



# CCD Contracts & Technical Briefs

18 August 2015

***Combatant Craft Division***

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- *Systems Design & Integration*
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- *Test & Evaluation*
- *Integrated Logistics Support*



# Overview of Active Contracts

**Scott Gustavson**

***Combatant Craft Division***

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# Overview of Active Contracts

## Engineering and Marine Services

- Scope: Provide acquisition of engineering and marine services in support of the NSWCCDDN mission. This is a multi-disciplinary Engineering and Alteration Installation Team (AIT) services task order including managerial, structural, mechanical, electrical, electronic, naval architectural, research and development, logistics, test and evaluation, prototyping, and installation and repair.
- Contract N00178-04-D-4027-EHP5
  - Incumbent Prime Contractor: CDI Marine Company
  - Base Year Contract w/One 1-Year Option
  - Award Date: 9/23/2014
  - POP End Date: 5/12/2016
  - Total - \$39,269,135.94



# Overview of Active Contracts

## Administrative, Information Technology and Financial Services

- Scope: Provide Program Management and Planning support services, Administrative Services, and Computer Engineering and Information Technology support services in support of the NSWCCDDN mission. This is a multi-disciplinary contract including managerial, administrative, financial and computer programmer/scientist services.
- Contract N00178-04-D-4107-EHP3
  - Incumbent Prime Contractor: Professional Software Engineering
  - Base Year Contract w/ Two 1-Year Options
  - Award Date: 2/1/2013
  - POP End Date: 1/31/2016
  - Total - \$12,198,074.24

# Overview of Active Contracts

## Waterfront Operations

- Scope: Contract provides for many aspects of RDT&E efforts, maintains the waterfront facility, and ensures operational readiness of boats and associated equipment in the custody of NSWCCDDN. Includes the full range of Testing and Evaluation efforts, maintains boat and craft, and accomplishes minor and major repairs and modernization on boats/craft. Includes operation of boats and craft during RDT&E events as well as other events as required. Provides for inspections and surveys to assess the material condition of boats and associated equipment, diagnose and/or troubleshoot faulty equipment, and perform the work to repair/replace such equipment.
- Contract N00178-05-D-4554-EHP1
  - Incumbent Prime Contractor: Seaward Services
  - Base Year Contract w/ Two 1-Year Options
  - Award Date: 2/14/2013
  - POP End Date: 2/14/2016
  - Total - \$35,016,114.66

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# Overview of Active Contracts

## Advanced Systems Engineering

- Scope: Engineering and Technical Management Support Services to design, develop and integrate advanced systems for all types of combatant craft, boats, watercraft, unmanned craft, and associated systems on U.S. Navy and other Federal agency vessels. Provides for all aspects of design, development, integration and installation of C4ISR, state of the art HM&E and autonomous systems.
- Contract N65540-12-D-0007
  - Incumbent Prime Contractor: Gibbs and Cox
  - Base Year Contract w/ Two 1-Year Options
  - Award Date: 7/10/2012
  - POP End Date: 7/8/2016
  - Total - \$10,799,969.24
- Contract N65540-12-D-0006
  - Incumbent Prime Contractor: Vencore (formerly QinetiQ)
  - Base Year Contract w/ Two 1-Year Options
  - Award Date: 7/10/2012
  - POP End Date: 7/8/2016
  - Total - \$9,902,317.35

# Overview of Active Contracts

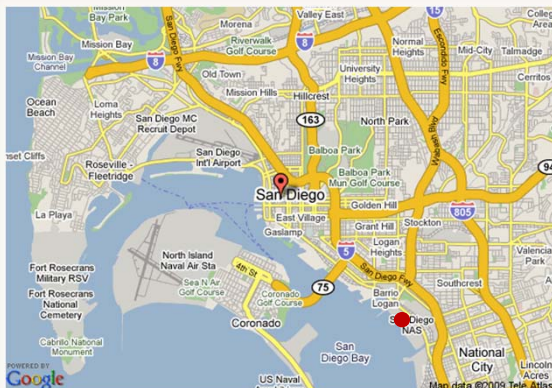
## OCONUS Engineering and Marine Services

- Scope: Provide acquisition of engineering and marine services in support of the NSWCCDDN OCONUS mission. This is a multi-disciplinary Engineering and Alteration Installation Team (AIT) services task order including managerial, structural, mechanical, electrical, electronic, naval architectural, research and development, logistics, test and evaluation, prototyping, and installation and repair for OCONUS projects; includes travel to and/or presence OCONUS
- Contract Pending Award
  - Incumbent Prime Contractor: N/A – New Requirement
  - Base Year Contract w/One 1-Year Option
  - Solicitation N00024-14-R-3405 Closed
  - Award Date: TBD
  - POP End Date: TBD + 2 years
  - Estimated Value < \$50,000,000



# Facilities with Contract Support

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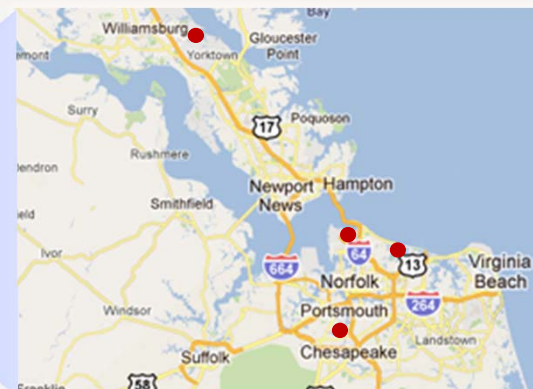
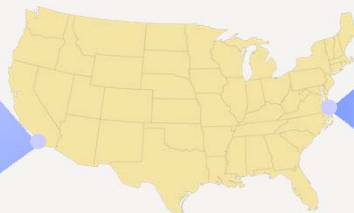
## San Diego, CA



