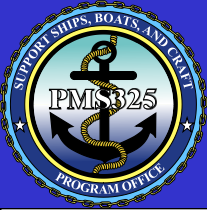


**Presentation to the
Society of Naval Architects and Marine Engineers
(SNAME) on the
High Performance Boats & Craft for
Expeditionary Patrol, Riverine Warfare & Harbor Security
18 January 2007**



**Jean-Michel Coughlin, PMS325G
Gary Weaver, NSWCCD**





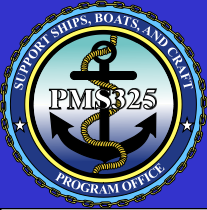
PMS325G Overview

PMS325G Provides Cradle to Grave Program Management for nearly 3000 U.S. Navy Boats

WE:

- **Buy boats** using GSA Federal Supply Schedules
- Assist Resource Sponsors in defining boat budget requirements
- Assist the Fleet and other customers in choosing the right solutions
- Manage boat in-service engineering and life cycle support
- Foster industry involvement
- Work with other government agencies to provide boat expertise

CNO Guiding Policy - OPNAVINST 4780.6E



Boat Procurement Policy

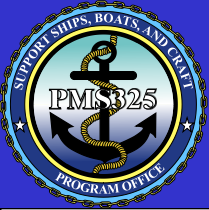
Section 5. Policy (Boats)

“Commander, Naval Sea Systems Command shall purchase, procure, acquire, or otherwise obtain all boats including boats required by the Military Sealift Command for operational use”

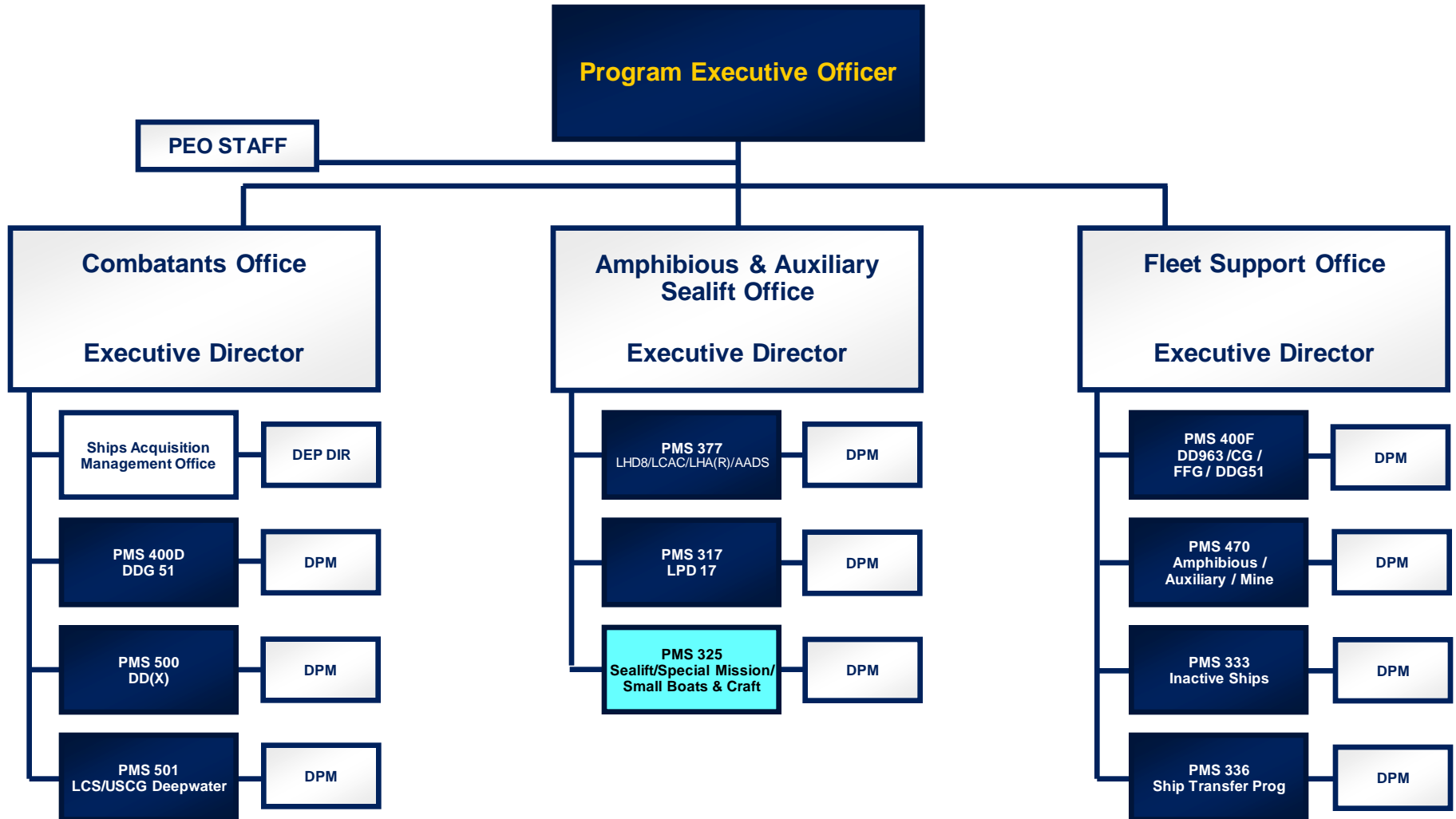
Section 6.c.(4) COMNAVSEASYSCOM Responsibilities

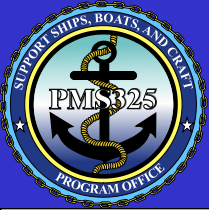
“Be responsible for the acquisition of U.S. Navy boats unless otherwise delegated”

