**CRUISE LOG**

**EX1504L1**

**10 July 2015 – 24 July 2015**

**INSTRUCTIONS:**

PLEASE INCLUDE FOLLOWING DURING EACH OF YOUR WATCHES:

Mapping log (All information written down in rough log [Green book])

Log what time you assume the watch – **All times UTC**

WX every three hours

Settings changes

Data quality trends

BIST times/filenames, reason for running

XBT/CTD casts

**Key**

PM – Ping Mode

ACM – Angular Coverage Mode

SB – Single Beam

MB – Multibeam

VD – Very Deep

AD – Along Direction

WX – Weather

STBD - Starboard

ED – Extra Deep

WCD – Water Column Data

BBS – Bottom Back Scatter

**10 JULY 2015**

1835 Run first BIST

1841 First BIST failed; error #’s 1, 3, 7, 15

1844 Ran second BIST

1850 Failed second BIST, same errors

1901 Full shutdown of SIS and TRU, will let reboot and then run another BIST

1902 All EK60 and Knudsen software running and pathways have been set for EX1504L1

1907 Remote start TRU

1921 Ran third BIST

1929 Failed third BIST; error #’s 7 and 9 and will rerun

1933 Export PU parameters, ran TX Channels test individually

1937 Failed TX Channels will do full reset of TRU

2031 Hard reset of TRU again because of ailed TX Channels, reset breakers as well

2034 Remote start TRU, CET Conway watching for proper start up

2107 Re-running BISTs after Richard re-seated TX36 boards on slots 13, 20 and 24 (Board 20 is an old board with scorch marks)

2112 All BISTs passed

2132 XBT Cast # 001 applied

2145 Started logging MB EM302

2147 Turned off mammal protection

2154 Constrained beam swath to 2000 m wide

2210 Started turn, Cont. line to 0001

2213 Steady on heading cont. line 0002

2224 Cont. line0003 for turn, traffic causing us to maneuver off track lines

2226 Steady on heading line 0005

2234 Broke line for turn, now on 0006

2249 Navy traffic caused us to miss track line to the south, we maintained heading (heading slightly more north than proposed track line) while passing Target #3, Cont. on line 0008

2305 Asked bridge to slow down to 8 knots for a few minutes

2309 Moving back up to transit speed. We had glitch in naming & line files names, created new survey name = EX1504L1a

2330 Bridge called, TSG pump is leaking, engineering working on fixing

2335 Began pinging in mammal protection mode

2345 Normal ping mode (mammal protection off), began logging

2355 EK60 and Knudsen lost bottom, extended ranges and restarted pining, Knudsen switched to manual gain

**11 JULY 2015**

0009 Slowing to 8 knots to enable more time to fix leaking TSG pump

0045 Slowed to 5.5 knots to enable more time to fix leaking TSG pump

0100 XBT Cast# 002 collected

0109 XBT Cast# 002 applied to line 0001 (new survey was started from before, so file line numbers reset)

0109 Began Patch Test, start patch line 1, E to W File line 0002 (8 knots)

0118 End line – Turn file line 0003

0123 Start patch line 2, File line 0004, W to E (8 knots)

0132 End line for turn, file line 0005

0143 Start patch line 3, File line 0006 E to W (8 knots)

0150 End line for turn, file line 0007

0203 Start patch line 4, File line 0008 W to E (4 knots)

0218 End line 0008, start tur line 0009

0228 Start patch line 5, File line 0010, E to W (8 knots)

0238 End line 0010, start new turn line 0011

0300 Start patch line 6, file line 0012, N to S (8 knots)

0310 End line 0013, start turn line 0014

0327 End line 0014, start turn line 0015

0344 Bridge – ships need to speed up to get more RPMs, so may speed up for awhile

0348 Increased speed for CME ops, Data was poor as a result, but good data already exists for this area

0408 Resume survey speed, CME ops complete

0427 Next line 0016

0527 Applied XBT Cast# 3 to line 17

0545 Swath changed to 36/36

0637 Lots of artifacts in MB (depth 4750 m), changed spike filter strength to medium

0645 Interference in EK60 & Knudsen

0731 Vessel deviating from track line to open CPA for passing vessel

0731 Next line 0019

0827 Next line 0020

0908 Swath changed to 45/45

0922 Swath changed to 36/36

0950 Watch – Jason, Neah and Lindsay

1000 XBT Cast# 004

1020 XBT Cast# 004 applied to line 0021

1025 EK60 range changed to 6000 m

1025 MB swath changed to 70/70, max depth changed to 6000 m

1026 Knudsen TX Pulse changed to 4 ms

1204 Knudsen gain to 35 dB, start new line

1219 Knudsen gain to 38 dB

1241 Knudsen range to 200 m, start new line

1249 Knudsen range back to 500 m, signal kept blanking out, start new line

1448 Trying range at 200 m again, start new line

1459 XBT Cast# 005

1515 XBT Cast# 005 applied to line 0026

1740 Dan, Joyce and Luan on watch; Jason, Neah and Lindsay off watch

1743 Swath angles reduced to 65° STBD and PORT

1908 tried strong spike filter to reduce artifacts in swath

2010 XBT Cast# 006 collected

2020 XBT Cast# 006 applied to line 0031 cont. line 0032

2030 Fire and boat drills until 2130

2155 Bridge increased speed to 9 Knots, data still ok

2159 Artifacts keep appearing in Knudsen as small black chunks/rectangles, they are sporadic in occurrence but consistent in depth

2330 Geographical screen on MB SIS has purple color under reg trackline data points (was self-corrected later)

**12 JULY 2015**

0105 XBT Cast# 007 completed

0112 Broke line 0037 for turn

0114 Started new line 0039 and turn line 0038 to continue on track line

0119 Applied XBT Cast# 007 to line 0039

0214 Start line 0040

0305 End line 0400, start turn line 0041

0315 Changed EM302 filter settings. Spike filter changed from strong to medium. Turned on slope filter – seemed to fix outer beam false detections.

0400 Sub-bottom: Range change to 1000m. Started new line.

0409 EM302: Start new line 0042.

0458 Sub-bottom: Tx Power 2; Tx Pulse 4.000ms, Range 1000m, Gain manual 44dB

0510 Start new line 0043

0621 XBT 08 completed

0628 XBT 08 applied to line 044

0705 Start new line 0045

0724 Sub-bottom: Gain change to 36dB, Pulse 8.000ms

0805 Start new line 0046

0905 Start new line 0047

1000 Neah, Jason and Lindsay on watch

1036 XBT cast #9

1048 XBT applied to line 48

1319 Knudsen having trouble finding bottom, changed range to 1000 m, started new line

1535 XBT Cast# 010 collected

1543 XBT Cast# 010 applied to line 0053

1656 Knudsen – trying range at 500 m, started new line

1738 Changed Knudsen range back to 1000 m, trouble holding bottom, started new line

1740 Dan, Joyce and Luan on watch

1805 Started new line 0056

1833 Knudsen gain changed to 37 dB

1905 Started new line 0057

1918 Batch copy of EK60 and Knudsen data onto servers

1947 Switched Knudsen to Auto Phase mode to see if floating artifacts go away

2005 New line 0059, Manual phase mode seems to have eliminated floating artifacts, changes Knudsen gain to 38 dB

2043 XBT Cast# 011 collected

2048 XBT Cast# 011 applied to line 0058

2106 New line 0059

2206 New line 0060, brought STBD swath angle to 62°

2209 STBD swath angle to 60°

2214 Increased STBD swath angle back to 65°, the smaller angle did not help STBD swath edge, still jagged

2244 Changed EK60 window range to 6500 m

2306 New line 0061, turned spike filter on to strong in SIS

**13 JULY 2015**

0006 New line 0062, switched MB back to medium spike filter, gave an artifact across swath with and increased relief on outside of swath and a decrease in relief on the inside of the swath near NADIR, this had occurred once before on another watch

