

- Marine Warranty Surveys

MSB Ltd. provides warranty surveys to the Insurance industry to confirm that all imposed warranties have been complied with and that the project under inspection presents no extraordinary circumstances than those which might normally be accepted by Underwriters concerned.

MSB Ltd. is the largest provider of warranty surveyors to DNV GL Noble Denton marine services – the world's leading consultancy in the offshore industry. Over 85% of the entire MSB portfolio is performed on behalf of DNVGL Noble Denton ms and is associated with provision of MWS surveyors, marine consultants and marine representatives since 2006.

For the last 15 years our surveyors have been employed by DNV Noble Denton on major projects worldwide as Kashagan Oil Field Development for Agip KCO, Yuri Korchagin, V. Filanovsky phases I, II, III V. Graifer for Lukoil, MedGaz, Dzhubga-Lazarevskoe-Sochi gas pipeline for Gazprom, Wingate project for Wintershall Noordzee BV, Baraka project off-shore Tunisia, TRA0 Akcakoca development in Black Sea for GSP Romania, Thanet Offshore Wind farm, Dunlin Gas Project, BG Gaupe project for British Gas, Triton DC6 for Dana Petroleum, Borkum West II Wind Farm, Islay project, CLOV and Kaombo for Total, TEN for Tullow Oil, East Anglia I WOF for Scottish Power, Shah Deniz II for BP, Zohr and Baltim SW projects for ENI and many others.

MSB offers the following warranty surveys:

- Floatover operations;
- Jacket and Top Side installations;
- Deep water Rigid and flexible pipelay – S-lay, J-lay, reeled pipe;
- Subsea power cables installations and repair;
- Towage and voyage approvals;
- Mooring approvals;
- Heavy lift loadout and load-off;
- Skidded loadouts of structures;
- SMPT operations;
- Heavy lifts stowage and securing approvals;
- Shipyard and site surveys;



As part of DNV GL Noble Denton ms, we have worked on the following major projects for the period 2015-2019:

2019 Rakushechnoe Oil Field Development, Caspian Sea

Providing marine consultancy services to the pipelay installation contractor Vimar-Offshore LLC for three pull-ins and pipelay operations – 6” 3LPE, 10” and 16” CWC pipelines.

Novatek Arctic LNG 2 Project

Review and approval of GBS towage route, bathymetry, berthing/unberthing, towage procedures; approval selection of all towing and mooring equipment; towing arrangements, specification of marine spread, etc.

Sakhalin Energy OPF Compression Project – Heavy Lift Transportation & Beach Landing Facility Operations Sakhalin Island Beach Landing Facility

Load-in Supervisor, Superintendent and Ballast Engineer on board the transportation barge HHIC-B1 responsible for the load-in of heavy lift units on SPMTs; performing beaching, anchoring and berthing of transit and transportation barges.

Sakhalin Energy OPF Compression Project – Heavy Lift Transportation & Beach Landing Facility Work

Providing consultancy for Heavy Lift Transportation and beach Landing Facility. Review and selection of mooring system and mooring equipment, towing equipment, inspection of tugs, etc.

Filanovskiy Oil Field Development phase III, Caspian Sea

Loadout and Transportation of Filanovsky III WHP Top Side through VCC and North Caspian Sea. Performing Filanovsky III WHP Top Side Floatover. Review and approval of various marine procedures.

Baltim SW Platform T&I Project

Review and approval of various procedure regarding installation of subsea templates, pin piles, jacket, foundation piles, top side installation, jacket weighing, installation of spools and other T&I activities.



