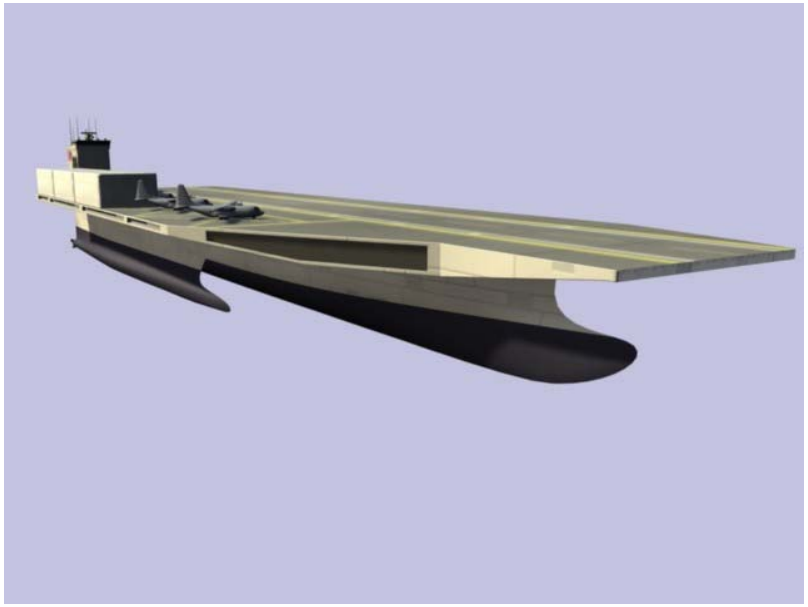
CCDOTT High Speed Trimaran Technology Development Program

SAIC – LM Aero Heavy Air Lift Seabasing Ship (HALSS) Concept



HALSS High Speed Trimaran Technology Expertise

The HALSS Trimaran ship incorporates the results of CCDOTT and ONR recent high speed trimaran technology development studies conducted by NSWCCD, SAIC and other research and ship design organizations.

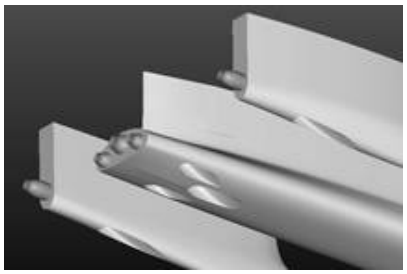
- CFD and naval optimization tools for multihull/trimaran resistance & wave load calculations & hull forms optimization
- Structural loads estimate & structural optimization
- Advanced machinery propulsion systems
- Series of model tests performed during recent years

Side hulls ~ 10% of the center hull: enables splitting the machinery between center and side hulls. Wave-piercing bulbous bow and minimum transom area for lower form resistance.

High Speed Trimaran Concepts Evaluation Expertise and Experience

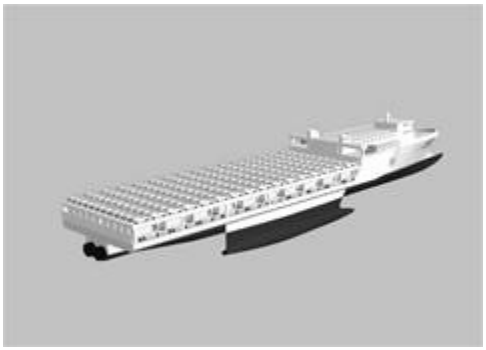
Very High Speed Sealift Trimaran (VHSST) Concept Design
CCDOTT Program FY 99 - 01

❑ **DASH 70-knot Slender & Small Waterplane Trimaran (SWAT)**
ONR R&D Project FY 00-01



❑ **Littoral Combat Trimaran Ship**
SAIC LCS Design Study
Competition – SAIC design team FY02

❑ **Dual Short Sea Shipping Trailership Concept Design for USA SuperRoutes Commercial Alliance. Commercial and Military modes**
CCDOTT Program FY 02



