

## YOKOHAMA - HOSES CALM BUOY

<b>Client</b>	YOKOHAMA Rubber Co. Ltd.
<b>Field</b>	Japan
<b>Location</b>	Japan
<b>Waterdepth</b>	100 m
<b>Type</b>	Subsea hose Floating Hose
<b>Flexible Riser, Flowline, Hoses</b>	2 x subsea 1 x floating

### Scope of Work

1. CALM Buoy system hose design
2. Subsea Hose configuration dynamic analysis and design
3. FSO loads and CALM Buoy offsets
4. Complete floating Hose analysis

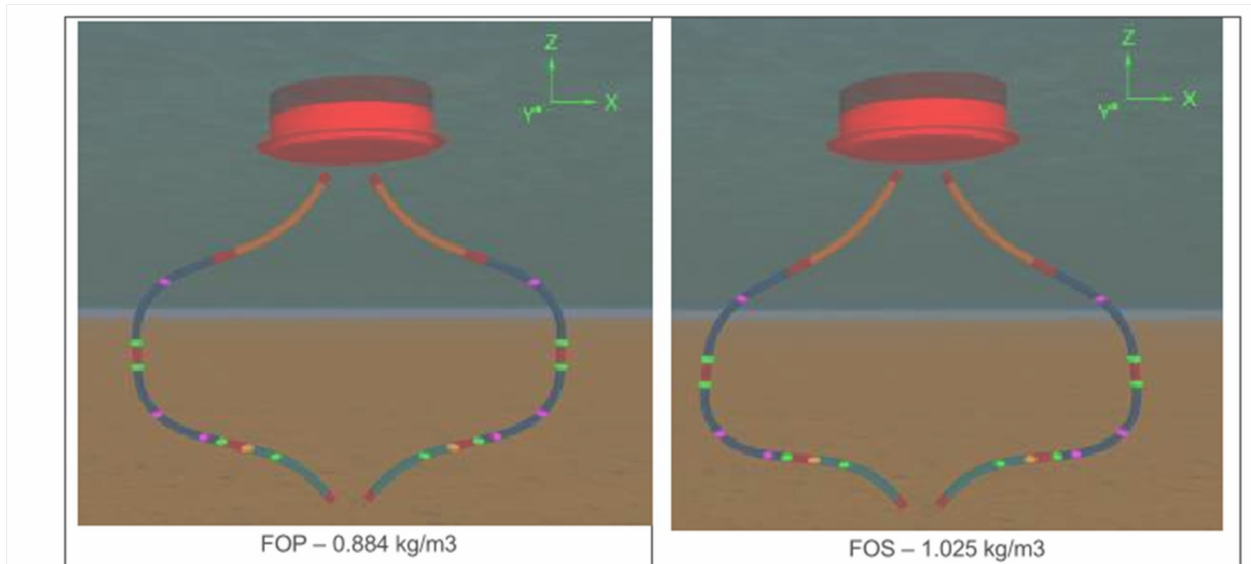
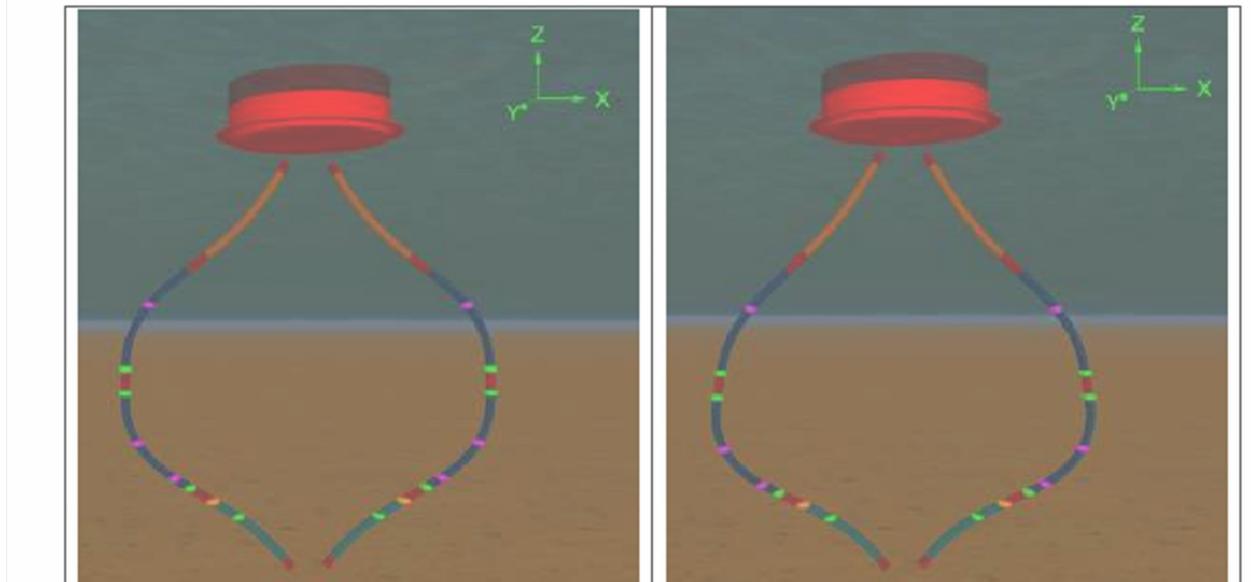
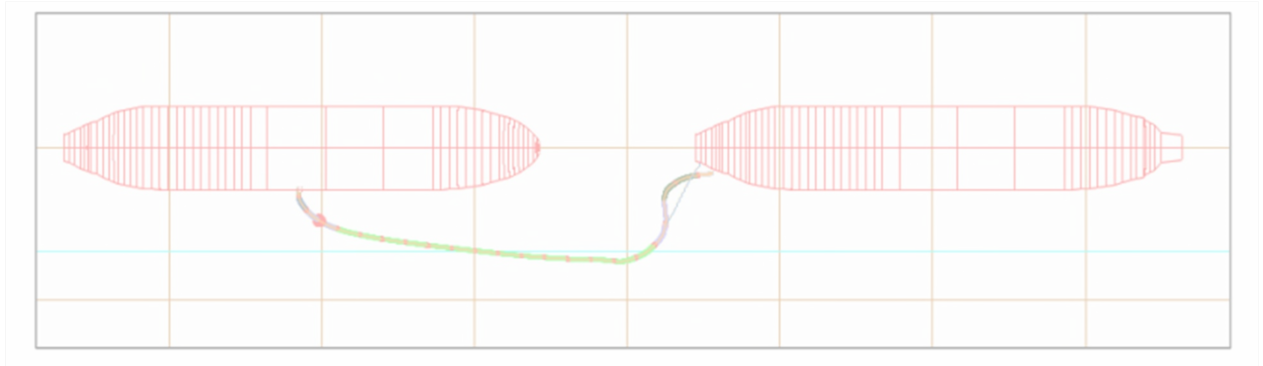


