

PROJECTS TRACK RECORD MOORING DESIGN

CLIENT	PROJECT	COUNTRY	CLASS SOCIETY	WATERDEPTH	DESCRIPTION OF PROJECT	TYPE	YEAR
Mooreast / Blue Ocean	Rubsh removal in Klang river	Malaysia	NA	5 m	<ol style="list-style-type: none"> 1. Hydrodynamic of rubbish collecting vessel. 2. Mooring system design for rubbish collecting vessel 3. Review of floating barrier design and operation 		2021
NOC	FSO & CALM Buoy	Qatar	ABS	70 m	<ol style="list-style-type: none"> 1. FEED STUDY level 2&3 for the mooring systems and vessel conversion requirements for FSO and CALM Buoy system 2. Chain stoppers and mooring system, specifications, RFQ 3. Structural design and engineering for reinforcements on vessel 4. Naval Architecture for conversion 5. Mooring analysis 6. Fatigue analysis 7. Mooring system design 		2020
SOA / Hyundai (HOB)	CALM Buoy	Korea	ABS	34 m	<ol style="list-style-type: none"> 1. Chain tensioning system engineering, analysis, procedures and drawings 2. Offshore installation analysis and procedures 3. Structural modifications design & engineering 		2020
NOC	FSO & CALM Buoy	Qatar	ABS	70 m	<ol style="list-style-type: none"> 1. FEED STUDY for mooring systems options 2. Technical commercial review of solutions 3. Design of mooring system , mooring analysis 		2020
UTS / CORTEZ	Offshore Installation	Singapore	DNV	500 m	<ol style="list-style-type: none"> 1. Structural design and engineering of requirements and changes for the VLS system to be loaded on board the installation vessel, for the SURF installation of flowlines and risers 2. Integration of new system with existing systems 		2020
NOC	FSO & CALM Buoy	Qatar	ABS	70 m	<ol style="list-style-type: none"> 1. FEED level 1 STUDY for the mooring systems and vessel conversion requirements 2. Chain stoppers and mooring system 3. Thruster and their requirements and analysis 4. Structural reinforcements on vessel 5. Naval Architecture for conversion 		2019

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Amaniaga	CALM Buoy	Malaysia	ABS	30 m	<ol style="list-style-type: none"> Detailed Mooring Analysis, including Fatigue for CALM Buoy Review of requirements for upgrade of buoy. Procedures for installation 		2019
MOPU HOLDINGS	Temporary Storage Tanker	Malaysia	ABS	60 m	<ol style="list-style-type: none"> Reinstatement of Mooring System Complete analysis design checks and reviews for the mooring system Complete Installation procedures and on-going review 		2019
SOA / Hyundai (HOB)	CALM Buoy	Korea	ABS	34 m	<ol style="list-style-type: none"> Hydrodynamic analysis of CALM Buoy Complete Mooring analysis, design and engineering, fatigue assessment etc. Riser analysis, design and engineering Detailed Installation Procedures 		2019
HESS Exploration & Production	FSO	Malaysia	ABS	56 m	<ol style="list-style-type: none"> DEEPBLUE was appointed as the overall Technical and Managerial consultant for the engineering of the offshore installation. Multiple DB personnel were appointed as the overall HESS Transport & Installation Management, in order to manage the different subcontractors from a technical and managerial point of view on-shore and during the offshore campaign for the FSO, mooring and SURF Installation. Including flowline lay, mooring installation and hook-up, SAT diving etc. 		2018
CAFHI	Jet-fuel offloading terminal	Singapore	ABS	15 m	<ol style="list-style-type: none"> Design and engineering of the mooring system for several size tankers for the offloading of cargo. Design and engineering of the Hose and SURF system for the offloading of the cargo at the terminal. 		2018
HESS Exploration & Production	Temporary Storage Tanker	Malaysia	ABS	56 m	<ol style="list-style-type: none"> Complete EPIC contract of the Temporary Storage Tanker. Design of the mooring system for a Temporary Storage Tanker (TST) for condensate storage. Design of the subsea flowline, riser and hose system for condensate transfer from Central Processing Platform (CPP) to the TST. Design of subsea support bases and gravity systems. Upgrading of 6-point mooring system to 8-point mooring system to increase the operability. Structural modifications to install 2 chain stoppers and 1 QRH at the stern of the TST. Installation engineering for the tanker, mooring and SURF. 		2017-2018

