

- Leviathan Gas FPSO – PMT Leads Concept to Detail
- 1.2 MTPA FLNG Conversion FEED
- ROC Oil – EWT FPSO Keppel Yard Team
- Murphy Azurite FPSO Removal – PMT
- Noble FLNG Feasibility PMT with ABS
- Husky Madura Sour Gas FPSO – OE
- FE appraisal of Griffin Venture
- Petrofac Cendor FPSO – EM
- Aker AFP Benita FPSO FEED
- Aker AFP Dhirubai Gas FPSO (850 MMscfd)
- DRL personnel ex PROSAFE, SBM, BAB, AFP, EMAS



The screenshot displays the DRL Engineering website with a navigation bar (HOME, SOLUTIONS, ABOUT US, OUR EX) and a list of services: From concept through to operations, Assess, Feasibility, VE Studies, Select, Definition and Execution, Contracting Strategy, Benchmark Costing, Global Pricing, Tender Documents, Market Assessment, FPSO Providers, CP Planning, Tender Evaluations, Mechanical Completion, Installation & Commissioning.

The main content area features a grid of project images and descriptions:

- WPT EWT FPSO – KIL SHIPYARD PORT**: Shows a large FPSO vessel at a port.
- WPT PROJECT MANAGEMENT SUPPORT – KILSHIRE FPSO – MALAYSIA**: Includes a photo of a person and a diagram of the FPSO layout.
- DRL PROJECT MANAGEMENT – LEVIATHAN GAS FPSO**: Features a 3D model of the FPSO and photos of project team members.
- A New Approach to Layout Safety**: Describes a new design approach for FPSO layout safety, mentioning the use of 3D models and safety studies.
- Layout Safety Software**: Shows a 3D model of an FPSO layout with safety features highlighted.
- FPSO DEVELOPMENT**: Includes a photo of a FPSO vessel and a diagram of its layout.
- DE SUPPORT – MURPHY MADURA FPSO**: Shows a photo of a FPSO vessel and a diagram of its layout.

At the bottom, a large image shows the **Decommissioning of Azurite FPSO, Pointe Noire**, with a large FPSO vessel being dismantled in the water.

FPSO - SINGAPORE



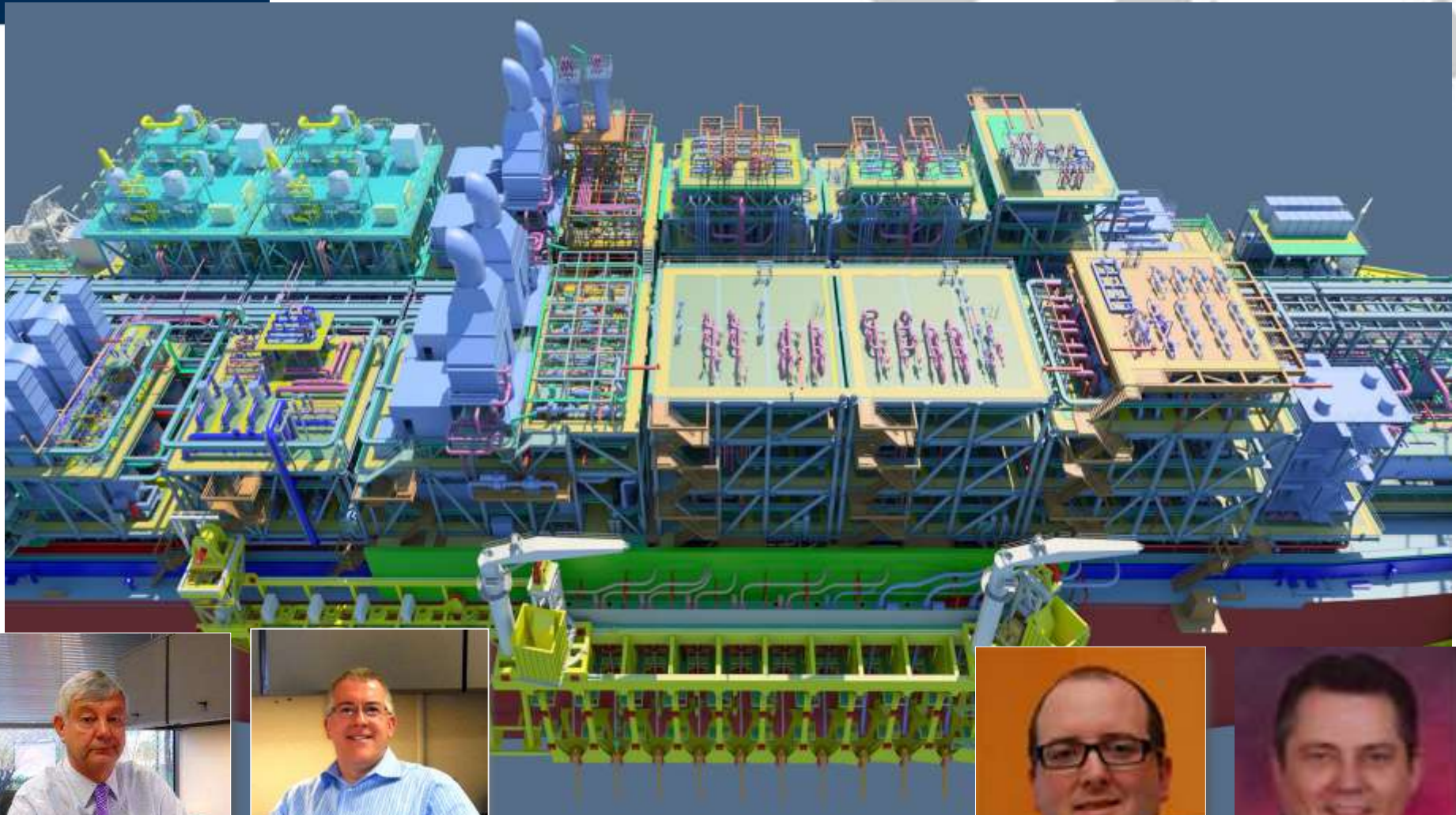
**Managing FPSO Shipyard Conversion
At Keppel Taus Yard, Singapore**



