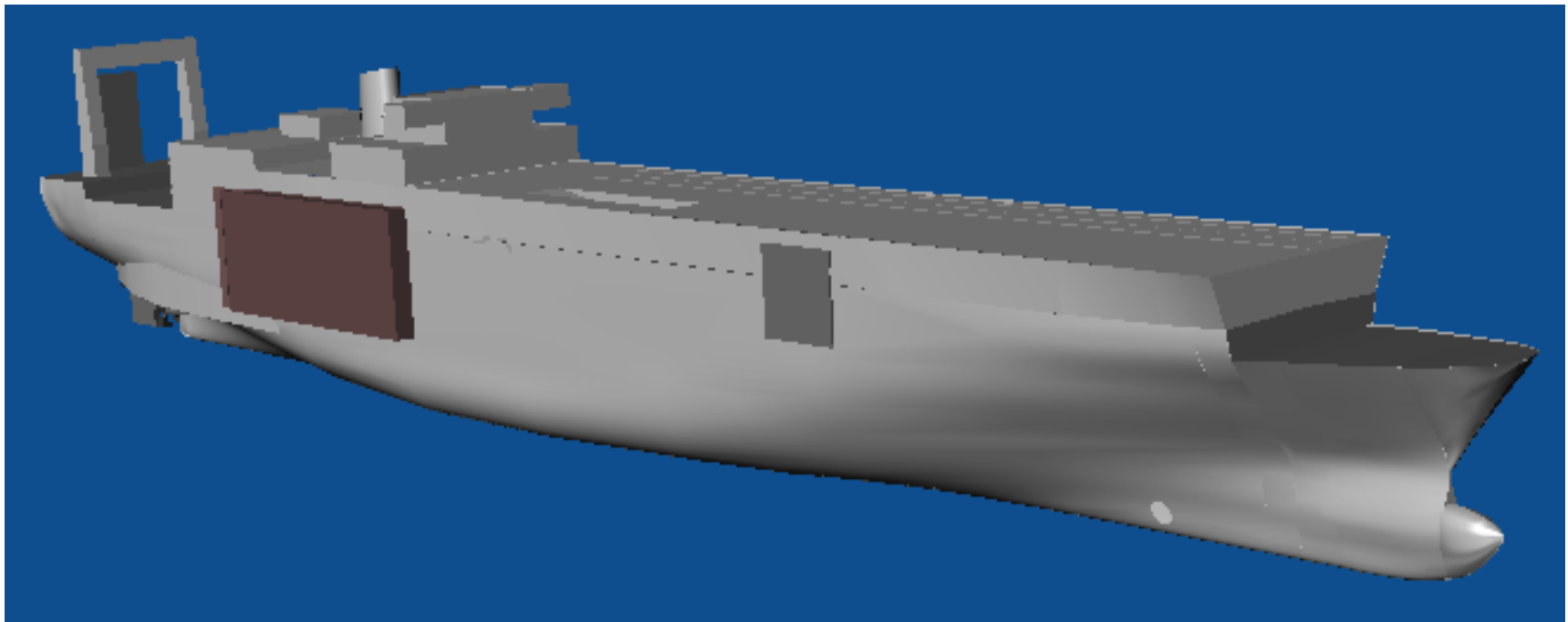


# Intermediate Transfer Ship Conversion



LT Mark Johnson, LT Cara LaPointe, LT Jip Mosman

- The purpose of this project was to choose the most appropriate commercial platform for conversion to an Intermediate Transfer Ship and then design a conversion that would realistically meet the maximum number of requirements.
- This conversion design will be a comparable alternative to the clean sheet ITS design by Gold, Johnson, West and Wolf.

## Highlighted requirements:

1. Capable of being constructed in an existing US Shipyard
2. Limited self-defense capability
3. Able to transit from home port to an operating area 2000 NM away within 7 days
4. Capable of loading, warehousing, and selectively offloading standard twenty-foot equivalent unit (TEU) containers
5. Able to maintain a minimum 5 day supply of sustainment supplies required by the 2015 MEB
6. Commercial intact and damaged stability requirements met
7. Designed in compliance with commercially accepted standards.

- Guide questions for prioritization and decision making:
  - What is the contribution of each conversion element to the overall ITS mission?
  - What is the magnitude of conversion required to achieve a specific capability?
  - Can this conversion be achieved using current processes and technologies?
  - What is the cost impact?



# Ship Type Tradeoff

Ship Type	Crude Carrier	Bulk Carrier	Contain-ership	RO-RO	Car Carrier	FPSO*
Secondary Market						
>40,000 DWT						
Stern/ Side Ramp						
Container Capable						
Dynamic Positioning						
Vehicle Decks						
Flight Deck Capable						

