suarez |

**Table 2-1: Project Personnel**

## 2.3 Operation Dates

The R/V Westerly worked May 25th through September 29th on this project. The vessel and associated crew generally worked twelve days straight followed by two fatigue management days. There were occasional exceptions made to the fatigue schedule due to tides, weather, and personnel changes.

The R/V Westerly was mobilized from Anchorage, AK from May 25th through May 31st. Project calibrations were performed on June 1st outside of Kenai, AK.

The LNG areas were worked on June 2nd through July 9th, July 11th, and September 21st through September 27th. Project work began with the LNG areas, however heavy nearshore fishing activity prevented the most nearshore areas to be completed in July. On July 11th the Westerly acquired a few infill lines on the LNG areas and mainlines in the pipeline area. After the completion of fishing season, the Westerly returned to the LNG areas from September 21st through 27th to complete very nearshore areas and acquire remaining bottom samples.

The pipeline areas were worked from July 10th through September 21st. On both July 10th and September 21st the Westerly acquired data in both the LNG and pipeline areas.

The Westerly was demobilized September 28th through September 29th. Additional demobilization days were utilized for shipping, sorting and storage preparations, however these activities were not formally captured in DPRs.

A complete DPRs and Line Logs are provided in Appendix 2-A and 2-B respectively.

# 3. NAVIGATION

## 3.1 Equipment and Post Processed Kinematic Positioning

The R/V Westerly was equipped with an Applanix POS MV positioning and motion system. The Applanix POS MV inertial navigation system was used to control motion and attitude for the R2Sonic 2024 system. The POS MV delivers full 6-degree-of-freedom position and orientation solutions for marine survey vessels, and outputs all motion variables at a high rate: position, velocity, heave, roll, pitch, true heading, acceleration vectors, and angular rate vectors. The system combines GNSS/DGPS with rugged, high-quality inertial sensors. The system measures true heading together with roll and pitch to 0.02 degree accuracy or better under dynamic conditions, including hard turns, and rapid acceleration and deceleration with heave accuracy of 1.969 inch (5 centimeters) or 5 percent, all in real time. The POS MV system consisted of two GNSS antennas mounted atop the vessel, a processor and an Inertial Measurement Unit (IMU) mounted in-line directly above the transducer. Data were fed from the processor to Hypack via Ethernet at 50 hertz. Delayed heave is logged at 25 hertz, and position data is logged at 100 hertz, both used for post-processing multibeam and LiDAR data.

Fugro subcontracted JOA Surveys, a local survey company, to install and maintain two GPS dual frequency base stations. One station was located in Kenai, Alaska and the other station was located near Tyonek, Alaska. Both station ran near continuously throughout the Westerly acquisition time period. Appendix 2-C contains OPUS solutions for base stations.

Recorded positioning and motion files were combined with data from one of the base stations for Post Processed Kinematic (PPK) positioning method using Applanix POSPac software.

### 3.1.1 Gyro Heading Calibration (GAMS Calibration)

Gyro Heading Calibration (GAMS Calibration). Vessel headings are measured by the Applanix POS MV, by way of a GPS Azimuth Measurement Subsystem (GAMS). GAMS computes a carrier phase differential GPS position solution of a Slave antenna with respect to a Master antenna position, thereby computing the heading between the two. In order for this subsystem to provide a heading accuracy of $0.01^0$, the system needs to know and resolve the spatial relationship between the two antennas. During the GAMS calibration, since the offset from the IMU to the Master antenna is known (from the vessel offset survey), the location of the Slave antenna is calculated by computing the baseline between the two antennas with respect to the IMU axes. To calibrate the heading data received from the POS MV GAMS subsystem, the POS Viewer software is used to run the GAMS Calibration routine. First, an accurate and precise separation distance between the two GNSS antennas is entered in the POS Viewer's GAMS Parameter Setup window. Once this known offset is entered into the system, the vessel begins maneuvering with turns to port and starboard (preferably figure-eight maneuvers) to allow the system to refine its heading accuracy.

Once the heading data falls to within an allowable accuracy, the vessel ends the figure-eight maneuvers and maintains a steady course and speed. The GAMS Calibration routine is started, and the POS MV completes the calibration. The results can be viewed in the GAMS Parameter Setup window of the POS Viewer software.

The POS MV Logger and POS MV controller software's real-time QC displays were monitored throughout the survey to ensure that the positional accuracies are achieved. These included, but were not limited to the following: GPS Status, Position Accuracy, Receiver Status (which included HDOP & PDOP), and Satellite Status.

## 3.2 Tidal Adjustments

Vertical adjustments for bathymetric and topographic data from NAVD-88 to MLLW for the project site were obtained from readily available data. Tidal modeling for the project site is a challenging task primarily due to the regions extremely large tide and its spatial variation. The tide range changes by less than 3 feet in over 80 miles between Seldovia (Southern part of Cook Inlet) and Nikiski, and more than 8 feet over the 60 miles between Nikiski and Anchorage. The data used to tabulate the adjustments for each specific site is included in Table 3-1 are based on tidal benchmark (BM) sheets and published on NOAA website: http://tidesandcurrents.noaa.gov.

| Station | | OPUS DB PID | Tidal Datum Epoch | NAD83 EPOCH 2011.00 | | Height of BM above MLLW | GEOID12A | Height of BM above NAVD88 |
|---|---|---|---|---|---|---|---|---|
| Number | Name | | | Latitude | Longitude | | | |
| 9455760 | Nikiski | BBBB48 | 2007-2011 | 60 41 03.07296 | 151 23 33.34652 | 12.838 | 7.991 | 10.607 |
| 9455869 | N. Foreland | BBBF25 | 2007-2011 | 61 02 46.29630 | 151 10 03.08093 | 8.969 | 4.791 | 9.118 |
| 9455781 | Boulder Pt. | N/A | Unknown | 60 46 34.00514 | 151 14 41.82529 | 6.436 | 4.644 | 4.145 |
| 9455866 | Pt. Possession | BBBF49 | 1982-2001 | 61 02 02.19240 | 150 24 21.55771 | 7.618 | 4.735 | 4.738 |
| 9455912 | Fire Island | BBDG04 | 1982-2001 | 61 10 22.69557 | 150 11 59.44208 | 8.659 | 5.111 | 5.607 |
| 9455920 | Anchorage | BBBH31 | 1982-2001 | 61 14 00.63624 | 149 53 16.11993 | 11.374 | 6.571 | 8.050 |

**Table 3-1: Separations between NAD83(2011) and MLLW.**

**Tidal datum at NIKISKI, COOK INLET based on:**

LENGTH OF SERIES: 15 YEARS

TIME PERIOD: Oct. 1996 - Sept. 2010 and June 2012 - May 2013

TIDAL EPOCH: 2007-2011

CONTROL TIDE STATION: 9455500 SELDOVIA, COOK INLET

**Table 3-2. Elevations of tidal datum referred to MLLW.**

| Elevations of tidal datum referred to Mean Lower Low Water (MLLW) | | Feet | Meters |
|---|---|---|---|
| HIGHEST OBSERVED WATER LEVEL (12/26/1976) | | 28.399 | 8.656 |
| MEAN HIGHER HIGH WATER | MHHW | 20.581 | 6.273 |
| MEAN HIGH WATER | MHW | 19.856 | 6.052 |
| MEAN SEA LEVEL | MSL | 11.289 | 3.441 |
| MEAN TIDE LEVEL | MTL | 10.997 | 3.352 |
| North American Vertical Datum | NAVD88 | 7.319 | 2.231 |
| MEAN LOW WATER | MLW | 2.139 | 0.652 |
| MEAN LOWER LOW WATER | MLLW | 0.000 | 0.000 |
| LOWEST OBSERVED WATER LEVEL (12/14/2008) | | -6.319 | -1.926 |

**Table 3-3. BM's with North American Vertical Datum (NAVD88).**

| Bench Mark Elevation Information | In METERS above: | | In FEET above: | |
|---|---|---|---|---|
| **Stamping or Designation** | **MLLW** | **MHW** | **MLLW** | **MHW** |
| 5760 L 1983 | 12.838 | 6.786 | 42.119 | 22.264 |
| NO 7 1973 | 35.890 | 29.838 | 117.749 | 97.894 |
| NO 8 1973 | 33.594 | 27.542 | 110.217 | 90.361 |
| NO 9 1973 | 35.880 | 29.828 | 117.717 | 97.861 |
| 5760 M 1983 | 13.191 | 7.139 | 43.278 | 23.422 |
| 5760 N 1983 | 26.356 | 20.304 | 86.470 | 66.614 |
| 5760 P 2002 | 10.651 | 4.599 | 34.944 | 14.957 |

### 3.2.1 LNG Areas:

The adjustment value of 2.231m (7.32 feet) for this site was based on information obtained for tidal BM NIKISKI, this information is typical for each Tidal BM included in the previous table

### 3.2.2 Pipeline Routes:

The adjustment value of 1.266m (4.15 feet) is the mean value between Boulder Point, and North Foreland stations. NAVD-88 to MLLW data for Boulder Point (2.290 m – 7.51 feet) are based on data collected by JOA Surveys LLC., In 1998, and 1999, data for North Foreland (-0.241m – 0.82 feet) obtained from NOAA website.

## 3.3 USBL Positioning

To refine the positioning accuracy of the side scan sonar and magnetometer sensors, an IXSEA Ultra-Short Baseline (USBL) acoustic tracking system was used. Sensor positioning were determined with the USBL system relative to the vessel's surface position.

### 3.3.1 USBL Calibration

USBL Calibration The pre-calibrated iXBlue Global Acoustic Positioning System (GAPS) combines USBL, INS and GPS technologies and requires no calibration. At a 4000 meter range an accuracy of 0.2% of the slant range is expected. The most accurate USBL in its category, it works in deep or extremely shallow water and difficult environments where other systems have failed. It provides absolute position as well as surface GPS-robust position.

## 3.4 Datum Conversions and Geodetic Parameters

Data was acquired in NAD83 UTM zone 5 meters and converted to project datum during final processing. Alaska LNG requirements stated that the coordinate system for reporting is the Geographic Coordinate System (GCS), NAD83 (NSRS 2007) Alaska Zone 4 (ft US), further defined below.

**Horizontal Datum: NAD83 (NSRS 2007)**
Authority: EPSG Code: 4759
Ellipsoid (Spheroid): GRS 1980 Semi-major Axis: 6378137.00
Semi-minor Axis: 6356752.314140356
Inverse Flattening: 298.257222101

**Vertical Datum (Orthometric Height): NAVD88**
Authority: ExxonMobil (XOM)
EPSG Code: ExxonMobil Custom
Code TBD Geoid: GEOID06
Direction: Positive Up
Vertical Shift: 0.00
Linear Units: US Survey Feet

**Projection: NAD83 (NSRS 2007)/Alaska Zone 4 (ftUS)**
Projection Name: NAD83_NSRS2007 _AiaskaZone4_ftUS_54392

Projection Method: Transverse Mercator
Authority: ExxonMobil (XOM)
EPSG Code: ExxonMobil Custom Code 54392
False Easting: 1640416.66
False Northing: 0.0
Central Meridian: -150.000 Define,
Scale Factor: 0.9999
Latitude of Origin: 54.0
Linear Unit: US Survey Feet
Area of Use: 152° W to 148° W, Onshore

**Transformation Parameters: NAD83 (NRS2007) to WGS 84**
Method: Geocentric translations (geographic 2D domain)
Source CRS: NAD83 (NSRS2007)
Code: 4759
Target CRS: WGS84
Code: 4326
Parameter Values:
X axis translation= -1 .00584m
Y axis translation= +1 .051562m
Z axis translation= +0.304801 m

**Datum Latitude Longitude Ellipsoid Height**
NAD83 (SRS2007) 60 40 26.18472 -151 20 53.60534 46.127
WGS84 60 40 26.17888 -151 20 53.69788 46.578

# 4. VESSEL AND EQUIPMENT

## 4.1 Survey Vessel

The R/V Westerly was contracted as the mid-sized shallow draft vessel for multibeam, side scan sonar, magnetometer, bottom sampling, and vessel based LiDAR platform. The M/V Westerly is a 50 foot catamaran with a draft of 1.5 feet. The Westerly is an ideal platform for Cook Inlet with sufficient stability and deck space for survey operations. The Westerly also has sufficient speed and endurance to transit to the project work sites and is acoustically quiet for data acquisition. See Appendix 2-G for equipment offsets and vessel configuration. See Appendix 2-E for a complete vessel specifications.

**Figure 4-1. The M/V Westerly transiting.**

**Table 4-1. M/V Westerly Survey Equipment**

| Survey Instrumentation | |
|---|---|
| Multibeam Echo Sounder | R2Sonic 2024 |
| Single-beam Echo Sounder | Odom CV-100 |
| Sound Velocity Profiler | Ocean Science Underway SV with Valeport RapidSV, AML SmartSV |
| Side scan Sonar | EdgeTech 4200 Dual Frequency(400/900 kHz) Sonar |
| Magnetometer | Marine Magnetics SeaSpy |
| Sea Bed Sampler | KC Day Grab |
| Positioning | Applanix POS MV |
| | Applanix IMU |
| | IXBlue GAPS Acoustic Positioning System (USBL) |
| LiDAR | Optech ILRIS HD |

**Table 4-2. M/V Westerly Software**

| Software | |
|---|---|
| Positioning | Hypack 2014 |
| | Hypack/Hysweep 2015 |
| | MV POS View |
| | IXBlue GAPS Control |
| Single-beam Echo Sounder | Odom eChart |
| Magnetometer Data Logger | SonarWiz |
| Side scan Sonar | Edgetech Discover |
| LiDAR Processing | Optech ILRIS-HD Parser |
| Tides | Nobeltec Tides and Currents |

## 4.2 Multibeam Echosounder

Bathymetric data were acquired using an R2Sonic 2024 multibeam sonar system deployed as a moon pool mount. The R2Sonic transmits a shaped continuous wave pulse at the selected frequency. The transmit pulse is narrow in the along-track direction, but very wide in the across-track direction. The reflected acoustic energy is received via the R2Sonic receivers, and within the receive module the beams are formed and the bottom detection process takes place. The resultant bottom detections (range and bearing) are sent via Ethernet deck lead to the Sonar Interface Module (SIM). The SIM then sends the data out to the R2Sonic control software and the data acquisition software. The R2Sonic output digital depth data to the Hypack / Hysweep acquisition system where it was stored with navigation data, motion sensor data, and heading data to be applied in post processing.

See Appendix 2-G for multibeam calibration report.

## 4.3 Sound Velocity Profilers

Two sound velocimeters were utilized during this survey: an Ocean Science Underway SV outfitted with a Valeport RapidSV was the primary velocimeter and an Applied Microsystems Limited (AML) SmartSV was used for a check measurements. Sound velocity casts were taken at approximately 2-4 hour intervals during multibeam data acquisition.

## 4.4 Side Scan Sonar

The side scan sonar system consisted of an Edgetech 4125 dual channel, digital, high-resolution side scan sonar for acquiring spatially corrected seafloor images suitable for preparation of high-quality seafloor mosaics. Survey line spacing and swath width settings were dependent on water depth.

See Appendix 2-G for side scan confidence check methods.

## 4.5 Magnetometer

A Marine Magnetics SeaSPY magnetometer was used to make measurements of the total magnetic field along survey tracklines. The magnetometer tow fish was equipped with a pressure/depth sensor to maintain optimum towing altitude. Total field strength readings were logged to the navigation computer through the Hypack and Sealink.

See Appendix 2-G for magnetometer functionality check methods.

## 4.6 Single Beam

Single-beam bathymetric data were acquired to provide a QC check aboard the multibeam equipped vessels and as a basic aid to navigation and depth indicator for setting tow depths for the side scan and magnetometer. The Odom CV-100 was utilized to log and display real-time water depth values. During data collection, simultaneous with positioning, a serial link between the Odom CV-100 echo sounder and the navigation software resulted in an exchange of information between systems for logging of depth soundings while the navigation system transmitted a time tag for marking the digital echo sounder record

## 4.7 Sea Bed Sampling

A KC Day Grab sampler was employed to recover sea bed samples at selected stations along the surveyed areas. Sample locations were selected for the purpose of ground-truthing the backscatter and side scan data. A sample was taken where changes in seabed lithologies were apparent as seen in the side scan and backscatter imagery.

Once on location, the boat was taken out of gear and the grab sampler was deployed off the stern of the vessel via the A-Frame. The grab sampler was recovered by a hydraulic winch.

At least two legitimate sample attempts were made at each of the preselected sample stations before abandoning a location. Each recovered sample was placed on a sample log sheet and photographed before being placed in a zip-lock plastic bag along with the sample log sheet. The completed log noted the date and time the sample was taken along with location of the sample and the water depth. The bagged samples were then retained and stored for later description and reference.

Sample descriptions were carried out ashore. Sample Descriptions and photographs of recovered samples are also provided in Appendix 2-D.

## 4.8 LiDAR / Laser Scanner

An Optech ILRS HD LiDAR laser scanner was mobilized aboard the R/V Westerly and a Utility Task Vehicle (UTV) to map the shoreline features above the waterline. Both the Westerly and the UTV acquired data during low tide to maximize the terrain exposed above water for detection. The UTV operated on the beach making passes both facing the water and facing the bluffs. The Westerly operated from the water directing data acquisition towards the beach.

On both survey platforms the LiDAR laser scanner and image ranging system was interfaced with a POS MV system to obtain integrated positioning and imaging data above water. Positioning of the LiDAR scanned images required mounting the scanner to lever arms (offsets) for the primary antennas. The measured offsets were entered into the POS MV software. One vital component on the POS system is the Inertial Measurement Unit (IMU) that internally determines its moment-to-moment orientation. Orientation refers to angles of rotation along three axes, X, Y, and Z or roll, pitch, and heading. When installed onto a vessel along with the ILRIS-HD, the IMU helps determine the changing orientation of the LiDAR sensor as the laser shots are fired.

During scanning operations a GPS base station was logging GPS data at one second intervals. These data were then processed in POSPac along with a POS MV GPS data file logged simultaneously to obtain a SBET (Smoothed Best Estimated Trajectory) file. After the SBET file was generated the scanned data was parsed through Optech's ILRIS-HD Parser software and a point cloud was generated.

## 5. ONSITE PROCESSING

To support the R/V Westerly data acquisition team and to provide data quality feedback and quality control a processing team worked from shore in Kenai, Alaska. Typically data was transferred every evening from the vessel to the processing team and was processed the following day. Quality feedback was delivered to the acquisition and management team as necessary and through check for data gaps and unsatisfactory data were made with the client representative prior to closing out any survey area block.

### 5.1 Multibeam

All Soundings were processed using CARIS (Computer Aided Resource Information System) HIPS (Hydrographic Information Processing System). HIPS converted the S7K files to HIPS format, corrected soundings for sound velocity, motion, tide, and vessel offset, and were used to examine and reject noisy soundings. HIPS also produced the final BASE surfaces.

ESRI ArcMap was utilized for survey planning, reviewing coverage plots, creating infills, cross lines, and graphics.

Applanix POSPac MMS was utilized for post-processing the vessel dual frequency GPS data with simultaneous base station data to calculate higher accuracy positions than those calculated in real time.

Raw POS MV data were processed in Applanix POSPac MMS with a Single Base Station Solution using the JOA's Base Station's dual frequency GPS data. A Smoothed Best Estimated Trajectory (SBET) file containing a Post Process Kinematic Inertial Navigation Solution was created. Additionally, a POSPac MMS RMS file was created which contained uncertainty information specific to each position and attitude calculation. This operation replaced the real time navigation, pitch, roll, gyro, and GPS Height data with PPK navigation, attitude records, and uncertainty data.

Processing of the POS MV data into a SBET file using a single base solution created highly accurate ellipsoid altitudes, normally better than 3.94" (10 cm), for all positioning data. Real-time ellipsoid altitude data was replaced with the SBET solution and a GPS tide was then calculated for each line. The GPS tide was generated by using the ellipsoid height and subtracting the heave, dynamic draft, and static draft specific to each line.

### 5.2 Side Scan Sonar

Side scan sonar data was processed in SonarWiz by Chesapeake Technology. The ".jsf" files for each line were loaded into SonarWiz as swaths representing the lines run by the survey vessel. The swaths are then bottom tracked to remove the water column and eliminate the nadir shadow of each swath. The gain is then equalized and adjusted to correct for graze angle and maximize the resolution of seafloor features as well as bringing conformity across multiple

swaths to ensure a resolute image of the seafloor at each survey site. Once completed the swaths for a survey area are mosaicked at a fit for purpose resolution and exported as a GeoTIFF.

## 5.3 Magnetometer

Magnetometer data was not processed onsite.

## 5.4 LiDAR

The base station data along with a POS MV GPS data file were processed in POSPac (Applanix software) to obtain a Smoothed Best Estimated Trajectory (SBET) file. After the SBET file was generated, the scanned data was parsed through Optech's ILRIS-3D Parser software and a point cloud was generated. Fugro proprietary software Las Editor was utilized to clean spikes and outliers from the final dataset and Terramodel software was utilized to quality control all final datasets.

# 6. SUMMARY OF HEALTH, SAFETY, AND ENVIRONMENTAL MATTERS

## 6.1 Safety Meetings/Safety Drills

Safety meetings and drills were conducted weekly, according the project schedule. In total, the Westerly's team (both vessel and shore-based) had 12,984 exposure hours with no recordable injuries. The team completed 17 safety meetings, 117 Job Hazard Analysis (JHA), 106 Task Risk Assessments (TRA), and 17 emergency Drills. Additional details can be found in the project's final HSE Report.

## 6.2 Hazard Observation Cards

52 Hazard Observation Cards (HOC) were created during this project. All of those 50 of the 52 cards were closed out before the end of the project. Since the close of the project the remaining two HOCs have been closed. HOC card list and details can be found in the project's final HSE Report.

# 7. APPENDICES

# APPENDIX 2-A
# DAILY PROGRESS REPORTS

# Daily Progress Report

ver 7.22.2015-A (Alaska)

Fugro
R/V: Westerly

| | |
|---|---|
| Client: | AK LNG |
| Job Description: | Seafloor Mapping |
| Area & Block(s): | LNG Sites |
| Prospect / Site: | Anchorage |
| Fugro Job #: | 23.00007123 |
| Job Day #: | 1 |
| Report For: | 25-May-2015 Monday |
| Julian Date: | 145 |
| Hours From: | 0700 to 1900 |
| Report From: | |

| | | |
|---|---|---|
| Production Hrs/Day: | 12.0 hrs | |
| Job Total in Meters: | 577,800.00 | |
| Total # of Lines: | 232 Lines | |
| # Cores/Core Time: | 20 cores | Est. 180 mins. |
| Total Meters Added: | 0.00 | |
| Total Meters Deleted: | 0.00 | |
| Survey Units: | Meters | |
| Nautical Mile (Feet): | 6080 | |

| Time Summary (Hours): | Today: | Job Totals: ( % ) | |
|---|---|---|---|
| Mobilize / Demobilize: | 12.00 | 12.00 | 100.00% |
| On-Line: | 0.00 | 0.00 | |
| Transit: | 0.00 | 0.00 | |
| Other Working: | 0.00 | 0.00 | |
| Equipment Downtime: | 0.00 | 0.00 | |
| Weather Stand-By: | 0.00 | 0.00 | |
| Other Stand-By: | 0.00 | 0.00 | |
| Stand-By / No Crew: | 0.00 | 0.00 | |
| Health, Safety & Environmental: | 0.00 | 0.00 | |
| Job Summary: | 12.00 | 12.00 | 100.00% |

Areas Worked:

**Job Total - Kilometers:** *577.80*

**Estimated Coring Time:** 5.00 Days

| HSE Reporting: | | HSE Officer: | Kelly Power |
|---|---|---|---|
| Toolbox: | Yes | JHA - mob activities | |
| Shift Change: | | | |
| Safety: | Yes | Vessel orientations, Training/Instruction for the local Forklift for Eddie Stutts | |
| Pre/Post Job: | | | |

| Production Summary: | Today: | To Date: | Job Total: | To Complete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 0.00 | 0.00 | 577.80 | 577.80 |
| Lines Completed: | 0 | 0 | 232 | 232 |
| Cores Taken: | 0 | 0 | 20 | 20 |
| In-Fill Kilometers: | 0.00 | 0.00 | | |
| Added on Kilometers: | 0.00 | 0.00 | | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 0.00 | | |

**Geophysical Equipment:**

| | |
|---|---|
| Equipment #1: | Navigation System - POS MV # |
| Equipment #2: | Diff. GPS System - Trimble AG130 # |
| Equipment #3: | MBES - R2Sonic # |
| Equipment #4: | SSS - Edgetech 4200 # |
| Equipment #5: | Mag. - SeaSpy # |
| Equipment #6: | USBL - IXSEA GAPS # |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

| Weather Summary: | Sea State (meters) | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | n/a | n/a | n/a |
| Wx - 1200: | cloudy, light rain | light aires | |
| Wx - 1800: | cloudy, light rain | light aires | |
| Wx - 2400: | | | |

***Personnel Onboard:***

| | |
|---|---|
| *Captain:* | Ryan Braget |
| *Other Vessel Crew:* | n/a |
| *Party Chief:* | Kelly Power |
| *Hydro. Surveyor:* | David Wise |
| *Geophysical Tech.:* | Richie Carmichael |
| *Other Survey Crew:* | n/a |
| *Client Representative:* | n/a |

***Personnel Onshore:***

| | |
|---|---|
| *Offshore Site Manager:* | Jim Grant |
| *Ass't Off. Site Manager:* | Eddie Stutts |
| *Data Manager:* | Chuck Chamberlain |
| *Data Processor:* | Garret Mitchell |
| *Data Processor:* | Lance Woods |
| *Data Processor:* | n/a |
| *Additional Proc.:* | n/a |
| *Client Representative:* | Ron Eckhardt |

**Client Representative's Remarks:**

FUGRO: Kelly Power Client:

# Daily Progress Report

ver 7.22.2015-A (Alaska)

**Client:** AK LNG
**Job Description:** Seafloor Mapping
**Area & Block(s):** LNG Sites
**Prospect / Site:** Anchorage
**Fugro Job #:** 23.00007123
**Job Day #:** 2

Fugro
R/V: Westerly

| | | |
|---|---|---|
| Report For: | 26-May-2015 | Tuesday |
| Julian Date: | 146 | |
| Hours From: | 0700 to 1900 | |

| | | |
|---|---|---|
| Production Hrs/Day: | 12.0 hrs | |
| Job Total in Meters: | 577,800.00 | |
| Total # of Lines: | 232 Lines | |
| # Cores/Core Time: | 20 cores | Est. 180 mins. |
| Total Meters Added: | 0.00 | |
| Total Meters Deleted: | 0.00 | |
| Survey Units: | Meters | |
| Nautical Mile (Feet): | 6080 | |

**Report From:**

| Time Summary (Hours): | Today: | Job Totals: ( % ) | |
|---|---|---|---|
| Mobilize / Demobilize: | 12.00 | 24.00 | 100.00% |
| On-Line: | 0.00 | 0.00 | |
| Transit: | 0.00 | 0.00 | |
| Other Working: | 0.00 | 0.00 | |
| Equipment Downtime: | 0.00 | 0.00 | |
| Weather Stand-By: | 0.00 | 0.00 | |
| Other Stand-By: | 0.00 | 0.00 | |
| Stand-By / No Crew: | 0.00 | 0.00 | |
| Health, Safety & Environmental: | 0.00 | 0.00 | |
| **Job Summary:** | **12.00** | **24.00** | **100.00%** |

**Areas Worked:**

**Job Total - Kilometers:** *577.80*

**Estimated Coring Time:** 5.00 Days

| HSE Reporting: | | HSE Officer: | Kelly Power |
|---|---|---|---|
| Toolbox: | x | JHA- Mob Activities | |
| Shift Change: | | | |
| Safety: | x | Vessel Orientation | |
| Pre/Post Job: | | | |

| Production Summary: | Today: | To Date: | Job Total: | To Complete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 0.00 | 0.00 | 577.80 | 577.80 |
| Lines Completed: | 0 | 0 | 232 | 232 |
| Cores Taken: | 0 | 0 | 20 | 20 |
| In-Fill Kilometers: | 0.00 | 0.00 | | |
| Added on Kilometers: | 0.00 | 0.00 | | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 0.00 | | |

**Geophysical Equipment:**

| | |
|---|---|
| Equipment #1: | Navigation System - POS MV #602273 |
| Equipment #2: | Diff. GPS System - Trimble AG130 #603512 |
| Equipment #3: | MBES - R2Sonic #603633 |
| Equipment #4: | SSS - Edgetech 4200 #403274 |
| Equipment #5: | Mag. - SeaSpy #403113 |
| Equipment #6: | USBL - IXSEA GAPS #151 |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

| Weather Summary: | Sea State (meters) | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | n/a | | |
| Wx - 1200: | calm | light | var |
| Wx - 1800: | calm | light | var |
| Wx - 2400: | | | |

***Personnel Onboard:***

*Captain:* Ryan Braget
*Other Vessel Crew:* n/a
*Party Chief:* Kelly Power
*Hydro. Surveyor:* David Wise
*Geophysical Tech.:* Richie Carmichael
*Other Survey Crew:* n/a
*Client Representative:* n/a

***Personnel Onshore:***

*Offshore Site Manager:* Jim Grant
*Ass't Off. Site Manager:* Eddie Stutts
*Data Manager:* Chuck Chamberlain
*Data Processor:* Garret Mitchell
*Data Processor:* Lance Woods
*Data Processor:* n/a
*Additional Proc.:* n/a
*Client Representative:* Ron Eckhardt

*Senior Hydrographer:* Gilbert Suarez

**Client Representative's Remarks:**

**FUGRO:** Kelly Power **Client:**

# Daily Progress Report

ver 7.22.2015-A (Alaska).

**Fugro**
**R/V: Westerly**

| | |
|---|---|
| Client: | AK LNG |
| Job Description: | Seafloor Mapping |
| Area & Block(s): | LNG Sites |
| Prospect / Site: | Anchorage |
| Fugro Job #: | 23.00007123 |
| Job Day #: | 3 |
| Report For: | 27-May-2015 Wednesday |
| Julian Date: | 147 |
| Hours From: | 0700 to 1900 |
| Report From: | |

| | | |
|---|---|---|
| Production Hrs/Day: | 12.0 hrs. | |
| Job Total in Meters: | 577,800.00 | |
| Total # of Lines: | 232 Lines | |
| # Cores/Core Time: | 20 cores | Est. 180 mins. |
| Total Meters Added: | 0.00 | |
| Total Meters Deleted: | 0.00 | |
| Survey Units: | Meters | |
| Nautical Mile (Feet): | 6080 | |

| Time Summary (Hours): | Today: | Job Totals: ( % ) | |
|---|---|---|---|
| Mobilize / Demobilize: | 12.00 | 36.00 | 100.00% |
| On-Line: | 0.00 | 0.00 | |
| Transit: | 0.00 | 0.00 | |
| Other Working: | 0.00 | 0.00 | |
| Equipment Downtime: | 0.00 | 0.00 | |
| Weather Stand-By: | 0.00 | 0.00 | |
| Other Stand-By: | 0.00 | 0.00 | |
| Stand-By / No Crew: | 0.00 | 0.00 | |
| Health, Safety & Environmental: | 0.00 | 0.00 | |
| **Job Summary:** | **12.00** | **36.00** | **100.00%** |
| Areas Worked: | | | |

**Job Total - Kilometers:** *577.80*

**Estimated Coring Time:** 5.00 Days

| HSE Reporting: | | HSE Officer: | Kelly Power |
|---|---|---|---|
| Toolbox: | x | JHA- Mob Activities | |
| Shift Change: | | | |
| Safety: | | | |
| Pre/Post Job: | | | |

| Production Summary: | Today: | To Date: | Job Total: | To Complete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 0.00 | 0.00 | 577.80 | 577.80 |
| Lines Completed: | 0 | 0 | 232 | 232 |
| Cores Taken: | 0 | 0 | 20 | 20 |
| In-Fill Kilometers: | 0.00 | 0.00 | | |
| Added on Kilometers: | 0.00 | 0.00 | | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 0.00 | | |

**Geophysical Equipment:**

| | |
|---|---|
| Equipment #1: | Navigation System - POS MV #602273 |
| Equipment #2: | Diff. GPS System - Trimble AG130 #603512 |
| Equipment #3: | MBES - R2Sonic #603633 |
| Equipment #4: | SSS - Edgetech 4200 #403274 |
| Equipment #5: | Mag. - SeaSpy #403113 |
| Equipment #6: | USBL - IXSEA GAPS #151 |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

| Weather Summary: | Sea State (meters) | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | n/a | | |
| Wx - 1200: | calm | light | var |
| Wx - 1800: | calm | light | var |
| Wx - 2400: | | | |

***Personnel Onboard:***

| | |
|---|---|
| *Captain:* | Ryan Braget |
| *Other Vessel Crew:* | n/a |
| *Party Chief:* | Kelly Power |
| *Hydro. Surveyor:* | David Wise |
| *Geophysical Tech.:* | Richie Carmichael |
| *Other Survey Crew:* | n/a |
| *Client Representative:* | n/a |

***Personnel Onshore:***

| | |
|---|---|
| *Offshore Site Manager:* | Jim Grant |
| *Ass't Off. Site Manager:* | Eddie Stutts |
| *Data Manager:* | Chuck Chamberlain |
| *Data Processor:* | Garret Mitchell |
| *Data Processor:* | Lance Woods |
| *Data Processor:* | n/a |
| *Additional Proc.:* | n/a |
| *Client Representative:* | Ron Eckhardt |
| *Senior Hydrographer:* | Gilbert Suarez |

**Client Representative's Remarks:**

**FUGRO:** Kelly Power **Client:**

# Daily Progress Report

*ver 7.22.2015-A (Alaska).*

**Fugro**
**R/V: Westerly**

| | |
|---|---|
| Client: | AK LNG |
| Job Description: | Seafloor Mapping |
| Area & Block(s): | LNG Sites |
| Prospect / Site: | Anchorage |
| Fugro Job #: | 23.00007123 |
| Job Day #: | 4 |
| Report For: | 28-May-2015 Thursday |
| Julian Date: | 148 |
| Hours From: | 0700 to 1900 |
| Report From: | |

| | |
|---|---|
| Production Hrs/Day: | 12.0 hrs. |
| Job Total in Meters: | 577,800.00 |
| Total # of Lines: | 232 Lines |
| # Cores/Core Time: | 20 cores / Est. 180 mins. |
| Total Meters Added: | 0.00 |
| Total Meters Deleted: | 0.00 |
| Survey Units: | Meters |
| Nautical Mile (Feet): | 6080 |

| Time Summary (Hours): | Today: | Job Totals: ( % ) | |
|---|---|---|---|
| Mobilize / Demobilize: | 12.00 | 48.00 | 100.00% |
| On-Line: | 0.00 | 0.00 | |
| Transit: | 0.00 | 0.00 | |
| Other Working: | 0.00 | 0.00 | |
| Equipment Downtime: | 0.00 | 0.00 | |
| Weather Stand-By: | 0.00 | 0.00 | |
| Other Stand-By: | 0.00 | 0.00 | |
| Stand-By / No Crew: | 0.00 | 0.00 | |
| Health, Safety & Environmental: | 0.00 | 0.00 | |
| Job Summary: | 12.00 | 48.00 | 100.00% |
| Areas Worked: | | | |

**Job Total - Kilometers:** ***577.80***

**Estimated Coring Time:** **5.00 Days**

| HSE Reporting: | | HSE Officer: | Kelly Power |
|---|---|---|---|
| Toolbox: | x | JHA- Mob Activities | |
| Shift Change: | | | |
| Safety: | x | Vessel Orientation for Cody Gibson | |
| Pre/Post Job: | | | |

| Production Summary: | Today: | To Date: | Job Total: | To Complete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 0.00 | 0.00 | 577.80 | 577.80 |
| Lines Completed: | 0 | 0 | 232 | 232 |
| Cores Taken: | 0 | 0 | 20 | 20 |
| In-Fill Kilometers: | 0.00 | 0.00 | | |
| Added on Kilometers: | 0.00 | 0.00 | | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 0.00 | | |

**Geophysical Equipment:**

| | |
|---|---|
| Equipment #1: | Navigation System - POS MV #602273 |
| Equipment #2: | Diff. GPS System - Trimble AG130 #603512 |
| Equipment #3: | MBES - R2Sonic #603633 |
| Equipment #4: | SSS - Edgetech 4200 #403274 |
| Equipment #5: | Mag. - SeaSpy #403113 |
| Equipment #6: | USBL - IXSEA GAPS #151 |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

| Weather Summary: | Sea State (meters) | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | n/a | | |
| Wx - 1200: | calm | light | var |
| Wx - 1800: | calm | light | var |
| Wx - 2400: | | | |

***Personnel Onboard:***

| | |
|---|---|
| *Captain:* | Ryan Braget |
| *Other Vessel Crew:* | n/a |
| *Party Chief:* | Kelly Power |
| *Hydro. Surveyor:* | David Wise |
| *Geophysical Tech.:* | Richie Carmichael |
| *Other Survey Crew:* | n/a |
| *Client Representative:* | n/a |

***Personnel Onshore:***

| | |
|---|---|
| *Offshore Site Manager:* | Jim Grant |
| *Ass't Off. Site Manager:* | Eddie Stutts |
| *Data Manager:* | Chuck Chamberlain |
| *Data Processor:* | Garret Mitchell |
| *Data Processor:* | Lance Woods |
| *Data Processor:* | n/a |
| *Additional Proc.:* | n/a |
| *Client Representative:* | Ron Eckhardt |
| *Senior Hydrographer:* | Gilbert Suarez |

**Client Representative's Remarks:**

**FUGRO:** Kelly Power **Client:**

# Daily Progress Report

ver 7.22.2015-A (Alaska)

**Client:** AK LNG
**Job Description:** Seafloor Mapping
**Area & Block(s):** LNG Sites
**Prospect / Site:** Anchorage
**Fugro Job #:** 23.00007123
**Job Day #:** 5

Fugro
R/V: Westerly

| | | |
|---|---|---|
| Report For: | 29-May-2015 | Friday |
| Julian Date: | 149 | |
| Hours From: | 0700 to 1900 | |

Report From:

| | | |
|---|---|---|
| Production Hrs/Day: | 12.0 hrs | |
| Job Total in Meters: | 577,800.00 | |
| Total # of Lines: | 232 Lines | |
| # Cores/Core Time: | 20 cores | Est. 180 mins. |
| Total Meters Added: | 0.00 | |
| Total Meters Deleted: | 0.00 | |
| Survey Units: | Meters | |
| Nautical Mile (Feet): | 6080 | |

| Time Summary (Hours): | Today: | Job Totals: ( % ) | |
|---|---|---|---|
| Mobilize / Demobilize: | 12.00 | 60.00 | 100.00% |
| On-Line: | 0.00 | 0.00 | |
| Transit: | 0.00 | 0.00 | |
| Other Working: | 0.00 | 0.00 | |
| Equipment Downtime: | 0.00 | 0.00 | |
| Weather Stand-By: | 0.00 | 0.00 | |
| Other Stand-By: | 0.00 | 0.00 | |
| Stand-By / No Crew: | 0.00 | 0.00 | |
| Health, Safety & Environmental: | 0.00 | 0.00 | |
| **Job Summary:** | **12.00** | **60.00** | **100.00%** |

Areas Worked:

**Job Total - Kilometers:** *577.80*

**Estimated Coring Time:** 5.00 Days

| HSE Reporting: | | HSE Officer: | Kelly Power |
|---|---|---|---|
| Toolbox: | x | Mob Activities | |
| Shift Change: | | | |
| Safety: | | | |
| Pre/Post Job: | | | |

| Production Summary: | Today: | To Date: | Job Total: | To Complete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 0.00 | 0.00 | 577.80 | 577.80 |
| Lines Completed: | 0 | 0 | 232 | 232 |
| Cores Taken: | 0 | 0 | 20 | 20 |
| In-Fill Kilometers: | 0.00 | 0.00 | | |
| Added on Kilometers: | 0.00 | 0.00 | | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 0.00 | | |

**Geophysical Equipment:**

| | |
|---|---|
| Equipment #1: | Navigation System - POS MV #602273 |
| Equipment #2: | Diff. GPS System - Trimble AG130 #603512 |
| Equipment #3: | MBES - R2Sonic #603633 |
| Equipment #4: | SSS - Edgetech 4200 #403274 |
| Equipment #5: | Mag. - SeaSpy #403113 |
| Equipment #6: | USBL - IXSEA GAPS #151 |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

| Weather Summary: | Sea State (meters) | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | n/a | | |
| Wx - 1200: | calm | light | var |
| Wx - 1800: | 0.3m | 10-15kts | SW |
| Wx - 2400: | | | |

***Personnel Onboard:***

| | |
|---|---|
| *Captain:* | Ryan Braget |
| *Other Vessel Crew:* | n/a |
| *Party Chief:* | Kelly Power |
| *Hydro. Surveyor:* | David Wise |
| *Geophysical Tech.:* | Richie Carmichael |
| *Other Survey Crew:* | n/a |
| *Client Representative:* | n/a |

***Personnel Onshore:***

| | |
|---|---|
| *Offshore Site Manager:* | Jim Grant |
| *Ass't Off. Site Manager:* | Eddie Stutts |
| *Data Manager:* | Chuck Chamberlain |
| *Data Processor:* | Garret Mitchell |
| *Data Processor:* | Lance Woods |
| *Data Processor:* | n/a |
| *Additional Proc.:* | n/a |
| *Client Representative:* | Ron Eckhardt |
| *Senior Hydrographer:* | Gilbert Suarez |

**Client Representative's Remarks:**

FUGRO: Kelly Power  Client: _____

# Daily Progress Report

ver 7.22.2015-A (Alaska)

**Client:** AK LNG
**Job Description:** Seafloor Mapping
**Area & Block(s):** LNG Sites
**Prospect / Site:** Anchorage
**Fugro Job #:** 23.00007123
**Job Day #:** 6

Fugro
R/V: Westerly

| | | |
|---|---|---|
| Report For: | 30-May-2015 | Saturday |
| Julian Date: | 150 | |
| Hours From: | 0700 to 1900 | |

Report From:

| | | |
|---|---|---|
| Production Hrs/Day: | 12.0 hrs | |
| Job Total in Meters: | 577,800.00 | |
| Total # of Lines: | 232 Lines | |
| # Cores/Core Time: | 20 cores | Est. 180 mins. |
| Total Meters Added: | 0.00 | |
| Total Meters Deleted: | 0.00 | |
| Survey Units: | Meters | |
| Nautical Mile (Feet): | 6080 | |

| Time Summary (Hours): | Today: | Job Totals: ( % ) | |
|---|---|---|---|
| Mobilize / Demobilize: | 12.00 | 72.00 | 100.00% |
| On-Line: | 0.00 | 0.00 | |
| Transit: | 0.00 | 0.00 | |
| Other Working: | 0.00 | 0.00 | |
| Equipment Downtime: | 0.00 | 0.00 | |
| Weather Stand-By: | 0.00 | 0.00 | |
| Other Stand-By: | 0.00 | 0.00 | |
| Stand-By / No Crew: | 0.00 | 0.00 | |
| Health, Safety & Environmental: | 0.00 | 0.00 | |
| **Job Summary:** | **12.00** | **72.00** | **100.00%** |

Areas Worked:

**Job Total - Kilometers:** *577.80*

**Estimated Coring Time:** 5.00 Days

| HSE Reporting: | | HSE Officer: | Kelly Power |
|---|---|---|---|
| Toolbox: | x | JHA-mob activities | |
| Shift Change: | | | |
| Safety: | | | |
| Pre/Post Job: | | | |

| Production Summary: | Today: | To Date: | Job Total: | To Complete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 0.00 | 0.00 | 577.80 | 577.80 |
| Lines Completed: | 0 | 0 | 232 | 232 |
| Cores Taken: | 0 | 0 | 20 | 20 |
| In-Fill Kilometers: | 0.00 | 0.00 | | |
| Added on Kilometers: | 0.00 | 0.00 | | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 0.00 | | |

**Geophysical Equipment:**

| | |
|---|---|
| Equipment #1: | Navigation System - POS MV #602273 |
| Equipment #2: | Diff. GPS System - Trimble AG130 #603512 |
| Equipment #3: | MBES - R2Sonic #603633 |
| Equipment #4: | SSS - Edgetech 4200 #403274 |
| Equipment #5: | Mag. - SeaSpy #403113 |
| Equipment #6: | USBL - IXSEA GAPS #151 |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

| Weather Summary: | Sea State (meters) | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | n/a | | |
| Wx - 1200: | Calm | light | var |
| Wx - 1800: | 0.3m | 10 | SW |
| Wx - 2400: | | | |

***Personnel Onboard:***

| | |
|---|---|
| *Captain:* | Ryan Braget |
| *Other Vessel Crew:* | n/a |
| *Party Chief:* | Kelly Power |
| *Hydro. Surveyor:* | David Wise |
| *Geophysical Tech.:* | Richie Carmichael |
| *Other Survey Crew:* | n/a |
| *Client Representative:* | n/a |

***Personnel Onshore:***

| | |
|---|---|
| *Offshore Site Manager:* | Jim Grant |
| *Ass't Off. Site Manager:* | Eddie Stutts |
| *Data Manager:* | Chuck Chamberlain |
| *Data Processor:* | Garret Mitchell |
| *Data Processor:* | Lance Woods |
| *Data Processor:* | n/a |
| *Additional Proc.:* | n/a |
| *Client Representative:* | Ron Eckhardt |
| *Senior Hydrographer:* | Gilbert Suarez |

**Client Representative's Remarks:**

FUGRO: Kelly Power  Client: _____

# Daily Progress Report

ver 7.22.2015-A (Alaska)

**Fugro**
**R/V: Westerly**

| | |
|---|---|
| Client: | AK LNG |
| Job Description: | Seafloor Mapping |
| Area & Block(s): | LNG Sites |
| Prospect / Site: | Anchorage |
| Fugro Job #: | 23.00007123 |
| Job Day #: | 7 |
| Report For: | 31-May-2015 Sunday |
| Julian Date: | 151 |
| Hours From: | 0700 to 1900 |
| Report From: | |

| | | |
|---|---|---|
| Production Hrs/Day: | 12.0 hrs | |
| Job Total in Meters: | 577,800.00 | |
| Total # of Lines: | 232 Lines | |
| # Cores/Core Time: | 20 cores | Est. 180 mins. |
| Total Meters Added: | 0.00 | |
| Total Meters Deleted: | 0.00 | |
| Survey Units: | Meters | |
| Nautical Mile (Feet): | 6080 | |

| Time Summary (Hours): | Today: | Job Totals: ( % ) | |
|---|---|---|---|
| Mobilize / Demobilize: | 12.00 | 84.00 | 100.00% |
| On-Line: | 0.00 | 0.00 | |
| Transit: | 0.00 | 0.00 | |
| Other Working: | 0.00 | 0.00 | |
| Equipment Downtime: | 0.00 | 0.00 | |
| Weather Stand-By: | 0.00 | 0.00 | |
| Other Stand-By: | 0.00 | 0.00 | |
| Stand-By / No Crew: | 0.00 | 0.00 | |
| Health, Safety & Environmental: | 0.00 | 0.00 | |
| **Job Summary:** | **12.00** | **84.00** | **100.00%** |

Areas Worked:

**Job Total - Kilometers:** *577.80*

**Estimated Coring Time:** **5.00 Days**

| HSE Reporting: | | HSE Officer: | Kelly Power |
|---|---|---|---|
| Toolbox: | X | JHA-Mob activities | |
| Shift Change: | | | |
| Safety: | | | |
| Pre/Post Job: | | | |

| Production Summary: | Today: | To Date: | Job Total: | To Complete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 0.00 | 0.00 | 577.80 | 577.80 |
| Lines Completed: | 0 | 0 | 232 | 232 |
| Cores Taken: | 0 | 0 | 20 | 20 |
| In-Fill Kilometers: | 0.00 | 0.00 | | |
| Added on Kilometers: | 0.00 | 0.00 | | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 0.00 | | |

**Geophysical Equipment:**

| | |
|---|---|
| Equipment #1: | Navigation System - POS MV #602273 |
| Equipment #2: | Diff. GPS System - Trimble AG130 #603512 |
| Equipment #3: | MBES - R2Sonic #603633 |
| Equipment #4: | SSS - Edgetech 4200 #403274 |
| Equipment #5: | Mag. - SeaSpy #403113 |
| Equipment #6: | USBL - IXSEA GAPS #151 |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

| Weather Summary: | Sea State (meters) | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | n/a | | |
| Wx - 1200: | n/a | light | var |
| Wx - 1800: | n/a | light | var |
| Wx - 2400: | | | |

***Personnel Onboard:***

| | |
|---|---|
| *Captain:* | Ryan Braget |
| *Other Vessel Crew:* | n/a |
| *Party Chief:* | Kelly Power |
| *Hydro. Surveyor:* | David Wise |
| *Geophysical Tech.:* | Richie Carmichael |
| *Other Survey Crew:* | n/a |
| *Client Representative:* | n/a |

***Personnel Onshore:***

| | |
|---|---|
| *Offshore Site Manager:* | Jim Grant |
| *Ass't Off. Site Manager:* | Eddie Stutts |
| *Data Manager:* | Chuck Chamberlain |
| *Data Processor:* | Garret Mitchell |
| *Data Processor:* | Lance Woods |
| *Data Processor:* | n/a |
| *Additional Proc.:* | n/a |
| *Client Representative:* | Ron Eckhardt |
| *Senior Hydrographer:* | Gilbert Suarez |

**Client Representative's Remarks:**

**FUGRO:** Kelly Power **Client:**

Alaska LNG

# Daily Progress Report

ver 7.22.2015-A (Alaska)

**Client:** AK LNG
**Job Description:** Seafloor Mapping
**Area & Block(s):** LNG Sites
**Prospect / Site:** Anchorage
**Fugro Job #:** 23.00007123
**Job Day #:** 8

Fugro
R/V: Westerly

| | | |
|---|---|---|
| Report For: | 01-Jun-2015 | Monday |
| Julian Date: | 152 | |
| Hours From: | 0700 to 1900 | |

| | | |
|---|---|---|
| Production Hrs/Day: | 12.0 hrs | |
| Job Total in Meters: | 577,800.00 | |
| Total # of Lines: | 232 Lines | |
| # Cores/Core Time: | 20 cores | Est. 180 mins. |
| Total Meters Added: | 0.00 | |
| Total Meters Deleted: | 0.00 | |
| Survey Units: | Meters | |
| Nautical Mile (Feet): | 6080 | |

**Report From:**

| Time Summary (Hours): | Today: | Job Totals: ( % ) | |
|---|---|---|---|
| Mobilize / Demobilize: | 0.00 | 84.00 | 87.50% |
| On-Line: | 0.00 | 0.00 | |
| Transit: | 0.00 | 0.00 | |
| Other Working: | 12.00 | 12.00 | 12.50% |
| Equipment Downtime: | 0.00 | 0.00 | |
| Weather Stand-By: | 0.00 | 0.00 | |
| Other Stand-By: | 0.00 | 0.00 | |
| Stand-By / No Crew: | 0.00 | 0.00 | |
| Health, Safety & Environmental: | 0.00 | 0.00 | |
| **Job Summary:** | **12.00** | **96.00** | **100.00%** |

**Areas Worked:**

**Job Total - Kilometers:** *577.80*

**Estimated Coring Time:** 5.00 Days

| HSE Reporting: | | HSE Officer: | Kelly Power |
|---|---|---|---|
| Toolbox: | X | JHA, Review MAR-TRA- 001,006,011,012,013,015 | |
| Shift Change: | | | |
| Safety: | Yes | Vessel Orientation for Client Rep, 1 HOC Card, Mob drill conducted | |
| Pre/Post Job: | | | |

| Production Summary: | Today: | To Date: | Job Total: | To Complete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 0.00 | 0.00 | 577.80 | 577.80 |
| Lines Completed: | 0 | 0 | 232 | 232 |
| Cores Taken: | 0 | 0 | 20 | 20 |
| In-Fill Kilometers: | 0.00 | 0.00 | | |
| Added on Kilometers: | 0.00 | 0.00 | | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 0.00 | | |

**Geophysical Equipment:**

| | |
|---|---|
| Equipment #1: | Navigation System - POS MV #602273 |
| Equipment #2: | Diff. GPS System - Trimble AG130 #603512 |
| Equipment #3: | MBES - R2Sonic #603633 |
| Equipment #4: | SSS - Edgetech 4200 #403274 |
| Equipment #5: | Mag. - SeaSpy #403113 |
| Equipment #6: | USBL - IXSEA GAPS #151 |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

| Weather Summary: | Sea State (meters) | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | n/a | | |
| Wx - 1200: | 0.7m | 10-15 kts | SW |
| Wx - 1800: | 1.5m - 2.0m | 15-20 kts | SW |
| Wx - 2400: | | | |

***Personnel Onboard:***

*Captain:* Ryan Braget
*Other Vessel Crew:* n/a
*Party Chief:* Kelly Power
*Hydro. Surveyor:* David Wise
*Geophysical Tech.:* Richie Carmichael
*Other Survey Crew:* n/a
*Client Representative:* n/a

***Personnel Onshore:***

*Offshore Site Manager:* Jim Grant
*Ass't Off. Site Manager:* Eddie Stutts
*Data Manager:* Chuck Chamberlain
*Data Processor:* Garret Mitchell
*Data Processor:* Lance Woods
*Data Processor:* n/a
*Additional Proc.:* n/a
*Client Representative:* Ron Eckhardt

*Senior Hydrographer:* Gilbert Suarez

**Client Representative's Remarks:**

FUGRO: Kelly Power Client:

Alaska LNG

# Daily Progress Report

ver 7.22.2015-A (Alaska)

**Client:** AK LNG
**Job Description:** Seafloor Mapping
**Area & Block(s):** LNG Sites
**Prospect / Site:** Anchorage
**Fugro Job #:** 23.00007123
**Job Day #:** 9

| | | |
|---|---|---|
| **Report For:** | 02-Jun-2015 | Tuesday |
| **Julian Date:** | 153 | |
| **Hours From:** | 0700 to 1900 | |

**Report From:**

Fugro
R/V: Westerly

| | | |
|---|---|---|
| Production Hrs/Day: | 12.0 hrs | |
| Job Total in Meters: | 577,800.00 | |
| Total # of Lines: | 232 Lines | |
| # Cores/Core Time: | 20 cores | Est. 180 mins. |
| Total Meters Added: | 0.00 | |
| Total Meters Deleted: | 0.00 | |
| Survey Units: | Meters | |
| Nautical Mile (Feet): | 6080 | |

| Time Summary (Hours): | Today: | Job Totals: | (%) |
|---|---|---|---|
| Mobilize / Demobilize: | 0.00 | 84.00 | 77.78% |
| On-Line: | 0.00 | 0.00 | |
| Transit: | 0.50 | 0.50 | 0.46% |
| Other Working: | 0.92 | 12.92 | 11.96% |
| Equipment Downtime: | 0.00 | 0.00 | |
| Weather Stand-By: | 10.58 | 10.58 | 9.80% |
| Other Stand-By: | 0.00 | 0.00 | |
| Stand-By / No Crew: | 0.00 | 0.00 | |
| Health, Safety & Environmental: | 0.00 | 0.00 | |
| **Job Summary:** | **12.00** | **108.00** | **100.00%** |

**Areas Worked:**

**Job Total - Kilometers:** *577.80*

**Estimated Coring Time:** 5.00 Days

| HSE Reporting: | | HSE Officer: | Kelly Power |
|---|---|---|---|
| Toolbox: | Yes | JHA-Deploying/Recovering Survey Equip | |
| Shift Change: | | | |
| Safety: | Yes | Installed Eyewash Bottles on Vessel | |
| Pre/Post Job: | | | |

| Production Summary: | Today: | To Date: | Job Total: | To Complete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 0.00 | 0.00 | 577.80 | 577.80 |
| Lines Completed: | 0 | 0 | 232 | 232 |
| Cores Taken: | 0 | 0 | 20 | 20 |
| In-Fill Kilometers: | 0.00 | 0.00 | | |
| Added on Kilometers: | 0.00 | 0.00 | | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 0.00 | | |

**Geophysical Equipment:**

| | |
|---|---|
| Equipment #1: | Navigation System - POS MV #602273 |
| Equipment #2: | Diff. GPS System - Trimble AG130 #603512 |
| Equipment #3: | MBES - R2Sonic #603633 |
| Equipment #4: | SSS - Edgetech 4200 #403274 |
| Equipment #5: | Mag. - SeaSpy #403113 |
| Equipment #6: | USBL - IXSEA GAPS #151 |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

| Weather Summary: | Sea State (meters) | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | n/a | | |
| Wx - 1200: | n/a | 10-15kts | S |
| Wx - 1800: | n/a | 10-15kts | S |
| Wx - 2400: | | | |

***Personnel Onboard:***

*Captain:* Ryan Braget
*Other Vessel Crew:* n/a
*Party Chief:* Kelly Power
*Hydro. Surveyor:* David Wise
*Geophysical Tech.:* Richie Carmichael
*Other Survey Crew:* n/a
*Client Representative:* n/a

***Personnel Onshore:***

*Offshore Site Manager:* Jim Grant
*Ass't Off. Site Manager:* Eddie Stutts
*Data Manager:* Chuck Chamberlain
*Data Processor:* Garret Mitchell
*Data Processor:* Lance Woods
*Data Processor:* n/a
*Additional Proc.:* n/a
*Client Representative:* Ron Eckhardt

*Senior Hydrographer:* Gilbert Suarez

**Client Representative's Remarks:**

WOW all day.

**FUGRO:** Kelly Power **Client:**

# Daily Progress Report

ver 7.22.2015-A (Alaska)

Fugro
R/V: Westerly

| | |
|---|---|
| Client: | AK LNG |
| Job Description: | Seafloor Mapping |
| Area & Block(s): | LNG Sites |
| Prospect / Site: | Anchorage |
| Fugro Job #: | 23.00007123 |
| Job Day #: | 10 |
| Report For: | 03-Jun-2015 Wednesday |
| Julian Date: | 154 |
| Hours From: | 0640 to 1840 |
| Report From: | |

| | | |
|---|---|---|
| Production Hrs/Day: | 12.0 hrs | |
| Job Total in Meters: | 577,800.00 | |
| Total # of Lines: | 232 Lines | |
| # Cores/Core Time: | 20 cores | Est. 180 mins. |
| Total Meters Added: | 0.00 | |
| Total Meters Deleted: | 0.00 | |
| Survey Units: | Meters | |
| Nautical Mile (Feet): | 6080 | |

| Time Summary (Hours): | Today: | Job Totals: | (%) |
|---|---|---|---|
| Mobilize / Demobilize: | 0.00 | 84.00 | 70.00% |
| On-Line: | 6.70 | 6.70 | 5.58% |
| Transit: | 1.75 | 2.25 | 1.88% |
| Other Working: | 3.55 | 16.47 | 13.72% |
| Equipment Downtime: | 0.00 | 0.00 | |
| Weather Stand-By: | 0.00 | 10.58 | 8.82% |
| Other Stand-By: | 0.00 | 0.00 | |
| Stand-By / No Crew: | 0.00 | 0.00 | |
| Health, Safety & Environmental: | 0.00 | 0.00 | |
| Job Summary: | 12.00 | 120.00 | 100.00% |

Areas Worked:

**Job Total - Kilometers:** 577.80
**On-Line Percent Complete:** 6.05%

**Estimated Coring Time:** 5.00 Days
**Estimated Time to Completion:** 13.67 Days

Estimated Time includes taking cores!

| HSE Reporting: | | HSE Officer: | Kelly Power |
|---|---|---|---|
| Toolbox: | X | JHA-SurveyOperations | |
| Shift Change: | | | |
| Safety: | X | HOC Card for a safe observation | |
| Pre/Post Job: | | | |

| Production Summary: | Today: | To Date: | Job Total: | To Complete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 34.95 | 34.95 | 577.80 | 542.85 |
| Lines Completed: | 19 | 19 | 232 | 213 |
| Cores Taken: | 0 | 0 | 20 | 20 |
| In-Fill Kilometers: | 0.00 | 0.00 | | |
| Added on Kilometers: | 0.00 | 0.00 | | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 0.00 | | |

**Geophysical Equipment:**

| | |
|---|---|
| Equipment #1: | Navigation System - POS MV #602273 |
| Equipment #2: | Diff. GPS System - Trimble AG130 #603512 |
| Equipment #3: | MBES - R2Sonic #603633 |
| Equipment #4: | SSS - Edgetech 4200 #403274 |
| Equipment #5: | Mag. - SeaSpy #403113 |
| Equipment #6: | USBL - IXSEA GAPS #151 |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

| Weather Summary: | Sea State (meters) | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | | | |
| Wx - 1200: | 0.3m | Light | Var |
| Wx - 1800: | 0.3m | Light | Var |
| Wx - 2400: | | | |

***Personnel Onboard:***

| | |
|---|---|
| *Captain:* | Ryan Braget |
| *Other Vessel Crew:* | n/a |
| *Party Chief:* | Kelly Power |
| *Hydro. Surveyor:* | David Wise |
| *Geophysical Tech.:* | Richie Carmichael |
| *Other Survey Crew:* | n/a |
| *Client Representative:* | n/a |

***Personnel Onshore:***

| | |
|---|---|
| *Offshore Site Manager:* | Jim Grant |
| *Ass't Off. Site Manager:* | Eddie Stutts |
| *Data Manager:* | Chuck Chamberlain |
| *Data Processor:* | Garret Mitchell |
| *Data Processor:* | Lance Woods |
| *Data Processor:* | n/a |
| *Additional Proc.:* | n/a |
| *Client Representative:* | Ron Eckhardt |
| *Senior Hydrographer:* | Gilbert Suarez |

**Client Representative's Remarks:**

Today's survey production of 34.88 km was recorded in LNG-001. The entire crew performed well.

FUGRO: Kelly Power  Client: _____

# Daily Progress Report

ver 7.22.2015-A (Alaska)

Fugro
R/V: Westerly

| | |
|---|---|
| Client: | AK LNG |
| Job Description: | Seafloor Mapping |
| Area & Block(s): | LNG Sites |
| Prospect / Site: | Anchorage |
| Fugro Job #: | 23.00007123 |
| Job Day #: | 11 |
| Report For: | 04-Jun-2015 Thursday |
| Julian Date: | 155 |
| Hours From: | 0630 to 1830 |
| Report From: | |

| | | |
|---|---|---|
| Production Hrs/Day: | 12.0 hrs | |
| Job Total in Meters: | 577,800.00 | |
| Total # of Lines: | 232 Lines | |
| # Cores/Core Time: | 20 cores | Est. 180 mins. |
| Total Meters Added: | 0.00 | |
| Total Meters Deleted: | 0.00 | |
| Survey Units: | Meters | |
| Nautical Mile (Feet): | 6080 | |

| Time Summary (Hours): | Today: | Job Totals: | (%) |
|---|---|---|---|
| Mobilize / Demobilize: | 0.00 | 84.00 | 63.64% |
| On-Line: | 0.00 | 6.70 | 5.08% |
| Transit: | 0.00 | 2.25 | 1.70% |
| Other Working: | 0.00 | 16.47 | 12.47% |
| Equipment Downtime: | 0.00 | 0.00 | |
| Weather Stand-By: | 12.00 | 22.58 | 17.11% |
| Other Stand-By: | 0.00 | 0.00 | |
| Stand-By / No Crew: | 0.00 | 0.00 | |
| Health, Safety & Environmental: | 0.00 | 0.00 | |
| Job Summary: | 12.00 | 132.00 | 100.00% |
| Areas Worked: | | | |

**Job Total - Kilometers:** *577.80*
**On-Line Percent Complete:** *6.05%*

**Estimated Coring Time:** 5.00 Days
**Estimated Time to Completion:** 13.67 Days

**Estimated Time includes taking cores!**

| HSE Reporting: | | HSE Officer: | Kelly Power |
|---|---|---|---|
| Toolbox: | X | JHA- tolbox talk | |
| Shift Change: | | | |
| Safety: | X | HOC Card- Unsafe Condition was rectified upon being noticed | |
| Pre/Post Job: | | | |

| Production Summary: | Today: | To Date: | Job Total: | To Complete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 0.00 | 34.95 | 577.80 | 542.85 |
| Lines Completed: | 0 | 19 | 232 | 213 |
| Cores Taken: | 0 | 0 | 20 | 20 |
| In-Fill Kilometers: | 0.00 | 0.00 | | |
| Added on Kilometers: | 0.00 | 0.00 | | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 0.00 | | |

**Geophysical Equipment:**

| | |
|---|---|
| Equipment #1: | Navigation System - POS MV #602273 |
| Equipment #2: | Diff. GPS System - Trimble AG130 #603512 |
| Equipment #3: | MBES - R2Sonic #603633 |
| Equipment #4: | SSS - Edgetech 4200 #403274 |
| Equipment #5: | Mag. - SeaSpy #403113 |
| Equipment #6: | USBL - IXSEA GAPS #151 |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

| Weather Summary: | Sea State (meters) | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | | | |
| Wx - 1200: | 1.5-2.0m | 15-20kts | NNE |
| Wx - 1800: | 1.5-2.0m | 10-15kts | NE |
| Wx - 2400: | | | |

***Personnel Onboard:***

| | |
|---|---|
| *Captain:* | Ryan Braget |
| *Other Vessel Crew:* | n/a |
| *Party Chief:* | Kelly Power |
| *Hydro. Surveyor:* | David Wise |
| *Geophysical Tech.:* | Richie Carmichael |
| *Other Survey Crew:* | n/a |
| *Client Representative:* | n/a |

***Personnel Onshore:***

| | |
|---|---|
| *Offshore Site Manager:* | Jim Grant |
| *Ass't Off. Site Manager:* | Eddie Stutts |
| *Data Manager:* | Chuck Chamberlain |
| *Data Processor:* | Garret Mitchell |
| *Data Processor:* | Lance Woods |
| *Data Processor:* | n/a |
| *Additional Proc.:* | n/a |
| *Client Representative:* | Ron Eckhardt |
| *Senior Hydrographer:* | Gilbert Suarez |

**Client Representative's Remarks:**

WOW all day. However, crew performed maintenance on survey equipment and vessel.

FUGRO: Kelly Power  Client:

# Daily Progress Report

ver 7.22.2015-A (Alaska)

Fugro
R/V: Westerly

| | |
|---|---|
| Client: | AK LNG |
| Job Description: | Seafloor Mapping |
| Area & Block(s): | LNG Sites |
| Prospect / Site: | Anchorage |
| Fugro Job #: | 23.00007123 |
| Job Day #: | 12 |
| Report For: | 05-Jun-2015 Friday |
| Julian Date: | 156 |
| Hours From: | 0645 to 1910 |
| Report From: | |

| | | |
|---|---|---|
| Production Hrs/Day: | 12.0 hrs | |
| Job Total in Meters: | 577,800.00 | |
| Total # of Lines: | 232 Lines | |
| # Cores/Core Time: | 20 cores | Est. 180 mins. |
| Total Meters Added: | 0.00 | |
| Total Meters Deleted: | 0.00 | |
| Survey Units: | Meters | |
| Nautical Mile (Feet): | 6080 | |

| Time Summary (Hours): | Today: | Job Totals: | (%) |
|---|---|---|---|
| Mobilize / Demobilize: | 0.00 | 84.00 | 58.17% |
| On-Line: | 6.08 | 12.78 | 8.85% |
| Transit: | 2.25 | 4.50 | 3.12% |
| Other Working: | 2.22 | 18.68 | 12.94% |
| Equipment Downtime: | 1.87 | 1.87 | 1.29% |
| Weather Stand-By: | 0.00 | 22.58 | 15.64% |
| Other Stand-By: | 0.00 | 0.00 | |
| Stand-By / No Crew: | 0.00 | 0.00 | |
| Health, Safety & Environmental: | 0.00 | 0.00 | |
| Job Summary: | 12.42 | 144.42 | 100.00% |
| Areas Worked: | | | |

**Job Total - Kilometers:** 577.80
**On-Line Percent Complete:** 11.69%

**Estimated Coring Time:** 5.00 Days
**Estimated Time to Completion:** 13.05 Days

Estimated Time includes taking cores!

| HSE Reporting: | | HSE Officer: | Kelly Power |
|---|---|---|---|
| Toolbox: | X | JHA-Survey Operations | |
| Shift Change: | | | |
| Safety: | | | |
| Pre/Post Job: | | | |

| Production Summary: | Today: | To Date: | Job Total: | To Complete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 32.60 | 67.55 | 577.80 | 510.25 |
| Lines Completed: | 16 | 35 | 232 | 197 |
| Cores Taken: | 0 | 0 | 20 | 20 |
| In-Fill Kilometers: | 0.00 | 0.00 | | |
| Added on Kilometers: | 0.00 | 0.00 | | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 0.00 | | |

**Geophysical Equipment:**

| | |
|---|---|
| Equipment #1: | Navigation System - POS MV #602273 |
| Equipment #2: | Diff. GPS System - Trimble AG130 #603512 |
| Equipment #3: | MBES - R2Sonic #603633 |
| Equipment #4: | SSS - Edgetech 4200 #403274 |
| Equipment #5: | Mag. - SeaSpy #403113 |
| Equipment #6: | USBL - IXSEA GAPS #151 |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

| Weather Summary: | Sea State (meters) | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | n/a | | |
| Wx - 1200: | 0.3m | 5kts | Var. |
| Wx - 1800: | 0.7m | 10kts | S |
| Wx - 2400: | | | |

***Personnel Onboard:***

| | |
|---|---|
| *Captain:* | Ryan Braget |
| *Other Vessel Crew:* | n/a |
| *Party Chief:* | Kelly Power |
| *Hydro. Surveyor:* | David Wise |
| *Geophysical Tech.:* | Richie Carmichael |
| *Other Survey Crew:* | n/a |
| *Client Representative:* | n/a |

***Personnel Onshore:***

| | |
|---|---|
| *Offshore Site Manager:* | Jim Grant |
| *Ass't Off. Site Manager:* | Eddie Stutts |
| *Data Manager:* | Chuck Chamberlain |
| *Data Processor:* | Garret Mitchell |
| *Data Processor:* | Lance Woods |
| *Data Processor:* | n/a |
| *Additional Proc.:* | n/a |
| *Client Representative:* | Ron Eckhardt |
| *Senior Hydrographer:* | Gilbert Suarez |

**Client Representative's Remarks:**

FUGRO: Kelly Power Client:

Alaska LNG

FUGRO

# DyX0 P#oG#g33 Rgf o#9

FUG#o
R/k: r g39g#n0

ver 7.22.2015-A (Alaska)

| | |
|---|---|
| Client: | AK LNe |
| Job Description: | Sgy!mo#t yf f XnG |
| Area & Block(s): | LNe SX9g3 |
| Prospect / Site: | An, vo#yGg |
| FUG#o Job b: | 2%s5555M12% |
| Joa Dy0 b: | 1% |
| Report For: | 5- uJUnu2516 Sy9U#Vy0 |
| Jhlian Date: | 16M |
| 4 ohrs Frot : | 5M55 9o 1Y55 |

| | |
|---|---|
| Production Hrs/Day: | 12.0 hrs |
| Job Total in Meters: | 577,800.00 |
| Total # of Lines: | 232 Lines |
| # Cores/Core Time: | 20 cores Est. 180 mins. |
| Total Meters Added: | 0.00 |
| Total Meters Deleted: | 0.00 |
| Survey Units: | Meters |
| Nautical Mile (Feet): | 6080 |

Report Frot :

| Tit e Sht t ar. (4 oU#3): | Toda. : | Job Totals: ( i ) | |
|---|---|---|---|
| t obili7e / Det obili7e: | 0.00 | 84.00 | 53.70% |
| OnuLine: | 0.00 | 12.78 | 8.17% |
| Transit: | 0.00 | 4.50 | 2.88% |
| Ot4er r orkine : | 12.00 | 30.68 | 19.62% |
| E_hipt ent Dor ntit e: | 0.00 | 1.87 | 1.19% |
| r eat4er Standu B. : | 0.00 | 22.58 | 14.44% |
| Ot4er Standu B. : | 0.00 | 0.00 | |
| Standu B. / No Crer : | 0.00 | 0.00 | |
| 4 ealt4 cSafet. & Enkiront ental: | 0.00 | 0.00 | |
| Job Sht t ar. : | 12s55 | 16- sW2 | 155s55i |

Joa To9ymuKXmop g9g#3: 577.80
OnuLXng Pg#, gn9Cop f mg9g: 11.69%

E39%o y9gV Co#XnG TXo g: 6s55 Dy03
E39%o y9gV TXo g 9o Cop f mg9%on: 1%s56 Dy03

E39%o y9gV TXo g Xn, rdVg3 9yZXnG, o#g3h

Areas r orked:

| 4 SE Reportine : | | 4 SE Officer: | Kgm0 Pod g# |
|---|---|---|---|
| Toolbox: | x | JHA- Refueling Vessel | |
| Shift Change: | | | |
| Safety: | X | Leadership Safety Training for Jim Grant, Kelly Power, Ryan Braget, Ron Eckhardt | |
| Pre/Post Job: | | | |

| Prodhction Sht t ar. : | Toda. : | To Date: | Job Total: | To Cot plete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 0.00 | 67.55 | 577.80 | 510.25 |
| Lines Completed: | 0 | 35 | 232 | 197 |
| Cores Taken: | 0 | 0 | 20 | 20 |
| In-Fill Kilometers: | 0.00 | 0.00 | | |
| Added on Kilometers: | 0.00 | 0.00 | | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 0.00 | | |

e eop4. sical E hipt ent:

| | |
|---|---|
| Equipment #1: | Navigation System - POS MV #602273 |
| Equipment #2: | Diff. GPS System - Trimble AG130 #603512 |
| Equipment #3: | MBES - R2Sonic #603633 |
| Equipment #4: | SSS - Edgetech 4200 #403274 |
| Equipment #5: | Mag. - SeaSpy #403113 |
| Equipment #6: | USBL - IXSEA GAPS #151 |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

| r eat4er Sht t ar. : | Sgy S9y9g (p g9g#3) | r XnV Sf ggV | DX#s |
|---|---|---|---|
| r 8 u5- 55: | | | |
| r 8 u1255: | n/a | Light | Var. |
| r 8 u1l 55: | na/ | Light | Var. |
| r 8 u2W55: | | | |

## Personnel Onboard:

| | |
|---|---|
| Captain: | Ryan Braget |
| Other Vessel Crew: | n/a |
| Party Chief: | Kelly Power |
| Hydro. Surveyor: | David Wise |
| Geophysical Tech.: | Richie Carmichael |
| Other Survey Crew: | n/a |
| Client Representative: | n/a |

## Personnel Onshore:

| | |
|---|---|
| Offshore Site Manager: | Jim Grant |
| Ass't Off. Site Manager: | Eddie Stutts |
| Data Manager: | Chuck Chamberlain |
| Data Processor: | Garret Mitchell |
| Data Processor: | Lance Woods |
| Data Processor: | n/a |
| Additional Proc.: | n/a |
| Client Representative: | Ron Eckhardt |
| Senior Hydrographer: | Gilbert Suarez |

Cnqn9 Rgf #q3qn9y9Qqv8 Rgp y#Z3:

FHe RO: ..... Kelly Power ..... Cnqn9 .....