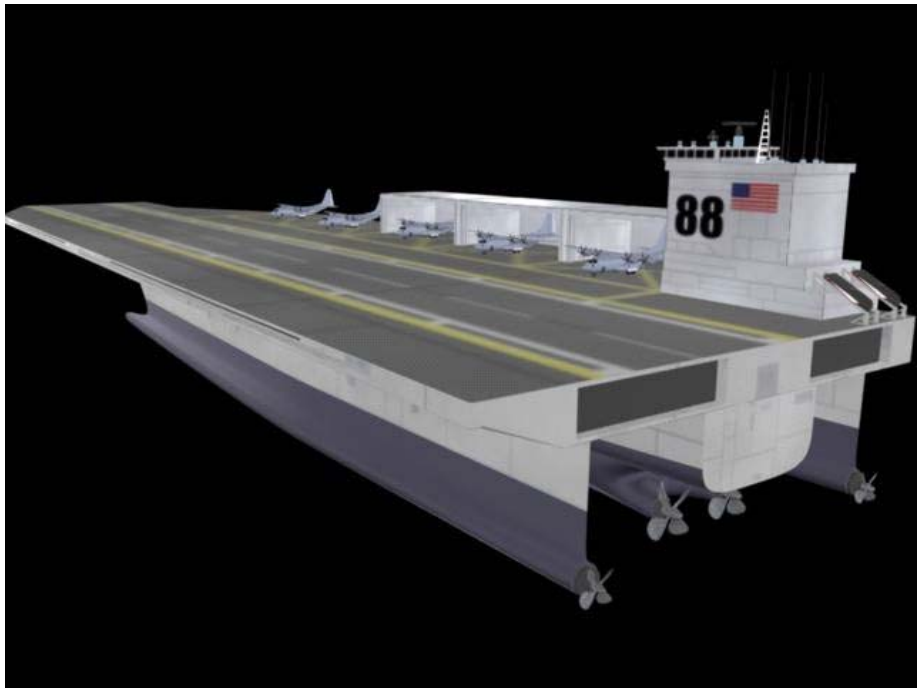
Anticipated HALSS Missions and Operations

- HALSS complements Seabasing, Strategic Mobility, Focused Logistics and Expeditionary Warfare Missions
- Has a capability of landing military payload at sea, austere bases ashore, or by air drop
- Provides a high speed sea base for C-130J heavy lift fixed wing aircraft

Innovative HALSS Supports Seizing the Initiative in 10 Days

- With 35 knot speed HALSS transports combat ready forces with logistic support from CONUS to Theater in ten days

- HALSS is a stable and seaworthy platform with flight deck sized for secure parking, launching and recovery of five C-130J airplanes to operate in high seas and in bad weather



The HALSS internal arrangements of the ship suit the cargo stowage and aircraft support requirements. The ship supports aircraft operations in high sea states, moves from CONUS to theater at high speed, and provides about 40 knot wind over deck speeds. The ship will be designed to be built and maintained in the USA.

HALSS Principle Characteristics

Flight Deck Length	**1,100 FT**
Flight Deck Width / Docking Hull Beam	**308 FT / 180 FT**
Payload (Combat forces sustainment)	**8,000 LT**
Aircraft Fuel Supply	**2,300 LT**
Range of Sea Voyage - CONUS to Advanced Base or to JOA	
Diesel machinery option,	**10,000 NM at 35 knots**
Without refueling	**>15,000 NM at 25 knots**
Endurance in Joint Operations Area	**up to 10 days**
Cargo Planes / Empty weight	**Five C-130 / 5 x 34 MT**
Speed	**35 knots**

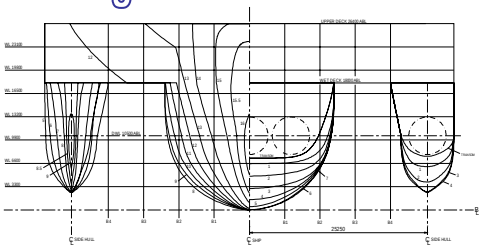
Why Trimarans for HALSS?

