

DATA ACQUISITION SUPERVISION REPORT

For the

2D MARINE SEISMIC SURVEY

Conducted by

CUE ENERGY RESOURCES

In The Exploration Licence Areas

BLOCKS T/37P & T/38P OFFSHORE TASMANIA

SURVEY START DATE 17th March 2008
SURVEY COMPLETION DATE 18th April 2008



VOLUME 1 SEISMIC DATA ACQUISITION

Compiled by Bill Lloyd

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1 INTRODUCTION

1.1 OBJECTIVES

To carry out a high quality 2D seismic survey,. The survey consists of some 3658.8 full fold kilometres comprising of 110 lines over the T37/38P block for Cue Energy Resources. The survey is located in the Sorell Basin of Tasmania

The seismic survey vessel was the M/V Pacific Titan owned and operated by Swire Pacific Offshore Operations (Pte) Ltd who provided the marine crew. The vessel was on lease by CGGVeritas, who supplied the seismic personnel, data processing and logistics.

1.2 SURVEY PARAMETRES

The following is a summary of the survey parameters:

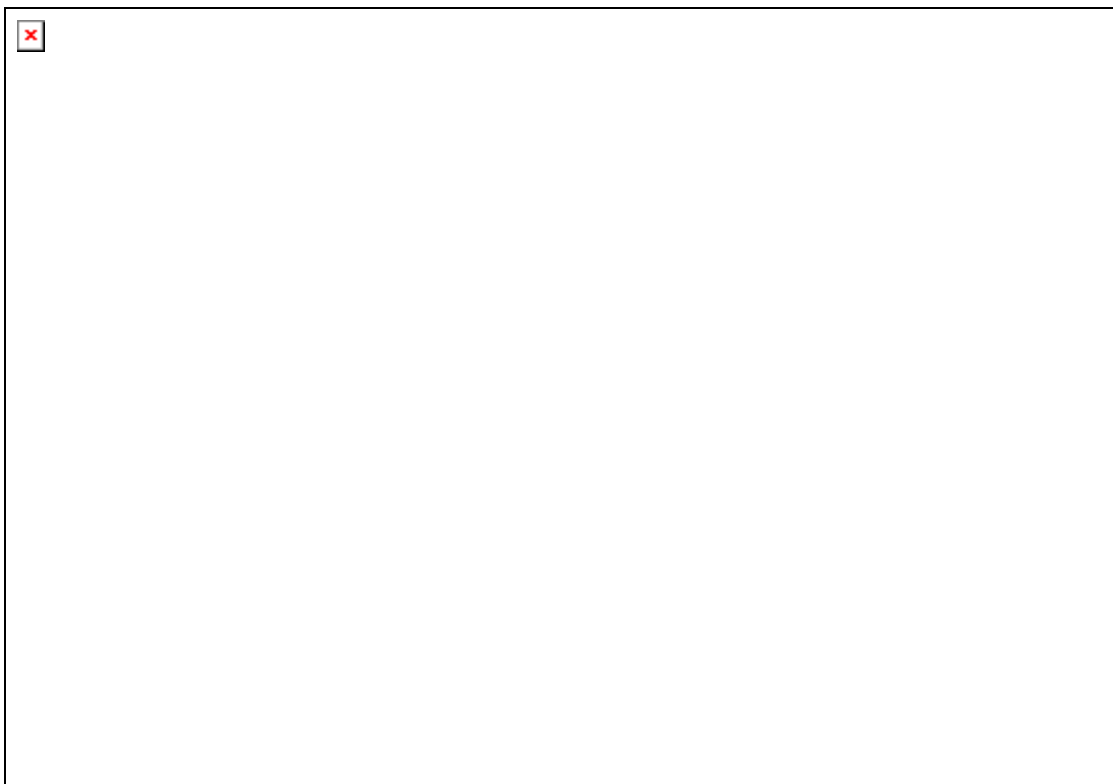
Survey type	: 2D
Client	: Cue Energy Resources Pty Ltd
Survey name	: Tasmania T/37P and T/38P 2D
SP interval	: 25m
Source	: 3040in ³ . Bolt guns
Streamer Length	: 6000 metres
Groups	: 480
Primary Positioning	: SPM2 SPM 5.16 HP
Secondary Positioning	: SPM1 SPM 5.16 XP
Third Positioning	: MULTIFIX 5 Ver 1.01 XP
Water depth	: 60m to 100m
Number of lines	: 111
Full fold sail line km	: 3658.8Kms
Port of supply	: Burnie, Tasmania
Contractor	: CGGVeritas
Vessel	: Pacific Titan
Client representation	: Enquest Pty. Limited

1.3 ACQUISITION PARAMETERS

Recording System	: Sercel SEAL system rev. 5.1
Number of Channels	: 480
Record Length	: 6000ms
Sample Interval	: 2ms
Low Cut Filter	: 4.7Hz at 12db/Oct
High Cut Filter	: 200Hz at 370dB/Oct
Tape Format	: SEG-D 8058
Digital Filter Delay	: off
Energy Source Type	: Bolt 1500LL and 1900LLX
Total Capacity	: 3040 cubic inches
Number of Arrays	: 1
Number of sub-arrays	: 3

Array Length	: 14.7m
Sub Array Separation	: 10.0m
Total Number of Guns	: 21 active
Capacity of each Sub-Array	: 1110 in ³ starboard, 1020 in ³ inner, 910in ³ port.
Typical Output	: 106.2 bar/metres pk-pk (at 6 metres)
Primary / bubble ratio	: 22.9 (full array, at 6 metres)
Pressure	: 2000psi +/- 10%
Depth	: 6.0 metres
Firing Delay from Time Zero	: 50ms
Shot Interval	: 25.0 metres
Streamer Type	: Gel Filled
Group Length	: 12.5 metres
Group Interval	: 12.5 metres
Group Sensitivity	: 21.5v/ bar
Hydrophones per Group	: 8 in parallel connection (8 per 12.5m base group)
Streamer depth	: 8 metres +/- 1.0m
Typical Noise	: 3.5 to 8.0 microbars
Offset (In-line)	: 145.0m
Nav Ref.-Cent. Source	: 180.00m
Primary Positioning	: SPM2 SPM 5.16 HP
Secondary Positioning	: SPM1 SPM 5.16 XP
Third Positioning	: MULTIFIX 5 Ver 1.01 XP
Integrated Navigation System	: SPECTRA
Echo Sounder	: Kongsberg-Simrad EA600, 12 kHz

1.4 LOCATION MAP



1.5 LINE CO-ORDINATES

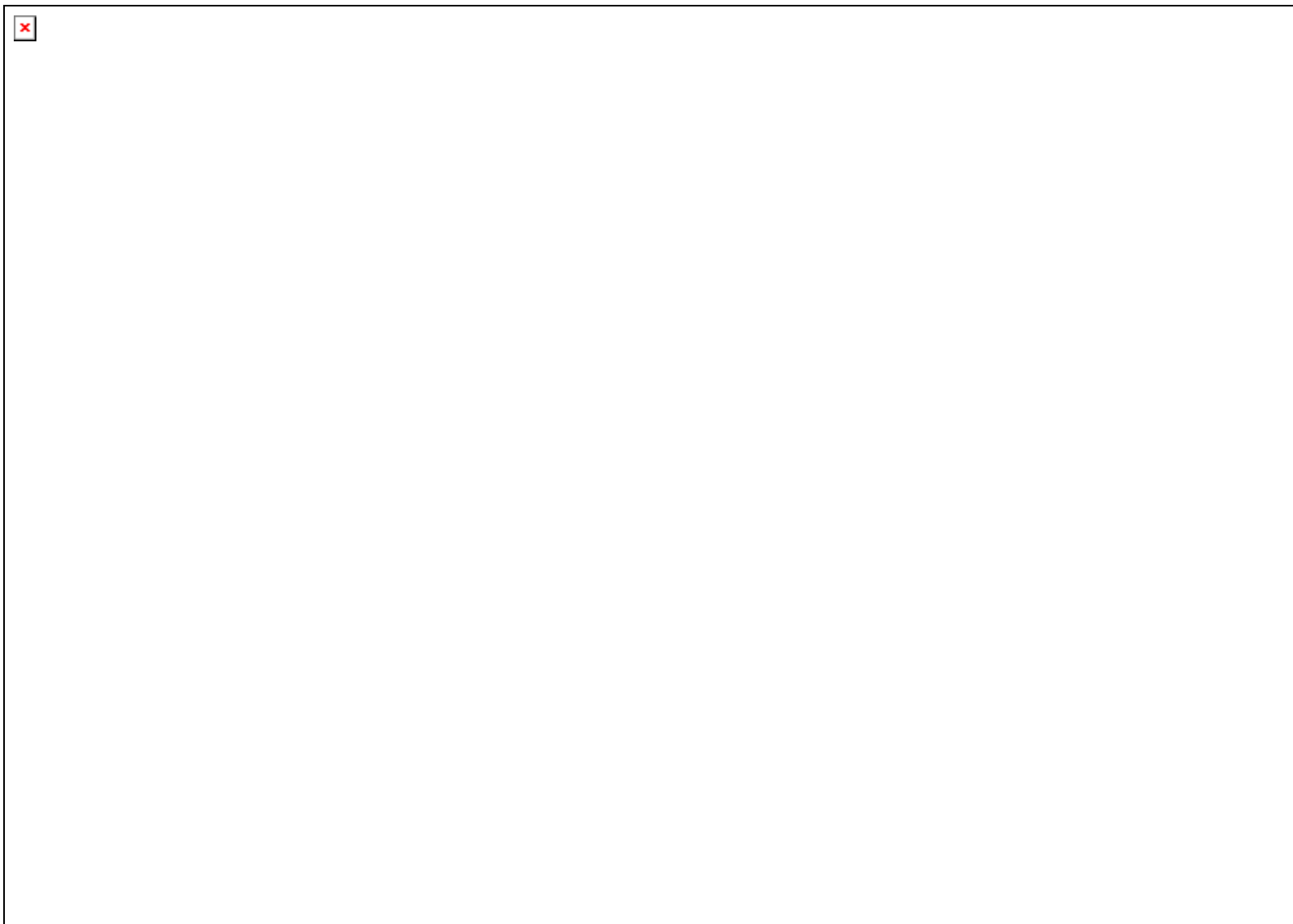
Line Number	SP Range	Latitude	Longitude	Easting	Northing
VCUE-08-E-01	1001	401541.15S	1455058.15E	402167.0	5542591.0
VCUE-08-E-01	2173	395951.79S	1455014.59E	400755.1	5571848.7
VCUE-08-E-02	1001	401544.40S	1455201.22E	403658.0	5542510.0
VCUE-08-E-02	2179	395950.20S	1455116.43E	402220.8	5571916.5
VCUE-08-E-03	1001	401540.58S	1455302.16E	405096.0	5542646.0
VCUE-08-E-03	2176	395948.76S	1455219.35E	403712.4	5571979.9
VCUE-08-E-04	1001	401541.61S	1455345.41E	406118.0	5542627.0
VCUE-08-E-04	2177	395949.04S	1455300.71E	404693.2	5571983.9
VCUE-08-E-05	1001	401538.79S	1455429.65E	407162.0	5542727.0
VCUE-08-E-05	2174	395948.70S	1455343.06E	405697.4	5572006.8
VCUE-08-E-06	1001	401536.56S	1455512.19E	408166.0	5542808.0
VCUE-08-E-06	2171	395948.91S	1455425.34E	406700.1	5572012.6
VCUE-08-E-07	1001	401536.06S	1455552.63E	409121.0	5542835.0
VCUE-08-E-07	2169	395949.91S	1455510.24E	407765.0	5571994.8
VCUE-08-E-08	1001	401535.27S	1455636.63E	410160.0	5542872.0
VCUE-08-E-08	3220	394537.78S	1455513.27E	407519.5	5598267.6
VCUE-08-E-09	1001	401534.03S	1455719.45E	411171.0	5542922.0
VCUE-08-E-09	3221	394535.96S	1455548.30E	408352.4	5598333.7
VCUE-08-E-10	1001	401531.39S	1455801.23E	412157.0	5543015.0
VCUE-08-E-10	3217	394536.45S	1455634.07E	409441.5	5598331.7
VCUE-08-E-11	1001	401529.66S	1455843.80E	413162.0	5543080.0
VCUE-08-E-11	3213	394537.95S	1455717.00E	410463.6	5598297.3
VCUE-08-E-12	1001	401528.11S	1455925.56E	414148.0	5543139.0
VCUE-08-E-12	3213	394536.41S	1455758.45E	411449.3	5598356.1
VCUE-08-E-13	1001	401525.83S	1460005.14E	415082.0	5543220.0
VCUE-08-E-13	3212	394534.89S	1455839.90E	412435.0	5598414.5
VCUE-08-E-14	1001	401524.33S	1460049.10E	416120.0	5543278.0
VCUE-08-E-14	3213	394532.64S	1455921.40E	413421.7	5598494.9
VCUE-08-E-15	1001	401523.00S	1460131.75E	417127.0	5543330.0
VCUE-08-E-15	3211	394532.95S	1460003.71E	414428.6	5598496.8
VCUE-08-E-16	1001	401521.67S	1460214.10E	418127.0	5543382.0
VCUE-08-E-16	3213	394530.00S	1460045.78E	415428.7	5598598.7
VCUE-08-E-17	1001	401522.01S	1460255.83E	419113.0	5543382.0
VCUE-08-E-17	3213	394530.36S	1460127.17E	416413.7	5598598.5
VCUE-08-E-18	1001	401520.67S	1460338.14E	420112.0	5543434.0
VCUE-08-E-18	3213	394529.03S	1460209.21E	417413.7	5598650.5
VCUE-08-E-19	1001	401517.70S	1460423.39E	421180.0	5543537.0
VCUE-08-E-19	3213	394526.12S	1460251.96E	418429.9	5598750.8
VCUE-08-E-20	1001	401518.01S	1460502.93E	422114.0	5543537.0
VCUE-08-E-20	3213	394526.38S	1460333.39E	419415.7	5598753.3
VCUE-08-E-21	1001	401514.97S	1460545.30E	423114.0	5543641.0
VCUE-08-E-21	3211	394524.98S	1460415.43E	420415.6	5598807.1
VCUE-08-E-22	1001	401516.98S	1460627.01E	424100.0	5543589.0
VCUE-08-E-22	3213	394525.31S	1460459.00E	421452.6	5598807.5
VCUE-08-E-23	1001	401513.93S	1460708.91E	425089.0	5543693.0
VCUE-08-E-23	3211	394523.89S	1460540.62E	422442.5	5598861.4
VCUE-08-E-24	1001	401511.93S	1460753.47E	426141.0	5543765.0
VCUE-08-E-24	2257	395814.68S	1460701.35E	424598.2	5575116.7
VCUE-08-E-25	1001	401510.92S	1460836.45E	427156.0	5543806.0
VCUE-08-E-25	2237	395829.91S	1460743.93E	425612.8	5574657.1
VCUE-08-E-26	1001	401509.93S	1460917.69E	428130.0	5543846.0
VCUE-08-E-26	2234	395831.35S	1460824.96E	426586.5	5574622.0
VCUE-08-E-27	1001	401510.24S	1461000.65E	429145.0	5543846.0
VCUE-08-E-27	2239	395827.66S	1460906.11E	427561.5	5574745.0

Line Number	SP Range	Latitude	Longitude	Easting	Northing
VCUE-08-E-28	1001	401506.59S	1461043.62E	430159.0	5543968.0
VCUE-08-E-28	2239	395823.97S	1460950.62E	428616.3	5574869.0
VCUE-08-E-29	1001	401504.93S	1461123.60E	431103.0	5544028.0
VCUE-08-E-29	2238	395823.05S	1461032.57E	429611.1	5574906.5
VCUE-08-E-30	1001	401503.23S	1461204.85E	432077.0	5544089.0
VCUE-08-E-30	2236	395822.91S	1461116.19E	430645.9	5574920.2
VCUE-08-E-31	1001	401501.57S	1461249.95E	433142.0	5544150.0
VCUE-08-E-31	2238	395819.74S	1461157.26E	431619.1	5575026.8
VCUE-08-E-32	1001	401459.87S	1461331.20E	434116.0	5544211.0
VCUE-08-E-32	2235	395820.48S	1461238.34E	432593.8	5575012.8
VCUE-08-E-33	1001	401459.17S	1461413.70E	435120.0	5544241.0
VCUE-08-E-33	2237	395818.13S	1461321.96E	433627.8	5575094.2
VCUE-08-E-34	1001	401458.44S	1461454.94E	436094.0	5544272.0
VCUE-08-E-34	2071	400031.83S	1461410.52E	434815.0	5570982.1
VCUE-08-E-35	1001	401456.83S	1461537.24E	437093.0	5544330.0
VCUE-08-E-35	2029	400104.25S	1461454.10E	435856.8	5569991.2
VCUE-08-E-36	1001	401455.49S	1461621.07E	438128.0	5544380.0
VCUE-08-E-36	2011	400117.59S	1461535.47E	436840.7	5569588.3
VCUE-08-E-37	1001	401453.28S	1461702.02E	439095.0	5544456.0
VCUE-08-E-37	1974	400145.24S	1461621.30E	437934.1	5568744.7
VCUE-08-E-38	1001	401452.74S	1461746.89E	440155.0	5544481.0
VCUE-08-E-38	1942	400210.71S	1461704.64E	438967.8	5567967.7
VCUE-08-E-39	1001	401452.17S	1461826.39E	441088.0	5544506.0
VCUE-08-E-39	1897	400246.53S	1461747.93E	440002.3	5566871.7
VCUE-08-E-40	1001	401449.96S	1461909.84E	442114.0	5544582.0
VCUE-08-E-40	1866	400309.45S	1461832.04E	441053.0	5566173.2
VCUE-08-E-41	1001	401448.59S	1461952.56E	443123.0	5544632.0
VCUE-08-E-41	1852	400319.44S	1461914.52E	442061.8	5565872.9
VCUE-08-E-42	1001	401447.98S	1462034.22E	444107.0	5544658.0
VCUE-08-E-42	1819	400345.55S	1461957.98E	443097.6	5565075.7
VCUE-08-E-43	1001	401448.22S	1462116.92E	445116.0	5544658.0
VCUE-08-E-43	1781	400416.56S	1462042.37E	444156.1	5564127.3
VCUE-08-E-44	1001	401448.45S	1462158.57E	446100.0	5544658.0
VCUE-08-E-44	1747	400444.32S	1462125.84E	445191.8	5563279.1
VCUE-08-E-45	1001	401448.78S	1462241.15E	447106.0	5544655.0
VCUE-08-E-45	1740	400450.32S	1462208.47E	446202.8	5563101.2
VCUE-08-E-46	1001	401449.02S	1462325.63E	448157.0	5544655.0
VCUE-08-E-46	1702	400521.43S	1462251.83E	447236.4	5562149.4
VCUE-08-E-47	1001	401450.46S	1462405.36E	449096.0	5544617.0
VCUE-08-E-47	1669	400549.47S	1462336.79E	448307.1	5561292.2
VCUE-08-E-48	1001	401448.83S	1462447.53E	450092.0	5544674.0
VCUE-08-E-48	1627	400621.87S	1462420.17E	449340.9	5560300.2
VCUE-08-E-49	1001	401447.85S	1462531.27E	451125.0	5544711.0
VCUE-08-E-49	1589	400651.73S	1462503.49E	450372.6	5559386.3
VCUE-08-E-50	1001	401448.67S	1462613.38E	452120.0	5544692.0
VCUE-08-E-50	1586	400654.99S	1462545.54E	451368.6	5559292.2
VCUE-08-E-51	1001	401448.87S	1462654.68E	453096.0	5544692.0
VCUE-08-E-51	1550	400724.27S	1462630.49E	452438.3	5558396.1
VCUE-08-E-52	1001	401447.84S	1462738.42E	454129.0	5544730.0
VCUE-08-E-52	1512	400754.06S	1462714.69E	453489.9	5557484.2
VCUE-08-E-53	1001	401448.04S	1462820.57E	455125.0	5544730.0
VCUE-08-E-53	1476	400823.42S	1462758.10E	454522.8	5556585.3
VCUE-08-E-54	1001	395233.43S	1461847.11E	441259.0	5585785.0
VCUE-08-E-54	1255	395519.04S	1461608.30E	437528.4	5580649.2
VCUE-08-E-54	2016	400404.85S	1460908.99E	427728.9	5564349.8
VCUE-08-N-01	1001	401537.95S	1455046.52E	401891.0	5542686.0

