



OFFSHORE CONSTRUCTION SPECIALISTS

**TOPSIDE FLOATOVER
PRE-QUALIFICATION DOCUMENT**



TOPSIDE FLOATOVER PRE-QUALIFICATION DOCUMENT

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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.

The company has grown steadily since incorporation and now employs 60 personnel of whom over 36 are civil/structural/mechanical engineers and draftsmen. The main office is located at 36 Kian Teck Road in Singapore with support back offices in Bangalore, India and Batam, Indonesia.

Our construction management and engineering team is unique in the industry and can be used to bring best in class management and engineering services to every facet of marine construction covering design & construction support engineering, management and field execution.

This pre-qualification covers floatover engineering and execution of Topside facilities.

OCS initial experience with floatovers came from working with first tier marine contractors such as McDermott & Heerema who were contractors to oil and gas majors such as Shell, Conoco Phillips, PTTEP etc. OCS personnel were employed in senior construction management and engineering roles on a series of major contracts.



More recently OCS has taken on 3 major floatover projects in the Volga Delta region of the NW Caspian for Lukoil on a standalone basis working a fully responsible subcontractor for the main contractor Caspian Hydra Technologies.

OCS performed the full package of engineering and construction management for the floatovers which were conducted from the Lukoil "TMB Yuri Kuvykin".

The projects were underwritten by the London insurance market and OCS was closely scrutinised by the marine warranty companies DNV Noble Denton and London Offshore Consultants. References from these companies can be provided if requested.

The scope of work for the OCS marine operation scope included:

- Development of Floatover Execution strategy
- Design and strengthening of Deck Support Frames.
- Design and specification for Leg Mating units
- Skid shoe designs
- Dynamic Analyses for floatover.
- Ballasting analyses.
- Specific fender designs
- Design of Loadout systems.
- Design of offshore skidding systems.

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- Transportation Analyses
- Offshore Execution management and Supervision.

OCS will adapt as required to our customer requirements but can provide full or partial cost effective floatover service depending on project needs.



2.0 OCS TOPSIDE FLOATOVER EXPERIENCE PROFILE

OCS personnel have completed the following major topsides float over projects for different customers while they were earlier employed by major contractors, with the exception of item 5, 6 and 7, where OCS managed the entire Floatover marine operations as a fully independent and responsible standalone subcontractor

No.	Client	Operator	Project	Descrip.	Jacket Weight (mT)	Floatover Barge Used	Year Comp.
1	Shell Philippines	Shell Philippines	Malampaya	CPP	11,000	H-541	2001
2	PTTEP	PTTEP (Thailand)	Arthit	CPP	18,000	Int650	2007
3	CLJOC	CLJOC (Vietnam)	SuTuVang	CPP	16,500	Int650	2008
4	Conoco Philips, Indonesia	Conoco Philips, Indonesia	North Belut	CPP	14,000	S45	2009
5	Caspian Hydro	LUKOIL	Filanovsky Stage 2	LSP-2	7150	TMB "Yuri Kuvykin"	2017
6	Caspian Hydro	LUKOIL	Filanovsky Stage 2	LQP-2	1500	TMB "Yuri Kuvykin"	2017
7	Caspian Hydro	LUKOIL	Korchagin	BK-TS	2800	TMB "Yuri Kuvykin"	2018

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.

OCS has extensive experience with preparation of high level Hazid presentations to address all risk elements of the project designed for the customer and the insurance market representative.

