



The specialist two day technical conference focused on the technology, operations and business issues in the global field of offshore surveying

WEDNESDAY 15 APRIL 2015

0830	Registration at Ocean Business Registration Area and then Refreshments on Level 4 - NOC Lecture Theatre	
0900		Introduction and welcome from the Conference Chairman Ed Danson, <i>Conference Chairman, Managing Director, Swan Consultants, UK</i>
0915	Rafael Ponce <i>Global Maritime Business Development Manager</i> Esri, USA	KEYNOTE PRESENTATION: The future of GIS and its impact in ocean activities Big data, 'the internet of things', and web GIS; combined with infrastructures, can be the nervous system of our planet to measure and understand it better in order to make better decisions for a better future. A marine data system would provide the means to make this information available and accessible to everyone. This paper will explain where the GIS technology is going and how this can affect the way we do business in the Oceans.
1	Industry and Professional Issues	
	Session Chair: Ed Danson, Conference Chairman, Managing Director, Swan Consultants, UK	
0950	Celina Thom <i>Project Manager</i> DOF Subsea Norway	Deconstructing workflows to solve the problems of today We take a step back from a world driven heavily by check lists, excel files, and folder structures to question if our modern way of working isn't just a spectacularly efficient answer to a 1980's problem that no longer exists. The presenter will pull apart some of the most engrained processes (chart production, document numbering, transmittal tracking, risk assessments...) to ask not how they can be improved but if they are needed at all. We explore new ways to handle and present digital data and metadata such that truly meet the needs of the industry in 2015.
1015	Chris Whomersley <i>Retired</i> ex Foreign Commonwealth Office, UK	Offshore Surveys and the International Law of the Sea UNCLOS sets out the rules on the law of the sea, which are binding on States and which should be reflected in their national law. How does the Convention define 'surveying' and 'marine scientific research'? In what circumstances does the Convention allow coastal States to regulate surveying? What conditions can coastal States impose on the conduct of marine scientific research? Are there different rules about military data-gathering?
1040	Nick Hough <i>Technical Adviser</i> IMCA, UK	IMCA Offshore Survey guidance: an update on further developments This presentation is intended as a technical update and overview of interesting developments in IMCA's Offshore Survey Division work programme. The presentation will show how a workgroup structure has helped in the development of IMCA technical guidance, allowing subject matter experts from both within IMCA members and from the wider technical community, to contribute to the process of creating useful, interesting and informative IMCA offshore survey publications.
1105	Coffee break	
2	Hydrographic and Seabed Survey	
	Session Chair: Ed Danson, Conference Chairman, Managing Director, Swan Consultants, UK	
1145	Vincent Latron <i>Operations Geophysicist</i> Eric Cauquil, <i>Offshore Site Investigation & Geohazard Expert</i> TOTAL E&P, France	Deep-water field asset monitoring by AUV: a new range of sensors and tools AUV (Autonomous Underwater Vehicle) technology is now routinely used for seabed and sub-seabed geophysical data acquisition. The practice of AUV inspection works, for in-field monitoring of SURF (Subsea infrastructures, Umbilicals, Risers and Flowlines) is, however, relatively new. This paper presents, from the perspective of an operator's experience, the application of such methods to deep offshore fields in West Africa.
1210	James Williams <i>Managing Director</i> Swathe Services Group, UK	Advances in Unmanned Surface Vessels (USVs) Advanced Undersea Vehicles and Systems offers a unique approach to survey operations with the development of a new Unmanned Surface Vessel (USV). After the product launch of the Multi-purpose USV (MUSV) v4.0 in the latter part of 2014, operational results have proven its capability as robust and a reliable product for offshore and coastal applications. This highly versatile MUSV was operated as a single asset, however, a new innovative Integrated Transport Launch and Recovery System (IT-LARS) allows for multiple vessels to be deployed giving a cost effective productivity force multiplier.