NavSta San Diego  
Bldg 71 – Engineering



NavSta San Diego  
Bldg 279 - Storage



## Hampton Roads, VA



JEBLCFS - Administrative, IT,  
Engineering



NavSta Norfolk Bldg V47 – Underway  
Operations, Warehousing, Prototyping,  
Training



St. Julien's Creek Annex Bldg 79 –  
Warehousing



Cheatham Annex Bldg XX –  
Warehousing

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# Future Competitive Requirements

<u>Summary Description/Title</u>	<u>Estimated Total Value</u>	<u>Estimated Award Date</u>
• Engineering Services (OCONUS) 5-Year	> \$100 M	1 <sup>st</sup> QTR FY-17
• Engineering Services (CONUS) 2-Year	< \$50 M	3 <sup>rd</sup> QTR FY-16
<i>Title: Request for Information – Engineering Services (CONUS)</i> <i>Sol. #: N00024-15-R-3117</i> <i>Agency: Department of the Navy</i> <i>Office: Naval Sea Systems Command</i> <i>Location: NSWC Carderock Division</i> <i>Posted On:</i> <i>Current Type: Sources Sought (Modified)</i>		
• Engineering Services (CONUS) 5-Year	> \$100 M	3 <sup>rd</sup> QTR FY-17
• Advanced Electronics	< \$25 M	4 <sup>th</sup> QTR FY-16
• Intelligent Systems	< \$50 M	1 <sup>st</sup> QTR FY-17
• Advanced Systems Engineering	< \$50 M	2 <sup>nd</sup> QTR FY-17
• Advanced System Prototype	< \$100 M	1 <sup>st</sup> QTR FY-17
• Waterfront Operations Support	< \$100 M	3 <sup>rd</sup> QTR FY-16
<i>Title: Request for Information - Waterfront Support Services</i> <i>Sol. #: N00167-15-SS-0015</i> <i>Agency: Department of the Navy</i> <i>Office: Naval Sea Systems Command</i> <i>Location: NSWC Carderock Division</i> <i>Posted On: Jul 01, 2015 3:14 pm</i> <i>Current Type: Sources Sought (Modified)</i>		
• Admin/IT Support	< \$25 M	1 <sup>st</sup> QTR FY-17

# QUESTIONS?



# Administrative & Business Operations

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# Overview of Active Contracts

## Administrative, Information Technology and Financial Services

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# Summary SOW

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- *This contract primarily supports in-house Administrative, Financial and Information Technology functions*
- *Primarily supporting the Admin Officer and Business Operations Manager, but also support to the Tech Codes*
  - *Timekeepers*
  - *Financial Analysts*
  - *Travel Specialists*
  - *Program/Project Analysts*
  - *Computer Programmers (IAWF certifications required)*
  - *Database Administrators (IAWF certifications required)*
  - *Network Administrators (IAWF certifications required)*
  - *Shipping/Receiving/Warehouse/Storage/Supplies*
  - *Reception/Visitor Control*
  - *Public Works Liaison*
- *Infrastructure support to the entire organization, supporting much of the non-inherently governmental functions needed to operate the detachment*

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# Job Categories

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- *Program Manager*
- *SharePoint Administrator*
- *Network Administrator*
- *Senior Computer Programmer*
- *Computer Analyst*
- *Senior Analyst/Analyst/Junior Analyst*
- *Program Analyst*
- *Quality Specialist*
- *Senior Administrative Specialist*
- *Travel Systems Specialist*
- *Supply Clerk (Office Assistant)*
- *Senior Technical Writer/Technical Writer*
- *Graphics Illustrator*
- *Database Administrator*
- *Computer Programmer/Junior Computer Programmer*

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# QUESTIONS?



# Naval Architecture & Boat Acquisition Engineering

Will Sokol

***Combatant Craft Division***

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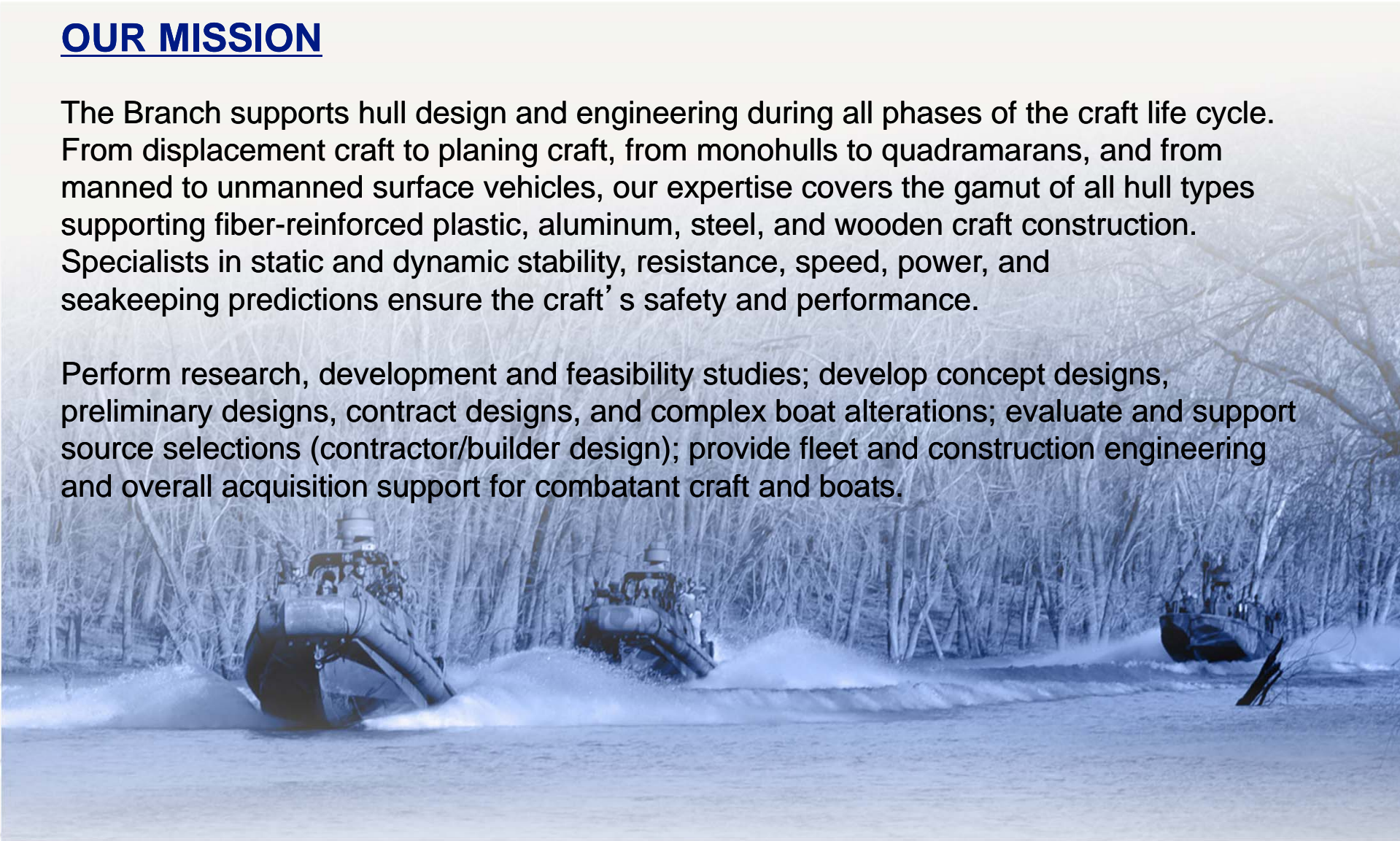
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# Naval Architecture Design & Acquisition