Figure 5: Static Hose Profile for LAT



## YOKOHAMA - TANDEM OFFLOADING HOSE

<b>Client</b>	YOKOHAMA Rubber Co. Ltd. / T7
<b>Field</b>	MVS
<b>Location</b>	Vietnam
<b>Waterdepth</b>	90 m
<b>Type</b>	Tandem floating hose
<b>Flexible Riser, Flowline, Floating hose Hoses</b>	



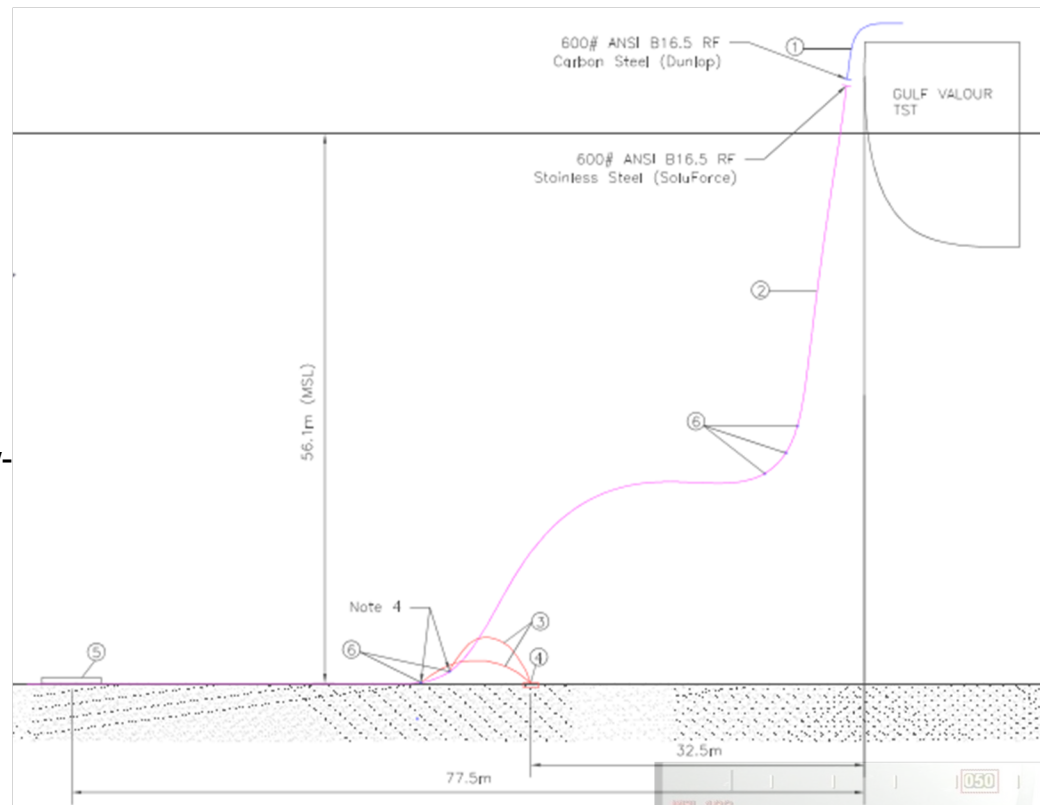
### Scope of Work

1. Dynamic analysis of offloading hose when free floating behind FPSO
2. Dynamic analysis of offloading hose when looped back behind FPSO
3. Dynamic analysis of offloading hose when used in Tandem FPSO – Shuttle tanker
4. Loads from floating hose on full system.



## HESS FLEXIBLE RISER & FLOWLINE

<b>Client</b>	HESS
<b>Field</b>	Bergading
<b>Location</b>	Malaysia
<b>Waterdepth</b>	56 m
<b>Type</b>	6" ID
<b>Flexible Riser, Flowline, Hoses</b>	Flexible Riser & Flowline



