

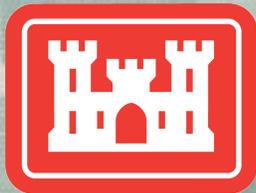
Z-Drive Towboats & Regulatory Update

Presentation for
2014 Locks Maintenance Workshop

Smyrna, TN

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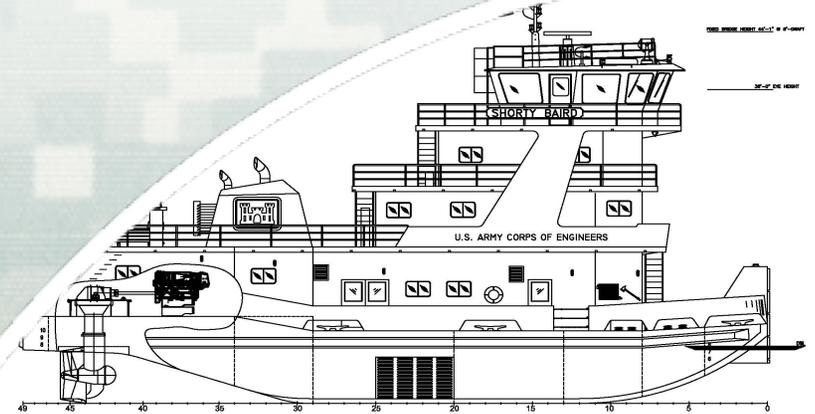


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OUTLINE

- Z-Drive Towboats in Industry
- Z-Drives in USACE Fleet
- Benefits of Z-Drives
- USACE M/V SHORTY BAIRD Replacement
- Regulatory Update



Z-DRIVE TOWBOATS IN INDUSTRY

- Southern Towing
 - 5 Z-Drive Towboats
 - First put in service in 2008
 - HP Range from 2300 to 3800
 - Performed direct fuel consumption with conventional drive towboats
 - Results of 7% to +15% fuel savings, faster trip times, less HP



Z-DRIVE TOWBOATS IN INDUSTRY

- Chem Carriers
 - Built 2011
 - 70'x28'x8-7"
 - 1400 HP
- Caroline Co.
 - MV Cairo (under construction)
 - 68'x34'x10'
 - 1500 HP
- American Commercial Lines
 - 4 Z-Drive Towboats Under Construction
 - 2000 HP



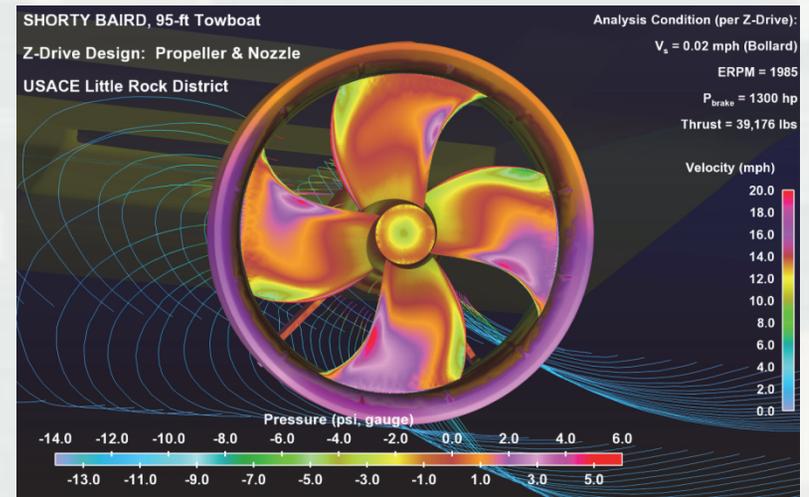
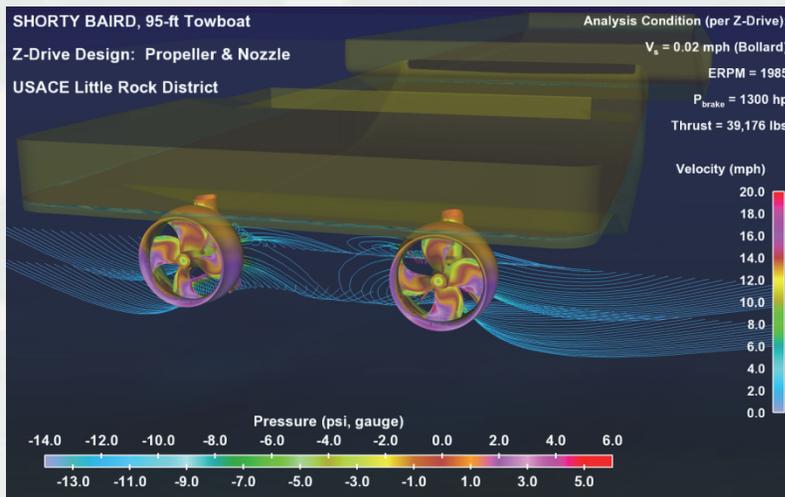
Z-DRIVES IN USACE FLEET

- Dredge HURLEY
- M/V WARD
- M/V LUSK
- Dredge MURDEN



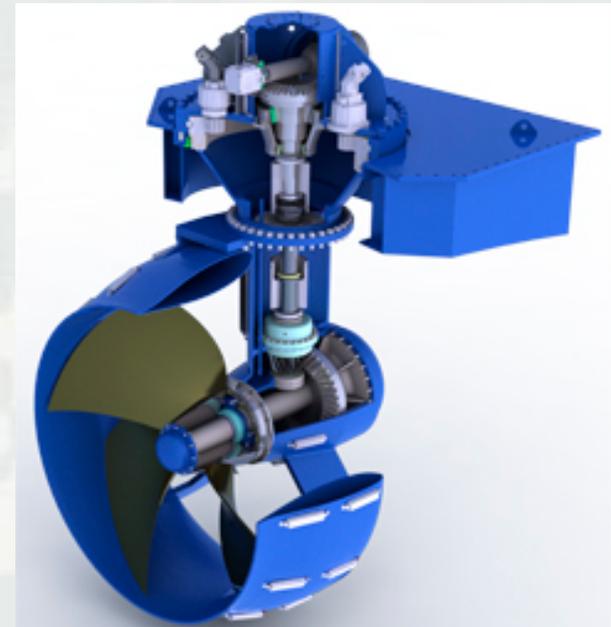
Z-DRIVE BENEFITS

- Z-Drives have documented improved performance and maneuverability, providing higher efficiency and fuel savings (~7-15% vs. same horsepower with conventional shaft arrangement).
- Directional thrust, increased maneuverability
- Higher equivalent horsepower (i.e. 2500 HP Z-Drive is comparable to 3000 HP conventional)



