

NEW LADDER PUMP DREDGES TO COMBAT SEVERE FLOODING IN BANGLADESH

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AUGUST 2013

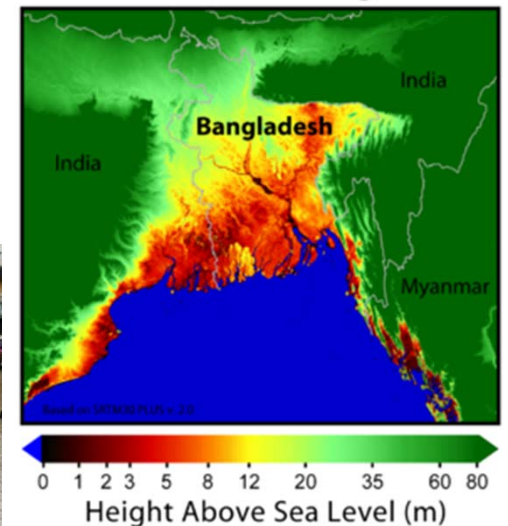
Bangladesh is prone to Severe Flooding



- Majority of Bangladesh <math>< 10\text{m}</math> above sea level
- 80% of Bangladesh is considered a Flood Plain
- Bangladesh has experienced extreme floods in 1966, 1987, 1988, 1998, and 2007
- Bangladesh Water Development Board (BWDB) is responsible for flood control, drainage, and irrigation projects



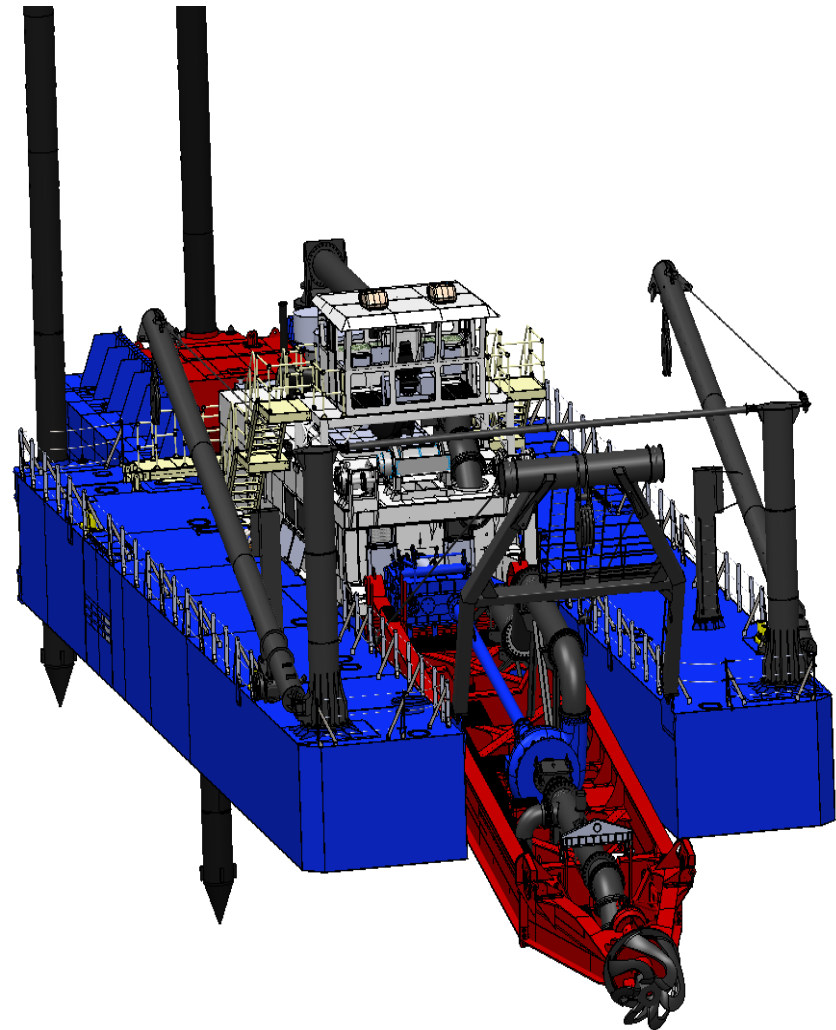
Sea Level Risks - Bangladesh



New Dredges to Solve Bangladesh Flooding



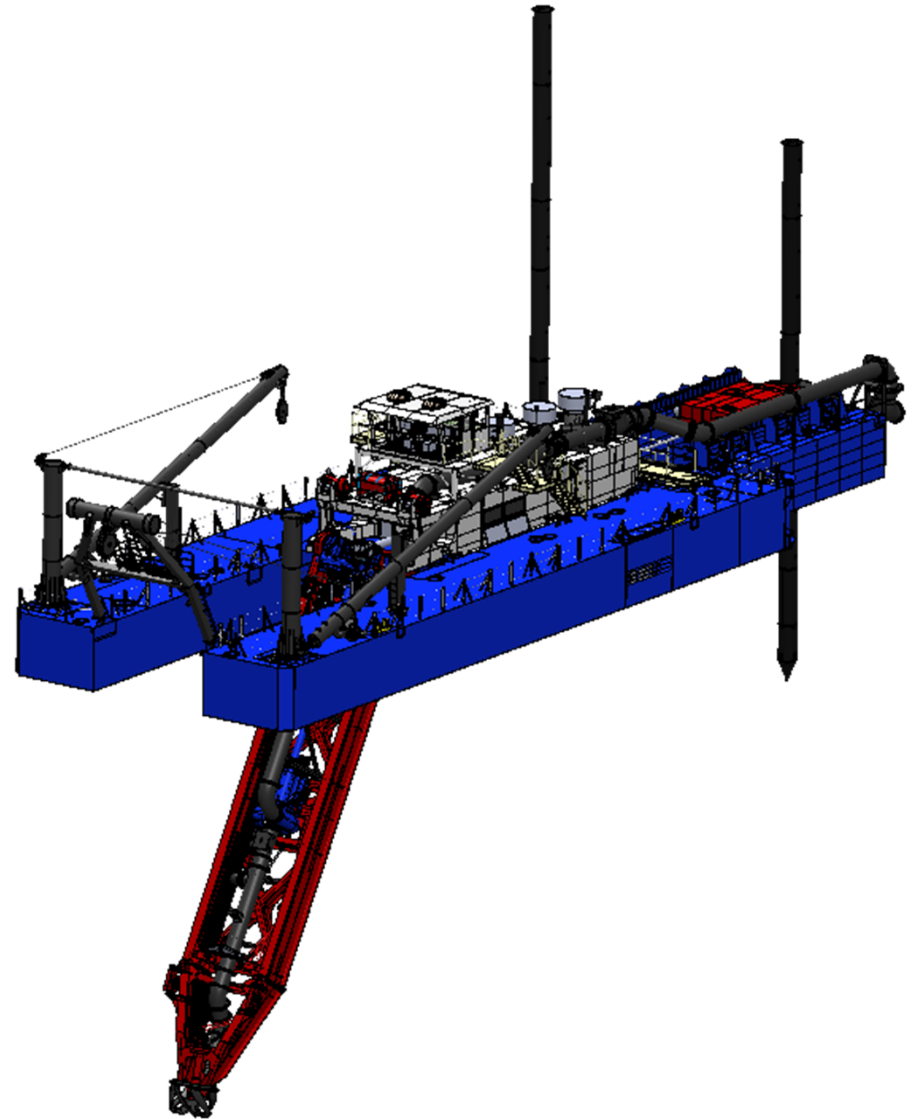
- BWDB has initiated acquisition programs for several new dredges
- These new dredges range from 400mm to 650mm discharge diameters and production ranging from 360 to 1900 m³/hr
- Ellicott Dredges' new 3870 model was selected for the 650 mm, 1900m³/hr dredge.
- Four dredges are currently being assembled in Bangladesh.