0045 Changed Knudsen phase range to 4800-5800m. Started new line.

0106 New line 0063

0123 Brought port + stbd swath angles to 55°

0134 XBT Cast #12 applied to line 0063

0205 New line 0064

0242 End line 64, start 65 turn line

0246 Changed range on SBP from 1000 to 500

0344 End line 66, start 67

0359 Knudsen range: 500m, Gain: 50; EM302: Spike Filter: Medium

0444 End line 67, start 68

0544 End line 68, start 69

0553 End line 69, start 70 turn line

0601 End line 70, start line 71

0618 Adjusted 302 max angles out to 40/40

0635 XBT #12 Deployed

0643 XBT #12 applied to line #0071

0654 SB Phase change to 4800-5300

0701 End line 0071, start 0072

0801 Start line 0073

0947 Jason, Neah, Lindsay on watch

1230 XBT cast #14

1244 XBT applied to line 0077

1402 End line 78, start 79

1502 End line 79, start 80

1537 Turning a few degrees to south

1602 End of line 80, start 81

1617 Knudsen range to 1000m. Start new line

1805 Changed Knudsen phase range to 3000 to 4000 m, Dan, Joyce and Luan on watch

1818 Broke line 083 for turn, started new line 0084

1821 Started new line for track line 0085

1827 Changed Knudsen phase range to 4000 to 5000 m

1832 Changed Knudsen phase range to 4500 to 5500 m, Pulse to 8 ms and power to 3

1835 Changed Knudsen depth limits to 4500 to 5500, trouble tracking bottom

1900 XBT Cast# 015 collected

1910 XBT Cast# 015 applied to line 0085

1928 Changed Knudsen depth limits to 2000 m to 5000, changed phase range to 4000 to 5000 m, Pulse to 4 ms

1933 Knudsen power to 2

1940 Knudsen power back to 3, phase range to 3500 to 4500 m

1946 Knudsen phase range to 3000 to 4000 m

1951 Knudsen phase range to 2500 to 3500 m

2000 Knudsen phase range to 2000 to 3000 m, depth limits to 1000 to 4000 m

2002 Broke line for turn, 0087

2004 Knudsen phase range to 2500 to 3500 m

2012 Knudsen power to 2

2028 Opened swath angles to 45° PORT and STBD

2030 Swath angles to 50° PORT and STBD

2032 Swath angles to 60° PORT and STBD

2034 Swath angles to 55° PORT and STBD

2048 Swath angles to 50° PORT and STBD

2103 New line 0088

2106 Knudsen phase range to 2000 to 3000 m

2130 Tried swat angles at 55° again

2150 Knudsen phase range to 1500 to 2500 m

2157 Knudsen gain to 38 dB

2203 New line 0089

2205 Tried PORT swath angle at 52°

2207 EK60 window range to 4000 m

2225 STBD side of swath still shows missing data artifacts sporadically, swath angles to 50° PORT and STBD

2232 Derek opened swath angles to 65° PORT and STBD

2240 Raw data transfer to server (EK60 and Knudsen)

2243 Knudsen gain to 32 dB

2247 Turned off slope filter

2303 New line 0090

2327 Knudsen gain 28 dB

2335 EK60 window range to 3000 m

2345 Knudsen pulse to 2 ms

**14 JULY 2015**

0009 XBT Cast# 016 collected

0016 Slope filter turned on

0020 XBT Cast# 016 applied to line 0091

0058 PORT swath angle reduced to 60°

0101 PORT swath angle back to 65°

0203 New line 0093

0303 Start new line 0094

0403 Start new line 0095

0456 XBT cast #17 collected

0501 XBT #71 Applied to line 0095

0504 Start newline 0096

0555 Knudsen phase changed to ‘1500-2500’. EK60 range changed to 3000m

0612 Stat new line 0097

0615 End line 0097. Turning. Start line 0098

0618 Turn complete. Start line 0099

0621 Stbd angular filter changed to 75deg, Port changed to 70deg

0629 Slope filter unchecked. Spike filter changed to weak. Knudsen phase changed to ‘2000-3000’. EK60 range changed to 4000m, gain to 35dB

