

The first quarter of 2011 has seen some momentous geopolitical events. A wind of political change started in Tunisia and blew through Egypt immediately changing the nature of both countries' governments; this air of change continues to affect North Africa and many countries in the Middle East. The terrible earthquake and tsunami that hit Japan has brought instant change with awful devastation and our heartfelt sorrow and good wishes go out to all the people so dreadfully affected. The political changes heighten and underline world concern about scarcity and the concentration of oil and gas resources and geological events underline how much we are at the mercy of natural calamities.

The oil and gas industry addresses the first concern by trying to find resources from all around the world, increasingly in deeper waters and more harsh environments; and to the second concern by trying to engineer its systems and equipment to withstand more extreme conditions and seismic events.

As a global technology leader, Bardex plays its part and is in the forefront of engineering its systems for extreme events and conditions.

## 2011 Exhibitions



We are exhibiting on Booth 1453 in the main hall where we will be displaying our new style Booth for the first time complete with new graphics and AV presentations. We have Sales, Support Services and Engineering lined up to discuss new projects and to answer your queries.



The main European offshore oil/gas conference and exhibition alternates between ONS, Stavanger and OE, Aberdeen where this year between 8<sup>th</sup> - 11<sup>th</sup> September, we shall be exhibiting on Stand 3A158. There is a lot of project activity in the North Sea, Barents Sea and Western Approaches in both newbuild and brownfield developments so we expect the show to be a busy one this year.

## Orders:

CLOV:

Following our successful mooring system delivery for the Usan FPSO (pictured still in the yard, at right), we are delighted to announce we have contracted with Daewoo Shipbuilding and Marine Engineering Company ("DSME") to supply the mooring system for the Total operated CLOV FPSO destined for operation offshore Angola, West Africa.

The mooring system will comprise sixteen BarLatch™ Fairlead Stoppers rated to hold the 17,347 kN break strength of the 147 mm mooring top chain, four moveable chain jacks providing a 3,960 kN stall capacity, two messenger winches each having 2,750 kN stall capacity, two 480 kW HPUs and an associated package of deck handling equipment, controls and instrumentation.



CLOV is an acronym for the names of the four fields - Cravo, Lirio, Orquidea and Violeta – found in the Angola Block 17 that the FPSO will produce from, with first oil expected in 2014. The FPSO is designed for a 160,000 bbls/day production capacity and will be moored in over 1,300 m water depth.

## Bardex at the Boundaries

We have designed and supplied hydraulic gripper jacks for drilling rig skidding applications around the world including for operations in extreme cold and conditions.

Bardex systems are successfully operating in Newfoundland and the Norwegian and UK sectors of the North Sea and in these regions,  $-20^{\circ}\text{C}$  is common.

In Alaska and offshore the Sakhalin Islands in Russia's extreme eastern province, our systems are rated for  $-40^{\circ}\text{C}$  and Bardex skidding systems for operation on the Pirazlomnaya platform in the Kara Sea in northern Russia were designed for  $-45^{\circ}\text{C}$ .

The photo at right shows the Sakhalin II project's Lunskoye platform equipped with Bardex skidding, seismic restraint and BOP handling systems, all designed for ultra low temperature operation.



Bardex rig restraints have been designed and supplied in a range of styles to immobilise drilling skid base and derrick modules in the strong gale-force winds experienced in the North Sea, for hurricane-strength winds in the Gulf of Mexico and projected seismic events which could be experienced in the Caspian Sea and Sea of Okhotsk. Our seismic restraints exert no additional forces on the rig structure in normal operation but will react seismic loads in simultaneous x-y-z directions of over 2000 tonnes.



Bardex has designed and supplied supplemental mooring systems for floating drilling and production platforms to increase the platform's total mooring integrity and capacity so that the MODU or production vessel can stay on station and ride out a storm or hurricane rather than having to interrupt operations and run before the storm to seek shelter.

Our chain jacks are compact and light, but they provide considerable added strength – the photo at left shows a chain jack (the light blue coloured equipment) which will hold a mooring load of up to 618 tonnes, almost three times the pulling capacity of the large winch shown alongside it.

We have supplied linear chain jacks for floating production vessel mooring systems which apply pre-tension loading of over 800 tonnes on 171 mm R4 top chain and which hold over 2,200 tonnes breaking strength of the chain. Our engineers have developed a chain jack design which will operate in arctic conditions down to  $-40^{\circ}\text{C}$ .

Bardex continues to develop new designs and products to meet the new environmental challenges that the oil/gas industry is facing in its search to find and develop new resources.

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