

Improving Decommissioning Capability of HMC



HEEREMA
CONTRACTORS

Anthony Fievez

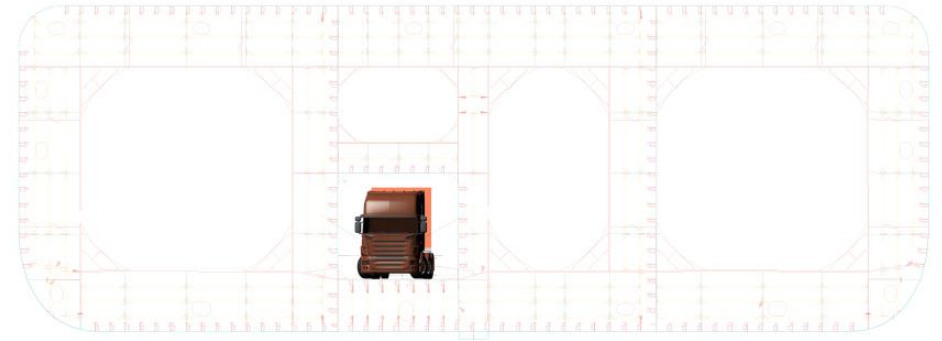
Business Development Manager | Heerema Marine Contractors

Which of the following will deliver most cost savings?



- a) Improvements in major hardware (e.g. vessels / rigs)?
- b) Improvements in tooling technology (e.g. faster cutting / lifting)?
- c) Collaboration between operators?
- d) Collaboration between operators and supply chain?
- e) Collaboration within the supply chain?

Sleipnir - 40 Years of Evolution



	Thialf	Sleipnir
Dimension	: 165 x 88 x 50 m	180 x 98 x 50 m
Lightship weight	: 74,000 t	125,000 t
Crane capacity main	: 2 x 7,100 t	2 x 10,000 t
aux	: 2 x 900 t	2 x 2,500 t
whip	: 2 x 200 t	2 x 200 t
Center to center cranes	: 60 m	67.5 m
Deck space	: 9.000 m ²	12.000 m ²
Deck capacity	: 12.000 t	20.000 t
Transit speed	: 6-7 kn	>10 kn

SSCV Sleipnir & Sustainability

SLEIPNIR'S SUSTAINABLE VALUES

Efficient

- ✓ Heat / cold energy re-use
- ✓ All LED lights
- ✓ Variable frequency drives
- ✓ Equipment condition monitoring
- ✓ Silicon based anti-fouling paint
- ✓ Thrusters under a horizontal angle for optimum DP performance
- ✓ Energy efficiency included in operational procedures
- ✓ Vacuum toilet system for low potable water consumption
- ✓ Glass Reinforced Epoxy piping for weight reduction and durability



Clean

- ✓ Dual fuel engines, MGO / LNG
- ✓ Selective catalytic reduction with urea injection for NOx reduction
- ✓ Advanced oxidation technology ballast water treatment
- ✓ High performance oil / bilge and deck water separation
- ✓ Focus on minimizing waste streams
- ✓ Sewage treatment including membrane filtration
- ✓ Waste management plant



Green Operations:

- LED lighting all over the vessel
- Environmentally friendly foul-release coating suited for low speed
- Low resistance design of pontoons
- Cold recovery (ex LNG-system) for chilled (cooling) water
- Heat recovery (ex engines) for heating
- Urea injection to reduce NOx
- Rainwater/grey water treatment
- Variable frequency drives



