TOPSIDE FLOATOVER
PRE-QUALIFICATION DOCUMENT

Offshore Construction Specialists (OCS)
36 Kian Teck Road
Singapore 628781
Tel: +65 6898-0210
Fax: +65 6898-0209
Web: http://www.offshore-ocs.com

Contact Information

<table>
<thead>
<tr>
<th>Contact:</th>
<th>Company Position:</th>
<th>Email Address:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Keith Jackson</td>
<td>Managing and Technical Director</td>
<td><a href="mailto:keith.jackson@offshore-ocs.com">keith.jackson@offshore-ocs.com</a></td>
</tr>
<tr>
<td>Seto Jian</td>
<td>Operations Manager</td>
<td><a href="mailto:setoj@offshore-ocs.com">setoj@offshore-ocs.com</a></td>
</tr>
<tr>
<td>William Wijaya</td>
<td>Project Manager</td>
<td><a href="mailto:william.wijaya@offshore-ocs.com">william.wijaya@offshore-ocs.com</a></td>
</tr>
<tr>
<td>Loke Kah Poh</td>
<td>Project Manager</td>
<td><a href="mailto:kplode@offshore-ocs.com">kplode@offshore-ocs.com</a></td>
</tr>
<tr>
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<td>Engineering Manager</td>
<td><a href="mailto:rakulr@offshore-ocs.com">rakulr@offshore-ocs.com</a></td>
</tr>
<tr>
<td>Alastair Wong</td>
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<td><a href="mailto:alastair.wong@offshore-ocs.com">alastair.wong@offshore-ocs.com</a></td>
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<tr>
<td>Fery Wijaya</td>
<td>Construction Manager</td>
<td><a href="mailto:fery@offshore-ocs.com">fery@offshore-ocs.com</a></td>
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<tr>
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<td><a href="mailto:chuy.chunfei@offshore-ocs.com">chuy.chunfei@offshore-ocs.com</a></td>
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</tbody>
</table>
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1.0 INTRODUCTION

Offshore Construction Specialists (OCS) was formed in 2007 from a core group of experienced marine construction engineers with an extensive track record working with major contractors.

The company provides construction management, engineering and strategic support equipment services primarily to the offshore oil and gas sector focusing on the installation of pipelines, platforms, tanker moorings and related facilities. In addition to engineering, OCS also provides turnkey services for pipeline burial, pipeline pre-commissioning & drying, flexible flow line installation and umbilical installation on a subcontract basis to marine contractors.

The company has grown steadily since incorporation and now employs 60 personnel of whom over 36 are civil/structural and mechanical engineers along with an equipment group comprising of mechanics and technicians to operate in-house developed equipment. The engineers and technician work hand in hand to ensure all projects are properly engineered and operationally practical.

Our personnel are experienced and all came from the same background as the main marine contractor. We help the major marine contractor plan the work such that the topside float over activity has the least impact on the vessel construction operations. We are proactive in highlighting potential issues and ensuring both parties win. OCS understands the importance of getting the job done safely and efficiently to minimise operational costs for all concerned.
1.1 TOPSIDE FLOATOVER EXPERIENCE

OCS personnel have completed the following major jacket launch projects for different customers:

<table>
<thead>
<tr>
<th>No.</th>
<th>Client</th>
<th>Operator</th>
<th>Project</th>
<th>Descrip.</th>
<th>Jacket Weight (mT)</th>
<th>Floatover Barge Used</th>
<th>Year Comp</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Shell Philippines</td>
<td>Shell Philippines</td>
<td>Malampaya</td>
<td>CPP</td>
<td>11,000</td>
<td>H-541</td>
<td>2001</td>
</tr>
<tr>
<td>2</td>
<td>PTTEP</td>
<td>PTTEP (Thailand)</td>
<td>Arthit</td>
<td>CPP</td>
<td>18,000</td>
<td>Int650</td>
<td>2007</td>
</tr>
<tr>
<td>3</td>
<td>CLJOC</td>
<td>CLJOC (Vietnam)</td>
<td>SuTuVang</td>
<td>CPP</td>
<td>16,500</td>
<td>Int650</td>
<td>2008</td>
</tr>
<tr>
<td>4</td>
<td>Conoco Philips, Indonesia</td>
<td>Conoco Philips, Indonesia</td>
<td>North Belut</td>
<td>CPP</td>
<td>14,000</td>
<td>S45</td>
<td>2009</td>
</tr>
<tr>
<td>5</td>
<td>Caspian Hydro</td>
<td>LUKOIL</td>
<td>Filanovsky Stage 2</td>
<td>IRP-2</td>
<td>8500</td>
<td>TMB</td>
<td>On Going</td>
</tr>
<tr>
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<td>LUKOIL</td>
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<td>LQP-2</td>
<td>1500</td>
<td>TMB</td>
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</table>