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3.0 ORGANISATION CHART

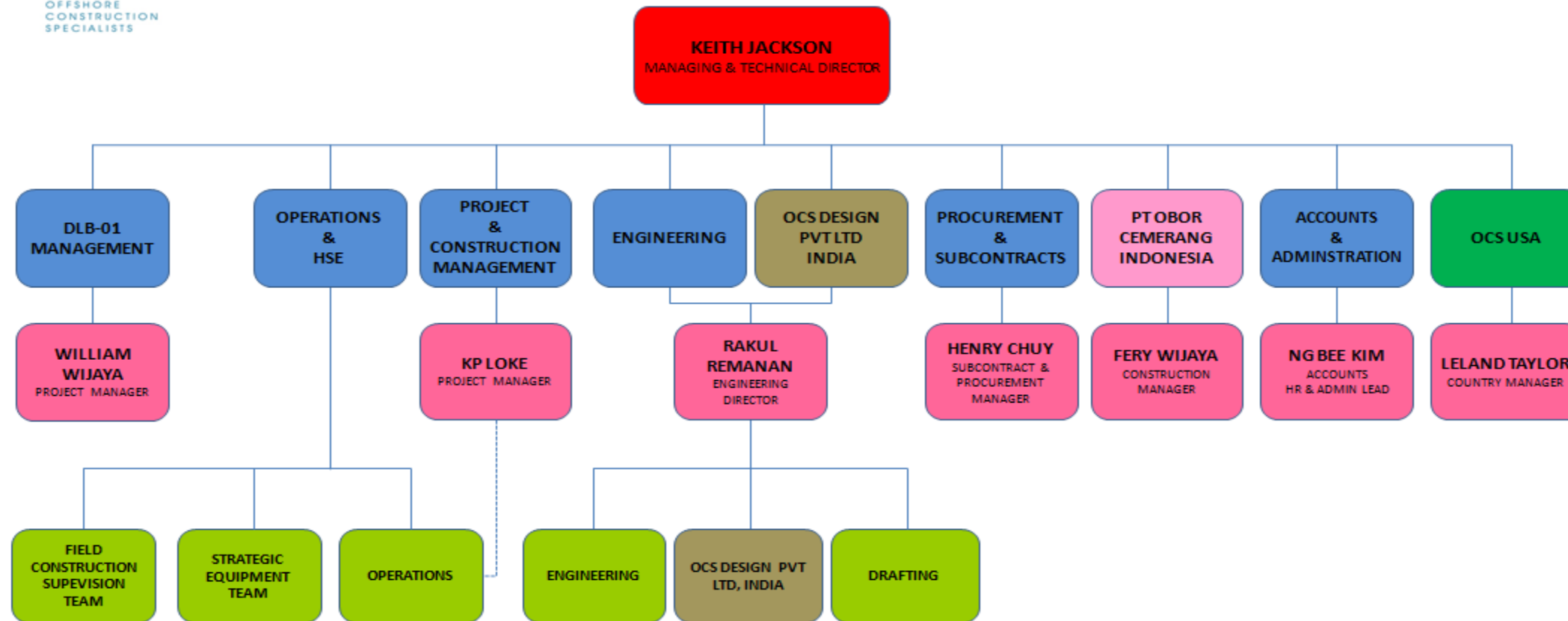
3.1 KEY PERSONNEL CONTACTS

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Refer to the next page for OCS Organisation Chart