Sleipnir

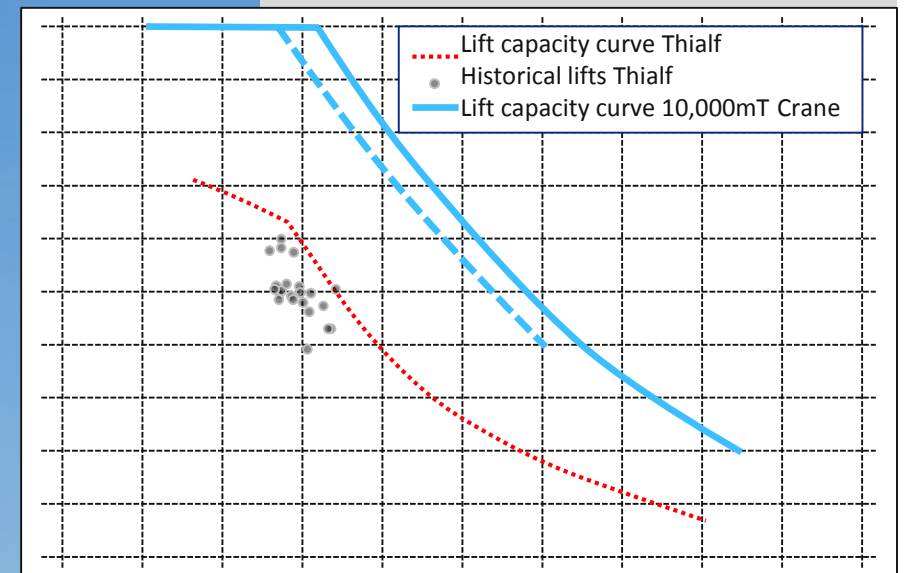
- ✓ Two cranes of 10,000 tonnes lifting capacity each
- ✓ DP Class 3
- ✓ Sailing 10 knots without tug assistance
- ✓ LR ECO Notation including additional requirements



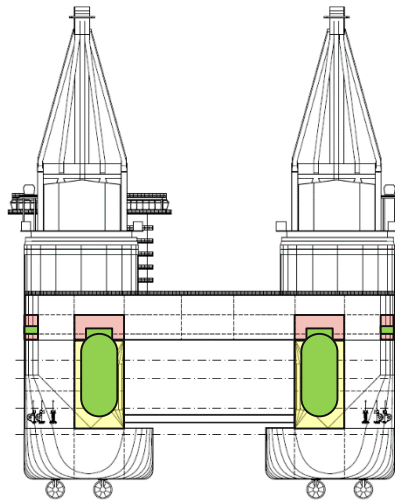
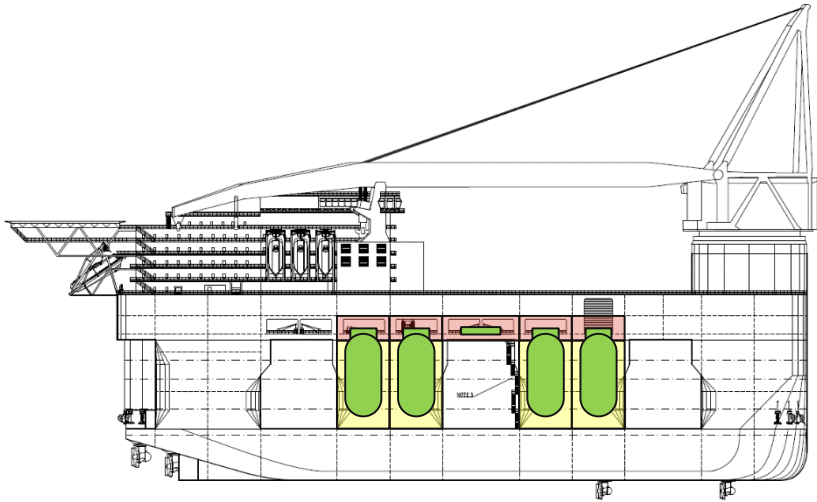
SSCV Sleipnir - 2x 10,000mT Cranes