Shah Deniz 2 Project for BP, Caspian Sea

MWS attendance for:

- Initiation and normal lay of ES1 14" Flow line by PLBH "ISRAFIL HUSEYNOV";
- Installation of CTZs; ES DSSIV module and installation of FTA;
- Load-out, Sail-away and Installation of WS Cluster XT's No 13 and 14 by SCV 'Khankendi';
- Attending on board SCV "Khankendi" the Loadout & Transportation of EN1 & EN2 FTA Foundations & EN CTZs;
- Installation of 4x ES Pipeline Walking Anchor (PWA) Driven Pile Anchors (DPAs) and 8x Piles by SCV 'Khankendi' at Shah Deniz Field and Installation of 4x WS Pipeline Walking Anchor (PWA) Driven Pile Anchors (DPAs) and 8x Piles by SCV 'Khankendi' at Shah Deniz Field.

Spirit Energy Rig Move from Andromeda Subsea Well to Chiswick platform location

Marine Assurance inspection of the Lead AHV Fairplay 33 at Rotterdam, The Nederland and AHT Multratug 4 at Vlissingen, The Netherlands.

Reliance Block KG-DWN-98/3 (KG-D6) R-Cluster Field Development Project.

Attending on board DLV 2000 Pipelines laying, PLETs installation and Riser and Riser protection frame installation. Water depths up to 2000m.

East Anglia One WOF

Attendance as MWS on-board Boskalis vessel "Ndurance" for Loadout of 14x Interarray Cables of Overall Length 40.5km while moored at Victoria Deepwater Berth at Hartlepool Harbour, UK

Scottish Power Renewables East Anglia 3 North HDD Duct Tow, Installation, Ballasting and Backfilling

Attendance as MWS for East Anglia 3 North HDD duct (1059m) tow out to installation site. Subsea pull-in



installation of HDD duct at EA3 North Pit. Ballasting of duct via Rockbag installation followed by backfilling works. Flooding and Calibration of EA3 North HDD duct; Subsea Installation of Rockbags and Backfilling of EA3 North pit=

2018

Kaombo SUL FPSO, Angola, Block 32

Review and approval of various procedures for FPSO tow, emergency towing, navigation and bridging documents, ERP, survey, etc. Attending Installation of Water Injection Well Jumper by LCV Bourbon Ocean Team 101. Water depths 1400m. Transpooling of production flexible jumper on installation vessel “Skandi Africa” from HLV “Happy River” at Sonamet, Lobito, Angola.

East Anglia One WOF

Review and approval of various procedures for ABCO duct collection, transfer to site, pull-in, etc.

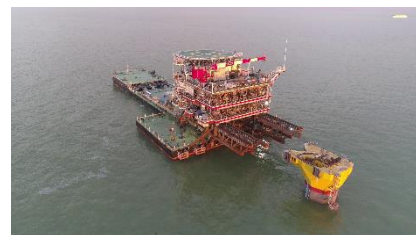
Attendance as MWS for East Anglia 1 Subsea Export Cable Lay up to Mid-line Joint (43.92 km) onboard Vessel “Maersk Connector” using ACP2 plough:

- Subsea Horizontal Pull in through EA1 North HDD duct (1052m) to onshore winch. CLV grounded and 8 skids with anchors and DP, assisted by 3 Anchor Handling Tugs and Main Tow Tug “Sentosa”; 5 Crossing Regions; Cable 2nd End Laydown; Simultaneous Lay and Burial Using ACP2 Plough.

Attendance as MWS for East Anglia 1 South HDD (1048m) tow to installation site. Subsea pull-in installation of HDD at EA1 South Pit.

Attendance as MWS onboard Vessel “Volantis” for East Anglia 1 North Subsea Export Cable Jetting and Burial using UT-1 trencher.

Attendance as MWS onboard vessel “Volantis” for the subsea installation of 108 fronded concrete mattresses (8.6 tonnes each) using an Intelligent Mattress Frame equipped with Dual Gemini Sonars along the route of EA1 North Subsea Export Cable.



Filanovskiy Oil Field Development phase III, Caspian Sea

Offshore Consultant onboard CLV “Atlantic Supporter” for Vimar Offshore for installation and post burial of two power cables and 1 geotech cable. OCM in charge for:

- Two sub-sea power cable loadouts, transportation and installations;
- Cables first and second ends pull-ins;
- Cable protection and bent restrictors installation;
- Cable trenching and post burial.

