Deep Green Project EIA: Coordination

Operations survey report (Bibby Hydromap, 2015b)

Minesto AB

Assignment Number: L100194-S00
Document Number: L-100194-S00-REPT-015

Xodus Group
Cheapside House, 138 Cheapside
London, UK, EC2V 6BJ

T +44 (0)207 246 2990
E info@xodusgroup.com
www.xodusgroup.com

Operations survey report (Bibby Hydromap, 2015b)

L100194-S00

Client: Minesto AB
Document Type: Report
Document Number: L-100194-S00-REPT-015

Rev	Date	Description	Issued By	Checked By	Approved By	Client Approval
A01	28/01/2016	Issued for Use	Bibby HydroMap	SG	JDM	
R01	02/12/2015	Issued for Review	Bibby HydroMap	AS (Cathies)	JL	-

Deep Green Project - Holyhead Deep

Project and Export Cable Route – Offshore Survey

Volume 1 – Operations Report

Bibby HydroMap Project No: 2015-021

Date: September 2015

Prepared For	Xodus Group
Project Manager	Mike King (michael.king@bibbyhydromap.com)
Report Author	Aneka Hawkins, David Rider & Tom Davenport
Report Review and Authorisation	Gareth Stevens
Bibby HydroMap Project Reference	2015-021
Revision	01
Report Reference Code	REP-F-015-1

Services Warranty

Based upon an agreed contract ("Holyhead Deep") between Bibby HydroMap Limited ("Bibby HydroMap") and the client as named at the front of this report ("Xodus Group"), this report and all it contains, together with its associated works and services, has been designed solely to meet the requirements of the Contract.

If there are any changes in the circumstances for the use of this report, such as changes in site conditions, differing final objectives of the Client, or changes to legislation existing at the time the report was produced, then some or all of the results contained within may not be valid and Bibby HydroMap disclaims liability for such usage. In case of doubt, please consult Bibby HydroMap.

The survey results are based on an interpretation of the processed data sets only, as no ground-truthing information for the seabed sediments was available at time of reporting.

For the avoidance of doubt, Bibby HydroMap assumes no responsibility to any other party in respect of or arising out of or in connection with this document and/or its contents. Any reliance on this document and/or its contents by any other party is done so wholly at such other party's own risk.

Report Revisions

Revision Number	Date of Issue	Comments
00	July 2015	For comment
01	September 2015	Comments addressed

Contents

Figures

Tables

Appendices

Appendix 1: Mobilisation Report(s) including Vessel Offset Table

Appendix 2: Daily Operations Report(s)

Appendix 3: Technical Specifications

1. Introduction

1.1 Project Overview

Bibby HydroMap were commissioned by Xodus Group in June 2015 to carry out a geophysical and environmental survey at Holyhead Deep, Holyhead, Wales. CMACS Ltd were subcontracted by Bibby HydroMap to assist on the environmental study.

The survey was required to investigate the seabed and sub-surface conditions in order to plan any subsequent geotechnical investigations and assist with the design and placement of tidal generation units and associated foundation structures including an export subsea cable linked to a land based substation facility and a transformer positioned on the seabed.

The survey was carried out between 9 June and 5 July 2015. A site location plan is shown below.

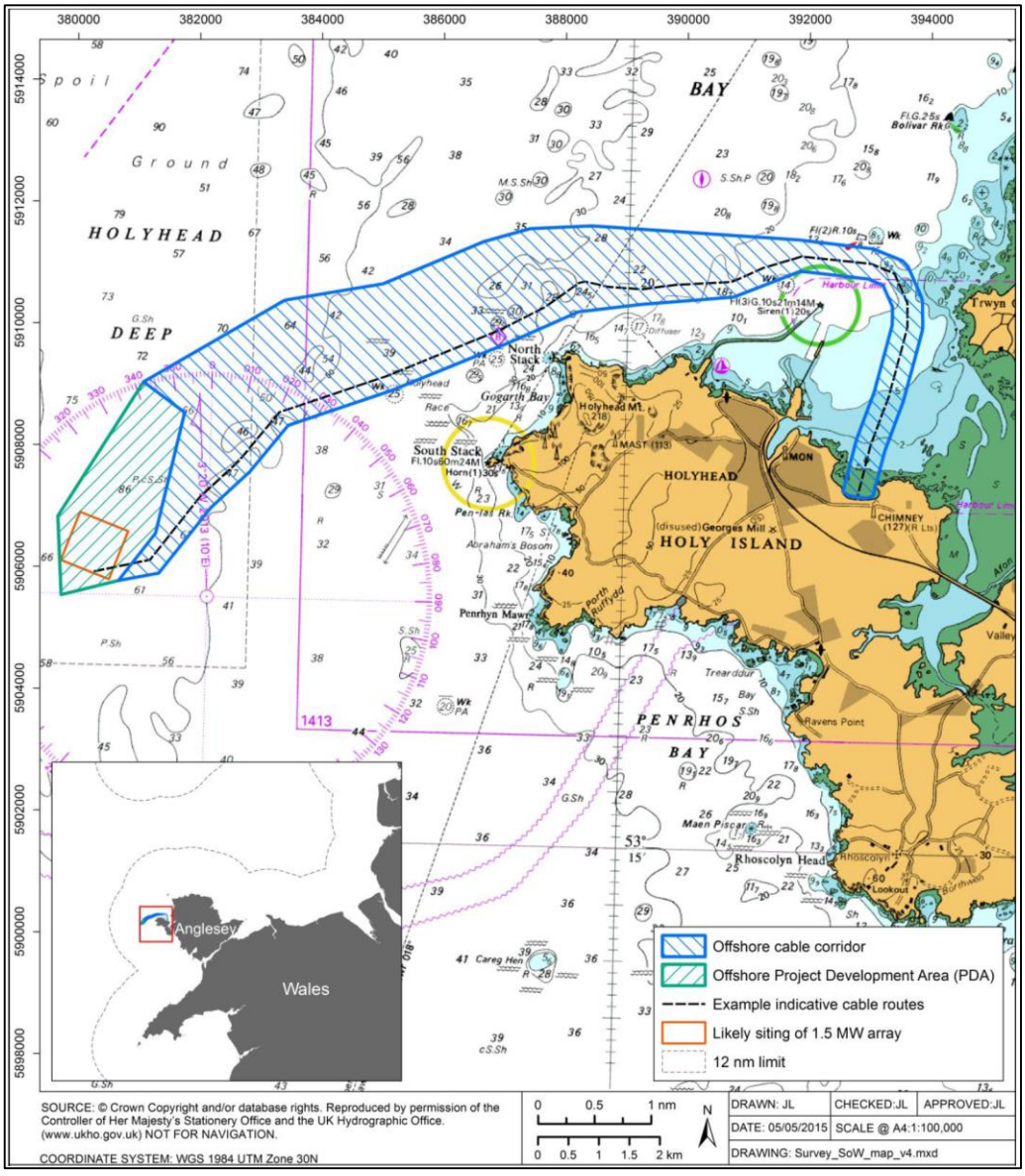


Figure 1: Site Location Plan

The main objectives of the surveys were as follows:

Geophysical Survey:

- To provide detail of the seabed conditions and bathymetry of the area
- To identify any debris, potential hazards and obstructions
- To identify any cable/ pipeline crossings as well as the presence of any existing subsea structures within the survey area
- To identify the presence of any points of archaeological and cultural heritage interest
- To produce laterally continuous interpretation of subsoil conditions where possible within the uppermost 5m below seabed
- Integrate the above data to optimise the installation of the subsea structures, cable route layout and planning of future geotechnical investigations

Environmental Survey:

- To document the seabed environment, habitats and species of conservational interest
- To ensure that all potential seabed biotopes and their distribution are sufficiently sampled in order to produce final habitat and biotope maps

In order to meet these objectives, multibeam bathymetry, side scan sonar, sub-bottom profiling and magnetometer data were acquired on site.

During the latter stages of the survey, an additional 'Route Development Area' survey was requested by the Client. This was undertaken within the inner section of the route bend between KP2.500 and KP4.500, across an area of approximately 0.58 km². Bathymetry and backscatter data were acquired at this location, with the backscatter data used for seabed features interpretation.

This Volume, Volume 1, is the Operations Report, which details the operational parameters, locations, times and techniques utilised during the survey carried out by MV Chartwell and MV Eagle. Volume 2, presents the preliminary results of the survey undertaken within the PDA and proposed export cable route. The preliminary Results Report encompasses the geophysical survey; the Environmental survey, provided by CMACS, will be included in the Final Report.

1.2 Operational Summary

The survey was conducted in two parts, The Project Development Area (PDA) and the cable route to the 5m contour and the inshore section of the cable route from the 5m contour into the beach.

Data acquisition for the PDA and Cable route to the 5m contour was undertaken from Bibby HydroMap's own dedicated shallow draft vessel MV Chartwell, equipped with Reson SeaBat 7101 Single Head Multibeam Echo Sounder, Klein 3000 Side Scan Sonar, Applied Acoustics AA200 Boomer, Geometrics G882 Magnetometer, and GeoAcoustics GeoPulse Pinger systems.

Description of Survey Areas:	Project Development Area (PDA) and Offshore cable corridor.
Survey Planning:	
Site Conditions:	Water depth varies between approximately 85m to the high water mark at the approach. Strong tidal currents. Thin, coarse seabed sediments over rock.
	9.6.2015 to 21.6.2015 Geophysical survey (MV Chartwell)

Schedule / Diary:	22.6.2015 to 2.7.2015 Environmental survey. (MV Chartwell) 2.7.2015 to 5.7.2015 Geophysical and Environmental surveys (MV Eagle)
Additional Information:	

Table 1: Operational Summary Table

2. Project Vessel, Personnel & Equipment

2.1 Survey Vessel

MV Chartwell was mobilised at the Port of Holyhead, which was approximately 30 minutes transit time from the site.

MV Eagle was mobilised in Holyhead Marina, which was approximately 10 minutes from her survey area.

MV Chartwell is a 26m 24hr coastal survey vessel which carries Category 2 certification under the current MCA Code of Practice for Small Workboats and Pilot Boats. Details of vessel specifications can be found at the following address: http://www.bibbyhydromap.com/vessels/

MV Eagle is a 5m 12hr shallow water jet drive survey vessel. Her draft of 0.5m and the ability to dry out makes her suited for very shallow water intertidal surveys. Water jet propulsion enables Eagle to have an extremely high level of manoeuvrability and slow speed control. Eagle carries Category 3 certification under the current MCA Code of Practice for Small Workboats and Pilot Boats. Details of vessel specifications can be found at the following address:

http://www.bibbyhydromap.com/site/assets/files/1664/bhl_eagle_v0.pdf

All staff members and visitors were inducted to the vessel and made aware of the vessel HSE plan along with Bibby HydroMap's company policies and procedures. Details of this are held within the vessel HSE plan and can be provided on request.

Health & Safety meetings were held on board and attended by all members of the survey crew and client representatives. Any relevant meetings are detailed in section 5 of this report. The vessel offsets are provided in the Mobilisation Reports (see Appendix 1).

Category	Details	Comments
24hr Coastal Survey Vessel. MCA SVC Category 1 available for specified contract (up to 150 miles from a safe haven) MCA SCV Category 2 (up to 60 miles from safe haven).	**MV Chartwell** 	Completely refitted in 2009, Chartwell is a 26m purpose built survey vessel, ideal for coastal geophysical investigations. She has a cruising speed of 15 knots and with a draft of 2.1m she has a minimum safe working water depth of 4m. Chartwell can accommodate 9 people and has a 5 to 7 day operational capacity.

Category	Details	Comments
12h Coastal Survey Vessel. MCA SCV Category 3 (up to 30 miles from safe haven).	**MV Eagle** 	Eagle is a purpose built shallow drafted survey vessel launched in 2003. Eagle is a heavy duty GRP, Halmatic, shallow drafted water jet propulsion catamaran with dimensions of 8.9m by 2.9m with a draft of 0.5m. The vessel has twin inboard engines which provide a fast cruising speed of over 15 knots, in optimum sea conditions. Eagle was purpose built for the Maritime Coastguard Agency (MCA) to the highest of build and fitting standards in 2003.

Table 2: Bibby HydroMap Survey Vessels

2.2 Project Personnel

The following personnel were involved during the acquisition stage of the project:

Acquisition							
Mike King	Project Manager						
Amy Gresty	Project Team Leader						
MV Chartwell	**Party Chief**	**Geophysicist**	**Surveyor**	**Engineer**	**Vessel Crew**	**Client Rep**	**Biologist**
Geophysical Survey	Mick Dougal	Aneka Hawkins	Greg Tandy	Rob Wells	Pat Hannigan	Francis Farrow	NA
					Steve Dalton		
					Finlay Munro		
Environmental Survey	Nick Bowley		Rosie Atkinson	Rob Wells	Giles Simmons	Francis Farrow	Ken Neil
					Karl Ward		Chris Hully
					Steven Dalton		Joel Kimber
MV Eagle	**Party Chief**	**Geophysicist**	**Surveyor**	**Engineer**	**Vessel Crew**	**Client Rep**	**Biologist**
Geophysical Survey	David Rider	David Rider	Josh Erratt	n/a	Tony Barcley	Manuela Secomandi	NA
					Dick Thurlow		
Processing and Reporting							
Personnel	Team Leader	Geophysicist	Surveyor	CAD	GIS	Reporting	QC
	Amy Gresty	Aneka Hawkins	Peter White	Gill Reaney		Liliana Trindade	Rob White
		Theo Gaussen				Cherri-Ann Bones	Hugh Fraser
		Jenny Whitehead					Jim Walters
		Ronan Hickey					Cherri-Ann Bones

Table 3: Project Personnel

2.3 Equipment List

The following equipment was utilised during survey data acquisition:

Equipment Utilised	MV Chartwell	MV Eagle
AAE Multi Element Hydrophone	✓	
Applanix POS MV 320 Aided Inertial Navigation System	✓	
Applied Acoustics AA200 Boomer Sub-Bottom Profiler	✓	
Applied Acoustics CSP300P/ CSP1000 Seismic Power Source	✓	
C-NAV 3050 dGNSS or Long Range RTK	✓	✓
Coda Technologies DA2000 Digital Data Acquisition System	✓	
Coda Technologies DA4G Digital Data Acquisition System	✓	
Coda Technologies GeoSurvey PC Acquisition System		✓
GeoAcoustics GeoPulse Pinger Sub-Bottom Profiler	✓	
Geometrics G882 Caesium Vapour Magnetometer	✓	✓
Hemisphere Crescent VS110 GPS Compass	✓	
Hemisphere Vector V1000 GNSS Compass		✓
IXSEA Octans IV Gyro Compass		
Klein 3000 Side Scan Sonar System	✓	
Klein 3900 Side Scan Sonar		✓
Knudsen 320M Dual Frequency Hydrographic Echo Sounder	✓	
QINSy Software Version 8.0	✓	
Reson SeaBat 7101 Single Head Multibeam Echo Sounder	✓	
Sonardyne Scout USBL System	✓	
T Count Cable Counter	✓	
Valeport Monitor Sound Velocity Probe	✓	

Table 4: Equipment Utilisation

3. Acquired Data Quality

3.1 Bathymetry

The multibeam system performed as expected during acquisition, providing generally high quality data collection throughout the survey area. Data was continually monitored during acquisition by the online surveyor to ensure project specific and Bibby HydroMap's data standards were achieved.

The sound velocity profile of the water column was continually monitored during the survey, with profile collected at least every 12 hours. The profiles indicated minor variation during the survey, fluctuating between 1493 ms^{-1} and 1494ms^{-1}. The recorded sound velocity information within the survey area indicates this variable had negligible influence in the total propagated uncertainty (TPU) of the multibeam soundings.

To quantify data quality, the bathymetry data was measured against the standards outlined within the IHO Standards for Hydrographic Surveys Special Publication No. 44, as specified in the scope of work. The scope of work for this project required data to be acquired in line with Order 1a requirements, which has been used for assessment.

IHO standards define the maximum allowable TPU for each order of survey – this is the total of all contributing random and systematic error sources found when measuring the depth of the seabed with an echo sounder. The standard divides TPU into two components; total horizontal uncertainty (THU) and total vertical uncertainty (TVU), given at the 95% confidence level.

THU accounts for geo-referencing and positioning errors associated with a survey in two dimensions (2D). TVU considers the errors in calculating the depth in one dimension (1D).

The maximum allowable TVU confidence uses the formula below. This equation divides error sources into two parameters:

- Uncertainties that are independent of depth, represented by '*a*';
- Uncertainties that are dependent of depth represented by '*b*', with depth represented by 'd'.

$$\pm\sqrt{a^2 + (bxd)^2}$$

For IHO Order 1a surveys, the minimum requirements are as follows:

	Order 1a
Maximum allowable THU (95% confidence level)	5m plus 5% of Depth
Maximum allowable TVU (95% confidence level)	a = 0.5m b = 0.013
Full Sea Floor Search	Required
Feature Detection	Cubic Features >2m, in depths up to 40m, 10% of depth beyond 40m

The figure below describes how the maximum allowable TVU and THU varies with water depth.

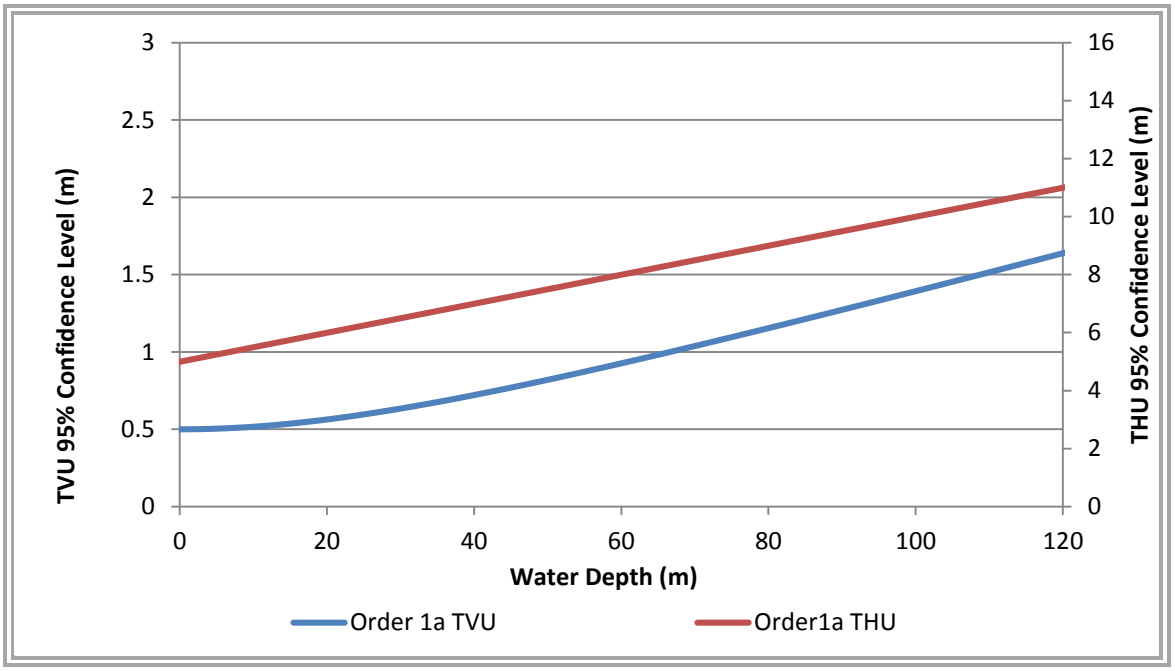


Figure 2: IHO Standard Maximum Allowable TVU and THU

3.1.1 Calculated Survey Error Budget

A TPU error budget was calculated for the complete survey system. This was completed using the Apriori Multibeam Uncertainty Simulation Tool (AMUST) software, sourced from the Rijkswaterstaat (RWS). AMUST requires the random and systematic errors of each part of the survey equipment installation to be entered, along with physical measurement accuracies. All error values were taken from manufacturer's documentation and dimensional control data. From these error estimates the simulator calculates THU and TVU for a single multibeam ping.

To ensure the survey system exceeded the minimum data standard, the calculated random position uncertainty (RPU) and random depth uncertainty (RDU) from AMUST were reviewed. The estimated uncertainties of each individual sensor and the resultant sum of these uncertainties for a single Reson 7101 swath are shown in the figures below, at a water depth of 30m (typical of the depths found on site).

The minimum standards according to the IHO Order 1a are present on each respective plot as shown below. In Figure 3 below, the overall accuracy of the position of the sounding along the swath (black line) does not exceed 1.75m and is below the maximum allowable THU of 6.3m (grey line).

In Figure 4 below, the uncertainty of the reduced depth of the swath (light blue line) is just above 0.28m, well below the maximum allowable TVU that is calculated as +/-0.634m.

The graphs above indicate that the calculated TPU for the survey is below the Order 1a maximum allowable uncertainty levels for both THU and TVU.

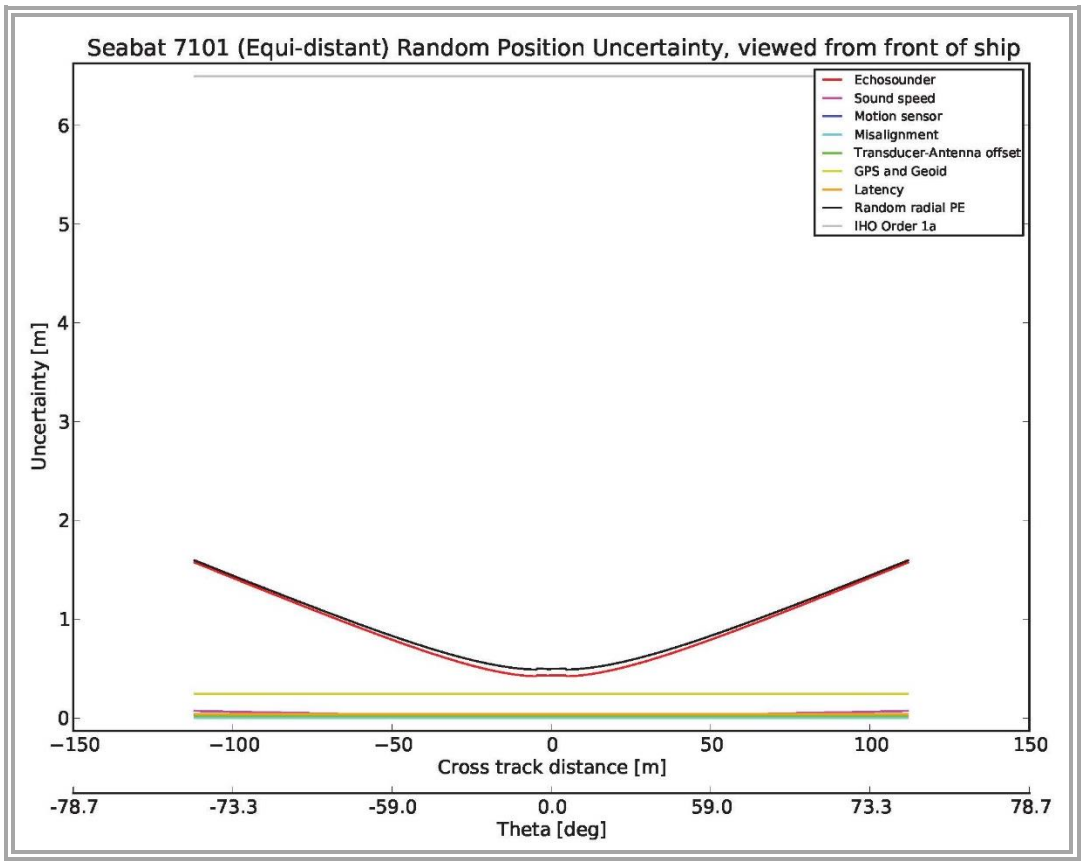


Figure 3: Calculated Total Horizontal Uncertainty

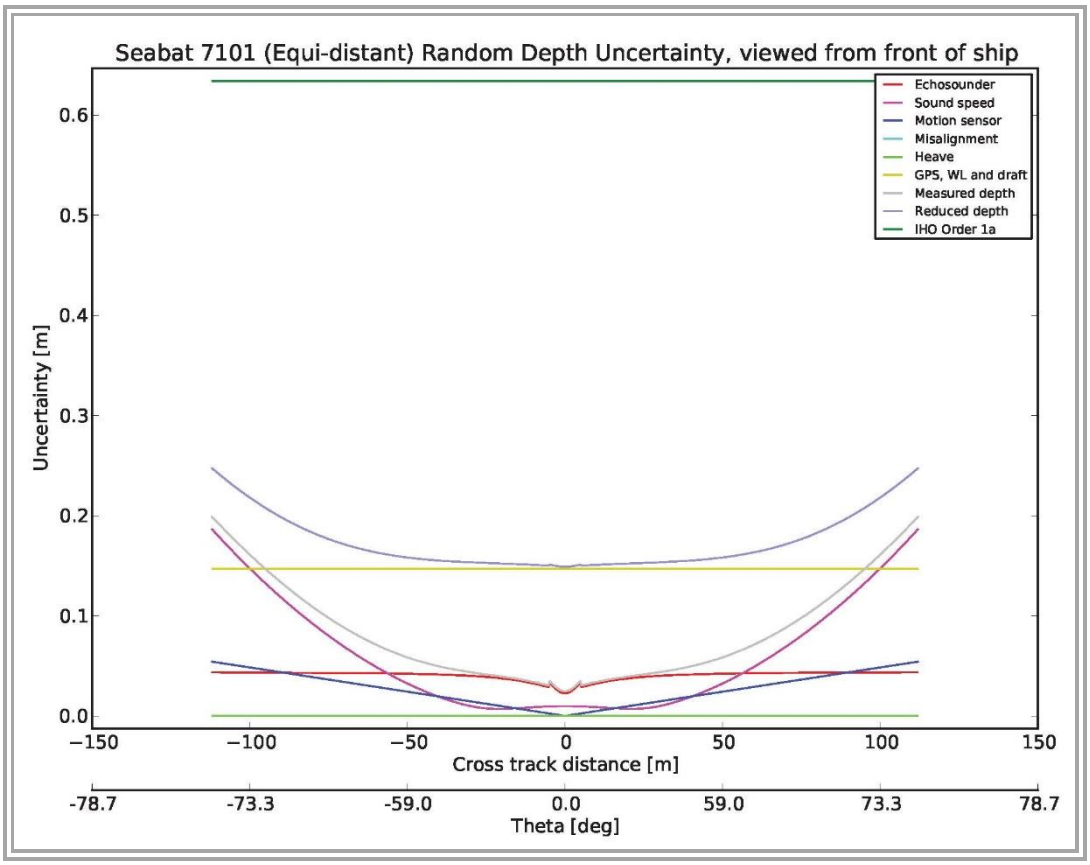


Figure 4: Calculated Total Vertical Uncertainty

3.2 Side Scan Sonar

The side scan sonar data collected was generally of good quality. Over 200% coverage was achieved allowing targets to be identified on more than one survey line and the centres of each swath to be covered. The fish was towed at an optimum height (for the range of 75 metres) of approximately 7.5 metres above the seabed. Occasional tugging was evident although this has not affected the quality of the final mosaic or the identification of any targets, features or seabed character. Similarly, positional data was of high quality, enabling accurate location of any targets and ensuring seabed features aligned on adjacent lines.

3.3 Magnetometer

The magnetometer and associated navigation data collected was of good quality. Some occasional noise spikes are present in the magnetometer data.

3.4 Sub-Bottom Profiler

The pinger data collected was generally of high quality and high resolution data was recorded to a depth of 5m minimum.

Boomer data was also acquired to a minimum depth of 10m. The boomer data was mostly of good quality however occasional blanking was evident, although this has not affected the quality of the data or the identification of any targets, features or seabed character.

4. Data Processing

4.1 Bathymetry

The majority of the data collected was processed at the Bibby HydroMap office with final processing and quality control completed at the Bibby HydroMap office. Bathymetry data processing was carried out using QPS Qimera. This software allows the user to apply tidal data, sound velocity corrections, edit bathymetry soundings and view the associated peripheral data for each multibeam ping to make adjustments where necessary. Qimera allows the user to visualise bathymetry data as a DTM surface whilst referencing the individual data lines. The DTM surface can show various attributes associated with the dataset including mean depth, standard deviation and hit count and modifications during data editing.

4.1.1 Vertical Reduction Methodology

The vertical datum used for all measurements was Lowest Astronomical Tide (LAT), as defined in the Project Scope, using the UKHO VORF model.

The reduction of data to the defined vertical datum used a GNSS height measurement based approach. The observed heights from the C-Nav 3050 GNSS system were reduced using the VORF (LAT) geoid/ellipsoid separation model.

QINSy was setup to apply the VORF LAT separation model to reduce the height observations of the C-Nav 3050 GNSS, which are accurate to +/-10cm utilising the C-Nav C^2 correction service. This reduced LAT height was applied to multibeam soundings to calculate the reduced depth.

It was necessary to integrated post processed GNSS height data to parts of the acquired data set where a poor quality height solution was being provided by the C-Nav 3050 GNSS. Logged GNSS observations for these time periods were processed using the Post-Processed Kinematic (PPK) module inside Novatel's Waypoint post processing software. GNSS data (1Hz) was converted to the software format. Nearby base station observations from Holyhead were acquired from the Leica Spiderweb website and imported into the software. With the Holyhead base station loaded Novatel's AdVance RTK (ARTK) processing was used, where carrier phase ambiguities are fixed for high accuracy positioning. The software then combined and smoothed the computed forwards and backwards trajectories in time, which resulted in an improvement in the position, velocity and accuracy to less than 10cm (1 sigma), depending on baseline lengths.

The processed data were outputted as a text navigation file, then imported into Qimera and integrated as the new GNSS height source.

4.1.2 Processing Methodology

The processed data files were gridded and reviewed in Qimera. The gridded surface was checked for data quality and accurate reduction in line with Order 1a, and to ensure all ancillary data was applied correctly before Processing Manager was used to correct and filter bathymetric data.

Data editing was completed using a combination of editing and cleaning tools built inside Qimera. Qimera allows the bathymetry surface to update with the changes made by the processor, which enables real-time validation of the data editing.

Once cleaned, a combined surface of the multibeam data was generated at 1m bin resolution and used for the creation of seabed imagery and exports of XYZ files.

4.1.3 Processed Quality Checks

All bathymetry processing followed a structured workflow with clearly defined QC checkpoints. All filtering, corrections and comments were recorded in a detailed processing log prior to a full QC check. Each data output from the approved bathymetry surface was documented and checked before being added to the project charting.

Before the processed bathymetry surface was approved the standard deviation and sounding density of the gridded surface were checked.

The computed standard deviation surface was used during processing to assess the quality of neighbouring swaths. Uniformly high standard deviation values on overlapping swaths indicate poor data correlation, relating to problems with the application of peripheral data and/or tidal reduction.

Standard deviation also highlights the roughness of the seabed surface. Flat and featureless seabed has low standard deviation, whereas a seabed with features such as exposed bedrock, megaripples, steep slopes and prominent wrecks usually have high standard deviation values.

The average standard deviation of this survey is 0.15m, which was considered an acceptable level for this survey. The figure below shows an example the standard deviation of the final processed surface.