LIST OF KEY OF PERSONNEL



LEGEND

- Singapore Head Office
- India Office
- Indonesia Office
- USA Office

Updated as of Aug 2021

4.0 TYPICAL FLOAOVER BARGE ORGANISATION CHART

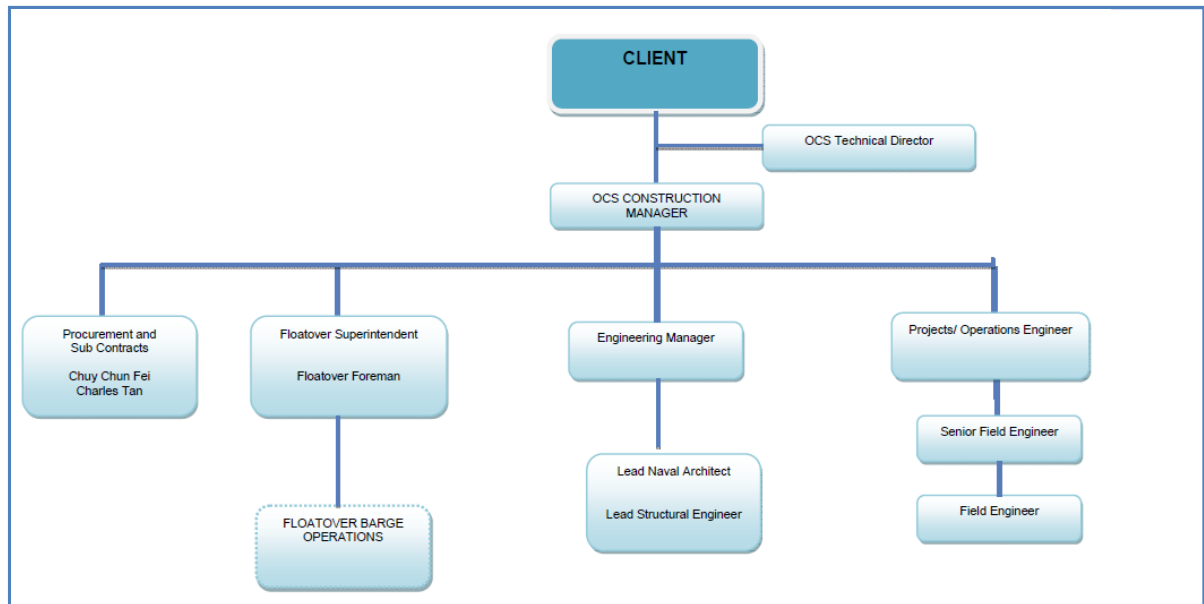


Figure 3.1 Typical Floatover PMT/Engineering

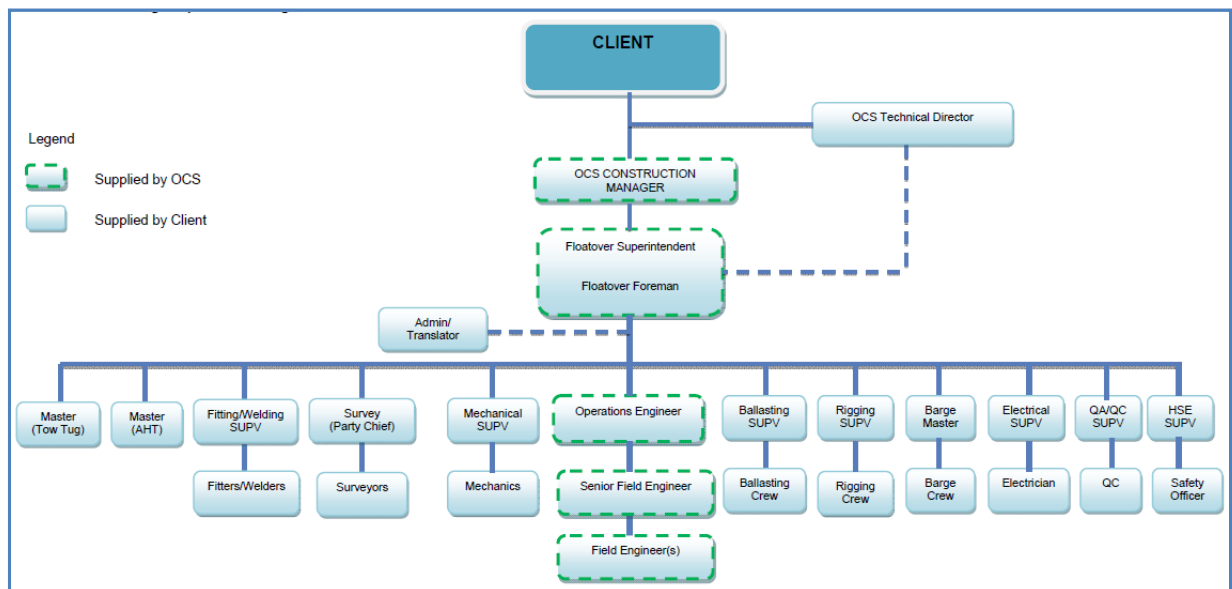




Figure 3.2 Typical Float over barge management

Typically, OCS Floatover management personnel requirements for a 24 hour operations specifically for Floatover operation activities are as follows:

- 1 x Floatover Superintendent
- 1 x Floatover Foreman
- 1 X Construction Manager
- 1 x Senior Construction Engineer
- 2 x Field Engineers



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- 1 x Structural Engineer
- 1 x Naval Architect (Ballast)

All other support personnel and equipment are normally provided by main contractor or a specialised local subcontractor. OCS can provide additional personnel as in the event it is needed.

Where specifically required, OCS can provide an option for provision of the entire support/floatover spread noting that the requirements of the floatover barge must be analysed on a case by case basis and availability in the prescribed time period is a critical consideration.

Customer requirements for this option can be addressed where required.

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5.0 PLANNING AND EXECUTION

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

5.1 Topside Floatover Scope

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

- Topside weight, dimension and physical constraints such as water depth vs barge depth and under keel clearances
- 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 for fabrication)
- LMU's Elastomer testing program
- Deck Support Units (if required)
- Use of Sand jacks
- Use of skidding systems if Topsides must be moved on DSF before Floatover.
- Requirement for Quick recoverable systems
- Floatover Engineering (OCS shall perform this as it is an integral part of the floatover), covering:
 - Mooring analysis during entry and exit sequence
 - Mating analysis leading to LMU design
 - Seafastening design between DSF to Float over barge
 - Seafastening design between Topside to DSF
 - Fendering design (requirement for sway and surge fenders)
- Topside Transportation Engineering
- Float Over equipment requirement/specification
- Mooring requirements
- Ballasting configurations and ballasting procedure
- Float over site verification/anchoring plans
- Float Over Barge rig up plans
- Execution methodology
- Personnel and equipment/vessel Mobilization plan