# Daily Progress Report

ver 7.22.2015-A (Alaska)

Fugro
R/V: Westerly

| | |
|---|---|
| Client: | AK LNG |
| Job Description: | Seafloor Mapping |
| Area & Block(s): | LNG Sites |
| Prospect / Site: | Anchorage |
| Fugro Job #: | 23.00007123 |
| Job Day #: | 14 |
| Report For: | 07-Jun-2015 Sunday |
| Julian Date: | 158 |
| Hours From: | 0700 to 1900 |
| Report From: | |

| | | |
|---|---|---|
| Production Hrs/Day: | 12.0 hrs | |
| Job Total in Meters: | 577,800.00 | |
| Total # of Lines: | 232 Lines | |
| # Cores/Core Time: | 20 cores | Est. 180 mins. |
| Total Meters Added: | 0.00 | |
| Total Meters Deleted: | 0.00 | |
| Survey Units: | Meters | |
| Nautical Mile (Feet): | 6080 | |

| Time Summary (Hours): | Today: | Job Totals: | (%) |
|---|---|---|---|
| Mobilize / Demobilize: | 0.00 | 84.00 | 49.88% |
| On-Line: | 0.00 | 12.78 | 7.59% |
| Transit: | 0.00 | 4.50 | 2.67% |
| Other Working: | 12.00 | 42.68 | 25.34% |
| Equipment Downtime: | 0.00 | 1.87 | 1.11% |
| Weather Stand-By: | 0.00 | 22.58 | 13.41% |
| Other Stand-By: | 0.00 | 0.00 | |
| Stand-By / No Crew: | 0.00 | 0.00 | |
| Health, Safety & Environmental: | 0.00 | 0.00 | |
| Job Summary: | 12.00 | 168.42 | 100.00% |
| Areas Worked: | | | |

**Job Total - Kilometers:** *577.80*
**On-Line Percent Complete:** *11.69%*

**Estimated Coring Time:** 5.00 Days
**Estimated Time to Completion:** 13.05 Days

**Estimated Time includes taking cores!**

| HSE Reporting: | | HSE Officer: | Kelly Power |
|---|---|---|---|
| Toolbox: | X | JHA-Equipment Installation | |
| Shift Change: | | | |
| Safety: | | | |
| Pre/Post Job: | | | |

| Production Summary: | Today: | To Date: | Job Total: | To Complete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 0.00 | 67.55 | 577.80 | 510.25 |
| Lines Completed: | 0 | 35 | 232 | 197 |
| Cores Taken: | 0 | 0 | 20 | 20 |
| In-Fill Kilometers: | 0.00 | 0.00 | | |
| Added on Kilometers: | 0.00 | 0.00 | | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 0.00 | | |

**Geophysical Equipment:**

| | |
|---|---|
| Equipment #1: | Navigation System - POS MV #602273 |
| Equipment #2: | Diff. GPS System - Trimble AG130 #603512 |
| Equipment #3: | MBES - R2Sonic #603633 |
| Equipment #4: | SSS - Edgetech 4200 #403274 |
| Equipment #5: | Mag. - SeaSpy #403113 |
| Equipment #6: | USBL - IXSEA GAPS #151 |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

| Weather Summary: | Sea State (meters) | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | n/a | | |
| Wx - 1200: | n/a | 5kts | SW |
| Wx - 1800: | n/a | 10-15kts | SW |
| Wx - 2400: | | | |

***Personnel Onboard:***

| | |
|---|---|
| *Captain:* | Ryan Braget |
| *Other Vessel Crew:* | n/a |
| *Party Chief:* | Kelly Power |
| *Hydro. Surveyor:* | David Wise |
| *Geophysical Tech.:* | Richie Carmichael |
| *Other Survey Crew:* | n/a |
| *Client Representative:* | n/a |

***Personnel Onshore:***

| | |
|---|---|
| *Offshore Site Manager:* | Jim Grant |
| *Ass't Off. Site Manager:* | Eddie Stutts |
| *Data Manager:* | Chuck Chamberlain |
| *Data Processor:* | Garret Mitchell |
| *Data Processor:* | Lance Woods |
| *Data Processor:* | n/a |
| *Additional Proc.:* | n/a |
| *Client Representative:* | Ron Eckhardt |
| *Senior Hydrographer:* | Gilbert Suarez |

**Client Representative's Remarks:**

FUGRO: Kelly Power Client:

Alaska LNG

FUGRO

# Daily Progress Report

**Fugro**
**R/V: Westerly**

*ver 7.22.2015-A (Alaska)*

| | |
|---|---|
| Client: | AK LNG |
| Job Description: | Seafloor Mapping |
| Area & Block(s): | LNG Sites |
| Prospect / Site: | Cook Inlet |
| Fugro Job #: | 23.00007123 |
| Job Day #: | 15 |
| Report For: | 08-Jun-2015 Monday |
| Julian Date: | 159 |
| Hours From: | 0645 to 1845 |
| Report From: | |

| | | |
|---|---|---|
| Production Hrs/Day: | 12.0 hrs | |
| Job Total in Meters: | 577,800.00 | |
| Total # of Lines: | 232 Lines | |
| # Cores/Core Time: | 20 cores | Est. 180 mins. |
| Total Meters Added: | 0.00 | |
| Total Meters Deleted: | 0.00 | |
| Survey Units: | Meters | |
| Nautical Mile (Feet): | 6080 | |

| Time Summary (Hours): | Today: | Job Totals: | ( % ) |
|---|---|---|---|
| Mobilize / Demobilize: | 0.00 | 84.00 | 46.56% |
| On-Line: | 0.00 | 12.78 | 7.08% |
| Transit: | 0.00 | 4.50 | 2.49% |
| Other Working: | 0.00 | 42.68 | 23.66% |
| Equipment Downtime: | 12.00 | 13.87 | 7.69% |
| Weather Stand-By: | 0.00 | 22.58 | 12.52% |
| Other Stand-By: | 0.00 | 0.00 | |
| Stand-By / No Crew: | 0.00 | 0.00 | |
| Health, Safety & Environmental: | 0.00 | 0.00 | |
| Job Summary: | 12.00 | 180.41 | 100.00% |
| Areas Worked: | | | |

**Job Total - Kilometers:** *577.80*
**On-Line Percent Complete:** *11.69%*

**Estimated Coring Time:** 5.00 Days
**Estimated Time to Completion:** 13.04 Days

**Estimated Time includes taking cores!**

| HSE Reporting: | | HSE Officer: | Kelly Power |
|---|---|---|---|
| Toolbox: | Yes | JHA-Equipment Installation/testing | |
| Shift Change: | | | |
| Safety: | | | |
| Pre/Post Job: | | | |

| Production Summary: | Today: | To Date: | Job Total: | To Complete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 0.00 | 67.55 | 577.80 | 510.25 |
| Lines Completed: | 0 | 35 | 232 | 197 |
| Cores Taken: | 0 | 0 | 20 | 20 |
| In-Fill Kilometers: | 0.00 | 0.00 | | |
| Added on Kilometers: | 0.00 | 0.00 | | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 0.00 | | |

**Geophysical Equipment:**

| | |
|---|---|
| Equipment #1: | Navigation System - POS MV #602273 |
| Equipment #2: | Diff. GPS System - Trimble AG130 #603512 |
| Equipment #3: | MBES - R2Sonic #603633 |
| Equipment #4: | SSS - Edgetech 4200 #403274 |
| Equipment #5: | Mag. - SeaSpy #403113 |
| Equipment #6: | USBL - IXSEA GAPS #151 |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

| Weather Summary: | Sea State (meters) | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | n/a | n/a | n/a |
| Wx - 1200: | cloudy | 10kts | WSW |
| Wx - 1800: | cloudy | 10kts | SW |
| Wx - 2400: | n/a | n/a | n/a |

***Personnel Onboard:***

| | |
|---|---|
| *Captain:* | Ryan Braget |
| *Other Vessel Crew:* | n/a |
| *Party Chief:* | Kelly Power |
| *Hydro. Surveyor:* | David Wise |
| *Geophysical Tech.:* | Richie Carmichael |
| *Other Survey Crew:* | n/a |
| *Client Representative:* | Ron Eckhardt |

***Personnel Onshore:***

| | |
|---|---|
| *Offshore Site Manager:* | Jim Grant |
| *Ass't Off. Site Manager:* | Eddie Stutts |
| *Data Manager:* | Chuck Chamberlain |
| *Data Processor:* | Marta Krynytzky |
| *Data Processor:* | Lance Woods |
| *Data Processor:* | n/a |
| *Additional Proc.:* | n/a |
| *Client Representative:* | n/a |
| *Senior Hydrographer* | Gibert Suarez |

**Client Representative's Remarks:**

**FUGRO:** Kelly Power **Client:** _____

# Daily Progress Report

ver 7.22.2015-A (Alaska)

Fugro
R/V: Westerly

| | |
|---|---|
| Client: | AK LNG |
| Job Description: | Seafloor Mapping |
| Area & Block(s): | LNG Sites |
| Prospect / Site: | Cook Inlet |
| Fugro Job #: | 23.00007123 |
| Job Day #: | 16 |
| Report For: | 09-Jun-2015 Tuesday |
| Julian Date: | 160 |
| Hours From: | 0700 to 1900 |
| Report From: | |

| | | |
|---|---|---|
| Production Hrs/Day: | 12.0 hrs | |
| Job Total in Meters: | 577,800.00 | |
| Total # of Lines: | 232 Lines | |
| # Cores/Core Time: | 20 cores | Est. 180 mins. |
| Total Meters Added: | 0.00 | |
| Total Meters Deleted: | 0.00 | |
| Survey Units: | Meters | |
| Nautical Mile (Feet): | 6080 | |

| Time Summary (Hours): | Today: | Job Totals: | (%) |
|---|---|---|---|
| Mobilize / Demobilize: | 0.00 | 84.00 | 43.66% |
| On-Line: | 0.00 | 12.78 | 6.64% |
| Transit: | 0.00 | 4.50 | 2.34% |
| Other Working: | 0.00 | 42.68 | 22.18% |
| Equipment Downtime: | 0.00 | 13.87 | 7.21% |
| Weather Stand-By: | 12.00 | 34.58 | 17.97% |
| Other Stand-By: | 0.00 | 0.00 | |
| Stand-By / No Crew: | 0.00 | 0.00 | |
| Health, Safety & Environmental: | 0.00 | 0.00 | |
| Job Summary: | 12.00 | 192.41 | 100.00% |
| Areas Worked: | | | |

**Job Total - Kilometers:** *577.80*
**On-Line Percent Complete:** *11.69%*

**Estimated Coring Time:** 5.00 Days
**Estimated Time to Completion:** 13.04 Days

**Estimated Time includes taking cores!**

| HSE Reporting: | | HSE Officer: | Kelly Power |
|---|---|---|---|
| Toolbox: | X | JHA-Equipment Installation Testing | |
| Shift Change: | | | |
| Safety: | X | Weekly Safety Meeting | |
| Pre/Post Job: | | | |

| Production Summary: | Today: | To Date: | Job Total: | To Complete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 0.00 | 67.55 | 577.80 | 510.25 |
| Lines Completed: | 0 | 35 | 232 | 197 |
| Cores Taken: | 0 | 0 | 20 | 20 |
| In-Fill Kilometers: | 0.00 | 0.00 | | |
| Added on Kilometers: | 0.00 | 0.00 | | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 0.00 | | |

**Geophysical Equipment:**

| | |
|---|---|
| Equipment #1: | Navigation System - POS MV #602273 |
| Equipment #2: | Diff. GPS System - Trimble AG130 #603512 |
| Equipment #3: | MBES - R2Sonic #603633 |
| Equipment #4: | SSS - Edgetech 4200 #403274 |
| Equipment #5: | Mag. - SeaSpy #403113 |
| Equipment #6: | USBL - IXSEA GAPS #151 |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

| Weather Summary: | Sea State (meters) | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | n/a | n/a | na/ |
| Wx - 1200: | 4'-6' | 25kts | NE |
| Wx - 1800: | 4'-6' | 15-20kts | NE |
| Wx - 2400: | n/a | n/a | n/a |

***Personnel Onboard:***

| | |
|---|---|
| *Captain:* | Ryan Braget |
| *Other Vessel Crew:* | n/a |
| *Party Chief:* | Kelly Power |
| *Hydro. Surveyor:* | David Wise |
| *Geophysical Tech.:* | Richie Carmichael |
| *Other Survey Crew:* | n/a |
| *Client Representative:* | Ron Eckhardt |

***Personnel Onshore:***

| | |
|---|---|
| *Offshore Site Manager:* | Jim Grant |
| *Ass't Off. Site Manager:* | Eddie Stutts |
| *Data Manager:* | Chuck Chamberlain |
| *Data Processor:* | Marta Krynytzky |
| *Data Processor:* | Lance Woods |
| *Data Processor:* | n/a |
| *Additional Proc.:* | n/a |
| *Client Representative:* | n/a |
| *Senior Hydrographer* | Gibert Suarez |

**Client Representative's Remarks:**

**FUGRO:** Kelly Power **Client:**

# Darly PXo! Xe33 RepoX7

Fu! Xo
R/f : i e37eXy

ver 7.22.2015-A (Alaska)

| | |
|---|---|
| Production Hrs/Day: | 12.0 hrs |
| Job Total in Meters: | 577,800.00 |
| Total # of Lines: | 232 Lines |
| # Cores/Core Time: | 20 cores / Est. 180 mins. |
| Total Meters Added: | 0.00 |
| Total Meters Deleted: | 0.00 |
| Survey Units: | Meters |
| Nautical Mile (Feet): | 6080 |

CLIENT: AK LNG
JOB DESCRIPTION: SeaVooXH appm!
AREA & BLOCK(S): LNG Sr7e3
PROSPECT / SITE: Coo, Inle7
FUGRO JOB #: 2M9999402M
Job Day #: 04

| | | |
|---|---|---|
| REPORT FOR: | 09-Jun-2901 | i edne3day |
| JULIAN DATE: | 050 | |
| 6 OURS FROH: | 95M9 7o 0t Y9 | |

REPORT FROH:

| TIHE SUHHAR. (6 ouX3): | TODA. : | JOB TOTALS: (W) | |
|---|---|---|---|
| H OBILI_E / DEHOBILI_E: | 0.00 | 84.00 | 40.86% |
| ON-LINE: | 7.23 | 20.01 | 9.74% |
| TRANSIT: | 3.62 | 8.12 | 3.95% |
| OT6ER i ORKING: | 2.32 | 45.00 | 21.89% |
| EQUIPHENT DOi NTIHE: | 0.00 | 13.87 | 6.75% |
| i EAT6ER STAND-B. : | 0.00 | 34.58 | 16.82% |
| OT6ER STAND-B. : | 0.00 | 0.00 | |
| STAND-B. / NO CREi : | 0.00 | 0.00 | |
| 6 EALT6 VSAFET. & ENf IRONHENTAL: | 0.00 | 0.00 | |
| JOB SUHHAR. : | 0M904 | 291s1% | 099s99W |

AREAS i ORKED:

**Job To7al - Krlome7eX3: 577.80**
**On-Lme PeXcen7Comple7e: 18.94%**

**E37ma7ed CoXm! Tme: 1s99 Day3**
**E37ma7ed Trme 7o Comple7on: 02s0Y Day3**

E37ma7ed Trme mclude3 7a. m! coXe3Z

| 6 SE REPORTING: | | 6 SE OFFICER: | Kelly PoweX |
|---|---|---|---|
| Toolbox: | X | JHA-SurveyOperations | |
| Shift Change: | None | | |
| Safety: | X | Medical Emergency Drill | |
| Pre/Post Job: | N/A | | |

| PRODUCTION SUHHAR. : | TODA. : | TO DATE: | JOB TOTAL: | TO COHPLETE: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 41.90 | 109.45 | 577.80 | 468.35 |
| Lines Completed: | 19 | 54 | 232 | 178 |
| Cores Taken: | 0 | 0 | 20 | 20 |
| In-Fill Kilometers: | 0.00 | 0.00 | | |
| Added on Kilometers: | 0.00 | 0.00 | | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 0.00 | | |

| i EAT6ER SUHHAR. : | Sea S7a7e (me7eX3) | i md Speed | DrXs |
|---|---|---|---|
| i 8 - 9599: | n/a | n/a | n/a |
| i 8 - 0299: | 0.3m | 5kts | N |
| i 8 - 0%99: | 0.5m | 10kts | SW |
| i 8 - 2Y99: | n/a | n/a | n/a |

GEOP6. SICAL EQUIPHENT:

| | |
|---|---|
| Equipment #1: | Navigation System - POS MV #602273 |
| Equipment #2: | Diff. GPS System - Trimble AG130 #603512 |
| Equipment #3: | MBES - R2Sonic #603633 |
| Equipment #4: | SSS - Edgetech 4200 #403274 |
| Equipment #5: | Mag. - SeaSpy #403113 |
| Equipment #6: | USBL - IXSEA GAPS #151 |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

## *Personnel Onboard:*

| | |
|---|---|
| *Captain:* | Ryan Braget |
| *Other Vessel Crew:* | n/a |
| *Party Chief:* | Kelly Power |
| *Hydro. Surveyor:* | David Wise |
| *Geophysical Tech.:* | Richie Carmichael |
| *Other Survey Crew:* | n/a |
| *Client Representative:* | Ron Eckhardt |

## *Personnel Onshore:*

| | |
|---|---|
| *Offshore Site Manager:* | Jim Grant |
| *Ass't Off. Site Manager:* | Eddie Stutts |
| *Data Manager:* | Chuck Chamberlain |
| *Data Processor:* | Marta Krynytzky |
| *Data Processor:* | Lance Woods |
| *Data Processor:* | n/a |
| *Additional Proc.:* | n/a |
| *Client Representative:* | n/a |
| *Senior Hydrographer* | Gibert Suarez |

**Clren7 RepXe3en7a7rgel8 RemaX 3:**

FUGRO: Kelly Power Clren7:

# Daily Progress Report

ver 7.22.2015-A (Alaska)

Fugro
R/V: Westerly

| | |
|---|---|
| Client: | AK LNG |
| Job Description: | Seafloor Mapping |
| Area & Block(s): | LNG Sites |
| Prospect / Site: | Cook Inlet |
| Fugro Job #: | 23.00007123 |
| Job Day #: | 18 |
| Report For: | 11-Jun-2015 Thursday |
| Julian Date: | 162 |
| Hours From: | 0640 to 1840 |
| Report From: | |

| | | |
|---|---|---|
| Production Hrs/Day: | 12.0 hrs | |
| Job Total in Meters: | 577,800.00 | |
| Total # of Lines: | 232 Lines | |
| # Cores/Core Time: | 20 cores | Est. 180 mins. |
| Total Meters Added: | 0.00 | |
| Total Meters Deleted: | 0.00 | |
| Survey Units: | Meters | |
| Nautical Mile (Feet): | 6080 | |

| Time Summary (Hours): | Today: | Job Totals: | (%) |
|---|---|---|---|
| Mobilize / Demobilize: | 0.00 | 84.00 | 38.61% |
| On-Line: | 0.00 | 20.01 | 9.20% |
| Transit: | 1.20 | 9.32 | 4.28% |
| Other Working: | 0.58 | 45.58 | 20.95% |
| Equipment Downtime: | 0.00 | 13.87 | 6.37% |
| Weather Stand-By: | 10.22 | 44.80 | 20.59% |
| Other Stand-By: | 0.00 | 0.00 | |
| Stand-By / No Crew: | 0.00 | 0.00 | |
| Health, Safety & Environmental: | 0.00 | 0.00 | |
| Job Summary: | 12.00 | 217.58 | 100.00% |
| Areas Worked: | | | |

**Job Total - Kilometers:** *577.80*
**On-Line Percent Complete:** *18.94%*

**Estimated Coring Time:** 5.00 Days
**Estimated Time to Completion:** 12.14 Days

**Estimated Time includes taking cores!**

| HSE Reporting: | | HSE Officer: | Kelly Power |
|---|---|---|---|
| Toolbox: | X | JHA-Survey Operations | |
| Shift Change: | N/A | | |
| Safety: | X | 1 HOC Card, Unsafe Condition, Rectified | |
| Pre/Post Job: | N/A | | |

| Production Summary: | Today: | To Date: | Job Total: | To Complete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 0.00 | 109.45 | 577.80 | 468.35 |
| Lines Completed: | 0 | 54 | 232 | 178 |
| Cores Taken: | 0 | 0 | 20 | 20 |
| In-Fill Kilometers: | 0.00 | 0.00 | | |
| Added on Kilometers: | 0.00 | 0.00 | | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 0.00 | | |

**Geophysical Equipment:**

| | |
|---|---|
| Equipment #1: | Navigation System - POS MV #602273 |
| Equipment #2: | Diff. GPS System - Trimble AG130 #603512 |
| Equipment #3: | MBES - R2Sonic #603633 |
| Equipment #4: | SSS - Edgetech 4200 #403274 |
| Equipment #5: | Mag. - SeaSpy #403113 |
| Equipment #6: | USBL - IXSEA GAPS #151 |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

| Weather Summary: | Sea State (meters) | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | n/a | n/a | n/a |
| Wx - 1200: | n/a | 15-20kts | SW |
| Wx - 1800: | n/a | 20kts | SW |
| Wx - 2400: | n/a | n/a | n/a |

***Personnel Onboard:***

| | |
|---|---|
| *Captain:* | Ryan Braget |
| *Other Vessel Crew:* | n/a |
| *Party Chief:* | Kelly Power |
| *Hydro. Surveyor:* | David Wise |
| *Geophysical Tech.:* | Richie Carmichael |
| *Other Survey Crew:* | n/a |
| *Client Representative:* | Ron Eckhardt |

***Personnel Onshore:***

| | |
|---|---|
| *Offshore Site Manager:* | Jim Grant |
| *Ass't Off. Site Manager:* | Eddie Stutts |
| *Data Manager:* | Chuck Chamberlain |
| *Data Processor:* | Marta Krynytzky |
| *Data Processor:* | Lance Woods |
| *Data Processor:* | n/a |
| *Additional Proc.:* | n/a |
| *Client Representative:* | n/a |
| *Senior Hydrographer* | Gibert Suarez |

**Client Representative's Remarks:**

WOW all day (12 hrs.).

FUGRO: Kelly Power Client:

Alaska LNG

# Daily Progress Report

ver 7.22.2015-A (Alaska)

**Client:** AK LNG
**Job Description:** Seafloor Mapping
**Area & Block(s):** LNG Sites
**Prospect / Site:** Cook Inlet
**Fugro Job #:** 23.00007123
**Job Day #:** 19

Fugro
R/V: Westerly

| | | |
|---|---|---|
| Report For: | 12-Jun-2015 | Friday |
| Julian Date: | 163 | |
| Hours From: | 0600 to 1800 | |

Report From:

| | | |
|---|---|---|
| Production Hrs/Day: | 12.0 hrs | |
| Job Total in Meters: | 577,800.00 | |
| Total # of Lines: | 232 Lines | |
| # Cores/Core Time: | 20 cores | Est. 180 mins. |
| Total Meters Added: | 0.00 | |
| Total Meters Deleted: | 0.00 | |
| Survey Units: | Meters | |
| Nautical Mile (Feet): | 6080 | |

| Time Summary (Hours): | Today: | Job Totals: | (%) |
|---|---|---|---|
| Mobilize / Demobilize: | 0.00 | 84.00 | 36.59% |
| On-Line: | 6.63 | 26.65 | 11.61% |
| Transit: | 2.00 | 11.32 | 4.93% |
| Other Working: | 3.37 | 48.95 | 21.32% |
| Equipment Downtime: | 0.00 | 13.87 | 6.04% |
| Weather Stand-By: | 0.00 | 44.80 | 19.51% |
| Other Stand-By: | 0.00 | 0.00 | |
| Stand-By / No Crew: | 0.00 | 0.00 | |
| Health, Safety & Environmental: | 0.00 | 0.00 | |
| Job Summary: | 12.00 | 229.58 | 100.00% |

Areas Worked:

**Job Total - Kilometers:** 577.80
**On-Line Percent Complete:** 25.55%

**Estimated Coring Time:** 5.00 Days
**Estimated Time to Completion:** 11.47 Days

Estimated Time includes taking cores!

| HSE Reporting: | | HSE Officer: | Kelly Power |
|---|---|---|---|
| Toolbox: | X | JHA-Toolbox | |
| Shift Change: | N/A | | |
| Safety: | None | | |
| Pre/Post Job: | None | | |

| Production Summary: | Today: | To Date: | Job Total: | To Complete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 38.15 | 147.60 | 577.80 | 430.20 |
| Lines Completed: | 17 | 71 | 232 | 161 |
| Cores Taken: | 0 | 0 | 20 | 20 |
| In-Fill Kilometers: | 0.00 | 0.00 | | |
| Added on Kilometers: | 0.00 | 0.00 | | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 0.00 | | |

**Geophysical Equipment:**

| | |
|---|---|
| Equipment #1: | Navigation System - POS MV #602273 |
| Equipment #2: | Diff. GPS System - Trimble AG130 #603512 |
| Equipment #3: | MBES - R2Sonic #603633 |
| Equipment #4: | SSS - Edgetech 4200 #403274 |
| Equipment #5: | Mag. - SeaSpy #403113 |
| Equipment #6: | USBL - IXSEA GAPS #151 |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

| Weather Summary: | Sea State (meters) | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | n/a | n/a | n/a |
| Wx - 1200: | 1.0m | light | var |
| Wx - 1800: | 0.3 | light | var |
| Wx - 2400: | n/a | n/a | n/a |

***Personnel Onboard:***

| | |
|---|---|
| *Captain:* | Ryan Braget |
| *Other Vessel Crew:* | n/a |
| *Party Chief:* | Kelly Power |
| *Hydro. Surveyor:* | David Wise |
| *Geophysical Tech.:* | Richie Carmichael |
| *Other Survey Crew:* | n/a |
| *Client Representative:* | Ron Eckhardt |

***Personnel Onshore:***

| | |
|---|---|
| *Offshore Site Manager:* | Jim Grant |
| *Ass't Off. Site Manager:* | Eddie Stutts |
| *Data Manager:* | Chuck Chamberlain |
| *Data Processor:* | Marta Krynytzky |
| *Data Processor:* | Lance Woods |
| *Data Processor:* | n/a |
| *Additional Proc.:* | n/a |
| *Client Representative:* | n/a |
| *Senior Hydrographer* | Gibert Suarez |

**Client Representative's Remarks:**

FUGRO: Kelly Power Client:

# Daily Progress Report

ver 7.22.2015-A (Alaska)

Fugro
R/V: Westerly

| | |
|---|---|
| Client: | AK LNG |
| Job Description: | Seafloor Mapping |
| Area & Block(s): | LNG Sites |
| Prospect / Site: | Cook Inlet |
| Fugro Job #: | 23.00007123 |
| Job Day #: | 20 |
| Report For: | 13-Jun-2015 Saturday |
| Julian Date: | 164 |
| Hours From: | 0630 to 1830 |
| Report From: | |

| | |
|---|---|
| Production Hrs/Day: | 12.0 hrs |
| Job Total in Meters: | 577,800.00 |
| Total # of Lines: | 232 Lines |
| # Cores/Core Time: | 20 cores / Est. 180 mins. |
| Total Meters Added: | 6,900.00 |
| Total Meters Deleted: | 0.00 |
| Survey Units: | Meters |
| Nautical Mile (Feet): | 6080 |

| Time Summary (Hours): | Today: | Job Totals: | (%) |
|---|---|---|---|
| Mobilize / Demobilize: | 0.00 | 84.00 | 34.77% |
| On-Line: | 8.67 | 35.31 | 14.62% |
| Transit: | 1.00 | 12.32 | 5.10% |
| Other Working: | 2.33 | 51.28 | 21.23% |
| Equipment Downtime: | 0.00 | 13.87 | 5.74% |
| Weather Stand-By: | 0.00 | 44.80 | 18.54% |
| Other Stand-By: | 0.00 | 0.00 | |
| Stand-By / No Crew: | 0.00 | 0.00 | |
| Health, Safety & Environmental: | 0.00 | 0.00 | |
| Job Summary: | 12.00 | 241.58 | 100.00% |
| Areas Worked: | | | |

**Job Total - Kilometers:** *584.70*
**On-Line Percent Complete:** *31.57%*

**Kilometers Added:** *6.90*

**Estimated Coring Time:** 5.00 Days
**Estimated Time to Completion:** 11.38 Days

**Estimated Time includes taking cores!**

| HSE Reporting: | | HSE Officer: | Kelly Power |
|---|---|---|---|
| Toolbox: | X | JHA-Toolbox | |
| Shift Change: | N/A | | |
| Safety: | Yes | HOC-Suggestion for fuel company to make a fuel hose extension for nozzle | |
| Pre/Post Job: | N/A | | |

| Production Summary: | Today: | To Date: | Job Total: | To Complete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 37.00 | 184.60 | 584.70 | 400.10 |
| Lines Completed: | 0 | 71 | 232 | 161 |
| Cores Taken: | 0 | 0 | 20 | 20 |
| In-Fill Kilometers: | 0.00 | 0.00 | | |
| Added on Kilometers: | 6.90 | 6.90 | 1.18% | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 0.00 | | |

**Geophysical Equipment:**

| | |
|---|---|
| Equipment #1: | Navigation System - POS MV #602273 |
| Equipment #2: | Diff. GPS System - Trimble AG130 #603512 |
| Equipment #3: | MBES - R2Sonic #603633 |
| Equipment #4: | SSS - Edgetech 4200 #403274 |
| Equipment #5: | Mag. - SeaSpy #403113 |
| Equipment #6: | USBL - IXSEA GAPS #151 |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

| Weather Summary: | Sea State (meters) | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | n/a | n/a | n/a |
| Wx - 1200: | 0.3m | 10kts | SW |
| Wx - 1800: | n/a | 10kts | SW |
| Wx - 2400: | n/a | n/a | n/a |

***Personnel Onboard:***

| | |
|---|---|
| *Captain:* | Ryan Braget |
| *Other Vessel Crew:* | n/a |
| *Party Chief:* | Kelly Power |
| *Hydro. Surveyor:* | David Wise |
| *Geophysical Tech.:* | Richie Carmichael |
| *Other Survey Crew:* | n/a |
| *Client Representative:* | Ron Eckhardt |

***Personnel Onshore:***

| | |
|---|---|
| *Offshore Site Manager:* | Jim Grant |
| *Ass't Off. Site Manager:* | Eddie Stutts |
| *Data Manager:* | Chuck Chamberlain |
| *Data Processor:* | Cody Brinson |
| *Data Processor:* | Lance Woods |
| *Data Processor:* | n/a |
| *Additional Proc.:* | n/a |
| *Client Representative:* | n/a |
| *Senior Hydrographer* | Gibert Suarez |

**Client Representative's Remarks:**

Three (3) in-fill lines and fifteen (15) MAG re-runs complete the required coverage in block LNG-001. QC review of LNG-001 MBES & SSS field data proves quality coverage and overlap is acceptable.

FUGRO: Kelly Power Client:

Alaska LNG

# Daily Progress Report

ver 7.22.2015-A (Alaska)

Fugro
R/V: Westerly

| | |
|---|---|
| Client: | AK LNG |
| Job Description: | Seafloor Mapping |
| Area & Block(s): | LNG Sites |
| Prospect / Site: | Cook Inlet |
| Fugro Job #: | 23.00007123 |
| Job Day #: | 21 |
| Report For: | 14-Jun-2015 Sunday |
| Julian Date: | 165 |
| Hours From: | 0630 to 1830 |
| Report From: | |

| | | |
|---|---|---|
| Production Hrs/Day: | 12.0 hrs | |
| Job Total in Meters: | 577,800.00 | |
| Total # of Lines: | 232 Lines | |
| # Cores/Core Time: | 20 cores | Est. 180 mins. |
| Total Meters Added: | 6,900.00 | |
| Total Meters Deleted: | 0.00 | |
| Survey Units: | Meters | |
| Nautical Mile (Feet): | 6080 | |

| Time Summary (Hours): | Today: | Job Totals: | (%) |
|---|---|---|---|
| Mobilize / Demobilize: | 0.00 | 84.00 | 33.13% |
| On-Line: | 0.00 | 35.31 | 13.93% |
| Transit: | 0.83 | 13.15 | 5.19% |
| Other Working: | 1.08 | 52.36 | 20.65% |
| Equipment Downtime: | 10.08 | 23.95 | 9.45% |
| Weather Stand-By: | 0.00 | 44.80 | 17.67% |
| Other Stand-By: | 0.00 | 0.00 | |
| Stand-By / No Crew: | 0.00 | 0.00 | |
| Health, Safety & Environmental: | 0.00 | 0.00 | |
| Job Summary: | 12.00 | 253.58 | 100.00% |
| Areas Worked: | | | |

**Job Total - Kilometers:** *584.70*
**On-Line Percent Complete:** *31.57%*

**Kilometers Added:** *6.90*

**Estimated Coring Time:** 5.00 Days
**Estimated Time to Completion:** 11.38 Days

**Estimated Time includes taking cores!**

| HSE Reporting: | | HSE Officer: | Kelly Power |
|---|---|---|---|
| Toolbox: | X | JHA-Toolbox | |
| Shift Change: | N/A | | |
| Safety: | X | 1 HOC Card, Unsafe condition that was rectified | |
| Pre/Post Job: | No | | |

| Production Summary: | Today: | To Date: | Job Total: | To Complete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 0.00 | 184.60 | 584.70 | 400.10 |
| Lines Completed: | 0 | 71 | 232 | 161 |
| Cores Taken: | 0 | 0 | 20 | 20 |
| In-Fill Kilometers: | 0.00 | 0.00 | | |
| Added on Kilometers: | 0.00 | 6.90 | 1.18% | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 0.00 | | |

**Geophysical Equipment:**

| | |
|---|---|
| Equipment #1: | Navigation System - POS MV #602273 |
| Equipment #2: | Diff. GPS System - Trimble AG130 #603512 |
| Equipment #3: | MBES - R2Sonic #603633 |
| Equipment #4: | SSS - Edgetech 4200 #403274 |
| Equipment #5: | Mag. - SeaSpy #403113 |
| Equipment #6: | USBL - IXSEA GAPS #151 |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

| Weather Summary: | Sea State (meters) | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | n/a | n/a | n/a |
| Wx - 1200: | 0.3m | 5kts | var. |
| Wx - 1800: | n/a | 5kts | var. |
| Wx - 2400: | n/a | n/a | n/a |

***Personnel Onboard:***

| | |
|---|---|
| *Captain:* | Ryan Braget |
| *Other Vessel Crew:* | n/a |
| *Party Chief:* | Kelly Power |
| *Hydro. Surveyor:* | David Wise |
| *Geophysical Tech.:* | Richie Carmichael |
| *Other Survey Crew:* | n/a |
| *Client Representative:* | Ron Eckhardt |

***Personnel Onshore:***

| | |
|---|---|
| *Offshore Site Manager:* | Jim Grant |
| *Ass't Off. Site Manager:* | Charlie Hall |
| *Data Manager:* | Chuck Chamberlain |
| *Data Processor:* | Cody Gibson |
| *Data Processor:* | Lance Woods |
| *Data Processor:* | n/a |
| *Additional Proc.:* | n/a |
| *Client Representative:* | n/a |
| *Senior Hydrographer* | n/a |

**Client Representative's Remarks:**

Technical downtime from 0825 to 1845 hrs.

FUGRO: Kelly Power Client:

# Daily Progress Report

ver 7.22.2015-A (Alaska)

**Client:** AK LNG
**Job Description:** Seafloor Mapping
**Area & Block(s):** LNG Sites
**Prospect / Site:** Cook Inlet
**Fugro Job #:** 23.00007123
**Job Day #:** 22

| | | |
|---|---|---|
| **Report For:** | 15-Jun-2015 | Monday |
| **Julian Date:** | 166 | |
| **Hours From:** | 0630 to 1830 | |

**Report From:**

Fugro
R/V: Westerly

| | | |
|---|---|---|
| Production Hrs/Day: | 12.0 hrs | |
| Job Total in Meters: | 577,800.00 | |
| Total # of Lines: | 232 Lines | |
| # Cores/Core Time: | 20 cores | Est. 180 mins. |
| Total Meters Added: | 6,900.00 | |
| Total Meters Deleted: | 0.00 | |
| Survey Units: | Meters | |
| Nautical Mile (Feet): | 6080 | |

| Time Summary (Hours): | Today: | Job Totals: | (%) |
|---|---|---|---|
| Mobilize / Demobilize: | 3.42 | 87.42 | 32.92% |
| On-Line: | 3.15 | 38.46 | 14.48% |
| Transit: | 1.67 | 14.82 | 5.58% |
| Other Working: | 3.77 | 56.13 | 21.14% |
| Equipment Downtime: | 0.00 | 23.95 | 9.02% |
| Weather Stand-By: | 0.00 | 44.80 | 16.87% |
| Other Stand-By: | 0.00 | 0.00 | |
| Stand-By / No Crew: | 0.00 | 0.00 | |
| Health, Safety & Environmental: | 0.00 | 0.00 | |
| **Job Summary:** | **12.00** | **265.58** | **100.00%** |

**Areas Worked:**

**Job Total - Kilometers:** *584.70*
**On-Line Percent Complete:** *34.85%*

**Kilometers Added:** *6.90*

**Estimated Coring Time:** 5.00 Days
**Estimated Time to Completion:** 10.99 Days

**Estimated Time includes taking cores!**

| HSE Reporting: | | HSE Officer: | Kelly Power |
|---|---|---|---|
| Toolbox: | X | JHA-Toolbox | |
| Shift Change: | N/A | | |
| Safety: | X | Spill Response Drill | |
| Pre/Post Job: | None | | |

| Production Summary: | Today: | To Date: | Job Total: | To Complete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 19.15 | 203.75 | 584.70 | 380.95 |
| Lines Completed: | 4 | 75 | 232 | 157 |
| Cores Taken: | 0 | 0 | 20 | 20 |
| In-Fill Kilometers: | 0.00 | 0.00 | | |
| Added on Kilometers: | 0.00 | 6.90 | 1.18% | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 0.00 | | |

**Geophysical Equipment:**

| | |
|---|---|
| Equipment #1: | Navigation System - POS MV #602273 |
| Equipment #2: | Diff. GPS System - Trimble AG130 #603512 |
| Equipment #3: | MBES - R2Sonic #603633 |
| Equipment #4: | SSS - Edgetech 4200 #403274 |
| Equipment #5: | Mag. - SeaSpy #403113 |
| Equipment #6: | USBL - IXSEA GAPS #151 |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

| Weather Summary: | Sea State (meters) | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | n/a | n/a | n/a |
| Wx - 1200: | 0.3m | 5kts | var |
| Wx - 1800: | n/a | 10-15kts | NW |
| Wx - 2400: | n/a | n/a | n/a |

***Personnel Onboard:***

*Captain:* Ryan Braget
*Other Vessel Crew:* n/a
*Party Chief:* Kelly Power
*Hydro. Surveyor:* David Wise
*Geophysical Tech.:* Richie Carmichael
*Other Survey Crew:* n/a
*Client Representative:* Ron Eckhardt

***Personnel Onshore:***

*Offshore Site Manager:* Jim Grant
*Ass't Off. Site Manager:* Charlie Hall
*Data Manager:* Chuck Chamberlain
*Data Processor:* Cody Gibson
*Data Processor:* Lance Woods
*Data Processor:* n/a
*Additional Proc.:* n/a
*Client Representative:* n/a

*Senior Hydrographer* n/a

**Client Representative's Remarks:**

FUGRO: Kelly Power Client:

Alaska LNG

# Daily Progress Report

Fugro
R/V: Westerly

*ver 7.22.2015-A (Alaska)*

| | |
|---|---|
| Production Hrs/Day: | 12.0 hrs |
| Job Total in Meters: | 577,800.00 |
| Total # of Lines: | 232 Lines |
| # Cores/Core Time: | 20 cores / Est. 180 mins. |
| Total Meters Added: | 6,900.00 |
| Total Meters Deleted: | 0.00 |
| Survey Units: | Meters |
| Nautical Mile (Feet): | 6080 |

**Client:** AK LNG
**Job Description:** Seafloor Mapping
**Area & Block(s):** LNG Sites
**Prospect / Site:** Cook Inlet
**Fugro Job #:** 23.00007123
**Job Day #:** 23

| | | |
|---|---|---|
| **Report For:** | 16-Jun-2015 | Tuesday |
| **Julian Date:** | 167 | |
| **Hours From:** | 0630 to 1830 | |

**Report From:**

| Time Summary (Hours): | Today: | Job Totals: | (%) |
|---|---|---|---|
| Mobilize / Demobilize: | 0.00 | 87.42 | 31.49% |
| On-Line: | 0.00 | 38.46 | 13.86% |
| Transit: | 1.83 | 16.65 | 6.00% |
| Other Working: | 10.17 | 66.30 | 23.88% |
| Equipment Downtime: | 0.00 | 23.95 | 8.63% |
| Weather Stand-By: | 0.00 | 44.80 | 16.14% |
| Other Stand-By: | 0.00 | 0.00 | |
| Stand-By / No Crew: | 0.00 | 0.00 | |
| Health, Safety & Environmental: | 0.00 | 0.00 | |
| **Job Summary:** | **12.00** | **277.58** | **100.00%** |

**Areas Worked:**

**Job Total - Kilometers:** *584.70*
**On-Line Percent Complete:** *34.85%*

**Kilometers Added:** *6.90*

**Estimated Coring Time:** 3.00 Days
**Estimated Time to Completion:** 8.99 Days

**Estimated Time includes taking cores!**

| HSE Reporting: | | HSE Officer: | Kelly Power |
|---|---|---|---|
| Toolbox: | X | JHA-Toolbox, Review MRA-TRA-003 | |
| Shift Change: | N/A | | |
| Safety: | X | Vessel Oientation for CH2MILL Rep, 1 HOC Card | |
| Pre/Post Job: | No | | |

| Production Summary: | Today: | To Date: | Job Total: | To Complete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 0.00 | 203.75 | 584.70 | 380.95 |
| Lines Completed: | 0 | 75 | 232 | 157 |
| Cores Taken: | 8 | 8 | 20 | 12 |
| In-Fill Kilometers: | 0.00 | 0.00 | | |
| Added on Kilometers: | 0.00 | 6.90 | 1.18% | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 0.00 | | |

**Geophysical Equipment:**

| | |
|---|---|
| Equipment #1: | Navigation System - POS MV #602273 |
| Equipment #2: | Diff. GPS System - Trimble AG130 #603512 |
| Equipment #3: | MBES - R2Sonic #603633 |
| Equipment #4: | SSS - Edgetech 4200 #403274 |
| Equipment #5: | Mag. - SeaSpy #403113 |
| Equipment #6: | USBL - IXSEA GAPS #151 |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

| Weather Summary: | Sea State (meters) | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | n/a | n/a | n/a |
| Wx - 1200: | 0.3m | 5kts | var. |
| Wx - 1800: | n/a | 10kts | N |
| Wx - 2400: | n/a | n/a | n/a |

***Personnel Onboard:***

*Captain:* Ryan Braget
*Other Vessel Crew:* n/a
*Party Chief:* Kelly Power
*Hydro. Surveyor:* David Wise
*Geophysical Tech.:* Richie Carmichael
*Other Survey Crew:* Kristin Reardon
*Client Representative:* Ron Eckhardt

***Personnel Onshore:***

*Offshore Site Manager:* Jim Grant
*Ass't Off. Site Manager:* Charlie Hall
*Data Manager:* Chuck Chamberlain
*Data Processor:* Cody Gibson
*Data Processor:* Lance Woods
*Data Processor:* n/a
*Additional Proc.:* n/a
*Client Representative:* n/a

*Senior Hydrographer* n/a

**Client Representative's Remarks:**

**FUGRO:** Kelly Power **Client:**

# Daily Progre33 ReporY

ver 7.22.2015-A (Alaska)

**Fugro**
**R/V: We3Yerly**

| | |
|---|---|
| Client: | AK LNG |
| Job Description: | Seafloor 7 apping |
| Area & Block(s): | LNG SiYe3 |
| Prospect / Site: | Cook InleY |
| Fugro Job #: | 2t s1111902t |
| Job Day #: | 28 |
| Report For: | 09-Jun-2105 Wedne3day |
| Julian Date: | 06H |
| Mours Fro7 : | 16t 1 Yo 0Ht 1 |

| | |
|---|---|
| Production Hrs/Day: | 12.0 hrs |
| Job Total in Meters: | 577,800.00 |
| Total # of Lines: | 232 Lines |
| # Cores/Core Time: | 20 cores Est. 180 mins. |
| Total Meters Added: | 6,900.00 |
| Total Meters Deleted: | 0.00 |
| Survey Units: | Meters |
| Nautical Mile (Feet): | 6080 |

Report Fro7 :

| Ti7 e Su7 7 ar. (Mour3): | Toda. : | Job Totals: ( % ) | |
|---|---|---|---|
| 7 obilize / De7 obilize: | 0.00 | 87.42 | 30.19% |
| On-Line: | 7.05 | 45.51 | 15.72% |
| Transit: | 1.17 | 17.82 | 6.15% |
| Otmer Working: | 3.78 | 70.08 | 24.20% |
| Equip7 ent Downti7 e: | 0.00 | 23.95 | 8.27% |
| Weatmer Stand-B. : | 0.00 | 44.80 | 15.47% |
| Otmer Stand-B. : | 0.00 | 0.00 | |
| Stand-B. / No Crew: | 0.00 | 0.00 | |
| Mealtm, Safet. & Environ7 ental: | 0.00 | 0.00 | |
| Job Su7 7 ar. : | 02s11 | 2H4s5H | 011s11% |

Areas Worked:

**Job ToYal - KilomeYer3:** *584.70*
**On-Line PercenYCompleYe:** *42.71%*

**KilomeYer3 Added:** *6.90*

**E3YmaYed Coring Time:** t s11 Day3
**E3Ymaye3 Time Yo CompleYon:** Hs14 Day3

E3Ymaye3 Time include3 Yaking core3!

| MSE Reporting: | | MSE Officer: | Kelly Power |
|---|---|---|---|
| Toolbox: | X | JHA-Toolbox | |
| Shift Change: | N/A | | |
| Safety: | X | 1 HOC, Suggestion for a dolly cart to aid moving equipment to/from vessel | |
| Pre/Post Job: | | | |

| Production Su7 7 ar. : | Toda. : | To Date: | Job Total: | To Co7 plete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 45.95 | 249.70 | 584.70 | 335.00 |
| Lines Completed: | 10 | 85 | 232 | 147 |
| Cores Taken: | 0 | 8 | 20 | 12 |
| In-Fill Kilometers: | 0.00 | 0.00 | | |
| Added on Kilometers: | 0.00 | 6.90 | 1.18% | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 0.00 | | |

**Geopm. sical Equip7 ent:**

| | |
|---|---|
| Equipment #1: | Navigation System - POS MV #602273 |
| Equipment #2: | Diff. GPS System - Trimble AG130 #603512 |
| Equipment #3: | MBES - R2Sonic #603633 |
| Equipment #4: | SSS - Edgetech 4200 #403274 |
| Equipment #5: | Mag. - SeaSpy #403113 |
| Equipment #6: | USBL - IXSEA GAPS #151 |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

| Weatmer Su7 7 ar. : | Sea SYaYe (meYer3) | Wind Speed | Dirs |
|---|---|---|---|
| Wx - 1611: | n/a | n/a | n/a |
| Wx - 0211: | 0.3m | light | var. |
| Wx - 0H11: | n/a | 10kts | N |
| Wx - 2811: | n/a | n/a | n/a |

***Personnel Onboard:***

| | |
|---|---|
| *Captain:* | Ryan Braget |
| *Other Vessel Crew:* | n/a |
| *Party Chief:* | Kelly Power |
| *Hydro. Surveyor:* | David Wise |
| *Geophysical Tech.:* | Richie Carmichael |
| *Other Survey Crew:* | n/a |
| *Client Representative:* | Ron Eckhardt |

***Personnel Onshore:***

| | |
|---|---|
| *Offshore Site Manager:* | Jim Grant |
| *Ass't Off. Site Manager:* | Charlie Hall |
| *Data Manager:* | Chuck Chamberlain |
| *Data Processor:* | Cody Gibson |
| *Data Processor:* | Lance Woods |
| *Data Processor:* | n/a |
| *Additional Proc.:* | n/a |
| *Client Representative:* | n/a |
| *Senior Hydrographer* | n/a |

**ClienYRepre3enYaYve'3 Remark3:**

FUGRO: Kelly Power ClienY:

# Daily Progress Report

ver 7.22.2015-A (Alaska)

Fugro
R/V: Westerly

| | |
|---|---|
| Client: | AK LNG |
| Job Description: | Seafloor Mapping |
| Area & Block(s): | LNG Sites |
| Prospect / Site: | Cook Inlet |
| Fugro Job #: | 23.00007123 |
| Job Day #: | 25 |
| Report For: | 18-Jun-2015 Thursday |
| Julian Date: | 169 |
| Hours From: | 0630 to 1830 |
| Report From: | |

| | | |
|---|---|---|
| Production Hrs/Day: | 12.0 hrs | |
| Job Total in Meters: | 577,800.00 | |
| Total # of Lines: | 232 Lines | |
| # Cores/Core Time: | 20 cores | Est. 180 mins. |
| Total Meters Added: | 6,900.00 | |
| Total Meters Deleted: | 0.00 | |
| Survey Units: | Meters | |
| Nautical Mile (Feet): | 6080 | |

| Time Summary (Hours): | Today: | Job Totals: | (%) |
|---|---|---|---|
| Mobilize / Demobilize: | 0.00 | 87.42 | 28.99% |
| On-Line: | 7.90 | 53.41 | 17.71% |
| Transit: | 1.50 | 19.32 | 6.41% |
| Other Working: | 1.85 | 71.93 | 23.85% |
| Equipment Downtime: | 0.75 | 24.70 | 8.19% |
| Weather Stand-By: | 0.00 | 44.80 | 14.85% |
| Other Stand-By: | 0.00 | 0.00 | |
| Stand-By / No Crew: | 0.00 | 0.00 | |
| Health, Safety & Environmental: | 0.00 | 0.00 | |
| Job Summary: | 12.00 | 301.58 | 100.00% |
| Areas Worked: | | | |

**Job Total - Kilometers:** *584.70*
**On-Line Percent Complete:** *49.54%*

**Kilometers Added:** *6.90*

**Estimated Coring Time:** 3.00 Days
**Estimated Time to Completion:** 7.53 Days

**Estimated Time includes taking cores!**

| HSE Reporting: | | HSE Officer: | Kelly Power |
|---|---|---|---|
| Toolbox: | X | JHA-Toolbox | |
| Shift Change: | N/A | | |
| Safety: | X | Vessel orientaion for Capt john, review MAR-TRA-012 | |
| Pre/Post Job: | None | | |

| Production Summary: | Today: | To Date: | Job Total: | To Complete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 39.95 | 289.65 | 584.70 | 295.05 |
| Lines Completed: | 9 | 94 | 232 | 138 |
| Cores Taken: | 0 | 8 | 20 | 12 |
| In-Fill Kilometers: | 0.00 | 0.00 | | |
| Added on Kilometers: | 0.00 | 6.90 | 1.18% | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 0.00 | | |

**Geophysical Equipment:**

| | |
|---|---|
| Equipment #1: | Navigation System - POS MV #602273 |
| Equipment #2: | Diff. GPS System - Trimble AG130 #603512 |
| Equipment #3: | MBES - R2Sonic #603633 |
| Equipment #4: | SSS - Edgetech 4200 #403274 |
| Equipment #5: | Mag. - SeaSpy #403113 |
| Equipment #6: | USBL - IXSEA GAPS #151 |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

| Weather Summary: | Sea State (meters) | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | n/a | n/a | n/a |
| Wx - 1200: | 0.3m | 5kts | SW |
| Wx - 1800: | 0.3m | 5-10kts | SW |
| Wx - 2400: | n/a | n/a | n/a |

***Personnel Onboard:***

| | |
|---|---|
| *Captain:* | Ryan Braget |
| *Other Vessel Crew:* | John Valikonis |
| *Party Chief:* | Kelly Power |
| *Hydro. Surveyor:* | David Wise |
| *Geophysical Tech.:* | Richie Carmichael |
| *Other Survey Crew:* | n/a |
| *Client Representative:* | Ron Eckhardt |

***Personnel Onshore:***

| | |
|---|---|
| *Offshore Site Manager:* | Jim Grant |
| *Ass't Off. Site Manager:* | Charlie Hall |
| *Data Manager:* | Chuck Chamberlain |
| *Data Processor:* | Cody Gibson |
| *Data Processor:* | Lance Woods |
| *Data Processor:* | n/a |
| *Additional Proc.:* | n/a |
| *Client Representative:* | n/a |
| *Senior Hydrographer* | n/a |

**Client Representative's Remarks:**

FUGRO: Kelly Power Client:

# Daily Progress Report

ver 7.22.2015-A (Alaska)

Fugro
R/V: Westerly

| | |
|---|---|
| Client: | AK LNG |
| Job Description: | Seafloor Mapping |
| Area & Block(s): | LNG Sites |
| Prospect / Site: | Cook Inlet |
| Fugro Job #: | 23.00007123 |
| Job Day #: | 26 |
| Report For: | 19-Jun-2015 Friday |
| Julian Date: | 170 |
| Hours From: | 0630 to 1830 |
| Report From: | |

| | | |
|---|---|---|
| Production Hrs/Day: | 12.0 hrs | |
| Job Total in Meters: | 577,800.00 | |
| Total # of Lines: | 232 Lines | |
| # Cores/Core Time: | 20 cores | Est. 180 mins. |
| Total Meters Added: | 6,900.00 | |
| Total Meters Deleted: | 0.00 | |
| Survey Units: | Meters | |
| Nautical Mile (Feet): | 6080 | |

| Time Summary (Hours): | Today: | Job Totals: | (%) |
|---|---|---|---|
| Mobilize / Demobilize: | 0.00 | 87.42 | 27.88% |
| On-Line: | 0.00 | 53.41 | 17.03% |
| Transit: | 0.42 | 19.73 | 6.29% |
| Other Working: | 0.50 | 72.43 | 23.10% |
| Equipment Downtime: | 0.00 | 24.70 | 7.88% |
| Weather Stand-By: | 11.08 | 55.88 | 17.82% |
| Other Stand-By: | 0.00 | 0.00 | |
| Stand-By / No Crew: | 0.00 | 0.00 | |
| Health, Safety & Environmental: | 0.00 | 0.00 | |
| Job Summary: | 12.00 | 313.58 | 100.00% |
| Areas Worked: | | | |

**Job Total - Kilometers:** *584.70*
**On-Line Percent Complete:** *49.54%*

**Kilometers Added:** *6.90*

**Estimated Coring Time:** 3.00 Days
**Estimated Time to Completion:** 7.53 Days

**Estimated Time includes taking cores!**

| HSE Reporting: | | HSE Officer: | Kelly Power |
|---|---|---|---|
| Toolbox: | X | JHA-Toolbox | |
| Shift Change: | N/A | | |
| Safety: | X | | |
| Pre/Post Job: | None | | |

| Production Summary: | Today: | To Date: | Job Total: | To Complete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 0.00 | 289.65 | 584.70 | 295.05 |
| Lines Completed: | 0 | 94 | 232 | 138 |
| Cores Taken: | 0 | 8 | 20 | 12 |
| In-Fill Kilometers: | 0.00 | 0.00 | | |
| Added on Kilometers: | 0.00 | 6.90 | 1.18% | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 0.00 | | |

**Geophysical Equipment:**

| | |
|---|---|
| Equipment #1: | Navigation System - POS MV #602273 |
| Equipment #2: | Diff. GPS System - Trimble AG130 #603512 |
| Equipment #3: | MBES - R2Sonic #603633 |
| Equipment #4: | SSS - Edgetech 4200 #403274 |
| Equipment #5: | Mag. - SeaSpy #403113 |
| Equipment #6: | USBL - IXSEA GAPS #151 |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

| Weather Summary: | Sea State (meters) | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | n/a | n/a | n/a |
| Wx - 1200: | n/a | 15-20kts | SW |
| Wx - 1800: | n/a | 15-20kts | SW |
| Wx - 2400: | n/a | n/a | n/a |

***Personnel Onboard:***

| | |
|---|---|
| *Captain:* | Ryan Braget |
| *Other Vessel Crew:* | John Valikonis |
| *Party Chief:* | Kelly Power |
| *Hydro. Surveyor:* | David Wise |
| *Geophysical Tech.:* | Richie Carmichael |
| *Other Survey Crew:* | n/a |
| *Client Representative:* | Ron Eckhardt |

***Personnel Onshore:***

| | |
|---|---|
| *Offshore Site Manager:* | Jim Grant |
| *Ass't Off. Site Manager:* | Charlie Hall |
| *Data Manager:* | Chuck Chamberlain |
| *Data Processor:* | Cody Gibson |
| *Data Processor:* | Lance Woods |
| *Data Processor:* | n/a |
| *Additional Proc.:* | n/a |
| *Client Representative:* | n/a |
| *Senior Hydrographer* | n/a |

**Client Representative's Remarks:**

WOW: ** SMALL CRAFT ADVISORY ** Winds: SW 20 to 25 knots. Seas: S 5 to 6 ft.
Confirmed seas of 6 ft in Cook Inlet at 0725 hrs.

FUGRO: Kelly Power Client:

# Daily Progress Report

ver 7.22.2015-A (Alaska)

Fugro
R/V: Westerly

| | |
|---|---|
| Client: | AK LNG |
| Job Description: | Seafloor Mapping |
| Area & Block(s): | LNG Sites |
| Prospect / Site: | Cook Inlet |
| Fugro Job #: | 23.00007123 |
| Job Day #: | 27 |
| Report For: | 20-Jun-2015 Saturday |
| Julian Date: | 171 |
| Hours From: | 0700 to 1900 |
| Report From: | |

| | | |
|---|---|---|
| Production Hrs/Day: | 12.0 hrs | |
| Job Total in Meters: | 577,800.00 | |
| Total # of Lines: | 232 Lines | |
| # Cores/Core Time: | 20 cores | Est. 180 mins. |
| Total Meters Added: | 6,900.00 | |
| Total Meters Deleted: | 0.00 | |
| Survey Units: | Meters | |
| Nautical Mile (Feet): | 6080 | |

| Time Summary (Hours): | Today: | Job Totals: | (%) |
|---|---|---|---|
| Mobilize / Demobilize: | 0.00 | 87.42 | 26.85% |
| On-Line: | 0.00 | 53.41 | 16.41% |
| Transit: | 0.00 | 19.73 | 6.06% |
| Other Working: | 12.00 | 84.43 | 25.93% |
| Equipment Downtime: | 0.00 | 24.70 | 7.59% |
| Weather Stand-By: | 0.00 | 55.88 | 17.16% |
| Other Stand-By: | 0.00 | 0.00 | |
| Stand-By / No Crew: | 0.00 | 0.00 | |
| Health, Safety & Environmental: | 0.00 | 0.00 | |
| Job Summary: | 12.00 | 325.58 | 100.00% |

Areas Worked:

**Job Total - Kilometers:** *584.70*
**On-Line Percent Complete:** *49.54%*

**Kilometers Added:** *6.90*

**Estimated Coring Time:** 3.00 Days
**Estimated Time to Completion:** 7.53 Days

**Estimated Time includes taking cores!**

| HSE Reporting: | | HSE Officer: | Kelly Power |
|---|---|---|---|
| Toolbox: | No | | |
| Shift Change: | N/A | | |
| Safety: | No | | |
| Pre/Post Job: | No | | |

| Production Summary: | Today: | To Date: | Job Total: | To Complete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 0.00 | 289.65 | 584.70 | 295.05 |
| Lines Completed: | 0 | 94 | 232 | 138 |
| Cores Taken: | 0 | 8 | 20 | 12 |
| In-Fill Kilometers: | 0.00 | 0.00 | | |
| Added on Kilometers: | 0.00 | 6.90 | 1.18% | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 0.00 | | |

**Geophysical Equipment:**

| | |
|---|---|
| Equipment #1: | Navigation System - POS MV #602273 |
| Equipment #2: | Diff. GPS System - Trimble AG130 #603512 |
| Equipment #3: | MBES - R2Sonic #603633 |
| Equipment #4: | SSS - Edgetech 4200 #403274 |
| Equipment #5: | Mag. - SeaSpy #403113 |
| Equipment #6: | USBL - IXSEA GAPS #151 |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

| Weather Summary: | Sea State (meters) | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | n/a | n/a | n/a |
| Wx - 1200: | n/a | 5kts | S |
| Wx - 1800: | n/a | 5kts | S |
| Wx - 2400: | n/a | n/a | n/a |

***Personnel Onboard:***

| | |
|---|---|
| *Captain:* | Ryan Braget |
| *Other Vessel Crew:* | John Valikonis |
| *Party Chief:* | Kelly Power |
| *Hydro. Surveyor:* | David Wise |
| *Geophysical Tech.:* | Richie Carmichael |
| *Other Survey Crew:* | n/a |
| *Client Representative:* | Ron Eckhardt |

***Personnel Onshore:***

| | |
|---|---|
| *Offshore Site Manager:* | Jim Grant |
| *Ass't Off. Site Manager:* | Charlie Hall |
| *Data Manager:* | Chuck Chamberlain |
| *Data Processor:* | Cody Gibson |
| *Data Processor:* | Lance Woods |
| *Data Processor:* | n/a |
| *Additional Proc.:* | n/a |
| *Client Representative:* | n/a |
| *Senior Hydrographer* | n/a |

**Client Representative's Remarks:**

Fatigue Management: Rest Day (1 of 2)

FUGRO: Kelly Power  Client:

Alaska LNG

# Daily Progress Report

Fugro
R/V: Westerly

*ver 7.22.2015-A (Alaska)*

| | |
|---|---|
| Production Hrs/Day: | *12.0 hrs* |
| Job Total in Meters: | 577,800.00 |
| Total # of Lines: | 232 Lines |
| # Cores/Core Time: | 20 cores / Est. 180 mins. |
| Total Meters Added: | 6,900.00 |
| Total Meters Deleted: | 0.00 |
| Survey Units: | Meters |
| Nautical Mile (Feet): | 6080 |

**Client:** AK LNG
**Job Description:** Seafloor Mapping
**Area & Block(s):** LNG Sites
**Prospect / Site:** Cook Inlet
**Fugro Job #:** 23.00007123
**Job Day #:** 28

| | | |
|---|---|---|
| **Report For:** | 21-Jun-2015 | Sunday |
| **Julian Date:** | 172 | |
| **Hours From:** | 0700 to 1900 | |

**Report From:**

| Time Summary (Hours): | Today: | Job Totals: | (%) |
|---|---|---|---|
| Mobilize / Demobilize: | 0.00 | 87.42 | *25.90%* |
| On-Line: | 0.00 | 53.41 | *15.82%* |
| Transit: | 0.00 | 19.73 | *5.85%* |
| Other Working: | 12.00 | 96.43 | *28.57%* |
| Equipment Downtime: | 0.00 | 24.70 | *7.32%* |
| Weather Stand-By: | 0.00 | 55.88 | *16.55%* |
| Other Stand-By: | 0.00 | 0.00 | |
| Stand-By / No Crew: | 0.00 | 0.00 | |
| Health, Safety & Environmental: | 0.00 | 0.00 | |
| **Job Summary:** | **12.00** | **337.58** | **100.00%** |

**Areas Worked:**

**Job Total - Kilometers:** ***584.70***
**On-Line Percent Complete:** ***49.54%***

**Kilometers Added:** ***6.90***

**Estimated Coring Time:** **3.00 Days**
**Estimated Time to Completion:** **7.53 Days**

**Estimated Time includes taking cores!**

| HSE Reporting: | | HSE Officer: | Kelly Power |
|---|---|---|---|
| Toolbox: | No | | |
| Shift Change: | N/A | | |
| Safety: | No | | |
| Pre/Post Job: | No | | |

| Production Summary: | Today: | To Date: | Job Total: | To Complete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 0.00 | 289.65 | 584.70 | 295.05 |
| Lines Completed: | 0 | 94 | 232 | 138 |
| Cores Taken: | 0 | 8 | 20 | 12 |
| In-Fill Kilometers: | 0.00 | 0.00 | | |
| Added on Kilometers: | 0.00 | 6.90 | 1.18% | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 0.00 | | |

**Geophysical Equipment:**

| | |
|---|---|
| Equipment #1: | Navigation System - POS MV #602273 |
| Equipment #2: | Diff. GPS System - Trimble AG130 #603512 |
| Equipment #3: | MBES - R2Sonic #603633 |
| Equipment #4: | SSS - Edgetech 4200 #403274 |
| Equipment #5: | Mag. - SeaSpy #403113 |
| Equipment #6: | USBL - IXSEA GAPS #151 |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

| Weather Summary: | Sea State (meters) | Wind Speed | Dir. |
|---|---|---|---|
| **Wx - 0600:** | n/a | n/a | n/a |
| **Wx - 1200:** | n/a | 5kts | SW |
| **Wx - 1800:** | n/a | 10kts | SW |
| **Wx - 2400:** | n/a | n/a | n/a |

***Personnel Onboard:***

| | |
|---|---|
| *Captain:* | Ryan Braget |
| *Other Vessel Crew:* | John Valikonis |
| *Party Chief:* | Kelly Power |
| *Hydro. Surveyor:* | David Wise |
| *Geophysical Tech.:* | Richie Carmichael |
| *Other Survey Crew:* | n/a |
| *Client Representative:* | Ron Eckhardt |

***Personnel Onshore:***

| | |
|---|---|
| *Offshore Site Manager:* | Charlie Hall |
| *Ass't Off. Site Manager:* | Marta Krynytzky |
| *Data Manager:* | Chuck Chamberlain |
| *Data Processor:* | Cody Gibson |
| *Data Processor:* | Lance Woods |
| *Data Processor:* | n/a |
| *Additional Proc.:* | n/a |
| *Client Representative:* | n/a |
| *Senior Hydrographer* | n/a |

**Client Representative's Remarks:**

**FUGRO:** Kelly Power **Client:**

# Daily Progress Report

ver 7.22.2015-A (Alaska)

Fugro
R/V: Westerly

| | |
|---|---|
| Client: | AK LNG |
| Job Description: | Seafloor Mapping |
| Area & Block(s): | LNG Sites |
| Prospect / Site: | Cook Inlet |
| Fugro Job #: | 23.00007123 |
| Job Day #: | 29 |
| Report For: | 22-Jun-2015 Monday |
| Julian Date: | 173 |
| Hours From: | 0630 to 1830 |
| Report From: | |

| | | |
|---|---|---|
| Production Hrs/Day: | 12.0 hrs | |
| Job Total in Meters: | 577,800.00 | |
| Total # of Lines: | 232 Lines | |
| # Cores/Core Time: | 20 cores | Est. 180 mins. |
| Total Meters Added: | 6,900.00 | |
| Total Meters Deleted: | 0.00 | |
| Survey Units: | Meters | |
| Nautical Mile (Feet): | 6080 | |

| Time Summary (Hours): | Today: | Job Totals: | (%) |
|---|---|---|---|
| Mobilize / Demobilize: | 0.00 | 87.42 | 25.01% |
| On-Line: | 6.75 | 60.16 | 17.21% |
| Transit: | 2.25 | 21.98 | 6.29% |
| Other Working: | 3.00 | 99.43 | 28.44% |
| Equipment Downtime: | 0.00 | 24.70 | 7.07% |
| Weather Stand-By: | 0.00 | 55.88 | 15.99% |
| Other Stand-By: | 0.00 | 0.00 | |
| Stand-By / No Crew: | 0.00 | 0.00 | |
| Health, Safety & Environmental: | 0.00 | 0.00 | |
| Job Summary: | 12.00 | 349.57 | 100.00% |
| Areas Worked: | | | |

**Job Total - Kilometers:** *584.70*
**On-Line Percent Complete:** *56.82%*

**Kilometers Added:** *6.90*

**Estimated Coring Time:** 3.00 Days
**Estimated Time to Completion:** 6.81 Days

**Estimated Time includes taking cores!**

| HSE Reporting: | | HSE Officer: | Kelly Power |
|---|---|---|---|
| Toolbox: | X | JHA-Toolbox | |
| Shift Change: | | | |
| Safety: | X | Review MAR-TRA-009 and 013 | |
| Pre/Post Job: | | | |

| Production Summary: | Today: | To Date: | Job Total: | To Complete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 42.55 | 332.20 | 584.70 | 252.50 |
| Lines Completed: | 10 | 104 | 232 | 128 |
| Cores Taken: | 0 | 8 | 20 | 12 |
| In-Fill Kilometers: | 0.00 | 0.00 | | |
| Added on Kilometers: | 0.00 | 6.90 | 1.18% | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 0.00 | | |

**Geophysical Equipment:**

| | |
|---|---|
| Equipment #1: | Navigation System - POS MV # |
| Equipment #2: | Diff. GPS System - Trimble AG130 # |
| Equipment #3: | MBES - R2Sonic # |
| Equipment #4: | SSS - Edgetech 4200 # |
| Equipment #5: | Mag. - SeaSpy # |
| Equipment #6: | USBL - IXSEA GAPS # |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

| Weather Summary: | Sea State (meters) | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | n/a | n/a | n/a |
| Wx - 1200: | 0.3m | 5kts | SSW |
| Wx - 1800: | n/a | 5kts | SW |
| Wx - 2400: | n/a | n/a | n/a |

***Personnel Onboard:***

| | |
|---|---|
| *Captain:* | Ryan Braget |
| *Other Vessel Crew:* | John Valikonis |
| *Party Chief:* | Kelly Power |
| *Hydro. Surveyor:* | David Wise |
| *Geophysical Tech.:* | Richie Carmichael |
| *Other Survey Crew:* | n/a |
| *Client Representative:* | Ron Eckhardt |

***Personnel Onshore:***

| | |
|---|---|
| *Offshore Site Manager:* | Charlie Hall |
| *Ass't Off. Site Manager:* | Marta Krynytzky |
| *Data Manager:* | Chuck Chamberlain |
| *Data Processor:* | Cody Gibson |
| *Data Processor:* | Lance Woods |
| *Data Processor:* | n/a |
| *Additional Proc.:* | n/a |
| *Client Representative:* | n/a |

**Client Representative's Remarks:**

FUGRO: Kelly Power Client:

# Darfy PXoZX_%%R_VoX8

FuZXo
R/k: i _%8_Xfy

*ver 7.22.2015-A (Alaska)*

| | |
|---|---|
| Client: | AK LNG |
| Job Description: | Seafloor Mapping |
| Area & Block(s): | LNG Sites |
| Prospect / Site: | Cook Inlet |
| Fugro Job #: | 23.00007123 |
| Job Day #: | 30 |
| Report For: | 23-Jun-2015 Tuesday |
| Julian Date: | 174 |
| Hours From: | 0630 to 1830 |
| Report From: | |

| | | |
|---|---|---|
| Production Hrs/Day: | 12.0 hrs | |
| Job Total in Meters: | 577,800.00 | |
| Total # of Lines: | 232 Lines | |
| # Cores/Core Time: | 20 cores | Est. 180 mins. |
| Total Meters Added: | 6,900.00 | |
| Total Meters Deleted: | 0.00 | |
| Survey Units: | Meters | |
| Nautical Mile (Feet): | 6080 | |

| Time Summary (Hours): | Today: | Job Totals: | (%) |
|---|---|---|---|
| Mobilize / Demobilize: | 0.00 | 87.42 | 24.18% |
| On-Line: | 0.00 | 60.16 | 16.64% |
| Transit: | 3.67 | 25.65 | 7.09% |
| Other Working: | 2.08 | 101.51 | 28.08% |
| Equipment Downtime: | 0.00 | 24.70 | 6.83% |
| Weather Stand-By: | 6.25 | 62.13 | 17.18% |
| Other Stand-By: | 0.00 | 0.00 | |
| Stand-By / No Crew: | 0.00 | 0.00 | |
| Health, Safety & Environmental: | 0.00 | 0.00 | |
| Job Summary: | 12.00 | 361.57 | 100.00% |
| Areas Worked: | | | |

**Job Total - Kilometers:** *584.70*
**On-Line Percent Complete:** *56.82%*

**Kilometers Added:** *6.90*

**Estimated Coring Time:** 3.00 Days
**Estimated Time to Completion:** 6.81 Days

**Estimated Time includes taking cores!**

| HSE Reporting: | | HSE Officer: | Kelly Power |
|---|---|---|---|
| Toolbox: | X | JHA-Toolbox | |
| Shift Change: | | | |
| Safety: | | | |
| Pre/Post Job: | | | |

| Production Summary: | Today: | To Date: | Job Total: | To Complete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 0.00 | 332.20 | 584.70 | 252.50 |
| Lines Completed: | 0 | 104 | 232 | 128 |
| Cores Taken: | 0 | 8 | 20 | 12 |
| In-Fill Kilometers: | 0.00 | 0.00 | | |
| Added on Kilometers: | 0.00 | 6.90 | 1.18% | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 0.00 | | |

**Geophysical Equipment:**

| | |
|---|---|
| Equipment #1: | Navigation System - POS MV # |
| Equipment #2: | Diff. GPS System - Trimble AG130 # |
| Equipment #3: | MBES - R2Sonic # |
| Equipment #4: | SSS - Edgetech 4200 # |
| Equipment #5: | Mag. - SeaSpy # |
| Equipment #6: | USBL - IXSEA GAPS # |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

| Weather Summary: | Sea State (meters) | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | n/a | n/a | n/a |
| Wx - 1200: | 1.2m | 15kts | SW |
| Wx - 1800: | n/a | 15kts | SW |
| Wx - 2400: | n/a | n/a | n/a |

***Personnel Onboard:***

| | |
|---|---|
| *Captain:* | John Valikonis |
| *Other Vessel Crew:* | n/a |
| *Party Chief:* | Kelly Power |
| *Hydro. Surveyor:* | David Wise |
| *Geophysical Tech.:* | Richie Carmichael |
| *Other Survey Crew:* | n/a |
| *Client Representative:* | Ron Eckhardt |

***Personnel Onshore:***

| | |
|---|---|
| *Offshore Site Manager:* | Charlie Hall |
| *Ass't Off. Site Manager:* | Marta Krynytzky |
| *Data Manager:* | Chuck Chamberlain |
| *Data Processor:* | Cody Gibson |
| *Data Processor:* | Lance Woods |
| *Data Processor:* | n/a |
| *Additional Proc.:* | n/a |
| *Client Representative:* | n/a |

**Client Representative's Remarks:**

WOW all day(Winds: SW 10 to 15 knots. Seas: SW 2 to 4 ft.).