0642 EM302 max angle changed to 65/65

0652 Knudsen phase changed to 2500-3500

0659 EM302 max angle changed to 60/60. Knudsen phase changed to 3000-4000.

0733 Knudsen phase change to 3500-4500. EK60 range change to 5000

0734 Start new line 0100

0745 Knudsen phase change to 3000-4000. Gain change to 40dB

0824 Start new line 0101

0916 Knudsen gain 38dB, EM302 max depth 6000 m, min depth 3000 m. Pt/Stbd angles changed to 50/50.

0928 Start new line 0102.

0935 EM302 max angle 60/60. Sub bottom phase 3500-4500.

0945 Knudsen phase change to 2500-3500 m. Gain 40dB.

0953 Knudsen phase change to 3000-4000 m.

0956 End line 0102. Turning. Start line 0103.

0959 Start new line 0104.

1000 Jason, Lindsay, Neah on watch.

1100 XBT cast #18

1111 XBT applied to line 0105

1114 MB max angle changed to 75/75. Approaching shallower depths.

1131 Ship slowing before turn.

1136 End line 0105. Start turn. Start line 0106.

1140 End turn. Start line 0107.

1159 MB max angle changed to 65/65 Approaching deeper depths.

1327 MB max angle changed to 70/70

1400 End line 0109. Turning. Start line 0110

1600 XBT cast #19

1607 XBT applied to line 0112

1614 End line 0112. Turning. Start line 0113

1616 End turn. Start line 0114

1709 MB max angle changed to 60/60

1725 Knudsen gain value changed to 35 dB

1753 Dan, Joyce and Luan on watch

1802 Knudsen power to 3 and pulse to 4 ms, changed depth limits to 4500 to 5500 m to help find bottom

1811 Turned on MB slope filter

1817 New line 0116

1843 Broke line for turn, turned off slope filter, Knudsen gain to 38 dB

1845 Started new line after turn 0118

1850 POR and STBD swath angles to 65°

1901 Knudsen phase range changed to 4000 to 5000 m

1903 Knudsen phase range changed to 3500 to 4500 m, SBP trouble holding bottom due steep slope on seamount edge

1905 Knudsen gain changed to 4 dB. MB depth limits changed to 3000 and 5000 m

1918 Knudsen phase range changed to 4000 to 5000 m

1933 Knudsen phase range changed to 4500 to 5500 m

1946 Started new line 0119

2000 Knudsen gain to 40 dB

2003 MB slope filter on

2018 MB swath angles to 60° PORT and STBD, Knudsen gain to 38 dB

2037 MB slope filter off

2047 XBT Cast# 020 collected

2056 XBT Cast# 020 applied to line 0120

2105 Broke line for turn, 0121

2114 Tried swath angles at 55° PORT and STBD

2122 Slope filter on

2204 Knudsen phase range to 4000 – 5000 m

2205 Started new line 0122

2211 Broke line for turn 0123; swath angles to 60° PORT and STBD

2215 Knudsen phase range to 3500 – 4500 m

2216 Started new line for after turn 0124

2220 Swat angles to 65° PORT and STBD

2221 Slope filter off, told bridge to take turns around 6 - 6.5 knots to get better coverage on MB

2224 Knudsen phase range to 3000 – 4000 m

2232 Knudsen phase range to 2500 – 3500 m

2233 Swath angles to 70° PORT and STBD

2236 Knudsen pulse to 4 ms and power to 2, gain to 40 dB

2239 Knudsen phase range to 2000 – 3000 m

2245 Pulse to 2 ms, phase range to 1500 – 2500 m

2251 Knudsen gain to 34 dB

2253 Knudsen power to 1

**15 JULY 2015**

0003 Min range on 302 changed to 300 m

0027 Changed phase range to 1000 – 2000 m

0119 Broke line for turn, getting closer look at Johnston

0120 New line for turn, 0129

0121 Phase range to 500 – 1500, all min depth limits to 100 m

0138 Broke line for turn, 0129

0140 Knudsen range to 500 m, Phase to 250 – 750 m

0143 Started new line after turn, 0131, Knudsen gain to 38 dB and pulse to 2 ms

0145 Knudsen gain at 42 dB

0148 Phase range to 500 – 1000 m, gain to 46 dB

0154 Knudsen gain to 44 dB

0240 Knudsen phase change to 1500-2500m, Range 1000

0247 XBT #21 deployment completed

0254 XBT #21 applied to line 0132

0256 Knudsen phase change to 2000-3000m; Power 2

0321 EM302 Max angles change from 70/70to 55/55

0340 Knudsen phase change 2000-3000m

0344 Knudsen Tx Pulse 2.000ms, Gain 41dB

0402 Start new line #133, Knudsen phase change 1500-2500m

0444 Start new line #134, Knudsen Tx pulse 4.000ms

0450 Knudsen phase change 3000-4000m

0515 Knudsen phase change 3500-4500m

0532 Knudsen phase change 3000-4000m

0538 Knudsen phase change 2500-3000m

0551 Knudsen phase change 3000-4000m

0552 EM302 spike filter weak; Penetration filter strong; uncheck slope box

0554 Start new line #135

0620 Knudsen phase change 4500-5000

0634 End line 135, start new line 136

0645 End line 136, start new line 137

0738 Knudsen phase change 4000-5000m

0802 Start new line 138

0808 EM302 spike filter: medium, penetration filter:off, slope checked

0811 Start new line #139

0813 Start new line #140

0825 SPB, changed power to 3 to find bottom

0846 XBT #22 Deployment completed

0850 XPT #22 Applied to line #140

0917 Start new line #141

0941 Knudsen phase change 3500-4500m; Gain 40dB

0950 Knudsen range change 500m; phase 4000-4500; Tx pulse 8; Tx power 2; Gain 60dB

1000 Jason, Neah and Lindseyon watch

1008 Knudsen range change to 1000m; gain 50db

1028 Knudsen gain 42db

1053 EM302 max angles 60/60

1115 Knudsen TX pulse to 4 ms; gain 34. Start new line

1135 EM302 End line 0143. Turning. Start lie 0144

1144 End turn. Start new line EM302 (0145) and EK60 and Knudsen

1228 Knudsen range to 500m. Start line 0146.

1404 Knudsen range to 1000m. Start line 0147

1500 XBT cast #23

1505 XBT cast delayed due to lightning

1538 XBT cast applied to line 0148

1734 Dan, Joyce and Luan on watch

1832 Phase range change to 2500 – 3500 m

1842 Phase range change to 3000 – 4000 m

1845 New line 0152

1851 Broke line for turn, 0153

1902 Phase range change to 2500 – 3500 m

1911 Broke line for turn, 0154

1914 Phase range change to 2000 – 3000 m

1916 Tried auto gain again, immediately switched back to manual

1920 Knudsen min depth to 1000 m

1921 Phase range change to 1500 – 2500 m

1922 Gain to 42 dB

1941 Gain to 34 dB

1942 Gain to 36 dB

1948 Gain to 34 dB

1954 Slope filter off

2012 New line 0155

2026 Phase range change to 2000 – 3000 m

2027 Max angles changed to 65° PORT and STBD

2042 Phase range change to 1500 – 2500

2108 XBT Cast# 024 collected

2117 XBT Cast# 024 applied to line 0156

2132 Turned spike filter from medium to weak on EM302

2135 Called bridge to reduce speed 0.5 knots

2147 Turned on sector tracking filter for EM302 to try to fix holes

2159 Changed phase to 2000 – 3000 m

2217 Phase change to 1500 – 2500 m

2232 Phase change to 2000 – 3000 m

2250 Phase change to 1500 – 2500 m

2258 Phase change to 2000 – 3000 m

2318 Phase range 1500 – 2500 m, new line 0158

2324 Gain to 34 dB

2327 Gain to 36 dB

**16 JULY 2015**

0007 Slope filter on

0011 Phase change 2000 – 3000 m, new line 0159

0016 Slope filter off

0027 Slope filter on

0034 Changed from deep to very deep ping mode to try and fix holes in soft sediments

0055 Phase range change to 3000 – 4000 m

0111 New line 0160

0145 Phase change 2500 – 3500 m

0207 XBT #25 deployment complete. Start new line 0161

0212 XBT #25 applied to line 0161