**OPNAVINST 4780.6E: Policy for Administering
Service Craft and Boats in the U.S. Navy**



Program Executive Office Ships





What We Buy



Standard 11m RIB



Naval Coastal Warfare HSB



Standard 7m RIB



Barrier Tenders



Riverine Patrol Boat



Mobile Security Group HSB



Riverine Assault Boat



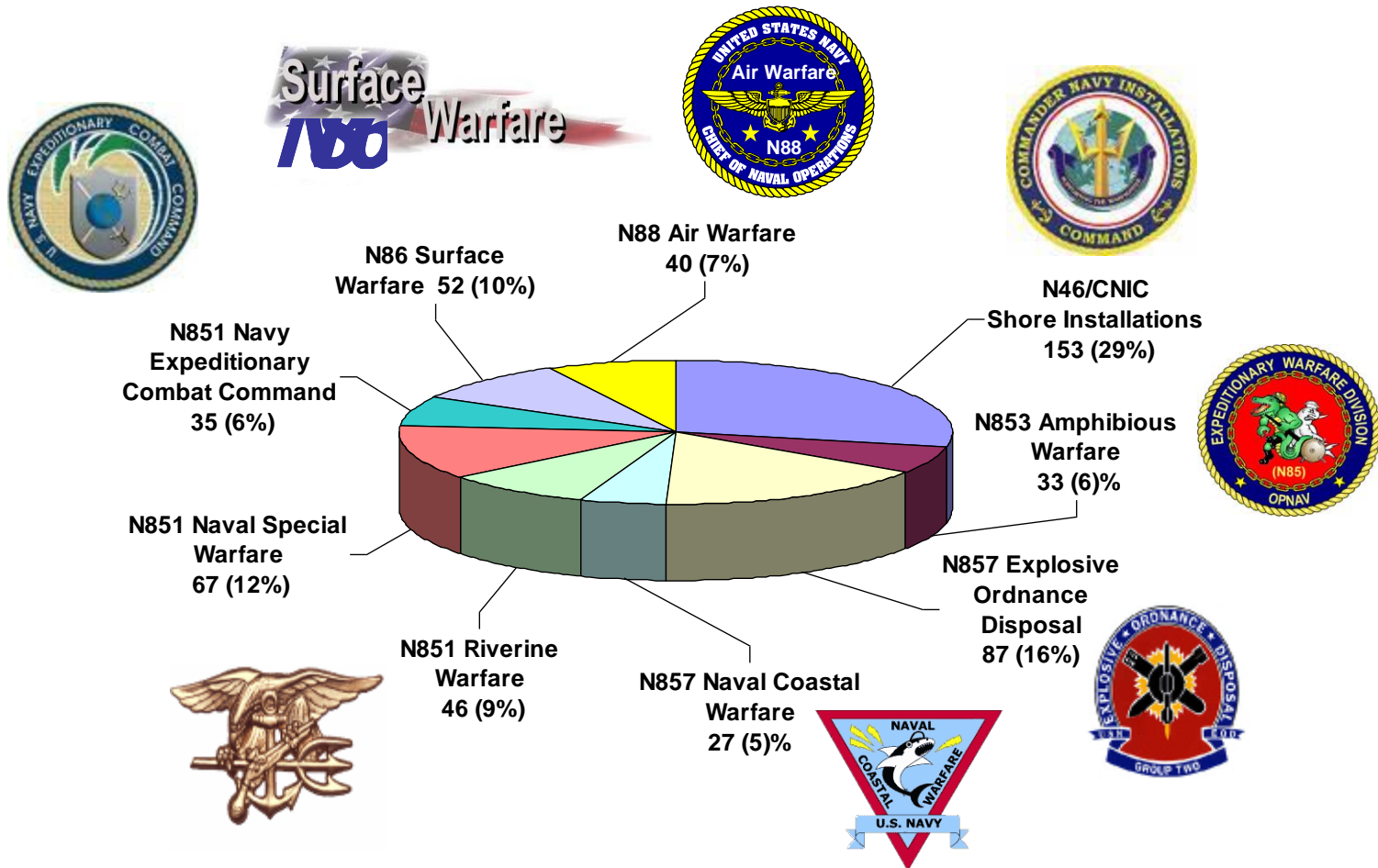
Special Mission Boats



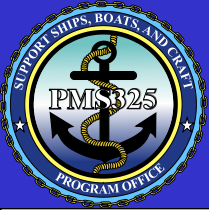
EOD RIB



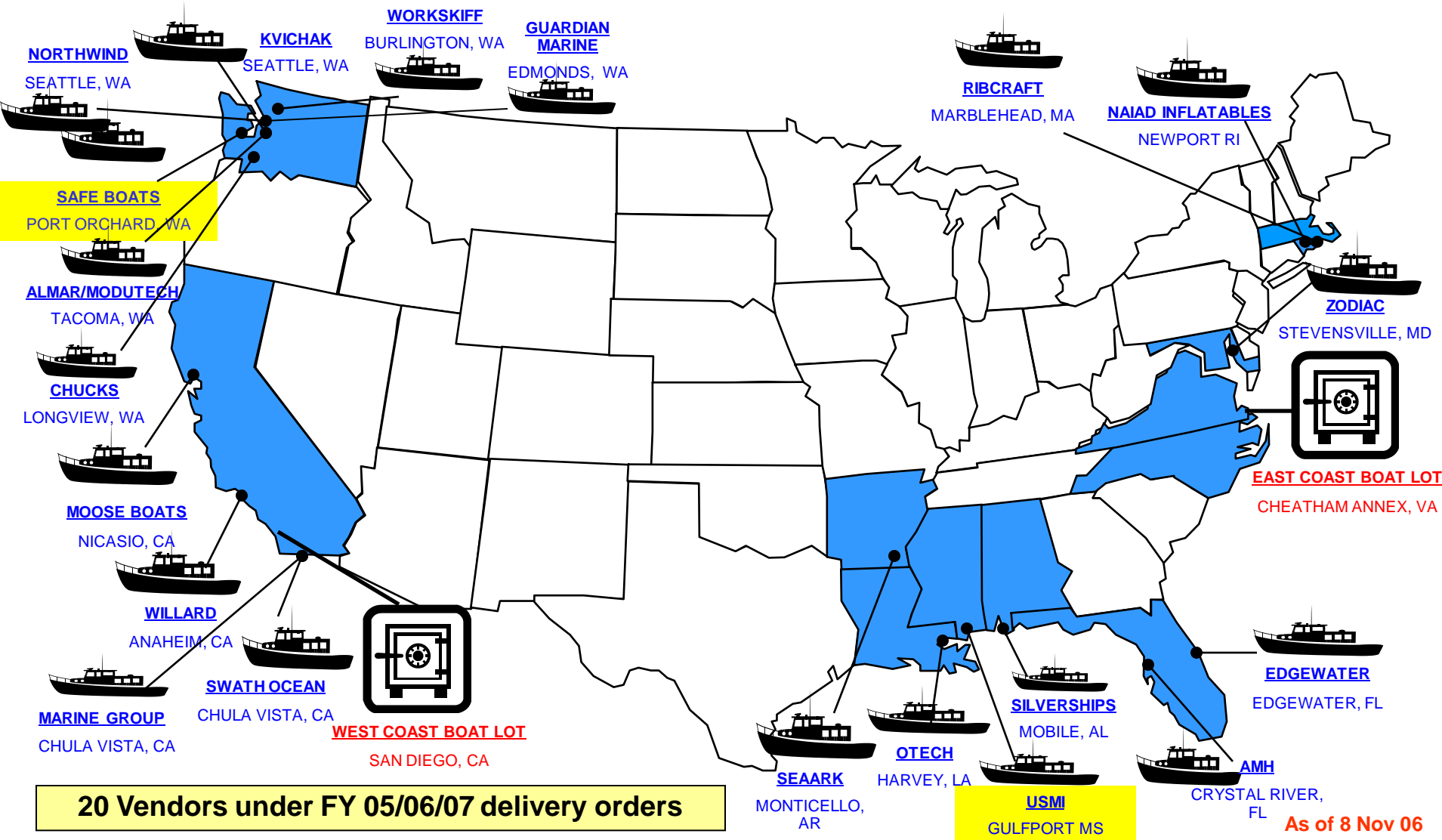
OPNAV Sponsor Procurements Boat Quantities (FY 06-13)

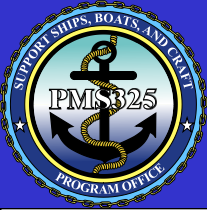


**Supporting all Warfare Communities
~ 2600 in-service boats**



Where We Do Business

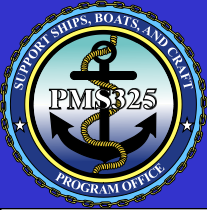




Streamlined Acquisition, GSA Schedules Program

- ❑ **Federal Supply Class 19: Marine Craft and Equipment Schedule 084**
 - Boats (Powered/Nonpowered), Inflatable, Inboard and Outboard engines, Floating Marine Barriers & Booms, Ancillary Services
 - www.gsa.gov
 - Commercial-off-the-shelf (COTS)
 - Allows for the procurement of additional “open market items”
- ❑ **GSA Procurement (FAR Part 8.4-Federal Supply Schedules)**
 - Orders are considered to be issued using full and open competition
 - GSA has already negotiated fair and reasonable pricing
 - Ordering activity only needs to determine that offer represents best value, and the price list of at least 3 schedule contractors is reviewed
 - Best value award/justification is based on past performance, technical merit of design, cost, R/D/M, warranty, & delivery terms
- ❑ **Delivery Orders' contractual requirements are based on:**
 - User Mission Needs, Operational Requirements, and required boat Performance capabilities
 - Available funding

**Significantly reduced documentation, workload
and cycle time using GSA schedules!**



Navy Small Boat Procurement Safeguards

Navy stipulated - not required by GSA

- **“Best Value” Pre-Award Conference**