\*Floating Production Storage and Offloading vessel

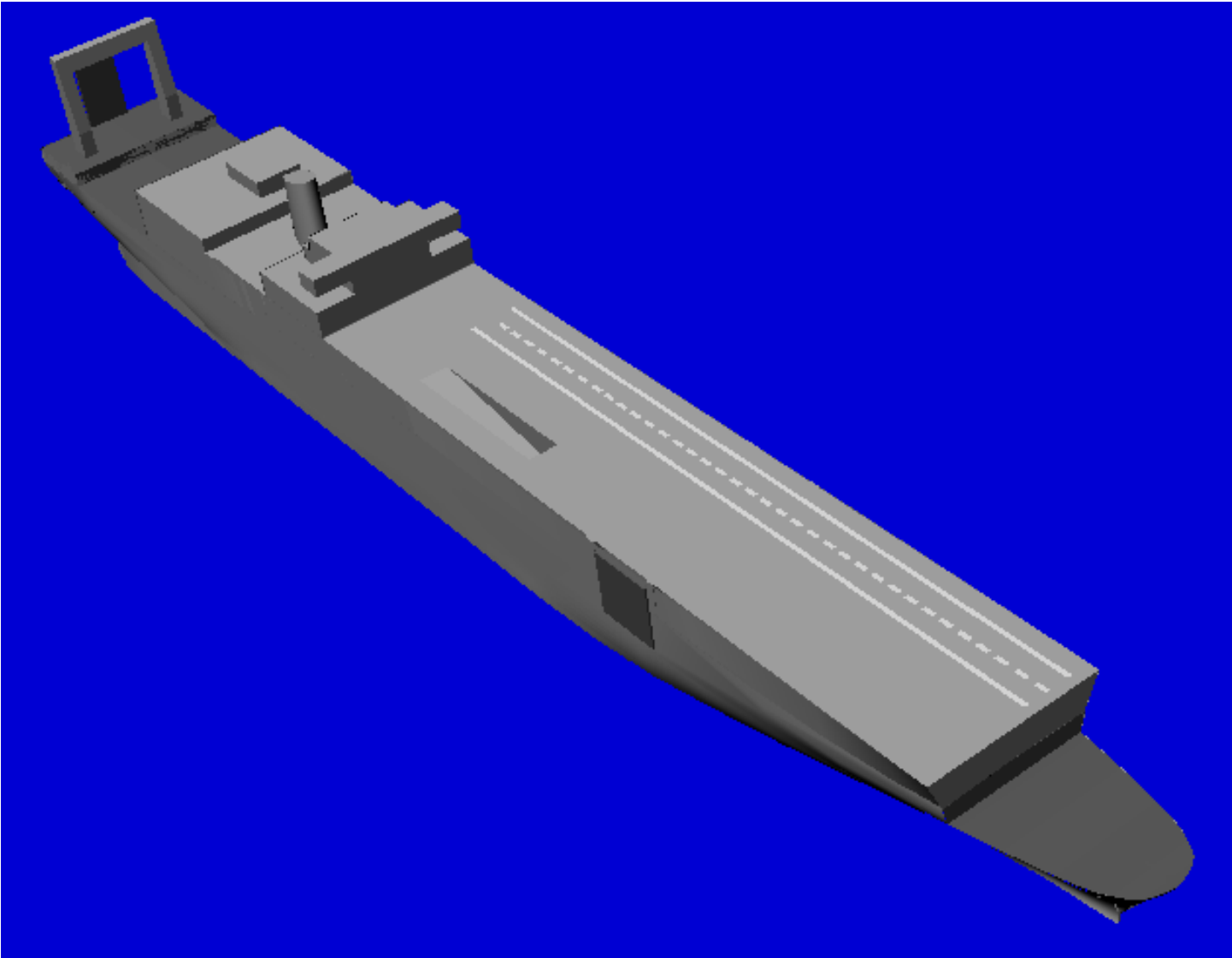
# ex-Jutlandia

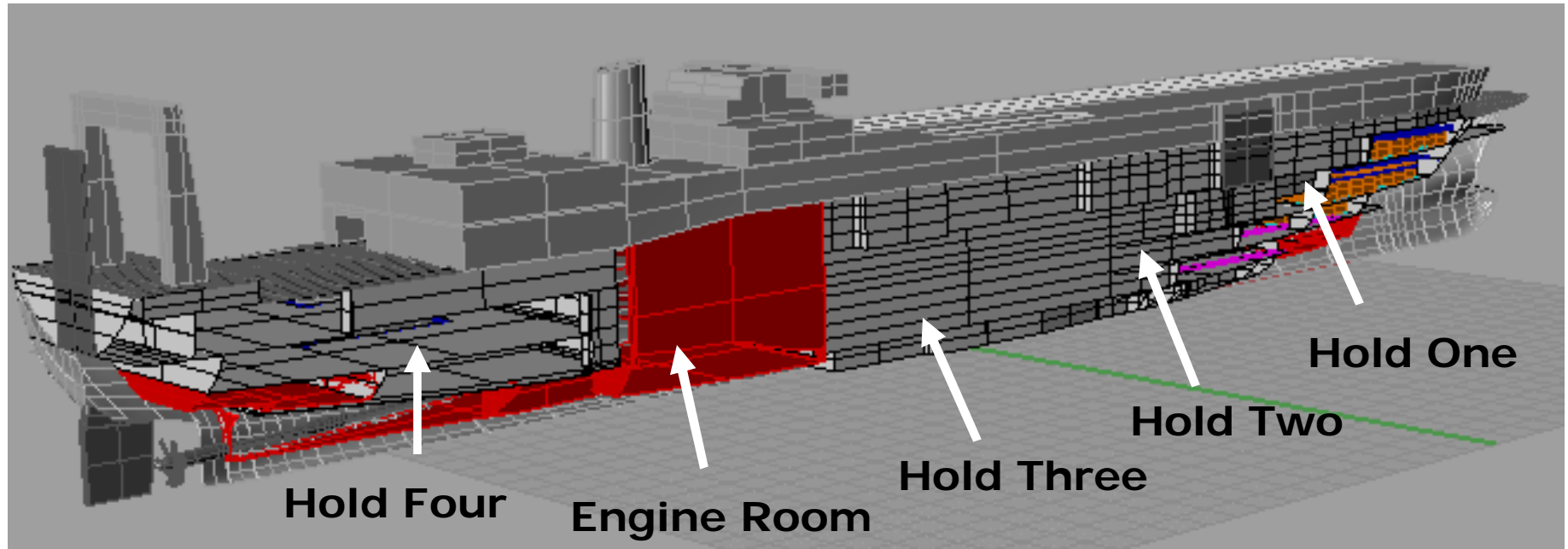


# USNS Gordon (T-AKR 296)



# ITS Conversion

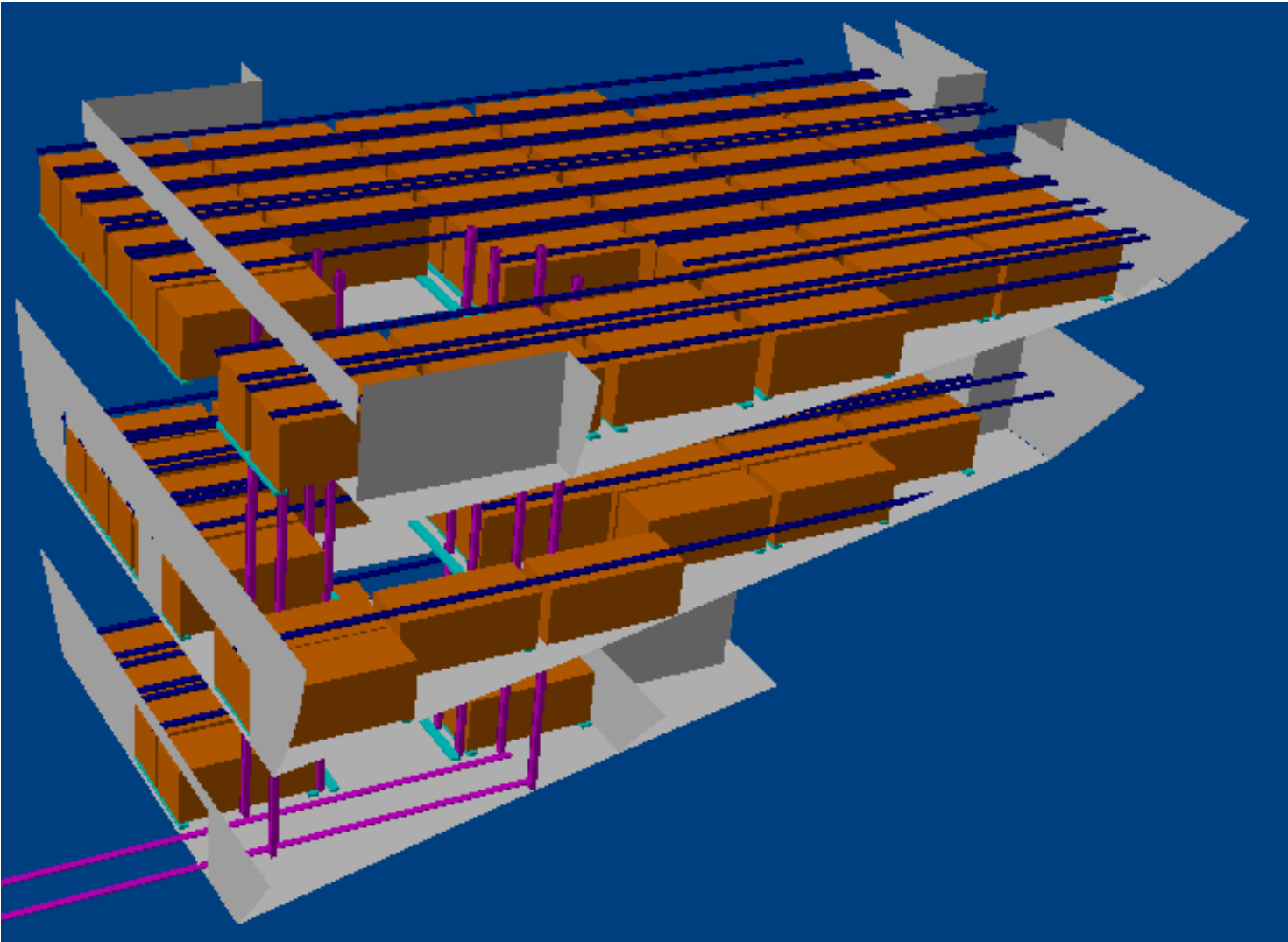




# Ship Characteristics

- Length: 291.3 m (956 ft)
- Beam: 32.3 m (106 ft)
- Draft: ~10.5 m (34 ft)
- Displacement: ~53,000 tonnes
- Endurance Speed/Range: 18-20 kts, 12000 NM
- Crew: 40 Permanent, 800+ Temporary
- Power/Propulsion: Diesel
- Proposed Load: 17 M1A1 tanks, 60 AAV, 180 HMMWV, 60 LAV, 84 TEU, 86 FEU (Accommodation)

