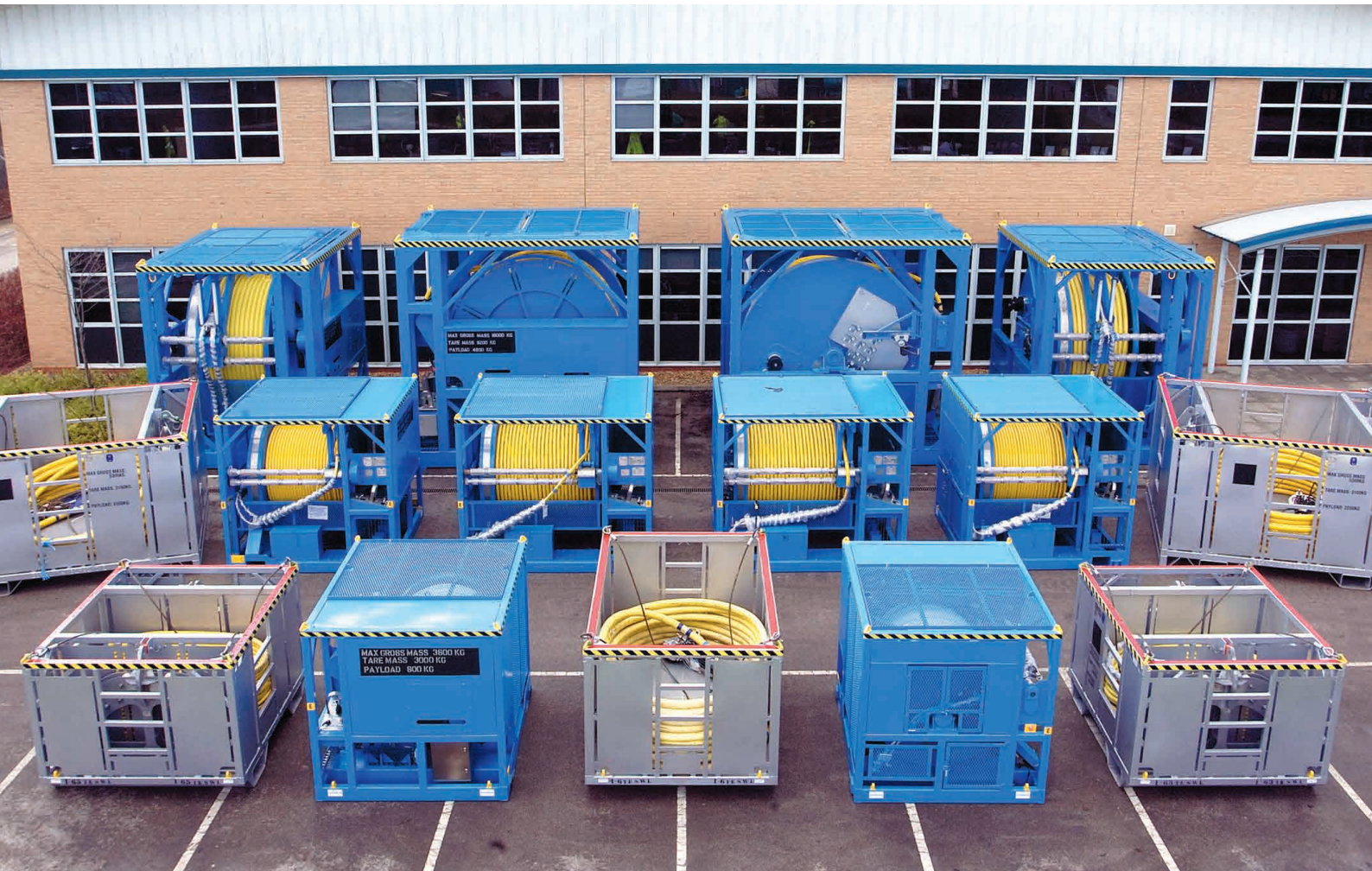




PROVIDING THE VITAL CONNECTION



## Completion and Workover Umbilical Systems

for the Aasgard Field Project in the Norwegian Sea

**Statoil's Aasgard field lies in the Haltenbanken area about 200 km offshore from Trondheim in Norway.**

Aasgard is one of the biggest developments on the Norwegian continental shelf producing via more than 50 wells and 17 templates tied together by 300 km of in-field flowlines.