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					<ul style="list-style-type: none"> 8. Provision of all personnel for installation, management, Flowline installation management 9. EPIC of the Offshore installation of the tanker, mooring system and SURF. 10. Offshore TST changeout of 6-point moored tanker with a new 8-point moored tanker. 11. Design engineering and offshore procedures for offloading of condensate. 		
JMUS	Floating Dock Installation	India	LR	25 m	<ul style="list-style-type: none"> 1. Installation engineering and procedures for mooring installation and hook up. 2. Offshore installation of the mooring system. 3. Offshore Personnel support during the installation. 		2017
SPT Offshore	Accommodation barge	Netherlands / Malaysia	ABS	73 m	<ul style="list-style-type: none"> 1. Field lay-out and mooring system design. 2. Mooring analysis and design for a construction support barge. 3. All engineering drawings for the design and installation. 		2017
LNG Link	FSRU	Indonesia	-	4 to 10 m	Feasibility and FEED study at multiple locations for <ul style="list-style-type: none"> 1. Mooring system 2. SURF and Hose system 3. Budgets and project execution. 		2017
Optima Energy	Multi Buoy Mooring for LPG Offloading	Cameroon	-	20 m	<ul style="list-style-type: none"> 1. Feasibility and FEED study for the mooring of LPG Offloading System 2. Preliminary costing for equipment and installation 		2017
Optima Energy	Multi Buoy Mooring for LPG Offloading	Nigeria	-	8 m	<ul style="list-style-type: none"> 1. Feasibility and FEED study for the mooring of LPG Offloading System 2. Preliminary costing for equipment and installation 		
Yinson	FPSO	Singapore	ABS	300 m	<ul style="list-style-type: none"> 1. Review of mooring proposals performed by others 2. Review of hydrodynamics performed by others 		2017
UAE Company	FPSO	UAE	DNV	80 m	<ul style="list-style-type: none"> 1. Engineering and design of Offshore anchor installation for Client 2. Engineering personnel present Offshore during anchor installation 		2016-2017

Offshore Installation

Detailed Design & Engineering /
FEED

Environmental / Offshore
renewables

Expert Witness - MWS and 3rd
Party Independent Review

Decommissioning

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Coastal Energy	Banang Field	Malaysia	ABS	70 m	<ol style="list-style-type: none"> 1. Engineering & Detailed design of a temporary mooring system for the tanker. 2. Detailed installation procedures, analysis and drawings. 3. MWS approval 4. Offshore Installation management and engineering execution by DEEPBLUE personnel 		2016
Coastal Energy	Kappal Field	Malaysia	ABS	70 m	<p>Mooring decommissioning of Storage Tanker and Offshore de-installation detailed engineering and design and execution:</p> <ol style="list-style-type: none"> 1. Detailed design and engineering of removal of the mooring system. 2. Detailed de-installation procedures, analysis and drawings. 3. Offshore removal of Tanker 4. MWS approval 5. Offshore management and engineering support by DEEPBLUE personnel 		2016
CAFHI	Vessel Terminal	Singapore	ABS	15 m	<p>Detailed design and Engineering:</p> <ol style="list-style-type: none"> 1. Mooring system design and analysis for loading vessel. 2. Mooring design and analysis for vessel along the quay side. 3. Naval Architectural review of the vessel with respect to the components and systems required for Mooring. 4. Drawings, analysis, procedures. 5. Installation procedures. 		2016
Exon Mobile / Amaniaga	Mooring system Installation	PNG	ABS	15 m	<p>Mooring Offshore installation detailed engineering and design and execution:</p> <ol style="list-style-type: none"> 1. Detailed design and engineering of mooring system installation. 2. Sea-fastening of all equipment. 3. Detailed installation procedures, analysis and drawings. 4. HAZID – SIMOPS. 5. Offshore management and engineering support by DEEPBLUE personnel 		2016