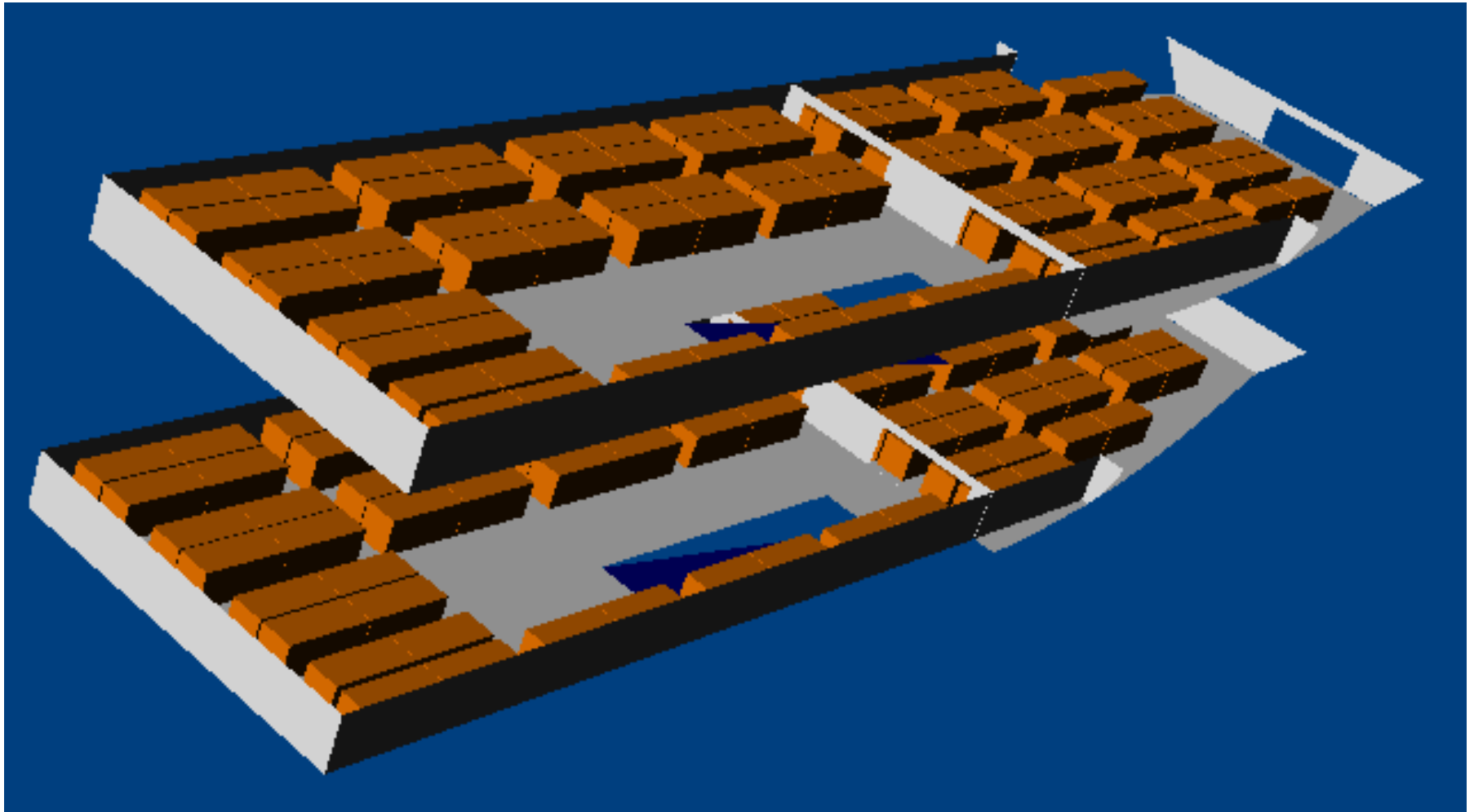
# Hold One SUSDS\*



\*Strike Up/Strike Down System

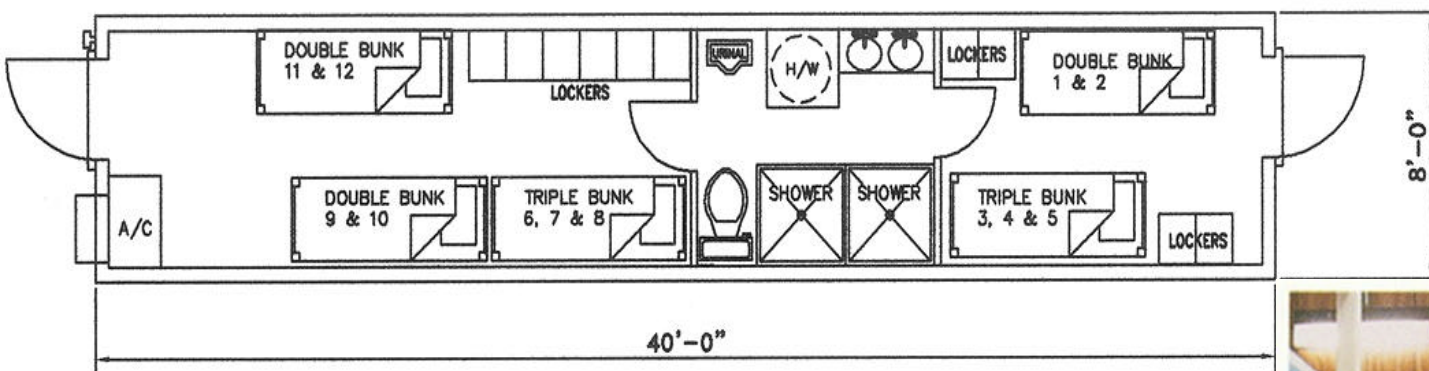
Ref: MSC

# Hold Two and Three Accommodations