Line Number	SP Range	Latitude	Longitude	Easting	Northing
VCUE-08-N-01	3166	401427.43S	1462854.86E	455931.3	5545370.1
VCUE-08-N-02	1001	401505.64S	1455045.67E	401858.0	5543682.0
VCUE-08-N-02	3167	401355.21S	1462854.77E	455923.4	5546363.5
VCUE-08-N-03	1001	401432.40S	1455045.39E	401838.0	5544707.0
VCUE-08-N-03	3166	401323.01S	1462853.18E	455880.0	5547356.2
VCUE-08-N-04	1001	401400.24S	1455044.25E	401798.0	5545698.0
VCUE-08-N-04	3166	401250.19S	1462851.69E	455839.0	5548367.6
VCUE-08-N-05	1001	401327.38S	1455042.82E	401751.0	5546711.0
VCUE-08-N-05	3167	401217.99S	1462851.05E	455818.0	5549360.5
VCUE-08-N-06	1001	401256.27S	1455039.66E	401664.0	5547669.0
VCUE-08-N-06	3168	401145.76S	1462848.60E	455754.3	5550353.7
VCUE-08-N-07	1001	401224.02S	1455038.01E	401612.0	5548663.0
VCUE-08-N-07	3167	401112.97S	1462845.56E	455676.4	5551364.4
VCUE-08-N-08	1001	401150.94S	1455035.57E	401541.0	5549682.0
VCUE-08-N-08	3171	401040.75S	1462847.09E	455706.8	5552358.0
VCUE-08-N-09	1001	401118.43S	1455033.97E	401490.0	5550684.0
VCUE-08-N-09	3171	401008.53S	1462845.20E	455656.2	5553351.3
VCUE-08-N-10	1001	401046.46S	1455031.72E	401424.0	5551669.0
VCUE-08-N-10	3171	400935.75S	1462842.61E	455589.0	5554361.4
VCUE-08-N-11	1001	401013.95S	1455029.90E	401368.0	5552671.0
VCUE-08-N-11	3173	400903.52S	1462842.62E	455583.5	5555355.1
VCUE-08-N-12	1001	400941.86S	1455028.59E	401324.0	5553660.0
VCUE-08-N-12	3170	400831.26S	1462837.82E	455464.2	5556349.0
VCUE-08-N-13	1001	400908.94S	1455028.81E	401316.0	5554675.0
VCUE-08-N-13	3118	400800.51S	1462742.90E	454158.8	5557289.3
VCUE-08-N-14	1001	400836.68S	1455026.48E	401248.0	5555669.0
VCUE-08-N-14	3068	400729.53S	1462647.51E	452842.0	5558236.6
VCUE-08-N-15	1001	400804.26S	1455024.75E	401194.0	5556668.0
VCUE-08-N-15	3016	400659.27S	1462550.66E	451490.6	5559161.0
VCUE-08-N-16	1001	400731.54S	1455022.31E	401123.0	5557676.0
VCUE-08-N-16	2966	400629.07S	1462455.25E	450172.8	5560083.5
VCUE-08-N-17	1001	400659.20S	1455021.42E	401089.0	5558673.0
VCUE-08-N-17	2916	400558.20S	1462401.35E	448890.4	5561026.8
VCUE-08-N-18	1001	400626.52S	1455020.04E	401043.0	5559680.0
VCUE-08-N-18	2864	400527.39S	1462304.87E	447546.5	5561967.8
VCUE-08-N-19	1001	400553.98S	1455018.86E	401002.0	5560683.0
VCUE-08-N-19	2813	400456.97S	1462209.68E	446233.1	5562896.5
VCUE-08-N-20	1001	400521.92S	1455017.08E	400947.0	5561671.0
VCUE-08-N-20	2762	400426.12S	1462113.87E	444904.3	5563838.1
VCUE-08-N-21	1001	400450.01S	1455014.79E	400880.0	5562654.0
VCUE-08-N-21	2712	400354.68S	1462018.57E	443587.4	5564797.6
VCUE-08-N-22	1001	400418.21S	1455013.43E	400835.0	5563634.0
VCUE-08-N-22	2659	400325.53S	1461921.17E	442220.8	5565686.3
VCUE-08-N-23	1001	400345.38S	1455012.22E	400793.0	5564646.0
VCUE-08-N-23	2607	400253.93S	1461824.90E	440880.0	5566650.4
VCUE-08-N-24	1001	400312.49S	1455012.02E	400775.0	5565660.0
VCUE-08-N-24	2555	400223.54S	1461729.72E	439565.2	5567577.0
VCUE-08-N-25	1001	400239.63S	1455008.70E	400683.0	5566672.0
VCUE-08-N-25	2506	400152.90S	1461634.59E	438251.0	5568511.3
VCUE-08-N-26	1001	400207.13S	1455008.49E	400665.0	5567674.0
VCUE-08-N-26	2453	400121.23S	1461538.29E	436908.7	5569476.5
VCUE-08-N-27	1001	400134.46S	1455007.53E	400629.0	5568681.0
VCUE-08-N-27	2402	400051.17S	1461443.46E	435601.1	5570392.6
VCUE-08-N-28	1001	400103.13S	1455004.98E	400556.0	5569646.0
VCUE-08-N-28	2360	400020.13S	1461356.43E	434478.0	5571339.9
VCUE-08-N-29	1001	400030.04S	1455003.98E	400519.0	5570666.0

Line Number	SP Range	Latitude	Longitude	Easting	Northing
VCUE-08-N-29	2359	395947.63S	1461354.22E	434416.9	5572341.6
VCUE-08-N-30	1001	395957.55S	1455001.50E	400447.0	5571667.0
VCUE-08-N-30	2361	395915.16S	1461353.66E	434395.0	5573342.4
VCUE-08-N-31	1001	395916.07S	1455510.05E	407748.0	5573038.0
VCUE-08-N-31	2067	395843.08S	1461352.46E	434358.0	5574331.4
VCUE-08-N-32	1001	395843.60S	1455509.01E	407711.0	5574039.0
VCUE-08-N-32	1675	395823.60S	1460658.64E	424536.6	5574841.1
VCUE-08-N-33	1001	395811.68S	1455508.75E	407693.0	5575023.0
VCUE-08-N-33	1675	395751.13S	1460658.26E	424517.8	5575842.0
VCUE-08-N-34	1001	395738.64S	1455510.03E	407711.0	5576042.0
VCUE-08-N-34	1671	395718.62S	1460655.26E	424436.6	5576843.5
VCUE-08-N-35	1001	395706.76S	1455510.53E	407711.0	5577025.0
VCUE-08-N-35	1670	395646.13S	1460654.58E	424410.6	5577845.2
VCUE-08-N-36	1001	395634.25S	1455508.77E	407657.0	5578027.0
VCUE-08-N-36	1670	395613.62S	1460652.73E	424356.6	5578847.0
VCUE-08-N-37	1001	395602.36S	1455508.47E	407638.0	5579010.0
VCUE-08-N-37	1670	395541.12S	1460652.30E	424336.7	5579849.0
VCUE-08-N-38	1001	395529.91S	1455509.78E	407657.0	5580011.0
VCUE-08-N-38	1666	395508.64S	1460649.31E	424255.6	5580849.6
VCUE-08-N-39	1001	395457.40S	1455509.49E	407638.0	5581013.0
VCUE-08-N-39	1665	395436.73S	1460647.90E	424212.5	5581833.1
VCUE-08-N-40	1001	395424.94S	1455510.00E	407638.0	5582014.0
VCUE-08-N-40	1663	395404.24S	1460646.21E	424162.5	5582834.4
VCUE-08-N-41	1001	395351.98S	1455509.76E	407620.0	5583030.0
VCUE-08-N-41	1663	395331.89S	1460645.91E	424145.4	5583831.5
VCUE-08-N-42	1001	395319.52S	1455510.27E	407620.0	5584031.0
VCUE-08-N-42	1660	395259.41S	1460643.17E	424070.3	5584832.4
VCUE-08-N-43	1001	395247.64S	1455510.77E	407620.0	5585014.0
VCUE-08-N-43	1659	395227.50S	1460642.53E	424045.3	5585815.9
VCUE-08-N-44	1001	395215.14S	1455510.52E	407602.0	5586016.0
VCUE-08-N-44	1657	395154.39S	1460640.05E	423976.3	5586836.2
VCUE-08-N-45	1001	395142.67S	1455510.27E	407584.0	5587017.0
VCUE-08-N-45	1654	395121.93S	1460636.56E	423883.3	5587836.2
VCUE-08-N-46	1001	395110.19S	1455509.23E	407547.0	5588018.0
VCUE-08-N-46	1655	395049.42S	1460636.47E	423871.3	5588838.5
VCUE-08-N-47	1001	395037.12S	1455509.74E	407547.0	5589038.0
VCUE-08-N-47	1654	395016.93S	1460635.88E	423847.2	5589840.0
VCUE-08-N-48	1001	395004.65S	1455509.50E	407529.0	5590039.0
VCUE-08-N-48	1651	394945.05S	1460632.41E	423755.0	5590822.1
VCUE-08-N-49	1001	394932.66S	1455509.24E	407511.0	5591025.0
VCUE-08-N-49	1651	394912.42S	1460632.03E	423736.1	5591828.0
VCUE-08-N-50	1001	394900.17S	1455510.51E	407529.0	5592027.0
VCUE-08-N-50	1648	394839.94S	1460630.06E	423679.1	5592828.9
VCUE-08-N-51	1001	394827.09S	1455510.27E	407511.0	5593047.0
VCUE-08-N-51	1646	394807.45S	1460627.65E	423611.9	5593830.1
VCUE-08-N-52	1001	394754.62S	1455510.78E	407511.0	5594048.0
VCUE-08-N-52	1646	394734.95S	1460628.07E	423611.9	5594832.1
VCUE-08-N-53	1001	394722.15S	1455510.53E	407493.0	5595049.0
VCUE-08-N-53	1643	394703.04S	1460624.61E	423519.7	5595815.0
VCUE-08-N-54	1001	394649.64S	1455509.48E	407456.0	5596051.0
VCUE-08-N-54	1643	394630.56S	1460623.47E	423482.7	5596816.0
VCUE-08-N-55	1001	394617.17S	1455509.23E	407438.0	5597052.0
VCUE-08-N-55	1642	394558.06S	1460622.09E	423439.7	5597817.7
VCUE-08-N-56	1001	394544.67S	1455508.98E	407420.0	5598054.0
VCUE-08-N-56	1641	394525.59S	1460620.70E	423396.7	5598818.4

1.6 PROGRAM MAP



2 SYNOPSIS

2.1 OVERVIEW

The survey consisted of 110 pre-plotted lines with a total of 3658.8 full fold kilometres in the T/48P block situated in the Bass Strait offshore Tasmania. A final total of 3988.225 kilometres of surface coverage equivalent to 3659.6 full fold kilometres were recorded in 115 sequences.

17th March 2008

Vessel arrived at the Cue Energy survey at 04:00 Hrs this was the midpoint between the Tap oil survey and the Cue Energy survey. The first line recorded was VCUE08-E08-001 and continued on to midnight.

18th March 2008

Very good day's production with lines VCUE08- E15, E12 & E09 completed and line E14 up till midnight. Line E14 had a slightly high noise record due to the sea state picking up at the start of the line however the weather continued to abate throughout the line and the brute stacks look good.

19th March 2008

Another good day's production with lines VCUE08-E14, E10, E06 E04 completed and line E07 until midnight. While recording line VCUE08- E04 a submarine surface six miles off the starboard beam as it was heading towards our safety zone radio contact on channel 16 was attempted there was no reply consequently four flare were fired and the ALDIS light used to try and get some attention. The submarine was eventually contacted by radio and its course was altered to give the vessel a wide berth. Radar contact with the submarine was maintained until it was well clear of the vessel.

20th March 2008

Reasonable day's production, down a little due to some longer line changes. Lines VCUE08-E07, N34, N32 & N26 completed with line N21 until midnight. A stronger than expected squall came through which effected lines N26 & N21, streamer depth was set to 9m for both these lines as winds reached in excess of 30Kts and both seas a swell rose to 3m causing heavy swell bursts on the streamer during the line. A look at the brute stacks after processing looked reasonable.

20th March 2008

Very good day's production with lines VCUE08-N21, N24, N20 & N27 completed and line N22 up to midnight. Lines N26 & N21 had some heavy swell bursts at the beginning of the line due to weather conditions but it slowly abated during the line. Streamer depths were set at 9m throughout the lines due to the weather conditions

21st March 2008

Another good day's production with lines VCUE08-N21, N24, N20 & N27 completed and line N22 recorded up to midnight. Line N21 streamer depth set to 9m due to weather conditions winds in excess of 30Kts and swells and seas up to 3m but decreasing brute stacks looked reasonable.

22nd March 2008

A very good day's production with lines VCUE08-N25, N29, N31 & E03 completed and line E01 up to midnight. All lines recorded without any tail buoy GPS data, also unable to track the tailbuoy with either of the radars. CGGVeritas informed of the situation and their recommendation was to keep on recording.

23rd March 2008

A good day's production with lines VCUE08-E01, N35, N33, E02 & E05 completed and line N40 up till midnight. No tail buoy GPS data and still unable to track it by radar.

24th March 2008

Another good day's production with lines VCUE08-E01, N35, N33, E02 & E05 completed and line N40 up to midnight. Still no GPS data from the tail buoy, and unable to track it using the radar.

25th March 2008

A reasonable day's production with lines VCUE-N40, N36, N39, N43, N38 & N41 completed and line N37 recorded up to midnight. However line N41 was terminated early due to an air leak as it was in the run-outs it was considered complete. A couple of line changes had to be extended slightly to give the gunners time to fix air leaks. Still no GPS data from the tail buoy and unable to track it on radar.

26th March 2008

Line VCUE08-N37 was the only line completed to day due to deteriorating weather conditions wind speed exceeded 40Kts and swells up to 4m and seas to 2m. All sources and streamer brought on board to avoid any damage.

27th March 2008

First half of the day lost to weather down time but lines VCUE08-N42, N46, N41, N45 & N48 completed.

28th March 2008

Very good day's production with lines VCUE08-N44, N50, N54, N51 & N55 being completed. And line N52 up to midnight.

29th March 2008

Lines VCUE-N56 & N53 completed when a quick weather front went through, wind speed increased to 40Kts and swells and seas rose to 6m the sources and vane pulled in to avoid any damage. During the afternoon weather started to abate vane and sources were re-deployed, line VCUE08-E13 recorded up to midnight.

30th March 2008

Very good day's production with lines VCUE08-E13, E17 & E21 completed and line E16 up to midnight. The weather conditions were very rough throughout the day all lines were recorded in the

troughs, which made it very uncomfortable. Lines E21 & E16 recorded with a streamer depth set to 9m due to sea state.

31st March 2008

Production was down today caused by weather conditions winds were up to 40Kts at times and the swell increased to 6m. Lines VCUE08-E16, E30 & E25 were completed by recording in the troughs.

01st April 2008

Reasonable day's production cut short due to crew change line VCUE08-E29, E24 & E28 completed. All trailing gear equipment was retrieved and a T/S dip was performed at 040° 18' 39"S 146° 05' 01"E result was 1513.09m/s, the vessel then proceeded to Burnie for crew change.

02nd April 2008

Vessel arrived at Burnie for crew change and re-supply at 05:45Hrs this was completed by 17:00Hrs and the vessel went on weather down time. Weather on the survey area has a sea state between 7 - 8, with winds in excess of 40 Kts and swells over 6m.

03rd April 2008

Vessel still alongside at Burnie due to weather conditions on the prospect area both the Government Bureau of Meteorology and Buoy Weather forecast have winds in excess of 40Kts and 6m swells.

04th April 2008

At 08:00Hrs it was decided that the weather had improved enough to head out unfortunately the port authority could not supply a pilot until 11:00Hrs this was later amended to 13:00Hrs the vessel left for the survey area. Streamer and source deployment commenced at 22:00Hrs once completed offset checks were carried out and the vessel headed for line VCUE08-E44.

05th April 2008

The first line VCUE08-E44-062 was terminated early due to a compressor problem resulting in a circle and a re-shoot of the line. On the next line VCUE08-E49 there was two circles on for operator error and one for a gun problem on source string 1. Lines completed were VCUE08-E49 & E45 and line N19 up to midnight.

06th April 2008

Very good day's production with lines VCUE08-N19, N14, & N18 completed and line N13 up to midnight. Due to the end of daylight saving there is an extra hour on the daily log.

07th April 2008

Another good day's production with lines VCUE08-N13, N17, N12 & N16 completed.

08th April 2008

Good day's production with lines VCUE08-N11, N15 & N10 completed. Towards the end of line VCUE08-N15 at SP 933 the bridge was asked to take the vessel out of Robtrac and go to autopilot as the vessel was drifting off to port, and bring it back to line heading the vessel came back at a

high velocity cross track and ended up 138m offline to port at the end of the line, this also caused some noise on the front end of the streamer.

09th April 2008

Poor day's production due to a circle on line VCUE08-N04 resulting from an air leak on source string 2. Lines complete were VCUE08-N05 & N09 with line N04 up to midnight. On line N04 between SP 2918-2889 lost raw navigation data line was continued using backup navigation system SPM1 which does not output raw data, when the spare SPM2 was initialised there was no jump in navigation position.

10th April 2008

Very good day's production with lines VCUE08-N04, N08 & N03 completed and line N07 up to midnight.

11th April 2008

Another good day's production with lines VCUE08-N07, N02 & N06 completed and line N01 up to midnight.

12th April 2008

Production was down today due to a longer than average line change and a circle on line VCUE08-E18 due to an air leak. Lines completed were VCUE08-N01 & E18 and line E22 up to midnight. Vessel position V1G3 (Multifix Position) changed antenna offsets now running off SPM1 this seems to have fixed the raw GPS data drop outs but the ionospheric data is missing.