Korchagin Well Head Platform Fork-Lift Floatover, Caspian Sea

Floatover Marine advisor to CHT, Russia and OCS Singapore for transportation and installation of the world’s largest fork-lift floatover (W=2,800 t). In charge of entire marine spread, preparation of the Korchagin WHP top side for and TMB barge for towage and floatover operation; Tow Master for the tow through the Caspian Sea; Performing the TMB barge (140x62 m) slot entry and exit.

Filanovskiy Oil Field Development phase III, Caspian Sea

Providing marine warranty services and attending the weighing and transportation through Volga/VCC/Caspian Sea of the Well Head Platform Substructure. Attending onboard the crane vessel Gurban Abasov for crane assisted ballasted installation of the Substructure and piling of the Well Head Platform Substructure.

Document reviews of transportation and installation procedures, as-built surveys, pre-installation surveys and bathymetry reviews; attending HAZID/HIRA and kick-off meetings.

Reliance Block KG-DWN-98/3 (KG-D6) R-Cluster Field Development Project.



Review of procedures and MEP for DLV 2000 pipelines and PLETs installations. Suitability survey of the DLV 2000.

ENI Angola Block 15/06 – East Hub Development Project

Attending Loadout of UM8 Jumper WAG onto CB JMC 2514 at PMT yard, Ambriz, Angola.

Attending Sailaway of UM8 Jumper WAG onto CB JMC 2514 from PMT yard, Ambriz, Angola to Offshore East Hub Field.

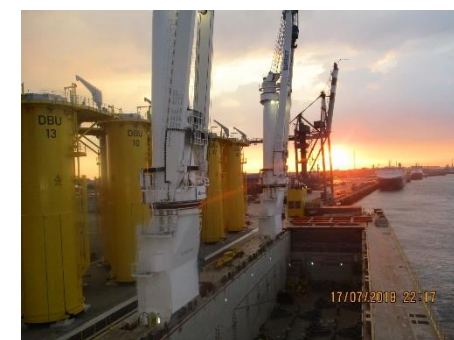
Petrobel - Zohr Field Development Project - ORU Phase

Attending Pre-commissioning, Jumpers and Flying leads installation activities on board of installation vessel “Far Samson”, Zohr field, Offshore Egypt. Water depths 1100-1700m. Attending Post-lay Trenching operations of 30” gas export and 8” glycol injection pipelines on board TSV “MO Toucan” Offshore Egypt.

Shah Deniz 2 Project for BP, Caspian Sea

MWS attendance for:

- Loadout, Sailaway and Installation of WS Cluster XTs No 13 and 14 by SCV ‘Khankendi’;
- loadout, Transport & Installation of EN DSSIV module and installation of 4 off 42” Foundation Piles for 12” WS DSSIV Foundation;
- Lifted installation of the 12” WS DSSIV and 4xpiles by SCV “KHANKENDI”;
- Lifted installation of 4 x WF PWA DPA & 8 x Piles by SCV “KHANKENDI”
- Lifted installation of 12” DSSIV Foundations by SCV “Khankendi” at EN and ES cluster locations;
- FBS installation in WS1 location by SCV “Khankendi”;
- Load-in and Loadout of 6,175 MLPP and Bare Pipe Joints from m/v “AP Dubrava” to



2017

- Numerous suitability surveys of vessels and loadouts of reels for RHD systems;

Filanovskiy Oil Field Development phase III, Caspian Sea

Providing consultancy scope for the T&I Contractor Vimar Offshore for installation of two power cables and 1 geotech cables.

Providing advice for:

- Cable installation methodology and choice of suitable CLV. Deck layout. Choice of cable lay spread;
- Cable first and second ends pull-in methodology;
- Cable protection and bent restrictors;
- Cable installation and burial methodology and choice of sub-contractor and equipment;
- Preparation of various procedures;

Total E&P Angola Block 32 – Kaombo Project

Suitability survey of the LCV Mearsk Attender.