## OUR MISSION

The Branch supports hull design and engineering during all phases of the craft life cycle. From displacement craft to planing craft, from monohulls to quadramarans, and from manned to unmanned surface vehicles, our expertise covers the gamut of all hull types supporting fiber-reinforced plastic, aluminum, steel, and wooden craft construction. Specialists in static and dynamic stability, resistance, speed, power, and seakeeping predictions ensure the craft's safety and performance.

Perform research, development and feasibility studies; develop concept designs, preliminary designs, contract designs, and complex boat alterations; evaluate and support source selections (contractor/builder design); provide fleet and construction engineering and overall acquisition support for combatant craft and boats.



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# Design & Acquisition

## Key Functions

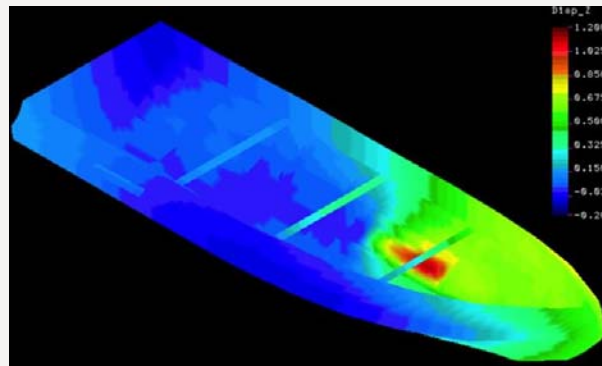
- **Naval Architectural Research & Development (R&D), Design and Analysis:** *Hull design, hydrodynamics, stability, arrangements, structures, powering and platform integration*
- **Program Planning Support:** *Feasibility & tradeoff studies, cost estimating*
- **Acquisition Support:** *Requirements determination, specification development, contract development, drawing development, and source selection*
- **Unmanned Surface Vehicle Research, Development & Fielding**
- **Boat & Craft Design:** *Drawings, specifications, technical studies (craft and related technologies), 3-D modeling, HSI*
- **Construction Oversight & Trials:** *Support various levels of onsite supervision and oversight and trials/acceptance*
- **Technical Craft Certification Support:** *Safe and Suitable Determination/Ready for Issue*



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(Photo: John F. Williams/U.S. Navy/Released) – Cover of Carderock WAVES Newsletter  
May/June 2015