OCS is equipped to handle large projects or discrete project elements depending on the specific needs of the customer. During the preparation for topside float over or any offshore work the safety of personnel, equipment and environment plays a vital role in the success of a project and as such, HAZID’s shall be conducted prior to any operations. These meetings are attended by key engineers and supervisors and all potential risks are identified and mitigation measures put in place to ensure they are as low as reasonably practicable.
2.0 ORGANISATION CHART

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Refer to the next page for OCS Organisation Chart
3.0 TYPICAL FLOATOVER BARGE ORGANISATION CHART

Typically, OCS personnel requirements for 24 hour operations specifically for launching activity are as follows:

- 1 x Floatover Superintendent
- 1 x Floatover Foreman
- 1 x Construction Manager
- 1 x Operations Engineer
- 1 x Snr Field Engineer
• 1 x Field Engineers (optional to add if situation arises)

All other support personnel and equipment are normally provided by main contractor. OCS can provide additional personnel as required.

Where specifically required, OCS can provide an option for provision of the entire support/launch spread. Customer requirements for this option can be discussed on a case by case basis.
4.0 PLANNING AND EXECUTION

OCS will cover the following scope areas during planning and execution of Topside Floatover projects.

4.1 Topside Scope

OCS will review the scope of work taking particular note of the following:

- Topside weight, dimension and physical constraints
- Topside Barge capabilities and constraints – loose or tight slot
- Critical ballast system
- Deck Support Frame integration with barge
- Leg Mating Units (LMU) design (and coordinate with vendor)
- LMU’s Elastomer testing program
- Deck Support Units
- Use of Sand jacks
- Requirement for Quick recoverable system
- Fendering design
- Floatover Engineering (OCS shall perform this as it is an intergral part of the floatover)
- Topside Transportation Engineering
- Float Over equipment requirement/specification
- Mooring requirements
- Ballasting configurations.
- Float over site verification/anchoring plans
- Float Over Barge rig up plans
- Execution methodology

4.2 Equipment Layout, preparation and Rig up

Based on a review of the scope of work and the other critical parameters listed in 4.1 above OCS will prepare a most appropriate float over layout for the work. In most cases these equipment are available and provided by main contractor which OCS will review their suitability and proposes checks and verification to ensure the serviceability of these equipment.

Based on the topside float over equipment assessment, OCS will provide a layout of the float over equipment on the barge assigned by the client. In certain cases OCS can provide the float over barge/spread on which to base the required equipment for the float over operation.

This layout will then be the basis for the float over barge rig up.

4.3 Equipment Testing

OCS will ensure that all float over support equipment (winches and mooring equipment including power packs, ballast system, power supply, cutting equipment, survey and motion
monitoring system, etc) is fully tested before leaving the rig up yard. Client representatives will be invited to witness the testing programme.

4.4 Load out

OCS personnel will be present during topside load out operation to ensure that all aspect of the load out that affects the float over will be monitored and any problem observed can be rectified immediately and escalation of issues impacting the float over operations at site will be avoided.

4.5 Execution Procedures

OCS will provide project specific execution procedures for every project which address all elements of the Topside float over project. These procedures must be approved by the client prior to offshore operation. OCS will ensure that the procedures address all constraints posed by specific project site conditions.

4.6 HAZID

Specific HAZID and risk identification sessions will be conducted to identify and propose mitigation measures for site hazards which may be posed by operations. This will be conducted as early as possible; otherwise, the latest to be conducted will be just before topside loadout.

4.7 Personnel

OCS will provide a team of qualified personnel to prepare and supervise the work at the rig up yard as well as float over execution as site. Key personnel will be the same for both who supervise the rig up and testing of the equipment on the float over barge and float over activity.

The OCS typical float over management organization chart as shown in section 3.
### 5.0 OCS CLIENT BASE

OCS has built up a significant customer base during four (8) years of operations. OCS past and present clients are listed below. References can be provided on request:

<table>
<thead>
<tr>
<th>NO</th>
<th>CLIENT NAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Asia Petroleum Developments / Salamander Energy (Indonesia)</td>
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<td>2</td>
<td>Bumi Amarda</td>
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<td>3</td>
<td>Chevron (Thailand)</td>
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<td>4</td>
<td>Clough Sapura JV (Australia)</td>
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<tr>
<td>5</td>
<td>DOF Subsea.</td>
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<tr>
<td>6</td>
<td>EMAS (Singapore)</td>
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<td>7</td>
<td>Franklin Offshore (Singapore)</td>
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<td>8</td>
<td>Galoc (Philippines)</td>
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<td>9</td>
<td>GF1 (Thailand)</td>
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<td>10</td>
<td>Global Industries (Malaysia)/Technip</td>
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<td>11</td>
<td>Hako Offshore (Singapore)</td>
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<tr>
<td>12</td>
<td>Heerema (Netherlands)</td>
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<tr>
<td>13</td>
<td>HESS (Indonesia)</td>
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<tr>
<td>14</td>
<td>Kangean Energy (Indonesia)</td>
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<td>15</td>
<td>Larsen &amp; Toubro (Malaysia/India)</td>
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<td>M3 Energy (Malaysia)</td>
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<td>17</td>
<td>McConnell Dowell CCC JV (Australia)</td>
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<td>MRTS Engineering Ltd (Russia)</td>
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<td>NorCE (Singapore)</td>
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<td>NuCoastal (Thailand)</td>
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<td>23</td>
<td>Offshore Marine Contractors</td>
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<td>24</td>
<td>Origin Energy (Australia)</td>
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<td>PT Timas Suplindo (Indonesia)</td>
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<td>26</td>
<td>Sapura Acergy (Malaysia)</td>
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<td>Sarku (Malaysia)</td>
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<td>28</td>
<td>Sea Drill (Singapore)</td>
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<td>29</td>
<td>Star Petroleum (Indonesia)</td>
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<td>30</td>
<td>Swiber (Singapore)</td>
</tr>
<tr>
<td>31</td>
<td>TLO Sapura Crest (Malaysia)</td>
</tr>
<tr>
<td>32</td>
<td>Vietsovpetro (VSP) (Vietnam)</td>
</tr>
</tbody>
</table>
6.0 TOPSIDE FLOATOVER - TRACK RECORD

Refer to attached.
SUBJECT: TOPSIDE FLOATOVER (MALAMPAYA CPP TOPSIDE) via Heerema

**Project Details:**
The Malampaya field is located off the coast of Palawan Island in the Philippines. The Malampaya Project is a gas development project to deliver gas to supply power plants within the Philippines by early 2002. The wells are in 850 m water depth and will be produced to a production platform in approximately 42 to 44 m water depths (LAT). The platform is designed to separate the gas, condensate and saturated water to the required specifications for export and disposal. The development plan consists of eight (8) Malampaya subsea wells and two (2) Camago, all tied back via subsea production manifolds. The well fluids combine and flow via two (2) 16” x 33 km multiphase subsea flowlines to the platform. The Topside Facility will be supported on a Concrete Gravity Structure (CGS), which is also used to store the condensate.

**Structure Information:**
- **Topside Type:** CPP 4-legged
- **Dimension:** LxWxH 101m x 52m x 24m
- **Jacket Weight:** 11,000mT (factored weight)
- **Water Depth:** 43m (LAT)
- **Floatover barge:** H-541 (160mx42mx10.7m)
- **Supported on DSF:** Yes
- **DSU (Elastomer) on DSF:** No
- **LMU:** Yes on CGS
- **Elastomer in LMU:** Yes on CGS
- **Sand Jacks in LMU:** Yes on CGS
- **Gap Type:** Tight Slot with mating lines

**Project Scope:**
This scope was managed by OCS personnel prior to incorporation of OCS, to illustrate the individuals’ experience of the personnel involved. The scope was for the Transportation and installation of the Malampaya Topside by float over using the barge H541. The topside float over installation was completed in August 2001.

**Pictures:**
![Project Pictures](image1.jpg) ![Project Pictures](image2.jpg)
![Project Pictures](image3.jpg) ![Project Pictures](image4.jpg)
SUBJECT: DECK FLOTOVER (ARTHIT APP Deck Floatover) PTTEP

Project Details:-
PTT Exploration and Production Company Limited (PTTEP) in partnership with Chevron and MOECO developed the Arthit field located in the Gulf Of Thailand. The Arthit field lies 35 km due east of the existing Bongkot Field, approx. 625 km from Rayong Province, and 250 km northeast of the town of Songkhla, Thailand. The water depth is approx. 80 meters.

The Arthit Field facilities comprises of:
- The bridge-linked Arthit Central Facilities, including the Arthit Process Platform (APP), the Arthit Quarters Platform (AQP), the Arthit Wellhead Platform-1 (AWP-1), and a flare platform;
- Five (5) wellhead platforms (AWP-2, AWP-3, AWP-4, AWP-5 & AWP-6);
- Gathering pipelines connecting the remote wellhead platforms to APP;
- A gas export pipeline to Arthit PLEM then to Erawan; and
- A condensate export pipeline to Bongkot FSO2.