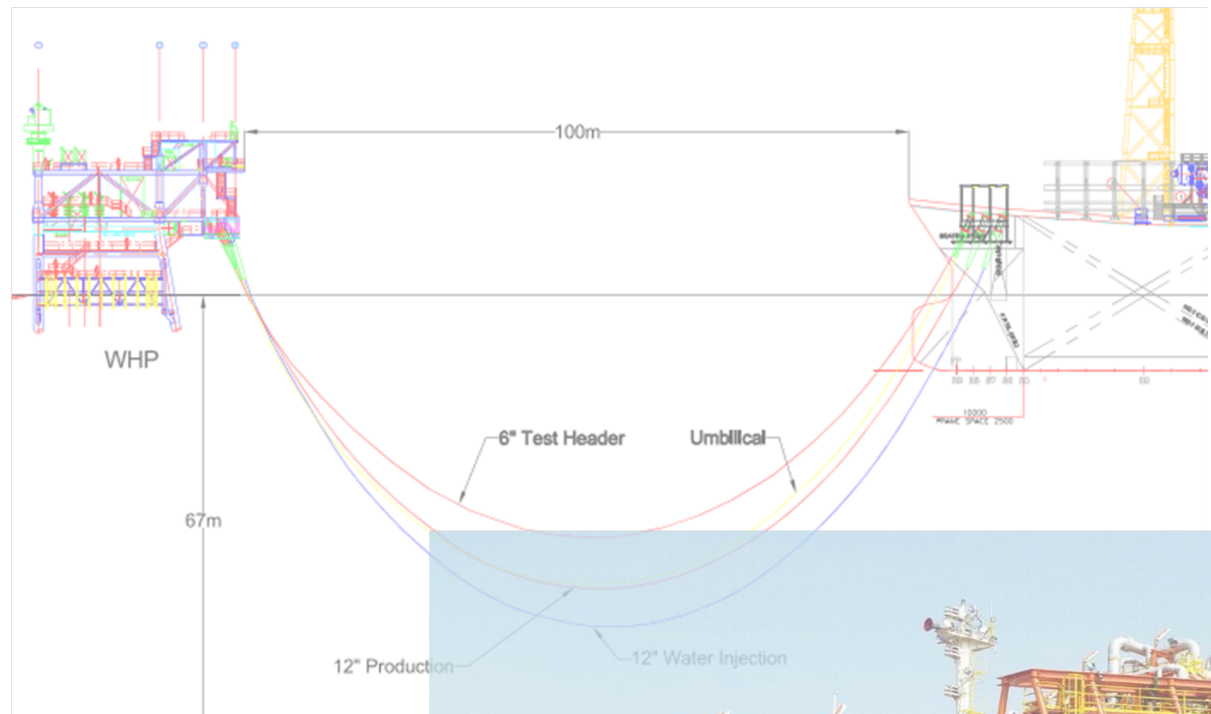
### Scope of Work

1. Design of the subsea flowline, riser and hose system for condensate transfer from CPP to the TST.
2. Design of subsea support bases and gravity systems.
3. Upgrading of 6-point mooring system to 8-point mooring system to increase the operability.
4. Structural modifications to install 2 chain stoppers and 1 QRH at the stern of the TST.
5. Installation engineering for the tanker, mooring and SURF.
6. Provision of all personnel for installation, management, Flowline installation management
7. EPIC of the Offshore installation of the tanker, mooring system and SURF.
8. Design engineering and offshore procedures for offloading of condensate.



## UAE Flexible risers & Umbilical

<b>Client</b>	UAE Company
<b>Field</b>	Bergading
<b>Location</b>	UAE
<b>Waterdepth</b>	80 m
<b>Type</b>	6", 12" ID Cable
<b>Flexible Riser, Flowline, Hoses</b>	Flexible Riser, Umbilical / Power Cable