0215 Knudsen gain 32dB

0245 Start new line 0162 for turn

0305 Phase change 3500-4000m; gain 44dB

0313 Turn complete. Start new line 0163

0336 Phase change 2500-3500

0406 Turned on sector tracking, holes in swath

0417 Gain 37dB

0418 Start new line 0164

0430 Phase change 2000-3000

0438 Changed from very deep to auto (deep)

0513 Start line 0165

0523 Changed from aut to very deep, Along track 1°

0529 Change to auto (deep); Max angle 70/70

0602 Phase change 1500-2500m

0610 Start new line 0166

0625 Knudsen Power 1; Pulse 2.000ms

0626 Power 2

0632 Gain 31dB

0720 Start new line 0167

0735 Phase change 2000-3000m; Gain 37dB

0741 Max angles 75/75

0757 XBT #26 collected

0804 XBT #26 applied to line 0167

0813 Phase change 1500-2500

0814 Start new line 0168

0828 Phase change 1000-2000m

0902 Phase change 1500-2500m

0909 Gain 36dB

0913 Start new line 0169

1000 Jason, Neah, and Lindsay on watch

1018 Knudsen Tx power to 1. Range 500. Start new line

1027 Knudsen Tx power back to 2. Start new line

1055 End line EM302 (0170). Turning. Start new line EM302 (0171), EK60, and Knudsen

1118 End turn. Start new line EM302 (0172), EK60, and Knudsen

1415 XBT cast #27

1425 XBT cast applied to line 0175

1500 Knudsen gain adjusted to 37dB

1508 Start turn, Start new line EM302 (0176), EK60, and Knudsen

1534 End turn. Star new line EM302 (0177), EK60, and Knudsen

1540 EK60 range adjusted to 4000m

1701 Knudsen gain adjusted to 34dB

1730 Dan, Joyce and Luan on watch

1742 Phase range to 1250 – 1750 m

1750 Phase range to 1500 – 2000 m, slope filter off

1754 Phase range to 1250 – 1750 m

1759 Phase range to 1500 – 2000 m

1815 Phase range to 1750 – 2250 m, Gain to 34 dB

1903 Phase range to 2250 – 2750 m, Pulse to 4ms

1905 Phase range to 2500 – 3000 m, SIS color map went to single red color for whole survey, maybe 1 really deep ping?

1910 Knudsen range to 1000 m, started new line, Phase range to 2500 – 3000 m, slope filter on

1919 Phase range to 3000 – 4000 m

1928 Broke line for turn 0181, color map on SIS fixed itself

1932 New line after turn, 0182

1943 Phase range changed to 3500 – 4500 m

2001 Gain to 36 dB, Pulse to 8 ms

2004 Broke line for turn 0183

2008 Phase range to 3000 – 4000 m

2012 XBT Cast# 028 collected

2016 XBT Cast@ 028 applied to line 0183, phase range changed to 3500 – 4500 m

2033 Phase range changed to 4000 – 5000 m, power to 3, gain to 38 dB

2055 Phase change to 4500 – 5500 m

2205 New line 0185

2228 Gain to 42 dB

2239 Broke line for turn 0186

2314 Phase range changed to 4000 – 5000 m

2323 Phase range changed to 3500 – 4500 m

2325 New Knudsen line for turn

2332 Phase range changed to 3000 – 4000 m

2336 Phase range changed to 2500 – 3500 m

2338 New line 187

2346 Phase range changed to 3000 – 4000 m

2353 Phase range changed to 3500 – 4500 m

**17 JULY 2015**

0008 Phase range changed to 4000 – 5000 m

0038 New line 0188

0051 EK60 + SBP data transfer to server

0113 XBT Cast# 029 collected

0116 Phase range changed to 3500 – 4500 m

0121 XBT Cast# 029 applied to line 0188

0130 Phase range changed to 3000 – 4000 m

0138 Phase range changed to 3500 – 4500 m

0144 STBD swath angle reduced to 70°

0148 Phase range changed to 4000 – 5000 m

0152 Tried swath angles at 65° POR and STBD

0248 Start new line 0190

0304 Phase range 3500-4500m

0309 Phase range 3000-4000m

0315 Phase range 3500-4500m

0321 Phase range 3000-4000m

0330 Phase range 3500-4500m

0338 Phase range 4000-5000m; Gain 50dB

0354 Start of turn. Start new line 0192

0430 End of turn. Start new line 0193

0431 Phase range 4000-5000m

0444 Phase range 3500-4500m

0447 Reduced SBP gain to 40dB, power from 3 to 2

0453 Phase range 3000-4000m. gain 45dB

0457 Phase range 2500-3500m

0505 Max angles 65/65; Knudsen phase range 2000-3000m

0512 Max angles 70/70; Knudsen phase change 2500-3500m

0516 Max angles 70/75

0522 Phase range 3000-4000m

0531 Start new line 0194

0551 XBT #30 deployment completed

0552 Phase range 2500-3500m

0556 XBT #30 applied to line 0194

0558 Phase range 3000-4000m

0601 Phase range 2500-3500m

0605 Gain 42dB

0612 Phase range 3000-4000m

0613 Line plan shifted 500m North to adjust coverage and minimize overlap. Relayed to bridge.

0637 Gain 37dB

0639 Start new line 0915

0652 Gain 44dB

0654 Phase change 2500-3500m

0713 Phase change 3000-4000m

0724 Gain 43dB

0725 Bridge called. Third generator offline due to leak It will not resume until the morning. On course 286° @ ~8.5kts. May have to slow down in reciprocal direction.

0730 Gain 41dB

0732 Start new line 0196

0816 Phase range 2500-3500m, Gain 44dB

0821 Phase range 2000-3000m

0824 Tx pulse 4.000ms

0829 Gain 39 dB

0831 Start new line 0197

0840 Phase change 3000-4000m

0848 Phase change 3500-4500m

0859 Phase change 4000-5000m

0903 Gain 45dB; end line

0904 Start new line 0198 for turn

0919 Phase change 3500-4500m

0925 End turn. Start new line 0199

0926 Phase change 3000-4000m

0935 Phase change 3500-4500m

0945 Phase change 3000-4000m

0952 Phase change 2500-3500m

0957 Phase change 2000-3000m

1002 Gain 37dB

1003 Jason, Lindsay, Neah on watch

1049 Knudsen range to 32 db, phase 2250-2750

1121 Knudsen gain to 32 db, phase 2250-2750

1135 Knudsen range to 1000, gain to 38 db. Start new line

1206 XBT cast #31

1215 XBT cast applied to line 0201

1223 Knudsen Phase 1500-2500, gain 30 db

1324 Knudsen Phase 2500-3500, gain 37 db

1325 Knudsen 3000-4000

1339 EM302 max depth 5000

1400 Begin turn, start new lines, EM302 (0204), EK60, and Knudsen. Trying arcing turn vs two 90 degree turns

1434 End turn. Start new lines EM302 (0205), EK60, Knudsen

1449 Knudsen phase 3500-4500

1512 Knudsen phase 2000-3000

1527 Knudsen phase 1500-2500, gain 32 db

1538 Knudsen phase 1000-2000

1555 Knudsen phase 1500 – 2500

1621 Knudsen phase 2000 – 3000

1632 Knudsen phase 2500 – 3500

1645 Knudsen phase 3000 – 4000

1656 Knudsen gain value to 38 dB

1703 XBT Cast# 032

1709 XBT Cast# 032 applied to line 0207

1736 Phase range changed to 1500 – 2500 m

1739 Dan, Joyce and Luan on watch

1749 Gain to 36 dB

1751 Gain to 34 dB

1813 Gain to 32 dB

1845 Phase range changed to 2000 – 3000

1856 Gain to 34 dB

1857 Broke line for turn 0210, New Knudsen and EK60 line

1902 Slope filter off, PORT swath angle to 75↑

1928 Tried medium ping mode to help with soft sediments

1930 Tried deep ping mode

1933 Along direction angle to 0°

1935 Swath angles to 70° PORT and STBD

1941 Phase range changed to 1500 – 2500

1954 Phase range changed to 2000 – 3000

1957 New line 0211

2014 Phase range changed to 2500 – 3500

2023 Penetration filter on weak, NADIR was getting deep artifacts, Knudsen Pulse to 8 ms, Phase range to 3000 – 4000

2030 Along direction angle to 1°, Swath angles to 55° PORT and STBD

2033 Ping mode back to Auto, bottom kept dropping out near edge of swath and artifacts at NADIR, penetration filter back to medium