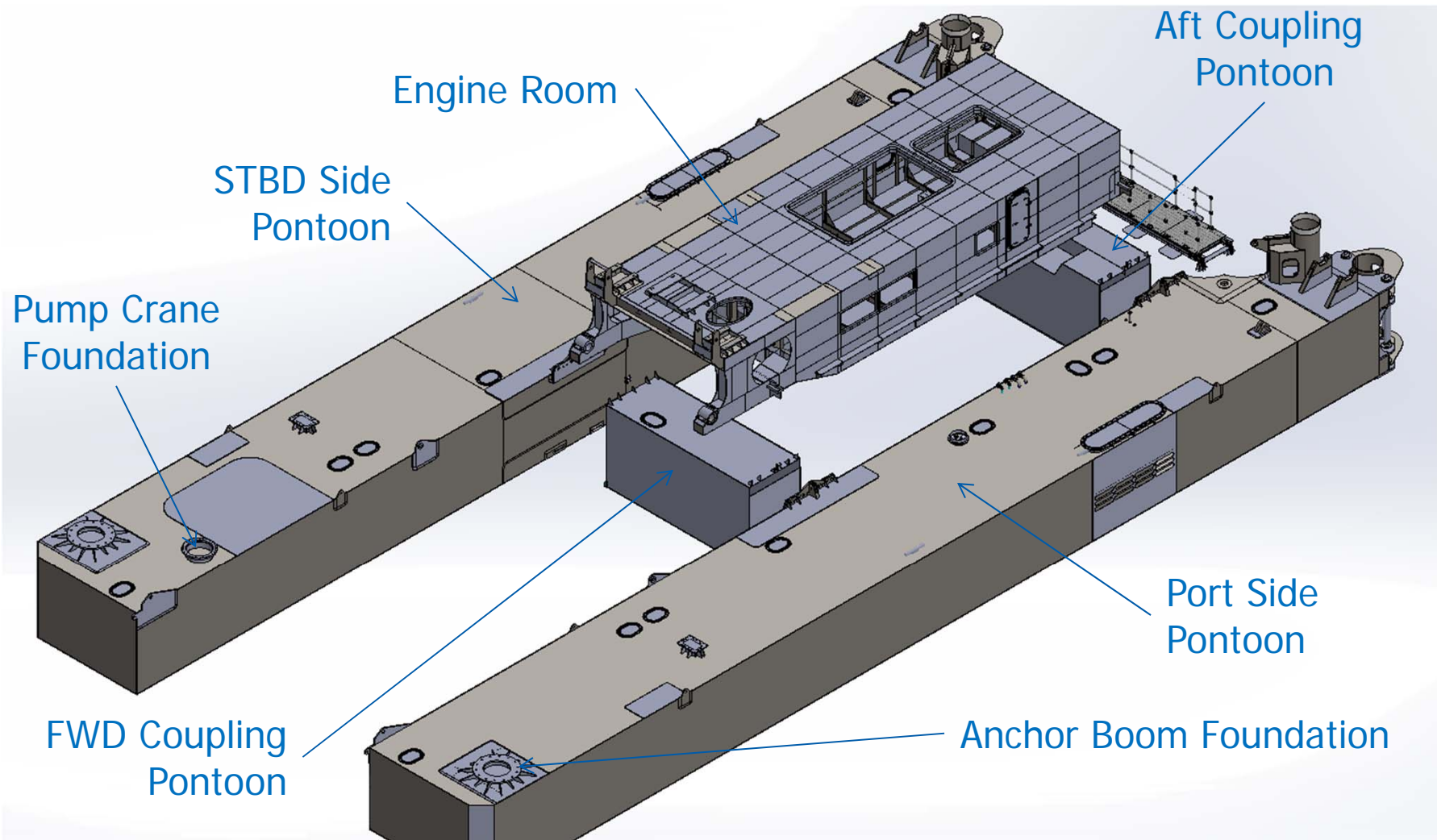
Ladder Pump Dredge for Deep Digging & High Efficiency



- Key features of the 3870 Dredge include:
 - Bureau Veritas Coastal Classification
 - ✕HULL ✕MACH
 - GIW Ladder Pump
 - 18 m Digging Depth
 - Mechanical drive of dredge pump with Ellicott pivoting Gearbox
 - Main Engine: CAT 3516C Marine
 - Aux Engine: CAT C32 Marine
 - 600 HP Direct Drive Hagglunds Cutter Drive
 - High Efficiency Load Sense hydraulic pumps for cutter drive and winches
 - Anchor Booms
 - Spud Carriage
 - Tilting Spuds



3870 is Fully Dismountable for Transportation to the Work Site

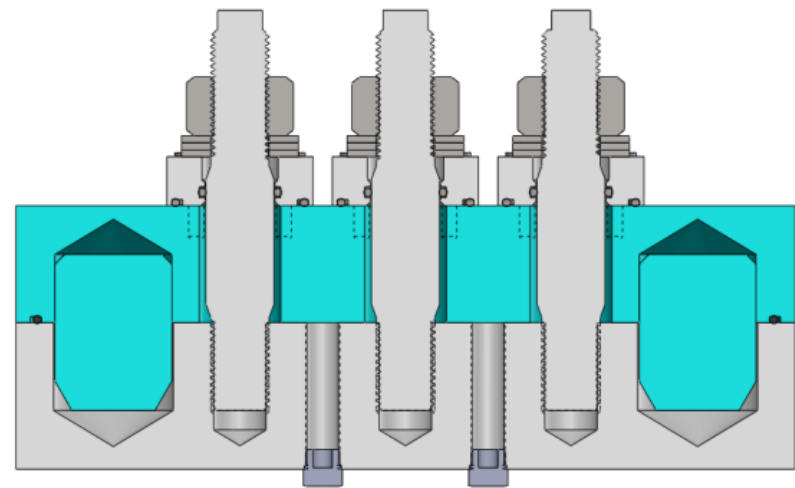
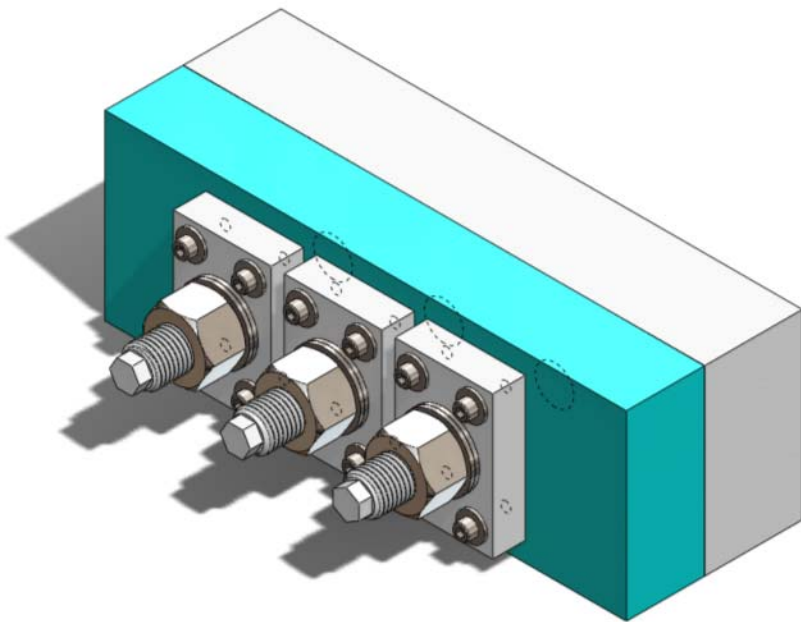