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CLIENT	PROJECT	COUNTRY	CLASS SOCIETY	WATERDEPTH	DESCRIPTION OF PROJECT	TYPE	YEAR
Mitsui	Floating Windmill	Japan	DNV	70 m	Detailed Engineering and design for a floating windmill: <ol style="list-style-type: none"> 1. Naval Architectural requirements 2. Mooring and anchoring system 3. Suction piles and drag anchors design 4. Installation procedures and engineering review 5. Cost estimation for mooring system and installation 		2016
UAE Company	FPSO	UAE	DNV	80 m	EPIC for the following: <ol style="list-style-type: none"> 1. Mooring system, anchors, winches 2. Subsea, Risers and umbilical 3. Detailed design of under deck strengthening for all non-process related topsides and marine equipment 4. Design of riser & Umbilical porches, floating hose porches 5. General Naval Architecture 6. Marine systems engineering and design 7. Offshore Installation support, engineering and procedures 		2015-2016
Dolphin Drilling/Viking	Mooring Analysis	Indonesia	ABS	30 m	Detailed design and Engineering: <ol style="list-style-type: none"> 1. Mooring analysis of drill ship with Class / MWS approval 2. Drawings of mooring system and field layout 3. Installation specification for the mooring systems 		2015
GLOCAL	Floating Windmill	Japan	DNV	70 m	Detailed Engineering and design for a floating platform: <ol style="list-style-type: none"> 1. Naval Architectural requirements 2. Hydrodynamics 3. Mooring design and anchoring system 4. Suction piles and drag anchors design 5. Installation procedures and engineering review 6. Cost estimation for mooring system and installation 		2015

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Bumi Armada	FSO Feasibility Studies	Myanmar	ABS	20 m	<p>Feasibility study of the FSO to be stationed offshore Myanmar comprising of:</p> <ol style="list-style-type: none"> 1. Mooring analysis for spread moored system. 2. Offloading analysis of FSO and shuttle tanker. 3. Field layout and mooring drawings. 4. Comparative study of various mooring and offloading options. 		2015
BC Petroleum	EPV Balai Mutiara	Malaysia	ABS	70 m	<p>Engineering design and Consultant for the EPV Upgrade for SURF, mooring and installation:</p> <ol style="list-style-type: none"> 1. Field lay-out review and development. 2. Mooring analysis, mooring fatigue, tandem analysis. 3. Riser analysis. 4. Design and engineering of vessel structural modifications requirements for mooring, risers, and the offshore installation. 5. Specifications for mooring systems, components, vessel equipment, offloading hoses, winches and dependant structures and equipment. 6. Offshore installation analysis, procedures, methodology, requirements and specifications. 7. Review of Company produced engineering packages and detailed design. 8. Review of Company subcontractors work and proposals. 9. Marine warranty surveyor, review of 3rd party engineering. 		2014 - 2015
COBALT	Cameia	West Africa	ABS	2800 m	<p>SURF, Subsea mooring, and installation detailed engineering for an FPSO comprising of:</p> <ol style="list-style-type: none"> 1. Field lay-out review and development. 2. Mooring analysis, mooring fatigue, tandem analysis, use of synthetic moorings for deep water. 3. Mooring analysis for turret and spread-moored 4. Riser and umbilical analysis, coupled analysis with mooring system, for the different options. 5. Design and engineering of vessel structural modifications requirements for mooring, risers, and the offshore installation. 6. Specifications for mooring systems, components, vessel equipment and dependant structures and equipment. 7. Offshore Installation analysis, procedures, methodology, requirements and specifications. 		2014