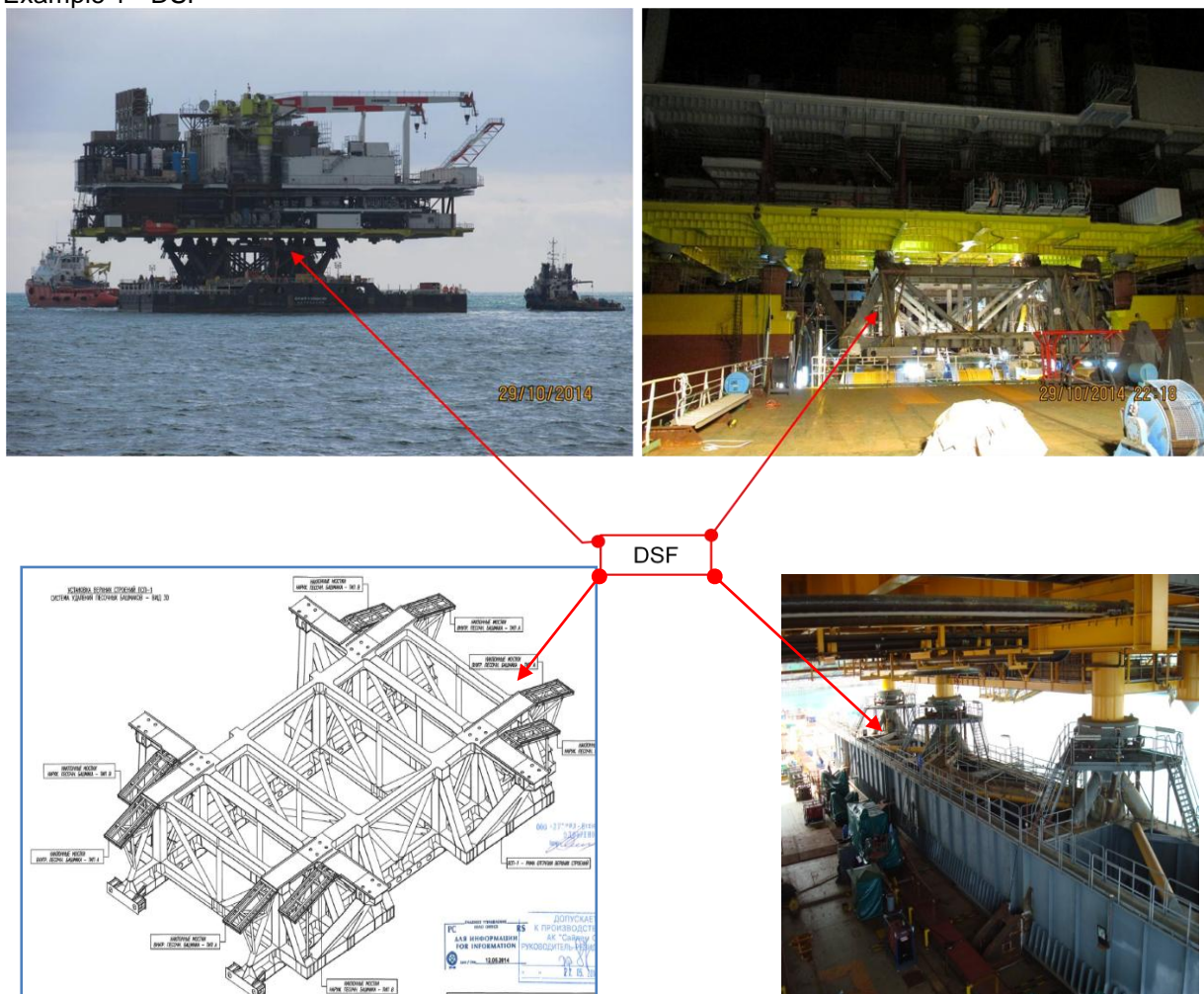
5.2. Floatover component terminology

Below are some of the terminology and a brief description of its use in Floatover installations:

A. Deck Support Frame

The Deck Support Frame (DSF) is a structure which supports the topside on the transportation barge. The topside may be built onto the DSF and skidded on to the transportation barge during load out, or, the DSF may be built independently from the topside and later jacked up to skid the DSF underneath. The DSF provides the necessary height for the float over operation as well as distributing the deck loads into the barge frames. The DSF also contains the necessary safe access, lighting facilities and seafastening.

Example 1 - DSF

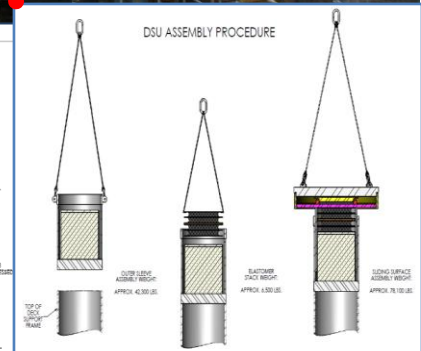
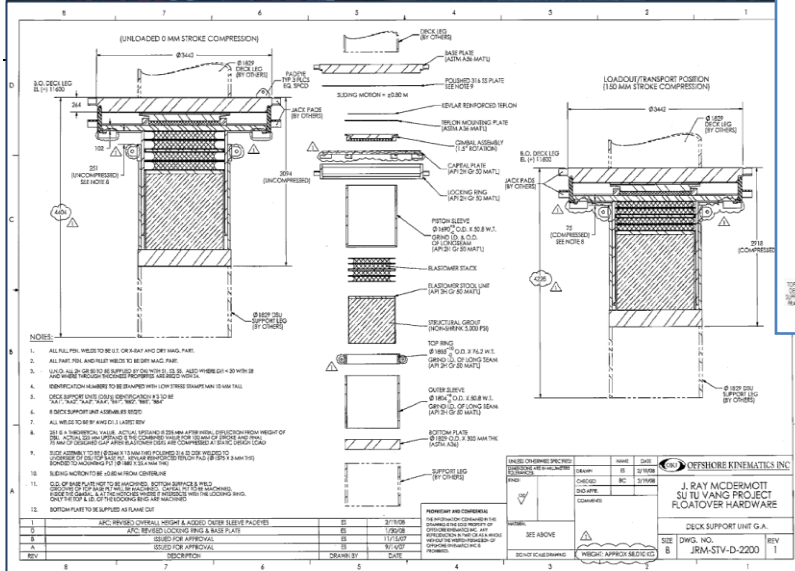