Catamaran Hull Provides Superior Stability

Preloaded Bolts and Shear Pins Provide Robust Tank Connections



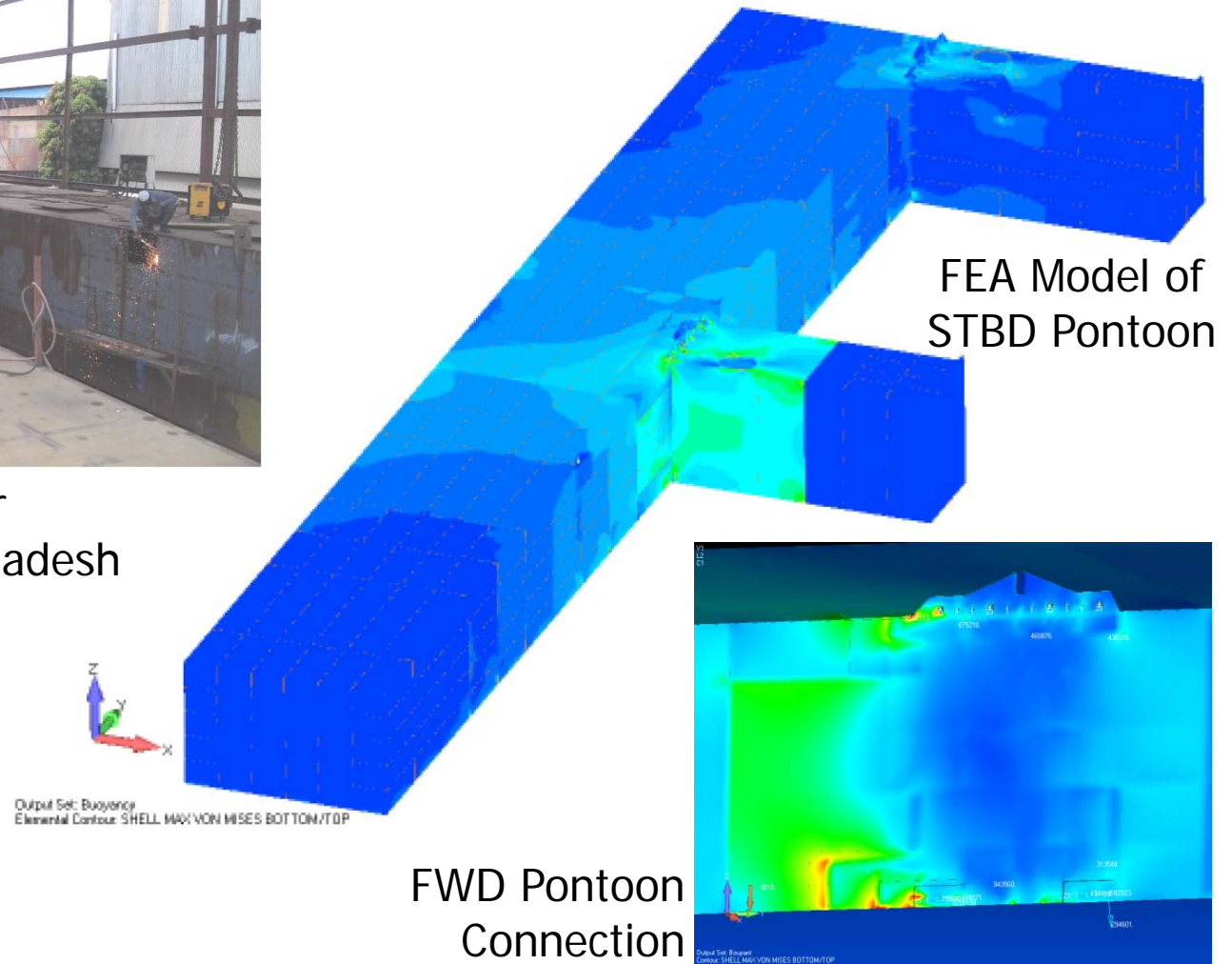
- Shear pins and pretensioned bolts at all hull connection points
- Redundant sealing with test port on lower joints
- Provisions for jacking bolts to ease disassembly



Pontoons Designed for Coastal Use Connections Validated with FEA



Pontoons Under Construction in Bangladesh



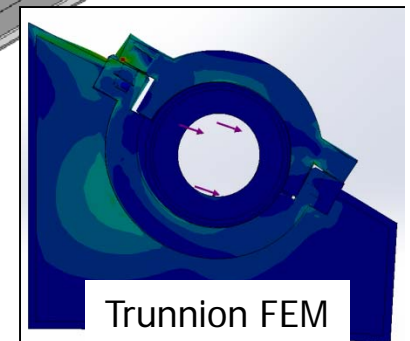
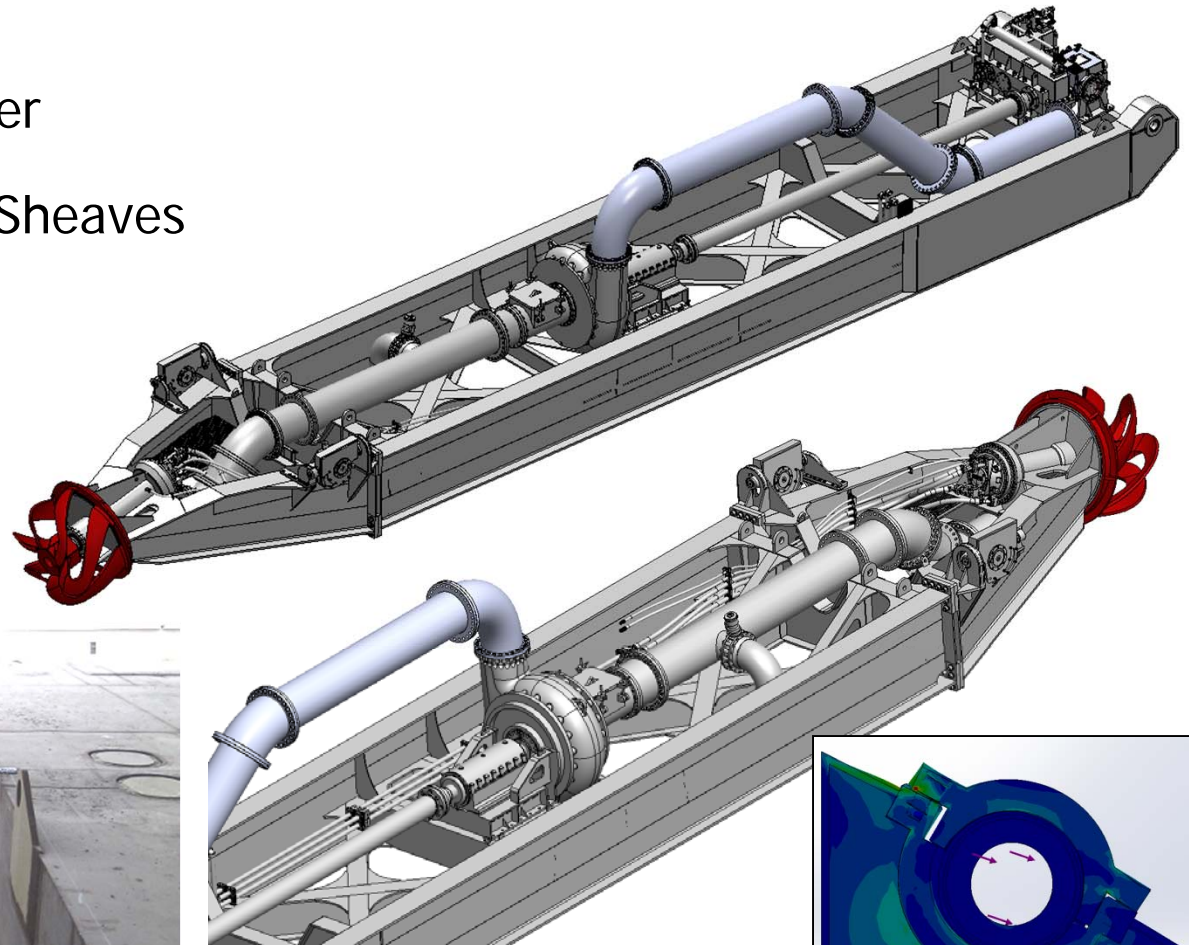
Robust Hull Construction for Coastal Use