Attending Installation of Production Rigid Jumper by LCV North Sea Atlantic. Water depths 1600m

Attending Mobilization, spooling and installation of PiP Production flowline by MCV Deep Blue. Water depths 1425-1925m

Attending FPSO CBLs loadout onto BOA22 in PTM yard Ambriz, Sailaway using tug Jascon 12 to Porto Amboim and CBLs offloading from BOA 22 in Paenal yard Porto Amboim, Angola.

Suitability survey of the tug Lucala.

ENI Ghana OCTP Development Project

Attending Local Mobilization and Sailaway of MCV Lewek Connector, Installation of Flexible Risers and Umbilical with UTA. Water depths 2400-2600m.

Attending Reels transfers from HLV Industrial Grace to the MCV Lewek Connector.

Attending AFLATs transfer from MCV Lewek Connector to the UOS Discovery and Sailaway of the UOS Discovery.

Suitability survey of the OUS Discovery, OCV Bourbon Homere and Alleco Commander.



Installation of 6" flow lines (fop4a and fop4b); First end deployment, Normal lay and Second end laydown for Umbilical USE-2, ROP4; Installation of RWI1 Flexible Riser and FWI1 6" Flowline.

V. Filanovsky II field development project, Caspian Sea.

Floatover Marine advisor to CHT, Russia and OCS Singapore for Filanovsky phase II 2017 campaign for loadout, transportation and floatover installation of for two top sides – LQ-2 and IFP-2. Based in Astrakhan, Russia.

Responsible for and managing on site the marine operations - transportation and floatover of IFP-2 and LQ-2 Top Sides.

Managing the marine spread and installing the connecting bridge between IFP-2 and LQ-2 platforms using Bumi Installer 800 t revolving crane.

Attending the transportation and installation at offshore site of the Temporary Accommodation Block for LQ-2 Platform.

Review of procedures for laying of two power lines and six geotech cables. Providing additional consultancy scope for the T&I contractor for installation of the power cables.

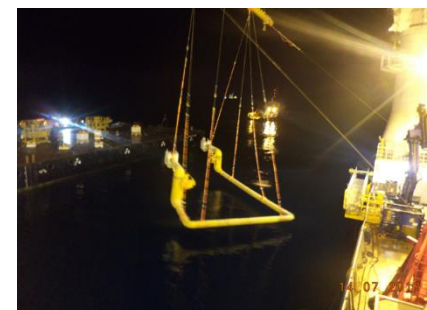
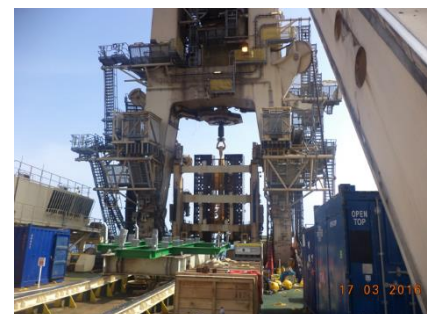
V. Filanovsky II field development project, Caspian Sea, MWS Scope.

Marine warranty services for approval of DP CLV East River. Approval of cable loadout and installation spread for two power and six geotech cables. Attending entire cable installation campaign for 2 x subsea power cables and post-burial operations.

Shah Deniz 2 Project for BP, Caspian Sea

MWS attendance for:

- Loadout and installation of NF1 and NF2 umbilicals;
- Transportation of XT2, XT3, XT4&XT5 Well Jumpers;
- Numerous suitability and transportation surveys.