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B. Deck Support Unit (DSU)

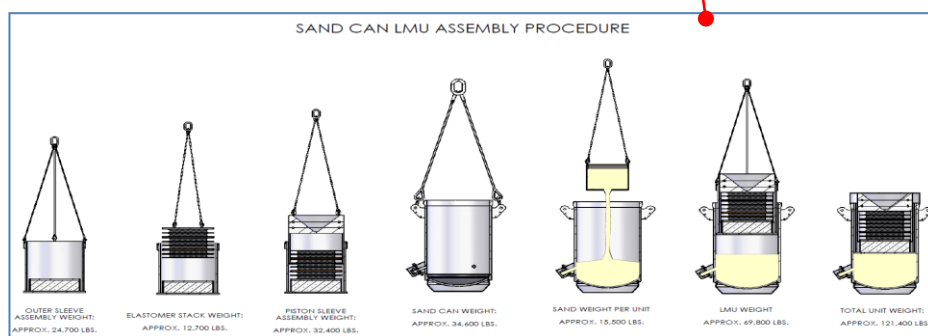
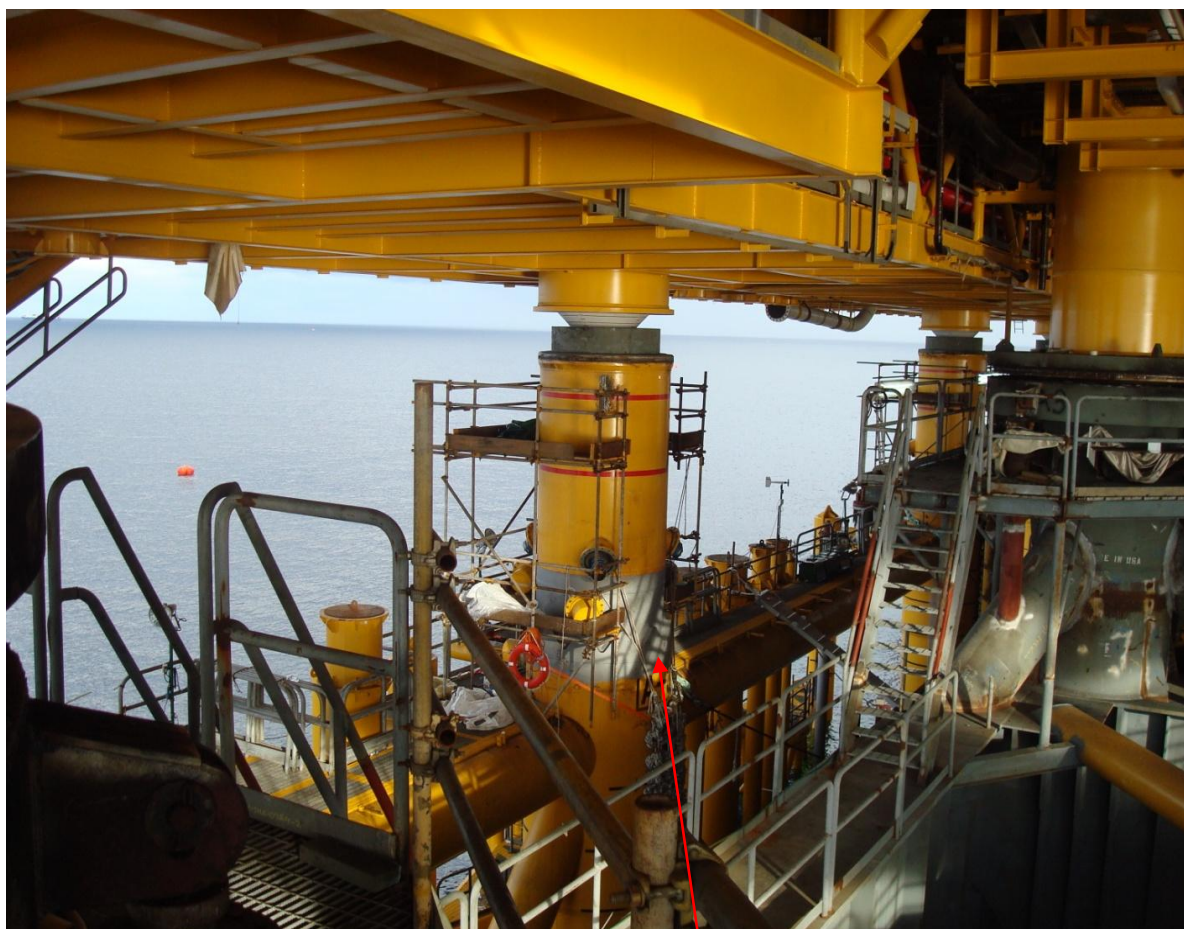
Depending on the design, Deck Support Unit (DSU) may be required on the DSF to support the Topside and to absorb the dynamic impact load during the Floatover separation phase.