Day 1

1235	Chris Moore AUV Program Manager Phoenix International Holdings Inc, USA	AUV operations in Search of MH370 On 21 March 2014, Phoenix International Holdings (Phoenix) was tasked by the U.S. Navy, through a multi-year Naval Sea Systems Command (NAVSEA) contract, to provide undersea search services in response to the disappearance of Malaysia Airlines Flight 370 (MH370). In support of this tasking, Phoenix deployed nine personnel, the Navy's Towed Pinger Locator (TPL), and Phoenix's Bluefin 21 AUV – a system called Artemis – to Australia. This presentation reports on the noteworthy findings and indicates the future for AUV technology.
1300	Lunch break and time to join colleagues at Ocean Business	
3	Subsea Positioning Session Chair: Michael Clark, Group Survey Manager, Subsea7, UK	
1430	Danny Wake Group Support Surveyor Subsea7, UK	Survey calibration reliability, management and proposed efficiency savings When the calibration status of a vessel can be demonstrated to be repeatable, time, effort and costs can be reduced by eliminating project-by-project duplication of calibration activities. Furthermore, the requirements for alongside calibrations, which originated in the need to calibrate against higher grade land survey techniques, can be challenged using the systems of today in order to reduce the costs associated with bringing ever larger vessels alongside, expressly for such activities. This paper presents modern, practical, dynamic techniques that demonstrate that calibration repeatability can be achieved and managed such that these proposed cost savings can be realised without compromise to survey quality.
1455	Sam Hanton Director of Survey Nautronix, UK	Acoustic Positioning – The Magic and the Myths The use of acoustic systems to address underwater communication, exploration, navigation and tracking have long been established but developments of oil fields in ever increasing water depths have brought many challenges to the requirements of subsea installation and positioning. Acoustic technologies have developed significantly over the last 10-20 years, however, in many situations the user remains happily distant from these developments, with little understanding of the technology or physics behind them. This presentation offers a brief review of the developments of acoustics and addresses some of the commonly held beliefs and disbeliefs of users, looking at a high level of how the systems work and some key areas necessary for success.
1520	Yves Paturel Inertial Systems Senior Expert iXBlue, France	Inertial Navigation at High Latitude: trials and test results Due to melting ice at the North Pole, navigation at high latitudes is increasing regularly. This is a great interest for the oil and gas industry, therefore, navigation and survey at these high latitudes becomes becomes more of a key issue. iXBlue collaborated with the Norwegian Polar Institute testing three of their products on the research vessel Lance during a ten day mission. The presentation shows the performance of all three products from the various aspects: accuracy of heading at the end of the alignment phase when alignment is performed at different latitudes; stability of heading accuracy over long navigation at high latitude and navigation accuracy without GNSS aiding at different latitudes.
1545	Coffee break	
4	Hydrographic and Seabed Survey Session Chair: David Parker, Hydrography Manager, UK Hydrographic Office, UK	
1630	Jim Powell Hydrographic Survey Port of London Authority, UK	Developing a robust method for vessel dimensional control surveys The Port of London Authority (PLA) Hydrographic Service in conjunction with 'Capture As-Built Ltd' have applied laser scanning and tracking along with photographic data capture to develop a cutting edge approach to dimensional control for survey vessels. With the aid of the latest hardware and software from Leica Geosystems and Hexagon Metrology a fully 3-Dimensional survey method has been created to optimise data capture and analysis for vessels and equipment. Rather than the conventional approach of photogrammetry or a Total Station survey, the PLA have been exploring the use of laser scanning.
1655	Duncan Mallace Managing Director MMT (UK) Ltd, UK	Faster, more accurate, higher resolution pipeline inspection The amount of kilometres per day for a pipeline inspection have been falling, yet the price per day to conduct the surveys has been increasing. The equipment that is installed on ROVs has become more accurate year on year, but the product delivered has remained the same. Something has to change and that something is 'The Surveyor'. 'The Surveyor' is an ROV designed to do nothing but survey tasks. This paper presents 'The Surveyor' and the data it produces. A quantum leap in ROV survey performance and technology.
1720	Ocean Business exhibition followed by the Ocean Business/Offshore Survey Gala Dinner (Please pre-book tickets)	