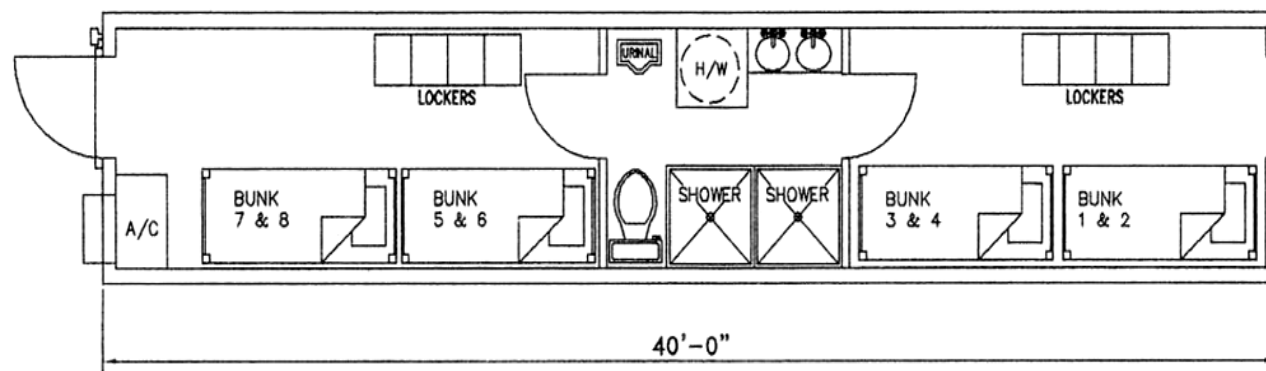




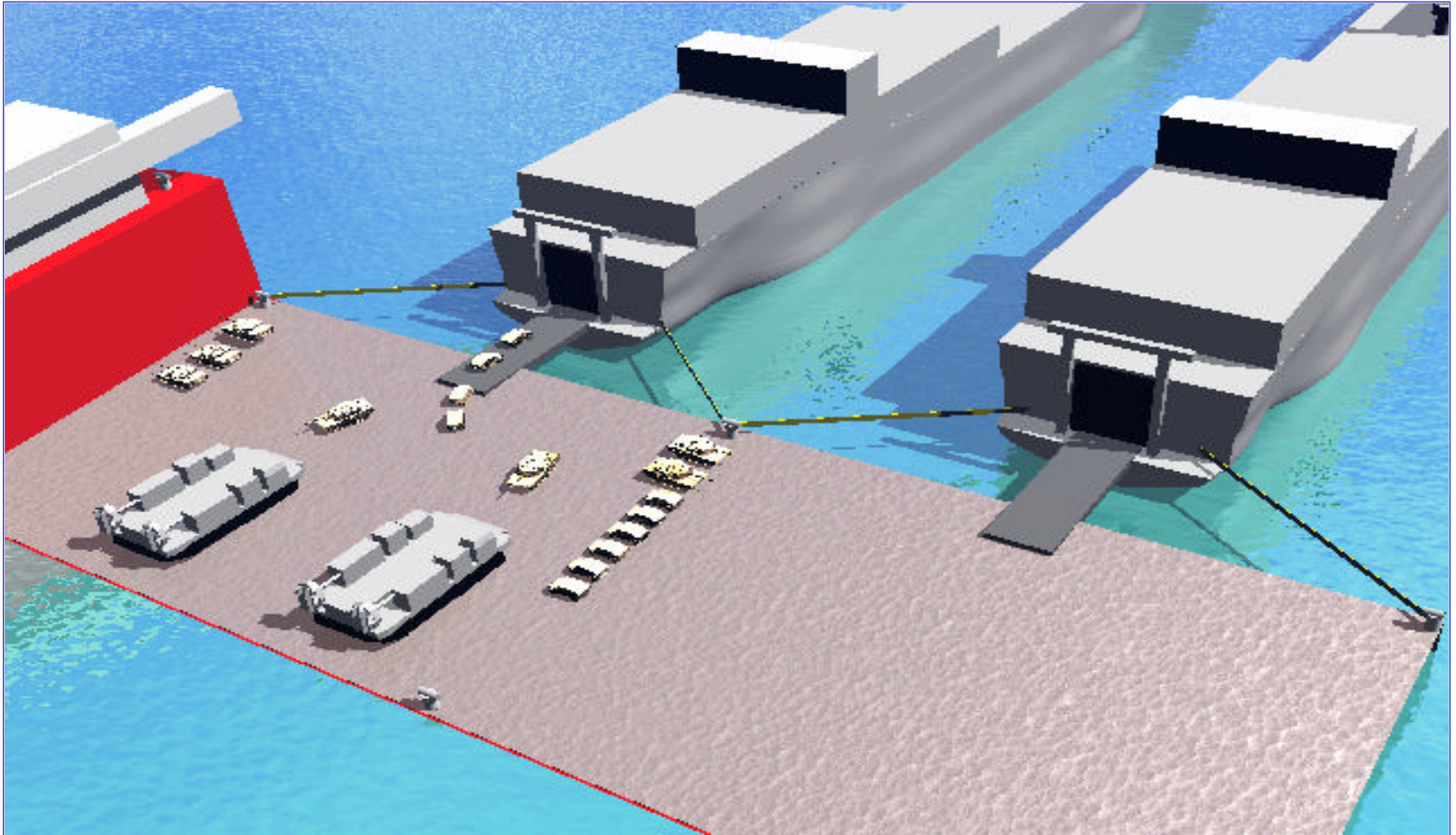
# Modular Berthing



- Berthing Compartment
- 8-12 man
- Head included

