



**OFFSHORE CONSTRUCTION SPECIALISTS**

**DETAILED AND CONSTRUCTION SUPPORT  
ENGINEERING  
PRE-QUALIFICATION DOCUMENT**



# **DETAILED AND CONSTRUCTION SUPPORT ENGINEERING PRE-QUALIFICATION DOCUMENT**

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## 1. INTRODUCTION

Offshore Construction Specialists (OCS) was formed in 2007 to provide construction management, engineering and consulting services primarily to the offshore oil and gas sector. Changing industry dynamics have resulted in a shortage of properly qualified and motivated engineers with the right experience to deal with the range of complex issues faced by offshore operators and contractors. OCS employs a base load of personnel with extensive experience in all facets of marine construction. OCS uses this depth of experience to mentor and train new personnel and has built an organisation capable of taking on the most difficult projects.

To complement our Construction management, Operations and Field Engineering capability the Company has established a Detailed Design and Construction Support Engineering division equipped with the latest industry software.

On the detailed engineering side we provide a full design service for Jackets, Topsides, Pipelines and offloading facilities. This service is ideal for operators seeking to develop marginal fields where OCS can formulate engineering and installation strategies that are practical and cost effective. OCS will design structures configured for either installation by derrick barge or by jack up as an integrated effort with drilling operations where necessary.

For construction and installation our engineering group capability covers the complete range of analyses required for all marine projects including platform and pipeline detailed design, FPSO module designs, transportation studies, pipeline, flexible flowline and umbilical lay analyses, pile driveability studies, mooring analyses, engineered lifts, jacket launching, float and upend, and a range of other applications.

This document focuses on the services OCS provides in relation to Detailed Design and Construction support and detailed engineering.



OCS fills the gap that often exists between design engineering and operational constructability. To this end our design and construction support engineers liaise closely with their installation and construction counterparts to ensure the engineering is practical and fit for purpose in addition to being theoretically sound.

OCS is proactive in highlighting potential issues and the ultimate aim is to ensure both parties win.

OCS has now completed a range of projects for many different customers with great success. We are equipped to handle large projects or discrete project elements depending on the specific needs of the customer.

The company has grown steadily since incorporation and now employs 60 personnel of whom 28 are qualified engineers and naval architects.

OCS has purchased a facility in the Pioneer district of Singapore at Number 36 Kian Teck Road to accommodate the Company's management, engineering and equipment groups. We intend to develop the facility to a best in class status in our field of operations to the mutual benefit of OCS and our clients.

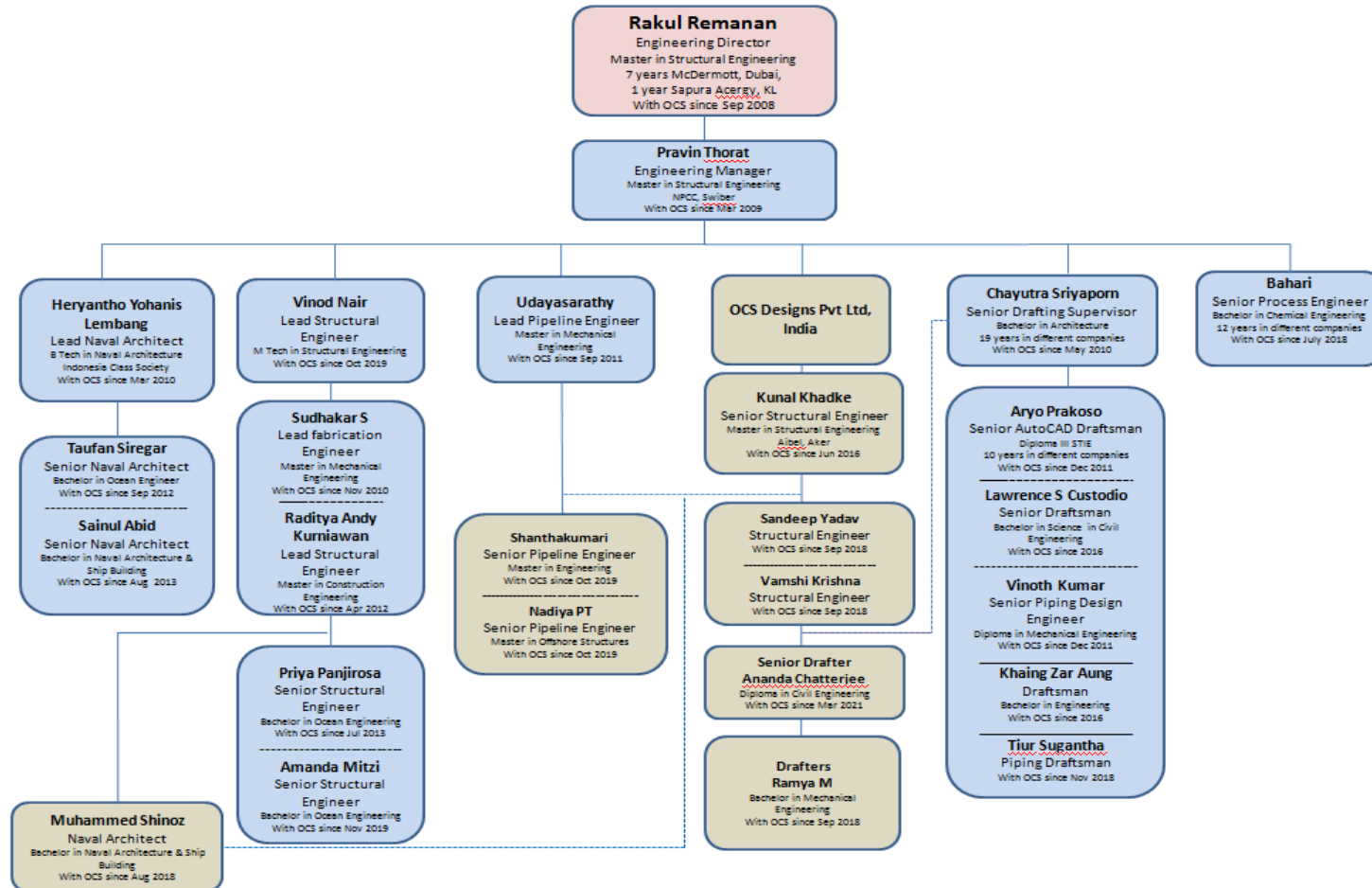
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## 2. OCS ORGANISATION CHART

### KEY PERSONNEL CONTACTS

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### 3. DETAILED AND CONSTRUCTION SUPPORT ENGINEERING ORGANISATION CHART



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#### 4. ENGINEERING ACTIVITIES

OCS's experience embraces the full range of Detailed Design and Construction Support Engineering (CSE). The Engineering group has extensive experience in all areas of analyses and design related to Marine pipelines, Structures and associated facilities. The experience encompasses the full range of structural, naval architectural, pipelines and geotechnical disciplines. While the focus is on engineering analyses related to offshore oil and gas facilities, the OCS Engineering group can perform general engineering covering a range of construction activities.

#### 5. DESIGN ENGINEERING

OCS Design Engineering team capability covers the full range of engineering required for the design of offshore facilities

##### a. Jacket and Topside Detailed Design.

The capability includes all pre-service and in-service analyses and designs, including:

##### Structural Engineering

- Jacket and Topside Load out Analysis
- Jacket and Topside Transportation Analysis
- Jacket and Topside Lifting Analysis
- Jacket Upending Analysis
- Jacket Launch Analysis
- Jacket and Topside Inplace Analysis
- Jacket and Topside Fatigue Analysis
- Jacket and Topside Seismic Analysis
- Push Over Analysis
- Float Over and Mating design
- Sub structure design for wind tower
- All miscellaneous designs like boat landing, crown shims, transition piece design etc.
- Pile design – eigen value analysis for stick up
- **Software Used : SACS, STAAD Pro, STAAD Offshore, MathCAD worksheets**



##### Process & Piping Engineering

- Equipment Sizing Studies
- Flare system analysis
- Flare dispersion and radiation study
- Process control, operating, start up and shutdown philosophies
- P&ID generation
- Piping Stress Analysis
- Piping layout and Isometrics
- Piping Specifications
- Piping MTO