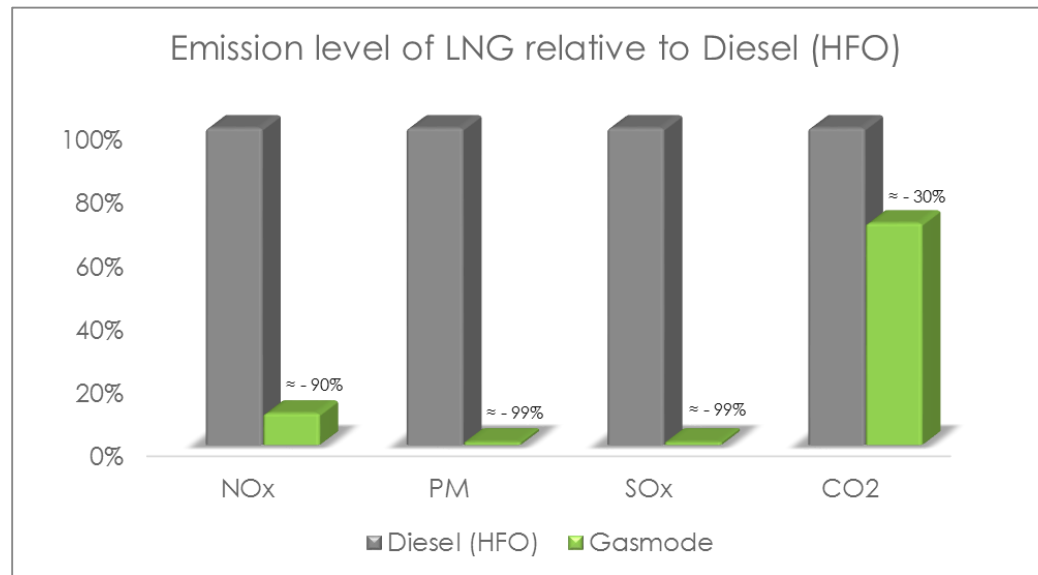
- SWL 10.000 t @ 48 m
- Boom length 145 m
- Tub diameter 30 m
- Weight of crane ca. 9000 t
- CoG close to center crane
- Power supply 11 kV
- Roller Slew Bearings



SSCV Sleipnir – LNG fuelled



- 1st vessel with dual-fuel engines suitable for DP/Crane Operations
 - Quick ramp-up times
 - Flexibility in vessel
- 8 x 1,000 m³ Storage capacity
- Largest LNG fuel plant to date offshore



SSCV Sleipnir – Thrusters

8 Thrusters x 5.5 MW

Existing fleet:

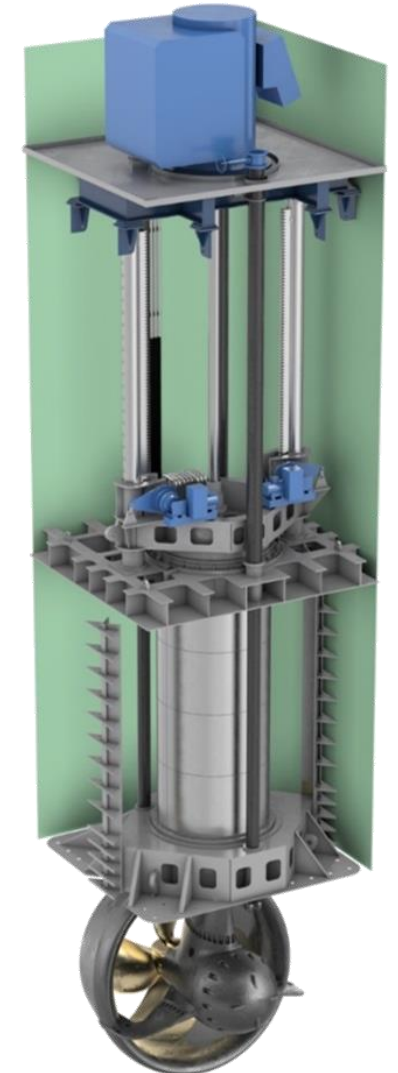
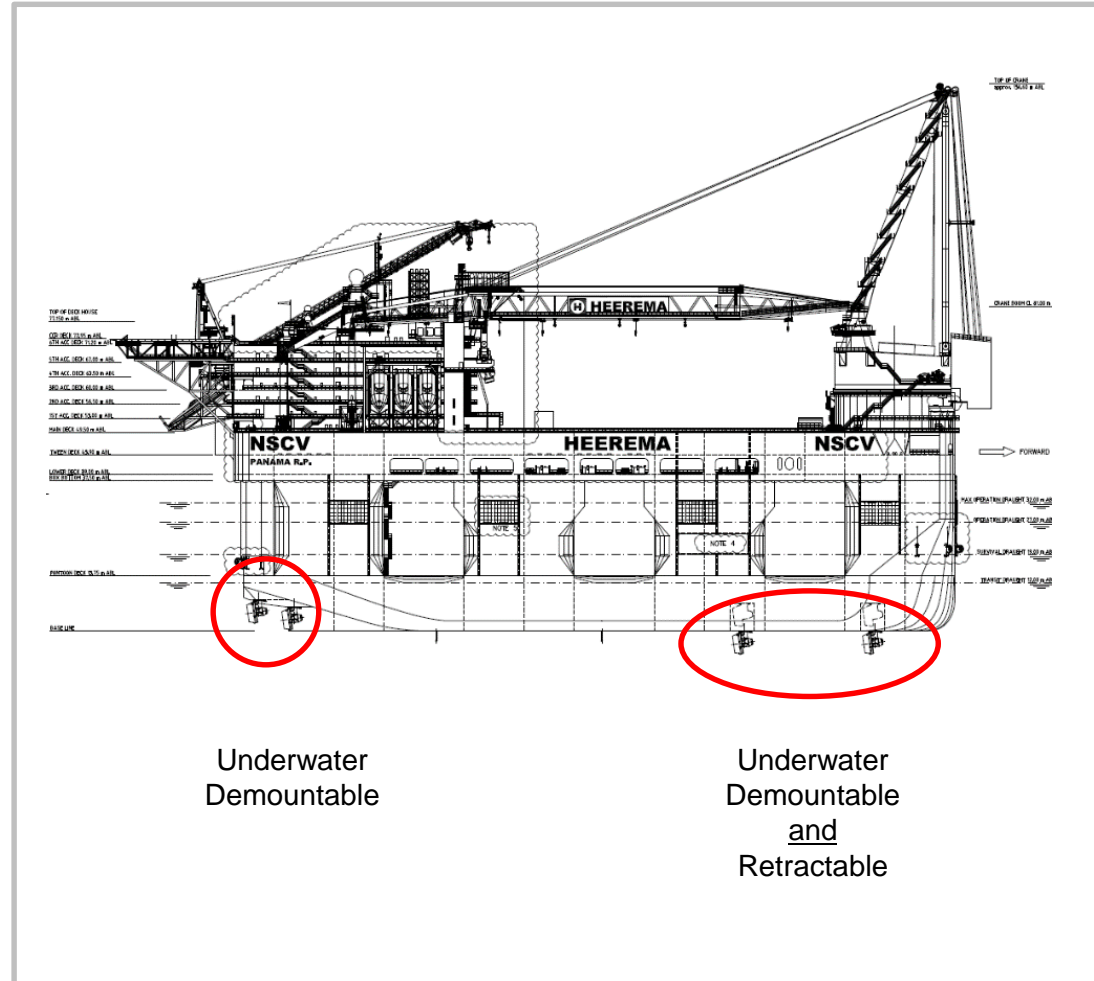
Underwater Demountable (Balder)

Retractable (Thialf)

Sleipnir

Underwater Demountable **and** Retractable

- No planned dry-dockings
- Transit propulsion (min 10 knots) only four aft thrusters
- Shallow water – reduce draft by retracting thrusters