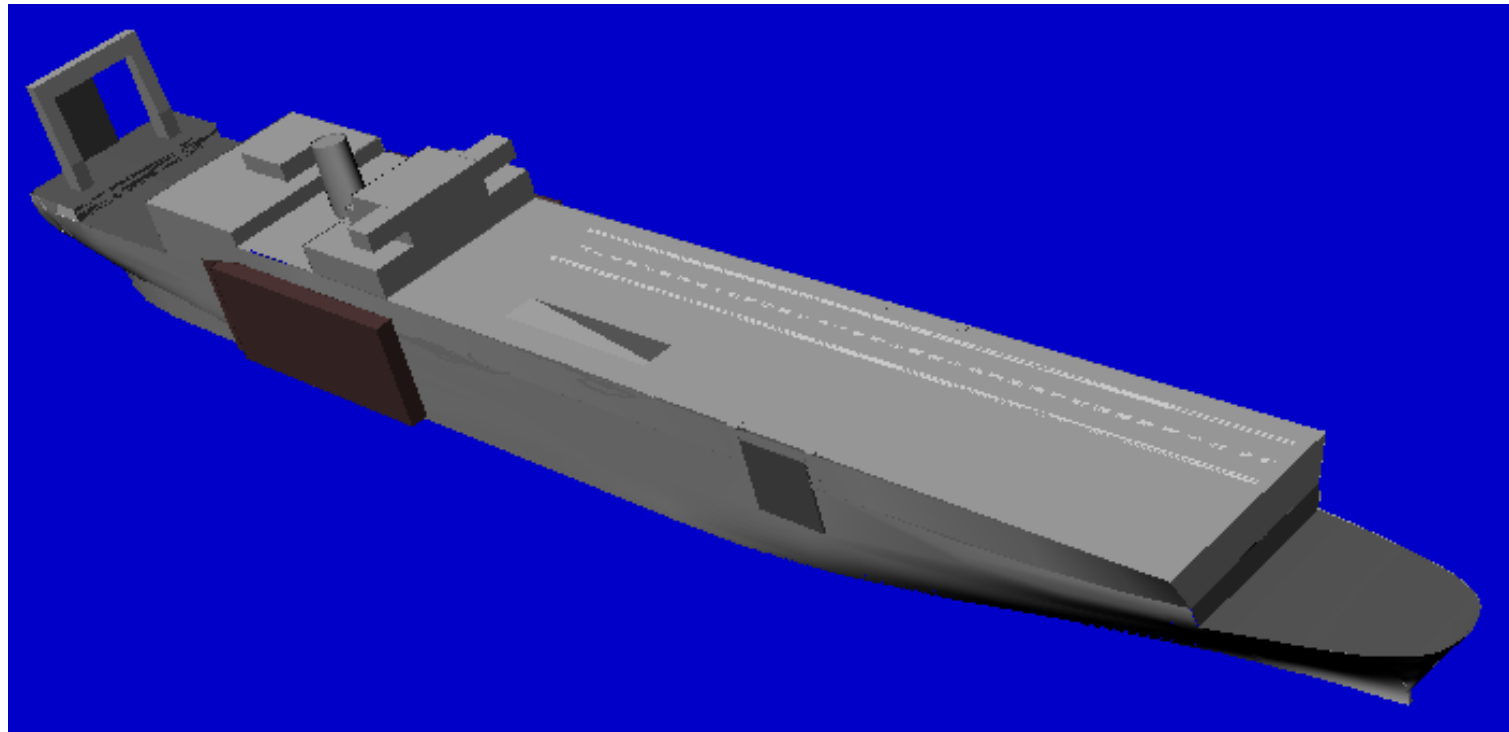


# NSWCCD CISC Heavy Lift Ship Concept



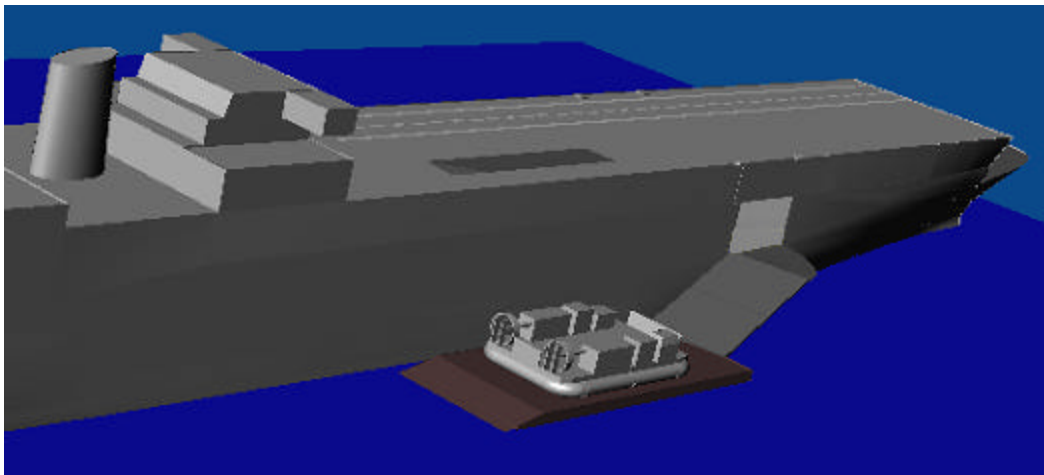
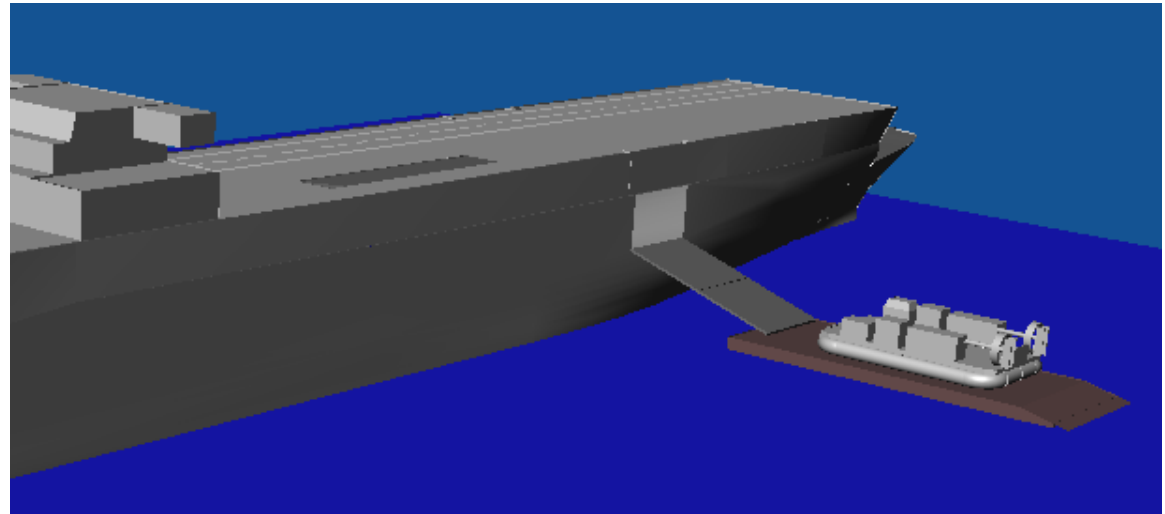
# Intermediate Landing Pontoons

