

Energy Matters

BMT Delivers Metocean Support for Tullow Oil

BMT ARGROSS has been awarded metocean assessment work and continues to develop its Web Portal. Read more on page 3.

BMT Nigel Gee Wins Windfarm Support Vessel Design

BMT Nigel Gee has been awarded a contract for construction of up to eight WSVs for Strategic Marine for Njord Offshore. Learn more on page 4.

Oil and Gas Growth in the UK and Effects on Employees

Norman di Perno of BMT Cordah discusses the importance of training and investing in employees in a competitive UK oil and gas industry. Read more on page 5.

BMT Delivers Concept Jetty Design for Petronas

BMT Asia Pacific completed a concept design for the RAPID complex in Malaysia. Read more on the back cover.





Message from the Sector Director

Dr. Ralph Rayner

Energy powers the global economy. Meeting an ever growing energy demand requires ingenuity and the capacity to develop and support a complex and growing infrastructure able to discover and exploit new energy resources and to deliver energy to where it is needed. There are two fundamental constraints on our ability to meet this challenge. The first is self-evidently the finite nature of the resource base upon which much of current energy supply depends. The second is the human capital required to develop new energy sources and to underpin a vast and globally interconnected energy infrastructure.

The sheer diversity and scale of knowledge, skills and experience needed to power new innovation and to design, install and maintain the infrastructure needed to meet present and future energy needs is vast and growing ever more

complex. Think of the complexity of supporting today's energy industry in comparison with what was needed during the early industrial revolution. Not only are the human capital needs massively diverse, they are also completely internationalized, with complex supply chains quite literally encircling the globe.

This issue of Energy Matters well illustrates this diversity and global interconnectedness with articles describing the application of broad engineering, technological and scientific capabilities to projects across multiple geographies.

Norman di Perno's editorial on the skills gap describes arguably the most significant challenge facing the energy industries. His arguments can be extended worldwide; in our internationalized business, this is not a problem confined to just a limited number of geographical

regions, it is a global problem for a global industry.

Recently we have seen a number of major offshore projects being delayed, at least in part, as a result of lack of competent resources to support their development. This problem will only get worse unless the skill gap is addressed.

As an employee owned business, BMT is highly committed to playing its part in training the next generation of innovators, practitioners and project managers. If we are to meet the challenges of meeting future energy demand we must all do more to encourage talented people to join the energy industries and to develop their knowledge, skills and experience.

I hope you find this edition of interest and, as always, would welcome your comments or questions at energy@bmtmail.com.

Shell Awards BMT Platform Maintenance Contract

Shell has selected BMT Asia Sdn Bhd to provide three-year maintenance services for a production storage facility offshore Malaysia.

BMT Scientific Marine Services previously installed Marine Instrumentation and Advisory Systems (MIS/MAS) on the platform.

This contract allows BMT to provide servicing and maintenance on the MIS/MAS instrumentation exposed to the offshore marine environment in order to ensure that components remain functional and provide accurate integrity data.

BMT's maintenance plan will include calibration checks, software

maintenance and updates, remote technical support, and data archiving, management, analysis and reporting.

BMT brings valuable experience to this project, having regularly provided service and maintenance to over 75 platforms around the world.



BMT ARGOSS Delivers Metocean Support Services to Tullow Oil

BMT ARGOSS has announced the award of a number of metocean assessments for Tullow Oil plc, including comprehensive overviews of meteorological and oceanographic conditions in West Africa and South America, to help support the company's offshore oil and gas exploration and operating activities.

Colleen Abell, Senior Environmental Remote Sensing & GIS Specialist at Tullow Oil plc comments: "Tullow have been engaging with BMT ARGOSS with regards to their metocean and regional reporting capabilities. We are currently evaluating available products and services primarily in support of the development of the BMT ARGOSS Metocean Portal - the launch of

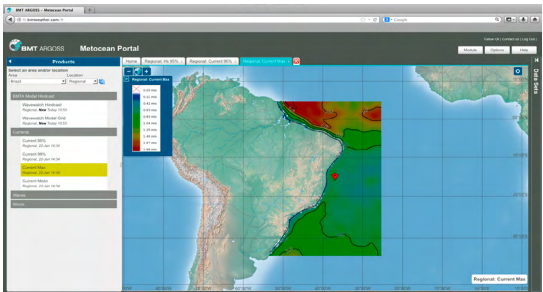
which is anticipated to have the potential to support Tullow's offshore projects and activities."

Using in-house, state-of-the-art numerical modeling techniques and analytical tools, BMT's experts are working closely with Tullow Oil to generate a range of spatial and temporal wind, wave and current data products, thereby aiding interpretation of the metocean climate in two target regions.

