

# RAISING THE STANDARD

Reducing Exposure and Increasing Efficiency in Decommissioning



**MINIMIZE OFFSHORE MAN-HOURS PER TON REMOVED**  
**USE THE RIGHT ASSET/APPROACH FOR EACH PHASE OF THE PROJECT – NOT CONSTRAINED**

**Task**  
**Optimization**  
**Minimize**  
**Schedule**

**Reduce**  
**Emissions**

**Safest Work**  
**Environment**

**Decrease**  
**Project Costs**

**STEP CHANGES IN PERFORMANCE CANNOT HAPPEN BY USING  
THE SAME METHODS OF THE PAST**



# DECOMMISSIONING RISK MANAGEMENT



## ENGINEERING

- Structure modeling, FEAs, Lift Analysis, Transport Analysis, Lifting & Rigging Solutions, AFE dwgs, Work Packs, etc.

## PREPARATION

- Platform based preparation crews ahead of HLV arrival
- Increased safety, higher efficiency, reduced costs
- Pre-config. of Transport Barge Grillage, Equipment and Ballast (No Offshore Ballasting)

## EXECUTION

- Pre-Rigging of Structure and Vessel prior to HLV Mobilization. NO Heavy Offshore Rigging
- 12-18hrs onsite for lift operations. Reduced exposure, increased safety margin, limited human involvement, increased efficiency, cost savings.

***“Use the hammer only when it’s needed: power applied with purpose.”***



# DUAL GANTRY LIFT SYSTEM



## DUAL GANTRY LIFT SYSTEM

- **Four (4) Main Crane Blocks**
  - **2,000t Individual Block Capacity Each Block**
- **Four (4) Aux. Blocks**
  - **500t Individual Block Capacity Each Block**
- **Multi-Engine HPUs (Redundancy - Safety)**
- **DPS3 - Eight (8) Thrusters – Four (4) Per Hull**
- **Independent Propulsion Power Units – **NO** PMS System**





# DECOMMISSIONING RISK MANAGEMENT

## OPTIMAL LIFTING SOLUTIONS



### Multi-Point Lift Solutions

- Even Load Distribution
- Reduced Risk of Structural Failure
- Greater Stability During Lifts
- Built in Redundancy
- Control of CoG

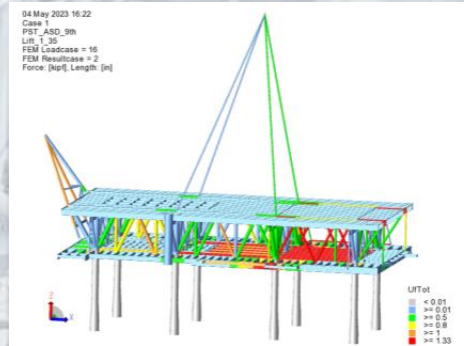


Figure 4.1.2 – Unity Check with a 1.35 Load Factor (Lift Case 1)

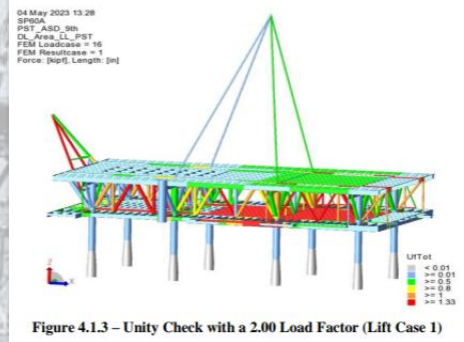


Figure 4.1.3 – Unity Check with a 2.00 Load Factor (Lift Case 1)

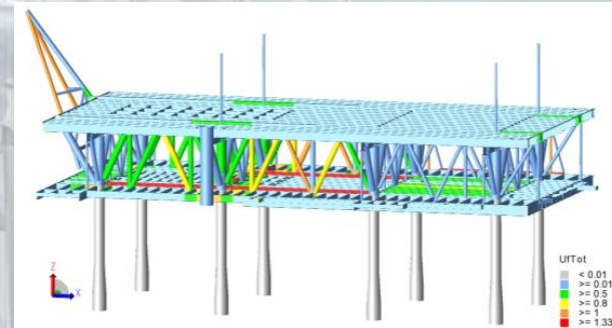


Figure 4.2.7 – Unity Check with a 1.35 Load Factor (Lift Case 5)