**FUGRO:** Kelly Power **Client:**

# Darfy PXoZX_%%R_VoX8

FuZXo
R/k: i _%8_Xfy

ver 7.22.2015-A (Alaska)

| | |
|---|---|
| Production Hrs/Day: | 12.0 hrs |
| Job Total in Meters: | 577,800.00 |
| Total # of Lines: | 232 Lines |
| # Cores/Core Time: | 20 cores / Est. 180 mins. |
| Total Meters Added: | 6,900.00 |
| Total Meters Deleted: | 0.00 |
| Survey Units: | Meters |
| Nautical Mile (Feet): | 6080 |

**Client:** AK LNG
**Job Description:** S_a0tooXMaVVmZ
**Area & Block(s):** LNG Sr8_%
**Prospect / Site:** Cood Inf_8
**Fugro Job #:** 1t s2222601t
**Job Day #:** t 0

| | | |
|---|---|---|
| **Report For:** | 14-Jun-1205 | i _pn_%pay |
| **Julian Date:** | 065 | |
| **Hours From:** | 23t 2 8o 0Yt 2 | |

**Report From:**

| Time Summar. (Houx%): | Toda. : | Job Totals: (w) | |
|---|---|---|---|
| Mobilive / Demobilive: | 0.00 | 87.42 | 23.40% |
| On-Line: | 6.68 | 66.84 | 17.89% |
| Transit: | 1.92 | 27.56 | 7.38% |
| Other i orking: | 2.85 | 104.36 | 27.94% |
| Ee uipment Doi ntime: | 0.55 | 25.25 | 6.76% |
| i eather Stand-B. : | 0.00 | 62.13 | 16.63% |
| Other Stand-B. : | 0.00 | 0.00 | |
| Stand-B. / No Crei : | 0.00 | 0.00 | |
| HealthcSafet. & Enkironmental: | 0.00 | 0.00 | |
| Job Summar. : | 01s22 | t 6t s56 | 022s22W |

Areas i orked:

| | |
|---|---|
| Job To8af - Krfog_8 X% | 584.70 |
| On-Lm P X n8Cog Vf 8 : | 63.30% |
| Krfog_8 X%App_p: | 6.90 |
| E%8rg a8 p CoXmZ Trg : | t s22 Day% |
| E%8rg a8 p Trg 8o Cog Vf 8on: | 3s1t Day% |
| E%8rg a8 p Trg m' fup %8admZ ' oX %7 | |

| HSE Reporting: | | HSE Officer: | K_ffy Pom_X |
|---|---|---|---|
| Toolbox: | X | JHA-Toolbox | |
| Shift Change: | N/A | | |
| Safety: | Yes | Review MAR-TRA-009 &013 | |
| Pre/Post Job: | No | | |

| Production Summar. : | Toda. : | To Date: | Job Total: | To Complete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 37.90 | 370.10 | 584.70 | 214.60 |
| Lines Completed: | 11 | 115 | 232 | 117 |
| Cores Taken: | 0 | 8 | 20 | 12 |
| In-Fill Kilometers: | 0.00 | 0.00 | | |
| Added on Kilometers: | 0.00 | 6.90 | 1.18% | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 0.00 | | |

**Geoph. sical Ee uipment:**

| | |
|---|---|
| Equipment #1: | Navigation System - POS MV # |
| Equipment #2: | Diff. GPS System - Trimble AG130 # |
| Equipment #3: | MBES - R2Sonic # |
| Equipment #4: | SSS - Edgetech 4200 # |
| Equipment #5: | Mag. - SeaSpy # |
| Equipment #6: | USBL - IXSEA GAPS # |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

| i eather Summar. : | S_a S8a8_ (g _8_X%) | i mp SV__p | Dr%s |
|---|---|---|---|
| i i - 2322: | n/a | n/a | n/a |
| i i - 0122: | 0.3m | 5-10kts | SW |
| i i - 0Y22: | 0.3m | 5kts | SW |
| i i - 1422: | n/a | n/a | n/a |

## Personnel Onboard:

| | |
|---|---|
| *Captain:* | John Valikonis |
| *Other Vessel Crew:* | n/a |
| *Party Chief:* | Kelly Power |
| *Hydro. Surveyor:* | David Wise |
| *Geophysical Tech.:* | Richie Carmichael |
| *Other Survey Crew:* | n/a |
| *Client Representative:* | Ron Eckhardt |

## Personnel Onshore:

| | |
|---|---|
| *Offshore Site Manager:* | Charlie Hall |
| *Ass't Off. Site Manager:* | Marta Krynytzky |
| *Data Manager:* | Chuck Chamberlain |
| *Data Processor:* | Cody Gibson |
| *Data Processor:* | Lance Woods |
| *Data Processor:* | n/a |
| *Additional Proc.:* | n/a |
| *Client Representative:* | n/a |

**Cfr_n8R_VX % n8a8t_.%R_g aXd%**

FUGRO: Kelly Power Cfr_n8

# Daily Progress Report

ver 7.22.2015-A (Alaska)

Fugro
R/V: Westerly

| | |
|---|---|
| Client: | AK LNG |
| Job Description: | Seafloor Mapping |
| Area & Block(s): | LNG Sites |
| Prospect / Site: | Cook Inlet |
| Fugro Job #: | 23.00007123 |
| Job Day #: | 32 |
| Report For: | 25-Jun-2015 Thursday |
| Julian Date: | 176 |
| Hours From: | 0630 to 1830 |
| Report From: | |

| | | |
|---|---|---|
| Production Hrs/Day: | 12.0 hrs | |
| Job Total in Meters: | 577,800.00 | |
| Total # of Lines: | 232 Lines | |
| # Cores/Core Time: | 20 cores | Est. 180 mins. |
| Total Meters Added: | 6,900.00 | |
| Total Meters Deleted: | 0.00 | |
| Survey Units: | Meters | |
| Nautical Mile (Feet): | 6080 | |

| Time Summary (Hours): | Today: | Job Totals: | (%) |
|---|---|---|---|
| Mobilize / Demobilize: | 0.00 | 87.42 | 22.67% |
| On-Line: | 4.77 | 71.61 | 18.57% |
| Transit: | 2.05 | 29.61 | 7.68% |
| Other Working: | 4.48 | 108.85 | 28.23% |
| Equipment Downtime: | 0.70 | 25.95 | 6.73% |
| Weather Stand-By: | 0.00 | 62.13 | 16.11% |
| Other Stand-By: | 0.00 | 0.00 | |
| Stand-By / No Crew: | 0.00 | 0.00 | |
| Health, Safety & Environmental: | 0.00 | 0.00 | |
| Job Summary: | 12.00 | 385.57 | 100.00% |
| Areas Worked: | | | |

| | |
|---|---|
| Job Total - Kilometers: | 584.70 |
| On-Line Percent Complete: | 65.07% |
| Kilometers Added: | 6.90 |
| Percent In-Fill: | 0.80% |
| Estimated Coring Time: | 3.00 Days |
| Estimated Time to Completion: | 6.20 Days |

Estimated Time includes taking cores!

| HSE Reporting: | | HSE Officer: | Kelly Power |
|---|---|---|---|
| Toolbox: | X | JHA-Toolbox | |
| Shift Change: | N/A | | |
| Safety: | X | Review MAR-TRA-009 TransducerDeployment | |
| Pre/Post Job: | No | | |

| Production Summary: | Today: | To Date: | Job Total: | To Complete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 10.35 | 380.45 | 584.70 | 204.25 |
| Lines Completed: | 9 | 124 | 232 | 108 |
| Cores Taken: | 0 | 8 | 20 | 12 |
| In-Fill Kilometers: | 4.70 | 4.70 | 0.80% | |
| Added on Kilometers: | 0.00 | 6.90 | 1.18% | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 0.00 | | |

**Geophysical Equipment:**

| | |
|---|---|
| Equipment #1: | Navigation System - POS MV # |
| Equipment #2: | Diff. GPS System - Trimble AG130 # |
| Equipment #3: | MBES - R2Sonic # |
| Equipment #4: | SSS - Edgetech 4200 # |
| Equipment #5: | Mag. - SeaSpy # |
| Equipment #6: | USBL - IXSEA GAPS # |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

| Weather Summary: | Sea State (meters) | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | n/a | n/a | n/a |
| Wx - 1200: | 0.3m | 5kts | var |
| Wx - 1800: | 0.3m | 10kts | S |
| Wx - 2400: | n/a | n/a | n/a |

***Personnel Onboard:***

| | |
|---|---|
| *Captain:* | John Valikonis |
| *Other Vessel Crew:* | n/a |
| *Party Chief:* | Kelly Power |
| *Hydro. Surveyor:* | David Wise |
| *Geophysical Tech.:* | Richie Carmichael |
| *Other Survey Crew:* | n/a |
| *Client Representative:* | Ron Eckhardt |

***Personnel Onshore:***

| | |
|---|---|
| *Offshore Site Manager:* | Charlie Hall |
| *Ass't Off. Site Manager:* | Marta Krynytzky |
| *Data Manager:* | Chuck Chamberlain |
| *Data Processor:* | Cody Gibson |
| *Data Processor:* | Lance Woods |
| *Data Processor:* | n/a |
| *Additional Proc.:* | n/a |
| *Client Representative:* | n/a |

**Client Representative's Remarks:**

FUGRO: Kelly Power Client:

# Daily Progress Report

ver 7.22.2015-A (Alaska)

Fugro
R/V: Westerly

| | |
|---|---|
| Client: | AK LNG |
| Job Description: | Seafloor Mapping |
| Area & Block(s): | LNG Sites |
| Prospect / Site: | Cook Inlet |
| Fugro Job #: | 23.00007123 |
| Job Day #: | 33 |
| Report For: | 26-Jun-2015 Friday |
| Julian Date: | 177 |
| Hours From: | 0630 to 1830 |
| Report From: | |

| | | |
|---|---|---|
| Production Hrs/Day: | 12.0 hrs | |
| Job Total in Meters: | 577,800.00 | |
| Total # of Lines: | 232 Lines | |
| # Cores/Core Time: | 20 cores | Est. 180 mins. |
| Total Meters Added: | 6,900.00 | |
| Total Meters Deleted: | 0.00 | |
| Survey Units: | Meters | |
| Nautical Mile (Feet): | 6080 | |

| Time Summary (Hours): | Today: | Job Totals: | (%) |
|---|---|---|---|
| Mobilize / Demobilize: | 0.00 | 87.42 | 21.99% |
| On-Line: | 0.97 | 72.58 | 18.26% |
| Transit: | 2.92 | 32.53 | 8.18% |
| Other Working: | 2.28 | 111.13 | 27.95% |
| Equipment Downtime: | 0.00 | 25.95 | 6.53% |
| Weather Stand-By: | 5.83 | 67.96 | 17.09% |
| Other Stand-By: | 0.00 | 0.00 | |
| Stand-By / No Crew: | 0.00 | 0.00 | |
| Health, Safety & Environmental: | 0.00 | 0.00 | |
| Job Summary: | 12.00 | 397.57 | 100.00% |

**Job Total - Kilometers:** *584.70*
**On-Line Percent Complete:** *65.07%*

**Kilometers Added:** *6.90*

**Percent In-Fill:** *0.80%*

**Estimated Coring Time:** 3.00 Days
**Estimated Time to Completion:** 6.25 Days

**Estimated Time includes taking cores!**

**Areas Worked:**

Sailed to site TM34. On standby upon arrival to allow tanker and its's assisting tug move away from the dock. Deployed survey equipment and attem to survey line TM34_004 but seas were 3' with a fast wave period. This resulted in cavitation around the multibeam transducer causing poor data quality.The line was aborted and vessel returned to dock. Vessel refueled upon arrival at dock.

| HSE Reporting: | | HSE Officer: | Kelly Power |
|---|---|---|---|
| Toolbox: | X | JHA-Toolbox | |
| Shift Change: | | | |
| Safety: | X | Review MAR-TRA-013 Vessel Fueling | |
| Pre/Post Job: | | | |

| Production Summary: | Today: | To Date: | Job Total: | To Complete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 0.00 | 380.45 | 584.70 | 204.25 |
| Lines Completed: | 0 | 124 | 232 | 108 |
| Cores Taken: | 0 | 8 | 20 | 12 |
| In-Fill Kilometers: | 0.00 | 4.70 | 0.80% | |
| Added on Kilometers: | 0.00 | 6.90 | 1.18% | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 0.00 | | |

**Geophysical Equipment:**

| | |
|---|---|
| Equipment #1: | Navigation System - POS MV # |
| Equipment #2: | Diff. GPS System - Trimble AG130 # |
| Equipment #3: | MBES - R2Sonic # |
| Equipment #4: | SSS - Edgetech 4200 # |
| Equipment #5: | Mag. - SeaSpy # |
| Equipment #6: | USBL - IXSEA GAPS # |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

| Weather Summary: | Sea State (meters) | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | n/a | n/a | n/a |
| Wx - 1200: | 1.0m | 15kts | SSW |
| Wx - 1800: | n/a | 15kts | SSW |
| Wx - 2400: | n/a | n/a | n/a |

***Personnel Onboard:***

| | |
|---|---|
| *Captain:* | John Valikonis |
| *Other Vessel Crew:* | n/a |
| *Party Chief:* | Kelly Power |
| *Hydro. Surveyor:* | David Wise |
| *Geophysical Tech.:* | Richie Carmichael |
| *Other Survey Crew:* | n/a |
| *Client Representative:* | Ron Eckhardt |

***Personnel Onshore:***

| | |
|---|---|
| *Offshore Site Manager:* | Charlie Hall |
| *Ass't Off. Site Manager:* | Marta Krynytzky |
| *Data Manager:* | Chuck Chamberlain |
| *Data Processor:* | Cody Gibson |
| *Data Processor:* | Lance Woods |
| *Data Processor:* | n/a |
| *Additional Proc.:* | n/a |
| *Client Representative:* | n/a |

**Client Representative's Remarks:**

FUGRO: Kelly Power Client:

# Daily Progress Report

ver 7.22.2015-A (Alaska)

Fugro
R/V: Westerly

| | |
|---|---|
| Client: | AK LNG |
| Job Description: | Seafloor Mapping |
| Area & Block(s): | LNG Sites |
| Prospect / Site: | Cook Inlet |
| Fugro Job #: | 23.00007123 |
| Job Day #: | 34 |
| Report For: | 27-Jun-2015 Saturday |
| Julian Date: | 178 |
| Hours From: | 0630 to 1830 |
| Report From: | |

| | | |
|---|---|---|
| Production Hrs/Day: | 12.0 hrs | |
| Job Total in Meters: | 577,800.00 | |
| Total # of Lines: | 232 Lines | |
| # Cores/Core Time: | 20 cores | Est. 180 mins. |
| Total Meters Added: | 8,750.00 | |
| Total Meters Deleted: | 1,600.00 | |
| Survey Units: | Meters | |
| Nautical Mile (Feet): | 6080 | |

| Time Summary (Hours): | Today: | Job Totals: | (%) |
|---|---|---|---|
| Mobilize / Demobilize: | 0.00 | 87.42 | 21.34% |
| On-Line: | 7.88 | 80.46 | 19.64% |
| Transit: | 2.75 | 35.28 | 8.61% |
| Other Working: | 1.37 | 112.50 | 27.47% |
| Equipment Downtime: | 0.00 | 25.95 | 6.34% |
| Weather Stand-By: | 0.00 | 67.96 | 16.59% |
| Other Stand-By: | 0.00 | 0.00 | |
| Stand-By / No Crew: | 0.00 | 0.00 | |
| Health, Safety & Environmental: | 0.00 | 0.00 | |
| Job Summary: | 12.00 | 409.57 | 100.00% |

Areas Worked:

| | |
|---|---|
| Job Total - Kilometers: | 584.95 |
| On-Line Percent Complete: | 72.31% |
| Kilometers Added: | 8.75 |
| Kilometers Deleted: | 1.60 |
| Percent In-Fill: | 0.80% |
| Estimated Coring Time: | 3.00 Days |
| Estimated Time to Completion: | 5.57 Days |

Estimated Time includes taking cores!

Today was a productive day with 42km of line data acquired. Total reflects added mileage for run in/outs and for deleted line km for SetNet fishing gear that were on lines TM34_014 and TM34_015 . The fishing gear preventing us from finishing the the line.

| HSE Reporting: | | HSE Officer: | Kelly Power |
|---|---|---|---|
| Toolbox: | X | JHA-Toolbox | |
| Shift Change: | N/A | | |
| Safety: | X | Review MAR-TAR-012 Towfish Deployment/Recovery | |
| Pre/Post Job: | No | | |

| Production Summary: | Today: | To Date: | Job Total: | To Complete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 42.55 | 423.00 | 584.95 | 161.95 |
| Lines Completed: | 12 | 136 | 232 | 96 |
| Cores Taken: | 0 | 8 | 20 | 12 |
| In-Fill Kilometers: | 0.00 | 4.70 | 0.80% | |
| Added on Kilometers: | 1.85 | 8.75 | 1.50% | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 1.60 | 1.60 | 0.27% | |

| Geophysical Equipment: | |
|---|---|
| Equipment #1: | Navigation System - POS MV # |
| Equipment #2: | Diff. GPS System - Trimble AG130 # |
| Equipment #3: | MBES - R2Sonic # |
| Equipment #4: | SSS - Edgetech 4200 # |
| Equipment #5: | Mag. - SeaSpy # |
| Equipment #6: | USBL - IXSEA GAPS # |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

| Weather Summary: | Sea State (meters) | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | n/a | n/a | n/a |
| Wx - 1200: | 0.3m | 10kts | NE |
| Wx - 1800: | 0.5m | 10kts | E |
| Wx - 2400: | n/a | n/a | n/a |

**Personnel Onboard:**

| | |
|---|---|
| Captain: | John Valikonis |
| Other Vessel Crew: | n/a |
| Party Chief: | Kelly Power |
| Hydro. Surveyor: | David Wise |
| Geophysical Tech.: | Richie Carmichael |
| Other Survey Crew: | n/a |
| Client Representative: | Ron Eckhardt |

**Personnel Onshore:**

| | |
|---|---|
| Offshore Site Manager: | Charlie Hall |
| Ass't Off. Site Manager: | Marta Krynytzky |
| Data Manager: | Chuck Chamberlain |
| Data Processor: | Cody Gibson |
| Data Processor: | Lance Woods |
| Data Processor: | n/a |
| Additional Proc.: | n/a |
| Client Representative: | n/a |

**Client Representative's Remarks:**

FUGRO: Kelly Power Client:

Alaska LNG

# Daily Progress Report

Fugro
R/V: Westerly

ver 7.22.2015-A (Alaska)

| | |
|---|---|
| Client: | AK LNG |
| Job Description: | Seafloor Mapping |
| Area & Block(s): | LNG Sites |
| Prospect / Site: | Cook Inlet |
| Fugro Job #: | 23.00007123 |
| Job Day #: | 35 |
| Report For: | 28-Jun-2015 Sunday |
| Julian Date: | 179 |
| Hours From: | 0630 to 1830 |
| Report From: | |

| | | |
|---|---|---|
| Production Hrs/Day: | 12.0 hrs | |
| Job Total in Meters: | 577,800.00 | |
| Total # of Lines: | 232 Lines | |
| # Cores/Core Time: | 20 cores | Est. 180 mins. |
| Total Meters Added: | 11,150.00 | |
| Total Meters Deleted: | 1,600.00 | |
| Survey Units: | Meters | |
| Nautical Mile (Feet): | 6080 | |

| Time Summary (Hours): | Today: | Job Totals: | (%) |
|---|---|---|---|
| Mobilize / Demobilize: | 0.00 | 87.42 | 20.74% |
| On-Line: | 6.08 | 86.54 | 20.53% |
| Transit: | 2.58 | 37.86 | 8.98% |
| Other Working: | 3.33 | 115.83 | 27.48% |
| Equipment Downtime: | 0.00 | 25.95 | 6.16% |
| Weather Stand-By: | 0.00 | 67.96 | 16.12% |
| Other Stand-By: | 0.00 | 0.00 | |
| Stand-By / No Crew: | 0.00 | 0.00 | |
| Health, Safety & Environmental: | 0.00 | 0.00 | |
| Job Summary: | 12.00 | 421.57 | 100.00% |

| | |
|---|---|
| Job Total - Kilometers: | 587.35 |
| On-Line Percent Complete: | 77.11% |
| Kilometers Added: | 11.15 |
| Kilometers Deleted: | 1.60 |
| Percent In-Fill: | 0.80% |
| Estimated Coring Time: | 3.00 Days |
| Estimated Time to Completion: | 5.14 Days |

Estimated Time includes taking cores!

Areas Worked:

Today saw the vessel acquire 30km of data on 10 lines. Weather conditions were good in the morning but deteriorated as the day went on. Surveyin through as data quality was good. At 3pm we recovered equipment and transited back to dock to fuel vessel.

| HSE Reporting: | | HSE Officer: | Kelly Power |
|---|---|---|---|
| Toolbox: | X | JHA-Toolbox Talk | |
| Shift Change: | N/A | | |
| Safety: | X | Review MAR-TRA-006 and 013 | |
| Pre/Post Job: | No | | |

| Production Summary: | Today: | To Date: | Job Total: | To Complete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 29.90 | 452.90 | 587.35 | 134.45 |
| Lines Completed: | 10 | 146 | 232 | 86 |
| Cores Taken: | 0 | 8 | 20 | 12 |
| In-Fill Kilometers: | 0.00 | 4.70 | 0.80% | |
| Added on Kilometers: | 2.40 | 11.15 | 1.90% | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 1.60 | 0.27% | |

Geophysical Equipment:

| | |
|---|---|
| Equipment #1: | Navigation System - POS MV # |
| Equipment #2: | Diff. GPS System - Trimble AG130 # |
| Equipment #3: | MBES - R2Sonic # |
| Equipment #4: | SSS - Edgetech 4200 # |
| Equipment #5: | Mag. - SeaSpy # |
| Equipment #6: | USBL - IXSEA GAPS # |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

| Weather Summary: | Sea State (meters) | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | n/a | n/a | n/a |
| Wx - 1200: | 0.5m | 10-15kts | E |
| Wx - 1800: | n/a | 10-15kts | ENE |
| Wx - 2400: | n/a | n/a | na/ |

**Personnel Onboard:**

| | |
|---|---|
| Captain: | John Valikonis |
| Other Vessel Crew: | n/a |
| Party Chief: | Kelly Power |
| Hydro. Surveyor: | David Wise |
| Geophysical Tech.: | Richie Carmichael |
| Other Survey Crew: | n/a |
| Client Representative: | Ron Eckhardt |

**Personnel Onshore:**

| | |
|---|---|
| Offshore Site Manager: | Charlie Hall |
| Ass't Off. Site Manager: | Marta Krynytzky |
| Data Manager: | Chuck Chamberlain |
| Data Processor: | Cody Gibson |
| Data Processor: | Lance Woods |
| Data Processor: | n/a |
| Additional Proc.: | n/a |
| Client Representative: | n/a |

**Client Representative's Remarks:**

FUGRO: Kelly Power Client:

# Daily Progress Report

ver 7.22.2015-A (Alaska)

Fugro
R/V: Westerly

| | |
|---|---|
| Client: | AK LNG |
| Job Description: | Seafloor Mapping |
| Area & Block(s): | LNG Sites |
| Prospect / Site: | Cook Inlet |
| Fugro Job #: | 23.00007123 |
| Job Day #: | 36 |
| Report For: | 29-Jun-2015 Monday |
| Julian Date: | 180 |
| Hours From: | 0630 to 1830 |
| Report From: | |

| | | |
|---|---|---|
| Production Hrs/Day: | 12.0 hrs | |
| Job Total in Meters: | 577,800.00 | |
| Total # of Lines: | 232 Lines | |
| # Cores/Core Time: | 20 cores | Est. 180 mins. |
| Total Meters Added: | 13,150.00 | |
| Total Meters Deleted: | 1,600.00 | |
| Survey Units: | Meters | |
| Nautical Mile (Feet): | 6080 | |

| Time Summary (Hours): | Today: | Job Totals: | ( % ) |
|---|---|---|---|
| Mobilize / Demobilize: | 0.00 | 87.42 | 20.16% |
| On-Line: | 7.20 | 93.74 | 21.62% |
| Transit: | 3.25 | 41.11 | 9.48% |
| Other Working: | 1.55 | 117.38 | 27.07% |
| Equipment Downtime: | 0.00 | 25.95 | 5.99% |
| Weather Stand-By: | 0.00 | 67.96 | 15.68% |
| Other Stand-By: | 0.00 | 0.00 | |
| Stand-By / No Crew: | 0.00 | 0.00 | |
| Health, Safety & Environmental: | 0.00 | 0.00 | |
| Job Summary: | 12.00 | 433.57 | 100.00% |

| | |
|---|---|
| Job Total - Kilometers: | 589.35 |
| On-Line Percent Complete: | 82.30% |
| Kilometers Added: | 13.15 |
| Kilometers Deleted: | 1.60 |
| Percent In-Fill: | 0.80% |
| Estimated Coring Time: | 3.00 Days |
| Estimated Time to Completion: | 4.68 Days |

Estimated Time includes taking cores!

Areas Worked:

Acquired 32km of line today. Data quality was good. Encountered a large area of floatsom (debris) within the survey site this morning. Had to move to other areas of the grid to avoid this debris. Debris consisted mostly of trees, logs and other small bits. Some of the trees and logs were quite large. By afternoon the debris field seemed to have drifted away from site. When we recovered the MBES transducer there was large tree caught on the u frame. Vessel may have had an obsrtuction go in the jet port but captain was able to back flush the debris out. Also of note there was seismic activi near our survey site and the vessels were contacted to obtain their course to maintain a safe distance apart.

| HSE Reporting: | | HSE Officer: | Kelly Power |
|---|---|---|---|
| Toolbox: | X | JHA-Toolbox | |
| Shift Change: | N/A | | |
| Safety: | X | Review TRA-009, Katie Conrad received Vessel Orientation | |
| Pre/Post Job: | No | | |

| Production Summary: | Today: | To Date: | Job Total: | To Complete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 32.15 | 485.05 | 589.35 | 104.30 |
| Lines Completed: | 9 | 155 | 232 | 77 |
| Cores Taken: | 0 | 8 | 20 | 12 |
| In-Fill Kilometers: | 0.00 | 4.70 | 0.80% | |
| Added on Kilometers: | 2.00 | 13.15 | 2.23% | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 1.60 | 0.27% | |

Geophysical Equipment:

| | |
|---|---|
| Equipment #1: | Navigation System - POS MV # |
| Equipment #2: | Diff. GPS System - Trimble AG130 # |
| Equipment #3: | MBES - R2Sonic # |
| Equipment #4: | SSS - Edgetech 4200 # |
| Equipment #5: | Mag. - SeaSpy # |
| Equipment #6: | USBL - IXSEA GAPS # |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

| Weather Summary: | Sea State (meters) | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | n/a | n/a | n/a |
| Wx - 1200: | 0.5m | 10kts | NE |
| Wx - 1800: | 0.3m | 5kts | NE |
| Wx - 2400: | n/a | n/a | n/a |

**Personnel Onboard:**

| | |
|---|---|
| Captain: | John Valikonis |
| Other Vessel Crew: | n/a |
| Party Chief: | Kelly Power |
| Hydro. Surveyor: | David Wise |
| Geophysical Tech.: | Richie Carmichael |
| Other Survey Crew: | Katie Conrad |
| Client Representative: | Ron Eckhardt |

**Personnel Onshore:**

| | |
|---|---|
| Offshore Site Manager: | Charlie Hall |
| Ass't Off. Site Manager: | Marta Krynytzky |
| Data Manager: | Chuck Chamberlain |
| Data Processor: | Cody Gibson |
| Data Processor: | Lance Woods |
| Data Processor: | n/a |
| Additional Proc.: | n/a |
| Client Representative: | n/a |

**Client Representative's Remarks:**

FUGRO: Kelly Power Client:

# Daily Progress Report

ver 7.22.2015-A (Alaska)

Fugro
R/V: Westerly

| | |
|---|---|
| Client: | AK LNG |
| Job Description: | Seafloor Mapping |
| Area & Block(s): | LNG Sites |
| Prospect / Site: | Cook Inlet |
| Fugro Job #: | 23.00007123 |
| Job Day #: | 37 |
| Report For: | 30-Jun-2015 Tuesday |
| Julian Date: | 181 |
| Hours From: | 0630 to 1830 |
| Report From: | |

| | | |
|---|---|---|
| Production Hrs/Day: | 12.0 hrs | |
| Job Total in Meters: | 588,200.00 | |
| Total # of Lines: | 232 Lines | |
| # Cores/Core Time: | 20 cores | Est. 180 mins. |
| Total Meters Added: | 15,000.00 | |
| Total Meters Deleted: | 1,600.00 | |
| Survey Units: | Meters | |
| Nautical Mile (Feet): | 6080 | |

| Time Summary (Hours): | Today: | Job Totals: | ( % ) |
|---|---|---|---|
| Mobilize / Demobilize: | 0.00 | 87.42 | 19.62% |
| On-Line: | 6.52 | 100.26 | 22.50% |
| Transit: | 1.33 | 42.45 | 9.53% |
| Other Working: | 4.15 | 121.53 | 27.28% |
| Equipment Downtime: | 0.00 | 25.95 | 5.82% |
| Weather Stand-By: | 0.00 | 67.96 | 15.25% |
| Other Stand-By: | 0.00 | 0.00 | |
| Stand-By / No Crew: | 0.00 | 0.00 | |
| Health, Safety & Environmental: | 0.00 | 0.00 | |
| Job Summary: | 12.00 | 445.57 | 100.00% |

| | |
|---|---|
| Job Total - Kilometers: | 601.60 |
| On-Line Percent Complete: | 84.06% |
| Kilometers Added: | 15.00 |
| Kilometers Deleted: | 1.60 |
| Percent In-Fill: | 0.78% |
| Estimated Coring Time: | 3.00 Days |
| Estimated Time to Completion: | 4.58 Days |

Estimated Time includes taking cores!

Areas Worked:

Eight lines were completed today for a total line km of 20.7km. 10.6 km was added to the project line km total to account for the merging of sites TM03 and TM04 into a single site TM34.

| HSE Reporting: | | HSE Officer: | Kelly Power |
|---|---|---|---|
| Toolbox: | X | JHA-Toolbox | |
| Shift Change: | N/A | | |
| Safety: | X | Review MAR-TRA-012 and 013 | |
| Pre/Post Job: | No | | |

| Production Summary: | Today: | To Date: | Job Total: | To Complete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 20.65 | 505.70 | 601.60 | 95.90 |
| Lines Completed: | 8 | 163 | 232 | 69 |
| Cores Taken: | 0 | 8 | 20 | 12 |
| In-Fill Kilometers: | 0.00 | 4.70 | 0.78% | |
| Added on Kilometers: | 1.85 | 15.00 | 2.49% | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 1.60 | 0.27% | |

| Geophysical Equipment: | |
|---|---|
| Equipment #1: | Navigation System - POS MV # |
| Equipment #2: | Diff. GPS System - Trimble AG130 # |
| Equipment #3: | MBES - R2Sonic # |
| Equipment #4: | SSS - Edgetech 4200 # |
| Equipment #5: | Mag. - SeaSpy # |
| Equipment #6: | USBL - IXSEA GAPS # |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

| Weather Summary: | Sea State (meters) | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | n/a | n/a | n/a |
| Wx - 1200: | 0.3m | 10kts | SW |
| Wx - 1800: | n/a | 10kts | SW |
| Wx - 2400: | n/a | n/a | n/a |

**Personnel Onboard:**

| | |
|---|---|
| Captain: | John Valikonis |
| Other Vessel Crew: | n/a |
| Party Chief: | Kelly Power |
| Hydro. Surveyor: | Katie Conrad |
| Geophysical Tech.: | Richie Carmichael |
| Other Survey Crew: | n/a |
| Client Representative: | Ron Eckhardt |

**Personnel Onshore:**

| | |
|---|---|
| Offshore Site Manager: | Charlie Hall |
| Ass't Off. Site Manager: | Marta Krynytzky |
| Data Manager: | Chuck Chamberlain |
| Data Processor: | Cody Gibson |
| Data Processor: | Lance Woods |
| Data Processor: | n/a |
| Additional Proc.: | n/a |
| Client Representative: | n/a |

**Client Representative's Remarks:**

FUGRO: Kelly Power Client:

# Daily Progress Report

ver 7.22.2015-A (Alaska)

Fugro
R/V: Westerly

| | |
|---|---|
| Client: | AK LNG |
| Job Description: | Seafloor Mapping |
| Area & Block(s): | LNG Sites |
| Prospect / Site: | Cook Inlet |
| Fugro Job #: | 23.00007123 |
| Job Day #: | 38 |
| Report For: | 01-Jul-2015 Wednesday |
| Julian Date: | 182 |
| Hours From: | 0630 to 1830 |
| Report From: | |

| | |
|---|---|
| Production Hrs/Day: | 12.0 hrs |
| Job Total in Meters: | 588,200.00 |
| Total # of Lines: | 232 Lines |
| # Cores/Core Time: | 20 cores Est. 180 mins. |
| Total Meters Added: | 15,000.00 |
| Total Meters Deleted: | 1,600.00 |
| Survey Units: | Meters |
| Nautical Mile (Feet): | 6080 |

| Time Summary (Hours): | Today: | Job Totals: | ( % ) |
|---|---|---|---|
| Mobilize / Demobilize: | 0.00 | 87.42 | 19.11% |
| On-Line: | 1.22 | 101.48 | 22.18% |
| Transit: | 1.33 | 43.78 | 9.57% |
| Other Working: | 1.27 | 122.80 | 26.84% |
| Equipment Downtime: | 8.18 | 34.13 | 7.46% |
| Weather Stand-By: | 0.00 | 67.96 | 14.85% |
| Other Stand-By: | 0.00 | 0.00 | |
| Stand-By / No Crew: | 0.00 | 0.00 | |
| Health, Safety & Environmental: | 0.00 | 0.00 | |
| Job Summary: | 12.00 | 457.57 | 100.00% |

| | |
|---|---|
| Job Total - Kilometers: | 601.60 |
| On-Line Percent Complete: | 84.47% |
| Kilometers Added: | 15.00 |
| Kilometers Deleted: | 1.60 |
| Percent In-Fill: | 0.78% |
| Estimated Coring Time: | 3.00 Days |
| Estimated Time to Completion: | 4.55 Days |

Estimated Time includes taking cores!

**Areas Worked:**

On first line of today the cable on the primary winch spooled off the drum and looped over axle. Time was taken to recover the towfish and set the the cable properly on the winch drum. During the re-deployment the winch cable got stuck in the block sheave and could not be freed. The towfish was then moved from primary and placed on secondary winch/cable. Just after the the start of the 2nd line comms was lost to the towfish. The problem turned out to be the termination end at the towfish. Survey gear was recovered and vessel transited to dock. While at dock the primary winch cable was freed from the sheave block and secondary winch cable reterminated. The primary winch block was moved further outboard to help prevent the cable from spooling up on one side of drum and ultimately prevent cable jumping off the drum. All survey gear is operational.

| HSE Reporting: | | HSE Officer: | Kelly Power |
|---|---|---|---|
| Toolbox: | X | JHA-Toolbox | |
| Shift Change: | | | |
| Safety: | X | Fire drill and review MAR-TRA-005 | |
| Pre/Post Job: | | | |

| Production Summary: | Today: | To Date: | Job Total: | To Complete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 2.50 | 508.20 | 601.60 | 93.40 |
| Lines Completed: | 1 | 164 | 232 | 68 |
| Cores Taken: | 0 | 8 | 20 | 12 |
| In-Fill Kilometers: | 0.00 | 4.70 | 0.78% | |
| Added on Kilometers: | 0.00 | 15.00 | 2.49% | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 1.60 | 0.27% | |

**Geophysical Equipment:**

| | |
|---|---|
| Equipment #1: | Navigation System - POS MV # |
| Equipment #2: | Diff. GPS System - Trimble AG130 # |
| Equipment #3: | MBES - R2Sonic # |
| Equipment #4: | SSS - Edgetech 4200 # |
| Equipment #5: | Mag. - SeaSpy # |
| Equipment #6: | USBL - IXSEA GAPS # |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

| Weather Summary: | Sea State (meters) | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | n/a | n/a | n/a |
| Wx - 1200: | 0.5m | 5-10kts | SW |
| Wx - 1800: | n/a | 10kts | SW |
| Wx - 2400: | n/a | n/a | n/a |

**Personnel Onboard:**

| | |
|---|---|
| Captain: | John Valikonis |
| Other Vessel Crew: | n/a |
| Party Chief: | Kelly Power |
| Hydro. Surveyor: | Katie Conrad |
| Geophysical Tech.: | Richie Carmichael |
| Other Survey Crew: | n/a |
| Client Representative: | Ron Eckhardt |

**Personnel Onshore:**

| | |
|---|---|
| Offshore Site Manager: | Charlie Hall |
| Ass't Off. Site Manager: | Marta Krynytzky |
| Data Manager: | Chuck Chamberlain |
| Data Processor: | Cody Gibson |
| Data Processor: | Lance Woods |
| Data Processor: | n/a |
| Additional Proc.: | n/a |
| Client Representative: | n/a |

**Client Representative's Remarks:**

FUGRO: Kelly Power Client:

# Daily Progress Report

ver 7.22.2015-A (Alaska)

| | |
|---|---|
| Client: | AK LNG |
| Job Description: | Seafloor Mapping |
| Area & Block(s): | LNG Sites |
| Prospect / Site: | Cook Inlet |
| Fugro Job #: | 23.00007123 |
| Job Day #: | 39 |
| Report For: | 02-Jul-2015 Thursday |
| Julian Date: | 183 |
| Hours From: | 0630 to 1830 |
| Report From: | |

Fugro
R/V: Westerly

| | | |
|---|---|---|
| Production Hrs/Day: | 12.0 hrs | |
| Job Total in Meters: | 588,200.00 | |
| Total # of Lines: | 214 Lines | |
| # Cores/Core Time: | 20 cores | Est. 180 mins. |
| Total Meters Added: | 16,950.00 | |
| Total Meters Deleted: | 4,100.00 | |
| Survey Units: | Meters | |
| Nautical Mile (Feet): | 6080 | |

| Time Summary (Hours): | Today: | Job Totals: | (%) |
|---|---|---|---|
| Mobilize / Demobilize: | 0.00 | 87.42 | 18.62% |
| On-Line: | 7.32 | 108.79 | 23.17% |
| Transit: | 1.25 | 45.03 | 9.59% |
| Other Working: | 3.43 | 126.23 | 26.88% |
| Equipment Downtime: | 0.00 | 34.13 | 7.27% |
| Weather Stand-By: | 0.00 | 67.96 | 14.47% |
| Other Stand-By: | 0.00 | 0.00 | |
| Stand-By / No Crew: | 0.00 | 0.00 | |
| Health, Safety & Environmental: | 0.00 | 0.00 | |
| Job Summary: | 12.00 | 469.57 | 100.00% |

| | |
|---|---|
| Job Total - Kilometers: | 601.05 |
| On-Line Percent Complete: | 89.21% |
| Kilometers Added: | 16.95 |
| Kilometers Deleted: | 4.10 |
| Percent In-Fill: | 0.78% |
| Estimated Coring Time: | 3.00 Days |
| Estimated Time to Completion: | 4.10 Days |

Estimated Time includes taking cores!

**Areas Worked:**

8 lines were completed today for a total of 28km. Currents were strong today. It took 2hrs to complete the last line of the day.

| HSE Reporting: | | HSE Officer: | Kelly Power |
|---|---|---|---|
| Toolbox: | X | JHA-Toolbox Talk | |
| Shift Change: | | | |
| Safety: | X | Review MAR-TRA-012 | |
| Pre/Post Job: | | | |

| Production Summary: | Today: | To Date: | Job Total: | To Complete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 28.00 | 536.20 | 601.05 | 64.85 |
| Lines Completed: | 8 | 172 | 214 | 42 |
| Cores Taken: | 0 | 8 | 20 | 12 |
| In-Fill Kilometers: | 0.00 | 4.70 | 0.78% | |
| Added on Kilometers: | 1.95 | 16.95 | 2.82% | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 2.50 | 4.10 | 0.68% | |

**Geophysical Equipment:**

| | |
|---|---|
| Equipment #1: | Navigation System - POS MV # |
| Equipment #2: | Diff. GPS System - Trimble AG130 # |
| Equipment #3: | MBES - R2Sonic # |
| Equipment #4: | SSS - Edgetech 4200 # |
| Equipment #5: | Mag. - SeaSpy # |
| Equipment #6: | USBL - IXSEA GAPS # |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

| Weather Summary: | Sea State (meters) | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | n/a | n/a | n/a |
| Wx - 1200: | 0.3m | 5kts | S |
| Wx - 1800: | 0.3m | 5kts | S |
| Wx - 2400: | n/a | n/a | na/ |

***Personnel Onboard:***

| | |
|---|---|
| Captain: | John Valikonis |
| Other Vessel Crew: | n/a |
| Party Chief: | Kelly Power |
| Hydro. Surveyor: | Katie Conrad |
| Geophysical Tech.: | Richie Carmichael |
| Other Survey Crew: | n/a |
| Client Representative: | Ron Eckhardt |

***Personnel Onshore:***

| | |
|---|---|
| Offshore Site Manager: | Charlie Hall |
| Ass't Off. Site Manager: | Marta Krynytzky |
| Data Manager: | Chuck Chamberlain |
| Data Processor: | Cody Gibson |
| Data Processor: | Lance Woods |
| Data Processor: | n/a |
| Additional Proc.: | n/a |
| Client Representative: | n/a |

**Client Representative's Remarks:**

FUGRO: Kelly Power Client:

Alaska LNG

FUGRO

# Dairy ProVre. . Report

*ver 7.22.2015-A (Alaska)*

FuVro R/g: We. terry

| | |
|---|---|
| CLIENT: | AK LNG |
| JOB DESCRIPTION: | Seawoor MappicV |
| AREA & BLOCK(S): | LNG Site. |
| PROSPECT / SITE: | Coo' Icret |
| FUGRO JOB #: | 03Y2222s103 |
| JOB DAY #: | 42 |
| REPORT FOR: | 23-Jun0215 Frimay |
| JULIAN DATE: | 174 |
| HOURS FROM: | 2632 to 1732 |

| | |
|---|---|
| Production Hrs/Day: | 12.0 hrs |
| Job Total in Meters: | 588,200.00 |
| Total # of Lines: | 214 Lines |
| # Cores/Core Time: | 20 cores / Est. 180 mins. |
| Total Meters Added: | 18,650.00 |
| Total Meters Deleted: | 4,100.00 |
| Survey Units: | Meters |
| Nautical Mile (Feet): | 6080 |

REPORT FROM:

| TIME SUMMAR8 (Hour. ): | TODA8: | JOB TOTALS: | ( % ) |
|---|---|---|---|
| MOBILIQE / DEMOBILIQE: | 0.00 | 87.42 | 18.15% |
| ON-LINE: | 6.13 | 114.93 | 23.86% |
| TRANSIT: | 2.50 | 47.53 | 9.87% |
| OTHER WORKING: | 3.37 | 129.60 | 26.91% |
| EI UIPMENT DOWNTIME: | 0.00 | 34.13 | 7.09% |
| WEATHER STAND-B8: | 0.00 | 67.96 | 14.11% |
| OTHER STAND-B8: | 0.00 | 0.00 | |
| STAND-B8 / NO CREW: | 0.00 | 0.00 | |
| HEALTHdSAFET8 & ENgIRONMENTAL: | 0.00 | 0.00 | |
| JOB SUMMAR8: | 10Y22 | 471Y5s | 122Y22% |

| | |
|---|---|
| Job Totan- Kiro eter. : | 602.75 |
| Oc-Lice Perkect Co prete: | 93.43% |
| Kiro eter. Ammem | 18.65 |
| Kiro eter. Deretem | 4.10 |
| Perkect Ic-Fim | 0.78% |
| E. ti atemCoricV Ti e: | 3Y22 Day. |
| E. ti atemTi e to Co pretioc: | 3Y6s Day. |

E. ti atemTi e ickrume. ta' icV kore. f

AREAS WORKED:

Completed 7 lines for a total of 27km today. It was a good day but currents were very strong and vessel speed while on line was greatly reduced w hile going against the current.

| HSE REPORTING: | | HSE OFFICER: | Kerry Pov er |
|---|---|---|---|
| Toolbox: | X | JHA-Toolbox | |
| Shift Change: | | | |
| Safety: | X | Review MAR-TRA-010 & 013 | |
| Pre/Post Job: | | | |

| PRODUCTION SUMMAR8: | TODA8: | TO DATE: | JOB TOTAL: | TO COMPLETE: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 26.95 | 563.15 | 602.75 | 39.60 |
| Lines Completed: | 7 | 179 | 214 | 35 |
| Cores Taken: | 0 | 8 | 20 | 12 |
| In-Fill Kilometers: | 0.00 | 4.70 | 0.78% | |
| Added on Kilometers: | 1.70 | 18.65 | 3.09% | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 4.10 | 0.68% | |

GEOPH8SICAL EI UIPMENT:

| | |
|---|---|
| Equipment #1: | Navigation System - POS MV # |
| Equipment #2: | Diff. GPS System - Trimble AG130 # |
| Equipment #3: | MBES - R2Sonic # |
| Equipment #4: | SSS - Edgetech 4200 # |
| Equipment #5: | Mag. - SeaSpy # |
| Equipment #6: | USBL - IXSEA GAPS # |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

| WEATHER SUMMAR8: | Sea State (_ eter. ) | WicmSpeem | DirY |
|---|---|---|---|
| Wx - 2622: | n/a | n/a | n/a |
| Wx - 1022: | 0.1m | Light | Var. |
| Wx - 1722: | n/a | Light | Var. |
| Wx - 0422: | n/a | n/a | n/a |

***Personnel Onboard:***

| | |
|---|---|
| *Captain:* | John Valikonis |
| *Other Vessel Crew:* | n/a |
| *Party Chief:* | Kelly Power |
| *Hydro. Surveyor:* | Katie Conrad |
| *Geophysical Tech.:* | Richie Carmichael |
| *Other Survey Crew:* | n/a |
| *Client Representative:* | Ron Eckhardt |

***Personnel Onshore:***

| | |
|---|---|
| *Offshore Site Manager:* | Charlie Hall |
| *Ass't Off. Site Manager:* | Marta Krynytzky |
| *Data Manager:* | Chuck Chamberlain |
| *Data Processor:* | Cody Gibson |
| *Data Processor:* | Lance Woods |
| *Data Processor:* | n/a |
| *Additional Proc.:* | n/a |
| *Client Representative:* | n/a |

Criect Repre. ectati! eZ Re ar' . :

FUGRO: , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , Criect: , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , , ,

# Daily Progress Report

ver 7.22.2015-A (Alaska)

| | |
|---|---|
| Client: | AK LNG |
| Job Description: | Seafloor Mapping |
| Area & Block(s): | LNG Sites |
| Prospect / Site: | Cook Inlet |
| Fugro Job #: | 23.00007123 |
| Job Day #: | 41 |
| Report For: | 04-Jul-2015 Saturday |
| Julian Date: | 185 |
| Hours From: | 0630 to 1830 |
| Report From: | |

Fugro
R/V: Westerly

| | | |
|---|---|---|
| Production Hrs/Day: | 12.0 hrs | |
| Job Total in Meters: | 588,200.00 | |
| Total # of Lines: | 214 Lines | |
| # Cores/Core Time: | 20 cores | Est. 180 mins. |
| Total Meters Added: | 18,650.00 | |
| Total Meters Deleted: | 4,100.00 | |
| Survey Units: | Meters | |
| Nautical Mile (Feet): | 6080 | |

| Time Summary (Hours): | Today: | Job Totals: | ( % ) |
|---|---|---|---|
| Mobilize / Demobilize: | 0.00 | 87.42 | 17.71% |
| On-Line: | 0.00 | 114.93 | 23.28% |
| Transit: | 0.00 | 47.53 | 9.63% |
| Other Working: | 12.00 | 141.60 | 28.69% |
| Equipment Downtime: | 0.00 | 34.13 | 6.92% |
| Weather Stand-By: | 0.00 | 67.96 | 13.77% |
| Other Stand-By: | 0.00 | 0.00 | |
| Stand-By / No Crew: | 0.00 | 0.00 | |
| Health, Safety & Environmental: | 0.00 | 0.00 | |
| Job Summary: | 12.00 | 493.57 | 100.00% |
| Areas Worked: | | | |

| | |
|---|---|
| Job Total - Kilometers: | 602.75 |
| On-Line Percent Complete: | 93.43% |
| Kilometers Added: | 18.65 |
| Kilometers Deleted: | 4.10 |
| Percent In-Fill: | 0.78% |
| Estimated Coring Time: | 3.00 Days |
| Estimated Time to Completion: | 3.67 Days |

Estimated Time includes taking cores!

Today was a rest day. No work conducted.

| HSE Reporting: | | HSE Officer: | Kelly Power |
|---|---|---|---|
| Toolbox: | | | |
| Shift Change: | | | |
| Safety: | | | |
| Pre/Post Job: | | | |

| Production Summary: | Today: | To Date: | Job Total: | To Complete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 0.00 | 563.15 | 602.75 | 39.60 |
| Lines Completed: | 0 | 179 | 214 | 35 |
| Cores Taken: | 0 | 8 | 20 | 12 |
| In-Fill Kilometers: | 0.00 | 4.70 | 0.78% | |
| Added on Kilometers: | 0.00 | 18.65 | 3.09% | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 4.10 | 0.68% | |

| Geophysical Equipment: | |
|---|---|
| Equipment #1: | Navigation System - POS MV # |
| Equipment #2: | Diff. GPS System - Trimble AG130 # |
| Equipment #3: | MBES - R2Sonic # |
| Equipment #4: | SSS - Edgetech 4200 # |
| Equipment #5: | Mag. - SeaSpy # |
| Equipment #6: | USBL - IXSEA GAPS # |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

| Weather Summary: | Sea State (meters) | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | n/a | n/a | n/a |
| Wx - 1200: | n/a | n/a | n/a |
| Wx - 1800: | n/a | n/a | n/a |
| Wx - 2400: | n/a | n/a | n/a |

**Personnel Onboard:**

| | |
|---|---|
| Captain: | John Valikonis |
| Other Vessel Crew: | n/a |
| Party Chief: | Kelly Power |
| Hydro. Surveyor: | Katie Conrad |
| Geophysical Tech.: | Richie Carmichael |
| Other Survey Crew: | n/a |
| Client Representative: | Ron Eckhardt |

**Personnel Onshore:**

| | |
|---|---|
| Offshore Site Manager: | Charlie Hall |
| Ass't Off. Site Manager: | Marta Krynytzky |
| Data Manager: | Chuck Chamberlain |
| Data Processor: | Cody Gibson |
| Data Processor: | Lance Woods |
| Data Processor: | n/a |
| Additional Proc.: | n/a |
| Client Representative: | n/a |

**Client Representative's Remarks:**

Fatigue Management: Scheduled Rest Day 1 of 2.

FUGRO: Kelly Power Client:

# Daily Progress Report

ver 7.22.2015-A (Alaska)

Fugro
R/V: Westerly

| | |
|---|---|
| Client: | AK LNG |
| Job Description: | Seafloor Mapping |
| Area & Block(s): | LNG Sites |
| Prospect / Site: | Cook Inlet |
| Fugro Job #: | 23.00007123 |
| Job Day #: | 42 |
| Report For: | 05-Jul-2015 Sunday |
| Julian Date: | 186 |
| Hours From: | 0630 to 1830 |
| Report From: | |

| | | |
|---|---|---|
| Production Hrs/Day: | 12.0 hrs | |
| Job Total in Meters: | 588,200.00 | |
| Total # of Lines: | 214 Lines | |
| # Cores/Core Time: | 20 cores | Est. 180 mins. |
| Total Meters Added: | 18,650.00 | |
| Total Meters Deleted: | 4,100.00 | |
| Survey Units: | Meters | |
| Nautical Mile (Feet): | 6080 | |

| Time Summary (Hours): | Today: | Job Totals: | ( % ) |
|---|---|---|---|
| Mobilize / Demobilize: | 0.00 | 87.42 | 17.29% |
| On-Line: | 0.00 | 114.93 | 22.73% |
| Transit: | 0.00 | 47.53 | 9.40% |
| Other Working: | 12.00 | 153.60 | 30.38% |
| Equipment Downtime: | 0.00 | 34.13 | 6.75% |
| Weather Stand-By: | 0.00 | 67.96 | 13.44% |
| Other Stand-By: | 0.00 | 0.00 | |
| Stand-By / No Crew: | 0.00 | 0.00 | |
| Health, Safety & Environmental: | 0.00 | 0.00 | |
| Job Summary: | 12.00 | 505.57 | 100.00% |

Areas Worked:

Today was a rest day. No work was conducted.

| | |
|---|---|
| Job Total - Kilometers: | 602.75 |
| On-Line Percent Complete: | 93.43% |
| Kilometers Added: | 18.65 |
| Kilometers Deleted: | 4.10 |
| Percent In-Fill: | 0.78% |
| Estimated Coring Time: | 3.00 Days |
| Estimated Time to Completion: | 3.67 Days |

Estimated Time includes taking cores!

| HSE Reporting: | | HSE Officer: | Kelly Power |
|---|---|---|---|
| Toolbox: | | | |
| Shift Change: | | | |
| Safety: | | | |
| Pre/Post Job: | | | |

| Production Summary: | Today: | To Date: | Job Total: | To Complete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 0.00 | 563.15 | 602.75 | 39.60 |
| Lines Completed: | 0 | 179 | 214 | 35 |
| Cores Taken: | 0 | 8 | 20 | 12 |
| In-Fill Kilometers: | 0.00 | 4.70 | 0.78% | |
| Added on Kilometers: | 0.00 | 18.65 | 3.09% | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 4.10 | 0.68% | |

| Geophysical Equipment: | |
|---|---|
| Equipment #1: | Navigation System - POS MV # |
| Equipment #2: | Diff. GPS System - Trimble AG130 # |
| Equipment #3: | MBES - R2Sonic # |
| Equipment #4: | SSS - Edgetech 4200 # |
| Equipment #5: | Mag. - SeaSpy # |
| Equipment #6: | USBL - IXSEA GAPS # |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

| Weather Summary: | Sea State (meters) | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | n/a | n/a | n/a |
| Wx - 1200: | n/a | n/a | n/a |
| Wx - 1800: | n/a | n/a | n/a |
| Wx - 2400: | n/a | n/a | n/a |

**Personnel Onboard:**

| | |
|---|---|
| Captain: | John Valikonis |
| Other Vessel Crew: | n/a |
| Party Chief: | Kelly Power |
| Hydro. Surveyor: | Katie Conrad |
| Geophysical Tech.: | Richie Carmichael |
| Other Survey Crew: | n/a |
| Client Representative: | Ron Eckhardt |

**Personnel Onshore:**

| | |
|---|---|
| Offshore Site Manager: | Charlie Hall |
| Ass't Off. Site Manager: | Marta Krynytzky |
| Data Manager: | Chuck Chamberlain |
| Data Processor: | Cody Gibson |
| Data Processor: | Lance Woods |
| Client Representative: | n/a |
| Data Processor: | n/a |
| Additional Proc.: | n/a |

**Client Representative's Remarks:**

Fatigue Management:Scheduled Rest Day 2 of 2.

FUGRO: Kelly Power  Client:

Alaska LNG

# Daily Progress Report

ver 7.22.2015-A (Alaska)

Fugro
R/V: Westerly

| | |
|---|---|
| Client: | AK LNG |
| Job Description: | 0 |
| Area & Block(s): | LNG Sites |
| Prospect / Site: | 0 |
| Fugro Job #: | 23.00007123 |
| Job Day #: | 43 |
| Report For: | 06-Jul-2015 Monday |
| Julian Date: | 187 |
| Hours From: | 0630 to 1830 |
| Report From: | |

| | |
|---|---|
| Production Hrs/Day: | 12.0 hrs |
| Job Total in Meters: | 577,800.00 |
| Total # of Lines: | 214 Lines |
| # Cores/Core Time: | 20 cores / Est. 180 mins. |
| Total Meters Added: | 20,900.00 |
| Total Meters Deleted: | 4,100.00 |
| Survey Units: | Meters |
| Nautical Mile (Feet): | 6080 |

| Time Summary (Hours): | Today: | Job Totals: | (%) |
|---|---|---|---|
| Mobilize / Demobilize: | 0.00 | 87.42 | 16.89% |
| On-Line: | 8.03 | 122.96 | 23.76% |
| Transit: | 2.33 | 49.86 | 9.63% |
| Other Working: | 1.63 | 155.23 | 29.99% |
| Equipment Downtime: | 0.00 | 34.13 | 6.59% |
| Weather Stand-By: | 0.00 | 67.96 | 13.13% |
| Other Stand-By: | 0.00 | 0.00 | |
| Stand-By / No Crew: | 0.00 | 0.00 | |
| Health, Safety & Environmental: | 0.00 | 0.00 | |
| Job Summary: | 12.00 | 517.57 | 100.00% |

| | |
|---|---|
| Job Total - Kilometers: | 594.60 |
| On-Line Percent Complete: | 95.16% |
| Kilometers Added: | 20.90 |
| Kilometers Deleted: | 4.10 |
| Percent In-Fill: | 0.79% |
| Estimated Coring Time: | 3.00 Days |
| Estimated Time to Completion: | 3.52 Days |

Estimated Time includes taking cores!

Areas Worked:

Today was a productive day with 10 lines acquired for a total of 36.95 km. The "To Date" Line km total was adjusted to account for lines acquired on site 1 which were reran. These rerun km were not meant to be included in the total and were deleted in this report. The total km deleted was 34.3km.

| HSE Reporting: | | HSE Officer: | Kelly Power |
|---|---|---|---|
| Toolbox: | X | JHA-Toolbox | |
| Shift Change: | | | |
| Safety: | X | Review MAR-TRA-012 | |
| Pre/Post Job: | | | |

| Production Summary: | Today: | To Date: | Job Total: | To Complete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 36.95 | 565.80 | 594.60 | 28.80 |
| Lines Completed: | 10 | 189 | 214 | 25 |
| Cores Taken: | 0 | 8 | 20 | 12 |
| In-Fill Kilometers: | 0.00 | 4.70 | 0.79% | |
| Added on Kilometers: | 2.25 | 20.90 | 3.51% | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 4.10 | 0.68% | |

| Geophysical Equipment: | |
|---|---|
| Equipment #1: | Navigation System - POS MV # |
| Equipment #2: | Diff. GPS System - Trimble AG130 # |
| Equipment #3: | MBES - R2Sonic # |
| Equipment #4: | SSS - Edgetech 4200 # |
| Equipment #5: | Mag. - SeaSpy # |
| Equipment #6: | USBL - IXSEA GAPS # |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

| Weather Summary: | Sea State (meters) | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | n/a | n/a | n/a |
| Wx - 1200: | 0.1m | Light | Var. |
| Wx - 1800: | 0.1m | Light | Var. |
| Wx - 2400: | n/a | n/a | n/a |

**Personnel Onboard:**

| | |
|---|---|
| Captain: | John Valikonis |
| Other Vessel Crew: | n/a |
| Party Chief: | Kelly Power |
| Hydro. Surveyor: | Katie Conrad |
| Geophysical Tech.: | Richie Carmichael |
| Other Survey Crew: | n/a |
| Client Representative: | Ron Eckhardt |

**Personnel Onshore:**

| | |
|---|---|
| Offshore Site Manager: | Charlie Hall |
| Ass't Off. Site Manager: | Marta Krynytzky |
| Data Manager: | Chuck Chamberlain |
| Data Processor: | Cody Gibson |
| Data Processor: | Lance Woods |
| Data Processor: | n/a |
| Additional Proc.: | n/a |
| Client Representative: | n/a |

**Client Representative's Remarks:**

FUGRO: Kelly Power Client:

# Daily Progress Report

ver 7.22.2015-A (Alaska)

**Client:** AK LNG
**Job Description:** 0
**Area & Block(s):** LNG Sites
**Prospect / Site:** 0
**Fugro Job #:** 23.00007123
**Job Day #:** 44

| | | |
|---|---|---|
| **Report For:** | 07-Jul-2015 | Tuesday |
| **Julian Date:** | 188 | |
| **Hours From:** | 0630 to 1830 | |

**Report From:**

Fugro
R/V: Westerly

| | | |
|---|---|---|
| Production Hrs/Day: | 12.0 hrs | |
| Job Total in Meters: | 577,800.00 | |
| Total # of Lines: | 214 Lines | |
| # Cores/Core Time: | 20 cores | Est. 180 mins. |
| Total Meters Added: | 22,950.00 | |
| Total Meters Deleted: | 4,100.00 | |
| Survey Units: | Meters | |
| Nautical Mile (Feet): | 6080 | |

| Time Summary (Hours): | Today: | Job Totals: | ( % ) |
|---|---|---|---|
| Mobilize / Demobilize: | 0.00 | 87.42 | 16.51% |
| On-Line: | 6.90 | 129.86 | 24.52% |
| Transit: | 2.83 | 52.70 | 9.95% |
| Other Working: | 2.27 | 157.50 | 29.74% |
| Equipment Downtime: | 0.00 | 34.13 | 6.44% |
| Weather Stand-By: | 0.00 | 67.96 | 12.83% |
| Other Stand-By: | 0.00 | 0.00 | |
| Stand-By / No Crew: | 0.00 | 0.00 | |
| Health, Safety & Environmental: | 0.00 | 0.00 | |
| **Job Summary:** | **12.00** | **529.57** | **100.00%** |

**Job Total - Kilometers:** 596.65
**On-Line Percent Complete:** 99.93%

**Kilometers Added:** 22.95
**Kilometers Deleted:** 4.10
**Percent In-Fill:** 0.79%

**Estimated Coring Time:** 3.00 Days
**Estimated Time to Completion:** 3.01 Days

**Estimated Time includes taking cores!**

**Areas Worked:**
Completed 9 lines today on the TM05 site. One line remains to be completed plus infill and reruns. The total number of rerun lines and infill lines will supplied by the processing department tomorrow.

| HSE Reporting: | | HSE Officer: | Kelly Power |
|---|---|---|---|
| Toolbox: | X | JHA-Toolbox | |
| Shift Change: | | | |
| Safety: | X | Weekly Safety Meeting, Review MAR-TRA-001 | |
| Pre/Post Job: | | | |

| Production Summary: | Today: | To Date: | Job Total: | To Complete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 30.45 | 596.25 | 596.65 | 0.40 |
| Lines Completed: | 9 | 198 | 214 | 16 |
| Cores Taken: | 0 | 8 | 20 | 12 |
| In-Fill Kilometers: | 0.00 | 4.70 | 0.79% | |
| Added on Kilometers: | 2.05 | 22.95 | 3.85% | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 4.10 | 0.68% | |

**Geophysical Equipment:**

| | |
|---|---|
| Equipment #1: | Navigation System - POS MV # |
| Equipment #2: | Diff. GPS System - Trimble AG130 # |
| Equipment #3: | MBES - R2Sonic # |
| Equipment #4: | SSS - Edgetech 4200 # |
| Equipment #5: | Mag. - SeaSpy # |
| Equipment #6: | USBL - IXSEA GAPS # |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

| Weather Summary: | Sea State (meters) | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | n/a | n/a | n/a |
| Wx - 1200: | 0.5m | 10kts | ESE |
| Wx - 1800: | 1.0m | 15kts | SW |
| Wx - 2400: | n/a | n/a | n/a |

***Personnel Onboard:***

| | |
|---|---|
| *Captain:* | John Valikonis |
| *Other Vessel Crew:* | n/a |
| *Party Chief:* | Kelly Power |
| *Hydro. Surveyor:* | Katie Conrad |
| *Geophysical Tech.:* | Richie Carmichael |
| *Other Survey Crew:* | n/a |
| *Client Representative:* | Ron Eckhardt |

***Personnel Onshore:***

| | |
|---|---|
| *Offshore Site Manager:* | Charlie Hall |
| *Ass't Off. Site Manager:* | Marta Krynytzky |
| *Data Manager:* | Chuck Chamberlain |
| *Data Processor:* | Cody Gibson |
| *Data Processor:* | Lance Woods |
| *Data Processor:* | n/a |
| *Additional Proc.:* | n/a |
| *Client Representative:* | n/a |

**Client Representative's Remarks:**

**FUGRO:** Kelly Power **Client:**

# Daily Progress Report

**Fugro**
**R/V: Westerly**

*ver 7.22.2015-A (Alaska)*

| | |
|---|---|
| Client: | AK LNG |
| Job Description: | Hydrographic Survey |
| Area & Block(s): | LNG Sites |
| Prospect / Site: | TM05 |
| Fugro Job #: | 23.00007123 |
| Job Day #: | 45 |
| Report For: | 08-Jul-2015 Wednesday |
| Julian Date: | 189 |
| Hours From: | 0630 to 1830 |

| | | |
|---|---|---|
| Production Hrs/Day: | 12.0 hrs | |
| Job Total in Meters: | 577,800.00 | |
| Total # of Lines: | 214 Lines | |
| # Cores/Core Time: | 20 cores | Est. 180 mins. |
| Total Meters Added: | 22,950.00 | |
| Total Meters Deleted: | 4,100.00 | |
| Survey Units: | Meters | |
| Nautical Mile (Feet): | 6080 | |

Report From:

| Time Summary (Hours): | Today: | Job Totals: | ( % ) |
|---|---|---|---|
| Mobilize / Demobilize: | 0.00 | 87.42 | 16.14% |
| On-Line: | 0.08 | 129.95 | 23.99% |
| Transit: | 1.25 | 53.95 | 9.96% |
| Other Working: | 2.17 | 159.67 | 29.48% |
| Equipment Downtime: | 0.00 | 34.13 | 6.30% |
| Weather Stand-By: | 8.50 | 76.46 | 14.12% |
| Other Stand-By: | 0.00 | 0.00 | |
| Stand-By / No Crew: | 0.00 | 0.00 | |
| Health, Safety & Environmental: | 0.00 | 0.00 | |
| Job Summary: | 12.00 | 541.57 | 100.00% |

Areas Worked:

| | |
|---|---|
| **Job Total - Kilometers:** | ***596.65*** |
| **On-Line Percent Complete:** | ***99.93%*** |
| **Kilometers Added:** | ***22.95*** |
| **Kilometers Deleted:** | ***4.10*** |
| **Percent In-Fill:** | ***0.79%*** |
| **Estimated Coring Time:** | **3.00 Days** |
| **Estimated Time to Completion:** | **3.01 Days** |

**Estimated Time includes taking cores!**

| HSE Reporting: | | HSE Officer: | Kelly Power |
|---|---|---|---|
| Toolbox: | X | JHA / Toolbox | |
| Shift Change: | | | |
| Safety: | X | Vessel Induction. Reviewed MAR-TRA-013 | |
| Pre/Post Job: | | | |

| Production Summary: | Today: | To Date: | Job Total: | To Complete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 0.00 | 596.25 | 596.65 | 0.40 |
| Lines Completed: | 0 | 198 | 214 | 16 |
| Cores Taken: | 0 | 8 | 20 | 12 |
| In-Fill Kilometers: | 0.00 | 4.70 | 0.79% | |
| Added on Kilometers: | 0.00 | 22.95 | 3.85% | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 4.10 | 0.68% | |

**Geophysical Equipment:**

| | |
|---|---|
| Equipment #1: | Navigation System - POS MV # |
| Equipment #2: | Diff. GPS System - Trimble AG130 # |
| Equipment #3: | MBES - R2Sonic # |
| Equipment #4: | SSS - Edgetech 4200 # |
| Equipment #5: | Mag. - SeaSpy # |
| Equipment #6: | USBL - IXSEA GAPS # |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

| Weather Summary | Sea State (meters) | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | n/a | n/a | n/a |
| Wx - 1200: | 1 to 1.2 | 10kt | SSW |
| Wx - 1800: | 1 | 10kt | SSW |
| Wx - 2400: | n/a | n/a | n/a |

***Personnel Onboard:***

| | |
|---|---|
| *Captain:* | John Valikonis |
| *Other Vessel Crew:* | Doug Bowlus |
| *Party Chief:* | Kelly Power |
| *Hydro. Surveyor:* | Katie Conrad |
| *Geophysical Tech.:* | Richie Carmichael |
| *Other Survey Crew:* | n/a |
| *Client Representative:* | n/a |

***Personnel Onshore:***

| | |
|---|---|
| *Offshore Site Manager:* | Charlie Hall |
| *Ass't Off. Site Manager:* | Marta Krynytzky |
| *Data Manager:* | Chuck Chamberlain |
| *Data Processor:* | Cody Gibson |
| *Data Processor:* | Lance Woods |
| *Data Processor:* | n/a |
| *Additional Proc.:* | n/a |
| *Client Representative:* | Ron Eckhardt |

**Client Representative's Remarks:**

Perform QC review of MBES and SSS data acquired from area LNG_TM05 at Processing Center with Chuck Chamberlain, Cody Gibson, and Lance Woods.

**FUGRO:** _____ **Client:** _____

# Daily Progress Report

**Fugro**
**R/V: Westerly**

*ver 7.22.2015-A (Alaska)*

| | |
|---|---|
| Client: | AK LNG |
| Job Description: | Hydrographic Survey |
| Area & Block(s): | LNG Sites |
| Prospect / Site: | TM05 |
| Fugro Job #: | 23.00007123 |
| Job Day #: | 46 |
| Report For: | 09-Jul-2015 Thursday |
| Julian Date: | 190 |
| Hours From: | 0630 to 1830 |

| | | |
|---|---|---|
| Production Hrs/Day: | *12.0 hrs* | |
| Job Total in Meters: | 577,800.00 | |
| Total # of Lines: | 214 Lines | |
| # Cores/Core Time: | 20 cores | Est. 180 mins. |
| Total Meters Added: | 23,150.00 | |
| Total Meters Deleted: | 4,100.00 | |
| Survey Units: | Meters | |
| Nautical Mile (Feet): | 6080 | |

Report From:

| Time Summary (Hours): | Today: | Job Totals: | ( % ) |
|---|---|---|---|
| Mobilize / Demobilize: | 0.00 | 87.42 | *15.79%* |
| On-Line: | 3.23 | 133.18 | *24.06%* |
| Transit: | 2.75 | 56.70 | *10.24%* |
| Other Working: | 6.02 | 165.68 | *29.93%* |
| Equipment Downtime: | 0.00 | 34.13 | *6.17%* |
| Weather Stand-By: | 0.00 | 76.46 | *13.81%* |
| Other Stand-By: | 0.00 | 0.00 | |
| Stand-By / No Crew: | 0.00 | 0.00 | |
| Health, Safety & Environmental: | 0.00 | 0.00 | |
| **Job Summary:** | **12.00** | **553.57** | **100.00%** |

**Job Total - Kilometers:** ***596.85***
**On-Line Percent Complete:** ******
**Kilometers Added:** ***23.15***
**Kilometers Deleted:** ***4.10***
**Percent In-Fill:** ***0.79%***

**Estimated Coring Time:** 3.00 Days
**Estimated Time to Completion:** 3.00 Days

**Estimated Time includes taking cores!**

**Areas Worked:**
Weather was marginable for good data quality at the start of the day but calmed down in the afternoon. Survey consisted mainly of in-fill and re-runs in the TM05 block.

| HSE Reporting: | | HSE Officer: | Doug Bowlus |
|---|---|---|---|
| Toolbox: | X | JHA-Toolbox | |
| Shift Change: | | | |
| Safety: | X | Reviewed MAR-TRA-009 | |
| Pre/Post Job: | | | |

| Production Summary: | Today: | To Date: | Job Total: | To Complete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 4.20 | 600.45 | 596.85 | 0.00 |
| Lines Completed: | 1 | 199 | 214 | 15 |
| Cores Taken: | 0 | 8 | 20 | 12 |
| In-Fill Kilometers: | 0.00 | 4.70 | 0.79% | |
| Added on Kilometers: | 0.20 | 23.15 | 3.88% | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 4.10 | 0.68% | |

**Geophysical Equipment:**

| | |
|---|---|
| Equipment #1: | Navigation System - POS MV # |
| Equipment #2: | Diff. GPS System - Trimble AG130 # |
| Equipment #3: | MBES - R2Sonic # |
| Equipment #4: | SSS - Edgetech 4200 # |
| Equipment #5: | Mag. - SeaSpy # |
| Equipment #6: | USBL - IXSEA GAPS # |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

| Weather Summary | Sea State (meters) | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | | | |
| Wx - 1200: | 1 to 1.2 | 10-15 kts | SSW |
| Wx - 1800: | 0.5 | 5-10 kts | SSW |
| Wx - 2400: | | | |

***Personnel Onboard:***

| | |
|---|---|
| *Captain:* | John Valikonis |
| *Other Vessel Crew:* | n/a |
| *Party Chief:* | Doug Bowlus |
| *Hydro. Surveyor:* | Katie Conrad |
| *Geophysical Tech.:* | Richie Carmichael |
| *Other Survey Crew:* | n/a |
| *Client Representative:* | Ron Eckhardt |

***Personnel Onshore:***

| | |
|---|---|
| *Offshore Site Manager:* | Charlie Hall |
| *Ass't Off. Site Manager:* | Marta Krynytzky |
| *Data Manager:* | Chuck Chamberlain |
| *Data Processor:* | Cody Gibson |
| *Data Processor:* | Lance Woods |
| *Data Processor:* | n/a |
| *Additional Proc.:* | n/a |
| *Client Representative:* | n/a |

**Client Representative's Remarks:**

**FUGRO:** **Client:**

# Daily Progress Report

**Fugro**
**R/V: Westerly**

*ver 7.22.2015-A (Alaska)*

| | |
|---|---|
| Client: | AK LNG |
| Job Description: | Seafloor Mapping |
| Area & Block(s): | Pipeline |
| Prospect / Site: | PL001 |
| Fugro Job #: | 23.00007123 |
| Job Day #: | 1 |
| Report For: | 10-Jul-2015 Friday |
| Julian Date: | 191 |
| Hours From: | 0630 to 1850 |
| Report From: | |

| | |
|---|---|
| Production Hrs/Day: | 12.0 hrs |
| Job Total in Meters: | 606,000.00 |
| Total # of Lines: | 484 Lines |
| # Cores/Core Time: | 20 cores / Est. 180 mins. |
| Total Meters Added: | 4,600.00 |
| Total Meters Deleted: | 0.00 |
| Survey Units: | Meters |
| Nautical Mile (Feet): | 6080 |

| Time Summary (Hours): | Today: | Job Totals: | ( % ) |
|---|---|---|---|
| Mobilize / Demobilize: | 0.00 | 0.00 | |
| On-Line: | 4.78 | 4.78 | 38.78% |
| Transit: | 3.08 | 3.08 | 25.00% |
| Other Working: | 2.72 | 2.72 | 22.03% |
| Equipment Downtime: | 0.00 | 0.00 | |
| Weather Stand-By: | 0.58 | 0.58 | 4.73% |
| Other Stand-By: | 1.17 | 1.17 | 9.46% |
| Stand-By / No Crew: | 0.00 | 0.00 | |
| Health, Safety & Environmental: | 0.00 | 0.00 | |
| **Job Summary:** | **12.33** | **12.33** | **100.00%** |

**Job Total - Kilometers:** ***610.60***
**On-Line Percent Complete:** ***2.69%***

**Kilometers Added:** ***4.60***

**Estimated Coring Time:** **5.00 Days**
**Estimated Time to Completion:** **19.40 Days**

**Estimated Time includes taking cores!**

**Areas Worked:**

Began surveying at PL001 area. Slightly delayed start in the morning due to low tide. Plan to start early tomorrow to avoid the low tide in the river. Fueled the vessel at the end of the day.

Plan to finish TM05 tomorrow and then continue working on PL001.

| HSE Reporting: | | HSE Officer: | Doug Bowlus |
|---|---|---|---|
| Toolbox: | X | JHA-Toolbox Talk | |
| Shift Change: | | | |
| Safety: | X | Review MAR-TRA-010 | |
| Pre/Post Job: | | | |

| Production Summary: | Today: | To Date: | Job Total: | To Complete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 16.45 | 16.45 | 610.60 | 594.15 |
| Lines Completed: | 23 | 23 | 484 | 461 |
| Cores Taken: | 0 | 0 | 20 | 20 |
| In-Fill Kilometers: | 0.00 | 0.00 | | |
| Added on Kilometers: | 4.60 | 4.60 | 0.75% | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 0.00 | | |

**Geophysical Equipment:**

| | |
|---|---|
| Equipment #1: | Navigation System - POS MV # |
| Equipment #2: | Diff. GPS System - Trimble AG130 # |
| Equipment #3: | MBES - R2Sonic # |
| Equipment #4: | SSS - Edgetech 4200 # |
| Equipment #5: | Mag. - SeaSpy # |
| Equipment #6: | USBL - IXSEA GAPS # |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

| Weather Summary | Sea State (meters) | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | n/a | n/a | n/a |
| Wx - 1200: | 0.2 | < 5kts | SW |
| Wx - 1800: | 0.2 | 5 kts | SW |
| Wx - 2400: | n/a | n/a | n/a |

***Personnel Onboard:***

| | |
|---|---|
| *Captain:* | John Valikonis |
| *Other Vessel Crew:* | n/a |
| *Party Chief:* | Doug Bowlus |
| *Hydro. Surveyor:* | Katie Conrad |
| *Geophysical Tech.:* | Richie Carmichael |
| *Other Survey Crew:* | n/a |
| *Client Representative:* | Ron Eckhardt |

***Personnel Onshore:***

| | |
|---|---|
| *Offshore Site Manager:* | Charlie Hall |
| *Ass't Off. Site Manager:* | Marta Krynytzky |
| *Data Manager:* | Chuck Chamberlain |
| *Data Processor:* | Cody Gibson |
| *Data Processor:* | Lanve Woods |
| *Data Processor:* | n/a |
| *Additional Proc.:* | n/a |
| *Client Representative:* | n/a |

**Client Representative's Remarks:**

**FUGRO:** _____ **Client:** _____

# Daily Progress Report

( 1 of 2 )

**Fugro**

**R/V: Westerly**

*ver 7.22.2015-A (Alaska)*

| | |
|---|---|
| Client: | AK LNG |
| Job Description: | Hydrographic Survey |
| Area & Block(s): | LNG Sites |
| Prospect / Site: | TM05 |
| Fugro Job #: | 23.00007123 |
| Job Day #: | 47 |
| Report For: | 11-Jul-2015 Saturday |
| Julian Date: | 192 |
| Hours From: | 0545 to 1055 |
| Report From: | |

| | |
|---|---|
| Production Hrs/Day: | 12.0 hrs |
| Job Total in Meters: | 577,800.00 |
| Total # of Lines: | 214 Lines |
| # Cores/Core Time: | 20 cores |
| Total Meters Added: | 23,150.00 |
| Total Meters Deleted: | 4,100.00 |
| Survey Units: | Meters |
| Nautical Mile (Feet): | 6080 |

| Time Summary (Hours): | Today: | Job Totals: | ( % ) |
|---|---|---|---|
| Mobilize / Demobilize: | 0.00 | 87.42 | 15.65% |
| On-Line: | 0.88 | 134.06 | 23.99% |
| Transit: | 1.00 | 57.70 | 10.33% |
| Other Working: | 3.28 | 168.97 | 30.24% |
| Equipment Downtime: | 0.00 | 34.13 | 6.11% |
| Weather Stand-By: | 0.00 | 76.46 | 13.68% |
| Other Stand-By: | 0.00 | 0.00 | |
| Stand-By / No Crew: | 0.00 | 0.00 | |
| Health, Safety & Environmental: | 0.00 | 0.00 | |
| **Job Summary:** | **5.17** | **558.74** | **100.00%** |

| | |
|---|---|
| **Job Total - Kilometers:** | ***596.85*** |
| **On-Line Percent Complete:** | 100% |
| **Kilometers Added:** | ***23.15*** |
| **Kilometers Deleted:** | ***4.10*** |
| **Percent In-Fill:** | ***0.79%*** |
| **Estimated Coring Time:** | **0.00 Days** |
| **Estimated Time to Completion:** | **0.00 Days** |

**Estimated Time includes taking cores!**

**Areas Worked:**

Early morning start due to river tides. Surveyed 2 re-runs (for data quality) and multibeam in-fill at TM05.