**Software Used: HYSYS, CAESAR II, PDMS, AutoCAD, MathCAD worksheets**

##### Electrical & Instrumentation

- Power System Studies
- Electrical Load list

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- Cable sizing calculation
- Single line diagrams
- Earthing and Lighting layouts
- Hazardous area classification
- Electrical specification and MTO
- Instrument process hook up drawings
- Instrument fire and Gas cable schedule
- Instrument I/O list
- Cable schedule
- Cause and Effect drawings
- Data sheets, specification and MTO

**Software Used: ETAP, AutoCAD, MathCAD worksheets**

**b. Platform and Pipeline Decommissioning.**

- Jacket and Topsides Reverse installation Analysis
- Jacket Under water cutting and removal studies
- Platform and pipeline flushing studies
- Platform preparation for decommissioning studies



**c. FPSO and FPU design**

- Module Structural Design
- Mooring analysis for the FPSO
- Process design for FPU
- Electrical Design for FPU
- Piping Design for FPU
- Mechanical Design for FPU

**d. Pipeline Detailed Design.**

- Pipeline flow assurance studies
- Pipeline Wall Thickness checks
- Cathodic protection design
- Route selection
- On bottom stability analysis
- Pipeline Global buckling analysis
- Span Analysis, Crossing design
- Bottom Roughness analysis
- Subsea Tee Protection design
- PLEM and PLET structural Design
- Pipeline MTO
- Dynamic Riser Analysis and design
- Pipeline Specifications

**Software Used: Offpipe (Static and Dynamic), Offpipe Span module, Orca flex, Caesar II, Abacus, MathCAD worksheets**

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## 6. CONSTRUCTION SUPPORT ENGINEERING AREAS OF EXPERTISE

### a. Structural Engineering

- Lift Engineering
- Rigging Designs
- Padeye design / checks
- Hook/ Prong checks
- Transportation / Jacket Launching / Upending Engineering
- Lift and Transportation engineering for wind tower installation
- Sea fastening Analyses/ designs
- Barge strength checks for transportation
- Jacket Launch, Lift and Upend Analyses.
- Pile Installation Checks
- Pile Stopper, stabbing guide Designs
- Pile Upending and Stick up Checks
- Barge Upgrades: Upgrade of marine construction barges to accommodate additional required structural or Pipelay capacity. Stinger upgrade or new build designs.
- Installation Aids design: Rigging Platform, Bumpers and guides, chaser frames, spreader bar/frame, lifting frames etc.

**Software Used: SACS, STAAD Pro, STAAD Offshore, MathCAD worksheets**

### b. Pipeline Engineering

#### Pipeline Installation Analysis

- Static and Dynamic Lay Analysis
- Davit Lift Analysis
- Start-up and Lay down analysis : Incl. DMA start up, bow string start up
- Abandonment and Recovery Analysis, Single Point Lift Analysis
- Pipeline Shifting Analysis Weld Repair Analysis,
- Local Buckling Checks
- Beach Pull analysis
- Lay Sensitivity Analysis : Incl. stinger angle and tension sensitivity
- Above water Tie-in analysis
- Pipeline lay fatigue analysis



#### Line Pipe Transportation

- Stacking Height Calculations
- Transportation Calculations and Sea fastening design

#### Installation aids and Miscellaneous Design Elements

- Start –up , Lay down and Pull heads design
- Beach Pull Hold Back Foundation Design, Cofferdam design
- Clamp design and bolt tension requirement check
- Concrete coating crushing strength and slipping check



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**Software Used: Offpipe (Static and Dynamic), Offpipe Span module, Orca flex, Caesar II MathCAD worksheets**

**c. SURF Installation Engineering**

Cable / Umbilical Installation Engineering

- Cable /Umbilical lay start up analysis inclusive of J Tube Pull Force Requirement
- Static Lay Analysis -Calculation of Lay Profile and Lay Tensions
- Dynamic Lay Analysis – Calculation of limiting environmental parameters
- Inline connector lay analysis
- Subsea end termination laydown analysis
- Fatigue Analysis

Flexible Hose (Downline) Deployment Analyses

- Static Analysis – Downline top tension and Catenary Calculations for Pre-connection and Post connection
- Static Analysis with Current – Top Tensions & Subsea end static Displacements prior to connection and downline catenaries for Various clash checks after connection
- Dynamic Analysis - Top tensions, Subsea Termination connection end force and Limiting Environmental parameters Calculation

**Software Used: Orcaflex (Static and Dynamic), MathCAD worksheets**

**d. Naval Architectural Studies**

Tow Analyses

- Stability Checks and Vessel Motion determination
- Towing System Evaluation incl. Bollard Pull Calculation

Engineered Lift Studies



- Calculation of Dynamic Applied Forces during lifting based on directional sea-states.
- Calculation of “Snatch” Loads during lifting and placement
- Lift movement amplitude calculations.

Mooring Analyses

- Calculations of mooring tensions in particular environmental criteria and checking of the capacity of mooring components with respect to applied tension and the determination of maximum allowable environmental criteria based on adopted mooring patterns.
- Determination of vessel excursion in certain sea-states.

Jacket Floatation and Upending Studies

- Assessment of Jacket configuration during various phases of upending
- Evaluation of jacket clearances with respect to the barge and the sea-bed
- Assessment of the requirement for jacket leg flooding during upending
- Evaluation of Sling Tensions and hook loads
- Jacket stability checks during upending, Sensitivity studies to investigate the effect of change in jacket weight and shift in COG

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#### Jacket Launch Studies

- Barge Ballasting Requirement, Rocker Arm Reactions
- Jacket Dive Depth, Maximum Barge Immersion
- Jacket Free Floating Condition stability check

#### Topside Floatover/ Mating Studies

- Mating analysis
- Calculation of loads in the LMU and DSF
- Calculation of Loads on the fenders/ mooring

**Software Used: MOSES, SACS, MathCAD worksheets**

#### **e. Geotechnical Engineering**

##### Pile Drivability studies



- To determine the dynamic stresses on the pile during driving
- To check the adequacy of a hammer to drive the pile
- To optimize the pile sections to reduce the number of offshore splices

**Software Used: GRL WEAP, MathCAD worksheets**

#### **f. FPSO/ FSO/ Mooring Installation Engineering**

- FPSO/ FSO station Keeping analysis
- FPSO/ FSO station keeping during installation – Tug boat/ Bollard Pull requirement
- Chain Mooring installation studies
- Catenary calculation
- Force calculation on Mooring Tower



**Software Used: MOSES, MathCAD worksheets**







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## 7. EXISTING AND PAST CLIENTS

OCS has built up a significant customer base during eight (9) years of operations. OCS past and present clients for the projects with engineering scope are listed below. References can be provided on request.



No	Client Name	
1	Allseas	
2	Asia Petroleum Developments (Salamander) (Indonesia)	
3	Baker Hughes	
4	BE & R Consulting	
5	Boskalis	
6	BW Offshore	
7	Caspian Hydra Technologies (Russia)	
8	Chemi-Link Corporation (Dubai)	
9	Chevron (Thailand)	
10	Chiyoda Singapore	









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No	Client Name	
11	CNOOC Offshore Oil Engineering Company (China)	
12	COPI ( Conoco Phillips Indonesia)	
13	Crowley maritime Corporation (USA)	
14	EMAS (Singapore)	
15	Exxon Mobil (Singapore)	
16	ESSO	
17	Franklin Offshore (Singapore)	
18	Hako Offshore (Singapore)	
19	Heerema (Holland)	
20	HESS (Indonesia)	
21	HPCL (India)	
22	IKM Testing (Australia)	













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No	Client Name	
23	Idemitsu	
24	Jawar Al Khaleej Shipping LLC (UAE)	
25	JGCS (Japan)	
26	Kangean Energy (Indonesia)	
27	Kris Energy (Singapore)	
28	Kuwait Gulf Oil Company	
29	L&T Sapura (Malaysia/ India)	
30	Larsen & Toubro (India)	
31	LUKOIL-Nizhnevolzhsk (Russia)	
32	M3 Energy (Malaysia)	
33	McConnell Dowell - Consolidated Contracting Company	





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No	Client Name	
34	Meindo	
35	Mobil Cepu Ltd	
36	Mezhregiontruboprovodstroy JSC (Russia)	
37	Modec	
38	Newfield Peninsula Malaysia (Malaysia)	
39	Nippon Steel	
40	NorCe / Solstad Offshore (Singapore)	
41	NuCoastal (Thailand)	
42	Oceanic Marine Contractors	
43	OilSearch	
44	ONGC (India)	
45	Origin Energy (Australia)	