 - NEW vendors, held at vendor’s facilities, review and clarify final delivery order’s administrative and technical requirements
- **Post Award Conference & In-Process Reviews**
 - For DO requirements’ clarification purposes only, not to be considered as “design review” – Boat is built as is (COTS), mostly for first time vendors and more complex boats
- **Builders trials** – encouraged for vendor’s benefit
- **Pre Delivery Inspection & Boat Trials**
 - Demonstrate boat compliance with delivery order requirements, UID implementation, participation limited to PMS325G/CCD Team with select user observer representation, not considered a T&E or training event
- **Post Delivery Inspection**
 - CCD representative assures that delivered boat is suitable for Fleet delivery
- **UID & WAWF Verification**
- **Warranty Guidelines Commence**

Intent is to insure boat compliance with contract requirements, minimize delivery order changes, and meet customer’s expectations



GSA Small Boat Acquisition Process

End User	PMS325G	Boat Builders
1 Requirements (Mission/Capabilities) Definition		
2a. Proposed Requirement Matrix	2b. Requests for Information	
3. Final Requirements Matrix/RFQ		
		4. Cost/Schedule Quote
5. Best Value Determination		
	6. Procurement Request	
7. Best Value Pre Award Conference		
	8. Award (Against existing GSA Schedule Contract)	
9. Post Award Conference & In-Process Reviews		
10. Pre Delivery Inspection & Boat Trials including UID's		
		11. Shipping
	12. Post-Delivery Inspection	
	13. Invoice w/Parent UID & Payment	
14. Delivery to Custodian / Commence Warranty Guidelines		

Time to delivery order award (steps 1-8): 15-34 weeks
Award to boat issue average time (steps 8-14): 24-72 wks
Time dependent on requirements/boat complexity



Riverine Patrol Boat



38' Riverine Patrol Boat

Mission: Conduct military operations on inland waterways including River Patrol and Interdiction (RPI) missions and support limited assault missions in low to medium threat riverine environments.