Today's DPR is split into 2 parts as the LNG site log is separate from the Pipeline log.

| HSE Reporting: | | HSE Officer: | Doug Bowlus |
|---|---|---|---|
| Toolbox: | X | JHA-Toolbox | |
| Shift Change: | | | |
| Safety: | X | Reviewed MAR-TRA-012 | |
| Pre/Post Job: | | | |

| Production Summary: | Today: | To Date: | Job Total: | To Complete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 0.00 | 600.25 | 596.85 | 0.00 |
| Lines Completed: | 0 | 199 | 214 | 15 |
| Cores Taken: | 0 | 8 | 20 | 12 |
| In-Fill Kilometers: | 0.00 | 4.70 | 0.79% | |
| Added on Kilometers: | 0.00 | 23.15 | 3.88% | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 4.10 | 0.68% | |

**Geophysical Equipment:**

| | |
|---|---|
| Equipment #1: | Navigation System - POS MV # |
| Equipment #2: | Diff. GPS System - Trimble AG130 # |
| Equipment #3: | MBES - R2Sonic # |
| Equipment #4: | SSS - Edgetech 4200 # |
| Equipment #5: | Mag. - SeaSpy # |
| Equipment #6: | USBL - IXSEA GAPS # |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

| Weather Summary | Sea State (meters) | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | n/a | n/a | n/a |
| Wx - 1200: | 0.5 | 5 kts | S |
| Wx - 1800: | n/a | n/a | n/a |
| Wx - 2400: | n/a | n/a | n/a |

***Personnel Onboard:***

| | |
|---|---|
| *Captain:* | John Valikonis |
| *Other Vessel Crew:* | n/a |
| *Party Chief:* | Doug Bowlus |
| *Hydro. Surveyor:* | Katie Conrad |
| *Geophysical Tech.:* | Richie Carmichael |
| *Other Survey Crew:* | n/a |
| *Client Representative:* | Ron Eckhardt |

***Personnel Onshore:***

| | |
|---|---|
| *Offshore Site Manager:* | Charlie Hall |
| *Ass't Off. Site Manager:* | Marta Krynytzky |
| *Data Manager:* | Chuck Chamberlain |
| *Data Processor:* | Cody Gibson |
| *Data Processor:* | Lance Woods |
| *Data Processor:* | n/a |
| *Additional Proc.:* | n/a |
| *Client Representative:* | n/a |

**Client Representative's Remarks:**

**FUGRO:** _____ **Client:** _____

# Daily Progress Report

( 2 of 2)

ver 7.22.2015-A (Alaska)

**R/V: Westerly**

| | |
|---|---|
| Client: | AK LNG |
| Job Description: | Seafloor Mapping |
| Area & Block(s): | Pipeline |
| Prospect / Site: | PL001 |
| Fugro Job #: | 23.00007123 |
| Job Day #: | 2 |
| Report For: | 11-Jul-2015 Saturday |
| Julian Date: | 192 |
| Hours From: | 1055 to 1745 |
| Report From: | |

| | |
|---|---|
| Production Hrs/Day: | 12.0 hrs |
| Job Total in Meters: | 606,000.00 |
| Total # of Lines: | 484 Lines |
| # Cores/Core Time: | 20 cores Est. 180 mins. |
| Total Meters Added: | 7,800.00 |
| Total Meters Deleted: | 0.00 |
| Survey Units: | Meters |
| Nautical Mile (Feet): | 6080 |

| Time Summary (Hours): | Today: | Job Totals: ( % ) | |
|---|---|---|---|
| Mobilize / Demobilize: | 0.00 | 0.00 | |
| On-Line: | 3.47 | 8.25 | 43.04% |
| Transit: | 2.08 | 5.17 | 26.96% |
| Other Working: | 0.95 | 3.67 | 19.13% |
| Equipment Downtime: | 0.33 | 0.33 | 1.74% |
| Weather Stand-By: | 0.00 | 0.58 | 3.04% |
| Other Stand-By: | 0.00 | 1.17 | 6.09% |
| Stand-By / No Crew: | 0.00 | 0.00 | |
| Health, Safety & Environmental: | 0.00 | 0.00 | |
| **Job Summary:** | **6.83** | **19.17** | **100.00%** |

**Job Total - Kilometers:** ***613.80***
**On-Line Percent Complete:** ***4.72%***

**Kilometers Added:** ***7.80***

**Estimated Coring Time:** **5.00 Days**
**Estimated Time to Completion:** **18.86 Days**

**Estimated Time includes taking cores!**

**Areas Worked:**

Continued work in PL001 after working in TM05 during the morning.

2 Hazard Observation Cards submitted today. Discussed HOCs with appropriate crew aboard vessel.

Today's DPR is split into 2 parts as the LNG site log is separate from the Pipeline log.

| HSE Reporting: | | HSE Officer: | Doug Bowlus |
|---|---|---|---|
| Toolbox: | X | JHA-Toolbox | |
| Shift Change: | | | |
| Safety: | X | MAR-TRA-012 | |
| Pre/Post Job: | | | |

| Production Summary: | Today: | To Date: | Job Total: | To Complete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 12.55 | 29.00 | 613.80 | 584.80 |
| Lines Completed: | 16 | 39 | 484 | 445 |
| Cores Taken: | 0 | 0 | 20 | 20 |
| In-Fill Kilometers: | 0.00 | 0.00 | | |
| Added on Kilometers: | 3.20 | 7.80 | 1.27% | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 0.00 | | |

**Geophysical Equipment:**

| | |
|---|---|
| Equipment #1: | Navigation System - POS MV # |
| Equipment #2: | Diff. GPS System - Trimble AG130 # |
| Equipment #3: | MBES - R2Sonic # |
| Equipment #4: | SSS - Edgetech 4200 # |
| Equipment #5: | Mag. - SeaSpy # |
| Equipment #6: | USBL - IXSEA GAPS # |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

| Weather Summary | Sea State (meters) | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | N/A | N/A | N/A |
| Wx - 1200: | N/A | N/A | N/A |
| Wx - 1800: | 0.2 | 3 kts | NW |
| Wx - 2400: | N/A | N/A | N/A |

***Personnel Onboard:***

| | |
|---|---|
| *Captain:* | John Valikonis |
| *Other Vessel Crew:* | n/a |
| *Party Chief:* | Doug Bowlus |
| *Hydro. Surveyor:* | Katie Conrad |
| *Geophysical Tech.:* | Richie Carmichael |
| *Other Survey Crew:* | n/a |
| *Client Representative:* | Ron Eckhardt |

***Personnel Onshore:***

| | |
|---|---|
| *Offshore Site Manager:* | Charlie Hall |
| *Ass't Off. Site Manager:* | Marta Krynytzky |
| *Data Manager:* | Chuck Chamberlain |
| *Data Processor:* | Cody Gibson |
| *Data Processor:* | Lanve Woods |
| *Data Processor:* | n/a |
| *Additional Proc.:* | n/a |
| *Client Representative:* | n/a |

**Client Representative's Remarks:**

**FUGRO:** _____ **Client:** _____

# Daily Progress Report

**Fugro**
**R/V: Westerly**

*ver 7.22.2015-A (Alaska)*

| | |
|---|---|
| Client: | AK LNG |
| Job Description: | Seafloor Mapping |
| Area & Block(s): | Pipeline |
| Prospect / Site: | PL001 / PL002 |
| Fugro Job #: | 23.00007123 |
| Job Day #: | 3 |
| Report For: | 12-Jul-2015 — Sunday |
| Julian Date: | 193 |
| Hours From: | 0615 to 1815 |
| Report From: | |

| | |
|---|---|
| Production Hrs/Day: | 12.0 hrs |
| Job Total in Meters: | 606,000.00 |
| Total # of Lines: | 484 Lines |
| # Cores/Core Time: | 20 cores — Est. 180 mins. |
| Total Meters Added: | 9,200.00 |
| Total Meters Deleted: | 0.00 |
| Survey Units: | Meters |
| Nautical Mile (Feet): | 6080 |

| Time Summary (Hours): | Today: | Job Totals: | ( % ) |
|---|---|---|---|
| Mobilize / Demobilize: | 0.00 | 0.00 | |
| On-Line: | 5.30 | 13.55 | 43.48% |
| Transit: | 3.42 | 8.58 | 27.54% |
| Other Working: | 3.28 | 6.95 | 22.30% |
| Equipment Downtime: | 0.00 | 0.33 | 1.07% |
| Weather Stand-By: | 0.00 | 0.58 | 1.87% |
| Other Stand-By: | 0.00 | 1.17 | 3.74% |
| Stand-By / No Crew: | 0.00 | 0.00 | |
| Health, Safety & Environmental: | 0.00 | 0.00 | |
| **Job Summary:** | **12.00** | **31.17** | **100.00%** |

**Job Total - Kilometers:** ***615.20***
**On-Line Percent Complete:** ***8.44%***

**Kilometers Added:** ***9.20***

**Estimated Coring Time:** **5.00 Days**
**Estimated Time to Completion:** **17.26 Days**

**Estimated Time includes taking cores!**

**Areas Worked:**
Completed running lines in PL001 then began surveying in block PL002. Fueled Vessel.

| HSE Reporting: | | HSE Officer: | Doug Bowlus |
|---|---|---|---|
| Toolbox: | X | JHA-Toolbox | |
| Shift Change: | | | |
| Safety: | X | MAR-TRA-013, MAR-TRA-014 | |
| Pre/Post Job: | | | |

| Production Summary: | Today: | To Date: | Job Total: | To Complete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 22.90 | 51.90 | 615.20 | 563.30 |
| Lines Completed: | 7 | 46 | 484 | 438 |
| Cores Taken: | 0 | 0 | 20 | 20 |
| In-Fill Kilometers: | 0.00 | 0.00 | | |
| Added on Kilometers: | 1.40 | 9.20 | 1.50% | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 0.00 | | |

**Geophysical Equipment:**

| | |
|---|---|
| Equipment #1: | Navigation System - POS MV # |
| Equipment #2: | Diff. GPS System - Trimble AG130 # |
| Equipment #3: | MBES - R2Sonic # |
| Equipment #4: | SSS - Edgetech 4200 # |
| Equipment #5: | Mag. - SeaSpy # |
| Equipment #6: | USBL - IXSEA GAPS # |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

| Weather Summary | Sea State (meters) | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | N/A | N/A | N/A |
| Wx - 1200: | 0.2 | 1 kts | S |
| Wx - 1800: | 0.2 | 5 kts | NNW |
| Wx - 2400: | N/A | N/A | N/A |

***Personnel Onboard:***

| | |
|---|---|
| *Captain:* | John Valikonis |
| *Other Vessel Crew:* | n/a |
| *Party Chief:* | Doug Bowlus |
| *Hydro. Surveyor:* | Katie Conrad |
| *Geophysical Tech.:* | Richie Carmichael |
| *Other Survey Crew:* | n/a |
| *Client Representative:* | Ron Eckhardt |

***Personnel Onshore:***

| | |
|---|---|
| *Offshore Site Manager:* | Charlie Hall |
| *Ass't Off. Site Manager:* | Marta Krynytzky |
| *Data Manager:* | Chuck Chamberlain |
| *Data Processor:* | Cody Gibson |
| *Data Processor:* | Lanve Woods |
| *Data Processor:* | n/a |
| *Additional Proc.:* | n/a |
| *Client Representative:* | n/a |

**Client Representative's Remarks:**

**FUGRO:** _____ **Client:** _____

# Daily Progress Report

**Fugro**
**R/V: Westerly**

*ver 7.22.2015-A (Alaska)*

| | |
|---|---|
| Client: | AK LNG |
| Job Description: | Seafloor Mapping |
| Area & Block(s): | Pipeline |
| Prospect / Site: | PL002 |
| Fugro Job #: | 23.00007123 |
| Job Day #: | 4 |
| Report For: | 13-Jul-2015 Monday |
| Julian Date: | 194 |
| Hours From: | 0630 to 1830 |
| Report From: | |

| | | |
|---|---|---|
| Production Hrs/Day: | 12.0 hrs | |
| Job Total in Meters: | 606,000.00 | |
| Total # of Lines: | 484 Lines | |
| # Cores/Core Time: | 20 cores | Est. 180 mins. |
| Total Meters Added: | 10,800.00 | |
| Total Meters Deleted: | 0.00 | |
| Survey Units: | Meters | |
| Nautical Mile (Feet): | 6080 | |

| Time Summary (Hours): | Today: | Job Totals: | ( % ) |
|---|---|---|---|
| Mobilize / Demobilize: | 0.00 | 0.00 | |
| On-Line: | 4.08 | 17.63 | 40.85% |
| Transit: | 4.17 | 12.75 | 29.54% |
| Other Working: | 1.25 | 8.20 | 19.00% |
| Equipment Downtime: | 0.00 | 0.33 | 0.77% |
| Weather Stand-By: | 2.50 | 3.08 | 7.14% |
| Other Stand-By: | 0.00 | 1.17 | 2.70% |
| Stand-By / No Crew: | 0.00 | 0.00 | |
| Health, Safety & Environmental: | 0.00 | 0.00 | |
| **Job Summary:** | **12.00** | **43.17** | **100.00%** |

**Job Total - Kilometers:** ***616.80***
**On-Line Percent Complete:** ***10.78%***

**Kilometers Added:** ***10.80***

**Estimated Coring Time:** **5.00 Days**
**Estimated Time to Completion:** **17.16 Days**

**Estimated Time includes taking cores!**

**Areas Worked:**

Continued surveying in PL002 Block. The weather picked up throughout the day. Surveying ended once data quality was degraded. Weather standby for the remainder of the day.

Two vessel safety drills conducted today.

| HSE Reporting: | | HSE Officer: | Doug Bowlus |
|---|---|---|---|
| Toolbox: | X | JHA-Toolbox | |
| Shift Change: | | | |
| Safety: | X | MAR-TRA-015, Loss of Power Drill, Abandon Ship Drill | |
| Pre/Post Job: | | | |

| Production Summary: | Today: | To Date: | Job Total: | To Complete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 14.60 | 66.50 | 616.80 | 550.30 |
| Lines Completed: | 8 | 54 | 484 | 430 |
| Cores Taken: | 0 | 0 | 20 | 20 |
| In-Fill Kilometers: | 0.00 | 0.00 | | |
| Added on Kilometers: | 1.60 | 10.80 | 1.75% | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 0.00 | | |

**Geophysical Equipment:**

| | |
|---|---|
| Equipment #1: | Navigation System - POS MV # |
| Equipment #2: | Diff. GPS System - Trimble AG130 # |
| Equipment #3: | MBES - R2Sonic # |
| Equipment #4: | SSS - Edgetech 4200 # |
| Equipment #5: | Mag. - SeaSpy # |
| Equipment #6: | USBL - IXSEA GAPS # |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

| Weather Summary | Sea State (meters) | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | N/A | N/A | N/A |
| Wx - 1200: | 1 | 5-10 kts | N |
| Wx - 1800: | 1 - 1.2 | 10-15 kts | W |
| Wx - 2400: | N/A | N/A | N/A |

***Personnel Onboard:***

| | |
|---|---|
| *Captain:* | John Valikonis |
| *Other Vessel Crew:* | n/a |
| *Party Chief:* | Doug Bowlus |
| *Hydro. Surveyor:* | Katie Conrad |
| *Geophysical Tech.:* | Richie Carmichael |
| *Other Survey Crew:* | n/a |
| *Client Representative:* | Ron Eckhardt |

***Personnel Onshore:***

| | |
|---|---|
| *Offshore Site Manager:* | Charlie Hall |
| *Ass't Off. Site Manager:* | Marta Krynytzky |
| *Data Manager:* | Chuck Chamberlain |
| *Data Processor:* | Cody Gibson |
| *Data Processor:* | Lance Woods |
| *Data Processor:* | n/a |
| *Additional Proc.:* | n/a |
| *Client Representative:* | n/a |

**Client Representative's Remarks:**

**FUGRO:** _____ **Client:** _____

# Daily Progress Report

**Fugro**
**R/V: Westerly**

*ver 7.22.2015-A (Alaska)*

| | |
|---|---|
| Client: | AK LNG |
| Job Description: | Seafloor Mapping |
| Area & Block(s): | Pipeline |
| Prospect / Site: | PL002 |
| Fugro Job #: | 23.00007123 |
| Job Day #: | 5 |
| Report For: | 14-Jul-2015 Tuesday |
| Julian Date: | 195 |
| Hours From: | 0630 to 1830 |
| Report From: | |

| | | |
|---|---|---|
| Production Hrs/Day: | 12.0 hrs | |
| Job Total in Meters: | 606,000.00 | |
| Total # of Lines: | 484 Lines | |
| # Cores/Core Time: | 55 cores | Est. 180 mins. |
| Total Meters Added: | 12,400.00 | |
| Total Meters Deleted: | 0.00 | |
| Survey Units: | Meters | |
| Nautical Mile (Feet): | 6080 | |

| Time Summary (Hours): | Today: | Job Totals: | ( % ) |
|---|---|---|---|
| Mobilize / Demobilize: | 0.00 | 0.00 | |
| On-Line: | 3.77 | 21.40 | 38.79% |
| Transit: | 3.25 | 16.00 | 29.00% |
| Other Working: | 4.70 | 12.90 | 23.38% |
| Equipment Downtime: | 0.28 | 0.62 | 1.12% |
| Weather Stand-By: | 0.00 | 3.08 | 5.59% |
| Other Stand-By: | 0.00 | 1.17 | 2.11% |
| Stand-By / No Crew: | 0.00 | 0.00 | |
| Health, Safety & Environmental: | 0.00 | 0.00 | |
| **Job Summary:** | **12.00** | **55.17** | **100.00%** |

**Job Total - Kilometers:** ***618.40***
**On-Line Percent Complete:** ***13.11%***

**Kilometers Added:** ***12.40***

**Estimated Coring Time:** **13.75 Days**
**Estimated Time to Completion:** **25.56 Days**

**Estimated Time includes taking cores!**

**Areas Worked:**
Weekly safety meeting. Continued surveying at PL002 area. Intermittent fault found in MBES cable; fix implemented.
Vessel oil change and fueling at end of the day.

Number of grab samples updated to reflect the Statement of Work.

| HSE Reporting: | | HSE Officer: | Doug Bowlus |
|---|---|---|---|
| Toolbox: | X | Weekly Safety Meeting, JHA-Toolbox | |
| Shift Change: | | | |
| Safety: | X | MAR-TRA-005, Weekly Safety Meeting | |
| Pre/Post Job: | | | |

| Production Summary: | Today: | To Date: | Job Total: | To Complete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 14.60 | 81.10 | 618.40 | 537.30 |
| Lines Completed: | 8 | 62 | 484 | 422 |
| Cores Taken: | 0 | 0 | 55 | 55 |
| In-Fill Kilometers: | 0.00 | 0.00 | | |
| Added on Kilometers: | 1.60 | 12.40 | 2.01% | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 0.00 | | |

**Geophysical Equipment:**

| | |
|---|---|
| Equipment #1: | Navigation System - POS MV # |
| Equipment #2: | Diff. GPS System - Trimble AG130 # |
| Equipment #3: | MBES - R2Sonic # |
| Equipment #4: | SSS - Edgetech 4200 # |
| Equipment #5: | Mag. - SeaSpy # |
| Equipment #6: | USBL - IXSEA GAPS # |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

| Weather Summary | Sea State (meters) | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | N/A | N/A | N/A |
| Wx - 1200: | 0.2 | < 5kts | SW |
| Wx - 1800: | N/A | 5kts | NW |
| Wx - 2400: | N/A | N/A | N/A |

***Personnel Onboard:***

| | |
|---|---|
| *Captain:* | Ryan Braget |
| *Other Vessel Crew:* | n/a |
| *Party Chief:* | Doug Bowlus |
| *Hydro. Surveyor:* | Katie Conrad |
| *Geophysical Tech.:* | Richie Carmichael |
| *Other Survey Crew:* | n/a |
| *Client Representative:* | n/a |

***Personnel Onshore:***

| | |
|---|---|
| *Offshore Site Manager:* | Charlie Hall |
| *Ass't Off. Site Manager:* | Marta Krynytzky |
| *Data Manager:* | Chuck Chamberlain |
| *Data Processor:* | Cody Gibson |
| *Data Processor:* | Lance Woods |
| *Data Processor:* | n/a |
| *Additional Proc.:* | n/a |
| *Client Representative:* | Ron Eckhardt |

**Client Representative's Remarks:**

Technical downtime from 0830 to 1830 hrs. QC office review of LNG TM05 MBES & SSS field data proves quality coverage and overlap is acceptable.

Exception taken to the excessive amount of technical downtime referenced. 2 of 3 systems operational; DT will be taken on rerun. Scheduled vessel maintenance is also counted in the technical downtime. Oil change on mains had been scheduled 2 days prior. CKH

**FUGRO:** _____ **Client:** _____

# Daily Progress Report

**Fugro**
**R/V: Westerly**

*ver 7.22.2015-A (Alaska)*

| | |
|---|---|
| Client: | AK LNG |
| Job Description: | Seafloor Mapping |
| Area & Block(s): | Pipeline |
| Prospect / Site: | PL002 |
| Fugro Job #: | 23.00007123 |
| Job Day #: | 6 |
| Report For: | 15-Jul-2015 Wednesday |
| Julian Date: | 196 |
| Hours From: | 0630 to 1830 |

| | | |
|---|---|---|
| Production Hrs/Day: | 12.0 hrs | |
| Job Total in Meters: | 606,000.00 | |
| Total # of Lines: | 484 Lines | |
| # Cores/Core Time: | 55 cores | Est. 180 mins. |
| Total Meters Added: | 14,000.00 | |
| Total Meters Deleted: | 0.00 | |
| Survey Units: | Meters | |
| Nautical Mile (Feet): | 6080 | |

**Report From:**

| Time Summary (Hours): | Today: | Job Totals: | ( % ) |
|---|---|---|---|
| Mobilize / Demobilize: | 0.00 | 0.00 | |
| On-Line: | 4.52 | 25.92 | 38.59% |
| Transit: | 4.58 | 20.58 | 30.65% |
| Other Working: | 2.48 | 15.38 | 22.90% |
| Equipment Downtime: | 0.42 | 1.03 | 1.54% |
| Weather Stand-By: | 0.00 | 3.08 | 4.59% |
| Other Stand-By: | 0.00 | 1.17 | 1.74% |
| Stand-By / No Crew: | 0.00 | 0.00 | |
| Health, Safety & Environmental: | 0.00 | 0.00 | |
| **Job Summary:** | **12.00** | **67.17** | **100.00%** |

**Job Total - Kilometers:** ***620.00***
**On-Line Percent Complete:** ***15.43%***

**Kilometers Added:** ***14.00***

**Estimated Coring Time:** **13.75 Days**
**Estimated Time to Completion:** **25.59 Days**

**Estimated Time includes taking cores!**

**Areas Worked:**
Continued surveying at PL002. Morning transit time was extended do to high ebb current.

| HSE Reporting: | | HSE Officer: | Doug Bowlus |
|---|---|---|---|
| Toolbox: | X | JHA-Toolbox | |
| Shift Change: | | | |
| Safety: | X | MAR-TRA-006 | |
| Pre/Post Job: | | | |

| Production Summary: | Today: | To Date: | Job Total: | To Complete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 14.55 | 95.65 | 620.00 | 524.35 |
| Lines Completed: | 8 | 70 | 484 | 414 |
| Cores Taken: | 0 | 0 | 55 | 55 |
| In-Fill Kilometers: | 0.00 | 0.00 | | |
| Added on Kilometers: | 1.60 | 14.00 | 2.26% | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 0.00 | | |

**Geophysical Equipment:**

| | |
|---|---|
| Equipment #1: | Navigation System - POS MV # |
| Equipment #2: | Diff. GPS System - Trimble AG130 # |
| Equipment #3: | MBES - R2Sonic # |
| Equipment #4: | SSS - Edgetech 4200 # |
| Equipment #5: | Mag. - SeaSpy # |
| Equipment #6: | USBL - IXSEA GAPS # |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

| Weather Summary | Sea State (meters) | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | N/A | N/A | N/A |
| Wx - 1200: | 0.5 | 10 - 15 kts | S |
| Wx - 1800: | 0.3 | 4 kts | NW |
| Wx - 2400: | N/A | N/A | N/A |

***Personnel Onboard:***

| | |
|---|---|
| *Captain:* | Ryan Braget |
| *Other Vessel Crew:* | n/a |
| *Party Chief:* | Doug Bowlus |
| *Hydro. Surveyor:* | Katie Conrad |
| *Geophysical Tech.:* | Richie Carmichael |
| *Other Survey Crew:* | n/a |
| *Client Representative:* | Ron Eckhardt |

***Personnel Onshore:***

| | |
|---|---|
| *Offshore Site Manager:* | Charlie Hall |
| *Ass't Off. Site Manager:* | Marta Krynytzky |
| *Data Manager:* | Chuck Chamberlain |
| *Data Processor:* | Cody Gibson |
| *Data Processor:* | Lance Woods |
| *Data Processor:* | n/a |
| *Additional Proc.:* | n/a |
| *Client Representative:* | n/a |

**Client Representative's Remarks:**

**FUGRO:** _____ **Client:** _____

# Daily Progress Report

**Fugro**
**R/V: Westerly**

*ver 7.22.2015-A (Alaska)*

| | |
|---|---|
| Client: | AK LNG |
| Job Description: | Seafloor Mapping |
| Area & Block(s): | Pipeline |
| Prospect / Site: | PL002 |
| Fugro Job #: | 23.00007123 |
| Job Day #: | 7 |
| Report For: | 16-Jul-2015 Thursday |
| Julian Date: | 197 |
| Hours From: | 0630 to 1830 |
| Report From: | |

| | | |
|---|---|---|
| Production Hrs/Day: | 12.0 hrs | |
| Job Total in Meters: | 606,000.00 | |
| Total # of Lines: | 484 Lines | |
| # Cores/Core Time: | 55 cores | Est. 180 mins. |
| Total Meters Added: | 15,800.00 | |
| Total Meters Deleted: | 0.00 | |
| Survey Units: | Meters | |
| Nautical Mile (Feet): | 6080 | |

| Time Summary (Hours): | Today: | Job Totals: | ( % ) |
|---|---|---|---|
| Mobilize / Demobilize: | 0.00 | 0.00 | |
| On-Line: | 3.02 | 28.93 | 36.55% |
| Transit: | 3.67 | 24.25 | 30.63% |
| Other Working: | 3.65 | 19.03 | 24.04% |
| Equipment Downtime: | 0.00 | 1.03 | 1.31% |
| Weather Stand-By: | 1.67 | 4.75 | 6.00% |
| Other Stand-By: | 0.00 | 1.17 | 1.47% |
| Stand-By / No Crew: | 0.00 | 0.00 | |
| Health, Safety & Environmental: | 0.00 | 0.00 | |
| **Job Summary:** | **12.00** | **79.17** | **100.00%** |

**Job Total - Kilometers:** ***621.80***
**On-Line Percent Complete:** ***17.22%***

**Kilometers Added:** ***15.80***

**Estimated Coring Time:** **13.75 Days**
**Estimated Time to Completion:** **25.34 Days**

**Estimated Time includes taking cores!**

**Areas Worked:**

Attempted a patch test near Boulder Point. Sea conditions at patch test area did not allow for the required data quality. Moved to PL002 area and continued surveying until sea state began to increase. Fueled vessel once back at dock. Weather standby the remainder of the day.

| HSE Reporting: | | HSE Officer: | Doug Bowlus |
|---|---|---|---|
| Toolbox: | X | JHA-Toolbox | |
| Shift Change: | | | |
| Safety: | X | MAR-TRA-009, MAR-TRA-013 | |
| Pre/Post Job: | | | |

| Production Summary: | Today: | To Date: | Job Total: | To Complete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 11.40 | 107.05 | 621.80 | 514.75 |
| Lines Completed: | 9 | 79 | 484 | 405 |
| Cores Taken: | 0 | 0 | 55 | 55 |
| In-Fill Kilometers: | 0.00 | 0.00 | | |
| Added on Kilometers: | 1.80 | 15.80 | 2.54% | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 0.00 | | |

**Geophysical Equipment:**

| | |
|---|---|
| Equipment #1: | Navigation System - POS MV # |
| Equipment #2: | Diff. GPS System - Trimble AG130 # |
| Equipment #3: | MBES - R2Sonic # |
| Equipment #4: | SSS - Edgetech 4200 # |
| Equipment #5: | Mag. - SeaSpy # |
| Equipment #6: | USBL - IXSEA GAPS # |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

| Weather Summary | Sea State (meters) | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | N/A | N/A | N/A |
| Wx - 1200: | 1 | 7 kts | E |
| Wx - 1800: | N/A | N/A | N/A |
| Wx - 2400: | N/A | N/A | N/A |

***Personnel Onboard:***

| | |
|---|---|
| *Captain:* | Ryan Braget |
| *Other Vessel Crew:* | n/a |
| *Party Chief:* | Doug Bowlus |
| *Hydro. Surveyor:* | Katie Conrad |
| *Geophysical Tech.:* | David Wise |
| *Other Survey Crew:* | Richie Carmichael |
| *Client Representative:* | Ron Eckhardt |

***Personnel Onshore:***

| | |
|---|---|
| *Offshore Site Manager:* | Charlie Hall |
| *Ass't Off. Site Manager:* | Marta Krynytzky |
| *Data Manager:* | Chuck Chamberlain |
| *Data Processor:* | Cody Gibson |
| *Data Processor:* | Lance Woods |
| *Data Processor:* | n/a |
| *Additional Proc.:* | n/a |
| *Client Representative:* | n/a |

**Client Representative's Remarks:**

**FUGRO:** _____ **Client:** _____

# Daily Progress Report

**Fugro**
**R/V: Westerly**

*ver 7.22.2015-A (Alaska)*

| | |
|---|---|
| Production Hrs/Day: | *12.0 hrs* |
| Job Total in Meters: | 606,000.00 |
| Total # of Lines: | 484 Lines |
| # Cores/Core Time: | 55 cores / Est. 180 mins. |
| Total Meters Added: | 15,800.00 |
| Total Meters Deleted: | 0.00 |
| Survey Units: | Meters |
| Nautical Mile (Feet): | 6080 |

**Client:** AK LNG
**Job Description:** Seafloor Mapping
**Area & Block(s):** Pipeline
**Prospect / Site:** PL002
**Fugro Job #:** 23.00007123
**Job Day #:** 8
**Report For:** 17-Jul-2015 — Friday
**Julian Date:** 198
**Hours From:** 0630 to 1830

**Report From:**

| Time Summary (Hours): | Today: | Job Totals: | ( % ) |
|---|---|---|---|
| Mobilize / Demobilize: | 0.00 | 0.00 | |
| On-Line: | 0.00 | 28.93 | *31.74%* |
| Transit: | 1.00 | 25.25 | *27.70%* |
| Other Working: | 0.67 | 19.70 | *21.61%* |
| Equipment Downtime: | 0.00 | 1.03 | *1.13%* |
| Weather Stand-By: | 10.33 | 15.08 | *16.54%* |
| Other Stand-By: | 0.00 | 1.17 | *1.28%* |
| Stand-By / No Crew: | 0.00 | 0.00 | |
| Health, Safety & Environmental: | 0.00 | 0.00 | |
| **Job Summary:** | **12.00** | **91.17** | **100.00%** |

**Job Total - Kilometers:** ***621.80***
**On-Line Percent Complete:** ***17.22%***

**Kilometers Added:** ***15.80***

**Estimated Coring Time:** 13.75 Days
**Estimated Time to Completion:** 25.34 Days

**Estimated Time includes taking cores!**

**Areas Worked:**
Small craft advisory today. Transited to the mouth of the Kenai River and verified the accuracy of weather forecast. Seas greater than 3 ft and wind speeds over 25kts. Weather standby.

| HSE Reporting: | | HSE Officer: | Doug Bowlus |
|---|---|---|---|
| Toolbox: | X | JHA-Toolbox | |
| Shift Change: | | | |
| Safety: | X | Weather Discussion | |
| Pre/Post Job: | | | |

| Production Summary: | Today: | To Date: | Job Total: | To Complete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 0.00 | 107.05 | 621.80 | 514.75 |
| Lines Completed: | 0 | 79 | 484 | 405 |
| Cores Taken: | 0 | 0 | 55 | 55 |
| In-Fill Kilometers: | 0.00 | 0.00 | | |
| Added on Kilometers: | 0.00 | 15.80 | 2.54% | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 0.00 | | |

**Geophysical Equipment:**
Equipment #1: Navigation System - POS MV #
Equipment #2: Diff. GPS System - Trimble AG130 #
Equipment #3: MBES - R2Sonic #
Equipment #4: SSS - Edgetech 4200 #
Equipment #5: Mag. - SeaSpy #
Equipment #6: USBL - IXSEA GAPS #
Equipment #7: Grab Sampler - Day Grab #
Equipment #8: Grab Sampler - Van Veen #
Equipment #9:
Equipment #10:
Equipment #11:

| Weather Summary | Sea State (meters) | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | N/A | N/A | N/A |
| Wx - 1200: | 1 to 2 | 28 kts | S |
| Wx - 1800: | N/A | N/A | N/A |
| Wx - 2400: | N/A | N/A | N/A |

***Personnel Onboard:***

| | |
|---|---|
| *Captain:* | Ryan Braget |
| *Other Vessel Crew:* | n/a |
| *Party Chief:* | Doug Bowlus |
| *Hydro. Surveyor:* | Katie Conrad |
| *Geophysical Tech.:* | David Wise |
| *Other Survey Crew:* | n/a |
| *Client Representative:* | Ron Eckhardt |

***Personnel Onshore:***

| | |
|---|---|
| *Offshore Site Manager:* | Charlie Hall |
| *Ass't Off. Site Manager:* | Marta Krynytzky |
| *Data Manager:* | Chuck Chamberlain |
| *Data Processor:* | Cody Gibson |
| *Data Processor:* | Lance Woods |
| *Data Processor:* | n/a |
| *Additional Proc.:* | n/a |
| *Client Representative:* | n/a |

**Client Representative's Remarks:**

WOW all day.

**FUGRO:** _____ **Client:** _____

# Daily Progress Report

**Fugro**
**R/V: Westerly**

*ver 7.22.2015-A (Alaska)*

| | |
|---|---|
| Client: | AK LNG |
| Job Description: | Seafloor Mapping |
| Area & Block(s): | Pipeline |
| Prospect / Site: | PL002 |
| Fugro Job #: | 23.00007123 |
| Job Day #: | 9 |
| Report For: | 18-Jul-2015 Saturday |
| Julian Date: | 199 |
| Hours From: | 0630 to 1830 |
| Report From: | |

| | | |
|---|---|---|
| Production Hrs/Day: | 12.0 hrs | |
| Job Total in Meters: | 606,000.00 | |
| Total # of Lines: | 484 Lines | |
| # Cores/Core Time: | 55 cores | Est. 180 mins. |
| Total Meters Added: | 15,800.00 | |
| Total Meters Deleted: | 0.00 | |
| Survey Units: | Meters | |
| Nautical Mile (Feet): | 6080 | |

| Time Summary (Hours): | Today: | Job Totals: | ( % ) |
|---|---|---|---|
| Mobilize / Demobilize: | 0.00 | 0.00 | |
| On-Line: | 0.00 | 28.93 | 31.74% |
| Transit: | 0.00 | 25.25 | 27.70% |
| Other Working: | 0.00 | 19.70 | 21.61% |
| Equipment Downtime: | 0.00 | 1.03 | 1.13% |
| Weather Stand-By: | 0.00 | 15.08 | 16.54% |
| Other Stand-By: | 0.00 | 1.17 | 1.28% |
| Stand-By / No Crew: | 0.00 | 0.00 | |
| Health, Safety & Environmental: | 0.00 | 0.00 | |
| **Job Summary:** | **0.00** | **91.17** | **100.00%** |

**Job Total - Kilometers:** ***621.80***
**On-Line Percent Complete:** ***17.22%***

**Kilometers Added:** ***15.80***

**Estimated Coring Time:** **13.75 Days**
**Estimated Time to Completion:** **25.34 Days**

**Estimated Time includes taking cores!**

**Areas Worked:**
Fatigue day. No work conducted.

| HSE Reporting: | | HSE Officer: | Doug Bowlus |
|---|---|---|---|
| Toolbox: | | | |
| Shift Change: | | | |
| Safety: | | | |
| Pre/Post Job: | | | |

| Production Summary: | Today: | To Date: | Job Total: | To Complete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 0.00 | 107.05 | 621.80 | 514.75 |
| Lines Completed: | 0 | 79 | 484 | 405 |
| Cores Taken: | 0 | 0 | 55 | 55 |
| In-Fill Kilometers: | 0.00 | 0.00 | | |
| Added on Kilometers: | 0.00 | 15.80 | 2.54% | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 0.00 | | |

**Geophysical Equipment:**

| | |
|---|---|
| Equipment #1: | Navigation System - POS MV # |
| Equipment #2: | Diff. GPS System - Trimble AG130 # |
| Equipment #3: | MBES - R2Sonic # |
| Equipment #4: | SSS - Edgetech 4200 # |
| Equipment #5: | Mag. - SeaSpy # |
| Equipment #6: | USBL - IXSEA GAPS # |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

| Weather Summary | Sea State (meters) | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | N/A | N/A | N/A |
| Wx - 1200: | N/A | N/A | N/A |
| Wx - 1800: | N/A | N/A | N/A |
| Wx - 2400: | N/A | N/A | N/A |

***Personnel Onboard:***

| | |
|---|---|
| *Captain:* | Ryan Braget |
| *Other Vessel Crew:* | n/a |
| *Party Chief:* | Doug Bowlus |
| *Hydro. Surveyor:* | Katie Conrad |
| *Geophysical Tech.:* | David Wise |
| *Other Survey Crew:* | n/a |
| *Client Representative:* | Ron Eckhardt |

***Personnel Onshore:***

| | |
|---|---|
| *Offshore Site Manager:* | Charlie Hall |
| *Ass't Off. Site Manager:* | Marta Krynytzky |
| *Data Manager:* | Chuck Chamberlain |
| *Data Processor:* | Cody Gibson |
| *Data Processor:* | Lance Woods |
| *Data Processor:* | n/a |
| *Additional Proc.:* | n/a |
| *Client Representative:* | n/a |

**Client Representative's Remarks:**

Fatigue Management - Rest Day ( 1 of 2)

**FUGRO:** _____ **Client:** _____

# Daily Progress Report

**Fugro**
**R/V: Westerly**

*ver 7.22.2015-A (Alaska)*

| | |
|---|---|
| Client: | AK LNG |
| Job Description: | Seafloor Mapping |
| Area & Block(s): | Pipeline |
| Prospect / Site: | PL002 |
| Fugro Job #: | 23.00007123 |
| Job Day #: | 10 |
| Report For: | 19-Jul-2015 Sunday |
| Julian Date: | 200 |
| Hours From: | 0630 to 1830 |
| Report From: | |

| | | |
|---|---|---|
| Production Hrs/Day: | 12.0 hrs | |
| Job Total in Meters: | 606,000.00 | |
| Total # of Lines: | 484 Lines | |
| # Cores/Core Time: | 55 cores | Est. 180 mins. |
| Total Meters Added: | 15,800.00 | |
| Total Meters Deleted: | 0.00 | |
| Survey Units: | Meters | |
| Nautical Mile (Feet): | 6080 | |

| Time Summary (Hours): | Today: | Job Totals: | ( % ) |
|---|---|---|---|
| Mobilize / Demobilize: | 0.00 | 0.00 | |
| On-Line: | 0.00 | 28.93 | 31.74% |
| Transit: | 0.00 | 25.25 | 27.70% |
| Other Working: | 0.00 | 19.70 | 21.61% |
| Equipment Downtime: | 0.00 | 1.03 | 1.13% |
| Weather Stand-By: | 0.00 | 15.08 | 16.54% |
| Other Stand-By: | 0.00 | 1.17 | 1.28% |
| Stand-By / No Crew: | 0.00 | 0.00 | |
| Health, Safety & Environmental: | 0.00 | 0.00 | |
| **Job Summary:** | **0.00** | **91.17** | **100.00%** |

**Job Total - Kilometers:** ***621.80***
**On-Line Percent Complete:** ***17.22%***

**Kilometers Added:** ***15.80***

**Estimated Coring Time:** **13.75 Days**
**Estimated Time to Completion:** **25.34 Days**

**Estimated Time includes taking cores!**

**Areas Worked:**
Fatigue day. No work conducted.

| HSE Reporting: | | HSE Officer: | Doug Bowlus |
|---|---|---|---|
| Toolbox: | | | |
| Shift Change: | | | |
| Safety: | | | |
| Pre/Post Job: | | | |

| Production Summary: | Today: | To Date: | Job Total: | To Complete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 0.00 | 107.05 | 621.80 | 514.75 |
| Lines Completed: | 0 | 79 | 484 | 405 |
| Cores Taken: | 0 | 0 | 55 | 55 |
| In-Fill Kilometers: | 0.00 | 0.00 | | |
| Added on Kilometers: | 0.00 | 15.80 | 2.54% | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 0.00 | | |

**Geophysical Equipment:**

| | |
|---|---|
| Equipment #1: | Navigation System - POS MV # |
| Equipment #2: | Diff. GPS System - Trimble AG130 # |
| Equipment #3: | MBES - R2Sonic # |
| Equipment #4: | SSS - Edgetech 4200 # |
| Equipment #5: | Mag. - SeaSpy # |
| Equipment #6: | USBL - IXSEA GAPS # |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

| Weather Summary | Sea State (meters) | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | N/A | N/A | N/A |
| Wx - 1200: | N/A | N/A | N/A |
| Wx - 1800: | N/A | N/A | N/A |
| Wx - 2400: | N/A | N/A | N/A |

***Personnel Onboard:***

| | |
|---|---|
| *Captain:* | Ryan Braget |
| *Other Vessel Crew:* | n/a |
| *Party Chief:* | Doug Bowlus |
| *Hydro. Surveyor:* | Katie Conrad |
| *Geophysical Tech.:* | David Wise |
| *Other Survey Crew:* | n/a |
| *Client Representative:* | Ron Eckhardt |

***Personnel Onshore:***

| | |
|---|---|
| *Offshore Site Manager:* | Charlie Hall |
| *Ass't Off. Site Manager:* | Marta Krynytzky |
| *Data Manager:* | Chuck Chamberlain |
| *Data Processor:* | Cody Gibson |
| *Data Processor:* | Lance Woods |
| *Data Processor:* | n/a |
| *Additional Proc.:* | n/a |
| *Client Representative:* | n/a |

**Client Representative's Remarks:**

Fatigue Management - Rest Day ( 2 of 2)

**FUGRO:** _____ **Client:** _____

# Daily Progress Report

**Fugro**
**R/V: Westerly**

*ver 7.22.2015-A (Alaska)*

| | |
|---|---|
| Production Hrs/Day: | *12.0 hrs* |
| Job Total in Meters: | 606,000.00 |
| Total # of Lines: | 484 Lines |
| # Cores/Core Time: | 55 cores / Est. 180 mins. |
| Total Meters Added: | 21,800.00 |
| Total Meters Deleted: | 0.00 |
| Survey Units: | Meters |
| Nautical Mile (Feet): | 6080 |

**Client:** AK LNG
**Job Description:** Seafloor Mapping
**Area & Block(s):** Pipeline
**Prospect / Site:** PL002
**Fugro Job #:** 23.00007123
**Job Day #:** 11

| | | |
|---|---|---|
| **Report For:** | 20-Jul-2015 | Monday |
| **Julian Date:** | 201 | |
| **Hours From:** | 0630 to 1830 | |

**Report From:**

| Time Summary (Hours): | Today: | Job Totals: | ( % ) |
|---|---|---|---|
| Mobilize / Demobilize: | 0.00 | 0.00 | |
| On-Line: | 7.47 | 36.40 | *35.28%* |
| Transit: | 2.83 | 28.08 | *27.22%* |
| Other Working: | 1.70 | 21.40 | *20.74%* |
| Equipment Downtime: | 0.00 | 1.03 | *1.00%* |
| Weather Stand-By: | 0.00 | 15.08 | *14.62%* |
| Other Stand-By: | 0.00 | 1.17 | *1.13%* |
| Stand-By / No Crew: | 0.00 | 0.00 | |
| Health, Safety & Environmental: | 0.00 | 0.00 | |
| **Job Summary:** | **12.00** | **103.17** | **100.00%** |

**Job Total - Kilometers:** ***627.80***
**On-Line Percent Complete:** ***22.26%***

**Kilometers Added:** ***21.80***

**Estimated Coring Time:** **13.75 Days**
**Estimated Time to Completion:** **24.34 Days**

**Estimated Time includes taking cores!**

**Areas Worked:**
Continued surveying in the PL002 block.

| HSE Reporting: | | HSE Officer: | Doug Bowlus |
|---|---|---|---|
| Toolbox: | X | JHA-Toolbox | |
| Shift Change: | | | |
| Safety: | X | MAR-TRA-005 | |
| Pre/Post Job: | | | |

| Production Summary: | Today: | To Date: | Job Total: | To Complete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 32.70 | 139.75 | 627.80 | 488.05 |
| Lines Completed: | 30 | 109 | 484 | 375 |
| Cores Taken: | 0 | 0 | 55 | 55 |
| In-Fill Kilometers: | 0.00 | 0.00 | | |
| Added on Kilometers: | 6.00 | 21.80 | 3.47% | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 0.00 | | |

**Geophysical Equipment:**

| | |
|---|---|
| Equipment #1: | Navigation System - POS MV # |
| Equipment #2: | Diff. GPS System - Trimble AG130 # |
| Equipment #3: | MBES - R2Sonic # |
| Equipment #4: | SSS - Edgetech 4200 # |
| Equipment #5: | Mag. - SeaSpy # |
| Equipment #6: | USBL - IXSEA GAPS # |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

| Weather Summary | Sea State (meters) | Wind Speed | Dir. |
|---|---|---|---|
| **Wx - 0600:** | N/A | N/A | N/A |
| **Wx - 1200:** | 0.5 | 6 kts | NW |
| **Wx - 1800:** | 0.3 | 5 - 10 kts | W |
| **Wx - 2400:** | N/A | N/A | N/A |

***Personnel Onboard:***

| | |
|---|---|
| *Captain:* | Ryan Braget |
| *Other Vessel Crew:* | n/a |
| *Party Chief:* | Doug Bowlus |
| *Hydro. Surveyor:* | Katie Conrad |
| *Geophysical Tech.:* | David Wise |
| *Other Survey Crew:* | n/a |
| *Client Representative:* | Ron Eckhardt |

***Personnel Onshore:***

| | |
|---|---|
| *Offshore Site Manager:* | Charlie Hall |
| *Ass't Off. Site Manager:* | Marta Krynytzky |
| *Data Manager:* | Chuck Chamberlain |
| *Data Processor:* | Cody Gibson |
| *Data Processor:* | Lance Woods |
| *Data Processor:* | n/a |
| *Additional Proc.:* | n/a |
| *Client Representative:* | n/a |

**Client Representative's Remarks:**

**FUGRO:** _____ **Client:** _____

# Daily Progress Report

**Fugro**
**R/V: Westerly**

*ver 7.22.2015-A (Alaska)*

| | |
|---|---|
| Client: | AK LNG |
| Job Description: | Seafloor Mapping |
| Area & Block(s): | Pipeline |
| Prospect / Site: | PL002 |
| Fugro Job #: | 23.00007123 |
| Job Day #: | 12 |
| Report For: | 21-Jul-2015 Tuesday |
| Julian Date: | 202 |
| Hours From: | 0630 to 1830 |
| Report From: | |

| | |
|---|---|
| Production Hrs/Day: | 12.0 hrs |
| Job Total in Meters: | 606,000.00 |
| Total # of Lines: | 484 Lines |
| # Cores/Core Time: | 55 cores / Est. 180 mins. |
| Total Meters Added: | 24,200.00 |
| Total Meters Deleted: | 0.00 |
| Survey Units: | Meters |
| Nautical Mile (Feet): | 6080 |

| Time Summary (Hours): | Today: | Job Totals: | ( % ) |
|---|---|---|---|
| Mobilize / Demobilize: | 0.00 | 0.00 | |
| On-Line: | 3.97 | 40.37 | 35.05% |
| Transit: | 2.78 | 30.87 | 26.80% |
| Other Working: | 5.25 | 26.65 | 23.14% |
| Equipment Downtime: | 0.00 | 1.03 | 0.90% |
| Weather Stand-By: | 0.00 | 15.08 | 13.10% |
| Other Stand-By: | 0.00 | 1.17 | 1.01% |
| Stand-By / No Crew: | 0.00 | 0.00 | |
| Health, Safety & Environmental: | 0.00 | 0.00 | |
| **Job Summary:** | **12.00** | **115.17** | **100.00%** |

**Job Total - Kilometers:** ***630.20***
**On-Line Percent Complete:** ***24.31%***

**Kilometers Added:** ***24.20***

**Estimated Coring Time:** **13.75 Days**
**Estimated Time to Completion:** **24.22 Days**

**Estimated Time includes taking cores!**

**Areas Worked:**

Weekly safety meeting. Performed a patch test at Boulder Point and then continued surveying at PL002.

Conducted weekly vessel drill.

| HSE Reporting: | | HSE Officer: |
|---|---|---|
| Toolbox: | X | JHA-Toolbox |
| Shift Change: | | |
| Safety: | X | Medical Emergency Drill, MAR-TRA-007 |
| Pre/Post Job: | | |

| Production Summary: | Today: | To Date: | Job Total: | To Complete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 13.45 | 153.20 | 630.20 | 477.00 |
| Lines Completed: | 12 | 121 | 484 | 363 |
| Cores Taken: | 0 | 0 | 55 | 55 |
| In-Fill Kilometers: | 0.00 | 0.00 | | |
| Added on Kilometers: | 2.40 | 24.20 | 3.84% | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 0.00 | | |

**Geophysical Equipment:**

| | |
|---|---|
| Equipment #1: | Navigation System - POS MV # |
| Equipment #2: | Diff. GPS System - Trimble AG130 # |
| Equipment #3: | MBES - R2Sonic # |
| Equipment #4: | SSS - Edgetech 4200 # |
| Equipment #5: | Mag. - SeaSpy # |
| Equipment #6: | USBL - IXSEA GAPS # |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

| Weather Summary | Sea State (meters) | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | N/A | N/A | N/A |
| Wx - 1200: | 0.5 | 4 kts | SW |
| Wx - 1800: | 0.3 | 8 kts | SSW |
| Wx - 2400: | N/A | N/A | N/A |

***Personnel Onboard:***

| | |
|---|---|
| *Captain:* | Ryan Braget |
| *Other Vessel Crew:* | n/a |
| *Party Chief:* | Doug Bowlus |
| *Hydro. Surveyor:* | Katie Conrad |
| *Geophysical Tech.:* | David Wise |
| *Other Survey Crew:* | n/a |
| *Client Representative:* | Ron Eckhardt |

***Personnel Onshore:***

| | |
|---|---|
| *Offshore Site Manager:* | Charlie Hall |
| *Ass't Off. Site Manager:* | Marta Krynytzky |
| *Data Manager:* | Chuck Chamberlain |
| *Data Processor:* | Cody Gibson |
| *Data Processor:* | Lance Woods |
| *Data Processor:* | n/a |
| *Additional Proc.:* | n/a |
| *Client Representative:* | n/a |

**Client Representative's Remarks:**

**FUGRO:** _____ **Client:** _____

# Daily Progress Report

**Fugro**
**R/V: Westerly**

*ver 7.22.2015-A (Alaska)*

| | |
|---|---|
| Production Hrs/Day: | *12.0 hrs* |
| Job Total in Meters: | 606,000.00 |
| Total # of Lines: | 484 Lines |
| # Cores/Core Time: | 55 cores / Est. 180 mins. |
| Total Meters Added: | 30,600.00 |
| Total Meters Deleted: | 0.00 |
| Survey Units: | Meters |
| Nautical Mile (Feet): | 6080 |

**Client:** AK LNG
**Job Description:** Seafloor Mapping
**Area & Block(s):** Pipeline
**Prospect / Site:** PL002
**Fugro Job #:** 23.00007123
**Job Day #:** 13
**Report For:** 22-Jul-2015 — Wednesday
**Julian Date:** 203
**Hours From:** 0630 to 1830

**Report From:**

| Time Summary (Hours): | Today: | Job Totals: | ( % ) |
|---|---|---|---|
| Mobilize / Demobilize: | 0.00 | 0.00 | |
| On-Line: | 7.22 | 47.58 | *37.42%* |
| Transit: | 2.75 | 33.62 | *26.44%* |
| Other Working: | 1.62 | 28.27 | *22.23%* |
| Equipment Downtime: | 0.42 | 1.45 | *1.14%* |
| Weather Stand-By: | 0.00 | 15.08 | *11.86%* |
| Other Stand-By: | 0.00 | 1.17 | *0.92%* |
| Stand-By / No Crew: | 0.00 | 0.00 | |
| Health, Safety & Environmental: | 0.00 | 0.00 | |
| **Job Summary:** | **12.00** | **127.17** | **100.00%** |

**Job Total - Kilometers:** ***636.60***
**On-Line Percent Complete:** ***29.56%***

**Kilometers Added:** ***30.60***

**Estimated Coring Time:** **13.75 Days**
**Estimated Time to Completion:** **23.20 Days**

**Estimated Time includes taking cores!**

**Areas Worked:**
Continued surveying at PL002. Ran lines closer to shore as the tide allowed.

| HSE Reporting: | | HSE Officer: |
|---|---|---|
| Toolbox: | X | JHA-Toolbox |
| Shift Change: | | |
| Safety: | X | MAR-TRA-009 |
| Pre/Post Job: | | |

| Production Summary: | Today: | To Date: | Job Total: | To Complete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 34.95 | 188.15 | 636.60 | 448.45 |
| Lines Completed: | 32 | 153 | 484 | 331 |
| Cores Taken: | 0 | 0 | 55 | 55 |
| In-Fill Kilometers: | 0.00 | 0.00 | | |
| Added on Kilometers: | 6.40 | 30.60 | 4.81% | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 0.00 | | |

**Geophysical Equipment:**

| | |
|---|---|
| Equipment #1: | Navigation System - POS MV # |
| Equipment #2: | Diff. GPS System - Trimble AG130 # |
| Equipment #3: | MBES - R2Sonic # |
| Equipment #4: | SSS - Edgetech 4200 # |
| Equipment #5: | Mag. - SeaSpy # |
| Equipment #6: | USBL - IXSEA GAPS # |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

| Weather Summary | Sea State (meters) | Wind Speed | Dir. |
|---|---|---|---|
| **Wx - 0600:** | N/A | N/A | N/A |
| **Wx - 1200:** | 0.5 | 2 kts | W |
| **Wx - 1800:** | 0.5 | 8 kts | NE |
| **Wx - 2400:** | N/A | N/A | N/A |

***Personnel Onboard:***

| | |
|---|---|
| *Captain:* | Ryan Braget |
| *Other Vessel Crew:* | n/a |
| *Party Chief:* | Doug Bowlus |
| *Hydro. Surveyor:* | Katie Conrad |
| *Geophysical Tech.:* | David Wise |
| *Other Survey Crew:* | n/a |
| *Client Representative:* | Ron Eckhardt |

***Personnel Onshore:***

| | |
|---|---|
| *Offshore Site Manager:* | Charlie Hall |
| *Ass't Off. Site Manager:* | Marta Krynytzky |
| *Data Manager:* | Chuck Chamberlain |
| *Data Processor:* | Cody Gibson |
| *Data Processor:* | Lance Woods |
| *Data Processor:* | n/a |
| *Additional Proc.:* | n/a |
| *Client Representative:* | n/a |

**Client Representative's Remarks:**

**FUGRO:** **Client:**

# Daily Progress Report

**Fugro**
**R/V: Westerly**

*ver 7.22.2015-A (Alaska)*

| | |
|---|---|
| Client: | AK LNG |
| Job Description: | Seafloor Mapping |
| Area & Block(s): | Pipeline |
| Prospect / Site: | PL002 |
| Fugro Job #: | 23.00007123 |
| Job Day #: | 14 |
| Report For: | 23-Jul-2015 Thursday |
| Julian Date: | 204 |
| Hours From: | 0630 to 1830 |
| Report From: | |

| | |
|---|---|
| Production Hrs/Day: | 12.0 hrs |
| Job Total in Meters: | 606,000.00 |
| Total # of Lines: | 484 Lines |
| # Cores/Core Time: | 55 cores / Est. 180 mins. |
| Total Meters Added: | 34,300.00 |
| Total Meters Deleted: | 0.00 |
| Survey Units: | Meters |
| Nautical Mile (Feet): | 6080 |

| Time Summary (Hours): | Today: | Job Totals: | ( % ) |
|---|---|---|---|
| Mobilize / Demobilize: | 0.00 | 0.00 | |
| On-Line: | 5.08 | 52.67 | 37.84% |
| Transit: | 2.75 | 36.37 | 26.13% |
| Other Working: | 3.00 | 31.27 | 22.47% |
| Equipment Downtime: | 1.17 | 2.62 | 1.88% |
| Weather Stand-By: | 0.00 | 15.08 | 10.84% |
| Other Stand-By: | 0.00 | 1.17 | 0.84% |
| Stand-By / No Crew: | 0.00 | 0.00 | |
| Health, Safety & Environmental: | 0.00 | 0.00 | |
| **Job Summary:** | **12.00** | **139.17** | **100.00%** |

**Job Total - Kilometers:** *640.30*
**On-Line Percent Complete:** *32.90%*

**Kilometers Added:** *34.30*

**Estimated Coring Time:** 13.75 Days
**Estimated Time to Completion:** 22.70 Days

**Estimated Time includes taking cores!**

**Areas Worked:**
Delayed start due to minor vessel issue discovered during dockside checks. Issue fixed prior to leaving dock. Continued surveying in the PL002 area. Fueled vessel in the evening.

| HSE Reporting: | | HSE Officer: |
|---|---|---|
| Toolbox: | X | JHA-Toolbox |
| Shift Change: | | |
| Safety: | X | MAR-TRA-010, MAR-TRA-013 |
| Pre/Post Job: | | |

| Production Summary: | Today: | To Date: | Job Total: | To Complete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 22.50 | 210.65 | 640.30 | 429.65 |
| Lines Completed: | 23 | 176 | 484 | 308 |
| Cores Taken: | 0 | 0 | 55 | 55 |
| In-Fill Kilometers: | 0.00 | 0.00 | | |
| Added on Kilometers: | 3.70 | 34.30 | 5.36% | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 0.00 | | |

**Geophysical Equipment:**

| | |
|---|---|
| Equipment #1: | Navigation System - POS MV # |
| Equipment #2: | Diff. GPS System - Trimble AG130 # |
| Equipment #3: | MBES - R2Sonic # |
| Equipment #4: | SSS - Edgetech 4200 # |
| Equipment #5: | Mag. - SeaSpy # |
| Equipment #6: | USBL - IXSEA GAPS # |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

**Weather Summary:**

| | Sea State (meters) | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | N/A | N/A | N/A |
| Wx - 1200: | 0.3 | 2 kts | WNW |
| Wx - 1800: | 1.0 | 10-15 kts | SW |
| Wx - 2400: | N/A | N/A | N/A |

***Personnel Onboard:***

| | |
|---|---|
| *Captain:* | Ryan Braget |
| *Other Vessel Crew:* | n/a |
| *Party Chief:* | Doug Bowlus |
| *Hydro. Surveyor:* | Katie Conrad |
| *Geophysical Tech.:* | David Wise |
| *Other Survey Crew:* | n/a |
| *Client Representative:* | Ron Eckhardt |

***Personnel Onshore:***

| | |
|---|---|
| *Offshore Site Manager:* | Charlie Hall |
| *Ass't Off. Site Manager:* | Marta Krynytzky |
| *Data Manager:* | Chuck Chamberlain |
| *Data Processor:* | Cody Gibson |
| *Data Processor:* | Lance Woods |
| *Data Processor:* | n/a |
| *Additional Proc.:* | n/a |
| *Client Representative:* | n/a |

**Client Representative's Remarks:**

**FUGRO:** _____ **Client:** _____

# Daily Progress Report

**Fugro**
**R/V: Westerly**

*ver 7.22.2015-A (Alaska)*

| | |
|---|---|
| Client: | AK LNG |
| Job Description: | Seafloor Mapping |
| Area & Block(s): | Pipeline |
| Prospect / Site: | PL002 |
| Fugro Job #: | 23.00007123 |
| Job Day #: | 15 |
| Report For: | 24-Jul-2015 Friday |
| Julian Date: | 205 |
| Hours From: | 0630 to 1830 |

| | | |
|---|---|---|
| Production Hrs/Day: | *12.0 hrs* | |
| Job Total in Meters: | 606,000.00 | |
| Total # of Lines: | 484 Lines | |
| # Cores/Core Time: | 55 cores | Est. 180 mins. |
| Total Meters Added: | 39,500.00 | |
| Total Meters Deleted: | 0.00 | |
| Survey Units: | Meters | |
| Nautical Mile (Feet): | 6080 | |

Report From:

| Time Summary (Hours): | Today: | Job Totals: ( % ) | |
|---|---|---|---|
| Mobilize / Demobilize: | 0.00 | 0.00 | |
| On-Line: | 7.13 | 59.80 | *39.56%* |
| Transit: | 2.83 | 39.20 | *25.93%* |
| Other Working: | 2.03 | 33.30 | *22.03%* |
| Equipment Downtime: | 0.00 | 2.62 | *1.73%* |
| Weather Stand-By: | 0.00 | 15.08 | *9.97%* |
| Other Stand-By: | 0.00 | 1.17 | *0.77%* |
| Stand-By / No Crew: | 0.00 | 0.00 | |
| Health, Safety & Environmental: | 0.00 | 0.00 | |
| **Job Summary:** | **12.00** | **151.18** | **100.00%** |

**Job Total - Kilometers:** ***645.50***
**On-Line Percent Complete:** ***38.01%***

**Kilometers Added:** ***39.50***

**Estimated Coring Time:** **13.75 Days**
**Estimated Time to Completion:** **21.88 Days**

**Estimated Time includes taking cores!**

**Areas Worked:**
Continued surveying in PL002.

| HSE Reporting: | | HSE Officer: | Doug Bowlus |
|---|---|---|---|
| Toolbox: | X | JHA-Toolbox | |
| Shift Change: | | | |
| Safety: | X | MAR-TRA-011 | |
| Pre/Post Job: | | | |

| Production Summary: | Today: | To Date: | Job Total: | To Complete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 34.70 | 245.35 | 645.50 | 400.15 |
| Lines Completed: | 33 | 209 | 484 | 275 |
| Cores Taken: | 0 | 0 | 55 | 55 |
| In-Fill Kilometers: | 0.00 | 0.00 | | |
| Added on Kilometers: | 5.20 | 39.50 | 6.12% | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 0.00 | | |

**Geophysical Equipment:**

| | |
|---|---|
| Equipment #1: | Navigation System - POS MV # |
| Equipment #2: | Diff. GPS System - Trimble AG130 # |
| Equipment #3: | MBES - R2Sonic # |
| Equipment #4: | SSS - Edgetech 4200 # |
| Equipment #5: | Mag. - SeaSpy # |
| Equipment #6: | USBL - IXSEA GAPS # |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

| Weather Summary: | Sea State (meters) | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | N/A | N/A | N/A |
| Wx - 1200: | 0.2 | 5 kts | S |
| Wx - 1800: | 0.5 | 4 kts | SSW |
| Wx - 2400: | N/A | N/A | N/A |

***Personnel Onboard:***

| | |
|---|---|
| *Captain:* | Ryan Braget |
| *Other Vessel Crew:* | n/a |
| *Party Chief:* | Doug Bowlus |
| *Hydro. Surveyor:* | Katie Conrad |
| *Geophysical Tech.:* | David Wise |
| *Other Survey Crew:* | n/a |
| *Client Representative:* | Ron Eckhardt |

***Personnel Onshore:***

| | |
|---|---|
| *Offshore Site Manager:* | Charlie Hall |
| *Ass't Off. Site Manager:* | Marta Krynytzky |
| *Data Manager:* | Chuck Chamberlain |
| *Data Processor:* | Cody Gibson |
| *Data Processor:* | Lance Woods |
| *Data Processor:* | n/a |
| *Additional Proc.:* | n/a |
| *Client Representative:* | n/a |

**Client Representative's Remarks:**

**FUGRO:** _____ **Client:** _____

# Daily Progress Report

**Fugro**
**R/V: Westerly**

*ver 7.22.2015-A (Alaska)*

| | |
|---|---|
| Client: | AK LNG |
| Job Description: | Seafloor Mapping |
| Area & Block(s): | Pipeline |
| Prospect / Site: | PL002 |
| Fugro Job #: | 23.00007123 |
| Job Day #: | 16 |
| Report For: | 25-Jul-2015 Saturday |
| Julian Date: | 206 |
| Hours From: | 0630 to 1830 |

| | | |
|---|---|---|
| Production Hrs/Day: | 12.0 hrs | |
| Job Total in Meters: | 606,000.00 | |
| Total # of Lines: | 484 Lines | |
| # Cores/Core Time: | 55 cores | Est. 180 mins. |
| Total Meters Added: | 39,500.00 | |
| Total Meters Deleted: | 0.00 | |
| Survey Units: | Meters | |
| Nautical Mile (Feet): | 6080 | |

Report From:

| Time Summary (Hours): | Today: | Job Totals: | ( % ) |
|---|---|---|---|
| Mobilize / Demobilize: | 0.00 | 0.00 | |
| On-Line: | 0.00 | 59.80 | 36.65% |
| Transit: | 0.00 | 39.20 | 24.02% |
| Other Working: | 1.25 | 34.55 | 21.17% |
| Equipment Downtime: | 10.75 | 13.37 | 8.19% |
| Weather Stand-By: | 0.00 | 15.08 | 9.24% |
| Other Stand-By: | 0.00 | 1.17 | 0.72% |
| Stand-By / No Crew: | 0.00 | 0.00 | |
| Health, Safety & Environmental: | 0.00 | 0.00 | |
| Job Summary: | 12.00 | 163.18 | 100.00% |

**Job Total - Kilometers:** ***645.50***
**On-Line Percent Complete:** ***38.01%***

**Kilometers Added:** ***39.50***

**Estimated Coring Time:** **13.75 Days**
**Estimated Time to Completion:** **21.88 Days**

**Estimated Time includes taking cores!**

Areas Worked:
No survey work completed today. Vessel issue required all day repair. Vessel fueling completed at the end of the day.

| HSE Reporting: | | HSE Officer: | Doug Bowlus |
|---|---|---|---|
| Toolbox: | X | JHA-Morning Meeting | |
| Shift Change: | | | |
| Safety: | X | MAR-TRA-013 | |
| Pre/Post Job: | | | |

| Production Summary: | Today: | To Date: | Job Total: | To Complete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 0.00 | 245.35 | 645.50 | 400.15 |
| Lines Completed: | 0 | 209 | 484 | 275 |
| Cores Taken: | 0 | 0 | 55 | 55 |
| In-Fill Kilometers: | 0.00 | 0.00 | | |
| Added on Kilometers: | 0.00 | 39.50 | 6.12% | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 0.00 | | |

| Geophysical Equipment: | |
|---|---|
| Equipment #1: | Navigation System - POS MV # |
| Equipment #2: | Diff. GPS System - Trimble AG130 # |
| Equipment #3: | MBES - R2Sonic # |
| Equipment #4: | SSS - Edgetech 4200 # |
| Equipment #5: | Mag. - SeaSpy # |
| Equipment #6: | USBL - IXSEA GAPS # |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

| Weather Summary: | Sea State (meters) | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | N/A | N/A | N/A |
| Wx - 1200: | 0.6 to 1.3 (forecast) | 10 kts | WSW |
| Wx - 1800: | 0.6 to 1.3 (forecast) | 17 kts | SW |
| Wx - 2400: | N/A | N/A | N/A |

***Personnel Onboard:***

| | |
|---|---|
| *Captain:* | Ryan Braget |
| *Other Vessel Crew:* | n/a |
| *Party Chief:* | Doug Bowlus |
| *Hydro. Surveyor:* | Katie Conrad |
| *Geophysical Tech.:* | David Wise |
| *Other Survey Crew:* | n/a |
| *Client Representative:* | Ron Eckhardt |

***Personnel Onshore:***

| | |
|---|---|
| *Offshore Site Manager:* | Charlie Hall |
| *Ass't Off. Site Manager:* | Marta Krynytzky |
| *Data Manager:* | Chuck Chamberlain |
| *Data Processor:* | Cody Gibson |
| *Data Processor:* | Lance Woods |
| *Data Processor:* | n/a |
| *Additional Proc.:* | n/a |
| *Client Representative:* | n/a |

**Client Representative's Remarks:**

Vessel Technical Downtime from 0630 to 1830 hrs.

**FUGRO:** _____ **Client:** _____

# Daily Progress Report

**Fugro**
**R/V: Westerly**

*ver 7.22.2015-A (Alaska)*

| | |
|---|---|
| Client: | AK LNG |
| Job Description: | Seafloor Mapping |
| Area & Block(s): | Pipeline |
| Prospect / Site: | PL002 |
| Fugro Job #: | 23.00007123 |
| Job Day #: | 17 |
| Report For: | 26-Jul-2015 Sunday |
| Julian Date: | 207 |
| Hours From: | 0630 to 1830 |
| Report From: | |

| | | |
|---|---|---|
| Production Hrs/Day: | 12.0 hrs | |
| Job Total in Meters: | 606,000.00 | |
| Total # of Lines: | 484 Lines | |
| # Cores/Core Time: | 55 cores | Est. 180 mins. |
| Total Meters Added: | 42,650.00 | |
| Total Meters Deleted: | 0.00 | |
| Survey Units: | Meters | |
| Nautical Mile (Feet): | 6080 | |

| Time Summary (Hours): | Today: | Job Totals: | ( % ) |
|---|---|---|---|
| Mobilize / Demobilize: | 0.00 | 0.00 | |
| On-Line: | 4.92 | 64.72 | 36.94% |
| Transit: | 4.37 | 43.57 | 24.87% |
| Other Working: | 2.72 | 37.27 | 21.28% |
| Equipment Downtime: | 0.00 | 13.37 | 7.63% |
| Weather Stand-By: | 0.00 | 15.08 | 8.61% |
| Other Stand-By: | 0.00 | 1.17 | 0.67% |
| Stand-By / No Crew: | 0.00 | 0.00 | |
| Health, Safety & Environmental: | 0.00 | 0.00 | |
| Job Summary: | 12.00 | 175.18 | 100.00% |

**Job Total - Kilometers:** *648.65*
**On-Line Percent Complete:** *42.06%*

**Kilometers Added:** *42.65*

**Estimated Coring Time:** 13.75 Days
**Estimated Time to Completion:** 21.18 Days

**Estimated Time includes taking cores!**

**Areas Worked:**
Continued surveying at PL002. Completed the offshore lines at PL002 pending data review. Surveyed as far inshore as conditions would safely allow with Multibeam.

| HSE Reporting: | | HSE Officer: | Doug Bowlus |
|---|---|---|---|
| Toolbox: | X | JHA-Toolbox | |
| Shift Change: | | | |
| Safety: | X | MAR-TRA-012 | |
| Pre/Post Job: | | | |

| Production Summary: | Today: | To Date: | Job Total: | To Complete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 27.50 | 272.85 | 648.65 | 375.80 |
| Lines Completed: | 29 | 238 | 484 | 246 |
| Cores Taken: | 0 | 0 | 55 | 55 |
| In-Fill Kilometers: | 0.00 | 0.00 | | |
| Added on Kilometers: | 3.15 | 42.65 | 6.58% | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 0.00 | | |

| Geophysical Equipment: | |
|---|---|
| Equipment #1: | Navigation System - POS MV # |
| Equipment #2: | Diff. GPS System - Trimble AG130 # |
| Equipment #3: | MBES - R2Sonic # |
| Equipment #4: | SSS - Edgetech 4200 # |
| Equipment #5: | Mag. - SeaSpy # |
| Equipment #6: | USBL - IXSEA GAPS # |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

| Weather Summary: | Sea State (meters) | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | N/A | N/A | N/A |
| Wx - 1200: | 0.5 | 16 kts | SSW |
| Wx - 1800: | 1.0 | 17 kts | SW |
| Wx - 2400: | N/A | N/A | N/A |

***Personnel Onboard:***

| | |
|---|---|
| *Captain:* | Ryan Braget |
| *Other Vessel Crew:* | n/a |
| *Party Chief:* | Doug Bowlus |
| *Hydro. Surveyor:* | Katie Conrad |
| *Geophysical Tech.:* | David Wise |
| *Other Survey Crew:* | n/a |
| *Client Representative:* | Ron Eckhardt |

***Personnel Onshore:***

| | |
|---|---|
| *Offshore Site Manager:* | Charlie Hall |
| *Ass't Off. Site Manager:* | Marta Krynytzky |
| *Data Manager:* | Chuck Chamberlain |
| *Data Processor:* | Cody Gibson |
| *Data Processor:* | Lance Woods |
| *Data Processor:* | n/a |
| *Additional Proc.:* | n/a |
| *Client Representative:* | n/a |

**Client Representative's Remarks:**

**FUGRO:** _____ **Client:** _____

# Daily Progress Report

**Fugro**
**R/V: Westerly**

*ver 7.22.2015-A (Alaska)*

| | |
|---|---|
| Client: | AK LNG |
| Job Description: | Seafloor Mapping |
| Area & Block(s): | Pipeline |
| Prospect / Site: | PL001 / PL003 |
| Fugro Job #: | 23.00007123 |
| Job Day #: | 18 |
| Report For: | 27-Jul-2015 Monday |
| Julian Date: | 208 |
| Hours From: | 0630 to 1830 |
| Report From: | |

| | | |
|---|---|---|
| Production Hrs/Day: | 12.0 hrs | |
| Job Total in Meters: | 606,000.00 | |
| Total # of Lines: | 484 Lines | |
| # Cores/Core Time: | 55 cores | Est. 180 mins. |
| Total Meters Added: | 43,650.00 | |
| Total Meters Deleted: | 0.00 | |
| Survey Units: | Meters | |
| Nautical Mile (Feet): | 6080 | |

| Time Summary (Hours): | Today: | Job Totals: ( % ) | |
|---|---|---|---|
| Mobilize / Demobilize: | 0.00 | 0.00 | |
| On-Line: | 5.22 | 69.94 | 37.36% |
| Transit: | 2.83 | 46.40 | 24.79% |
| Other Working: | 3.53 | 40.80 | 21.80% |
| Equipment Downtime: | 0.42 | 13.79 | 7.37% |
| Weather Stand-By: | 0.00 | 15.08 | 8.06% |
| Other Stand-By: | 0.00 | 1.17 | 0.63% |
| Stand-By / No Crew: | 0.00 | 0.00 | |
| Health, Safety & Environmental: | 0.00 | 0.00 | |
| **Job Summary:** | **12.00** | **187.18** | **100.00%** |

**Job Total - Kilometers:** ***649.65***
**On-Line Percent Complete:** ***47.29%***

**Kilometers Added:** ***43.65***

**Estimated Coring Time:** **13.75 Days**
**Estimated Time to Completion:** **20.25 Days**

**Estimated Time includes taking cores!**

**Areas Worked:**

Ran in-fill at PL001. Began surveying at PL003. Fuel truck delayed, vessel fueling moved to tomorrow morning.