13th April 2008

Good production today with lines VCUE08-E22, E19 & E27 being completed, there is still no ionospheric data being recorded. Line VCUE08-E19 is considered complete but from SP2659 to EOL all auxiliary channels on the seismic records were lost. Personally I would have much rather they re-shot that part of the line but CGGVeritas want to look at it to see if they can recover the line.

14th April 2008

Very good day's production with lines VCUE08-E32, E37, E41, E35 & E39 being completed. On line change after line E35 the output of V1G3 was changed from SPM1 to SPM2, new offsets for the antenna for V1G3 entered into SPECTRA was X=5.25 Y=0.00, now X=4.20 Y=1.05.

2.2 SURVEY PRODUCTION BY LINE

Seq	Line Identifier	Hdg	FSP	LSP	Surface Kms	Full Fold Kms
001	VCUE08-E08-001	177	3220	881	58.50000	55.50000
002	VCUE08-E11-002	357	1001	3333	58.32500	55.32500
003	VCUE08-E15-003	177	3211	2176	25.90000	25.90000
003	VCUF08-E15-003	177	2175	881	32.37500	29.37500
004	VCUF08-E12-004	357	1001	3333	58.32500	55.32500
005	VCUF08-E09-005	177	3221	881	58.52500	55.52500
006	VCUF08-E14-006	357	1001	1949	23.72500	23.72500
006	VCUE08-E14-006	357	1950	3333	34.60000	31.60000
007	VCUE08-E10-007	177	3217	881	58.42500	55.42500
008	VCUE08-E06-008	357	1001	2291	32.27500	29.27500
009	VCUE08-E04-009	177	2177	881	32.42500	29.42500
010	VCUE08-E07-010	357	1001	1051	1.27500	1.27500
010	VCUE08-E07-010	357	1052	2289	30.95000	27.95000
011	VCUE08-N34-011	087	1001	1791	19.77500	16.77500
012	VCUE08-N32-012	267	1675	881	19.87500	16.87500
013	VCUE08-N26-013	087	1001	2573	39.32500	36.32500
014	VCUE08-N21-014	267	2712	1422	32.27500	32.27500
014	VCUE08-N21-014	267	1421	881	13.52500	10.52500
015	VCUE08-N24-015	087	1001	2675	41.87500	38.87500
016	VCUE08-N20-016	267	2762	881	47.05000	44.05000
017	VCUE08-N27-017	087	1001	2522	38.05000	35.05000
018	VCUE08-N22-018	267	2659	2348	7.80000	7.80000
018	VCUE08-N22-018	267	2347	1010	33.45000	30.45000
019	VCUE08-N28-019	087	1001	2480	37.00000	34.00000
020	VCUE08-N23-020	267	2607	881	43.17500	40.17500
021	VCUE08-N30-021	087	1001	2481	37.02500	34.02500
022	VCUE08-N25-022	267	2506	881	40.65000	37.65000
023	VCUE08-N29-023	087	1001	2479	36.97500	33.97500
024	VCUE08-N31-024	267	2067	881	29.67500	26.67500
025	VCUE08-E03-025	177	2176	881	32.40000	29.40000
026	VCUE08-E01-026	357	1150	2293	28.60000	25.60000
026	VCUE08-E01-026	357	1001	1149	3.72500	3.72500
027	VCUE08-N35-027	087	1001	1790	19.75000	16.75000
028	VCUE08-N33-028	267	1675	881	19.87500	16.87500
029	VCUE08-E02-029	177	2179	881	32.47500	29.47500
030	VCUE08-E05-030	357	1001	2294	32.35000	29.35000

Seq	Line Identifier	Hdg	FSP	LSP	Surface Kms	Full Fold Kms
031	VCUE08-N40-031	087	1001	1410	10.25000	10.25000
031	VCUE08-N40-031	087	1411	1783	9.32500	6.32500
032	VCUE08-N36-032	267	1670	881	19.75000	16.75000
033	VCUE08-N39-033	087	1001	1785	19.62500	16.62500
034	VCUE08-N43-034	267	1659	881	19.47500	16.47500
035	VCUE08-N35-035	087	1001	1786	19.65000	16.65000
036	VCUE08-N41-036	267	1663	960	17.60000	14.60000
037	VCUE08-N37-037	087	1001	1555	13.87500	13.87500
037	VCUE08-N37-037	087	1556	1790	5.87500	2.87500
039	VCUE08-N42-039	267	1660	881	19.50000	16.50000
040	VCUE08-N46-040	087	1001	1775	19.37500	16.37500
041	VCUE08-N49-041	267	1651	881	19.27500	16.27500
042	VCUE08-N45-042	087	1001	1774	19.35000	16.35000
043	VCUE08-N48-043	267	1651	881	19.27500	16.27500
044	VCUE08-N44-044	087	1001	1777	19.42500	16.42500
045	VCUE08-N47-045	267	1654	881	19.35000	16.35000
046	VCUE08-N50-046	087	1001	1768	19.20000	16.20000
047	VCUE08-N54-047	267	1643	881	19.07500	16.07500
048	VCUE08-N51-048	087	1001	1766	19.15000	16.15000
049	VCUE08-N55-049	267	1642	881	19.05000	16.05000
050	VCUE08-N52-050	087	1001	1616	15.40000	15.40000
050	VCUE08-N52-050	087	1617	1766	3.75000	0.75000
051	VCUE08-N56-051	267	1641	881	19.02500	16.02500
052	VCUE08-N53-052	087	1001	1763	19.07500	16.07500
053	VCUE08-E13-053	177	3212	1687	38.15000	38.15000
053	VCUE08-E13-053	177	1686	881	20.15000	17.15000
054	VCUE08-E17-054	357	1001	3333	58.32500	55.32500
055	VCUE08-E21-055	177	3211	881	58.27500	55.27500
056	VCUE08-E16-056	357	1001	2435	35.87500	35.87500
056	VCUE08-E16-056	357	2436	3333	22.45000	19.45000
057	VCUE08-E30-057	177	2236	881	33.90000	30.90000
058	VCUE08-E25-058	177	1001	2357	33.92500	30.92500
059	VCUE08-E29-059	177	2238	881	33.95000	30.95000
060	VCUE08-E24-060	357	1001	2377	34.42500	31.42500
061	VCUE08-E28-061	177	2239	881	33.97500	30.97500
063	VCUE08-E44-063	357	1001	1867	21.67500	18.67500
065	VCUE08-E49-065	177	1589	881	17.72500	14.72500
066	VCUE08-E45-066	357	1001	1868	21.70000	18.50000
067	VCUE08-N19-067	267	2813	2117	17.42500	17.42500

Seq	Line Identifier	Hdg	FSP	LSP	Surface Kms	Full Fold Kms
067	VCUE08-N19-067	267	2116	881	30.90000	27.90000
068	VCUE08-N14-068	087	1001	3188	54.70000	51.70000
069	VCUE08-N18-069	267	2864	881	49.60000	46.60000
070	VCUE08-N13-070	087	1001	3075	51.87500	51.87500
070	VCUE08-N13-070	087	3076	3238	4.07500	1.07500
071	VCUE08-N17-071	267	2916	881	50.90000	47.90000
072	VCUE08-N12-072	087	1001	3290	57.25000	54.25000
073	VCUE08-N16-073	267	2966	881	52.15000	49.15000
074	VCUE08-N11-074	087	1001	3293	57.32500	54.32500
075	VCUE08-N15-075	267	3016	881	53.40000	50.40000
076	VCUE08-N10-076	087	1001	3291	57.27500	54.27500
077	VCUE08-N05-077	267	3167	881	57.17500	54.17500
078	VCUE08-N09-078	087	1001	3291	57.27500	54.27500
080	VCUE08-N04-080	267	3166	1904	31.57500	31.57500
080	VCUE08-N04-080	267	1903	881	25.57500	22.57500
081	VCUE08-N08-081	087	1001	3291	57.27500	54.27500
082	VCUE08-N03-082	267	3166	881	57.15000	54.15000
083	VCUE08-N07-083	087	1001	2309	32.72500	32.72500
083	VCUE08-N07-083	087	2310	3287	24.45000	21.45000
084	VCUE08-N02-084	267	3166	881	57.15000	54.15000
085	VCUE08-N06-085	087	1001	3288	57.20000	54.20000
086	VCUE08-N01-086	267	3166	1857	32.75000	32.75000
086	VCUE08-N01-086	267	1856	881	24.40000	21.40000
087	VCUE08-E18-087	357	1001	1985	24.62500	24.62500
088	VCUE08-E18-088	357	1986	3333	33.70000	30.70000
089	VCUE08-E22-089	177	3213	1575	40.97500	40.97500
089	VCUE08-E22-089	177	1574	881	17.35000	14.35000
090	VCUE08-E19-090	357	1001	3333	58.32500	55.32500
091	VCUE08-E23-091	177	3211	881	58.27500	55.27500
092	VCUE08-E27-092	357	1001	2359	33.97500	30.97500
093	VCUE08-E32-093	177	2235	881	33.87500	30.87500
094	VCUE08-E37-094	357	1001	2094	27.35000	24.35000
095	VCUE08-E41-095	177	1852	881	24.30000	21.30000
096	VCUE08-E35-096	357	1001	2149	28.72500	27.30000
097	VCUE08-E39-097	177	1897	881	25.42500	22.42500
098	VCUE08-E42-098	357	1001	1939	23.47500	20.47500
099	VCUE08-E46-099	177	1702	881	20.55000	17.55000
100	VCUE08-E50-100	357	1001	1706	17.65000	14.65000
101	VCUE08-E53-101	177	1496	881	15.40000	12.40000

Seq	Line Identifier	Hdg	FSP	LSP	Surface Kms	Full Fold Kms
102	VCUE08-E48-102	357	1001	1747	18.67500	15.67500
103	VCUE08-E52-103	177	1512	881	15.80000	12.80000
104	VCUE08-E47-104	357	1001	1370	9.25000	9.25000
104	line VCUE08-E47	357	1371	1789	10.47500	7.47500
105	VCUE08-E51-105	177	1550	881	16.75000	13.75000
106	VCUE08-E43-106	357	1001	1901	22.52500	19.52500
107	VCUE08-E40-107	177	1866	881	24.65000	21.65000
108	VCUE08-E34-108	357	1001	2191	29.77500	26.77500
109	VCUE08-E38-109	177	1942	881	26.55000	23.55000
110	VCUE08-E33-110	357	1001	2357	33.92500	30.92500
111	VCUE08-E36-111	177	2011	881	28.27500	25.27500
112	VCUE08-E31-112	357	1001	2358	33.95000	30.95000
113	VCUE08-E36-113	177	2234	881	33.85000	30.85000
114	VCUE08-E20-114	357	1001	1481	12.02500	12.02500
114	VCUE08-E20-114	357	1482	3333	46.30000	43.30000
115	VCUE08-E54-114	216	1001	2136	28.40000	25.40000

Total Survey Production

Surface KM	KMFF
3988.22500	3659.60000

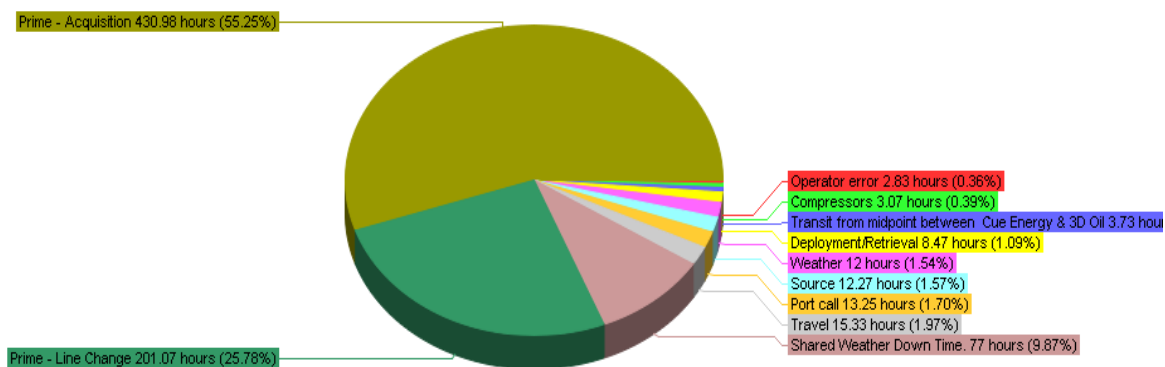
2.3 STATISTICAL SUMMARY**Total Survey Timing**

Code	Description	Duration
01	Prime - Acquisition	430.98
02	Prime - Line Change	201.07
09	Shared Weather Down Time.	77.00
10	Weather	12.00
19	Transit from midpoint between Cue Energy & 3D Oil	3.73
25	Port call	13.25
26	Travel	15.33
27	Deployment/Retrieval	8.47
29	Operator error	2.83
30	Source	12.27
31	Compressors	3.07

Total Time = 780.000 Hours

Timing Breakdown

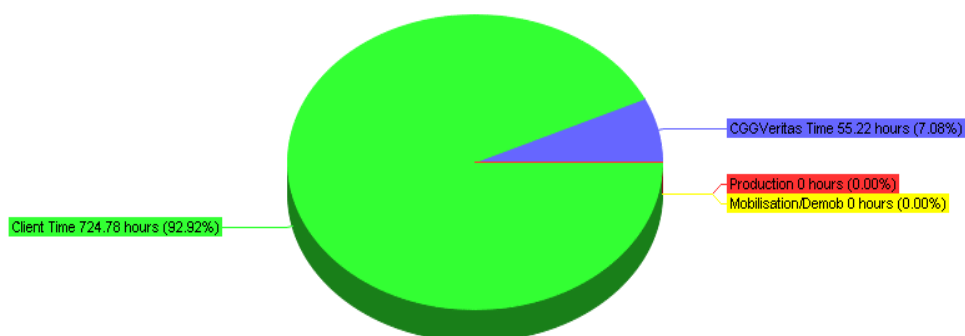
Cue 2D - Timing Breakdown



created with ChartDirector from www.advsofteng.com

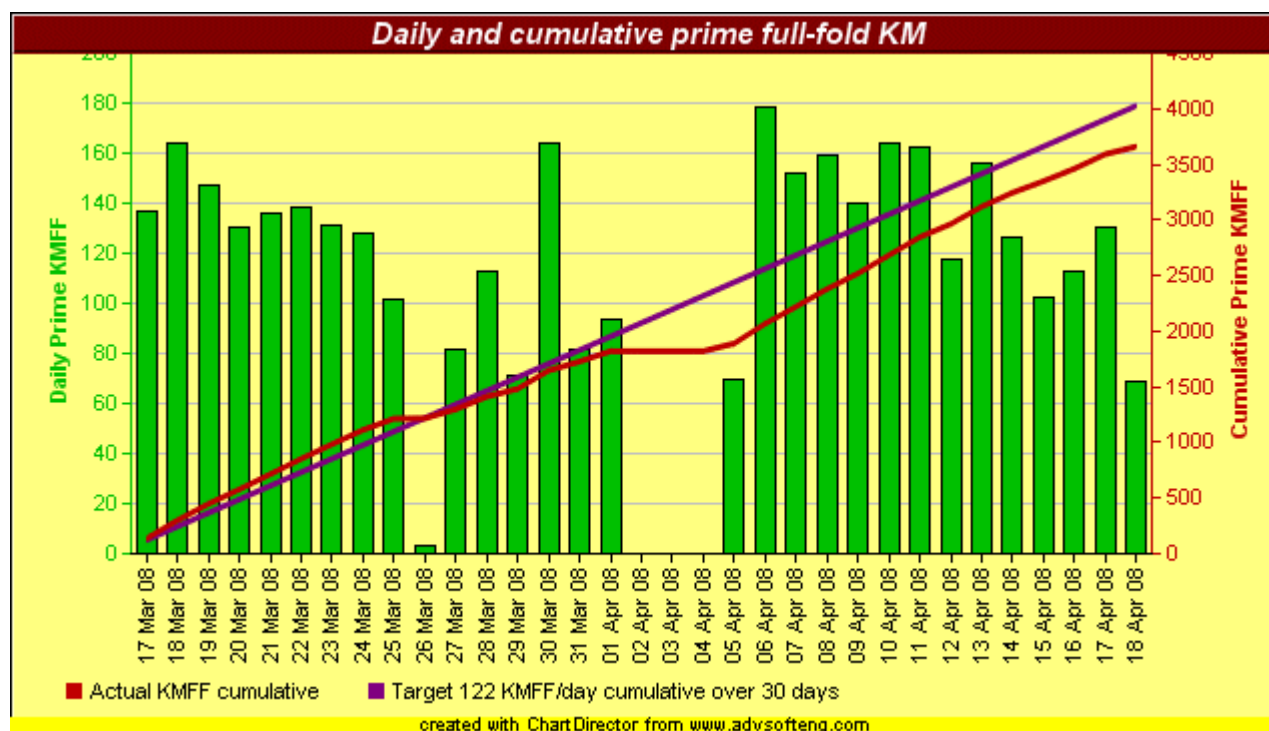
Category Timing

Cue 2D - Category Timing between 17 Mar 08 and 18 Apr 08 (Total = 780.00 hours)