Ladder Pump Provides High Efficiency at Deep Digging Depths



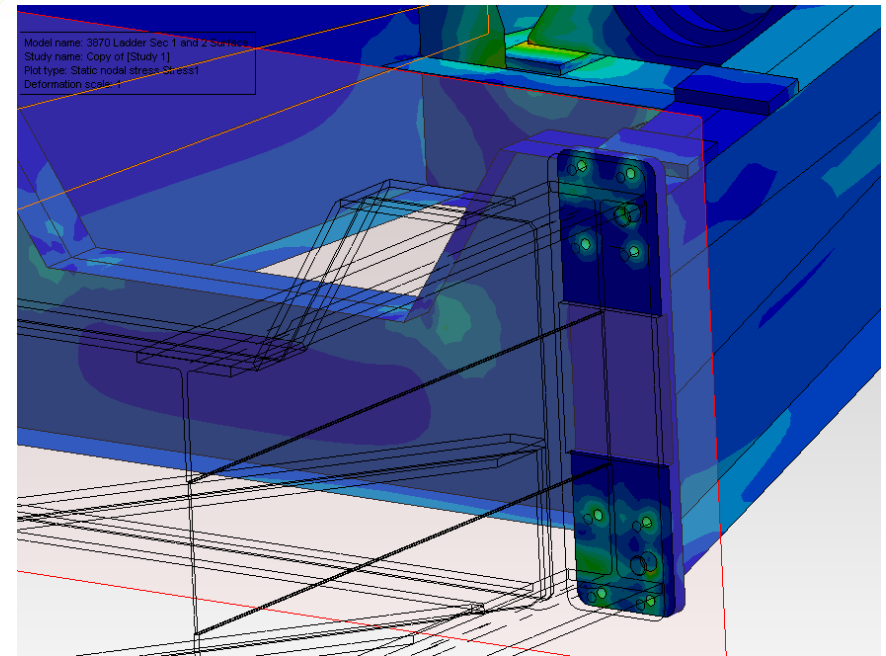
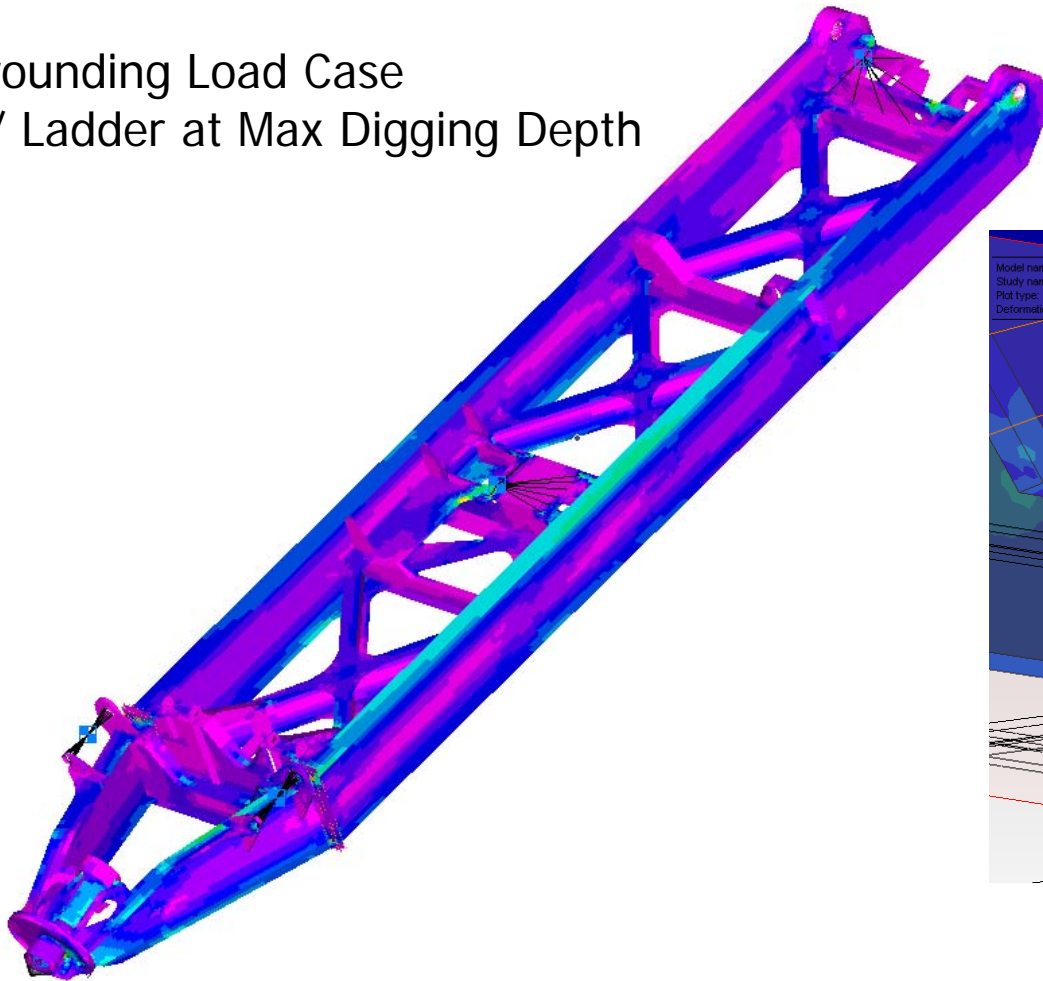
- 600HP Direct Drive Cutter
- Counter Balance Swing Sheaves
- Suction Relief Valve
- Ladder Pump
- Pivoting Gear Box