Tides will not allow for transit to worksite until after 10:30 tomorrow.

| HSE Reporting: | | HSE Officer: | Doug Bowlus |
|---|---|---|---|
| Toolbox: | X | JHA-Toolbox | |
| Shift Change: | | | |
| Safety: | X | MAR-TRA-014 | |
| Pre/Post Job: | | | |

| Production Summary: | Today: | To Date: | Job Total: | To Complete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 34.35 | 307.20 | 649.65 | 342.45 |
| Lines Completed: | 5 | 243 | 484 | 241 |
| Cores Taken: | 0 | 0 | 55 | 55 |
| In-Fill Kilometers: | 0.00 | 0.00 | | |
| Added on Kilometers: | 1.00 | 43.65 | 6.72% | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 0.00 | | |

**Geophysical Equipment:**

| | |
|---|---|
| Equipment #1: | Navigation System - POS MV # |
| Equipment #2: | Diff. GPS System - Trimble AG130 # |
| Equipment #3: | MBES - R2Sonic # |
| Equipment #4: | SSS - Edgetech 4200 # |
| Equipment #5: | Mag. - SeaSpy # |
| Equipment #6: | USBL - IXSEA GAPS # |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

**Weather Summary:**

| | Sea State (meters) | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | N/A | N/A | N/A |
| Wx - 1200: | 0.3 | 5 kts | W |
| Wx - 1800: | 0.3 | 4 kts | W |
| Wx - 2400: | N/A | N/A | N/A |

***Personnel Onboard:***

| | |
|---|---|
| *Captain:* | Ryan Braget |
| *Other Vessel Crew:* | n/a |
| *Party Chief:* | Doug Bowlus |
| *Hydro. Surveyor:* | Katie Conrad |
| *Geophysical Tech.:* | David Wise |
| *Other Survey Crew:* | n/a |
| *Client Representative:* | Ron Eckhardt |

***Personnel Onshore:***

| | |
|---|---|
| *Offshore Site Manager:* | Marta Krynytzky |
| *Ass't Off. Site Manager:* | Charle Hall |
| *Data Manager:* | Chuck Chamberlain |
| *Data Processor:* | Cody Gibson |
| *Data Processor:* | Lance Woods |
| *Data Processor:* | n/a |
| *Additional Proc.:* | n/a |
| *Client Representative:* | n/a |

**Client Representative's Remarks:**

**FUGRO:** _____ **Client:** _____

# Daily Progress Report

**Fugro**
**R/V: Westerly**

*ver 7.22.2015-A (Alaska)*

| | |
|---|---|
| Client: | AK LNG |
| Job Description: | Seafloor Mapping |
| Area & Block(s): | Pipeline |
| Prospect / Site: | PL001 / PL003 |
| Fugro Job #: | 23.00007123 |
| Job Day #: | 19 |
| Report For: | 28-Jul-2015 Tuesday |
| Julian Date: | 209 |
| Hours From: | 0645 to 1845 |
| Report From: | |

| | | |
|---|---|---|
| Production Hrs/Day: | *12.0 hrs* | |
| Job Total in Meters: | 606,000.00 | |
| Total # of Lines: | 484 Lines | |
| # Cores/Core Time: | 55 cores | Est. 180 mins. |
| Total Meters Added: | 45,250.00 | |
| Total Meters Deleted: | 0.00 | |
| Survey Units: | Meters | |
| Nautical Mile (Feet): | 6080 | |

| Time Summary (Hours): | Today: | Job Totals: ( % ) | |
|---|---|---|---|
| Mobilize / Demobilize: | 0.00 | 0.00 | |
| On-Line: | 3.67 | 73.60 | *36.95%* |
| Transit: | 3.50 | 49.90 | *25.05%* |
| Other Working: | 2.83 | 43.64 | *21.91%* |
| Equipment Downtime: | 0.00 | 13.79 | *6.92%* |
| Weather Stand-By: | 2.00 | 17.08 | *8.58%* |
| Other Stand-By: | 0.00 | 1.17 | *0.59%* |
| Stand-By / No Crew: | 0.00 | 0.00 | |
| Health, Safety & Environmental: | 0.00 | 0.00 | |
| **Job Summary:** | **12.00** | **199.18** | **100.00%** |

**Job Total - Kilometers:** ***651.25***
**On-Line Percent Complete:** ***50.75%***

**Kilometers Added:** ***45.25***

**Estimated Coring Time:** **13.75 Days**
**Estimated Time to Completion:** **19.70 Days**

**Estimated Time includes taking cores!**

**Areas Worked:**
Weekly safety meeting. Vessel fueling occurred this morning as they were unable to make it last night during working hours. Low tide prevented departure until late morning. Began surveying at PL004 area.

| HSE Reporting: | | HSE Officer: | Doug Bowlus |
|---|---|---|---|
| Toolbox: | X | Toolbox | |
| Shift Change: | | | |
| Safety: | X | Weekly Safety Meeting, Collecting Water in a bucket TRA, MAR-TRA-013 | |
| Pre/Post Job: | | | |

| Production Summary: | Today: | To Date: | Job Total: | To Complete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 23.30 | 330.50 | 651.25 | 320.75 |
| Lines Completed: | 8 | 251 | 484 | 233 |
| Cores Taken: | 0 | 0 | 55 | 55 |
| In-Fill Kilometers: | 0.00 | 0.00 | | |
| Added on Kilometers: | 1.60 | 45.25 | 6.95% | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 0.00 | | |

**Geophysical Equipment:**

| | |
|---|---|
| Equipment #1: | Navigation System - POS MV # |
| Equipment #2: | Diff. GPS System - Trimble AG130 # |
| Equipment #3: | MBES - R2Sonic # |
| Equipment #4: | SSS - Edgetech 4200 # |
| Equipment #5: | Mag. - SeaSpy # |
| Equipment #6: | USBL - IXSEA GAPS # |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

| Weather Summary: | Sea State (meters) | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | N/A | N/A | N/A |
| Wx - 1200: | 0.2 | 3 kts | NW |
| Wx - 1800: | 0.2 | 2 kts | WNW |
| Wx - 2400: | N/A | N/A | N/A |

***Personnel Onboard:***

| | |
|---|---|
| *Captain:* | Ryan Braget |
| *Other Vessel Crew:* | n/a |
| *Party Chief:* | Doug Bowlus |
| *Hydro. Surveyor:* | Katie Conrad |
| *Geophysical Tech.:* | David Wise |
| *Other Survey Crew:* | n/a |
| *Client Representative:* | Ron Eckhardt |

***Personnel Onshore:***

| | |
|---|---|
| *Offshore Site Manager:* | Marta Krynytzky |
| *Ass't Off. Site Manager:* | Charle Hall |
| *Data Manager:* | Chuck Chamberlain |
| *Data Processor:* | Cody Gibson |
| *Data Processor:* | Lance Woods |
| *Data Processor:* | n/a |
| *Additional Proc.:* | n/a |
| *Client Representative:* | n/a |

**Client Representative's Remarks:**

**FUGRO:** _____ **Client:** _____

# Daily Progress Report

**Fugro**
**R/V: Westerly**

*ver 7.22.2015-A (Alaska)*

| | |
|---|---|
| Client: | AK LNG |
| Job Description: | Seafloor Mapping |
| Area & Block(s): | Pipeline |
| Prospect / Site: | PL001 / PL003 |
| Fugro Job #: | 23.00007123 |
| Job Day #: | 20 |
| Report For: | 29-Jul-2015 Wednesday |
| Julian Date: | 210 |
| Hours From: | 0630 to 1830 |
| Report From: | |

| | | |
|---|---|---|
| Production Hrs/Day: | 12.0 hrs | |
| Job Total in Meters: | 606,000.00 | |
| Total # of Lines: | 484 Lines | |
| # Cores/Core Time: | 55 cores | Est. 180 mins. |
| Total Meters Added: | 47,400.00 | |
| Total Meters Deleted: | 0.00 | |
| Survey Units: | Meters | |
| Nautical Mile (Feet): | 6080 | |

| Time Summary (Hours): | Today: | Job Totals: | ( % ) |
|---|---|---|---|
| Mobilize / Demobilize: | 0.00 | 0.00 | |
| On-Line: | 5.12 | 78.72 | 37.28% |
| Transit: | 3.42 | 53.32 | 25.25% |
| Other Working: | 2.97 | 46.60 | 22.07% |
| Equipment Downtime: | 0.50 | 14.29 | 6.77% |
| Weather Stand-By: | 0.00 | 17.08 | 8.09% |
| Other Stand-By: | 0.00 | 1.17 | 0.55% |
| Stand-By / No Crew: | 0.00 | 0.00 | |
| Health, Safety & Environmental: | 0.00 | 0.00 | |
| Job Summary: | 12.00 | 211.18 | 100.00% |

**Job Total - Kilometers:** ***653.40***
**On-Line Percent Complete:** ***55.52%***

**Kilometers Added:** ***47.40***

**Estimated Coring Time:** **13.75 Days**
**Estimated Time to Completion:** **19.00 Days**

**Estimated Time includes taking cores!**

**Areas Worked:**
Continued surveying at PL004. Fueled vessel in the evening.

| HSE Reporting: | | HSE Officer: | Doug Bowlus |
|---|---|---|---|
| Toolbox: | X | Toolbox | |
| Shift Change: | | | |
| Safety: | X | MAR-TRA-015, MAR-TRA-013 | |
| Pre/Post Job: | | | |

| Production Summary: | Today: | To Date: | Job Total: | To Complete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 32.30 | 362.80 | 653.40 | 290.60 |
| Lines Completed: | 7 | 258 | 484 | 226 |
| Cores Taken: | 0 | 0 | 55 | 55 |
| In-Fill Kilometers: | 0.00 | 0.00 | | |
| Added on Kilometers: | 2.15 | 47.40 | 7.25% | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 0.00 | | |

**Geophysical Equipment:**

| | |
|---|---|
| Equipment #1: | Navigation System - POS MV # |
| Equipment #2: | Diff. GPS System - Trimble AG130 # |
| Equipment #3: | MBES - R2Sonic # |
| Equipment #4: | SSS - Edgetech 4200 # |
| Equipment #5: | Mag. - SeaSpy # |
| Equipment #6: | USBL - IXSEA GAPS # |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

| Weather Summary: | Sea State (meters) | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | N/A | N/A | N/A |
| Wx - 1200: | 0.2 | 6 kts | S |
| Wx - 1800: | 0.2 | 11 kts | SW |
| Wx - 2400: | N/A | N/A | N/A |

***Personnel Onboard:***

| | |
|---|---|
| *Captain:* | Ryan Braget |
| *Other Vessel Crew:* | n/a |
| *Party Chief:* | Doug Bowlus |
| *Hydro. Surveyor:* | Katie Conrad |
| *Geophysical Tech.:* | David Wise |
| *Other Survey Crew:* | n/a |
| *Client Representative:* | n/a |

***Personnel Onshore:***

| | |
|---|---|
| *Offshore Site Manager:* | Marta Krynytzky |
| *Ass't Off. Site Manager:* | Charle Hall |
| *Data Manager:* | Chuck Chamberlain |
| *Data Processor:* | Cody Gibson |
| *Data Processor:* | Lance Woods |
| *Data Processor:* | n/a |
| *Additional Proc.:* | n/a |
| *Client Representative:* | Ron Eckhardt |

**Client Representative's Remarks:**

Reviewed MBES & SSS data at CPC. PL-01 and PL-02 data sets are acceptable.

**FUGRO:** _____ **Client:** _____

# Daily Progress Report

**Fugro**
**R/V: Westerly**

*ver 7.22.2015-A (Alaska)*

| | |
|---|---|
| Client: | AK LNG |
| Job Description: | Seafloor Mapping |
| Area & Block(s): | Pipeline |
| Prospect / Site: | N/A |
| Fugro Job #: | 23.00007123 |
| Job Day #: | 21 |
| Report For: | 30-Jul-2015 Thursday |
| Julian Date: | 211 |
| Hours From: | 0630 to 1830 |
| Report From: | |

| | | |
|---|---|---|
| Production Hrs/Day: | 12.0 hrs | |
| Job Total in Meters: | 606,000.00 | |
| Total # of Lines: | 484 Lines | |
| # Cores/Core Time: | 55 cores | Est. 180 mins. |
| Total Meters Added: | 47,400.00 | |
| Total Meters Deleted: | 0.00 | |
| Survey Units: | Meters | |
| Nautical Mile (Feet): | 6080 | |

| Time Summary (Hours): | Today: | Job Totals: ( % ) | |
|---|---|---|---|
| Mobilize / Demobilize: | 0.00 | 0.00 | |
| On-Line: | 0.00 | 78.72 | 35.27% |
| Transit: | 0.00 | 53.32 | 23.89% |
| Other Working: | 12.00 | 58.60 | 26.26% |
| Equipment Downtime: | 0.00 | 14.29 | 6.40% |
| Weather Stand-By: | 0.00 | 17.08 | 7.65% |
| Other Stand-By: | 0.00 | 1.17 | 0.52% |
| Stand-By / No Crew: | 0.00 | 0.00 | |
| Health, Safety & Environmental: | 0.00 | 0.00 | |
| Job Summary: | 12.00 | 223.18 | 100.00% |

**Job Total - Kilometers:** ***653.40***
**On-Line Percent Complete:** ***55.52%***

**Kilometers Added:** ***47.40***

**Estimated Coring Time:** 13.75 Days
**Estimated Time to Completion:** 19.00 Days

**Estimated Time includes taking cores!**

**Areas Worked:**
LIDAR Mobilization. No survey work performed today.

| HSE Reporting: | | HSE Officer: | Doug Bowlus |
|---|---|---|---|
| Toolbox: | X | JHA-Toolbox | |
| Shift Change: | | | |
| Safety: | X | MAR-TRA-005 | |
| Pre/Post Job: | | | |

| Production Summary: | Today: | To Date: | Job Total: | To Complete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 0.00 | 362.80 | 653.40 | 290.60 |
| Lines Completed: | 0 | 258 | 484 | 226 |
| Cores Taken: | 0 | 0 | 55 | 55 |
| In-Fill Kilometers: | 0.00 | 0.00 | | |
| Added on Kilometers: | 0.00 | 47.40 | 7.25% | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 0.00 | | |

**Geophysical Equipment:**

| | |
|---|---|
| Equipment #1: | Navigation System - POS MV # |
| Equipment #2: | Diff. GPS System - Trimble AG130 # |
| Equipment #3: | MBES - R2Sonic # |
| Equipment #4: | SSS - Edgetech 4200 # |
| Equipment #5: | Mag. - SeaSpy # |
| Equipment #6: | USBL - IXSEA GAPS # |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

| Weather Summary: | Sea State (meters) | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | N/A | N/A | N/A |
| Wx - 1200: | N/A | 6 kts | SW |
| Wx - 1800: | N/A | 7 kts | SW |
| Wx - 2400: | N/A | N/A | N/A |

***Personnel Onboard:***

| | |
|---|---|
| *Captain:* | Ryan Braget |
| *Other Vessel Crew:* | n/a |
| *Party Chief:* | Doug Bowlus |
| *Hydro. Surveyor:* | Katie Conrad |
| *Geophysical Tech.:* | David Wise |
| *Other Survey Crew:* | n/a |
| *Client Representative:* | Ron Eckhardt |

***Personnel Onshore:***

| | |
|---|---|
| *Offshore Site Manager:* | Marta Krynytzky |
| *Ass't Off. Site Manager:* | Charle Hall |
| *Data Manager:* | Chuck Chamberlain |
| *Data Processor:* | Cody Gibson |
| *Data Processor:* | Lance Woods |
| *Data Processor:* | n/a |
| *Additional Proc.:* | n/a |
| *Client Representative:* | n/a |

**Client Representative's Remarks:**

**FUGRO:** _____ **Client:** _____

# Dairy ProdrQ33 RQpor7

**Fudro**
**R/I : WQ37Qrry**

*ver 7.22.2015-A (Alaska)*

| | |
|---|---|
| Production Hrs/Day: | *12.0 hrs* |
| Job Total in Meters: | 606,000.00 |
| Total # of Lines: | 484 Lines |
| # Cores/Core Time: | 55 cores / Est. 180 mins. |
| Total Meters Added: | 47,400.00 |
| Total Meters Deleted: | 0.00 |
| Survey Units: | Meters |
| Nautical Mile (Feet): | 6080 |

**Client:** AK LNG
**Job Description:** SQawpor Happied
**Area & Block(s):** PipQrieQ
**Prospect / Site:** N/A
**Fugro Job #:** 20.1111s920
**Job Day #:** 22

| | | |
|---|---|---|
| **Report For:** | 09-Jun2195 | FriVay |
| **Julian Date:** | 292 | |
| **6 ours Froh:** | 1M01 7o 9t 01 | |

**Report Froh:**

| Tih e Suh hary (6 our3): | Today: | Job Totals: ( % ) | |
|---|---|---|---|
| H obilize / Deh obilize: | 0.00 | 0.00 | |
| On-Line: | 0.00 | 78.72 | *33.47%* |
| Transit: | 4.42 | 57.74 | *24.55%* |
| Ot6 er Working: | 7.58 | 66.19 | *28.14%* |
| Ev uiph ent Downtih e: | 0.00 | 14.29 | *6.07%* |
| Weat6 er Stand-By: | 0.00 | 17.08 | *7.26%* |
| Ot6 er Stand-By: | 0.00 | 1.17 | *0.50%* |
| Stand-By / No Crew: | 0.00 | 0.00 | |
| 6 ealt6 _Safety & Eni ironh ental: | 0.00 | 0.00 | |
| **Job Suh hary:** | **92.11** | **205.9t** | **911.11%** |

**Job To7an- Kiro, Q7Qr3:** *653.40*
**Oe-LieQPQrf Qe7Co, prQ7Q:** *55.52%*

**Kiro, Q7Qr3 AVVQV:** *47.40*

**E37i, a7QV Coried Ti, Q** 90.s5 Day3
**E37i, a7QV Ti, Q7o Co, prQ7ioe:** 94.11 Day3

**E37i, a7QV Ti, Qief nuVQ3 7agied f orQ3k**

**Areas Worked:**
Today the vessel transited to Tyonek and conducted a Lidar survey (laser scanning) of the proposed pipeline landing site. The survey was conducted at low tide to maximize coverage of exposed beach and rocks near the shoreline.

| 6 SE Reporting: | | 6 SE Officer: | KQrry Po' Qr |
|---|---|---|---|
| Toolbox: | X | JHA-Toolbox | |
| Shift Change: | N/A | | |
| Safety: | X | Lance and Cody received a vessel orientation | |
| Pre/Post Job: | | | |

| Production Suh hary: | Today: | To Date: | Job Total: | To Coh plete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 0.00 | 362.80 | 653.40 | 290.60 |
| Lines Completed: | 0 | 258 | 484 | 226 |
| Cores Taken: | 0 | 0 | 55 | 55 |
| In-Fill Kilometers: | 0.00 | 0.00 | | |
| Added on Kilometers: | 0.00 | 47.40 | 7.25% | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 0.00 | | |

**Geop6 ysical Ev uiph ent:**

| | |
|---|---|
| Equipment #1: | Navigation System - POS MV # |
| Equipment #2: | Diff. GPS System - Trimble AG130 # |
| Equipment #3: | MBES - R2Sonic # |
| Equipment #4: | SSS - Edgetech 4200 # |
| Equipment #5: | Mag. - SeaSpy # |
| Equipment #6: | USBL - IXSEA GAPS # |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

| Weat6 er Suh hary: | SQa S7a7Q(, Q7Qr3) | Wie V SpQQV | Dir. |
|---|---|---|---|
| **Wx - 1M11:** | na | na | na |
| **Wx - 9211:** | 0.3 | 5-10 | SW |
| **Wx - 9t 11:** | 0.3 | Light | Var |
| **Wx - 2811:** | na | na | na |

***Personnel Onboard:***

*Captain:* Ryan Braget
*Other Vessel Crew:* n/a
*Party Chief:* Kelly Power
*Hydro. Surveyor:* Cody Gibson
*Geophysical Tech.:* Lance Woods
*Other Survey Crew:* n/a
*Client Representative:* n/a

***Personnel Onshore:***

*Offshore Site Manager:* Marta Krynytzky
*Ass't Off. Site Manager:* Charle Hall
*Data Manager:* Chuck Chamberlain
*Data Processor:* Katie Conrad
*Data Processor:* David Wise
*Data Processor:* Doug Bowlus
*Additional Proc.:* n/a
*Client Representative:* Ron Eckhardt

**CriQe7RQprQ3Qe7a7icQ3 RQ arg3:**

**FUGRO:** **CriQe7:**

Alaska LNG FUGRO

# DarQ PXonXm33 RmwoX7

FunXo
R/f : i m37mXQ

ver 7.22.2015-A (Alaska)

| | |
|---|---|
| CLIENT: | AK LNG |
| JOB DESCRIPTION: | SmaQoXH awwrdn |
| AREA & BLOCK(S): | PrwmQdm |
| PROSPECT / SITE: | N/A |
| FUGRO JOB #: | 25.0000s925 |
| JOB DAY #: | 25 |
| REPORT FOR: | 09-Aun-2091 Sa7uXeay |
| JULIAN DATE: | 295 |
| 6 OURS FROH: | 0M50 7o 9t 50 |

| | | |
|---|---|---|
| Production Hrs/Day: | 12.0 hrs | |
| Job Total in Meters: | 606,000.00 | |
| Total # of Lines: | 484 Lines | |
| # Cores/Core Time: | 55 cores | Est. 180 mins. |
| Total Meters Added: | 47,400.00 | |
| Total Meters Deleted: | 0.00 | |
| Survey Units: | Meters | |
| Nautical Mile (Feet): | 6080 | |

REPORT FROH:

| TIHE SUHHARY (6 ouX3): | TODAY: | JOB TOTALS: ( W ) | |
|---|---|---|---|
| H OBILIZE / DEHOBILIZE: | 0.00 | 0.00 | |
| ON-LINE: | 0.00 | 78.72 | 31.85% |
| TRANSIT: | 2.58 | 60.32 | 24.40% |
| OT6ER i ORKING: | 9.42 | 75.60 | 30.59% |
| EpUIPHENT DOi NTIHE: | 0.00 | 14.29 | 5.78% |
| i EAT6ER STAND-BY: | 0.00 | 17.08 | 6.91% |
| OT6ER STAND-BY: | 0.00 | 1.17 | 0.47% |
| STAND-BY / NO CREi : | 0.00 | 0.00 | |
| 6 EALT6 VSAFETY & ENf IRONHENTAL: | 0.00 | 0.00 | |
| JOB SUHHARY: | 92.00 | 2%s.9t | 900.00W |

| | | |
|---|---|---|
| Job To7aQ KrQl m7mX3: | 653.40 | |
| Od-LrdmPmX md7Col wQ7m | 55.52% | |
| KrQl m7mX3 Aeeme: | 47.40 | |
| E37rl a7me CoXdn Trl m | 95.s1 | Day3 |
| E37rl a7me Trl m7o Col wQ7rod: | 94.00 | Day3 |

E37rl a7me Trl mrd Qem8 7acrdn oXn8!

AREAS i ORKED: BouQmXPord7

Conducted a Lidar survey at Boulder Pt. During the survey the vessel touched the seafloor at very slow speed. Vessel was declutched at the time as vessel was maintaining a very slow speed. The vessel was following a 10' contour on the vessel electronic chart while we were surveying. The vessel touched and crew felt a very small bump. Crew stopped the survey. Vessel drifted away from the aground area before propulsion was engaged. Once away from area the captain checked the bilges for any sign of water and there was none. The vessel then circled back and resumed the Lidar survey a little further offshore. The survey was completed without incident. However upon review of the data onshore, the vessel distance from the shore resulted in the Lidar laser scanner being out of range of the shoreline and no usable Lidar data were acquired.

| 6 SE REPORTING: | | 6 SE OFFICER: | KmQ Po, mX |
|---|---|---|---|
| Toolbox: | X | JHA-Toolbox | |
| Shift Change: | N/A | | |
| Safety: | X | Review MRA-TRA 011 and 013 | |
| Pre/Post Job: | | | |

| PRODUCTION SUHHARY: | TODAY: | TO DATE: | JOB TOTAL: | TO COHPLETE: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 0.00 | 362.80 | 653.40 | 290.60 |
| Lines Completed: | 0 | 258 | 484 | 226 |
| Cores Taken: | 0 | 0 | 55 | 55 |
| In-Fill Kilometers: | 0.00 | 0.00 | | |
| Added on Kilometers: | 0.00 | 47.40 | 7.25% | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 0.00 | | |

GEOP6YSICAL EpUIPHENT:

| | |
|---|---|
| Equipment #1: | Navigation System - POS MV # |
| Equipment #2: | Diff. GPS System - Trimble AG130 # |
| Equipment #3: | MBES - R2Sonic # |
| Equipment #4: | SSS - Edgetech 4200 # |
| Equipment #5: | Mag. - SeaSpy # |
| Equipment #6: | USBL - IXSEA GAPS # |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

| i EAT6ER SUHHARY: | Sma S7a7m(l m7mX3) | i rde Swmme | DrX |
|---|---|---|---|
| i 8 - 0M00: | na | na | na |
| i 8 - 9200: | 0.3 | light | Var. |
| i 8 - 9t 00: | 0.3 | light | Var. |
| i 8 - 2%00: | na | na | na |

**Personnel Onboard:**

| | |
|---|---|
| *Captain:* | Ryan Braget |
| *Other Vessel Crew:* | n/a |
| *Party Chief:* | Kelly Power |
| *Hydro. Surveyor:* | Cody Gibson |
| *Geophysical Tech.:* | Lance Woods |
| *Other Survey Crew:* | n/a |
| *Client Representative:* | n/a |

**Personnel Onshore:**

| | |
|---|---|
| *Offshore Site Manager:* | Marta Krynytzky |
| *Ass't Off. Site Manager:* | Charle Hall |
| *Data Manager:* | Chuck Chamberlain |
| *Data Processor:* | Katie Conrad |
| *Data Processor:* | David Wise |
| *Data Processor:* | n/a |
| *Additional Proc.:* | n/a |
| *Client Representative:* | Ron Eckhardt |

CQmd7RmwXn8md7a7rvm13 Rml aXc3:

FUGRO: kkkkkkkkkkkkkkkkkkkkkkkkkkkkkkkkkkkkkkkkkkkkk CQmd7: kkkkkkkkkkkkkkkkkkkkkkkkkkkkkkkkkkkkkkkkkkkkkkkk

# Daily Progress Report

ver 7.22.2015-A (Alaska)

Fugro
R/V: Westerly

| | |
|---|---|
| Client: | AK LNG |
| Job Description: | Seafloor Mapping |
| Area & Block(s): | Pipeline |
| Prospect / Site: | N/A |
| Fugro Job #: | 23.00007123 |
| Job Day #: | 24 |
| Report For: | 02-Aug-2015 Sunday |
| Julian Date: | 214 |
| Hours From: | 0630 to 1830 |
| Report From: | |

| | | |
|---|---|---|
| Production Hrs/Day: | 12.0 hrs | |
| Job Total in Meters: | 606,000.00 | |
| Total # of Lines: | 484 Lines | |
| # Cores/Core Time: | 55 cores | Est. 180 mins. |
| Total Meters Added: | 47,400.00 | |
| Total Meters Deleted: | 0.00 | |
| Survey Units: | Meters | |
| Nautical Mile (Feet): | 6080 | |

| Time Summary (Hours): | Today: | Job Totals: | ( % ) |
|---|---|---|---|
| Mobilize / Demobilize: | 0.00 | 0.00 | |
| On-Line: | 0.00 | 78.72 | 30.37% |
| Transit: | 0.00 | 60.32 | 23.27% |
| Other Working: | 12.00 | 87.60 | 33.80% |
| Equipment Downtime: | 0.00 | 14.29 | 5.51% |
| Weather Stand-By: | 0.00 | 17.08 | 6.59% |
| Other Stand-By: | 0.00 | 1.17 | 0.45% |
| Stand-By / No Crew: | 0.00 | 0.00 | |
| Health, Safety & Environmental: | 0.00 | 0.00 | |
| Job Summary: | 12.00 | 259.18 | 100.00% |

**Job Total - Kilometers:** *653.40*
**On-Line Percent Complete:** *55.52%*

**Kilometers Added:** *47.40*

**Estimated Coring Time:** 13.75 Days
**Estimated Time to Completion:** 19.00 Days

**Estimated Time includes taking cores!**

**Areas Worked:**
Today was a fatigue mangement day. All personnel where on a rest period and no operations were conducted.

| HSE Reporting: | | HSE Officer: | Kelly Power |
|---|---|---|---|
| Toolbox: | N/A | | |
| Shift Change: | N/A | | |
| Safety: | N/A | | |
| Pre/Post Job: | N/A | | |

| Production Summary: | Today: | To Date: | Job Total: | To Complete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 0.00 | 362.80 | 653.40 | 290.60 |
| Lines Completed: | 0 | 258 | 484 | 226 |
| Cores Taken: | 0 | 0 | 55 | 55 |
| In-Fill Kilometers: | 0.00 | 0.00 | | |
| Added on Kilometers: | 0.00 | 47.40 | 7.25% | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 0.00 | | |

**Geophysical Equipment:**

| | |
|---|---|
| Equipment #1: | Navigation System - POS MV # |
| Equipment #2: | Diff. GPS System - Trimble AG130 # |
| Equipment #3: | MBES - R2Sonic # |
| Equipment #4: | SSS - Edgetech 4200 # |
| Equipment #5: | Mag. - SeaSpy # |
| Equipment #6: | USBL - IXSEA GAPS # |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

| Weather Summary: | Sea State (meters) | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | n/a | n/a | n/a |
| Wx - 1200: | n/a | n/a | n/a |
| Wx - 1800: | n/a | n/a | n/a |
| Wx - 2400: | n/a | n/a | n/a |

***Personnel Onboard:***

| | |
|---|---|
| *Captain:* | Ryan Braget |
| *Other Vessel Crew:* | n/a |
| *Party Chief:* | Kelly Power |
| *Hydro. Surveyor:* | Katie Conrad |
| *Geophysical Tech.:* | Dave Wise |
| *Other Survey Crew:* | n/a |
| *Client Representative:* | Ron Eckhardt |

***Personnel Onshore:***

| | |
|---|---|
| *Offshore Site Manager:* | Marta Krynytzky |
| *Ass't Off. Site Manager:* | Charle Hall |
| *Data Manager:* | Chuck Chamberlain |
| *Data Processor:* | Cody Gibson |
| *Data Processor:* | Lance Woods |
| *Data Processor:* | n/a |
| *Additional Proc.:* | n/a |
| *Client Representative:* | n/a |

**Client Representative's Remarks:**

FUGRO: Kelly Power Client:

Alaska LNG

FUGRO

# Daily Pronre33 Repor7

Funro
R/I : We37erQ

ver 7.22.2015-A (Alaska)

| | |
|---|---|
| Client: | AK LNG |
| Job Description: | Seawoor Happinn |
| Area & Block(s): | PipeOme |
| Prospect / Site: | N/A |
| Fugro Job #: | 29.0000s129 |
| Job Day #: | 25 |
| Report For: | 09-Aun-2015 HomVay |
| Julian Date: | 215 |
| 6 ours Froh: | 0M90 7o 1t 90 |
| Report Froh: | |

| | |
|---|---|
| Production Hrs/Day: | 12.0 hrs |
| Job Total in Meters: | 606,000.00 |
| Total # of Lines: | 484 Lines |
| # Cores/Core Time: | 55 cores Est. 180 mins. |
| Total Meters Added: | 47,400.00 |
| Total Meters Deleted: | 0.00 |
| Survey Units: | Meters |
| Nautical Mile (Feet): | 6080 |

| Tihe Suhhary (6our3): | Today: | Job Totals: | ( % ) |
|---|---|---|---|
| Hobilize / Dehobilize: | 12.00 | 12.00 | 4.43% |
| On-Line: | 0.00 | 78.72 | 29.03% |
| Transit: | 0.00 | 60.32 | 22.24% |
| Ot6er Working: | 0.00 | 87.60 | 32.30% |
| Evuiphent Downtihe: | 0.00 | 14.29 | 5.27% |
| Weat6er Stand-By: | 0.00 | 17.08 | 6.30% |
| Ot6er Stand-By: | 0.00 | 1.17 | 0.43% |
| Stand-By / No Crew: | 0.00 | 0.00 | |
| 6 ealt6 _Safety & Eni ironhental: | 0.00 | 0.00 | |
| Job Suhhary: | 12.00 | 2s1.1t | 100.00% |
| Areas Worked: | | | |

Job To7aQ- KiQ, e7er3: 653.40
Om-Line Perf em7 Co, pQ7e: 55.52%

KiQ, e7er3 AVVeV: 47.40

E37i, a7eV Corinn Ti, e: 19.s5 Day3
E37i, a7eV Ti, e 7o Co, pQ7iom 14.00 Day3

E37i, a7eV Ti, e inf QVe3 7agimn f ore3k

No operations were conducted today as the Lidar laser scanner system was demobilized from the vessel.

| 6 SE Reporting: | | 6 SE Officer: | KeQy Po' er |
|---|---|---|---|
| Toolbox: | X | JHA-Toolbox | |
| Shift Change: | N/A | | |
| Safety: | X | Review MRA-TRA-005 | |
| Pre/Post Job: | | | |

| Production Suhhary: | Today: | To Date: | Job Total: | To Cohplete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 0.00 | 362.80 | 653.40 | 290.60 |
| Lines Completed: | 0 | 258 | 484 | 226 |
| Cores Taken: | 0 | 0 | 55 | 55 |
| In-Fill Kilometers: | 0.00 | 0.00 | | |
| Added on Kilometers: | 0.00 | 47.40 | 7.25% | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 0.00 | | |

| Weat6er Suhhary: | Sea S7a7e (, e7er3) | WimV SpeeV | Dir. |
|---|---|---|---|
| Wx - 0M00: | n/a | n/a | n/a |
| Wx - 1200: | n/a | Light | Var |
| Wx - 1t 00: | n/a | Light | Var |
| Wx - 2800: | n/a | n/a | n/a |

Geop6ysical Evuiphent:

| | |
|---|---|
| Equipment #1: | Navigation System - POS MV # |
| Equipment #2: | Diff. GPS System - Trimble AG130 # |
| Equipment #3: | MBES - R2Sonic # |
| Equipment #4: | SSS - Edgetech 4200 # |
| Equipment #5: | Mag. - SeaSpy # |
| Equipment #6: | USBL - IXSEA GAPS # |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

## Personnel Onboard:

| | |
|---|---|
| Captain: | Ryan Braget |
| Other Vessel Crew: | n/a |
| Party Chief: | Kelly Power |
| Hydro. Surveyor: | Katie Conrad |
| Geophysical Tech.: | Dave Wise |
| Other Survey Crew: | n/a |
| Client Representative: | n/a |

## Personnel Onshore:

| | |
|---|---|
| Offshore Site Manager: | Marta Krynytzky |
| Ass't Off. Site Manager: | Charle Hall |
| Data Manager: | Chuck Chamberlain |
| Data Processor: | Cody Gibson |
| Data Processor: | Lance Woods |
| Data Processor: | n/a |
| Additional Proc.: | n/a |
| Client Representative: | Ron Eckhardt |

CQem7 Repre3em7a7ice!3 Re, arg3:

FUGRO: dddddddddddddddddddddddd \ddddddddddddd dddddd CQem7: dddddddddddddddddddddddddddddddddddddddddddddddd

# Daily Progress Report

ver 7.22.2015-A (Alaska)

**Client:** AK LNG
**Job Description:** Seafloor Mapping
**Area & Block(s):** Pipeline
**Prospect / Site:** N/A
**Fugro Job #:** 23.00007123
**Job Day #:** 26

| | | |
|---|---|---|
| **Report For:** | 04-Aug-2015 | Tuesday |
| **Julian Date:** | 216 | |
| **Hours From:** | 0630 to 1830 | |

**Report From:**

Fugro
R/V: Westerly

| | | |
|---|---|---|
| Production Hrs/Day: | 12.0 hrs | |
| Job Total in Meters: | 606,000.00 | |
| Total # of Lines: | 484 Lines | |
| # Cores/Core Time: | 55 cores | Est. 180 mins. |
| Total Meters Added: | 50,400.00 | |
| Total Meters Deleted: | 0.00 | |
| Survey Units: | Meters | |
| Nautical Mile (Feet): | 6080 | |

| Time Summary (Hours): | Today: | Job Totals: | ( % ) |
|---|---|---|---|
| Mobilize / Demobilize: | 0.00 | 12.00 | 4.24% |
| On-Line: | 4.95 | 83.67 | 29.55% |
| Transit: | 1.50 | 61.82 | 21.83% |
| Other Working: | 5.55 | 93.15 | 32.90% |
| Equipment Downtime: | 0.00 | 14.29 | 5.05% |
| Weather Stand-By: | 0.00 | 17.08 | 6.03% |
| Other Stand-By: | 0.00 | 1.17 | 0.41% |
| Stand-By / No Crew: | 0.00 | 0.00 | |
| Health, Safety & Environmental: | 0.00 | 0.00 | |
| **Job Summary:** | **12.00** | **283.18** | **100.00%** |

**Areas Worked:** Block PL04

**Job Total - Kilometers:** *656.40*
**On-Line Percent Complete:** *58.56%*

**Kilometers Added:** *50.40*

**Estimated Coring Time:** 13.75 Days
**Estimated Time to Completion:** 18.68 Days

**Estimated Time includes taking cores!**

Acquired 21.6km of line today on PL04. At times the current was fast and slowed vessel while going against it. Data quality was good.

| HSE Reporting: | | HSE Officer: | Kelly Power |
|---|---|---|---|
| Toolbox: | X | JHA-Toolbox | |
| Shift Change: | | | |
| Safety: | X | Weekly safety meeting plus client rep received a vessel orientation | |
| Pre/Post Job: | | | |

| Production Summary: | Today: | To Date: | Job Total: | To Complete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 21.60 | 384.40 | 656.40 | 272.00 |
| Lines Completed: | 10 | 268 | 484 | 216 |
| Cores Taken: | 0 | 0 | 55 | 55 |
| In-Fill Kilometers: | 0.00 | 0.00 | | |
| Added on Kilometers: | 3.00 | 50.40 | 7.68% | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 0.00 | | |

**Geophysical Equipment:**

Equipment #1: Navigation System - POS MV #
Equipment #2: Diff. GPS System - Trimble AG130 #
Equipment #3: MBES - R2Sonic #
Equipment #4: SSS - Edgetech 4200 #
Equipment #5: Mag. - SeaSpy #
Equipment #6: USBL - IXSEA GAPS #
Equipment #7: Grab Sampler - Day Grab #
Equipment #8: Grab Sampler - Van Veen #
Equipment #9:
Equipment #10:
Equipment #11:

| Weather Summary: | Sea State (meters) | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | n/a | n/a | n/a |
| Wx - 1200: | 0.3m | 5kts | SW |
| Wx - 1800: | 0.3m | 5kts | SW |
| Wx - 2400: | n/a | n/a | n/a |

***Personnel Onboard:***

*Captain:* Ryan Braget
*Other Vessel Crew:* n/a
*Party Chief:* Kelly Power
*Hydro. Surveyor:* Katie Conrad
*Geophysical Tech.:* Dave Wise
*Other Survey Crew:* Richie Carmichael
*Client Representative:* Kent Simpson

***Personnel Onshore:***

*Offshore Site Manager:* Marta Krynytzky
*Ass't Off. Site Manager:* Charle Hall
*Data Manager:* Chuck Chamberlain
*Data Processor:* Cody Gibson
*Data Processor:* Lance Woods
*Data Processor:* n/a
*Additional Proc.:* n/a
*Client Representative:* Ron Eckhardt

**Client Representative's Remarks:**

**FUGRO:** Kelly Power **Client:** Kent W. Simpson

# Daily Progress Report

ver 7.22.2015-A (Alaska)

| | |
|---|---|
| Client: | AK LNG |
| Job Description: | Seafloor Mapping |
| Area & Block(s): | Pipeline |
| Prospect / Site: | N/A |
| Fugro Job #: | 23.00007123 |
| Job Day #: | 27 |
| Report For: | 05-Aug-2015 Wednesday |
| Julian Date: | 217 |
| Hours From: | 0630 to 1830 |
| Report From: | |

Fugro
R/V: Westerly

| | | |
|---|---|---|
| Production Hrs/Day: | 12.0 hrs | |
| Job Total in Meters: | 606,000.00 | |
| Total # of Lines: | 484 Lines | |
| # Cores/Core Time: | 55 cores | Est. 180 mins. |
| Total Meters Added: | 53,700.00 | |
| Total Meters Deleted: | 0.00 | |
| Survey Units: | Meters | |
| Nautical Mile (Feet): | 6080 | |

| Time Summary (Hours): | Today: | Job Totals: | ( % ) |
|---|---|---|---|
| Mobilize / Demobilize: | 0.00 | 12.00 | 4.07% |
| On-Line: | 5.72 | 89.39 | 30.28% |
| Transit: | 3.30 | 65.12 | 22.06% |
| Other Working: | 2.98 | 96.14 | 32.57% |
| Equipment Downtime: | 0.00 | 14.29 | 4.84% |
| Weather Stand-By: | 0.00 | 17.08 | 5.79% |
| Other Stand-By: | 0.00 | 1.17 | 0.40% |
| Stand-By / No Crew: | 0.00 | 0.00 | |
| Health, Safety & Environmental: | 0.00 | 0.00 | |
| Job Summary: | 12.00 | 295.18 | 100.00% |

Areas Worked: PL04 and PL03

**Job Total - Kilometers:** *659.70*
**On-Line Percent Complete:** *60.25%*

**Kilometers Added:** *53.70*

**Percent In-Fill:** *1.30%*

**Estimated Coring Time:** 13.75 Days
**Estimated Time to Completion:** 18.67 Days

**Estimated Time includes taking cores!**

Completed block PL04 today barring any reruns or infill lines. Ran 2 infill lines in block PL03 which now should have full coverage. In yesterdays DPR I inadvertly added 3km on to the daily total. The daily total reported yesterday showed 21.60 km. The actual daily total should have read 18.6km. I have corrected the error and updated todays DPR to reflect that change.

| HSE Reporting: | | HSE Officer: | Kelly Power |
|---|---|---|---|
| Toolbox: | X | JHA-Toolbox | |
| Shift Change: | | | |
| Safety: | X | MOB Drill, Review MRA-TRA-012 | |
| Pre/Post Job: | | | |

| Production Summary: | Today: | To Date: | Job Total: | To Complete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 16.05 | 397.45 | 659.70 | 262.25 |
| Lines Completed: | 11 | 279 | 484 | 205 |
| Cores Taken: | 0 | 0 | 55 | 55 |
| In-Fill Kilometers: | 8.55 | 8.55 | 1.30% | |
| Added on Kilometers: | 3.30 | 53.70 | 8.14% | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 0.00 | | |

**Geophysical Equipment:**

| | |
|---|---|
| Equipment #1: | Navigation System - POS MV # |
| Equipment #2: | Diff. GPS System - Trimble AG130 # |
| Equipment #3: | MBES - R2Sonic # |
| Equipment #4: | SSS - Edgetech 4200 # |
| Equipment #5: | Mag. - SeaSpy # |
| Equipment #6: | USBL - IXSEA GAPS # |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

| Weather Summary: | Sea State (meters) | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | n/a | n/a | n/a |
| Wx - 1200: | 0.3m | 10kts | S |
| Wx - 1800: | 0.3m | 10kts | S |
| Wx - 2400: | n/a | n/a | n/a |

***Personnel Onboard:***

| | |
|---|---|
| *Captain:* | Ryan Braget |
| *Other Vessel Crew:* | n/a |
| *Party Chief:* | Kelly Power |
| *Hydro. Surveyor:* | David Wise |
| *Geophysical Tech.:* | Richie Carmichael |
| *Other Survey Crew:* | n/a |
| *Client Representative:* | Ron Eckhardt |

***Personnel Onshore:***

| | |
|---|---|
| *Offshore Site Manager:* | Marta Krynytzky |
| *Ass't Off. Site Manager:* | Charle Hall |
| *Data Manager:* | Chuck Chamberlain |
| *Data Processor:* | Cody Gibson |
| *Data Processor:* | Lance Woods |
| *Data Processor:* | n/a |
| *Additional Proc.:* | n/a |
| *Client Representative:* | Kent Simpson |

**Client Representative's Remarks:**

Technical downtime: Nav Systems Onboard. 06:55 to 07:25 (0.5h): Diagnostics to POS-MV

FUGRO: Kelly Power  Client: Kent W. Simpson

# Daily Progress Report

ver 7.22.2015-A (Alaska)

**Client:** AK LNG
**Job Description:** Seafloor Mapping
**Area & Block(s):** Pipeline
**Prospect / Site:** N/A
**Fugro Job #:** 23.00007123
**Job Day #:** 28

| | | |
|---|---|---|
| **Report For:** | 06-Aug-2015 | Thursday |
| **Julian Date:** | 218 | |
| **Hours From:** | 0630 to 1830 | |

**Report From:**

Fugro
R/V: Westerly

| | | |
|---|---|---|
| Production Hrs/Day: | 12.0 hrs | |
| Job Total in Meters: | 606,000.00 | |
| Total # of Lines: | 484 Lines | |
| # Cores/Core Time: | 55 cores | Est. 180 mins. |
| Total Meters Added: | 56,500.00 | |
| Total Meters Deleted: | 0.00 | |
| Survey Units: | Meters | |
| Nautical Mile (Feet): | 6080 | |

| Time Summary (Hours): | Today: | Job Totals: | ( % ) |
|---|---|---|---|
| Mobilize / Demobilize: | 0.00 | 12.00 | 3.91% |
| On-Line: | 5.50 | 94.89 | 30.89% |
| Transit: | 3.53 | 68.65 | 22.35% |
| Other Working: | 2.97 | 99.10 | 32.26% |
| Equipment Downtime: | 0.00 | 14.29 | 4.65% |
| Weather Stand-By: | 0.00 | 17.08 | 5.56% |
| Other Stand-By: | 0.00 | 1.17 | 0.38% |
| Stand-By / No Crew: | 0.00 | 0.00 | |
| Health, Safety & Environmental: | 0.00 | 0.00 | |
| **Job Summary:** | **12.00** | **307.18** | **100.00%** |

**Job Total - Kilometers:** *662.50*
**On-Line Percent Complete:** *62.59%*

**Kilometers Added:** *56.50*

**Percent In-Fill:** *1.29%*

**Estimated Coring Time:** 13.75 Days
**Estimated Time to Completion:** 18.48 Days

**Estimated Time includes taking cores!**

**Areas Worked:**

Surveyed in 2 blocks PL05 and PL06. Encountered the heavy lift ship Svenja near PL05. In communicating with the Svenja the vessel requested we give her a 1nm CPA as she was recovering anchors for departure. The recovery of the anchors is expected to take 36hrs. The Westerly surveyed the lines that were outside the Svenja 1nm cpa and then travelled to PL06 and resumed operations on that block. The Westerly also had to take an extended line on PL06 to allow a seismic vessel to pass ahead and thru PL06.

| HSE Reporting: | | HSE Officer: | Kelly Power |
|---|---|---|---|
| Toolbox: | X | JHA-Toolbox | |
| Shift Change: | | | |
| Safety: | X | Review MAR-TRA's 012 and 013 | |
| Pre/Post Job: | | | |

| Production Summary: | Today: | To Date: | Job Total: | To Complete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 17.20 | 414.65 | 662.50 | 247.85 |
| Lines Completed: | 14 | 293 | 484 | 191 |
| Cores Taken: | 0 | 0 | 55 | 55 |
| In-Fill Kilometers: | 0.00 | 8.55 | 1.29% | |
| Added on Kilometers: | 2.80 | 56.50 | 8.53% | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 0.00 | | |

**Geophysical Equipment:**

| | |
|---|---|
| Equipment #1: | Navigation System - POS MV # |
| Equipment #2: | Diff. GPS System - Trimble AG130 # |
| Equipment #3: | MBES - R2Sonic # |
| Equipment #4: | SSS - Edgetech 4200 # |
| Equipment #5: | Mag. - SeaSpy # |
| Equipment #6: | USBL - IXSEA GAPS # |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

| Weather Summary: | Sea State (meters) | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | n/a | n/a | n/a |
| Wx - 1200: | 0.3m | 10kts | SW |
| Wx - 1800: | 0.3m | 10kts | SW |
| Wx - 2400: | n/a | n/a | n/a |

***Personnel Onboard:***

*Captain:* Ryan Braget
*Other Vessel Crew:* n/a
*Party Chief:* Kelly Power
*Hydro. Surveyor:* David Wise
*Geophysical Tech.:* Richie Carmichael
*Other Survey Crew:* n/a
*Client Representative:* Kent Simpson

***Personnel Onshore:***

*Offshore Site Manager:* Marta Krynytzky
*Ass't Off. Site Manager:* Charle Hall
*Data Manager:* Chuck Chamberlain
*Data Processor:* Cody Gibson
*Data Processor:* Lance Woods
*Data Processor:* n/a
*Additional Proc.:* n/a
*Client Representative:* Ron Eckhardt

**Client Representative's Remarks:**

**FUGRO:** Kelly Power **Client:** Kent W. Simpson

# Daily Progress Report

ver 7.22.2015-A (Alaska)

**Client:** AK LNG
**Job Description:** Seafloor Mapping
**Area & Block(s):** PL06
**Prospect / Site:** Cook Inlet
**Fugro Job #:** 23.00007123
**Job Day #:** 29

| | | |
|---|---|---|
| **Report For:** | 07-Aug-2015 | Friday |
| **Julian Date:** | 219 | |
| **Hours From:** | 0630 to 1830 | |

**Report From:**

Fugro
R/V: Westerly

| | | |
|---|---|---|
| Production Hrs/Day: | 12.0 hrs | |
| Job Total in Meters: | 606,000.00 | |
| Total # of Lines: | 484 Lines | |
| # Cores/Core Time: | 55 cores | Est. 180 mins. |
| Total Meters Added: | 62,300.00 | |
| Total Meters Deleted: | 0.00 | |
| Survey Units: | Meters | |
| Nautical Mile (Feet): | 6080 | |

| Time Summary (Hours): | Today: | Job Totals: | (%) |
|---|---|---|---|
| Mobilize / Demobilize: | 0.00 | 12.00 | 3.76% |
| On-Line: | 5.92 | 100.81 | 31.58% |
| Transit: | 4.42 | 73.07 | 22.89% |
| Other Working: | 1.67 | 100.77 | 31.57% |
| Equipment Downtime: | 0.00 | 14.29 | 4.48% |
| Weather Stand-By: | 0.00 | 17.08 | 5.35% |
| Other Stand-By: | 0.00 | 1.17 | 0.37% |
| Stand-By / No Crew: | 0.00 | 0.00 | |
| Health, Safety & Environmental: | 0.00 | 0.00 | |
| **Job Summary:** | **12.00** | **319.18** | **100.00%** |

**Job Total - Kilometers:** *668.30*
**On-Line Percent Complete:** *66.20%*

**Kilometers Added:** *62.30*

**Percent In-Fill:** *1.28%*

**Estimated Coring Time:** 13.75 Days
**Estimated Time to Completion:** 18.04 Days

**Estimated Time includes taking cores!**

**Areas Worked:** PL08

Transited to PL06 but due to possible seismic activity in that area we continued on to block PL08. We had a productive day on block PL08 with 29 lines completed for a total of 27.7km.

| HSE Reporting: | | HSE Officer: | Kelly Power |
|---|---|---|---|
| Toolbox: | X | JHA-Toolbox | |
| Shift Change: | n/a | | |
| Safety: | X | Review MAR-TRA-009 | |
| Pre/Post Job: | n/a | | |

| Production Summary: | Today: | To Date: | Job Total: | To Complete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 27.75 | 442.40 | 668.30 | 225.90 |
| Lines Completed: | 29 | 322 | 484 | 162 |
| Cores Taken: | 0 | 0 | 55 | 55 |
| In-Fill Kilometers: | 0.00 | 8.55 | 1.28% | |
| Added on Kilometers: | 5.80 | 62.30 | 9.32% | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 0.00 | | |

**Geophysical Equipment:**

| | |
|---|---|
| Equipment #1: | Navigation System - POS MV #BGR602273 |
| Equipment #2: | Diff. GPS System - Trimble AG130 #BGR603512 |
| Equipment #3: | MBES - R2Sonic #BGR603633 |
| Equipment #4: | SSS - Edgetech 4200 #38719 |
| Equipment #5: | Mag. - SeaSpy #13380A |
| Equipment #6: | USBL - IXSEA GAPS #151 |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

| Weather Summary: | Sea State (meters) | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | n/a | n/a | n/a |
| Wx - 1200: | 0.1m | light | Var. |
| Wx - 1800: | 0.3m | 10kts | S |
| Wx - 2400: | n/a | n/a | n/a |

***Personnel Onboard:***

*Captain:* Ryan Braget
*Other Vessel Crew:* n/a
*Party Chief:* Kelly Power
*Hydro. Surveyor:* David Wise
*Geophysical Tech.:* Richie Carmichael
*Other Survey Crew:* n/a
*Client Representative:* Kent Simpson

***Personnel Onshore:***

*Offshore Site Manager:* Marta Krynytzky
*Ass't Off. Site Manager:* Charlie Hall
*Data Manager:* Chuck Chamberlain
*Data Processor:* Cody Gibson
*Data Processor:* Lance Woods
*Data Processor:* n/a
*Additional Proc.:* n/a
*Client Representative:* n/a

**Client Representative's Remarks:**

**FUGRO:** Kelly Power **Client:** Kent W. Simpson

Alaska LNG

FUGRO

# Daily Progress Report

ver 7.22.2015-A (Alaska)

| | |
|---|---|
| Client: | AK LNG |
| Job Description: | Seafloor Mapping |
| Area & Block(s): | PL06 |
| Prospect / Site: | Cook Inlet |
| Fugro Job #: | 23.00007123 |
| Job Day #: | 30 |
| Report For: | 08-Aug-2015 Saturday |
| Julian Date: | 220 |
| Hours From: | 0630 to 1830 |
| Report From: | |

R/V: Westerly

| | | |
|---|---|---|
| Production Hrs/Day: | 12.0 hrs | |
| Job Total in Meters: | 606,000.00 | |
| Total # of Lines: | 484 Lines | |
| # Cores/Core Time: | 55 cores | Est. 180 mins. |
| Total Meters Added: | 62,300.00 | |
| Total Meters Deleted: | 0.00 | |
| Survey Units: | Meters | |
| Nautical Mile (Feet): | 6080 | |

| Time Summary (Hours): | Today: | Job Totals: | (%) |
|---|---|---|---|
| Mobilize / Demobilize: | 0.00 | 12.00 | 3.62% |
| On-Line: | 0.00 | 100.81 | 30.44% |
| Transit: | 0.75 | 73.82 | 22.29% |
| Other Working: | 0.50 | 101.27 | 30.58% |
| Equipment Downtime: | 0.00 | 14.29 | 4.31% |
| Weather Stand-By: | 10.75 | 27.83 | 8.40% |
| Other Stand-By: | 0.00 | 1.17 | 0.35% |
| Stand-By / No Crew: | 0.00 | 0.00 | |
| Health, Safety & Environmental: | 0.00 | 0.00 | |
| Job Summary: | 12.00 | 331.18 | 100.00% |

**Job Total - Kilometers:** *668.30*
**On-Line Percent Complete:** *66.20%*

**Kilometers Added:** *62.30*

**Percent In-Fill:** *1.28%*

**Estimated Coring Time:** 13.75 Days
**Estimated Time to Completion:** 18.04 Days

Estimated Time includes taking cores!

**Areas Worked:**

No operations were conducted today as weather conditions were poor. Attemped to sail to survey sites in the early morning but sea conditions were poor. Vessel encountered 1.0m to 1.5m seas on sail to site. Winds were 10-15kts and forecasted to increase to a steady 15kts from the sout Given that forecast indicated wind and sea states were increasing thru the day, vessel returned to port as conditions were not suitable for surveying. Forecast at present is marginal for tomorrow.

| HSE Reporting: | | HSE Officer: | Kelly Power |
|---|---|---|---|
| Toolbox: | X | JHA-Toolbox Talk | |
| Shift Change: | N/A | | |
| Safety: | X | Review MAR-TRA-013 Refuelling Vessel | |
| Pre/Post Job: | N/A | | |

| Production Summary: | Today: | To Date: | Job Total: | To Complete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 0.00 | 442.40 | 668.30 | 225.90 |
| Lines Completed: | 0 | 322 | 484 | 162 |
| Cores Taken: | 0 | 0 | 55 | 55 |
| In-Fill Kilometers: | 0.00 | 8.55 | 1.28% | |
| Added on Kilometers: | 0.00 | 62.30 | 9.32% | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 0.00 | | |

**Geophysical Equipment:**

| | |
|---|---|
| Equipment #1: | Navigation System - POS MV #BGR602273 |
| Equipment #2: | Diff. GPS System - Trimble AG130 #BGR603512 |
| Equipment #3: | MBES - R2Sonic #BGR603633 |
| Equipment #4: | SSS - Edgetech 4200 #38719 |
| Equipment #5: | Mag. - SeaSpy #13380A |
| Equipment #6: | USBL - IXSEA GAPS #151 |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

| Weather Summary: | Sea State (meters) | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | n/a | n/a | n/a |
| Wx - 1200: | 1.0m-1.5m | 15-20kts | SW |
| Wx - 1800: | n/a | 10-15kts | SW |
| Wx - 2400: | n/a | n/a | n/a |

***Personnel Onboard:***

| | |
|---|---|
| *Captain:* | Ryan Braget |
| *Other Vessel Crew:* | n/a |
| *Party Chief:* | Kelly Power |
| *Hydro. Surveyor:* | David Wise |
| *Geophysical Tech.:* | Richie Carmichael |
| *Other Survey Crew:* | n/a |
| *Client Representative:* | Kent Simpson |

***Personnel Onshore:***

| | |
|---|---|
| *Offshore Site Manager:* | Marta Krynytzky |
| *Ass't Off. Site Manager:* | Charlie Hall |
| *Data Manager:* | Chuck Chamberlain |
| *Data Processor:* | Cody Gibson |
| *Data Processor:* | Lance Woods |
| *Data Processor:* | n/a |
| *Additional Proc.:* | n/a |
| *Client Representative:* | n/a |

**Client Representative's Remarks:**

FUGRO: Kelly Power  Client: Kent W. Simpson

# Daily Progress Report

ver 7.22.2015-A (Alaska)

**Client:** AK LNG
**Job Description:** Seafloor Mapping
**Area & Block(s):** PL06
**Prospect / Site:** Cook Inlet
**Fugro Job #:** 23.00007123
**Job Day #:** 31

| | | |
|---|---|---|
| **Report For:** | 09-Aug-2015 | Sunday |
| **Julian Date:** | 221 | |
| **Hours From:** | 0630 to 1830 | |

**Report From:**

**Fugro**
**R/V: Westerly**

| | | |
|---|---|---|
| Production Hrs/Day: | 12.0 hrs | |
| Job Total in Meters: | 606,000.00 | |
| Total # of Lines: | 484 Lines | |
| # Cores/Core Time: | 55 cores | Est. 180 mins. |
| Total Meters Added: | 63,300.00 | |
| Total Meters Deleted: | 0.00 | |
| Survey Units: | Meters | |
| Nautical Mile (Feet): | 6080 | |

| Time Summary (Hours): | Today: | Job Totals: | ( % ) |
|---|---|---|---|
| Mobilize / Demobilize: | 0.00 | 12.00 | 3.50% |
| On-Line: | 3.62 | 104.42 | 30.43% |
| Transit: | 4.17 | 77.98 | 22.72% |
| Other Working: | 2.63 | 103.90 | 30.28% |
| Equipment Downtime: | 0.00 | 14.29 | 4.16% |
| Weather Stand-By: | 1.58 | 29.41 | 8.57% |
| Other Stand-By: | 0.00 | 1.17 | 0.34% |
| Stand-By / No Crew: | 0.00 | 0.00 | |
| Health, Safety & Environmental: | 0.00 | 0.00 | |
| **Job Summary:** | **12.00** | **343.18** | **100.00%** |

**Areas Worked:**

**Job Total - Kilometers:** *669.30*
**On-Line Percent Complete:** *68.82%*

**Kilometers Added:** *63.30*

**Percent In-Fill:** *1.28%*

**Estimated Coring Time:** 13.75 Days
**Estimated Time to Completion:** 17.69 Days

**Estimated Time includes taking cores!**

| HSE Reporting: | | HSE Officer: | Kelly Power |
|---|---|---|---|
| Toolbox: | X | JHA-Toolbox | |
| Shift Change: | N/A | | |
| Safety: | X | Review MAR-TRA-005 | |
| Pre/Post Job: | N/A | | |

| Production Summary: | Today: | To Date: | Job Total: | To Complete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 18.20 | 460.60 | 669.30 | 208.70 |
| Lines Completed: | 5 | 327 | 484 | 157 |
| Cores Taken: | 0 | 0 | 55 | 55 |
| In-Fill Kilometers: | 0.00 | 8.55 | 1.28% | |
| Added on Kilometers: | 1.00 | 63.30 | 9.46% | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 0.00 | | |

**Geophysical Equipment:**

| | |
|---|---|
| Equipment #1: | Navigation System - POS MV #BGR602273 |
| Equipment #2: | Diff. GPS System - Trimble AG130 #BGR603512 |
| Equipment #3: | MBES - R2Sonic #BGR603633 |
| Equipment #4: | SSS - Edgetech 4200 #38719 |
| Equipment #5: | Mag. - SeaSpy #13380A |
| Equipment #6: | USBL - IXSEA GAPS #151 |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

| Weather Summary: | Sea State (meters) | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | n/a | n/a | n/a |
| Wx - 1200: | 0.3m | 10kts | S |
| Wx - 1800: | 1.0m | 10-15kts | S |
| Wx - 2400: | n/a | n/a | n/a |

***Personnel Onboard:***

| | |
|---|---|
| *Captain:* | Ryan Braget |
| *Other Vessel Crew:* | n/a |
| *Party Chief:* | Kelly Power |
| *Hydro. Surveyor:* | David Wise |
| *Geophysical Tech.:* | Richie Carmichael |
| *Other Survey Crew:* | n/a |
| *Client Representative:* | Kent Simpson |

***Personnel Onshore:***

| | |
|---|---|
| *Offshore Site Manager:* | Marta Krynytzky |
| *Ass't Off. Site Manager:* | Charlie Hall |
| *Data Manager:* | Chuck Chamberlain |
| *Data Processor:* | Cody Gibson |
| *Data Processor:* | Lance Woods |
| *Data Processor:* | n/a |
| *Additional Proc.:* | n/a |
| *Client Representative:* | n/a |

**Client Representative's Remarks:**

**FUGRO:** Kelly Power **Client:** Kent W. Simpson

# Daily Progress Report

ver 7.22.2015-A (Alaska)

| | |
|---|---|
| Client: | AK LNG |
| Job Description: | Seafloor Mapping |
| Area & Block(s): | Pipeline |
| Prospect / Site: | Cook Inlet |
| Fugro Job #: | 23.00007123 |
| Job Day #: | 32 |
| Report For: | 10-Aug-2015 Monday |
| Julian Date: | 222 |
| Hours From: | 0600 to 1800 |
| Report From: | |

Fugro
R/V: Westerly

| | | |
|---|---|---|
| Production Hrs/Day: | 12.0 hrs | |
| Job Total in Meters: | 606,000.00 | |
| Total # of Lines: | 484 Lines | |
| # Cores/Core Time: | 55 cores | Est. 180 mins. |
| Total Meters Added: | 63,300.00 | |
| Total Meters Deleted: | 0.00 | |
| Survey Units: | Meters | |
| Nautical Mile (Feet): | 6080 | |

| Time Summary (Hours): | Today: | Job Totals: | (%) |
|---|---|---|---|
| Mobilize / Demobilize: | 0.00 | 12.00 | 3.38% |
| On-Line: | 0.00 | 104.42 | 29.40% |
| Transit: | 0.00 | 77.98 | 21.96% |
| Other Working: | 0.00 | 103.90 | 29.25% |
| Equipment Downtime: | 0.00 | 14.29 | 4.02% |
| Weather Stand-By: | 12.00 | 41.41 | 11.66% |
| Other Stand-By: | 0.00 | 1.17 | 0.33% |
| Stand-By / No Crew: | 0.00 | 0.00 | |
| Health, Safety & Environmental: | 0.00 | 0.00 | |
| Job Summary: | 12.00 | 355.18 | 100.00% |

**Job Total - Kilometers:** *669.30*
**On-Line Percent Complete:** *68.82%*

**Kilometers Added:** *63.30*

**Percent In-Fill:** *1.28%*

**Estimated Coring Time:** 13.75 Days
**Estimated Time to Completion:** 17.69 Days

**Estimated Time includes taking cores!**

**Areas Worked:**

Today was weather day. Winds were 20-25kts through most of the morning with seas forecasted to to be in the 2.0m range. Tomorrow the vessel will remain at the dock while maintenance is performed on one of the engines. An ordered oil heat exchanger that arrived by courier in Kenai today will be installed on the stbd engine.

| HSE Reporting: | | HSE Officer: | Kelly Power |
|---|---|---|---|
| Toolbox: | None | | |
| Shift Change: | N/A | | |
| Safety: | No | | |
| Pre/Post Job: | N/A | | |

| Production Summary: | Today: | To Date: | Job Total: | To Complete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 0.00 | 460.60 | 669.30 | 208.70 |
| Lines Completed: | 0 | 327 | 484 | 157 |
| Cores Taken: | 0 | 0 | 55 | 55 |
| In-Fill Kilometers: | 0.00 | 8.55 | 1.28% | |
| Added on Kilometers: | 0.00 | 63.30 | 9.46% | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 0.00 | | |

**Geophysical Equipment:**

| | |
|---|---|
| Equipment #1: | Navigation System - POS MV #BGR602273 |
| Equipment #2: | Diff. GPS System - Trimble AG130 #BGR603512 |
| Equipment #3: | MBES - R2Sonic #BGR603633 |
| Equipment #4: | SSS - Edgetech 4200 #38719 |
| Equipment #5: | Mag. - SeaSpy #13380A |
| Equipment #6: | USBL - IXSEA GAPS #151 |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

| Weather Summary: | Sea State (meters) | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | n/a | 20-25kts | S |
| Wx - 1200: | n/a | 15kts | S |
| Wx - 1800: | n/a | 10-15kts | E |
| Wx - 2400: | n/a | n/a | n/a |

***Personnel Onboard:***

| | |
|---|---|
| *Captain:* | Ryan Braget |
| *Other Vessel Crew:* | n/a |
| *Party Chief:* | Kelly Power |
| *Hydro. Surveyor:* | David Wise |
| *Geophysical Tech.:* | Richie Carmichael |
| *Other Survey Crew:* | n/a |
| *Client Representative:* | Kent Simpson |

***Personnel Onshore:***

| | |
|---|---|
| *Offshore Site Manager:* | Marta Krynytzky |
| *Ass't Off. Site Manager:* | Charlie Hall |
| *Data Manager:* | Chuck Chamberlain |
| *Data Processor:* | Cody Gibson |
| *Data Processor:* | Lance Woods |
| *Data Processor:* | n/a |
| *Additional Proc.:* | n/a |
| *Client Representative:* | n/a |

**Client Representative's Remarks:**

FUGRO: Kelly Power  Client: Kent W. Simpson

# Daily Progress Report

ver 7.22.2015-A (Alaska)

**Client:** AK LNG
**Job Description:** Seafloor Mapping
**Area & Block(s):** Pipeline
**Prospect / Site:** Cook Inlet
**Fugro Job #:** 23.00007123
**Job Day #:** 33

| | | |
|---|---|---|
| **Report For:** | 11-Aug-2015 | Tuesday |
| **Julian Date:** | 223 | |
| **Hours From:** | 0630 to 1830 | |

**Report From:**

Fugro
R/V: Westerly

| | | |
|---|---|---|
| Production Hrs/Day: | 12.0 hrs | |
| Job Total in Meters: | 606,000.00 | |
| Total # of Lines: | 484 Lines | |
| # Cores/Core Time: | 55 cores | Est. 180 mins. |
| Total Meters Added: | 63,300.00 | |
| Total Meters Deleted: | 0.00 | |
| Survey Units: | Meters | |
| Nautical Mile (Feet): | 6080 | |

| Time Summary (Hours): | Today: | Job Totals: | ( % ) |
|---|---|---|---|
| Mobilize / Demobilize: | 0.00 | 12.00 | 3.27% |
| On-Line: | 0.00 | 104.42 | 28.44% |
| Transit: | 0.00 | 77.98 | 21.24% |
| Other Working: | 1.00 | 104.90 | 28.57% |
| Equipment Downtime: | 11.00 | 25.29 | 6.89% |
| Weather Stand-By: | 0.00 | 41.41 | 11.28% |
| Other Stand-By: | 0.00 | 1.17 | 0.32% |
| Stand-By / No Crew: | 0.00 | 0.00 | |
| Health, Safety & Environmental: | 0.00 | 0.00 | |
| **Job Summary:** | **12.00** | **367.18** | **100.00%** |

**Job Total - Kilometers:** *669.30*
**On-Line Percent Complete:** *68.82%*

**Kilometers Added:** *63.30*

**Percent In-Fill:** *1.28%*

**Estimated Coring Time:** 13.75 Days
**Estimated Time to Completion:** 17.69 Days

**Estimated Time includes taking cores!**

**Areas Worked:**
Vessel was in port today while maintanance conducted on starboard main engine. The oil heat exchanger was replaced with new one.
Vessel is ready to sail tomorrow morning. Vessel will transit to pipeline block PL05 to resume survey operations.

| HSE Reporting: | | HSE Officer: | Kelly Power |
|---|---|---|---|
| Toolbox: | X | JHA-Toolbox | |
| Shift Change: | N/A | | |
| Safety: | X | Weekly Safety Meeting, Fugro "I"power presentation | |
| Pre/Post Job: | N/A | | |

| Production Summary: | Today: | To Date: | Job Total: | To Complete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 0.00 | 460.60 | 669.30 | 208.70 |
| Lines Completed: | 0 | 327 | 484 | 157 |
| Cores Taken: | 0 | 0 | 55 | 55 |
| In-Fill Kilometers: | 0.00 | 8.55 | 1.28% | |
| Added on Kilometers: | 0.00 | 63.30 | 9.46% | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 0.00 | | |

**Geophysical Equipment:**

| | |
|---|---|
| Equipment #1: | Navigation System - POS MV #BGR602273 |
| Equipment #2: | Diff. GPS System - Trimble AG130 #BGR603512 |
| Equipment #3: | MBES - R2Sonic #BGR603633 |
| Equipment #4: | SSS - Edgetech 4200 #38719 |
| Equipment #5: | Mag. - SeaSpy #13380A |
| Equipment #6: | USBL - IXSEA GAPS #151 |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

| Weather Summary: | Sea State (meters) | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | n/a | n/a | n/a |
| Wx - 1200: | n/a | 10kts | N |
| Wx - 1800: | n/a | 10kts | N |
| Wx - 2400: | n/a | n/a | n/a |

***Personnel Onboard:***

| | |
|---|---|
| *Captain:* | Ryan Braget |
| *Other Vessel Crew:* | n/a |
| *Party Chief:* | Kelly Power |
| *Hydro. Surveyor:* | David Wise |
| *Geophysical Tech.:* | Richie Carmichael |
| *Other Survey Crew:* | n/a |
| *Client Representative:* | Kent Simpson |

***Personnel Onshore:***

| | |
|---|---|
| *Offshore Site Manager:* | Marta Krynytzky |
| *Ass't Off. Site Manager:* | Charlie Hall |
| *Data Manager:* | Chuck Chamberlain |
| *Data Processor:* | Cody Gibson |
| *Data Processor:* | Lance Woods |
| *Data Processor:* | n/a |
| *Additional Proc.:* | n/a |
| *Client Representative:* | n/a |

**Client Representative's Remarks:**

**FUGRO:** Kelly Power **Client:** Kent W. Simpson

# Daily Progress Report

ver 7.22.2015-A (Alaska)

**Client:** AK LNG
**Job Description:** Seafloor Mapping
**Area & Block(s):** Pipeline
**Prospect / Site:** Cook Inlet
**Fugro Job #:** 23.00007123
**Job Day #:** 34

| | | |
|---|---|---|
| **Report For:** | 12-Aug-2015 | Wednesday |
| **Julian Date:** | 224 | |
| **Hours From:** | 0630 to 1830 | |

**Report From:**

**Fugro**
**R/V: Westerly**

| | | |
|---|---|---|
| Production Hrs/Day: | 12.0 hrs | |
| Job Total in Meters: | 606,000.00 | |
| Total # of Lines: | 484 Lines | |
| # Cores/Core Time: | 55 cores | Est. 180 mins. |
| Total Meters Added: | 65,100.00 | |
| Total Meters Deleted: | 0.00 | |
| Survey Units: | Meters | |
| Nautical Mile (Feet): | 6080 | |

| Time Summary (Hours): | Today: | Job Totals: | (%) |
|---|---|---|---|
| Mobilize / Demobilize: | 0.00 | 12.00 | 3.16% |
| On-Line: | 5.87 | 110.29 | 29.09% |
| Transit: | 3.37 | 81.35 | 21.45% |
| Other Working: | 2.77 | 107.67 | 28.39% |
| Equipment Downtime: | 0.00 | 25.29 | 6.67% |
| Weather Stand-By: | 0.00 | 41.41 | 10.92% |
| Other Stand-By: | 0.00 | 1.17 | 0.31% |
| Stand-By / No Crew: | 0.00 | 0.00 | |
| Health, Safety & Environmental: | 0.00 | 0.00 | |
| **Job Summary:** | **12.00** | **379.18** | **100.00%** |

**Job Total - Kilometers:** *671.10*
**On-Line Percent Complete:** *72.46%*

**Kilometers Added:** *65.10*

**Percent In-Fill:** *1.27%*

**Estimated Coring Time:** 13.75 Days
**Estimated Time to Completion:** 17.24 Days

**Estimated Time includes taking cores!**

**Areas Worked:**

Block PL05 was completed today and 4 lines on block PL07. An emergency drill was conducted. The drill scenario involved a large obstruction on the seafloor that would have seen the Sidescan Sonar towfish collide with it. The drill was performed on a line turn and the crew performed very well. There was good communication during and after the drill. The end result was crew avoided having the sidescan sonar crash into the large boulder by having good communication amongst all members and performing the necessary and correct actions to ensure there was no collision.
The plan tomorrow is to conduct survey operations on block PL06.

| HSE Reporting: | | HSE Officer: | Kelly Power |
|---|---|---|---|
| Toolbox: | X | JHA-Toolbox | |
| Shift Change: | | | |
| Safety: | X | SS/Mag obstruction on botton drill, Review MAR-TRA-013 | |
| Pre/Post Job: | | | |

| Production Summary: | Today: | To Date: | Job Total: | To Complete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 25.65 | 486.25 | 671.10 | 184.85 |
| Lines Completed: | 9 | 336 | 484 | 148 |
| Cores Taken: | 0 | 0 | 55 | 55 |
| In-Fill Kilometers: | 0.00 | 8.55 | 1.27% | |
| Added on Kilometers: | 1.80 | 65.10 | 9.70% | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 0.00 | | |

**Geophysical Equipment:**

| | |
|---|---|
| Equipment #1: | Navigation System - POS MV #BGR602273 |
| Equipment #2: | Diff. GPS System - Trimble AG130 #BGR603512 |
| Equipment #3: | MBES - R2Sonic #BGR603633 |
| Equipment #4: | SSS - Edgetech 4200 #38719 |
| Equipment #5: | Mag. - SeaSpy #13380A |
| Equipment #6: | USBL - IXSEA GAPS #151 |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

| Weather Summary: | Sea State (meters) | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | n/a | n/a | n/a |
| Wx - 1200: | 0.2m | 5kts | N |
| Wx - 1800: | 0.2m | 10kts | W |
| Wx - 2400: | n/a | n/a | n/a |

***Personnel Onboard:***

| | |
|---|---|
| *Captain:* | Ryan Braget |
| *Other Vessel Crew:* | n/a |
| *Party Chief:* | Kelly Power |
| *Hydro. Surveyor:* | David Wise |
| *Geophysical Tech.:* | Richie Carmichael |
| *Other Survey Crew:* | n/a |
| *Client Representative:* | Kent Simpson |

***Personnel Onshore:***

| | |
|---|---|
| *Offshore Site Manager:* | Marta Krynytzky |
| *Ass't Off. Site Manager:* | Charlie Hall |
| *Data Manager:* | Chuck Chamberlain |
| *Data Processor:* | Cody Gibson |
| *Data Processor:* | Lance Woods |
| *Data Processor:* | n/a |
| *Additional Proc.:* | n/a |
| *Client Representative:* | n/a |

**Client Representative's Remarks:**

Pleased to observe the drill include a briefing, execution, and follow-up lessons learned. Well done.