Z-DRIVE BENEFITS & CONCERNS

- Repairs in the wet
- Reduced downtime / Swap units in < 8 hrs
- Construction considerations
- Equipment and maintenance considerations
- Concerns:
 - Vulnerability of Equipment
 - Maintenance – specialized techs
 - Increased capital costs



M/V SHORTY BAIRD

REPLACEMENT

- 95'x43'x10'
- (2) Thruster Master TM1500MZ Z-Drives
 - Driven by (2) CAT C32 Tier 3 Engines
 - Each 1,300 HP -> 2,600 HP
 - CFD Analysis – comparable to 3,000 HP Conventional
- (2) 150-kW Generators
- (4) 7.5 HP Deck Winches / (1) 10 HP Capstan
- Quarters for 7 Persons / Office / Galley & Mess Area
- Contract Awarded to Horizon Shipyard in
September 2013 - Expected Delivery May/June 2015



M/V SHORTY BAIRD REPLACEMENT

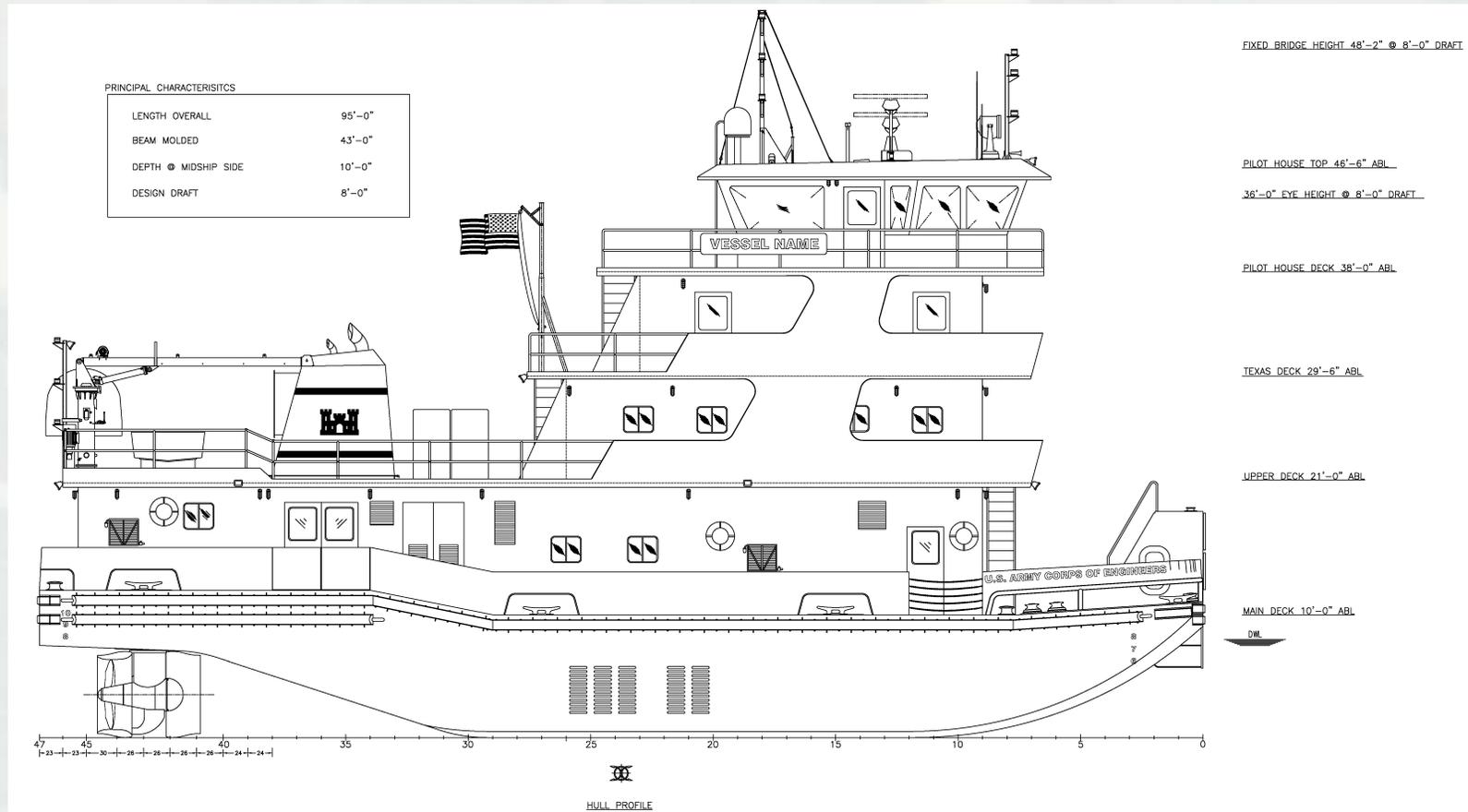