- ❑ Large Flight Deck Operations Area
- ❑ Long Runway Length
- ❑Parking and hangar Space for C-130J/KC-130s
- ❑ Low Roll and Pitch Motions in a Seaway
- ❑ Large Warehouse Storage Area
- ❑ Long Slender Hull with Wave Piercing Bow
- ❑ Minimum Speed Loss in Seaway

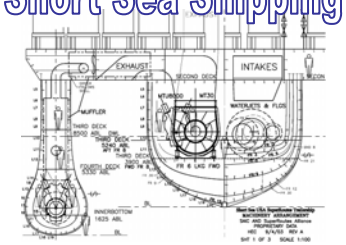
HALSS Hull Forms Development

High Speed Trimaran technology development & hull forms optimization experience based on results of CCDOTT & ONR 98-04 projects:

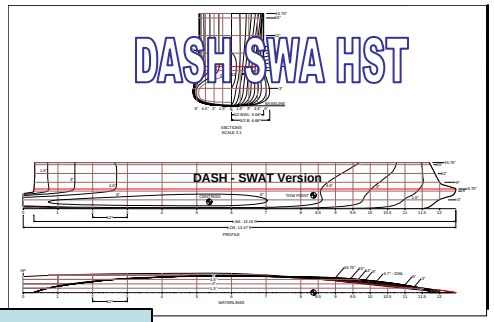
Large Dual Use HST



Short Sea Shipping HST



DASH SWA HST

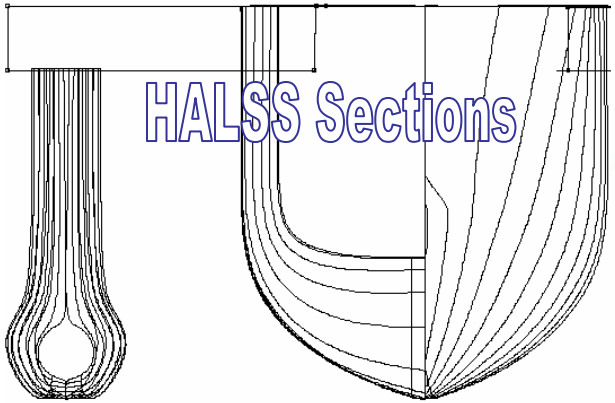


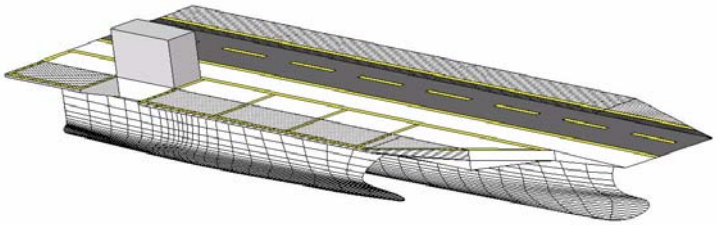
HALSS Multi Disciplinary Optimization:
Wave & Viscous-Inviscid Interaction, Scaling factors, Sea Motions & Wave Loads, Structural Integrity

HALSS Hulls Forms

- **High Speed Performance & Structural Requirements Compromise**
- **Excellent Seakeeping & Structural Support**
- **Enough Area/Volume for all of Propulsion Machinery Options**