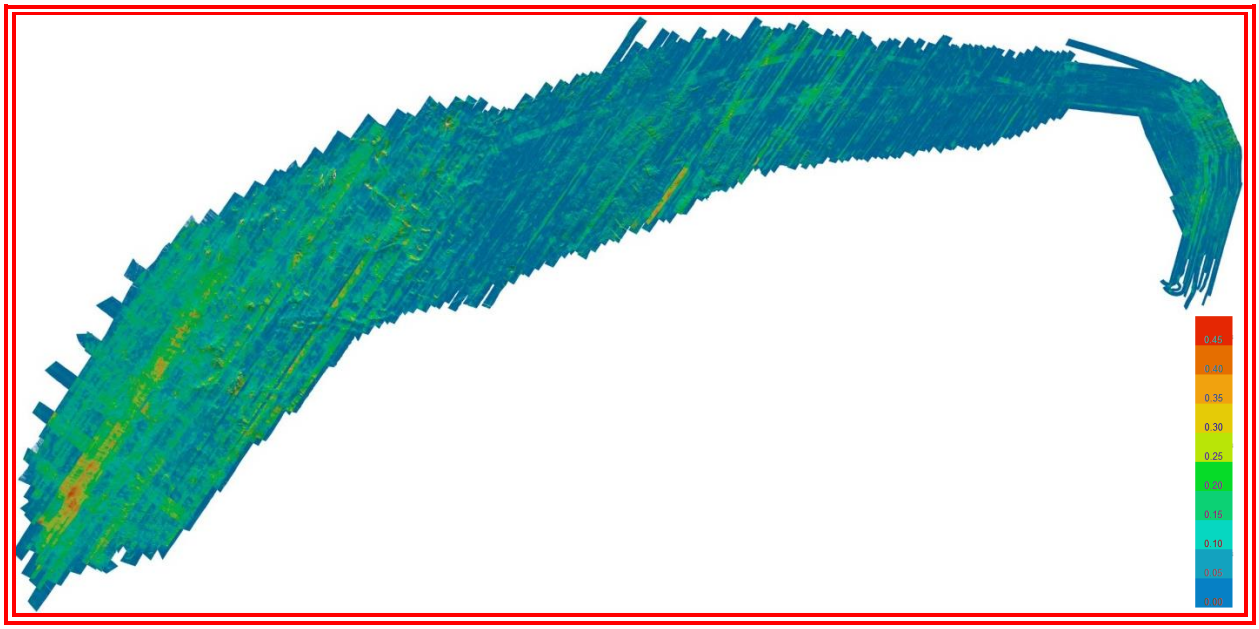


Figure 5: Gridded Standard Deviation per 1.0m x 1.0m Cell

The sounding density surface assesses whether the processed bathymetry met the feature detection and data coverage requirements of the specified IHO standard. The scope of work for this project specified 100% coverage with multibeam data and an assumed data density of 9 soundings per gridded cell to provide an acceptable surface.

The average sounding density across the survey area was calculated as 15 soundings within a 1m x 1m cell. The figure below shows an example of the sounding density of the final processed gridded surface.

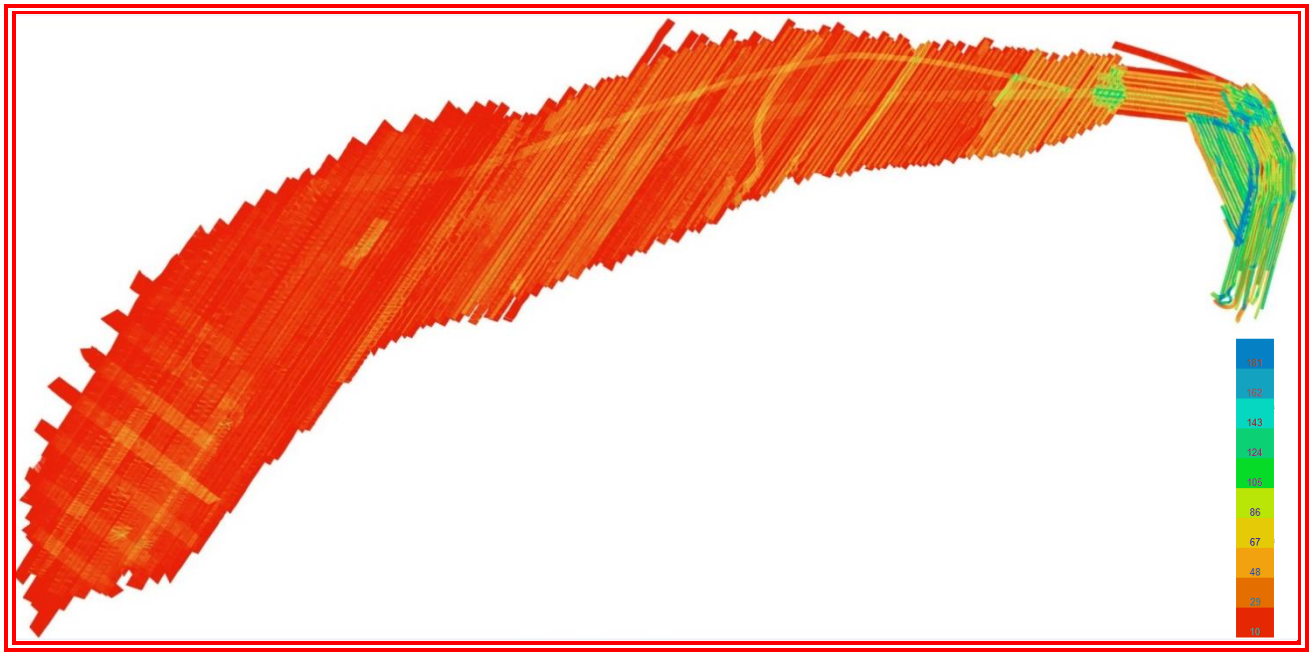


Figure 6: Sounding Density per 1.0m x 1.0m Cell

Full coverage was achieved, meeting Order 1a requirements for full sea floor search. The striping in the figure represents the overlap in multibeam swaths required to achieve complete ensonification. The feature detection criteria for Order 1a have been achieved. The final gridded surface is binned at 1m, exceeding the minimum size of detectable features for the water depth. This bin size provided a sounding density exceeding the minimum of 9 soundings per cell assumed necessary for accurate feature detection.

4.1.4 Backscatter Data Processing

Fledermaus Geocoder Toolbox (FMGT) was utilised to process the backscatter data acquired within the cable route development area. FMGT has been designed specifically to process backscatter data from multibeam systems and utilises the Geocoder algorithms to produce an adjusted backscatter mosaic. The software supports multiple file formats. For this project pairs of QINSy database and QPD files were used.

Data were loaded into FMGT with the databases and QPDs merged to a single GSF file. This process utilised the QPD files created during the bathymetry processing and the raw QINSy database files containing backscatter data.

Backscatter adjustments and filtering were undertaken by an automated process within the software, which applies specific parameters for RESON backscatter data to create normalised data files ready for visualising in a single mosaic.

All data files were normalised and mosaicked image with a suitable range set was exported. The image was then integrated with the side scan sonar results for seabed feature interpretation.

4.2 Side Scan Sonar

The side scan sonar data was processed in Coda Survey Engine Mosaic+ software, allowing accurate picking of the seabed before applying a slant range correction and playing in to the mosaic.

The navigation data recorded in the side scan data during acquisition was then filtered to remove any bad position fixes and create a smooth position interpolated for each sonar ping. A fixed layback of 1.85 metres was applied to account for the separation between the USBL beacon and towfish transceivers. The position of the side scan data was compared to the bathymetry to check that the position of significant targets match between the two datasets, within the specified tolerances. The data was enhanced in the mosaic window by applying TVGs and layering the data accordingly to create a final image of the seabed.

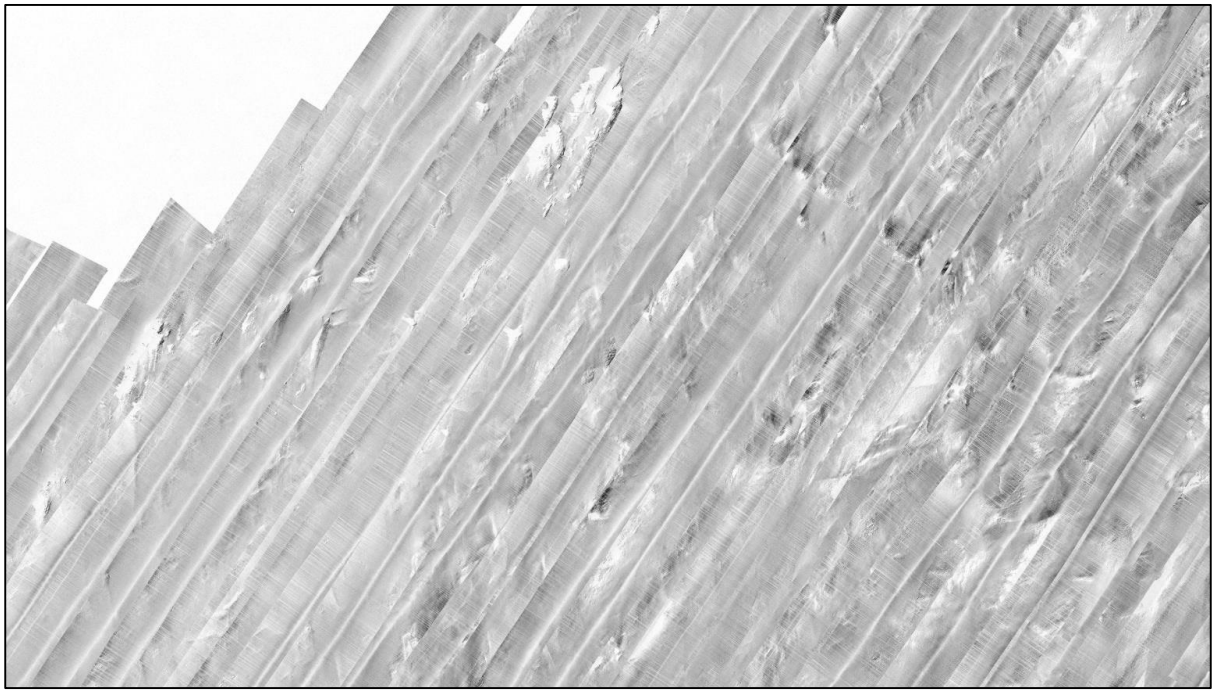


Figure 7: Example Image from the Side Scan Sonar Mosaic

Targets were picked using a boulder density analysis method. The survey area was divided into a grid of areas for the boulder density analysis. Within each area up to 10 examples of the largest boulders were picked and dimensions measured in the waterfall display. This also helped to check positional data. The final mosaic was exported as a GeoTiff image at a resolution of 10 pixels per metre. The mosaic Geotiff and targets were imported into Bentley MicroStation and all boulders with dimensions greater than 0.3m were picked within representative 1000m^2 circular areas within each section of the grid to provide a boulder density of each grid area. The mosaics were also imported into Bentley Microstation/ArcGIS for charting and reporting.

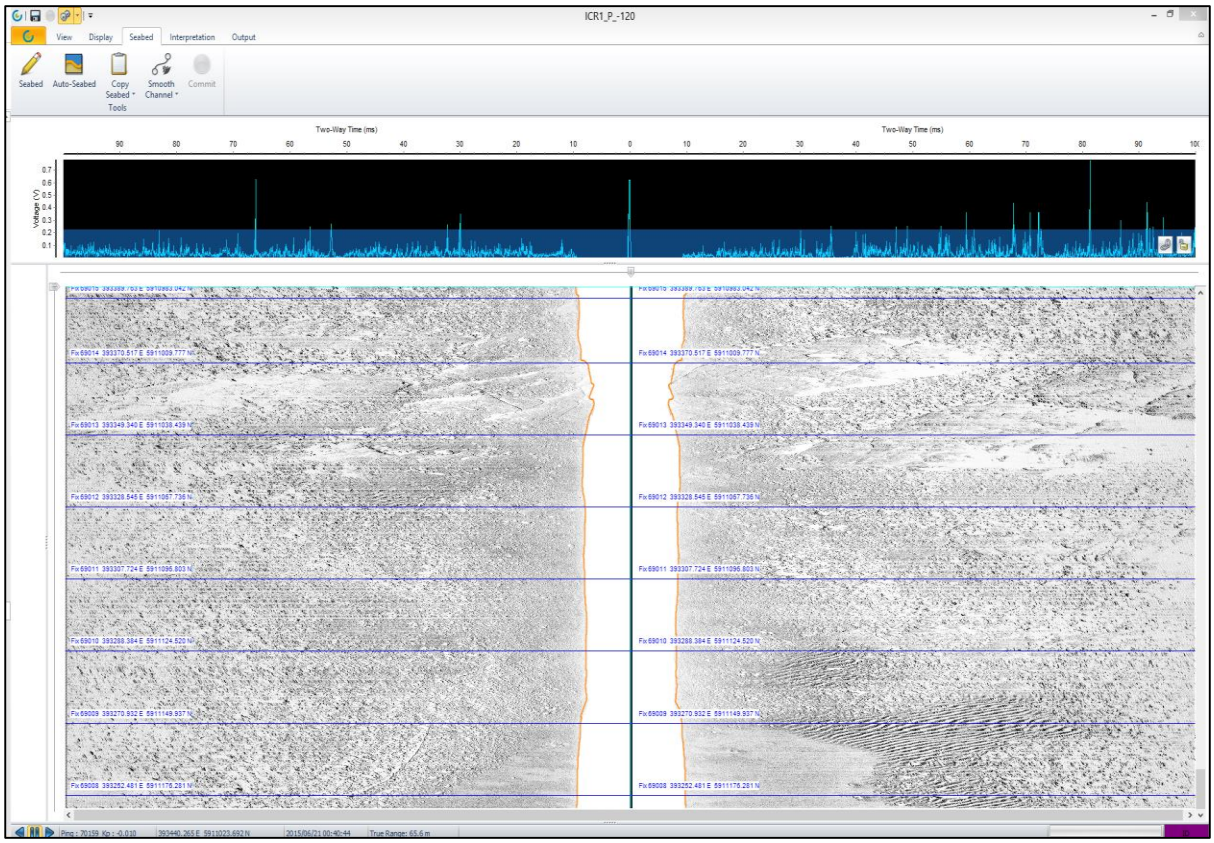


Figure 8: Example Image from the Side Scan Sonar Waterfall

In Survey Engine Mosaic+, the GIS window allows other datasets to be imported (e.g. bathymetry GeoTiffs, dxfs etc.) and shows how they line up against the side scan sonar data.

Once the data was processed it was integrated with the magnetometer, bathymetry and seismic data to guarantee full interpretation.

4.3 Magnetometer

The magnetometer data was processed in Oasis Montaj allowing filtering to remove any long wavelength magnetic signals caused by diurnal variation and/or regional geology. The software was also used for gridding and interpretation of large magnetometer datasets to produce a target listing.

To begin this process, a long wavelength approximation of the magnetometer data was undertaken, using a non-linear filter over a user defined number of samples. This effectively used a sliding window to average the data set; the number of samples or window over which this averaging was performed was manipulated by the interpreting geophysicist to highlight different features. These averaged values were then subtracted from the total field to produce a residual value.

Once a residual value was calculated, the data was gridded to help visualise the data and to produce plots of the residual values. This grid showed any trends in the data that can help identify cables, pipelines and geology.

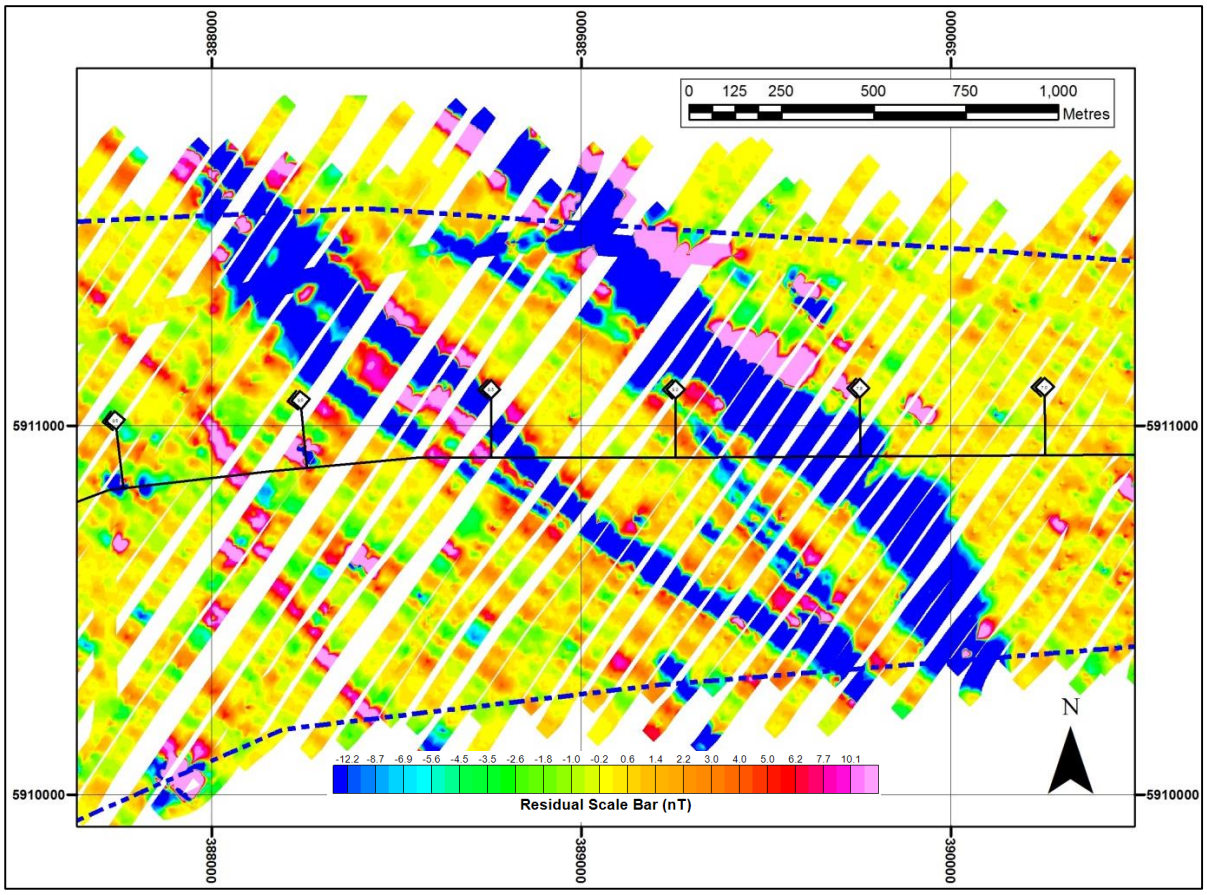


Figure 9: Example Image from Magnetometer Grid

The data was then interpreted and anomalies were picked and measured before a listing was exported and reported.

4.4 Sub-Bottom Profiler

The data was processed in Coda Survey Engine Seismic+, allowing accurate picking of the seabed then applying time varied gain amplification, frequency filters, swell filters etc. to enhance the data. Horizons were picked and interpreted and the GIS window allowed other datasets to be imported (e.g. side scan sonar mosaic, dxfs etc.) to show where they lie against the sub-bottom data.

Profiles were created in Seismic+ for each RPL requested by the client and imported into ArcGIS. The horizons were then reduced vertically using the bathymetry XYZ data and plotted before they were exported and charted in AutoCAD or MicroStation.

Isopachytes were created for inferred rock/coarse granular material down to a depth of 55m. 1m interval contours were used to a depth of 5m, followed by 5m interval contours to a depth of 55m. A 7.5m contour was also created. Significant horizons were picked on all lines and exported from Seismic+ as an XYZ. This was then imported into ArcGIS and contoured. The contours are exported and charted in AutoCAD or MicroStation.

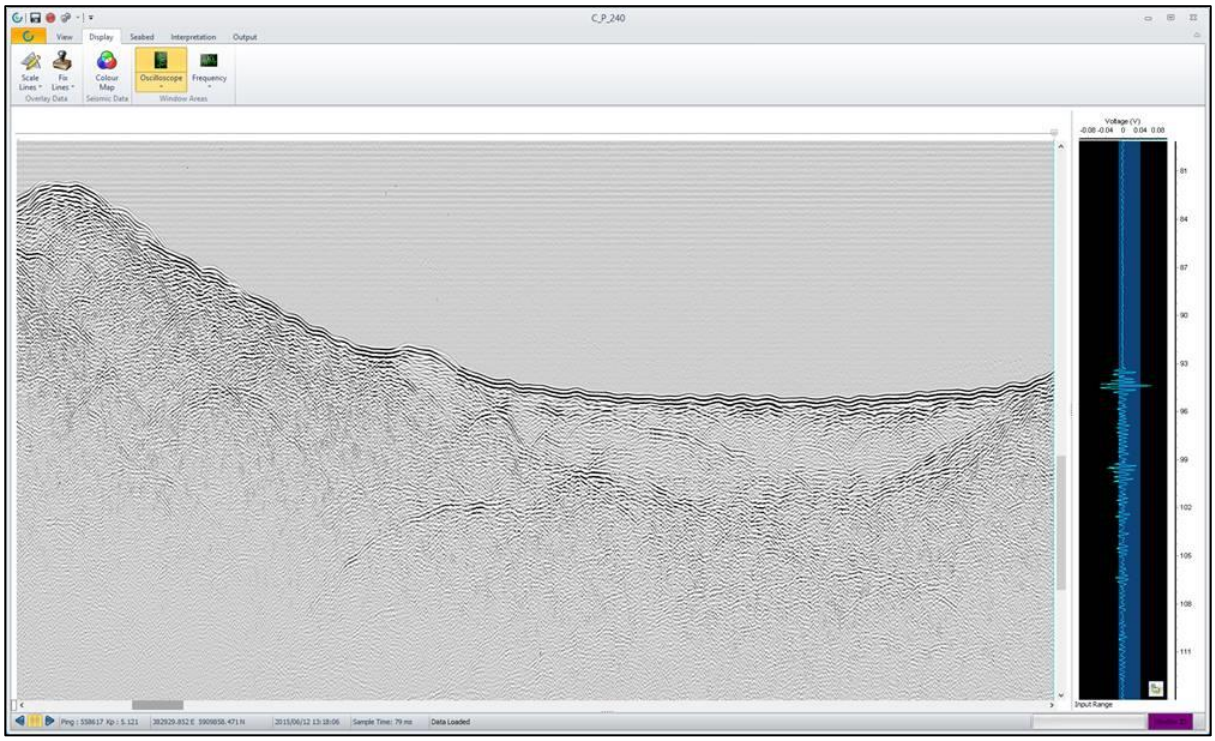


Figure 10: Example Pinger data from Seismic Waterfall showing a thin pocket of sediment over rockhead.

The sub-bottom data was quality controlled against the side scan sonar and bathymetry data to ensure the datasets cross correlated.

5. Health & Safety

All work undertaken during the contract by Bibby HydroMap personnel was carried out within the general guidelines of the companies Health and Safety Policy, as defined within the Vessel HSE Plan for MV Chartwell HSE Reporting procedures are detailed fully in Section 3.4.7 (Incident Reporting) of the HSE Plan. These are also discussed in Sections 3.2.5 (HSE Meeting Structures) and 3.4.5 (Change Procedures). This document is read, understood and signed by all on-board parties.

Personal Protective Equipment (PPE) was worn throughout the contract, as required.

Bibby HydroMap personnel worked within project safety guidelines and plans adopted by Xodus Group.

Prior to the commencement of any field operations, the following activities were completed:

- Field Staff Project Briefing;
- Vessel Induction;
- Project Safety Meeting;
- Abandon Ship Drill.

No accidents or injuries were reported during the contract. The minutes of all safety meetings and any incident/accident reports were forwarded on to the Xodus Group along with the daily progress reports. These documents can be provided on request.

Table 5 summarises the measures/ actions taken during the survey for both Eagle and Chartwell.

HSE Activity	MV Chartwell	MV Eagle
Tool box talks	46	3
Safety meetings	4	0
Safety observations	9	1
Near misses	0	0
Safety incidents	0	0

Table 5: Summary of health & safety activities

List of Standard Abbreviations

ADCP	Acoustic Doppler Current Profiler	MLWN	Mean Low Water Neaps
CAD	Computer Aided Design	MLWS	Mean Low Water Springs
CD	Chart Datum	MNR	Mean Neap Range
CM	Central Meridian	MSL	Mean Sea Level
CPU	Central Processing Unit	MSR	Mean Spring Range
CTD	Conductivity Temperature Depth	OD(N)	Ordnance Datum (Newlyn)
dGPS	differential Global Positioning System	OSGB	Ordnance Survey of Great Britain
dxf	Drawing Exchange Format (AutoCAD file)	OSTN02	Ordnance Survey Transformation Network
ED50	European Datum 1950	PCS	Processing Control System
EGM96	Earth Gravitational Model 1996	PPE	Personal Protective Equipment
EGNOS	Euro Geostationary Navigation Overlay Service	PPM	Parts Per Million
ESA	European Space Agency	PPP	Precise Point Positioning
GAMS	GPS Azimuth Measurement Subsystem	PPS	Pulse per Second
GLA	General Lighthouse Authority	QC	Quality Control
GNSS	Global Navigation Satellite System	RIB	Rigid Inflatable Boat
GSM	Global System for Mobile Communications	RPL	Route Position List
HAT	Highest Astronomical Tide	RMS	Route Mean Square
HF	High Frequency	RTCM	Radio Technical Commission for Maritime Services
Hz	Hertz	RTK	Real Time Kinematic
IHO	International Hydrographic Organisation	SBAS	Satellite Based Augmentation System
IMO	International Maritime Organisation	SD	Standard Deviation
INS	Inertial Navigation System	SVP	Sound Velocity Probe
kHz	Kilohertz	SVP	Sound Velocity Profile
km	Kilometre	SVS	Sound Velocity Sensor
KP	Kilometre Post	TPU	Total Propagated Uncertainty
LAT	Lowest Astronomical Tide	TVG	Time Variable Gain
LRK	Long Range Kinematic	UHF	Ultra High Frequency
MCA	Maritime & Coastguard Agency	USBL	Ultra Short Base Line
MF	Medium Frequency	UTM	Universal Transverse Mercator
MHWI	Mean High Water Interval	VHF	Very High Frequency
MHWN	Mean High Water Neaps	WAAS	Wide Area Augmentation System
MHWS	Mean High Water Springs	WGS84	World Geodetic System 1984
MHz	Megahertz	WSM	Wideband Sub Mini
MLWI	Mean Low Water Interval		

References

IHO Standards for Hydrographic Surveys Special Publication No. 44, 5th Edition, February 2008 (https://www.iho.int/iho_pubs/standard/S-44_5E.pdf)

Appendices

Appendix 1	-	Mobilisation Report(s) including Vessel Offset Table
Appendix 2	-	Daily Operations Report(s)
Appendix 3	-	Technical Specifications

Appendix 1

Mobilisation Report(s) including Vessel Offset Table

Deep Green Project – Holyhead Deep

Project Site and Export Cable Route: Offshore Survey

Mobilisation Report

2015-021

June 2015

Prepared For	Francis Farrow (francis.farrow@btinternet.com)
Project Manager	M King (Michael.king@bibbyhydromap.com)
Report Author	G Tandy/ M Dougal / A Hawkins
Report Review and Authorisation	
Bibby Hydromap Project Reference	2015 - 021
Revision	01

Services Warranty

Based upon an agreed contract (The Contract) between Bibby HydroMap and the Xodus Group (the Client), this report and all it contains, together with its associated works and services, has been designed solely to meet the requirements of The Contract.

Any changes in the circumstances for the use of this report, such as changes in site conditions, differing final objectives of the Client, or changes to legislation existing at the time the report was produced, then some or all of the results contained within may not be valid and Bibby HydroMap can accept no liability for such usage. In case of doubt, please consult Bibby HydroMap.

Report Revisions

Revision Number	Date of Issue	Comments
01	23/06/2015	For reference only

Contents

Appendices

Appendix I: Mobilisation Revisions

Appendix II: Vessel Specification

Appendix III: POS MV Installation

Appendix IV: SVP Calibration Certificate

1. Introduction

MV Chartwell was commissioned in May 2015 to support an ongoing contract between the Xodus Group and Bibby HydroMap at the Holyhead Deep Water site. The scope of work included the acquisition of bathymetry and geophysical data.

It should be noted that some of these calibrations took place on the previous contract, and this is reflected in the calibration information where required.

1.1 Vessel MV Chartwell

Bibby Hydromap own dedicated survey vessel, MV Chartwell was utilised on a 24 hour basis throughout the survey period. The vessel was mobilised at and operated from Liverpool. Mobilisation verifications were carried over two wreck sites in the Holyhead deep green area.

MV Chartwell is a purpose built mono-hull survey vessel. The vessel has dimensions of 26.5m by 5.8m and a draft of 2.2m, providing a stable working platform. Further information regarding this vessel is presented in Appendix 1 to this report.

1.2 Geodetic Parameters

GNSS systems mobilised for this project are referenced to the World Geodetic System, 1984 (WGS84), utilising the ITRS89 realization. All survey area coordinates are in terms of:

Datum:	WGS84
Conversion Factor to m	
Spheroid	WGS84
Semi-Major Axis	6378137.00m
Semi-Minor axis	6356752.314m
Inverse Flattening (I/F)	298.257223563000

Projection	Universal Transverse Mercator (North Hemisphere)
False Easting	500000.000m
False Northing	0.000m
Latitude of Origin	00;00;00.00000 N
Central Meridian	003;00;00.00000 W
UTM Zone	30 North
Scale Factor on CM	0.9996
Units:	Metres

1.2.1 Vertical Datum and Tidal Reduction

Tidal Reduction Online	Accurate Heights to VORF LAT
Processed Tidal Reduction for Site Reports	Accurate Heights to VORF LAT

1.2.2 Time

Raw Data	UTC
Survey Log Sheets	UTC
Reports	UTC

1.2.3 Units of Measurement

Linear	Metres (m)	
Angular	Degrees (°, positive clockwise)	Except for Datum Transformation

1.3 Equipment List

The specification sheets for the equipment listed can be viewed at the following address: http://www.bibbyhydromap.com/spec-sheets/

Hardware		**Asset Number**
Global Positioning System 1	CNAV 3050 (CCS)	SUR0270
Global Positioning System 2	POS MV (220) WAVEMASTER	SUR0335
Global Positioning System 3	Hemisphere VS110	OP0113
Gyro 1	POS MV (220) WAVEMASTER	SUR0335
Gyro 2	Hemisphere VS110	OP0113

Hardware		Asset Number
Motion Reference Unit 1	POS MV (220) WAVEMASTER	SUR0335
Multibeam Echo Sounder	RESON 7101	SUR0147 /SUR0148
Single Beam Echo Sounder	Knudsen 320 LF	SUR0111
Side Scan Sonar 1	Klein 3000	SUR0403
Side Scan Sonar 2	Klein 3000	Serial No. 568
Magnetometer 1	Geomatics G882	SUR0011
Magnetometer 2	Geomatics G882	SUR0012
USBL	Sonardyne Scout+	SUR0171 /SUR0172
Sound Velocity Profiler	Valeport Mini SVP	SUR0292

Software		
Survey Acquisition	QINSy 8.1.2015.03.31	
Geophysics Acquisition	CODA	

2. Vessel Offsets

2.1 Common Reference Point

The Common Reference Point (CRP) has been defined as part of a dimensional survey that was completed by RESON on 22nd Oct 2012, and supplemented by further surveys conducted by Bibby HydroMap on 08th July 2014. The dimensional survey established all offsets relative to the defined CRP and the mounting angles of Motion Reference Units and Multi-beam with respect to the Vessel Reference Frame (VRF). The full offset listings from the Dimensional Control Survey are presented in Appendix 3.

The CRP was defined along the Centreline of the vessel, under the rear door of the wheelhouse. The Centre of Gravity (CoG) was computed as 1.91m below this point. All Offsets are referenced to the COG with respect to the VRF.