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No	Client Name	
46	Petronas (Malaysia)	
47	PTTEP (Thailand)	
48	PTSC	
49	Rekayasa (Indonesia)	
50	Saipem	
51	SapuraAcergy (Malaysia)	
52	Sarku (Malaysia)	
53	Sea Drill (Singapore)	
54	SK E & C (Malaysia)	
55	Southern Oil Company of Iraq	
56	Star Petroleum (Indonesia)	
57	Technip	

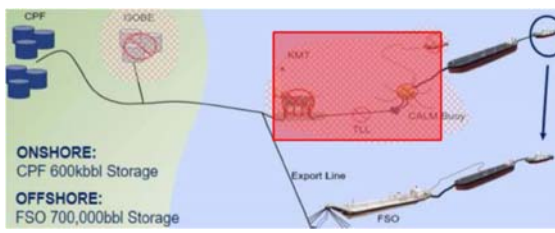
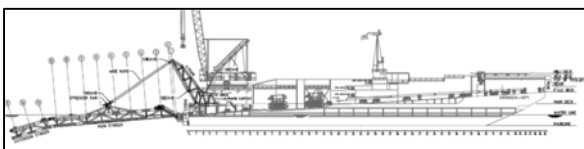

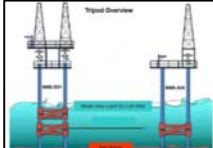
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No	Client Name	
58	Timas Suplindo (Indonesia)	
59	TLO Sapura Crest (Malaysia)	
60	Vestas	
61	Vietsovpetro (VSP) (Vietnam)	



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## 8. MAIN PROJECTS - COMPLETED AND ONGOING

<b>1) Project : Kumul Platform and Pipeline Decommissioning</b> <b>Client : Oil Search</b>	
<p><u>Scope includes complete Pre FEED for the decommissioning of Kumul Platform, Pipeline, SBM and other related infrastructure</u></p> <ul style="list-style-type: none"> <li>• Structural Analysis and design for decommissioning</li> <li>• Removal Methodology and procedure</li> <li>• Platform and pipeline flushing procedure</li> <li>• Execution Plan</li> <li>• Project cost Estimation</li> </ul>	 <p><b>ONSHORE:</b> CPF 600kbbbl Storage</p> <p><b>OFFSHORE:</b> FSO 700,000bbl Storage</p>
<b>2) Project : Stinger Design for KP 1 Barge</b> <b>Client : PT Meindo</b>	
<ul style="list-style-type: none"> <li>• Concept design of Stinger</li> <li>• Detailed Design of Stinger</li> <li>• Installation design and methodology for the stinger</li> <li>• Pipelay Analysis with the proposed stinger</li> <li>• Mechanical design (lifting and luffing) of the stinger</li> </ul>	
<b>3) Project : SBM Pipeline Rejuvenation Phase II</b> <b>Client : Shell, Sapura</b>	
<p><u>Near Shore Engineering</u></p> <ul style="list-style-type: none"> <li>• Cofferdam design</li> <li>• Trench Designs</li> <li>• Construction Support Engineering</li> </ul>	
<b>4) Project : B6/27 Decommissioning Project</b> <b>Client : PTTEP</b>	
<p><u>Platform Installation Engineering</u></p> <ul style="list-style-type: none"> <li>• Structural Analysis and design for decommissioning</li> <li>• Removal Methodology and procedure</li> <li>• Execution Plan</li> </ul>	



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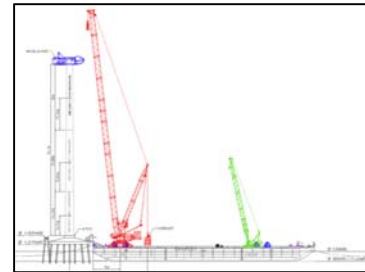
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#### 5) Project : Tra Vinh Wind farm Client : Vestas Wing Technology Vietnam LLC

Scope includes complete construction management for installation engineering including:

- Barge Rig Up design
- Lift drawings for Towers, Nacelle, Hub and Blades
- Mooring Analysis of barge during installation
- Barge grounding analysis – Ballast patterns and strength checks
- Weather Management Plan
- Transportation and Sea fastening Reports



#### 6) Project : Tabangao LNG Project Client : JGC/ Shell

Pipeline FEED Design

- Carrier pipe wall thickness and in place analysis
- Flexible pipe pull through analysis
- Power/ FOC pull through analysis
- J Tube and J Tube Structure Design
- All Data sheet Preparation
- MTO and Procurement Support



#### 7) Project : SV-DN Development Project Client : PTSC/ Idemitsu

Platform Installation Engineering

- Jacket Launch and Upending Analysis
- Jacket and Deck Transportation and sea fastening Analysis and design
- Jacket and Deck rigging Design
- Jacket and Deck installation aids design





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#### 8) Project : Sri Racha Subsea Crude Pipeline Capacity Maintenance Project

Client : ESSO Thailand Company

##### Pipeline Installation Engineering

- Pipeline Field Data Book
- Trenching Analysis
- Cofferdam design
- Beach Pull Analysis
- Barge Trenching/ Dredging system Design
- Plume Dispersion Study

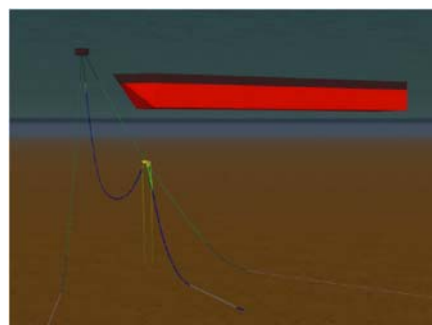


#### 9) Project : MV 12 Riser Temporary Repair Project

Client : MODEC

##### Dynamic Riser Detailed design and Installation Analysis:

- Riser Inplace analysis
- Riser Installation Analysis
- Mid Water Buoy adequacy check
- Piggy back design for riser
- Piggy back clamp design – Aluminum





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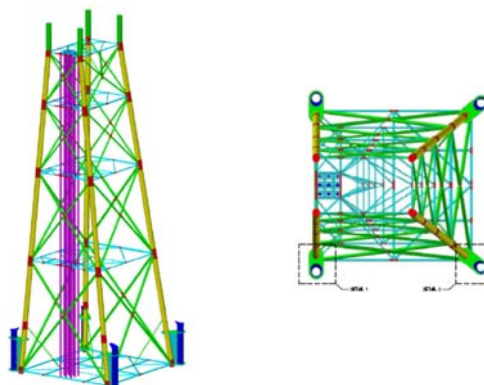
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#### 10) Project : Dusasfu Phase-3- Ruche Field Development- Jacket detailed Design Client : BW Energy – Gabon SA

##### Jacket detailed Design, including:

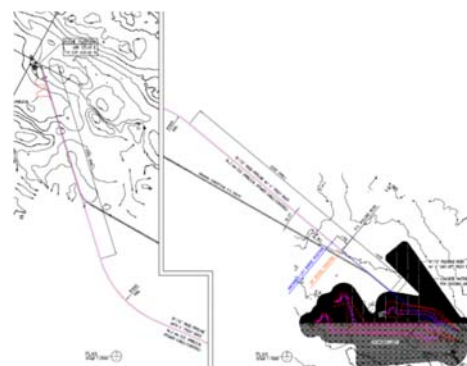
- In-place Analysis
- Jacket Transportation Analysis
- Jacket lifting Analysis
- Jacket On Bottom Stability Analysis
- Jacket Cathodic Protection Design
- Jacket dynamic analysis
- Jacket Fatigue Analysis
- Jacket Load out Analysis
- Jacket Boat Impact Study
- Jacket Mud mat Design
- Jacket Miscellaneous Designs
- 



#### 11) Project : Dusasfu Phase-3- Ruche Field Development- Pipeline detailed Design Client : BW Energy – Gabon SA

##### Pipeline detailed Design, including:

- Pipeline wall thickness verification
- Pipeline Expansion Analysis
- Pipeline Global Buckling Analysis
- On Bottom Stability Analysis
- Pipeline Span Analysis
- Pipeline On Bottom Roughness Analysis
- Pipeline Crossing Analysis
- PLET/ PLEM, Spool design
- Pipe Stress Analysis
- Pipeline MTO