Example 2 - DSU



In some cases the LMU can be integrated with the sand can/sand jack system.

Example 5 – LMU for SuTuVang Floatover project (integrated Sand jack)



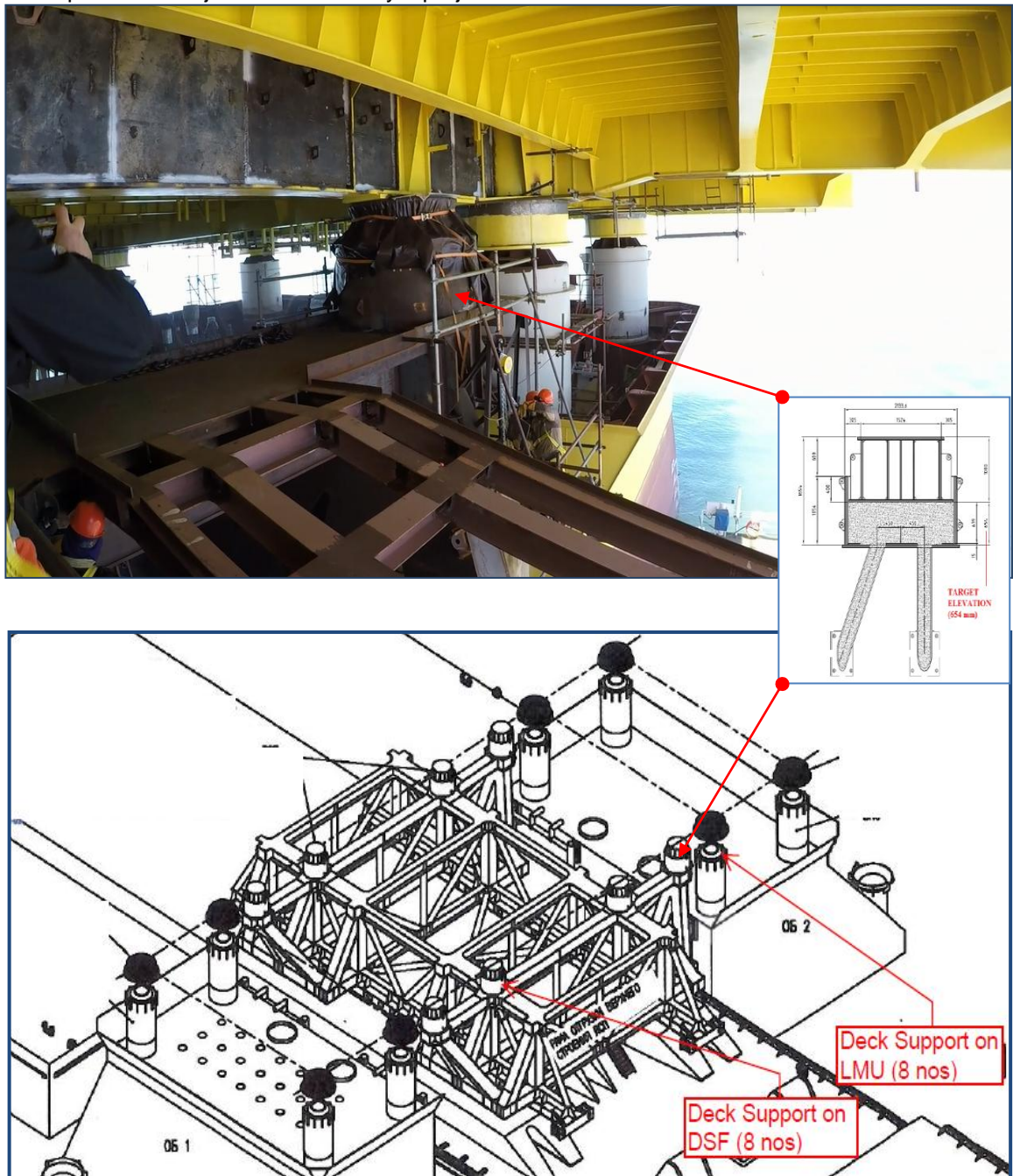
D. Sand Can/Sand jack



Sand jacks are designed to :

1. “quickly” lower the topside while minimizing the resulting impact loads during the final stages of load transfer.
2. Control lowering of the Topside at final stages

Sand jacks are control by sand gate, normally design using sliding hinged plate or valve.

Example 6 – Sand jack for Filanovsky 2 project



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E. Fender system

The purpose of the fenders is to restrain surge (longitudinal) and sway (transverse) movement of the Floatover barge during mating. Fenders will be design to take the environmental loads during Floatover which will then transmit onto the jacket/substructure which must resist these impact loads.

When the Floatover barge is positioned between substructures/jacket legs at the final position for mating, gap between sway fenders and floating barge fenders are normally 75 mm.