Squadron Composition: Six (6) Patrol Boats

Users: Naval Riverine Squadrons (3 Squadrons) 1st Squadron – Fall/Winter 07; 2nd Squadron Summer 07 (fielded first); 3rd Squadron (Fall 08)

Builder: Safe Boats International

Procurement Quantities

Riv Patrol Boat	FY06	FY07	FY08	FY09	FY10	FY11
Qty	6	*9	*10			

* Total budgeted Patrol and Assault quantities

Schedule

Riv Patrol Boat	FY06	FY07	FY08	FY09	FY10	FY11
07-F-2217 (FY06)		Award ▲	◇ 2 boats			
07-F-22XX (FY06)		Award ▲	◇◇ 4 boats			
FY 07 DO's		Award ▲	◇◇ TBD			
FY 08 DO's			Award ▲	◇◇ TBD		

GSA Procurements

Selected Key Requirements

- Hull: Aluminum 5086 series plating with beaching reinforcement doubler
- Ballistic Protection: Cabin/coxswain station/propulsion system against 7.62mm x 39mm ball; personnel/weapon station protection kits
- Propulsion: Twin inboard Yanmar diesel engines w/water jets
- Speed: 35 knots cruise/40 knots sprint
- Communications: VHF marine band/VHF tactical, HF/UHF/SATCOM, Blue Force Tracker, 6 station Intercom, Secure data link
- Navigation: radar, advanced GPS, chart plotter, depth sounder, heading sensor;
- Surveillance: EO/IR device
- 5 Crew, 10-13 passengers



Riverine Assault Boat



33' Riverine Assault Boat

Mission: Conduct military operations on inland waterways including River Patrol and Interdiction (RPI) missions and support limited assault missions in low to medium threat riverine environments.

Squadron Composition: Four (4) Assault Boats

Users: Naval Riverine Squadrons (3 Squadrons) 1st Squadron – Fall/Winter 07; 2nd Squadron Summer 07 (fielded first); 3rd Squadron (Fall 08)

Builder: USMI

Procurement Quantities

Riv Assault Boat	FY06	FY07	FY08	FY09	FY10	FY11
Qty	4	*9	*10			

* Total budgeted Patrol and Assault quantities

Schedule

Riv Assault Boat	FY06	FY07	FY08	FY09	FY10	FY11
07-F-2216 (FY06)		Award	4 boats			
FY 07 DO's		Award	TBD			
FY 08 DO's		Award	TBD			

GSA Procurements

Selected Key Requirements

- Hull: Aluminum 5086 series plating with beaching reinforcement doubler
- Ballistic Protection: Cabin/coxswain station/propulsion system against 7.62mm x 39mm ball; personnel/weapon station protection kits
- Propulsion: Twin inboard Yanmar diesel engines w/water jets
- Speed: 35 knots cruise/40 knots sprint
- Communications: VHF marine band/VHF tactical, HF/UHF/SATCOM, Blue Force Tracker, 6 station Intercom, Secure data link
- Navigation: radar, advanced GPS, chart plotter, depth sounder, heading sensor;
- Surveillance: EO/IR device
- 5-7 Crewmen



Riverine Command Boat

TBD

Riverine Command Boat Candidates

Mission: Conduct military operations on inland waterways including River Patrol and Interdiction (RPI) missions and support limited assault missions in low to medium threat riverine environments.

Squadron Composition: Two (2) Command Boats

Users: Naval Riverine Squadrons (3 Squadrons) 1st Squadron – Fall/Winter 07; 2nd Squadron Summer 07 (fielded first); 3rd Squadron (Fall 08)

Builder(s): TBD

Procurement Quantities

Riv C&C Boat	FY06	FY07	FY08	FY09	FY10	FY11
Qty		*2	2			

* Includes one budgeted and one special procurement

Schedule

Riv C&C Boat	FY06	FY07	FY08	FY09	FY10	FY11
07-F-22XX		Award	2 boats			
FY 08 DO			Award	2 boats		