- Shown here in stowed configuration
- Organic capability to transfer rolling stock to LCAC's



# Intermediate Landing Pontoons

- Two possible loading configurations

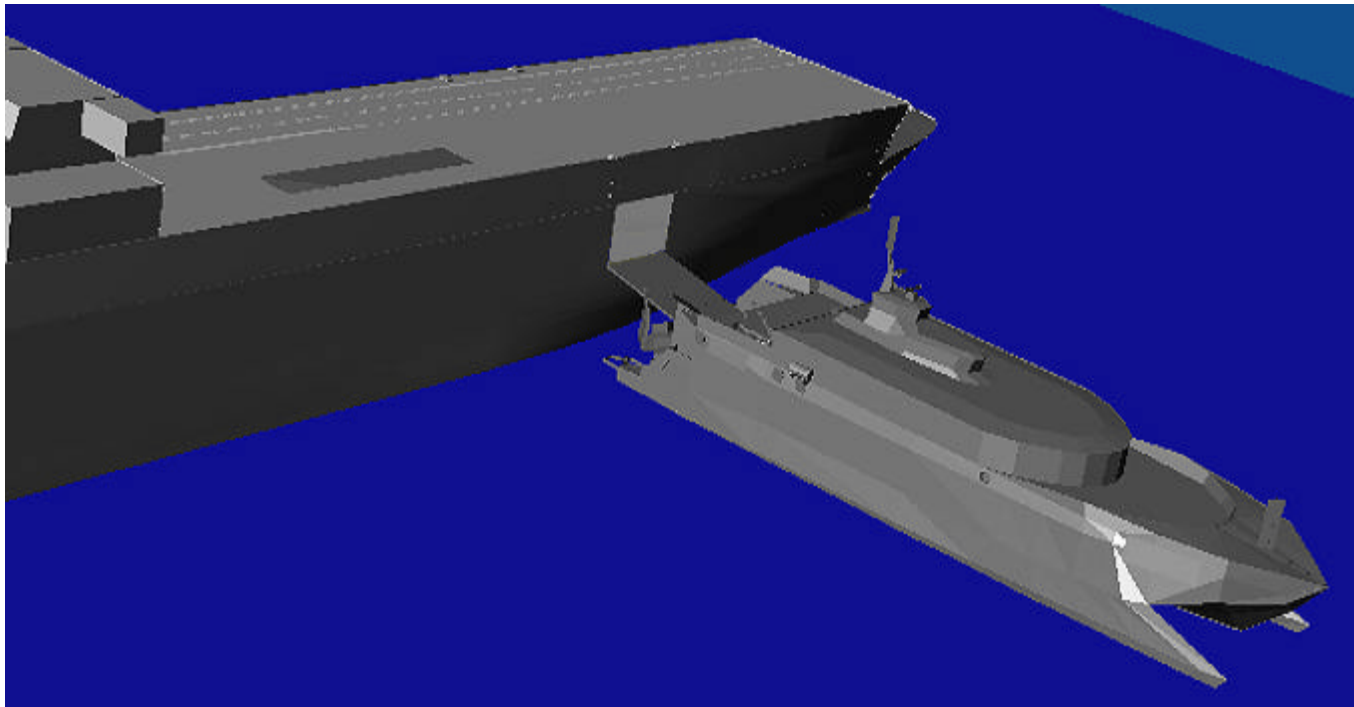


- Would require further seakeeping and technical analysis to see which works best