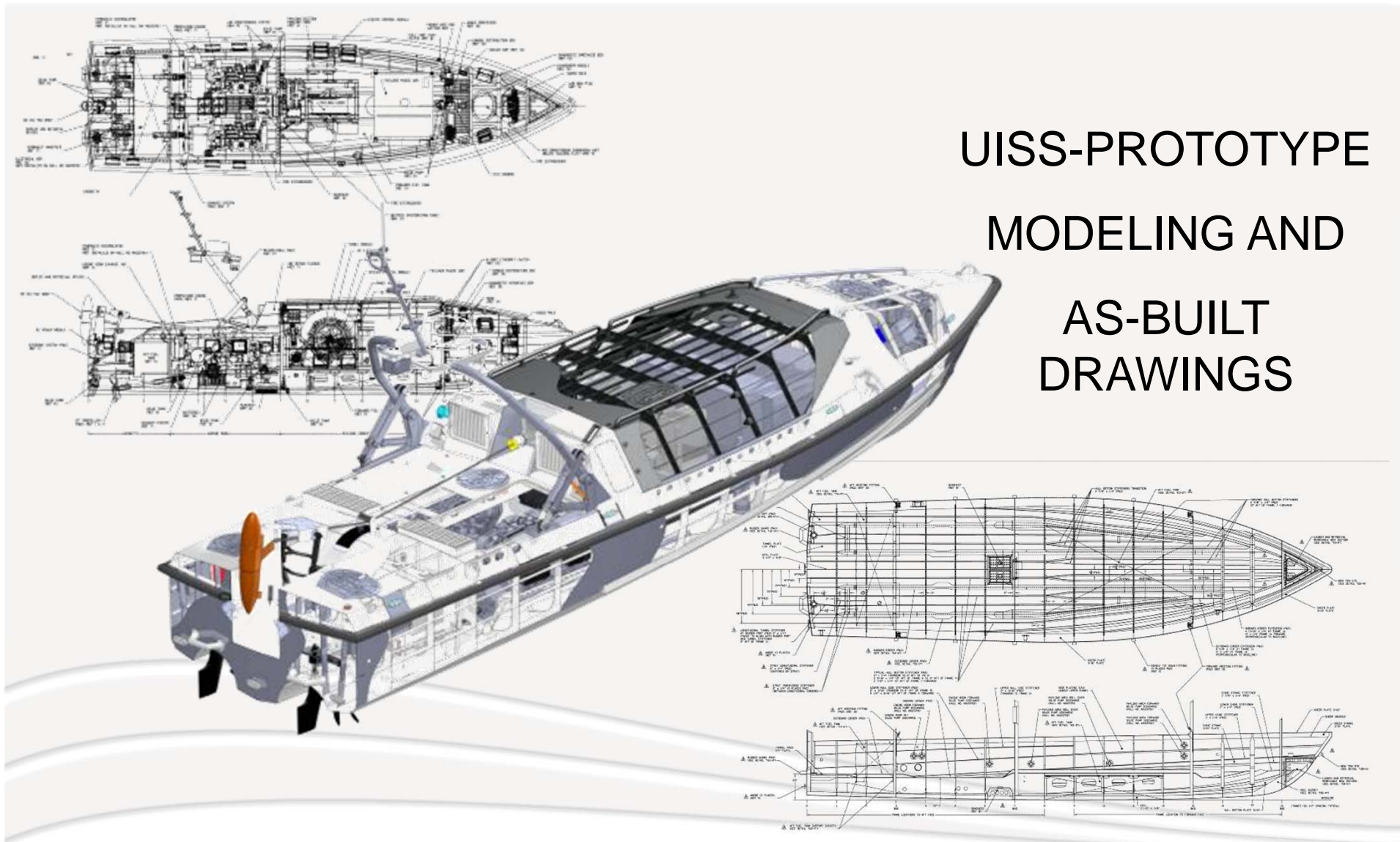


Open source : <http://www.compositesworld.com/articles/re-inventing-the-rhib-shock-mitigation>

- Classic NavArch R&D (plus component development)
  - Hydrodynamics
  - Structural optimization
  - Seakeeping
  - Craft Integration

# Craft Design & Fielding

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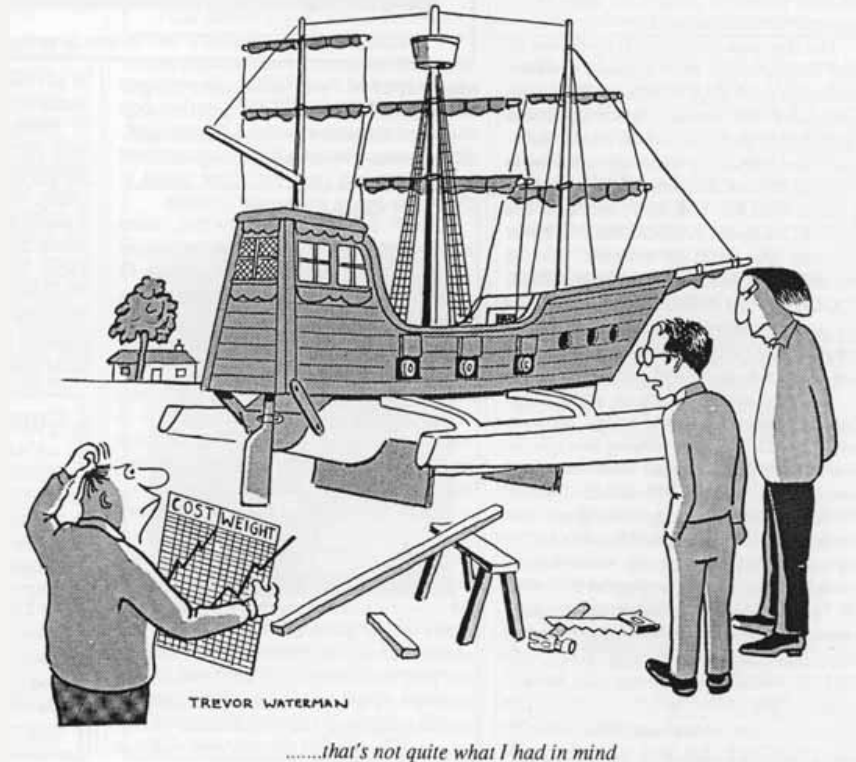
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# Construction

- *Design and Systems Engineering Agent*
  - *Design Reviews*
  - *Technical Authority*
  - *Certification*
- *Construction Oversight*



Open source : <http://www.f-boat.com/>

- *Builders and Acceptance Trials*



# Classic Naval Architecture

- **Structures**
  - *Materials (metals, composites)*
  - *Response/Performance*
  - *Efficiency*
- **Hydrodynamic Performance**
  - *Seakeeping*
  - *Resistance*
  - *Ride Quality*
  - *Maneuverability*
  - *Efficiency*
- **Survivability**
  - *Suitability*
  - *Adequacy*
- **Machinery**
  - *Utility*
  - *Performance*
  - *Efficiency*
- **Propulsors**
  - *Suitability*
  - *Performance*
  - *Efficiency*
- **Human Factors**
  - *Utility/Functionality*
  - *Comfort*
  - *Safety*
  - *Maintainability*

# Naval Architects are System Engineers

- *System engineering an [interdisciplinary](#) approach and means for enabling the realization and deployment of successful [systems](#).*
- *..., systems engineers deal with abstract systems, and rely on other engineering disciplines to design and deliver the tangible products that are the realization of those systems.*
- *...The systems engineering effort spans the whole system lifecycle. SE focuses on defining customer needs and required functionality early in the development cycle, documenting requirements, then proceeding with design synthesis and system validation while considering the complete problem:*
  - *Cost & Schedule*
  - *Design & Development*
  - *Manufacturing & Deployment*
  - *Training*
  - *Test & Evaluation*
  - *Environment*
  - *Information Assurance*
  - *Performance Engineering*
  - *Operations & Maintenance*
  - *System Disposal*