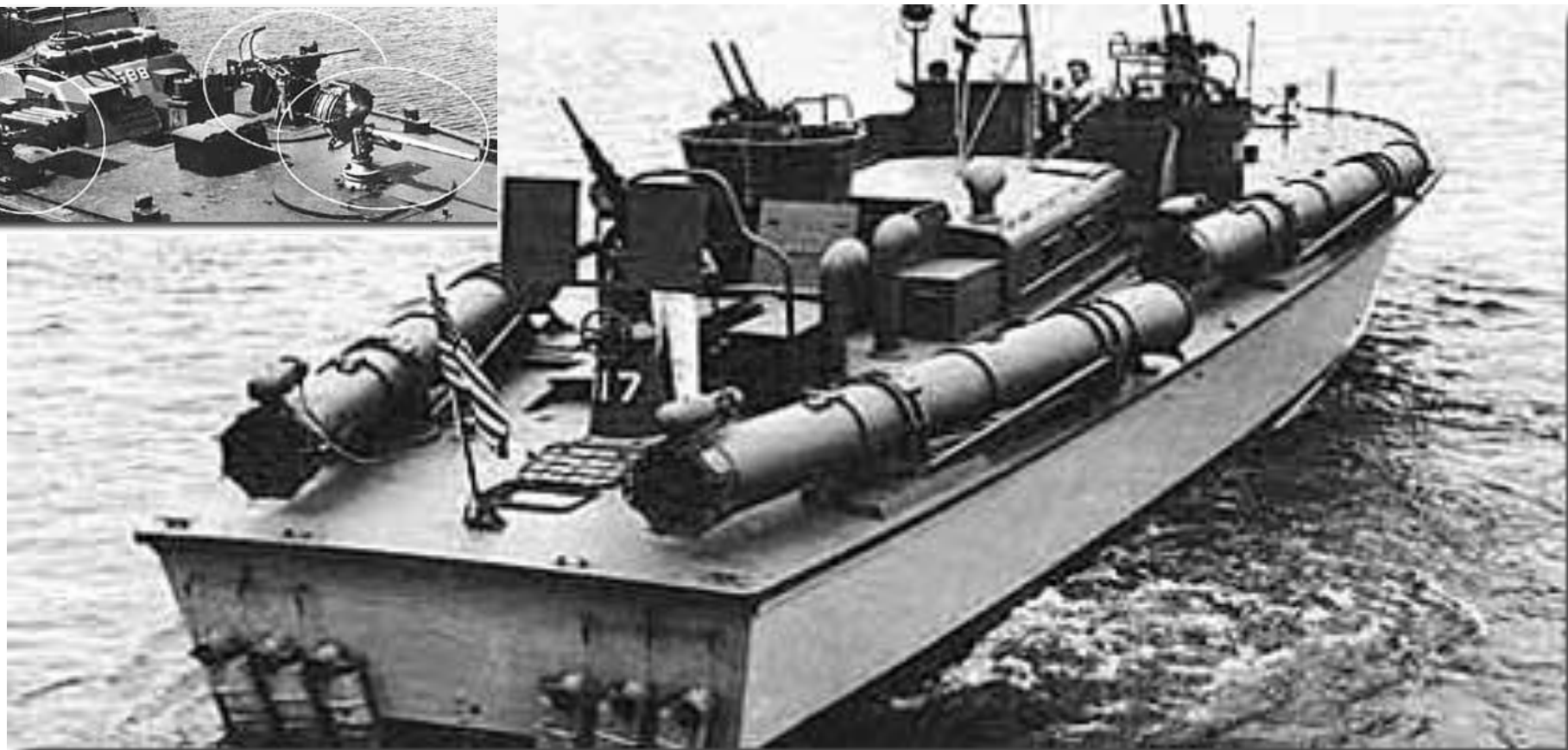
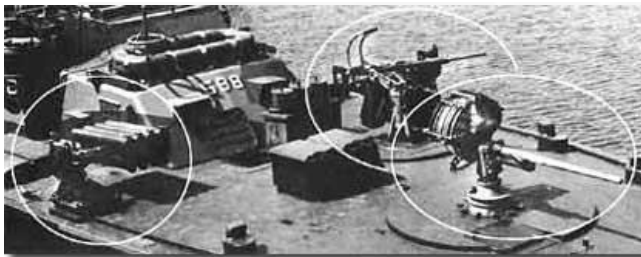
GSA Procurements

Performance Parameters

- Hull: Aluminum 508x series plating
- Mission duration: Up to 24 hours
- Operating environment: Operate SS 3/Survive SS 4
- Capacity (Crew): 5 crew/3 passengers
- Capacity (Payload): 2930 lbs.
- Payload Space: Reconfigurable space for passenger transport, MEDEVAC, Unmanned vehicle C&C, resupply, berthing
- Propulsion: Twin inboard diesel engines w/waterjets
- Req'd Speed, cruise/sprint: 35 knots/45 knots
- Obj Speed, cruise/sprint: 40 knots/45 knots
- Acceleration: 0 to 25 knots in 15 seconds
- Fuel Capacity: 575-600 gallons
- Ballistic Protection: 7.62 mm NATO Ball
- Air Transport Internal: Objective C-17 single craft with prime mover
- Air Transport External: Objective CH-53 external lift without trailer

1940'S ~80' PT BOAT

Left; 2- 5 inch Rocket Launchers, Center Top; 1 - Mk4 20mm automatic cannon, Right; 1- 37mm automatic canon,