Structure Information:-
- Deck Type: 8-legged deck
- Dimension (LxBxH)m: 75.5 x 65.9 x 55.3
- Deck Weight: 17,998 mT (Factored weight)
- Water Depth: 78.1 m (MSL)
- Floatover barge: Intermac 650 (650’ x 170’ x 40’)
- Supported on DSF: Yes
- DSU (Elastomer) on DSF: Yes
- LMU: Yes
- LMU and Elastomer: Yes on deck
- Sand jacks in transition: Yes (on jacket leg)
- Gap Type: Loose slot

Project Scope:-
This scope was managed by OCS personnel prior to incorporation of OCS, to illustrate the individuals’ experience of the personnel involved. The project scope was for the transportation and installation of the APP Deck by Float Over utilizing the barge Intermac 650. The float over operation was completed on 2007

Pictures:
**SUBJECT:** CPP TOPSIDE FLOATOVER (CuuLong STV CPP TOPSIDE) via J Ray McDermott

**Project Details:**
CuuLong Joint Operating Company (CLJOC) embarked on the development of the SuTuComplex located in about 53m water depth in Block 15-1 offshore Vietnam. The SuTuVang Field consists of a Central Procession Platform with pipelines and tie-in to the existing WHP-A.

**Structure Information:**
- **Topside Type:** CPP 8-legged
- **Dimension:** LxWxH 68m x 80m x 40m
- **Jacket Weight:** 16500mT (factored weight)
- **Water Depth:** 53 m (MSL)
- **Floatover barge:** Intermac 650 (650’ x 170’ x 40’)
- **Supported on DSF:** Yes
- **DSU (Elastomer) on DSF:** Yes (OKI)
- **LMU:** Yes on jacket leg
- **Elastomer in LMU:** Yes on jacket Leg
- **Sand Jacks in LMU:** Yes on jacket Leg
- **Gap Type:** Loose Slot

**Project Scope:**
This scope was managed by OCS personnel prior to incorporation of OCS, to illustrate the individuals’ experience of the personnel involved. The scope was for the installation for STV CPP complex which entails STV platform and associated pipeline using the construction barge DB30. The topside installation using float over was completed in August 2008.

**Pictures:**
![Project Images]
SUBJECT: DECK FLOATOVER (North Belut CPP Deck Floatover)

**Project Details:**
Conoco Phillips Indonesia (COPI) is undertaking the development of the North Belut Field, located in Block B of the Indonesian sector of the Natuna Sea. The North Belut field is located approximately 60km East North-East of the Belanak FPSO installed on the Belanak Field. The North Belut development comprises of:

a) 1 Centre Processing Platform (North Belut Central Processing Platform (NBCPP))

b) 2 Wellhead Jackets and Platforms - Wellhead Platform C (WHP-C) and Wellhead Platform D (WHP-D).

NBCPP will be an 8-legged jacket platform, whilst WHP-C and WHP-D will be four piles 20-slots platforms. WHP-D will be connected with a bridge to NBCPP.

**Structure Information:**
- **Deck Type:** 4-legged deck
- **Dimension:** 24m x 46.5m
- **Deck Weight:** 14,000 mT (factored weight)
- **Water Depth:** 54 m (MSL)
- **Float over barge:** 545 (180.0m x 42.0m x 11.5m)

**Project Scope:**
OCS scope for this project was to second a Client Site Representative to Conoco Phillips Indonesia North Belut project to oversee the installation engineering, rig up, installation procedure preparation, site coordination/supervision for the CPP jacket and CPP Deck Installation. CPP Deck Floatover was completed in 2009

**Pictures:**
7.0 ISO CERTIFICATION

OCS is an ISO9001 (2008) certified company, with the certificate as below:-
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: 41537/0/381/UKAS
Issue No: 2
Date of Issue: 06 November 2016
Date of Issue: 06 November 2019

Issued by: [Signature]
On behalf of the Scheme Manager

[Signatures and logos]
8.0 NATA CERTIFICATION

[Image of NATA Accredited Laboratory certificate]

National Association of Testing Authorities, Australia
(ABN 59 004 379 748)

has accredited

Offshore Construction Specialists Pte Ltd
Singapore

following demonstration of its technical competence to operate in accordance with

ISO/IEC 17025
This facility is accredited in the field of

MECHANICAL TESTING

for the tests, calibrations and measurements shown on the Scope of Accreditation
issued by NATA

Jennifer Evans
Chief Executive Officer

Date of issue: 25 August 2016
Date of accreditation: 15 July 2013
Accreditation number: 19122