2038 Penetration filter back to weak, moved back to medium

2045 Knudsen power to 3, phase range to 3500 – 4500

2056 Phase range to 4000 – 5000

2058 Swath angles to 45° PORT and STBD

2100 Swath angles to 50° PORT and STBD, New line 0212

2125 Knudsen gain to 38 dB

2143 Phase range to 3500 – 4500

2153 Phase range to 3000 – 4000

2154 Phase range to 2500 – 3500

2156 Phase range to 3000 – 4000

2201 Slope filter off

2202 Knudsen phase range to 3500 – 4500

2210 XBT Cast# 033 collected

2213 XBT Cast# 033 applied to line 0213

2226 Swath angles to 60° PORT and STBD

2229 Swath angles to 55° PORT and STBD

2258 New line 0214

2318 Phase range to 3000 – 4000

2327 Phase range to 2500 – 3500

2334 Phase range to 2000 – 3000, power to 2, pulse to 4 ms

2353 Phase range to 1500 – 2500

**17 JULY 2015**

0005 Swath angles to 60° PORT and STBD

0017 Phase range to 2000 – 3000

0018 Phase range to 2500 – 3500

0020 Swath angles to 55° PORT and STBD

0024 Phase range to 3000 – 4000

0031 Broke line for turn 0216, New Knudsen and EK60 line for turn

0033 Phase change to 3500 – 4500

0036 New line for after turn 0217

0121 Phase range to 4000 – 5000

0143 Phase range to 3500 – 4500

0152 Phase range to 3000 – 4000

0154 Phase range to 2500 – 3500

0200 Amanda, Maria, Dan on watch

0205 Gain 43dB

0206 EM302 changed to Deep, nadir beams dropping out

0207 Phase change 2000-3000m; Gain 40dB

0209 Start new line 0219 for turn.

0214 End turn, start new line 0220

0215 Gain 37dB

0223 Phase range 1500-2500m

0243 Gain 35dB

0251 Max angles 63/63

0254 Pulse 2.000ms

0306 Phase range 1000-2000m

0314 Start new line 221

0316 Phase shift 1500-2500m

0336 EK60 range 0-3500m

0337 Max angle 63/70

0338 Max angle 63/65

0349 Gain 35dB

0350 Phase range 2000-3000m

0411 XBT #34 deployed.

0415 Start new line 0222

0417 XBT #34 Applied to line 0222

0423 Phase range 2500-3500m

0430 Phase range 2000-3000m

0433 EM302 lost bottom. Settings adjusted to Auto ping

0444 Unchecked slope detection

0451 Max angles 60/60

0455 Phase change 1500-2500m

0502 Gain 32dB

0504 Power 1, Gain 30dB

0511 Power 2

0523 Gain 35dB

0524 Start new line 0223

0525 Phase range 2000-3000m

0543 Phase range 2500-3500m, Pulse 4.000ms, Gain 40dB

0545 Max angles 60/65

0546 EK60 range 0-4000m

0548 Penetration filter strong, spike filter off, max angles 60/60

0552 Gain 35dB

0606 Phase range 2000-3000m

0624 Start new line 0224

0634 Gain 34 dB

0635 Phase range 1500-2500m

0645 Pulse 2.000ms

0655 Phase range 1000-2000m; Power 1

0700 Max angles 60/70

0710 Max angles 50/70

0712 Max angles 65/70

0715 Start new line 0225

0721 Max angles 60/60, Phase rane 1500-2500m, Power 2

0724 Gain 30dB

0729 Max angles 55/60

0738 Phase change 2000-3000m

0814 Max angle 55/65

0824 Phase change 1500-2500m

0829 Phase range 2000-3000m

0833 Gain 34dB

0840 Phase range 1500-2500m, Power 1

0915 Start new line 0227

0927 Start new line for turn 0228

0929 End turn. Start new line 0229

0940 Power 2

0941 Max angles 60/65

0942 Phase range 2000-3000m

0952 Phase range 2500-3500m

1000 Jason, Lindsay, Neah on watch

1007 Phase 3000-4000

1015 XBT case #35

1020 Phase 3500-4500 Gain 35 d

1022 XBT cast applied to line 229

1026 EK60 depth range to 5500

1027 Asked bridge to slow to 7.5-8 knots to see if EM302 data quality improves. Been getting a lot of nadir and swatch artifacts.