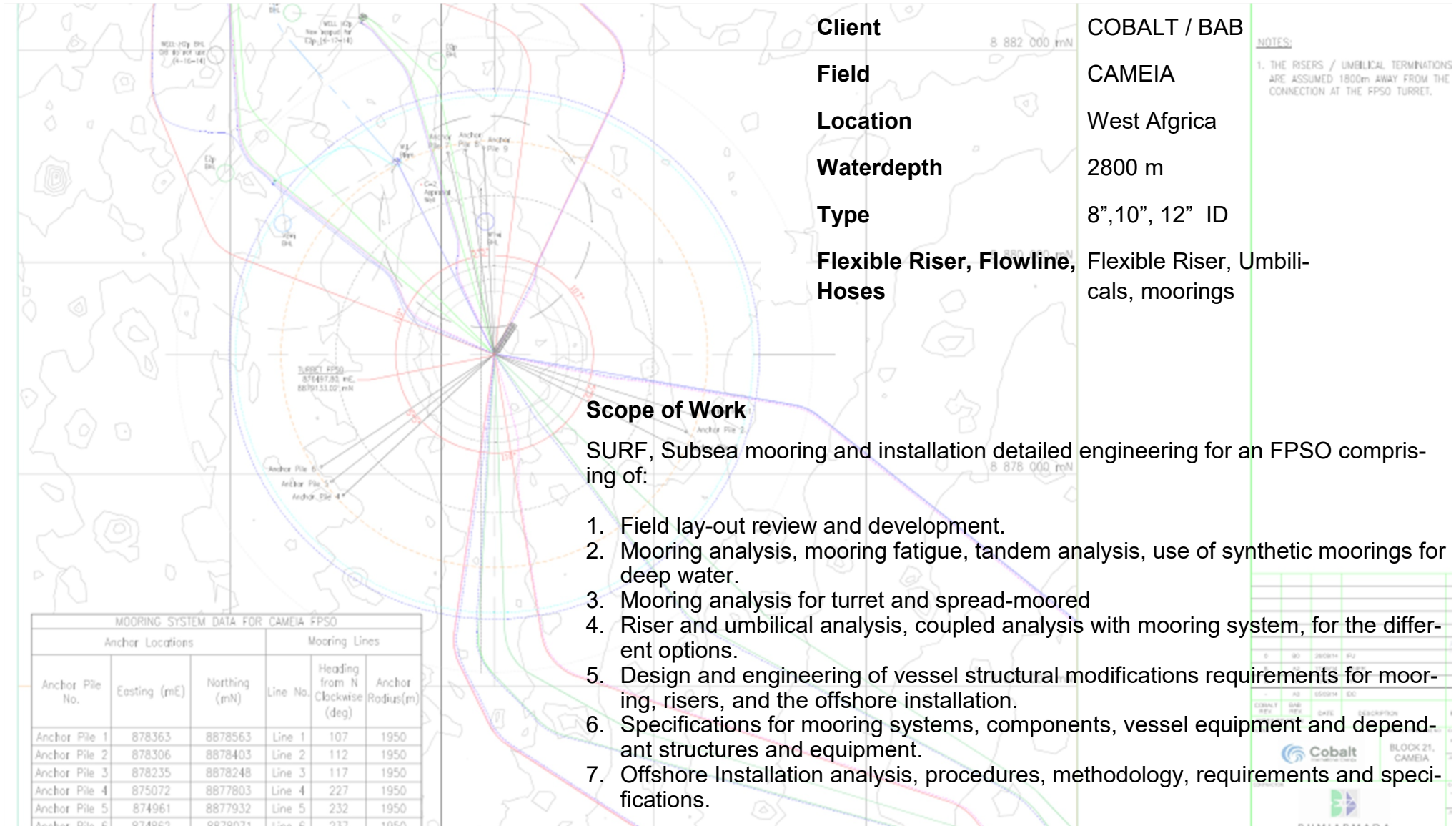
### Scope of Work

EPIC for the following:

1. Subsea, Risers and umbilical
2. Design of riser & Umbilical porches, floating hose porches
3. Offshore Installation support, engineering and procedures



# RISERS, UMBILICALS & MOORING



**Client** COBALT / BAB  
**Field** CAMEIA  
**Location** West Africa  
**Waterdepth** 2800 m  
**Type** 8",10", 12" ID  
**Flexible Riser, Flowline, Hoses** Flexible Riser, Umbilicals, moorings

**NOTES:**  
 1. THE RISERS / UMBILICAL TERMINATIONS ARE ASSUMED 1800m AWAY FROM THE CONNECTION AT THE FPSO TURRET.

**Scope of Work**

SURF, Subsea mooring and installation detailed engineering for an FPSO comprising of:

1. Field lay-out review and development.
2. Mooring analysis, mooring fatigue, tandem analysis, use of synthetic moorings for deep water.
3. Mooring analysis for turret and spread-moored
4. Riser and umbilical analysis, coupled analysis with mooring system, for the different options.
5. Design and engineering of vessel structural modifications requirements for mooring, risers, and the offshore installation.
6. Specifications for mooring systems, components, vessel equipment and dependent structures and equipment.
7. Offshore Installation analysis, procedures, methodology, requirements and specifications.

NO	REV	DATE	DESCRIPTION
01	01	2019/11	ISSUE FOR PERMIT
02	01	2020/04	ISSUE FOR PERMIT

BLOCK 21, CAMEIA