After a difficult three years for Offshore, we are starting to see market stabilization and new projects emerging. These include some of the most technically challenging field developments our industry has ever seen. To meet these projects’ demands for greater efficiency, Bureau Veritas is working with clients and industry partners to establish innovative tools and methodologies to support and lead the industry in its move towards digitalization.

One example is our updated Asset Integrity Management (AIM) tool, which we are demonstrating at this year’s OTC. By identifying new ways to utilize inspection data collected as a result of increased monitoring of assets, AIM enables customers to optimize and extend operations and maximize asset value.

Bureau Veritas is also working to simplify and streamline project and operational assurance by reducing project lifecycle interfaces. This includes expanding our Quality Assurance services through three recent acquisitions: TMC Marine, MatthewsDaniel and MAC.

**Visit us at OTC** to discuss how we can support your project.

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In March, Total E&P Congo started up production on the second phase of the Moho Nord project located 75 km offshore Pointe-Noire in the Republic of the Congo. Moho Nord is the biggest deepwater oil development to date in the Republic of the Congo. Total E&P Congo is the operator with a 53.5% share, Chevron holds 31.5% and SNPC 15%.

Moho Nord is the second project on the Moho Bilondo offshore license, launched to develop the recent findings on the field. The second phase of Moho Nord involves the creation of a new production point on the north of Moho Bilondo field with a maximum expected production capacity of 100,000 barrels of oil per day. Two floating units have been delivered: the FPU Likouf and an unmanned Tension Leg Platform (TLP), the first of its kind for Total in Africa. The oil from all wells is processed on the FPU Likouf and then exported by pipeline to the Djeno onshore terminal, also operated by Total E&P Congo.

Bureau Veritas was deeply involved from the project’s earliest stage, providing classification during the design and construction of FPU Likouf in HHI yards in Korea. Bureau Veritas offices all over the world were included in the classification process for more than 50 systems installed on the FPU, in addition to 10 systems submitted for certification.

PROJECT ENGINEERING MANAGEMENT Group Manager Ron Mack explains the simple reason for this: “SOFEC’s sophisticated turret systems are used for floating units: FPSOs, FSOs and FLNGs used in deepwater projects or fields that, unlike the Gulf of Mexico, do not benefit from existing infrastructure.”

A key feature of turret mooring is that it permits the unit to weathervane 360 degrees, allowing operation in extreme sea conditions. In total, SOFEC has delivered over 50 SPMs worldwide, most recently in South-East Asia, Nigeria and Brazil. It also has a fast-developing business in FLNG.

A typical example of SOFEC’s work is the Bureau Veritas-classed turret system recently delivered for a project offshore Malaysia, employing a turret-moored FSO with storage capacity of approximately 550,000 barrels.

The project demanded a tight delivery schedule: 13 months, compared to up to 24 months for some of SOFEC’s recent projects. “This meant we had to work extremely efficiently. It was also the first time that we had worked with Bureau Veritas on classification of a turret system. It demanded close cooperation between SOFEC and Bureau Veritas engineers at the start of the project to clarify the class rules and ensure we had a clear understanding of the technical requirements.”

“Bureau Veritas is very thorough: we appreciated the fact that they took the additional step of doing their own calculations and analysis and modeling the mooring system.”

“We maintained close communication with their engineers in Houston and Paris to close comments and successfully meet the delivery schedule.”

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**VERIFICATION FOR NOBLE ENERGY**

Bureau Veritas has been appointed by global oil and natural gas exploration and production company Noble Energy, to provide an independent verification of its development executions in the Leviathan Project, off the Mediterranean coast of Israel.

Bureau Veritas’ Verification provides independent assessment of compliance with the Project requirements. Bureau Veritas will be focused on the review and verification of the design/engineering, fabrication, installation and commissioning of the safety critical elements (SCE) of the Project, which will consist of subsea installations, a host platform, export lines to and onshore tie-in at the coastal valve station.

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**MAC ACQUISITION STRENGTHENS VALUE-ADD SERVICES**

Bureau Veritas was pleased to announce the acquisition of Maritime Assurance & Consulting (MAC) in 2016. Based in Aberdeen, MAC provides offshore assurance and consulting services throughout the world. It offers high quality service and recognized strengths in dynamic positioning and engineering. Marine warranty and assurance services largely focus on vessels serving the offshore industry. The acquisition further enhances Bureau Veritas’ Maritime Assurance services for offshore clients worldwide.