1042 So far data has improved, will remain at 7.5-8 knot speed

1203 Phase 3000-4000 m

1212 Phase 2500-3500

1216 Phase 2000-3000

1217 EM302 max angles to 75/75

1223 Phase 1500-2500 m. Gain 34 db

1230 Knudsen gain 30 db

1234 Knudsen range 500 m. Phase 1500-2000, gain 34 db

1335 Asked bridge to increase speed by half a knot. Will monitor to see if data quality remains good. (8-8.5 knots)

1533 XBT case applied to line 0235

1556 Phase 1750-2250 m

1603 Phase 2000-2500 m

1623 Phase 2500-3000 m

1639 Phase 2250 – 2750 m

1700 Phase 2000 – 3500 m

1701 Phase 1750 – 2250 m

1736 Phase 1500 – 2000 m, Gain 36 dB

1741 Dan, Joyce and Luan on watch

1744 Phase range to 1750 – 2250 m

1754 Phase range to 2000 – 2500 m

1801 Gain to 34 dB, Phase range to 2250 – 2750 m

1828 New line 0238

1845 Phase range to 2000 – 2500 m

1913 Phase range to 1750 – 2250 m

1928 New line 0239

1930 EK60 and Knudsen data copy to server

1934 Phase range to 1500 – 2000 m

2006 XBT Cast# 037 collected

2012 XBT Cast# 037 applied to line 0239

2028 New line 0240

2039 Gain to 32 dB

2055 Phase range to 1750 – 2250 m

2100 Phase range to 2000 – 2500 m

2121 Phase range to 2250 – 2750 m

2128 New line 0241

2133 Phase range to 2500 – 3000 m

2139 Phase range to 2750 – 3250 m

2151 Change EK60 range to 3500 m

2152 Phase range to 3000 – 3500 m

2155 Change EK60 range to 4000 m

2156 Phase range to 3250 – 3750 m

2204 Change EK60 range to 4500 m

2205 Phase range to 3500 – 4000 m

2212 Cont. line for turn on MB 0242, EK60 and Knudsen, Pulse to 8 ms, power to 3

2218 Phase range to 3500 – 4500 m, Range to 1000 m, started new Knudsen line

2223 Along direction angle to -3°

2228 Swath angels to 45° PORT and STBD

2232 Phase range to 3000 – 4000 m

2243 Phase range to 3500 – 4500 m

2255 Cont. line for turn, fire and abandon ship drills

2302 End turn 0243, start survey line 0244

2310 Moved 302 tilt back to zero

2338 Phase range to 2500 – 3500 m

**19 JULY 2015**

0003 Swath angles to 60° PORT and STBD

0006 Phase change to 2000 – 3000, slope filter off

0007 Swath angles to 65° PORT and STBD, Power to 2

0020 Asked bridge to shift to PORT by 500 m to reduce cross over coverage

0021 EK60 and Knudsen data copy to server

0027 Phase range to 1500 – 2500 m

0033 Swath angles to 70° PORT and STBD

0047 Swath angles to 75° PORT and STBD

0049 Gain to 34 dB

0056 Pulse to 4 ms

0103 XBT Cast# 038 collected

0109 XBT Cast# 038 applied to line 0246

0115 Pulse marked down to 2 ms

0140 Knudsen power down to 1

0154 Knudsen power down to 1

0154 Knudsen power to 2 ms, gain to 36 dB

0155 Phase range to 2000 – 3000 m

0200 Amanda, Maria and Dan on watch

0206 Phase range 2500-3500m, Gain 39dB, Pulse 4.000ms

0212 Start new line 0247

0230 Phase range 3000-4000m

0248 Gain 40dB

0250 2500-3500m phase range

0300 Phase range 3000-4000m

0304 Phase range 2500-3500m

0320 Phase range 2000-3000m

0323 Max angles 60/60, range depth gates decreased 1900-2800, slope checked

0327 Knudsen Pulse 4ms

0328 Slope unchecked, Max angles 60/65

0405 Power 1

0406 Power 2, Gain 35dB

0409 Start new line 0249

0424 Phase range 2500-3500m; Gain 40dB

0433 Phase range 3500-4500m; EM302 Along track -2°

0437 Speed reduced from 8.7 to 8.0 kts; Max angles 50/50

0446 Max angls 50/55

0451 Gain 37B; Pulse 4.000ms

0502 Start new line 0250

0539 Phase range 2500-3500m; Max angles 65/65

0542 Phase range 2000-3000m

0553 Phase range 1500-2500m

0601 Pulse 2.000ms; Start new line 0251

0611 Pulse 4.00ms; Phase range 2500-3500m

0621 Aeration box checked; Penetration filter off

0635 Phase range 3000-4000

0642 Bridge shifting 500m stbd to improve coverage

0647 Phase range 2500-3500m

0702 Start new line 0252

0722 Phase range 1500-2500m; Tx pulse 2.000ms; Gain 38dB

0731 Power 1

0735 Max angles 70/70

0818 Max angles 65/65

0825 Max angles 60/60

0834 Called bridge asked to slow to 70-7.5kts to improve data

0907 Phase range 1500-2500m

0914 asked bridge to shift 500m starboard for gap filling

0915 Start new line 0254

0950 Phase range 2500-3500m; Pulse 4; Power 2

1000 Jason, Neah, Lindsay on watch

1012 EK60 range to 5000m

1018 Knudsen phase to 3000-4000

1033 Knudsen phase to 3500-4500

1123 XBT Cast #39

1129 XBT cast #39 applied to line 0256

1137 Knudsen phase 3000-4000, gain 34 dB

1153 Knudsen phase 2000-3000m

1157 Knudsen phase 1500-2500m

1221 Knudsen gain 30dB

1251 Asked bridge to increase speed by 0.5 knots (7.5-8.5)

1351 Knudsen gain 40dB

1421 Knudsen phase 2000-3000m

1425 Increased speed 0.5 knots (8-8.5)

1446 Knudsen phase 1500-2500, EM302 max angle 75/75

1505 Knudsen Phase 2000-3000m

1518 Knudsen phase 1500-2500

1554 Shifting vessel track line 400m to port to improve coverage

1600 XBT cast #40

1604 Knudsen phase 2000-3000m

1606 XBT cast applied to line 0261

1714 Knudsen phase 2500 – 3500 m

1741 Slope filter off, spike filter to weak

1743 Dan, Joyce and Luan on watch

1744 Along direction angle to -3°, aeration filter off, Knudsen range to 2000 – 3000 m, spike filter strength to medium

1802 New line 0262, aeration filter on

1818 Aeration filter off

1829 TX Pulse to 2 ms, gain to 40 dB

1833 Phase range to 500 – 2500 m, pulse to 4 ms and gain to 38 dB

1836 Phase range to2000 – 3000 m

1841 Gain to 36 dB

1854 Holes in data correspond to the sector boundary between the outer most sector and the second outer most sector. For DEEP Ping mode that corresponds to the shift between FM and CW pulses (DEEP2 Mode)

1856 Phase range to 2500 -3500 m

1902 New lines 0264

1907 Along direction angle to -2°, Tried FM Disable to change outer most swath sectors to CW; FM Disable turned off the outer most swath sectors (Did not switch to CW mode like we wanted). Sector edge holes/artifact issue was resolved but we lost a significant amount of coverage due to losing the outer most sector. Will leave FM Disable off to ensure coverage