M/V SHORTY BAIRD REPLACEMENT



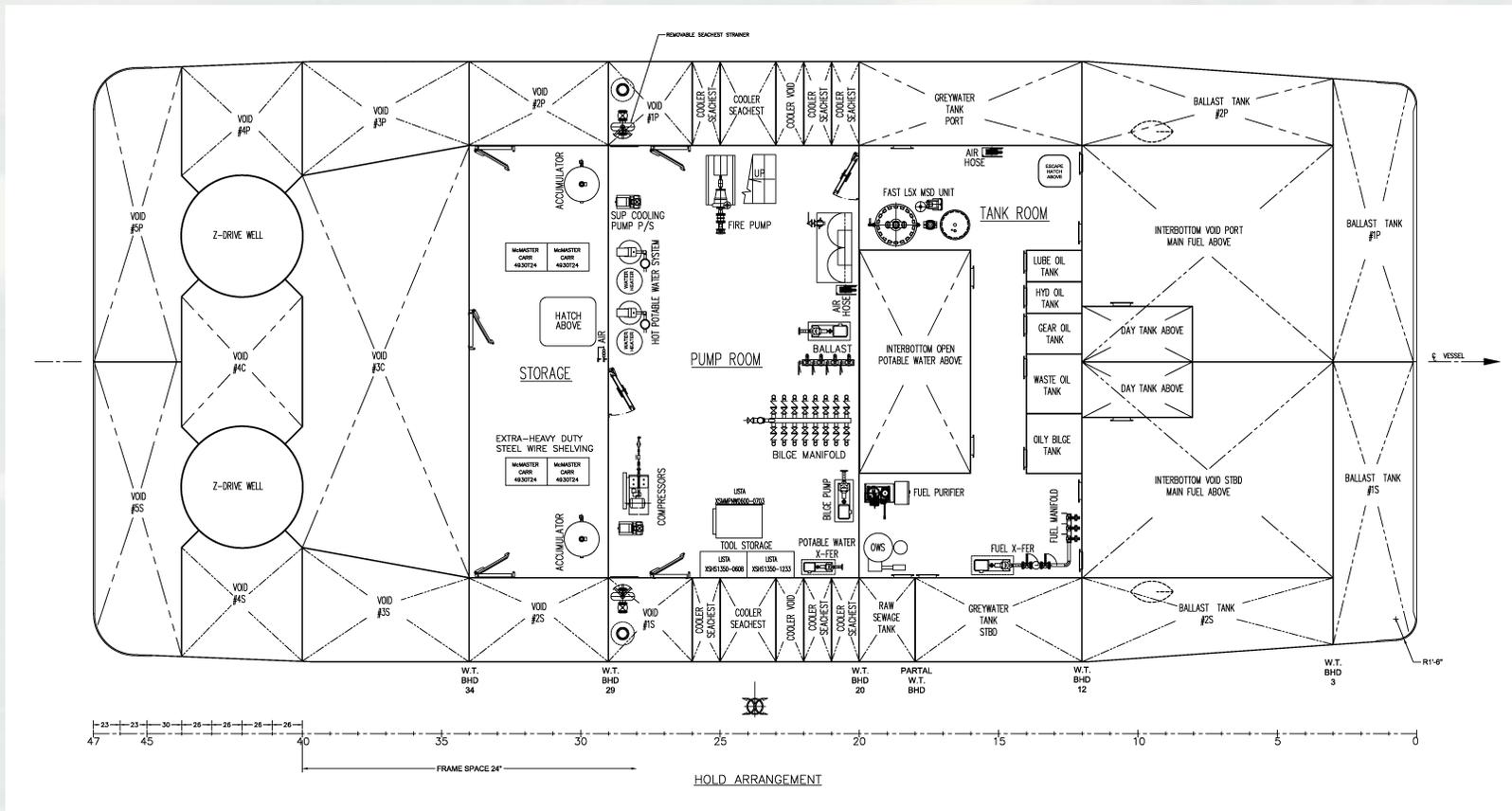
M/V SHORTY BAIRD

REPLACEMENT



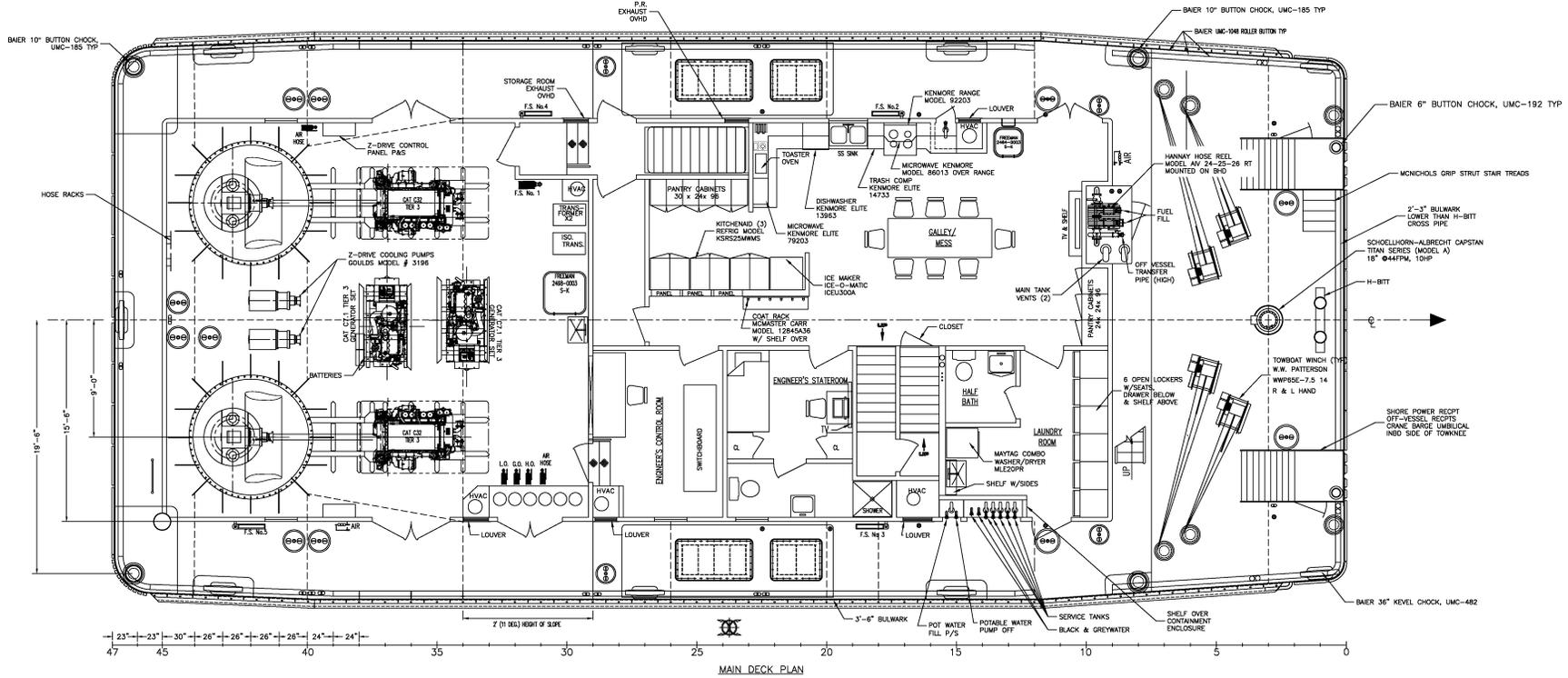
M/V SHORTY BAIRD

REPLACEMENT



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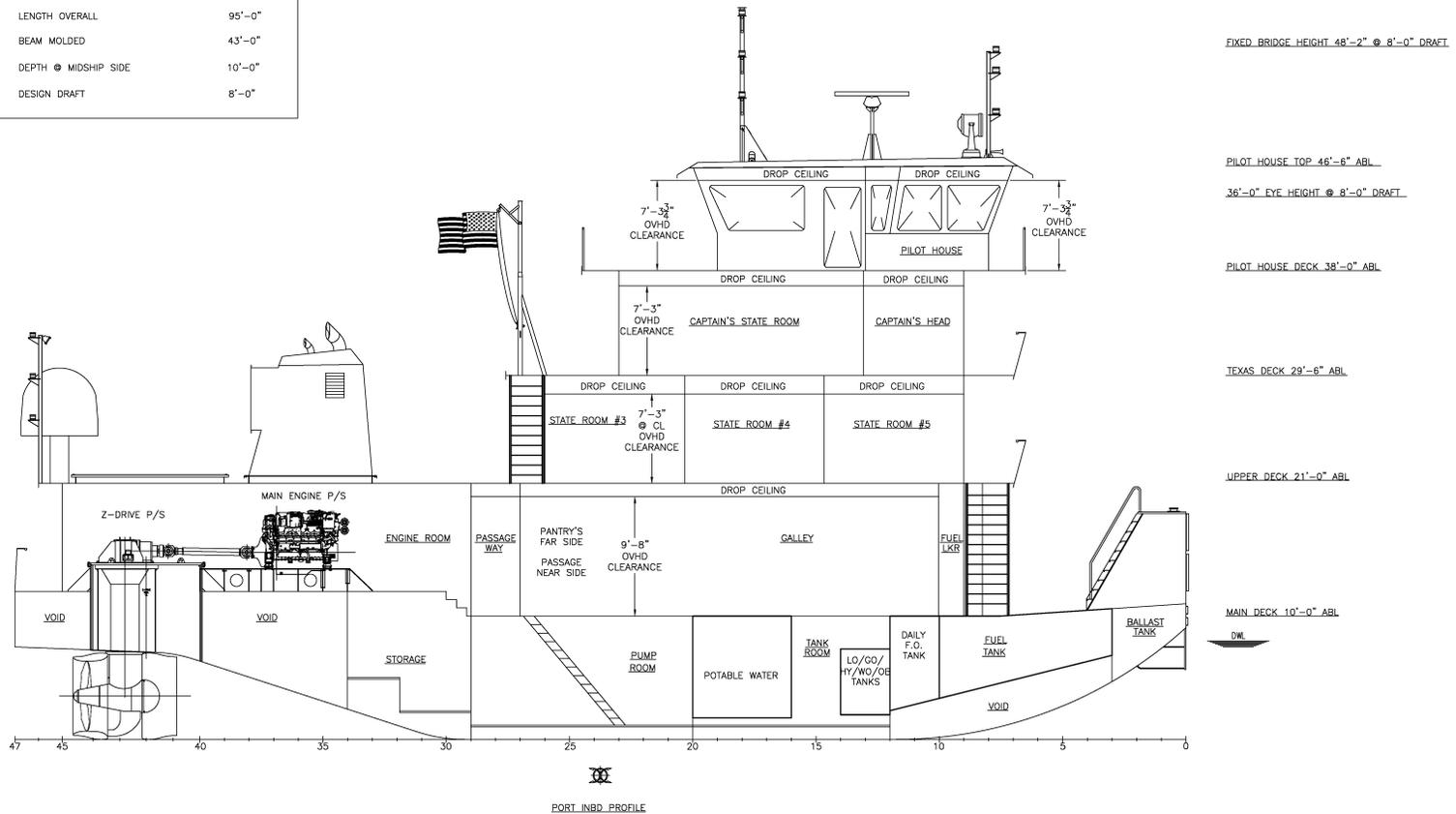


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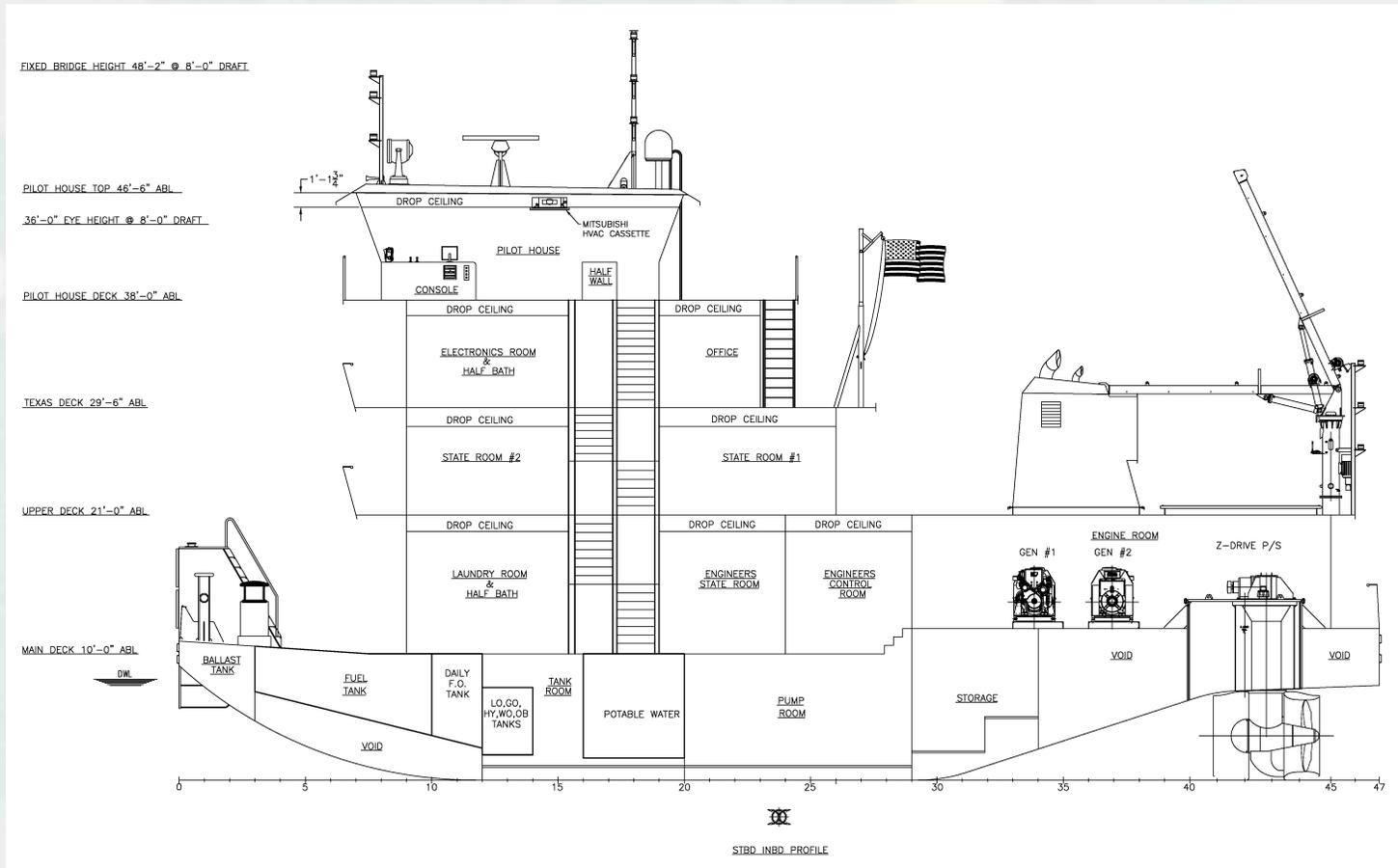
PRINCIPAL CHARACTERISTICS