Late 1960'S 50' ASSAULT SUPPORT PATROL BOAT



1970'S 65' MK III PATROL BOAT



2000'S CRAFT



VIETNAM CRAFT

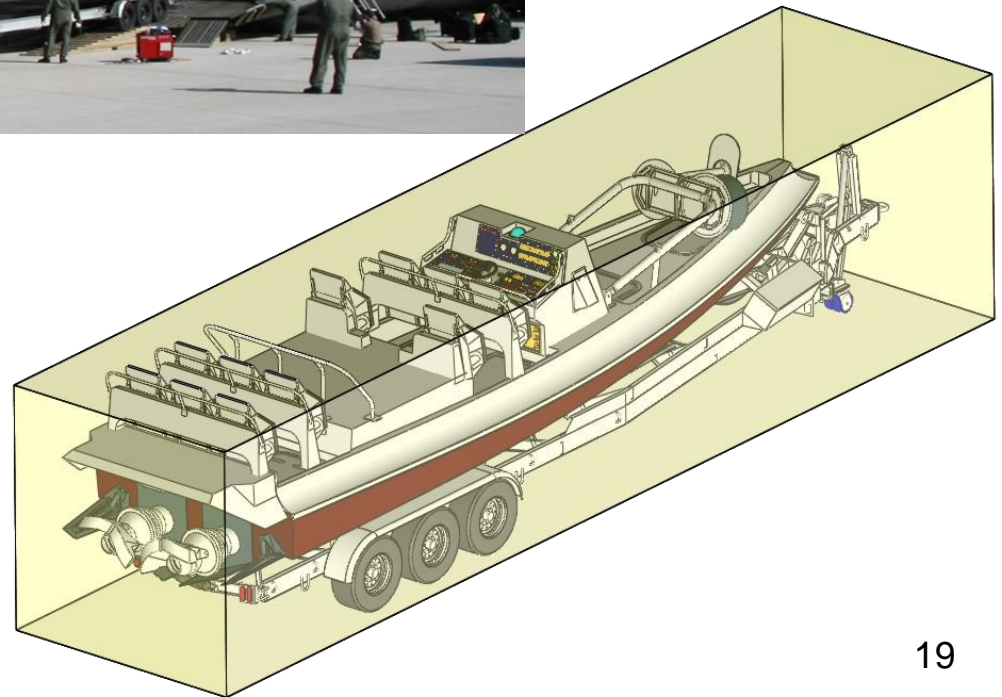
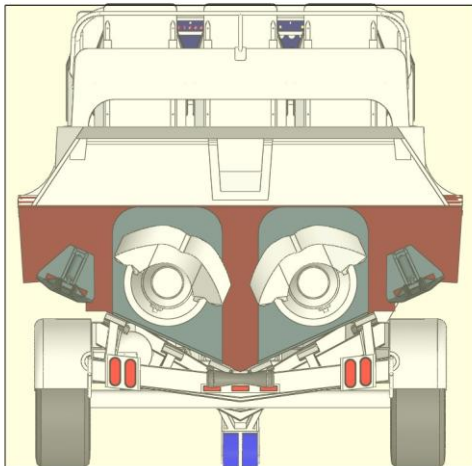
U.S. NAVAL EQUIVALENT

BOAT	CAPABILITY
31' PBR	PATROL, INTERDICTION
36' LANDING CRAFT PERSONNEL	LIFT 15 PAX, RIVER AND PORT SECURITY
45' MARK V PICKET	HARBOR PATROL
50' PATROL CRAFT - FAST	5 DAY ENDURANCE INSHORE PATROL
50' ASSAULT SUPPORT PATROL BOAT	ESCORT, FIRE SUPPORT, MINESWEEPER, TUG SECURITY PATROL
56' ARMORED TROOP CARRIER	TROOP/SUPPLY TRANSPORT, HELO DECK, AND REFUELER
60' MONITOR	FIRE SUPPORT FOR RIVERINE AND GROUND ASSAULT
60' COMMAND / CONTROL BOAT	HEAVILY ARMORED MONITOR TYPE MOBILE COMMAND POST
80' PATROL TORPEDO FAST	HIGH SPEED COASTAL TORPEDO & GUN BOAT
165' PG	HIGH SPEED COASTAL PATROL

BOAT	CAPABILITY
25' PB NCW	PORT SECURITY, PATROL, SURVEILLANCE
32' SOC-R	SPECWAR RIVERINE INSERTION/ EXTRACTION
36' SURC	SQUAD LIFT, RIVERINE PATROL
34' NCW PB	HARBOR SECURITY
170' PC	COASTAL PATROL & INTERDICTION



Are these gaps relevant against the current projected asymmetric threat?