Example 7 fender system



F. Topside Seafastening

Sea-fastening system is provided in order to prevent any Topside movement during transportation. The system shall also be designed to be easily removable and clear to allow mating operation without interference. Generally if there is no uplifting during transportation, and only in terms of pitch and roll motions then pitch and roll stoppers are generally sufficient.

Example 8 – Typical pitch and roll stopper



Seafastening removal sequence is then incorporated into the Floatover procedure.

G. Ballasting Systems

A high capacity ballast system is required to ensure the transfer of the topside loads from the supports on the DSF/DSU onto the substructure/jacket legs LMU as quickly as possible.

Dedicated Floatover barges sometimes have customized rapid ballast systems. Others may have in built ballast system which can be supplemented with external ballasting systems.

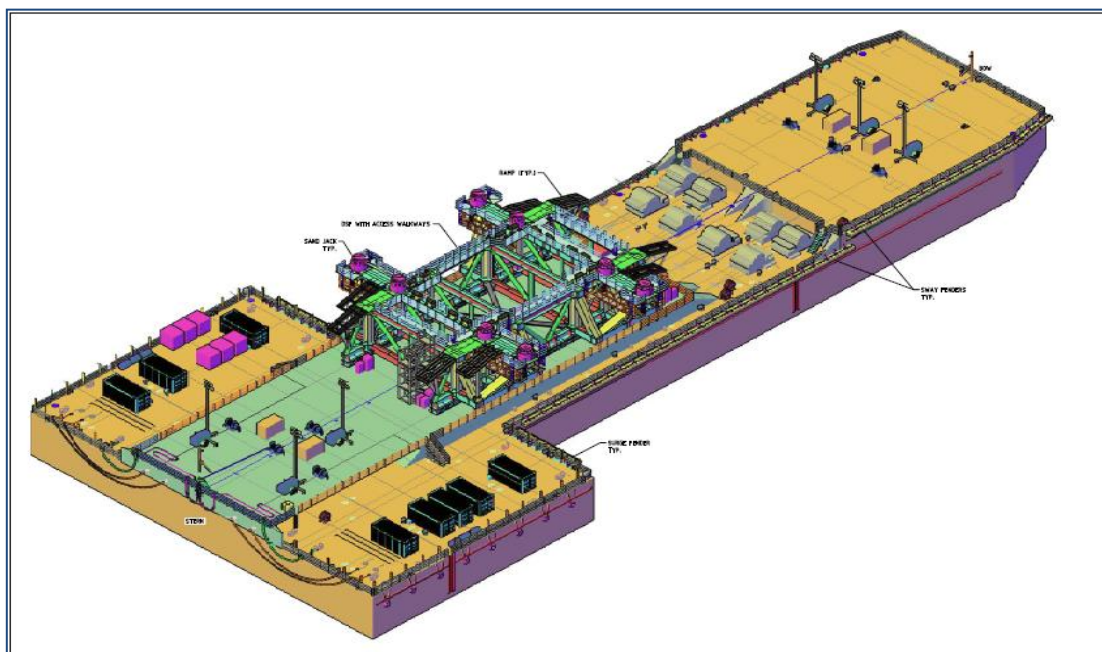
The capacity of the ballast system needs to take account of tidal changes.

5.3 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 this equipment is 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.



Example 9 – Layout of Floatover barge equipment

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5.4 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.

5.5 Load out

OCS personnel will be present during topside load out operation to ensure that all aspects of the load out that affect the float over will be monitored and any problems observed can be rectified immediately to prevent an escalation of issues impacting the float over operations at site.

5.6 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 and MWS prior to offshore operation. OCS will ensure that the procedures address all constraints posed by specific project site conditions.

5.7 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 such that agreed mitigation measures can be implemented prior to sailaway.

5.8 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 to ensure continuity.

The OCS typical float over management organization chart as shown in section 3.

6.0 OCS CLIENT BASE

OCS has built up a significant customer base during eleven (11) years of operations. OCS past and present clients are listed below. References can be provided on request:

NO	CLIENT NAME
1	Asia Petroleum Developments / Salamander Energy (Indonesia)
2	Bumi Amarda
3	Caspian Hydra Technologies (Caspian Region)
4	Chevron (Thailand)
5	Clough Sapura JV (Australia)
6	DOF Subsea.
7	EMAS (Singapore)
8	Franklin Offshore (Singapore)
9	Galoc (Philippines)
10	GFI (Thailand)
11	Global Industries (Malaysia)/Technip
12	Hako Offshore (Singapore)
13	Heerema (Netherlands)
14	HESS (Indonesia)
15	Kangean Energy (Indonesia)
16	Larsen & Toubro (Malaysia/ India)
17	M3 Energy (Malaysia)
18	McConnell Dowell CCC JV (Australia)
19	MRTS Engineering Ltd (Russia)
20	Newfield Peninsula Malaysia (Malaysia)
21	Nippon Steel (Indonesia)
22	NorCE (Singapore)
23	NuCoastal (Thailand)
24	Offshore Marine Contractors
25	Origin Energy (Australia)
26	PetroVietnam Technical Services Corporation (PTSC)
27	PT Timas Suplindo (Indonesia)
28	Sapura Acergy (Malaysia)
29	Sarku (Malaysia)
30	Sea Drill (Singapore)
31	Star Petroleum (Indonesia)
32	Swiber (Singapore)
33	TLO Sapura Crest (Malaysia)
34	Vietsovpetro (VSP) (Vietnam)