# Boats and Craft vs. Ships

Boats and craft are typically much more sensitive to seemingly minor changes in areas such as:

- Stability
- Performance
- Seakeeping
- Safety
- Reliability
- Maintainability
- Signatures
- Structural Integrity
- Transportability
- Interchangeability
- Supply Support
- Durability

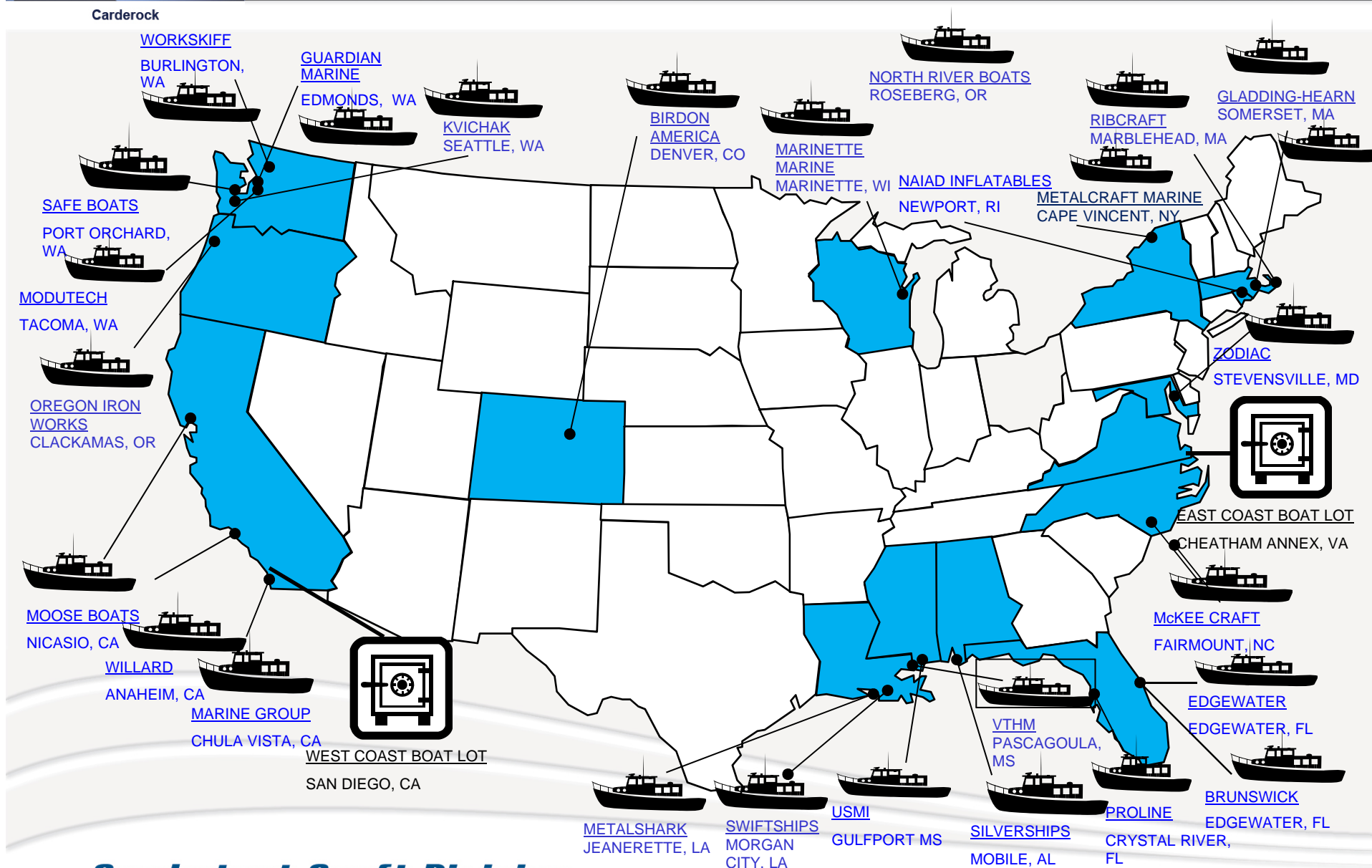


*Tightly integrated systems  
engineering is essential*

# Technical Competencies

- **Craft Hydrodynamics** – *Hull form development & resistance prediction, maneuverability, seakeeping, propulsor design & integration, control surfaces, appendages design; Tools: Model testing & computational tools incl CFD*
- **Craft Hydrostatics** – *Stability Analysis, Criteria Determination, Lines Measurement & Validation, Inclining Experiments*
- **Craft Weight Estimates** – *Feasibility, Preliminary, Contract and Final Estimates, Weight Validation and Tracking*
- **Craft Structural Design** – *Materials (Composite, AL, Steel), Design Methods, Detail Design Development, Construction Oversight*
- **Craft Modeling and Simulation** – *2-D Drafting, 3-D Modeling, Solid Modeling*
- **Craft Requirements Development Support** – *Analysis of Alternatives, Operational Requirements support, Systems Analysis and Tradeoffs*
- **Craft Specification Development** – *Commercial and Gov't Specifications Analysis and Selection, Regulatory Agency Rules Review & Development, Craft Design Criteria & Techniques*
- **Craft Program & Project Management**
- **Craft Concepts Development and Prototyping**

# Where Our Boats Are Built



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# Acquisition Types and Strategies