Main Offsets

Sign Convention	X axis	Y axis	Z axis
	Starboard: +ve	Bow: +ve	Up: +ve

CRP	X (+ve Starboard)	Y (+ve Forward)	Z (+up)	Comments
	0	0	1.91	Survey mark below survey room door

Antennas	X (+ve Starboard)	Y (+ve Forward)	Z - GPS plate to CoG	Antenna	CoG to base of antenna	CoG to phase centre
			Z (+up)		Z (+up)	Z (+up)
CNAV 3050	1.962	-0.357	4.807	NAVANT3001R	4.927	4.975
POS MV Primary	1.963	-0.757	4.807	Zephyr 2	4.866	4.929
POS MV Secondary	-1.932	-0.773	4.797	Zephyr 2	4.854	4.917
Hemisphere	-1.63	-0.773	4.797		4.817	

Echosounders	X	Y	Z (+up)	Comments
RESON Tx	1.522	-3.341	-1.948	
RESON Rx	1.522	-3.040	-1.864	
RESON AC	1.522	-3.341	-1.864	
Knudsen 320	0.500	6.163	-2.015	
IMU	X	Y	Z (+up)	Comments
POS MV Output	0	0	0	
Actual IMU	2.467	-3.651	0.078	Y is forwards, Z positive Up
Sensor 2 (MBES)	1.522	-3.341	-1.864	Y is forwards, Z positive Up
USBL	X	Y	Z +up (CoG)	Comments
Sonardyne Scout	-2.77	-5	-3.13	
Towpoints				Comments
Low A-Frame Stbd	0.464	-11.380	3.231	
Stbd Davit	4.317	-10.845	3.030	

Note: CoG - Centre of Gravity

2.2.1 INS/IMU Offsets

Sign Convention	X axis	Y axis	Z axis
	+ve Forward	+ve Starboard	+ve Down

Applanix PosMV Wavemaster Lever Arms	X	Y	Z	Comments
Ref to IMU Lever Arm	-3.651	2.467	-0.078	
Ref. to Primary GPS Lever Arm	-0.757	1.963	-4.929	
Ref. to Sensor 1 Lever Arm	0	0	0	
Ref. to Sensor 2 Lever Arm	-3.341	1.522	1.864	***RESON 7101***
Ref. to Centre of Rotation Lever Arm	0	0	0	
Mounting Angles – *Tate-Bryant Rotation*	Roll	Pitch	Heading	Comments
IMU Frame w.r.t. Ref. Frame	3.601	-1.993	3.775	
Sensor 1 with respect to Ref	0	0	0	
Sensor 2 with respect to Ref	0	0		

3. Equipment

3.1 Global Positioning Systems

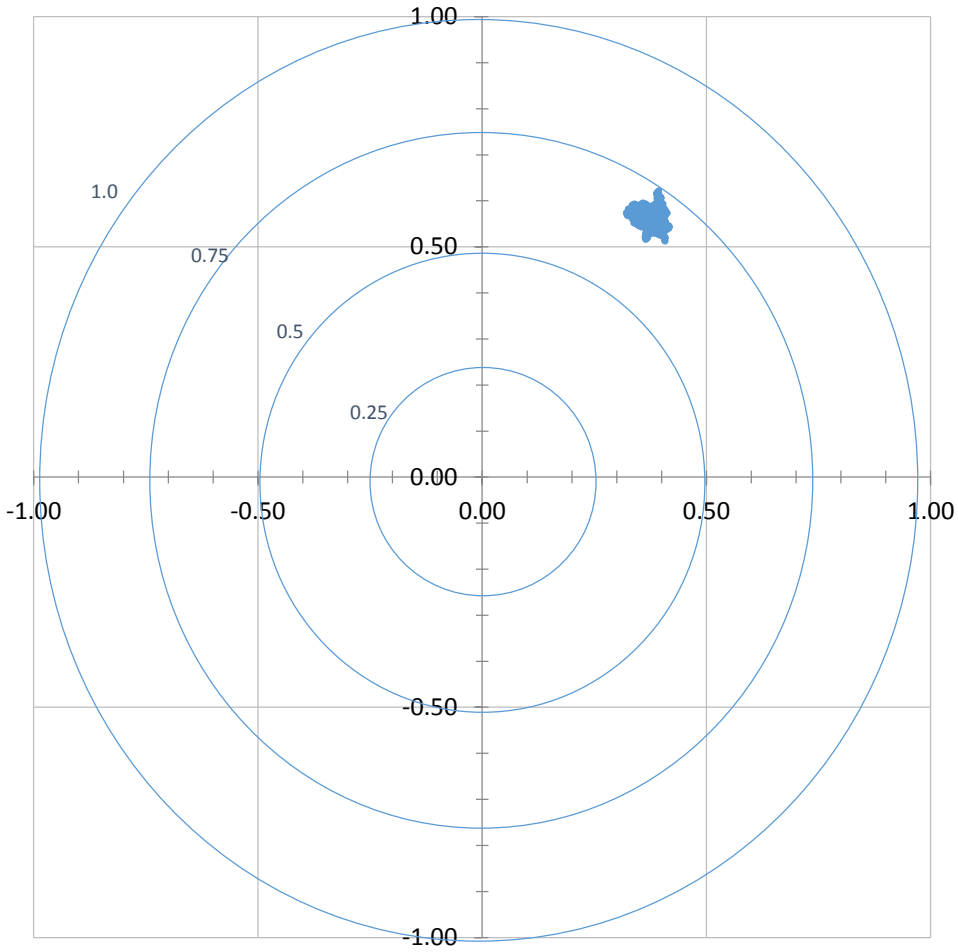
Position Navigation	Model	Serial No.	DGNSS Corrections	Antenna	Output Interval	Recorded Format
Primary	CNAV 3050	11619	CCS (RTG)	NAVANT3001R	5Hz	.cnav3050, db
Secondary	POS MV	3877	dGPS	Zephyr 2	50Hz	.000, db

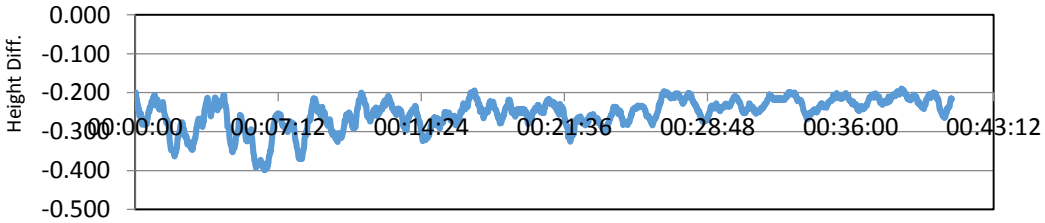
3.1.1 Navigation Verification

In order to calibrate the navigation systems, the CNAV 3050 RTG receiver was removed and placed over a known Passive GPS station. For this calibration, the receiver unit was left in place for a period of 30 minutes, with readings taken every second.

Navigation Check Location	Office Passive Station
Verification Date	28/04/2015
GPS System Used	CNAV 3050
Corrections Used	CCS RTG
Recording Duration	30 minutes

GPS data was subsequently logged within QPS QINSy, averaged and the Computed minus Observed (C-O) values are shown in the table below.





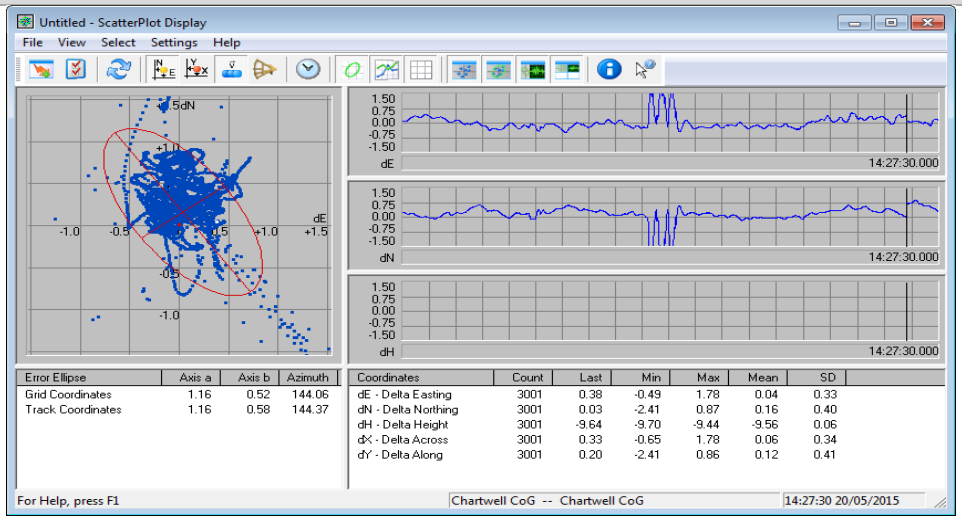
Mean Position	Passive Station Coordinates	Passive station (Survey Datum)	Recorded Value (Survey Datum)	St. Dev	C-O
Coord System	ETRS89	ETRS89 UTM30N	WGS84UTM30N		
Easting/Longitude	002 58 10.264 W	502029.853	502030.2312	0.017	0.00
Northing/Latitude	53 20 02.433 N	5909427.767	5909429.328	0.015	0.001
Height	85.538	85.538	85.285	0.043	0.039

3.1.2 Primary and Secondary GPS System Comparison

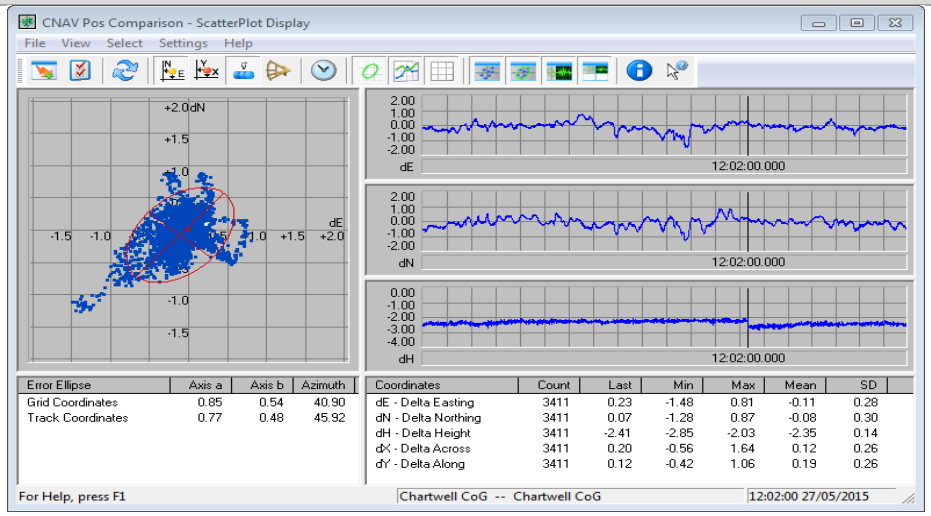
A primary and secondary GPS system comparison was performed alongside Huskinson's Dock, Liverpool. The GPS data was subsequently logged within QPS QINSy, averaged and the Computed minus Observed (C-O) values are shown in the table below:

	Easting (m)	Northing (m)
Primary GPS	499923.3778	5920508.118
Secondary GPS	499922.9413	5920506.693
Difference (C-O)	0.4365	1.425

Static Comparison Plot

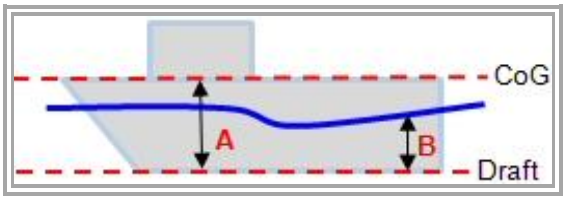


Dynamic Comparison Plot



3.1.7 Drafts (During Mobilisation)

Software	QINSy	
	Measurement (m)	Position Sent
Draft Point	-1.948	MBES
Height Above Draft Point (m) **A**	1.948	Draft to CoG/CRP. Positive Value
Manual Draft (m) **B**	1.186	Positive Value



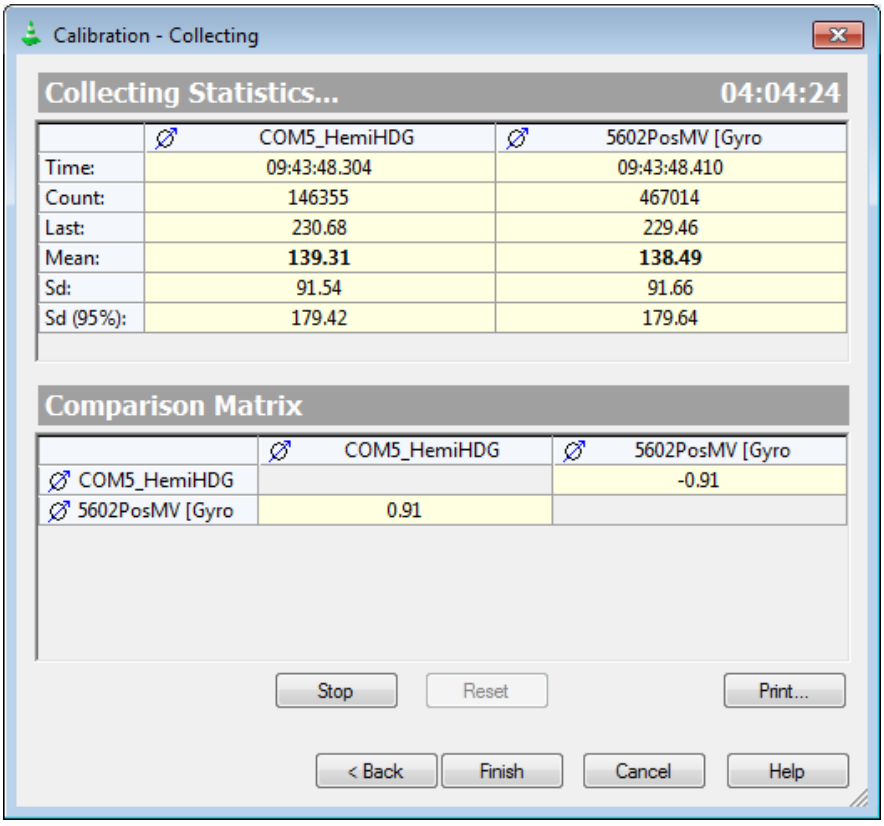
3.2 Heading and Motion

Motion Reference	Model	Serial No.	Control Software	Recorded Format
Primary	PosMV (220)	3877	PosView 5.8	.qpd/.000
Secondary	Hemisphere	0923-9420-0025	NA	.qpd

3.2.1 Calibration and Verification

A dynamic comparison of the primary and secondary heading systems was carried out whilst at sea. The heading values of both systems were logged over a period of 4 hours, where the vessel had undertaken numerous manouvers testing all headings. The results of the comparison are shown in the table below:

System comparison results



	Gyro 1	Gyro 2
Observation Count	467014	146355
Mean Heading Result	138.49	139.31
Result Standard Deviation	179.64	179.42

3.2.2 QINSy Heading Corrections

QINSy Heading Correction for Gyro 1 (C-O)	0
QINSy Heading Correction for Gyro 2 (C-O)	-0.82

3.2.3 POS M/V GAMS

Prior to completing the GPS Azimuth Measurement Subsystem (GAMS) calibration routine for the APPLANIX POS MV 320, the heading threshold was set, with all other offsets in the GAMS (GPS Azimuth Measurement Subsystem) set to zero. The GPS Position Dilution of Precision (PDOP) was checked to ensure a good satellite configuration was present during the calibration. A series of fast manoeuvres were undertaken, until the calibration threshold was reached, the GAMS calibration then resolved the baseline vectors and antennae separation.

At present, a fault with the GAMS calibration software has prevented the antenna separation and baseline vector being calculated. From the dimensional survey of the vessel, the offsets of the primary and secondary antennas are known, meaning the offsets can be calculated manually.

Antenna	Port	Starboard	Difference
X	1.963	Baseline X	-1.932
Y	-0.757	Baseline Y	-0.773
Z	4.929	Baseline Z	4.917

On the 27th May a GAMS calibration was able to be conducted. The offset results calculated on completion of the GAMS routine proved that the initial offsets used were correct.

Location	Liverpool	Date	27/05/2015
Heading Threshold	0.5	Baseline X	-3.895
Aerial Separation	3.895	Baseline Y	-0.016
Heading Correction	0	Baseline Z	-0.012

3.2.3 Interfacing Settings

PosMV Wavemaster Configuration

PosMV

Ethernet Realtime Output Control:

Sensor Navigation Solution (1 or 2)	Sensor1
Output Rate (Hz)	50

Serial Outputs – Motion to Multibeam Echo Sounder

PORT	1	2	3	4	5
Data Format	TSS1	$PRDID	$GPGGA		
Interfaced to…	Reson 7101	Sonardyne Scout	Sonardyne Scout		
Update Rate (Hz)	20Hz	10Hz	10Hz		
Baud Rate	115200	57600	38400		
Lever Arm	Sensor 2	NA	NA		
Roll Positive Sense	Port Up	Port Up	Port Up		
Pitch Positive Sense	Bow Up	Bow Up	Bow Up		
Heave Positive Sense	Heave Up	Heave Up	Heave Up		

3.2.4 Timing Pulse (PPS)

	System	Positive/Negative
Pulse Source	CNAV 3050	Negative
Pulse Used by	QINSy	Negative
	RESON 7101	Falling

3.3 Echo Sounders

Echo Sounder System	Model	Serial No.	Control Software Version	Rx, Tx	Recorded Format
MBES	Reson 7101	K977	7k control	Reson Bathy 7027	Qinsy db
SBES	Knudsen 320 M	8185013	Echo control	DBT	Qinsy db

3.3.1 Multi Beam Echo Sounders

			Notes
System	Reson 7101		
SV Sensor	Reson SVS 70		
Mounting	Hull Mounted		
Software	FP 2.3		
High Frequency	240	kHz	
Low Frequency	NA	kHz	
Offset (Transducer to waterline)	1.186	m	
Operational Mode	Best Coverage		
Absorption	60	dB/km	
Spreading	30	dB	

During first deployment, the Multibeam settings were optimised for the environmental conditions. The follow values were used at the beginning of acquisition.

			Notes
Pulse Length	67	µs	
Power	214	dB	
Gain	13	dB	
Range	50	m	
Coverage Angle	125	deg	
Max Ping Rate	50	p/s	

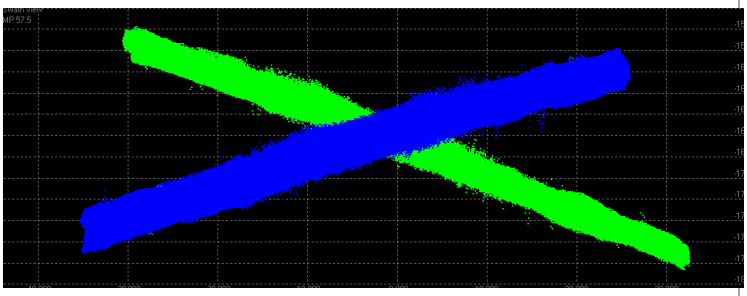
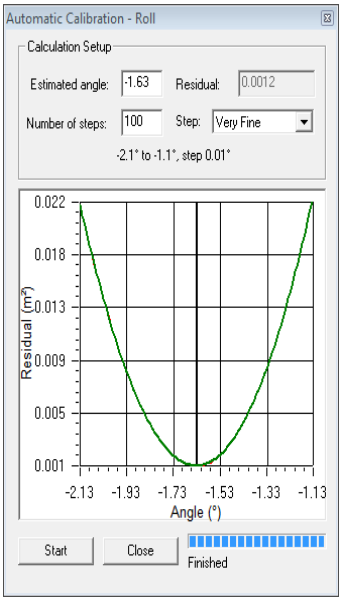
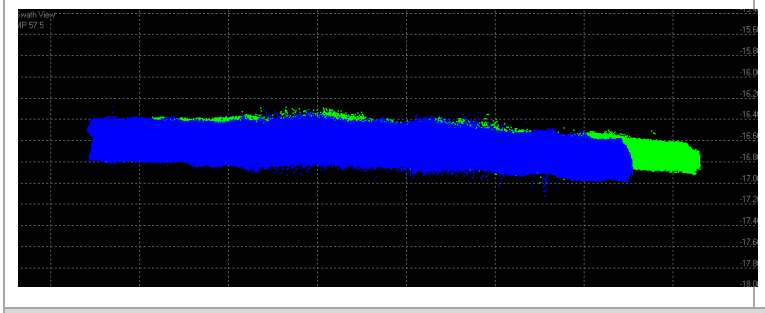
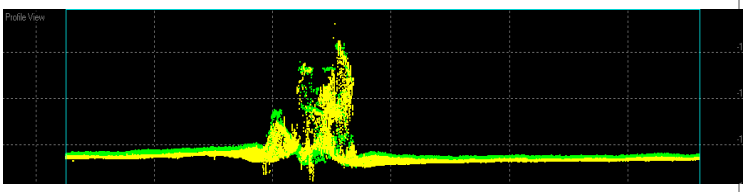
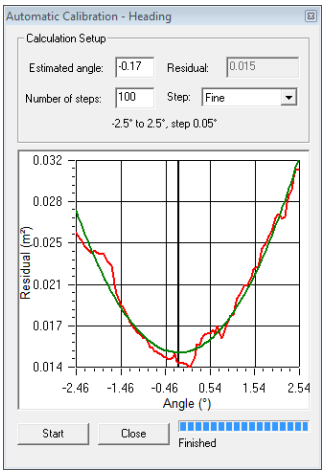
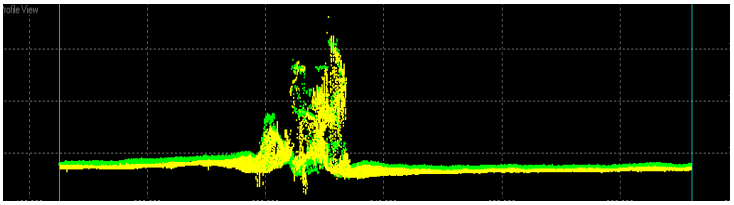
The multibeam system was subject to a calibration routine, which involved the collection of overlapping data along three survey lines, run in alternate directions up and down slope, or across a feature such as a wreck, and across a flat seabed, in order to resolve the residual bias in the transducer mounting. A pulse per second (PPS) system is interfaced into the navigation computer and this precise timing system eliminates any latency issues, nevertheless a latency check is performed to prove that there isn't such an issue. These parameters are entered into QPS QINSy, along with transducer draft, speed of sound profile and tidal data, in order to create the corrected XYZ files.

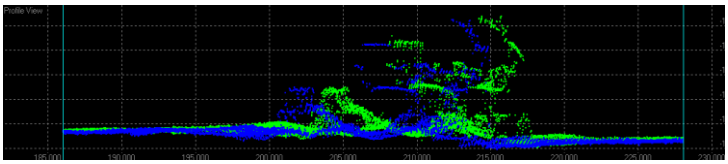
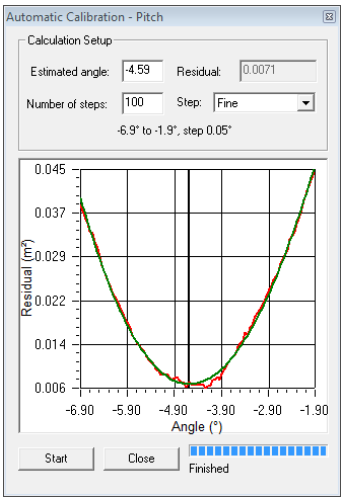
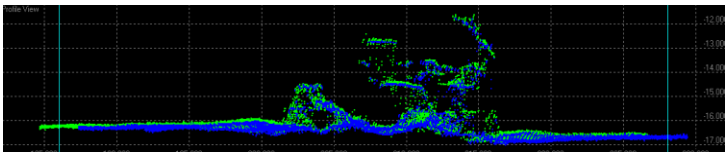
The multibeam calibration was performed after the heading verification. An SVP dip was taken prior to the calibration.

Location	Burbo Bank	Easting	Northing
		474523	5926590
Water Depth Range	12m to 16m	MBES Range Setting	35m
Date of Collection		Date of Processing	

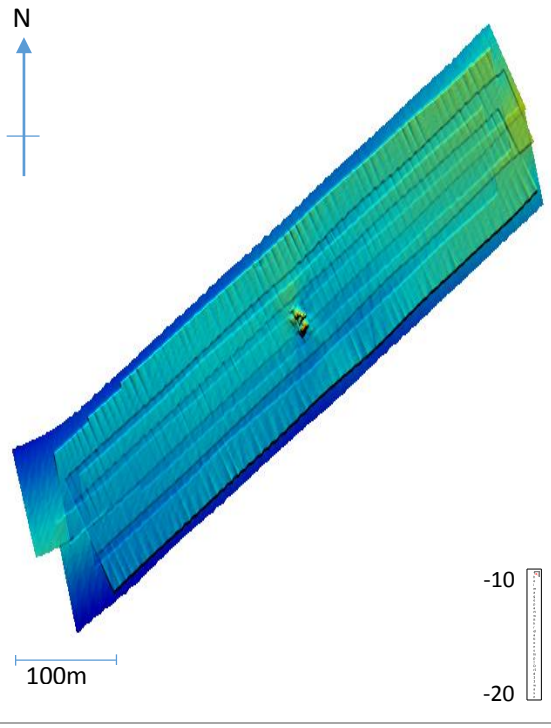
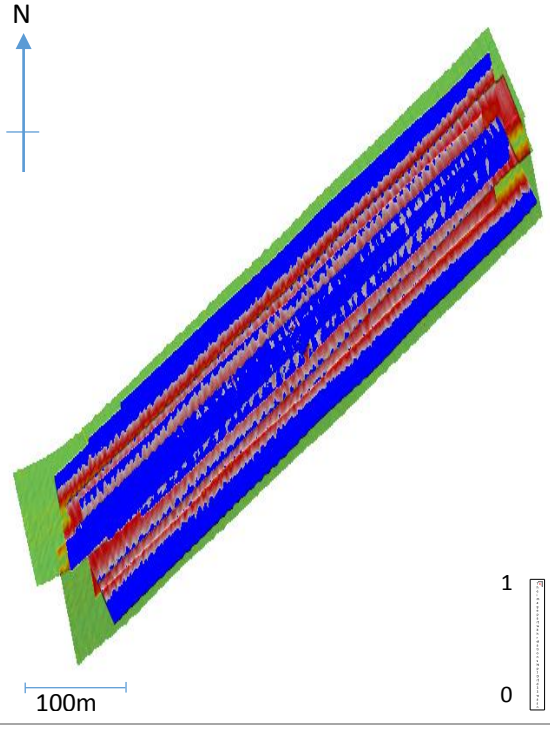
Calibration Lines	Line Name	Dir	Notes	For
Port	MBES_CAL_P25	←	50% overlap of centre lines	Heading
Centre 1	MBES_CAL_CL	→	100% of centre line 2	Heading, roll & pitch
Centre 2	MBES_CAL_CL	←	100% of centre line 1	Heading, roll & pitch
Starboard	MBES_CAL_S25	→	50% overlap of centre lines	Heading
CENTRE 3	MBES_CAL_CL	→	100% overlap w/ CENTRE 4	Latency, 3kts
CENTRE 4	MBES_CAL_CL	→	100% overlap w/ CENTRE 3	Latency, 6kts

Calibration Results	Roll	Heading	Pitch
Value (Degrees)	-1.63	-0.17	-4.59

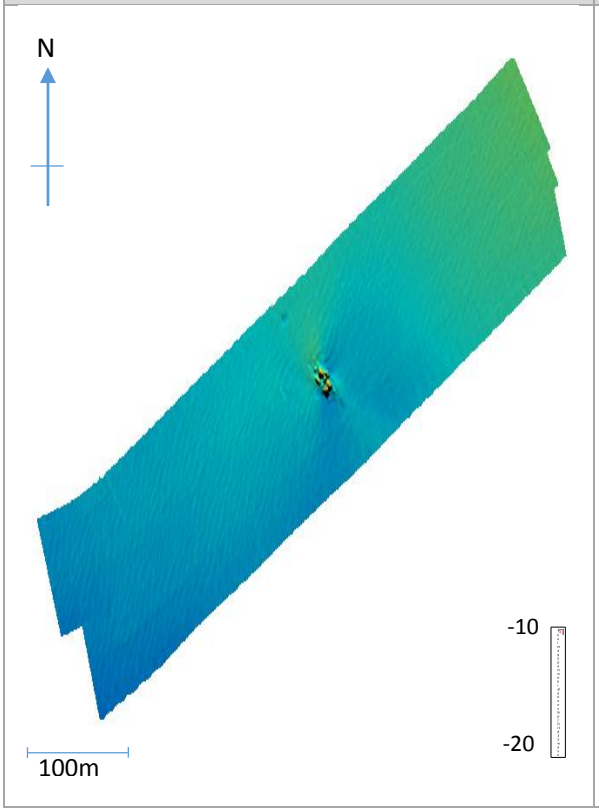
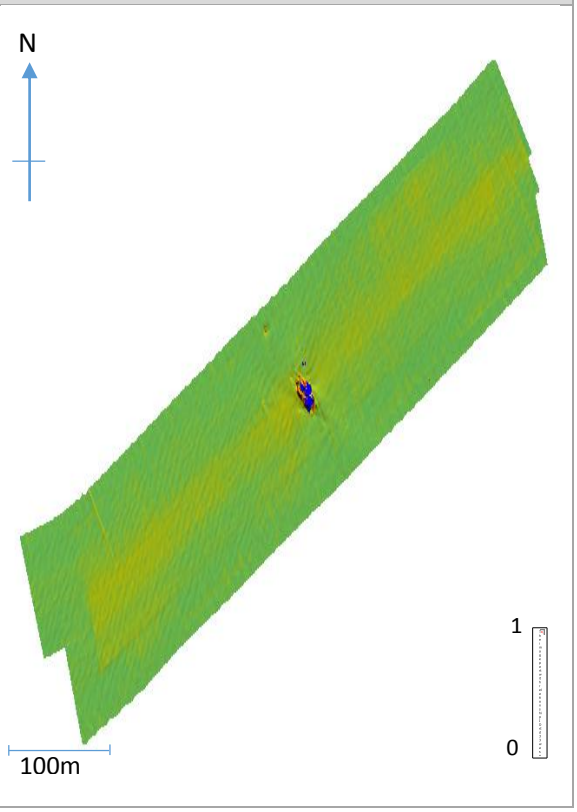
QINSy Validator – Calibration Profiles	
Roll	
Before	*Calibration Result*
	