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**NEWS IN BRIEF...**

- **NEW OSVS SUPPORT OFFSHORE WIND** Bureau Veritas is classing two OSVs to support the growing offshore wind sector, both with dynamic positioning (DP2). Boskalis is to convert an F-class semi-submersible heavy transport vessel into a crane vessel for the installation of offshore wind turbine foundations. The vessel will feature a Huisman-supplied 3,000 tons offshore mast crane and accommodate 150 people. Meanwhile, Louis Dreyfus has ordered an 83m SOV from Cemre in Turkey, to provide operation and maintenance support to Dong Energy. It will be equipped with a sophisticated motion compensated access system and accommodate 60 technicians.

- **ADVANCED SIMULATIONS WITH HYDROCEAN R&D** In 2016, HydrOcean improved methodologies enabling the efficient use of CFD for offshore applications thanks to three major research and development projects. These were carried out with key players in the offshore industry: TOTAL, TECHNIP, SAIPEM, SUBSEA7, ENTREPOSE, and DORIS engineering. The projects covered wind load calculations for complex structures, subsea lifting operations and shallow water effects on DP-assisted vessels during pipe laying operations.

- **DRONE INSPECTIONS MOVE A STEP FORWARD** Bureau Veritas has witnessed external inspections carried out using a drone showing very good traceability of findings. The three parties involved – owner’s superintendent, class surveyor and drone service supplier – used these tests to get more familiar with such new techniques and to share each other’s knowledge in order to improve them and develop guidance notes and acceptance criteria for this activity. Bureau Veritas is implementing several pilot projects for internal inspections with industrial Unmanned Aerial Vehicles. Currently, there is no “universal” drone able to cover all types of required class internal inspections. Finally, Bureau Veritas is looking to build an “ecosystem” in which drones are specialised for either general visual inspection either close-up inspection and eventually carrying additional tools (for thickness measurement, phased array ultrasonic testing, paint quality testing, laser 3D mapping, etc.).

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JIPs TARGET BETTER DESIGN FOR FLOATING UNITS

Bureau Veritas leads three JIPs to develop solutions for designers and operators of floating offshore units. The oil and gas offshore industry faces a dual challenge: how to meet very high reliability requirements, while reducing costs? Understanding operational risk is essential if designers and operators are to make cost-effective decisions.

In 2013 Bureau Veritas launched a JIP to develop an improved methodology to address roll motions in FPSOs. Nineteen major offshore companies took part in the JIP, the results of which were brought together in a guidance note designed to harmonize the practices for estimating roll motions. Application of the note can potentially reduce the deviations between design and operation, enabling operators to identify more cost-effective solutions and avoid unexpected downtime and structural degradation. We are now inviting the industry to join Phase II of the Non Linear Roll JIP tackling specific aspects of the roll motion problem in order to further improve the guidance note.

A second major hazard for marine installations is greenwater: the impact caused by high water velocities can potentially damage sensitive equipment or structures. The Greenwater JIP therefore aims at providing a reliable and consistent risk based methodology to investigate greenwater susceptibility and loading from the bow and sides of FPSOs.

The final JIP addresses repairs due to corrosion. Cutting and welding an offshore structure during operation is expensive and high-risk. Leading operators to seek solutions for cold repairs and a few examples of application of bonded composite patches have been implemented. However a lack of failure criteria in place to date to assess the strength of bonding has meant an extensive qualification process for each repair, and therefore higher costs. This is why Bureau Veritas has launched the StrengthBond Offshore JIP to define a guideline for strength assessment of offshore bonded repair. As a result of the JIP, it is expected that the approval of a bonded repair will become faster and systematic tests will no longer be required for each specific design. This is a first important step to make bonded repairs a practice as common as it is in other industries such as aeronautics.

MARINE WARRANTY SURVEY FOR SUR DE TEXAS - TUXPAN PIPELINE

TransCanada, in partnership with IEnova and Infraestructura Marina del Golfo (IMG) has recently awarded the Marine Warranty Survey (MWS) scope for its Sur De Texas-Tuxpan (SDTT) pipeline project to MatthewsDaniel, a Bureau Veritas company.

TransCanada will develop, own and operate 60% of the project, with IEnova owning 40%. The pipeline spans 800 km from Brownsville, USA to Tuxpan, Mexico via Altamira, Mexico. It will be the first time TransCanada has installed a pipeline in the Gulf of Mexico.

The project leverages MatthewsDaniel’s extensive MWS pipelay expertise worldwide, and its experience and knowledge of working in the Mexican waters of the Gulf of Mexico.

The MWS scope includes vessel suitability surveys for the two pipelay vessels Tog Mor and Solitaire as well as the general cargo, pipe supply barges and dive support vessels. In addition, a full desktop review and approval of all engineering studies and procedures relating to the loadout, transportation and installation of the 42-inch (107cm) concrete coated pipeline will be conducted offshore with MatthewsDaniel surveyors to witness pipelay initiations, shore approaches and tie-ins.

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