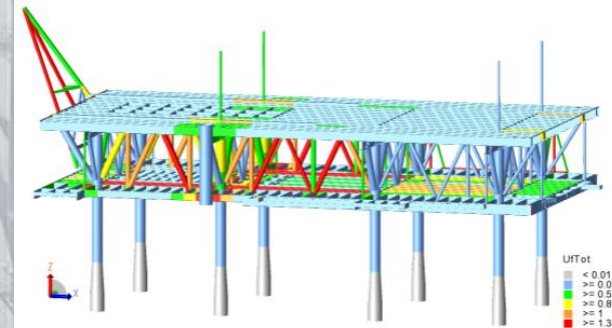


Figure 4.2.8 – Unity Check with a 2.00 Load Factor (Lift Case 5)

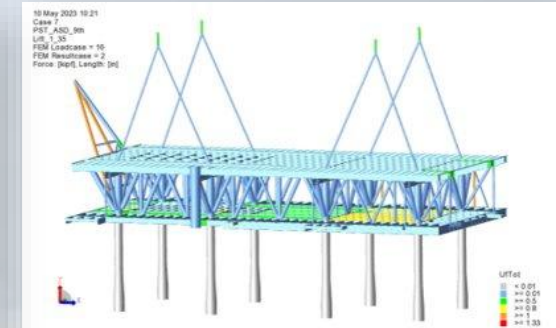


Figure 4.2.10 – Unity Check with a 1.35 Load Factor (Lift Case 6)

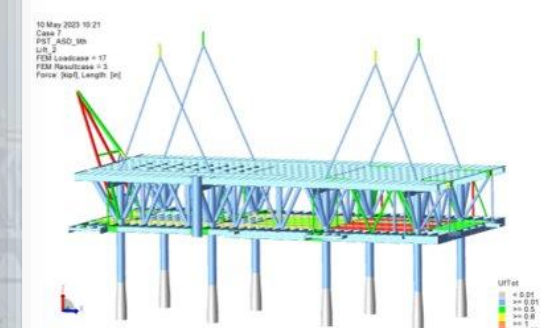


Figure 4.2.11 – Unity Check with a 2.00 Load Factor (Lift Case 6)



# DUAL GANTRY LIFT SYSTEM



- The patented joint connection of the Lifting Gantries to the hulls is a decoupling mechanism between the two.
- Due to the decoupling system the hulls take all sea state and wave action independently from the lifting gantries and from each other.
- Pseudo Heave Compensation Effect.
- Load imparting through the centerline bulkheads of each hull drive load vertically down.
- **NO** Healing Moment.
- **ZERO** Stability Risk