Sleipnir in Decom Mode



MARINE
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Sleipnir in Decom mode

Removal executions from 2019

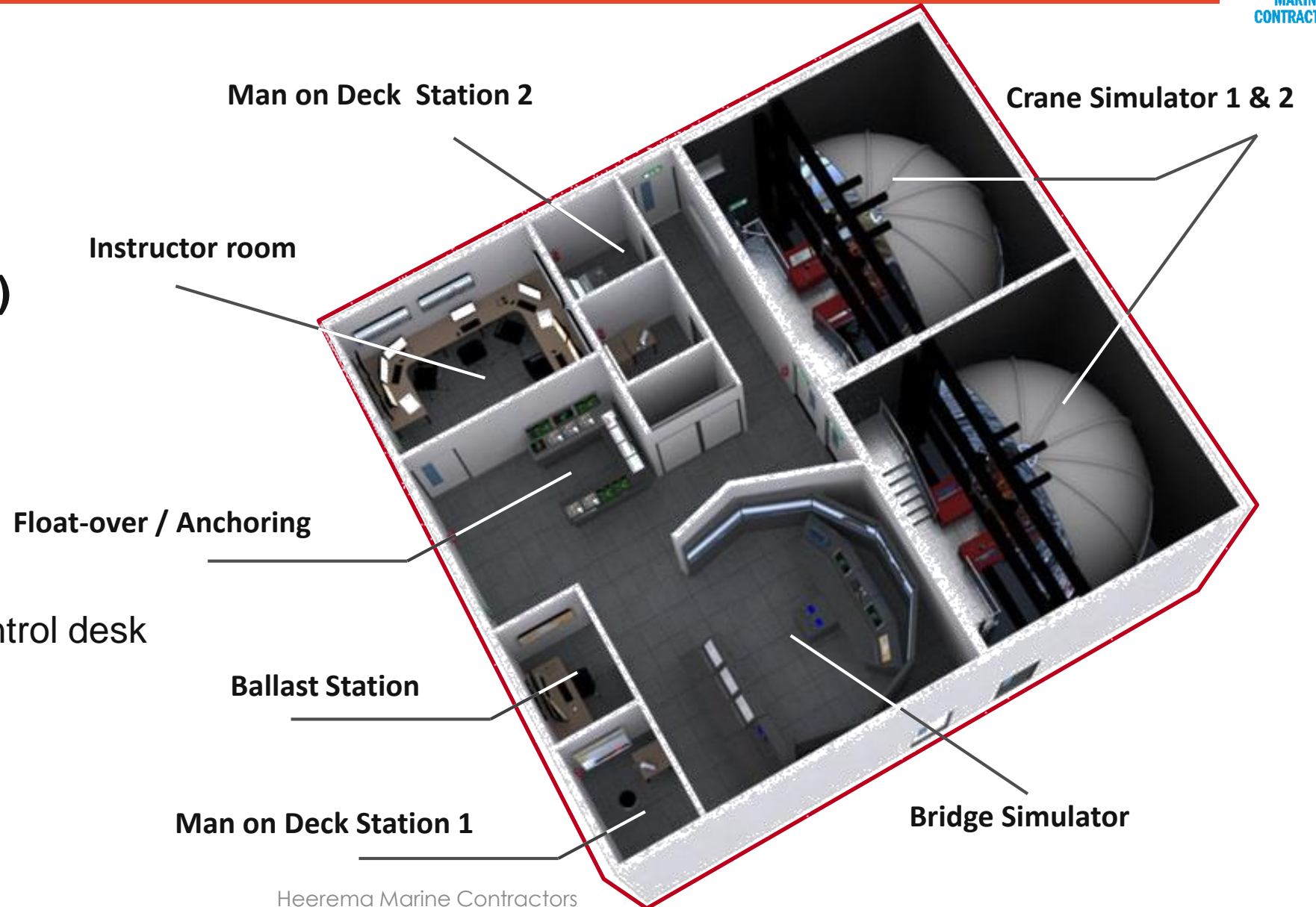
20,000 t deck load capacity for
Removal items