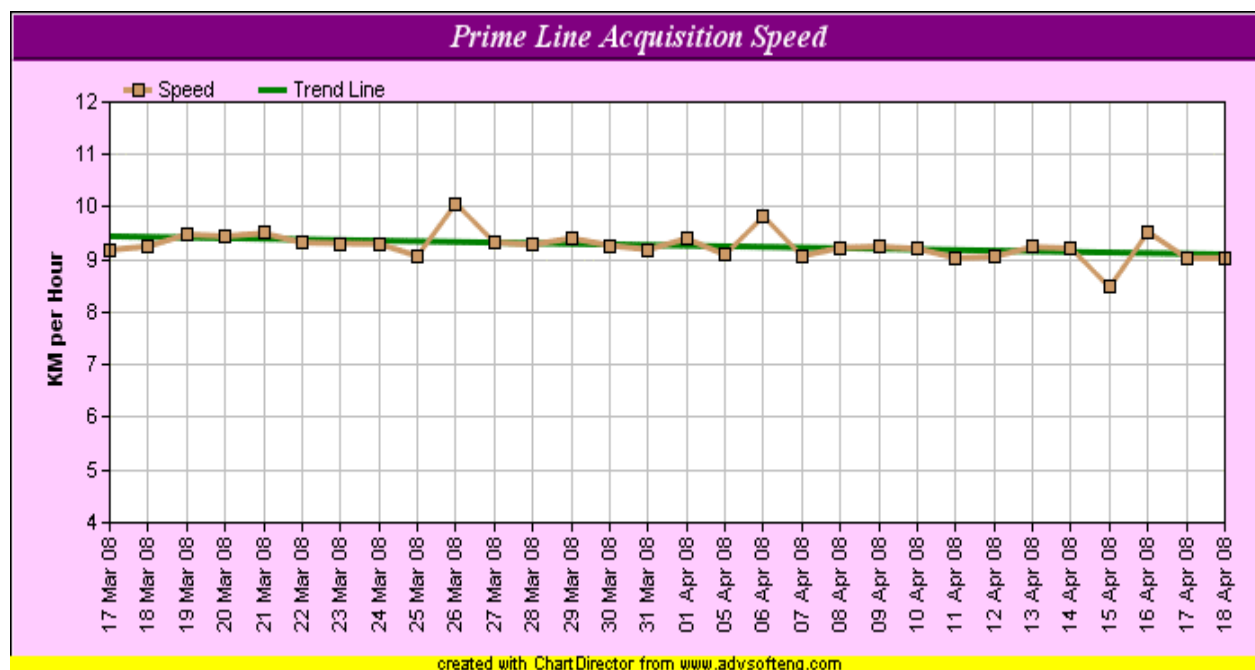


created with ChartDirector from www.advsofteng.com

Daily and Cumulative Full Fold Kilometres



Acquisition Speed

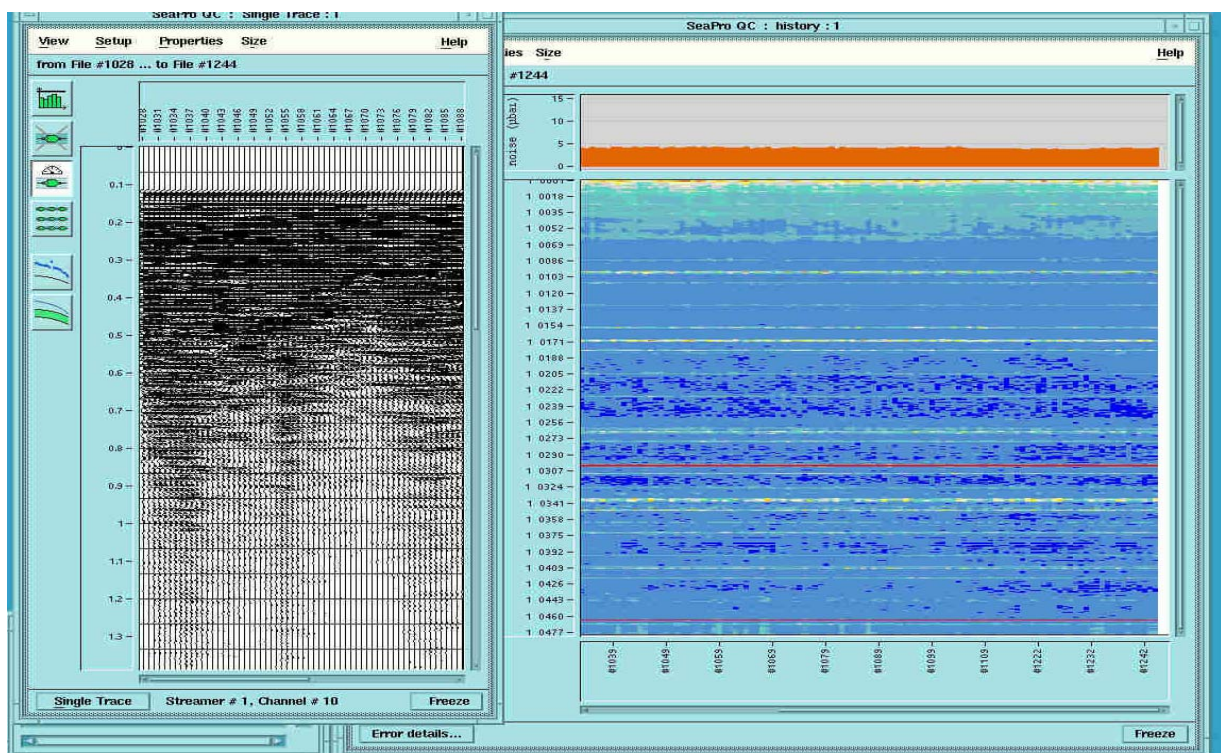


2.4 TECHNICAL SUMMARY

The following is a brief description of individual equipment performance throughout the survey:

Recording Instruments

The Pacific Titan is fitted with a Sercel 24 bit SEAL system. This was a brand new system for the Pacific Titan and relatively new to the market. The Sercel system provided a comprehensive array of real time on screen displays, showing auxiliary channels, Streamer channel display and single trace display. The last 20 records could be accessed and displayed for QC evaluation. A shot display similar to the old oscilloscope display but greatly expanded and colour coded to indicate noise strength was also available. All displays could be manipulated to improve data quality control. The figure below shows a sample screen shot from the Seal recording system.



A full set of daily tests was automatically carried out each day showing the recording system and streamer were within contract specification. The system operated faultlessly during the survey.

Observer's reports were automatically generated using CGGVeritas standard Obslog package. Faults from the recording system and array logging system were automatically generated at the completion of each line. The quality of the Observers logs was acceptable. There could have been more detail regarding streamer control and weather observations in regard to the streamer and data.

Streamer

The Sercel solid digital streamer worked extremely well during the survey with no down time. Streamer depths were maintained at 8 metres. Noise levels on the data were monitored closely during QC processing.

Energy Source

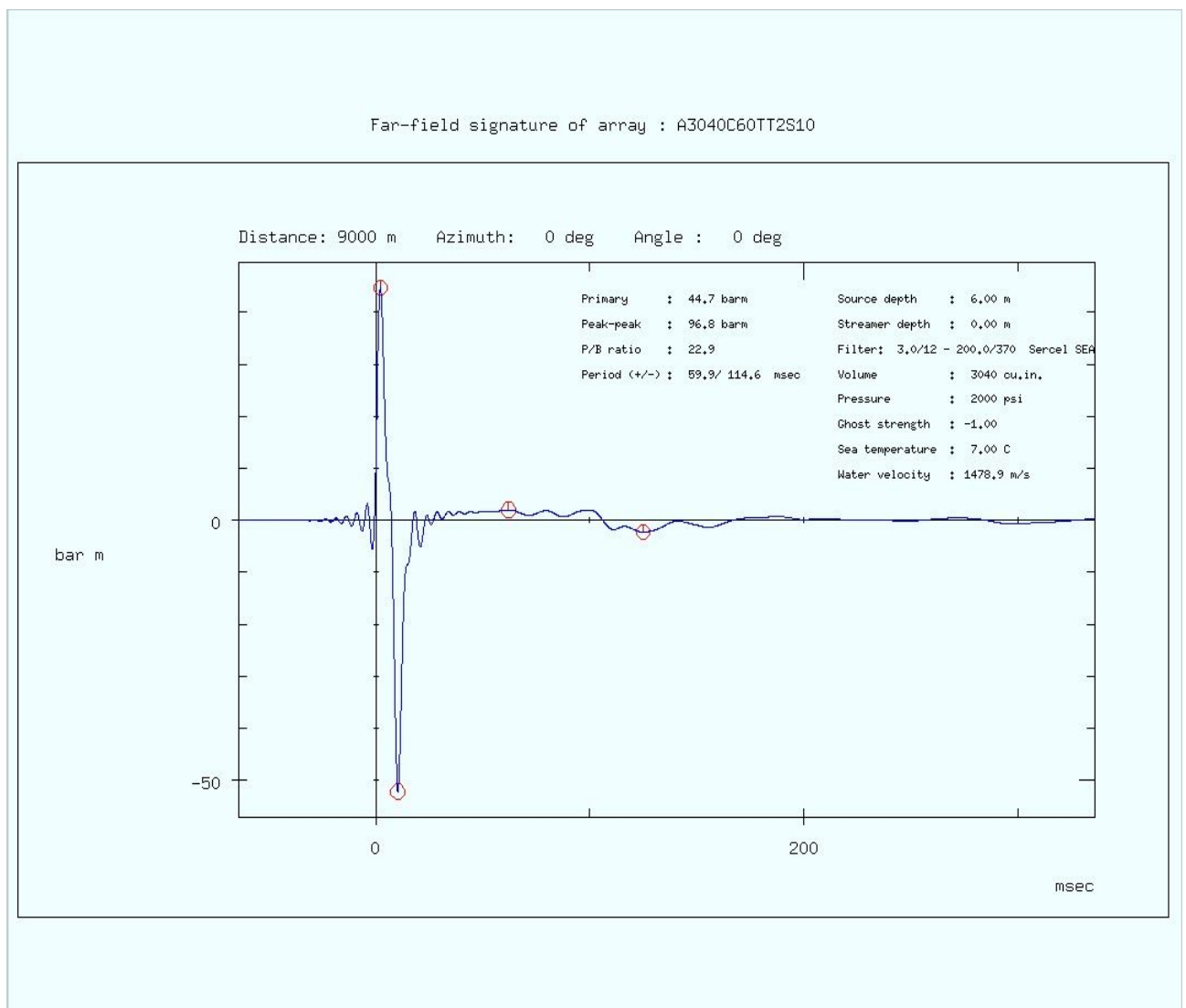
Over the past few years the Pacific Titan was used primarily as a source vessel so the arrays and the attached infrastructure were in good condition. A new Sealink 2000, onboard source controller and hydrophone data acquisition system was installed early 2004. A twin screen graphical interface allows for simple operator monitoring and control as well as showing deterioration of gun performance

A rigorous maintenance schedule was maintained on the array strings and individual elements were replaced at the specified time regardless of their performance.

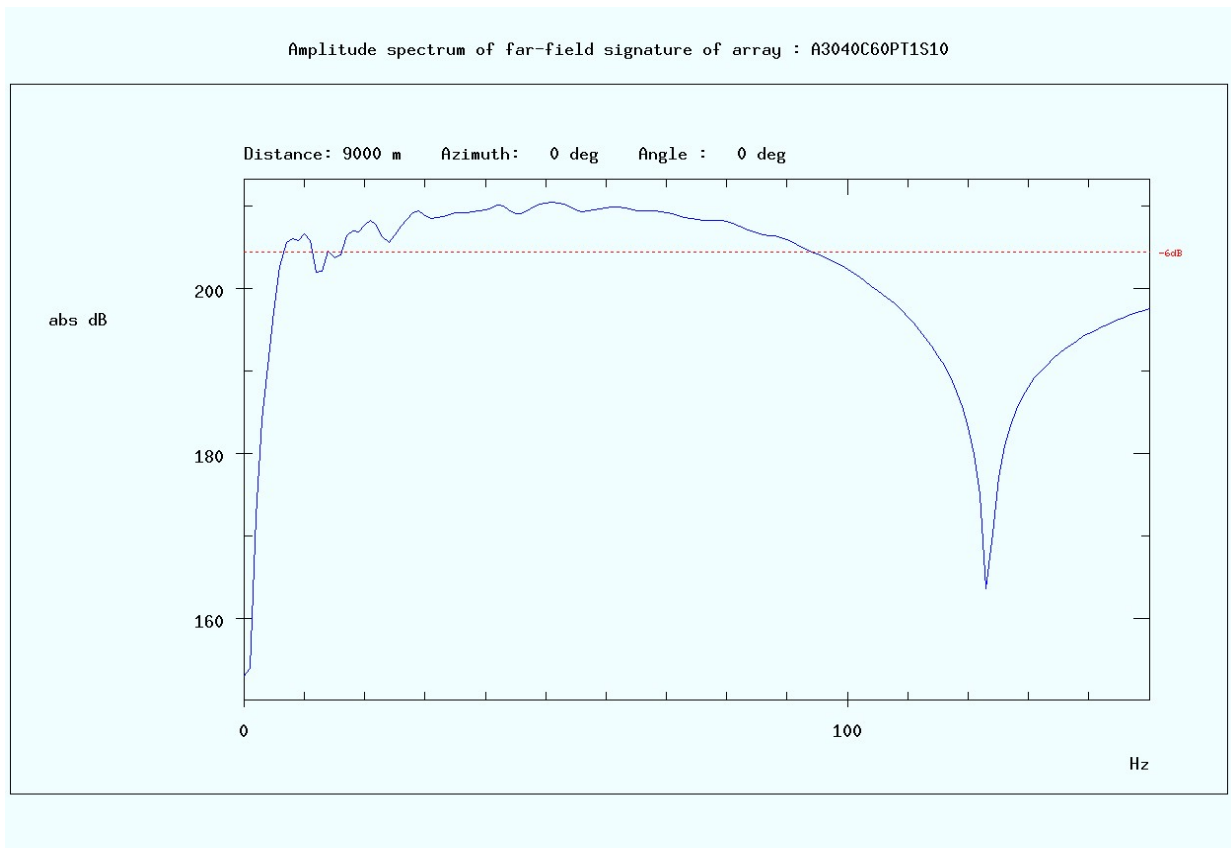
The three sub arrays were equipped with a total of 26 array elements. The drop out spec was generated by CGGVeritas 12.27 hours were lost to source array problems which was excellent considering the size of the prospect. A 3040 cu³ inch array was used through out the survey.

The Titan has three compressors, one compressor comfortably maintained air pressure with the other one being rotated through to allow maintenance to be carried out. Down time to compressors was 3.07 hrs when a compressor dump valve stuck open. The 25.0m recording intervals was easily within the scope of the compressors.

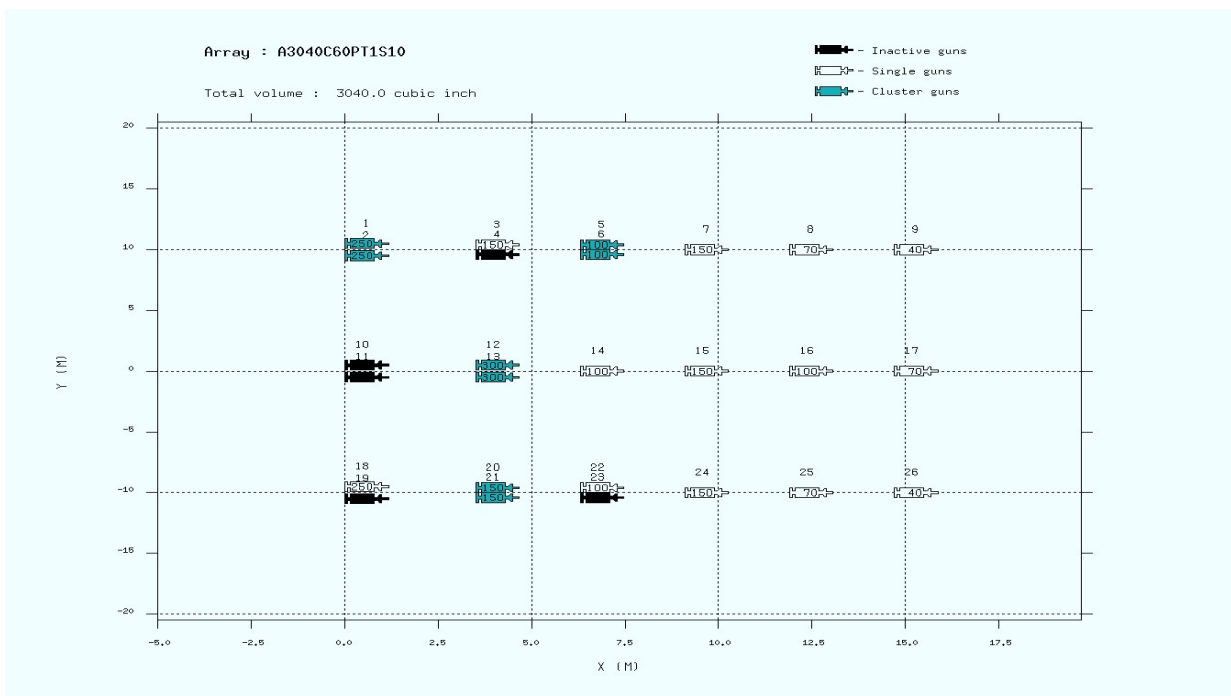
The 3040 cu in Source Array



The Amplitude Spectrum of the 3040 cubic inch array.



The 3040 cubic inch array layout.



Streamer Details

Seismic data were acquired during this survey using the SEAL Digital Solid Streamer, manufactured by Sercel, Inc.

<u>item</u>	<u>description</u>	<u>type</u>	<u>amount</u>	<u>remark</u>
Streamers	24 bit, digital	SEAL Sercel	2D, Up to 12 km active	
Depth Control	Digicourse	5011	Up to 40	
Buoyancy		Foam		
Retrievers	Concord	SRD	12	3 each 3 km
Streamer skin	Polyurethane	3.5mm		
Hydrophones	SSAS	Radial		
Section Length	150 m			
Section diameter	50 mm			
Lead-in	300 m			
Group Length	12.5 m			
No of hydrophones per group	8			21.5V/bar sensitivity
Max number of channels	960			12.5m @ 2ms
Telemetry data link	Dual twisted pair with CRC control	AWG 22		
Power lines	Dual	AWG 14		
Connectors	28 pin			
Acquisition	Sercel	SEAL	1	
Format	SEG D rev.2	8058		
Recording	3590 cartridge	IBM comp.	3	
Computer	Sun	Blade 2000	1	
Bird Controller	Digicourse	System	1	
Sampling				¼, 1/2, 1,2,4 ms
Aux channels			40	max 100
Plotter	Isys	24"	1	online
Printer	HP	830 A4		Logs, tests etc.
Network	TCP/IP	100kb		Ethernet coax

2.5 VESSEL

The Pacific Titan was built in Japan in 1982 and since that time has been through a number of transformations, from anchor handler to seismic boat, back to anchor handler before being refitted once more as a seismic vessel.

Although the vessel is set up as a 3D vessel, she was a good 2D platform. The 3D capacity meant that it was possible to make use of active floats on the tail buoy and sub arrays thus providing a higher degree of positioning accuracy than would normally be found on a 2D survey vessel. The latest refit saw a Sercel Solid digital streamer installed along with an Argus tape management system where data is written to a hard drive before being transferred to tape. This allows more time for system communications and greatly reduces the possibility of tape errors.

The vessel has been poorly maintained over the years and needs to have a general tidy up to be comfortable. For the size of the vessel the cabins for both seismic and marine crews are small and cramped. Conditions are reminiscent of 20 years ago. Extended surveys on this vessel could



become a serious OHS issue. There are adequate numbers of showers and toilets available and although the steward worked hard to keep them clean, they are in a poor state and need to be completely refitted to a standard fitting the current OHS standards expected of crews and vessels. The same argument could be applied to the quarters for the seismic crew.

Swire Pacific Offshore supplied the vessel marine personnel. All seismic personnel were from various countries and contracted to CGGVeritas.

The instrument room while not large was well laid out with plenty of working space for all personnel. The back deck areas are split with the streamer reels above the array deck. Both areas were spacious with plenty of safe working space for both array mechanics and streamer handling. The galley and mess areas were adequate. House keeping on the whole was adequate

Communications are through Norsat and Inmarsat. The client has an office next to the instrument room with a network connection but no phone.