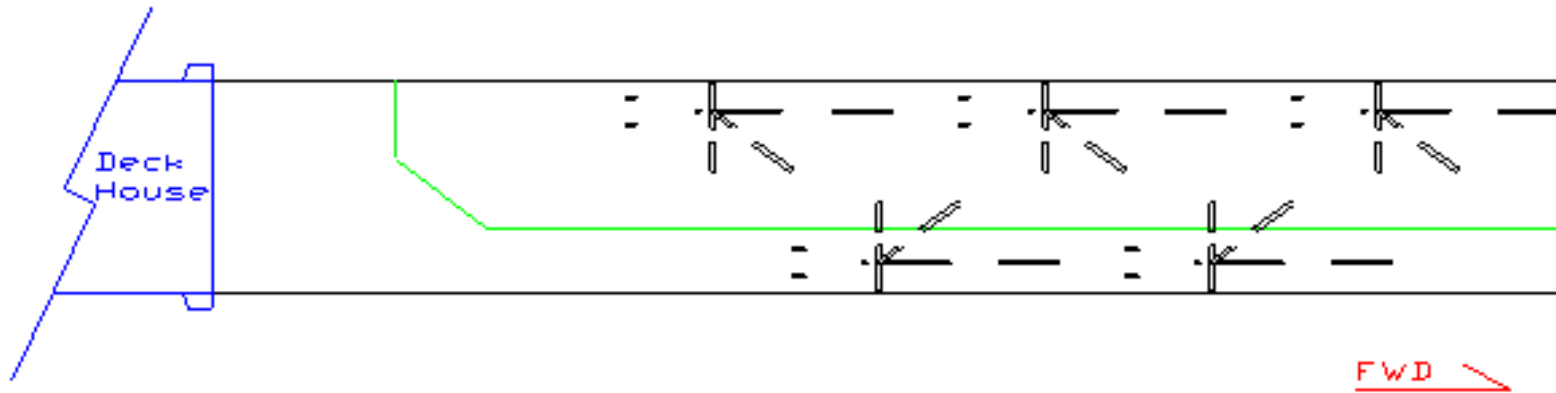


# ITS-HSC Interface

- Used to transfer cargo to the ITS
- Separation maintained by engines/dynamic positioning with fendering as backup



# Flight Deck Design

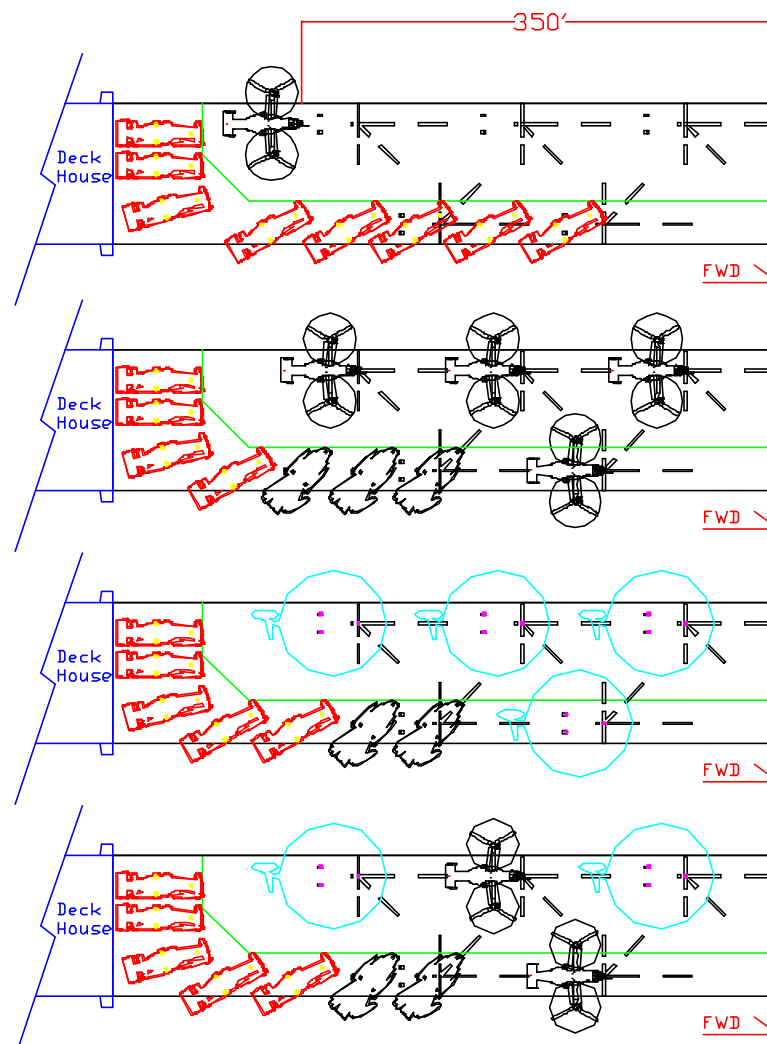


- ITS is capable of landing all aircraft of the Seabased Support Element (SBSE) of 2015 MEB:
  - MV-22
  - CH-53E
  - AH-1
  - UH-1
  - Unmanned Aerial Vehicles

# Possible Flight Deck Arrangements



- ITS will primarily act as a lilypad to land, load and launch aircraft of the SBSE
- ITS could temporarily embark aircraft onboard
- MV-22 can operate with either:
  - Vertical Take Off and Landing (VTOL)
  - Short Take Off and Landing (STOL)
- Multiple possibilities for combinations of aircraft on deck



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60,000 DWT Mid-Life Containership	\$15-25 million
Flight Deck	\$50-75 million
Smart Warehousing Technology (Inc. Necessary Cranes)	\$35-50 million
Ro-Ro Deck Conversion	\$80-100 million
Misc. Systems Upgrades	\$50-100 million
R & D	\$5-15 million
Lead Ship Cost	\$245-365 million

\*FY2005 \$



# ITS Ship Comparison



<b><u>Characterisitic</u></b>	<b><u>ITS New Design</u></b>	<b><u>ITS Conversion</u></b>
Displacement	100,080 MT	53,000 MT
Power/Propulsion	Integrated Power System/Pods	Diesel/Conventional Shaft
Max Speed	20 kts	20 kts
Accommodations	3510	850+ (variable)
LCAC (maximum)	8 in well deck	2 on pontoons
Aircraft Landing Spots (MV-22)	12	5
Lead Ship Cost (2005\$)	\$758 Million	\$245-365 Million

- A more detailed hull strength analysis
- Electrical capacity requirements
- Dynamic positioning system
- Analysis of inter-vehicle connections and operations
  - LCAC loading
  - HSC unloading schemes

- Shares many aspects of the mid 1990s T-AKR/LMSR conversion (a proven concept)
- Interfaces with other platforms will be key
- Conversion of a commercial container ship to an Intermediate Transfer Ship is feasible

# Questions??