Azurite FDP SO Decommissioning



ENGG OE – LEVIATHAN GAS FPSO



Our Personnel – lead roles in Owner PMT



Leviathan Gas FPSO Fabrication Scope of Work

Vessel details:
Built: 2012 by DSME Korea
Dim: L 333m x W 60m x D 30.5m
Deadweight: 320,000 T
Class: ABS

- Dry-dock scope:**
1. Riser porch
 2. New Sea Chests
 3. SW Lift pump caisson
 4. Sacrificial anodes
 5. Fairlead support str
 7. MGPS system
 8. Hull coating
 9. Bilge Keel
 10. Blast & Coating
 6. Overboard pipes

140 P Accommodation
Conversion (900 T)

Aft Access
Handling (150 T)

19 Topside
Modules (25000T)

Pipe rack
215m (1850 T)

130m Flare
Tower (400 T)

2 x IG Towers
(45 T)

Lifeboat
Supports (250 T)

2 Crane pedestals
& boom rests (90 T)

Module support
Stools (350 T)

Fwd Access
handling (150 T)

Fwd temp
Shelter ((60 T)

Helideck
(230T)

Offloading
Station (80 T)

New poop
deck (450 T)

Workshop &
storage (50 T)

Marine
Pipe rack (150 T)

Convert 5S BT
To PW tanks 1 & 2
(150T)

Bilge
Keel (250T)

Riser
Porch 1450 T

Fatigue
Brackets (350 T)

Convert #1 CT P&S
To 13 chemical tanks
(1665 T)

4 x 6 mooring
system (1500 T)

Hull / Marine Scope
+/- 10000 Tons

Hull Demolition Scope

- 1.Fwd windlass x 1 unit
- 2.Anchor chain x 1 unit
- 3.Poop deck winch x 3 units
- 4.Main deck winch x 5 units
- 5.Hose handling crane x 2 units
- 6.Provision crane x 2 units
- 7.Bow thruster
- 8.Main deck piping & conduit
- 9.Main deck outfitting
- 10.Telecom & Navigation equip
- 11.LQ equipment
- 12.Engine Room equipment
- 13.E&I items