Vessel Specifications

Name	:M/V Pacific Titan
Owner	:Swire Pacific Offshore Operations (Pte) Ltd
Port of Registry	:Singapore
Date Built	:1981
Date Refit	:2000
IMO Number	:8208385
Radio Call Sign	:9V5935
Classifications	
Flag	:Singapore
Class	:A1 (E) Seismic Research AMS ACCU
Designation	:Seismic Research Vessel
Dimensions	
Length, overall	:64.50 meters
Beam	:18.50 meters
Draft	:6.00 meters
GRT	:3211 tonnes (gross registered tonnage)
NRT	:963 tonnes (net registered tonnage)
Machinery	
Main Engines	:4 x 1600 bhp, 6Z-ST, total 6400 bhp @ 680 rpm
Propulsion	:2 x variable pitch, in Kort Nozzles
Bow Thruster	:Yanmar 6LAAL-DTN, 420 bhp, 5 tonnes thrust
Generators	:3 x 280 kW, 440v, 60 Hz alternators, driven by Yanmar 6LAAL-DTN diesel engines.
Capacities	
Fuel Oil Capacity	:1300 cubic meters
Lubricating Oil Capacity	:5.0 cubic meters
Cable Oil Capacity	:48.0 cubic meters
Fresh Water Capacity	:154.0 cubic meters
Water Maker	:2 x RO Machines, producing 20.0 cubic meters per day
Operating Capabilities	
Speed	:12 knots (Maximum), 10 knots (Cruising)
Fuel Consumption	:9.0 cubic meters per day (average)
Endurance	:45 days, while conducting 2D survey
Bridge Equipment	
Radar	:Kelvin Hughes Nucleus 6000A ARPA with slave in instrument room
Secondary Radar	:JRC JMA 3210 Daylight
Echo Sounder	:Simrad ED-162
GPS	:Furuno GP 30
Communications	:G.M.D.S.S.(Global Maritime Distress & Safety System)
	:1x Skanti SSB
	:2 x VHF
	:2 x Inmarsat C 456304540/456304550 with
	:Thrane and Thrane telex facility
	:3 x VHF (portable GMDSS)
	:2 x SART
	:1 x EPIRB
	:1 x Navtex
	:1 x Jotron TR-6102 Airband Transceiver
Satcom B	:NERA Inmarsat phone / fax
	:Tel: (874) 335 385 510
	:Fax: (874) 335 385 513
Satcom C	:TeleNor C-Link phone / fax
High Speed data link	:TeleNor C-Link
Weather Fax	:Furuno 207

Safety Equipment

Fire monitoring, and detection of all accommodation, machinery and office spaces.
Foam deluge system covering streamer winches, streamer storage reels and helideck.
Six man solid Man overboard boat on quick release davit.
7.5 metre, 210hp. Rigid NorSafe Fast Rescue Boat Certified for 10 people.
LSA equipment for 45 persons excluding survival suits.

2.6 SAFETY SUMMARY

The vessel fully adheres to the health and safety requirements as set out by SOLAS. All machinery and seismic equipment is maintained on a computerised planned maintenance system. HSE audit recommendations are implemented through the IMGC-QHSE System which highlights deficiencies identified during audits and sets target dates for the completion of work along with whom or which department is responsible. Regular cross audits are held to improve and bring to attention any problems in operations or work practises. All emergency exits and routes to exits are adequately marked. A fully integrated alarm system is in place and is tested on a regular basis. Flashing lights are fitted to alert personnel when equipment on the gun deck is either being pressurised or test fired. Fire fighting equipment is positioned at all necessary locations about the vessel. The streamer reel is covered by a foam deluge system. The streamer reels are fitted with a 'save-all'. There is no obvious drainage to the waste kerosene tank. Nearly all-lifting equipment on the gun deck consists of stainless steel chains and shackles. Lifting points on deck heads were not used unless they had been rated. All certification is current. More than adequate abandonment equipment is carried on board.

Emergency procedures are laid down and prominently displayed about the vessel. Vessel plans showing emergency escape routes along with the location of all emergency equipment are also prominently displayed. Emergency fire/boat and man-overboard drills are held on a weekly basis. Current policy, hazards, near misses and topics arising are dealt with during the HSE meetings held for all crew.

Procedures for handling trailing gear during deployment and recovery were clearly laid down and followed closely. Procedures are under constant review as both the equipment and therefore the handling techniques change. Procedures are also in place for two-boat operations, helicopter operations and at-sea personnel transfers. Safety 'toolbox' meetings were held with all personnel involved prior to any operation. A Permit to Work system was in place for all hot work (burning, welding, and cutting), confined space entry, work aloft, work on high-pressure systems and electrical systems.

Comprehensive first aid and medical supplies are carried onboard. Medical advice was on hand through the ISOS Sydney (+61 2 9372 2468), Frontier Medical (27 7 6840 3344), AUSSAR (Australian Search and Rescue) & Victoria Air Ambulance 000/ 1300 883 200.

All seismic personnel have completed an offshore survival course, which covers survival at sea; fire fighting, first aid and helicopter underwater escape training. The Master, Chief Officer and some senior seismic personnel have undertaken advanced first aid and HSE management courses.

The waste management system in place onboard consisted of all food waste being separated prior to incineration. All glass and metal were separated for disposal ashore. Dirty oil, PVC and plastic refuse was also stored separately for disposal onshore in line with MARPOL regulations.

The standard of accommodation was adequate to poor. The general housekeeping was adequate.

Pacific Titan Crew List				Date:	3rd March	2008
No	Name	Rank	D.O.B.	Citizen	Passport no.	Exp.date
1	Theodore Strockyj	Captain	15.09.50	Australian	E3061610	19.12.17
2	James Riley	Chief Officer	11.11.80	Australian	L7347221	26.04.09
3	Hemaka Dissanayake	2nd Mate	26.02.72	New Zealander	EA888314	29.10.12
4	Carl Sayers	Chief Engineer	24.05.49	New Zealander	AA647005	14.03.13
5	Alexander Ivanoff	1st Engineer	05.12.60	Australian	M5216687	22.11.15
6	Alexander Saldanha	2nd Engineer	04.03.64	Australian	M1239195	12.02.14
7	Kerin Ross	G.P.	06.07.46	Australian	L7195273	08.02.09
8	Chris Pitman	G.P.	16.11.48	New Zealander	AA500827	18.06.12
9	Michael Howard	G.P.	29.07.73	Australian	M7562140	01.10.17
10	John Mason	G.P.	17.05.47	Australian	E7592880	30.08.12
11	Donald Crawford	Chief Stwd	13.04.46	Australian	M5345157	21.07.16
12	Graeme Scott	Stwd	09.07.56	Australian	M1975283	26.11.14
13	Christopher Milne	Ch Cook	03.04.61	Australian	M5791813	01.04.16
14	Anthony Raines	Cook	07.03.54	Australian	M1656991	19.07.14
15	Shan Mudiyansele	Comp Mech	05.01.63	Sri Lankan	M1858320	31.03.09
16	Peter Brown	Comp Mech				
CGG VERITAS GEOPHYSICAL						
17	Sigurd Østerrud	Party Chief	15.10.61	Norwegian	20761184	24.02.15
18	Paul Stafford	Ch Navigator	11.05.70	British	203602835	24.04.12
19	Jun Lumabas	Observer	31.10.80	Filipino	ZZ229544	29.06.12
20	Dervin Arenal Victorio	Observer	23.10.80	Filipino	XX0019977	13.09.12
21	Roger Steffensen	Chief Mechanic	06.08.53	Norwegian	25245636	11.04.16
22	Ronaldo Morales	Mechanic	22.03.59	Filipino	ZZ145454	18.05.10
23	Reynaldo Vega	Mechanic	17.09.62	Filipino	UU0385562	19.12.11
24	Victor Satago	Mechanic	08.05.68	Filipino	XX0022520	16.09.12
25	Jose Peralta	Mechanic	01.06.50	Filipino	SS0035761	01.12.10
26	Steffi Schwarz	Field Geophys.	02.04.73	Australian	M2598263	
27	Dennis Aquino	Geophy	02.08.79	Filipino	XX0037558	24.09.12
28	Dennis Maranon	Observer	22.09.77	Filipino	QQ0076201	17.03.10
29	Christopher Hernandez	Navigator	5.12.83	Filipino	XX0188983	29.11.12
30	Roberto Obras Sibayan	Medic	13.05.65	Filipino	TT0947029	23.10.11
31	Allan Beattie	Observer	23.03.65	British	93105388	03.12.13
32	Richard Sykes	HSE	18.08.66	British	761103260	28.02.16
33	Clement Le Du	Navigator	23.03.07	French	03TE59624	
34	William Lloyd	Client Rep	21.10.48	Australian	E1022292	14.03.15
35	Carol Sutherland	MMO	28.08.63	New Zealander	AB718594	11.08.10

Pacific Titan Crew List				Date:	2nd. April	2008
No	Name	Rank	D.O.B.	Citizen	Passport no.	Exp.date
1	Bruce Wallis	Captain	24.08.53	Australian	L8924123	25.01.11
2	Raymond Smith	Chief Officer	23.04.61	Australian	M6763702	17.04.17
3	William Shelley	2nd Mate	26.02.72	Australian	E3022159	
4	Tommy Boughton	Chief Engineer	30.03.55	Australian	M7065567	01.06.17
5	Peter Caple	1st Engineer	02.05.65	Australian	E3052135	16.10.17
6	P.Golatkar	2nd Engineer	25.06.59	Indian	B5713039	02.08.11
7	C.Herangi	G.P.	04.08.56	New Zealander	AA390623	28.05.12
8	K.Robertson	G.P.	10.06.48	Australian	M6535274	15.11.16
9	Bjorn Thomasson	G.P.	11.10.52	New Zealander	AA528860	
10	Lionel Hall	G.P.	03.01.58	Australian	M5337014	22.05.16
11	Jamie Dent	Chief Stwd	21.09.61	Australian	L89494325	22.05.10
12	Bruce Maher	Stwd	05.03.53	Australian	L3042947	29.11.11
13	David Ferrier	Chief Cook	12.03.58	Australian	M5091479	11.04.16
14	Nathan Bartlett	2nd. Cook	01.05.80	Australian	M1664811	28.10.14
15	Kenneth Stephens	Comp. Mech	17.09.51	Australian	M1851206	27.09.14
16	David Billington	Comp. Mech	09.11.49	Australian	M2858580	30.06.15
CGG VERITAS GEOPHYSICAL						
17	Haydn Brook	Party Chief	10.07.73	Australian	E1024451	10.03.15
18	Tyrone Hackett	Chief Observer	19.12.71	Canadian	BD106336	16.06.10
19	John Shannon Gracey	Observer	18.07.59	British	039872219	27.10.10
20	Steven Ryan	Ch Nav	10.08.81	Australian	M5358989	04.01.12
21	Ralph Bennett	Chief Mechanic	26.03.58	British	102069928	18.12.10
22	Regis Derrien	SL Mechanic	15.02.69	French	02YD55942	06.08.12
23	William Agcaoili	SL Mechanic	18.11.51	Filipino	ZZ206521	29.11.11
24	Paulo Goncalves	Mechanic	07.09.71	French	05AT81090	14.02.16
25	Ivar Almhjell	Mechanic	24.01.75	Norweign	26128623	06.08.17
26	Aleil Aliman	Medic	08.03.75	Filipino	SS0907185	06.04.11
27	Ingvild Bostad	Observer	04.02.79	Norwegian	20874534	09.05.15
28	Tommy Timenes	Chief Field-Geo	02.09.73	Norwegian	26335444	23.08.08
29	Isabelle Nicolas	Field Geo.	16.05.79	Filipino	ZZ213750	22.01.12
30	Jared Smith	Navigator	03.03.78	New Zealander	F017116	16.05.10
31	Donald Hutchings	SL Navigator	16.03.59	Canadian	BD106848	18.08.12
32	Slavomir Korybalski	SL Observer	01.03.75	Polish	AT8339985	30.08.17
33	William Lloyd	Client Rep	21.10.48	Australian	E1022292	14.03.15
34	Debbie Glasgow	MMO	25.11.57	New Zealand	N466526	01.12.08

HSE Details for Survey

Fatality	0	Client	788
Lost Time Incident	0	Maritime	12848
Medical Treatment Case	0	Seismic	13252
First Aid Case	0	3rd Party	788
Restricted Work Case	0		
Material Loss or Damage	0		
Environmental Incident/Damage	0		
Near Miss	0		
Hazard	0		
Unsafe Act	0		
Total Incidents	0	Total Hours	27676
		Total Man Days	1153.16666667

2.7 RECOMMENDATIONS & CONCLUSION

- Showers and toilets need renewing, they are in a very poor state and unhygienic
- The overall appearance of the vessel is poor, this reflects on both the contractor and the Company.
- With the overall OH&S performance expected of and delivered by both the Marine Crew and the Seismic Crew. The acceptance of a vessel in the Pacific Titans condition is a let down the hard work done by the crew in maintaining a safe and comfortable work environment.

The over all performance of the crew was excellent, work was carried out in a professional manner, any problems encountered were quickly brought to the client's attention.

Safety standards by both marine and seismic crew were high, closer cooperation during drills would be an advantage and improve teamwork.

3 NAVIGATION

3.1 NAVIGATION HARDWARE AND SOFTWARE

System	Hardware (Type and Serial No.)	Software version
Concepts Spectra Concepts Reflex SeisPos processing External Header Compass System TS-meter Echo Sounder Multifix 5	RTN μ (30/207P & 30/208P) Linux Workstations Windows Workstation Digicourse System 3 5011 Birds Saiv AS STD/CTD model SD204 SIMRAD EA600 Windows Workstation	Spectra v 10.9.01.10 Reflex v 1.9.4 (Not in use) Red Hat v 7.3 v 13.15 CGG LABO v 5.01 v 3.5.9.97 v 2.1.1.0 v 1.09

System Timing

Spectra issued closures to the source firing system and recording system 50 milliseconds before the predicted time of peak pressure. Spectra received the time break back from the GunLink source controller and all Spectra system positions are output for this time.

An additional trigger was issued from Spectra 500 milliseconds after time zero. This was sent to the recording system as a timing verification. The trigger was 5 milliseconds in duration.

3.2 SURVEY POSITIONING METHOD USED

This survey was carried out using CGGVeritas standard mode of operation for single streamer, single source surveys.

Positioning of the vessel was by Single frequency differential DGPS with delivery of differential correction data in RTCM 104 format and recorded in the P2/94 files.

The source was positioned relative to the vessel using a network consisting of rGPS units mounted on all 3 sub-arrays.

The centre last group of the streamer was positioned using a network consisting of one rGPS system unit mounted on the tail buoy and streamer mounted compass heading units. Tailbuoy GPS data lost on the 24 March and not operative until after the crew change on the 03 April 08.

The streamer shape was modelled by up to 23 Digicourse series 5011 combined streamer depth control and magnetic compass units on the streamer.

Least squares condition equations for the streamer assuming circular arcs between compasses and relating the tracking nodes, compasses, tension corrected distances between compasses, rotation bias and scale were used to compute scale, rotation and individual compass corrections. The streamer shape was then computed by the circular arc method.

3.3 SURFACE POSITIONING

General

All survey and positioning work was carried out using the D_GDA_1994 Spheroid and datum. Grid co-ordinates were based on the Universal Transverse Mercator projection zone 55 S. Central Meridian for zone 55 is 147°E. Common Offshore datum shift parameters for WGS84 were as specified in the contract.

For WGS 84, the following parameters were entered into Spectra INS:

Semi-Major Axis: 6378137.000
Inverse Flattening: 298.25722360

Datum Shift Parameters

For transformation of WGS84

DX (m)	DY (m)	DZ (m)	Rot X (sec)	Rot Y (sec)	Rot Z (sec)	Scale (ppm)
0	0	0	0	0.000	0.000	0.000

Vessel Navigation

Summary

The SPM2000 with SPM 5.16 software provides single and dual frequency GPS positioning, using corrections generated by the Fugro Starfix network of reference stations broadcast via geostationary communication satellites.

The standard single frequency service is Starfix and the dual frequency services are Starfix.Plus, Skyfix.XP and Starfix.HP (High Performance).

Both, Starfix and Starfix.Plus are sub-metre level accuracy services. Starfix-Plus is the recommended service for equatorial regions where the standard service cannot achieve metre level accuracy during any peak of the solar cycle.

Starfix.HP is the Fugro positioning service with decimetre level accuracy at distances up to 1000 km from Starfix.HP reference stations making this system ideal for offshore applications requiring very precise horizontal and vertical positioning. The HP engine is now aided with the Starfix.XP engine to provide more robust and accurate position.

Skyfix.XP is Fugro's Positioning service based purely on State Space corrections.

Differential Correction Systems:

Fugro Skyfix via Spot Beam (OCSAT) satellite and Fugro Starfix via Inmarsat (IOR) and NTrip (Corrections received via VSAT)

All systems had the same accuracy and were set to have the same weight in the solution.

Fugro Multifix is a multiple reference station DGPS system tailored for the specific needs of seismic surveying. Algorithms combine reference station data and pseudo range measurements into the best position estimates.

By employing a correlation model for weighting the multiple range corrections in a least squares estimation process, the optimum pseudo-range corrections are obtained. W-testing and F-testing techniques detect and reject correction outliers.

Quality control is based upon UKOOA's recommended DGPS quality indicators - the precision and reliability of the fix are displayed as an Error Ellipse and Marginally Detectable Errors (MDE).

The differential corrections were transmitted to, and received on-board the vessel by three independent means and provided a high degree of redundancy to ensure continuous vessel positioning.

DGPS Reference Stations

By employing a correlation model for weighting the multiple range corrections in a least squares estimation process, the optimum pseudo-range corrections are obtained. W-testing and F-testing

Ref. St. Name	Latitude	Longitude	Height (m)
Melbourne	037°48' 29.0050"S	144°57' 48.030"E	82.05
Bathurst	033°25' 46.787"S	149°34' 01.970"E	939.97
Cobar	031°29' 57.430"S	145°50' 20.346"E	207.17
Ceduna	032°07' 03.047"S	133°41' 22.852"E	7.27
Brisbane	027°28' 38.486"S	153°01' 37.353"E	93.15

techniques detect and reject correction outliers.

Quality control is based upon UKOOA's recommended DGPS quality indicators - the precision and reliability of the fix are displayed as an Error Ellipse and Marginally Detectable Errors (MDE).

The differential corrections were transmitted to, and received on-board the vessel by two independent means and provided a high degree of redundancy to ensure continuous vessel positioning.

Float Navigation

Float (tailbuoy, headbuoy and source) surface navigation was provided by Kongsberg-Seatex Seatrack relative GPS. The in-sea units incorporated a GPS receiver and interfacing for direct data transmission of the raw satellite pseudo-range data via UHF link to the vessel.

On board the vessel, the raw pseudo-range data from the float unit was matched with simultaneously received data at the vessel's GPS receiver to compute a vector describing the location of the float unit relative to the vessel, from which the float position was derived.

Streamer Compasses

23 series 5011 Digicourse combined magnetic compass and streamer depth controllers were attached to the streamers. All compasses were used for positioning and shaping the streamers.

Compass Sampling Rate = 2 second
Averaging constant = 14 seconds

Compass performance was monitored on a line-to-line basis throughout the acquisition phase of the survey.

Gyro Compass

The gyro compass used during the survey was:

Gyro 1 (NEMA) - Simrad HS50 GPS

The gyro correction values as computed at the last calibration were as follows:

Gyro 1 -- plus 1.4 degrees

Gyro 2 -- plus 2.2 degrees

Magnetic Declination

Model: IGRF2005
Date: 2008-03-03
Position: 40°00"S 146.10"E
Magnetic Declination: 12.9"E

Velocity of Sound in Water

CTD/CTD Velocity Profiler Model SD204 is programmed to measure data at one-metre intervals. The probe is allowed to free-fall and is then recovered. Speed of sound and depth are computed by the program, which decodes the stored information from the probe. The raw data is entered into a spreadsheet where the Medwin formula is used to calculate velocity. **Velocity calculated at 1514.11 m/s.**

3.4 ECHO SOUNDER

Primary Echo Sounder: Simrad Model EA600 200/12KHz

The echo sounder speed of sound was set to 1500 m/s. A draught correction of zero was entered in the echo sounder. Depth data was recorded throughout the survey using a dual transducer/dual frequency (12 KHz/ 200 KHz) Simrad EA600 Echo sounder.