THURSDAY 16 APRIL 2015

0900		<p>Introduction to day two Ed Danson, <i>Conference Chairman, Managing Director, Swan Consultants, UK</i></p>
5	Hydrographic and Seabed Survey	
	Session Chair: William Heaps, Deputy Marine Advisor, Associated British Ports, UK	
0905	<p>Kevin Black <i>Technical Director</i> Partrac Ltd, UK</p>	<p>Turbulence in Marine Environments (TiME) - A MRCF funded project Turbulence in Marine Environments (TiME), for measuring and evaluating turbulent effects in tidal arrays in Scottish Waters is being funded by the Scottish Government's Marine Renewables Commercialisation Fund (MRCF) Array Technology Innovation Programme and managed by the Carbon Trust. As the tidal industry moves toward development of arrays, a limited understanding of the effects of turbulence on loading, structure lifetimes and actual energy yield presents significant risk to stakeholders. This research project presents, for the first time, a unified framework for measuring, classifying and predicting the effect of turbulence on resource assessment, device design/operation and array yield.</p>
0930	<p>Jérôme Malgorn <i>Sub Bottom Profilers</i> <i>Product Manager</i> Kongsberg Maritime UK</p>	<p>High resolution 3D acoustic imaging of sub-seabed structures - Geochirp3D GeoChirp 3D is a sub-bottom profiler that uses frequency modulated source signals to produce 3D high resolution acoustic images of the shallow sub-seabed. It scales down conventional 3D seismic methods to achieve decimetre resolution of the upper tens of meters of the sub-surface. This is achieved by mounting a chirp sub-bottom profiler source together with 60 hydrophone arrays on a rigid frame that is positioned using RTK GPS position and heading system together with a motion reference unit. The data output is industry standard SEGY, which is processed using bespoke algorithms as well as readily available seismic processing software. The method has been applied in a various industry sectors including marine geology and geophysical research, military applications and as a non-intrusive technique in marine archaeology. Unlike the 2D surveys, which produce individual cross-sections of the sub-surface, the 3D method combines the data acquired during the survey into a data volume which can then be visualised in any orientation.</p>
0955	<p>Delphine Coates <i>Marine Consultant</i> Marine Ecological Surveys Limited, UK</p>	<p>Multi-technique surveys to detect ecological changes in offshore wind farms In order to meet the European renewable energy targets by 2020, offshore wind farm developments have vastly increased throughout the past decade. Both the construction and long-term presence of these developments raise concerns for the marine environment as many hard structures are being installed in naturally sandy habitats. Pre- and post-construction surveys of the seabed have intensively been carried out around offshore renewable energy developments. Applying a range of survey techniques ensures the detection of any potential impacts enforced upon the fauna living in the seabed. This has been illustrated by intensive surveys carried out at the Thanet, Sheringham Shoal and C-Power offshore wind farms in the UK and Belgium respectively.</p>
6	Data Processing and Visualisation	
	Session Chair: Gordon Beattie, Regional Survey Applications Manager, DOF Subsea, UK	
1100	<p>Michael Redmayne <i>Account Manager</i> CARIS, USA</p> <p>Andrew Orthmann <i>Charting Program</i> <i>Manager</i> TerraSond, USA</p>	<p>Reducing Ping to Chart Time through autonomous on-board data processing Data processing tools have reduced the ratio of acquisition to processing time significantly in the past ten years, so that there is no longer a significant processing backlog after acquisition. With the increasing use of autonomous platforms for hydrographic survey operations, this backlog has become evident again. This paper will describe a new method of acquiring and processing data autonomously whilst the survey is underway, and the benefits that can be gained from using this method. It will also describe how this method was proven on a hydrographic survey vessel during a multibeam survey in western Alaska.</p>
1125	<p>Andrew Waddington <i>Managing Director</i> Andy Waddington Hydrographic Consultants, UK</p>	<p>A standard for bathymetric data from space-based observation Despite the demand for satellite derived bathymetry (SDB), there is not currently a suitable method for specifying the requirement in common terms, nor a baseline to assess suitability of space derived data so that credible value based assessments can be made. Hence a set of generic standards for SDB has been created based on IHO S44. This deliberate use of accepted standards for hydrography is intended to enable a wider cross section of users and producers beyond the navigation community to interpret SDB information against in a common generic format.</p>