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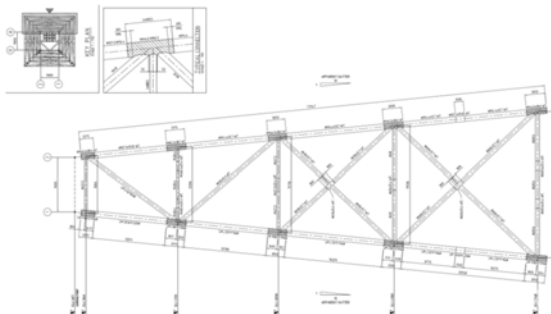


#### 12) Project : Apsara Block A- Mini Platform – Structural Detailed Design

Client : KrisEnergy (Apsara) Company Limited

##### Jacket detailed Design, including:

- In-place Analysis
- Jacket Transportation Analysis
- Jacket lifting Analysis
- Jacket On Bottom Stability Analysis
- Jacket Cathodic Protection Design
- Jacket dynamic and Fatigue analysis
- Jacket Load out Analysis
- Jacket Boat Impact Study
- Jacket Mud mat Design
- Jacket Miscellaneous Designs



#### 13) Project : Apsara Block A- Mini Platform – Piping and Process Detailed Design

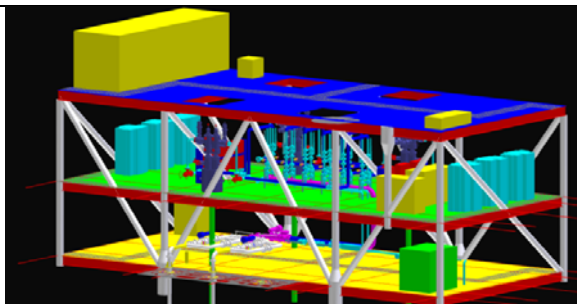
Client : KrisEnergy (Apsara) Company Limited

##### Piping Design

- Specification and data sheets
- Pipe stress analysis and pipe support design
- Isometrics and GAs
- MTO

##### Process Design

- All package designs
- P&IDs
- Process Simulation and Line sizing
- Utility consumption and equipment sizing
- Process data Sheets
- Safe charts and Cause and effect diagrams



#### 14) Project : Production Barge (Ingenium II) Cambodia Apsara Block A Project

Client : Keppel Offshore/ KrisEnergy (Apsara) Ltd

##### **Detailed Engineering Design for Modification of FPU**

- Process design : Equipment sizing, flare system analysis, flare dispersion study, process control, start up and shut down
- Electrical Design: layouts, cable sizing, SLD, specifications and MTO
- Piping Design: Layout, stress analysis, isometrics, specification and MTO
- Instrumentation design: I/O list, cause and effects diagram, cable schedule, data sheets, specifications and MTO







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#### 15) Project : Pesek Group II Lube Storage Project- Mech 4

Client : Chiyoda Singapore (pte) Limited/ Exxon Mobil Asia Pacific Pte Ltd

EPC – 3 New Pipes Pull through the existing 24” subsea pipeline, detailed design:

- Subsea Pipeline Bundle pull through design
- Subsea Pipeline Detailed Design
- Subsea Pipeline Shore – Subsea – Shore – Bundled pull installation - Detailed Installation Engineering
- Pipeline Procurement
- Pipeline Construction/Installation

Installation Engineering

- Pipeline pull analysis/ buoyancy calculation
- Spool lift analysis & Installation Studies
- Installation Aids Design



#### 16) Project : Neelam Re-Development and B173AC Project & Bassein Development Project

Client : L&T Hydrocarbon Engineering Ltd / ONGC

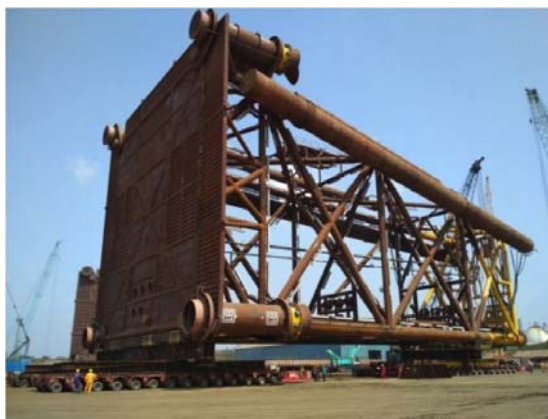
**Installation Engineering Services including**

##### **Structural**

- Lifting Analysis & rigging Design
- On-Bottom Stability
- Pile Driveability Analysis
- Conductor Drivability & hangoff studied
- Installations Aids – Bumper & Guide, rigging platforms design

##### **Naval Architectural**

- Floatation & upending Analysis
- Launch Analysis
- Dual block Upending Analysis
- Docking analysis

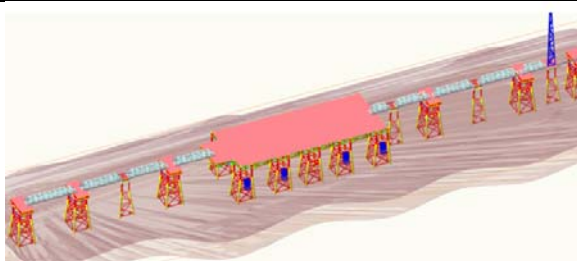


#### 17) Project : Pre FEED – LNG Loading/ Unloading Jetty

Client : CLP Hongkong

**Pre Feed design of Unloading and Loading Jetty to change from the concrete jetty to a steel jetty concept**

- Berthing Load calculation
- Mooring and Berthing dolphin topside and jacket design
- Pile Design
- Bridge Design





## OFFSHORE CONSTRUCTION SPECIALISTS

### DETAILED AND CONSTRUCTION SUPPORT ENGINEERING PRE-QUALIFICATION DOCUMENT



#### 18) Project : OSTT Jetty to SS Jetty Subsea pipeline Project Client : HPCL - India

- Pipeline detailed design including stress analysis
- Onshore launcher and receiver design
- Pipe support design on the Jetty
- Pipe pull design
- Electrical and Instrumentation design
- Process design check
- Procurement of all items



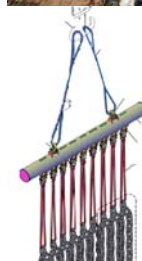
#### 19) Project : MV17 Mooring Legs Replacement Project Client : Modec / Petrovietnam (PTSC) / Japan Vietnam Petroleum Company (JVPC)

##### Structural

- Chaser Pile Design
- Chaser Pile Storage and Chaser Rack
- Chain Spreader Bar
- Pile Driveability Analysis
- Pile Lifting and Upending Pile and miscellaneous seafastening
- Wire Rope Partition

##### Naval Architectural

- ACWB POS1 Mooring Analysis



#### 20) Project : Yuri Korchagin Field – Satellite Platform Client : Caspian Hydra Technologies/ Lukoil

- Transportation & Installation of Substructure of the wellhead platform
- Transportation & Floatover and Mating Analysis of topsides
- Mooring analyses
- Fender design
- Deck Support Frame Design





## OFFSHORE CONSTRUCTION SPECIALISTS

### DETAILED AND CONSTRUCTION SUPPORT ENGINEERING PRE-QUALIFICATION DOCUMENT



#### 21) Project : Filanovsky – Phase 2

Client : Caspian Hydra Technologies/ Lukoil

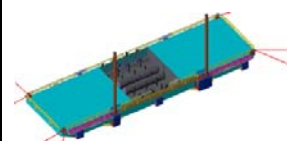
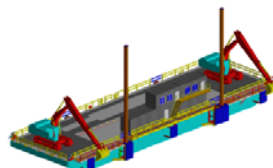
- Floatover and Mating Analysis of two topsides
- Mooring analyses
- Fender design
- LMU (Leg Mating Units) shell design
- Sand Jack Design



#### 22) Project : Utility Barge : OCS UB01 Miss Pennie

Client : OCS - Fully operational (Separate Prequalification Doc)

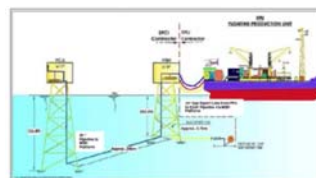
- Utility barge conceptualisation
- Utility Barge naval architectural design
- Utility Barge equipment design
- 



#### 23) Project : EPCI for MDA and MBH Field Development

Client : Pt Timas/ HCML (ONGOING)