Echo Sounder Verification

A verification was performed, alongside in Burnie, Tasmania. This was done using a lead line, and also depth reading from the calibrated TS probe.

All depths recorded are based on the position of the Fathometer's transducer on the vessel's Hull. Depths are NOT draught corrected. Diagram and explanation in Appendix "A"

3.5 INTEGRATED NAVIGATION SYSTEM

The integrated navigation system used for this survey was Spectra from Concept Systems Ltd. UK. Spectra is an integrated navigation and data management system designed to handle environments of multi-vessel operations such as under shooting of obstructions as rigs. Spectra delivers data management, positioning techniques and flexibility with the following key benefits:

- Navigation acquisition and validation with real-time source and streamer positioning for marine seismic surveys ranging from simple 2D and high resolution requirements to extensive 3D multi-streamer, multi-vessel configurations.
- Distributed data server provides simple connectivity to easily configure multi-vessel surveys.
- Real-time data acquisition units with integrated GPS receiver provide triggering to 50 micro-seconds, allowing remote synchronization of seismic and acoustic systems.
- Real-time binning, CMP and offset distribution with simultaneous bin expansion capabilities.
- Data logging to UKOOA P1/90 and P2/94 standards with full redundancy providing confidence in data integrity.
- Quality control process providing alarm and audit facilities meeting UKOOA guidelines. Extensive online graphical analysis facilities and end of line reporting facilities.

- Positioning using Kalman Filtering with advanced data snooping statistical testing techniques.
- DGPS and RGPS real-time recomputation.
- Autopilot interface controlled from instrument room leaving the navigator in charge of steering. This facility is fully integrated with a comprehensive turn planning utility providing optimum efficiency on line changes

CGGVeritas implementation of Spectra runs on workstations based on the IBM Pentium-4 PC architecture, and on the LINUX operating system.

NAVIGATION SUMMARY

A upgraded navigation system was installed in Singapore February 08 by FUGRO while it gave a lot more redundancy it was at times very intermittent in operation no positional data was ever lost Occasional drop out of data generated by SPM 2. SPM 1 remained stable throughout the survey and thus always provided 2 solutions. Due to dropouts in SPM 2 becoming more frequent around seq #86, SPM 1 was fed into Multifix DGPS system replacing the feed of SPM 2. This meant an adjustment to Multifix antenna offsets was required.

Once SPM2 was observed to be stable it was fed back into the Multifix software starting seq #97;

ECHO SOUNDER

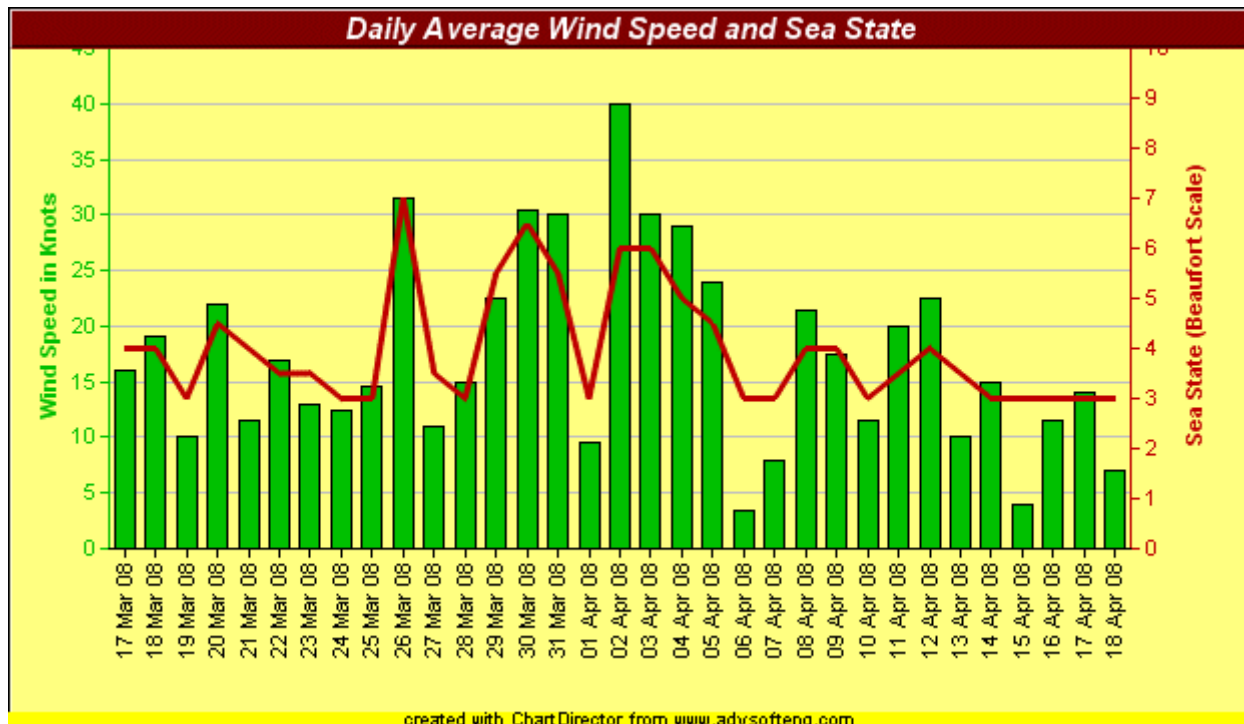
Echo Sounder data was very good throughout the survey.

4 ENVIRONMENT

4.1 WEATHER

It was possible, via the 'World Wide Web', to access data about local environmental conditions from www.buoyweather.com. Information was reported daily with a 7 day forecast. The local weather conditions were broadcast on VHF by Maritime Radio. Wind direction and weather forecasts were also available from the NavTex system. Further information was gained from the admiralty pilot for the area.

The diagram shown below gives the average wind speed and sea state for the survey period.



4.2 TIDES, CURRENT AND FEATHER

There were very small feathers in the survey area mainly effected by tidal movements which were quite small. Feather angle never exceeded 10 degrees throughout the survey.

4.3 NAVIGATION HAZARDS

The survey was conducted in open waters of around 60 to 80 metres depth. Very few vessels were seen during the survey and those that were, were readily contacted and kept clear of the survey area.

4.4 ENVIRONMENTAL

In keeping with modern survey practice environmental protection played an important role in the operating practices of CGGVeritas in line with Cue Energy Resources own environmental concerns and the contract requirements. Survey operations were carried out under procedures designed to minimise any environmental impact at all times.

There was no off shore refuelling during the survey. The M/V Titan has a Sercel solid digital streamer which contains no fluids.

Great care was taken to follow International Maritime Regulations with regard to the disposal of garbage and waste. The Pacific Titan was equipped with an incinerator so that where possible most of the waste could be burnt. Ash from the incinerator was stored for proper disposal ashore. Putrescibles were discharged over the side in compliance with MARPOL regulations. Garbage that was unsuitable for burning was segregated and stored on board the vessel for proper disposal ashore. In addition the ship operates a garbage separation scheme to separate plastics, glass and metal waste. Hazardous wastes such as lithium batteries and chemicals were stored for proper disposal under the manufacturer's guidelines.

The overall environmental performance of the crew was up to modern industry standards with no garbage disposal to the sea.

4.5 CETACEAN REPORTING

On all lines, the acoustic energy source was gradually brought up to maximum capacity over a 20-minute period (soft start) to give sufficient notice to any marine life that might have been in the area. A low volume array element was run during all line changes. Soft starts and production were terminated immediately whales were observed approaching closer than 3.0 kilometres. Acquisition was not resumed until all whale activity had been observed to move outside the 3.0 kilometre zone for a period of a further 30 minutes. There were no sightings of cetaceans during this survey causing the termination of two lines during this survey. There were MMO's onboard Carol Sutherland until 2 April 08 and Debbie Glasgow took over for the rest of the survey. and they will produce a separate MMO report.

4.6 FISHING

There were no problems with any fishing vessels throughout this survey. The Pacific Titan broadcast the position and intent at regular intervals during the day.

4.7 CORAL REEFS

The vessel operated in water depths ranging from 60 to 90 metres with the streamer towed at a maximum depth of 7-9 metres and the source arrays at 6 metres. There were no reefs in the survey area.

4.8 CONCLUSION

The Pacific Titan and associated operations had no detrimental impact on the local environment during the seismic survey.

The only discharges into the sea were small quantities of food scraps and treated sewage waste, which fell within MARPOL guidelines.

5 INSTRUMENT TESTS

Before the beginning of the survey a complete set of instrument tests was performed. These tests were as follows:

- • Instrument Noise
- • Instrument Distortion
- • Instrument Crosstalk
- • Instrument Gain/Phase
- • Instrument Common Mode
- • Field Hydrophone Leakage
- • Field Capacitance
- • Field Cut Off
- • Field Noise

The start of contract tests were recorded to tape, and sent to the processing centre together with the seismic data. The result of the Start of Job Instrument tests showed all system tests well in specification and no bad seismic hydrophone groups on the streamer.

Instrument Noise Test

This test is to measure the noise of the ADC converter in the FDU. The converter's input is connected to the internal test network. A DFT is performed and the noise spectral power below 3Hz is computed. As the total energy of the output signal is known, the total noise within the bandwidth can be deduced.

Instrument Gain and Phase Test

This test is used to check for any drift of the gain and phase of the FDU's built in ADC converter within the band from DC to the filter's cut-off frequency.

The ADC supplies a pulse with known amplitude and width to the internal test network. The ADC input is connected to the internal test network. The voltage across the internal test network is measured. A DFT is computed on the DSP's output signal (for different test frequencies) and compared to a model computed with the same frequencies. The error is computed in terms of difference in amplitude and phase with respect to the model.

The test returns the maximum error computed in amplitude and phase.

Instrument Distortion Test

This test is used to check the FDU's built in ADC converter for linear response. A sine wave with known amplitude and frequency is applied to its input via the internal test network. The test returns the ratio of the spectral power of the output signal to the spectral power of all harmonics within the bandwidth determined by the selected filter.

Instrument CMRR Test

This test is used to measure the Common Mode Rejection Ratio of the FDU's built in ADC converter. A sine wave with known amplitude and frequency is applied to both of its inputs via the internal test network. The test returns the ratio of the RMS value of the output voltage, relative to the input, to the common mode voltage.

Instrument Cross Talk Test

This test is used to measure cross talk between FDU's. The test includes two sequences:

During the first sequence, the test generator applies a sine wave to the test network in each even FDU. The ADC converter in each odd FDU measures the resulting voltage across its own test network. (The test generator in odd FDU's is disabled).

Conversely, during the second test sequence, the test sine wave is fed to each odd FDU and the resulting voltage is measured across the test network in each even FDU.

The ratio of the measured voltage to the theoretical value of the test signal is computed and displayed as Instrument Cross talk for each FDU.

Sensor Capacitance Test

This test is used to measure the capacitance of the seismic sensor connected on the channel input. The DAC supplies a sine wave with known frequency and amplitude to the channel input. The DftCorr of the output from the ADC is computed at the test frequency. Knowing the current supplied to the sensor, the total impedance can be computed.

The capacitance can finally be computed by using the imaginary part of the impedance.

Sensor Cut-off Frequency Test

With hydrophones as input sensors, measuring the cut-off frequency of the seismic channel is equivalent to determining the pulse response for the channel. The DAC supplies a pulse (with known amplitude and width) to the channel input. From the resulting voltage, measured by the ADC, the cut-off frequency of the channel is computed using a least-squares method.

Sensor Leakage Test

This test is used to measure the global leakage resistance between the seismic channel and the earth ground. During this test, the test generator creates a leak current at precisely determined points in the test network, via the FDU's earth resistance. The resulting voltage at particular points in the network is measured. As the output current of the test generator is known, the measurements allow the system to determine the leakage resistance on the positive and negative input paths of the channel. Finally the total resistance to ground can then be calculated.

End of Job Test

At the end of the survey a complete set of instrument tests was performed. These tests were as follows:

1. DCO/Noise/Range
2. Streamer RMS Noise
3. Channel Gain Accuracy
4. HD Harmonic Distortion
4. Common Mode Rejection
5. Impulse Response
6. Crosstalk Isolation Odd
7. Crosstalk Isolation Even
8. Hydrophone Response and Leakage

The result of the End of Job instrument tests verified the system. Comparing results from all the instrument tests showed that the system was stable and in specification throughout the survey.

6 DIARY

March 17th	Category	Comment
04:00	SB	Start of Cue Energy Resources at midpoint of Tap Oil and Cue Resources at 039°41'20S 145°53'25E.
05:17	SB	Commenced line VCUE08-E08-001, completed no problems.
11:30	SB	Line change to line VCUE08-E11-002.
13:03	SB	Commenced line VCUE08-E11-002, completed.
19:39	SB	Line change to line VCUE08-E15-003.
21:17	SB	Commenced line VCUE08-E15-003, MSP 2176.
March 18th	Category	Comment
00:00	SB	Continuation of line VCUF08-E15-003, completed.
03:25	SB	Line change to line VCUF08-E12-004.
05:16	SB	Commenced line VCUF08-E12-004, completed no problems.
11:38	SB	Line change to line VCUF08-E09-005.
13:22	SB	Commenced line VCUF08-E09-005, completed all in spec.
19:46	SB	Line change to line VCUF08-E14-006.
21:30	SB	Commenced line VCUF08-E14-006, MSP 1949.
March 19th	Category	Comment
00:00	SB	Continuation line VCUE08-E14-006, completed.
03:39	SB	Line change to VCUE08-E10-007.
05:21	SB	Commenced line VCUE08-E10-007, completed no problems encountered.
11:27	SB	Line change to line VCUE08-E06-008.
13:06	SB	Commenced line VCUE08-E06-008, completed.
16:31	SB	Line change to line VCUE08-E04-009.
18:41	SB	Commenced line VCUE08-E04-009, completed within specs.
22:09	SB	Line change to line VCUE08-E07-010.
23:52	SB	Commenced line VCUE08-E07-010, MSP 1051.
March 20th	Category	Comment
00:00	SB	Continuation line VCUE08-E07-010, line completed.
03:14	SB	Line change to line VCUE08-N34-011.
05:26	SB	Commenced line VCUE08-N34-011, completed SP 1386 robtrac locked up vessel steered 60m offline robtrac disengaged vessel steered back to line at SP 1423.
07:26	SB	Line change to line VCUE08-N32-012.
09:09	SB	Commenced line VCUE08-N32-012, completed.
11:21	SB	Line change to line VCUE08-N26-013.
13:51	SB	Commenced line VCUE08-N26-013, completed weather marginal at best line recorded with heavy swell bursts throughout the line, brute stacks look reasonable. Streamer depth set to 9m.
17:59	SB	Line change to line VCUE08-N21-014.
20:31	SB	Commenced line VCUE08-N21-014, MSP 1422 streamer depth set to 9m due to weather conditions heavy swell bursts during the first part of the line brute stacks look reasonable.
March 21st	Category	Comment
00:00	SB	Continuation line VCUE08-N21-014, completed SP 1435-1409 echo sounder locked up, Large swell bursts were evident throughout the line. Streamer depth set to 9m due to sea state.
01:28	SB	Line change to line VCUE08-N24-015.
03:23	SB	Commenced line VCUE08-N24-015, completed within specs.
07:44	SB	Line change to line VCUE08-N20-016.
09:56	SB	Commenced line VCUE08-N20-016, completed no problems.
14:48	SB	Line change to line VCUE08-N27-017.
16:38	SB	Recording line VCUE08-N27-017, completed within specs.

20:44	SB	Line change to line VCUE08-N22-018.
23:11	SB	Commenced line VCUE08-N22-018, MSP 2348.
March 22nd	Category	Comment
00:00	SB	Continuation line VCUE08-N22-018, terminated early due to an airleak on source 2 gun 3, the line is considered complete.
03:35	SB	Line change to line VCUE08-N28-019.
06:16	SB	Commenced line VCUE08-N28-019, completed within specs.
10:17	SB	line change to line VCUE08-N23-020.
12:39	SB	Commenced line VCUE08-N23-020, completed tailbouy GPS not working unable to track tailbouy on radar either but all compasses are working fine.
17:13	SB	Line change to line VCUE08-N30-021.
19:06	SB	Commenced line VCUE08-N30-021, completed but still no GPS tailbouy data and no radar positioning.
23:05	SB	Line change to line VCUE08-N25-022.
March 23rd	Category	Comment
00:00	SB	Line change to line VCUE08-N25-022.
01:07	SB	Commenced line VCUE08-N25-022, completed no GPS data from the tailbouy. SP 956-947 Robtrac loses control to port maximum distance offline 45m.
05:27	SB	Line change to line VCUE08-N29-023.
07:11	SB	Commenced line VCUE08-N29-023, completed no GPS data from SOL.
11:15	SB	Line change to line VCUE08-N31-024.
13:10	SB	Commenced line VCUE08-N31-024, completed no GPS data from tailbouy throughout the line.
16:19	SB	Line change to line VCUE08-E03-025.
18:30	SB	Commenced line VCUE08-E03-025, completed no GPS data from tailbouy and no radar returns.
21:57	SB	Line change to line VCUE08-E01-026.
23:36	SB	Commenced line VCUE08-E01-026 MSP 1149. No tailbouy GPS data and no radar returns from tailbouy.
March 24th	Category	Comment
00:00	SB	Continuation line VCUE08-E01-026, completed no GPS or radar fix to the tailbouy.
03:02	SB	Line change to line VCUE08-N35-027.
03:58	SB	Commenced line VCUE08-N35-027, completed no GPS or radar fix to tailbouy.
06:07	SB	Line change to line VCUE08-N33-028.
08:12	SB	Commenced line VCUE08-N33-028, completed no GPS data or radar fixes on tailbouy.
10:23	SB	Line change to line VCUE08-E02-029.
12:28	SB	Commenced line VCUE08-E02-029, completed no GPS or radar returns from the tailbouy.
15:56	SB	Line change to line VCUE08-E05-030.
17:33	SB	Commenced line VCUE08-E05-030, completed no GPS or radar fixes to the tailbouy.
21:02	SB	Line change to line VCUE08-N40-031.
22:55	SB	Commenced line VCUE08-N40-031, MSP 1410 no GPS data from the tailbouy also unable to track on radar.
March 25th	Category	Comment
00:00	SB	Continuation line VCUE08-N40-031, completed no GPS data from tailbouy radar also not tracking tailbouy.
01:01	SB	Line change to line VCUE08-N36-032.
02:38	SB	Commenced line VCUE08-N36-032, completed no GPS data fro tailbouy and no radar returns.
04:56	DT	Line change extended by 15 min to repair gun 7 source sting 1 due to a faulty sensor line.