Day 2

1150	<p>Jason Gillham Chief Executive Officer 2G Robotics Inc Canada</p>	<p>High resolution visualisations using underwater laser scanning</p> <p>Underwater laser scanning enables detailed inspections to be easily conducted and highly accurate measurements to be instantaneously, and repeatedly captured from the 3D point cloud visualisations generated by the scanners. The laser scanners can be deployed by ROVs or AUVs and provide millimetre-level resolution point cloud data. This millimetre-level resolution provides engineers with the detail needed for developing effective design and repair solutions. This presentation will delve into the high resolution visualisation capabilities of underwater laser scanning, and the recent interfacing of the 2G Robotics ULS-500 underwater laser scanner with the hydrographic data acquisition and processing software solutions provided by EIVA, HYPACK, and QPS.</p>
1215	Lunch break and time to join colleagues at Ocean Business	
7	Survey Operations	
Session Chair: Ed Danson, Conference Chairman, Managing Director, Swan Consultants, UK		
1345	<p>Anne Chabert Chief Geophysicist Fugro EMU, UK</p>	<p>The application of marine geophysical methods for UXO detection</p> <p>The uncontrolled detonation of UXO is still a present-day risk in areas affected by World War II munitions; such as the UK, Germany and France. Over the last few years there has been a steady increase in the requirement to undertake high-resolution marine geophysical surveys to detect unexploded ordnance in proposed wind farm sites and the associated cable routes to shore. To respond to the constant demand for higher-resolution imaging of the seabed and sub-surface sediments, the survey industry has to continually evolve and develop new techniques to acquire and process geophysical data. This presentation will review the different solutions currently available in the market, from the different type of sensors, to acquisition designs and processing methods. Advantage and limitations of each technique will be reviewed and discussed from a technical and financial point of view. Since undertaking their first UXO survey for an offshore wind farm in 2009, Fugro EMU has been a key player in the UXO survey market in Europe. Several study cases will be presented here to illustrate the challenges the survey industry is currently facing and what the future holds for UXO marine survey.</p>
1410	<p>Matthew Goode Geodesist Fugro Intersite B.V. Netherlands</p>	<p>New developments in precise offshore positioning</p> <p>Fugro has extended the PPP technique to utilise Integer Ambiguity Resolution (IAR). This significant development enables the user to achieve the aforementioned increase in real-time accuracy. In addition, their services have been expanded to include the Galileo and BeiDou constellations, which enhance convergence time, availability and precision. In this contribution they will show the results that are achieved by combining PPP and IAR at a selection of static sites and for a dynamic dataset. They will also present the result of multi-constellation PPP, using precise satellite orbit and clocks for GPS, Glonass, Galileo and BeiDou generated from Fugro's tracking network.</p>
1435	<p>Pat Fournier Operations Manager Neptune, Australia</p>	<p>Case Study: Gorgon Heavy lift and tie-in construction survey</p> <p>The Gorgon Offshore Project represents the largest construction project in Australia's history and this case study represents the involvement of Neptune Geomatics and the hydrographic survey industry. The Gorgon Project is developing the Gorgon and Jansz-lo gas fields, located in the Greater Gorgon area, around 130km off the northwest coast of Western Australia. Neptune, on board the Sapura 3000, was part of a large team assembled to install structures at both the Gorgon and Jansz-lo fields. The installation phase of the project has continued over a period of more than 12 months.</p>
1500		<p>Closing remarks</p> <p>Ed Danson, Conference Chairman, Managing Director, Swan Consultants, UK</p>
1515	Close of conference	

Programme correct as at 30 April 2015. Programme subject to change, please refer to www.offshoresurvey.co.uk for updates