Hull Piping Systems

1. Cargo Oil System
2. Ballast Water System
3. Inert Gas system
4. Compressed Air system
5. Steam/Feed/Cond. Water sys
6. N2 system
7. MGPS system
8. SW cooling sys (Marine & Topside)
9. FW cooling sys
10. Offspec produced water & cond. sys
11. Open drain & closed drain system
12. FW distribution system
13. Fire system
14. Fixed fire suppression system
15. Hydraulic Oil sys
16. Fuel Gas system
17. MEG & Methanol sys
18. Foam System
19. Diesel Oil

Hull Coating & Painting

- 1.Hull painting – 450, 740m²
- 2.Main deck – 18, 000m²
- 3.11 WBT – 229, 526m²
- 4.11 COT – 155, 000 m²
- 5.Slop tanks 15, 000 m²
- 6.Offspec tanks – 19, 000m²
- 7.FWT – 1, 000m²
- 8.APT – 8,000m²
- 9.Chemical tanks – 25, 000m²
- 10.Ext Super Structure – 5, 170m²

Other Hull Misc Scope

- 1.2 x FW generators & SW ejectors
- 2.Lifting Equip
- 3.Cargo offload & mooring equipment
- 4.Safety equipment
- 5.Ballast tank dehumidifier
- 6.New emergency generator
- 7.New sewage treatment plant
- 8.Tank anodes 4, 600 # x 50 kg
- 9.Hull anodes 600 # x 100 kg
- 10.Hatch covers
- 11.Tank air vent heads
- 12.Refrurbish machinery equipment
- 13.COW machine
- 14.Heating coils in slop tank
- 15.O/H valves
- 16.E&I navigation & communication equip

OE – HUSKY MADURA GAS FPSO



FLNG Development



DRL Engineering are assisting the License Block Operator (Owner), in technical management and risk assessment and due diligence of this major development .

DRL are fulfilling the roles of PM, EM, Structural Lead, Process and Marine



LNG FPSO

Accommodation, Machinery & Propulsion

- Class Rules & MODU
- IMO IGC Codes
- CFRs
- SOLAS
- MARPOL

Offshore Cargo Transfer

- IMO IGC Codes
- SIGTTO, OCIMF
- IACS Requirements
- Class Rules
- SOLAS, MARPOL
- Class Offshore Terminal Guide

Power Generation

- Class Steel Vessel Rules
- IEC standards
- Design code

Overall

Risk Based Approach

- FSA, QRA
- Class Guidelines on Risk Assessment
- Special studies, etc...
- Risk acceptance criteria, ALARP Principle

Mooring & Turret

- Class SPM Rules
- Class Rules for Building & Classing
- Class Steel Vessel Rules

Hull & Structure

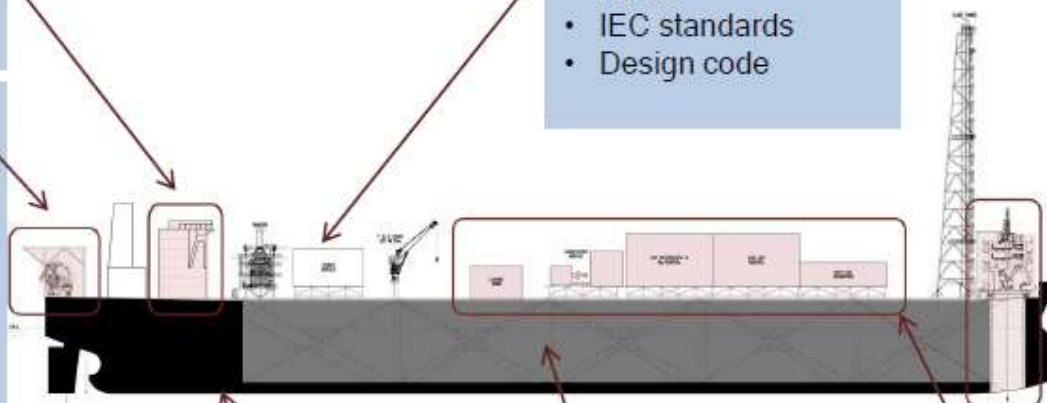
- Class Steel Vessel Rules
- MODU Rules
- DLA, SFA
- Class Rules for Building & Classing