Ladder Design Validated with FEA



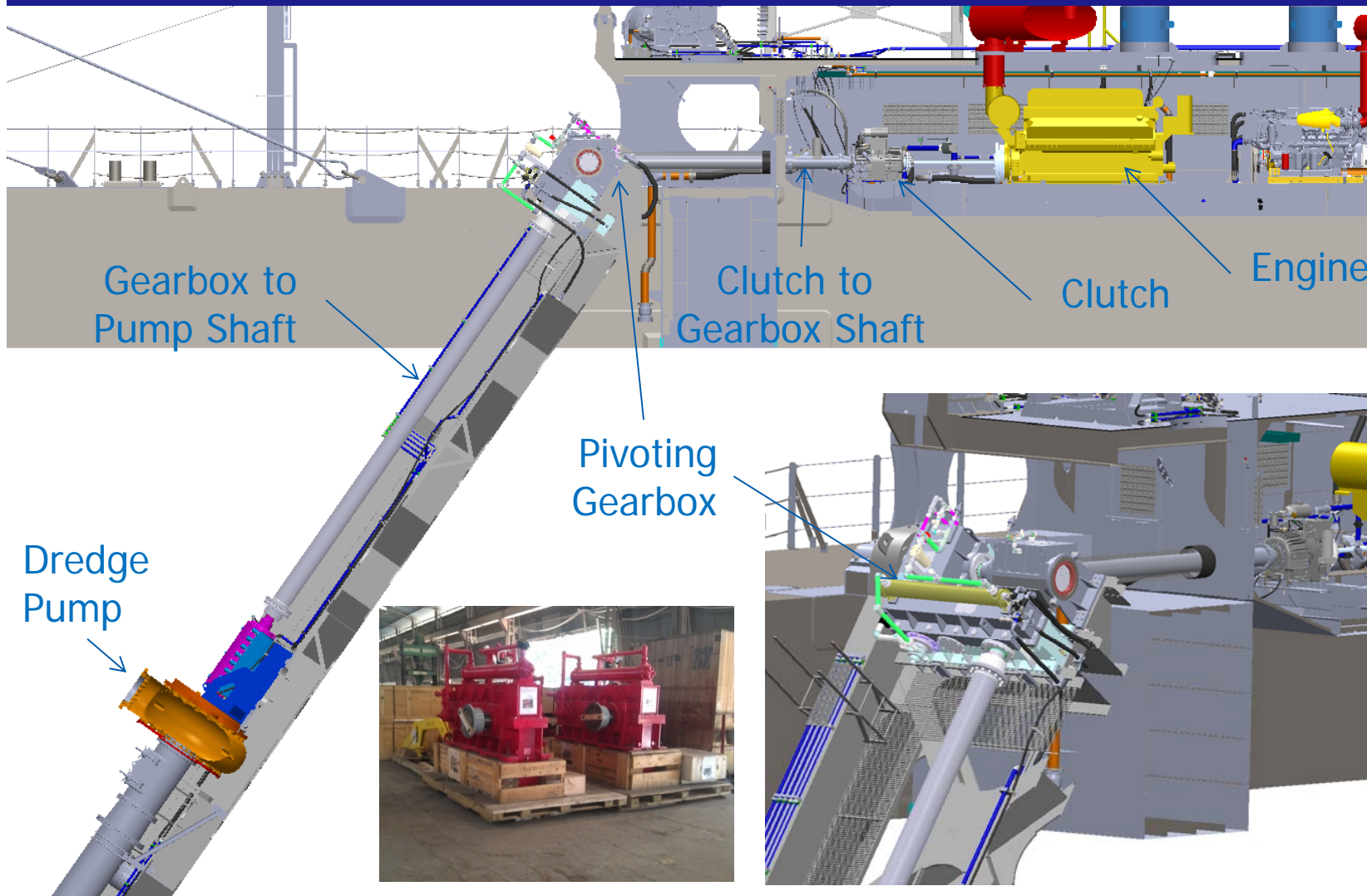
Grounding Load Case
w/ Ladder at Max Digging Depth



Detailed FEA Model of Bolted Connection

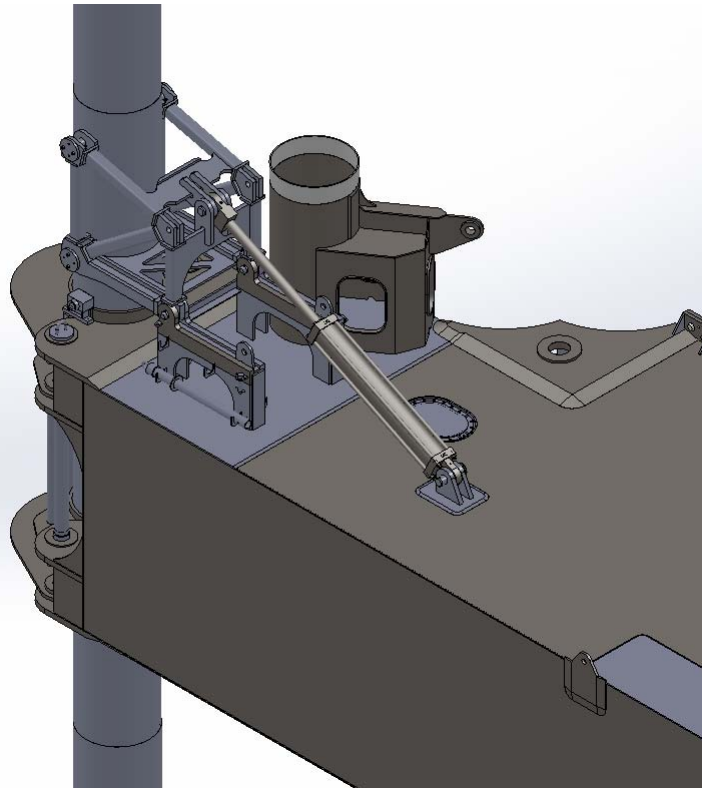
Ladder Design Digitally Validated Against Worst Case Loads

Direct Drive Dredge Pump Provides High Efficiency Dredging Operations

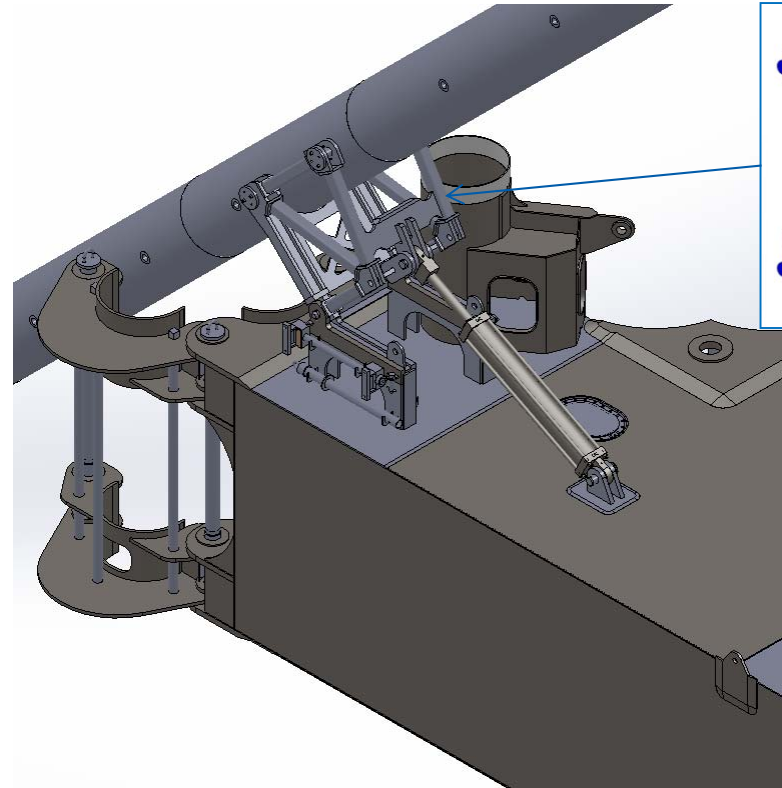


Pivoting Gear Box Provides Efficient Transmission of Dredge Power

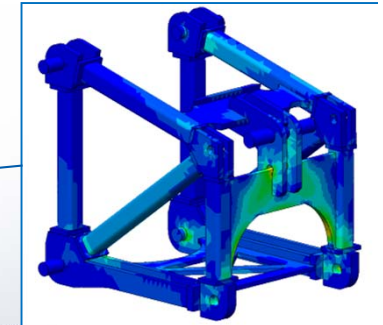
Spud Tilting Capability Allows Dredge to Navigate Shallow Water & Below Bridges