After	
	
Heading	
Before	*Calibration Result*
	
After	
	

Pitch	
Before 	*Calibration Result* 
After 	

Before calibration values have been applied

Depth Plot	SD Plot
	

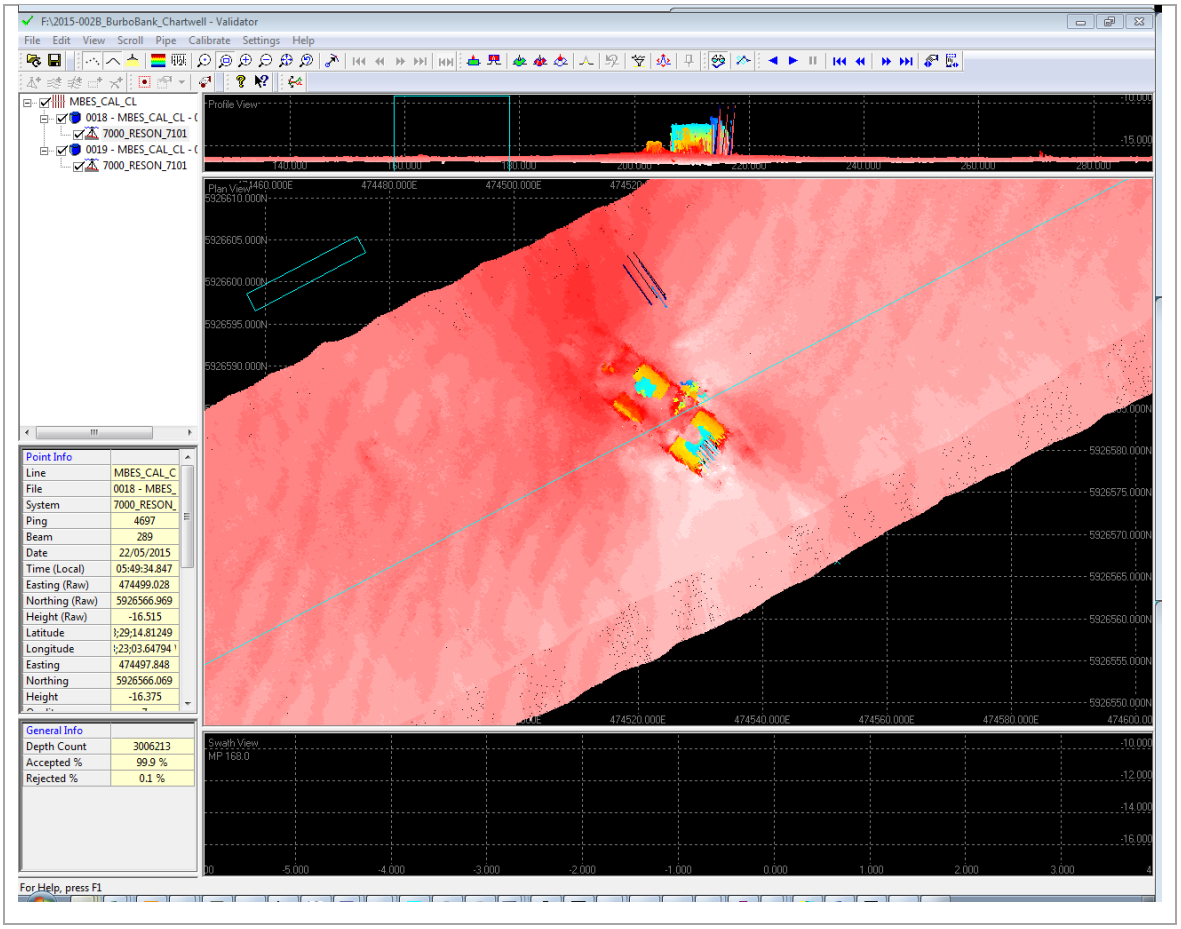
After calibration values have been applied

Depth Plot	SD Plot
	

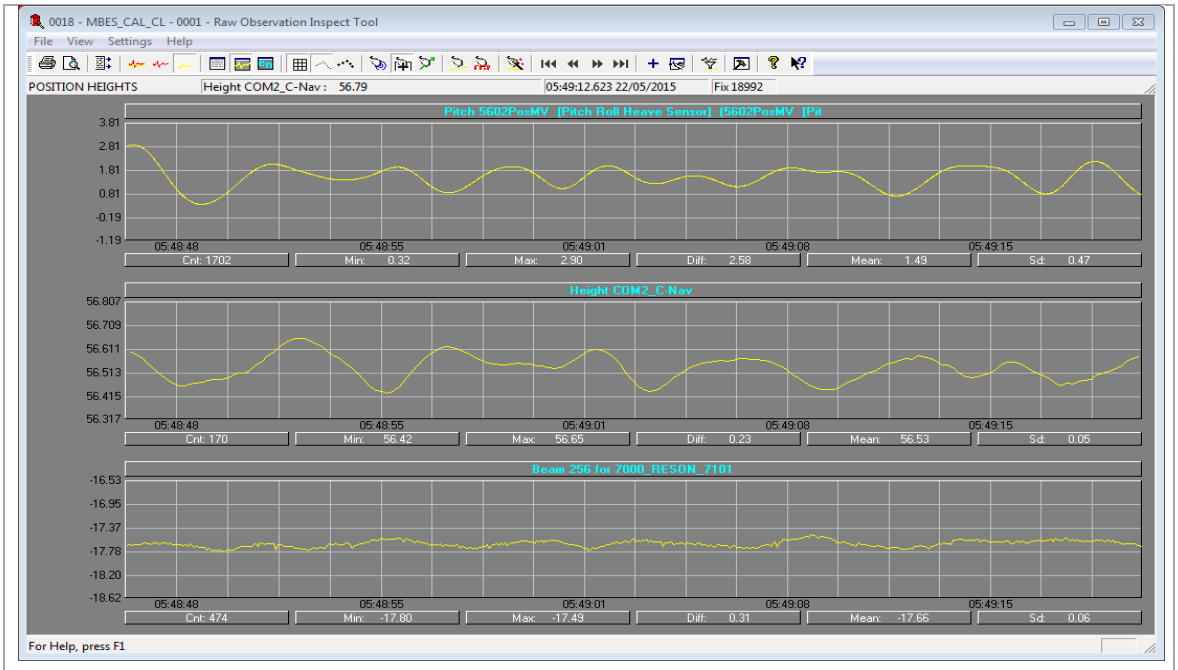
3.3.2 Latency Test

Two multibeam datasets is collected over each other, running in the same direction at a slow speed and at the maximum speed (Limited to MBES mounting arrangement). These are then compared in QINSy to see if there is a latency issue.

Latency (3 knots and 6 knots)

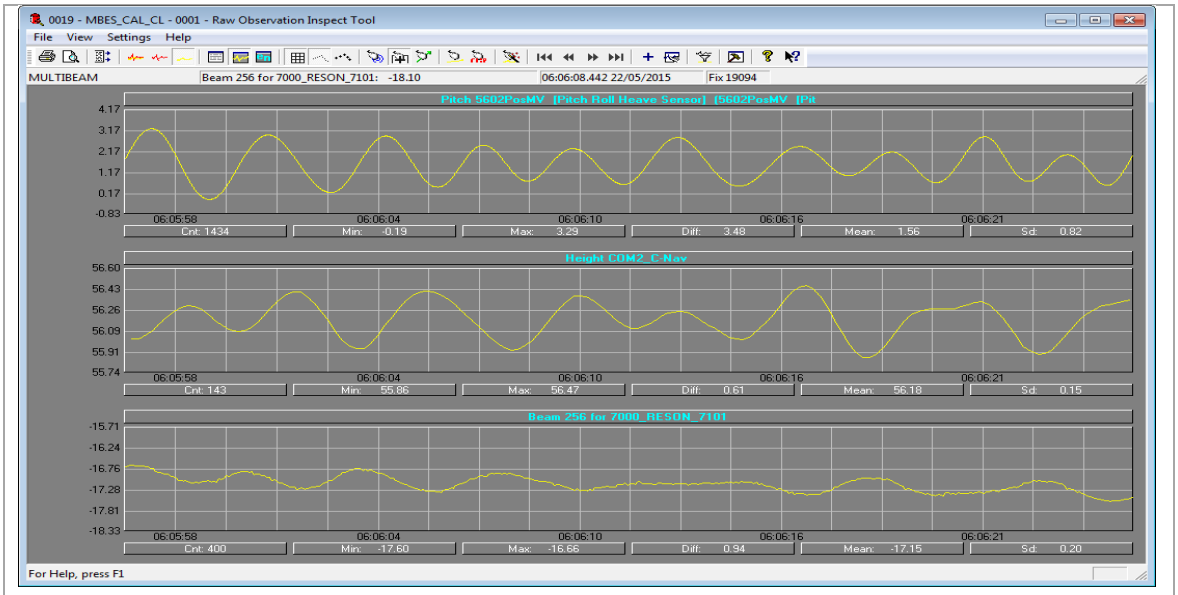


Slow speed line



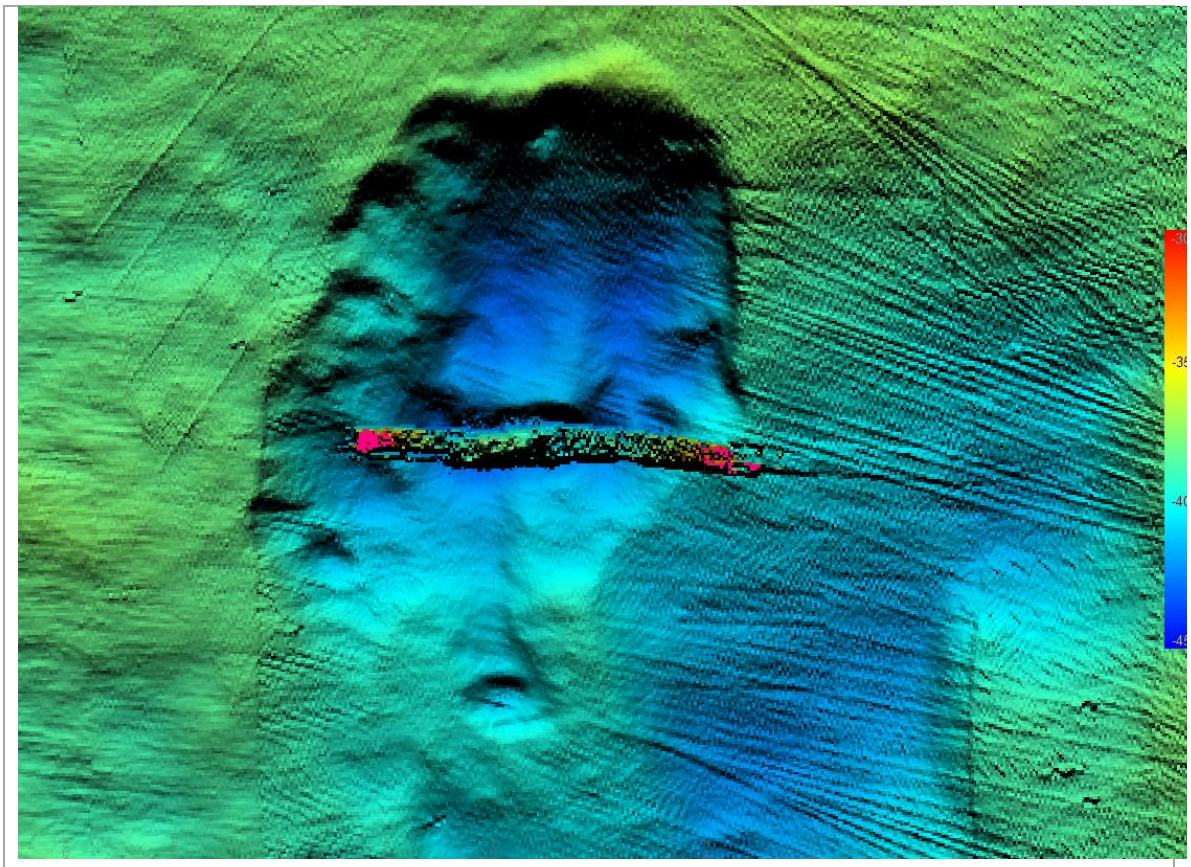
Time Stamping MBES. Raw MRU Heave vs GPS Height vs MBES Nadir Beam. The Graph shows that the time stamping for each system oscillation matches accurately.

Fast speed line



Time Stamping MBES. Raw MRU Heave vs GPS Height vs MBES Nadir Beam. The Graph shows that the time stamping for each system oscillation matches accurately.

3.3.3 MBES Wreck Verification



Two lines in opposite directions were run over a wreck to verify the previous multibeam calibration.

3.3.3 Single Beam Echo Sounders

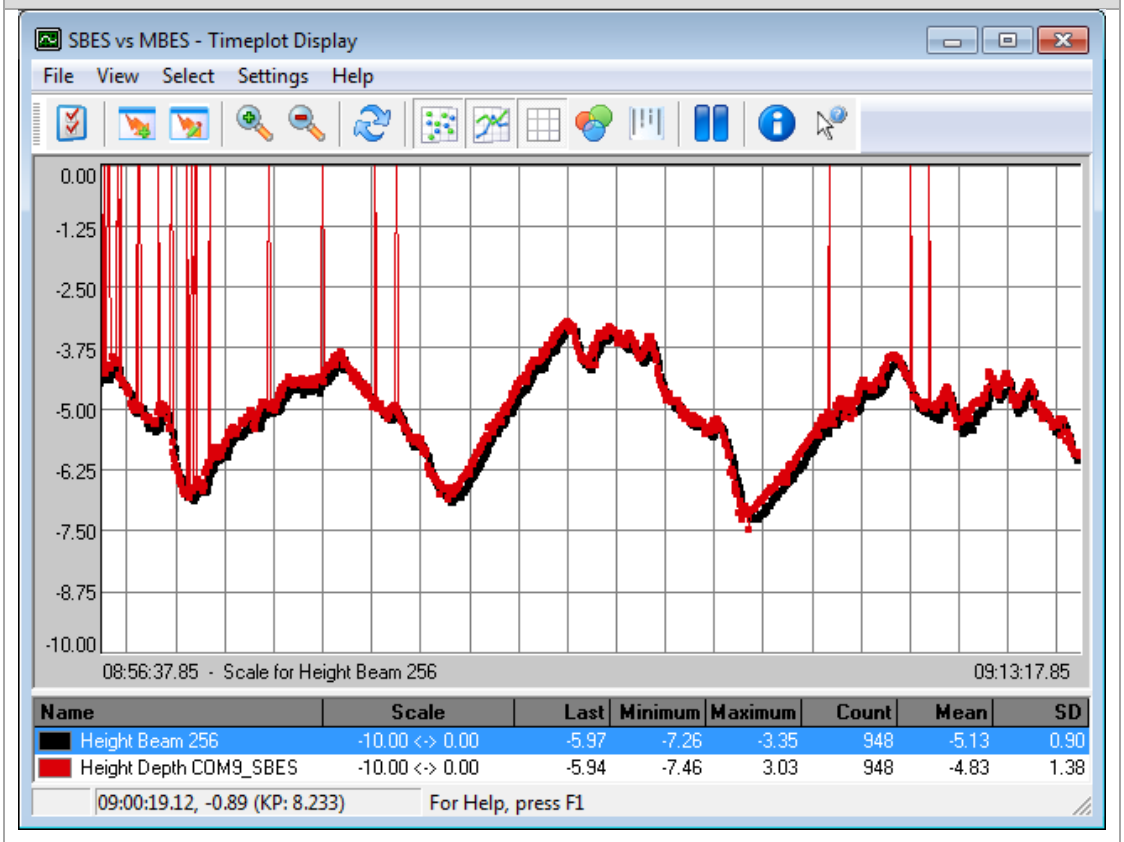
			Notes
Equipment	Knudsen 320M		
Software	NA		
High Frequency	N/A	kHz	
Low Frequency	250	kHz	
Offset (Transducer to waterline)	1.253	m	
Sound Velocity Value in SBES Unit	1500	m/s	
Sound Velocity Value in QINSy driver	1500	m/s	

Bar Check

The single beam echo sounder was calibrated using the standard 'bar check' routine. This technique involves the lowering of a reflective surface, capable of reflecting the acoustic pulse and creating an echo return, to a known depth, relative to the sea surface. Firstly, an SVP dip is acquired to derive the mean velocity through the water column and the derived value is then entered into the navigation software or directly into the echo sounder interface. The 'bar' is then lowered directly below the transducer and held typically 1 to 2m below the transducer. A note of the actual depth is recorded against the observed echo sounder reading. The draft can then be set accordingly.

During mobilisation the depth of the Single beam echo sounder was compared to the Nadir beam from the Multibeam. This comparison showed a difference in depth of less than 3cm.

Echo Sounder Depth Comparison



During survey operations the draft of the single beam echo sounder will be periodically measured.

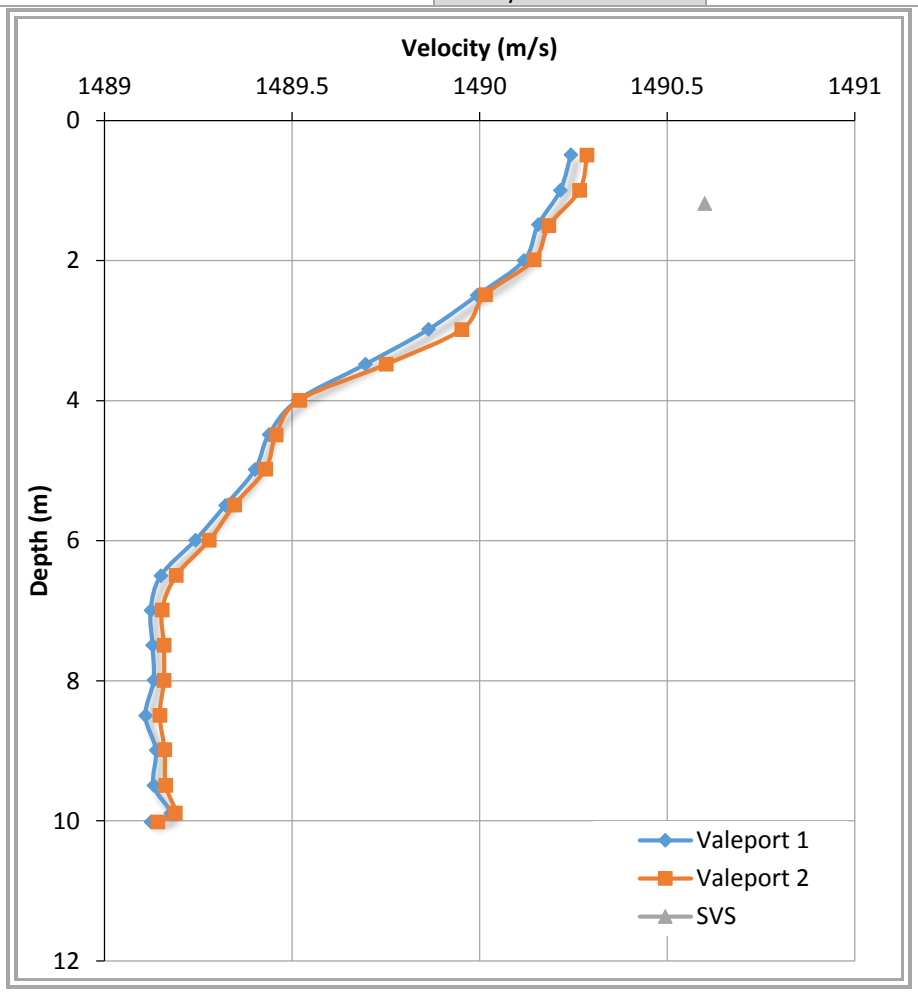
3.4 Sound Velocity Profile and Sensors

Sound Velocity Measurement	Model	Serial No.	Calibration Date		Recorded Format
SVP1	Valeport Mini SVP	43265	18/06/2013		QINSy .db
SVP2	Valeport Mini SVP	48009	09/09/2014	*Spare	QINSy .db
MBES SVS	RESON SVS 70	4709032	11/04/2014	For beam steering	QINSy .db

Sound velocity measurement systems are subject to a 24month factory calibration cycle.

3.4.1 Sound Velocity Profile and Sensor Validation

Location	Liverpool Canada Dock		
Vessel	Chartwell	SVP System 1	Valeport Mini SVP
Date of Collection	15/05/2015	SVP System 2	Valeport Mini SVP
		SVS System	RESON SVS 70



3.5 Subsurface Positioning

Subsurface Positioning System	Model	Control Software Version	Beacons	Recorded Format
	Sonardyne Scout	Ranger	WSM	.qpd

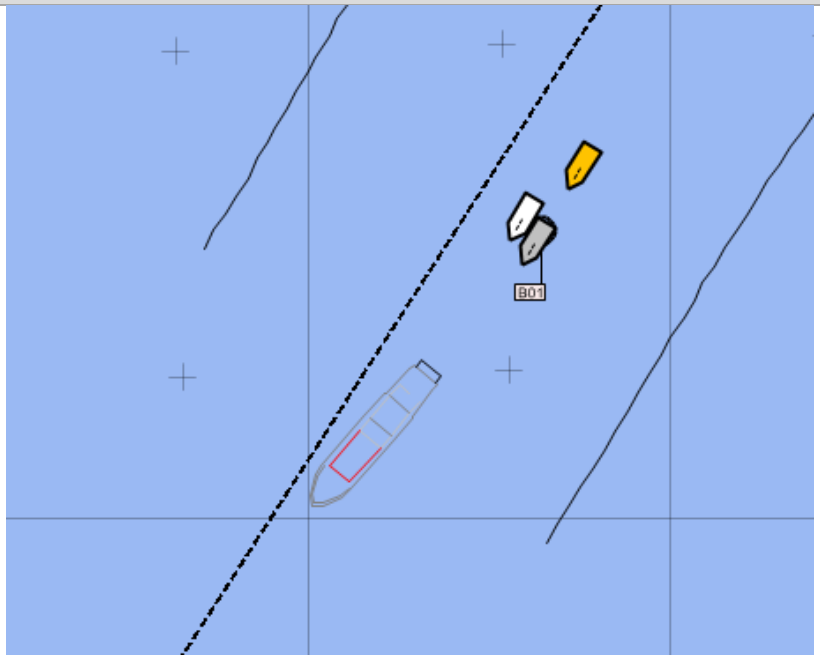
To following WSM6 beacons were available during the project. The table also presents the applied interrogation settings:

Model	Asset No.	Serial No	Interrogate Setting	Power	Gain
WSM	SUR0224	274028-008	B2	High	Low
WSM	SUR0129	260924-010	B2	High	Low
WSM	SUR0158	266850-010	B2	High	Low

The USBL beacon was deployed at 10m depth over the bow and stern while alongside in Huskinsons dock. This procedure is required to check the USBL offsets, MRU orientation and USBL depth sensor.

All USBL beacons to be used during the survey operations were then subsequently deployed at the bow. All beacons gave pulse positioned depth values accurate to +/- 1m.

Beacon Position on QINSy Navigation Screen

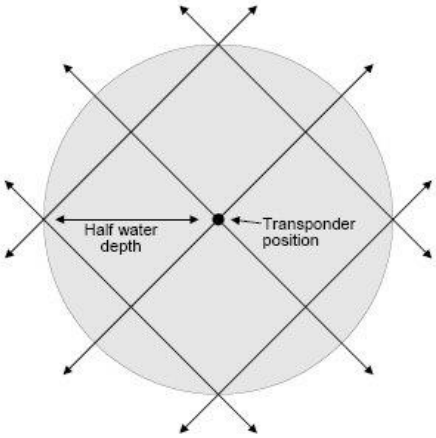


3.5.1 USBL Calibration

The Sonardyne Scout USBL system was calibrated by placing a transponder approximately 1m above the seabed, in a seabed-mounted, fixed frame. A sound velocity dip was acquired prior to the calibration and entered into the Scout software. The vessel then undertook a dynamic calibration,

A series of lines were sailed past the transducer position, starting typically 3 to 4 times the water depth from the transponder and passing within 1 times water depth, at the closest point of approach. The

data was then processed, using a least squares adjustment routine within the Sonardyne CASIUS Calibration Routine module along with QPS QINSy (as QINSy accounts for tidal changes but CASIUS doesn't), to derive the mounting alignment errors between the attitude data and the vessel mounted USBL transceiver.



Typical Box-In Calibration Routine Runline Plan

Calibration Type	Qinsy	Date	21/05/2015
Water Depth	30m	Closest Pass	30m
Vessel Speed	2m/s	DP?	No

		Offsets		
Sensor inputs	Sensor	X	Y	Z
Position	CNAV	1.962	-0.357	4.807
Motion	POS MV	0	0	0
Heading	POS MV	0	0	0

	Pitch Correction	Roll Correction	Heading Correction
Before	0	0	0
Calculated	-2.797	-0.654	1.300
Calculated Accuracy	0.707	0.710	0.904

3.5.2 USBL Calibration Verification

Location	Burbo Bank	Easting	Northing
		456393	5939051
Coordinate System	ETRS89		
Target used for Check	MBES calibration wreck		

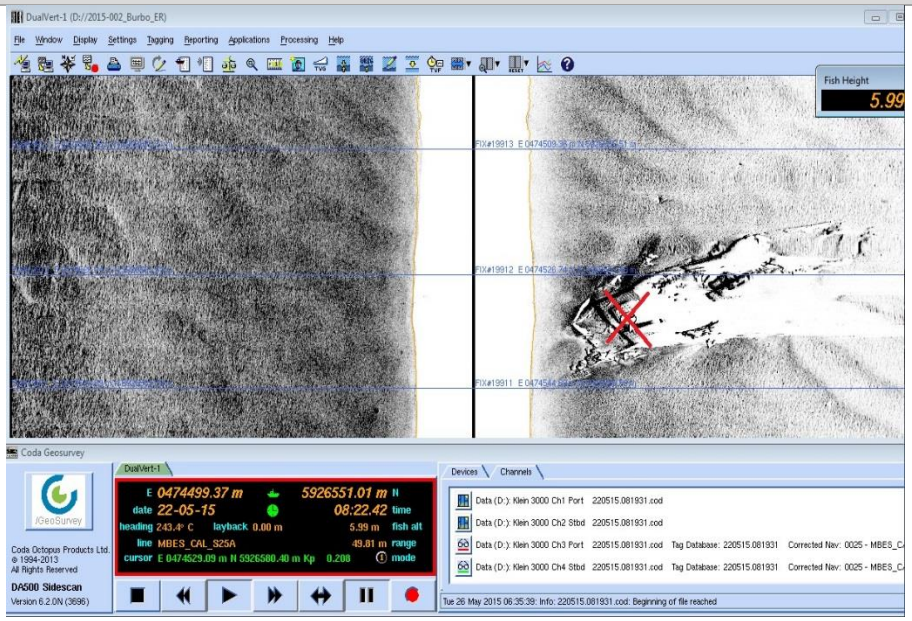
The USBL calibration result was verified by running a survey line parallel to the wreck used for the MBES calibration. The line was run twice, in opposing directions at 4 knots both ways. The data was processed in CODA GeoSurvey, and the error in positioning the cable with the magnetometer was resolved to be between ±1.5m and ±1.4m.

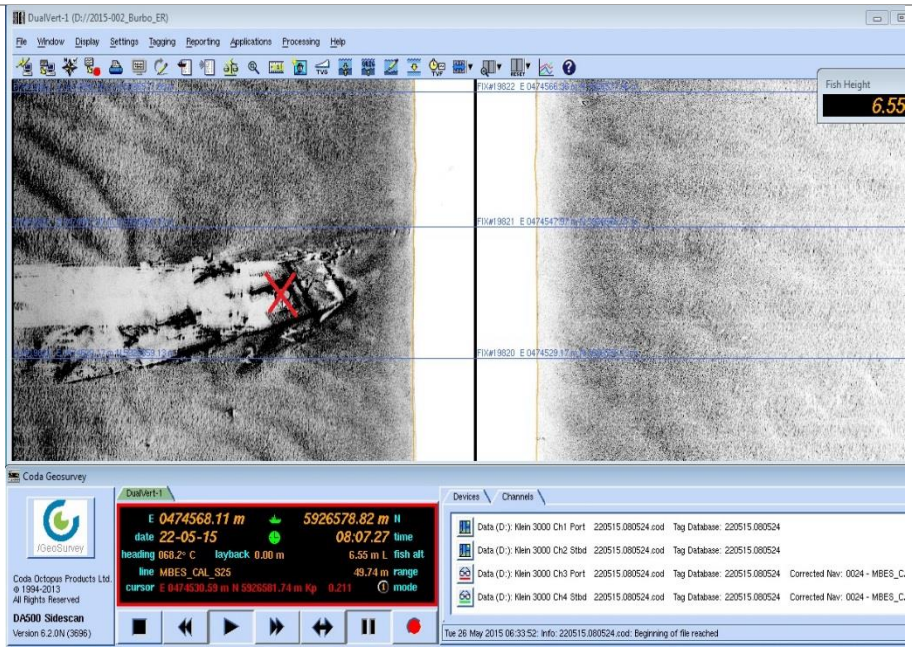
To verify the USBL calibration, the online USBL navigation was used to create a side scan sonar mosaic. The data example indicates accurate USBL positioning, with the seabed features in the data lining up with adjacent data lines.