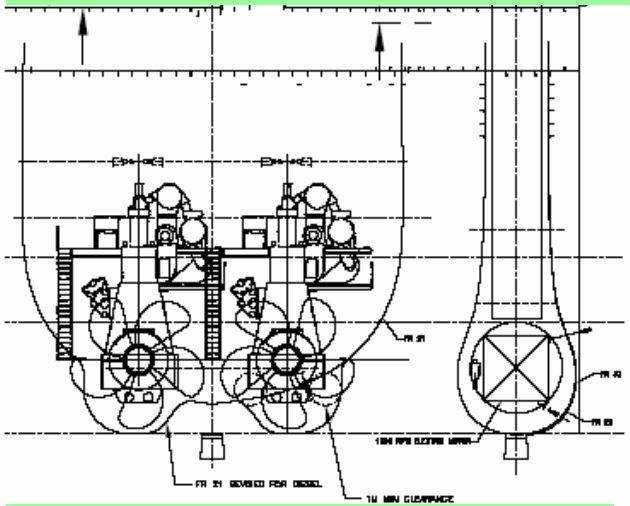
HALSS Sections

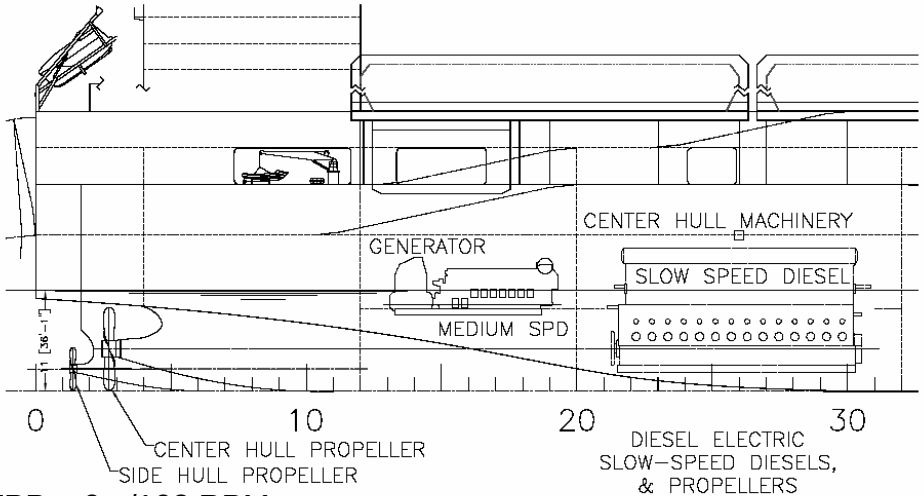




HALSS Machinery Propulsion Options

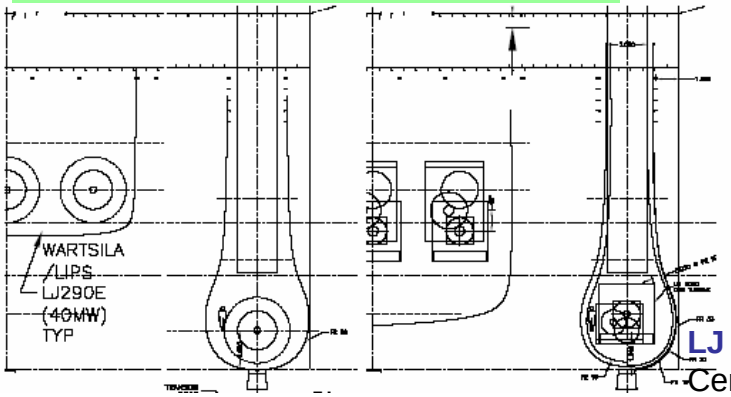
Diesel @ Propeller Option:

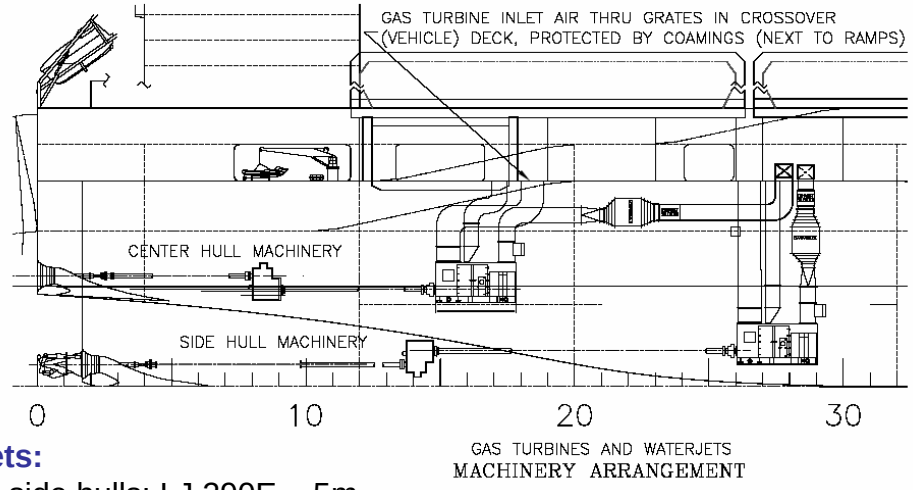




Propellers:
Center hull FPP ~ 9m/102 RPM
Side hull CPP ~ 4.6m/201 RPM

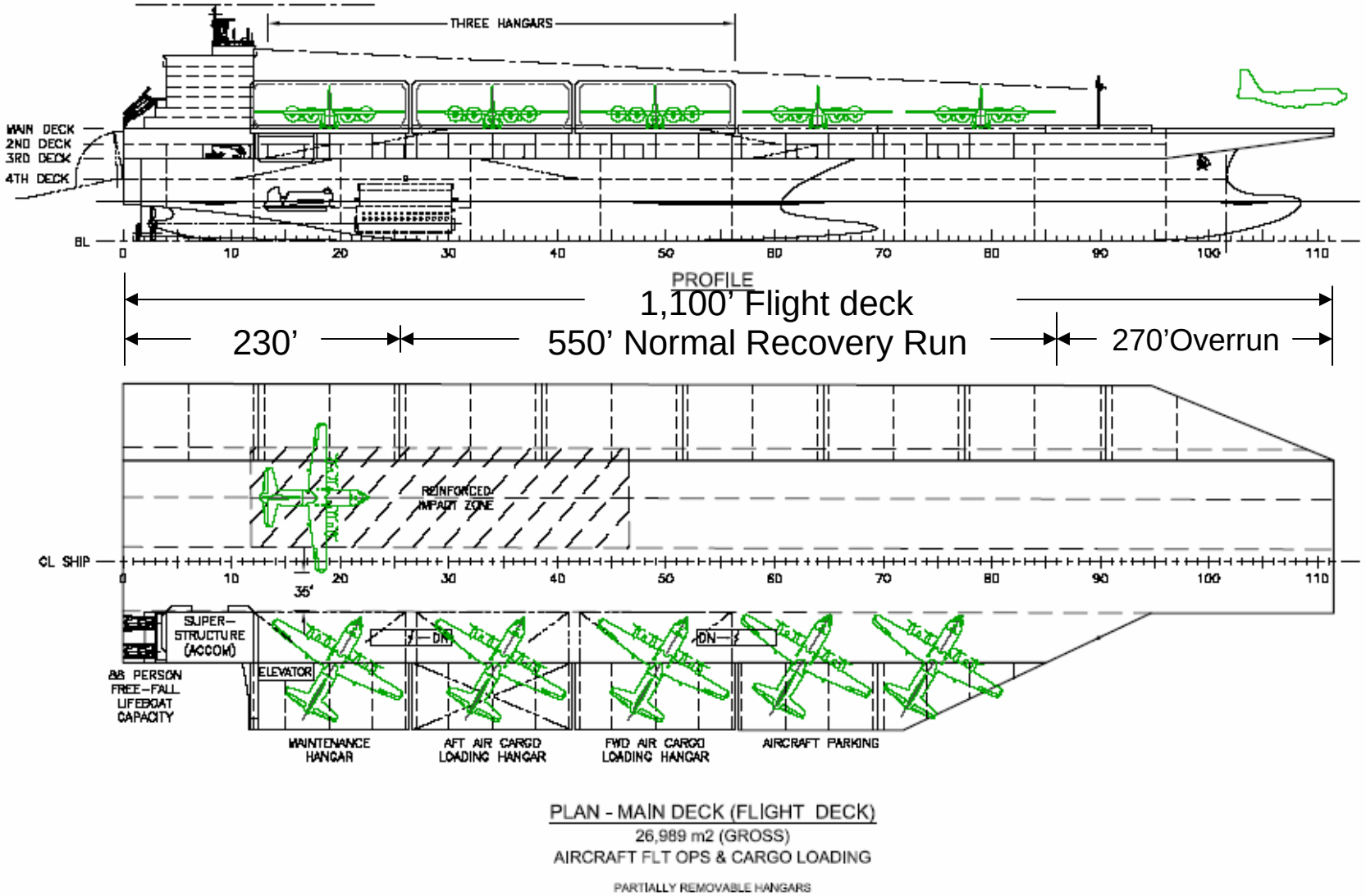
LM6000 @ LWJ Option:



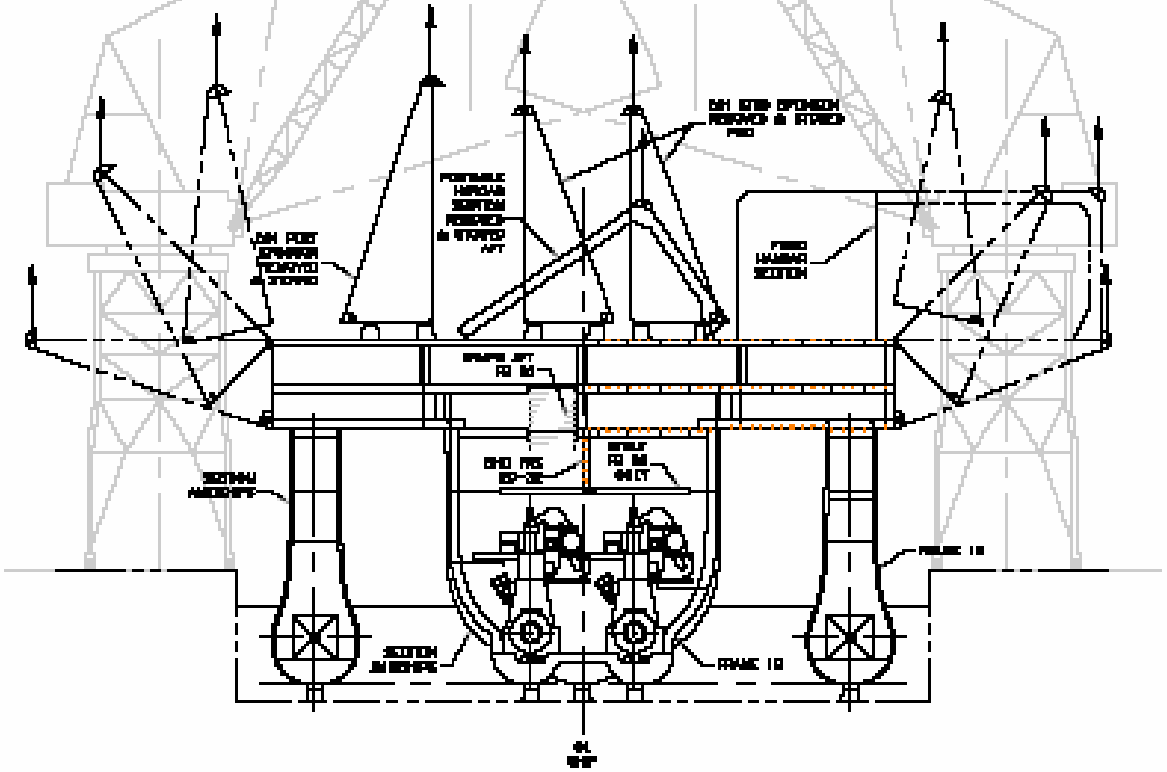


LJ Waterjets:
Center and side hulls: LJ 290E ~ 5m
or LJ 200/Axial ~ 3.5m (CDIM designed under CCDOTT funded program)

HALSS Arrangement



HALSS Maintenance Approach



SECTION IN WAY OF ENGINE & MOTOR ROOMS

Conclusion

- HALSS accumulates High Speed Trimaran Technology Development results and findings during CCDOTT FY99-04 Programs and provides a high speed, stable platform to base C-130, KC-130 in bad weather and rough seas
- Complements Seabasing, Strategic Mobility, Focused Logistics and Expeditionary Warfare Missions. Supports the rapid response capability operating from CONUS. Complements – doesn't replace existing Sea Basing concepts and Provides Flexibility to the National Command Authority at all levels
- Would be further developed for HALSS baseline version (with use of current technologies) and for advanced version (smaller sizes - suitable for majority of the US shipyards and higher speeds – 40+ knots)