LNG Containment

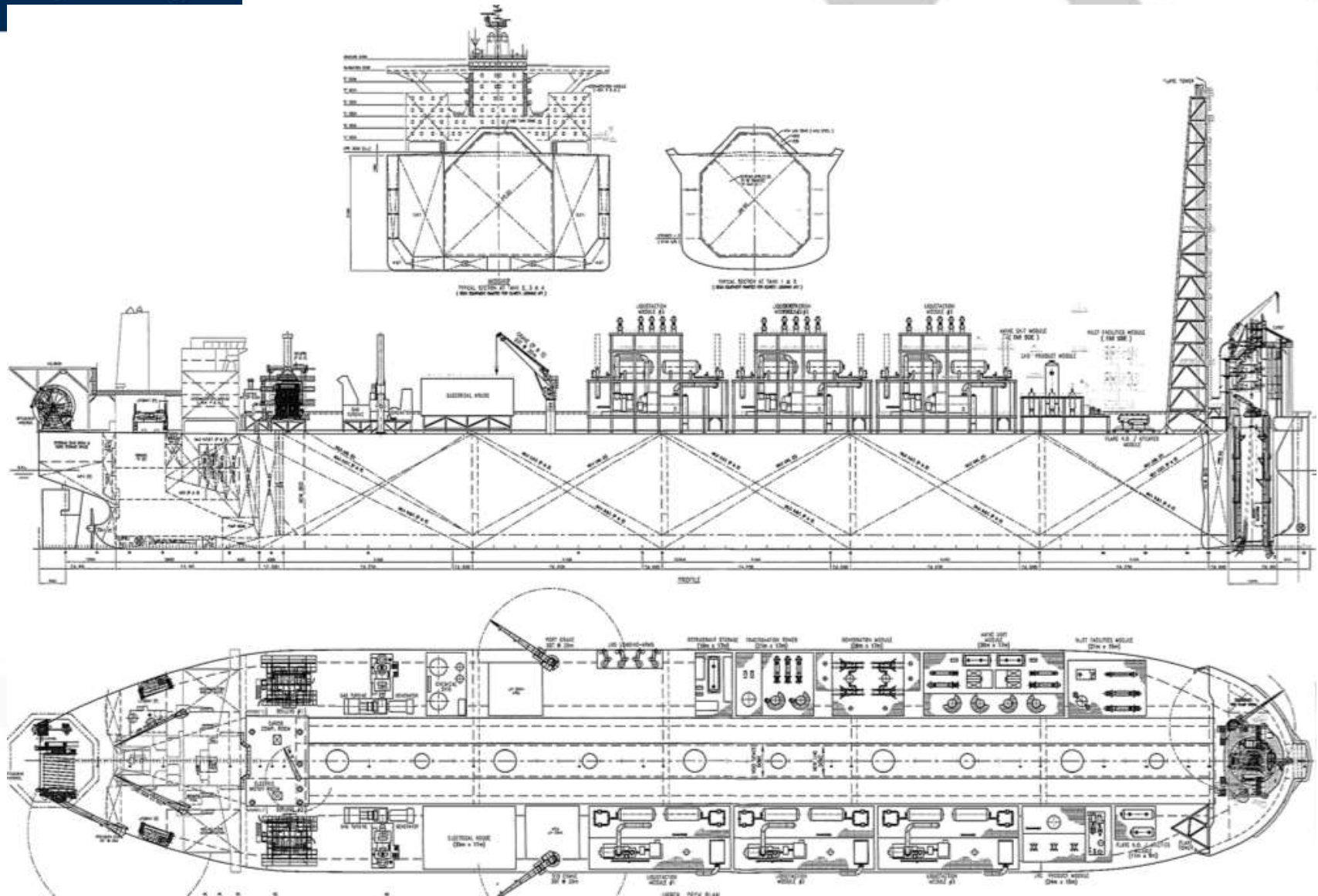
- Class Terminal Guide
- Design Code
- IMO IGC Codes
- Continuous Monitoring of Cargo Containment & critical structures

Process Plant

- IGC Code & NFPA
- API, ASME, ANSI
- ABS Facility Guide
- Steel Vessel Rules
- SIGTTO
- ABS Offshore Terminal Guide



1.2 MTPA FLNG CONVERSION



Husky Madura FPSO - Indonesia

DRL Provide Consulting Services for:

- Value Engineering
- Lease Tender Contract Preparation
- Peer Reviews
- PMT Team members



Cendor FPSO - Malaysia

DRL Engineering Manager for the Cendor FPSO Detailed Engg