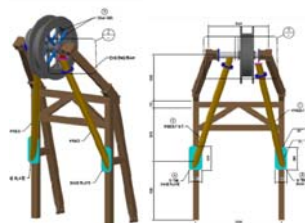
- Jacket Upending Analysis (2 nos)
- Jacket and topside lift analysis (2 nos)
- Pile drivability (2 nos)
- Structures transportation analysis (2 nos)
- Structures sea fastening design (2 nos)
- Installation Aids design report (2 nos)



#### 24) Project : Baker Hughes

Client: Baker Hughes

- Design check of hose deployment skid
- Strengthening proposal for the hose deployment skid







## OFFSHORE CONSTRUCTION SPECIALISTS

### DETAILED AND CONSTRUCTION SUPPORT ENGINEERING PRE-QUALIFICATION DOCUMENT



**25) Project : PHE WMO**  
**Client : Pt Timas/ Pertamina**

- Jacket Upending Analysis
- Jacket and topside lift analysis
- Pile drivability
- Structures transportation analysis
- Structures sea fastening design
- Installation Aids design report



**26) Project : EPC for Trunk Pipeline at Bin Omar Oil Field**  
**Client : CHEMI-LINK, SOC Iraq**



- On shore Pipeline detailed design
- Data sheet preparation
- MTO preparation
- Specification preparation
- Procurement assistance
- Civil work reports
- Electrical design, data sheets and specifications
- Launcher/ receiver design
- Instrument control design, including SCADA system
- Pipeline Process design






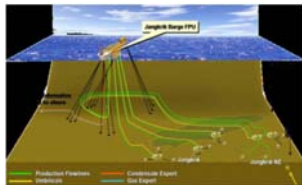


**27) Project : Pipeline Subsidence rectification**  
**Client: Mcconnell Dowell**

- Stress analysis for the subsided/ sunken onshore pipeline
- Stress analysis for rectification of onshore pipeline subsidence



 OFFSHORE CONSTRUCTION SPECIALISTS	OFFSHORE CONSTRUCTION SPECIALISTS		
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28) Project : Madura BD Field Development – T & I Client : Timas/ Husky CNOOC Madura Limited		
<ul style="list-style-type: none"><li>• Beach approach design</li><li>• Barge stability analysis</li><li>• Barge rig up design</li><li>• Trenching analysis and slope stability</li></ul>		
29) Project : Baker Hughes Client : Baker Hughes		
<ul style="list-style-type: none"><li>▪ Subsea sampling unit design</li><li>▪ Subsea sampling unit fabrication</li><li>▪ Clump weight design</li><li>▪ Clump weight fabrication</li></ul>		
30) Project : Chevron Wheatstone Project Client : Baker Hughes		
<ul style="list-style-type: none"><li>▪ Cyclonic loading check on equipment</li><li>▪ Stability of equipment under cyclonic loading</li></ul>		
31) Project : Jangkrik Complex Project Client: Saipem/ PT Timas		
<ul style="list-style-type: none"><li>▪ Pipeline Field Data Book</li></ul>		



## OFFSHORE CONSTRUCTION SPECIALISTS

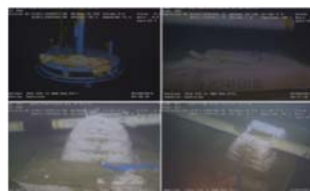
### DETAILED AND CONSTRUCTION SUPPORT ENGINEERING PRE-QUALIFICATION DOCUMENT



#### 32) Project : Mallikai Project- Package B

Client : Technip

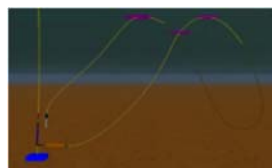
- Grout Bag design or free span correction
- Sea fastening design of the free span correction spread



#### 33) Project : Gorgon Upstream Pre-commissioning

Client : Baker Hughes

- CTU (coiled Tubing) Dynamic Analysis report





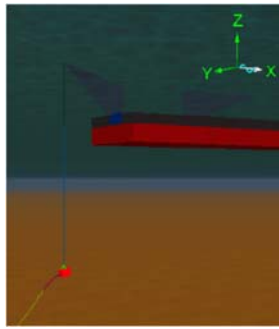



#### 34) Project : Kitchen Lights Unit 3

Client : Crowley Solution Pte Ltd

- Pile Driving and drilling deck design
- King Pile Subsea Template design
- Installation Aids design
- Installation engineering of all the above
- Sea fastening design of all the above



 OFFSHORE CONSTRUCTION SPECIALISTS	OFFSHORE CONSTRUCTION SPECIALISTS		
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<b>35) Project : Kirinskoye Umbilical Repair Project</b> <b>Client : MRTS, Russia</b>		
<ul style="list-style-type: none"><li>▪ SDU Recovery Analysis</li><li>▪ Field Data book for Umbilical</li></ul>		
<b>36) Project : Cambodia Block A Wellhead Platform</b> <b>Client : Krisenergy</b>		
<p>Conceptualisation and detailed design of the jacket and topside including</p> <ul style="list-style-type: none"><li>▪ Jacket Transportation Analysis and design</li><li>▪ Jacket lift analysis and Design</li><li>▪ Jacket and topside In place Analysis and design</li><li>▪ Pile design</li><li>▪ Jacket and topside secondary steel design</li><li>▪ Jacket and deck fatigue analysis</li><li>▪ Primary steel drawings</li><li>▪ Primary Steel MTO</li></ul>		
<b>37) Project : Badamayar project</b> <b>Client : Sapura Acergy/ Total E &amp; P Myanmar</b>		
<ul style="list-style-type: none"><li>▪ Early engineering: Floatation and upending analysis of 3 Jackets.</li><li>▪ Propose buoyancy tank geometry</li><li>▪ Pile drivability analysis</li><li>▪ Jacket and Topside transportation analysis</li><li>▪ Jacket levelling frame design</li><li>▪ Jacket Upending Analysis- 3 jackets</li></ul>		



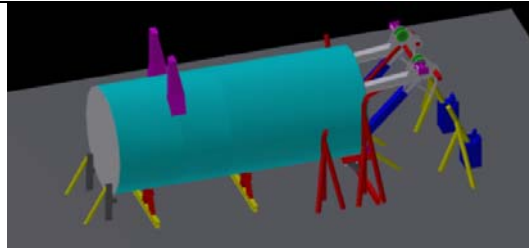
## OFFSHORE CONSTRUCTION SPECIALISTS

### DETAILED AND CONSTRUCTION SUPPORT ENGINEERING PRE-QUALIFICATION DOCUMENT



- 38) Project : Wheatstone SGS project**  
**Client : Sapura Acergy( Australia ) Pty Ltd ( SAPLA)**

- Bumpers and guides design for landing of buoyancy tank
- Sea fastening design of buoyancy tank



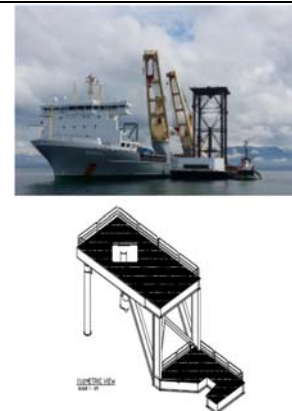
- 39) Project : Gorgon Upstream project**  
**Client : Baker Hughes**

- Injector Frame design
- Injector frame lift design ( DNV 2.7-3)
- Coiled Tubing Deployment analysis
- Coiled tubing fatigue analysis
- Fabrication of Injector frame to DNV 2.7-3



- 40) Project : Kitchen Lights Unit 3**  
**Client : Crowley Maritime Corporation**

- Design of Pile driving and drilling deck
- Design of man riding basket



- 41) Project : Chevron Wheatstone Project**  
**Client : Baker Hughes**

- Seafastening design of flooding and de watering spread
- Design of over boarding chute and work platform



## OFFSHORE CONSTRUCTION SPECIALISTS

### DETAILED AND CONSTRUCTION SUPPORT ENGINEERING PRE-QUALIFICATION DOCUMENT



#### 42) Project : Banyu Urip – FSO and Mooring tower Installation

Client : Rekhayasa/ Mobil Cepu

- Station keeping analysis of FSO during installation
- Force calculation on mooring tower during FSO installation
- Bollard pull/ Tug requirement calculation during FSO installation



#### 43) Project : Julimar Development Project

Client : Baker Hughes

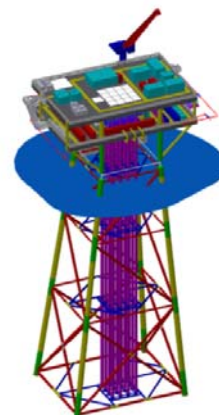
- Seafastening design of flooding and de watering spread
- Design of over boarding chute and work platform