	Easting	Northing

SSS Starboard Channel Position	474529.09	5926580.40
SSS Port Channel Position	474530.59	5926581.74
Difference	1.5	1.34

Position Verification Plot

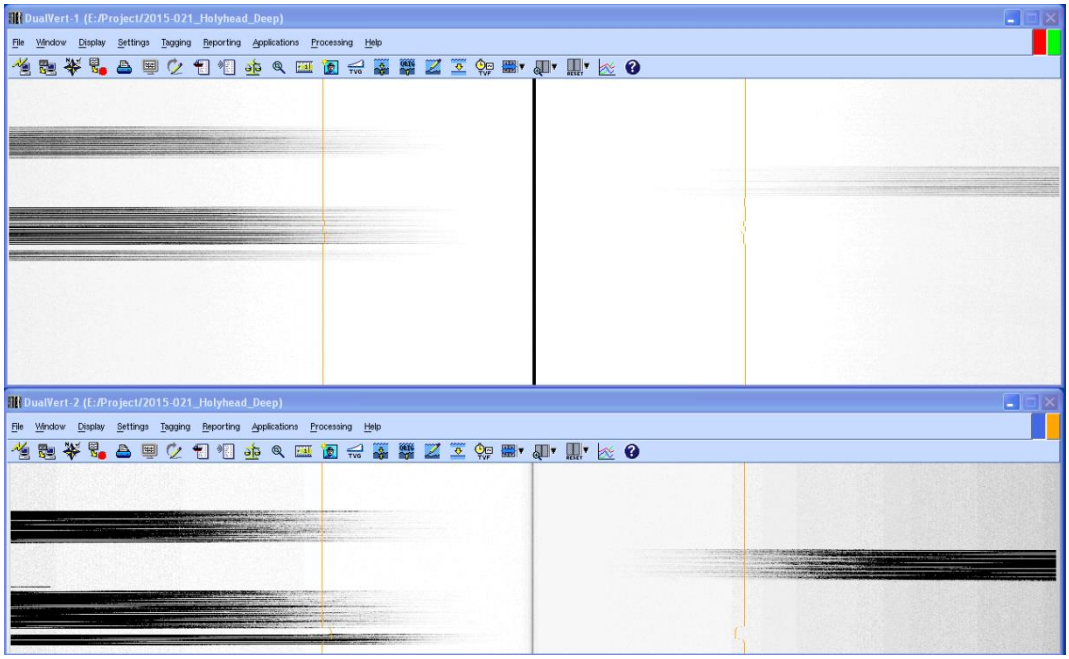




3.6 Side Scan Sonar

SSS System Used:	Klein 3000	Recorder	
SSS Operating Frequency	100/500kHz	System:	CODA DA2000
SSS Slant Range	75m	True Range of SSS Data Recorded	74m
Soft Tow or Winch?	Winch	Sweep Time of SB Data Recorded	NA
Notes			

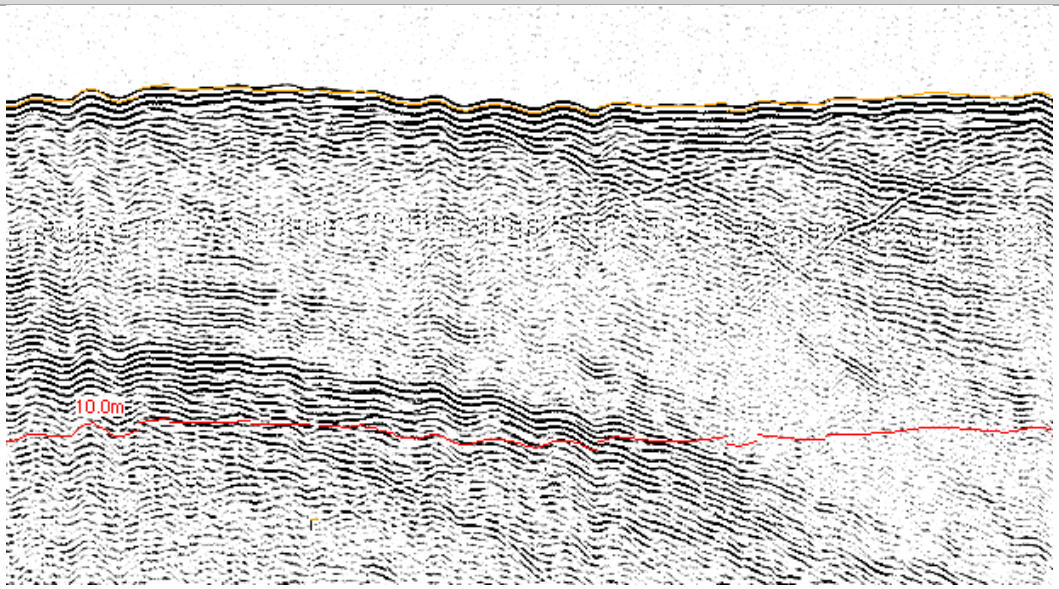
3.6.1 Side Scan Sonar Rub Test

Side Scan Sonar Rub Test (08/06/2015)


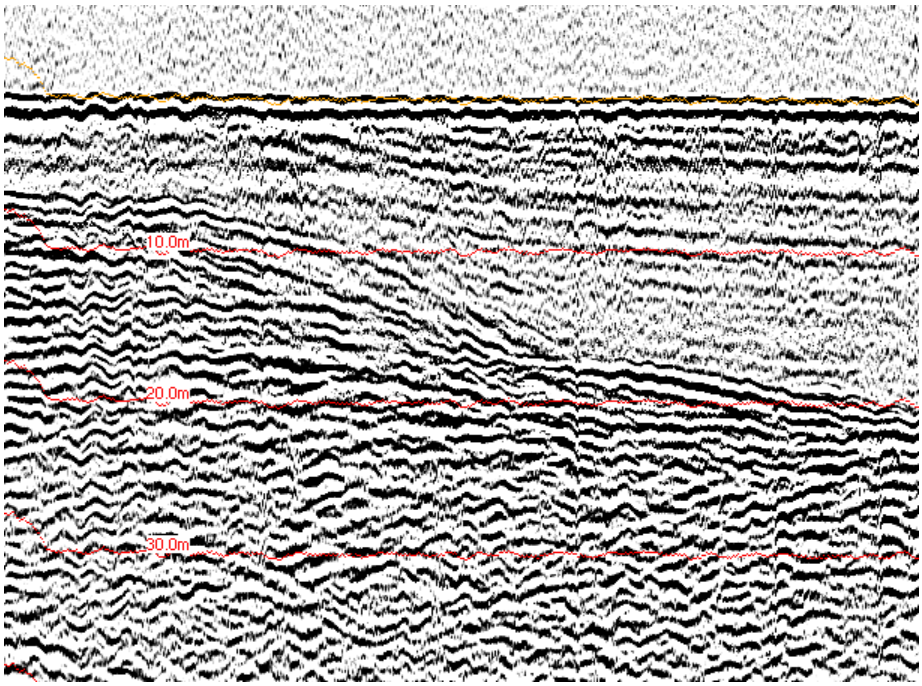
3.7 Sub Bottom Profilers

SBP 1 System Used: GeoAcoustics Geopulse 5430A	
Frequency	3.5KHz
Trigger Period Used	150ms
Sweep Time	140ms
Hydrophones Used?	NA
Recording System	Coda DA4G
Recorder Channel / Trigger	1
SBP Wet Tested?	Yes
Nav Source	Qinsy
Notes:	Hull mounted
SBP 2 System Used: SES AA200 Boomer Plate with Applied Acoustics CSP1200D	
Frequency / Power	150J
Trigger Period Used	250ms
Sweep Time	200ms
Hydrophones Used?	SES hydrophone 8 element
Recorder Channel / Trigger	2
SBP Wet Tested?	Yes
Nav Source	Qinsy
Notes:	Boomer plate fitted on towed catamaran.

SBP System 1 Wet Test



SBP System 2 Wet Test



3.8 Magnetometers

Magnetometer 1			Pressure sensor
Serial No	SUR0011	Bias	-1.64
Tow Point (Soft tow or SSS?)	Port SSS	Entered into	Database

Magnetometer 1			Pressure sensor
Gradiometer setup	No	Coefficient	0.016377
Notes		Entered into	Driver

Magnetometer 2			Pressure sensor
Serial No	SUR0012	Bias	-3.4
Tow Point (Soft tow or SSS?)		Entered into	Database
Gradiometer setup	No	Coefficient	0.034019
Notes	SPARE	Entered into	Driver

3.8.1 Magnetometer Pressure Sensor Verification

The magnetometers were tested on back deck to check that the sensor was recording sensible values. The factory calibration values for the pressure sensors were entered into the navigation software.

Following the USBL layback check when towing the magnetometer, the pressure sensor values were verified alongside by lowering the magnetometers to 5m below the water surface. The scale and bias results were applied to the raw voltages in QINSy online. This depth check was to check both pressure sensor functionality and that pressure sensor readings were interpreted/processed correctly to depths in the navigation software.

The pressure sensor readings on the magnetometers are an online data QC. They are not used to position the magnetometers.

4. Acquisition Software

4.1 QINSy

Version	8.10.2015.03.31

PDF of the QINSy project database is available on request.

4.2 SSS Software

Version	Coda GeoSurvey 6.2.0

4.3 SBP Software

Version	Coda GeoSurvey 6.2.0

Appendices

Appendix I: Mobilisation Revisions

Appendix II: Vessel Specification

Appendix III: POS MV Installation

Appendix IV: SVP Calibration Certificate

Appendix I

Mobilisation Revisions

Revision Number	Date of Issue	Details
01	23/06/15	

Appendix II

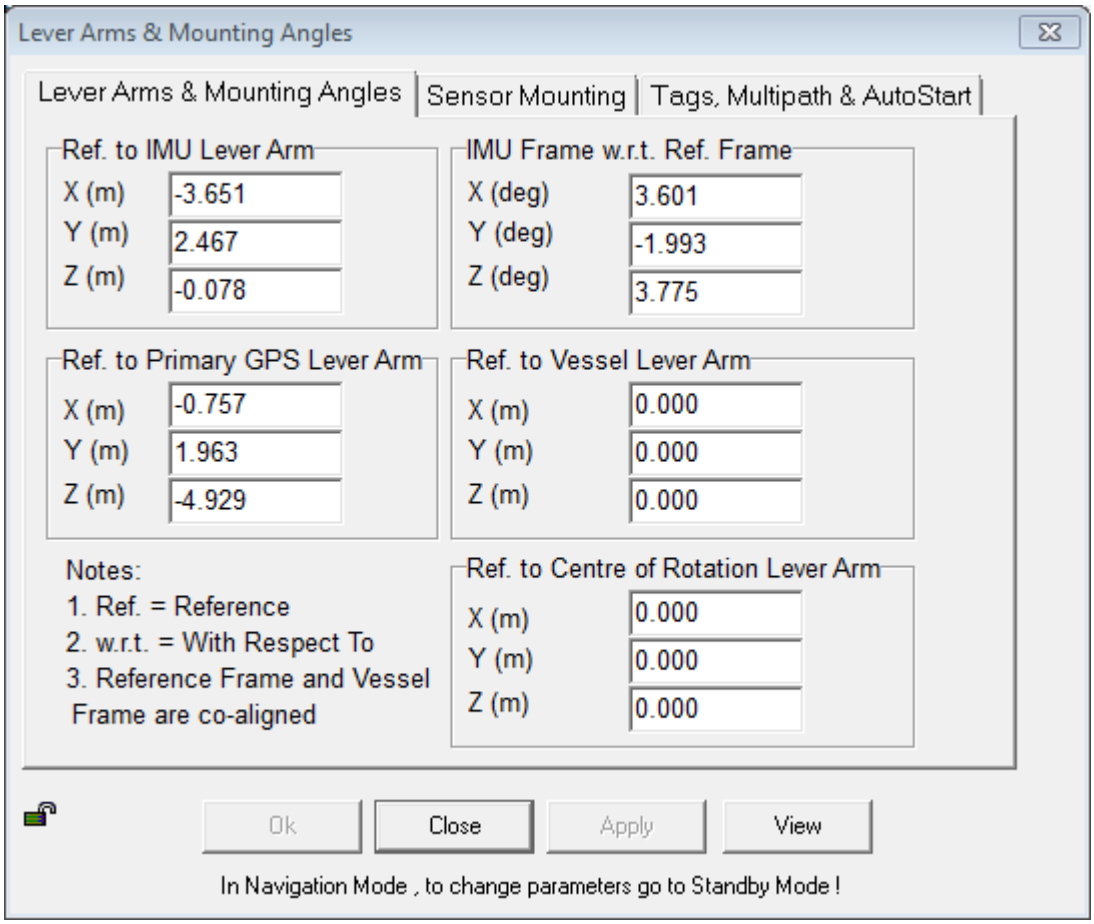
Vessel Specification

The specification sheet for MV Chartwell is available on request

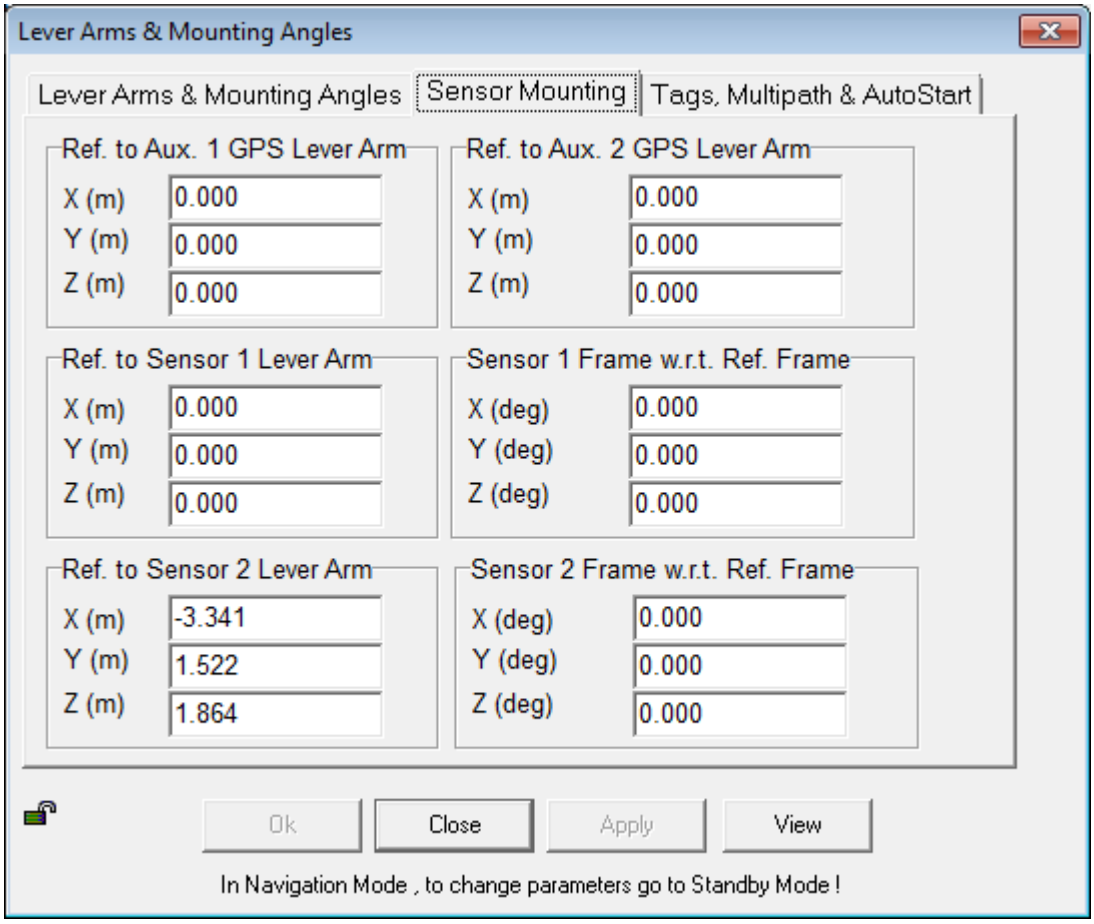
Appendix III

POS MV Installation

Lever Arms and Mounting Angles



Sensor Mounting


Lever Arms & Mounting Angles
Lever Arms & Mounting Angles
Sensor Mounting
Tags, Multipath & AutoStart
Ref. to Aux. 1 GPS Lever Arm
X (m) 0.000
Y (m) 0.000
Z (m) 0.000
Ref. to Aux. 2 GPS Lever Arm
X (m) 0.000
Y (m) 0.000
Z (m) 0.000
Ref. to Sensor 1 Lever Arm
X (m) 0.000
Y (m) 0.000
Z (m) 0.000
Sensor 1 Frame w.r.t. Ref. Frame
X (deg) 0.000
Y (deg) 0.000
Z (deg) 0.000
Ref. to Sensor 2 Lever Arm
X (m) -3.341
Y (m) 1.522
Z (m) 1.864
Sensor 2 Frame w.r.t. Ref. Frame
X (deg) 0.000
Y (deg) 0.000
Z (deg) 0.000
Ok
Close
Apply
View
In Navigation Mode , to change parameters go to Standby Mode !

Appendix IV

SVP Calibration Certificate available on request

Appendix 2

Daily Operations Report(s)

BIBBY HYDROMAP
Committed to Quality and Innovation

DAILY PROGRESS REPORT

2015-021 // Holyhead Deep - CHARTWELL

Part of BIBBY MARINE SURVEY SERVICES LTD

Vessel	CH01 // Chartwell	Date	08-Jun-2015
Contractor		Report Nº	1
Client	XOD001 // Xodus Subsea		

TIMES (UTC) From	TIMES (UTC) To	Code	Diary of Operations
00:00	14:00	MOB	Vessel arrived in Holyhead and mob
14:00	15:00	MOB	Kick off and HSE meeting
15:00	00:00	MOB	Vessel mob

Weather

Time	Obs. Wind (Dir/F)		Sea State	Forecast	
06:00	SE	2	SLGT		
12:00	SE	2	SLGT		
18:00	SE	3	SLGT		
0:00:00	SE	4	SLGT	Gale Wrn.	N

Personnel on site

Nº of Survey Crew	4	Client	1
Nº of Vessel Crew	3	Total	8

Environment

Bagged & Disposed Ashore		
Amount	0	
Type		

Vessel Fuel & Fresh Water

Fuel	8150	Litres
Water	1700	Litres

HSE

	Today	To Date	Comments
Safety Meeting	1	1	
Tool Box Talks			
Near Misses			
Safety Incidents			
L.T.I.s			
Safety Observations			

Crew List - (Full Names):	Mick Dougal, Rob Wells, Aneka Hawkins, Greg Tandy, Pat Hannigan, Finlay Munro, Steve Dalton, Francis Farrow
Progress Comments - Plan Next 24 Hrs:	Verification and survey operations
Comments - Contractor Rep:	
Comments - Client Rep:	Previous Calibration accepted
Defects - Vessel & Equipment:	
Signatures:	Contractors Rep ..... Clients Rep ..... Date .....

BIBBY HYDROMAP
Committed to Quality and Innovation

DAILY PROGRESS REPORT

2015-021 // Holyhead Deep - CHARTWELL

Part of BIBBY MARINE SURVEY SERVICES LTD

Vessel	CH01 // Chartwell	Date	08-Jun-2015
Contractor		Report Nº	1
Client	XOD001 // Xodus Subsea		

Progress (UTC 00:00 - 24:00)

Acquisition Code	Site/Area Name/Description	Unit of Measure	Total Units to Complete	Total Units Complete Today	Total Units Completed To Date	% Complete
WORK	Acquisition	KM LINES	448		0	0.00

Summary of Time

Status	Code Description	Previous hh:mm	Today Hours	Today Mins	Total hh:mm
BK-EQUIP	Breakdown - Survey/IT				00:00
BK-VESSEL	Breakdown - Vessel				00:00
DEMOB	De-Mobilisation				00:00
DISPUTE	Disputed Time				00:00
MOB	Mobilisation		24	0	24:00
ST-CLIENT	Stand Down - Client				00:00
ST-HYDRO	Stand Down - Hydromap				00:00
TRANSIT	Transit				00:00
WORK	Acquisition				00:00
WOW	Waiting on weather				00:00
WOW-PORT	Waiting on Weather - PORT				00:00
WOW-SEA	Waiting on Weather - Sea				00:00
	Totals	00:00	24	0	24:00
	DPR Checksum	Op Hrs	24	Days	1.00

Comments - Contractor Rep:	
Comments - Client Rep:	
Signatures:	Contractors Rep ..... Clients Rep ..... Date .....

BIBBY HYDROMAP
Committed to Quality and Innovation

DAILY PROGRESS REPORT

2015-021 // Holyhead Deep - CHARTWELL

Part of BIBBY MARINE SURVEY SERVICES LTD

Vessel	CH01 // Chartwell	Date	09-Jun-2015
Contractor		Report Nº	2
Client	XOD001 // Xodus Subsea		

TIMES (UTC) From	TIMES (UTC) To	Code	Diary of Operations
00:00	05:11	MOB	Alongside Holyhead
05:11	05:35	TRANSIT	Start of transit to site
05:35	05:47	WORK	Muster drill
05:48	06:30	TRANSIT	Continued transit and arrival at W of site
06:30	09:30	MOB	All towed gearin the water, resolved issue with hydrophone, all systems logging, SVP and verification target chosen
09:30	11:21	MOB	Acquiring verification data over wreck in SSS
11:21	12:30	MOB	Unable to verify same point on wreck - need to rerun at HW
12:30	14:03	MOB	Recover towed gear and move to start of sighting line at W of site
14:03	15:30	MOB	Sighting line upto 5m contour at HW
15:30	16:57	MOB	Acquiring verifiction lines at HW
16:57	18:51	BK-VESSEL	Hydraulics failed, towed gear recovered, pole recovered, making for Holyhead
18:51	00:00	BK-VESSEL	Alongside Holyhead

Weather

Time	Obs. Wind (Dir/F)		Sea State	Forecast	
06:00	NE	3	SLGT		
12:00	NNE	4	SLGT		
18:00	NNW	2	SLGT		
0:00:00	NNE	2	SLGT	Gale Wrn.	N

Personnel on site

Nº of Survey Crew	4	Client	1
Nº of Vessel Crew	3	Total	8

Environment

Bagged & Disposed Ashore		
Amount	0	
Type		

Vessel Fuel & Fresh Water

Fuel	8500	Litres
Water	1000	Litres

HSE

	Today	To Date	Comments
Safety Meeting		1	
Tool Box Talks	2	2	
Near Misses			
Safety Incidents			
L.T.I.s			
Safety Observations			

Crew List - (Full Names):	Mick Dougal, Rob Wells, Aneka Hawkins, Greg Tandy, Pat Hannigan, Finlay Munro, Steve Dalton, Francis Farrow
Progress Comments - Plan Next 24 Hrs:	Hydraulics failed, engineer to resolve issue and test system. If vericfication lines are ok then go to site and continue survey operations
Comments - Contractor Rep:	
Comments - Client Rep:	Further verification of sonar required as target points do not compare well.
Defects - Vessel & Equipment:	
Signatures:	Contractors Rep ..... Clients Rep ..... Date .....

BIBBY HYDROMAP
Committed to Quality and Innovation

DAILY PROGRESS REPORT

2015-021 // Holyhead Deep - CHARTWELL

Part of BIBBY MARINE SURVEY SERVICES LTD

Vessel	CH01 // Chartwell	Date	09-Jun-2015
Contractor		Report Nº	2
Client	XOD001 // Xodus Subsea		

Progress (UTC 00:00 - 24:00)

Acquisition Code	Site/Area Name/Description	Unit of Measure	Total Units to Complete	Total Units Complete Today	Total Units Completed To Date	% Complete
WORK	Acquisition	KM LINES	448		0	0.00

Summary of Time

Status	Code Description	Previous hh:mm	Today Hours	Today Mins	Total hh:mm
BK-EQUIP	Breakdown - Survey/IT				00:00
BK-VESSEL	Breakdown - Vessel		7	3	07:03
DEMOB	De-Mobilisation				00:00
DISPUTE	Disputed Time				00:00
MOB	Mobilisation	24:00	15	38	39:38
ST-CLIENT	Stand Down - Client				00:00
ST-HYDRO	Stand Down - Hydromap				00:00
TRANSIT	Transit		1	6	01:06
WORK	Acquisition		0	12	00:12
WOW	Waiting on weather				00:00
WOW-PORT	Waiting on Weather - PORT				00:00
WOW-SEA	Waiting on Weather - Sea				00:00
	Totals	24:00	23	59	47:59
	DPR Checksum	Op Hrs	24	Days	2.00

Comments - Contractor Rep:	
Comments - Client Rep:	
Signatures:	Contractors Rep ..... Clients Rep ..... Date .....

BIBBY HYDROMAP
Committed to Quality and Innovation

DAILY PROGRESS REPORT

2015-021 // Holyhead Deep - CHARTWELL

Part of BIBBY MARINE SURVEY SERVICES LTD

Vessel	CH01 // Chartwell	Date	10-Jun-2015
Contractor		Report Nº	3
Client	XOD001 // Xodus Subsea		

TIMES (UTC) From	TIMES (UTC) To	Code	Diary of Operations
00:00	08:00	BK-VESSEL	Alongside Holyhead
08:00	11:42	BK-VESSEL	Hydraulics engineer onboard resolving problem
11:42	13:42	MOB	Transit to 2nd wreck target for SSS verification
13:42	13:57	MOB	SVP
13:57	14:30	MOB	Running MBES lines over target
14:30	15:00	MOB	Deploying towed gear
15:00	15:30	MOB	Resolving issue with Beacon
15:30	16:48	MOB	Running SSS verification lines - weather came up, positioning of fish online difficult
16:48	17:00	MOB	Attempting to verfiy lines - unable
17:00	20:45	MOB	Running further lines in different directions - further attempts at verification failed
20:45	00:00	MOB	Various set up changes to resolve issue

Weather

Time		Obs. Wind (Dir/F)	Sea State	Forecast	
00:00	06:00	NW 2	SLGT		
06:00	12:00	NW 2	SLGT		
12:00	18:00	NW 4/5	MOD		
18:00:00	24:00:00	NW4	SLGT	Gale Wrn.	N

Personnel on site

Nº of Survey Crew	4	Client	1
Nº of Vessel Crew	3	Total	8

Environment

Bagged & Disposed Ashore			
Amount	0		
Type			

Vessel Fuel & Fresh Water

Fuel		Litres
Water		Litres

HSE

	Today	To Date	Comments
Safety Meeting		1	
Tool Box Talks	2	4	
Near Misses			
Safety Incidents			
L.T.I.s			
Safety Observations			

Crew List - (Full Names):	Mick Dougal, Rob Wells, Aneka Hawkins, Greg Tandy, Pat Hannigan, Finlay Munro, Steve Dalton, Francis Farrow
Progress Comments - Plan Next 24 Hrs:	Verifcation still not resolved - further attempts being made, if complete then survey operations
Comments - Contractor Rep:	
Comments - Client Rep:	
Defects - Vessel & Equipment:	
Signatures:	Contractors Rep ..... Clients Rep ..... Date .....

BIBBY HYDROMAP
Committed to Quality and Innovation

DAILY PROGRESS REPORT

2015-021 // Holyhead Deep - CHARTWELL

Part of BIBBY MARINE SURVEY SERVICES LTD

Vessel	CH01 // Chartwell	Date	10-Jun-2015
Contractor		Report Nº	3
Client	XOD001 // Xodus Subsea		

Progress (UTC 00:00 - 24:00)

Acquisition Code	Site/Area Name/Description	Unit of Measure	Total Units to Complete	Total Units Complete Today	Total Units Completed To Date	% Complete
WORK	Acquisition	KM LINES	448		0	0.00

Summary of Time

Status	Code Description	Previous hh:mm	Today Hours	Today Mins	Total hh:mm
BK-EQUIP	Breakdown - Survey/IT				00:00
BK-VESSEL	Breakdown - Vessel	07:03	11	42	18:45
DEMOB	De-Mobilisation				00:00
DISPUTE	Disputed Time				00:00
MOB	Mobilisation	39:39	12	18	51:57
ST-CLIENT	Stand Down - Client				00:00
ST-HYDRO	Stand Down - Hydromap				00:00
TRANSIT	Transit	01:06			01:06
WORK	Acquisition	00:12			00:12
WOW	Waiting on weather				00:00
WOW-PORT	Waiting on Weather - PORT				00:00
WOW-SEA	Waiting on Weather - Sea				00:00
	Totals	48:00	24	0	72:00
	DPR Checksum	Op Hrs	24	Days	3.00

Comments - Contractor Rep:	
Comments - Client Rep:	
Signatures:	Contractors Rep ..... Clients Rep ..... Date .....

BIBBY HYDROMAP
Committed to Quality and Innovation

DAILY PROGRESS REPORT

2015-021 // Holyhead Deep - CHARTWELL

Part of BIBBY MARINE SURVEY SERVICES LTD

Vessel	CH01 // Chartwell	Date	11-Jun-2015
Contractor		Report Nº	4
Client	XOD001 // Xodus Subsea		

TIMES (UTC) From	TIMES (UTC) To	Code	Diary of Operations
00:00	03:17	MOB	Continued verification trials
03:17	07:56	WORK	Inshore predicted MBES infill
07:56	08:17	TRANSIT	Transit to berth
08:17	11:56	MOB	Bibby principle surveyors onboard to resolve verification issue - resolved
11:56	12:47	TRANSIT	Transit to W of site
12:47	13:47	WORK	Deploying gear and SVP
13:47	00:00	WORK	Survey operations

Weather

Time		Obs. Wind (Dir/F)	Sea State	Forecast	
00:00	06:00	NE	2		
06:00	12:00	NE	2		
12:00	18:00	NE	2		
18:00:00	24:00:00	NNW	3	Gale Wrn.	N

Personnel on site

Nº of Survey Crew	4	Client	1	
Nº of Vessel Crew	3	Total	8	

Environment

Bagged & Disposed Ashore		
Amount	100kg	
Type	General waste	

Vessel Fuel & Fresh Water

Fuel	8325	Litres
Water	1250	Litres

HSE

	Today	To Date	Comments
Safety Meeting		1	
Tool Box Talks	2	6	
Near Misses			
Safety Incidents			
L.T.I.s			
Safety Observations			

Crew List - (Full Names):	Mick Dougal, Rob Wells, Aneka Hawkins, Greg Tandy, Pat Hannigan, Finlay Munro, Steve Dalton, Francis Farrow
Progress Comments - Plan Next 24 Hrs:	Continued survey operations
Comments - Contractor Rep:	
Comments - Client Rep:	
Defects - Vessel & Equipment:	
Signatures:	Contractors Rep ..... Clients Rep ..... Date .....

BIBBY HYDROMAP
Committed to Quality and Innovation

DAILY PROGRESS REPORT

2015-021 // Holyhead Deep - CHARTWELL

Part of BIBBY MARINE SURVEY SERVICES LTD

Vessel	CH01 // Chartwell	Date	11-Jun-2015
Contractor		Report Nº	4
Client	XOD001 // Xodus Subsea		

Progress (UTC 00:00 - 24:00)

Acquisition Code	Site/Area Name/Description	Unit of Measure	Total Units to Complete	Total Units Complete Today	Total Units Completed To Date	% Complete
WORK	Acquisition	KM LINES	448	31.5	31.5	7.03
WORK-01	Additional Data Acquisition	KM LINES	0		0	0.00

Summary of Time

Status	Code Description	Previous hh:mm	Today Hours	Today Mins	Total hh:mm
BK-EQUIP	Breakdown - Survey/IT				00:00
BK-VESSEL	Breakdown - Vessel	18:45			18:45
DEMOB	De-Mobilisation				00:00
DISPUTE	Disputed Time				00:00
MOB	Mobilisation	51:57	6	56	58:53
ST-CLIENT	Stand Down - Client				00:00
ST-HYDRO	Stand Down - Hydromap				00:00
TRANSIT	Transit	01:06	1	12	02:18
WORK	Acquisition	00:12	15	52	16:04
WORK-01	Additional Data Acquisition				00:00
WOW	Waiting on weather				00:00
WOW-01	Waiting on Weather - Additional work				00:00
WOW-PORT	Waiting on Weather - PORT				00:00
WOW-SEA	Waiting on Weather - Sea				00:00
	Totals	72:00	24	0	96:00
	DPR Checksum	Op Hrs	24	Days	4.00

Comments - Contractor Rep:	
Comments - Client Rep:	
Signatures:	Contractors Rep ..... Clients Rep ..... Date .....

BIBBY HYDROMAP
Committed to Quality and Innovation

DAILY PROGRESS REPORT

2015-021 // Holyhead Deep - CHARTWELL

Part of BIBBY MARINE SURVEY SERVICES LTD

Vessel	CH01 // Chartwell	Date	12-Jun-2015
Contractor		Report Nº	5
Client	XOD001 // Xodus Subsea		

TIMES (UTC) From	To	Code	Diary of Operations
00:00	20:23	WORK	Continued survey operations
20:23	20:56	WORK	Recovering gear due to state of weather
20:56	22:02	TRANSIT	Transit to Holyhead
22:02	00:00	WOW-PORT	Alongside Holyhead - WOW

Weather

Time		Obs. Wind (Dir/F)	Sea State	Forecast	
00:00	06:00	N 2	SLGT		
06:00	12:00	NNE 2	SLGT		
12:00	18:00	N2 to 4	SLgGT/MO		
18:00:00	24:00:00	N 5 to 6	ROUGH	Gale Wrn.	N

Personnel on site

Nº of Survey Crew	4	Client	1		
Nº of Vessel Crew	3	Total	8		

Environment

Bagged & Disposed Ashore		
Amount	0kg	
Type		

Vessel Fuel & Fresh Water

Fuel	7040	Litres
Water	950	Litres

HSE

	Today	To Date	Comments
Safety Meeting		1	
Tool Box Talks	2	8	
Near Misses			
Safety Incidents			
L.T.I.s			
Safety Observations			

Crew List - (Full Names):	Mick Dougal, Rob Wells, Aneka Hawkins, Greg Tandy, Pat Hannigan, Finlay Munro, Steve Dalton, Francis Farrow
Progress Comments - Plan Next 24 Hrs:	Alongside Holyhead - monitoring weather
Comments - Contractor Rep:	
Comments - Client Rep:	
Defects - Vessel & Equipment:	
Signatures:	Contractors Rep ..... Clients Rep ..... Date .....

BIBBY HYDROMAP
Committed to Quality and Innovation

DAILY PROGRESS REPORT

2015-021 // Holyhead Deep - CHARTWELL

Part of BIBBY MARINE SURVEY SERVICES LTD

Vessel	CH01 // Chartwell	Date	12-Jun-2015
Contractor		Report Nº	5
Client	XOD001 // Xodus Subsea		

Progress (UTC 00:00 - 24:00)

Acquisition Code	Site/Area Name/Description	Unit of Measure	Total Units to Complete	Total Units Complete Today	Total Units Completed To Date	% Complete
WORK	Acquisition	KM LINES	448	75.369	106.869	23.85

Summary of Time

Status	Code Description	Previous hh:mm	Today Hours	Today Mins	Total hh:mm
BK-EQUIP	Breakdown - Survey/IT				00:00
BK-VESSEL	Breakdown - Vessel	18:45			18:45
DEMOB	De-Mobilisation				00:00
DISPUTE	Disputed Time				00:00
MOB	Mobilisation	58:52			58:52
ST-CLIENT	Stand Down - Client				00:00
ST-HYDRO	Stand Down - Hydromap				00:00
TRANSIT	Transit	02:18	1	6	03:24
WORK	Acquisition	16:04	20	56	37:00
WOW	Waiting on weather				00:00
WOW-PORT	Waiting on Weather - PORT		1	58	01:58
WOW-SEA	Waiting on Weather - Sea				00:00
	Totals	96:00	24	0	120:00
	DPR Checksum	Op Hrs	24	Days	5.00

Comments - Contractor Rep:	
Comments - Client Rep:	
Signatures:	Contractors Rep ..... Clients Rep ..... Date .....