Spud Attached to Tilt Frame with Locking Pins



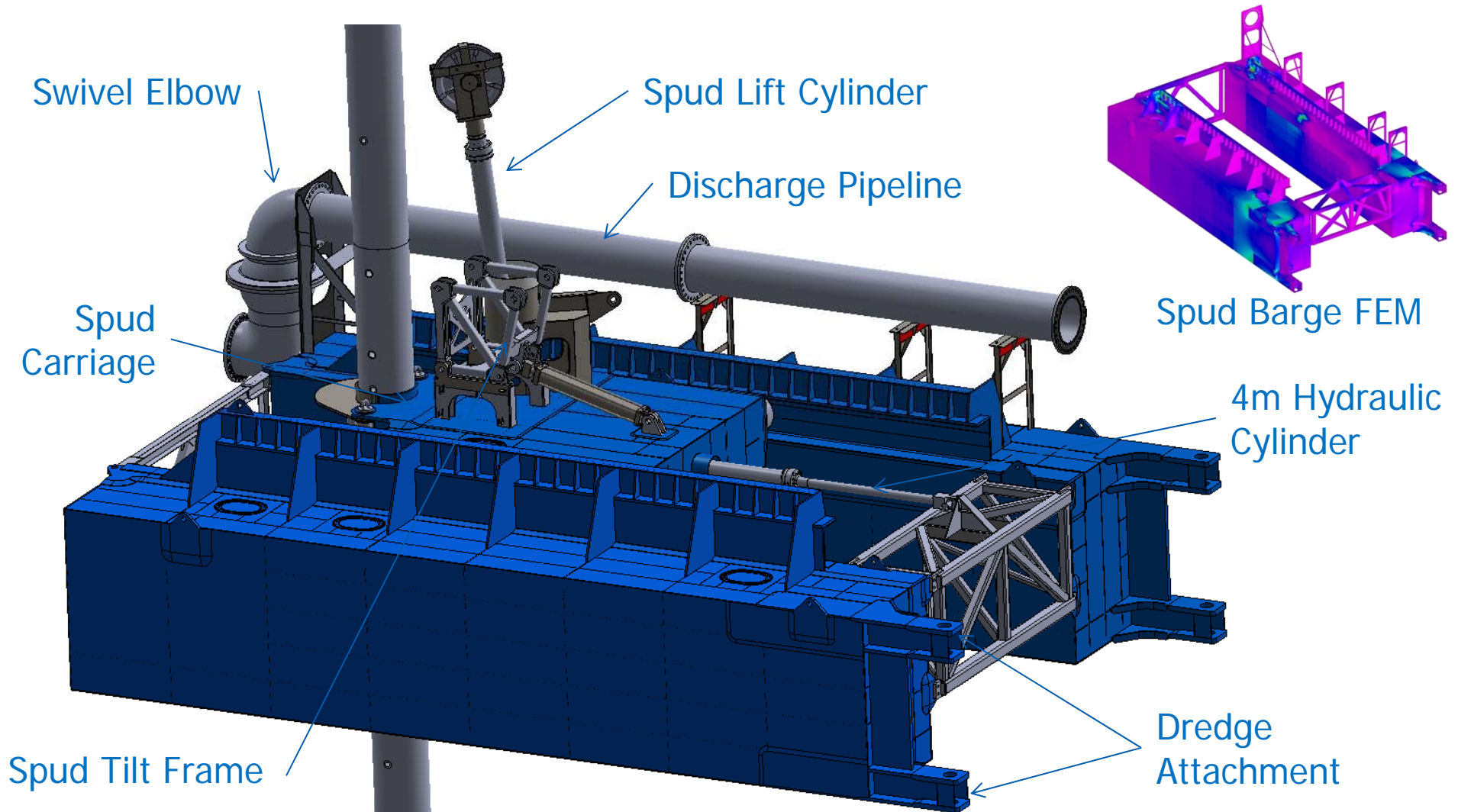
Positive Control of Spud During Entire Tilting Operation



FEM of Tilt Frame

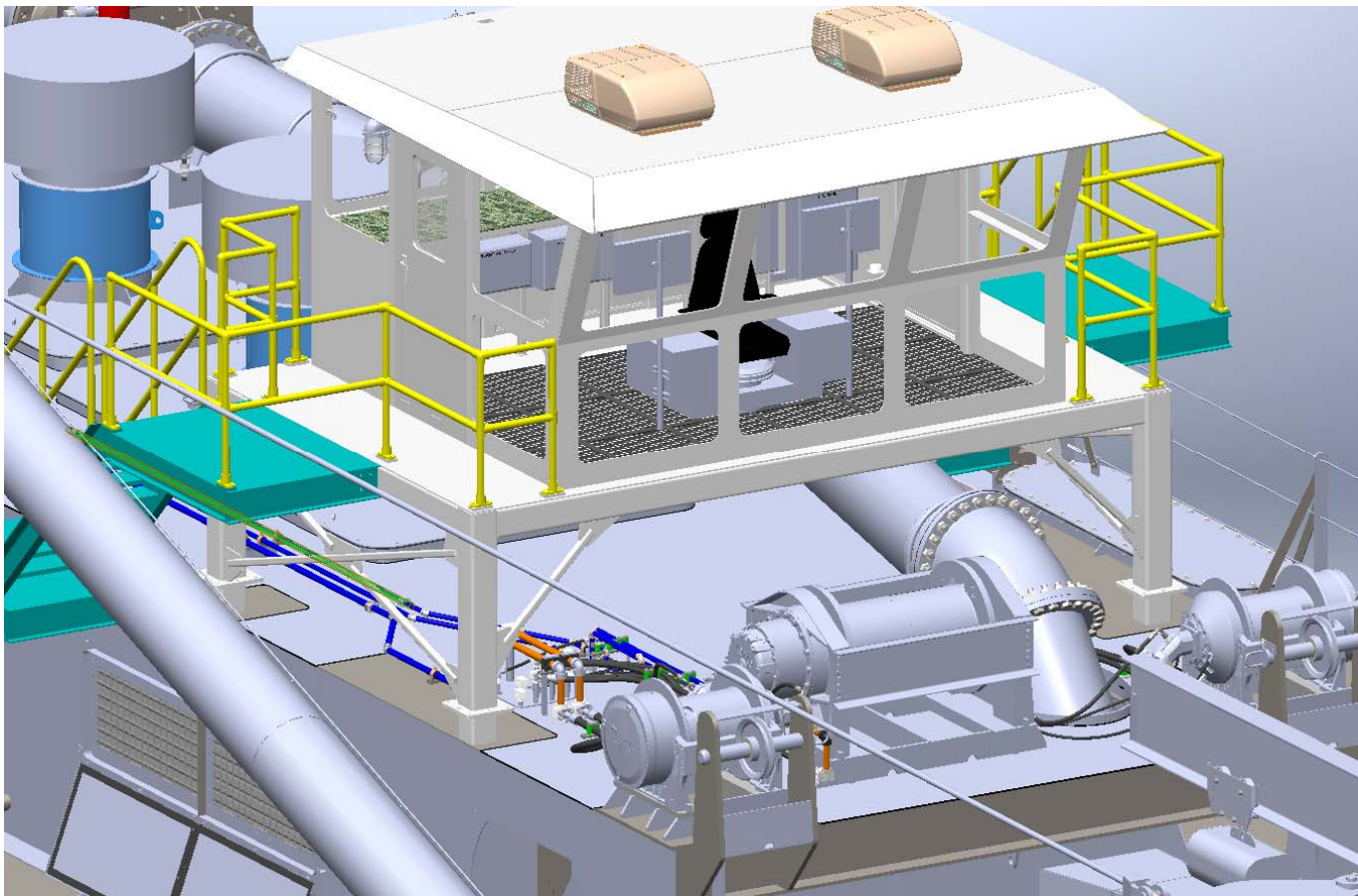
Spud Tilting Improves Versatility of Dredge