**FUGRO:** Kelly Power **Client:** Kent W. Simpson

Alaska LNG

FUGRO

# Daily Progress Report

ver 7.22.2015-A (Alaska)

| | |
|---|---|
| Client: | AK LNG |
| Job Description: | Seafloor Mapping |
| Area & Block(s): | Pipeline |
| Prospect / Site: | Cook Inlet |
| Fugro Job #: | 23.00007123 |
| Job Day #: | 35 |
| Report For: | 13-Aug-2015 Thursday |
| Julian Date: | 225 |
| Hours From: | 0630 to 1830 |
| Report From: | |

Fugro
R/V: Westerly

| | | |
|---|---|---|
| Production Hrs/Day: | 12.0 hrs | |
| Job Total in Meters: | 606,000.00 | |
| Total # of Lines: | 484 Lines | |
| # Cores/Core Time: | 55 cores | Est. 180 mins. |
| Total Meters Added: | 66,900.00 | |
| Total Meters Deleted: | 0.00 | |
| Survey Units: | Meters | |
| Nautical Mile (Feet): | 6080 | |

| Time Summary (Hours): | Today: | Job Totals: | (%) |
|---|---|---|---|
| Mobilize / Demobilize: | 0.00 | 12.00 | 3.07% |
| On-Line: | 4.70 | 114.99 | 29.40% |
| Transit: | 4.08 | 85.43 | 21.84% |
| Other Working: | 3.22 | 110.88 | 28.35% |
| Equipment Downtime: | 0.00 | 25.29 | 6.47% |
| Weather Stand-By: | 0.00 | 41.41 | 10.59% |
| Other Stand-By: | 0.00 | 1.17 | 0.30% |
| Stand-By / No Crew: | 0.00 | 0.00 | |
| Health, Safety & Environmental: | 0.00 | 0.00 | |
| Job Summary: | 12.00 | 391.18 | 100.00% |

**Job Total - Kilometers:** *672.90*
**On-Line Percent Complete:** *74.93%*

**Kilometers Added:** *66.90*

**Percent In-Fill:** *1.69%*

**Estimated Coring Time:** 13.75 Days
**Estimated Time to Completion:** 16.96 Days

**Estimated Time includes taking cores!**

**Areas Worked:** Blocks PL04 and PL06

Ran infill line at PL04 then moved to block PL06. Tomorrow the plan is to continue work in block PL06. Tomorrow sees the Captain Ryan Braget being rotated out and Capatin John Valikonis taking his place on the vessel.

| HSE Reporting: | | HSE Officer: | Kelly Power |
|---|---|---|---|
| Toolbox: | X | JHA-Toolbox | |
| Shift Change: | N/A | | |
| Safety: | X | Review MAR-TRA-006 | |
| Pre/Post Job: | N/A | | |

| Production Summary: | Today: | To Date: | Job Total: | To Complete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 17.95 | 504.20 | 672.90 | 168.70 |
| Lines Completed: | 9 | 345 | 484 | 139 |
| Cores Taken: | 0 | 0 | 55 | 55 |
| In-Fill Kilometers: | 2.80 | 11.35 | 1.69% | |
| Added on Kilometers: | 1.80 | 66.90 | 9.94% | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 0.00 | | |

**Geophysical Equipment:**

| | |
|---|---|
| Equipment #1: | Navigation System - POS MV #BGR602273 |
| Equipment #2: | Diff. GPS System - Trimble AG130 #BGR603512 |
| Equipment #3: | MBES - R2Sonic #BGR603633 |
| Equipment #4: | SSS - Edgetech 4200 #38719 |
| Equipment #5: | Mag. - SeaSpy #13380A |
| Equipment #6: | USBL - IXSEA GAPS #151 |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

| Weather Summary: | Sea State (meters) | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | n/a | n/a | n/a |
| Wx - 1200: | 0.1m | 0kts | NW |
| Wx - 1800: | 0.2m | 5kts | NW |
| Wx - 2400: | n/a | n/a | n/a |

***Personnel Onboard:***

| | |
|---|---|
| *Captain:* | Ryan Braget |
| *Other Vessel Crew:* | n/a |
| *Party Chief:* | Kelly Power |
| *Hydro. Surveyor:* | David Wise |
| *Geophysical Tech.:* | Richie Carmichael |
| *Other Survey Crew:* | n/a |
| *Client Representative:* | Kent Simpson |

***Personnel Onshore:***

| | |
|---|---|
| *Offshore Site Manager:* | Marta Krynytzky |
| *Ass't Off. Site Manager:* | Charlie Hall |
| *Data Manager:* | Chuck Chamberlain |
| *Data Processor:* | Cody Gibson |
| *Data Processor:* | Lance Woods |
| *Data Processor:* | n/a |
| *Additional Proc.:* | n/a |
| *Client Representative:* | n/a |

**Client Representative's Remarks:**

**FUGRO:** Kelly Power **Client:** Kent W. Simpson

# Daily Progress Report

ver 7.22.2015-A (Alaska)

**Client:** AK LNG
**Job Description:** Seafloor Mapping
**Area & Block(s):** Pipeline
**Prospect / Site:** Cook Inlet
**Fugro Job #:** 23.00007123
**Job Day #:** 36

| | | |
|---|---|---|
| **Report For:** | 14-Aug-2015 | Friday |
| **Julian Date:** | 226 | |
| **Hours From:** | 0630 to 1830 | |

**Report From:**

**Fugro**
**R/V: Westerly**

| | | |
|---|---|---|
| Production Hrs/Day: | 12.0 hrs | |
| Job Total in Meters: | 606,000.00 | |
| Total # of Lines: | 484 Lines | |
| # Cores/Core Time: | 55 cores | Est. 180 mins. |
| Total Meters Added: | 67,300.00 | |
| Total Meters Deleted: | 0.00 | |
| Survey Units: | Meters | |
| Nautical Mile (Feet): | 6080 | |

| Time Summary (Hours): | Today: | Job Totals: | (%) |
|---|---|---|---|
| Mobilize / Demobilize: | 0.00 | 12.00 | 2.98% |
| On-Line: | 3.25 | 118.24 | 29.33% |
| Transit: | 4.08 | 89.52 | 22.20% |
| Other Working: | 4.67 | 115.55 | 28.66% |
| Equipment Downtime: | 0.00 | 25.29 | 6.27% |
| Weather Stand-By: | 0.00 | 41.41 | 10.27% |
| Other Stand-By: | 0.00 | 1.17 | 0.29% |
| Stand-By / No Crew: | 0.00 | 0.00 | |
| Health, Safety & Environmental: | 0.00 | 0.00 | |
| **Job Summary:** | **12.00** | **403.18** | **100.00%** |

**Areas Worked:** PL06

**Job Total - Kilometers:** *673.30*
**On-Line Percent Complete:** *76.66%*

**Kilometers Added:** *67.30*

**Percent In-Fill:** *1.69%*

**Estimated Coring Time:** 13.75 Days
**Estimated Time to Completion:** 16.75 Days

**Estimated Time includes taking cores!**

Today the vessel worked in block PL06. Currents were very strong today. One of the lines took over 2hrs to complete. It was also a short day as veseel had to return to port to refuel. The next 2 days are designated fatigue management days. No operations are planned.
On the Monday survey operations will resume in PL06. There was 1 HOC card submitted for a safe act. The MBES operator noticed that on sidescan sheave block the access flap had come open. Operations were halted as the access flap was closed. No incident occurred.
The flap will now be checked daily prior to start of operations.

| HSE Reporting: | | HSE Officer: | Kelly Power |
|---|---|---|---|
| Toolbox: | X | JHA-Toolbox | |
| Shift Change: | | | |
| Safety: | X | Review MAR-TRA-013, 1 HOC card for a safe act | |
| Pre/Post Job: | | | |

| Production Summary: | Today: | To Date: | Job Total: | To Complete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 11.95 | 516.15 | 673.30 | 157.15 |
| Lines Completed: | 2 | 347 | 484 | 137 |
| Cores Taken: | 0 | 0 | 55 | 55 |
| In-Fill Kilometers: | 0.00 | 11.35 | 1.69% | |
| Added on Kilometers: | 0.40 | 67.30 | 10.00% | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 0.00 | | |

**Geophysical Equipment:**

| | |
|---|---|
| Equipment #1: | Navigation System - POS MV #BGR602273 |
| Equipment #2: | Diff. GPS System - Trimble AG130 #BGR603512 |
| Equipment #3: | MBES - R2Sonic #BGR603633 |
| Equipment #4: | SSS - Edgetech 4200 #38719 |
| Equipment #5: | Mag. - SeaSpy #13380A |
| Equipment #6: | USBL - IXSEA GAPS #151 |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

| Weather Summary: | Sea State (meters) | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | n/a | n/a | n/a |
| Wx - 1200: | 0.6m | 5-10kts | SW |
| Wx - 1800: | n/a | 10kts | SW |
| Wx - 2400: | n/a | n/a | n/a |

***Personnel Onboard:***

| | |
|---|---|
| *Captain:* | John Valikonis |
| *Other Vessel Crew:* | n/a |
| *Party Chief:* | Kelly Power |
| *Hydro. Surveyor:* | David Wise |
| *Geophysical Tech.:* | Richie Carmichael |
| *Other Survey Crew:* | n/a |
| *Client Representative:* | Kent Simpson |

***Personnel Onshore:***

| | |
|---|---|
| *Offshore Site Manager:* | Marta Krynytzky |
| *Ass't Off. Site Manager:* | Charlie Hall |
| *Data Manager:* | Chuck Chamberlain |
| *Data Processor:* | Cody Gibson |
| *Data Processor:* | Lance Woods |
| *Data Processor:* | n/a |
| *Additional Proc.:* | n/a |
| *Client Representative:* | n/a |

**Client Representative's Remarks:**

**FUGRO:** Kelly Power **Client:** Kent W. Simpson

# Daily Progress Report

ver 7.22.2015-A (Alaska)

**Client:** AK LNG
**Job Description:** Seafloor Mapping
**Area & Block(s):** Pipeline
**Prospect / Site:** Cook Inlet
**Fugro Job #:** 23.00007123
**Job Day #:** 37

| | | |
|---|---|---|
| **Report For:** | 15-Aug-2015 | Saturday |
| **Julian Date:** | 227 | |
| **Hours From:** | 0630 to 1830 | |

**Report From:**

Fugro
R/V: Westerly

| | | |
|---|---|---|
| Production Hrs/Day: | 12.0 hrs | |
| Job Total in Meters: | 606,000.00 | |
| Total # of Lines: | 484 Lines | |
| # Cores/Core Time: | 55 cores | Est. 180 mins. |
| Total Meters Added: | 67,300.00 | |
| Total Meters Deleted: | 0.00 | |
| Survey Units: | Meters | |
| Nautical Mile (Feet): | 6080 | |

| Time Summary (Hours): | Today: | Job Totals: | ( % ) |
|---|---|---|---|
| Mobilize / Demobilize: | 0.00 | 12.00 | 2.89% |
| On-Line: | 0.00 | 118.24 | 28.48% |
| Transit: | 0.00 | 89.52 | 21.56% |
| Other Working: | 12.00 | 127.55 | 30.72% |
| Equipment Downtime: | 0.00 | 25.29 | 6.09% |
| Weather Stand-By: | 0.00 | 41.41 | 9.97% |
| Other Stand-By: | 0.00 | 1.17 | 0.28% |
| Stand-By / No Crew: | 0.00 | 0.00 | |
| Health, Safety & Environmental: | 0.00 | 0.00 | |
| **Job Summary:** | **12.00** | **415.18** | **100.00%** |

**Areas Worked:**

Fatigue Mangement day , no survey operations were conducted.

**Job Total - Kilometers:** *673.30*
**On-Line Percent Complete:** *76.66%*

**Kilometers Added:** *67.30*

**Percent In-Fill:** *1.69%*

**Estimated Coring Time:** 13.75 Days
**Estimated Time to Completion:** 16.75 Days

**Estimated Time includes taking cores!**

| HSE Reporting: | | HSE Officer: | Kelly Power |
|---|---|---|---|
| Toolbox: | No | | |
| Shift Change: | N/A | | |
| Safety: | No | | |
| Pre/Post Job: | N/A | | |

| Production Summary: | Today: | To Date: | Job Total: | To Complete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 0.00 | 516.15 | 673.30 | 157.15 |
| Lines Completed: | 0 | 347 | 484 | 137 |
| Cores Taken: | 0 | 0 | 55 | 55 |
| In-Fill Kilometers: | 0.00 | 11.35 | 1.69% | |
| Added on Kilometers: | 0.00 | 67.30 | 10.00% | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 0.00 | | |

**Geophysical Equipment:**

| | |
|---|---|
| Equipment #1: | Navigation System - POS MV #BGR602273 |
| Equipment #2: | Diff. GPS System - Trimble AG130 #BGR603512 |
| Equipment #3: | MBES - R2Sonic #BGR603633 |
| Equipment #4: | SSS - Edgetech 4200 #38719 |
| Equipment #5: | Mag. - SeaSpy #13380A |
| Equipment #6: | USBL - IXSEA GAPS #151 |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

| Weather Summary: | Sea State (meters) | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | n/a | n/a | n/a |
| Wx - 1200: | n/a | n/a | n/a |
| Wx - 1800: | n/a | n/a | n/a |
| Wx - 2400: | n/a | n/a | n/a |

***Personnel Onboard:***

*Captain:* John Valikonis
*Other Vessel Crew:* n/a
*Party Chief:* Kelly Power
*Hydro. Surveyor:* David Wise
*Geophysical Tech.:* Richie Carmichael
*Other Survey Crew:* n/a
*Client Representative:* Kent Simpson

***Personnel Onshore:***

*Offshore Site Manager:* Marta Krynytzky
*Ass't Off. Site Manager:* Charlie Hall
*Data Manager:* Chuck Chamberlain
*Data Processor:* Cody Gibson
*Data Processor:* Lance Woods
*Data Processor:* n/a
*Additional Proc.:* n/a
*Client Representative:* n/a

**Client Representative's Remarks:**

**FUGRO:** Kelly Power **Client:** Kent W. Simpson

Alaska LNG

FUGRO

# Daily Progress Report

ver 7.22.2015-A (Alaska)

| | |
|---|---|
| Client: | AK LNG |
| Job Description: | Seafloor Mapping |
| Area & Block(s): | Pipeline |
| Prospect / Site: | Cook Inlet |
| Fugro Job #: | 23.00007123 |
| Job Day #: | 38 |
| Report For: | 16-Aug-2015 Sunday |
| Julian Date: | 228 |
| Hours From: | 0630 to 1830 |
| Report From: | |

Fugro
R/V: Westerly

| | | |
|---|---|---|
| Production Hrs/Day: | 12.0 hrs | |
| Job Total in Meters: | 606,000.00 | |
| Total # of Lines: | 484 Lines | |
| # Cores/Core Time: | 55 cores | Est. 180 mins. |
| Total Meters Added: | 67,300.00 | |
| Total Meters Deleted: | 0.00 | |
| Survey Units: | Meters | |
| Nautical Mile (Feet): | 6080 | |

| Time Summary (Hours): | Today: | Job Totals: | ( % ) |
|---|---|---|---|
| Mobilize / Demobilize: | 0.00 | 12.00 | 2.81% |
| On-Line: | 0.00 | 118.24 | 27.68% |
| Transit: | 0.00 | 89.52 | 20.96% |
| Other Working: | 12.00 | 139.55 | 32.67% |
| Equipment Downtime: | 0.00 | 25.29 | 5.92% |
| Weather Stand-By: | 0.00 | 41.41 | 9.69% |
| Other Stand-By: | 0.00 | 1.17 | 0.27% |
| Stand-By / No Crew: | 0.00 | 0.00 | |
| Health, Safety & Environmental: | 0.00 | 0.00 | |
| Job Summary: | 12.00 | 427.18 | 100.00% |

Areas Worked: None

| | |
|---|---|
| Job Total - Kilometers: | 673.30 |
| On-Line Percent Complete: | 76.66% |
| Kilometers Added: | 67.30 |
| Percent In-Fill: | 1.69% |
| Estimated Coring Time: | 13.75 Days |
| Estimated Time to Completion: | 16.75 Days |

Estimated Time includes taking cores!

Today was a fatigue mangement day. No survey operations were conducted.
Tomorrow the plan is to resume survey operations in PL06.

| HSE Reporting: | | HSE Officer: | Kelly Power |
|---|---|---|---|
| Toolbox: | No | | |
| Shift Change: | N/A | | |
| Safety: | No | | |
| Pre/Post Job: | No | | |

| Production Summary: | Today: | To Date: | Job Total: | To Complete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 0.00 | 516.15 | 673.30 | 157.15 |
| Lines Completed: | 0 | 347 | 484 | 137 |
| Cores Taken: | 0 | 0 | 55 | 55 |
| In-Fill Kilometers: | 0.00 | 11.35 | 1.69% | |
| Added on Kilometers: | 0.00 | 67.30 | 10.00% | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 0.00 | | |

| Geophysical Equipment: | |
|---|---|
| Equipment #1: | Navigation System - POS MV #BGR602273 |
| Equipment #2: | Diff. GPS System - Trimble AG130 #BGR603512 |
| Equipment #3: | MBES - R2Sonic #BGR603633 |
| Equipment #4: | SSS - Edgetech 4200 #38719 |
| Equipment #5: | Mag. - SeaSpy #13380A |
| Equipment #6: | USBL - IXSEA GAPS #151 |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

| Weather Summary: | Sea State (meters) | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | n/a | n/a | n/a |
| Wx - 1200: | n/a | n/a | n/a |
| Wx - 1800: | n/a | n/a | n/a |
| Wx - 2400: | n/a | n/a | n/a |

**Personnel Onboard:**

| | |
|---|---|
| Captain: | John Valikonis |
| Other Vessel Crew: | n/a |
| Party Chief: | Kelly Power |
| Hydro. Surveyor: | David Wise |
| Geophysical Tech.: | Richie Carmichael |
| Other Survey Crew: | n/a |
| Client Representative: | Kent Simpson |

**Personnel Onshore:**

| | |
|---|---|
| Offshore Site Manager: | Marta Krynytzky |
| Ass't Off. Site Manager: | Charlie Hall |
| Data Manager: | Chuck Chamberlain |
| Data Processor: | Cody Gibson |
| Data Processor: | Lance Woods |
| Data Processor: | n/a |
| Additional Proc.: | n/a |
| Client Representative: | n/a |

**Client Representative's Remarks:**

FUGRO: Kelly Power  Client: Kent W. Simpson

# Daily Progress Report

ver 7.22.2015-A (Alaska)

**Client:** AK LNG
**Job Description:** Seafloor Mapping
**Area & Block(s):** Pipeline
**Prospect / Site:** Cook Inlet
**Fugro Job #:** 23.00007123
**Job Day #:** 39

| | | |
|---|---|---|
| **Report For:** | 17-Aug-2015 | Monday |
| **Julian Date:** | 229 | |
| **Hours From:** | 0630 to 1830 | |

**Report From:**

**Fugro**
**R/V: Westerly**

| | | |
|---|---|---|
| Production Hrs/Day: | 12.0 hrs | |
| Job Total in Meters: | 606,000.00 | |
| Total # of Lines: | 484 Lines | |
| # Cores/Core Time: | 55 cores | Est. 180 mins. |
| Total Meters Added: | 67,700.00 | |
| Total Meters Deleted: | 0.00 | |
| Survey Units: | Meters | |
| Nautical Mile (Feet): | 6080 | |

| Time Summary (Hours): | Today: | Job Totals: | (%) |
|---|---|---|---|
| Mobilize / Demobilize: | 0.00 | 12.00 | 2.73% |
| On-Line: | 3.87 | 122.11 | 27.80% |
| Transit: | 4.50 | 94.02 | 21.41% |
| Other Working: | 2.23 | 141.78 | 32.28% |
| Equipment Downtime: | 0.38 | 25.67 | 5.85% |
| Weather Stand-By: | 1.02 | 42.43 | 9.66% |
| Other Stand-By: | 0.00 | 1.17 | 0.27% |
| Stand-By / No Crew: | 0.00 | 0.00 | |
| Health, Safety & Environmental: | 0.00 | 0.00 | |
| **Job Summary:** | **12.00** | **439.18** | **100.00%** |

**Job Total - Kilometers:** *673.70*
**On-Line Percent Complete:** *78.34%*

**Kilometers Added:** *67.70*

**Percent In-Fill:** *1.68%*

**Estimated Coring Time:** 13.75 Days
**Estimated Time to Completion:** 16.56 Days

**Estimated Time includes taking cores!**

**Areas Worked:** PL05 and PL06

Vessel ran a couple of short test infill lines at PL05 and ran 2 lines at PL06. The first line at PL06 took close to 3hrs to complete due to a strong ebb current which peaked at 4.5kts and choppy seas. An attempt at a 3rd line was aborted due rough sea conditions resulting in poor data quality from the sidescan sonar. The choppy seas created a tugging motion on the towfish resulting in loss of data at times.
The plan tomorrow is to have our safety weekly meeting in the morning. Sail to PL06 to resume survey operations. The vessel will depart from survey site earlier to return to dock and refuel.
There was also a small bit of equipment downtime due to the positioning system POS MV resetting while on PL05.

| HSE Reporting: | | HSE Officer: | Kelly Power |
|---|---|---|---|
| Toolbox: | X | JHA-Toolbox | |
| Shift Change: | N/A | | |
| Safety: | X | Vessel orientation for Ezrah, Review TRA-MAR-012 | |
| Pre/Post Job: | No | | |

| Production Summary: | Today: | To Date: | Job Total: | To Complete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 11.65 | 527.80 | 673.70 | 145.90 |
| Lines Completed: | 2 | 349 | 484 | 135 |
| Cores Taken: | 0 | 0 | 55 | 55 |
| In-Fill Kilometers: | 0.00 | 11.35 | 1.68% | |
| Added on Kilometers: | 0.40 | 67.70 | 10.05% | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 0.00 | | |

**Geophysical Equipment:**

| | |
|---|---|
| Equipment #1: | Navigation System - POS MV #BGR602273 |
| Equipment #2: | Diff. GPS System - Trimble AG130 #BGR603512 |
| Equipment #3: | MBES - R2Sonic #BGR603633 |
| Equipment #4: | SSS - Edgetech 4200 #38719 |
| Equipment #5: | Mag. - SeaSpy #13380A |
| Equipment #6: | USBL - IXSEA GAPS #151 |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

| Weather Summary: | Sea State (meters) | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | n/a | n/a | n/a |
| Wx - 1200: | 0.6m | 10kts | NE |
| Wx - 1800: | 1.0m | 10-15kts | NE |
| Wx - 2400: | n/a | n/a | n/a |

***Personnel Onboard:***

*Captain:* John Valikonis
*Other Vessel Crew:* Ezrah Schraven
*Party Chief:* Kelly Power
*Hydro. Surveyor:* David Wise
*Geophysical Tech.:* Richie Carmichael
*Other Survey Crew:* n/a
*Client Representative:* n/a

***Personnel Onshore:***

*Offshore Site Manager:* Marta Krynytzky
*Ass't Off. Site Manager:* Charlie Hall
*Data Manager:* Chuck Chamberlain
*Data Processor:* Cody Gibson
*Data Processor:* Lance Woods
*Data Processor:* n/a
*Additional Proc.:* n/a
*Client Representative:* Kent Simpson

**Client Representative's Remarks:**

**FUGRO:** Kelly Power **Client:** Kent W. Simpson

# Daily Progress Report

ver 7.22.2015-A (Alaska)

**Client:** AK LNG
**Job Description:** Seafloor Mapping
**Area & Block(s):** Pipeline
**Prospect / Site:** Cook Inlet
**Fugro Job #:** 23.00007123
**Job Day #:** 40

**Fugro**
**R/V: Westerly**

| | | |
|---|---|---|
| Report For: | 18-Aug-2015 | Tuesday |
| Julian Date: | 230 | |
| Hours From: | 0630 to 1930 | |

**Report From:**

| | |
|---|---|
| Production Hrs/Day: | 12.0 hrs |
| Job Total in Meters: | 606,000.00 |
| Total # of Lines: | 484 Lines |
| # Cores/Core Time: | 55 cores / Est. 180 mins. |
| Total Meters Added: | 68,300.00 |
| Total Meters Deleted: | 0.00 |
| Survey Units: | Meters |
| Nautical Mile (Feet): | 6080 |

| Time Summary (Hours): | Today: | Job Totals: | (%) |
|---|---|---|---|
| Mobilize / Demobilize: | 0.00 | 12.00 | 2.65% |
| On-Line: | 3.60 | 125.71 | 27.80% |
| Transit: | 4.15 | 98.17 | 21.71% |
| Other Working: | 5.25 | 147.03 | 32.52% |
| Equipment Downtime: | 0.00 | 25.67 | 5.68% |
| Weather Stand-By: | 0.00 | 42.43 | 9.38% |
| Other Stand-By: | 0.00 | 1.17 | 0.26% |
| Stand-By / No Crew: | 0.00 | 0.00 | |
| Health, Safety & Environmental: | 0.00 | 0.00 | |
| **Job Summary:** | **13.00** | **452.18** | **100.00%** |

**Areas Worked:** PL06

**Job Total - Kilometers:** *674.30*
**On-Line Percent Complete:** *80.54%*

**Kilometers Added:** *68.30*

**Percent In-Fill:** *1.68%*

**Estimated Coring Time:** 13.75 Days
**Estimated Time to Completion:** 16.28 Days

**Estimated Time includes taking cores!**

Completed the remaining 3 lines in block PL06. Conducted a Fire Drill onboard the vessel. Drill went well and there was good discussion amongst crew afterwards. Fueling of the vessel today was not completed until 19:30 hrs as fuel truck was delayed. May have to refuel vessel again tomorrow depending on how much fuel the vessl uses. The vessel is transiting further away and has been working harder against the tides near the north shore. Plan for tomorrow is the resume survey operations in PL07.

| HSE Reporting: | | HSE Officer: | Kelly Power |
|---|---|---|---|
| Toolbox: | X | JHS-Toolbox | |
| Shift Change: | N/A | | |
| Safety: | Yes | Fire Drill Exercise, Review MAR-TRA-013 | |
| Pre/Post Job: | No | | |

| Production Summary: | Today: | To Date: | Job Total: | To Complete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 15.25 | 543.05 | 674.30 | 131.25 |
| Lines Completed: | 3 | 352 | 484 | 132 |
| Cores Taken: | 0 | 0 | 55 | 55 |
| In-Fill Kilometers: | 0.00 | 11.35 | 1.68% | |
| Added on Kilometers: | 0.60 | 68.30 | 10.13% | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 0.00 | | |

**Geophysical Equipment:**

| | |
|---|---|
| Equipment #1: | Navigation System - POS MV #BGR602273 |
| Equipment #2: | Diff. GPS System - Trimble AG130 #BGR603512 |
| Equipment #3: | MBES - R2Sonic #BGR603633 |
| Equipment #4: | SSS - Edgetech 4200 #38719 |
| Equipment #5: | Mag. - SeaSpy #13380A |
| Equipment #6: | USBL - IXSEA GAPS #151 |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

| Weather Summary: | Sea State (meters) | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | n/a | n/a | n/a |
| Wx - 1200: | 0.6m | 10kts | S |
| Wx - 1800: | 1.0m | 15kts | W |
| Wx - 2400: | n/a | n/a | n/a |

***Personnel Onboard:***

*Captain:* John Valikonis
*Other Vessel Crew:* n/a
*Party Chief:* Kelly Power
*Hydro. Surveyor:* David Wise
*Geophysical Tech.:* Richie Carmichael
*Other Survey Crew:* n/a
*Client Representative:* Kent Simpson

***Personnel Onshore:***

*Offshore Site Manager:* Marta Krynytzky
*Ass't Off. Site Manager:* Charlie Hall
*Data Manager:* Chuck Chamberlain
*Data Processor:* Cody Gibson
*Data Processor:* Lance Woods
*Data Processor:* n/a
*Additional Proc.:* n/a
*Client Representative:* n/a

**Client Representative's Remarks:**

**FUGRO:** Kelly Power **Client:** Kent W. Simpson

# Daily Progress Report

ver 7.22.2015-A (Alaska)

**Client:** AK LNG
**Job Description:** Seafloor Mapping
**Area & Block(s):** Pipeline
**Prospect / Site:** Cook Inlet
**Fugro Job #:** 23.00007123
**Job Day #:** 41

**Fugro**
**R/V: Westerly**

| | | |
|---|---|---|
| Report For: | 19-Aug-2015 | Wednesday |
| Julian Date: | 231 | |
| Hours From: | 0630 to 1830 | |

**Report From:**

| | |
|---|---|
| Production Hrs/Day: | 12.0 hrs |
| Job Total in Meters: | 606,000.00 |
| Total # of Lines: | 484 Lines |
| # Cores/Core Time: | 55 cores / Est. 180 mins. |
| Total Meters Added: | 69,300.00 |
| Total Meters Deleted: | 0.00 |
| Survey Units: | Meters |
| Nautical Mile (Feet): | 6080 |

| Time Summary (Hours): | Today: | Job Totals: | (%) |
|---|---|---|---|
| Mobilize / Demobilize: | 0.00 | 12.00 | 2.59% |
| On-Line: | 4.07 | 129.77 | 27.96% |
| Transit: | 4.07 | 102.23 | 22.02% |
| Other Working: | 3.87 | 150.90 | 32.51% |
| Equipment Downtime: | 0.00 | 25.67 | 5.53% |
| Weather Stand-By: | 0.00 | 42.43 | 9.14% |
| Other Stand-By: | 0.00 | 1.17 | 0.25% |
| Stand-By / No Crew: | 0.00 | 0.00 | |
| Health, Safety & Environmental: | 0.00 | 0.00 | |
| **Job Summary:** | **12.00** | **464.18** | **100.00%** |

**Job Total - Kilometers:** *675.30*
**On-Line Percent Complete:** *83.59%*

**Kilometers Added:** *69.30*

**Percent In-Fill:** *1.68%*

**Estimated Coring Time:** 13.75 Days
**Estimated Time to Completion:** 15.87 Days

**Estimated Time includes taking cores!**

**Areas Worked:** PL06
Completed 5 lines in PL06. Returned to dock early to fuel vessel. Plan for tomorrow is to resume survey operations in PL06.
Ran a MBES test line in TM05.

| HSE Reporting: | | HSE Officer: | Kelly Power |
|---|---|---|---|
| Toolbox: | X | JHA-Toolbox | |
| Shift Change: | N/A | | |
| Safety: | X | Review MAR-TRA-006 and 013 | |
| Pre/Post Job: | None | | |

| Production Summary: | Today: | To Date: | Job Total: | To Complete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 21.40 | 564.45 | 675.30 | 110.85 |
| Lines Completed: | 5 | 357 | 484 | 127 |
| Cores Taken: | 0 | 0 | 55 | 55 |
| In-Fill Kilometers: | 0.00 | 11.35 | 1.68% | |
| Added on Kilometers: | 1.00 | 69.30 | 10.26% | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 0.00 | | |

**Geophysical Equipment:**

| | |
|---|---|
| Equipment #1: | Navigation System - POS MV #BGR602273 |
| Equipment #2: | Diff. GPS System - Trimble AG130 #BGR603512 |
| Equipment #3: | MBES - R2Sonic #BGR603633 |
| Equipment #4: | SSS - Edgetech 4200 #38719 |
| Equipment #5: | Mag. - SeaSpy #13380A |
| Equipment #6: | USBL - IXSEA GAPS #151 |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

| Weather Summary: | Sea State (meters) | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | n/a | n/a | n/a |
| Wx - 1200: | 0.3m | 5kts | E |
| Wx - 1800: | n/a | 5kts | E |
| Wx - 2400: | n/a | n/a | n/a |

***Personnel Onboard:***

| | |
|---|---|
| *Captain:* | John Valikonis |
| *Other Vessel Crew:* | n/a |
| *Party Chief:* | Kelly Power |
| *Hydro. Surveyor:* | David Wise |
| *Geophysical Tech.:* | Richie Carmichael |
| *Other Survey Crew:* | n/a |
| *Client Representative:* | Kent Simpson |

***Personnel Onshore:***

| | |
|---|---|
| *Offshore Site Manager:* | Marta Krynytzky |
| *Ass't Off. Site Manager:* | Charlie Hall |
| *Data Manager:* | Chuck Chamberlain |
| *Data Processor:* | Cody Gibson |
| *Data Processor:* | Lance Woods |
| *Data Processor:* | n/a |
| *Additional Proc.:* | n/a |
| *Client Representative:* | n/a |

**Client Representative's Remarks:**

**FUGRO:** Kelly Power **Client:** Kent W. Simpson

Alaska LNG

FUGRO

# Daily Progress Report

ver 7.22.2015-A (Alaska)

| | |
|---|---|
| Client: | AK LNG |
| Job Description: | Seafloor Mapping |
| Area & Block(s): | Pipeline |
| Prospect / Site: | Cook Inlet |
| Fugro Job #: | 23.00007123 |
| Job Day #: | 42 |
| Report For: | 20-Aug-2015 Thursday |
| Julian Date: | 232 |
| Hours From: | 0630 to 1815 |
| Report From: | |

Fugro
R/V: Westerly

| | | |
|---|---|---|
| Production Hrs/Day: | 12.0 hrs | |
| Job Total in Meters: | 606,000.00 | |
| Total # of Lines: | 484 Lines | |
| # Cores/Core Time: | 55 cores | Est. 180 mins. |
| Total Meters Added: | 70,700.00 | |
| Total Meters Deleted: | 0.00 | |
| Survey Units: | Meters | |
| Nautical Mile (Feet): | 6080 | |

| Time Summary (Hours): | Today: | Job Totals: | ( % ) |
|---|---|---|---|
| Mobilize / Demobilize: | 0.00 | 12.00 | 2.52% |
| On-Line: | 6.18 | 135.96 | 28.57% |
| Transit: | 4.08 | 106.32 | 22.34% |
| Other Working: | 1.23 | 152.13 | 31.97% |
| Equipment Downtime: | 0.25 | 25.92 | 5.45% |
| Weather Stand-By: | 0.00 | 42.43 | 8.92% |
| Other Stand-By: | 0.00 | 1.17 | 0.25% |
| Stand-By / No Crew: | 0.00 | 0.00 | |
| Health, Safety & Environmental: | 0.00 | 0.00 | |
| Job Summary: | 11.75 | 475.93 | 100.00% |

Areas Worked: PL07

**Job Total - Kilometers:** *676.70*
**On-Line Percent Complete:** *88.44%*

**Kilometers Added:** *70.70*

**Percent In-Fill:** *1.68%*

**Estimated Coring Time:** 13.75 Days
**Estimated Time to Completion:** 15.23 Days

**Estimated Time includes taking cores!**

7 lines were completed on PL07 today with 1 line remaining. Tomorrow the plan is to survey that 1 line finishing block PL07.
Then commence surveying in block PL08.

| HSE Reporting: | | HSE Officer: | Kelly Power |
|---|---|---|---|
| Toolbox: | X | JHA-Toolbox | |
| Shift Change: | | | |
| Safety: | X | Review MAR-TRA-006 | |
| Pre/Post Job: | | | |

| Production Summary: | Today: | To Date: | Job Total: | To Complete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 34.05 | 598.50 | 676.70 | 78.20 |
| Lines Completed: | 7 | 364 | 484 | 120 |
| Cores Taken: | 0 | 0 | 55 | 55 |
| In-Fill Kilometers: | 0.00 | 11.35 | 1.68% | |
| Added on Kilometers: | 1.40 | 70.70 | 10.45% | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 0.00 | | |

**Geophysical Equipment:**

| | |
|---|---|
| Equipment #1: | Navigation System - POS MV #BGR602273 |
| Equipment #2: | Diff. GPS System - Trimble AG130 #BGR603512 |
| Equipment #3: | MBES - R2Sonic #BGR603633 |
| Equipment #4: | SSS - Edgetech 4200 #38719 |
| Equipment #5: | Mag. - SeaSpy #13380A |
| Equipment #6: | USBL - IXSEA GAPS #151 |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

| Weather Summary: | Sea State (meters) | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | n/a | n/a | n/a |
| Wx - 1200: | 0.3m | 5kts | NE |
| Wx - 1800: | 0.3m | 5kts | N |
| Wx - 2400: | n/a | n/a | n/a |

***Personnel Onboard:***

| | |
|---|---|
| *Captain:* | John Valikonis |
| *Other Vessel Crew:* | n/a |
| *Party Chief:* | Kelly Power |
| *Hydro. Surveyor:* | David Wise |
| *Geophysical Tech.:* | Richie Carmichael |
| *Other Survey Crew:* | n/a |
| *Client Representative:* | Kent Simpson |

***Personnel Onshore:***

| | |
|---|---|
| *Offshore Site Manager:* | Marta Krynytzky |
| *Ass't Off. Site Manager:* | Charlie Hall |
| *Data Manager:* | Chuck Chamberlain |
| *Data Processor:* | Cody Gibson |
| *Data Processor:* | Lance Woods |
| *Data Processor:* | n/a |
| *Additional Proc.:* | n/a |
| *Client Representative:* | n/a |

**Client Representative's Remarks:**

FUGRO: Kelly Power  Client: Kent W. Simpson

# Daily Progress Report

ver 7.22.2015-A (Alaska)

**Client:** AK LNG
**Job Description:** Seafloor Mapping
**Area & Block(s):** Pipeline
**Prospect / Site:** 0
**Fugro Job #:** 23.00007123
**Job Day #:** 43

| | | |
|---|---|---|
| **Report For:** | 21-Aug-2015 | Friday |
| **Julian Date:** | 233 | |
| **Hours From:** | 0630 to | 1845 |

**Report From:**

**Fugro**
**R/V: Westerly**

| | | |
|---|---|---|
| Production Hrs/Day: | 12.0 hrs | |
| Job Total in Meters: | 606,000.00 | |
| Total # of Lines: | 484 Lines | |
| # Cores/Core Time: | 55 cores | Est. 180 mins. |
| Total Meters Added: | 74,300.00 | |
| Total Meters Deleted: | 0.00 | |
| Survey Units: | Meters | |
| Nautical Mile (Feet): | 6080 | |

| Time Summary (Hours): | Today: | Job Totals: | ( % ) |
|---|---|---|---|
| Mobilize / Demobilize: | 0.00 | 12.00 | 2.47% |
| On-Line: | 4.20 | 140.16 | 28.81% |
| Transit: | 4.42 | 108.99 | 22.41% |
| Other Working: | 3.63 | 155.76 | 32.02% |
| Equipment Downtime: | 0.00 | 25.92 | 5.33% |
| Weather Stand-By: | 0.00 | 42.43 | 8.72% |
| Other Stand-By: | 0.00 | 1.17 | 0.24% |
| Stand-By / No Crew: | 0.00 | 0.00 | |
| Health, Safety & Environmental: | 0.00 | 0.00 | |
| **Job Summary:** | **12.25** | **486.43** | **100.00%** |

**Job Total - Kilometers:** *680.30*
**On-Line Percent Complete:** *90.76%*

**Kilometers Added:** *74.30*

**Percent In-Fill:** *1.67%*

**Estimated Coring Time:** 13.75 Days
**Estimated Time to Completion:** 14.94 Days

**Estimated Time includes taking cores!**

**Areas Worked:** PL08

Travelled to site PL07 this morning but sea conditions were not suitable for data collection. The vessel then transited toa section PL08 which was close to shore and was bit more sheltered. We completed 18 lines on PL08 for a total of 18.95km. The plan tomorrow is to go to PL07 and complete the 1 remaining line there and then resume operations in PL08. The vessel refueled upon returning to dock today. The current forecast for the survey areas in Cook Inlet is poor. Will evaluate morning forecast and weather conditions in the morning.

| HSE Reporting: | | HSE Officer: | Kelly Power |
|---|---|---|---|
| Toolbox: | X | JHA-Toolbox | |
| Shift Change: | | | |
| Safety: | X | Review MAR-TRA-013 | |
| Pre/Post Job: | | | |

| Production Summary: | Today: | To Date: | Job Total: | To Complete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 18.95 | 617.45 | 680.30 | 62.85 |
| Lines Completed: | 18 | 382 | 484 | 102 |
| Cores Taken: | 0 | 0 | 55 | 55 |
| In-Fill Kilometers: | 0.00 | 11.35 | 1.67% | |
| Added on Kilometers: | 3.60 | 74.30 | 10.92% | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 0.00 | | |

**Geophysical Equipment:**

| | |
|---|---|
| Equipment #1: | Navigation System - POS MV #BGR602273 |
| Equipment #2: | Diff. GPS System - Trimble AG130 #BGR603512 |
| Equipment #3: | MBES - R2Sonic #BGR603633 |
| Equipment #4: | SSS - Edgetech 4200 #38719 |
| Equipment #5: | Mag. - SeaSpy #13380A |
| Equipment #6: | USBL - IXSEA GAPS #151 |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

| Weather Summary: | Sea State (meters) | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | n/a | n/a | n/a |
| Wx - 1200: | 0.6m | 5kts | NW |
| Wx - 1800: | n/a | 5kts | nw |
| Wx - 2400: | n/a | n/a | n/a |

***Personnel Onboard:***

*Captain:* John Valikonis
*Other Vessel Crew:* n/a
*Party Chief:* Kelly Power
*Hydro. Surveyor:* David Wise
*Geophysical Tech.:* Richie Carmichael
*Other Survey Crew:* n/a
*Client Representative:* Kent Simpson

***Personnel Onshore:***

*Offshore Site Manager:* Marta Krynytzky
*Ass't Off. Site Manager:* Charlie Hall
*Data Manager:* Chuck Chamberlain
*Data Processor:* Cody Gibson
*Data Processor:* Lance Woods
*Data Processor:* n/a
*Additional Proc.:* n/a
*Client Representative:* n/a

**Client Representative's Remarks:**

**FUGRO:** Kelly Power **Client:** Kent W. Simpson

Alaska LNG

# Daily Progress Report

ver 7.22.2015-A (Alaska)

**Client:** AK LNG
**Job Description:** Seafloor Mapping
**Area & Block(s):** Pipeline
**Prospect / Site:** Cook Inlet
**Fugro Job #:** 23.00007123
**Job Day #:** 44

**R/V:** Westerly

| | |
|---|---|
| Report For: | 22-Aug-2015 Saturday |
| Julian Date: | 234 |
| Hours From: | 0630 to 1830 |
| Report From: | |

| | | |
|---|---|---|
| Production Hrs/Day: | 12.0 hrs | |
| Job Total in Meters: | 606,000.00 | |
| Total # of Lines: | 484 Lines | |
| # Cores/Core Time: | 55 cores | Est. 180 mins. |
| Total Meters Added: | 74,500.00 | |
| Total Meters Deleted: | 0.00 | |
| Survey Units: | Meters | |
| Nautical Mile (Feet): | 6080 | |

| Time Summary (Hours): | Today: | Job Totals: | (%) |
|---|---|---|---|
| Mobilize / Demobilize: | 0.00 | 12.00 | 2.41% |
| On-Line: | 0.42 | 140.58 | 28.20% |
| Transit: | 6.67 | 115.65 | 23.20% |
| Other Working: | 2.00 | 157.76 | 31.65% |
| Equipment Downtime: | 0.00 | 25.92 | 5.20% |
| Weather Stand-By: | 2.92 | 45.35 | 9.10% |
| Other Stand-By: | 0.00 | 1.17 | 0.23% |
| Stand-By / No Crew: | 0.00 | 0.00 | |
| Health, Safety & Environmental: | 0.00 | 0.00 | |
| **Job Summary:** | **12.00** | **498.43** | **100.00%** |

**Job Total - Kilometers:** *680.50*
**On-Line Percent Complete:** *91.16%*

**Kilometers Added:** *74.50*

**Percent In-Fill:** *1.67%*

**Estimated Coring Time:** 13.75 Days
**Estimated Time to Completion:** 14.89 Days

**Estimated Time includes taking cores!**

**Areas Worked:** PL07

Vessel transited to PL07 site and surveyed 1 line there completing site PL07. While transiting to the PL08 site the wind and sea conditions degraded such that conditions were to poor to survey. Vessel recovered equipment as conditions were forecasted to degrade further through the da On tranisting back to dock the starboard main engine developed a small crack in its exhaust expansion pipe and had to be shutdown. There were no concerns to persons from this exhaust leak. The vessel returned to dock on its port engine. The vessel refueled upon docking. The captain has initiated repairs to the exhaust pipe ( a spare replacemnent was located in spares kit) and is expected to complete the repairs sometime tomorrow. The vessel will down until these repairs are completed which will most likely take 1 day.

| HSE Reporting: | | HSE Officer: | Kelly Power |
|---|---|---|---|
| Toolbox: | X | JHA-Toolbox | |
| Shift Change: | | | |
| Safety: | X | Review MAR-TRA-009, 1 HOC card for a safe act | |
| Pre/Post Job: | | | |

| Production Summary: | Today: | To Date: | Job Total: | To Complete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 2.90 | 620.35 | 680.50 | 60.15 |
| Lines Completed: | 1 | 383 | 484 | 101 |
| Cores Taken: | 0 | 0 | 55 | 55 |
| In-Fill Kilometers: | 0.00 | 11.35 | 1.67% | |
| Added on Kilometers: | 0.20 | 74.50 | 10.95% | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 0.00 | | |

**Geophysical Equipment:**

| | |
|---|---|
| Equipment #1: | Navigation System - POS MV #BGR602273 |
| Equipment #2: | Diff. GPS System - Trimble AG130 #BGR603512 |
| Equipment #3: | MBES - R2Sonic #BGR603633 |
| Equipment #4: | SSS - Edgetech 4200 #38719 |
| Equipment #5: | Mag. - SeaSpy #13380A |
| Equipment #6: | USBL - IXSEA GAPS #151 |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

**Weather Summary:**

| | Sea State (meters) | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | na | na | na |
| Wx - 1200: | 1.0m | 15kts | NW |
| Wx - 1800: | na | 15kts | NW |
| Wx - 2400: | na | na | na |

***Personnel Onboard:***

*Captain:* John Valikonis
*Other Vessel Crew:* n/a
*Party Chief:* Kelly Power
*Hydro. Surveyor:* David Wise
*Geophysical Tech.:* Richie Carmichael
*Other Survey Crew:* n/a
*Client Representative:* Kent Simpson

***Personnel Onshore:***

*Offshore Site Manager:* Marta Krynytzky
*Ass't Off. Site Manager:* Charlie Hall
*Data Manager:* Chuck Chamberlain
*Data Processor:* Cody Gibson
*Client Representative:* n/a
*Data Processor:* Lance Woods
*Data Processor:* n/a
*Additional Proc.:* n/a

**Client Representative's Remarks:**

**FUGRO:** Kelly Power **Client:** Kent W. Simpson

# Daily Progress Report

ver 7.22.2015-A (Alaska)

**Client:** AK LNG
**Job Description:** Seafloor Mapping
**Area & Block(s):** Pipeline
**Prospect / Site:** Cook Inlet
**Fugro Job #:** 23.00007123
**Job Day #:** 45

| | | |
|---|---|---|
| **Report For:** | 23-Aug-2015 | Sunday |
| **Julian Date:** | 235 | |
| **Hours From:** | 0630 to 1830 | |

**Report From:**

**Fugro**
**R/V: Westerly**

| | | |
|---|---|---|
| Production Hrs/Day: | 12.0 hrs | |
| Job Total in Meters: | 606,000.00 | |
| Total # of Lines: | 484 Lines | |
| # Cores/Core Time: | 55 cores | Est. 180 mins. |
| Total Meters Added: | 74,500.00 | |
| Total Meters Deleted: | 0.00 | |
| Survey Units: | Meters | |
| Nautical Mile (Feet): | 6080 | |

| Time Summary (Hours): | Today: | Job Totals: | ( % ) |
|---|---|---|---|
| Mobilize / Demobilize: | 0.00 | 12.00 | 2.35% |
| On-Line: | 0.00 | 140.58 | 27.54% |
| Transit: | 0.00 | 115.65 | 22.66% |
| Other Working: | 0.00 | 157.76 | 30.91% |
| Equipment Downtime: | 12.00 | 37.92 | 7.43% |
| Weather Stand-By: | 0.00 | 45.35 | 8.88% |
| Other Stand-By: | 0.00 | 1.17 | 0.23% |
| Stand-By / No Crew: | 0.00 | 0.00 | |
| Health, Safety & Environmental: | 0.00 | 0.00 | |
| **Job Summary:** | **12.00** | **510.43** | **100.00%** |

**Job Total - Kilometers:** *680.50*
**On-Line Percent Complete:** *91.16%*

**Kilometers Added:** *74.50*

**Percent In-Fill:** *1.67%*

**Estimated Coring Time:** 13.75 Days
**Estimated Time to Completion:** 14.89 Days

**Estimated Time includes taking cores!**

**Areas Worked:** None

No survey operations conducted as vessel was down for maintenance/repairs. A new exhaust expansion flex joint was installed on Starboard Engine. However while reassembling the exhaust expansion part a bolt was broken off in the turbo charger manifold. A local mechanic shop has been contacted and a mechanic will assess the situation. Expect the vessel to be down tomorrow while repairs are made.

| HSE Reporting: | | HSE Officer: | Kelly Power |
|---|---|---|---|
| Toolbox: | X | JHA-Toolbox | |
| Shift Change: | N/A | | |
| Safety: | X | Review MAR-TRA-002 | |
| Pre/Post Job: | No | | |

| Production Summary: | Today: | To Date: | Job Total: | To Complete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 0.00 | 620.35 | 680.50 | 60.15 |
| Lines Completed: | 0 | 383 | 484 | 101 |
| Cores Taken: | 0 | 0 | 55 | 55 |
| In-Fill Kilometers: | 0.00 | 11.35 | 1.67% | |
| Added on Kilometers: | 0.00 | 74.50 | 10.95% | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 0.00 | | |

**Geophysical Equipment:**

| | |
|---|---|
| Equipment #1: | Navigation System - POS MV #BGR602273 |
| Equipment #2: | Diff. GPS System - Trimble AG130 #BGR603512 |
| Equipment #3: | MBES - R2Sonic #BGR603633 |
| Equipment #4: | SSS - Edgetech 4200 #38719 |
| Equipment #5: | Mag. - SeaSpy #13380A |
| Equipment #6: | USBL - IXSEA GAPS #151 |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

| Weather Summary: | Sea State (meters) | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | na | na | na |
| Wx - 1200: | na | 10kts | NW |
| Wx - 1800: | na | 10kts | NW |
| Wx - 2400: | na | na | na |

***Personnel Onboard:***

*Captain:* John Valikonis
*Other Vessel Crew:* n/a
*Party Chief:* Kelly Power
*Hydro. Surveyor:* David Wise
*Geophysical Tech.:* Richie Carmichael
*Other Survey Crew:* n/a
*Client Representative:* Kent Simpson

***Personnel Onshore:***

*Offshore Site Manager:* Marta Krynytzky
*Ass't Off. Site Manager:* Charlie Hall
*Data Manager:* Chuck Chamberlain
*Data Processor:* Cody Gibson
*Data Processor:* Lance Woods
*Data Processor:* n/a
*Additional Proc.:* n/a
*Client Representative:* n/a

**Client Representative's Remarks:**

**FUGRO:** Kelly Power **Client:** Kent W. Simpson

# Daily Progress Report

ver 7.22.2015-A (Alaska)

**Client:** AK LNG
**Job Description:** Seafloor Mapping
**Area & Block(s):** Pipeline
**Prospect / Site:** Cook Inlet
**Fugro Job #:** 23.00007123
**Job Day #:** 46

| | | |
|---|---|---|
| **Report For:** | 24-Aug-2015 | Monday |
| **Julian Date:** | 236 | |
| **Hours From:** | 0630 to 1830 | |

**Report From:**

Fugro
R/V: Westerly

| | | |
|---|---|---|
| Production Hrs/Day: | 12.0 hrs | |
| Job Total in Meters: | 606,000.00 | |
| Total # of Lines: | 484 Lines | |
| # Cores/Core Time: | 55 cores | Est. 180 mins. |
| Total Meters Added: | 74,500.00 | |
| Total Meters Deleted: | 0.00 | |
| Survey Units: | Meters | |
| Nautical Mile (Feet): | 6080 | |

| Time Summary (Hours): | Today: | Job Totals: | (%) |
|---|---|---|---|
| Mobilize / Demobilize: | 0.00 | 12.00 | 2.30% |
| On-Line: | 0.00 | 140.58 | 26.91% |
| Transit: | 0.00 | 115.65 | 22.14% |
| Other Working: | 0.00 | 157.76 | 30.20% |
| Equipment Downtime: | 12.00 | 49.92 | 9.56% |
| Weather Stand-By: | 0.00 | 45.35 | 8.68% |
| Other Stand-By: | 0.00 | 1.17 | 0.22% |
| Stand-By / No Crew: | 0.00 | 0.00 | |
| Health, Safety & Environmental: | 0.00 | 0.00 | |
| **Job Summary:** | **12.00** | **522.43** | **100.00%** |

**Job Total - Kilometers:** *680.50*
**On-Line Percent Complete:** *91.16%*

**Kilometers Added:** *74.50*

**Percent In-Fill:** *1.67%*

**Estimated Coring Time:** 13.75 Days
**Estimated Time to Completion:** 14.89 Days

**Estimated Time includes taking cores!**

**Areas Worked:**

Vessel was conducting repairs to Starboard engine in the morning. A 3rd party mechanic came to vessel and made the repairs. The vessel sailed in the afternoon for sea trials. The orignal problem with the exhaust manifold does appear to to working ok. However the vessel was having an issue with coming up to full speed.. The vessel returned to dock where the fuel filters and air filters were changed and or cleaned.
The plan tomorrow is to sail to PL08 and resume operations.

| HSE Reporting: | | HSE Officer: | Kelly Power |
|---|---|---|---|
| Toolbox: | X | JHA-Toolbox | |
| Shift Change: | N/A | | |
| Safety: | X | Review MAR-TRA-002 | |
| Pre/Post Job: | No | | |

| Production Summary: | Today: | To Date: | Job Total: | To Complete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 0.00 | 620.35 | 680.50 | 60.15 |
| Lines Completed: | 0 | 383 | 484 | 101 |
| Cores Taken: | 0 | 0 | 55 | 55 |
| In-Fill Kilometers: | 0.00 | 11.35 | 1.67% | |
| Added on Kilometers: | 0.00 | 74.50 | 10.95% | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 0.00 | | |

**Geophysical Equipment:**

| | |
|---|---|
| Equipment #1: | Navigation System - POS MV #BGR602273 |
| Equipment #2: | Diff. GPS System - Trimble AG130 #BGR603512 |
| Equipment #3: | MBES - R2Sonic #BGR603633 |
| Equipment #4: | SSS - Edgetech 4200 #38719 |
| Equipment #5: | Mag. - SeaSpy #13380A |
| Equipment #6: | USBL - IXSEA GAPS #151 |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

| Weather Summary: | Sea State (meters) | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | na | na | na |
| Wx - 1200: | na | 10kts | N |
| Wx - 1800: | na | 10kts | N |
| Wx - 2400: | na | na | na |

***Personnel Onboard:***

*Captain:* John Valikonis
*Other Vessel Crew:* n/a
*Party Chief:* Kelly Power
*Hydro. Surveyor:* David Wise
*Geophysical Tech.:* Richie Carmichael
*Other Survey Crew:* n/a
*Client Representative:* Kent Simpson

***Personnel Onshore:***

*Offshore Site Manager:* Marta Krynytzky
*Ass't Off. Site Manager:* Charlie Hall
*Data Manager:* Chuck Chamberlain
*Data Processor:* Cody Gibson
*Data Processor:* Lance Woods
*Data Processor:* n/a
*Additional Proc.:* n/a
*Client Representative:* n/a

**Client Representative's Remarks:**

**FUGRO:** Kelly Power **Client:** Kent W. Simpson

# Daily Progress Report

ver 7.22.2015-A (Alaska)

Fugro
R/V: Westerly

| | |
|---|---|
| Client: | AK LNG |
| Job Description: | Seafloor Mapping |
| Area & Block(s): | Pipeline |
| Prospect / Site: | Cook Inlet |
| Fugro Job #: | 23.00007123 |
| Job Day #: | 47 |
| Report For: | 25-Aug-2015 Tuesday |
| Julian Date: | 237 |
| Hours From: | 0630 to 1830 |

| | | |
|---|---|---|
| Production Hrs/Day: | 12.0 hrs | |
| Job Total in Meters: | 606,000.00 | |
| Total # of Lines: | 484 Lines | |
| # Cores/Core Time: | 55 cores | Est. 180 mins. |
| Total Meters Added: | 74,500.00 | |
| Total Meters Deleted: | 0.00 | |
| Survey Units: | Meters | |
| Nautical Mile (Feet): | 6080 | |

Report From:

| Time Summary (Hours): | Today: | Job Totals: | ( % ) |
|---|---|---|---|
| Mobilize / Demobilize: | 0.00 | 12.00 | 2.25% |
| On-Line: | 0.00 | 140.58 | 26.30% |
| Transit: | 0.00 | 115.65 | 21.64% |
| Other Working: | 1.50 | 159.26 | 29.80% |
| Equipment Downtime: | 10.50 | 60.42 | 11.31% |
| Weather Stand-By: | 0.00 | 45.35 | 8.49% |
| Other Stand-By: | 0.00 | 1.17 | 0.22% |
| Stand-By / No Crew: | 0.00 | 0.00 | |
| Health, Safety & Environmental: | 0.00 | 0.00 | |
| Job Summary: | 12.00 | 534.43 | 100.00% |

**Job Total - Kilometers:** *680.50*
**On-Line Percent Complete:** *91.16%*

**Kilometers Added:** *74.50*

**Percent In-Fill:** *1.67%*

**Estimated Coring Time:** 13.75 Days
**Estimated Time to Completion:** 14.89 Days

Estimated Time includes taking cores!

**Areas Worked:**

While sailing out of Kenai River today vessel developed a problem with port engine which resulted in the engine shutting down. The engine did restart prior to docking. Mechanic was brought in who diagnosed a dirty inercoolers on the engines. The mechanic removed the coolers to clean th overnight and will reinstall them in the morning. A Loss of propulsion drill was conducted. Drill execution and discussion afterwards was good. Conta with the MV Norman O and the My Marie was made by the vessel on VHF and by cell phone to test the numbers from ERP and ask the vessels if they could supply assistance if required. The plan tomorrow is the reinstall intercoolers and sail to survey sites. The weather forecast for tomorrow is poor.

| HSE Reporting: | | HSE Officer: | Kelly Power |
|---|---|---|---|
| Toolbox: | X | JHA-Toolbox | |
| Shift Change: | N/A | | |
| Safety: | X | Review MAR-TRA-007, Conducted a loss of propulsion drill | |
| Pre/Post Job: | | | |

| Production Summary: | Today: | To Date: | Job Total: | To Complete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 0.00 | 620.35 | 680.50 | 60.15 |
| Lines Completed: | 0 | 383 | 484 | 101 |
| Cores Taken: | 0 | 0 | 55 | 55 |
| In-Fill Kilometers: | 0.00 | 11.35 | 1.67% | |
| Added on Kilometers: | 0.00 | 74.50 | 10.95% | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 0.00 | | |

**Geophysical Equipment:**

| | |
|---|---|
| Equipment #1: | Navigation System - POS MV #BGR602273 |
| Equipment #2: | Diff. GPS System - Trimble AG130 #BGR603512 |
| Equipment #3: | MBES - R2Sonic #BGR603633 |
| Equipment #4: | SSS - Edgetech 4200 #38719 |
| Equipment #5: | Mag. - SeaSpy #13380A |
| Equipment #6: | USBL - IXSEA GAPS #151 |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

| Weather Summary: | Sea State (meters) | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | n/a | n/a | n/a |
| Wx - 1200: | 0.6m | 5-10kts | S |
| Wx - 1800: | 0.8m | 10kts | S |
| Wx - 2400: | n/a | n/a | n/a |

***Personnel Onboard:***

| | |
|---|---|
| *Captain:* | John Valikonis |
| *Other Vessel Crew:* | n/a |
| *Party Chief:* | Kelly Power |
| *Hydro. Surveyor:* | David Wise |
| *Geophysical Tech.:* | Richie Carmichael |
| *Other Survey Crew:* | n/a |
| *Client Representative:* | Kent Simpson |

***Personnel Onshore:***

| | |
|---|---|
| *Offshore Site Manager:* | Marta Krynytzky |
| *Ass't Off. Site Manager:* | Charlie Hall |
| *Data Manager:* | Chuck Chamberlain |
| *Data Processor:* | Cody Gibson |
| *Data Processor:* | Lance Woods |
| *Data Processor:* | n/a |
| *Additional Proc.:* | n/a |
| *Client Representative:* | n/a |

**Client Representative's Remarks:**

FUGRO: Kelly Power  Client: Kent W. Simpson

# Daily Progress Report

ver 7.22.2015-A (Alaska)

**Client:** AK LNG
**Job Description:** Seafloor Mapping
**Area & Block(s):** Pipeline
**Prospect / Site:** Cook Inlet
**Fugro Job #:** 23.00007123
**Job Day #:** 48

| | | |
|---|---|---|
| **Report For:** | 26-Aug-2015 | Wednesday |
| **Julian Date:** | 238 | |
| **Hours From:** | 0630 to 1830 | |

**Report From:**

**Fugro**
**R/V: Westerly**

| | |
|---|---|
| Production Hrs/Day: | 12.0 hrs |
| Job Total in Meters: | 606,000.00 |
| Total # of Lines: | 484 Lines |
| # Cores/Core Time: | 55 cores / Est. 180 mins. |
| Total Meters Added: | 74,500.00 |
| Total Meters Deleted: | 0.00 |
| Survey Units: | Meters |
| Nautical Mile (Feet): | 6080 |

| Time Summary (Hours): | Today: | Job Totals: | ( % ) |
|---|---|---|---|
| Mobilize / Demobilize: | 0.00 | 12.00 | 2.20% |
| On-Line: | 0.00 | 140.58 | 25.73% |
| Transit: | 0.00 | 115.65 | 21.17% |
| Other Working: | 0.00 | 159.26 | 29.15% |
| Equipment Downtime: | 0.00 | 60.42 | 11.06% |
| Weather Stand-By: | 12.00 | 57.35 | 10.49% |
| Other Stand-By: | 0.00 | 1.17 | 0.21% |
| Stand-By / No Crew: | 0.00 | 0.00 | |
| Health, Safety & Environmental: | 0.00 | 0.00 | |
| **Job Summary:** | **12.00** | **546.43** | **100.00%** |

**Job Total - Kilometers:** *680.50*
**On-Line Percent Complete:** *91.16%*

**Kilometers Added:** *74.50*

**Percent In-Fill:** *1.67%*

**Estimated Coring Time:** 13.75 Days
**Estimated Time to Completion:** 14.89 Days

**Estimated Time includes taking cores!**

**Areas Worked:** None

Today the vessel was waiting on weather. Wind speeds were 35kts gusting to 45kts at times. Sea conditions in survey area would be in excess of 2.5m. While down on weather today the vessel completed repairs to the engines and had the intercoolers reinstalled. A sea trial was conducted in Kenai River. Both the 3rd party mechanic and vesssel captain were satisfied with the repairs.
In the afternoon the crews of the RV Westerly and RV My Marie met at the Cannery dock. Both crews reviewed MAR-TRA-007 Anchor & Towing risk assesment. The Westerly tow bridle was laid out on the deck. Crews reviewed where the bridle would connected to on each vessel. Both captains discussed communication and towing configurations. It was a good discussion. Plan to sail tomorrow morning if weather is suitable. Current forecast is marginal.

| HSE Reporting: | | HSE Officer: | Kelly Power |
|---|---|---|---|
| Toolbox: | X | JHA-Toolbox | |
| Shift Change: | N/A | | |
| Safety: | X | Review MAR-TRA-007 with Westerly and My Maria crews | |
| Pre/Post Job: | No | | |

| Production Summary: | Today: | To Date: | Job Total: | To Complete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 0.00 | 620.35 | 680.50 | 60.15 |
| Lines Completed: | 0 | 383 | 484 | 101 |
| Cores Taken: | 0 | 0 | 55 | 55 |
| In-Fill Kilometers: | 0.00 | 11.35 | 1.67% | |
| Added on Kilometers: | 0.00 | 74.50 | 10.95% | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 0.00 | | |

| Weather Summary: | Sea State (meters) | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | 2.0m | 25kts | SW |
| Wx - 1200: | 2.5m | 35-40kts | SSW |
| Wx - 1800: | 2.5m | 30-35kts | SSW |
| Wx - 2400: | na | na | na |

**Geophysical Equipment:**

Equipment #1: Navigation System - POS MV #BGR602273
Equipment #2: Diff. GPS System - Trimble AG130 #BGR603512
Equipment #3: MBES - R2Sonic #BGR603633
Equipment #4: SSS - Edgetech 4200 #38719
Equipment #5: Mag. - SeaSpy #13380A
Equipment #6: USBL - IXSEA GAPS #151
Equipment #7: Grab Sampler - Day Grab #
Equipment #8: Grab Sampler - Van Veen #
Equipment #9:
Equipment #10:
Equipment #11:

***Personnel Onboard:***

*Captain:* John Valikonis
*Other Vessel Crew:* n/a
*Party Chief:* Kelly Power
*Hydro. Surveyor:* David Wise
*Geophysical Tech.:* Richie Carmichael
*Other Survey Crew:* n/a
*Client Representative:* Kent Simpson

***Personnel Onshore:***

*Offshore Site Manager:* Marta Krynytzky
*Ass't Off. Site Manager:* Charlie Hall
*Data Manager:* Chuck Chamberlain
*Data Processor:* Cody Gibson
*Data Processor:* Lance Woods
*Data Processor:* n/a
*Additional Proc.:* n/a
*Client Representative:* n/a

**Client Representative's Remarks:**

**FUGRO:** Kelly Power **Client:** Kent W. Simpson

# Daily Progress Report

ver 7.22.2015-A (Alaska)

**Client:** AK LNG
**Job Description:** Seafloor Mapping
**Area & Block(s):** Pipeline
**Prospect / Site:** Cook Inlet
**Fugro Job #:** 23.00007123
**Job Day #:** 49

| | | |
|---|---|---|
| **Report For:** | 27-Aug-2015 | Thursday |
| **Julian Date:** | 239 | |
| **Hours From:** | 0630 to 1830 | |

**Report From:**

**Fugro**
**R/V: Westerly**

| | | |
|---|---|---|
| Production Hrs/Day: | 12.0 hrs | |
| Job Total in Meters: | 606,000.00 | |
| Total # of Lines: | 484 Lines | |
| # Cores/Core Time: | 55 cores | Est. 180 mins. |
| Total Meters Added: | 74,500.00 | |
| Total Meters Deleted: | 0.00 | |
| Survey Units: | Meters | |
| Nautical Mile (Feet): | 6080 | |

| Time Summary (Hours): | Today: | Job Totals: | ( % ) |
|---|---|---|---|
| Mobilize / Demobilize: | 0.00 | 12.00 | 2.15% |
| On-Line: | 0.00 | 140.58 | 25.17% |
| Transit: | 0.00 | 115.65 | 20.71% |
| Other Working: | 0.00 | 159.26 | 28.52% |
| Equipment Downtime: | 0.00 | 60.42 | 10.82% |
| Weather Stand-By: | 12.00 | 69.35 | 12.42% |
| Other Stand-By: | 0.00 | 1.17 | 0.21% |
| Stand-By / No Crew: | 0.00 | 0.00 | |
| Health, Safety & Environmental: | 0.00 | 0.00 | |
| **Job Summary:** | **12.00** | **558.43** | **100.00%** |

**Areas Worked:** Nil

**Job Total - Kilometers:** *680.50*
**On-Line Percent Complete:** *91.16%*

**Kilometers Added:** *74.50*

**Percent In-Fill:** *1.67%*

**Estimated Coring Time:** 13.75 Days
**Estimated Time to Completion:** 14.89 Days

**Estimated Time includes taking cores!**

No survey operations were conducted today. Vessel remained at the dock due to poor weather conditions offshore. There was a small vessel advisory in effect for today/tonight. Wind speeds ranged fom 20 to 30kts through the day. The weather forecaset for tomorrow is poor. Will review conditions and forecast in the morning.

| HSE Reporting: | | HSE Officer: | Kelly Power |
|---|---|---|---|
| Toolbox: | No | | |
| Shift Change: | N/A | | |
| Safety: | No | | |
| Pre/Post Job: | No | | |

| Production Summary: | Today: | To Date: | Job Total: | To Complete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 0.00 | 620.35 | 680.50 | 60.15 |
| Lines Completed: | 0 | 383 | 484 | 101 |
| Cores Taken: | 0 | 0 | 55 | 55 |
| In-Fill Kilometers: | 0.00 | 11.35 | 1.67% | |
| Added on Kilometers: | 0.00 | 74.50 | 10.95% | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 0.00 | | |

**Geophysical Equipment:**

| | |
|---|---|
| Equipment #1: | Navigation System - POS MV #BGR602273 |
| Equipment #2: | Diff. GPS System - Trimble AG130 #BGR603512 |
| Equipment #3: | MBES - R2Sonic #BGR603633 |
| Equipment #4: | SSS - Edgetech 4200 #38719 |
| Equipment #5: | Mag. - SeaSpy #13380A |
| Equipment #6: | USBL - IXSEA GAPS #151 |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

| Weather Summary: | Sea State (meters) | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | 2.0m | 20kts | SW |
| Wx - 1200: | 2.0m | 15-20kts | NW |
| Wx - 1800: | 2.0m | 30kts | NW |
| Wx - 2400: | na | na | na |

***Personnel Onboard:***

*Captain:* John Valikonis
*Other Vessel Crew:* n/a
*Party Chief:* Kelly Power
*Hydro. Surveyor:* David Wise
*Geophysical Tech.:* Richie Carmichael
*Other Survey Crew:* n/a
*Client Representative:* Kent Simpson

***Personnel Onshore:***

*Offshore Site Manager:* Marta Krynytzky
*Ass't Off. Site Manager:* Charlie Hall
*Data Manager:* Chuck Chamberlain
*Data Processor:* Cody Gibson
*Data Processor:* Lance Woods
*Data Processor:* n/a
*Additional Proc.:* n/a
*Client Representative:* n/a

**Client Representative's Remarks:**

**FUGRO:** Kelly Power **Client:** Kent W. Simpson

# Daily Progress Report

ver 7.22.2015-A (Alaska)

**Client:** AK LNG
**Job Description:** Seafloor Mapping
**Area & Block(s):** Pipeline
**Prospect / Site:** Cook Inlet
**Fugro Job #:** 23.00007123
**Job Day #:** 50

**Fugro**
**R/V: Westerly**

| | |
|---|---|
| Production Hrs/Day: | 12.0 hrs |
| Job Total in Meters: | 606,000.00 |
| Total # of Lines: | 484 Lines |
| # Cores/Core Time: | 55 cores / Est. 180 mins. |
| Total Meters Added: | 74,500.00 |
| Total Meters Deleted: | 0.00 |
| Survey Units: | Meters |
| Nautical Mile (Feet): | 6080 |

| | | |
|---|---|---|
| Report For: | 28-Aug-2015 | Friday |
| Julian Date: | 240 | |
| Hours From: | 0630 to 1830 | |

**Report From:**

| Time Summary (Hours): | Today: | Job Totals: | ( % ) |
|---|---|---|---|
| Mobilize / Demobilize: | 0.00 | 12.00 | 2.10% |
| On-Line: | 0.00 | 140.58 | 24.64% |
| Transit: | 0.00 | 115.65 | 20.27% |
| Other Working: | 0.00 | 159.26 | 27.92% |
| Equipment Downtime: | 0.00 | 60.42 | 10.59% |
| Weather Stand-By: | 12.00 | 81.35 | 14.26% |
| Other Stand-By: | 0.00 | 1.17 | 0.21% |
| Stand-By / No Crew: | 0.00 | 0.00 | |
| Health, Safety & Environmental: | 0.00 | 0.00 | |
| **Job Summary:** | **12.00** | **570.43** | **100.00%** |

**Job Total - Kilometers:** *680.50*
**On-Line Percent Complete:** *91.16%*

**Kilometers Added:** *74.50*

**Percent In-Fill:** *1.67%*

**Estimated Coring Time:** 13.75 Days
**Estimated Time to Completion:** 14.89 Days

**Estimated Time includes taking cores!**

**Areas Worked:** None

Vessel was down on weather for the day. Winds were up throughout the day. Expected sea conditions were poor.
There is no plannedsurvey activities tomorrow as it is a scheduled fatigue management day.

| HSE Reporting: | | HSE Officer: | Kelly Power |
|---|---|---|---|
| Toolbox: | No | | |
| Shift Change: | N/A | | |
| Safety: | No | | |
| Pre/Post Job: | No | | |

| Production Summary: | Today: | To Date: | Job Total: | To Complete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 0.00 | 620.35 | 680.50 | 60.15 |
| Lines Completed: | 0 | 383 | 484 | 101 |
| Cores Taken: | 0 | 0 | 55 | 55 |
| In-Fill Kilometers: | 0.00 | 11.35 | 1.67% | |
| Added on Kilometers: | 0.00 | 74.50 | 10.95% | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 0.00 | | |

**Geophysical Equipment:**

| | |
|---|---|
| Equipment #1: | Navigation System - POS MV #BGR602273 |
| Equipment #2: | Diff. GPS System - Trimble AG130 #BGR603512 |
| Equipment #3: | MBES - R2Sonic #BGR603633 |
| Equipment #4: | SSS - Edgetech 4200 #38719 |
| Equipment #5: | Mag. - SeaSpy #13380A |
| Equipment #6: | USBL - IXSEA GAPS #151 |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

| Weather Summary: | Sea State (meters) | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | 1.5m | 15-20kts | NE |
| Wx - 1200: | 1.5m | 15kts | NE |
| Wx - 1800: | 1.5m | 15kts | NE |
| Wx - 2400: | na | na | na |

***Personnel Onboard:***

*Captain:* Ryan Braget
*Other Vessel Crew:* n/a
*Party Chief:* Kelly Power
*Hydro. Surveyor:* David Wise
*Geophysical Tech.:* Richie Carmichael
*Other Survey Crew:* n/a
*Client Representative:* Kent Simpson

***Personnel Onshore:***

*Offshore Site Manager:* Marta Krynytzky
*Ass't Off. Site Manager:* Charlie Hall
*Data Manager:* Chuck Chamberlain
*Data Processor:* Cody Gibson
*Data Processor:* Lance Woods
*Data Processor:* n/a
*Additional Proc.:* n/a
*Client Representative:* n/a

**Client Representative's Remarks:**

**FUGRO:** Kelly Power **Client:** Kent W. Simpson

Alaska LNG

# Daily Progress Report

ver 7.22.2015-A (Alaska)

**Client:** AK LNG
**Job Description:** Seafloor Mapping
**Area & Block(s):** Pipeline
**Prospect / Site:** Cook Inlet
**Fugro Job #:** 23.00007123
**Job Day #:** 51

| | | |
|---|---|---|
| **Report For:** | 29-Aug-2015 | Saturday |
| **Julian Date:** | 241 | |
| **Hours From:** | 0630 to 1830 | |

**Report From:**

**Fugro**
**R/V: Westerly**

| | | |
|---|---|---|
| Production Hrs/Day: | 12.0 hrs | |
| Job Total in Meters: | 606,000.00 | |
| Total # of Lines: | 484 Lines | |
| # Cores/Core Time: | 55 cores | Est. 180 mins. |
| Total Meters Added: | 74,500.00 | |
| Total Meters Deleted: | 0.00 | |
| Survey Units: | Meters | |
| Nautical Mile (Feet): | 6080 | |

| Time Summary (Hours): | Today: | Job Totals: | ( % ) |
|---|---|---|---|
| Mobilize / Demobilize: | 0.00 | 12.00 | 2.06% |
| On-Line: | 0.00 | 140.58 | 24.14% |
| Transit: | 0.00 | 115.65 | 19.86% |
| Other Working: | 12.00 | 171.26 | 29.40% |
| Equipment Downtime: | 0.00 | 60.42 | 10.37% |
| Weather Stand-By: | 0.00 | 81.35 | 13.97% |
| Other Stand-By: | 0.00 | 1.17 | 0.20% |
| Stand-By / No Crew: | 0.00 | 0.00 | |
| Health, Safety & Environmental: | 0.00 | 0.00 | |
| **Job Summary:** | **12.00** | **582.43** | **100.00%** |

**Areas Worked:** None

Today was a fatigue mangement day. No survey operations were conducted.