1919 Penetration filter to weak, phase range to 2000 – 3000 m

1923 Penetration filter to off, DEEP Ping mode

1925 Along direction angle to -1°

1928 Turned off sector tracking to try and eliminate sector edge artifacts/holes

1934 Pulse to 8 ms, phase range to 2500 – 3500 m

2000 Gain to 38 dB, new line 0265

2005 Auto ping mode

2006 Phase range to 3000 – 4000 m

2012 Knudsen power to 3

2025 New line for turn on SIS, EK60 and Knudsen, phase range to 3500 – 4500m

2034 Phase range to 3000 – 4000 m

2035 Phase range to 2500 – 3500 m

2048 Knudsen power to 2

2051 Phase range to 2000 – 3000 m

2100 Phase range 2500 – 3500 m

2103 XBT Cast# 041 collected

2109 XBT Cast# 041 applied to line 0266

2117 Phase range to 3000 – 4000 m

2118 New line for next track line 0267

2126 Phase range to 2500 – 3500 m

2141 Phase range to 2000 – 3000 m

2213 Phase range to 2500 – 3500 m

2219 Deep ping mode, back to AUTO ping mode

2234 EK60 and Knudsen data copy to server

2250 Phase range to 3000 – 4000 m

2313 Along direction angle to 0°

2318 New line 0269

2358 Phase range to 2500 – 3500

**20 JULY 2015**

0005 Knudsen power to 3

0037 Phase range to 3000 – 4000 m, asked bridge to move 300 m to STBD to ensure coverage of artifacts

0102 Phase range to 2500 – 3500 m

0108 Phase range to 3000 – 4000 m

0141 Phase range to 2500 – 3500 m

0150 Spike filter to medium, penetration filter to weak, aeration filter on

0202 Phase range to 2000-3000m; Amanda, Maria and Dan on watch

0209 XBT #42 deployed

0215 XBT #42 applied to line 0271

0216 Phase range 2500-3500m

0217 Start new line 0272 for turn

0221 Power 2

0229 Power 3

0236 Phase range 3000-4000m

0317 Start new line 0273

0337 Phase range 2500-3500m

0344 Phase range 2000-3000m

0348 Phase range 1500-2500m

0356 Power 2, Pulse 4

0404 Phase range 2000-3000; Gain 37db

0413 Phase range 2500-3500m

0420 Start new line 0274

0421 Phase range 3000-4000m

0428 Pulse 8.000ms

0429 Start new line 0275 for turn

0431 End turn. Start new line 0276. Phase range 2500-3500m

0434 Power 3

0440 Phase range 3000-4000m

0447 Phase range 3500-4500m

0449 Power 2, Pulse 4

0505 Phase range 4000-5000m

0531 Start new line 0277

0536 Pulse 8.000ms, Power 3

0541 Phase range 4500-5500m

0552 Turned off aeration filter, on sector tracking

0613 Power 2; Gain 37db

0616 Gain 40db; Penetration filter medium

0632 Phase range 4000-5000m

0641 Phase range 3500-4500m

0642 Start new line 0278

0653 Power 3

0657 Phase range 3000-4000m; 2500-3500m

0708 Phase range 2000-3000m; Gain 38dB

0712 Phase range 1500-2500

0716 Start new line 0279 @turn

0725 End turn. Start new line 0280

0742 Gain 32dB

0744 Power 1. Gain 35dB

0809 XBT #43 applied to line #280

0813 Line shift 400m to port

0826 Start new line 0281

0934 Start new line 0282

1000 Jason, Lindsay, Neah on watch

1014 Knudsen Tx power 2, gain 31

1040 EK60 range to 4500. Knudsen phase 2500-3500

1041 EM302 turned off penetration filter, spike filter to weak

1051 Knudsen Tx pulse 4 m, gain 34 db

1054 Knudsen range 500, Phase 2750-3250. Tx pulse 8 m

1104 Knudsen T pulse 8 m, gain 42 dB, range 1000, phase 2500-3500. Start new line

1126 EM302 spike filter to medium

1316 Knudsen Tx pulse 4ms, start new line

1321 Phase 1500-2500

1357 Knudsen Tx pulse 4ms, start new line

1415 XBT cast #44

1428 XBT cast applied to line 0287

1515 Knudsen phase 2000-3000, gain value to 37 db

1527 Knudsen phase 2500-3500

1550 Knudsen 3000-4000

1626 EK60 range 550 m, Knudsen phase 3500-4500, EM302 max depth 5500 m

1629 Begin turn, start new line. EM302 (0290), EK60, Knudsen

1639 Knudsen phase 4000-5000

1644 EM302 max depth 6500 m, EK60 range 6500 m, Knudsen 4500-5500

1654 End turn. Start new lines EM302(0291), EK60, Knudsen

1704 Phase 4000-5000 m

1732 Phase 3500-4500 m

1739 Dan, Joyce, Luan on watch

1743 Phase 3000-4000 m

1822 Asked bridge to come to PORT 300 m to better coverage over artifacts

1831 DEEP Ping mode

1835 Phase range to 2500 – 3500 m

1836 Bridge will start to come back to STBD towards original track line

1850 Phase range to 2000 – 3000 m

1855 New line 0293

1916 Pulse to 2 ms, Gain to 40 dB

1943 Gain to 36 dB, Power to 1

1946 Power to 2

1955 Phase range to 2500 – 3500 m, New line 0294

1959 Asked bridge to move 500 m for more coverage

2001 Phase range to 3000 – 4000 m

2014 Gain to 38 dB

2017 TX Pule to 4 ms, Phase range to 3500 – 4500 m

2040 TX Power to 3

2044 TX Pulse to 8 ms

2052 Phase range to 3000 – 4000 m

2054 XBT Cast# 045 collected

2100 XBT Cast3 045 applied to line 0295

2111 EK60 and Knudsen data copy to server

2120 TX power to 2

2130 Phase range to 3500 – 4500 m

2229 Phase range to 3000 – 4000 m

2236 Broke line for turn, 0297; new lines for EK60 and Knudsen

2239 DEEP ping mode

2241 Phase range to 2500 – 3500 m

2247 TX Pulse to 4 ms, along direction angle to -1° for pitching

2249 Auto ping mode, along direction angle to -2°

2255 Phase range to 2000 – 3000 m

2308 Phase range to 1500 – 2500 m

2313 Phase range to 2000 – 3000 m

2324 Phase range to 2500 – 3500 m

2326 Phase range to 3000 – 4000 m

2337 Phase range to 3500 – 4500 m

2357 Phase range to 4000 – 5000 m, new survey line for turn 0299; New EK60 and Knudsen line

**21 JULY 2015**

0016 Along direction angle to -1°, pitching decreased

0018 Along direction angle to 0°

0025 EK60 and Knudsen data copy to server

0040 Phase range to 3500 – 4500 m

0051 Phase range to 3000 – 4000 m

0056 Phase range to 2500 – 3500 m

0107 Phase range to 3000 – 4000 m

0111 Asked bridge to move 200 m to PORT to cover holiday

0124 TX Pulse to 8ms

0125 Deep Ping Mode

0129 Asked Bridge to move 200m to port

0139 Auto ping mode

0200 Amanda, Maria and Dan on watch

0206 XGT #46 deployed

0211 Phase change 3000-4000m

0315 Asked bridge to move 900m to port for gap filing along edge of guyot

0346 Phase change 2000-3000m

0408 Start new line 0303

0426 Gain 36dB

0430 Gain 39dB

0439 Phase change 2500-3500m

0451 Phase range 3000-4000m

0457 Start new line 0304

0512 Phase range 2500-3500m

0516 Shifting to port to fill nadir gap of adjacent line

0517 Phase range 3000-4000m

0519 Start new line 0305

0533 Phase range 3500-4500m

0539 Phase range 3000-4000m; Gain 40dB

0553 Phase range 3500-4500m

0613 Start new line 0306 for turn

0616 End turn. Start new line 0307

0638 Phase range 4000-5000m

0706 Stop pinging/logging of all sonar

0707 BISTs Test, all pass

0720 Resume pinging EM302

0721 Start new line 0308

0722 Resume pinging EK60

0731 Resumed full power EM302 line 308, Pinging SBP again

0803 XBT #47 applied to line 308

0812 Phase change 4000-5000m

0839 Changed ping mode from extra deep to very deep

0849 Phase change 2500-3500m

0855 End line 309, Start turn line 310; phase range 2000-3000m

0903 Pulse 4.000ms

0905 Start new line 311 @ end of turn

0912 Phase range2500-3500m

0920 Pulse 8.000ms; Phase range 3000-4000m

0955 Jason, Neah, Lindsay on watch

1012 Phase 4000-5000m

1028 Start turn new lines: EM302 (0313), EK60 and Knudsen

1033 End turn. New Lines: EM302 (0314, EK60 and Knudsen

1129 Phase 3500-4500m

1316 Phase 3000-4000m

1338 Phase 2500-3500m

1359 Phase 2000-3000m EM302 data drop out at NADIR had to force depth

1405 XBT cast #48

1409 EM302 continues to drop out forcing depth and ping mode to deep

1410 Phase 150-250m

1415 XBT cast applied to line 0317

1418 EM302 Continued to go in and out as we climb slope

1422 Continue to force depth as EM302 continues to lose bottom

1437 EM302 appears to have settled

1449 Knudsen range to 500m, Gain 28dB. Start new line

1454 EK60 range to 4500m

1504 EM302 back to AUTO ping mode

1748 Dan, Joyce and Luan on watch

1806 Phase range to 1750 – 2250 m

1808 Penetration filter on weak, asked bridge to move 700 m to PORT

1813 Penetration filter on medium

1830 Penetration filter off

1833 New line 0322

1900 Phase range to 2000 – 2500 m, Pulse to 4 ms

1916 Pulse to 2 ms

1920 Gain to 36 dB

1929 XBT Cast# 049 collected

1934 XBT Cast# 049 applied to line 0323

1940 Phase range to 1750 – 2250 m

1944 Spike filter to strong

2018 Asked bridge to move 200 m to STBD

2023 Along direction angle to 1°

2025 Along direction angle to 0°

2027 Along direction angle to -1°

2034 New line 0324, SIS having trouble maintaining bottom

2051 EK60 range to 4000 m, Knudsen range to 1000 m, phase range to 2500 – 3500 m, pulse to 4 ms, Along direction angle to 0°