7.0 PROJECT PHOTOS

SUBJECT: TOPSIDES FLOATOVER (FILANOVSKY 2 - LSP2 and LQP2) 2017

Project Details:-

LUKOIL-Nizhnevolsk is developing the Filanovsky Field Phase 2. The Filanovsky 2 field is located in the north part of the Russian sector of the northern Caspian Sea approximately 170km south of Astrakhan. The Filanovsky Phase 2 Development comprises of:

- a) 1 Ice Resistance Fixed Platform (LSP2)
- b) 1 Accommodation Platform (LQP2)
- c) 1 connecting bridge (CB4) linking LSP2 and LQP2

The water depth at the location is 8.4m. Both the substructures were “tapered boxed hull” construction and were installed by others during the spring/summer of 2016. The Topsides were installed using the Floatover method in spring/summer 2017. The floatover barge used is provided by Lukoil, the T-Barge “Yuri Kuvykin” based in Astrakhan. The barge was rigged up with Floatover support equipment in Astrakhan prior to TS loadout.

Structure Information:-

LSP2

Topside Type: 8-legged TS + LMU on SS
 Dimension 91.2m x 50.6m x 40m
 Deck Weight: 7,149 mT
 DSF/Sand Jack Yes, 815mT /Yes – 8 nos

LQP2

Topside Type: 4-legged TS
 Dimension 46.6m x 34.4m x 28m
 Deck Weight: 1351 mT
 DSF/Sand Jack Yes, 260mT/No.

Float over barge:- “Yuri Kuvykin” (T-Barge, Length = 140m, Width 62m/30m, Depth 9.3m)

Project Scope:-

The main scope of work was awarded to Caspian Hydra Technologies (CHT). CHT in turn awarded the Topside Floatover Engineering and Floatover Management to OCS. OCS’s scope for this project was to perform the Topside Floatover Engineering and provide Topside Floatover management including Floatover barge rig up and supervision



River Tow along the Volgograd Caspian Channel (VCC)

LSP2 Towed across lowered power



LSP2 Towed in open sea



LSP2 Towed main tug Svetluy



LSP2 SS
Preparation
work -
completing
installing LMU



LSP2 SS with LQP2 SS in view



Floating Barge approaching LSP2 SS SLOT LSP2 SS





**SUBJECT: TOPSIDES FLOATOVER (KORCHAGIN – Substructure and Topside)
2017/2018**

Project Details:-

LUKOIL-Nizhnevolzhsk is developing the Korchagin Field.
The Korchagin field is located in the north part of the Russian sector of the northern Caspian Sea approximately 200km south of Astrakhan. The Korchagin Development comprises of:
a) 1 Ice Resistance Fixed Substructure
b) 1 Topsides
The water depth at the location is 11.9m.
The substructures were “Monopod” construction with 8ea x piles installed during the spring of 2017.
The Topsides were installed using the skidding and Floatover method in April 2018.
The floatover barge used is provided by Lukoil, the T-Barge “Yuri Kuvykin” based in Astrakhan. The barge was rigged up with Floatover support equipment in Astrakhan prior to TS loadout.

Substructure information: -

Substructure Type: 8-legged Monopod
Dimension : 22.6m x 16.6m x 25.5m
Structure weight : 2400mT

Topside information: -

Topside Type : 6-legged Topside
Dimension : 44.5m x 48.0m x 24.0m
Structure weight : 2805mT

Project Scope:-

The main scope of work was awarded to Caspian Hydra Technologies (CHT). CHT in turn awarded the Topside Floatover Engineering and Floatover Management to OCS. OCS’s scope for this project was to perform the Topside Floatover Engineering and provide Topside Floatover management including Floatover barge rig up and supervision and control at site during the Floatover installation. OCS provided an installation management team onboard the Floatover barge to supervise the Floatover operation and manage the marine logistical operations.

Korchagin Project





8.0 ISO CERTIFICATION

OCS is an ISO9001 (2015) certified company



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
URS is a member of United Registrar of Systems (Holdings) Ltd, United House, 4 Pinfold Road, Dovenhams, BH1 2SL, UK. Company Registration no. 5208480.
URS Pte Ltd Pte Ltd, 7000A Beach Road #00-023, The Plaza, Singapore 109921

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41578/C/0001/UK/En

Date of Issue: (Original)

06 November 2016

Date of Issue:

06 November 2019

Issue No:

3

Expiry Date:

05 November 2022

Issued by:






On behalf of the Schemes Manager



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9.0 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).
APB-1-9 / Issue 5 / May 2019

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10.0 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