**Job Total - Kilometers:** *680.50*
**On-Line Percent Complete:** *91.16%*

**Kilometers Added:** *74.50*

**Percent In-Fill:** *1.67%*

**Estimated Coring Time:** 13.75 Days
**Estimated Time to Completion:** 14.89 Days

**Estimated Time includes taking cores!**

| HSE Reporting: | | HSE Officer: | Kelly Power |
|---|---|---|---|
| Toolbox: | No | | |
| Shift Change: | N/A | | |
| Safety: | No | | |
| Pre/Post Job: | No | | |

| Production Summary: | Today: | To Date: | Job Total: | To Complete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 0.00 | 620.35 | 680.50 | 60.15 |
| Lines Completed: | 0 | 383 | 484 | 101 |
| Cores Taken: | 0 | 0 | 55 | 55 |
| In-Fill Kilometers: | 0.00 | 11.35 | 1.67% | |
| Added on Kilometers: | 0.00 | 74.50 | 10.95% | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 0.00 | | |

**Geophysical Equipment:**

| | |
|---|---|
| Equipment #1: | Navigation System - POS MV #BGR602273 |
| Equipment #2: | Diff. GPS System - Trimble AG130 #BGR603512 |
| Equipment #3: | MBES - R2Sonic #BGR603633 |
| Equipment #4: | SSS - Edgetech 4200 #38719 |
| Equipment #5: | Mag. - SeaSpy #13380A |
| Equipment #6: | USBL - IXSEA GAPS #151 |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

| Weather Summary: | Sea State (meters) | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | na | na | na |
| Wx - 1200: | na | na | na |
| Wx - 1800: | na | na | na |
| Wx - 2400: | na | na | na |

***Personnel Onboard:***

*Captain:* Ryan Braget
*Other Vessel Crew:* n/a
*Party Chief:* Kelly Power
*Hydro. Surveyor:* David Wise
*Geophysical Tech.:* Richie Carmichael
*Other Survey Crew:* n/a
*Client Representative:* Kent Simpson

***Personnel Onshore:***

*Offshore Site Manager:* Marta Krynytzky
*Ass't Off. Site Manager:* Charlie Hall
*Data Manager:* Chuck Chamberlain
*Data Processor:* Cody Gibson
*Data Processor:* Lance Woods
*Data Processor:* n/a
*Additional Proc.:* n/a
*Client Representative:* n/a

**Client Representative's Remarks:**

**FUGRO:** Kelly Power **Client:** Kent W. Simpson

Alaska LNG

# Daily Progress Report

ver 7.22.2015-A (Alaska)

**Client:** AK LNG
**Job Description:** Seafloor Mapping
**Area & Block(s):** Pipeline
**Prospect / Site:** Cook Inlet
**Fugro Job #:** 23.00007123
**Job Day #:** 52

| | | |
|---|---|---|
| **Report For:** | 30-Aug-2015 | Sunday |
| **Julian Date:** | 242 | |
| **Hours From:** | 0630 to 1830 | |

**Report From:**

Fugro
R/V: Westerly

| | | |
|---|---|---|
| Production Hrs/Day: | 12.0 hrs | |
| Job Total in Meters: | 606,000.00 | |
| Total # of Lines: | 484 Lines | |
| # Cores/Core Time: | 55 cores | Est. 180 mins. |
| Total Meters Added: | 74,500.00 | |
| Total Meters Deleted: | 0.00 | |
| Survey Units: | Meters | |
| Nautical Mile (Feet): | 6080 | |

| Time Summary (Hours): | Today: | Job Totals: | ( % ) |
|---|---|---|---|
| Mobilize / Demobilize: | 0.00 | 12.00 | 2.02% |
| On-Line: | 0.00 | 140.58 | 23.65% |
| Transit: | 0.00 | 115.65 | 19.46% |
| Other Working: | 12.00 | 183.26 | 30.83% |
| Equipment Downtime: | 0.00 | 60.42 | 10.16% |
| Weather Stand-By: | 0.00 | 81.35 | 13.68% |
| Other Stand-By: | 0.00 | 1.17 | 0.20% |
| Stand-By / No Crew: | 0.00 | 0.00 | |
| Health, Safety & Environmental: | 0.00 | 0.00 | |
| **Job Summary:** | **12.00** | **594.43** | **100.00%** |

**Areas Worked:** None

Today was a fatigue mangement day. No survey operations were conducted.

**Job Total - Kilometers:** *680.50*
**On-Line Percent Complete:** *91.16%*

**Kilometers Added:** *74.50*

**Percent In-Fill:** *1.67%*

**Estimated Coring Time:** 13.75 Days
**Estimated Time to Completion:** 14.89 Days

**Estimated Time includes taking cores!**

| HSE Reporting: | | HSE Officer: | Kelly Power |
|---|---|---|---|
| Toolbox: | No | | |
| Shift Change: | N/A | | |
| Safety: | No | | |
| Pre/Post Job: | No | | |

| Production Summary: | Today: | To Date: | Job Total: | To Complete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 0.00 | 620.35 | 680.50 | 60.15 |
| Lines Completed: | 0 | 383 | 484 | 101 |
| Cores Taken: | 0 | 0 | 55 | 55 |
| In-Fill Kilometers: | 0.00 | 11.35 | 1.67% | |
| Added on Kilometers: | 0.00 | 74.50 | 10.95% | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 0.00 | | |

**Geophysical Equipment:**

| | |
|---|---|
| Equipment #1: | Navigation System - POS MV #BGR602273 |
| Equipment #2: | Diff. GPS System - Trimble AG130 #BGR603512 |
| Equipment #3: | MBES - R2Sonic #BGR603633 |
| Equipment #4: | SSS - Edgetech 4200 #38719 |
| Equipment #5: | Mag. - SeaSpy #13380A |
| Equipment #6: | USBL - IXSEA GAPS #151 |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

| Weather Summary: | Sea State (meters) | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | na | na | na |
| Wx - 1200: | na | na | na |
| Wx - 1800: | na | na | na |
| Wx - 2400: | na | na | na |

***Personnel Onboard:***

| | |
|---|---|
| *Captain:* | Ryan Braget |
| *Other Vessel Crew:* | n/a |
| *Party Chief:* | Kelly Power |
| *Hydro. Surveyor:* | David Wise |
| *Geophysical Tech.:* | Richie Carmichael |
| *Other Survey Crew:* | n/a |
| *Client Representative:* | Kent Simpson |

***Personnel Onshore:***

| | |
|---|---|
| *Offshore Site Manager:* | Marta Krynytzky |
| *Ass't Off. Site Manager:* | Charlie Hall |
| *Data Manager:* | Chuck Chamberlain |
| *Data Processor:* | Cody Gibson |
| *Data Processor:* | Lance Woods |
| *Data Processor:* | n/a |
| *Additional Proc.:* | n/a |
| *Client Representative:* | n/a |

**Client Representative's Remarks:**

**FUGRO:** Kelly Power **Client:** Kent W. Simpson

Alaska LNG

# Daily Progress Report

ver 7.22.2015-A (Alaska)

| | |
|---|---|
| Client: | AK LNG |
| Job Description: | Seafloor Mapping |
| Area & Block(s): | Pipeline |
| Prospect / Site: | Cook Inlet |
| Fugro Job #: | 23.00007123 |
| Job Day #: | 53 |
| Report For: | 31-Aug-2015 Monday |
| Julian Date: | 243 |
| Hours From: | 0630 to 1830 |
| Report From: | |

Fugro
R/V: Westerly

| | | |
|---|---|---|
| Production Hrs/Day: | 12.0 hrs | |
| Job Total in Meters: | 606,000.00 | |
| Total # of Lines: | 484 Lines | |
| # Cores/Core Time: | 55 cores | Est. 180 mins. |
| Total Meters Added: | 74,500.00 | |
| Total Meters Deleted: | 0.00 | |
| Survey Units: | Meters | |
| Nautical Mile (Feet): | 6080 | |

| Time Summary (Hours): | Today: | Job Totals: | ( % ) |
|---|---|---|---|
| Mobilize / Demobilize: | 0.00 | 12.00 | 1.98% |
| On-Line: | 0.00 | 140.58 | 23.18% |
| Transit: | 0.00 | 115.65 | 19.07% |
| Other Working: | 0.00 | 183.26 | 30.22% |
| Equipment Downtime: | 0.00 | 60.42 | 9.96% |
| Weather Stand-By: | 12.00 | 93.35 | 15.39% |
| Other Stand-By: | 0.00 | 1.17 | 0.19% |
| Stand-By / No Crew: | 0.00 | 0.00 | |
| Health, Safety & Environmental: | 0.00 | 0.00 | |
| Job Summary: | 12.00 | 606.43 | 100.00% |
| Areas Worked: | | | |

**Job Total - Kilometers:** *680.50*
**On-Line Percent Complete:** *91.16%*

**Kilometers Added:** *74.50*

**Percent In-Fill:** *1.67%*

**Estimated Coring Time:** 13.75 Days
**Estimated Time to Completion:** 14.89 Days

**Estimated Time includes taking cores!**

| HSE Reporting: | | HSE Officer: | Kelly Power |
|---|---|---|---|
| Toolbox: | X | JHA-Toolbox | |
| Shift Change: | N/A | | |
| Safety: | X | Abandon Ship Drill, Review MAR-TRA-007, 1 HOC for a suggestion | |
| Pre/Post Job: | No | | |

| Production Summary: | Today: | To Date: | Job Total: | To Complete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 0.00 | 620.35 | 680.50 | 60.15 |
| Lines Completed: | 0 | 383 | 484 | 101 |
| Cores Taken: | 0 | 0 | 55 | 55 |
| In-Fill Kilometers: | 0.00 | 11.35 | 1.67% | |
| Added on Kilometers: | 0.00 | 74.50 | 10.95% | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 0.00 | | |

**Geophysical Equipment:**

| | |
|---|---|
| Equipment #1: | Navigation System - POS MV #BGR602273 |
| Equipment #2: | Diff. GPS System - Trimble AG130 #BGR603512 |
| Equipment #3: | MBES - R2Sonic #BGR603633 |
| Equipment #4: | SSS - Edgetech 4200 #38719 |
| Equipment #5: | Mag. - SeaSpy #13380A |
| Equipment #6: | USBL - IXSEA GAPS #151 |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

| Weather Summary: | Sea State (meters) | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | 1.2-1.5m | 20kts | NE |
| Wx - 1200: | 1.5m | 20-25kts | N |
| Wx - 1800: | 1.5m | 15-20kts | N |
| Wx - 2400: | na | na | na |

***Personnel Onboard:***

| | |
|---|---|
| *Captain:* | Ryan Braget |
| *Other Vessel Crew:* | n/a |
| *Party Chief:* | Kelly Power |
| *Hydro. Surveyor:* | David Wise |
| *Geophysical Tech.:* | Richie Carmichael |
| *Other Survey Crew:* | n/a |
| *Client Representative:* | Kent Simpson |

***Personnel Onshore:***

| | |
|---|---|
| *Offshore Site Manager:* | Marta Krynytzky |
| *Ass't Off. Site Manager:* | Charlie Hall |
| *Data Manager:* | Chuck Chamberlain |
| *Data Processor:* | Cody Gibson |
| *Data Processor:* | Lance Woods |
| *Data Processor:* | n/a |
| *Additional Proc.:* | n/a |
| *Client Representative:* | n/a |

**Client Representative's Remarks:**

FUGRO: Kelly Power  Client: Kent W. Simpson

# Daily Progress Report

ver 7.22.2015-A (Alaska)

**Client:** AK LNG
**Job Description:** Seafloor Mapping
**Area & Block(s):** Pipeline
**Prospect / Site:** Cook Inlet
**Fugro Job #:** 23.00007123
**Job Day #:** 54

| | | |
|---|---|---|
| **Report For:** | 01-Sep-2015 | Tuesday |
| **Julian Date:** | 244 | |
| **Hours From:** | 0630 to 1830 | |

**Report From:**

Fugro
R/V: Westerly

| | | |
|---|---|---|
| Production Hrs/Day: | 12.0 hrs | |
| Job Total in Meters: | 606,000.00 | |
| Total # of Lines: | 484 Lines | |
| # Cores/Core Time: | 55 cores | Est. 180 mins. |
| Total Meters Added: | 74,500.00 | |
| Total Meters Deleted: | 0.00 | |
| Survey Units: | Meters | |
| Nautical Mile (Feet): | 6080 | |

| Time Summary (Hours): | Today: | Job Totals: | ( % ) |
|---|---|---|---|
| Mobilize / Demobilize: | 0.00 | 12.00 | 1.94% |
| On-Line: | 0.93 | 141.51 | 22.88% |
| Transit: | 3.92 | 119.57 | 19.33% |
| Other Working: | 5.15 | 188.41 | 30.47% |
| Equipment Downtime: | 0.00 | 60.42 | 9.77% |
| Weather Stand-By: | 2.00 | 95.35 | 15.42% |
| Other Stand-By: | 0.00 | 1.17 | 0.19% |
| Stand-By / No Crew: | 0.00 | 0.00 | |
| Health, Safety & Environmental: | 0.00 | 0.00 | |
| **Job Summary:** | **12.00** | **618.43** | **100.00%** |

**Job Total - Kilometers:** *680.50*
**On-Line Percent Complete:** *91.16%*

**Kilometers Added:** *74.50*

**Percent In-Fill:** *1.73%*

**Estimated Coring Time:** 13.75 Days
**Estimated Time to Completion:** 14.89 Days

**Estimated Time includes taking cores!**

**Areas Worked:** PL07

Vessel departed dock near mid morning as conditions forecasted and described by MV Q105 were not suitable survey conditions. Vessel did depart once conditions were described as improving. The Westerly arrived at the Forelands to conduct a MBES patchtest but conditions were not suitable. The Westerly then transited to PL07 where it completed MBES infill work. The vessel then transited to a location near Boulder Point and conducted a MBES calibration. Once completed the vessel returned to dock, conducted some vessel maintenace and refueled. The plan for tomorrow is to conduct survey operations in site PL08.

| HSE Reporting: | | HSE Officer: | Kelly Power |
|---|---|---|---|
| Toolbox: | X | JHA-Toolbox | |
| Shift Change: | N/A | | |
| Safety: | X | Weekly Safety Meeting, Review MAR-TRA's 012 and 013 | |
| Pre/Post Job: | No | | |

| Production Summary: | Today: | To Date: | Job Total: | To Complete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 0.00 | 620.35 | 680.50 | 60.15 |
| Lines Completed: | 0 | 383 | 484 | 101 |
| Cores Taken: | 0 | 0 | 55 | 55 |
| In-Fill Kilometers: | 0.40 | 11.75 | 1.73% | |
| Added on Kilometers: | 0.00 | 74.50 | 10.95% | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 0.00 | | |

**Geophysical Equipment:**

| | |
|---|---|
| Equipment #1: | Navigation System - POS MV #BGR602273 |
| Equipment #2: | Diff. GPS System - Trimble AG130 #BGR603512 |
| Equipment #3: | MBES - R2Sonic #BGR603633 |
| Equipment #4: | SSS - Edgetech 4200 #38719 |
| Equipment #5: | Mag. - SeaSpy #13380A |
| Equipment #6: | USBL - IXSEA GAPS #151 |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

| Weather Summary: | Sea State (meters) | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | 1.5m | 20kts | N |
| Wx - 1200: | 0.5m | 10kts | N |
| Wx - 1800: | 0.5m-1.0m | 10-15kts | W |
| Wx - 2400: | na | na | na |

***Personnel Onboard:***

*Captain:* Ryan Braget
*Other Vessel Crew:* n/a
*Party Chief:* Kelly Power
*Hydro. Surveyor:* David Wise
*Geophysical Tech.:* Richie Carmichael
*Other Survey Crew:* n/a
*Client Representative:* Kent Simpson

***Personnel Onshore:***

*Offshore Site Manager:* Marta Krynytzky
*Ass't Off. Site Manager:* Charlie Hall
*Data Manager:* Chuck Chamberlain
*Data Processor:* Cody Gibson
*Data Processor:* Lance Woods
*Data Processor:* n/a
*Additional Proc.:* n/a
*Client Representative:* n/a

**Client Representative's Remarks:**

**FUGRO:** Kelly Power **Client:** Kent W. Simpson

# Daily Progress Report

ver 7.22.2015-A (Alaska)

| | |
|---|---|
| Client: | AK LNG |
| Job Description: | Seafloor Mapping |
| Area & Block(s): | Pipeline |
| Prospect / Site: | Cook Inlet |
| Fugro Job #: | 23.00007123 |
| Job Day #: | 55 |
| Report For: | 02-Sep-2015 Wednesday |
| Julian Date: | 245 |
| Hours From: | 0630 to 1830 |
| Report From: | |

Fugro
R/V: Westerly

| | | |
|---|---|---|
| Production Hrs/Day: | 12.0 hrs | |
| Job Total in Meters: | 606,000.00 | |
| Total # of Lines: | 484 Lines | |
| # Cores/Core Time: | 55 cores | Est. 180 mins. |
| Total Meters Added: | 79,050.00 | |
| Total Meters Deleted: | 0.00 | |
| Survey Units: | Meters | |
| Nautical Mile (Feet): | 6080 | |

| Time Summary (Hours): | Today: | Job Totals: | (%) |
|---|---|---|---|
| Mobilize / Demobilize: | 0.00 | 12.00 | 1.90% |
| On-Line: | 6.15 | 147.66 | 23.42% |
| Transit: | 3.67 | 123.24 | 19.55% |
| Other Working: | 2.18 | 190.60 | 30.23% |
| Equipment Downtime: | 0.00 | 60.42 | 9.58% |
| Weather Stand-By: | 0.00 | 95.35 | 15.12% |
| Other Stand-By: | 0.00 | 1.17 | 0.19% |
| Stand-By / No Crew: | 0.00 | 0.00 | |
| Health, Safety & Environmental: | 0.00 | 0.00 | |
| Job Summary: | 12.00 | 630.43 | 100.00% |

**Job Total - Kilometers:** *685.05*
**On-Line Percent Complete:** *93.79%*

**Kilometers Added:** *79.05*

**Percent In-Fill:** *1.72%*

**Estimated Coring Time:** 13.75 Days
**Estimated Time to Completion:** 14.56 Days

**Estimated Time includes taking cores!**

**Areas Worked:** PL08

Vessel resumed operations in site PL08. 23 lines were completed. Data quality was good. At times the high current of 5.2kts slowed vessel. Plan tomorrow is to resume survey operations in the PL08 area.

| HSE Reporting: | | HSE Officer: | Kelly Power |
|---|---|---|---|
| Toolbox: | X | JHA-Toolbox | |
| Shift Change: | N/A | | |
| Safety: | X | Review MAR-TRA-012 | |
| Pre/Post Job: | No | | |

| Production Summary: | Today: | To Date: | Job Total: | To Complete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 22.15 | 642.50 | 685.05 | 42.55 |
| Lines Completed: | 23 | 406 | 484 | 78 |
| Cores Taken: | 0 | 0 | 55 | 55 |
| In-Fill Kilometers: | 0.00 | 11.75 | 1.72% | |
| Added on Kilometers: | 4.55 | 79.05 | 11.54% | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 0.00 | | |

**Geophysical Equipment:**

| | |
|---|---|
| Equipment #1: | Navigation System - POS MV #BGR602273 |
| Equipment #2: | Diff. GPS System - Trimble AG130 #BGR603512 |
| Equipment #3: | MBES - R2Sonic #BGR603633 |
| Equipment #4: | SSS - Edgetech 4200 #38719 |
| Equipment #5: | Mag. - SeaSpy #13380A |
| Equipment #6: | USBL - IXSEA GAPS #151 |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

| Weather Summary: | Sea State (meters) | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | 0.3m | 5kts | E |
| Wx - 1200: | 0.3m | 5kts | E |
| Wx - 1800: | 0.5m | 5kts | N |
| Wx - 2400: | na | na | na |

***Personnel Onboard:***

| | |
|---|---|
| *Captain:* | Ryan Braget |
| *Other Vessel Crew:* | n/a |
| *Party Chief:* | Kelly Power |
| *Hydro. Surveyor:* | David Wise |
| *Geophysical Tech.:* | Richie Carmichael |
| *Other Survey Crew:* | n/a |
| *Client Representative:* | n/a |

***Personnel Onshore:***

| | |
|---|---|
| *Offshore Site Manager:* | Marta Krynytzky |
| *Ass't Off. Site Manager:* | Charlie Hall |
| *Data Manager:* | Chuck Chamberlain |
| *Data Processor:* | Cody Gibson |
| *Data Processor:* | Lance Woods |
| *Data Processor:* | n/a |
| *Additional Proc.:* | n/a |
| *Client Representative:* | Kent Simpson |

**Client Representative's Remarks:**

FUGRO: Kelly Power  Client: Kent W. Simpson

# Daily Progress Report

ver 7.22.2015-A (Alaska)

**Client:** AK LNG
**Job Description:** Seafloor Mapping
**Area & Block(s):** Pipeline
**Prospect / Site:** Cook Inlet
**Fugro Job #:** 23.00007123
**Job Day #:** 56

| | | |
|---|---|---|
| **Report For:** | 03-Sep-2015 | Thursday |
| **Julian Date:** | 246 | |
| **Hours From:** | 0630 to 1830 | |

**Report From:**

Fugro
R/V: Westerly

| | | |
|---|---|---|
| Production Hrs/Day: | 12.0 hrs | |
| Job Total in Meters: | 606,000.00 | |
| Total # of Lines: | 484 Lines | |
| # Cores/Core Time: | 55 cores | Est. 180 mins. |
| Total Meters Added: | 82,050.00 | |
| Total Meters Deleted: | 0.00 | |
| Survey Units: | Meters | |
| Nautical Mile (Feet): | 6080 | |

| Time Summary (Hours): | Today: | Job Totals: | ( % ) |
|---|---|---|---|
| Mobilize / Demobilize: | 0.00 | 12.00 | 1.87% |
| On-Line: | 2.98 | 150.64 | 23.45% |
| Transit: | 3.47 | 126.70 | 19.72% |
| Other Working: | 1.47 | 192.06 | 29.90% |
| Equipment Downtime: | 0.50 | 60.92 | 9.48% |
| Weather Stand-By: | 3.58 | 98.93 | 15.40% |
| Other Stand-By: | 0.00 | 1.17 | 0.18% |
| Stand-By / No Crew: | 0.00 | 0.00 | |
| Health, Safety & Environmental: | 0.00 | 0.00 | |
| **Job Summary:** | **12.00** | **642.43** | **100.00%** |

**Job Total - Kilometers:** *688.05*
**On-Line Percent Complete:** *95.18%*

**Kilometers Added:** *82.05*

**Percent In-Fill:** *1.71%*

**Estimated Coring Time:** 13.75 Days
**Estimated Time to Completion:** 14.39 Days

**Estimated Time includes taking cores!**

**Areas Worked:** PL08

Completed 15 lines in PL08 before weather conditions degraded. Of note today the primary sidescan cable wet splice failed. We switched to the secondary winch and continued survey operations. Downtime was minimal. Cable was reterminated at the dock later in the day.
Vessel was scheduled to refuel today but there was another vessel at our fueling berth undergoing repairs with welding operations. Fuel truck has been arranged for tomorrow morning. Plan for tomorrow is to resume survey operations in the PL08 survey area.

| HSE Reporting: | | HSE Officer: | Kelly Power |
|---|---|---|---|
| Toolbox: | X | JHA-Toolbox | |
| Shift Change: | No | | |
| Safety: | No | | |
| Pre/Post Job: | No | | |

| Production Summary: | Today: | To Date: | Job Total: | To Complete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 12.40 | 654.90 | 688.05 | 33.15 |
| Lines Completed: | 15 | 421 | 484 | 63 |
| Cores Taken: | 0 | 0 | 55 | 55 |
| In-Fill Kilometers: | 0.00 | 11.75 | 1.71% | |
| Added on Kilometers: | 3.00 | 82.05 | 11.93% | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 0.00 | | |

**Geophysical Equipment:**

| | |
|---|---|
| Equipment #1: | Navigation System - POS MV #BGR602273 |
| Equipment #2: | Diff. GPS System - Trimble AG130 #BGR603512 |
| Equipment #3: | MBES - R2Sonic #BGR603633 |
| Equipment #4: | SSS - Edgetech 4200 #38719 |
| Equipment #5: | Mag. - SeaSpy #13380A |
| Equipment #6: | USBL - IXSEA GAPS #151 |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

| Weather Summary: | Sea State (meters) | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | na | na | na |
| Wx - 1200: | 0.7m | 10kts | NE |
| Wx - 1800: | 1.3m | 15kts | NE |
| Wx - 2400: | na | na | na |

***Personnel Onboard:***

*Captain:* Ryan Braget
*Other Vessel Crew:* n/a
*Party Chief:* Kelly Power
*Hydro. Surveyor:* David Wise
*Geophysical Tech.:* Richie Carmichael
*Other Survey Crew:* n/a
*Client Representative:* Kent Simpson

***Personnel Onshore:***

*Offshore Site Manager:* Marta Krynytzky
*Ass't Off. Site Manager:* Charlie Hall
*Data Manager:* Lance Woods
*Data Processor:* Cody Gibson
*Data Processor:* na
*Data Processor:* n/a
*Additional Proc.:* n/a
*Client Representative:* na

**Client Representative's Remarks:**

**FUGRO:** Kelly Power **Client:** Kent W. Simpson

# Daily Progress Report

ver 7.22.2015-A (Alaska)

**Client:** AK LNG
**Job Description:** Seafloor Mapping
**Area & Block(s):** Pipeline
**Prospect / Site:** Cook Inlet
**Fugro Job #:** 23.00007123
**Job Day #:** 57

| | | |
|---|---|---|
| **Report For:** | 04-Sep-2015 | Friday |
| **Julian Date:** | 247 | |
| **Hours From:** | 0630 to 1830 | |

**Report From:**

**Fugro**
**R/V: Westerly**

| | | |
|---|---|---|
| Production Hrs/Day: | 12.0 hrs | |
| Job Total in Meters: | 606,000.00 | |
| Total # of Lines: | 484 Lines | |
| # Cores/Core Time: | 55 cores | Est. 180 mins. |
| Total Meters Added: | 82,650.00 | |
| Total Meters Deleted: | 0.00 | |
| Survey Units: | Meters | |
| Nautical Mile (Feet): | 6080 | |

| Time Summary (Hours): | Today: | Job Totals: | (%) |
|---|---|---|---|
| Mobilize / Demobilize: | 0.00 | 12.00 | 1.83% |
| On-Line: | 2.68 | 153.32 | 23.43% |
| Transit: | 4.00 | 130.70 | 19.97% |
| Other Working: | 3.40 | 195.46 | 29.87% |
| Equipment Downtime: | 0.50 | 61.42 | 9.39% |
| Weather Stand-By: | 1.42 | 100.35 | 15.33% |
| Other Stand-By: | 0.00 | 1.17 | 0.18% |
| Stand-By / No Crew: | 0.00 | 0.00 | |
| Health, Safety & Environmental: | 0.00 | 0.00 | |
| **Job Summary:** | **12.00** | **654.42** | **100.00%** |

**Job Total - Kilometers:** *688.65*
**On-Line Percent Complete:** *88.56%*

**Kilometers Added:** *82.65*

**Percent In-Fill:** *1.71%*

**Estimated Coring Time:** 13.75 Days
**Estimated Time to Completion:** 15.40 Days

**Estimated Time includes taking cores!**

**Areas Worked:** PL08

Vessel refueled in the morning. Spoke to MV Q105 who informed us that the weather was good south of Forelands where she was located. Westerly arrived on site PL08 but weather conditins were not suitable for deploying/surveying. Vessel jogged on site for 1.5hrs while waiting for sea to subside. Once seas did subside gear was deployed. During depoyment a problem with the port SS cable was discovered. The SS/Mag fish were switched to the stbd winch cable and survey operations commenced. During the first line run the vessel encountered a large debris field, containing large trees, logs, branches and other misc items. The line was aborted and the vessel moved to another location within PL08. Upon returning to dock the port SS cable wa reterminated but a secondary problem was discovered within the winch slip rings which will require more troubleshooting to resolve. The plan tomorrow is to work near the PL08 area.

| HSE Reporting: | | HSE Officer: | Kelly Power |
|---|---|---|---|
| Toolbox: | X | JHA-Toolbox | |
| Shift Change: | N/A | | |
| Safety: | X | Review MAR-TRA-013, 1 HOC card submitted | |
| Pre/Post Job: | No | | |

| Production Summary: | Today: | To Date: | Job Total: | To Complete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 12.15 | 609.89 | 688.65 | 78.76 |
| Lines Completed: | 3 | 429 | 484 | 55 |
| Cores Taken: | 0 | 0 | 55 | 55 |
| In-Fill Kilometers: | 0.00 | 11.75 | 1.71% | |
| Added on Kilometers: | 0.60 | 82.65 | 12.00% | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 0.00 | | |

**Geophysical Equipment:**

| | |
|---|---|
| Equipment #1: | Navigation System - POS MV #BGR602273 |
| Equipment #2: | Diff. GPS System - Trimble AG130 #BGR603512 |
| Equipment #3: | MBES - R2Sonic #BGR603633 |
| Equipment #4: | SSS - Edgetech 4200 #38719 |
| Equipment #5: | Mag. - SeaSpy #13380A |
| Equipment #6: | USBL - IXSEA GAPS #151 |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

**Weather Summary:**

| | Sea State (meters) | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | n/a | n/a | n/a |
| Wx - 1200: | 1.0m | 10kts | NE |
| Wx - 1800: | 0.3m | 5kts | NE |
| Wx - 2400: | n/a | n/a | n/a |

***Personnel Onboard:***

| | |
|---|---|
| *Captain:* | Ryan Braget |
| *Other Vessel Crew:* | n/a |
| *Party Chief:* | Kelly Power |
| *Hydro. Surveyor:* | David Wise |
| *Geophysical Tech.:* | Richie Carmichael |
| *Other Survey Crew:* | n/a |
| *Client Representative:* | Kent Simpson |

***Personnel Onshore:***

| | |
|---|---|
| *Offshore Site Manager:* | Marta Krynytzky |
| *Ass't Off. Site Manager:* | Charlie Hall |
| *Data Manager:* | Lance Woods |
| *Data Processor:* | Cody Gibson |
| *Data Processor:* | n/a |
| *Data Processor:* | n/a |
| *Additional Proc.:* | n/a |
| *Client Representative:* | n/a |

**Client Representative's Remarks:**

**FUGRO:** Kelly Power **Client:** Kent W. Simpson

# Daily Progress Report

ver 7.22.2015-A (Alaska)

| | |
|---|---|
| Client: | AK LNG |
| Job Description: | Seafloor Mapping |
| Area & Block(s): | Pipeline |
| Prospect / Site: | Cook Inlet |
| Fugro Job #: | 23.00007123 |
| Job Day #: | 58 |
| Report For: | 05-Sep-2015 Saturday |
| Julian Date: | 248 |
| Hours From: | 0630 to 1830 |
| Report From: | |

R/V: Westerly

| | | |
|---|---|---|
| Production Hrs/Day: | 12.0 hrs | |
| Job Total in Meters: | 606,000.00 | |
| Total # of Lines: | 484 Lines | |
| # Cores/Core Time: | 55 cores | Est. 180 mins. |
| Total Meters Added: | 106,000.00 | |
| Total Meters Deleted: | 0.00 | |
| Survey Units: | Meters | |
| Nautical Mile (Feet): | 6080 | |

| Time Summary (Hours): | Today: | Job Totals: | (%) |
|---|---|---|---|
| Mobilize / Demobilize: | 0.00 | 12.00 | 1.80% |
| On-Line: | 4.50 | 157.82 | 23.68% |
| Transit: | 3.58 | 134.28 | 20.15% |
| Other Working: | 3.92 | 199.38 | 29.92% |
| Equipment Downtime: | 0.00 | 61.42 | 9.22% |
| Weather Stand-By: | 0.00 | 100.35 | 15.06% |
| Other Stand-By: | 0.00 | 1.17 | 0.18% |
| Stand-By / No Crew: | 0.00 | 0.00 | |
| Health, Safety & Environmental: | 0.00 | 0.00 | |
| Job Summary: | 12.00 | 666.42 | 100.00% |

**Job Total - Kilometers:** *712.00*
**On-Line Percent Complete:** *88.94%*
**Kilometers Added:** *106.00*
**Percent In-Fill:** *1.65%*
**Estimated Coring Time:** 13.75 Days
**Estimated Time to Completion:** 15.39 Days

**Estimated Time includes taking cores!**

**Areas Worked:** Borehole Locations on the North Shore

Completed MBES survey of borehole locations SC-1A, SC-2, VP-1, VP-1A and VP-2. Unable to get coverage over SC-1 as it was to shallow for vessel to survey that location. Collected some SS coverage on the outer edge of SC-1A before the SS termination end failed. We believe cavitation/strumming of towing the SS fish in shallow water may have allowed water egress into connector thereby causing it to fail. The cable has since be re-terminated and SS fish tested ok. However there is a small groove in the bulkhead connector on the towfish. Further consultation will be required before fish is used again. Another SS towfish is being sent from a Fugro opco. The plan for tomorrow is to mobilize the ground truthing equipment and conduct grab sample operations on the pipeline route.

| HSE Reporting: | | HSE Officer: | Kelly Power |
|---|---|---|---|
| Toolbox: | X | JHA-Toolbox | |
| Shift Change: | N/A | | |
| Safety: | X | ReviewMAR-TRA-009 and 013 | |
| Pre/Post Job: | No | | |

| Production Summary: | Today: | To Date: | Job Total: | To Complete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 23.35 | 633.24 | 712.00 | 78.76 |
| Lines Completed: | 0 | 429 | 484 | 55 |
| Cores Taken: | 0 | 0 | 55 | 55 |
| In-Fill Kilometers: | 0.00 | 11.75 | 1.65% | |
| Added on Kilometers: | 23.35 | 106.00 | 14.89% | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 0.00 | | |

**Geophysical Equipment:**

| | |
|---|---|
| Equipment #1: | Navigation System - POS MV #BGR602273 |
| Equipment #2: | Diff. GPS System - Trimble AG130 #BGR603512 |
| Equipment #3: | MBES - R2Sonic #BGR603633 |
| Equipment #4: | SSS - Edgetech 4200 #38719 |
| Equipment #5: | Mag. - SeaSpy #13380A |
| Equipment #6: | USBL - IXSEA GAPS #151 |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

**Weather Summary:**

| | Sea State (meters) | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | na | na | na |
| Wx - 1200: | 0.3m | light | Var. |
| Wx - 1800: | 0.3m | light | Var. |
| Wx - 2400: | na | na | na |

***Personnel Onboard:***

| | |
|---|---|
| *Captain:* | Ryan Braget |
| *Other Vessel Crew:* | n/a |
| *Party Chief:* | Kelly Power |
| *Hydro. Surveyor:* | David Wise |
| *Geophysical Tech.:* | Richie Carmichael |
| *Other Survey Crew:* | n/a |
| *Client Representative:* | Kent Simpson |

***Personnel Onshore:***

| | |
|---|---|
| *Offshore Site Manager:* | Marta Krynytzky |
| *Ass't Off. Site Manager:* | Charlie Hall |
| *Data Manager:* | Lance Woods |
| *Data Processor:* | Cody Gibson |
| *Data Processor:* | n/a |
| *Data Processor:* | n/a |
| *Additional Proc.:* | n/a |
| *Client Representative:* | n/a |

**Client Representative's Remarks:**

DPR correction: SC-1 was too shallow to acquire MBES coverage

**FUGRO:** Kelly Power **Client:** Kent W. Simpson

# Daily Progress Report

ver 7.22.2015-A (Alaska)

**Client:** AK LNG
**Job Description:** Seafloor Mapping
**Area & Block(s):** Pipeline
**Prospect / Site:** Cook Inlet
**Fugro Job #:** 23.00007123
**Job Day #:** 59

| | | |
|---|---|---|
| **Report For:** | 06-Sep-2015 | Sunday |
| **Julian Date:** | 249 | |
| **Hours From:** | 0630 to 1830 | |

**Report From:**

**Fugro**
**R/V: Westerly**

| | |
|---|---|
| Production Hrs/Day: | 12.0 hrs |
| Job Total in Meters: | 606,000.00 |
| Total # of Lines: | 484 Lines |
| # Cores/Core Time: | 55 cores / Est. 180 mins. |
| Total Meters Added: | 118,250.00 |
| Total Meters Deleted: | 0.00 |
| Survey Units: | Meters |
| Nautical Mile (Feet): | 6080 |

| Time Summary (Hours): | Today: | Job Totals: | (%) |
|---|---|---|---|
| Mobilize / Demobilize: | 3.17 | 15.17 | 2.24% |
| On-Line: | 2.28 | 160.11 | 23.60% |
| Transit: | 2.93 | 137.22 | 20.23% |
| Other Working: | 3.62 | 202.99 | 29.92% |
| Equipment Downtime: | 0.00 | 61.42 | 9.05% |
| Weather Stand-By: | 0.00 | 100.35 | 14.79% |
| Other Stand-By: | 0.00 | 1.17 | 0.17% |
| Stand-By / No Crew: | 0.00 | 0.00 | |
| Health, Safety & Environmental: | 0.00 | 0.00 | |
| **Job Summary:** | **12.00** | **678.42** | **100.00%** |

**Job Total - Kilometers:** *724.25*
**On-Line Percent Complete:** *89.13%*

**Kilometers Added:** *118.25*

**Percent In-Fill:** *1.62%*

**Estimated Coring Time:** 13.75 Days
**Estimated Time to Completion:** 15.38 Days

**Estimated Time includes taking cores!**

**Areas Worked:** Suneva Lake Borehole Locations

Vessel completed MBES survey of Suneva Lake borehole locations SL-1A and SL-1. It is estimated that a 250' raduis coverage area over SL-1 was achieved and a 500'radius area was achieved over SL-1A. After completing survey of boreholes vessel returned to dock and demobed the USBL transducer and mobilzed the grab sampler equipment. The plan tomorrow is to conduct ground truthing operations in the pipeline area and tide permitting collect multibeam data over the Boulder Point Borehole location.

| HSE Reporting: | | HSE Officer: | Kelly Power |
|---|---|---|---|
| Toolbox: | X | JHA-Toolbox | |
| Shift Change: | N/A | | |
| Safety: | X | Review TRA-MAR-002 | |
| Pre/Post Job: | No | | |

| Production Summary: | Today: | To Date: | Job Total: | To Complete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 12.25 | 645.49 | 724.25 | 78.76 |
| Lines Completed: | 0 | 429 | 484 | 55 |
| Cores Taken: | 0 | 0 | 55 | 55 |
| In-Fill Kilometers: | 0.00 | 11.75 | 1.62% | |
| Added on Kilometers: | 12.25 | 118.25 | 16.33% | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 0.00 | | |

**Geophysical Equipment:**

| | |
|---|---|
| Equipment #1: | Navigation System - POS MV #BGR602273 |
| Equipment #2: | Diff. GPS System - Trimble AG130 #BGR603512 |
| Equipment #3: | MBES - R2Sonic #BGR603633 |
| Equipment #4: | SSS - Edgetech 4200 #38719 |
| Equipment #5: | Mag. - SeaSpy #13380A |
| Equipment #6: | USBL - IXSEA GAPS #151 |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

| Weather Summary: | Sea State (meters) | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | na | na | na |
| Wx - 1200: | 0.3m | 5kts | SW |
| Wx - 1800: | 0.3m | 5kts | SW |
| Wx - 2400: | na | na | na |

***Personnel Onboard:***

| | |
|---|---|
| *Captain:* | Ryan Braget |
| *Other Vessel Crew:* | n/a |
| *Party Chief:* | Kelly Power |
| *Hydro. Surveyor:* | David Wise |
| *Geophysical Tech.:* | Richie Carmichael |
| *Other Survey Crew:* | n/a |
| *Client Representative:* | Kent Simpson |

***Personnel Onshore:***

| | |
|---|---|
| *Offshore Site Manager:* | Marta Krynytzky |
| *Ass't Off. Site Manager:* | Charlie Hall |
| *Data Manager:* | Lance Woods |
| *Data Processor:* | Cody Gibson |
| *Data Processor:* | n/a |
| *Data Processor:* | n/a |
| *Additional Proc.:* | n/a |
| *Client Representative:* | n/a |

**Client Representative's Remarks:**

**FUGRO:** Kelly Power **Client:** Kent W. Simpson

# Daily Progress Report

ver 7.22.2015-A (Alaska)

**Client:** AK LNG
**Job Description:** Seafloor Mapping
**Area & Block(s):** Pipeline
**Prospect / Site:** Cook Inlet
**Fugro Job #:** 23.00007123
**Job Day #:** 60

**Fugro**
**R/V: Westerly**

| | | |
|---|---|---|
| Report For: | 07-Sep-2015 | Monday |
| Julian Date: | 250 | |
| Hours From: | 0630 to 1830 | |

**Report From:**

| | |
|---|---|
| Production Hrs/Day: | 12.0 hrs |
| Job Total in Meters: | 606,000.00 |
| Total # of Lines: | 484 Lines |
| # Cores/Core Time: | 55 cores / Est. 180 mins. |
| Total Meters Added: | 123,400.00 |
| Total Meters Deleted: | 0.00 |
| Survey Units: | Meters |
| Nautical Mile (Feet): | 6080 |

| Time Summary (Hours): | Today: | Job Totals: | (%) |
|---|---|---|---|
| Mobilize / Demobilize: | 0.00 | 15.17 | 2.20% |
| On-Line: | 1.20 | 161.31 | 23.36% |
| Transit: | 3.08 | 140.30 | 20.32% |
| Other Working: | 5.55 | 208.54 | 30.21% |
| Equipment Downtime: | 0.00 | 61.42 | 8.90% |
| Weather Stand-By: | 2.17 | 102.51 | 14.85% |
| Other Stand-By: | 0.00 | 1.17 | 0.17% |
| Stand-By / No Crew: | 0.00 | 0.00 | |
| Health, Safety & Environmental: | 0.00 | 0.00 | |
| **Job Summary:** | **12.00** | **690.42** | **100.00%** |

**Job Total - Kilometers:** *729.40*
**On-Line Percent Complete:** *89.20%*

**Kilometers Added:** *123.40*

**Percent In-Fill:** *1.61%*

**Estimated Coring Time:** 11.25 Days
**Estimated Time to Completion:** 12.88 Days

**Estimated Time includes taking cores!**

**Areas Worked:** Borehole Location and Pipeline

Vessel was waiting on tides this morning as tide was low in river mouth. Could not depart earlier due to darkness. While at dock crew reviewed grab sampler TRA and did a full test of sampler while at the dock. Grab sample operations were conducted on PL01, PL02 and PL05. Borehole BP-1 was surveyed with multibeam and coverage was acquired around the location up to a 150' radius. Vessel fueled upon returning to dock. The plan tomorrow is to conduct grab samples operations on the pipeline areas.

| HSE Reporting: | | HSE Officer: | Kelly Power |
|---|---|---|---|
| Toolbox: | X | JHA-Toolbox | |
| Shift Change: | N/A | | |
| Safety: | X | Review MAR-TRA-003 & 013, 1 HOC for a safe act | |
| Pre/Post Job: | No | | |

| Production Summary: | Today: | To Date: | Job Total: | To Complete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 5.15 | 650.64 | 729.40 | 78.76 |
| Lines Completed: | 0 | 429 | 484 | 55 |
| Cores Taken: | 10 | 10 | 55 | 45 |
| In-Fill Kilometers: | 0.00 | 11.75 | 1.61% | |
| Added on Kilometers: | 5.15 | 123.40 | 16.92% | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 0.00 | | |

**Geophysical Equipment:**

| | |
|---|---|
| Equipment #1: | Navigation System - POS MV #BGR602273 |
| Equipment #2: | Diff. GPS System - Trimble AG130 #BGR603512 |
| Equipment #3: | MBES - R2Sonic #BGR603633 |
| Equipment #4: | SSS - Edgetech 4200 #38719 |
| Equipment #5: | Mag. - SeaSpy #13380A |
| Equipment #6: | USBL - IXSEA GAPS #151 |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

| Weather Summary: | Sea State (meters) | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | na | na | na |
| Wx - 1200: | 0.3m | light | var |
| Wx - 1800: | na | light | W |
| Wx - 2400: | na | na | na |

***Personnel Onboard:***

*Captain:* Ryan Braget
*Other Vessel Crew:* n/a
*Party Chief:* Kelly Power
*Hydro. Surveyor:* David Wise
*Geophysical Tech.:* Richie Carmichael
*Other Survey Crew:* n/a
*Client Representative:* Kent Simpson

***Personnel Onshore:***

*Offshore Site Manager:* Marta Krynytzky
*Ass't Off. Site Manager:* Charlie Hall
*Data Manager:* Lance Woods
*Data Processor:* Cody Gibson
*Data Processor:* n/a
*Data Processor:* n/a
*Additional Proc.:* n/a
*Client Representative:* n/a

**Client Representative's Remarks:**

**FUGRO:** Kelly Power **Client:** Kent W. Simpson

# Daily Progress Report

ver 7.22.2015-A (Alaska)

**Client:** AK LNG
**Job Description:** Seafloor Mapping
**Area & Block(s):** Pipeline
**Prospect / Site:** Cook Inlet
**Fugro Job #:** 23.00007123
**Job Day #:** 61

| | | |
|---|---|---|
| **Report For:** | 08-Sep-2015 | Tuesday |
| **Julian Date:** | 251 | |
| **Hours From:** | 0630 to 1830 | |

**Report From:**

Fugro
R/V: Westerly

| | | |
|---|---|---|
| Production Hrs/Day: | 12.0 hrs | |
| Job Total in Meters: | 606,000.00 | |
| Total # of Lines: | 484 Lines | |
| # Cores/Core Time: | 55 cores | Est. 180 mins. |
| Total Meters Added: | 123,400.00 | |
| Total Meters Deleted: | 0.00 | |
| Survey Units: | Meters | |
| Nautical Mile (Feet): | 6080 | |

| Time Summary (Hours): | Today: | Job Totals: | ( % ) |
|---|---|---|---|
| Mobilize / Demobilize: | 4.17 | 19.33 | 2.75% |
| On-Line: | 0.00 | 161.31 | 22.96% |
| Transit: | 3.67 | 143.97 | 20.50% |
| Other Working: | 4.17 | 212.71 | 30.28% |
| Equipment Downtime: | 0.00 | 61.42 | 8.74% |
| Weather Stand-By: | 0.00 | 102.51 | 14.59% |
| Other Stand-By: | 0.00 | 1.17 | 0.17% |
| Stand-By / No Crew: | 0.00 | 0.00 | |
| Health, Safety & Environmental: | 0.00 | 0.00 | |
| **Job Summary:** | **12.00** | **702.42** | **100.00%** |

**Job Total - Kilometers:** *729.40*
**On-Line Percent Complete:** *89.20%*

**Kilometers Added:** *123.40*

**Percent In-Fill:** *1.61%*

**Estimated Coring Time:** 9.00 Days
**Estimated Time to Completion:** 10.63 Days

**Estimated Time includes taking cores!**

**Areas Worked:** Pipeline

Today we completed the ground truthing operations in the pipeline areas with the exception of PL08. Grab sampling in that area can only occur afte Oct 1 with a PSO agent onboard. The grab sampling equipment was demobilized and the USBL system mobilized. The plan tomorrow is to conduct survey operations with in the PL08 site. Today vessel conducted a Loss of steering drill. Weather forecast for tomorrow is marginal with seas building to 1.0m and a small craft advisory for tomorrow evening.

| HSE Reporting: | | HSE Officer: | Kelly Power |
|---|---|---|---|
| Toolbox: | X | JHA-Toolbox | |
| Shift Change: | N/A | | |
| Safety: | X | Loss of steering Drill, Review MAR-TRA-003 and 013 | |
| Pre/Post Job: | No | | |

| Production Summary: | Today: | To Date: | Job Total: | To Complete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 0.00 | 650.64 | 729.40 | 78.76 |
| Lines Completed: | 0 | 429 | 484 | 55 |
| Cores Taken: | 9 | 19 | 55 | 36 |
| In-Fill Kilometers: | 0.00 | 11.75 | 1.61% | |
| Added on Kilometers: | 0.00 | 123.40 | 16.92% | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 0.00 | | |

**Geophysical Equipment:**

| | |
|---|---|
| Equipment #1: | Navigation System - POS MV #BGR602273 |
| Equipment #2: | Diff. GPS System - Trimble AG130 #BGR603512 |
| Equipment #3: | MBES - R2Sonic #BGR603633 |
| Equipment #4: | SSS - Edgetech 4200 #38719 |
| Equipment #5: | Mag. - SeaSpy #13380A |
| Equipment #6: | USBL - IXSEA GAPS #151 |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

| Weather Summary: | Sea State (meters) | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | na | na | na |
| Wx - 1200: | 0.3m | 5kts | N |
| Wx - 1800: | 0.3m | 5-10kts | N |
| Wx - 2400: | na | na | na |

***Personnel Onboard:***

*Captain:* Ryan Braget
*Other Vessel Crew:* n/a
*Party Chief:* Kelly Power
*Hydro. Surveyor:* David Wise
*Geophysical Tech.:* Richie Carmichael
*Other Survey Crew:* n/a
*Client Representative:* Kent Simpson

***Personnel Onshore:***

*Offshore Site Manager:* Marta Krynytzky
*Ass't Off. Site Manager:* Charlie Hall
*Data Manager:* Lance Woods
*Data Processor:* Cody Gibson
*Data Processor:* Katie Conrad
*Data Processor:* n/a
*Additional Proc.:* n/a
*Client Representative:* n/a

**Client Representative's Remarks:**

DRILL for vessel steering loss demonstrated full vessel maneuverability without the vessel steering wheel. Mobilization included the replacement sidescan sonar fish

**FUGRO:** Kelly Power **Client:** Kent W. Simpson

# Daily Progress Report

ver 7.22.2015-A (Alaska)

**Client:** AK LNG
**Job Description:** Seafloor Mapping
**Area & Block(s):** Pipeline
**Prospect / Site:** Cook Inlet
**Fugro Job #:** 23.00007123
**Job Day #:** 62

| | | |
|---|---|---|
| **Report For:** | 09-Sep-2015 | Wednesday |
| **Julian Date:** | 252 | |
| **Hours From:** | 0630 to 1830 | |

**Report From:**

**Fugro**
**R/V: Westerly**

| | | |
|---|---|---|
| Production Hrs/Day: | 12.0 hrs | |
| Job Total in Meters: | 606,000.00 | |
| Total # of Lines: | 484 Lines | |
| # Cores/Core Time: | 55 cores | Est. 180 mins. |
| Total Meters Added: | 123,400.00 | |
| Total Meters Deleted: | 0.00 | |
| Survey Units: | Meters | |
| Nautical Mile (Feet): | 6080 | |

| Time Summary (Hours): | Today: | Job Totals: | ( % ) |
|---|---|---|---|
| Mobilize / Demobilize: | 0.00 | 19.33 | 2.71% |
| On-Line: | 0.00 | 161.31 | 22.58% |
| Transit: | 0.00 | 143.97 | 20.15% |
| Other Working: | 0.50 | 213.21 | 29.84% |
| Equipment Downtime: | 7.00 | 68.42 | 9.58% |
| Weather Stand-By: | 4.50 | 107.01 | 14.98% |
| Other Stand-By: | 0.00 | 1.17 | 0.16% |
| Stand-By / No Crew: | 0.00 | 0.00 | |
| Health, Safety & Environmental: | 0.00 | 0.00 | |
| **Job Summary:** | **12.00** | **714.42** | **100.00%** |

**Job Total - Kilometers:** *729.40*
**On-Line Percent Complete:** *89.20%*

**Kilometers Added:** *123.40*

**Percent In-Fill:** *1.61%*

**Estimated Coring Time:** 9.00 Days
**Estimated Time to Completion:** 10.63 Days

**Estimated Time includes taking cores!**

**Areas Worked:** None

The sidescan towfish that arrived yesterday did not work. There is a problem internal to the unit. Troubleshooting advice from the manufacturer points to the CPU in the fish is not booting up, as a result of a dead bios battery or problem with an internal cable. We do have a replacement fish being sent from manufacturer. Weather conditions were good in the morning but did degrade in the early afternoon as forecasted. There is a small craft advisory in effect this evening and forecast for tomorrow is poor.

| HSE Reporting: | | HSE Officer: | Kelly Power |
|---|---|---|---|
| Toolbox: | X | JHA-Toolbox | |
| Shift Change: | No | | |
| Safety: | X | Review MAR-TRA-009 | |
| Pre/Post Job: | No | | |

| Production Summary: | Today: | To Date: | Job Total: | To Complete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 0.00 | 650.64 | 729.40 | 78.76 |
| Lines Completed: | 0 | 429 | 484 | 55 |
| Cores Taken: | 0 | 19 | 55 | 36 |
| In-Fill Kilometers: | 0.00 | 11.75 | 1.61% | |
| Added on Kilometers: | 0.00 | 123.40 | 16.92% | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 0.00 | | |

**Geophysical Equipment:**

| | |
|---|---|
| Equipment #1: | Navigation System - POS MV #BGR602273 |
| Equipment #2: | Diff. GPS System - Trimble AG130 #BGR603512 |
| Equipment #3: | MBES - R2Sonic #BGR603633 |
| Equipment #4: | SSS - Edgetech 4200 #38719 |
| Equipment #5: | Mag. - SeaSpy #13380A |
| Equipment #6: | USBL - IXSEA GAPS #151 |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

| Weather Summary: | Sea State (meters) | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | na | na | na |
| Wx - 1200: | 0.3 | 5kts | ENE |
| Wx - 1800: | 1.2m | 15kts | N |
| Wx - 2400: | na | na | na |

***Personnel Onboard:***

*Captain:* Ryan Braget
*Other Vessel Crew:* n/a
*Party Chief:* Kelly Power
*Hydro. Surveyor:* David Wise
*Geophysical Tech.:* Richie Carmichael
*Other Survey Crew:* n/a
*Client Representative:* Kent Simpson

***Personnel Onshore:***

*Offshore Site Manager:* Marta Krynytzky
*Ass't Off. Site Manager:* Charlie Hall
*Data Manager:* Lance Woods
*Data Processor:* Cody Gibson
*Data Processor:* Katie Conrad
*Data Processor:* n/a
*Additional Proc.:* n/a
*Client Representative:* n/a

**Client Representative's Remarks:**

Client Rep onshore today to review seafloor grab samples and propose additional ground-truth locations

**FUGRO:** Kelly Power **Client:** Kent W. Simpson

# Daily Progress Report

ver 7.22.2015-A (Alaska)

**Client:** AK LNG
**Job Description:** Seafloor Mapping
**Area & Block(s):** Pipeline
**Prospect / Site:** Cook Inlet
**Fugro Job #:** 23.00007123
**Job Day #:** 63

| | | |
|---|---|---|
| **Report For:** | 10-Sep-2015 | Thursday |
| **Julian Date:** | 253 | |
| **Hours From:** | 0630 to 1830 | |

**Report From:**

Fugro
R/V: Westerly

| | | |
|---|---|---|
| Production Hrs/Day: | 12.0 hrs | |
| Job Total in Meters: | 606,000.00 | |
| Total # of Lines: | 484 Lines | |
| # Cores/Core Time: | 55 cores | Est. 180 mins. |
| Total Meters Added: | 123,400.00 | |
| Total Meters Deleted: | 0.00 | |
| Survey Units: | Meters | |
| Nautical Mile (Feet): | 6080 | |

| Time Summary (Hours): | Today: | Job Totals: | ( % ) |
|---|---|---|---|
| Mobilize / Demobilize: | 0.00 | 19.33 | 2.66% |
| On-Line: | 0.00 | 161.31 | 22.21% |
| Transit: | 0.00 | 143.97 | 19.82% |
| Other Working: | 0.00 | 213.21 | 29.35% |
| Equipment Downtime: | 0.00 | 68.42 | 9.42% |
| Weather Stand-By: | 12.00 | 119.01 | 16.38% |
| Other Stand-By: | 0.00 | 1.17 | 0.16% |
| Stand-By / No Crew: | 0.00 | 0.00 | |
| Health, Safety & Environmental: | 0.00 | 0.00 | |
| **Job Summary:** | **12.00** | **726.42** | **100.00%** |

**Areas Worked:** None

**Job Total - Kilometers:** *729.40*
**On-Line Percent Complete:** *89.20%*

**Kilometers Added:** *123.40*

**Percent In-Fill:** *1.61%*

**Estimated Coring Time:** 9.00 Days
**Estimated Time to Completion:** 10.63 Days

**Estimated Time includes taking cores!**

Waiting on weather all day. All crew members went to weekly safety meeting at Fugro operationg office in Nikiski. Vessel maintance was conducted which consisted of changing oil in both of the main engines. Ships husbandry was also done. Demobilized the USBL transducer and pol Mobilized the grab sampling equipment. A sidescan fish is scheduled to arrive in Anchorage tomorrow at noon. A spare sidescan fish is being prepared and will be shipped from another Fugro opco tomorrow. Arrival of the spare fish is not expected until after the weekend. Weather forecast for tomorrow is fair. Plan for tomorrow is to conduct grab sample operations in the pipeline corridor.

| HSE Reporting: | | HSE Officer: | Kelly Power |
|---|---|---|---|
| Toolbox: | X | JHA-Toolbox | |
| Shift Change: | N/A | | |
| Safety: | X | Review MAR-TRA -002 | |
| Pre/Post Job: | No | | |

| Production Summary: | Today: | To Date: | Job Total: | To Complete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 0.00 | 650.64 | 729.40 | 78.76 |
| Lines Completed: | 0 | 429 | 484 | 55 |
| Cores Taken: | 0 | 19 | 55 | 36 |
| In-Fill Kilometers: | 0.00 | 11.75 | 1.61% | |
| Added on Kilometers: | 0.00 | 123.40 | 16.92% | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 0.00 | | |

**Geophysical Equipment:**

Equipment #1: Navigation System - POS MV #BGR602273
Equipment #2: Diff. GPS System - Trimble AG130 #BGR603512
Equipment #3: MBES - R2Sonic #BGR603633
Equipment #4: SSS - Edgetech 4200 #38719
Equipment #5: Mag. - SeaSpy #13380A
Equipment #6: USBL - IXSEA GAPS #151
Equipment #7: Grab Sampler - Day Grab #
Equipment #8: Grab Sampler - Van Veen #
Equipment #9:
Equipment #10:
Equipment #11:

| Weather Summary: | Sea State (meters) | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | 1.5m | 15-20kts | E |
| Wx - 1200: | 1.5m | 20kts | S |
| Wx - 1800: | 1.0m | 10kts | S |
| Wx - 2400: | na | na | na |

***Personnel Onboard:***

*Captain:* Ryan Braget
*Other Vessel Crew:* n/a
*Party Chief:* Kelly Power
*Hydro. Surveyor:* David Wise
*Geophysical Tech.:* Richie Carmichael
*Other Survey Crew:* n/a
*Client Representative:* Kent Simpson

***Personnel Onshore:***

*Offshore Site Manager:* Marta Krynytzky
*Ass't Off. Site Manager:* Charlie Hall
*Data Manager:* Lance Woods
*Data Processor:* Cody Gibson
*Data Processor:* Katie Conrad
*Data Processor:* n/a
*Additional Proc.:* n/a
*Client Representative:* n/a

**Client Representative's Remarks:**

**FUGRO:** Kelly Power **Client:** Kent W. Simpson

# Daily Progress Report

ver 7.22.2015-A (Alaska)

**Client:** AK LNG
**Job Description:** Seafloor Mapping
**Area & Block(s):** Pipeline
**Prospect / Site:** Cook Inlet
**Fugro Job #:** 23.00007123
**Job Day #:** 64

| | | |
|---|---|---|
| **Report For:** | 11-Sep-2015 | Friday |
| **Julian Date:** | 254 | |
| **Hours From:** | 0630 to 1830 | |

**Report From:**

Fugro
R/V: Westerly

| | | |
|---|---|---|
| Production Hrs/Day: | 12.0 hrs | |
| Job Total in Meters: | 606,000.00 | |
| Total # of Lines: | 484 Lines | |
| # Cores/Core Time: | 55 cores | Est. 180 mins. |
| Total Meters Added: | 123,400.00 | |
| Total Meters Deleted: | 0.00 | |
| Survey Units: | Meters | |
| Nautical Mile (Feet): | 6080 | |

| Time Summary (Hours): | Today: | Job Totals: | ( % ) |
|---|---|---|---|
| Mobilize / Demobilize: | 0.00 | 19.33 | 2.62% |
| On-Line: | 0.00 | 161.31 | 21.84% |
| Transit: | 3.50 | 147.47 | 19.97% |
| Other Working: | 8.50 | 221.71 | 30.02% |
| Equipment Downtime: | 0.00 | 68.42 | 9.27% |
| Weather Stand-By: | 0.00 | 119.01 | 16.12% |
| Other Stand-By: | 0.00 | 1.17 | 0.16% |
| Stand-By / No Crew: | 0.00 | 0.00 | |
| Health, Safety & Environmental: | 0.00 | 0.00 | |
| **Job Summary:** | **12.00** | **738.42** | **100.00%** |

**Areas Worked:** Pipeline

**Job Total - Kilometers:** *729.40*
**On-Line Percent Complete:** *89.20%*

**Kilometers Added:** *123.40*

**Percent In-Fill:** *1.61%*

**Estimated Coring Time:** 3.25 Days
**Estimated Time to Completion:** 4.88 Days

**Estimated Time includes taking cores!**

Very good day. 23 of the 24 groundtruthing stations were completed. The 24th station was not completed as there was simops seismic activity near the location. There is no planned survey work tomorrow or Sunday due to fatigue mangement. The plan on Monday is to demob the grab sampler and mobilize the USBL transducer and sidescan fish.

| HSE Reporting: | | HSE Officer: | Kelly Power |
|---|---|---|---|
| Toolbox: | X | JHA-Toolbox | |
| Shift Change: | N/A | | |
| Safety: | X | Review MAR-TRA-003, 2 HOC cards | |
| Pre/Post Job: | No | | |

| Production Summary: | Today: | To Date: | Job Total: | To Complete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 0.00 | 650.64 | 729.40 | 78.76 |
| Lines Completed: | 0 | 429 | 484 | 55 |
| Cores Taken: | 23 | 42 | 55 | 13 |
| In-Fill Kilometers: | 0.00 | 11.75 | 1.61% | |
| Added on Kilometers: | 0.00 | 123.40 | 16.92% | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 0.00 | | |

**Geophysical Equipment:**

| | |
|---|---|
| Equipment #1: | Navigation System - POS MV #BGR602273 |
| Equipment #2: | Diff. GPS System - Trimble AG130 #BGR603512 |
| Equipment #3: | MBES - R2Sonic #BGR603633 |
| Equipment #4: | SSS - Edgetech 4200 #38719 |
| Equipment #5: | Mag. - SeaSpy #13380A |
| Equipment #6: | USBL - IXSEA GAPS #151 |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

| Weather Summary: | Sea State (meters) | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | na | 5kts | E |
| Wx - 1200: | 0.3m | 10kts | N |
| Wx - 1800: | 0.3m | 10kts | S |
| Wx - 2400: | na | na | na |

***Personnel Onboard:***

*Captain:* Ryan Braget
*Other Vessel Crew:* n/a
*Party Chief:* Kelly Power
*Hydro. Surveyor:* David Wise
*Geophysical Tech.:* Richie Carmichael
*Other Survey Crew:* n/a
*Client Representative:* Kent Simpson

***Personnel Onshore:***

*Offshore Site Manager:* Marta Krynytzky
*Ass't Off. Site Manager:* Charlie Hall
*Data Manager:* Lance Woods
*Data Processor:* Cody Gibson
*Data Processor:* Katie Conrad
*Data Processor:* n/a
*Additional Proc.:* n/a
*Client Representative:* n/a

**Client Representative's Remarks:**

**FUGRO:** Kelly Power **Client:** Kent W. Simpson

# Daily Progress Report

ver 7.22.2015-A (Alaska)

**Client:** AK LNG
**Job Description:** Seafloor Mapping
**Area & Block(s):** Pipeline
**Prospect / Site:** Cook Inlet
**Fugro Job #:** 23.00007123
**Job Day #:** 65

| | | |
|---|---|---|
| **Report For:** | 12-Sep-2015 | Saturday |
| **Julian Date:** | 255 | |
| **Hours From:** | 0630 to 1830 | |

**Report From:**

**Fugro**
**R/V: Westerly**

| | | |
|---|---|---|
| Production Hrs/Day: | 12.0 hrs | |
| Job Total in Meters: | 606,000.00 | |
| Total # of Lines: | 484 Lines | |
| # Cores/Core Time: | 55 cores | Est. 180 mins. |
| Total Meters Added: | 123,400.00 | |
| Total Meters Deleted: | 0.00 | |
| Survey Units: | Meters | |
| Nautical Mile (Feet): | 6080 | |

| Time Summary (Hours): | Today: | Job Totals: | ( % ) |
|---|---|---|---|
| Mobilize / Demobilize: | 0.00 | 19.33 | 2.58% |
| On-Line: | 0.00 | 161.31 | 21.50% |
| Transit: | 0.00 | 147.47 | 19.65% |
| Other Working: | 12.00 | 233.71 | 31.14% |
| Equipment Downtime: | 0.00 | 68.42 | 9.12% |
| Weather Stand-By: | 0.00 | 119.01 | 15.86% |
| Other Stand-By: | 0.00 | 1.17 | 0.16% |
| Stand-By / No Crew: | 0.00 | 0.00 | |
| Health, Safety & Environmental: | 0.00 | 0.00 | |
| **Job Summary:** | **12.00** | **750.42** | **100.00%** |

**Areas Worked:** None

**Job Total - Kilometers:** *729.40*
**On-Line Percent Complete:** *89.20%*

**Kilometers Added:** *123.40*

**Percent In-Fill:** *1.61%*

**Estimated Coring Time:** 3.25 Days
**Estimated Time to Completion:** 4.88 Days

**Estimated Time includes taking cores!**

Today was a fatigue mangement day. No survey operations were conducted.

| HSE Reporting: | | HSE Officer: | Kelly Power |
|---|---|---|---|
| Toolbox: | No | | |
| Shift Change: | No | | |
| Safety: | No | | |
| Pre/Post Job: | No | | |

| Production Summary: | Today: | To Date: | Job Total: | To Complete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 0.00 | 650.64 | 729.40 | 78.76 |
| Lines Completed: | 0 | 429 | 484 | 55 |
| Cores Taken: | 0 | 42 | 55 | 13 |
| In-Fill Kilometers: | 0.00 | 11.75 | 1.61% | |
| Added on Kilometers: | 0.00 | 123.40 | 16.92% | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 0.00 | | |

**Geophysical Equipment:**

| | |
|---|---|
| Equipment #1: | Navigation System - POS MV #BGR602273 |
| Equipment #2: | Diff. GPS System - Trimble AG130 #BGR603512 |
| Equipment #3: | MBES - R2Sonic #BGR603633 |
| Equipment #4: | SSS - Edgetech 4200 #38719 |
| Equipment #5: | Mag. - SeaSpy #13380A |
| Equipment #6: | USBL - IXSEA GAPS #151 |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

| Weather Summary: | Sea State (meters) | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | na | na | na |
| Wx - 1200: | na | na | na |
| Wx - 1800: | na | na | na |
| Wx - 2400: | na | na | na |

***Personnel Onboard:***

| | |
|---|---|
| *Captain:* | Ryan Braget |
| *Other Vessel Crew:* | n/a |
| *Party Chief:* | Kelly Power |
| *Hydro. Surveyor:* | David Wise |
| *Geophysical Tech.:* | Richie Carmichael |
| *Other Survey Crew:* | n/a |
| *Client Representative:* | Kent Simpson |

***Personnel Onshore:***

| | |
|---|---|
| *Offshore Site Manager:* | Marta Krynytzky |
| *Ass't Off. Site Manager:* | Charlie Hall |
| *Data Manager:* | Lance Woods |
| *Data Processor:* | Cody Gibson |
| *Data Processor:* | Katie Conrad |
| *Data Processor:* | n/a |
| *Additional Proc.:* | n/a |
| *Client Representative:* | n/a |

**Client Representative's Remarks:**

**FUGRO:** Kelly Power **Client:** Kent W. Simpson

# Daily Progress Report

ver 7.22.2015-A (Alaska)

**Client:** AK LNG
**Job Description:** Seafloor Mapping
**Area & Block(s):** Pipeline
**Prospect / Site:** Cook Inlet
**Fugro Job #:** 23.00007123
**Job Day #:** 66

| | | |
|---|---|---|
| **Report For:** | 13-Sep-2015 | Sunday |
| **Julian Date:** | 256 | |
| **Hours From:** | 0630 to 1830 | |

**Report From:**

Fugro
R/V: Westerly

| | | |
|---|---|---|
| Production Hrs/Day: | 12.0 hrs | |
| Job Total in Meters: | 606,000.00 | |
| Total # of Lines: | 484 Lines | |
| # Cores/Core Time: | 55 cores | Est. 180 mins. |
| Total Meters Added: | 123,400.00 | |
| Total Meters Deleted: | 0.00 | |
| Survey Units: | Meters | |
| Nautical Mile (Feet): | 6080 | |

| Time Summary (Hours): | Today: | Job Totals: | ( % ) |
|---|---|---|---|
| Mobilize / Demobilize: | 0.00 | 19.33 | 2.54% |
| On-Line: | 0.00 | 161.31 | 21.16% |
| Transit: | 0.00 | 147.47 | 19.34% |
| Other Working: | 12.00 | 245.71 | 32.23% |
| Equipment Downtime: | 0.00 | 68.42 | 8.97% |
| Weather Stand-By: | 0.00 | 119.01 | 15.61% |
| Other Stand-By: | 0.00 | 1.17 | 0.15% |
| Stand-By / No Crew: | 0.00 | 0.00 | |
| Health, Safety & Environmental: | 0.00 | 0.00 | |
| **Job Summary:** | **12.00** | **762.42** | **100.00%** |

**Areas Worked:** None

**Job Total - Kilometers:** *729.40*
**On-Line Percent Complete:** *89.20%*

**Kilometers Added:** *123.40*

**Percent In-Fill:** *1.61%*

**Estimated Coring Time:** 3.25 Days
**Estimated Time to Completion:** 4.88 Days

**Estimated Time includes taking cores!**

No survey operations were conducted today as it was a fatigur mangement day.
Tomorrow the plan is to demob grab sampler equipment and mobilize the USBL transducer. The forecast for tomorrow is poor with a Small vessel and Gale warning in effect.

| HSE Reporting: | | HSE Officer: | Kelly Power |
|---|---|---|---|
| Toolbox: | No | | |
| Shift Change: | N/A | | |
| Safety: | No | | |
| Pre/Post Job: | No | | |

| Production Summary: | Today: | To Date: | Job Total: | To Complete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 0.00 | 650.64 | 729.40 | 78.76 |
| Lines Completed: | 0 | 429 | 484 | 55 |
| Cores Taken: | 0 | 42 | 55 | 13 |
| In-Fill Kilometers: | 0.00 | 11.75 | 1.61% | |
| Added on Kilometers: | 0.00 | 123.40 | 16.92% | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 0.00 | | |

**Geophysical Equipment:**

| | |
|---|---|
| Equipment #1: | Navigation System - POS MV #BGR602273 |
| Equipment #2: | Diff. GPS System - Trimble AG130 #BGR603512 |
| Equipment #3: | MBES - R2Sonic #BGR603633 |
| Equipment #4: | SSS - Edgetech 4200 #38719 |
| Equipment #5: | Mag. - SeaSpy #13380A |
| Equipment #6: | USBL - IXSEA GAPS #151 |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

| Weather Summary: | Sea State (meters) | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | na | na | na |
| Wx - 1200: | na | na | na |
| Wx - 1800: | na | na | na |
| Wx - 2400: | na | na | na |

***Personnel Onboard:***

| | |
|---|---|
| *Captain:* | Ryan Braget |
| *Other Vessel Crew:* | n/a |
| *Party Chief:* | Kelly Power |
| *Hydro. Surveyor:* | David Wise |
| *Geophysical Tech.:* | Richie Carmichael |
| *Other Survey Crew:* | n/a |
| *Client Representative:* | Kent Simpson |

***Personnel Onshore:***

| | |
|---|---|
| *Offshore Site Manager:* | Marta Krynytzky |
| *Ass't Off. Site Manager:* | Charlie Hall |
| *Data Manager:* | Lance Woods |
| *Data Processor:* | Cody Gibson |
| *Data Processor:* | Katie Conrad |
| *Data Processor:* | n/a |
| *Additional Proc.:* | n/a |
| *Client Representative:* | n/a |

**Client Representative's Remarks:**

**FUGRO:** Kelly Power **Client:** Kent W. Simpson

# Daily Progress Report

ver 7.22.2015-A (Alaska)

**Client:** AK LNG
**Job Description:** Seafloor Mapping
**Area & Block(s):** Pipeline
**Prospect / Site:** Cook Inlet
**Fugro Job #:** 23.00007123
**Job Day #:** 67

| | | |
|---|---|---|
| **Report For:** | 14-Sep-2015 | Monday |
| **Julian Date:** | 257 | |
| **Hours From:** | 0630 to 1930 | |

**Report From:**

**Fugro**
**R/V: Westerly**

| | | |
|---|---|---|
| Production Hrs/Day: | 12.0 hrs | |
| Job Total in Meters: | 606,000.00 | |
| Total # of Lines: | 484 Lines | |
| # Cores/Core Time: | 55 cores | Est. 180 mins. |
| Total Meters Added: | 123,400.00 | |
| Total Meters Deleted: | 0.00 | |
| Survey Units: | Meters | |
| Nautical Mile (Feet): | 6080 | |

| Time Summary (Hours): | Today: | Job Totals: | ( % ) |
|---|---|---|---|
| Mobilize / Demobilize: | 0.00 | 19.33 | 2.49% |
| On-Line: | 0.00 | 161.31 | 20.80% |
| Transit: | 0.00 | 147.47 | 19.02% |
| Other Working: | 0.00 | 245.71 | 31.69% |
| Equipment Downtime: | 0.00 | 68.42 | 8.82% |
| Weather Stand-By: | 13.00 | 132.01 | 17.02% |
| Other Stand-By: | 0.00 | 1.17 | 0.15% |
| Stand-By / No Crew: | 0.00 | 0.00 | |
| Health, Safety & Environmental: | 0.00 | 0.00 | |
| **Job Summary:** | **13.00** | **775.42** | **100.00%** |

**Job Total - Kilometers:** *729.40*
**On-Line Percent Complete:** *89.20%*

**Kilometers Added:** *123.40*

**Percent In-Fill:** *1.61%*

**Estimated Coring Time:** 3.25 Days
**Estimated Time to Completion:** 4.88 Days

**Estimated Time includes taking cores!**

**Areas Worked:** NONE

Vessel was waiting on weather today. There was small vessel warning for Cook Inlet. Winds were strong throughout morning but did abate late afternoon. Two sidescan arrived today. Both were rub tested OK. One fish however was not able to able to pass the magnetometer data to the mag software. Suspect that there is a configuration setting in the fish preventing the data transfer. Will contact the manufacturer Edgetech in morning. Regardless, we do having a working SS system. Plan tomorrow is to survey in block PL08. The weather foerecast for tomorrow is fair with 0.6m seas from the north.

| HSE Reporting: | | HSE Officer: | Kelly Power |
|---|---|---|---|
| Toolbox: | X | JHA-Toolbox | |
| Shift Change: | N/A | | |
| Safety: | X | Review MAR-TRA-003 | |
| Pre/Post Job: | No | | |

| Production Summary: | Today: | To Date: | Job Total: | To Complete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 0.00 | 650.64 | 729.40 | 78.76 |
| Lines Completed: | 0 | 429 | 484 | 55 |
| Cores Taken: | 0 | 42 | 55 | 13 |
| In-Fill Kilometers: | 0.00 | 11.75 | 1.61% | |
| Added on Kilometers: | 0.00 | 123.40 | 16.92% | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 0.00 | | |

**Geophysical Equipment:**

| | |
|---|---|
| Equipment #1: | Navigation System - POS MV #BGR602273 |
| Equipment #2: | Diff. GPS System - Trimble AG130 #BGR603512 |
| Equipment #3: | MBES - R2Sonic #BGR603633 |
| Equipment #4: | SSS - Edgetech 4200 #38719 |
| Equipment #5: | Mag. - SeaSpy #13380A |
| Equipment #6: | USBL - IXSEA GAPS #151 |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

| Weather Summary: | Sea State (meters) | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | 3.0m | 25-30kts | SSW |
| Wx - 1200: | 1.5m | 10-15kts | SSE |
| Wx - 1800: | 1.0m | 10kts | S |
| Wx - 2400: | na | na | na |