2057 Phase range to 2000 – 3000 m

2105 Phase range to 1500 – 2500 m

2109 Gain to 34 dB, EK60 and Knudsen data copy to server

2128 Phase range to 2000 – 3000 m

2144 Phase range to 2500 – 3500 m

2145 Penetration filter on medium

2159 Penetration filter on strong

2224 TX pulse to 4 ms

2300 Called bridge, move to STBD 500 m

2312 Phase range to 3000 – 4000 m

2340 Switching to UTM zone 3N

2356 End line 0327, start turn 0328, same for EK60 and Knudsen

**22 JULY 2015**

0012 XBT Cast# 050 collected

0015 Phase range to 2500 – 3500 m

0024 Applied XBT Cast# 050 to line 0328

0031 End turn line 0328, start survey line 0329

0032 Phase change 2000 – 3000 m, pulse to 8 ms, gain to 37 dB, start new line

0034 Phase change 2500 – 3500 m

0133 Swath angles to 60° PORT and STBD

0134 Swath angles to 55° PORT and STBD

0135 Swath angles to 50° PORT and STBD

0138 Swath angles to 55° STBD

0145 Swath angles to 45° STBD

0146 Swath angles to 47° PORT and STBD

0153 Phase change 3000 – 4000 m

0154 Swath angles to 45° PORT and STBD

0200 Amanda, Maria and Dan on watch

0206 Max angles 55/45; SBP Gain 40dB

0217 Max angles 45/40

0241 Start new line for turn. Lin 0332

0249 End turn. Start new line 0333

0251 Max angles 50/50

0257 EK60 range 5000m; SBP Phase range 4000-5000m; Power 3

0302 EX60 range 6000m; SBP Phase range 4500-5500m

0304 Spike filter off, Penetration filter off, slope checked

0328 Max angles 35/35; Spike filter medium; sector tracking on

0350 Start new line 0335 for turn

0354 End line. Start new line 0336

0426 Asked bridge to move 400m to starboard

0433 Phase range 4000-5000m

0449 Max angles 50/60; spike filter off

0454 Start new line 0337

0459 EM302 in very deep mode

0518 XBT #51 deployed

0523 XBT #51 applied to line 0337

0551 Max angles 40/55

0602 Shifting 1500m to port to increase coverage

0646 Start new line 0340

0718 Phase range 4000-5000m

0756 Slope unchecked

0845 Shift 800m to starboard

0848 Start new line 0342

0854 Phase range 3500-4500m

0921 Phase range 3000-4000; Shift 500m to starboard

0922 Phase range 3500-4500m

0946 Phase range 4000-5000m

1000 Jason, Lindsay, Neah on watch

1010 Tx Power 2, gain47 db

1105 XBT cast #52

1111 XBT applied to line 344

1144 Phase 4500-5500, gain 37

1148 EM302 spike filter to medium, penetration filter off

1157 Knudsen Tx power 3, Tx pulse 16 ms, gain 43 db, depths greater than 5000 m

1159 Knudsen range 500 m, start new line, phase 4750-5250

1208 EK60 range to 6500m

1337 Knudsen phase 4500-5500

1354 Phase 4750-5250

1420 Knudsen Tx pulse ms

1514 Tx pulse 16 ms

1610 XBT cast #53

1617 XBT cast applied to line 0349

1701 Knudsen Tx pulse 32 ms, gain 62 db

1720 Knudsen Tx pulse 16 m, gain 42 db

1735 Dan, Joyce and Luan on watch

1822 New line 0352

1922 New line 0353

2033 Swath angles to 50° PORT and STBD

2034 Swath angles to 40° PORT and STBD

2035 Swath angles to 30° PORT and STBD

2043 Swath angles to 27° PORT and STBD

2045 Along direction angle to 1°

2046 Swath angles to 25° PORT and STBD

2047 Along direction angle to 0°, Swath angles to 23° PORT and STBD

2055 XBT Cast# 054 collected

2102 XBT Cast# 054 applied to line 0354

2123 New line 0355

2350 Swath angles to 28° PORT and STBD

2357 Swath angles to 32° PORT and STBD

2359 Swath angles to 30° PORT and STBD

**23 JULY 2015**

0001 Phase range to 4500 – 5000 m

0023 New line 0358

0123 New line 0359

0154 Gain to 40 dB

0207 Stopped logging for pick up of glass ball

0234 Started logging. New line 0360

0240 XBT #55 deployed

0246 XBT #55 applied to line 0360

0307 EM302 in very deep mode

0336 EM302 ping mode to auto

0415 Port max angle to 26°

0422 Slope filter on

0433 Start new line 0362

0512 Shift 600m to port (original trackline)

0515 Start new line 0363

0541 Max angles 29/35

0548 ET changing corrections satellite due to low SNR

0617 Start new line 0362

0711 Max angles 29/36

0728 Start new line 0365

0730 EM302 ping mode extra deep; Along direction 1°

0734 Aeration on

0742 Phase range 4250-4750m

0745 Shifting to starboard to fill gap then returning to trackline

0751 Phase range 4500m-5000m

0802 XBT #56 deployed

0803 Shift 110m to starboard for coverage

0806 XBT #56 applied to line 0356

0808 Power 2

0903 Shifting 300m to starboard for coverage

0913 Start new line 0367

0920 Gain 37dB

1000 Jason, Lindsay, Neah on watch

1015 EM302 ping mode to auto

1045 EM302 along direction to O

1053 Red Triangle of Death in EM302! Happened shortly after changing max depth to 5700. Immediately changed ping mode to extra deep and red triangle went away.

1120 EM302 ping mode auto. Max angles 70/70

1130 EM302 sector tracking on to remove sector boundary artifacts in backscatter

1143 EM302 ping mode extra deep. Losing nadir when in very deep mode while in auto. We are currently in 4500 m depths.

1307 Knudsen phase 4250-4750

1323 Knudsen Tx pulse 16 ms, gain 44 db

1340 Asked bridge to shift 00m starboard

1412 XBT cast #57

1420 XBT case applied to line 0372

1432 Asked bridge to pull back speed to under 9 knots, data quality has been low

1440 EM302 ping mode to auto, very deep mode improved with slower speed

1539 SIS/EM302 max depth 5500

1606 Start turn. Start new lines EM302(0374), Knudsen, EK60

1612 End turn. Start new lines EM302(0375), Knudsen, EK60

1624 Start turn. Start new lines EM302(0376), EK60, Knudsen

1636 End turn. Start new lines EM302(0377), EK60, Knudsen

1745 Dan, Joyce and Luan on watch

1835 New line 0379

1848 Asked bridge to move 500 m to port

1923 Gain to 34 dB

1942 Stopped logging and pinging MB and closed SIS to re-seat boards, Remote shut-off TRU

2001 Re-started TRU with remote

2016 Re-started SIS will run BIST, XBT Cast# 058 collected

2019 Running EM302 complete BIST, stopped pinging EK60 and SBP

2038 Tried to start pinging but SIS won’t ping (says its faulty), XBY Cast# 058 applied to line 0381

2042 TX firmware warning, closed SIS, tuned off SIS workstation, rebooted TRU

2046 Turned on TRU, loss of steerage drill underway

2053 SIS machine did a windows update automatically

2059 Running BIST, failed 1, 3, 6, 5-15 timed out

2117 Knudsen sync mode set to internal, MB not pinging, started recording Knudsen, range to 200 m, gain to 36 dB, Pulse to 16 ms, auto phase mode

2126 Knudsen range to 500 m, manual phase mode

2206 Restarted TRU, SIS, pinging error

2211 Knudsen and EK60 are off

2215 Run all BIST (after pinging for 5 min)

2221 BIST passed

2231 EK60 and Knudsen restarted w/ external triggering

2240 Slope filter on

2302 Restart SIS, wasn’t gridding

2307 Started logging SIS, line 0381

2323 Swath angles to 30° PORT and STBD

2327 Along direction angle -1° PORT and STBD, then -2°

2330 Swath angles to 20° PORT and STBD

2331 Aeration filter on

**24 JULY 2015**

0008 New line 0382

0108 New line 0383

0200 Amanda, Maria and Dan on watch

0220 XBT #59 deployed

0224 Max angles 25/25

0227 XBT #59 Applied to line 0384

0251 Max angles 25/22

0314 SBP pulse reduced to 4ms

0357 25/22 Max angles

0400 Start new line 0386

0510 Start new line 0387

0519 Max angles 20/20

0530 Max angles 23/23

0609 Start new line 0388

0620 Max angles 20/20

0700 Start new line 0389

0720 Start new line 0390 for turn

0725 End turn. Start new line 0391

0756 XBT #60 deployed

0802 XBT #60 Applied to line 0391

0823 Start new line 0392 for turn

0826 Max angles 25/25

0831 Start new line 0393 (end of turn)

0840 Gain 39dB

0841 Phase range 4250-4750m

0856 Phase range 4500-5000m

0909 SBP lost bottom over pinnacle; Power 3, Pulse 16, Gain 45, Phase range 4250-4750m

0918 SBP Power 2, Pulse 8

0920 SBP Pulse 4ms, Gain 40dB

0924 Gain 37dB

1000 Jason, Neah Lindsey on watch

1009 Knudsen Tx Pulse 8ms Gain 40dB

1028 Knudsen Phase 4000-4500m

1043 Knudsen Phase 4250-54750m

1052 Knudsen Phase 4500-5000m

1123 Asked Bridge to shift 500m to stb

1244 EM302 max angles 35/35

1320 Decreased ship speed to 8.5-9knts

1321 EM302 Ping mode to AUTO, max angles 50/50

1324 Knudsen Phase 4250-4750m

1336 EM302 max depth 5000m, max angles 70/70

1358 Knudsen range 1000m, phase 3500-4500m start new line

1405 XBT cast #61

1406 Asked Bridge to shift 500m to stb

1410 Knudsen phase 2500-3500m

1412 XBT cast applied to line 0398

1415 EM302 Ping mode very deep

1422 EK60 Range 4000m, Knudsen depth limit min 800m max 4000m

1426 EK60 having trouble digitizing bottom, giving 0m depth. Switches to 4000m occasionally

1430 Restart EK60

1446 EK60 still not responding

1447 Knudsen range 500. Phase 2750-3250m

1449 EM302 Red Triangle! Switched ping mode to deep. All better

1520 EK60 Bottom detection min range was off which clipped data and caused above headache. Need to right click depth reading to disgust

1534 EM302 sector Tracking OFF

1538 EM302 Ping mode Very Deep

1651 Knudsen phase 2500-3000m

1654 EM302 Ping mode DEEP

1702 Phase 2250-2750m

1716 Phase 1500-2000m

1728 Phase 1000-1500m

1733 At 1000m Powering down Knudsen, at 500m meters powering down EK60 and EM302.

1740 Dan, Joyce and Luan on watch

1800 EK60 data transfer to server

1808 Secured logging and pinging for all sonars (end of cruise), final EK60 data transfer

1810 TRU remote shutdown