2016

DNV GL R&D – Feasibility of shared anchor points for a Floating Offshore Wind Turbine (FOWT) Farm – Awarded with Certificate and Bronze Medal by the Institution of Mechanical Engineers (IMechE)

- Design and development of shared anchor mooring patterns;
- Design, followed by static and dynamic analysis of the FOWT Tower, Controller and Nacelle under Hywind II, Buchan Deep operating conditions, using the FAST software;
- Design of the SPAR substructure in Patran
- Design and stability Analysis of the SPAR type substructure in ANSYS AQWA
- Coupled dynamic analysis of the single turbine model in OrcaFlex and FAST, followed by design, static and dynamic analysis of the shared anchor wind farm in OrcaFlex in the Ultimate and Accidental Limit States (ULS and ALS)
- Risk Analysis via BowTie Diagrams and extensive Hazid of all key wind farm components
- Design of buoy type to act as a shared connection
- Development of marine installation, maintenance and decommissioning procedures

Mooring Deep Water Development for Mirae FPSO, Gulf of Mexico

Mirae FPSO 100-year return mooring research & sensitivity case study for Chevron. Investigating the feasibility of moored vessels in hurricane conditions in the Gulf of Mexico

Filanovskiy Oil Field Development phase III, Caspian Sea

Floatover Marine advisors to CHT, Russia and OCS Singapore for Filanovsky phase II 2017 campaign for loadout, transportation and floatover installation of for two top sides – LQ-2 and IFP-2. Based in Astrakhan, Russia.



Responsible for and managing on site the marine operations - transportation and floatover of IFP-2 and LQ-2 Top Sides.

Managing the marine spread and installing the connecting bridge between IFP-2 and LQ-2 platforms using Bumi Installer 800 t revolving crane.

Attending the transportation and installation at offshore site of the Temporary Accommodation Block for LQ-2 Platform

Review of procedures for laying of two power lines and six geotech cables. Providing additional consultancy scope for the T&I contractor for installation of the power cables.

Kaombo Field Development, Total E&P Angola, Block 32

Review of docking plans and procedures for 320,000 dwt taker to be converted as FPSO.

Attending HAZID and HIRA sessions with the T&I Contractor CHT Heerema for DW Flowlines and FLET installations using DCV Balder.

Attending HAZID and HIRA sessions with the T&I Contractor Technip for SURF Flexible Jumpers installation to FPSO, transportation of spools and project equipment.

Angola Block 15/06 East Hub – SURF, ENI

Attending HIRA and HAZID sessions for jumper, spools and X-mas tree installations. Suitability surveys of the Barge Seaways 23 and AHT Tricia K.

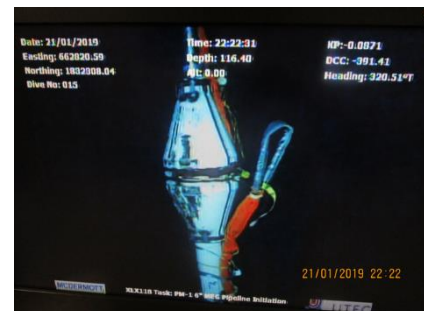
Tullow TEN Project

Attending Local Mobilization and Sailaway of MCV Deep Energy, Installation of WI and GI rigid flowlines with PLETs. Water depths 1000-2000m.

Suitability survey of the Bourbon Hera.

FPSO Petrojarl I at Damen Shiprepair Yard

Attending upgrade of FPSO at Damen Shiprepair Yard. MWS attendance for E-House transport and Installation onboard FPSO “Petrojarl I”.



Shah Deniz 2 Project for BP, Caspian Sea

MWS attendance for:

- Lifted Deployment and Wet Store of several 32" spools;
- Initiation, normal and laydown of 32" Export Pipeline;
- Installation of 14" WF1 and WF2 flowlines;
- Initiation of 18" pipe WI pipe line, Normal Lay, Cross Over Pipe Lay and Final Lay Down of 18" WI pipeline;
- Initiation, normal lay and final laydown of the 32" gas export pipelines # 1 and No2



2015

Filanovskiy Oil Field Development phase II, Caspian Sea

Providing consultancy and installation superintendent services for the T&I Contractor Caspian Hydro Technologies for Filanovsky phase II 2016 campaign for pre-marine warranty approval of transportation and installation of sub-structures for two platforms – LQ-2 and IFP-2. Based in Astrakhan, Russia.