#### 44) Project : Wassana Wellhead Platform

Client : Krisenergy

Conceptualisation and detailed design of the jacket and topside including

- Jacket Transportation Analysis and design
- Jacket lift analysis and Design
- Jacket and topside In place Analysis and design
- Pile design
- Jacket and topside secondary steel design
- Jacket and deck fatigue analysis
- Primary steel drawings
- Primary Steel MTO







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### DETAILED AND CONSTRUCTION SUPPORT ENGINEERING PRE-QUALIFICATION DOCUMENT



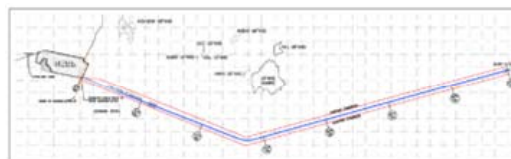
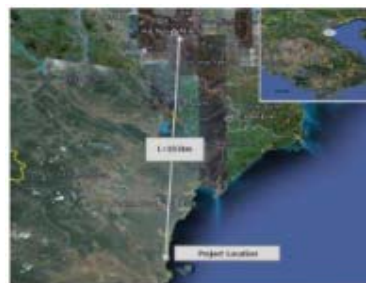
**45) Project : NSRP Complex Project**  
**Client : Zentech, SKEC, JGCS, NSRP (ONGOING)**

#### Review of

- Pipeline
- All the pipeline detailed design documents incl,
- Pipeline design basis
- Route design report
- Wall thickness report
- Cathodic protection design report
- On-bottom stability analysis report
- End Expansion Analysis Report
- Free Span Analysis Report
- Upheaval Buckling analysis
- Spool Expansion analysis report
- Pipeline seismic analysis report
- MTO
- Specifications

#### Preparation

- Pipeline operating manuals
- Quantitative Risk Analysis Document
- Corrosion Management Plan
- Emergency Response Plan



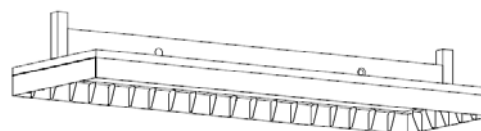
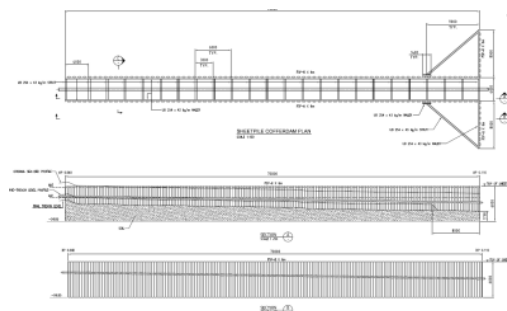
**46) Project : Banyu Urip – Pipeline Installation**  
**Client : Rekayasa / Mobil Cepu**

#### Review of

- Pipeline:
- Field Data Book
- RAO generation
- Beach pull analysis
- Naval Architectural:
- Transportation analysis
- Mooring analysis Pipeline Installation

#### Design of

- Cofferdam for beach pull
- Concrete sleepers





## OFFSHORE CONSTRUCTION SPECIALISTS

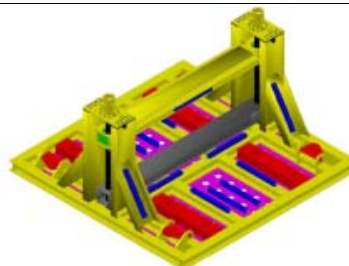
### DETAILED AND CONSTRUCTION SUPPORT ENGINEERING PRE-QUALIFICATION DOCUMENT



#### 47) Project : Apache Julimar

Client : Allseas / Apache

- Seafastening Design for PLETS



#### 48) Project : KGO Gas and Condensate Export System

Client : Essar / KGO

##### Pipeline:

- Field Data Book for 1 trunk line
- Above water tie in analysis
- Beach Pull Analysis

##### Naval Architecture:

- Mooring analysis
- Anchor Pattern Drawings
- Catenary drawings for anchor lines

##### Structural:

- Installation aids design



#### 49) Project : Lampung LNG Floating Storage and Re gasification facilities

Client : ReKayasa

##### Pipeline:

- Field Data Book preparation
- Davit lift analysis for riser installation
- Riser installation studies







## OFFSHORE CONSTRUCTION SPECIALISTS

### DETAILED AND CONSTRUCTION SUPPORT ENGINEERING PRE-QUALIFICATION DOCUMENT



#### 50) Project : Bukit Tua Development Project

Client :PT Timas Suplindo/ PC Ketapang -Petronas

##### Pipeline:

- Field Data Book for 3 nos infield pipelines and 1 export line
- 2 nos of above water tie in analysis
- Beach pull and Trenching Analysis
- Support analysis for HDD string pull

##### Structural:

- Jacket / Deck Lifting rigging design
- Pile drivability analysis
- Jacket and deck sea fastening analysis

##### Naval Architectural:

- Transportation analysis for jacket, deck and pipehaul
- Mooring analysis for Jacket/ Deck/ Pipeline Installation
- Jacket two block upend analysis



#### 51) Project : PHE UL

Client :PT Timas Suplindo / Pertamina Hulu Energi

##### Pipeline:

- Static and Dynamic Pipelay Analysis
- Field Data Book for infield pipeline

##### Structural:

- Jacket / Deck Lifting rigging design
- Pile drivability analysis
- Jacket and topside seafastening design

##### Naval Architectural:

- Transportation analysis of jacket and deck
- Pipe haul transportation analysis
- Mooring analysis for Jacket/ Deck/ Pipeline Installation





## OFFSHORE CONSTRUCTION SPECIALISTS

### DETAILED AND CONSTRUCTION SUPPORT ENGINEERING PRE-QUALIFICATION DOCUMENT



#### 52) Project : Lima Subsidence Remediation Project

Client : PT Timas Suplindo / Pertamina EP

##### Naval Architectural:

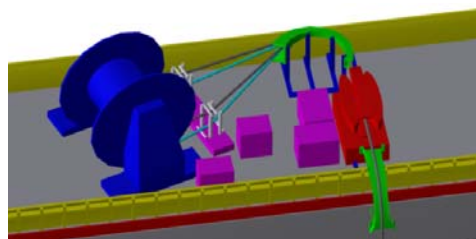
- Mooring analysis for the hook up and accommodation support barges
- Review of all transportation analyses reports



#### 53) Project : Jansz pipeline Installation

Client : IKM Testing Australia/ Allseas/ Chevron

- Design of reel, reel winder and tensioner support
- Design of horizontal chute
- Design of vertical chute support
- Fabrication of horizontal chute and modification of vertical chute



#### 54) Project : Parigi Hot Tap

Client : PT Timas Suplindo / Pertamina EP

##### Pipeline:

- Pipeline Detailed design Verification incl
- Pipeline wall thickness check
- Pipeline stability analysis – concrete coating thickness check
- Pipeline bottom roughness analysis
- Pipeline span analysis
- Pipeline cathodic protection design
- Pipeline Installation Engineering incl
- Pipeline static / dynamic lay analysis
- Pipeline Field data book preparation

##### Structural:

- Design of subsea protection structures
- Design of Concrete sleepers

##### Naval Architectural:

- Mooring Analysis
- Transportation Analysis





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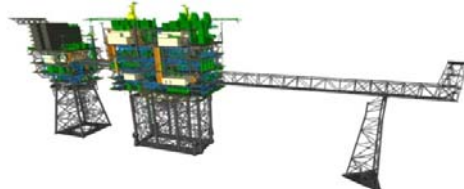
#### 55) Project : Mafumeira Project

Client : Heerema Marine Contractor/ Chevron

WHP SUL, WHP Centro, Tripod, Bridge and LQP Platforms

##### Structural:

- Jacket, deck and bridge Sea fastening concepts
- Jacket ,Deck and Bridge Rigging design



#### 56) Project : Gorgan project – Barrow Island LNG Plant

Client : NorceSolstad/ Chevron

113 numbers of lift installation

##### Naval Architectural:

- Mooring analysis for Roadways and topside installations
- Engineered lift study for Roadways and topside installations



#### 57) Project : Zawtika Development Project, Phase 1A

Client : L&T / PTTEP

##### Structural:

- Rigging design of 3 jackets and topsides
- On bottom stability checks of 3 jackets