BIBBY HYDROMAP
Committed to Quality and Innovation

DAILY PROGRESS REPORT

2015-021 // Holyhead Deep - CHARTWELL

Part of BIBBY MARINE SURVEY SERVICES LTD

Vessel	CH01 // Chartwell	Date	13-Jun-2015
Contractor		Report Nº	6
Client	XOD001 // Xodus Subsea		

TIMES (UTC) From	TIMES (UTC) To	Code	Diary of Operations
00:00	00:00	WOW-PORT	Waiting on weather

Weather						Environment			HSE			
Time		Obs. Wind (Dir/F)	Sea State	Forecast		Bagged & Disposed Ashore				Today	To Date	Comments
00:00	06:00	4 to 5	MOD			Amount	100kg					
06:00	12:00	4 to 5	MOD			Type	General waste		Safety Meeting		1	
12:00	18:00	4 to 5	MOD						Tool Box Talks		8	
18:00:00	0:00:00	4 to 5	MOD	Gale Wrn.	N				Near Misses			
Personnel on site						Vessel Fuel & Fresh Water			Safety Incidents			
Nº of Survey Crew			4	Client	1	Fuel	6970	Litres	L.T.I.s			
Nº of Vessel Crew			3	Total	8	Water	1700	Litres	Safety Observations			

Crew List - (Full Names):	Mick Dougal, Rob Wells, Aneka Hawkins, Greg Tandy, Pat Hannigan, Finlay Munro, Steve Dalton, Francis Farrow
Progress Comments - Plan Next 24 Hrs:	Continue to monitor weather - potential window late evening
Comments - Contractor Rep:	
Comments - Client Rep:	
Defects - Vessel & Equipment:	
Signatures:	Contractors Rep ..... Clients Rep ..... Date .....

BIBBY HYDROMAP
Committed to Quality and Innovation

DAILY PROGRESS REPORT

2015-021 // Holyhead Deep - CHARTWELL

Part of BIBBY MARINE SURVEY SERVICES LTD

Vessel	CH01 // Chartwell	Date	13-Jun-2015
Contractor		Report Nº	6
Client	XOD001 // Xodus Subsea		

Progress (UTC 00:00 - 24:00)

Acquisition Code	Site/Area Name/Description	Unit of Measure	Total Units to Complete	Total Units Complete Today	Total Units Completed To Date	% Complete
WORK	Acquisition	KM LINES	448		106.87	23.85

Summary of Time

Status	Code Description	Previous hh:mm	Today Hours	Today Mins	Total hh:mm
BK-EQUIP	Breakdown - Survey/IT				00:00
BK-VESSEL	Breakdown - Vessel	18:45			18:45
DEMOB	De-Mobilisation				00:00
DISPUTE	Disputed Time				00:00
MOB	Mobilisation	58:52			58:52
ST-CLIENT	Stand Down - Client				00:00
ST-HYDRO	Stand Down - Hydromap				00:00
TRANSIT	Transit	03:24			03:24
WORK	Acquisition	37:00			37:00
WOW	Waiting on weather				00:00
WOW-PORT	Waiting on Weather - PORT	01:58	24	0	25:58
WOW-SEA	Waiting on Weather - Sea				00:00
	Totals	120:00	24	0	144:00
	DPR Checksum	Op Hrs	24	Days	6.00

Comments - Contractor Rep:	
Comments - Client Rep:	
Signatures:	Contractors Rep ..... Clients Rep ..... Date .....

BIBBY HYDROMAP
Committed to Quality and Innovation

DAILY PROGRESS REPORT

2015-021 // Holyhead Deep - CHARTWELL

Part of BIBBY MARINE SURVEY SERVICES LTD

Vessel	CH01 // Chartwell	Date	14-Jun-2015
Contractor		Report Nº	7
Client	XOD001 // Xodus Subsea		

TIMES (UTC) From	TIMES (UTC) To	Code	Diary of Operations
00:00	10:00	WOW-PORT	Alondside Holyhead - WOW
10:00	10:15	WOW-PORT	Safety meeting
10:15	16:00	WOW-PORT	Alonngside Holyhead
16:00	16:15	WOW-PORT	Fire drill
16:15	18:42	WOW-PORT	Alongside Holyhead
18:42	19:51	TRANSIT	Transit to site
19:51	21:00	WORK	All gear deployed, SVP and TBT
21:00	00:00	WORK	Commence survey operations

Weather

Time		Obs. Wind (Dir/F)	Sea State	Forecast
00:00	06:00	N 4 to5	MOD	
06:00	12:00	4 to 5	MOD	
12:00	18:00	N 3	MOD	
18:00:00	0:00:00	N 2 to 3	SLGT	Gale Wrn.

Personnel on site

Nº of Survey Crew	4	Client	1
Nº of Vessel Crew	3	Total	8

Environment

Bagged & Disposed Ashore		
Amount	0kg	
Type		

Vessel Fuel & Fresh Water

Fuel	7670	Litres
Water	1500	Litres

HSE

	Today	To Date	Comments
Safety Meeting	1	2	
Tool Box Talks	2	10	
Near Misses			
Safety Incidents			
L.T.I.s			
Safety Observations			

Crew List - (Full Names):	Mick Dougal, Rob Wells, Aneka Hawkins, Greg Tandy, Pat Hannigan, Finlay Munro, Steve Dalton, Francis Farrow
Progress Comments - Plan Next 24 Hrs:	Continued survey operations within available weather window - monitor weather.
Comments - Contractor Rep:	
Comments - Client Rep:	
Defects - Vessel & Equipment:	
Signatures:	Contractors Rep ..... Clients Rep ..... Date .....

BIBBY HYDROMAP
Committed to Quality and Innovation

DAILY PROGRESS REPORT

2015-021 // Holyhead Deep - CHARTWELL

Part of BIBBY MARINE SURVEY SERVICES LTD

Vessel	CH01 // Chartwell	Date	14-Jun-2015
Contractor		Report Nº	7
Client	XOD001 // Xodus Subsea		

Progress (UTC 00:00 - 24:00)

Acquisition Code	Site/Area Name/Description	Unit of Measure	Total Units to Complete	Total Units Complete Today	Total Units Completed To Date	% Complete
WORK	Acquisition	KM LINES	448	5.663	112.533	25.12

Summary of Time

Status	Code Description	Previous hh:mm	Today Hours	Today Mins	Total hh:mm
BK-EQUIP	Breakdown - Survey/IT				00:00
BK-VESSEL	Breakdown - Vessel	18:45			18:45
DEMOB	De-Mobilisation				00:00
DISPUTE	Disputed Time				00:00
MOB	Mobilisation	58:52			58:52
ST-CLIENT	Stand Down - Client				00:00
ST-HYDRO	Stand Down - Hydromap				00:00
TRANSIT	Transit	03:24	1	9	04:33
WORK	Acquisition	37:00	4	9	41:09
WOW	Waiting on weather				00:00
WOW-PORT	Waiting on Weather - PORT	01:58	18	42	20:40
WOW-SEA	Waiting on Weather - Sea				00:00
	Totals	120:00	24	0	144:00
	DPR Checksum	Op Hrs	24	Days	6.00

Comments - Contractor Rep:	
Comments - Client Rep:	
Signatures:	Contractors Rep ..... Clients Rep ..... Date .....

BIBBY HYDROMAP
Committed to Quality and Innovation

DAILY PROGRESS REPORT

2015-021 // Holyhead Deep - CHARTWELL

Part of BIBBY MARINE SURVEY SERVICES LTD

Vessel	CH01 // Chartwell	Date	15-Jun-2015
Contractor		Report Nº	8
Client	XOD001 // Xodus Subsea		

TIMES (UTC) From	TIMES (UTC) To	Code	Diary of Operations
00:00	00:00	WORK	Continued survey operations

Weather					Environment			HSE			
Time		Obs. Wind (Dir/F)	Sea State	Forecast	Bagged & Disposed Ashore				Today	To Date	Comments
00:00	06:00	S 2	CALM		Amount	0kg		Safety Meeting		2	Improve
06:00	12:00	SE 2 to 3	CALM/SLG		Type			Tool Box Talks	2	12	housekeeping, refit
12:00	18:00	SSW 2 to 3	CALM/SLG					Near Misses			guard chains, tie T-
18:00	00:00	S 2 to3	CALM/SLG	Gale Wrn. N				Safety Incidents			count better,
Personnel on site					Vessel Fuel & Fresh Water			L.T.I.s			threaded bar on
Nº of Survey Crew			4	Client 1	Fuel	6990	Litres	Safety Observations	4	4	machine rack sorted
Nº of Vessel Crew			3	Total 8	Water	1000	Litres				

Crew List - (Full Names):	Mick Dougal, Rob Wells, Aneka Hawkins, Greg Tandy, Pat Hannigan, Finlay Munro, Steve Dalton, Francis Farrow
Progress Comments - Plan Next 24 Hrs:	Continue survey operations - weather expected to come up midday - continue to monitor
Comments - Contractor Rep:	
Comments - Client Rep:	Fire Drill carried out 14/06/2015
Defects - Vessel & Equipment:	
Signatures:	Contractors Rep ..... Clients Rep ..... Date .....

BIBBY HYDROMAP
Committed to Quality and Innovation

DAILY PROGRESS REPORT

2015-021 // Holyhead Deep - CHARTWELL

Part of BIBBY MARINE SURVEY SERVICES LTD

Vessel	CH01 // Chartwell	Date	15-Jun-2015
Contractor		Report Nº	8
Client	XOD001 // Xodus Subsea		

Progress (UTC 00:00 - 24:00)

Acquisition Code	Site/Area Name/Description	Unit of Measure	Total Units to Complete	Total Units Complete Today	Total Units Completed To Date	% Complete
WORK	Acquisition	KM LINES	448	95.968	208.498	46.54
WORK-01	Additional Data Acquisition	KM LINES	0		0	0.00

Summary of Time

Status	Code Description	Previous hh:mm	Today Hours	Today Mins	Total hh:mm
BK-EQUIP	Breakdown - Survey/IT				00:00
BK-VESSEL	Breakdown - Vessel	18:45			18:45
DEMOB	De-Mobilisation				00:00
DISPUTE	Disputed Time				00:00
MOB	Mobilisation	58:52			58:52
ST-CLIENT	Stand Down - Client				00:00
ST-HYDRO	Stand Down - Hydromap				00:00
TRANSIT	Transit	04:33			04:33
WORK	Acquisition	41:09	24	0	65:09
WORK-01	Additional Data Acquisition				00:00
WOW	Waiting on weather				00:00
WOW-01	Waiting on Weather - Additional work				00:00
WOW-PORT	Waiting on Weather - PORT	44:40			44:40
WOW-SEA	Waiting on Weather - Sea				00:00
	Totals	168:00	24	0	192:00
	DPR Checksum	Op Hrs	24	Days	8.00

Comments - Contractor Rep:	
Comments - Client Rep:	
Signatures:	Contractors Rep ..... Clients Rep ..... Date .....

BIBBY HYDROMAP
Committed to Quality and Innovation

DAILY PROGRESS REPORT

2015-021 // Holyhead Deep - CHARTWELL

Part of BIBBY MARINE SURVEY SERVICES LTD

Vessel	CH01 // Chartwell	Date	16-Jun-2015
Contractor		Report Nº	9
Client	XOD001 // Xodus Subsea		

TIMES (UTC) From	TIMES (UTC) To	Code	Diary of Operations
00:00	11:01	WOW	Continued survey operations
11:01	11:37	WORK	All gear recovered - TBT
11:37	12:37	TRANSIT	Transit to Holyhead
12:37	00:00	WOW-PORT	Alongside Holyhead - WOW

Weather

Time		Obs. Wind (Dir/F)	Sea State	Forecast	
00:00	06:00	SSW 2 to 3	SLGT		
06:00	12:00	SW 3 to 4	SLGT - MO		
12:00	18:00	WNW 4 to 5	MOD		
18:00	00:00	WNW 4 to 5	MOD	Gale Wrn.	N

Personnel on site

Nº of Survey Crew	4	Client	1		
Nº of Vessel Crew	3	Total	8		

Environment

Bagged & Disposed Ashore		
Amount	0kg	
Type		

Vessel Fuel & Fresh Water

Fuel		Litres
Water		Litres

HSE

	Today	To Date	Comments
Safety Meeting		2	
Tool Box Talks	1	13	
Near Misses			
Safety Incidents			
L.T.I.s			
Safety Observations		4	

Crew List - (Full Names):	Mick Dougal, Rob Wells, Aneka Hawkins, Greg Tandy, Pat Hannigan, Finlay Munro, Steve Dalton, Francis Farrow
Progress Comments - Plan Next 24 Hrs:	WOW - monitoring weather
Comments - Contractor Rep:	
Comments - Client Rep:	
Defects - Vessel & Equipment:	
Signatures:	Contractors Rep ..... Clients Rep ..... Date .....

BIBBY HYDROMAP
Committed to Quality and Innovation

DAILY PROGRESS REPORT

2015-021 // Holyhead Deep - CHARTWELL

Part of BIBBY MARINE SURVEY SERVICES LTD

Vessel	CH01 // Chartwell	Date	16-Jun-2015
Contractor		Report Nº	9
Client	XOD001 // Xodus Subsea		

Progress (UTC 00:00 - 24:00)

Acquisition Code	Site/Area Name/Description	Unit of Measure	Total Units to Complete	Total Units Complete Today	Total Units Completed To Date	% Complete
WORK	Acquisition	KM LINES	448	44.402	252.902	56.45
WORK-01	Additional Data Acquisition	KM LINES	0		0	0.00

Summary of Time

Status	Code Description	Previous hh:mm	Today Hours	Today Mins	Total hh:mm
BK-EQUIP	Breakdown - Survey/IT				00:00
BK-VESSEL	Breakdown - Vessel	18:45			18:45
DEMOB	De-Mobilisation				00:00
DISPUTE	Disputed Time				00:00
MOB	Mobilisation	58:52			58:52
ST-CLIENT	Stand Down - Client				00:00
ST-HYDRO	Stand Down - Hydromap				00:00
TRANSIT	Transit	04:33	1	0	05:33
WORK	Acquisition	65:09	0	36	65:45
WORK-01	Additional Data Acquisition				00:00
WOW	Waiting on weather		11	1	11:01
WOW-01	Waiting on Weather - Additional work				00:00
WOW-PORT	Waiting on Weather - PORT	44:40	11	23	56:03
WOW-SEA	Waiting on Weather - Sea				00:00
	Totals	192:00	24	0	216:00
	DPR Checksum	Op Hrs	24	Days	9.00

Comments - Contractor Rep:	
Comments - Client Rep:	
Signatures:	Contractors Rep ..... Clients Rep ..... Date .....

BIBBY HYDROMAP
Committed to Quality and Innovation

DAILY PROGRESS REPORT

2015-021 // Holyhead Deep - CHARTWELL

Part of BIBBY MARINE SURVEY SERVICES LTD

Vessel	CH01 // Chartwell	Date	17-Jun-2015
Contractor		Report Nº	10
Client	XOD001 // Xodus Subsea		

TIMES (UTC) From	TIMES (UTC) To	Code	Diary of Operations
00:00	00:00	WOW-PORT	Alongside Holyhead

Weather						Environment			HSE			
Time		Obs. Wind (Dir/F)	Sea State	Forecast		Bagged & Disposed Ashore				Today	To Date	Comments
00:00	06:00	WSW 3 to 4	MOD			Amount	100kg					
06:00	12:00	WSW 3 to 4	MOD			Type	General waste		Safety Meeting		2	
12:00	18:00	NW 3 to 4	MOD						Tool Box Talks		13	
18:00	00:00	NW 3 to 4	MOD	Gale Wrn.	N				Near Misses			
Personnel on site						**Vessel Fuel & Fresh Water**			Safety Incidents			
Nº of Survey Crew			4	Client	1	Fuel	6200	Litres	L.T.I.s			
Nº of Vessel Crew			3	Total	8	Water	1700	Litres	Safety Observations		4	

Crew List - (Full Names):	Mick Dougal, Rob Wells, Aneka Hawkins, Greg Tandy, Pat Hannigan, Finlay Munro, Steve Dalton, Francis Farrow
Progress Comments - Plan Next 24 Hrs:	Monitor weather - working window expected mid-morning to midday
Comments - Contractor Rep:	
Comments - Client Rep:	
Defects - Vessel & Equipment:	
Signatures:	Contractors Rep ..... Clients Rep ..... Date .....

BIBBY HYDROMAP
Committed to Quality and Innovation

DAILY PROGRESS REPORT

2015-021 // Holyhead Deep - CHARTWELL

Part of BIBBY MARINE SURVEY SERVICES LTD

Vessel	CH01 // Chartwell	Date	17-Jun-2015
Contractor		Report Nº	10
Client	XOD001 // Xodus Subsea		

Progress (UTC 00:00 - 24:00)

Acquisition Code	Site/Area Name/Description	Unit of Measure	Total Units to Complete	Total Units Complete Today	Total Units Completed To Date	% Complete
WORK	Acquisition	KM LINES	448	0	252.9	56.45
WORK-01	Additional Data Acquisition	KM LINES	0		0	0.00

Summary of Time

Status	Code Description	Previous hh:mm	Today Hours	Today Mins	Total hh:mm
BK-EQUIP	Breakdown - Survey/IT				00:00
BK-VESSEL	Breakdown - Vessel	18:45			18:45
DEMOB	De-Mobilisation				00:00
DISPUTE	Disputed Time				00:00
MOB	Mobilisation	58:52			58:52
ST-CLIENT	Stand Down - Client				00:00
ST-HYDRO	Stand Down - Hydromap				00:00
TRANSIT	Transit	05:33			05:33
WORK	Acquisition	76:46			76:46
WORK-01	Additional Data Acquisition				00:00
WOW	Waiting on weather				00:00
WOW-01	Waiting on Weather - Additional work				00:00
WOW-PORT	Waiting on Weather - PORT	56:03	24	0	80:03
WOW-SEA	Waiting on Weather - Sea				00:00
	Totals	216:00	24	0	240:00
	DPR Checksum	Op Hrs	24	Days	10.00

Comments - Contractor Rep:	
Comments - Client Rep:	
Signatures:	Contractors Rep ..... Clients Rep ..... Date .....

BIBBY HYDROMAP
Committed to Quality and Innovation

DAILY PROGRESS REPORT

2015-021 // Holyhead Deep - CHARTWELL

Part of BIBBY MARINE SURVEY SERVICES LTD

Vessel	CH01 // Chartwell	Date	18-Jun-2015
Contractor		Report Nº	11
Client	XOD001 // Xodus Subsea		

TIMES (UTC) From	TIMES (UTC) To	Code	Diary of Operations
00:00	07:42	WOW-PORT	Alongside Holyhead - WOW
07:42	08:12	TRANSIT	Transit to cable route
08:12	09:54	WORK	SVP and all gear deployed
09:54	23:45	WORK	Continued survey operations
23:45	00:00	WORK	Weather coming up - recovering gear

Weather

Time		Obs. Wind (Dir/F)	Sea State	Forecast	
00:00	06:00	W 3 to 4	MOD		
06:00	12:00	SW 3	SLGT		
12:00	18:00	WSW 3	MOD		
18:00	00:00	NW 4 to 5	MOD	Gale Wrn.	N

Personnel on site

Nº of Survey Crew	4	Client	1		
Nº of Vessel Crew	3	Total	8		

Environment

Bagged & Disposed Ashore	
Amount	0kg
Type	

Vessel Fuel & Fresh Water

Fuel	5690	Litres			
Water	1350	Litres			

HSE

	Today	To Date	Comments
Safety Meeting		2	
Tool Box Talks	2	15	
Near Misses			
Safety Incidents			
L.T.I.s			
Safety Observations		4	

Crew List - (Full Names):	Mick Dougal, Rob Wells, Aneka Hawkins, Greg Tandy, Pat Hannigan, Finlay Munro, Steve Dalton, Francis Farrow
Progress Comments - Plan Next 24 Hrs:	Monitor weather
Comments - Contractor Rep:	
Comments - Client Rep:	
Defects - Vessel & Equipment:	
Signatures:	Contractors Rep ..... Clients Rep ..... Date .....

BIBBY HYDROMAP
Committed to Quality and Innovation

DAILY PROGRESS REPORT

2015-021 // Holyhead Deep - CHARTWELL

Part of BIBBY MARINE SURVEY SERVICES LTD

Vessel	CH01 // Chartwell	Date	18-Jun-2015
Contractor		Report Nº	11
Client	XOD001 // Xodus Subsea		

Progress (UTC 00:00 - 24:00)

Acquisition Code	Site/Area Name/Description	Unit of Measure	Total Units to Complete	Total Units Complete Today	Total Units Completed To Date	% Complete
WORK	Acquisition	KM LINES	448	54.158	307.058	68.54
WORK-01	Additional Data Acquisition	KM LINES	0		0	0.00

Summary of Time

Status	Code Description	Previous hh:mm	Today Hours	Today Mins	Total hh:mm
BK-EQUIP	Breakdown - Survey/IT				00:00
BK-VESSEL	Breakdown - Vessel	18:45			18:45
DEMOB	De-Mobilisation				00:00
DISPUTE	Disputed Time				00:00
MOB	Mobilisation	58:52			58:52
ST-CLIENT	Stand Down - Client				00:00
ST-HYDRO	Stand Down - Hydromap				00:00
TRANSIT	Transit	05:33	0	30	06:03
WORK	Acquisition	76:46	15	48	92:34
WORK-01	Additional Data Acquisition				00:00
WOW	Waiting on weather				00:00
WOW-01	Waiting on Weather - Additional work				00:00
WOW-PORT	Waiting on Weather - PORT	80:03	7	42	87:45
WOW-SEA	Waiting on Weather - Sea				00:00
	Totals	240:00	24	0	264:00
	DPR Checksum	Op Hrs	24	Days	11.00

Comments - Contractor Rep:	
Comments - Client Rep:	
Signatures:	Contractors Rep ..... Clients Rep ..... Date .....

BIBBY HYDROMAP
Committed to Quality and Innovation

DAILY PROGRESS REPORT

2015-021 // Holyhead Deep - CHARTWELL

Part of BIBBY MARINE SURVEY SERVICES LTD

Vessel	CH01 // Chartwell	Date	19-Jun-2015
Contractor		Report Nº	12
Client	XOD001 // Xodus Subsea		

TIMES (UTC) From	TIMES (UTC) To	Code	Diary of Operations
00:00	00:39	WORK	Transit to Holyhead
00:39	11:18	WOW-PORT	Alongside Holyhead - WOW
11:18	11:39	TRANSIT	Transit to Cable Route
11:39	12:24	WORK	All gear deployed
12:24	15:42	WORK	Survey operations around cable route
15:42	00:00	WORK	Moved to west export cable route and continue survey operations

Weather

Time		Obs. Wind (Dir/F)	Sea State	Forecast	
00:00	06:00	NW 3 to 4	MOD		
06:00	12:00	WNW 3	SLGT		
12:00	18:00	W 2 to 3	SLGT		
18:00	00:00	S 2 to 3	SLGT	Gale Wrn.	N

Personnel on site

Nº of Survey Crew	4	Client	1		
Nº of Vessel Crew	3	Total	8		

Environment

Bagged & Disposed Ashore		
Amount	100kg	
Type	General waste	

Vessel Fuel & Fresh Water

Fuel	5020	Litres
Water	950	Litres

HSE

	Today	To Date	Comments
Safety Meeting		2	
Tool Box Talks	2	17	
Near Misses			
Safety Incidents			
L.T.I.s			
Safety Observations		4	

Crew List - (Full Names):	Mick Dougal, Rob Wells, Aneka Hawkins, Greg Tandy, Pat Hannigan, Steve Dalton, Francis Farrow, Eddie Owen
Progress Comments - Plan Next 24 Hrs:	Crew change: Finlay Munro off, Eddie Owen on - Continued survey operations - monitor weather
Comments - Contractor Rep:	
Comments - Client Rep:	
Defects - Vessel & Equipment:	
Signatures:	Contractors Rep ..... Clients Rep ..... Date .....

BIBBY HYDROMAP
Committed to Quality and Innovation

DAILY PROGRESS REPORT

2015-021 // Holyhead Deep - CHARTWELL

Part of BIBBY MARINE SURVEY SERVICES LTD

Vessel	CH01 // Chartwell	Date	19-Jun-2015
Contractor		Report Nº	12
Client	XOD001 // Xodus Subsea		

Progress (UTC 00:00 - 24:00)

Acquisition Code	Site/Area Name/Description	Unit of Measure	Total Units to Complete	Total Units Complete Today	Total Units Completed To Date	% Complete
WORK	Acquisition	KM LINES	448	38.035	345.095	77.03
WORK-01	Additional Data Acquisition	KM LINES	0		0	0.00

Summary of Time

Status	Code Description	Previous hh:mm	Today Hours	Today Mins	Total hh:mm
BK-EQUIP	Breakdown - Survey/IT				00:00
BK-VESSEL	Breakdown - Vessel	18:45			18:45
DEMOB	De-Mobilisation				00:00
DISPUTE	Disputed Time				00:00
MOB	Mobilisation	58:52			58:52
ST-CLIENT	Stand Down - Client				00:00
ST-HYDRO	Stand Down - Hydromap				00:00
TRANSIT	Transit	06:03	0	21	06:24
WORK	Acquisition	92:34	12	59	105:33
WORK-01	Additional Data Acquisition				00:00
WOW	Waiting on weather				00:00
WOW-01	Waiting on Weather - Additional work				00:00
WOW-PORT	Waiting on Weather - PORT	87:45	10	42	98:27
WOW-SEA	Waiting on Weather - Sea				00:00
	Totals	264:00	24	2	288:02
	DPR Checksum	Op Hrs	24	Days	12.00

Comments - Contractor Rep:	
Comments - Client Rep:	
Signatures:	Contractors Rep ..... Clients Rep ..... Date .....

BIBBY HYDROMAP
Committed to Quality and Innovation

DAILY PROGRESS REPORT

2015-021 // Holyhead Deep - CHARTWELL

Part of BIBBY MARINE SURVEY SERVICES LTD

Vessel	CH01 // Chartwell	Date	20-Jun-2015
Contractor		Report Nº	13
Client	XOD001 // Xodus Subsea		

TIMES (UTC) From	TIMES (UTC) To	Code	Diary of Operations
00:00	20:39	WORK	Continued survey operations
20:39	22:18	WORK	Export corridor and PDA complete - mob soft tow for inshore cable route
22:18	00:00	WORK	Survey operations up to 5m contour

Weather

Time		Obs. Wind (Dir/F)	Sea State	Forecast	
00:00	06:00	W 2 to 3	SLGT		
06:00	12:00	S 2	SLGT		
12:00	18:00	SSW 2 to 3	SLGT		
18:00	00:00	W 3	SLGT	Gale Wrn.	N

Personnel on site

Nº of Survey Crew	4	Client	1		
Nº of Vessel Crew	3	Total	8		

Environment

Bagged & Disposed Ashore			
Amount	0kg		
Type			

Vessel Fuel & Fresh Water

Fuel	4420	Litres
Water	600	Litres

HSE

	Today	To Date	Comments
Safety Meeting		2	
Tool Box Talks	2	19	
Near Misses			
Safety Incidents			
L.T.I.s			
Safety Observations		4	

Crew List - (Full Names):	Mick Dougal, Rob Wells, Aneka Hawkins, Greg Tandy, Pat Hannigan, Steve Dalton, Francis Farrow, Eddie Owen
Progress Comments - Plan Next 24 Hrs:	Continued survey operations until expect weather coming up around midnight to 0200/0300
Comments - Contractor Rep:	
Comments - Client Rep:	
Defects - Vessel & Equipment:	
Signatures:	Contractors Rep ..... Clients Rep ..... Date .....

BIBBY HYDROMAP
Committed to Quality and Innovation

DAILY PROGRESS REPORT

2015-021 // Holyhead Deep - CHARTWELL

Part of BIBBY MARINE SURVEY SERVICES LTD

Vessel	CH01 // Chartwell	Date	20-Jun-2015
Contractor		Report Nº	13
Client	XOD001 // Xodus Subsea		

Progress (UTC 00:00 - 24:00)

Acquisition Code	Site/Area Name/Description	Unit of Measure	Total Units to Complete	Total Units Complete Today	Total Units Completed To Date	% Complete
WORK	Acquisition	KM LINES	448	68.393	413.493	92.30
WORK-01	Additional Data Acquisition	KM LINES	0		0	0.00

Summary of Time

Status	Code Description	Previous hh:mm	Today Hours	Today Mins	Total hh:mm
BK-EQUIP	Breakdown - Survey/IT				00:00
BK-VESSEL	Breakdown - Vessel	18:45			18:45
DEMOB	De-Mobilisation				00:00
DISPUTE	Disputed Time				00:00
MOB	Mobilisation	58:52			58:52
ST-CLIENT	Stand Down - Client				00:00
ST-HYDRO	Stand Down - Hydromap				00:00
TRANSIT	Transit	06:24			06:24
WORK	Acquisition	105:34	24	0	129:34
WORK-01	Additional Data Acquisition				00:00
WOW	Waiting on weather				00:00
WOW-01	Waiting on Weather - Additional work				00:00
WOW-PORT	Waiting on Weather - PORT	98:24			98:24
WOW-SEA	Waiting on Weather - Sea				00:00
	Totals	288:00	24	0	312:00
	DPR Checksum	Op Hrs	24	Days	13.00

Comments - Contractor Rep:	
Comments - Client Rep:	
Signatures:	Contractors Rep ..... Clients Rep ..... Date .....

BIBBY HYDROMAP
Committed to Quality and Innovation

DAILY PROGRESS REPORT

2015-021 // Holyhead Deep - CHARTWELL

Part of BIBBY MARINE SURVEY SERVICES LTD

Vessel	CH01 // Chartwell	Date	21-Jun-2015
Contractor		Report Nº	14
Client	XOD001 // Xodus Subsea		

TIMES (UTC) From	TIMES (UTC) To	Code	Diary of Operations
00:00	02:20	WORK	Continued survey operations - infill CR up to 5m contour
02:20	02:44	WORK	Recovery of all gear - TBT
02:44	03:05	TRANSIT	Transit to Holyhead
03:05	00:00	WOW-PORT	Alongside Holyhead

Weather						Environment			HSE			
Time		Obs. Wind (Dir/F)	Sea State	Forecast		Bagged & Disposed Ashore				Today	To Date	Comments
00:00	06:00	W 3 to 4	MOD			Amount	0kg					
06:00	12:00	WSW 4	MOD			Type			Safety Meeting		2	
12:00	18:00	WSW3 to 4	MOD						Tool Box Talks	1	20	
18:00	00:00	WSW 3 to 4	MOD	Gale Wrn.	N				Near Misses			
Personnel on site						Vessel Fuel & Fresh Water			Safety Incidents			
Nº of Survey Crew			4	Client	1	Fuel	4800	Litres	L.T.I.s			
Nº of Vessel Crew			3	Total	8	Water	1700	Litres	Safety Observations		4	

Crew List - (Full Names):	Mick Dougal, Rob Wells, Aneka Hawkins, Greg Tandy, Simon Fowler, Steve Dalton, Francis Farrow, Karlton Ward
Progress Comments - Plan Next 24 Hrs:	Waiting confirmation from office that Chartwell has finished geophys survey - 2 lines of CR MBES infill to complete if required which can be acquired during env survey. Crew change - P.Hannigan off, S. Fowler on. Eddie Owen deserted the vessel upon arrival at Holyhead without informing crew - whereabouts unknown - replaced by Karton Ward
Comments - Contractor Rep:	
Comments - Client Rep:	
Defects - Vessel & Equipment:	
Signatures:	Contractors Rep ..... Clients Rep ..... Date .....