Jackets horizontal or vertical lifted or
transported

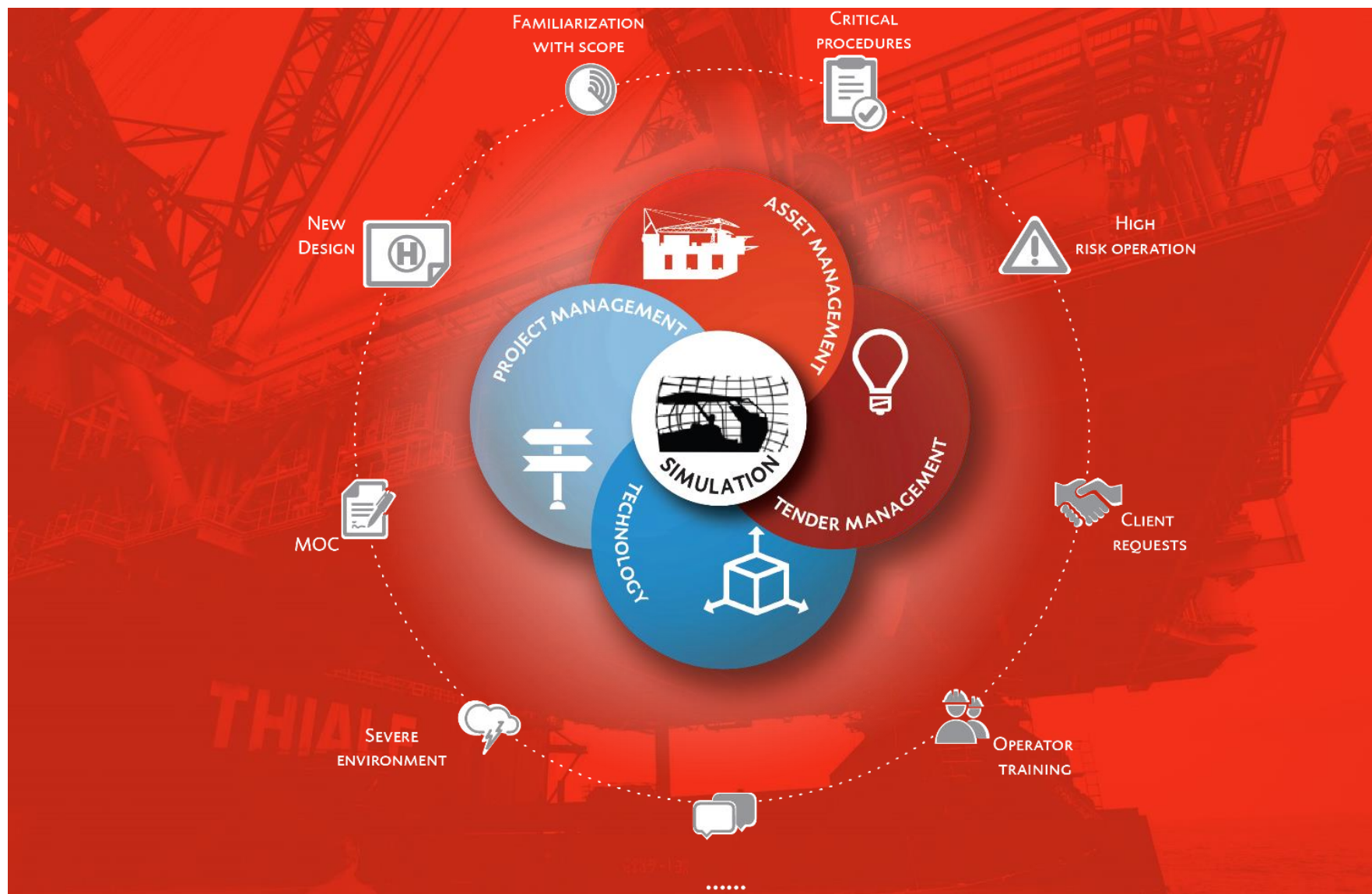


Simulation Area (floor 2)