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M3nergy	Perintis FPSO	Indonesia	ABS	30 m	Mooring and installation detailed design & engineering: <ol style="list-style-type: none"> Detailed Mooring analysis for vessel lay-up. Specifications of mooring system. Offshore Installation requirements. 		2014
Coastal Energy	Banang Field	Malaysia	ABS	70 m	Mooring and Offshore installation detailed engineering and design and execution: <ol style="list-style-type: none"> Detailed design and engineering of mooring system. Detailed design and engineering of Side by Side offloading, simulation of SBS. Detailed installation procedures, analysis and drawings. Offshore Installation Offshore management and engineering support by DEEPBLUE personnel 		2014
NAE – Bumi Armada	ETAN FPSO	Nigeria	ABS	1800 m	FEED study for an FPSO comprising of: <ol style="list-style-type: none"> Field lay-out review and development. Mooring analysis, mooring fatigue, tandem analysis, use of synthetic moorings for deep water. Preliminary riser and umbilical analysis, coupled analysis with mooring system. Design and engineering of vessel structural modifications requirements for mooring, risers, and the offshore installation. Specifications for mooring systems, components, vessel equipment and dependant structures and equipment. 		2014
PETROBRAS – Bumi Armada	LIBRA FPSO	Brazil	ABS	2400 m	FEED study for an FPSO comprising of: <ol style="list-style-type: none"> Field lay-out review and development. Mooring analysis, mooring fatigue, tandem analysis, use of synthetic moorings for deep water. Riser and umbilical analysis, coupled analysis with mooring system. Design and engineering of vessel structural modifications requirements for mooring, risers, and the offshore installation. Specifications for mooring systems, components, vessel equipment and dependant structures and equipment. 		2014
M3nergy	Perintis FPSO	Malaysia	ABS	20 m	Mooring detailed design & engineering: <ol style="list-style-type: none"> Detailed Mooring analysis for vessel lay-up. Specifications of mooring system. Offshore Installation requirements. 		2014

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ENI – Bumi Armada	OCTP FPSO	Ghana	ABS	900 m	FEED study for an FPSO comprising: <ol style="list-style-type: none"> 1. Field lay-out review and development. 2. Mooring analysis, mooring fatigue, tandem analysis, use of synthetic moorings for deep water. 3. Preliminary riser and umbilical analysis, coupled analysis with mooring system. 4. Design and engineering of vessel structural modifications requirements for mooring, risers, and the offshore installation. 5. Specifications for mooring systems, components, vessel equipment and dependant structures and equipment. 		2013 - 2014
Tullow	KUDU FPU	Namibia	DNV	160 m	FEED study for an FPU comprising: <ol style="list-style-type: none"> 1. Field lay-out review and development. 2. Mooring analysis, mooring fatigue, tandem analysis, use of synthetic moorings for deep water. 3. Preliminary riser and umbilical analysis, coupled analysis with mooring system. 4. Design and engineering of vessel structural modifications requirements for mooring, risers, and the offshore installation. 5. Specifications for mooring systems, components, vessel equipment and dependant structures and equipment. 		2013
Coastal Energy	Storage Tanker for Kapal Field	Malaysia	ABS	70 m	Mooring system for production tanker: <ol style="list-style-type: none"> 1. Detailed design and engineering of mooring system. 2. Detailed design and engineering of Side by Side offloading, simulation of SBS. 		2013
PETRONAS – TECHNIP	Bukit Tua FPSO	Indonesia	ABS	70 m	Mooring and SURF: <ol style="list-style-type: none"> 1. Supply of mooring and riser engineering personnel. 2. Mooring analysis, mooring fatigue analysis. 3. Riser analysis, riser design. 4. Design and engineering of mooring and riser systems on board the FPSO. 5. Design and engineering of Marine systems. 6. Design and engineering of the offshore installation for mooring and risers. 7. Preparation of Detailed Specifications for all mooring, risers, subsea and marine systems. 		2012 - 2013