LENGTH OVERALL	95'-0"
BEAM MOLDED	43'-0"
DEPTH @ MIDSHIP SIDE	10'-0"
DESIGN DRAFT	8'-0"

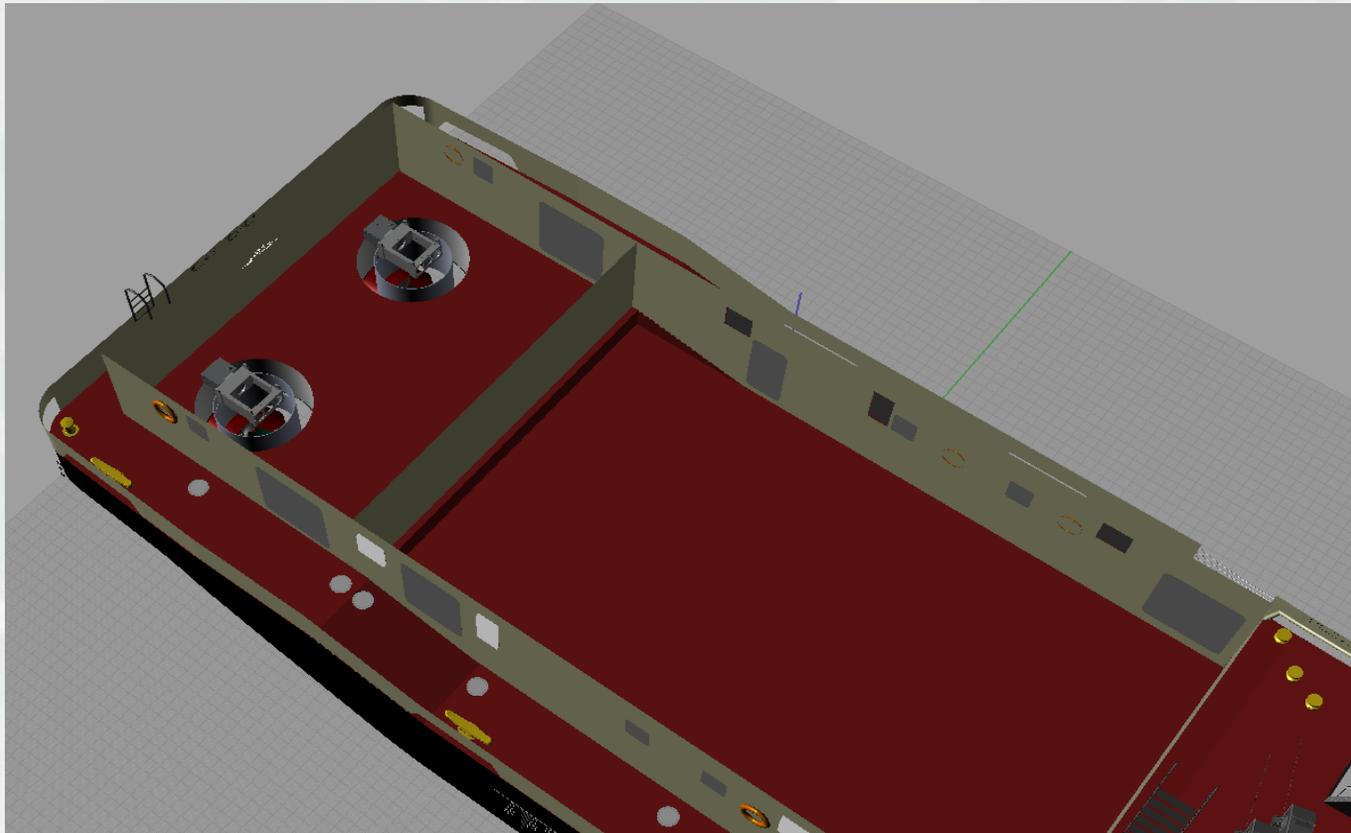


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