Travelling Spud Barge Improves Efficiency of Dredging Operations



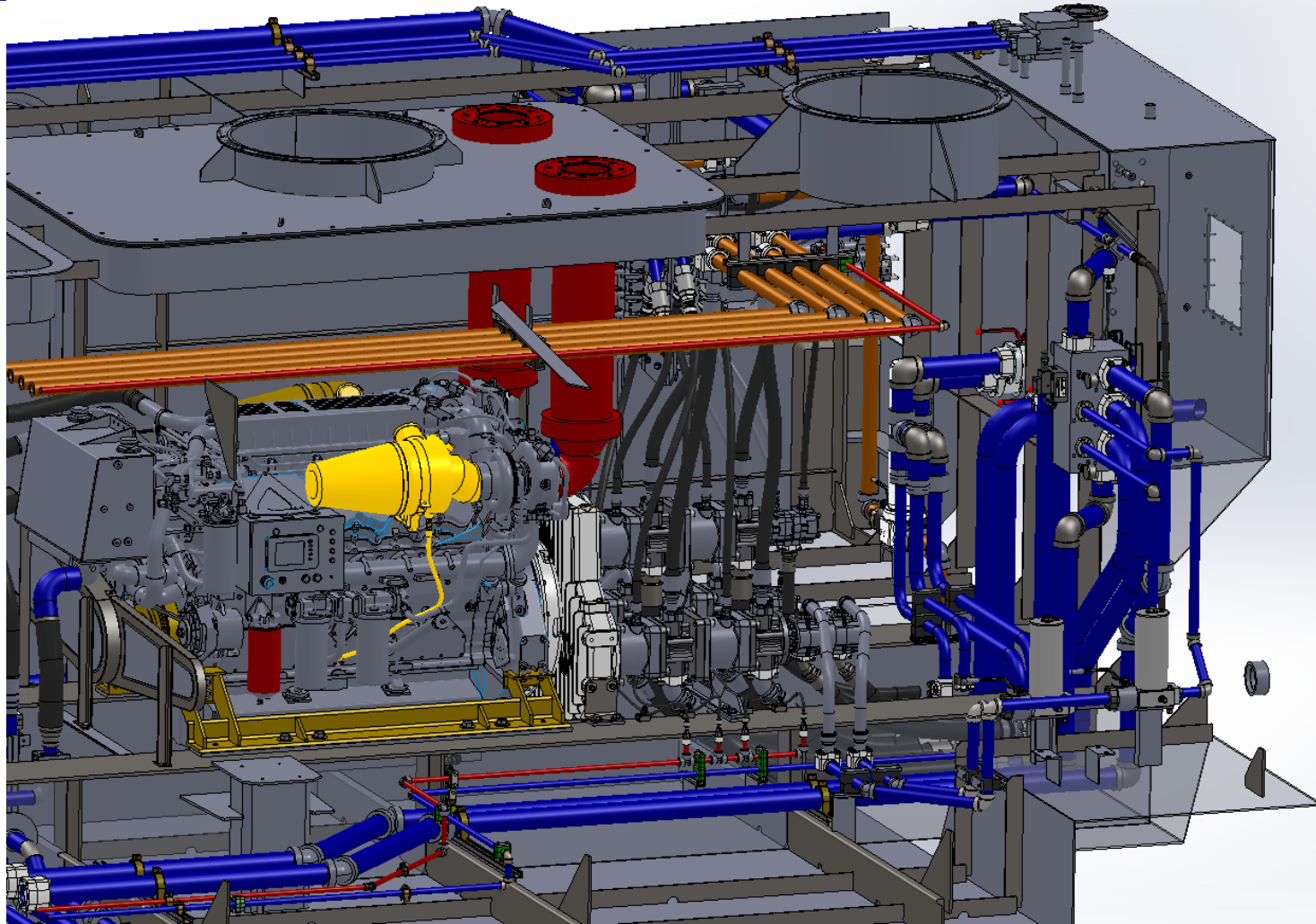
Spud Carriage Designed for Full Coastal Operation

All Dredge Operations Controlled from Operator's Chair



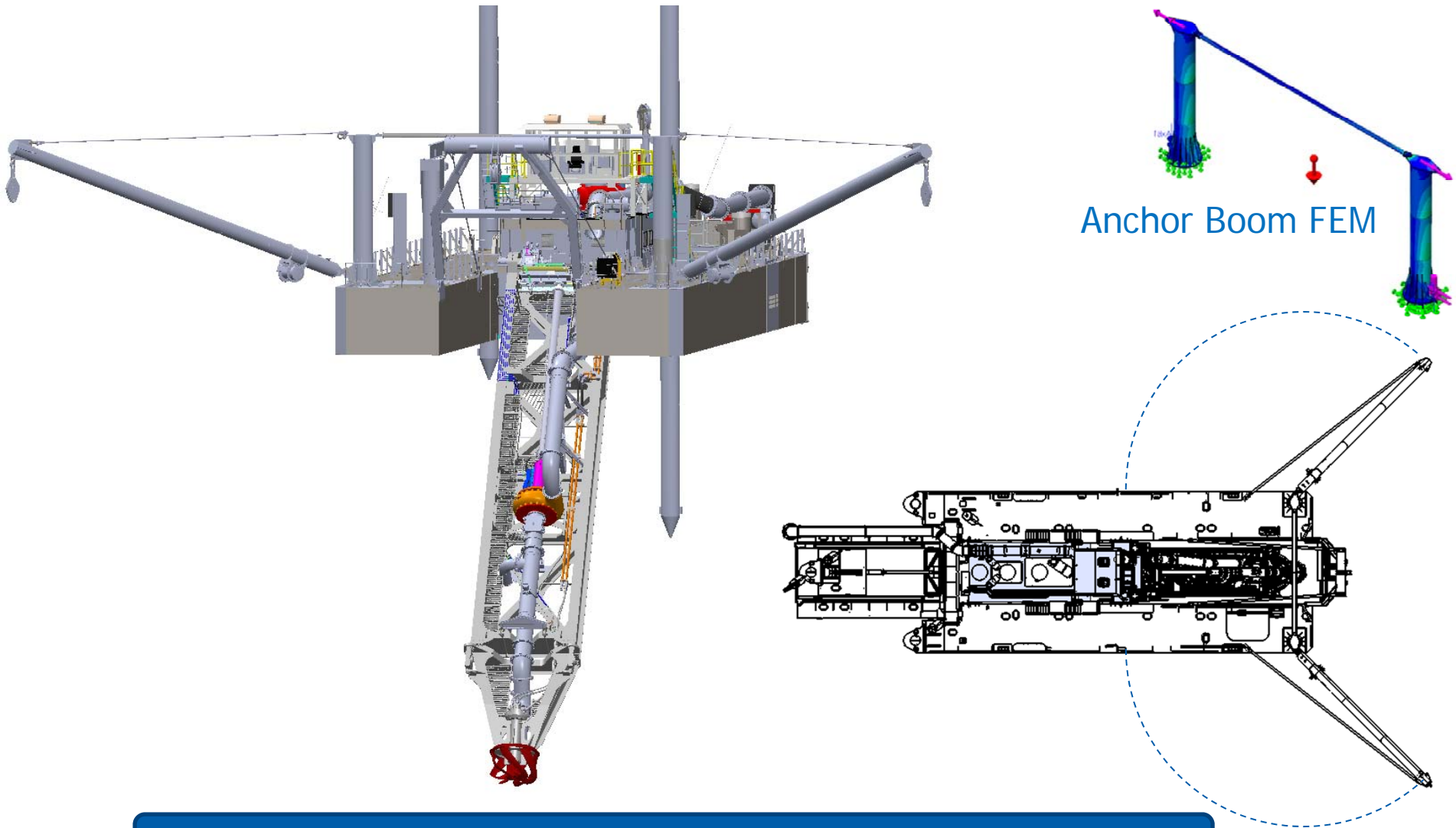
Modern Control System Reduces Dredge Manning Requirements