## Alignment to Service

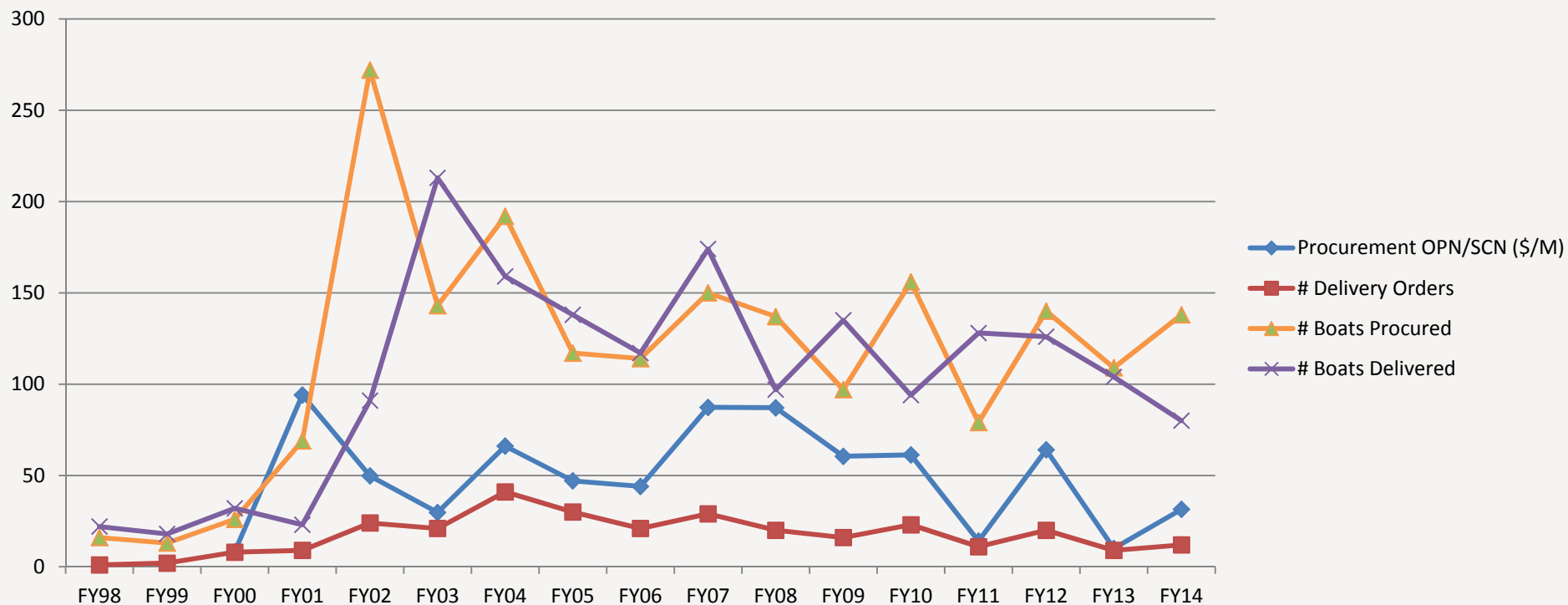
- **Support for all ACAT Levels:** *Technical Support for ACAT-level appropriate docs and support; R&D, studies, specification development, source selection, contract support, construction oversight, and delivery*
- **Development of Technical Specifications & Drawings:** *Range from: fully Gov' t-controlled configurations and design to Detailed Specification to Performance Specifications to GSA procurements*
- **Use Commercial Standards:** *Heavily involved in and utilize applicable commercial standards: ABS Rules & Guidelines, Det Norske Veritas, ISO Directive 94/25/EC, as well as applicable USCG, ABYC, IEEE, etc.*

**ALL Acquisitions Utilize COTS Components/Materials**



# PMS325G Acquisition History (1998 - 2014)

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	FY98	FY99	FY00	FY01	FY02	FY03	FY04	FY05	FY06	FY07	FY08	FY09	FY10	FY11	FY12	FY13	FY14
Procurement OPN/SCN (\$/M)			8.229	94.1	49.76	29.731	66.091	47.041	44.028	87.275	87.082	60.493	61.256	14.097	64.033	10.061	31.472
# Delivery Orders	1	2	8	9	24	21	41	30	21	29	20	16	23	11	20	9	12
# Boats Procured	16	13	26	69	272	143	192	117	114	150	137	97	156	79	140	109	138
# Boats Delivered	22	18	32	23	91	213	159	138	117	174	97	135	94	128	126	104	80

# Current Other Than Navy

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<u>Designation</u>	<u>Contract Award</u>	<u>Customer</u>	<u>Program Office</u>	<u>Number in Contract</u>	<u>First Delivery</u>	<u>Contract Completion</u>
27m MK V PB	FY 09	Kuwait	PMS 325F	10	FY 11	EXPECTED FY 15
28m Egyptian Coastal Patrol Craft (Co-Production)	FY 09	Egypt	PMS 325F	2	EXPECTED FY 11	FY 15
63m Egyptian Fast Missile Craft	FY 05	Egypt	PMS 325E	4	FY 12	FY 15
Combatant Craft Medium (CCM)	FY14	NAVSPECWARCOM/ USSOCOM	USSOCOM	24	FY15	FY19
24ft Bridge Erection Boat	FY14	U.S. Army	TACOM	400+	FY15	FY20
Uruguay FP MED	FY14	FMS - Uruguay	PMS 325F	2	FY15	FY15
7m/11m RIBs	FY14	FMS - Ukraine	PMS 325F	5	FY15	FY15
10M PB	FY14	FMS - Kenya	PMS 325F	4	FY15	FY16
11m NSW RIB	FY14	FMS - Israel	PMS 325F	3	FY15	FY15
7m RIB	Expected FY15	FMS - Jordan	PMS 325F	3	FY15	TBD
44ft PB	Expected FY15	FMS - Jordan	PMS 325F	2	FY15	FY16
27ft PB	Expected FY15	FMS - Thailand	PMS 325F	6	FY15	FY16
30' Riverine Boat	Expected FY15	FMS - Nepal	PMS 325F	10	FY15	FY17
7M RIB (SDAF)	FY15	FMS - Various (SDAF)	PMS 325F	up to 360	FY15	FY19



# QUESTIONS?

The sea is selective,  
slow in recognition of effort and  
aptitude, but fast in sinking the  
unfit – Felix Riesenbergr Jr.