- Bridge
- Ballast room
- 2x Deck (avatar) rooms
- 2x 6m dia. crane domes
- Float-over simulation control desk
- Instructor room



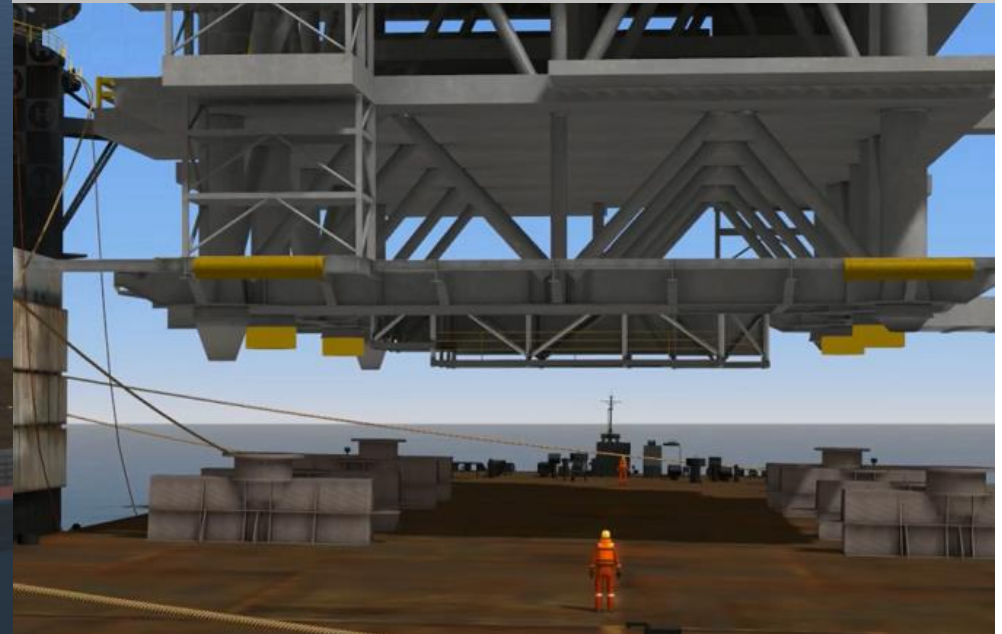
The Force Multiplier



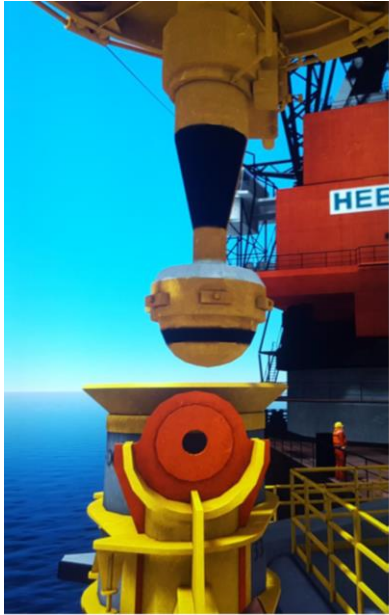
Back loading Barge Improvement

Objectives:

- Concept design for cones & receptor
- Improve workability
- Understand weather limitations
- Alignment engineers and operators