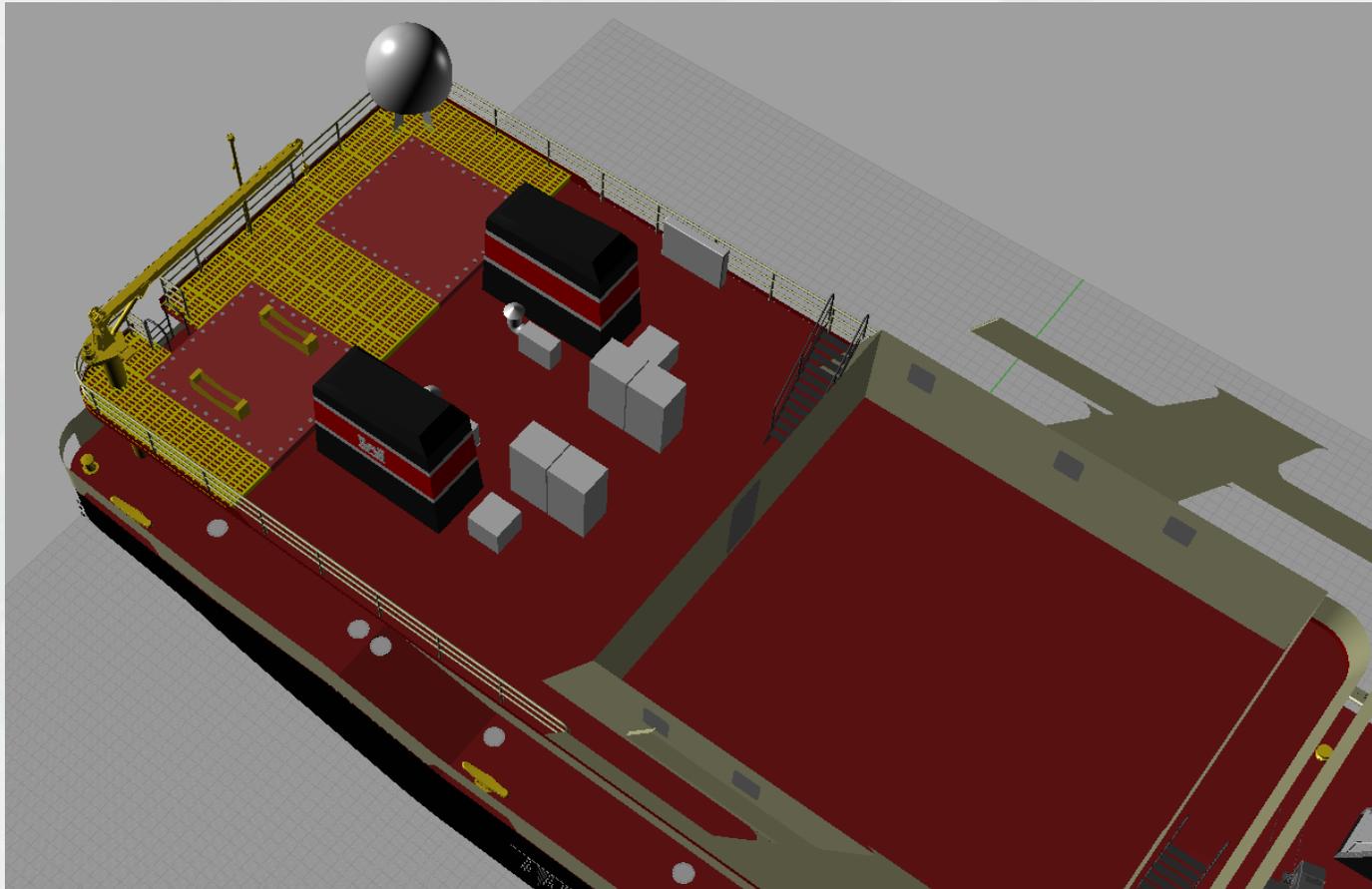
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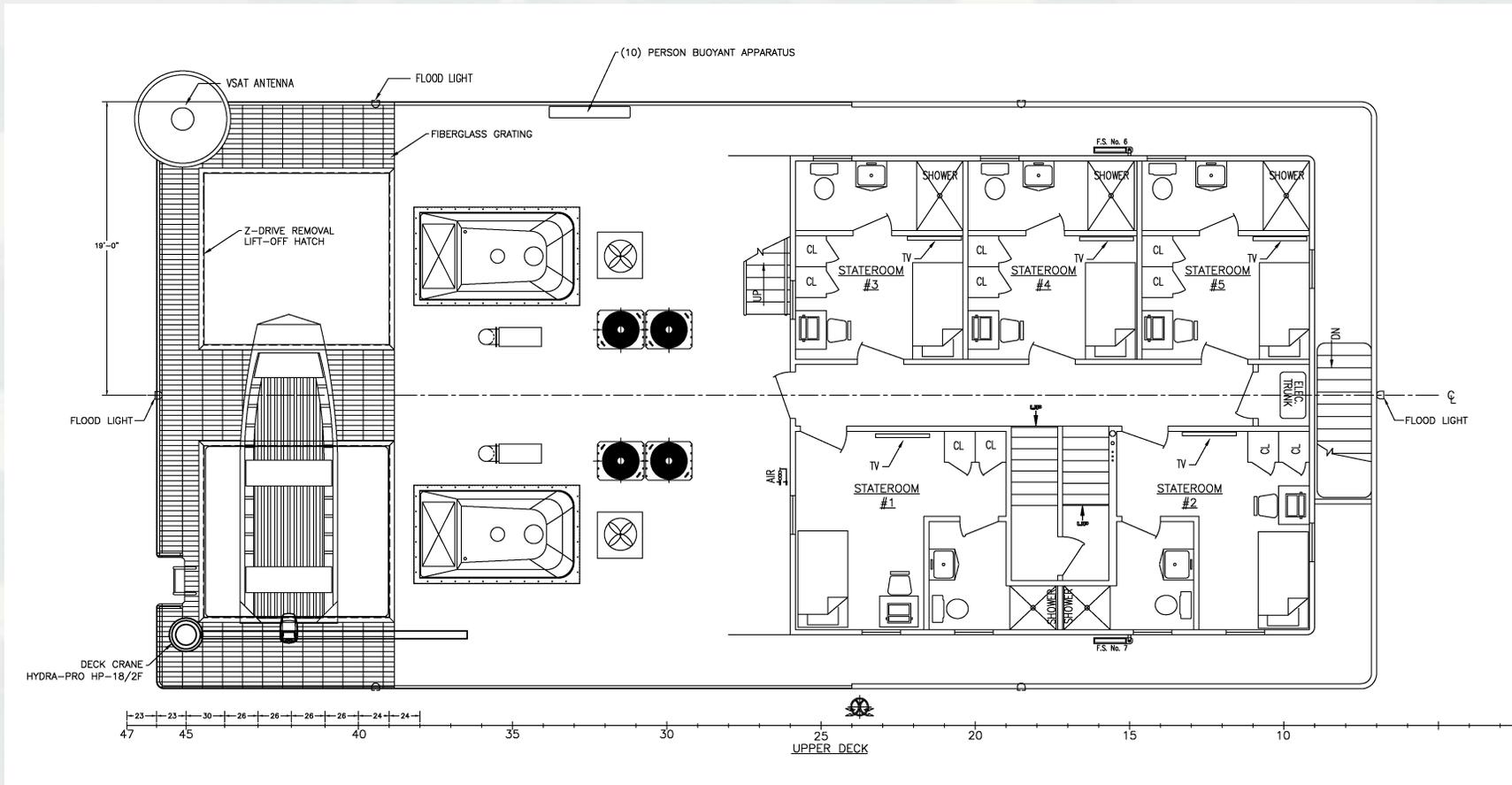