# Systems Design & Integration

Scott Petersen

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# Mission

The mission of the Systems Design and Integration branch within the Combatant Craft Division is to be the engineering resource for research, standards development, design, development, and integration of mechanical, electrical, and electronic systems across the full life cycle of manned and unmanned surface craft. We develop total craft systems and integrate new technologies, balancing user requirements and costs to deliver comprehensive solutions to meet the needs of the Navy and other government agencies.

- DoD and industry wide leader in technical knowledge and innovation in small craft systems design and integration
- Aligned to support national military strategy
- Maintain technical health
- Set standards for Navy systems acquisition
- Evaluate and support customer needs
- Showcase “realm of the possible”



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# Technical Competencies

*Electrical Power Generation*  
*Electrical Power Distribution*  
*Outboard Motors*  
*Engines and Propulsion Systems*  
*Fuels, Lubricants, and Related Regulation*  
*Machinery*  
*Heating, Ventilation and Air Conditioning*  
*Firefighting*  
*Command, Control, and Computers*  
*Navigation*  
*Communications, Intelligence, Surveillance, and Reconnaissance*  
*Mission System Integration*  
*Trailers*  
*Intelligent Autonomy*  
*Machinery Automation, Controls, and Sensing*  
*Unmanned Vehicle System Design*  
*Unmanned Vehicle Command and Control*  
*Ship Interoperability*  
*C4ISR Policy and Architecture*  
*Craft Acquisition Program Management*

# Advanced System Engineering Contract

A Primary Tool for Code 8320 but used across division!

## Current Contract

Very Broad Technology Coverage

## Future Contracts

Advanced Electronics

Intelligent Systems

Advanced Systems

*“Advanced” systems refers to those systems that are:*

- Without precedent for use on operational assets*
- Original designs emerging from the development and application of Research & Development (R&D) or Science and Technology (S&T) efforts*
- Adapted from existing militarized aviation, ship or ground vehicle platforms for use on small boats and craft*
- Small boat and craft derivatives of existing commercial technologies*
- Proven for use on any platform but require a change in mission set from that which they were originally designed*



# Electronics System Integration

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## AN/PRC-117F (2 Nets)



§UHF/VHF LOS  
§UHF SATCOM  
§DAMA

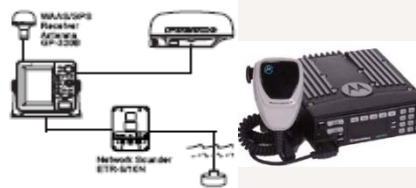
§SINCGARS  
§Have Quick 2

## SeaFLIR III EO/IR



Reconnaissance & Surveillance

## COMMERCIAL NAVIGATION EQUIPMENT AND VHF RADIO



RADAR/DEPTH SOUNDER/VHF RADIO

## FBCB2 (BFT)



•Force XXI Battle Command,  
Brigade and Below  
•Blue/Red SA  
•C2

## IFF



## NAV/FILE TRANSFER CPU



## AN/VRC-104



§HF/VHF  
§150W Output

## DAGR



•Defense Advanced GPS  
Receiver  
•Anti-jam security

## RADIO CONTROL/INTERCOM SYSTEM



## AN/PRC-152



•UHF/VHF LOS  
•SINCGARS  
•Have Quick 2

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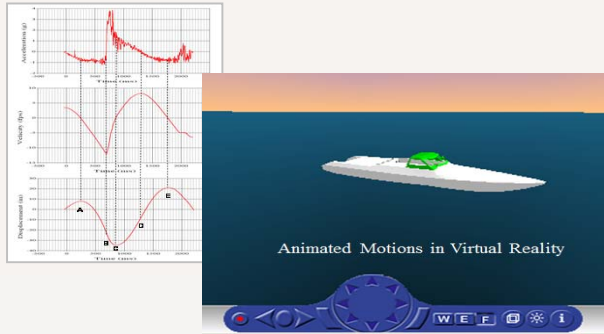
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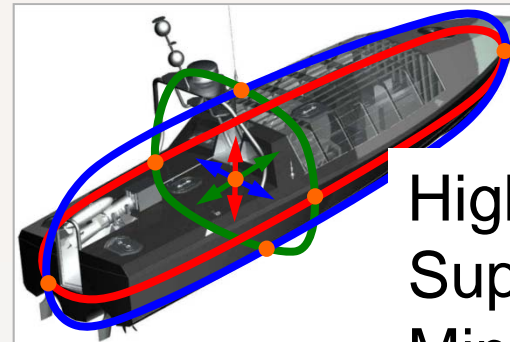
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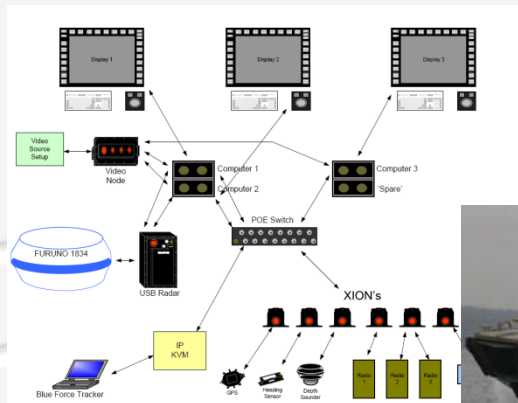
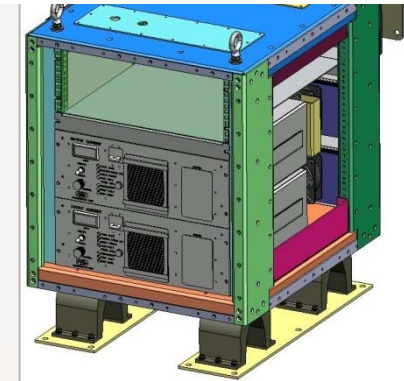
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Craft Health  
Monitoring System &  
Simulation