Martin Williams, Senior Metocean Advisor at BMT ARGOSS, explains: "Understanding the impact of the physical environment on an offshore structure is critical to safety and efficiency in all phases of the structure's lifecycle. BMT's work

helps Tullow plan effectively and minimize the risks to personnel, the environment and the company."

BMT is also collaborating with Tullow Oil on the development of an online metocean and weather forecasting portal which, once fully developed, will provide key engineers and planners with secure and rapid access to all Tullow's metocean information via a single gateway.



Upcoming Conferences



Offshore Technology Conference (OTC) 2014
Reliant Center
Houston, TX, USA
May 5-8, 2014
Visit BMT at Booth #2441-E



Indonesia Abandonment and Site Restoration on Oil & Gas 2014
The Trans Luxury Hotel
Bandung, Indonesia
June 5-6, 2014
Dr. Joe Ferris of BMT Cordah will speak on June 6 at 2:00 p.m.



RenewableUK Global Offshore Wind Conference 2014
Scottish Exhibition & Conf Ctr.
Glasgow, UK
June 11-12, 2014
Visit BMT at Booth #211

BMT Nigel Gee Provides Advanced Windfarm Support Vessel Design for Strategic Marine for Njord Offshore

BMT Nigel Gee Ltd is pleased to announce it has won a design for the construction of up to eight advanced 26m Windfarm Support Vessels (WSV), to be built by the Australian shipbuilder, Strategic Marine. The vessels are to be built for Njord Offshore Ltd who has already taken delivery of eight BMT designed 21m WSVs, also built by Strategic Marine.

Developed from BMT's well-established range of WSVs with Njord Offshore, the vessels will be 26m in length with a beam of 9.1m, powered by four Scania DI16 070 diesel engines, driving Servogear controllable pitch propellers (CPP) through a combining gearbox. Capable of speeds in excess of 27.5 knots with ten tonnes of deadweight, the vessels will have a resiliently mounted superstructure together with the BMT patented Active Fender System. Furthermore, they will be built to the DNV Wind Farm Service 1 R1 notation suitable for operation up to 150 nautical miles from shore.

These vessels will offer significant improvement in efficiency and comfort, with market leading fuel consumption and noise levels. The first two vessels will be delivered early in 2015.

Tom Mehew, Director of Njord Offshore comments: "We have now completed over 20,000 transfers with our BMT designed 21m WSVs and have been delighted with their performance. Therefore, going back to BMT for the 26m design was an easy choice for us. Designed specifically for windfarms further offshore, the design and

layout of the 26m CPP will offer increased speed, efficiency and operational capability for our clients."

Commenting on the order, Ed Dudson, BMT Nigel Gee's Technical Director, says: "These 26m vessels are designed specifically to provide improved operational flexibility, capability and efficiency. The arrangement of the vessel has been developed in close co-operation with Njord Offshore and offers a highly versatile deck and accommodation design. The selection of CPP provides very high bollard pull capability without any reduction in high speed operation or fuel economy. This contract further reinforces BMT's position as a leader in the design of offshore windfarm support vessels."

Paul Liddington, Business Development Manager at Strategic Marine comments: "We are extremely pleased to be working with BMT Nigel Gee again to offer Njord Offshore another world

class product. In addition, we are extremely proud that Njord Offshore have again chosen Strategic Marine to build their next fleet of larger 26m WSVs. The order clearly signifies recognition of the build quality and customised service which Strategic Marine provides."

Paul continues: "With the organisation's strategically located fabrication yards in Singapore and Vietnam, we have the capability to build in either location or in combination to suit client and timescale requirements. In this instance, the Aluminium Hulls will be built in Vietnam and then shipped to Singapore for outfitting and delivery. This allows Strategic Marine to offer very competitive pricing for these new vessels. With these vessels getting larger and more sophisticated, our local purchasing network and Asian labour rates makes our high quality products highly competitive compared to other areas of the world."



Mind the Skills Gap!
An Editorial by Norman Di Perno, Managing Director at BMT Cordah

Predictions from Oil and Gas UK indicate that up to 24 billion barrels of oil and gas is yet to be extracted from the seabed around the UK. Couple this with forecasts from various trade bodies, analysts and recruitment companies that anything from 10,000 to 150,000 people are needed in the coming years, and it is clear to see that the UK's oil and gas industry is very much alive and kicking.

The growth opportunities are indeed well documented. However, the industry's ability to fully exploit this boom could be hampered because of the significant skills gap that currently exists. Some of the key issues include a shortage of suitably experienced technical people. This is an issue for both service providers and operating companies. There is also too much movement of staff within the industry which results in people with incomplete experience – in other words, two years' experience at five companies is not the same as five years' experience at two companies.