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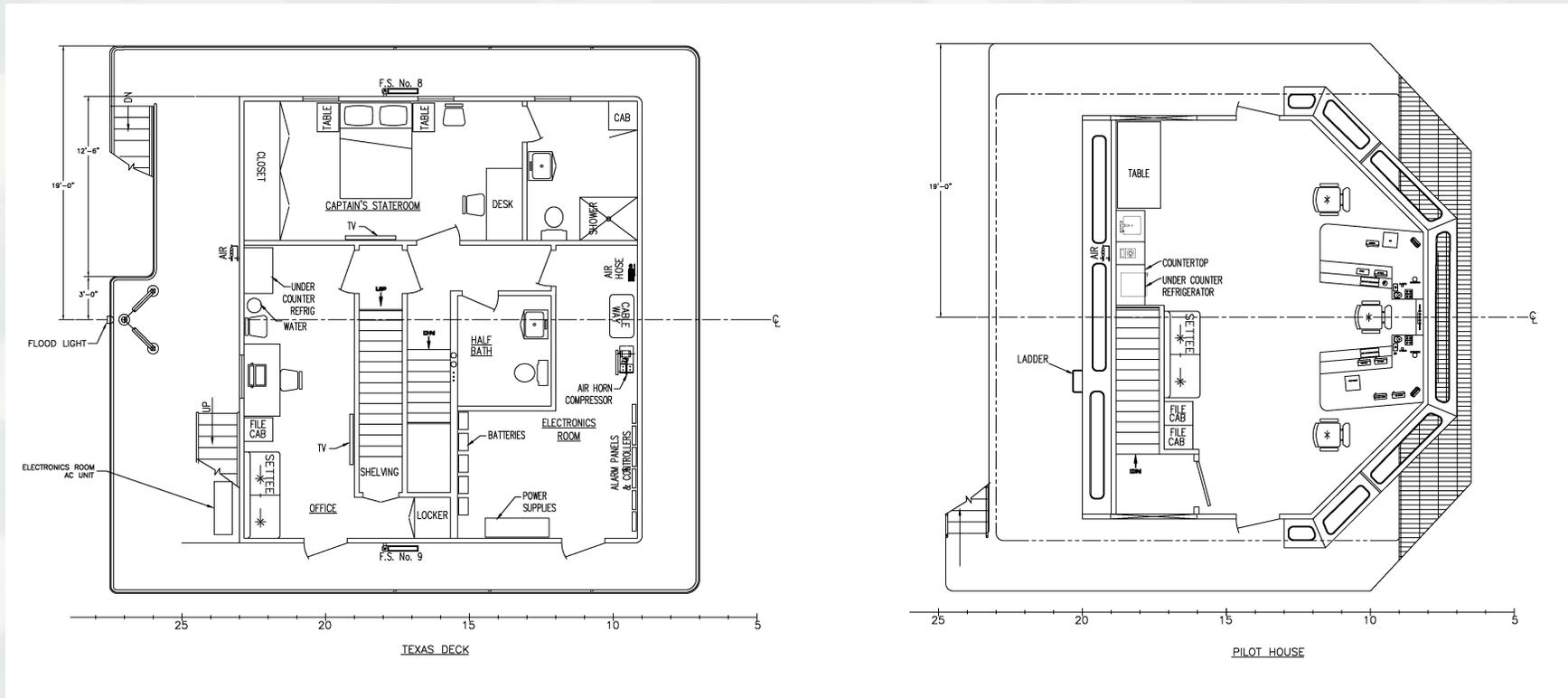
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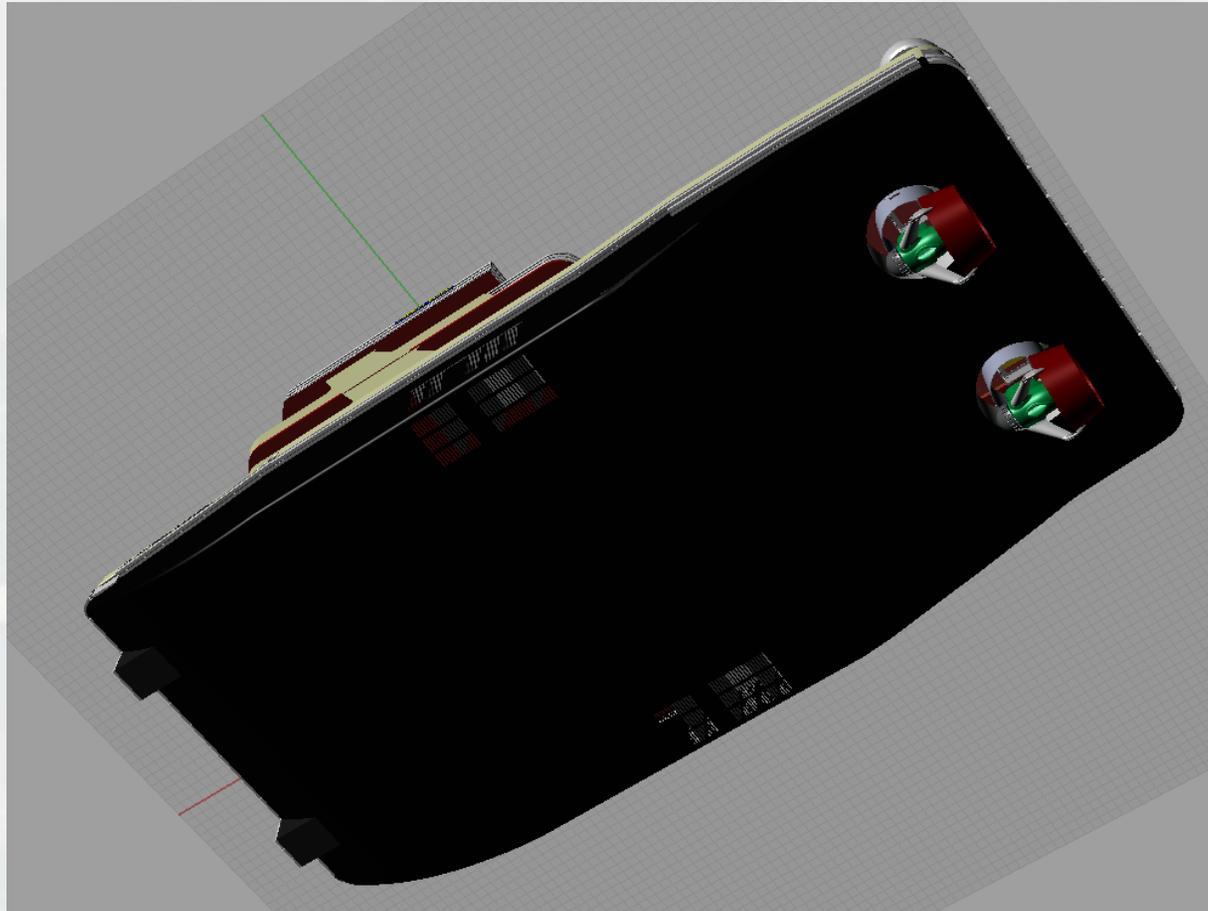