BIBBY HYDROMAP
Committed to Quality and Innovation

DAILY PROGRESS REPORT

2015-021 // Holyhead Deep - CHARTWELL

Part of BIBBY MARINE SURVEY SERVICES LTD

Vessel	CH01 // Chartwell	Date	21-Jun-2015
Contractor		Report Nº	14
Client	XOD001 // Xodus Subsea		

Progress (UTC 00:00 - 24:00)

Acquisition Code	Site/Area Name/Description	Unit of Measure	Total Units to Complete	Total Units Complete Today	Total Units Completed To Date	% Complete
WORK	Acquisition	KM LINES	448		413.49	92.30
WORK-01	Additional Data Acquisition	KM LINES	0		0	0.00

Summary of Time

Status	Code Description	Previous hh:mm	Today Hours	Today Mins	Total hh:mm
BK-EQUIP	Breakdown - Survey/IT				00:00
BK-VESSEL	Breakdown - Vessel	18:45			18:45
DEMOB	De-Mobilisation				00:00
DISPUTE	Disputed Time				00:00
MOB	Mobilisation	58:52			58:52
ST-CLIENT	Stand Down - Client				00:00
ST-HYDRO	Stand Down - Hydromap				00:00
TRANSIT	Transit	06:24	0	21	06:45
WORK	Acquisition	129:34	2	44	132:18
WORK-01	Additional Data Acquisition				00:00
WOW	Waiting on weather				00:00
WOW-01	Waiting on Weather - Additional work				00:00
WOW-PORT	Waiting on Weather - PORT	98:24	20	55	119:19
WOW-SEA	Waiting on Weather - Sea				00:00
	Totals	312:00	24	0	336:00
	DPR Checksum	Op Hrs	24	Days	14.00

Comments - Contractor Rep:	
Comments - Client Rep:	
Signatures:	Contractors Rep ..... Clients Rep ..... Date .....

BIBBY HYDROMAP
Committed to Quality and Innovation

DAILY PROGRESS REPORT

2015-021 // Holyhead Deep - CHARTWELL

Part of BIBBY MARINE SURVEY SERVICES LTD

Vessel	CH01 // Chartwell	Date	22-Jun-2015
Contractor		Report Nº	15
Client	XOD001 // Xodus Subsea		

TIMES (UTC) From	TIMES (UTC) To	Code	Diary of Operations
00:00	12:00	WOW-PORT	Alongside Holyhead
12:00	00:00	MOB	Mobbing for benthic survey

Weather						Environment			HSE			
Time		Obs. Wind (Dir/F)	Sea State	Forecast		Bagged & Disposed Ashore				Today	To Date	Comments
00:00	06:00	NNW 3	SLGT			Amount	0kg					
06:00	12:00	NNW 3	SLGT			Type			Safety Meeting		2	
12:00	18:00	N 3	SLGT						Tool Box Talks	1	21	
18:00	00:00	N 2	SLGT	Gale Wrn.	N				Near Misses			
Personnel on site						Vessel Fuel & Fresh Water			Safety Incidents			
Nº of Survey Crew			4	Client	1	Fuel	4800	Litres	L.T.I.s			
Nº of Vessel Crew			3	Total	8	Water	1300	Litres	Safety Observations		4	

Crew List - (Full Names):	Mick Dougal, Rosie Atkinson, Chris Tulley, Tom Anderson, Simon Fowler, Steve Dalton, Francis Farrow, Karlton Ward
Progress Comments - Plan Next 24 Hrs:	Rosie Atkinson, Chris Tulley and Tom Anderson joined the vessel - Rob Wells, Greg Tandy and Aneka Hawkins left. Continue mob for benthic survey - monitor weather
Comments - Contractor Rep:	
Comments - Client Rep:	
Defects - Vessel & Equipment:	
Signatures:	Contractors Rep ..... Clients Rep ..... Date .....

BIBBY HYDROMAP
Committed to Quality and Innovation

DAILY PROGRESS REPORT

2015-021 // Holyhead Deep - CHARTWELL

Part of BIBBY MARINE SURVEY SERVICES LTD

Vessel	CH01 // Chartwell	Date	22-Jun-2015
Contractor		Report Nº	15
Client	XOD001 // Xodus Subsea		

Progress (UTC 00:00 - 24:00)

Acquisition Code	Site/Area Name/Description	Unit of Measure	Total Units to Complete	Total Units Complete Today	Total Units Completed To Date	% Complete
WORK	Acquisition	KM LINES	448		413.49	92.30
WORK-01	Additional Data Acquisition	KM LINES	0		0	0.00

Summary of Time

Status	Code Description	Previous hh:mm	Today Hours	Today Mins	Total hh:mm
BK-EQUIP	Breakdown - Survey/IT				00:00
BK-VESSEL	Breakdown - Vessel	18:45			18:45
DEMOB	De-Mobilisation				00:00
DISPUTE	Disputed Time				00:00
MOB	Mobilisation	58:52	12	0	70:52
ST-CLIENT	Stand Down - Client				00:00
ST-HYDRO	Stand Down - Hydromap				00:00
TRANSIT	Transit	06:45			06:45
WORK	Acquisition	132:18			132:18
WORK-01	Additional Data Acquisition				00:00
WOW	Waiting on weather				00:00
WOW-01	Waiting on Weather - Additional work				00:00
WOW-PORT	Waiting on Weather - PORT	119:19	12	0	131:19
WOW-SEA	Waiting on Weather - Sea				00:00
	Totals	336:00	24	0	360:00
	DPR Checksum	Op Hrs	24	Days	15.00

Comments - Contractor Rep:	
Comments - Client Rep:	
Signatures:	Contractors Rep ..... Clients Rep ..... Date .....

BIBBY HYDROMAP
Committed to Quality and Innovation

DAILY PROGRESS REPORT

2015-021 // Holyhead Deep - CHARTWELL

Part of BIBBY MARINE SURVEY SERVICES LTD

Vessel	CH01 // Chartwell	Date	23-Jun-2015
Contractor		Report Nº	16
Client	XOD001 // Xodus Subsea		

TIMES (UTC) From	TIMES (UTC) To	Code	Diary of Operations
00:00	08:00	MOB	Alongside Holyhead continuing mob
08:00	08:21	WORK	Fire drill
08:21	09:00	MOB	Continued mob
09:00	10:00	MOB	Ken Neal onboard to describe/discuss Env survey
10:00	13:06	MOB	Continued mob
13:06	13:15	TRANSIT	Transit to site to attempt drop camera work on CR
13:15	13:30	TRANSIT	Transit to Holyhead after altercation between marine crew onboard
13:30	00:00	ST-HYDRO	Alongside Holyhead

Weather

Time		Obs. Wind (Dir/F)	Sea State	Forecast	
00:00	06:00	WNW 2	SLGT		
06:00	12:00	SSW 4	MOD		
12:00	18:00	S 3 to 4	MOD		
18:00	00:00	S 3 to 4	MOD	Gale Wrn.	N

Personnel on site

Nº of Survey Crew	4	Client	1
Nº of Vessel Crew	3	Total	8

Environment

Bagged & Disposed Ashore		
Amount	10kg	
Type	General waste	

Vessel Fuel & Fresh Water

Fuel	4074	Litres
Water	1300	Litres

HSE

	Today	To Date	Comments
Safety Meeting	1	3	
Tool Box Talks		21	
Near Misses			
Safety Incidents			
L.T.I.s			
Safety Observations		4	

Crew List - (Full Names):	Mick Dougal, Rosie Atkinson, Chris Tulley, Tom Anderson, Steve Dalton, Francis Farrow, Karlton Ward
Progress Comments - Plan Next 24 Hrs:	Simon Fowler leaving the vessel after altercation with Steve Dalton - New skipper onbaord 24/06/2015, expected midday, potential for MBES infill and CR camera drop depending on weather
Comments - Contractor Rep:	
Comments - Client Rep:	
Defects - Vessel & Equipment:	
Signatures:	Contractors Rep ..... Clients Rep ..... Date .....

BIBBY HYDROMAP
Committed to Quality and Innovation

DAILY PROGRESS REPORT

2015-021 // Holyhead Deep - CHARTWELL

Part of BIBBY MARINE SURVEY SERVICES LTD

Vessel	CH01 // Chartwell	Date	23-Jun-2015
Contractor		Report Nº	16
Client	XOD001 // Xodus Subsea		

Progress (UTC 00:00 - 24:00)

Acquisition Code	Site/Area Name/Description	Unit of Measure	Total Units to Complete	Total Units Complete Today	Total Units Completed To Date	% Complete
WORK	Acquisition	KM LINES	448		413.49	92.30
WORK-01	Additional Data Acquisition	KM LINES	0		0	0.00

Summary of Time

Status	Code Description	Previous hh:mm	Today Hours	Today Mins	Total hh:mm
BK-EQUIP	Breakdown - Survey/IT				00:00
BK-VESSEL	Breakdown - Vessel	18:45			18:45
DEMOB	De-Mobilisation				00:00
DISPUTE	Disputed Time				00:00
MOB	Mobilisation	70:52	12	45	83:37
ST-CLIENT	Stand Down - Client				00:00
ST-HYDRO	Stand Down - Hydromap		10	30	10:30
TRANSIT	Transit	06:45	0	24	07:09
WORK	Acquisition	132:18	0	21	132:39
WORK-01	Additional Data Acquisition				00:00
WOW	Waiting on weather				00:00
WOW-01	Waiting on Weather - Additional work				00:00
WOW-PORT	Waiting on Weather - PORT	131:19			131:19
WOW-SEA	Waiting on Weather - Sea				00:00
	Totals	360:00	24	0	384:00
	DPR Checksum	Op Hrs	24	Days	16.00

Comments - Contractor Rep:	
Comments - Client Rep:	
Signatures:	Contractors Rep ..... Clients Rep ..... Date .....

BIBBY HYDROMAP
Committed to Quality and Innovation

DAILY PROGRESS REPORT

2015-021 // Holyhead Deep - CHARTWELL

Part of BIBBY MARINE SURVEY SERVICES LTD

Vessel	CH01 // Chartwell	Date	24-Jun-2015
Contractor		Report Nº	17
Client	XOD001 // Xodus Subsea		

TIMES (UTC) From	TIMES (UTC) To	Code	Diary of Operations
00:00	11:30	ST-HYDRO	Alongside Holyhead - waiting for marine crew
11:30	12:00	WORK	Ken Neal from CMACS and Giles Simmons arrived on the vessel
12:00	12:42	WORK	Preparing vessel for departure
12:42	13:00	TRANSIT	Transit to CR site
13:00	13:24	WORK	SVP, MBES set up - TBT
13:24	14:24	WORK	MBES infill
14:24	15:24	WORK	Pole deployment, preparing camera deployment and TBT's
15:24	17:21	WORK	Commencing camera drops
17:21	17:42	WORK	Recovery of pole, sea safe camera gear
17:42	18:12	TRANSIT	Transit to Holyhead
18:12	00:00	WOW-PORT	Alongside Holyhead - WOW

Weather

Time		Obs. Wind (Dir/F)	Sea State	Forecast
00:00	06:00	SSW 5 to 6	MOD	N
06:00	12:00	SSW 4 to 5	MOD	
12:00	18:00	SSW 4	MOD	
18:00	00:00	SSW 5	MOD	Gale Wrn.

Personnel on site

Nº of Survey Crew	4	Client	1		
Nº of Vessel Crew	3	Total	8		

Environment

Bagged & Disposed Ashore		
Amount	50kg	
Type	General waste	

Vessel Fuel & Fresh Water

Fuel	4370	Litres
Water	1700	Litres

HSE

	Today	To Date	Comments
Safety Meeting		3	
Tool Box Talks	4	25	
Near Misses			
Safety Incidents			
L.T.I.s			
Safety Observations		4	

Crew List - (Full Names):	Mick Dougal, Rosie Atkinson, Chris Tulley, Steve Dalton, Francis Farrow, Karlton Ward, Ken Neal, Giles Simmons
Progress Comments - Plan Next 24 Hrs:	Tom Anderson off - Ken Neal and Giles Simmons on. Weather window possible from approx. 0600 to midday. Monitor weather
Comments - Contractor Rep:	
Comments - Client Rep:	
Defects - Vessel & Equipment:	
Signatures:	Contractors Rep ..... Clients Rep ..... Date .....

BIBBY HYDROMAP
Committed to Quality and Innovation

DAILY PROGRESS REPORT

2015-021 // Holyhead Deep - CHARTWELL

Part of BIBBY MARINE SURVEY SERVICES LTD

Vessel	CH01 // Chartwell	Date	24-Jun-2015
Contractor		Report Nº	17
Client	XOD001 // Xodus Subsea		

Progress (UTC 00:00 - 24:00)

Acquisition Code	Site/Area Name/Description	Unit of Measure	Total Units to Complete	Total Units Complete Today	Total Units Completed To Date	% Complete
WORK	Acquisition	KM LINES	448		413.49	92.30
WORK-01	Additional Data Acquisition	KM LINES	0		0	0.00

Summary of Time

Status	Code Description	Previous hh:mm	Today Hours	Today Mins	Total hh:mm
BK-EQUIP	Breakdown - Survey/IT				00:00
BK-VESSEL	Breakdown - Vessel	18:45			18:45
DEMOB	De-Mobilisation				00:00
DISPUTE	Disputed Time				00:00
MOB	Mobilisation	83:37			83:37
ST-CLIENT	Stand Down - Client				00:00
ST-HYDRO	Stand Down - Hydromap	10:30	11	30	22:00
TRANSIT	Transit	07:09	0	48	07:57
WORK	Acquisition	132:39	5	54	138:33
WORK-01	Additional Data Acquisition				00:00
WOW	Waiting on weather				00:00
WOW-01	Waiting on Weather - Additional work				00:00
WOW-PORT	Waiting on Weather - PORT	131:19	5	48	137:07
WOW-SEA	Waiting on Weather - Sea				00:00
	Totals	384:00	24	0	408:00
	DPR Checksum	Op Hrs	24	Days	17.00

Comments - Contractor Rep:	5 camera drops complete
Comments - Client Rep:	
Signatures:	Contractors Rep ..... Clients Rep ..... Date .....

BIBBY HYDROMAP
Committed to Quality and Innovation

DAILY PROGRESS REPORT

2015-021 // Holyhead Deep - CHARTWELL

Part of BIBBY MARINE SURVEY SERVICES LTD

Vessel	CH01 // Chartwell	Date	25-Jun-2015
Contractor		Report Nº	18
Client	XOD001 // Xodus Subsea		

TIMES (UTC) From	TIMES (UTC) To	Code	Diary of Operations
00:00	05:03	WOW-PORT	Alongside Holyhead -wow
05:03	05:21	TRANSIT	Transit to site
05:21	09:00	WORK	Continued survey operations - camera drops
09:00	11:09	WORK	Change camera to grab
11:09	11:21	TRANSIT	Transit to grab location
11:21	13:18	WORK	Continued survey operations - grabs
13:18	13:48	WORK	Rerigging camera
13:48	15:06	WORK	Attempt survey ops with camera, defeated by tide
15:06	15:33	WORK	Recover gear
15:33	16:06	TRANSIT	Transit to Holyhead
16:06	00:00	WOW-PORT	Alongside Holyhead

Weather

Time		Obs. Wind (Dir/F)	Sea State	Forecast	
00:00	06:00	SSW 4 to 5	MOD		
06:00	12:00	SSW 4	MOD		
12:00	18:00	S 4	MOD		
18:00	00:00	S 4	MOD	Gale Wrn.	N

Personnel on site

Nº of Survey Crew	4	Client	1		
Nº of Vessel Crew	3	Total	8		

Environment

Bagged & Disposed Ashore		
Amount	0kg	
Type		

Vessel Fuel & Fresh Water

Fuel	4000	Litres
Water	1000	Litres

HSE

	Today	To Date	Comments
Safety Meeting		3	
Tool Box Talks	7	32	
Near Misses			
Safety Incidents			
L.T.I.s			
Safety Observations	2	6	

Crew List - (Full Names):	Mick Dougal, Rosie Atkinson, Chris Tulley, Steve Dalton, Francis Farrow, Karlton Ward, Ken Neal, Giles Simmons
Progress Comments - Plan Next 24 Hrs:	
Comments - Contractor Rep:	
Comments - Client Rep:	Vessel working 12hr/day because of requirement to use all available manpower to deploy/recover camera and grab sampler
Defects - Vessel & Equipment:	
Signatures:	Contractors Rep ..... Clients Rep ..... Date .....

BIBBY HYDROMAP
Committed to Quality and Innovation

DAILY PROGRESS REPORT

2015-021 // Holyhead Deep - CHARTWELL

Part of BIBBY MARINE SURVEY SERVICES LTD

Vessel	CH01 // Chartwell	Date	25-Jun-2015
Contractor		Report Nº	18
Client	XOD001 // Xodus Subsea		

Progress (UTC 00:00 - 24:00)

Acquisition Code	Site/Area Name/Description	Unit of Measure	Total Units to Complete	Total Units Complete Today	Total Units Completed To Date	% Complete
WORK	Acquisition	KM LINES	448		413.49	92.30
WORK-01	Additional Data Acquisition	KM LINES	0		0	0.00

Summary of Time

Status	Code Description	Previous hh:mm	Today Hours	Today Mins	Total hh:mm
BK-EQUIP	Breakdown - Survey/IT				00:00
BK-VESSEL	Breakdown - Vessel	18:45			18:45
DEMOB	De-Mobilisation				00:00
DISPUTE	Disputed Time				00:00
MOB	Mobilisation	83:37			83:37
ST-CLIENT	Stand Down - Client				00:00
ST-HYDRO	Stand Down - Hydromap	22:00			22:00
TRANSIT	Transit	07:57	1	3	09:00
WORK	Acquisition	138:33	10	0	148:33
WORK-01	Additional Data Acquisition				00:00
WOW	Waiting on weather				00:00
WOW-01	Waiting on Weather - Additional work				00:00
WOW-PORT	Waiting on Weather - PORT	137:07	12	57	150:04
WOW-SEA	Waiting on Weather - Sea				00:00
	Totals	408:00	24	0	432:00
	DPR Checksum	Op Hrs	24	Days	18.00

Comments - Contractor Rep:	3 camera drops complete & 5 grab locations
Comments - Client Rep:	
Signatures:	Contractors Rep ..... Clients Rep ..... Date .....

BIBBY HYDROMAP
Committed to Quality and Innovation

DAILY PROGRESS REPORT

2015-021 // Holyhead Deep - CHARTWELL

Part of BIBBY MARINE SURVEY SERVICES LTD

Vessel	CH01 // Chartwell	Date	26-Jun-2015
Contractor		Report Nº	19
Client	XOD001 // Xodus Subsea		

TIMES (UTC) From	TIMES (UTC) To	Code	Diary of Operations
00:00	10:00	WOW-PORT	Alongside Holyhead
10:00	12:00	WOW-PORT	Party Chief handover, Mick Dougal depart
12:00	14:00	WOW-PORT	Deployment procedures planning and review
14:00	16:00	WOW-PORT	Equipment maintenance and project admin, vessel maintenance
16:00	18:00	WOW-PORT	Camera frame modifications
18:00	00:00	WOW-PORT	Alongside Holyhead

Weather

Time	Obs. Wind (Dir/F)	Sea State	Forecast
			S or SW 4 or 5, 6 at times. Slight or moderate.
			Gale Wrn. N

Personnel on site

Nº of Survey Crew	5	Client	1
Nº of Vessel Crew	3	Total	9

Environment

Bagged & Disposed Ashore		
Amount	4kg	
Type	Plastics, Food and Domestic waste	

Vessel Fuel & Fresh Water

Fuel	4000	Litres
Water	950	Litres

HSE

	Today	To Date	Comments
Safety Meeting		3	
Tool Box Talks		32	
Near Misses			
Safety Incidents			
L.T.I.s			
Safety Observations		6	

Crew List - (Full Names):	Nick Bowley, Mick Dougal, Rosie Atkinson, Chris Tulley, Steve Dalton, Francis Farrow, Karlton Ward, Ken Neal, Giles Simmons
Progress Comments - Plan Next 24 Hrs:	Waiting on weather and party chief change over today. Plan to sail at 0400Z tomorrow morning to continue benthic work scope.
Comments - Contractor Rep:	
Comments - Client Rep:	
Defects - Vessel & Equipment:	
Signatures:	Contractors Rep ..... Clients Rep ..... Date .....

BIBBY HYDROMAP
Committed to Quality and Innovation

DAILY PROGRESS REPORT

2015-021 // Holyhead Deep - CHARTWELL

Part of BIBBY MARINE SURVEY SERVICES LTD

Vessel	CH01 // Chartwell	Date	26-Jun-2015
Contractor		Report Nº	19
Client	XOD001 // Xodus Subsea		

Progress (UTC 00:00 - 24:00)

Acquisition Code	Site/Area Name/Description	Unit of Measure	Total Units to Complete	Total Units Complete Today	Total Units Completed To Date	% Complete
WORK	Acquisition	KM LINES	448		413.49	92.30
WORK-01	Additional Data Acquisition	KM LINES	0		0	0.00

Summary of Time

Status	Code Description	Previous hh:mm	Today Hours	Today Mins	Total hh:mm
BK-EQUIP	Breakdown - Survey/IT				00:00
BK-VESSEL	Breakdown - Vessel	18:45			18:45
DEMOB	De-Mobilisation				00:00
DISPUTE	Disputed Time				00:00
MOB	Mobilisation	83:37			83:37
ST-CLIENT	Stand Down - Client				00:00
ST-HYDRO	Stand Down - Hydromap	22:00			22:00
TRANSIT	Transit	09:00			09:00
WORK	Acquisition	148:33			148:33
WORK-01	Additional Data Acquisition				00:00
WOW	Waiting on weather				00:00
WOW-01	Waiting on Weather - Additional work				00:00
WOW-PORT	Waiting on Weather - PORT	150:04	24	0	174:04
WOW-SEA	Waiting on Weather - Sea				00:00
	Totals	432:00	24	0	456:00
	DPR Checksum	Op Hrs	24	Days	19.00

Comments - Contractor Rep:	
Comments - Client Rep:	
Signatures:	Contractors Rep ..... Clients Rep ..... Date .....

BIBBY HYDROMAP
Committed to Quality and Innovation

DAILY PROGRESS REPORT

2015-021 // Holyhead Deep - CHARTWELL

Part of BIBBY MARINE SURVEY SERVICES LTD

Vessel	CH01 // Chartwell	Date	27-Jun-2015
Contractor		Report Nº	20
Client	XOD001 // Xodus Subsea		

TIMES (UTC) From	To	Code	Diary of Operations
00:00	04:00	WOW-PORT	Alongside Holyhead
04:00	05:00	WORK	Depart Holyhead, transit to site
05:00	05:21	WORK	TBT, deploy USBL pole
05:21	06:15	WORK	TBT, deploy camera and begin benthic operations
06:15	06:30	BK-EQUIP	Breakdown, camera lamp malfunction
06:30	08:57	WORK	Continue camera operations
08:57	09:30	WORK	Camera operations no longer possible in PDA due to weather and tidal conditions, transit to site 38
09:30	09:45	WORK	Conference call
09:45	10:36	WORK	Camera drop at site 38, transit to site 39
10:36	10:45	WORK	Camera drop at site 39
10:45	11:12	WORK	Recover USBL pole, transit inshore to site 37
11:12	11:27	WORK	TBT to switch to DAY grab ops
11:27	11:36	WORK	DAY grab deployed and unsuccessful after 3 attempts
11:36	12:00	WORK	Switch to HAMON grab. 4 unsuccessful attempts
12:00	12:21	WORK	Weather to poor to continue operations, transit to Holyhead
12:21	16:00	WOW-PORT	Alongside Holyhead, project and vessel admin
16:00	00:00	WOW-PORT	Alongside Holyhead, waiting on weather

Weather

Time	Obs. Wind (Dir/F)		Sea State	Forecast
05:00	SW	4	Mod	S or SW 6-7
11:00	SW	4-5	Mod	decreasing 4-5, Mod
17:00	SW	5-6	Mod	or Rough
				Gale Wrn. Y

Environment

Bagged & Disposed Ashore	
Amount	0
Type	

HSE

	Today	To Date	Comments
Safety Meeting		3	Safety Obs: Survey
Tool Box Talks	3	35	room chairs to low
Near Misses			for desk and slip
Safety Incidents			hazard in galley due
L.T.I.s			to weather
Safety Observations	2	8	

Personnel on site

Nº of Survey Crew	4	Client	1
Nº of Vessel Crew	3	Total	8

Vessel Fuel & Fresh Water

Fuel	10025	Litres
Water	1200	Litres

Crew List - (Full Names):	Nick Bowley, Rosie Atkinson, Chris Tulley, Steve Dalton, Francis Farrow, Karlton Ward, Ken Neal, Giles Simmons
Progress Comments - Plan Next 24 Hrs:	24 of 41 camera drops have been completed successfully, a further 2 were unsuccessful and need repeating. The 1 grab location today was unsuccessful, 5 successful to date. Currently 31 grab locations are required in total, pending further camera works. Waiting on weather tomorrow with an aim to continue works on Monday.
Comments - Contractor Rep:	
Comments - Client Rep:	
Defects - Vessel & Equipment:	None
Signatures:	Contractors Rep ..... Clients Rep ..... Date .....

BIBBY HYDROMAP
Committed to Quality and Innovation

DAILY PROGRESS REPORT

2015-021 // Holyhead Deep - CHARTWELL

Part of BIBBY MARINE SURVEY SERVICES LTD

Vessel	CH01 // Chartwell	Date	27-Jun-2015
Contractor		Report Nº	20
Client	XOD001 // Xodus Subsea		

Progress (UTC 00:00 - 24:00)

Acquisition Code	Site/Area Name/Description	Unit of Measure	Total Units to Complete	Total Units Complete Today	Total Units Completed To Date	% Complete
WORK	Acquisition	KM LINES	448		413.49	92.30
WORK-01	Additional Data Acquisition	KM LINES	0		0	0.00

Summary of Time

Status	Code Description	Previous hh:mm	Today Hours	Today Mins	Total hh:mm
BK-EQUIP	Breakdown - Survey/IT		0	15	00:15
BK-VESSEL	Breakdown - Vessel	18:45			18:45
DEMOB	De-Mobilisation				00:00
DISPUTE	Disputed Time				00:00
MOB	Mobilisation	83:37			83:37
ST-CLIENT	Stand Down - Client				00:00
ST-HYDRO	Stand Down - Hydromap	22:00			22:00
TRANSIT	Transit	09:00			09:00
WORK	Acquisition	148:33	8	6	156:39
WORK-01	Additional Data Acquisition				00:00
WOW	Waiting on weather				00:00
WOW-01	Waiting on Weather - Additional work				00:00
WOW-PORT	Waiting on Weather - PORT	174:04	15	39	189:43
WOW-SEA	Waiting on Weather - Sea				00:00
	Totals	456:00	24	0	480:00
	DPR Checksum	Op Hrs	24	Days	20.00

Comments - Contractor Rep:	
Comments - Client Rep:	
Signatures:	Contractors Rep ..... Clients Rep ..... Date .....

BIBBY HYDROMAP
Committed to Quality and Innovation

DAILY PROGRESS REPORT

2015-021 // Holyhead Deep - CHARTWELL

Part of BIBBY MARINE SURVEY SERVICES LTD

Vessel	CH01 // Chartwell	Date	28-Jun-2015
Contractor		Report Nº	21
Client	XOD001 // Xodus Subsea		

TIMES (UTC) From	To	Code	Diary of Operations
00:00	06:00	WOW-PORT	Alongside Holyhead
06:00	09:30	WOW-PORT	Project and vessel admin
09:30	09:45	WOW-PORT	Conference Call
09:45	10:00	WOW-PORT	Project and vessel admin
10:00	10:45	WOW-PORT	Weekly Safety Meeting
10:45	13:00	WOW-PORT	Tidy vessel, sort void space storage, vessel off berth to allow Bibby Athena quayside access, vessel alongside to Bibby Athena
13:00	13:45	WOW-PORT	Lunch
13:45	14:30	WOW-PORT	Excess equipment not in use craned onto quayside
14:30	16:00	WOW-PORT	Clean and tidy vessel
16:00	16:30	WOW-PORT	Bibby Athena Departs, vessel back alongside quay
16:30	00:00	WOW-PORT	Alongside Holyhead

Weather					Environment			HSE			
Time	Obs. Wind (Dir/F)		Sea State	Forecast	Bagged & Disposed Ashore				Today	To Date	Comments
				F4-5 occasionally 3,	Amount	12kg					
				Increasing F6-7 later.	Type	Plastic, Food and Domestic		Safety Meeting	1	4	
				Moderate.				Tool Box Talks		32	
				Gale Wrn. Y				Near Misses			
Personnel on site					Vessel Fuel & Fresh Water			Safety Incidents			
Nº of Survey Crew			4	Client 1	Fuel	9675	Litres	L.T.I.s			
Nº of Vessel Crew			3	Total 8	Water	1700	Litres	Safety Observations		6	

Crew List - (Full Names):	Nick Bowley, Rosie Atkinson, Chris Tulley, Steve Dalton, Francis Farrow, Karlton Ward, Ken Neal, Giles Simmons
Progress Comments - Plan Next 24 Hrs:	Plan for tomorrow is to depart Holyhead at 05:00Z to make use of the potential weather window during the day on Monday. This looks to last until mid afternoon at the latest. We will commence with Grab operations in the more sheltered areas.
Comments - Contractor Rep:	
Comments - Client Rep:	
Defects - Vessel & Equipment:	None
Signatures:	Contractors Rep ..... Clients Rep ..... Date .....

BIBBY HYDROMAP
Committed to Quality and Innovation

DAILY PROGRESS REPORT

2015-021 // Holyhead Deep - CHARTWELL

Part of BIBBY MARINE SURVEY SERVICES LTD

Vessel	CH01 // Chartwell	Date	28-Jun-2015
Contractor		Report Nº	21
Client	XOD001 // Xodus Subsea		

Progress (UTC 00:00 - 24:00)

Acquisition Code	Site/Area Name/Description	Unit of Measure	Total Units to Complete	Total Units Complete Today	Total Units Completed To Date	% Complete
WORK	Acquisition	KM LINES	448		413.49	92.30
WORK-01	Additional Data Acquisition	KM LINES	0		0	0.00

Summary of Time

Status	Code Description	Previous hh:mm	Today Hours	Today Mins	Total hh:mm
BK-EQUIP	Breakdown - Survey/IT				00:00
BK-VESSEL	Breakdown - Vessel	18:45			18:45
DEMOB	De-Mobilisation				00:00
DISPUTE	Disputed Time				00:00
MOB	Mobilisation	83:37			83:37
ST-CLIENT	Stand Down - Client				00:00
ST-HYDRO	Stand Down - Hydromap	22:00			22:00
TRANSIT	Transit	09:00			09:00
WORK	Acquisition	148:33			148:33
WORK-01	Additional Data Acquisition				00:00
WOW	Waiting on weather				00:00
WOW-01	Waiting on Weather - Additional work				00:00
WOW-PORT	Waiting on Weather - PORT	174:04	24	0	198:04
WOW-SEA	Waiting on Weather - Sea				00:00
	Totals	456:00	24	0	480:00
	DPR Checksum	Op Hrs	24	Days	20.00

Comments - Contractor Rep:	
Comments - Client Rep:	
Signatures:	Contractors Rep ..... Clients Rep ..... Date .....