Efficient Hydraulic Plant Reduces Fuel Consumption



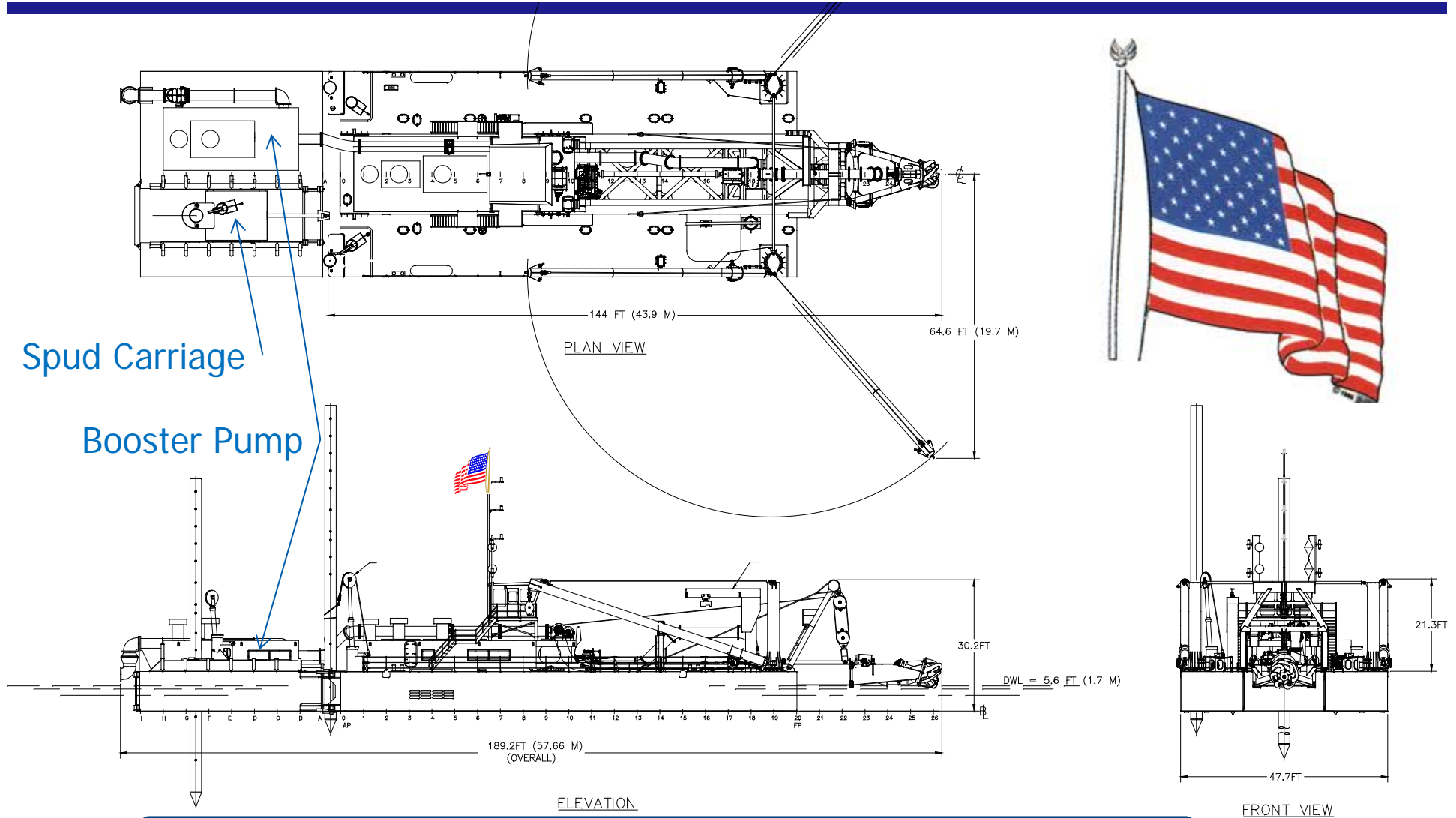
All Piping Validated via Digital Prototype

Anchor Booms Provide Dredge with Capability to Advance Swing Anchors



No Workboat Required to Advance Anchors

Ellicott 6000 Concept Includes Barge Mounted Booster Pump

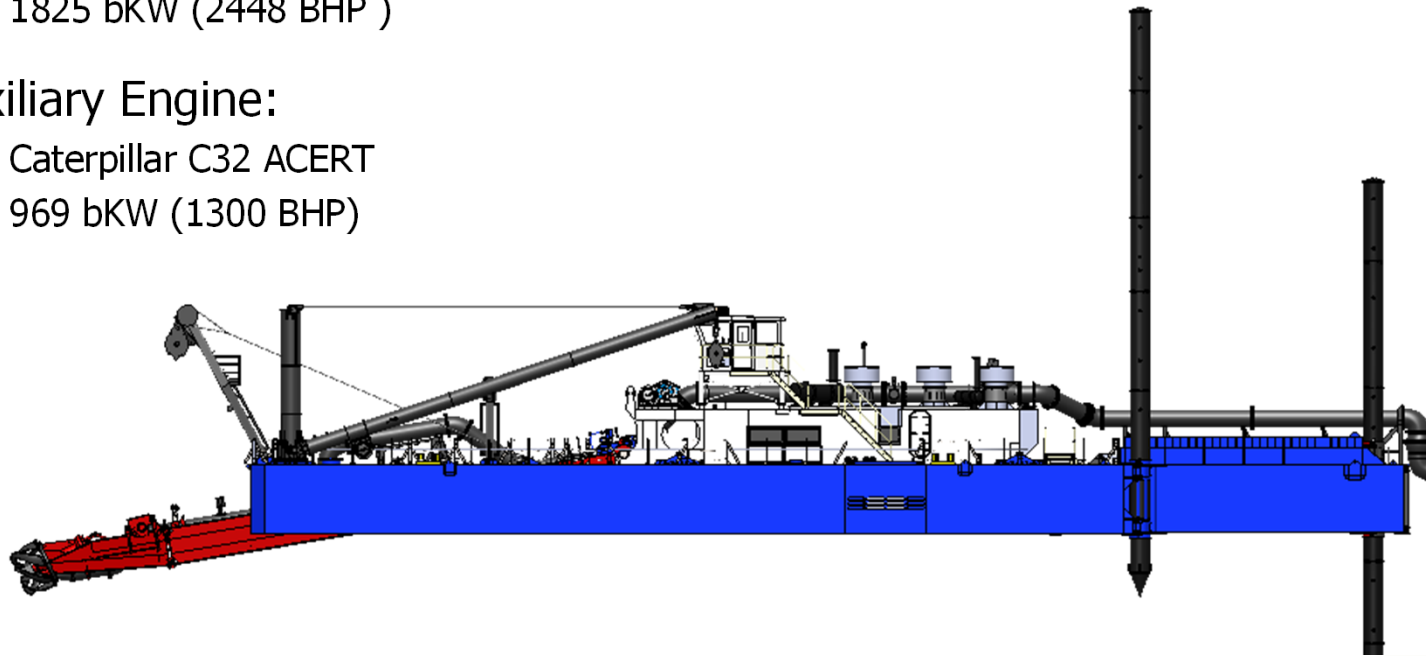


Barge Mounted Booster Enables Long Line Pumping

Summary: 3870 Key Characteristics



- LOA = 57.66m (ladder raised)
- Beam = 14.5m
- Mean Draft = 1.7m
- Main Engine:
 - Caterpillar 3516C
 - 1825 bKW (2448 BHP)
- Auxiliary Engine:
 - Caterpillar C32 ACERT
 - 969 bKW (1300 BHP)
- Dredge Pump
 - GIW C/4 ME
- Generator: 48KW/60KVA
- Harbor Set: 69KW/86KVA



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엘리코트

ЭЛЛИКОТТ

*Anywhere
in the world
the word for
dredge is*

ELLICOTT



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