05:11	SB	Line change to line VCUE08-N39-033.
07:15	SB	Commenced line VCUE08-N39-033, completed no tailbuoy GPS data and unable to track tailbuoy on radar.
09:16	SB	Line change to line VCUE08-N43-034.
10:49	SB	Commenced line VCUE08-N43-034, completed no tailbuoy GPS data and unable to track by radar.
13:04	SB	Line change to line VCUE08-N38-035.
14:43	SB	Commenced line VCUE08-N38-035, completed no tailbuoy GPS data and unable to track on radar.
16:47	SB	Line change to line VCUE08-N41-036.
18:28	SB	Commenced line VCUE08-N41-036, line terminated early LGSP 960 due to an air leak, line considered complete. No GPS data from the tailbuoy and no radar tracking.
20:32	DT	Extended line change to repair guns.
21:02	SB	Line change to line VCUE08-N37-037.
22:34	SB	Commenced line VCUE08-N37-037, MSP 1555 no tailbuoy GPS data and unable to track tailbuoy with the radar.
March 26th	Category	Comment
00:00	SB	Continuation line VCUE08-N37-037, completed no GPS tailbuoy data and no radar tracking.
00:35	SB	Line change to line VCUE08-N42-038. Due to weather conditions vessel speed reduced to 4Kts, sea state deteriorating all the time with wind gust up to 40kts.
02:37	SB	Commenced line VCUE08-N42-038, line terminated due to deteriorating weather conditions and excessive swell noise on the streamer. No usable data collected D.N.P
03:37	SB	Tried to record a north south line parallel to the weather streamer noise out of spec and vessel control marginal at best.
05:17	SB	Started to pick up sources to minimise any damage.
06:50	SB	Initially it was too rough to retrieve the vane due to sea state but eventually picked up.
09:30	SB	Streamer on board, winds 25-30Kts seas and swell 5m S/W.
12:05	SB	Down for weather GPS tailbuoy pod replaced just waiting for weather to start abating. CUE weather down time.
14:37	SB	Still down for weather but changed to shared down time.
18:35	SB	Commenced re-deploying the streamer, weather slowly abating.
22:31	SB	Streamer is fully deployed but the weather still too bad to deploy the vane. Wind at 20Kts and seas 3-4m S/W.
March 27th	Category	Comment
00:00	SB	Waiting for sea state to drop before deploying the vane.
01:35	SB	Deploying the vane.
02:03	SB	Deploying seismic sources.
04:13	SB	Heading for line VCUE08-N42-039, offset shots taken for check all okay offset 145m.
06:00	SB	Commenced line VCUE08-N42-039, completed in spec.
08:03	SB	Line change to line VCUE08-N46-040.
09:37	SB	Commenced line VCUE08-N46-040, completed within specs.
11:46	SB	Line change to line VCUE08-N49-041.
13:34	SB	Commenced line VCUE08-N49-041, completed within specs.
15:36	SB	Line change to line VCUE08-N45-042.
16:56	SB	Commenced line VCUE08-N45-042 completed within specs but run-in to line shortened due to an oil rig.
19:00	DT	Line change extended to give gunners more time to repair sensor on string 1.
19:30	SB	Line change to line VCUE08-N48-043.
21:08	SB	Commenced line VCUE08-N48-043, completed within specs.
23:12	SB	Line change to line VCUE08-N44-044.

March 28th	Category	Comment
00:00	SB	Line change to line VCUE08-N44-044.
00:35	SB	Commenced line VCUE08-N44-044, completed within specs.
02:43	SB	Line change to line VCUE08-N47-045.
04:17	SB	Commenced line VCUE08-N47-045, completed within specs.
06:14	SB	Line change to line VCUE08-N50-046.
07:43	SB	Commenced line VCUE08-N50-046, completed within specs.
09:53	SB	Line change to line VCUE08-N54-047.
11:23	SB	Commenced line VCUE08-N54-047, completed within specs.
13:22	SB	Line change to line VCUE08-N51-048.
14:58	SB	Commenced line VCUE08-N51-048, completed within specs.
17:04	SB	Line change to line VCUE08-N55-049.
18:40	SB	Commenced line VCUE08-N55-049, completed within specs.
20:43	SB	Line change to line VCUE08-N52-050.
22:19	SB	Commenced line VCUE08-N52-050, MSP 1616.
March 29th	Category	Comment
00:00	SB	Continuation line VCUE08-N52-050, completed within spec.
00:24	SB	Line change to line VCUE08-N56-051.
02:02	SB	Commenced line VCUE08-N56-051, completed within specs.
04:03	SB	Line change to line VCUE08-N53-052.
05:37	SB	Commenced line VCUE08-N53-052, completed within specs.
07:41	SB	Provisional line change. Weather deteriorating rapidly winds gusting to 35 Kts and swells increasing up to 4.5m all source arrays brought on board.
08:56	SB	Provisional line change. Vane brought on board, due to weather conditions.
09:15	SB	Provisional line change.
10:41	SB	Weather increased up to 40Kts and 6m swells before slowly decreasing.
16:41	SB	Testing the line heading looks reasonable weather is still decreasing, heading for line VCUE08-E13-053.
17:30	SB	Deploying the vane.
17:40	SB	Deploying seismic sources.
19:05	SB	Heading for line VCUE08-E13-053.
19:59	SB	Commenced line VCUE08-E13-053, MSP 1687.
March 30th	Category	Comment
00:00	SB	Continuation line VCUE08-E13-053, completed within specs.
02:06	SB	Line change to line VCUE08-E17-054.
03:56	SB	Commenced line VCUE08-E17-054, completed within specs.
10:24	SB	Line change to line VCUE08-E21-055.
12:07	SB	Commenced line VCUE08-E21-055, completed within spec. Streamer depth set to 9m due to sea state.
18:13	SB	Line change to line VCUE08-E16-056.
20:03	SB	Commenced line VCUE08-E16-056 MSP 2435 streamer depth set at 9m.
March 31st	Category	Comment
00:00	SB	Continuation of line VCUE08-E16-056, completed within spec streamer depth set to 9m due to sea state.
02:28	SB	Nominal line change to line, terminated due to weather conditions swells up to 6m and winds gusting to 40Kts making streamer control marginal tail end was on the surface, and steering erratic.
04:15	SB	Down for weather swells up to 6m and seas of 3m with wind gusts to 45Kts at times.
14:24	SB	Commenced line VCUE08-E30-057, completed within specs, streamer depth set to 9m due to weather conditions.
18:05	SB	Line change extended by 1Km, on the last turn on to the line the cable surfaced on the turn on into the line and took more than the 6Km run-in to return to streamer depth of 9m.

18:15	SB	Line change to line VCUE08-E25-058, the streamer did come to the surface during the turn on to line the extra 1km gave extra time for the streamer to level out before the line start.
20:02	SB	Commenced line VCUE08-E25-058 completed within specs.
23:42	SB	Line change to line VCUE08-E29-059.
April 1st	Category	Comment
00:00	SB	Line change to line VCUE08-E29-59.
01:32	SB	Commenced line VCUE08-E29-059. completed within spec.
05:00	SB	Line change to line VCUE08-E24-060.
06:36	SB	Commenced line VCUE08-E24-060, completed within specs.
10:26	SB	Line change to line VCUE08-E28-061.
11:57	SB	Commenced line VCUE08-E28-061, completed within specs.
15:32	SB	Provisional line change. Started retrieving source strings.
17:20	DT	Retrieving vane and streamers.
20:10	DT	T/S dip done at 040 38' 19S 146 05' 01E result was 1513.09m/s
20:16	DT	Heading to Burnie for crew change.
April 2nd	Category	Comment
00:00	DT	Vessel heading to Burnie for crew change.
05:45	DT	Alongside Burnie for crew change, bunkering and re-supply.
17:00	SB	Along side Burnie due to extreme weather conditions. Swells in the survey area are predicted to be greater than 6m with a sea state of 7-8 with winds in excess of 40Kts.
April 3rd	Category	Comment
00:00	SB	Still along side at Burnie waiting for weather to abate at the survey area.
April 4th	Category	Comment
00:00	SB	Along side at Burnie waiting for weather on the survey area to abate.
08:00	SB	Vessel ready to sail at 08:00Hrs, due to pilot unavailability vessel could not sail any earlier.
11:00	DT	Still alongside Burnie vessel departure delayed waiting for pilot.
13:00	DT	Transiting to survey area.
18:08	DT	Deploying the streamer.
22:00	DT	Deploying the sources.
23:40	DT	Heading for line VCUE08-E44-062.
April 5th	Category	Comment
00:00	DT	Heading for line VCUE08-E44-062.
00:23	DT	Commenced line VCUE08-E44-062, terminated due to compressor problem lost air pressure, no usable data collected D.N.P.
00:29	DT	Circling around back to line VCUE08-E44-063 due to compressor problem.
03:27	SB	Commenced line VCUE08-E44-063, completed within specs.
05:53	SB	Line change to line VCUE08-E49-064.
07:59	DT	Commenced line VCUE08-E49-064, Terminated due to operator error, circling around.
08:08	DT	Down time due to operator error
10:58	DT	Down time due to problem source 1 Gun 7 had a solenoid problem.
13:48	SB	Commenced line VCUE08-E49-065, completed within spec.
15:49	SB	Line change to line VCUE08-E45-066.
17:36	SB	Commenced line VCUE08-E45-066, completed within specs.
19:57	SB	Line change to line VCUE08-N19-067.
22:10	SB	Commenced line VCUE08-N19-067, M.S.P 2117
April 6th	Category	Comment
00:00	SB	Continuation line VCUE08-N19-067, completed within spec.
01:08	SB	Line change to line VCUE08-N14-068. There is one extra hour added in due to the end of daylight saving.
03:45	SB	Commenced line VCUE08-N14-068, completed within specs.
09:35	SB	Line change to line VCUE08-N18-069.
11:15	SB	Commenced line VCUE08-N18-069, completed within spec.

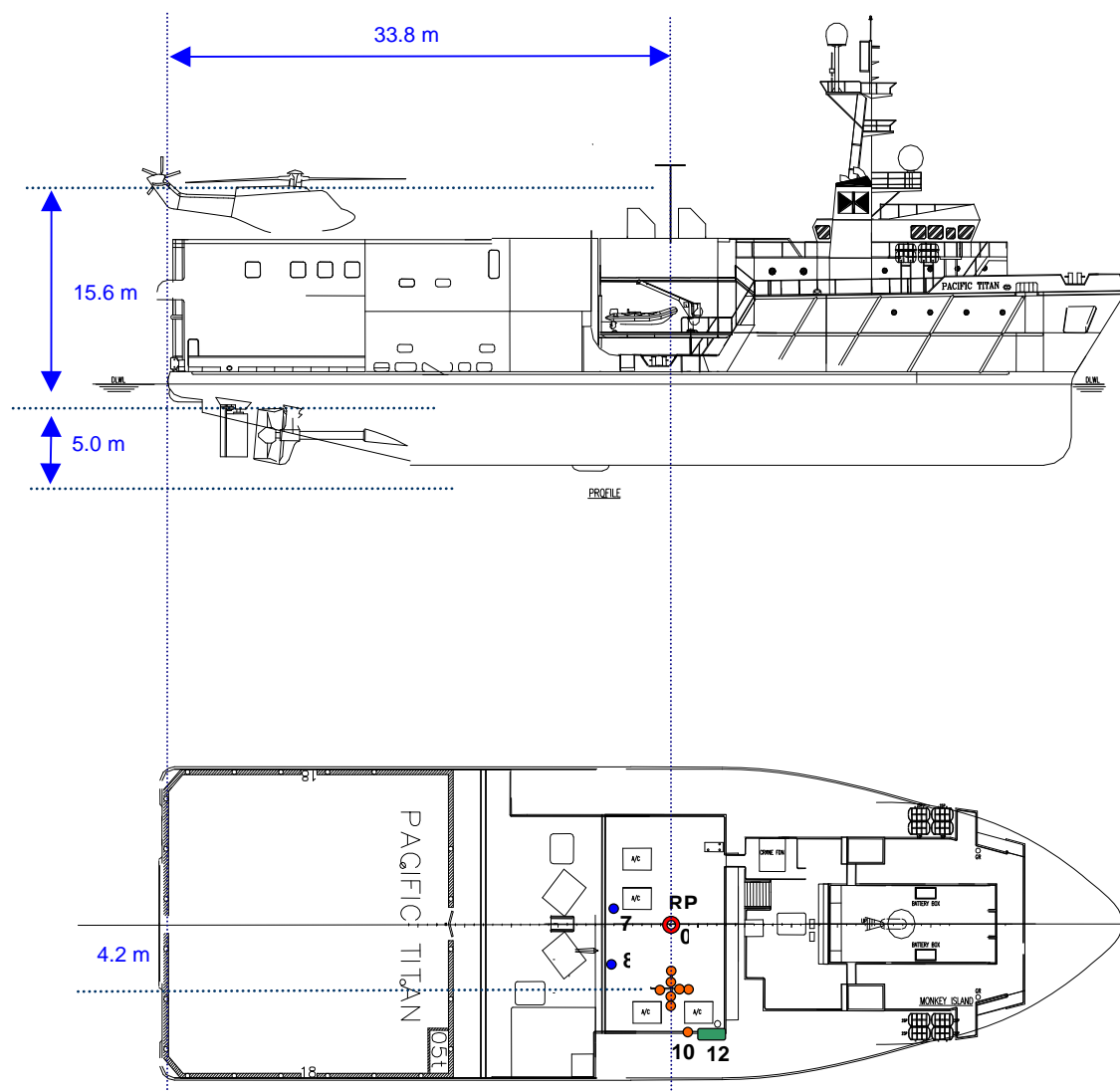
16:34	SB	Line change to line VCUE08-N13-070.
18:15	SB	Commenced line VCUE08-N13-070, MSP 3075
April 7th	Category	Comment
00:00	SB	Continuation line VCUE08-N13-070, completed within spec.
00:27	SB	Line change to line VCUE08-N17-071.
02:05	SB	Commenced line VCUE08-N17-071, completed within spec.
07:32	SB	Line change to line VCUE08-N12-072.
09:24	SB	Commenced line VCUE08-N12-072, completed within spec.
15:56	SB	Line change to line VCUE08-N16-073.
17:51	SB	Commenced line VCUE08-N16-073, completed within spec.
23:32	SB	Line change to line VCUE08-N11-074.
April 8th	Category	Comment
00:00	SB	Line change to line VCUE08-N11-074.
01:20	SB	Commenced line VCUE08-N11-074, Completed within spec.
07:38	SB	Line change to line VCUE08-N15-075.
09:05	SB	Commenced line VCUE08-N15-075, completed SP 933 vessel started to drift off to port bridge asked to bring it back using auto pilot vessel came back at a high velocity cross track and ended being off line by 138m at EOL.
14:41	SB	Line change to line VCUE08-N10-076.
16:28	SB	Commenced line VCUE08-N10-076, completed within specs.
22:46	SB	Line change to line VCUE08-N05-077.
April 9th	Category	Comment
00:00	SB	Line change to line VCUE08-N05-077.
00:24	SB	Commenced line VCUE08-N05-077, completed within spec.
06:27	SB	line change to line VCUE08-N09-078.
08:16	SB	Commenced line VCUE08-N09-078, completed within spec.
14:33	SB	Line change to line VCUE08-N04-079.
16:30	DT	Extended line change due to gun 26 string 2 autofiring.
16:45	DT	Commence line VCUE08-N04-079 Source string 2 has an air leak circling around. No usable data collected D.N.P.
16:57	DT	Circling back around to attempt line VCUE08-N04 again.
20:33	SB	Commenced line VCUE08-N04-080, MSP 1905.
April 10th	Category	Comment
00:00	SB	Continuation line VCUE08-N04-080, completed no raw GPS data to P2 files from SP 2921-2885.
02:40	SB	Line change to line VCUE08-N08-081.
04:21	SB	Commenced line VCUE08-N08-081, completed within spec.
10:39	SB	Line change to line VCUE08-N03-082.
12:16	SB	Commenced line VCUE08-N03-082, completed within spec.
18:24	SB	Line change to line VCUE08-N07-083.
20:21	SB	Commenced line VCUE08-N07-083, MSP 2309.
April 11th	Category	Comment
00:00	SB	Continuation line VCUE08-N07-083, completed within spec.
02:50	SB	Line change to line VCUE08-N02-084.
04:26	SB	Commenced line VCUE08-N02-084, completed within spec.
10:41	SB	Line change to line VCUE08-N08-085.
12:23	SB	Commenced line VCUE08-N06-085, completed within spec.
18:38	SB	Line change to line VCUE08-N01-086.
20:21	SB	Commenced line VCUE08-N01-086, MSP 1857.
April 12th	Category	Comment
00:00	SB	Continuation line VCUE08-N01-086, completed within spec.
02:40	SB	Line change to line VCUE08-E18-087. Vessel position V1G3 (Multifix position) changed from antenna offsets now running off SPM1.
07:10	SB	Commenced line VCUE08-E18-087, terminated early due to airleak LGSP 1985. No ionospheric data being recorded. Circling around to complete the line.

09:45	DT	Circling around back to line VCUE08-E18-088 due to an air leak.
13:44	SB	Commenced line VCUE08-E18-088, completed still not recording any ionospheric data.
17:36	SB	Line change to line VCUE08-E22-089.
19:28	SB	Commenced line VCUE08-E22-089, completed still not getting ionospheric data.
April 13th	Category	Comment
00:00	SB	Continuation of line VCUE08-E22-089, completed no ionospheric data being collected.
01:51	SB	Line change to line VCUE08-E19-090.
03:40	SB	Commenced line VCUE08-E19-090, completed no ionospheric data being recorded.
09:59	SB	Line change to line VCUE08-E23-091.
11:46	SB	Commenced line VCUE08-E23-091, completed not recording ionospheric data.
18:05	SB	Line change to line VCUE08-E27-092.
19:48	SB	Commenced line VCUE08-E27-092, completed not recording ionospheric data.
23:29	SB	Line change from to line VCUE08-E32-093.
April 14th	Category	Comment
00:00	SB	Line change from to line VCUE08-E32-093.
01:07	SB	Commenced line VCUE08-E32-093, completed within spec no ionospheric data recorded..
04:31	SB	Line change to line VCUE08-E37-094.
06:19	SB	Commenced line VCUE08-E37-094, completed within spec no ionospheric data recorded.
09:17	SB	Line change to line VCUE08-E41-095.
10:50	SB	Commenced line VCUE08-E41-095, completed within spec no ionospheric data recorded.
13:32	SB	Line change to line VCUE08-E35-096.
15:19	SB	Commenced line VCUE08-E35-096, completed within spec no ionospheric data recorded.
18:35	SB	Line change to line VCUE08-E39-097. Changed output of V1G3 from SPM1 to SPM2, new offsets for V1G3 entered into SPECTRA of antenna position.
20:07	SB	Commenced line VCUE08-E39-097, completed within spec.
22:56	SB	Line change to line VCUE08-E42-098.
April 15th	Category	Comment
00:00	SB	Line change to line VCUE08-E42-098.
00:38	SB	Commenced line VCUE08-E42-098, completed within spec.
03:18	SB	Line change to line VCUE08-E46-099.
04:45	SB	Commenced line VCUE08-E46-099, completed within spec.
06:57	SB	Line change to line VCUE08-E50-100.
08:37	SB	Commenced line VCUE08-E50-100, completed within spec.
10:27	SB	Line change to line VCUE08-E53-101.
12:18	SB	Commenced line VCUE08-E53-101, completed within spec.
13:55	SB	Line change to line VCUE08-E48-102.
15:37	SB	Commenced line VCUE08-E48-102, completed within spec.
17:47	SB	Line change to line VCUE08-E52-103.
19:31	SB	Commenced line VCUE08-E52-103, completed within spec compass S1C20 knocked out in SPECTRA due to high bias.
21:16	SB	Line change to line VCUE08-E47-104.
21:59	SB	Commenced line VCUE08-E47-104, MSP 1370 compass S1C20 knocked out in SPECTRA due to high bias.
April 16th	Category	Comment
00:00	SB	Continuation line VCUE08-E47-104, MSP 1370 compass S1C20 knocked out in SPECTRA due to high bias.