***Personnel Onboard:***

| | |
|---|---|
| *Captain:* | Ryan Braget |
| *Other Vessel Crew:* | n/a |
| *Party Chief:* | Kelly Power |
| *Hydro. Surveyor:* | David Wise |
| *Geophysical Tech.:* | Richie Carmichael |
| *Other Survey Crew:* | n/a |
| *Client Representative:* | Kent Simpson |

***Personnel Onshore:***

| | |
|---|---|
| *Offshore Site Manager:* | Marta Krynytzky |
| *Ass't Off. Site Manager:* | Charlie Hall |
| *Data Manager:* | Lance Woods |
| *Data Processor:* | Cody Gibson |
| *Data Processor:* | Katie Conrad |
| *Data Processor:* | n/a |
| *Additional Proc.:* | n/a |
| *Client Representative:* | n/a |

**Client Representative's Remarks:**

**FUGRO:** Kelly Power **Client:** Kent W. Simpson

# Daily Progress Report

ver 7.22.2015-A (Alaska)

**Client:** AK LNG
**Job Description:** Seafloor Mapping
**Area & Block(s):** Pipeline
**Prospect / Site:** Cook Inlet
**Fugro Job #:** 23.00007123
**Job Day #:** 68

| | | |
|---|---|---|
| **Report For:** | 15-Sep-2015 | Tuesday |
| **Julian Date:** | 258 | |
| **Hours From:** | 0630 to 1830 | |

**Report From:**

**Fugro**
**R/V: Westerly**

| | |
|---|---|
| Production Hrs/Day: | 12.0 hrs |
| Job Total in Meters: | 606,000.00 |
| Total # of Lines: | 484 Lines |
| # Cores/Core Time: | 55 cores / Est. 180 mins. |
| Total Meters Added: | 125,250.00 |
| Total Meters Deleted: | 0.00 |
| Survey Units: | Meters |
| Nautical Mile (Feet): | 6080 |

| Time Summary (Hours): | Today: | Job Totals: | (%) |
|---|---|---|---|
| Mobilize / Demobilize: | 0.00 | 19.33 | 2.46% |
| On-Line: | 3.15 | 164.46 | 20.89% |
| Transit: | 2.92 | 150.38 | 19.10% |
| Other Working: | 5.93 | 251.64 | 31.96% |
| Equipment Downtime: | 0.00 | 68.42 | 8.69% |
| Weather Stand-By: | 0.00 | 132.01 | 16.77% |
| Other Stand-By: | 0.00 | 1.17 | 0.15% |
| Stand-By / No Crew: | 0.00 | 0.00 | |
| Health, Safety & Environmental: | 0.00 | 0.00 | |
| **Job Summary:** | **12.00** | **787.42** | **100.00%** |

**Job Total - Kilometers:** *731.25*
**On-Line Percent Complete:** *90.13%*

**Kilometers Added:** *125.25*

**Percent In-Fill:** *1.61%*

**Estimated Coring Time:** 3.25 Days
**Estimated Time to Completion:** 4.75 Days

**Estimated Time includes taking cores!**

**Areas Worked:** PL08

Today was first day we used the newly acquired SS fish. Enroute to location the 1st sidescan was wet tested just outside the river mouth. Upon arrival at PL08 the 2nd SS fish was tested on deck OK after receiving a password to allow the SS fish pass the magnatometer data through its hardware. The option was previously installed but was reset while SS fish was at the manufacturer for repair. Vessel conducted a MOB drill. Results were excellent as the life ring thrown overboard acting as a MOB, was recovered in 1min30sec. The vessel worked hard today against the currents and tides. Vessel refueled at the end of today and will most likely will need to refuel at the end day tomorrow. Plan tomorrow is resume survey operations in PL08. Weather forecast for tomorrow is fair with 10kts of variable wind and 0.6m seas.

| HSE Reporting: | | HSE Officer: | Kelly Power |
|---|---|---|---|
| Toolbox: | X | JHA-Toolbox | |
| Shift Change: | N/A | | |
| Safety: | X | MOB Drill, Review MAR-TRA-012 and 013 | |
| Pre/Post Job: | No | | |

| Production Summary: | Today: | To Date: | Job Total: | To Complete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 8.45 | 659.09 | 731.25 | 72.16 |
| Lines Completed: | 9 | 438 | 484 | 46 |
| Cores Taken: | 0 | 42 | 55 | 13 |
| In-Fill Kilometers: | 0.00 | 11.75 | 1.61% | |
| Added on Kilometers: | 1.85 | 125.25 | 17.13% | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 0.00 | | |

**Geophysical Equipment:**

| | |
|---|---|
| Equipment #1: | Navigation System - POS MV #BGR602273 |
| Equipment #2: | Diff. GPS System - Trimble AG130 #BGR603512 |
| Equipment #3: | MBES - R2Sonic #BGR603633 |
| Equipment #4: | SSS - Edgetech 4200 #38719 |
| Equipment #5: | Mag. - SeaSpy #13380A |
| Equipment #6: | USBL - IXSEA GAPS #151 |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

**Weather Summary:**

| | Sea State (meters) | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | 0.6m | 5kts | E |
| Wx - 1200: | 0.6m | 10kts | N |
| Wx - 1800: | 0.6m | 10kts | NE |
| Wx - 2400: | na | na | na |

***Personnel Onboard:***

*Captain:* Ryan Braget
*Other Vessel Crew:* n/a
*Party Chief:* Kelly Power
*Hydro. Surveyor:* David Wise
*Geophysical Tech.:* Richie Carmichael
*Other Survey Crew:* n/a
*Client Representative:* Kent Simpson

***Personnel Onshore:***

*Offshore Site Manager:* Marta Krynytzky
*Ass't Off. Site Manager:* Charlie Hall
*Data Manager:* Lance Woods
*Data Processor:* Cody Gibson
*Data Processor:* Katie Conrad
*Data Processor:* n/a
*Additional Proc.:* n/a
*Client Representative:* n/a

**Client Representative's Remarks:**

**FUGRO:** Kelly Power **Client:** Kent W. Simpson

Alaska LNG

# Daily Progress Report

ver 7.22.2015-A (Alaska)

**Client:** AK LNG
**Job Description:** Seafloor Mapping
**Area & Block(s):** Pipeline
**Prospect / Site:** Cook Inlet
**Fugro Job #:** 23.00007123
**Job Day #:** 69

| | | |
|---|---|---|
| **Report For:** | 16-Sep-2015 | Wednesday |
| **Julian Date:** | 259 | |
| **Hours From:** | 0630 to 1830 | |

**Report From:**

**Fugro**
**R/V: Westerly**

| | | |
|---|---|---|
| Production Hrs/Day: | 12.0 hrs | |
| Job Total in Meters: | 606,000.00 | |
| Total # of Lines: | 484 Lines | |
| # Cores/Core Time: | 55 cores | Est. 180 mins. |
| Total Meters Added: | 131,750.00 | |
| Total Meters Deleted: | 0.00 | |
| Survey Units: | Meters | |
| Nautical Mile (Feet): | 6080 | |

| Time Summary (Hours): | Today: | Job Totals: | ( % ) |
|---|---|---|---|
| Mobilize / Demobilize: | 0.00 | 19.33 | 2.42% |
| On-Line: | 4.35 | 168.81 | 21.12% |
| Transit: | 2.10 | 152.48 | 19.07% |
| Other Working: | 5.55 | 257.19 | 32.17% |
| Equipment Downtime: | 0.00 | 68.42 | 8.56% |
| Weather Stand-By: | 0.00 | 132.01 | 16.51% |
| Other Stand-By: | 0.00 | 1.17 | 0.15% |
| Stand-By / No Crew: | 0.00 | 0.00 | |
| Health, Safety & Environmental: | 0.00 | 0.00 | |
| **Job Summary:** | **12.00** | **799.42** | **100.00%** |

**Job Total - Kilometers:** *737.75*
**On-Line Percent Complete:** *92.79%*

**Kilometers Added:** *131.75*

**Percent In-Fill:** *1.59%*

**Estimated Coring Time:** 3.25 Days
**Estimated Time to Completion:** 4.34 Days

**Estimated Time includes taking cores!**

**Areas Worked:** PL08

Worked in PL08. Sea conditions were good and so was data quality. Vessel re-fueled after returning to the dock. The weather forecast for tomorrow is marginal with 10kt wind from the North and 1.0m seas. Winds fron the N to NE affect the PL08 area the most. The plan for tomorrow is to resume operations in PL08 if weather conditions suitable if not may conduct survey operations at TM34.

| HSE Reporting: | | HSE Officer: | Kelly Power |
|---|---|---|---|
| Toolbox: | X | JHA-Toolbox | |
| Shift Change: | N/A | | |
| Safety: | X | Reiew MAR-TRA-013 | |
| Pre/Post Job: | No | | |

| Production Summary: | Today: | To Date: | Job Total: | To Complete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 25.45 | 684.54 | 737.75 | 53.21 |
| Lines Completed: | 9 | 447 | 484 | 37 |
| Cores Taken: | 0 | 42 | 55 | 13 |
| In-Fill Kilometers: | 0.00 | 11.75 | 1.59% | |
| Added on Kilometers: | 6.50 | 131.75 | 17.86% | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 0.00 | | |

**Geophysical Equipment:**

| | |
|---|---|
| Equipment #1: | Navigation System - POS MV #BGR602273 |
| Equipment #2: | Diff. GPS System - Trimble AG130 #BGR603512 |
| Equipment #3: | MBES - R2Sonic #BGR603633 |
| Equipment #4: | SSS - Edgetech 4200 #38719 |
| Equipment #5: | Mag. - SeaSpy #13380A |
| Equipment #6: | USBL - IXSEA GAPS #151 |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

| Weather Summary: | Sea State (meters) | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | 0.6m | 5kts | NE |
| Wx - 1200: | 0.3m | 5-10kts | NNW |
| Wx - 1800: | 0.3m | 5kts | N |
| Wx - 2400: | na | na | na |

***Personnel Onboard:***

*Captain:* Ryan Braget
*Other Vessel Crew:* n/a
*Party Chief:* Kelly Power
*Hydro. Surveyor:* David Wise
*Geophysical Tech.:* Richie Carmichael
*Other Survey Crew:* n/a
*Client Representative:* Kent Simpson

***Personnel Onshore:***

*Offshore Site Manager:* Marta Krynytzky
*Ass't Off. Site Manager:* Charlie Hall
*Data Manager:* Lance Woods
*Data Processor:* Cody Gibson
*Data Processor:* Katie Conrad
*Data Processor:* n/a
*Additional Proc.:* n/a
*Client Representative:* n/a

**Client Representative's Remarks:**

**FUGRO:** Kelly Power **Client:** Kent W. Simpson

# Daily Progress Report

ver 7.22.2015-A (Alaska)

**Client:** AK LNG
**Job Description:** Seafloor Mapping
**Area & Block(s):** Pipeline
**Prospect / Site:** Cook Inlet
**Fugro Job #:** 23.00007123
**Job Day #:** 70

| | | |
|---|---|---|
| **Report For:** | 17-Sep-2015 | Thursday |
| **Julian Date:** | 260 | |
| **Hours From:** | 0630 to 1830 | |

**Report From:**

Fugro
R/V: Westerly

| | | |
|---|---|---|
| Production Hrs/Day: | 12.0 hrs | |
| Job Total in Meters: | 606,000.00 | |
| Total # of Lines: | 484 Lines | |
| # Cores/Core Time: | 55 cores | Est. 180 mins. |
| Total Meters Added: | 131,750.00 | |
| Total Meters Deleted: | 0.00 | |
| Survey Units: | Meters | |
| Nautical Mile (Feet): | 6080 | |

| Time Summary (Hours): | Today: | Job Totals: | ( % ) |
|---|---|---|---|
| Mobilize / Demobilize: | 0.00 | 19.33 | 2.38% |
| On-Line: | 0.00 | 168.81 | 20.80% |
| Transit: | 1.50 | 153.98 | 18.98% |
| Other Working: | 1.00 | 258.19 | 31.82% |
| Equipment Downtime: | 0.00 | 68.42 | 8.43% |
| Weather Stand-By: | 9.50 | 141.51 | 17.44% |
| Other Stand-By: | 0.00 | 1.17 | 0.14% |
| Stand-By / No Crew: | 0.00 | 0.00 | |
| Health, Safety & Environmental: | 0.00 | 0.00 | |
| **Job Summary:** | **12.00** | **811.42** | **100.00%** |

**Job Total - Kilometers:** *737.75*
**On-Line Percent Complete:** *92.79%*

**Kilometers Added:** *131.75*

**Percent In-Fill:** *1.59%*

**Estimated Coring Time:** 3.25 Days
**Estimated Time to Completion:** 4.34 Days

**Estimated Time includes taking cores!**

**Areas Worked:** None

Vessel attampeted to sail to the PL08 site but conditions north of the Forelands were poor. Seas of 1.2m 1.5m were observed. Vessel speed was reduced as a result of the high seas. It would take 2.5-3hrs to transit from Forelands to survey site. Forecast for day was calling for 1.0m seas at the survey site all day. Decision made to return to port and wait on weather. Tomorrow's forecast for survey area is promising with winds 10kts or less in the morning. Plan for tomorrow is to resume survey operations in PL08.

| HSE Reporting: | | HSE Officer: | Kelly Power |
|---|---|---|---|
| Toolbox: | X | JHA-Toolbox | |
| Shift Change: | N/A | | |
| Safety: | X | Review MAR-TRA-012 | |
| Pre/Post Job: | No | | |

| Production Summary: | Today: | To Date: | Job Total: | To Complete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 0.00 | 684.54 | 737.75 | 53.21 |
| Lines Completed: | 0 | 447 | 484 | 37 |
| Cores Taken: | 0 | 42 | 55 | 13 |
| In-Fill Kilometers: | 0.00 | 11.75 | 1.59% | |
| Added on Kilometers: | 0.00 | 131.75 | 17.86% | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 0.00 | | |

**Geophysical Equipment:**

| | |
|---|---|
| Equipment #1: | Navigation System - POS MV #BGR602273 |
| Equipment #2: | Diff. GPS System - Trimble AG130 #BGR603512 |
| Equipment #3: | MBES - R2Sonic #BGR603633 |
| Equipment #4: | SSS - Edgetech 4200 #38719 |
| Equipment #5: | Mag. - SeaSpy #13380A |
| Equipment #6: | USBL - IXSEA GAPS #151 |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

| Weather Summary: | Sea State (meters) | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | 0.5m | 5kts | NE |
| Wx - 1200: | 1.5m | 10-15kts | NE |
| Wx - 1800: | 1.5m | 15-20kts | W |
| Wx - 2400: | na | na | na |

***Personnel Onboard:***

*Captain:* Ryan Braget
*Other Vessel Crew:* n/a
*Party Chief:* Kelly Power
*Hydro. Surveyor:* David Wise
*Geophysical Tech.:* Richie Carmichael
*Other Survey Crew:* n/a
*Client Representative:* na

***Personnel Onshore:***

*Offshore Site Manager:* Marta Krynytzky
*Ass't Off. Site Manager:* Charlie Hall
*Data Manager:* Lance Woods
*Data Processor:* Cody Gibson
*Data Processor:* Katie Conrad
*Data Processor:* n/a
*Additional Proc.:* n/a
*Client Representative:* Kent Simpson

**Client Representative's Remarks:**

**FUGRO:** Kelly Power **Client:** Kent W. Simpson

# Daily Progress Report

ver 7.22.2015-A (Alaska)

**Client:** AK LNG
**Job Description:** Seafloor Mapping
**Area & Block(s):** Pipeline
**Prospect / Site:** Cook Inlet
**Fugro Job #:** 23.00007123
**Job Day #:** 71

**Fugro**
**R/V: Westerly**

| | | |
|---|---|---|
| Report For: | 18-Sep-2015 | Friday |
| Julian Date: | 261 | |
| Hours From: | 0630 to 1830 | |

**Report From:**

| | |
|---|---|
| Production Hrs/Day: | 12.0 hrs |
| Job Total in Meters: | 606,000.00 |
| Total # of Lines: | 484 Lines |
| # Cores/Core Time: | 55 cores / Est. 180 mins. |
| Total Meters Added: | 134,350.00 |
| Total Meters Deleted: | 0.00 |
| Survey Units: | Meters |
| Nautical Mile (Feet): | 6080 |

| Time Summary (Hours): | Today: | Job Totals: | (%) |
|---|---|---|---|
| Mobilize / Demobilize: | 0.00 | 19.33 | 2.35% |
| On-Line: | 5.53 | 174.34 | 21.17% |
| Transit: | 3.67 | 157.65 | 19.15% |
| Other Working: | 2.80 | 260.99 | 31.70% |
| Equipment Downtime: | 0.00 | 68.42 | 8.31% |
| Weather Stand-By: | 0.00 | 141.51 | 17.19% |
| Other Stand-By: | 0.00 | 1.17 | 0.14% |
| Stand-By / No Crew: | 0.00 | 0.00 | |
| Health, Safety & Environmental: | 0.00 | 0.00 | |
| **Job Summary:** | **12.00** | **823.41** | **100.00%** |

**Job Total - Kilometers:** *740.35*
**On-Line Percent Complete:** *96.79%*

**Kilometers Added:** *134.35*

**Percent In-Fill:** *1.59%*

**Estimated Coring Time:** 3.25 Days
**Estimated Time to Completion:** 3.73 Days

**Estimated Time includes taking cores!**

**Areas Worked:** PL08

Vessel worked in PL08 and acquired 32km of line. Conditions good and so was data quality. Tomorrow's forecast is fair. With variable winds and 0.5m seas. The plan for tomorrow is to resume operations in PL08. The vessel did fuel today.

| HSE Reporting: | | HSE Officer: | Kelly Power |
|---|---|---|---|
| Toolbox: | X | JHA-Toolbox | |
| Shift Change: | N/A | | |
| Safety: | X | Review MAR-TRA-009 & 013 | |
| Pre/Post Job: | No | | |

| Production Summary: | Today: | To Date: | Job Total: | To Complete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 32.05 | 716.59 | 740.35 | 23.76 |
| Lines Completed: | 13 | 460 | 484 | 24 |
| Cores Taken: | 0 | 42 | 55 | 13 |
| In-Fill Kilometers: | 0.00 | 11.75 | 1.59% | |
| Added on Kilometers: | 2.60 | 134.35 | 18.15% | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 0.00 | | |

**Geophysical Equipment:**

| | |
|---|---|
| Equipment #1: | Navigation System - POS MV #BGR602273 |
| Equipment #2: | Diff. GPS System - Trimble AG130 #BGR603512 |
| Equipment #3: | MBES - R2Sonic #BGR603633 |
| Equipment #4: | SSS - Edgetech 4200 #38719 |
| Equipment #5: | Mag. - SeaSpy #13380A |
| Equipment #6: | USBL - IXSEA GAPS #151 |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

| Weather Summary: | Sea State (meters) | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | 0.5m | 10kts | N |
| Wx - 1200: | 0.5m | 10kts | N |
| Wx - 1800: | 0.3m | 5kts | N |
| Wx - 2400: | na | na | na |

***Personnel Onboard:***

*Captain:* Ryan Braget
*Other Vessel Crew:* n/a
*Party Chief:* Kelly Power
*Hydro. Surveyor:* David Wise
*Geophysical Tech.:* Richie Carmichael
*Other Survey Crew:* n/a
*Client Representative:* Kent Simpson

***Personnel Onshore:***

*Offshore Site Manager:* Marta Krynytzky
*Ass't Off. Site Manager:* Charlie Hall
*Data Manager:* Chuck Chamberlain
*Data Processor:* Cody Gibson
*Data Processor:* Lance Woods
*Data Processor:* n/a
*Additional Proc.:* n/a
*Client Representative:* n/a

**Client Representative's Remarks:**

**FUGRO:** Kelly Power **Client:** Kent W. Simpson

Alaska LNG

FUGRO

# Daily Progress Report

ver 7.22.2015-A (Alaska)

| | |
|---|---|
| Client: | AK LNG |
| Job Description: | Seafloor Mapping |
| Area & Block(s): | Pipeline |
| Prospect / Site: | Cook Inlet |
| Fugro Job #: | 23.00007123 |
| Job Day #: | 72 |
| Report For: | 19-Sep-2015 Saturday |
| Julian Date: | 262 |
| Hours From: | 0630 to 1830 |
| Report From: | |

R/V: Westerly

| | | |
|---|---|---|
| Production Hrs/Day: | 12.0 hrs | |
| Job Total in Meters: | 606,000.00 | |
| Total # of Lines: | 484 Lines | |
| # Cores/Core Time: | 55 cores | Est. 180 mins. |
| Total Meters Added: | 139,150.00 | |
| Total Meters Deleted: | 0.00 | |
| Survey Units: | Meters | |
| Nautical Mile (Feet): | 6080 | |

| Time Summary (Hours): | Today: | Job Totals: | (%) |
|---|---|---|---|
| Mobilize / Demobilize: | 0.00 | 19.33 | 2.31% |
| On-Line: | 5.47 | 179.81 | 21.52% |
| Transit: | 4.08 | 161.73 | 19.36% |
| Other Working: | 2.45 | 263.44 | 31.53% |
| Equipment Downtime: | 0.00 | 68.42 | 8.19% |
| Weather Stand-By: | 0.00 | 141.51 | 16.94% |
| Other Stand-By: | 0.00 | 1.17 | 0.14% |
| Stand-By / No Crew: | 0.00 | 0.00 | |
| Health, Safety & Environmental: | 0.00 | 0.00 | |
| Job Summary: | 12.00 | 835.41 | 100.00% |

**Job Total - Kilometers:** 745.15
**On-Line Percent Complete:** 100.33%

**Kilometers Added:** 139.15

**Percent In-Fill:** 1.58%

**Estimated Coring Time:** 3.25 Days
**Estimated Time to Completion:** 3.25 Days

Estimated Time includes taking cores!

**Areas Worked:** PL08

PL08 was completed today. However there 3 weather reshoots and 1 MBES infill to complete. Weather outlook for tomorrow is poor with 10kt winds from the North and 1.0m seas. The plan tomorrow is to complete the reruns in PL08.

| HSE Reporting: | | HSE Officer: | Kelly Power |
|---|---|---|---|
| Toolbox: | X | JHA-Toolbox | |
| Shift Change: | N/A | | |
| Safety: | X | Review MAR-TRA-012, 1 HOC for safe act | |
| Pre/Post Job: | No | | |

| Production Summary: | Today: | To Date: | Job Total: | To Complete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 31.00 | 747.59 | 745.15 | 0.00 |
| Lines Completed: | 24 | 484 | 484 | 0 |
| Cores Taken: | 0 | 42 | 55 | 13 |
| In-Fill Kilometers: | 0.00 | 11.75 | 1.58% | |
| Added on Kilometers: | 4.80 | 139.15 | 18.67% | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 0.00 | | |

**Geophysical Equipment:**

| | |
|---|---|
| Equipment #1: | Navigation System - POS MV #BGR602273 |
| Equipment #2: | Diff. GPS System - Trimble AG130 #BGR603512 |
| Equipment #3: | MBES - R2Sonic #BGR603633 |
| Equipment #4: | SSS - Edgetech 4200 #38719 |
| Equipment #5: | Mag. - SeaSpy #13380A |
| Equipment #6: | USBL - IXSEA GAPS #151 |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

| Weather Summary: | Sea State (meters) | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | 0.5m | 10kts | N |
| Wx - 1200: | 0.5m | 5kts | N |
| Wx - 1800: | 0.3m | 5kts | N |
| Wx - 2400: | na | na | na |

***Personnel Onboard:***

| | |
|---|---|
| *Captain:* | Ryan Braget |
| *Other Vessel Crew:* | n/a |
| *Party Chief:* | Kelly Power |
| *Hydro. Surveyor:* | David Wise |
| *Geophysical Tech.:* | Richie Carmichael |
| *Other Survey Crew:* | n/a |
| *Client Representative:* | Kent Simpson |

***Personnel Onshore:***

| | |
|---|---|
| *Offshore Site Manager:* | Marta Krynytzky |
| *Ass't Off. Site Manager:* | Charlie Hall |
| *Data Manager:* | Chuck Chamberlain |
| *Data Processor:* | Cody Gibson |
| *Data Processor:* | Lance Woods |
| *Data Processor:* | n/a |
| *Additional Proc.:* | n/a |
| *Client Representative:* | n/a |

**Client Representative's Remarks:**

FUGRO: Kelly Power Client: Kent W. Simpson

# Daily Progress Report

ver 7.22.2015-A (Alaska)

**Client:** AK LNG
**Job Description:** Seafloor Mapping
**Area & Block(s):** Pipeline
**Prospect / Site:** Cook Inlet
**Fugro Job #:** 23.00007123
**Job Day #:** 73

| | | |
|---|---|---|
| **Report For:** | 20-Sep-2015 | Sunday |
| **Julian Date:** | 263 | |
| **Hours From:** | 0630 to 1830 | |

**Report From:**

Fugro
R/V: Westerly

| | | |
|---|---|---|
| Production Hrs/Day: | 12.0 hrs | |
| Job Total in Meters: | 606,000.00 | |
| Total # of Lines: | 484 Lines | |
| # Cores/Core Time: | 55 cores | Est. 180 mins. |
| Total Meters Added: | 139,150.00 | |
| Total Meters Deleted: | 0.00 | |
| Survey Units: | Meters | |
| Nautical Mile (Feet): | 6080 | |

| Time Summary (Hours): | Today: | Job Totals: | ( % ) |
|---|---|---|---|
| Mobilize / Demobilize: | 0.00 | 19.33 | 2.28% |
| On-Line: | 0.00 | 179.81 | 21.22% |
| Transit: | 1.75 | 163.48 | 19.29% |
| Other Working: | 0.75 | 264.19 | 31.18% |
| Equipment Downtime: | 0.00 | 68.42 | 8.07% |
| Weather Stand-By: | 9.50 | 151.01 | 17.82% |
| Other Stand-By: | 0.00 | 1.17 | 0.14% |
| Stand-By / No Crew: | 0.00 | 0.00 | |
| Health, Safety & Environmental: | 0.00 | 0.00 | |
| **Job Summary:** | **12.00** | **847.41** | **100.00%** |

**Job Total - Kilometers:** *745.15*
**On-Line Percent Complete:** *100.33%*

**Kilometers Added:** *139.15*

**Percent In-Fill:** *1.58%*

**Estimated Coring Time:** 3.25 Days
**Estimated Time to Completion:** 3.25 Days

**Estimated Time includes taking cores!**

**Areas Worked:** None

Vessel sailed towards PL08 site this morning but as vessel neared sea conditions degraded to 1.0m seas. Vessel turned and headed back south. As vessel neared the TM34 LNG site, high tide had already peaked. Vessel continued back south towards port were vessel refueled. While in port today the Captain changed out the engine air filters, inspected engine exhaust system and installed insulation around exhaust piping. The weather forecast for tomorrow is fair with winds variable and less than 10kts. The plan for tomorrow is the sail to PL08 and complete SS weather reshoots and a MBES infill. High tide for the LNG TM34 site tomorrow is at 11:50am.

| HSE Reporting: | | HSE Officer: | Kelly Power |
|---|---|---|---|
| Toolbox: | X | JHA-Toolbox | |
| Shift Change: | N/A | | |
| Safety: | X | Review MAR-TRA-013 | |
| Pre/Post Job: | No | | |

| Production Summary: | Today: | To Date: | Job Total: | To Complete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 0.00 | 747.59 | 745.15 | 0.00 |
| Lines Completed: | 0 | 484 | 484 | 0 |
| Cores Taken: | 0 | 42 | 55 | 13 |
| In-Fill Kilometers: | 0.00 | 11.75 | 1.58% | |
| Added on Kilometers: | 0.00 | 139.15 | 18.67% | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 0.00 | | |

**Geophysical Equipment:**

| | |
|---|---|
| Equipment #1: | Navigation System - POS MV #BGR602273 |
| Equipment #2: | Diff. GPS System - Trimble AG130 #BGR603512 |
| Equipment #3: | MBES - R2Sonic #BGR603633 |
| Equipment #4: | SSS - Edgetech 4200 #38719 |
| Equipment #5: | Mag. - SeaSpy #13380A |
| Equipment #6: | USBL - IXSEA GAPS #151 |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

| Weather Summary: | Sea State (meters) | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | na | na | na |
| Wx - 1200: | 1.0m | 10kts | N |
| Wx - 1800: | 0.5-1.0m | 10kts | N |
| Wx - 2400: | na | na | na |

***Personnel Onboard:***

*Captain:* Ryan Braget
*Other Vessel Crew:* n/a
*Party Chief:* Kelly Power
*Hydro. Surveyor:* David Wise
*Geophysical Tech.:* Richie Carmichael
*Other Survey Crew:* n/a
*Client Representative:* Kent Simpson

***Personnel Onshore:***

*Offshore Site Manager:* Jim Grant
*Ass't Off. Site Manager:* Marta Krynytzky
*Data Manager:* Lance Woods
*Data Processor:* Cody Gibson
*Data Processor:* Katie Conrad
*Data Processor:* n/a
*Additional Proc.:* n/a
*Client Representative:* n/a

**Client Representative's Remarks:**

**FUGRO:** Kelly Power **Client:** Kent W. Simpson

# Daily Progress Report

ver 7.22.2015-A (Alaska)

**Client:** AK LNG
**Job Description:** Seafloor Mapping
**Area & Block(s):** Pipeline
**Prospect / Site:** Cook Inlet
**Fugro Job #:** 23.00007123
**Job Day #:** 74

| | | |
|---|---|---|
| **Report For:** | 21-Sep-2015 | Monday |
| **Julian Date:** | 264 | |
| **Hours From:** | 0700 to 1200 | |

**Report From:**

**Fugro**
**R/V: Westerly**

| | | |
|---|---|---|
| Production Hrs/Day: | 12.0 hrs | |
| Job Total in Meters: | 606,000.00 | |
| Total # of Lines: | 484 Lines | |
| # Cores/Core Time: | 45 cores | Est. 180 mins. |
| Total Meters Added: | 139,150.00 | |
| Total Meters Deleted: | 0.00 | |
| Survey Units: | Meters | |
| Nautical Mile (Feet): | 6080 | |

| Time Summary (Hours): | Today: | Job Totals: | ( % ) |
|---|---|---|---|
| Mobilize / Demobilize: | 0.00 | 19.33 | 2.27% |
| On-Line: | 0.32 | 180.13 | 21.13% |
| Transit: | 2.92 | 166.40 | 19.52% |
| Other Working: | 1.77 | 265.96 | 31.20% |
| Equipment Downtime: | 0.00 | 68.42 | 8.03% |
| Weather Stand-By: | 0.00 | 151.01 | 17.72% |
| Other Stand-By: | 0.00 | 1.17 | 0.14% |
| Stand-By / No Crew: | 0.00 | 0.00 | |
| Health, Safety & Environmental: | 0.00 | 0.00 | |
| **Job Summary:** | **5.00** | **852.41** | **100.00%** |

**Job Total - Kilometers:** *745.15*
**On-Line Percent Complete:** *100.33%*

**Kilometers Added:** *139.15*

**Percent In-Fill:** *1.67%*

**Estimated Coring Time:** 0.75 Days
**Estimated Time to Completion:** 0.75 Days

**Estimated Time includes taking cores!**

**Areas Worked:** PL08

Completed weather ruruns and infill in PL08 site. PL08 site is now complete. Switched to LNG DPR at 12 noon.
Another Fugro vessel (geotechnical operations vessel) has been tasked with completing the 3 remaing core samples in PL08.

| HSE Reporting: | | HSE Officer: | Kelly Power |
|---|---|---|---|
| Toolbox: | X | JHA-Toolbox | |
| Shift Change: | N/A | | |
| Safety: | X | Review MAR-RA-009, Medical Emergency Drill, 1 HOC | |
| Pre/Post Job: | No | | |

| Production Summary: | Today: | To Date: | Job Total: | To Complete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 0.00 | 747.59 | 745.15 | 0.00 |
| Lines Completed: | 0 | 484 | 484 | 0 |
| Cores Taken: | 0 | 42 | 45 | 3 |
| In-Fill Kilometers: | 0.70 | 12.45 | 1.67% | |
| Added on Kilometers: | 0.00 | 139.15 | 18.67% | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 0.00 | | |

**Geophysical Equipment:**

| | |
|---|---|
| Equipment #1: | Navigation System - POS MV #BGR602273 |
| Equipment #2: | Diff. GPS System - Trimble AG130 #BGR603512 |
| Equipment #3: | MBES - R2Sonic #BGR603633 |
| Equipment #4: | SSS - Edgetech 4200 #38719 |
| Equipment #5: | Mag. - SeaSpy #13380A |
| Equipment #6: | USBL - IXSEA GAPS #151 |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

| Weather Summary: | Sea State (meters) | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | 0.5m | 10kts | N |
| Wx - 1200: | 0.3m | 10kts | N |
| Wx - 1800: | 0.3m | 5kts | N |
| Wx - 2400: | na | na | na |

***Personnel Onboard:***

*Captain:* Ryan Braget
*Other Vessel Crew:* n/a
*Party Chief:* Kelly Power
*Hydro. Surveyor:* David Wise
*Geophysical Tech.:* Richie Carmichael
*Other Survey Crew:* n/a
*Client Representative:* Kent Simpson

***Personnel Onshore:***

*Offshore Site Manager:* Jim Grant
*Ass't Off. Site Manager:* Marta Krynytzky
*Data Manager:* Lance Woods
*Data Processor:* Cody Gibson
*Data Processor:* Katie Conrad
*Data Processor:* n/a
*Additional Proc.:* n/a
*Client Representative:* n/a

**Client Representative's Remarks:**

**FUGRO:** Kelly Power **Client:** Kent W. Simpson

# Daily Progress Report

ver 7.22.2015-A (Alaska)

**Client:** AK LNG
**Job Description:** Hydrographic Survey
**Area & Block(s):** LNG Sites
**Prospect / Site:** TM05
**Fugro Job #:** 23.00007123
**Job Day #:** 48

| | | |
|---|---|---|
| **Report For:** | 21-Sep-2015 | Monday |
| **Julian Date:** | 264 | |
| **Hours From:** | 1200 to 1900 | |

**Report From:**

Fugro
R/V: Westerly

| | | |
|---|---|---|
| Production Hrs/Day: | 12.0 hrs | |
| Job Total in Meters: | 588,200.00 | |
| Total # of Lines: | 215 Lines | |
| # Cores/Core Time: | 20 cores | Est. 180 mins. |
| Total Meters Added: | 23,150.00 | |
| Total Meters Deleted: | 4,100.00 | |
| Survey Units: | Meters | |
| Nautical Mile (Feet): | 6080 | |

| Time Summary (Hours): | Today: | Job Totals: | ( % ) |
|---|---|---|---|
| Mobilize / Demobilize: | 0.00 | 87.42 | 15.45% |
| On-Line: | 3.97 | 138.03 | 24.40% |
| Transit: | 1.70 | 59.40 | 10.50% |
| Other Working: | 1.33 | 170.30 | 30.10% |
| Equipment Downtime: | 0.00 | 34.13 | 6.03% |
| Weather Stand-By: | 0.00 | 76.46 | 13.52% |
| Other Stand-By: | 0.00 | 0.00 | |
| Stand-By / No Crew: | 0.00 | 0.00 | |
| Health, Safety & Environmental: | 0.00 | 0.00 | |
| **Job Summary:** | **7.00** | **565.74** | **100.00%** |

**Job Total - Kilometers:** 607.25
**On-Line Percent Complete:** 98.89%

**Kilometers Added:** 23.15
**Kilometers Deleted:** 4.10
**Percent In-Fill:** 0.77%

**Estimated Coring Time:** 3.00 Days
**Estimated Time to Completion:** 3.13 Days

Estimated Time includes taking cores!

**Areas Worked:** TM34

Switched from pipeline workscope at noon. Transited to TM34. Collected MBES data only as tide had already peaked and was ebbing. Did not acquire SS data as result of ebbing tide and submerged setnet fishing bouys in the TM34 north area. No SS data was acquired in around the piers vessel manuverablity would have been compromised. Mbes data coverage in around piers was good. The weather forecast for tomorrow is very poor. There is a samll craft advisory in effect for Cook inlet and the TM34 survey area. Will evaluate conditions in morning and will continue to survey in TM34 area, weather permitting.

| HSE Reporting: | | HSE Officer: | Doug Bowlus |
|---|---|---|---|
| Toolbox: | X | JHA-Toolbox | |
| Shift Change: | N/A | | |
| Safety: | X | Review MAR-TRA-009, Medical Emergency Drill, 1 HOC | |
| Pre/Post Job: | No | | |

| Production Summary: | Today: | To Date: | Job Total: | To Complete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 30.45 | 600.51 | 607.25 | 6.74 |
| Lines Completed: | 9 | 208 | 215 | 7 |
| Cores Taken: | 0 | 8 | 20 | 12 |
| In-Fill Kilometers: | 0.00 | 4.70 | 0.77% | |
| Added on Kilometers: | 0.00 | 23.15 | 3.81% | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 4.10 | 0.67% | |

**Geophysical Equipment:**

| | |
|---|---|
| Equipment #1: | Navigation System - POS MV #BGR602273 |
| Equipment #2: | Diff. GPS System - Trimble AG130 #BGR603512 |
| Equipment #3: | MBES - R2Sonic #BGR603633 |
| Equipment #4: | SSS - Edgetech 4200 #38719 |
| Equipment #5: | Mag. - SeaSpy #13380A |
| Equipment #6: | USBL - IXSEA GAPS #151 |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

**Weather Summary:**

| | Sea State (meters) | Wind Speed | Dir. |
|---|---|---|---|
| **Wx - 0600:** | na | na | na |
| **Wx - 1200:** | 0.5m | 10kts | N |
| **Wx - 1800:** | 0.3m | 5kts | N |
| **Wx - 2400:** | na | na | na |

***Personnel Onboard:***

*Captain:* Ryan Braget
*Other Vessel Crew:* n/a
*Party Chief:* Kelly Power
*Hydro. Surveyor:* David Wise
*Geophysical Tech.:* Richie Carmichael
*Other Survey Crew:* n/a
*Client Representative:* Kent Simpson

***Personnel Onshore:***

*Offshore Site Manager:* Jim Grant
*Ass't Off. Site Manager:* Marta Krynytzky
*Data Manager:* Lance Woods
*Data Processor:* Cody Gibson
*Data Processor:* Katie Conrad
*Data Processor:* n/a
*Additional Proc.:* n/a
*Client Representative:* n/a

**Client Representative's Remarks:**

Prospect/site is TM34

**FUGRO:** Kelly Power **Client:** Kent W. Simpson

# Daily Progress Report

ver 7.22.2015-A (Alaska)

**Client:** AK LNG
**Job Description:** Hydrographic Survey
**Area & Block(s):** LNG Sites
**Prospect / Site:** LNG Site
**Fugro Job #:** 23.00007123
**Job Day #:** 49

| | | |
|---|---|---|
| **Report For:** | 22-Sep-2015 | Tuesday |
| **Julian Date:** | 265 | |
| **Hours From:** | 0700 to 1900 | |

**Report From:**

**Fugro**
**R/V: Westerly**

| | |
|---|---|
| Production Hrs/Day: | 12.0 hrs |
| Job Total in Meters: | 588,200.00 |
| Total # of Lines: | 215 Lines |
| # Cores/Core Time: | 20 cores / Est. 180 mins. |
| Total Meters Added: | 23,150.00 |
| Total Meters Deleted: | 4,100.00 |
| Survey Units: | Meters |
| Nautical Mile (Feet): | 6080 |

| Time Summary (Hours): | Today: | Job Totals: | ( % ) |
|---|---|---|---|
| Mobilize / Demobilize: | 0.00 | 87.42 | 15.13% |
| On-Line: | 0.00 | 138.03 | 23.89% |
| Transit: | 0.00 | 59.40 | 10.28% |
| Other Working: | 0.00 | 170.30 | 29.48% |
| Equipment Downtime: | 0.00 | 34.13 | 5.91% |
| Weather Stand-By: | 12.00 | 88.46 | 15.31% |
| Other Stand-By: | 0.00 | 0.00 | |
| Stand-By / No Crew: | 0.00 | 0.00 | |
| Health, Safety & Environmental: | 0.00 | 0.00 | |
| **Job Summary:** | **12.00** | **577.74** | **100.00%** |

**Areas Worked:** None

| | |
|---|---|
| **Job Total - Kilometers:** | 607.25 |
| **On-Line Percent Complete:** | 98.89% |
| **Kilometers Added:** | 23.15 |
| **Kilometers Deleted:** | 4.10 |
| **Percent In-Fill:** | 0.77% |
| **Estimated Coring Time:** | 3.00 Days |
| **Estimated Time to Completion:** | 3.13 Days |

**Estimated Time includes taking cores!**

Vessel was waiting on weather today. There was a small craft advisory in effect for Cook Inlet and the survey area. Vessel did do some reconn work in the Kenai River and transited outside the river mouth were northly 20kt winds, whitecaps and 1.0mseas were noted. Tomorrow's present fo for Cook Inlet is poor. Will evaluate the forecast and weather conditions in the morning. If suitable vessel will transit to LNG TM34 and resume survey operations.

| HSE Reporting: | | HSE Officer: | Kelly Power |
|---|---|---|---|
| Toolbox: | X | JHA-Toolbox | |
| Shift Change: | N/A | | |
| Safety: | X | Weekly SAFTEY Meeting, Review MAR-TRA-013 | |
| Pre/Post Job: | No | | |

| Production Summary: | Today: | To Date: | Job Total: | To Complete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 0.00 | 600.51 | 607.25 | 6.74 |
| Lines Completed: | 0 | 208 | 215 | 7 |
| Cores Taken: | 0 | 8 | 20 | 12 |
| In-Fill Kilometers: | 0.00 | 4.70 | 0.77% | |
| Added on Kilometers: | 0.00 | 23.15 | 3.81% | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 4.10 | 0.67% | |

**Geophysical Equipment:**

| | |
|---|---|
| Equipment #1: | Navigation System - POS MV #BGR602273 |
| Equipment #2: | Diff. GPS System - Trimble AG130 #BGR603512 |
| Equipment #3: | MBES - R2Sonic #BGR603633 |
| Equipment #4: | SSS - Edgetech 4200 #38719 |
| Equipment #5: | Mag. - SeaSpy #13380A |
| Equipment #6: | USBL - IXSEA GAPS #151 |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

| Weather Summary: | Sea State (meters) | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | 0.5m | 10kts | NE |
| Wx - 1200: | 1.0m | 20kts | NNE |
| Wx - 1800: | 1.0m | 20kts | NNE |
| Wx - 2400: | na | na | na |

***Personnel Onboard:***

| | |
|---|---|
| *Captain:* | Ryan Braget |
| *Other Vessel Crew:* | n/a |
| *Party Chief:* | Kelly Power |
| *Hydro. Surveyor:* | David Wise |
| *Geophysical Tech.:* | Richie Carmichael |
| *Other Survey Crew:* | n/a |
| *Client Representative:* | Kent Simpson |

***Personnel Onshore:***

| | |
|---|---|
| *Offshore Site Manager:* | Jim Grant |
| *Ass't Off. Site Manager:* | Marta Krynytzky |
| *Data Manager:* | Lance Woods |
| *Data Processor:* | Cody Gibson |
| *Data Processor:* | Katie Conrad |
| *Data Processor:* | n/a |
| *Additional Proc.:* | n/a |
| *Client Representative:* | n/a |

**Client Representative's Remarks:**

**FUGRO:** Kelly Power **Client:** Kent W. Simpson

# Daily Progress Report

ver 7.22.2015-A (Alaska)

**Client:** AK LNG
**Job Description:** Hydrographic Survey
**Area & Block(s):** LNG Sites
**Prospect / Site:** LNG Site
**Fugro Job #:** 23.00007123
**Job Day #:** 50

| | | |
|---|---|---|
| **Report For:** | 23-Sep-2015 | Wednesday |
| **Julian Date:** | 266 | |
| **Hours From:** | 0700 to 1900 | |

**Report From:**

Fugro
R/V: Westerly

| | | |
|---|---|---|
| Production Hrs/Day: | 12.0 hrs | |
| Job Total in Meters: | 588,200.00 | |
| Total # of Lines: | 215 Lines | |
| # Cores/Core Time: | 20 cores | Est. 180 mins. |
| Total Meters Added: | 23,150.00 | |
| Total Meters Deleted: | 4,100.00 | |
| Survey Units: | Meters | |
| Nautical Mile (Feet): | 6080 | |

| Time Summary (Hours): | Today: | Job Totals: | ( % ) |
|---|---|---|---|
| Mobilize / Demobilize: | 0.00 | 87.42 | 14.82% |
| On-Line: | 0.00 | 138.03 | 23.41% |
| Transit: | 0.00 | 59.40 | 10.07% |
| Other Working: | 2.23 | 172.53 | 29.26% |
| Equipment Downtime: | 0.00 | 34.13 | 5.79% |
| Weather Stand-By: | 9.77 | 98.23 | 16.66% |
| Other Stand-By: | 0.00 | 0.00 | |
| Stand-By / No Crew: | 0.00 | 0.00 | |
| Health, Safety & Environmental: | 0.00 | 0.00 | |
| **Job Summary:** | **12.00** | **589.74** | **100.00%** |

**Job Total - Kilometers:** 607.25
**On-Line Percent Complete:** 98.89%

**Kilometers Added:** 23.15
**Kilometers Deleted:** 4.10
**Percent In-Fill:** 0.77%

**Estimated Coring Time:** 3.00 Days
**Estimated Time to Completion:** 3.13 Days

Estimated Time includes taking cores!

**Areas Worked:** TM34

Sailed to TM34 site after tide had risen in River Mouth. Conditions on site were very poor. Winds were 20kts with 1.6m seas. Returned to port. Plan for tomorrow is to sail at 10am due to low tide and because the earlier allowable tide height for the vessel would be in darkenss. Weather forecast is good for tomorrow. Will go to TM34 and conduct MBES/SS operations.

| HSE Reporting: | | HSE Officer: | Kelly Power |
|---|---|---|---|
| Toolbox: | X | JHA-Toolbox | |
| Shift Change: | N/A | | |
| Safety: | X | Review MAR-TRA-009 | |
| Pre/Post Job: | No | | |

| Production Summary: | Today: | To Date: | Job Total: | To Complete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 0.00 | 600.51 | 607.25 | 6.74 |
| Lines Completed: | 0 | 208 | 215 | 7 |
| Cores Taken: | 0 | 8 | 20 | 12 |
| In-Fill Kilometers: | 0.00 | 4.70 | 0.77% | |
| Added on Kilometers: | 0.00 | 23.15 | 3.81% | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 4.10 | 0.67% | |

**Geophysical Equipment:**

| | |
|---|---|
| Equipment #1: | Navigation System - POS MV #BGR602273 |
| Equipment #2: | Diff. GPS System - Trimble AG130 #BGR603512 |
| Equipment #3: | MBES - R2Sonic #BGR603633 |
| Equipment #4: | SSS - Edgetech 4200 #38719 |
| Equipment #5: | Mag. - SeaSpy #13380A |
| Equipment #6: | USBL - IXSEA GAPS #151 |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

| Weather Summary: | Sea State (meters) | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | 0.6m | 10-15kts | NE |
| Wx - 1200: | 1.6m | 15-20kts | NE |
| Wx - 1800: | 1.0m | 10-15kts | ENE |
| Wx - 2400: | na | na | na |

***Personnel Onboard:***

| | |
|---|---|
| *Captain:* | Ryan Braget |
| *Other Vessel Crew:* | n/a |
| *Party Chief:* | Kelly Power |
| *Hydro. Surveyor:* | David Wise |
| *Geophysical Tech.:* | Richie Carmichael |
| *Other Survey Crew:* | n/a |
| *Client Representative:* | Kent Simpson |

***Personnel Onshore:***

| | |
|---|---|
| *Offshore Site Manager:* | Jim Grant |
| *Ass't Off. Site Manager:* | Marta Krynytzky |
| *Data Manager:* | Lance Woods |
| *Data Processor:* | Cody Gibson |
| *Data Processor:* | Katie Conrad |
| *Data Processor:* | n/a |
| *Additional Proc.:* | n/a |
| *Client Representative:* | n/a |

**Client Representative's Remarks:**

**FUGRO:** Kelly Power **Client:** Kent W. Simpson

# Daily Progress Report

ver 7.22.2015-A (Alaska)

| | |
|---|---|
| Client: | AK LNG |
| Job Description: | Hydrographic Survey |
| Area & Block(s): | LNG Sites |
| Prospect / Site: | LNG Site |
| Fugro Job #: | 23.00007123 |
| Job Day #: | 51 |
| Report For: | 24-Sep-2015 Thursday |
| Julian Date: | 267 |
| Hours From: | 0700 to 1900 |
| Report From: | |

Fugro
R/V: Westerly

| | |
|---|---|
| Production Hrs/Day: | 12.0 hrs |
| Job Total in Meters: | 588,200.00 |
| Total # of Lines: | 215 Lines |
| # Cores/Core Time: | 20 cores / Est. 180 mins. |
| Total Meters Added: | 23,150.00 |
| Total Meters Deleted: | 4,100.00 |
| Survey Units: | Meters |
| Nautical Mile (Feet): | 6080 |

| Time Summary (Hours): | Today: | Job Totals: | (%) |
|---|---|---|---|
| Mobilize / Demobilize: | 0.00 | 87.42 | 14.53% |
| On-Line: | 3.82 | 141.85 | 23.57% |
| Transit: | 2.28 | 61.68 | 10.25% |
| Other Working: | 0.90 | 173.43 | 28.82% |
| Equipment Downtime: | 2.00 | 36.13 | 6.00% |
| Weather Stand-By: | 3.00 | 101.23 | 16.82% |
| Other Stand-By: | 0.00 | 0.00 | |
| Stand-By / No Crew: | 0.00 | 0.00 | |
| Health, Safety & Environmental: | 0.00 | 0.00 | |
| Job Summary: | 12.00 | 601.74 | 100.00% |

| | |
|---|---|
| Job Total - Kilometers: | 607.25 |
| On-Line Percent Complete: | 101.76% |
| Kilometers Added: | 23.15 |
| Kilometers Deleted: | 4.10 |
| Percent In-Fill: | 0.82% |
| Estimated Coring Time: | 3.00 Days |
| Estimated Time to Completion: | 3.00 Days |

Estimated Time includes taking cores!

**Areas Worked:** TM34

Area TM34 was completed today for sidescan and mbes coverage. There was an area north of the piers in which sidscan coverage could not be att due to several bouys attached by line to setnet clump weights on the bottom. Sidescan was collected near shore as practical as possible. When it became to shallow the the sidescan was retrieved to deck and the survey continued with multibeam acquisation only. Good coverage of multibeam was obtained throughout the TM34 survey area. There is no planned survey activities tomorrow as weather forecast is poor so tomorrow will be a fatigue management. Allowing for survey operations to be conducted on the weekend. The sidescan and and USBL transducer will be demoblized and the grab sampler mobed. There is 1 day of survey operations remaining which consists of grab sampling.

| HSE Reporting: | | HSE Officer: | Kelly Power |
|---|---|---|---|
| Toolbox: | X | JHA-Toolbox | |
| Shift Change: | N/A | | |
| Safety: | X | Review MAR-TRA-012 | |
| Pre/Post Job: | No | | |

| Production Summary: | Today: | To Date: | Job Total: | To Complete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 17.40 | 617.91 | 607.25 | 0.00 |
| Lines Completed: | 9 | 217 | 215 | 0 |
| Cores Taken: | 0 | 8 | 20 | 12 |
| In-Fill Kilometers: | 0.30 | 5.00 | 0.82% | |
| Added on Kilometers: | 0.00 | 23.15 | 3.81% | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 4.10 | 0.67% | |

**Geophysical Equipment:**

| | |
|---|---|
| Equipment #1: | Navigation System - POS MV #BGR602273 |
| Equipment #2: | Diff. GPS System - Trimble AG130 #BGR603512 |
| Equipment #3: | MBES - R2Sonic #BGR603633 |
| Equipment #4: | SSS - Edgetech 4200 #38719 |
| Equipment #5: | Mag. - SeaSpy #13380A |
| Equipment #6: | USBL - IXSEA GAPS #151 |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

| Weather Summary: | Sea State (meters) | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | na | na | na |
| Wx - 1200: | 0.5m | 10kts | N |
| Wx - 1800: | 0.3m | 5kts | N |
| Wx - 2400: | na | na | na |

**Personnel Onboard:**

| | |
|---|---|
| Captain: | Ryan Braget |
| Other Vessel Crew: | n/a |
| Party Chief: | Kelly Power |
| Hydro. Surveyor: | David Wise |
| Geophysical Tech.: | Richie Carmichael |
| Other Survey Crew: | n/a |
| Client Representative: | Kent Simpson |

**Personnel Onshore:**

| | |
|---|---|
| Offshore Site Manager: | Jim Grant |
| Ass't Off. Site Manager: | Marta Krynytzky |
| Data Manager: | Lance Woods |
| Data Processor: | Cody Gibson |
| Data Processor: | Katie Conrad |
| Data Processor: | n/a |
| Additional Proc.: | n/a |
| Client Representative: | n/a |

**Client Representative's Remarks:**

FUGRO: Kelly Power  Client: Kent W. Simpson

# Daily Progress Report

ver 7.22.2015-A (Alaska)

**Client:** AK LNG
**Job Description:** Hydrographic Survey
**Area & Block(s):** LNG Sites
**Prospect / Site:** LNG Site
**Fugro Job #:** 23.00007123
**Job Day #:** 52

| | | |
|---|---|---|
| **Report For:** | 25-Sep-2015 | Friday |
| **Julian Date:** | 268 | |
| **Hours From:** | 0700 to 1900 | |

**Report From:**

Fugro
R/V: Westerly

| | | |
|---|---|---|
| Production Hrs/Day: | 12.0 hrs | |
| Job Total in Meters: | 588,200.00 | |
| Total # of Lines: | 215 Lines | |
| # Cores/Core Time: | 20 cores | Est. 180 mins. |
| Total Meters Added: | 23,150.00 | |
| Total Meters Deleted: | 4,100.00 | |
| Survey Units: | Meters | |
| Nautical Mile (Feet): | 6080 | |

| Time Summary (Hours): | Today: | Job Totals: | ( % ) |
|---|---|---|---|
| Mobilize / Demobilize: | 0.00 | 87.42 | 14.24% |
| On-Line: | 0.00 | 141.85 | 23.11% |
| Transit: | 0.00 | 61.68 | 10.05% |
| Other Working: | 12.00 | 185.43 | 30.21% |
| Equipment Downtime: | 0.00 | 36.13 | 5.89% |
| Weather Stand-By: | 0.00 | 101.23 | 16.49% |
| Other Stand-By: | 0.00 | 0.00 | |
| Stand-By / No Crew: | 0.00 | 0.00 | |
| Health, Safety & Environmental: | 0.00 | 0.00 | |
| **Job Summary:** | **12.00** | **613.74** | **100.00%** |

**Job Total - Kilometers:** 607.25
**On-Line Percent Complete:** 101.76%

**Kilometers Added:** 23.15
**Kilometers Deleted:** 4.10
**Percent In-Fill:** 0.82%

**Estimated Coring Time:** 3.00 Days
**Estimated Time to Completion:** 3.00 Days

Estimated Time includes taking cores!

**Areas Worked:** None

Today was a fatigue management day to allow vessel crew to work this coming weekend. Weather was poor today with gale force winds and seas forecasted to be 3.0m. Weather forecast for tomorrow is better. Today during high tide the USBL transducer pole and transducer were removed from the vessel and the grab sampler installed. The high tide aided in easier installation and transport of equipment to and from the vessel. Tomorrow the plan is to sail and conduct grab sample operations over the LNG site areas.

| HSE Reporting: | | HSE Officer: | Kelly Power |
|---|---|---|---|
| Toolbox: | X | JHA-Toolbox | |
| Shift Change: | N/A | | |
| Safety: | X | Review MAR-TRA-002 | |
| Pre/Post Job: | No | | |

| Production Summary: | Today: | To Date: | Job Total: | To Complete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 0.00 | 617.91 | 607.25 | 0.00 |
| Lines Completed: | 0 | 217 | 215 | 0 |
| Cores Taken: | 0 | 8 | 20 | 12 |
| In-Fill Kilometers: | 0.00 | 5.00 | 0.82% | |
| Added on Kilometers: | 0.00 | 23.15 | 3.81% | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 4.10 | 0.67% | |

**Geophysical Equipment:**

| | |
|---|---|
| Equipment #1: | Navigation System - POS MV #BGR602273 |
| Equipment #2: | Diff. GPS System - Trimble AG130 #BGR603512 |
| Equipment #3: | MBES - R2Sonic #BGR603633 |
| Equipment #4: | SSS - Edgetech 4200 #38719 |
| Equipment #5: | Mag. - SeaSpy #13380A |
| Equipment #6: | USBL - IXSEA GAPS #151 |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

| Weather Summary: | Sea State (meters) | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | na | na | na |
| Wx - 1200: | 2.0m | 30kts | SSW |
| Wx - 1800: | 2.0m | 20kts | SSW |
| Wx - 2400: | na | na | na |

***Personnel Onboard:***

*Captain:* Ryan Braget
*Other Vessel Crew:* n/a
*Party Chief:* Kelly Power
*Hydro. Surveyor:* David Wise
*Geophysical Tech.:* Richie Carmichael
*Other Survey Crew:* n/a
*Client Representative:* Kent Simpson

***Personnel Onshore:***

*Offshore Site Manager:* Jim Grant
*Ass't Off. Site Manager:* Marta Krynytzky
*Data Manager:* Lance Woods
*Data Processor:* Cody Gibson
*Data Processor:* Katie Conrad
*Data Processor:* n/a
*Additional Proc.:* n/a
*Client Representative:* n/a

**Client Representative's Remarks:**

**FUGRO:** Kelly Power **Client:** Kent W. Simpson

# Daily Progress Report

ver 7.22.2015-A (Alaska)

**Client:** AK LNG
**Job Description:** Hydrographic Survey
**Area & Block(s):** LNG Sites
**Prospect / Site:** LNG Site
**Fugro Job #:** 23.00007123
**Job Day #:** 53

| | | |
|---|---|---|
| **Report For:** | 26-Sep-2015 | Saturday |
| **Julian Date:** | 269 | |
| **Hours From:** | 0700 to 1900 | |

**Report From:**

Fugro
R/V: Westerly

| | | |
|---|---|---|
| Production Hrs/Day: | 12.0 hrs | |
| Job Total in Meters: | 588,200.00 | |
| Total # of Lines: | 215 Lines | |
| # Cores/Core Time: | 18 cores | Est. 180 mins. |
| Total Meters Added: | 23,150.00 | |
| Total Meters Deleted: | 4,100.00 | |
| Survey Units: | Meters | |
| Nautical Mile (Feet): | 6080 | |

| Time Summary (Hours): | Today: | Job Totals: | ( % ) |
|---|---|---|---|
| Mobilize / Demobilize: | 0.00 | 87.42 | 13.97% |
| On-Line: | 0.00 | 141.85 | 22.67% |
| Transit: | 1.97 | 63.65 | 10.17% |
| Other Working: | 6.18 | 191.62 | 30.62% |
| Equipment Downtime: | 0.02 | 36.15 | 5.78% |
| Weather Stand-By: | 3.83 | 105.06 | 16.79% |
| Other Stand-By: | 0.00 | 0.00 | |
| Stand-By / No Crew: | 0.00 | 0.00 | |
| Health, Safety & Environmental: | 0.00 | 0.00 | |
| **Job Summary:** | **12.00** | **625.74** | **100.00%** |

**Job Total - Kilometers:** 607.25
**On-Line Percent Complete:** 101.76%

**Kilometers Added:** 23.15
**Kilometers Deleted:** 4.10
**Percent In-Fill:** 0.82%

**Estimated Coring Time:** 0.00 Days
**Estimated Time to Completion:** 0.00 Days

Estimated Time includes taking cores!

**Areas Worked:** LNG sites TM34, TM02,TM01

Completed 10 of 19 proposed grab sample locations. All priority 1 and priority 2 locations completed. While conducting a grab sample at D5SS01-10-01 the rope on the core winch rolled off drum and wedged into the drum sidewall and outer winch casing. Crew performed a JHA and discussed how to retrieve the grab sampler and free the rope. A secondary winch and block were utilized to recover the grab sampler without any incidents. The core winch rope was then reterminated. Grab sampling continued without incident until weather conditions were unsuitable for grab sampling operations, at which time operations were halted and vessel returned to port where it offloaded the grab samples and the vessel refueled. No more grab sampling is planned. Tomorrow has been scheduled a fatigue day while data is reviewed prior to start of demobilzation of the vessel on Monday.

| HSE Reporting: | | HSE Officer: | Kelly Power |
|---|---|---|---|
| Toolbox: | X | JHA-Toolbox | |
| Shift Change: | N/A | | |
| Safety: | X | Seth Jones received a vessel oreintation. Review MAR-TRA-003 and 013 | |
| Pre/Post Job: | No | | |

| Production Summary: | Today: | To Date: | Job Total: | To Complete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 0.00 | 617.91 | 607.25 | 0.00 |
| Lines Completed: | 0 | 217 | 215 | 0 |
| Cores Taken: | 10 | 18 | 18 | 0 |
| In-Fill Kilometers: | 0.00 | 5.00 | 0.82% | |
| Added on Kilometers: | 0.00 | 23.15 | 3.81% | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 4.10 | 0.67% | |

**Geophysical Equipment:**

| | |
|---|---|
| Equipment #1: | Navigation System - POS MV #BGR602273 |
| Equipment #2: | Diff. GPS System - Trimble AG130 #BGR603512 |
| Equipment #3: | MBES - R2Sonic #BGR603633 |
| Equipment #4: | SSS - Edgetech 4200 #38719 |
| Equipment #5: | Mag. - SeaSpy #13380A |
| Equipment #6: | USBL - IXSEA GAPS #151 |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

| Weather Summary: | Sea State (meters) | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | na | na | na |
| Wx - 1200: | 0.5m | 10-15kts | NE |
| Wx - 1800: | 1.0m | 10-15kts | ENE |
| Wx - 2400: | na | na | na |

***Personnel Onboard:***

*Captain:* Ryan Braget
*Other Vessel Crew:* n/a
*Party Chief:* Kelly Power
*Hydro. Surveyor:* David Wise
*Geophysical Tech.:* Richie Carmichael
*Other Survey Crew:* Seth Jones(CH2MHILL)
*Client Representative:* Kent Simpson

***Personnel Onshore:***

*Offshore Site Manager:* Jim Grant
*Ass't Off. Site Manager:* Marta Krynytzky
*Data Manager:* Lance Woods
*Data Processor:* Cody Gibson
*Data Processor:* Katie Conrad
*Data Processor:* n/a
*Additional Proc.:* n/a
*Client Representative:* n/a

**Client Representative's Remarks:**

**FUGRO:** Kelly Power **Client:** Kent W. Simpson

Alaska LNG

FUGRO

# Daily Progress Report

ver 7.22.2015-A (Alaska)

**Client:** AK LNG
**Job Description:** Hydrographic Survey
**Area & Block(s):** LNG Sites
**Prospect / Site:** LNG Site
**Fugro Job #:** 23.00007123
**Job Day #:** 54

| | | |
|---|---|---|
| **Report For:** | 27-Sep-2015 | Sunday |
| **Julian Date:** | 270 | |
| **Hours From:** | 0700 to 1900 | |

**Report From:**

**Fugro**
**R/V: Westerly**

| | | |
|---|---|---|
| Production Hrs/Day: | 12.0 hrs | |
| Job Total in Meters: | 588,200.00 | |
| Total # of Lines: | 215 Lines | |
| # Cores/Core Time: | 18 cores | Est. 180 mins. |
| Total Meters Added: | 23,150.00 | |
| Total Meters Deleted: | 4,100.00 | |
| Survey Units: | Meters | |
| Nautical Mile (Feet): | 6080 | |

| Time Summary (Hours): | Today: | Job Totals: | ( % ) |
|---|---|---|---|
| Mobilize / Demobilize: | 0.00 | 87.42 | 13.71% |
| On-Line: | 0.00 | 141.85 | 22.24% |
| Transit: | 0.00 | 63.65 | 9.98% |
| Other Working: | 12.00 | 203.62 | 31.93% |
| Equipment Downtime: | 0.00 | 36.15 | 5.67% |
| Weather Stand-By: | 0.00 | 105.06 | 16.47% |
| Other Stand-By: | 0.00 | 0.00 | |
| Stand-By / No Crew: | 0.00 | 0.00 | |
| Health, Safety & Environmental: | 0.00 | 0.00 | |
| **Job Summary:** | **12.00** | **637.74** | **100.00%** |

**Areas Worked:** NONE

**Job Total - Kilometers:** 607.25
**On-Line Percent Complete:** 101.76%

**Kilometers Added:** 23.15
**Kilometers Deleted:** 4.10
**Percent In-Fill:** 0.82%

**Estimated Coring Time:** 0.00 Days
**Estimated Time to Completion:** 0.00 Days

Estimated Time includes taking cores!

Today was a fatigue mangement day. Data was reviewed and the the vessel will start demobilization tomorrow, Monday Sept 28.

| HSE Reporting: | | HSE Officer: | Kelly Power |
|---|---|---|---|
| Toolbox: | No | | |
| Shift Change: | No | | |
| Safety: | No | | |
| Pre/Post Job: | No | | |

| Production Summary: | Today: | To Date: | Job Total: | To Complete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 0.00 | 617.91 | 607.25 | 0.00 |
| Lines Completed: | 0 | 217 | 215 | 0 |
| Cores Taken: | 0 | 18 | 18 | 0 |
| In-Fill Kilometers: | 0.00 | 5.00 | 0.82% | |
| Added on Kilometers: | 0.00 | 23.15 | 3.81% | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 4.10 | 0.67% | |

**Geophysical Equipment:**

| | |
|---|---|
| Equipment #1: | Navigation System - POS MV #BGR602273 |
| Equipment #2: | Diff. GPS System - Trimble AG130 #BGR603512 |
| Equipment #3: | MBES - R2Sonic #BGR603633 |
| Equipment #4: | SSS - Edgetech 4200 #38719 |
| Equipment #5: | Mag. - SeaSpy #13380A |
| Equipment #6: | USBL - IXSEA GAPS #151 |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

| Weather Summary: | Sea State (meters) | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | na | na | na |
| Wx - 1200: | na | na | na |
| Wx - 1800: | na | na | na |
| Wx - 2400: | na | na | na |

***Personnel Onboard:***

| | |
|---|---|
| *Captain:* | Ryan Braget |
| *Other Vessel Crew:* | n/a |
| *Party Chief:* | Kelly Power |
| *Hydro. Surveyor:* | David Wise |
| *Geophysical Tech.:* | Richie Carmichael |
| *Other Survey Crew:* | Seth Jones(CH2MHILL) |
| *Client Representative:* | Kent Simpson |

***Personnel Onshore:***

| | |
|---|---|
| *Offshore Site Manager:* | Jim Grant |
| *Ass't Off. Site Manager:* | Marta Krynytzky |
| *Data Manager:* | Lance Woods |
| *Data Processor:* | Cody Gibson |
| *Data Processor:* | Katie Conrad |
| *Data Processor:* | n/a |
| *Additional Proc.:* | n/a |
| *Client Representative:* | n/a |

**Client Representative's Remarks:**

Seth Jones (CH2M Hill) was not a POB for 27th September

**FUGRO:** Kelly Power **Client:** Kent W. Simpson

# Daily Progress Report

**Fugro**
**R/V: Westerly**

*ver 7.22.2015-A (Alaska)*

| | |
|---|---|
| Production Hrs/Day: | *12.0 hrs* |
| Job Total in Meters: | 588,200.00 |
| Total # of Lines: | 215 Lines |
| # Cores/Core Time: | 18 cores / Est. 180 mins. |
| Total Meters Added: | 23,150.00 |
| Total Meters Deleted: | 4,100.00 |
| Survey Units: | Meters |
| Nautical Mile (Feet): | 6080 |

**Client:** AK LNG
**Job Description:** Hydrographic Survey
**Area & Block(s):** LNG Sites
**Prospect / Site:** LNG Site
**Fugro Job #:** 23.00007123
**Job Day #:** 55

| | | |
|---|---|---|
| **Report For:** | 28-Sep-2015 | Monday |
| **Julian Date:** | 271 | |
| **Hours From:** | 0700 to 1900 | |

**Report From:**

| Time Summary (Hours): | Today: | Job Totals: | (%) |
|---|---|---|---|
| Mobilize / Demobilize: | 12.00 | 99.42 | *15.30%* |
| On-Line: | 0.00 | 141.85 | *21.83%* |
| Transit: | 0.00 | 63.65 | *9.80%* |
| Other Working: | 0.00 | 203.62 | *31.34%* |
| Equipment Downtime: | 0.00 | 36.15 | *5.56%* |
| Weather Stand-By: | 0.00 | 105.06 | *16.17%* |
| Other Stand-By: | 0.00 | 0.00 | |
| Stand-By / No Crew: | 0.00 | 0.00 | |
| Health, Safety & Environmental: | 0.00 | 0.00 | |
| **Job Summary:** | **12.00** | **649.74** | **100.00%** |

**Areas Worked:**
Westerly Demobilization

**Job Total - Kilometers:** ***607.25***
**On-Line Percent Complete:** ***101.76%***

**Kilometers Added:** ***23.15***
**Kilometers Deleted:** ***4.10***
**Percent In-Fill:** ***0.82%***

**Estimated Coring Time:** -2.50 Days
**Estimated Time to Completion:** -2.50 Days

**Estimated Time includes taking cores!**

| HSE Reporting: | | HSE Officer: | Richie Charmichael |
|---|---|---|---|
| Toolbox: | X | JHA | |
| Shift Change: | | | |
| Safety: | | | |
| Pre/Post Job: | | | |

| Production Summary: | Today: | To Date: | Job Total: | To Complete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 0.00 | 617.91 | 607.25 | 0.00 |
| Lines Completed: | 0 | 217 | 215 | 0 |
| Cores Taken: | 10 | 28 | 18 | 0 |
| In-Fill Kilometers: | 0.00 | 5.00 | 0.82% | |
| Added on Kilometers: | 0.00 | 23.15 | 3.81% | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 4.10 | 0.67% | |

**Geophysical Equipment:**

| | |
|---|---|
| Equipment #1: | Navigation System - POS MV #BGR602273 |
| Equipment #2: | Diff. GPS System - Trimble AG130 #BGR603512 |
| Equipment #3: | MBES - R2Sonic #BGR603633 |
| Equipment #4: | SSS - Edgetech 4200 #38719 |
| Equipment #5: | Mag. - SeaSpy #13380A |
| Equipment #6: | USBL - IXSEA GAPS #151 |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

| Weather Summary | Sea State (meters) | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | | | |
| Wx - 1200: | | | |
| Wx - 1800: | | | |
| Wx - 2400: | | | |

***Personnel Onboard:***

| | |
|---|---|
| *Captain:* | Ryan Braget |
| *Other Vessel Crew:* | n/a |
| *Party Chief:* | |
| *Hydro. Surveyor:* | David Wise |
| *Geophysical Tech.:* | Richie Carmichael |
| *Other Survey Crew:* | |
| *Client Representative:* | |

***Personnel Onshore:***

| | |
|---|---|
| *Offshore Site Manager:* | Jim Grant |
| *Ass't Off. Site Manager:* | Marta Krynytzky |
| *Data Manager:* | Lance Woods |
| *Data Processor:* | Cody Gibson |
| *Data Processor:* | Katie Conrad |
| *Data Processor:* | n/a |
| *Additional Proc.:* | n/a |
| *Client Representative:* | n/a |

**Client Representative's Remarks:**

**FUGRO:** _____ **Client:** _____

# Daily Progress Report

**Fugro**
**R/V: Westerly**

*ver 7.22.2015-A (Alaska)*

| | |
|---|---|
| Client: | AK LNG |
| Job Description: | Hydrographic Survey |
| Area & Block(s): | LNG Sites |
| Prospect / Site: | LNG Site |
| Fugro Job #: | 23.00007123 |
| Job Day #: | 56 |
| Report For: | 29-Sep-2015 Tuesday |
| Julian Date: | 272 |
| Hours From: | 0700 to 1900 |
| Report From: | |

| | |
|---|---|
| Production Hrs/Day: | 12.0 hrs |
| Job Total in Meters: | 588,200.00 |
| Total # of Lines: | 215 Lines |
| # Cores/Core Time: | 18 cores Est. 180 mins. |
| Total Meters Added: | 23,150.00 |
| Total Meters Deleted: | 4,100.00 |
| Survey Units: | Meters |
| Nautical Mile (Feet): | 6080 |

| Time Summary (Hours): | Today: | Job Totals: | ( % ) |
|---|---|---|---|
| Mobilize / Demobilize: | 12.00 | 111.42 | 16.84% |
| On-Line: | 0.00 | 141.85 | 21.44% |
| Transit: | 0.00 | 63.65 | 9.62% |
| Other Working: | 0.00 | 203.62 | 30.77% |
| Equipment Downtime: | 0.00 | 36.15 | 5.46% |
| Weather Stand-By: | 0.00 | 105.06 | 15.88% |
| Other Stand-By: | 0.00 | 0.00 | |
| Stand-By / No Crew: | 0.00 | 0.00 | |
| Health, Safety & Environmental: | 0.00 | 0.00 | |
| **Job Summary:** | **12.00** | **661.74** | **100.00%** |

**Areas Worked:**
Westerly Demobilization

**Job Total - Kilometers:** ***607.25***
**On-Line Percent Complete:** ******
**Kilometers Added:** ***23.15***
**Kilometers Deleted:** ***4.10***
**Percent In-Fill:** ***0.82%***

**Estimated Coring Time:** **-2.50 Days**
**Estimated Time to Completion:** **-2.50 Days**

**Estimated Time includes taking cores!**

| HSE Reporting: | | HSE Officer: | Richie Charmichael |
|---|---|---|---|
| Toolbox: | X | JHA, demob TRA | |
| Shift Change: | | | |
| Safety: | | | |
| Pre/Post Job: | | | |

| Production Summary: | Today: | To Date: | Job Total: | To Complete: |
|---|---|---|---|---|
| (Includes AM) Kilometers: | 0.00 | 617.91 | 607.25 | 0.00 |
| Lines Completed: | 0 | 217 | 215 | 0 |
| Cores Taken: | 0 | 28 | 18 | 0 |
| In-Fill Kilometers: | 0.00 | 5.00 | 0.82% | |
| Added on Kilometers: | 0.00 | 23.15 | 3.81% | |
| Line Extended Kilometers: | 0.00 | 0.00 | | |
| Deleted Kilometers: | 0.00 | 4.10 | 0.67% | |

| Geophysical Equipment: | |
|---|---|
| Equipment #1: | Navigation System - POS MV #BGR602273 |
| Equipment #2: | Diff. GPS System - Trimble AG130 #BGR603512 |
| Equipment #3: | MBES - R2Sonic #BGR603633 |
| Equipment #4: | SSS - Edgetech 4200 #38719 |
| Equipment #5: | Mag. - SeaSpy #13380A |
| Equipment #6: | USBL - IXSEA GAPS #151 |
| Equipment #7: | Grab Sampler - Day Grab # |
| Equipment #8: | Grab Sampler - Van Veen # |
| Equipment #9: | |
| Equipment #10: | |
| Equipment #11: | |

| Weather Summary | Sea State (meters) | Wind Speed | Dir. |
|---|---|---|---|
| Wx - 0600: | | | |
| Wx - 1200: | | | |
| Wx - 1800: | | | |
| Wx - 2400: | | | |

***Personnel Onboard:***

| | |
|---|---|
| *Captain:* | Ryan Braget |
| *Other Vessel Crew:* | n/a |
| *Party Chief:* | |
| *Hydro. Surveyor:* | 0 |
| *Geophysical Tech.:* | Richie Carmichael |
| *Other Survey Crew:* | |
| *Client Representative:* | |

***Personnel Onshore:***

| | |
|---|---|
| *Offshore Site Manager:* | Jim Grant |
| *Ass't Off. Site Manager:* | 0 |
| *Data Manager:* | Lance Woods |
| *Data Processor:* | Cody Gibson |
| *Data Processor:* | Katie Conrad |
| *Data Processor:* | n/a |
| *Additional Proc.:* | n/a |
| *Client Representative:* | n/a |

**Client Representative's Remarks:**

**FUGRO:** _____ **Client:** _____