Attending the transportation and installation of the LQ-2 substructure W = 2,430 mts, IFP-2 substructure W = 6,120 mts. Performing barge superintendent duties for installation of piles.



Early review and preparation of procedures for two top sides transportations and floatover operations in 2017.

FPSO Petrojarl I docking in Damen Shiprepair, Rotterdam

Review of docking procedure and docking plan approval. Attending on site for the docking operations of the FPSO Petrojarl I at dock # 8 in Damen Shiprepair, Rotterdam.



Development of Deepwater URF Installation Procedures – Basis of Design

Development of Deepwater URF Installation Procedures– Basis of Design. Preparation of HIRA and attending HIRA meetings for URF deepwater installations.

FPSO Kaombo docking in Sembawang Shipyard, Singapore

Review of docking and ballasting procedures and docking plan approval.

Tullow TEN Project

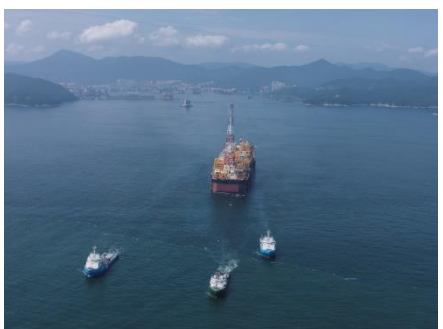
Attending HSE and lessons learnt meeting at Technip Flexi France for TEN project – heavy lift shore crane and HSE for loadout of 31 flexibles.

HIRA for Pipe Carriers Berthing to Borealis and Transfer of Pipes from Carriers to Borealis at Suresnes Subsea 7 office, Paris

Attending several Loadouts of Suction Piles, Manifold, Riser Base and PLETs onto CBs and several Sailaways. CMIDs and Suitability surveys of the Pacific Brigand, Pacific Avenger, Pacific Patriot, Pacific Porpoise Loadout and Transportation of SFL and EFL onto LCV Simar Esperansa

Attending Mobilization HLV Tokyo with MCV Deep Pioneer and Supply vessel Bourbon Calm, Load outs Reels, Hold-back piles and SOM/Transpooling Flexibles GI flowline and OP Risers , Transportation and Installations of Hold-back piles, Step over module, Flexibles WI & OP Risers. Water depths 1000-2000m Attending Mobilizations HLV Happy Ranger with LCV Viking Neptune. Loadouts/Offload Umbilical Reels, Transportation and Installations of the several Static Umbilicals and Riser. Water depths 1000-2000m Numerous attendances in Flexi France for mobilization of four HLVs and Lay spread on LCV Viking Neptune.

ENI Congo Marine XII Block Lichendjili Gas Development



Attending Installation of Jacket, Piles, Deck and Deck Structures. Suitability survey of the AHTS Bourbon Thalie, HLV “SAIPEM 3000”, AHT “ARMADA TUAH 81”, “LEWEK CHANCELLOR”

STATOIL MARINER JACKET EPC

Suitability survey of cargo barge Wagenborg 9

Attending Piles Loadout at Bow Terminal, Vlissingen, The Netherlands, using MLC and SPMT.



GDF DEVELOPMENT CYGNUS PROJECT

Attending Trailered Loadout of AUQ TS in Methil, UK.

Installation of FPSO STL Buoy in the Mariner Field

Towing of the STL Buoy from Tananger to the Mariner Field by the towing and AHT vessel BB Worker. Pile anchors, mooring lines (chains, TDPs and WSS) installation and hook-up of a turret FPSO STL Buoy.



Mariner Project for Statoil, UK Sector North sea

Loadout of steel jacket piles on board the Wagenborg-9 barge at Middelburg, Netherlands.



FPSO CLOV for Total E&P Angola

OLT towage from Lobito to CLOV Field (off-shore Angola) and the hook-up of the OLT Buoy at the CLOV Field) as well as the installation of the two FOCs and the first OOL between the FPSO and the OLT Buoy