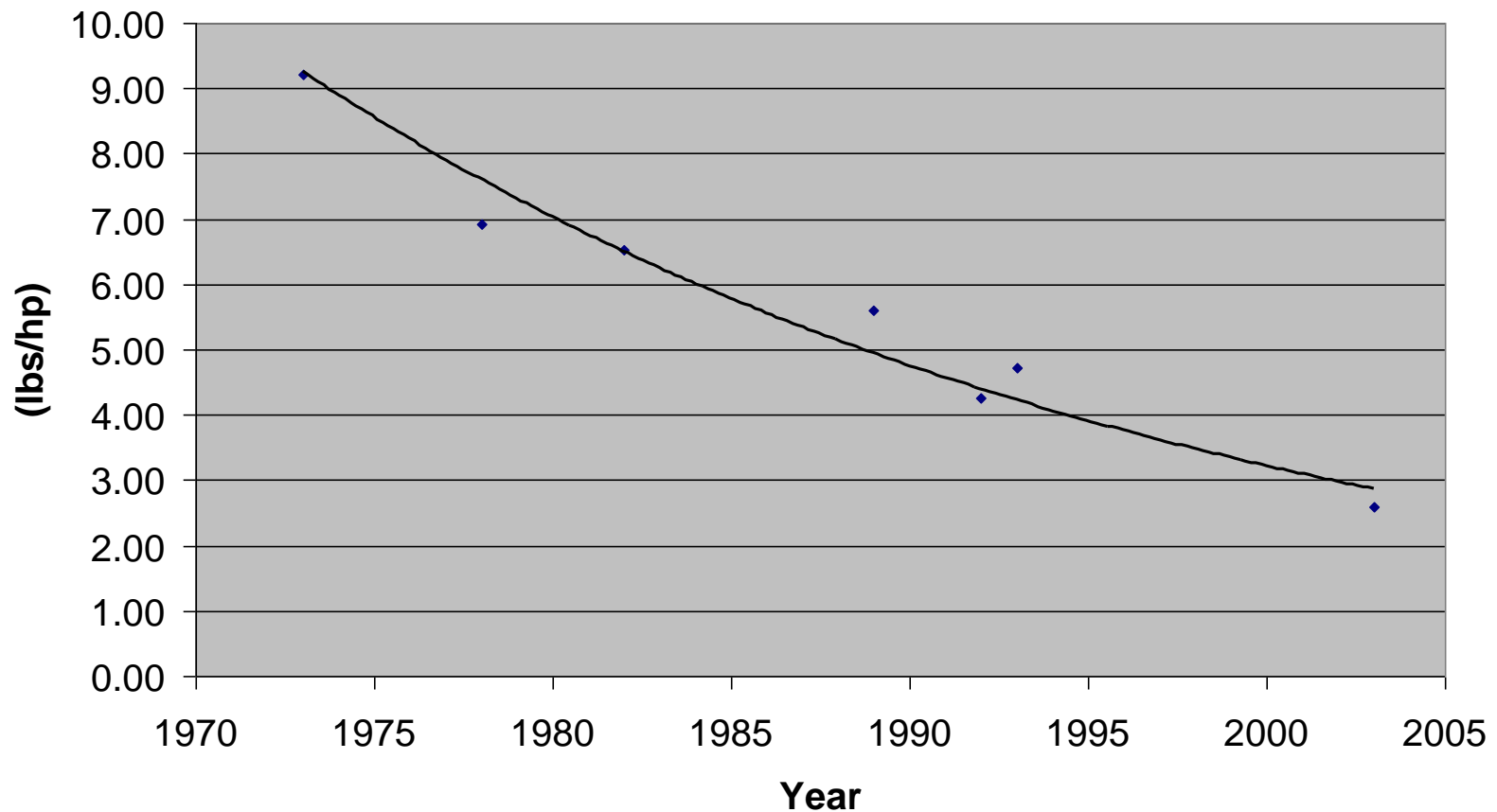


11MRB0202 Stowed Aboard USS Tortuga (LSD 46)

Enabling Technology



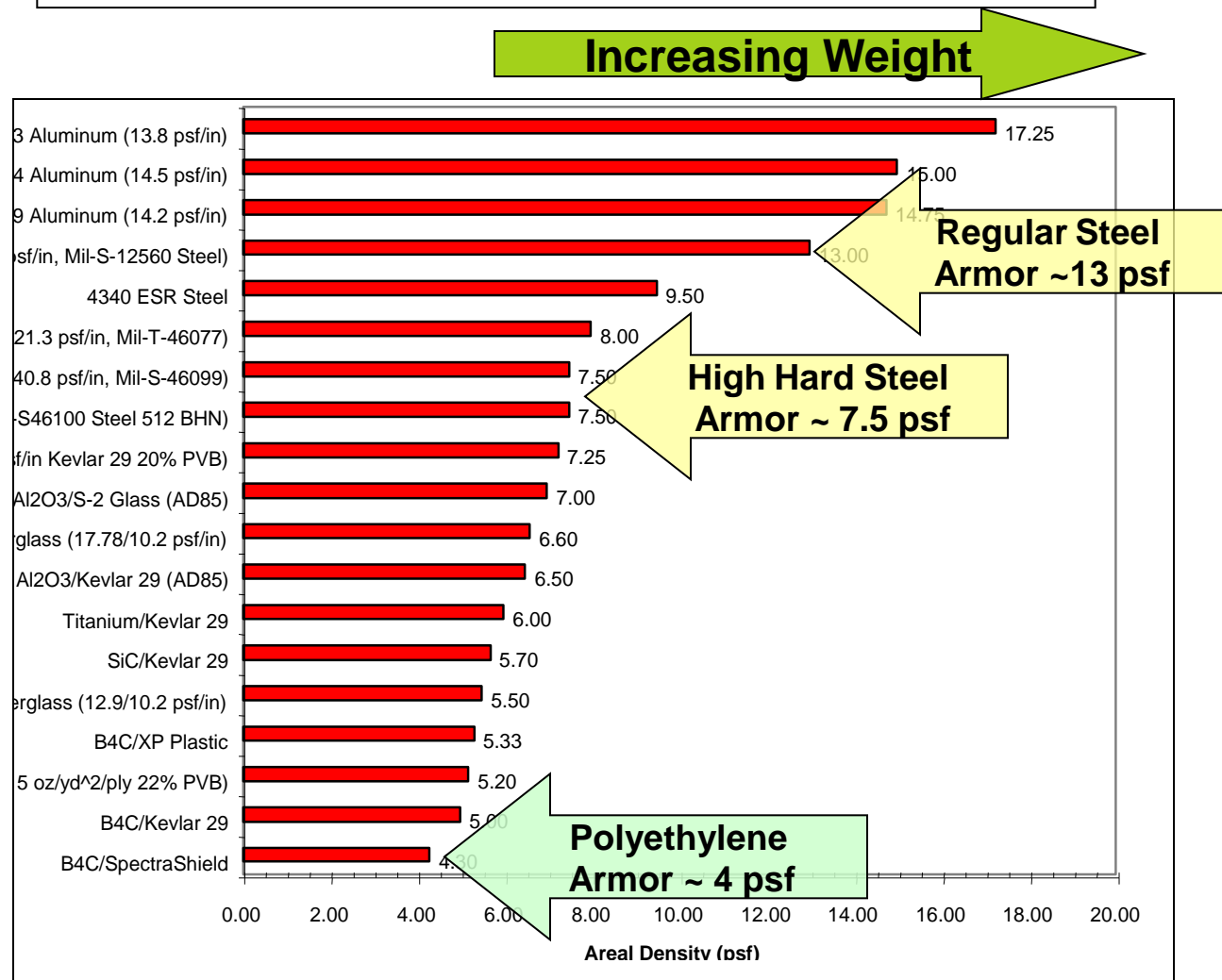
**Commercial 6 Cylinder Marine Diesel Engine
Horsepower to Weight Ratio Trend in Combatant Craft**