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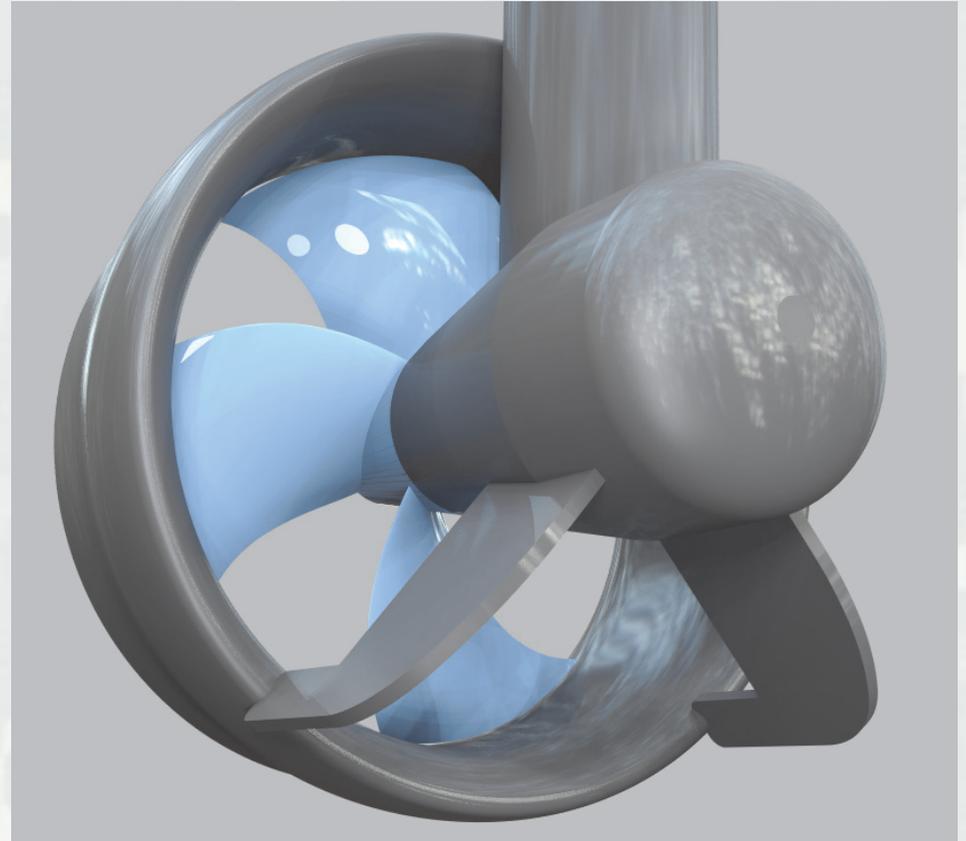
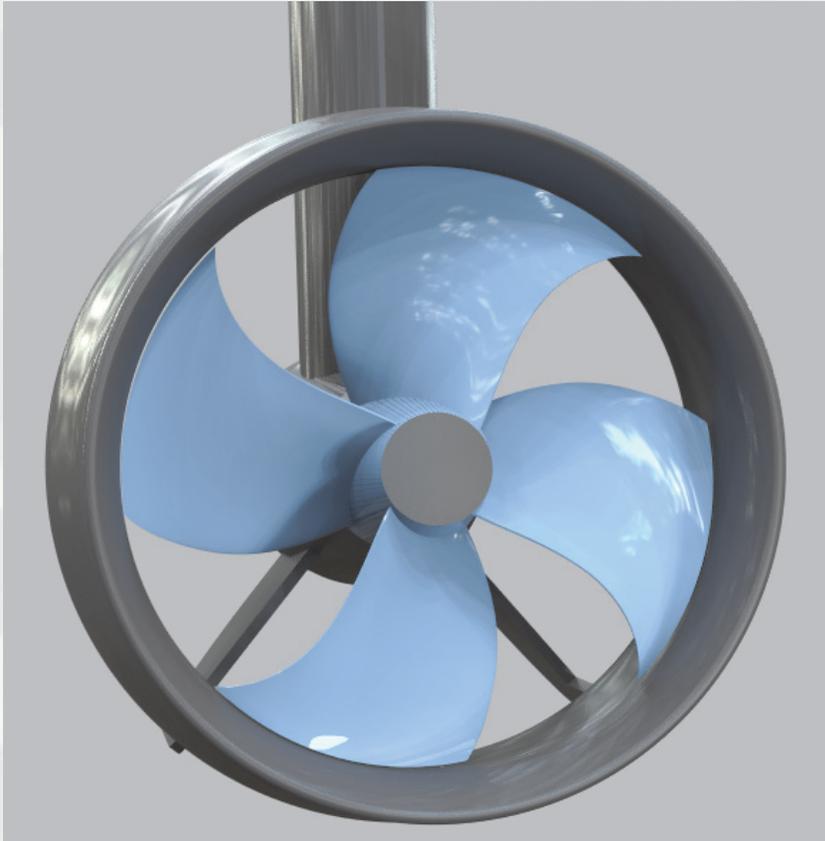
REPLACEMENT



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REGULATORY UPDATE

Ballast Water

- USCG Ballast Water Management Rules went into effect in June 2012
- Only large USACE dredges may require ballast water treatment devices
 - Dredge WHEELER needs to implement at 1st scheduled dry dock after January 2014
- Bottom line, if a vessel has ballast tanks, there are parts of the 33CFR151 Subpart D that are applicable
 - Mainly reporting requirements, record keeping requirements and BMPs with respect to the uptake and discharge of ballast water and the conditions of the tanks.



REGULATORY UPDATE

EPA Vessel General Permit (VGP) 2013

- Went into effect December 2013
- Need to file NOI electronically (> 300 GRT or > 2,113 gals of ballast water capacity)
 - Need PARI if >79', but below the thresholds above
- Stricter bilge and effluent discharge requirements
- Ballast water BMPs and requirements
- Environmentally Acceptable Lubricants / Oil to Sea Interfaces



REGULATORY UPDATE

EPA Small Vessel General Permit (sVGP)

- No final rule, no update

Subchapter M

- The USCG has not published the final rule. The rumor in the industry is sometime this year?? (last year the rumor was Fall 2013)



DISCUSSIONS/QUESTIONS

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