Furthermore, limited availability of skilled people is resulting in many operating companies using local technical consultancies as their talent pool and often offering salaries 30% higher with enhanced benefits to help attract staff. This is somewhat ironic given that these same companies continue to pressurise the supply chain to remain competitive and rarely offer rate increases in excess of cost of living.

As such, small technical consultancies are faced with the prospect of investing in training their staff for two to three years, only to have them poached by a competitor or operator. Losing this layer of staff is making it even more difficult to justify bringing in and training new graduates as the burden then falls on senior members of staff who are already overworked.

We must stop this insular approach and invest the time and money to train people and grow our own teams, rather than trying to outbid the competition with more attractive salaries



and benefits. We also need to broaden our reach and consider that there could be well trained, dedicated professionals that have an abundance of transferable skills – the military being one such example.

Echoing the strategy recently set out by sector skills body, OPITO (Offshore Petroleum Industry Training Organization), it is vital that we effectively address this challenge now and give ourselves the best chance possible to deliver a sustainable workforce for the future.



BMT Employee Spotlights - New Faces and Key Contacts

Nelson Diaz



BMT Scientific Marine Services hired Nelson as a new Project Manager. He recently worked as a Senior Project Engineer and Technical Lead at Molex Active Fiber Optics Group. He holds a Master's degree in Electrical Engineering from Colorado Technical University in Denver and received a certificate towards his MBA from Regis University.

Andy Holdcroft



Andy has recently joined BMT Nigel Gee as the new Operations Director. He has over 20 years experience in senior operational and technical roles with an extensive background including international program delivery, strategic business planning, cross functional team development / leadership, risk management, continuous improvement and quality, and technology development.

Gareth Jones



Gareth has joined BMT Cordah as a Principal Consultant. He previously worked for the Scottish Government, most recently in the Offshore Energy and Environmental Advice Group supporting the Marine Scotland Licensing and Operations Team in relation to the Renewable and Oil & Gas sectors. He has a Bachelor degree in Marine Biology from Aberdeen University.

Rob Koenders



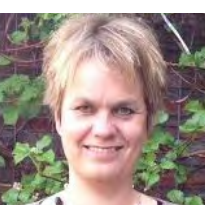
BMT ARGOSS hired Rob Koenders as a Maritime Meteorologist. He previously worked at Weathernews as a meteorologist and did internships at KNMI in the Netherlands and the Bureau of Meteorology in Melbourne, Australia. He studied Soil, Water and Atmosphere in Wageningen.

Rohani Abdul Latiff



Rohani has joined BMT Asia Sdn Bhd as a meteorologist/weather forecaster. She previously worked as Assistant Director of the Central Forecast Office at the Malaysian Meteorological Department and has over 7 years experience in the provision of public weather forecast and marine forecast services. She holds a BSc in Physics from University of Science (USM) Malaysia.

Alice Lentink



Alice joined BMT ARGOSS as a Maritime Forecaster. She previously worked as a forecaster at the Dutch Royal Meteorological Institute (KNMI) and then at Weathernews. She studied Meteorology and Physical Oceanography at Utrecht University in the Netherlands.

Jessica Platt



BMT Scientific Marine Services has appointed Jessica as a new Project Manager. She previously worked for Raytheon Company as a Senior Software Engineer and then as an IT Project Manager. She received a Master of Science in Information Systems from Northeastern University in Boston.

Mike Sillett



Mike has joined BMT Scientific Marine Services as a Sr. Project Manager/Key Account Manager based in Houston. He was previously a Managing Consultant for BMT Reliability Consultants for over 20 years. He holds a Bachelor's degree in Electrical and Electronic Engineering from Portsmouth Polytechnic.

BMT ARGOSS Joins Forces with Met Office and Oceanweather

BMT ARGOSS has announced a joint initiative with the Met Office, the UK's national weather service, and Oceanweather Inc to help support oil and gas majors with offshore engineering design and operational planning in the mid-Atlantic region.

The main deliverable of this project, entitled the Mid-Atlantic Current Hindcast (MACH), is a 20-year high quality ocean current reanalysis for the mid-Atlantic region, with nested high resolution grids covering principal oil and gas concession areas.

Robin Stephens, Metocean Group Manager at BMT ARGOSS explains: "In recent years, ocean modelling technology has significantly advanced - therefore we recognised the importance and timeliness of conducting a comprehensive, new West Africa ocean current hindcast. Much of the oil and gas activity in this region is in deep water and involves the design, installation and operation of floating production systems with substantial subsea components such as risers and moorings, both of which are very susceptible to current-induced loadings."

