

# PROJECT SHEET

**DNO OMAN BLOCK 8 LTD (DNO), OMAN**  
FLOWLINE AND UMBILICAL INSTALLATION FOR BUKHA 1

## BOSKALIS

Royal Boskalis Westminster is a leading global marine contractor and services provider. With safety as our core value, we offer a wide variety of specialist activities to the oil & gas and renewables sectors. These activities include marine installation and decommissioning, seabed intervention, marine transport and services, subsea services and marine survey. In addition, Boskalis is a global dredging contractor, provides towage and terminal services across the globe and delivers marine salvage solutions.

By understanding what drives our clients we are able to provide the solutions that enable them to meet their specific business goals. For this reason we are constantly looking for new ways to broaden and optimize our offering and are committed to expanding our proposition, supported by our financial strength.

With our committed professionals in engineering, project management and operations, 900 specialized vessels and an unprecedented breadth of activities in 90 countries across six continents we help our clients in the offshore industry push boundaries and create new horizons.

## DNO OMAN BLOCK 8 LTD

DNO Oman Block 8 Ltd (DNO) is the operator of the Bukha Field, offshore Khasab, Oman. DNO entered Oman in 2012 and operates the country's only producing offshore fields on behalf of Omani Oil & Gas ministry.

Boskalis Subsea Services (BSS) in recent years have assisted DNO with lifting a flare boom onto the WB Platform, making use of a DP2 offshore vessel, also Boskalis provided diving and inspection services to DNO for their SPM Offshore RAK, UAE.

## SCOPE OF WORK

The project objective of this scope of work is to pull-in, lay, connect and commission a 1,200 m long 6" ID production flowline, together with a

## FEATURES

Client	DNO Oman Block 8 Ltd
Location	onshore preparations: Papendrecht & Dubai offshore works: Bukha Alpha Platform in the Bukha Field, offshore Khasab, Oman
Period	April - September 2017
Contractor	Boskalis Offshore Subsea Services Middle East LLC



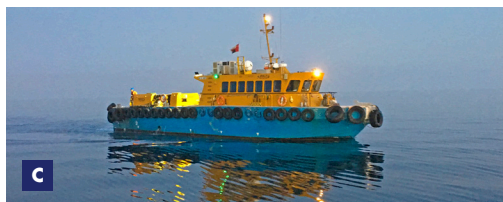
**A** Location map

**B** DSV MMA Prestige working nearby BA Platform during the lay campaign

111 mm OD hydraulic control umbilical between the Bukha Alpha (BA) Platform and the Bukha 1 (B1) Subsea Well. BSS was contracted to provide the procedures, Dive Support Vessel (DSV), Hyperbaric Rescue Vessel (HRV), project equipment and personnel to undertake this SOW.

The contract was awarded in April 2017, and the installation of the newly manufactured 6" ID Flowline and 111 mm OD umbilical between the B1 well and the BA platform took place during the month of August 2017.





The following offshore & marine works were undertaken:

- Installation of winches and ancillary equipment for pull-in operations and flowline and umbilical testing from the BA Platform
- Mobilisation of Saturation DSV with flexible product installation equipment
- As found surveys of:
  - The BA Platform
  - The proposed lay route
  - The B1 Wellhead Tree
- Transfer of the pull-in winch wire from the platform to the DSV deck through the J-Tube
- Overboarding, pull-in (via spare J-Tube) and subsequent hang-off of the first end of the Production Flexible Flowline and Umbilical on the BA Platform
- Dual lay of the 2 products towards the B1 Well, including installing of piggyback clamps
- Laydown of both products secondary end near to the B1 Well
- Barrier Testing of the B1 Well
- Installation of a dropdown spool onto the B1 well, prior to the tie-in of the production flowline
- Connection of the control umbilical to the B1 well via a stab plate
- Commissioning support as directed by DNO

In addition to the above, integrity testing/monitoring activities of the umbilical cores and flowline, pre, during and post lay were undertaken.



The Engineering & Project management scope of work comprised (amongst other aspects) of:

- Flexible product (J-tube) pull-in analysis
- Flexible product lay analysis (using Orcaflex)
- Flexible product deployment spread deck design (layout, seafastening)
- Detailed Work Procedures (DWP) for project mobilization and execution
- Storyboard drafting for the DWPs
- Winch frame design as installed on BA Platform
- Anchor assembly and pull-back arrangement for (option of) pulling back both products from J-tube in case they would get stuck
- Preparation of the heavy lifts of both product reels using an onshore 600 t crawler crane



Main equipment used:

- DSV MMA Prestige with BSS' SAT4 dive system
- HRV MMA Cavalier (for hyperbaric rescue, supply and floatel duties)
- CTV Gulf Navigation 2
- Seaeye Panther XT Plus
- H<sub>2</sub>S Equipment (sensors & cascade system)
- Airlift & Compressors
- 400 t Reel Drive System (RDS)
- 80 t umbilical spooler
- 1x 36 t Hydraulic Tensioner
- 1x 3 t Linear Cable Engine
- 1x 4.5 m Radius Over boarding Chute
- Grayloc Connectors, sand bags, grout bags, flowline and umbilical pressure testing spreads
- 2x 32 t platform pull-in winches

- C** Crew transfer vessel Gulf Navigation 2
- D** The flexible product installation spread, with flowline and umbilical on the reels, on the back deck of DSV MMA Prestige.
- E** DSV MMA Prestige installing flowline and umbilical simultaneously