Verification & Validation

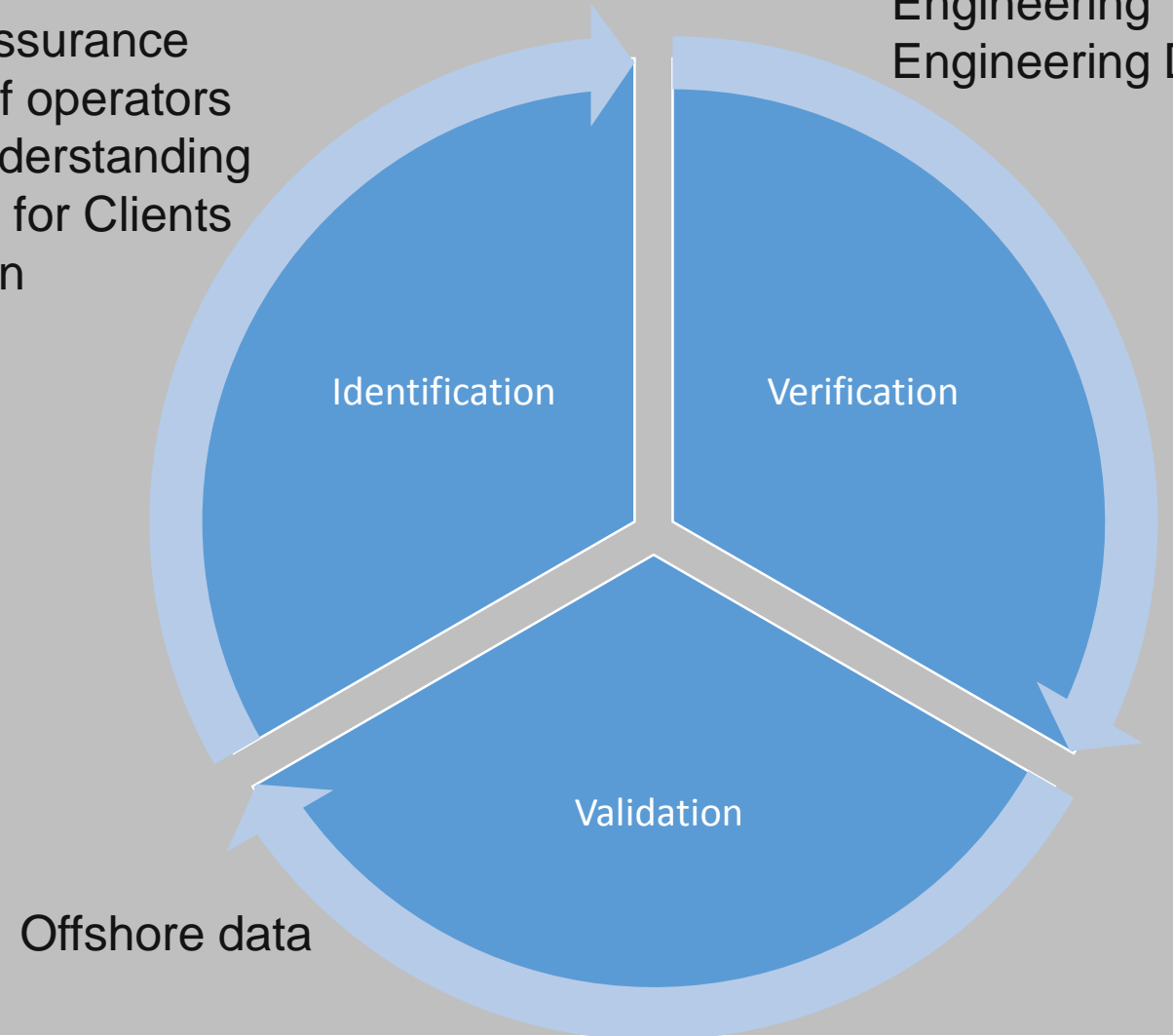


For purposes of

- Quality assurance
- Feeling of operators
- Better understanding
- Evidence for Clients
- Innovation



Engineering Tools
Engineering Data



Innovative Market Engagement

In our experience Operators who have taken an innovative approach to tendering Decommissioning projects have received better proposals and seen less execution surprises



Well P&A \neq Drilling
Demolition \neq Fabrication
Removal \neq Installation



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