BIBBY HYDROMAP
Committed to Quality and Innovation

DAILY PROGRESS REPORT

2015-021 // Holyhead Deep - CHARTWELL

Part of BIBBY MARINE SURVEY SERVICES LTD

Vessel	CH01 // Chartwell	Date	29-Jun-2015
Contractor		Report Nº	22
Client	XOD001 // Xodus Subsea		

TIMES (UTC) From	TIMES (UTC) To	Code	Diary of Operations
00:00	05:00	WOW-PORT	Alongside Holyhead
05:00	05:27	WORK	Depart Holyhead, Transit to site
05:27	05:51	WORK	TBT's for SVP dip, USBL pole and grab deployment.
05:51	06:21	WORK	SVP dip, deploy USBL pole, manouvre onto first grab location
06:21	09:30	WORK	Commence Grab operations
09:30	09:42	WORK	Conference call
09:42	11:51	WORK	Continue Grab Ops
11:51	14:30	WORK	Transit to breakwater, TBT's to swap grab/camera and deploy camera. Swap out gear, process samples, transit to site
14:30	17:00	WORK	Camera Ops
17:00	17:12	WORK	Camera ops complete, recover camera and USBL pole.
17:12	17:54	WORK	Transit to Holyhead
17:54	00:00	WOW-PORT	Alongside Holyhead

Weather

Time	Obs. Wind (Dir/F)		Sea State	Forecast
06:00	SW	F4	slight/mod	F4-5 becoming 3
11:00	SW	F4-5	slight	later, mod becoming
17:00	SSW	F4	slight	slight
				Gale Wrn. N

Personnel on site

Nº of Survey Crew	4	Client	1
Nº of Vessel Crew	3	Total	8

Environment

Bagged & Disposed Ashore		
Amount	0	
Type		

Vessel Fuel & Fresh Water

Fuel	9000	Litres
Water	1300	Litres

HSE

	Today	To Date	Comments
Safety Meeting		4	SO: Cupboard doors
Tool Box Talks	5	40	not secured properly
Near Misses			at sea.
Safety Incidents			
L.T.I.s			
Safety Observations	1	9	

Crew List - (Full Names):	Nick Bowley, Rosie Atkinson, Chris Tulley, Steve Dalton, Francis Farrow, Karlton Ward, Ken Neal, Giles Simmons
Progress Comments - Plan Next 24 Hrs:	Camera operations complete. Site 40 has been abandoned for both grab and camera ops due to predicted tidal stength at location. Plan for the next 24 hours is to sail around midday to continue grab operations.
Comments - Contractor Rep:	Whilst sea state remains slight during operations, swell builds quickly and is the main issue with camera and grab deployments. Crew worked above and beyond today and this resulted in the safe, successful completion of the camera operations.
Comments - Client Rep:	As above noted above crew worked well and safely throughout the grab and camera operations.
Defects - Vessel & Equipment:	
Signatures:	Contractors Rep ..... Clients Rep ..... Date .....

BIBBY HYDROMAP
Committed to Quality and Innovation

DAILY PROGRESS REPORT

2015-021 // Holyhead Deep - CHARTWELL

Part of BIBBY MARINE SURVEY SERVICES LTD

Vessel	CH01 // Chartwell	Date	29-Jun-2015
Contractor		Report Nº	22
Client	XOD001 // Xodus Subsea		

Progress (UTC 00:00 - 24:00)

Acquisition Code	Site/Area Name/Description	Unit of Measure	Total Units to Complete	Total Units Complete Today	Total Units Completed To Date	% Complete
WORK	Acquisition	KM LINES	448		413.49	92.30
WORK-01	Additional Data Acquisition	KM LINES	0		0	0.00

Summary of Time

Status	Code Description	Previous hh:mm	Today Hours	Today Mins	Total hh:mm
BK-EQUIP	Breakdown - Survey/IT	00:15			00:15
BK-VESSEL	Breakdown - Vessel	18:45			18:45
DEMOB	De-Mobilisation				00:00
DISPUTE	Disputed Time				00:00
MOB	Mobilisation	83:37			83:37
ST-CLIENT	Stand Down - Client				00:00
ST-HYDRO	Stand Down - Hydromap	22:00			22:00
TRANSIT	Transit	09:00			09:00
WORK	Acquisition	156:39	12	54	169:33
WORK-01	Additional Data Acquisition				00:00
WOW	Waiting on weather				00:00
WOW-01	Waiting on Weather - Additional work				00:00
WOW-PORT	Waiting on Weather - PORT	213:43	11	6	224:49
WOW-SEA	Waiting on Weather - Sea				00:00
	Totals	504:00	24	0	528:00
	DPR Checksum	Op Hrs	24	Days	22.00

Comments - Contractor Rep:	40 camera sites complete, 1 abandoned. 16 grab sites to attempt.
Comments - Client Rep:	
Signatures:	Contractors Rep ..... Clients Rep ..... Date .....

BIBBY HYDROMAP
Committed to Quality and Innovation

DAILY PROGRESS REPORT

2015-021 // Holyhead Deep - CHARTWELL

Part of BIBBY MARINE SURVEY SERVICES LTD

Vessel	CH01 // Chartwell	Date	30-Jun-2015
Contractor		Report Nº	23
Client	XOD001 // Xodus Subsea		

TIMES (UTC) From	TIMES (UTC) To	Code	Diary of Operations
00:00	09:30	WOW-PORT	Alongside Holyhead, waiting on weather
09:30	09:45	WOW-PORT	Conference call
09:45	10:00	WOW-PORT	Muster drill
10:00	10:30	WOW-PORT	Crew swap out Chris Tulley for Joel Kimber, induction.
10:30	11:30	WOW-PORT	Swap over camera for Grab
11:30	11:42	WORK	Depart Holyhead, transit to site
11:42	12:00	WORK	TBTs for SVP, USBL pole and Grab deployment. SVP Dip
12:00	12:15	WORK	Transit to grab location
12:15	12:45	WORK	Grab attempt at location 12. Swell beyond safe limits and winch feeder has moving across the drum
12:45	13:21	WORK	Recover USBL pole, head inshore for extra MBES work
13:21	13:42	WORK	RAF Rescue helo training on backdeck
13:42	13:45	WORK-01	Arrive at extra MBES work location. SVP dip
13:45	17:00	WORK-01	Extra MBES work
17:00	17:15	WORK-01	MBES work complete, SVP dip, transit to Holyhead
17:15	19:00	BK-VESSEL	Alongside Holyhead, embark electrician to look at Winch feeder
19:00	00:00	BK-VESSEL	Hydraulic soft start motor failure, waiting on qualified engineer

Weather

Time	Obs. Wind (Dir/F)		Sea State	Forecast
11:30	SW	F3-4	Slight	F2 increasing F5 later.
15:00	SW	F2-3	Smooth	Slight.
				Gale Wrn. N

Personnel on site

Nº of Survey Crew	4	Client	1
Nº of Vessel Crew	3	Total	8

Environment

Bagged & Disposed Ashore		
Amount	10kg	
Type	Plastics, Food and Domestic Waste	

Vessel Fuel & Fresh Water

Fuel	8700	Litres
Water	1000	Litres

HSE

	Today	To Date	Comments
Safety Meeting		4	
Tool Box Talks	3	43	
Near Misses			
Safety Incidents			
L.T.I.s			
Safety Observations		9	

Crew List - (Full Names):	Nick Bowley, Rosie Atkinson, Joel Kimber, Steve Dalton, Francis Farrow, Karlton Ward, Ken Neal, Giles Simmons
Progress Comments - Plan Next 24 Hrs:	Completed extra MBES work. Waiting on hydraulics to be fixed and when fixed the plan is to sail to continue grab operations.
Comments - Contractor Rep:	
Comments - Client Rep:	
Defects - Vessel & Equipment:	Winch feeder is not moving across the winch drum. Hydraulic soft start motor faults.
Signatures:	Contractors Rep ..... Clients Rep ..... Date .....

BIBBY HYDROMAP
Committed to Quality and Innovation

DAILY PROGRESS REPORT

2015-021 // Holyhead Deep - CHARTWELL

Part of BIBBY MARINE SURVEY SERVICES LTD

Vessel	CH01 // Chartwell	Date	30-Jun-2015
Contractor		Report Nº	23
Client	XOD001 // Xodus Subsea		

Progress (UTC 00:00 - 24:00)

Acquisition Code	Site/Area Name/Description	Unit of Measure	Total Units to Complete	Total Units Complete Today	Total Units Completed To Date	% Complete
WORK	Acquisition	KM LINES	448		413.49	92.30
WORK-01	Additional Data Acquisition	KM LINES	0		0	0.00

Summary of Time

Status	Code Description	Previous hh:mm	Today Hours	Today Mins	Total hh:mm
BK-EQUIP	Breakdown - Survey/IT	00:15			00:15
BK-VESSEL	Breakdown - Vessel	18:45	6	45	25:30
DEMOB	De-Mobilisation				00:00
DISPUTE	Disputed Time				00:00
MOB	Mobilisation	83:37			83:37
ST-CLIENT	Stand Down - Client				00:00
ST-HYDRO	Stand Down - Hydromap	22:00			22:00
TRANSIT	Transit	09:00			09:00
WORK	Acquisition	169:30	2	12	171:42
WORK-01	Additional Data Acquisition		3	33	03:33
WOW	Waiting on weather				00:00
WOW-01	Waiting on Weather - Additional work				00:00
WOW-PORT	Waiting on Weather - PORT	224:52	11	30	236:22
WOW-SEA	Waiting on Weather - Sea				00:00
	Totals	528:00	24	0	552:00
	DPR Checksum	Op Hrs	24	Days	23.00

Comments - Contractor Rep:	16 grab locations remaining
Comments - Client Rep:	
Signatures:	Contractors Rep ..... Clients Rep ..... Date .....

BIBBY HYDROMAP
Committed to Quality and Innovation

DAILY PROGRESS REPORT

2015-021 // Holyhead Deep - CHARTWELL

Part of BIBBY MARINE SURVEY SERVICES LTD

Vessel	CH01 // Chartwell	Date	01-Jul-2015
Contractor		Report Nº	24
Client	XOD001 // Xodus Subsea		

TIMES (UTC) From	TIMES (UTC) To	Code	Diary of Operations
00:00	07:30	BK-VESSEL	Alongside Holyhead
07:30	11:00	BK-VESSEL	Engineers onboard to fix Hydraulics
11:00	11:12	WORK	Deapart Holyhead
11:12	11:45	WORK	TBTs for SVP, USBL pole deployment and Grab ops
11:45	12:00	WORK	SVP Dip, USBL pole deployed
12:00	17:27	WORK	Grab sampling operations
17:27	17:36	WORK	Recover Grab and USBL pole
17:36	18:12	WORK	Transit to Holyhead
18:12	00:00	DEMOB	Alongside Holyhead

Weather

Time	Obs. Wind (Dir/F)		Sea State	Forecast
11:00	S	F3	Slight	F4-5, Slight or Moderate
15:00	SW	F3-4	Slight	
				Gale Wrn. N

Personnel on site

Nº of Survey Crew	4	Client	1
Nº of Vessel Crew	3	Total	8

Environment

Bagged & Disposed Ashore	
Amount	0kg
Type	

Vessel Fuel & Fresh Water

Fuel	9195	Litres
Water	1200	Litres

HSE

	Today	To Date	Comments
Safety Meeting		4	
Tool Box Talks	3	46	
Near Misses			
Safety Incidents			
L.T.I.s			
Safety Observations		9	

Crew List - (Full Names):	Nick Bowley, Rosie Atkinson, Joel Kimber, Steve Dalton, Francis Farrow, Karlton Ward, Ken Neal, Giles Simmons
Progress Comments - Plan Next 24 Hrs:	Benthic Survey Complete. Demob vessel tomorrow, R Atkinson, J Kimber, K Neal and F Farrow to disembark and depart for Liverpool.
Comments - Contractor Rep:	Good teamwork and communication from a determined team ensured safe, successful completion of the Grab operations.
Comments - Client Rep:	The survey and marine crew worked as a team throughout the survey and environmental work, which was a great asset in seeing a successful and safe completion of the project
Defects - Vessel & Equipment:	Winch feeder and hydraulics fixed
Signatures:	Contractors Rep ..... Clients Rep ..... Date .....

BIBBY HYDROMAP
Committed to Quality and Innovation

DAILY PROGRESS REPORT

2015-021 // Holyhead Deep - CHARTWELL

Part of BIBBY MARINE SURVEY SERVICES LTD

Vessel	CH01 // Chartwell	Date	01-Jul-2015
Contractor		Report Nº	24
Client	XOD001 // Xodus Subsea		

Progress (UTC 00:00 - 24:00)

Acquisition Code	Site/Area Name/Description	Unit of Measure	Total Units to Complete	Total Units Complete Today	Total Units Completed To Date	% Complete
WORK	Acquisition	KM LINES	448		413.49	92.30
WORK-01	Additional Data Acquisition	KM LINES	0		0	0.00

Summary of Time

Status	Code Description	Previous hh:mm	Today Hours	Today Mins	Total hh:mm
BK-EQUIP	Breakdown - Survey/IT	00:15			00:15
BK-VESSEL	Breakdown - Vessel	25:30	11	0	36:30
DEMOB	De-Mobilisation		5	48	05:48
DISPUTE	Disputed Time				00:00
MOB	Mobilisation	83:37			83:37
ST-CLIENT	Stand Down - Client				00:00
ST-HYDRO	Stand Down - Hydromap	22:00			22:00
TRANSIT	Transit	09:00			09:00
WORK	Acquisition	171:42	7	12	178:54
WORK-01	Additional Data Acquisition	03:33			03:33
WOW	Waiting on weather				00:00
WOW-01	Waiting on Weather - Additional work				00:00
WOW-PORT	Waiting on Weather - PORT	236:22			236:22
WOW-SEA	Waiting on Weather - Sea				00:00
	Totals	552:00	24	0	576:00
	DPR Checksum	Op Hrs	24	Days	24.00

Comments - Contractor Rep:	All Grab locations attempted, survey complete
Comments - Client Rep:	
Signatures:	Contractors Rep ..... Clients Rep ..... Date .....

BIBBY HYDROMAP
Committed to Quality and Innovation

DAILY PROGRESS REPORT

2015-021 // Holyhead Deep - CHARTWELL

Part of BIBBY MARINE SURVEY SERVICES LTD

Vessel	CH01 // Chartwell	Date	02-Jul-2015
Contractor		Report Nº	25
Client	XOD001 // Xodus Subsea		

TIMES (UTC) From	TIMES (UTC) To	Code	Diary of Operations
00:00	00:00	DEMOB	Demobilisation of the vessel, MV Chartwell returned to Liverpool

Weather					Environment			HSE			
Time	Obs. Wind (Dir/F)		Sea State	Forecast	Bagged & Disposed Ashore				Today	To Date	Comments
					Amount						
					Type			Safety Meeting		4	
								Tool Box Talks		46	
				Gale Wrn.				Near Misses			
Personnel on site					**Vessel Fuel & Fresh Water**			Safety Incidents			
Nº of Survey Crew		4	Client	1	Fuel		Litres	L.T.I.s			
Nº of Vessel Crew		3	Total	8	Water		Litres	Safety Observations		9	

Crew List - (Full Names):	Nick Bowley, Rosie Atkinson, Joel Kimber, Steve Dalton, Francis Farrow, Karlton Ward, Ken Neal, Giles Simmons
Progress Comments - Plan Next 24 Hrs:	
Comments - Contractor Rep:	
Comments - Client Rep:	
Defects - Vessel & Equipment:	
Signatures:	Contractors Rep ..... Clients Rep ..... Date .....

BIBBY HYDROMAP
Committed to Quality and Innovation

DAILY PROGRESS REPORT

2015-021 // Holyhead Deep - CHARTWELL

Part of BIBBY MARINE SURVEY SERVICES LTD

Vessel	CH01 // Chartwell	Date	02-Jul-2015
Contractor		Report Nº	25
Client	XOD001 // Xodus Subsea		

Progress (UTC 00:00 - 24:00)

Acquisition Code	Site/Area Name/Description	Unit of Measure	Total Units to Complete	Total Units Complete Today	Total Units Completed To Date	% Complete
WORK	Acquisition	KM LINES	448		413.49	92.30
WORK-01	Additional Data Acquisition	KM LINES	0		0	0.00

Summary of Time

Status	Code Description	Previous hh:mm	Today Hours	Today Mins	Total hh:mm
BK-EQUIP	Breakdown - Survey/IT	00:15			00:15
BK-VESSEL	Breakdown - Vessel	36:30			36:30
DEMOB	De-Mobilisation	05:48	24	0	29:48
DISPUTE	Disputed Time				00:00
MOB	Mobilisation	83:37			83:37
ST-CLIENT	Stand Down - Client				00:00
ST-HYDRO	Stand Down - Hydromap	22:00			22:00
TRANSIT	Transit	09:00			09:00
WORK	Acquisition	178:54			178:54
WORK-01	Additional Data Acquisition	03:33			03:33
WOW	Waiting on weather				00:00
WOW-01	Waiting on Weather - Additional work				00:00
WOW-PORT	Waiting on Weather - PORT	236:22			236:22
WOW-SEA	Waiting on Weather - Sea				00:00
	Totals	576:00	24	0	600:00
	DPR Checksum	Op Hrs	24	Days	25.00

Comments - Contractor Rep:	16 grab locations remaining
Comments - Client Rep:	
Signatures:	Contractors Rep ..... Clients Rep ..... Date .....

BIBBY HYDROMAP
Committed to Quality and Innovation

DAILY PROGRESS REPORT

2015-021A // Holyhead Deep - EAGLE - NO PROCESSING

Part of BIBBY MARINE SURVEY SERVICES LTD

Vessel	EA01 // Eagle	Date	02-Jul-2015
Contractor		Report Nº	1
Client	XOD001 // Xodus Subsea		

TIMES (UTC) From	TIMES (UTC) To	Code	Diary of Operations
08:30	10:30	MOB	Project paperwork and loading equipment at Brombrough Offices
10:30	12:30	MOB	Travel to Holyhead Marina
12:30	19:00	BK-VESSEL	Vessel Checks and fault finding from intermittet engin faults. Rectified
19:00	20:30	MOB	continue Mobilising vessel for survey operations

Weather					Environment			HSE			
Time	Obs. Wind (Dir/F)		Sea State	Forecast	Bagged & Disposed Ashore				Today	To Date	Comments
					Amount						
					Type			Safety Meeting			
								Tool Box Talks			
				Gale Wrn.				Near Misses			
Personnel on site					**Vessel Fuel & Fresh Water**			Safety Incidents			
Nº of Survey Crew		2	Client	0	Fuel		Litres	L.T.I.s			
Nº of Vessel Crew		2	Total	4	Water		Litres	Safety Observations			

Crew List - (Full Names):	Tony Barcley (Skipper), Josh Erret (Surveyor), David Rider(Geo/Party Chief), Richard Thrlow (Skipper)
Progress Comments - Plan Next 24 Hrs:	Continue Mobilisation of Survey equipment.
Comments - Contractor Rep:	Vessel propolsion system began the day with intermittend faults which have been rectified. This has limited progress of the mobilsation.
Comments - Client Rep:	
Defects - Vessel & Equipment:	Bucket drive hydralics is likely to have an air leak which can be rectified by keeping the hydralc oil levels high.
Signatures:	Contractors Rep ..... Clients Rep ..... Date 03/07/2015

BIBBY HYDROMAP
Committed to Quality and Innovation

DAILY PROGRESS REPORT

2015-021A // Holyhead Deep - EAGLE - NO PROCESSING

Part of BIBBY MARINE SURVEY SERVICES LTD

Vessel	EA01 // Eagle	Date	02-Jul-2015
Contractor		Report Nº	1
Client	XOD001 // Xodus Subsea		

Progress (UTC 00:00 - 24:00)

Acquisition Code	Site/Area Name/Description	Unit of Measure	Total Units to Complete	Total Units Complete Today	Total Units Completed To Date	% Complete
WORK	Acquisition		0		0	0.00

Summary of Time

Status	Code Description	Previous hh:mm	Today Hours	Today Mins	Total hh:mm
BK-EQUIP	Breakdown - Survey/IT				00:00
BK-VESSEL	Breakdown - Vessel		6	30	06:30
DEMOB	De-Mobilisation				00:00
DISPUTE	Disputed Time				00:00
MOB	Mobilisation		5	30	05:30
ST-CLIENT	Stand Down - Client				00:00
ST-HYDRO	Stand Down - Hydromap				00:00
TRANSIT	Transit				00:00
WORK	Acquisition				00:00
WOW	Waiting on weather				00:00
WOW-PORT	Waiting on Weather - PORT				00:00
WOW-SEA	Waiting on Weather - Sea				00:00
	Totals	00:00	12	0	12:00
	DPR Checksum	Op Hrs	12	Days	1.00

Comments - Contractor Rep:	
Comments - Client Rep:	
Signatures:	Contractors Rep ..... Clients Rep ..... Date .....

BIBBY HYDROMAP
Committed to Quality and Innovation

DAILY PROGRESS REPORT

2015-021A // Holyhead Deep - EAGLE - NO PROCESSING

Part of BIBBY MARINE SURVEY SERVICES LTD

Vessel	EA01 // Eagle	Date	03-Jul-2015
Contractor		Report Nº	2
Client	XOD001 // Xodus Subsea		

TIMES (UTC) From	TIMES (UTC) To	Code	Diary of Operations
08:00	20:00	MOB	Continue Mobilisation of Survey Equipment

Weather					Environment			HSE			
Time	Obs. Wind (Dir/F)		Sea State	Forecast	Bagged & Disposed Ashore				Today	To Date	Comments
					Amount						
					Type			Safety Meeting			
								Tool Box Talks			
				Gale Wrn.				Near Misses			
Personnel on site					**Vessel Fuel & Fresh Water**			Safety Incidents			
Nº of Survey Crew			1	Client 1	Fuel		Litres	L.T.I.s			
Nº of Vessel Crew			2	Total 4	Water		Litres	Safety Observations			

Crew List - (Full Names):	Josh Erret (Surveyor), David Rider(Geo/Party Chief), Richard Thrlow (Skipper), Manuela Secomandi (Client Rep)
Progress Comments - Plan Next 24 Hrs:	Continue last few remaing items in Mobilisation and heading calibration. Hope to begin survey operations in the afternoon.
Comments - Contractor Rep:	
Comments - Client Rep:	
Defects - Vessel & Equipment:	
Signatures:	Contractors Rep ..... Clients Rep ..... Date 03/07/2015 .....

BIBBY HYDROMAP
Committed to Quality and Innovation

DAILY PROGRESS REPORT

2015-021A // Holyhead Deep - EAGLE - NO PROCESSING

Part of BIBBY MARINE SURVEY SERVICES LTD

Vessel	EA01 // Eagle	Date	03-Jul-2015
Contractor		Report Nº	2
Client	XOD001 // Xodus Subsea		

Progress (UTC 00:00 - 24:00)

Acquisition Code	Site/Area Name/Description	Unit of Measure	Total Units to Complete	Total Units Complete Today	Total Units Completed To Date	% Complete
WORK	Acquisition		0		0	0.00

Summary of Time

Status	Code Description	Previous hh:mm	Today Hours	Today Mins	Total hh:mm
BK-EQUIP	Breakdown - Survey/IT				00:00
BK-VESSEL	Breakdown - Vessel	06:30			06:30
DEMOB	De-Mobilisation				00:00
DISPUTE	Disputed Time				00:00
MOB	Mobilisation	05:30	12	0	17:30
ST-CLIENT	Stand Down - Client				00:00
ST-HYDRO	Stand Down - Hydromap				00:00
TRANSIT	Transit				00:00
WORK	Acquisition				00:00
WOW	Waiting on weather				00:00
WOW-PORT	Waiting on Weather - PORT				00:00
WOW-SEA	Waiting on Weather - Sea				00:00
	Totals	12:00	12	0	24:00
	DPR Checksum	Op Hrs	12	Days	2.00

Comments - Contractor Rep:	
Comments - Client Rep:	
Signatures:	Contractors Rep ..... Clients Rep ..... Date .....

BIBBY HYDROMAP
Committed to Quality and Innovation

DAILY PROGRESS REPORT

2015-021A // Holyhead Deep - EAGLE - NO PROCESSING

Part of BIBBY MARINE SURVEY SERVICES LTD

Vessel	EA01 // Eagle	Date	04-Jul-2015
Contractor		Report Nº	3
Client	XOD001 // Xodus Subsea		

TIMES (UTC) From	TIMES (UTC) To	Code	Diary of Operations
07:30	08:00	MOB	Travel to Beach to inspect Site from Shore at mid Tide
08:00	11:30	MOB	Onboard complete Vessel tests and continue Mobilising for survey operations
11:30	13:40	MOB	Begin calibrating and verification checks
13:40	19:30	WOW	Transit to end of breakwater to asses weather is not suitible for survey operations

Weather					Environment			HSE			
Time	Obs. Wind (Dir/F)		Sea State	Forecast	Bagged & Disposed Ashore				Today	To Date	Comments
13:40	SSW	6-7	Slight	5-6 SSW	Amount	6Kg					
					Type	General waste		Safety Meeting			
								Tool Box Talks			
				Gale Wrn.				Near Misses			
Personnel on site					Vessel Fuel & Fresh Water			Safety Incidents			
Nº of Survey Crew			1	Client 1	Fuel		Litres	L.T.I.s			
Nº of Vessel Crew			2	Total 4	Water		Litres	Safety Observations			

Crew List - (Full Names):	Josh Erratt (Surveyor), David Rider(Geo/Party Chief), Richard Thurlow (Skipper), Manuela Secomandi (Client Rep)
Progress Comments - Plan Next 24 Hrs:	Beging Survey operations using the high water to get as much overlap as possible with land data
Comments - Contractor Rep:	
Comments - Client Rep:	
Defects - Vessel & Equipment:	
Signatures:	Contractors Rep ..... Clients Rep ..... Date 03/07/2015 .....

BIBBY HYDROMAP
Committed to Quality and Innovation

DAILY PROGRESS REPORT

2015-021A // Holyhead Deep - EAGLE - NO PROCESSING

Part of BIBBY MARINE SURVEY SERVICES LTD

Vessel	EA01 // Eagle	Date	04-Jul-2015
Contractor		Report Nº	3
Client	XOD001 // Xodus Subsea		

Progress (UTC 00:00 - 24:00)

Acquisition Code	Site/Area Name/Description	Unit of Measure	Total Units to Complete	Total Units Complete Today	Total Units Completed To Date	% Complete
WORK	Acquisition		0		0	0.00

Summary of Time

Status	Code Description	Previous hh:mm	Today Hours	Today Mins	Total hh:mm
BK-EQUIP	Breakdown - Survey/IT				00:00
BK-VESSEL	Breakdown - Vessel	06:30			06:30
DEMOB	De-Mobilisation				00:00
DISPUTE	Disputed Time				00:00
MOB	Mobilisation	17:30	6	10	23:40
ST-CLIENT	Stand Down - Client				00:00
ST-HYDRO	Stand Down - Hydromap				00:00
TRANSIT	Transit				00:00
WORK	Acquisition				00:00
WOW	Waiting on weather		5	50	05:50
WOW-PORT	Waiting on Weather - PORT				00:00
WOW-SEA	Waiting on Weather - Sea				00:00
	Totals	24:00	12	0	36:00
	DPR Checksum	Op Hrs	12	Days	3.00

Comments - Contractor Rep:	
Comments - Client Rep:	
Signatures:	Contractors Rep ..... Clients Rep ..... Date .....

BIBBY HYDROMAP
Committed to Quality and Innovation

DAILY PROGRESS REPORT

2015-021A // Holyhead Deep - EAGLE - NO PROCESSING

Part of BIBBY MARINE SURVEY SERVICES LTD

Vessel	EA01 // Eagle	Date	05-Jul-2015
Contractor		Report Nº	4
Client	XOD001 // Xodus Subsea		

TIMES (UTC) From	TIMES (UTC) To	Code	Diary of Operations
08:00	08:15	WORK	On-board vessel checks and set up for survey operations
08:15	08:30	TRANSIT	Transit to site and recce the site
08:30	09:00	WORK	Deploy SSS and Magnetometer
09:00	13:15	WORK	Begin survey operations on the site
13:15	13:25	WORK	Recover gear and asses data for coverage and Grab/camera locations
13:25	14:21	WORK	Commence grab operations, 1 successful grab at GS1. Three attempts made at each location
14:21	20:00	WORK	Transit back to Holyhead Marina to begin data assessment and demobilisation

Weather

Time	Obs. Wind (Dir/F)		Sea State	Forecast
12:00	SSW	4-5	Slight	4-5 SSW
				Gale Wrn.

Environment

Bagged & Disposed Ashore		
Amount	2Kg	
Type	General waste	

Personnel on site

Nº of Survey Crew	1	Client	1
Nº of Vessel Crew	2	Total	4

Vessel Fuel & Fresh Water

Fuel		Litres
Water		Litres

HSE

	Today	To Date	Comments
Safety Meeting			Survey Crew showed good communication during shallow water operations.
Tool Box Talks	3	3	
Near Misses			
Safety Incidents			
L.T.I.s			
Safety Observations	1	1	

Crew List - (Full Names):	Josh Erratt (Surveyor), David Rider(Geo/Party Chief), Richard Thurlow (Skipper), Manuela Secomandi (Client Rep)
Progress Comments - Plan Next 24 Hrs:	Demobilise and data drop back to the office.
Comments - Contractor Rep:	Completion of all areas of the site accomplishing overlap with both chartwell datasets and land environmental datasets.
Comments - Client Rep:	
Defects - Vessel & Equipment:	
Signatures:	Contractors Rep ..... Clients Rep ..... Date 03/07/2015 .....

BIBBY HYDROMAP
Committed to Quality and Innovation

DAILY PROGRESS REPORT

2015-021A // Holyhead Deep - EAGLE - NO PROCESSING

Part of BIBBY MARINE SURVEY SERVICES LTD

Vessel	EA01 // Eagle	Date	05-Jul-2015
Contractor		Report Nº	4
Client	XOD001 // Xodus Subsea		

Progress (UTC 00:00 - 24:00)

Acquisition Code	Site/Area Name/Description	Unit of Measure	Total Units to Complete	Total Units Complete Today	Total Units Completed To Date	% Complete
WORK	Acquisition		0		0	0.00

Summary of Time

Status	Code Description	Previous hh:mm	Today Hours	Today Mins	Total hh:mm
BK-EQUIP	Breakdown - Survey/IT				00:00
BK-VESSEL	Breakdown - Vessel	06:30			06:30
DEMOB	De-Mobilisation				00:00
DISPUTE	Disputed Time				00:00
MOB	Mobilisation	23:40			23:40
ST-CLIENT	Stand Down - Client				00:00
ST-HYDRO	Stand Down - Hydromap				00:00
TRANSIT	Transit		0	15	00:15
WORK	Acquisition		11	45	11:45
WOW	Waiting on weather	05:49			05:49
WOW-PORT	Waiting on Weather - PORT				00:00
WOW-SEA	Waiting on Weather - Sea				00:00
	Totals	36:00	12	0	48:00
	DPR Checksum	Op Hrs	12	Days	4.00

Comments - Contractor Rep:	
Comments - Client Rep:	
Signatures:	Contractors Rep ..... Clients Rep ..... Date .....

Appendix 3

Technical Specifications

The specification sheets for the equipment listed can be viewed at the following address:

http://www.bibbyhydromap.co.uk/spec-sheets/