# TRANSPORT BARGE POSITIONING & CONTROL



**SHELTERED HARBOR AREA FOR CONDUCTING  
SEA-FASTENING OPERATIONS**

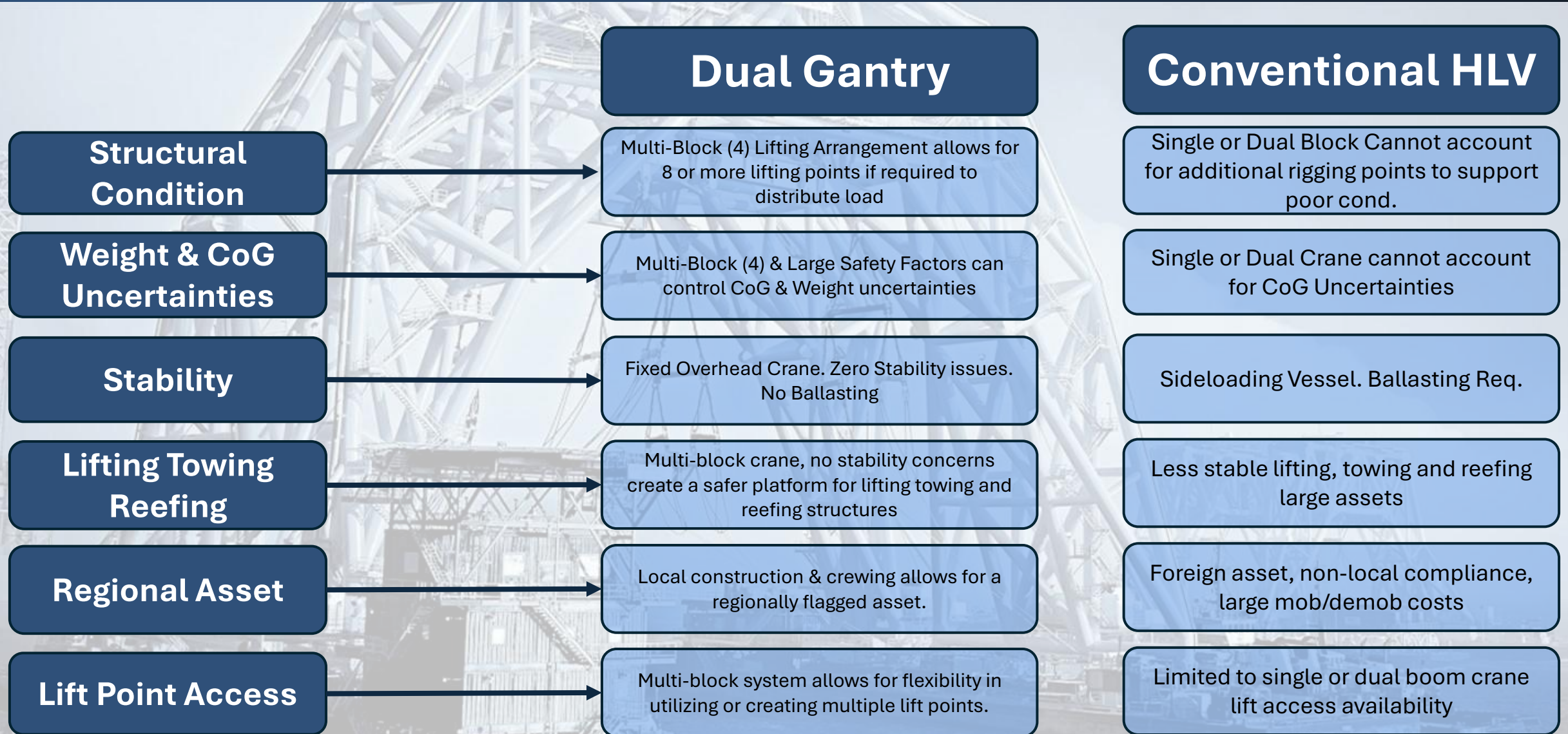


**EIGHT (8) MOORING WINCHES FOR  
POSITIONING & CONTROL**



# DECOMMISSIONING RISK MANAGEMENT

## Dual Gantry HLV vs Conventional HLV





# DUAL GANTRY HEAVY LIFT VESSEL EVOLUTION



## VB-4,000



- Barge mounted dual truss system
- Ability to lift 4,000 tons with hook height of 98 ft.
- Eight (8) Point Mooring System
- 2008 OTC Spotlight on New Technology Award recipient

## TX-10,000



- Barge mounted dual truss system, improved design of Bottom Feeder
- Ability to lift 7,500 tons with hook height of 178 ft.
- DP -3 system eliminates need for anchors and mooring lines

## CLAW



- Solution to the challenge of reducing diver operations
- Technology developed with Operator Partner
- Resulted in immediate safety improvements
- 2012 OTC Spotlight on New Technology Award recipient

## CUTTER



- Further reduce offshore operations (exposure)
- Developed with Operator Partner
- Immediate results via pilot project
- 2015 OTC Spotlight on New Technology Award recipient



# DECOMMISSIONING RISK MANAGEMENT



**300+ Offshore Projects Completed – 350,000+ tons lifted**

- Decommissioning
- Installation
- Toppled Structure Recovery/Salvage
- Marine Salvage & Wreck Removal





# PROJECT/CAPABILITY SAMPLE