##### Naval Architectural

- Upending analysis of 3 jackets
- Launch and floatation analysis of 3 jackets
- Pile launch and Upending Analysis
- Mooring analysis

##### Geo-technical studies

- Pile Drivability analysis of 3 jackets
- Eigen Value Analysis for stick up calculations

##### Pipeline Engineering

- Static and Dynamic Pipelay analysis
- Field data Book



**58) Project : Conversion of NandGaurav Barge to Pipelay Barge**

**Client : EOSSL – Essar India**

**Structural:**

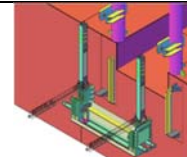
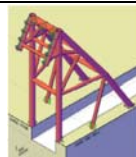
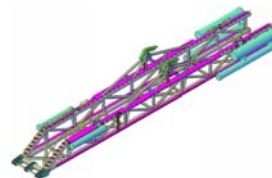
- Complete design of the upgrade system , including foundation and strengthening for tensioners, winches , roller , pipe tunnel
- Complete design of stinger and stinger support A Frame and hitch

**Naval Architectural**

- Stability booklet for the barge

**Pipeline Engineering**

- Pipelay analysis for different pipe sizes



**59) Project : QCLNG Upstream Project**

**Client : MCJV**

**Pipeline:**

- Pipeline Pull Analysis
- Pull cable catenary checks
- Pipeline On Bottom stability checks during pulling

Buoyancy calculations for the pull

**Structural**

- Design of Pull head



**60) Project : Bawal Subsea Development**

**Client : TIMAS/ ConocoPhillips**

**Pipeline:**

- Static and Dynamic Pipelay Analysis
- Abandonment and Recovery Analysis
- Start-Up and Lay down Analysis
- Weld Repair Analysis
- Local Buckling Checks

**Pipeline detailed design**

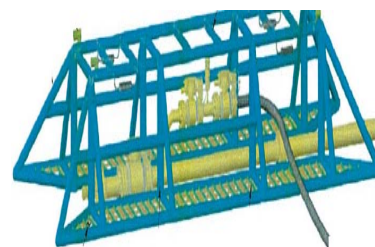
- Wall Thickness check
- Cathodic protection design
- Route selection
- On bottom stability analysis
- Span Analysis & Crossing design
- Bottom Roughness analysis
- Subsea Tee Protection design

**Structural**

- Installation Engineering, rigging design of Tee protection structure
- Sea fastening for pipe haul

**Naval Architectural**

- Tow / stability analysis – material barge ( pipe haul and subsea structures)







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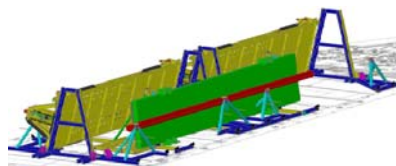


#### 61) Project : Gorgon Janz Offshore Pipelay

Client : Allseas / Chevron

##### Structural:

- Seafastening design for S mode PLETs Sea fastening Design for J mode PLETs
- Sea fastening Design for lay in PLETs
- Sea fastening Design for APS structures



#### 62) Project : Yolla Mid Life Enhancement Project

Client : Origin Energy

##### Structural:

- Rigging design for Compressor (CM), Accommodation (AM) and Condensate modules
- Sea fastening designs for CM and AM modules
- Bumpers and Guides design
- Barge Strength check (HLV, Work barge and material barge)
- Gangway design
- Spreader frame and Spreader bar design



##### Naval Architectural

- Engineered Lift Study
- Extensive lift workability study using the available met ocean data and the Vessel ( J 25 ) motion characteristics.
- Material barge stability analysis



#### 63) Project : ArkatunDagi Field Development Project

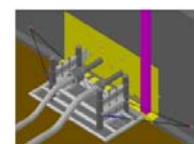
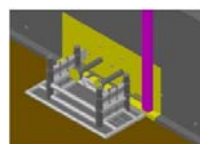
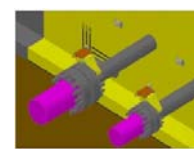
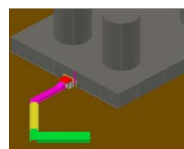
Client : Heerema / Exxon Neftegaz



##### Structural






- Spool Tunnel design.
- Spool and tunnel lifting spreader bar design
- Grillage and sea fastening design for tunnel and spool



##### Naval Architectural









- Engineered lift study










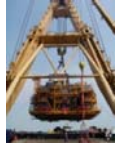


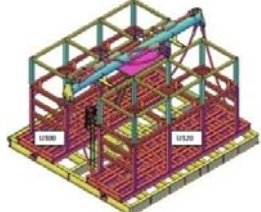
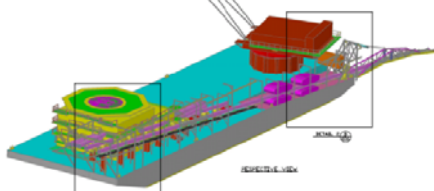
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	DETAILED AND CONSTRUCTION SUPPORT ENGINEERING PRE-QUALIFICATION DOCUMENT		

<b>64) Project : Provision of Marine Construction Services in Gulf of Papua</b> <b>Client : EMAS/ Oil search</b>		
<b>Structural</b> <ul style="list-style-type: none"><li>PLEM installation rigging design</li><li>Sea fastening designs for pipe haul and subsea structures</li></ul> <b>Pipeline:</b> <ul style="list-style-type: none"><li>Static and Dynamic Pipelay Analysis</li><li>Abandonment and Recovery Analysis</li><li>Start-Up and Lay down Analysis</li><li>Weld Repair Analysis</li><li>Local Buckling Checks</li><li>Pipeline Davit lift analysis ( PLEM and Riser Stalk on)</li></ul> <b>Naval Architectural</b> <ul style="list-style-type: none"><li>Tow stability analysis for material barge ( pipe haul and subsea structures)</li></ul> <b>Geotechnical</b> <ul style="list-style-type: none"><li>PLEM, Stabilization support and Anchor pile Drivability analysis</li></ul>		
<b>65) Project : TSB Development Project</b> <b>Client : TIMAS/ Kangean Energy Indonesia Limited</b>		
<b>Pipeline:</b> <ul style="list-style-type: none"><li>Static and Dynamic Pipelay Analysis</li><li>Abandonment and Recovery Analysis</li><li>Start-Up and Lay down Analysis</li><li>Weld Repair Analysis</li><li>Local Buckling Checks</li></ul> <b>Flexible pipeline/ Cable:</b> <ul style="list-style-type: none"><li>Flexible Pipelay analysis</li><li>Cable lay analysis</li></ul> <b>Structural</b> <ul style="list-style-type: none"><li>Installation Engineering of Riser base, Manifold and hot tap protection.</li><li>Sea fastening of pipehauls and the subsea structures</li></ul> <b>Naval Architectural</b> <ul style="list-style-type: none"><li>Tow / stability analysis – material barge ( pipe haul and subsea structures)</li></ul>		
		
<b>66) Project : Chevron 2011 campaign – Platforms and Pipeline Installation</b> <b>Client : EMAS/ Chevron</b>		
<b>Structural:</b> <ul style="list-style-type: none"><li>Rigging design for deck and jacket installation</li></ul> <b>Naval Architectural</b> <ul style="list-style-type: none"><li>Engineered lift study</li></ul> <b>Pipeline:</b> <ul style="list-style-type: none"><li>Static and Dynamic Pipelay Analysis</li><li>Abandonment and Recovery Analysis</li><li>Start-Up and Lay down Analysis</li><li>Weld Repair Analysis</li><li>Local Buckling Checks</li></ul>		