JDR was contracted by FMC to supply a control package comprising Xmas Tree and Landing String umbilicals and jumpers, High Set Lubricator Valve umbilicals and jumpers and Hotline Hydraulic and Electric umbilical systems.

The package comprised 10 reels, 12 baskets and 20 sheaves and will provide the vital connections to an array of subsurface well control and intervention systems.

# Workover and umbilical systems, fully integrated, tested and ready to operate

JDR is a leading manufacturer of specialist cable and umbilical systems for the offshore oil and gas industry. As such, JDR uses its extensive experience to engineer technically feasible solutions to suit offshore applications. The full range of Asgard products have been specifically designed and rigorously tested to deliver an integrated system that will achieve optimum performance in a harsh offshore environment.

The system included a duplicate fleet of umbilicals, termination assemblies and fully tested Zone 1 compliant Reeler packages providing:

- **XT Umbilical and Jumper**
- **Hydraulic Hotline Umbilical and Jumper**
- **Electric Hotline Umbilical and Jumper**
- **Landing String Umbilical and Jumper**
- **HSLV Umbilical and Jumper**

Ancillary equipment including sheaves, air hoses and protective covers was also provided as part of the turnkey solution, complete with DNV rated cargo baskets.



The Asgard project provided an opportunity for the JDR design team to custom-engineer and manufacture all of the components to address key efficiency savings and an improved fatigue performance during handling.

By optimising the arrangement of the umbilical components during the lay-up process, the final umbilical diameter is minimised to reduce reel size and ultimately the deck foot-print. Combined with dedicated strength members, excellent fatigue performance of the functional components is assured and localised stresses are minimised when the umbilical is subject to bending and handling under tension.

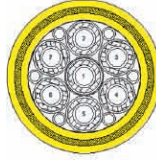
## DESIGN DATA



### XT Umbilical and Jumper

Functional Lines: 15 x 1/4" NB 690 bar (10,000psi) WP hydraulic hoses  
3 x 1/4" NB 690 bar (10,000psi) WP low vol exp chem/hyd hoses  
2 x cables each containing 2.5mm<sup>2</sup> screened twisted pairs  
1 x cable containing 2.5mm<sup>2</sup> unscreened twisted quad

Umbilical Length: 600m  
Jumper Length: 1 x 75m  
Design Water Depth: 500m  
Operating Temp: -20 to 40°C  
Storage Temp: -30°C



### Hydraulic Hotline Umbilical System

Functional Lines: 7 x 1/4" NB 690 bar (10,000psi) WP hydraulic/chemical hoses

Umbilical Length: 600m  
Jumper Length: 1 x 75m  
Design Water Depth: 500m  
Operating Temp: -20 to 40°C  
Storage Temp: -30°C



### Electrical Hotline Umbilical System

Functional Lines: 2 x cables each containing 2.5mm<sup>2</sup> screened twisted pairs

Umbilical Length: 600m  
Jumper Length: 1 x 75m  
Design Water Depth: 500m  
Operating Temp: 0 to 90°C  
Storage Temp: -30°C



### Landing String Umbilical System

Functional Lines: 21 x 1/4" NB 690 bar (10,000psi) WP hydraulic/chemical hoses

Umbilical Length: 600m  
Jumper Length: 1 x 75m  
Design Water Depth: 500m  
Hose Operating Temp: -18 to 99°C  
Sheath Max Temp: 135°C  
Storage Temp: -30°C



### HSLV Umbilical System

Functional Lines: 5 x 1/4" NB 690 bar (10,000psi) WP hydraulic/chemical hoses

Umbilical Length: 200m  
Jumper Length: 1 x 75m  
Design Water Depth: 200m  
Hose Operating Temp: -18 to 99°C  
Sheath Max Temp: 135°C  
Storage Temp: -30°C

## Terminations

All JDR umbilical products are completed with integrated terminations providing with compression seals and quick connections for immediate deployment and operation.



## Reeler Units

To accommodate the range of umbilical designs, JDR custom-engineered five individual reeler units complete with all hydraulic and electrical components, spooling, braking and lifting elements.



**JDR is the world's leading manufacturer of high performance custom-engineered IWOCs umbilicals and complete workover reeler packages.** In the offshore sector, JDR has demonstrated flexible and innovative design and engineering approaches for umbilicals, cables and termination installations and has established a reputation as a responsive and collaborative engineering and offshore service resource.

JDR is a leading worldwide provider of custom designed and manufactured subsea power cables and umbilical systems for a broad range of applications in the oil and gas sector and the growing offshore renewables industry.

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