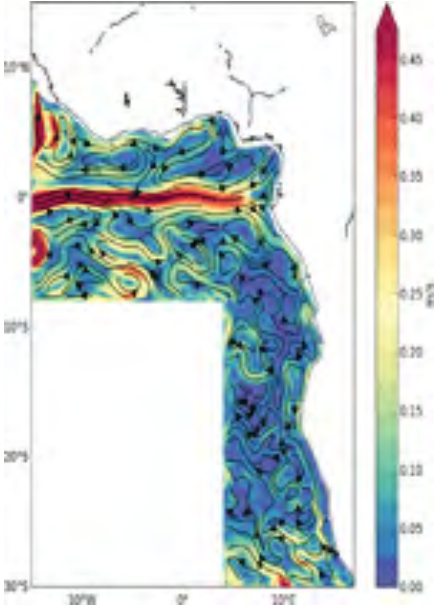
He continues, "By simulating ocean current, temperature and salinity in profile we can provide customers with a long term simulation which has been validated and optimised against

data that has been measured in the region."

Following completion of a pilot two year integration and a detailed validation study against available concurrent in-situ current measurements, a full 20-year integration is underway to produce an ocean current hindcast database, suitable for use in offshore engineering and operational planning.

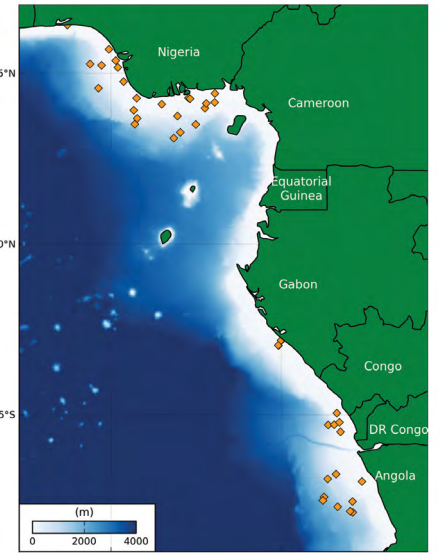
Arwel Griffiths, Business Development Director at the Met Office comments: "This initiative is an exciting opportunity to demonstrate to the oil and gas community our technical credentials in ocean modelling.

With BMT ARGOSS' extensive experience in providing metocean services, Oceanweather's strong standing in the provision of high integrity wind and wave hindcast data, and the Met Office's world class science and forecasting expertise, we are confident that we can provide oil and gas customers with a robust ocean simulation which will help them plan future projects."



Monthly mean currents for May 1996 at 70m depth

With an initial focus on the West Africa region, the hindcast will provide a strong framework for conducting fine resolution modelling in other parts of the mid-Atlantic basin, including Brazil.



Locations of oceanographic measurements in West Africa for MACH model validation

BMT Delivers Concept Jetty Design for RAPID Project

BMT Asia Pacific has completed a concept design for the Material Off-Loading Facility (MOLF) at Petroliam Nasional Berhad's (Petronas') proposed Refinery and Petrochemical Integrated Development (RAPID) complex in southeast Johor, Malaysia. The RAPID project will help to address the growing need for petroleum and commodity petrochemical products in the Asia Pacific region.

The proposed RAPID refinery will have a capacity of 300,000 barrels per day that will produce naphtha and liquid petroleum gas (LPG) feedstock for the RAPID petrochemical complex, as well as gasoline and diesel that meet European specifications. The RAPID petrochemical complex will have a Naphtha Steam Cracker that will produce a number of commodity products.

Working in partnership with Technip, the FEED contractor for the project,

BMT provided a concept design for a temporary, heavy lift jetty. This jetty will be an integral part of the infrastructure needed to realize the RAPID project.

Per Cato Roed, Managing Director for BMT Asia Pacific Singapore office explains: "Given that heavy lifts of specialized modules and equipment will be performed at the jetty during the RAPID project construction phase, we needed to carefully consider the customer's requirements and ensure an optimum layout. Taking the temporary nature of the jetty into consideration, it was also important for us to optimize the design in relation to several dimensions, notably sedimentation and maintenance dredging requirements."

BMT carried out the conceptual design of the MOLF, covering geotechnical and marine structural engineering design activities, as well

as a number of specialist studies and surveys needed to adequately evaluate the options available.

Marine studies utilizing BMT's navigation simulation tool, REMBRANDT, were also completed later to better understand the possible operational limits associated with the ships coming into the port and the impact this would have on the jetty design.



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