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<b>67) Project : PRP Platform Module Installation</b> <b>Client : Norce Offshore / Punj Lloyd/ PTSC</b>		
<b>Structural:</b> <ul style="list-style-type: none"> <li>▪ Rigging design for module installation</li> <li>▪ Bumpers and Guides design</li> <li>▪ Gangway design</li> <li>▪ Spreader frame and Spreader bar design</li> </ul>		
<b>68) Project : Saint Josephs Cable Replacement Project</b> <b>Client : TLO/ Shell Malaysia</b> <b>69) Project : Bokor Cable Installation</b> <b>Client : TLO/ Petronas</b>		
<b>Cable:</b> <ul style="list-style-type: none"> <li>▪ Cable Lay analysis</li> <li>▪ J tube pull analysis</li> </ul> <b>Structural:</b> <ul style="list-style-type: none"> <li>▪ Sea fastening check for cable reel</li> </ul>		
<b>70) Project : MHN RD II – 4 Whs</b> <b>Client : TLO/ L &amp; T / ONGC</b>		
<b>Structural:</b> <ul style="list-style-type: none"> <li>▪ Lift rigging design , trunnion and padeye checks</li> <li>▪ On bottom stability analysis and mud mat checks</li> <li>▪ Pile stick up checks</li> <li>▪ Conductor hang off study</li> </ul> <b>Naval Architectural</b> <ul style="list-style-type: none"> <li>▪ Jacket upending and floatation analysis</li> </ul> <b>Geotechnical</b> <ul style="list-style-type: none"> <li>▪ Pile drivability analysis</li> <li>▪ Conductor drivability analysis</li> </ul>		
<b>71) Project : MHN Project</b> <b>Client : L &amp; T / ONGC</b>		
Third party review of the installation engineering documents <b>Structural:</b> <ul style="list-style-type: none"> <li>▪ Jacket In place analysis</li> <li>▪ On-bottom stability and mud mat checks</li> <li>▪ Start-Up and Lay down Analysis</li> </ul> <b>Naval Architectural</b> <ul style="list-style-type: none"> <li>▪ Launch analysis- Cable and Bridge</li> <li>▪ Jacket upending and floatation analysis</li> </ul>		

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<b>72) Project : North Belut Project- Installation of cable and bridge</b> <b>Client : TIMAS/ Conoco Phillips</b>	
<b>Structural</b> <ul style="list-style-type: none"> <li>Sea fastening design of cable and bridge</li> <li>Rigging design of bridge</li> </ul> <b>Naval Architectural</b> <ul style="list-style-type: none"> <li>Tow / stability analysis – Material barge- Cable and Bridge</li> </ul> <b>Cable</b> <ul style="list-style-type: none"> <li>Cable Lay Analysis</li> </ul>	   
<b>73) Project : Ujung Pangkah Platform Installation and Flowline EPCI. Phase -2</b> <b>Client : TIMAS/ Amerada HESS</b>	
<b>Structural</b> <ul style="list-style-type: none"> <li>Jacket / Deck Lift rigging design</li> <li>sea fastening design - Jacket/ deck.</li> <li>Pile drivability analysis</li> </ul> <b>Naval Architectural</b> <ul style="list-style-type: none"> <li>Tow / stability analysis – Jacket/ deck</li> <li>Mooring analysis for Jacket/ Deck Installation.</li> <li>Engineered Lift study</li> </ul>	   
<b>74) Project : Compressor Replacement Project- East Belumut</b> <b>.....Client : Newfield</b>	
<b>SCOPE</b> <b>Structural</b> <ul style="list-style-type: none"> <li>Design of Integration Skid</li> <li>Lift rigging design including spreader bar and lift point design</li> </ul>	
<b>75) Project : POE- Giant -6 – Conversion to Pipelay Barge</b> <b>Client : Pioneer Offshore</b>	
<b>Conversion to pipelay barge , including</b> <ul style="list-style-type: none"> <li>Pipe tunnel</li> <li>Read rack and monorails</li> <li>Tensioner and roller foundations</li> <li>Conveyer system</li> <li>Stinger and A Frame design</li> <li>Barge strength check</li> </ul>	





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#### 76) Project : Transportation and Installation of FSO moorings and Riser for JDA B-17

Client : Franklin / M3NERGY JDA SDN BHD/ Carigali - PTTEPI

##### Structural

Designs of

- Chaser pile
- Chaser frame
- Tensioner ramp
- Chain spreader bar
- Pile stopper
- Riser overboard chute
- Access Platform below turret
- Riser hang-off collar
- Chain Pull-in A Frame
- Chain Tensioning padeye

##### Naval Architectural

- Tow analysis and sea fastening design of piles

##### Geotechnical

- Pile Drivability Analysis



#### 77) Project : EPCI – KG Gas Development Project- Kakap Field –West Natuna

Client : TIMAS/ Star Energy

##### Pipeline:

- Field Data Book for pipeline
- Bow string Start-up Analysis



##### Structural













- Sea fastening analysis/ Design for the pipe haul
- Umbilical Reel Sea fastening
- Spool Sea fastening analysis



##### Naval Architectural

- Mooring analysis for Riser and I Tube Installation



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<b>78) Project : Ujung Pangkah Platform Installation and Flowline EPCI. Phase -1</b> <b>Client : TIMAS/ Amerada HESS</b>		
<b>Pipeline:</b> <ul style="list-style-type: none"> <li>Field Data Book for 6", 12" and 16" pipeline</li> <li>Transportation analysis and sea fastening design for pipe hauls.</li> <li>Pipelay Barge Mooring Analysis</li> <li>Davit lift / Riser Installation analysis.</li> <li>Innovative pipeline start-up analysis using two barge</li> </ul> <b>Structural</b> <ul style="list-style-type: none"> <li>Jacket / Deck Lift rigging design</li> <li>sea fastening design - Jacket/ deck.</li> <li>Pile drivability analysis</li> <li>Deck Load out Analysis – Indicative study</li> <li>Installation Frame Design</li> <li>Chaser Frame design</li> </ul> <b>Naval Architectural</b> <ul style="list-style-type: none"> <li>Tow / stability analysis – Jacket/ deck</li> <li>Mooring analysis for Jacket/ Deck Installation.</li> <li>Engineered Lift study – Jacket</li> </ul>		
		
		
<b>79) Project : Kambuna Topsides , Risers and Pipeline Installation</b> <b>Client : TIMAS / Asia Petroleum Development/ Pertamina</b>		
<b>Pipeline:</b> <ul style="list-style-type: none"> <li>Field Data Book for 14" pipeline</li> <li>Above Water Tie –in Analysis for 14" pipeline</li> <li>Beach Pull Analysis for 14" Pipeline</li> </ul> <b>Structural</b> <ul style="list-style-type: none"> <li>Deck Lifting rigging design</li> <li>Installation aids design for pipelay</li> <li>Beach Pull foundation Design</li> <li>Barge Upgrades-Stinger Design for POE-PL1</li> <li>Barge Upgrades-Ready Rack and mono rail design for POE-PL1</li> <li>Sea fastening analysis/ Design for the pipe haul</li> <li>Dredge barge modification</li> </ul> <b>Naval Architectural</b> <ul style="list-style-type: none"> <li>Transportation analysis for pipe haul</li> </ul>		
		
		

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## 9. ISO CERTIFICATION



### *Certificate of Registration*

This certificate has been awarded to

**Offshore Construction Specialists Pte Ltd**

36 Kian Teck Road, Singapore 628781, Singapore

in recognition of the organization's Quality Management System which complies with

**ISO 9001:2015**

The scope of activities covered by this certificate is defined below

**Provision of Project Management and Consultancy Services for Oil and Gas Construction Facilities**



Certificate Number:

41578/B/0001/SA/En

Date of Issue: (Original)

04 November 2016

Date of Issue:

04 November 2019

Issue No:

2

Expiry Date:

03 November 2022




Issued by:

On behalf of the Director



If there is any doubt as to authenticity of this certificate, please do not hesitate to contact the Head Office of the Group via [info@urs-certification.com](mailto:info@urs-certification.com).  
URS is a member of United Registrar of Systems (Singapore) Ltd, United House, 100 River Road, Singapore 117050, URS Company Registration no. 3298486.  
URS Pte Ltd (the Ltd) 79004 Beach Road #09-023, The Plaza, Singapore 109257



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## 10. NATA CERTIFICATION



NATA is Australia's government-endorsed accreditor of laboratories, and a leader in accreditation internationally. NATA is a signatory to the international mutual recognition arrangements of the International Laboratory Accreditation Cooperation (ILAC) and the Asia Pacific Accreditation Cooperation (APAC).  
APR-1-9 / Issue 5 / May 2015

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## 11. BCA CERTIFICATION

Serial No : C2108038



**Building and Construction Authority**

**CERTIFICATE OF LICENCE**

This is to certify that

**OFFSHORE CONSTRUCTION SPECIALISTS  
PTE LTD**

(Unique Entity Number / ACRA Registration Number : 200720801G )

is licensed as a

General Builder Class 1  
(24 Aug 2021 to 24 Aug 2024)

under Part VA of the Building Control Act and Building Control  
(Licensing of Builders) Regulations 2008



Commissioner of Building Control  
Singapore

Date: 25 Aug 2021