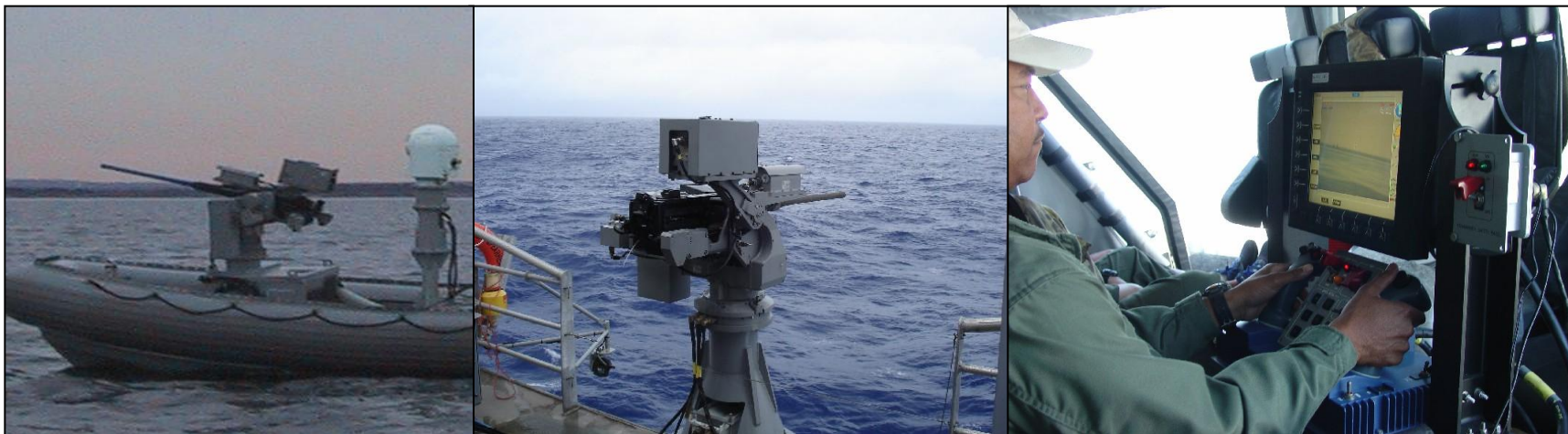


Enabling Technology



Viable Marine Environment Armor Products





- Remote Operated Small Arms Mount
- Two axis, gyro-stabilized Weapon Station (WS)
- Thermal imaging sensor and a day time CCD camera
- System weight 640lbs with weapon and ammo
- Costs ~\$250k per system

At moderate ranges 10 fold increase in accuracy





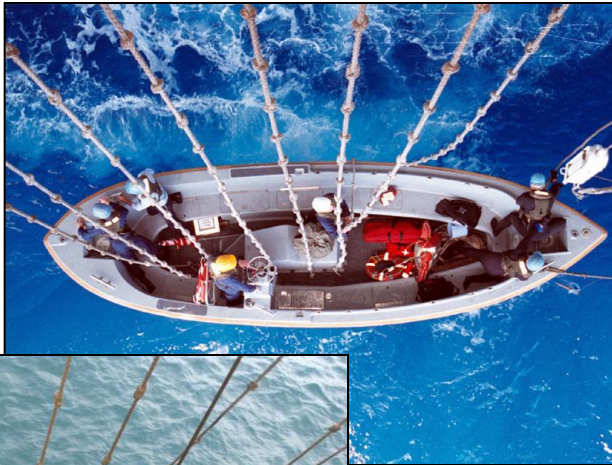


Technology Advancements

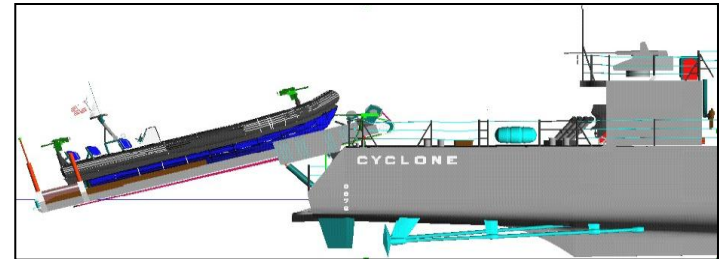


- Hull (advanced armor, advanced composite hull materials use negated)
- Propulsion (Engines, waterjet reliability)
 - Electronic controls (emissions and noise, reliability – maintainability)
- Electrical (Modest weight savings in DC systems).
- Comm / NAV / ISR
 - Communications SATCOM (data transmission), Cell Phones
 - Electronic charting, depth and positioning
 - Detection sensors (NVG's, TWS, FLIR)
- Weapons – Biggest advance is with remote operated stabilized weapon system.

RIB's as ships boats



Stern Ramp Launch and Recovery







Technology Gaps



- Always more reliability, easier to maintain, smaller logistical footprint
- Faster in a Sea State - Slam Avoidance
 - Clearly defined operational requirements / limits (how fast, how far, how long, and in what sea state)
 - Hull form developments, research (what hull forms and hull form variations are best suited to good seakeeping at high speeds in high sea states?)
 - Operator Training (ought to develop test for coxswain seamanship skills to operate at high speeds in high sea states and provide the most comfortable ride to passengers)
- Acceleration prediction methods (currently use empirical method based on limited data set.)
- Structural criteria
 - Currently criteria adequate but possibly conservative
- Wide spread application of multi-fuel outboard engines
 - Lots of development research has not yet transitioned into the fleet
- Waterjet impeller and engine raw water pump impeller wear characteristics
- Integrated Digital Environment