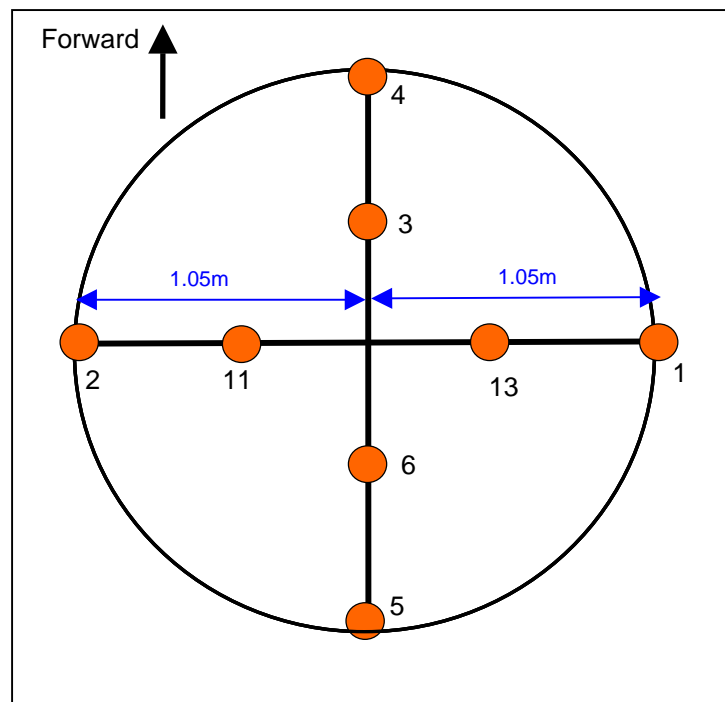
01:09	SB	Line change to line VCUE08-E51-105.
02:38	SB	Commenced line VCUE08-E51-105, completed within spec compass S1C20 out of SPECTRA due to high bias.
04:26	SB	Line change to line VCUE08-E43-106.
06:22	SB	Commenced line VCUE08-E43-106, completed within spec compass S1C20 knocked out in SPECTRA due to high bias.
08:54	SB	Line change to line VCUE08-E40-107.
10:49	SB	Commenced line VCUE08-E40-107, completed within spec compass S1C20 knocked out in SPECTRA due to high bias.
13:37	SB	Line change to line VCUE08-E34-108.
15:35	SB	Commenced line VCUE08-E34-108, completed within spec compass S1C20 knocked out in SPECTRA due to high bias.
18:59	SB	Line change to line VCUE08-E38-109.
20:35	SB	Commenced line VCUE08-E38-109, completed within spec compass S1C20 knocked out in SPECTRA due to high bias.
22:37	SB	Line change to line VCUE08-E33-110.
April17th	Category	Comment
00:00	SB	Line change to line VCUE08-E33-110.
01:19	SB	Commenced line VCUE08-E33-110, completed within spec compass S1C20 knocked out in SPECTRA due to high bias.
05:12	SB	Line change to line VCUE08-E36-111.
07:03	SB	Commenced line VCUE08-E36-111, completed within spec compass S1C20 knocked out in SPECTRA due to high bias.
10:09	SB	Line change to line VCUE08-E31-112.
11:49	SB	Commenced line VCUE08-E31-112, completed within spec compass S1C20 knocked out in SPECTRA due to high bias.
15:30	SB	Line change to line VCUE08-E36-113.
17:13	SB	Commenced line VCUE08-E36-113, completed within spec compass S1C20 knocked out in SPECTRA due to high bias.
20:58	SB	Line change to line VCUE08-E20-114.
22:42	SB	Commenced line VCUE08-E20-114 MSP 1481. Compass S1C20 knocked out in SPECTRA due to high bias.
April18th	Category	Comment
00:00	SB	Continuation line VCUE08-E20-114, completed within spec compass S1C20 knocked out in SPECTRA due to high bias.
05:08	SB	Line change to line VCUE08-E54-115.
09:25	SB	Commenced line VCUE08-E54-114, completed within spec compass S1C20 knocked out in SPECTRA due to high bias. Line dogleg commenced at SP 1255 new HDG 211 Deg. This completes the lines in the CUE survey.
12:33	SB	Reached the mid point between the Cue and 3D Oil survey which completes the Cue seismic survey.

7 MEASUREMENTS

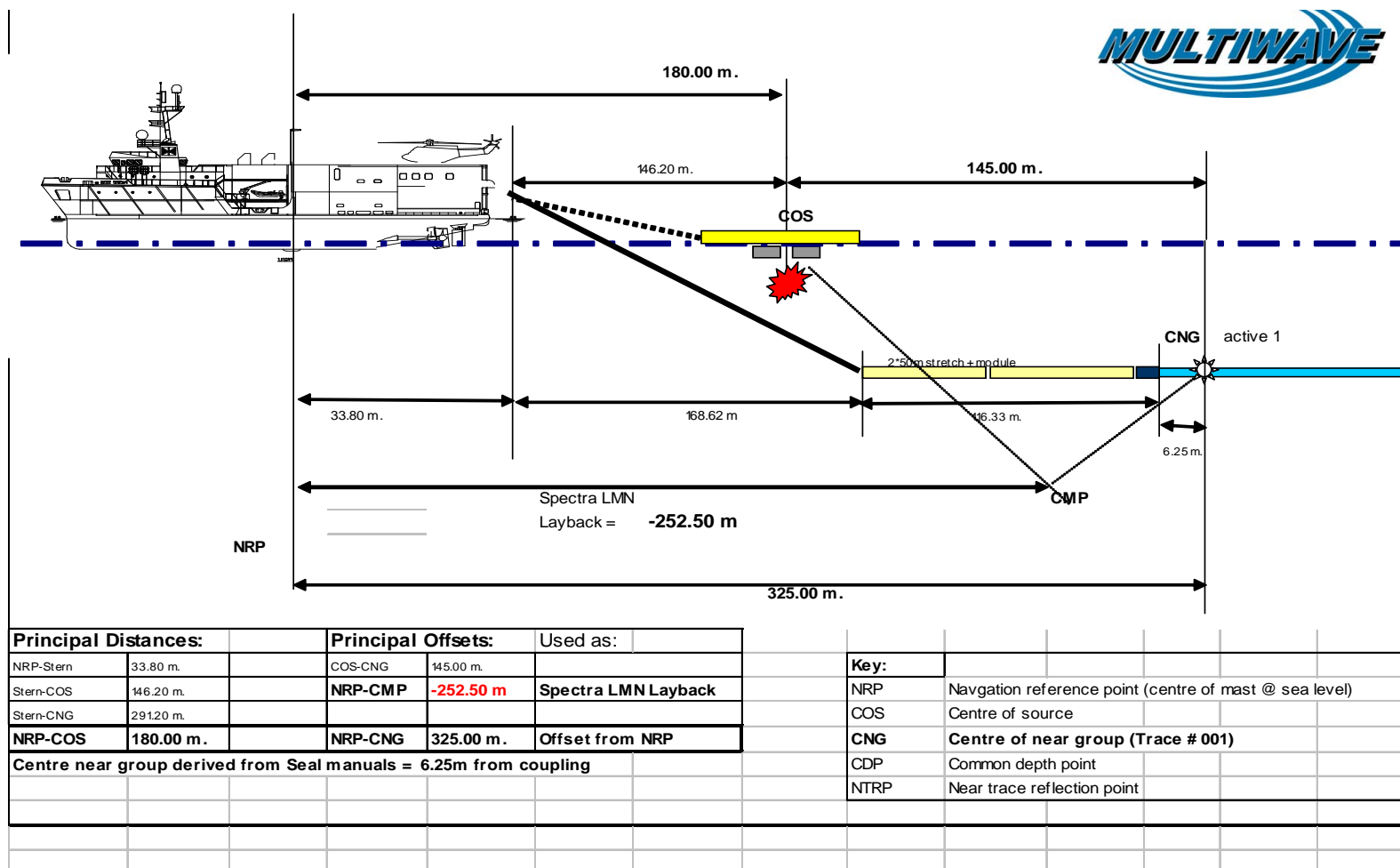
7.1 GPS ANTENNA POSITION






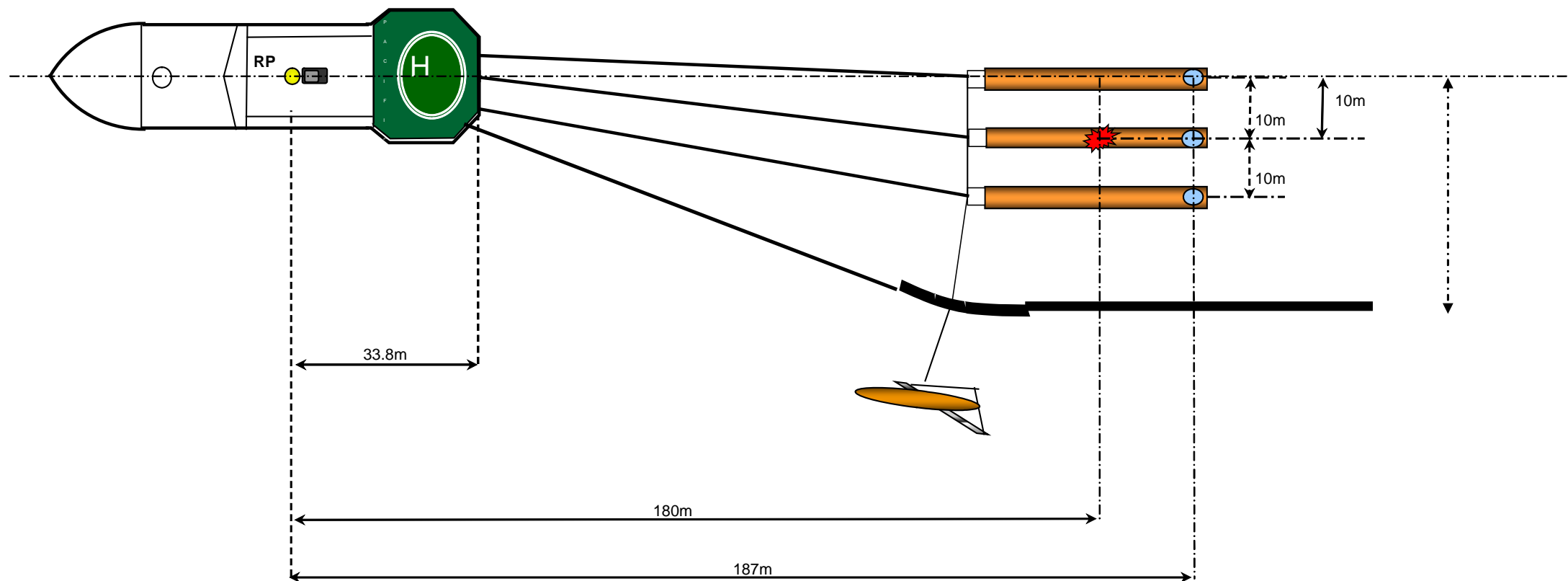
No	Spectra ID	X	Y	Z	Description	Cable Id
0	V1	0.00	0.00	0.00	Vessel ref point	
		0.00	-33.80	0.00	Vessel centre Stern from ref point	
1	V1G1,V1G5	5.25	0.00	15.60	SPM1 XP,HP. Alison 940D	2 Red Rings
2		3.15	0.00	15.60	Alison 940D	5 Red Rings
3					motorola UHF Radio antenna	
4	V1G2, V1G3, V1G4	4.20	1.05	15.60	SPM2 XP,HP Multifix. Alison 940D	3 Red Rings
5					Seatex Yagi VCU, UHF antenna	4 Red Rings
6					Seatex Omni VCU, UHF antenna	1 Red Ring
7	V1E1	-1.30	-5.80	-5.00	Simrad EA 600, 200kHz tranceducer	
8	V1E2	1.50	-6.10	-5.00	Simrad EA 600, 12kHz tranceducer	
9	Speedlan					
10	Runt 1				Trimble Bullet	
11					Sailor VHF Antenna	2 Green Rings
12	V1GY1				Simrad GPS Gyro	
13	Gun deck re-rad				Gun deck re-rad	



7.2 TOWING SYSTEM



-  Centre of Source
-  RGPS pod
-  RP Reference Point
Vessel Centre Stern at sea level



8 APPENDICES

8.1 MGC CONVENTIONS AND TERMINOLOGY

Glossary:

Active	: 150m active streamer section (40 used in streamer)
BCU	: Bird Compass Unit, Digicourse series depth / compass unit
Module	: Streamer electronics module
DGPS	: Differential Global Positioning System. Satellite navigation systems.
MOB	: Man overboard boat. A fast rescue craft designed for emergencies.
SEAL 24	: Data acquisition, streamer interface and recording system
Inmarsat B	: Telecom satellite communication system
DNP	: Do Not Process. Data acquired but not accepted.
RGPS	: Relative GPS system used for positioning source and tailbuoys
RU	: Remote unit commonly known as either a bird or compass unit
SPU	: Source Positioning Unit. RGPS units situated on sub-arrays
Skyfix	: Fugro RTCM delivery system
Spectra	: Real Time navigation system
SPECTRA	: Seismic processing system
SEALINK	: Digital energy source timing system
SEISPOS	: Navigation QC system

8.2 LINE AND SHOT POINT NUMBER CONVENTION

Line/Job prefix VCUE

Sail Line Format: Sail line numbers had the format TP06--xxx- yy, where:

CUE = Origin Exploration Limited's identifier
08 = Year of acquisition
xxx = Sail line number.
yy = sequence number

Shot Point numbers : Started used incremented and decrementing shotpoints depending on line heading.

8.3 DESCRIPTION OF LINE LOG CONTENTS

The following provides details of the data recorded for each line in the Observers Line Logs. All items appear on the individual Line Logs found on the CD accompanying this report.

Line Statistics

Seq.	: Sequence number of line (Order in which lines were shot)
Sail Line	: Client specified line number
Date	: Date on which line was started
Dir.	: Nominal line heading
Start Time	: Time of start of line, local time
End Time	: Time of end of line, local time.
SOL	: Start of line column heading
EOL	: End of line column heading
FSP	: First Shotpoint
LSP	: Last Shotpoint
KM	: Total kilometres recorded
KMFF	: Total kilometres full fold
CMP	: Na.
SQKMFF	: Na
Vessel Speed	: Vessels speed in knots at the start and end of the line.

Environment

Wind Speed	: Average wind speed in knots
Wind Dir.	: Average direction of wind
Water Depth	: Water depth below the transducer at the start and end of line
Swell	: Average swell height at the Start and End of line.
Sea State	: Sea conditions i.e. slight, moderate or rough at BOL/EOL

Streamers

SOL noise	: Ambient RMS streamer noise calculated at start of line
EOL noise	: Ambient RMS streamer noise calculated at end of line
Bad Channels	: The number of defective channels on the streamer. These can be classed as bad for several reasons, dead, noisy, spiking, leaking etc.
Feather	: The angle the streamer deviates off the line heading, negative numbers indicate port, positive numbers indicate starboard

Summary

Status	: Whether line complete or incomplete
Comments	: General summary of line quality and any particular aspect of the line which may require special attention.
Bad Records	: The number of bad shots or records on the line.

8.4 ECHO SOUNDER CALIBRATION

ECHOSOUNDER CALIBRATION - m/v. PACIFIC TITAN

Alongside:- **Brunie Port, Australia (during bunkering)**
 Taken in position: **41° 01' 43.8" S 145° 54' 19.0" E**

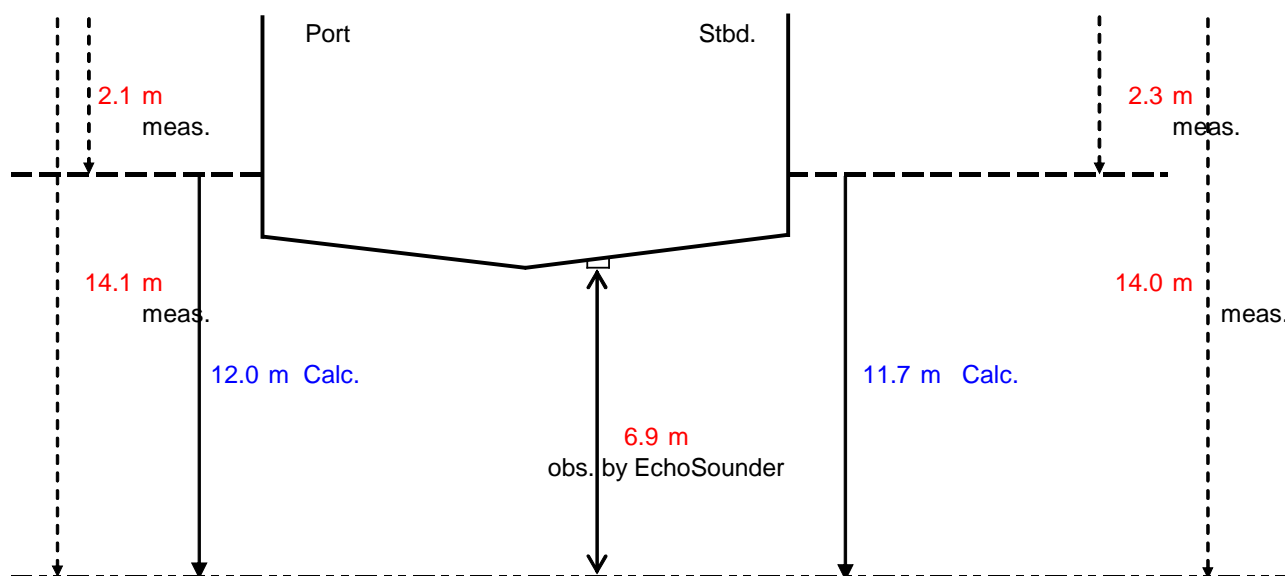
Date: **3 Mar 08**

Time: **3:00** GMT **14:00 Local Time**

Job: **6374**

Client: **Santos**

Measurements taken:-	metres		
Port Freeboard	2.1	Stbd Freeboard	2.3
Port Lead-Line	14.1	Stbd Lead-Line	14.0
EchoSounder Reading	6.9	Fwd Draught marks:	4.6
Time	2:55	Aft Draught marks:	5.2



Draught Marks:

Aft :	5.2 m		
Forward :	4.6 m	Theoretical Draught =	4.9 m

Electronic Depth + Theoret. Draught =	11.8 m
True Measured Water depth =	11.9 m

Difference = 0.0 m

TEXT = Measured
 TEXT = Calculated
 TEXT = Observed
 TEXT = Results