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Lundin – Bureau Veritas	IKDAM FPSO	Malaysia	DNV	70 m	Feasibility study and concept selection for mooring systems, SURF, and field lay-out of the IKDAM FPSO: 1. Mooring analysis. 2. Field lay-out options review. 3. HSE and operational analysis of the concepts. 4. Commercial and Technical review of the concepts.		2012
PTTEP	FSO-3	Thailand	ABS	70 m	Study of future production requirements, mooring, SURF, installation: 1. Feasibility study and pre-FEED for the development of a new FSO and integration with the existing field architecture. 2. Mooring analysis and requirements for FSO, CALM buoy. 3. Flexible riser analysis		2012
ONGC	D-1 FPSO	India	ABS	150 m	Overall technical manager on behalf of ONGC for: 1. Riser systems and subsea. 2. Mooring system, offshore installation. 3. Naval architecture, hull, vessel, structural systems. 4. All marine systems on board the FPSO, marine engineering.		2011 - 2012
Coastal Energy	Songkhla	Thailand	ABS	20 m	Detailed design, support at procurements and installation: 1. Field lay-out, mooring design and analysis, SURF design and analysis, offshore installation. 2. Hydrodynamic analysis of vessels 3. Continuous EPIC support for the for the different. Songkhla FSOs.		2011 - 2012
KEI – TJS	Sepanjang FSO	Indonesia	ABS	45 m	Mooring, SURF, installation, naval architecture: 1. Design and engineer of mooring system and riser system for the FSO. 2. Offshore installation engineering and provision of support personnel for the offshore phase.		2010 - 2011

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ONGC-DPS	D-1 FPSO	India	ABS	150 m	FEED study for: <ol style="list-style-type: none"> 1. Mooring systems, riser systems, subsea components, offshore installation. 2. FSO structural, marine and naval architectural requirements. 3. Preparation of technical specification and RFQs for the above in order to issue for BID to EPIC Contractor. 		2010
Chevron – EDG	FSO Vietnam Block B Gas Project FEED Study	Vietnam	ABS	150 m	Detailed design and FEED study for: <ol style="list-style-type: none"> 1. Mooring systems, riser systems, subsea components, offshore installation. 2. FSO structural, marine and naval architectural requirements. 3. All marine systems, IG, cargo, ballast, HVAC, LQ, ER, electrical, mechanical etc. 4. Preparation of technical specification and RFQs for the above in order to issue for BID to EPIC Contractor. 		2010
ONGC – DPS	D-1 FPSO FEED Study	India	ABS	150 m	Conceptual design and FEED for: <ol style="list-style-type: none"> 1. Mooring systems, riser systems, subsea components, field lay-out. 2. FSO structural, marine and naval architectural requirements. 3. Preliminary installation method statements. 4. Preparation of Technical Specification and RFQs for the above in order to issue for BID to EPIC Contractor. 		2010
Petrofac – DPS	FPSO FEED Study Cendor II	Malaysia	ABS	80 m	FEED study for: <ol style="list-style-type: none"> 1. Mooring systems, Riser Systems, Subsea components 2. FSO structural, marine and Naval Architectural requirements 3. All Marine systems, IG, Cargo, ballast, HVAC, LQ, ER, Electrical, mechanical etc. 4. Preparation of Technical Specification and RFQs for the above in order to issue for BID to EPIC Contractor. 		2009 – 2010

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Coastal Energy	Songkhla FSO	Thailand	ABS	20 m	Mooring, SURF, field lay-out: <ol style="list-style-type: none"> Design of new and review of existing system with respect to mooring, risers, offshore and subsea arrangement. Mooring analysis and design. Offloading analysis and design. Riser analysis and design. Hose analysis and design. Vessel mooring requirements and Installation requirements. 		2009 – 2010
Galoc Petroleum Company	FPSO	Philippines	DNV	600 m	Review of client's subcontractors design and engineering: <ol style="list-style-type: none"> Mooring system, Riser and SURF Offshore Installation 		2009 – 2010
Mistubishi Oil	Sepanjang FSO	Indonesia	ABS	45 m	Review on behalf of Client the detailed design of mooring and risers, review of subcontractors.		2009
Kangean Energy Indonesia	Temporary Sepanjang FSO	Indonesia	ABS	45 m	Design, delivery and installation of mooring system and support during operational phase.		2009
Prosafe Productions	POLVO FPSO	Brazil	ABS	800 m	Offloading mooring analysis for moored FPSO POLVO.		2008
Prosafe Productions	ABO FPSO	Nigeria	ABS	600 m	Mooring analysis for the extension of the riser system and its installation.		2008
Larsen Oil & Gas	FPSO X	Singapore	DNV	200 m	Design responsibility for field lay-out riser configuration, subsea systems, mooring systems, and offshore works.		2008