High Temperature  
Superconductor -  
Minesweeping



Integrated Electronics  
Suite Prototyping

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# Intelligent Systems

## Small USV for Reconnaissance



## USV Test Center





# Intelligent Systems

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USV Navigation  
and  
Communications



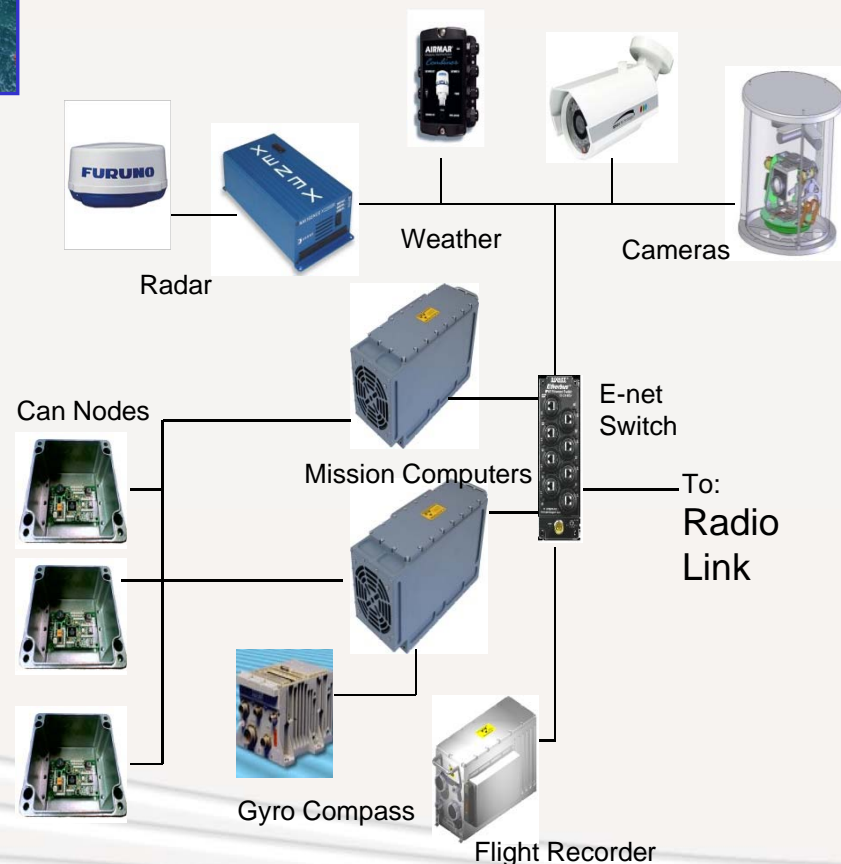
USV Homing

UISS Risk  
Mitigation  
Initiatives



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## USV Command & Control Architecture and Autonomy



Monitoring, Rudder, Throttle, Transmission  
Control

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# Intelligent Systems

## Host Ship

Core System

Mission  
Interfaces

Support &  
Maintenance

Launch  
& Recovery

Ship-USV  
Interfaces

Navigation  
(Safe & Appropriate)

Health  
Monitors

System  
Management

Navigation Aids  
(lighting, etc.)

Hull

Mission Module  
Support

Obstacle  
Avoidance

Propulsion

Power Gen  
Distro & control

Path Planning

Condition  
Reporting

Data Network

Controls  
(steering, etc.)

Misc.  
Craft Systems

Sensors

**“Core” Boat**

Data  
Exchange:  
Health  
Status  
Environment

Internal USV  
Interfaces:  
Foundations  
Power  
Control  
Data

## Mission System

Control

Processing

Communications

Supporting  
Sensors

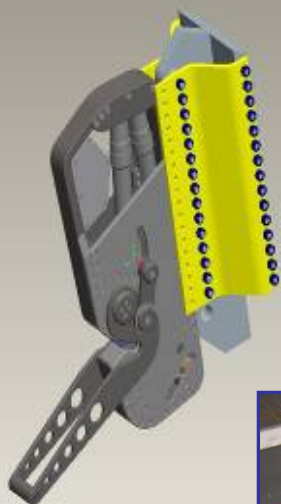
Mission  
Planning/Execution

Data Network

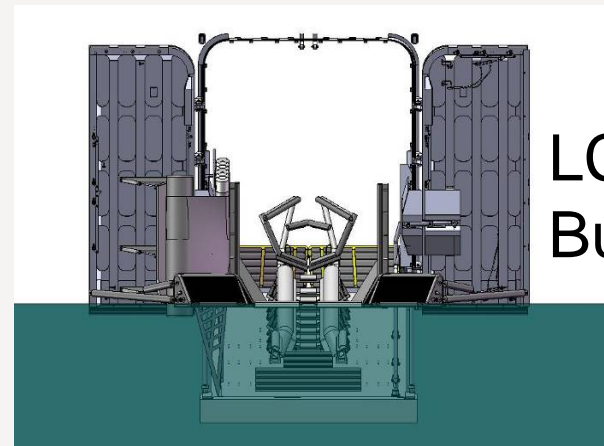
Mission PAYLOAD



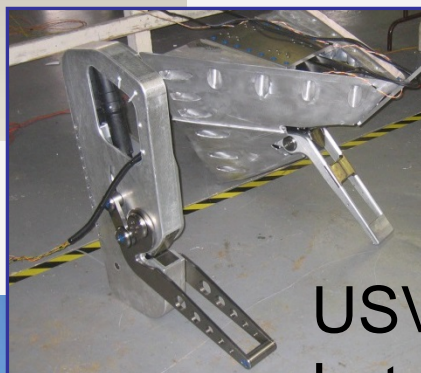
# Advanced Systems



LCS USV Line Catching

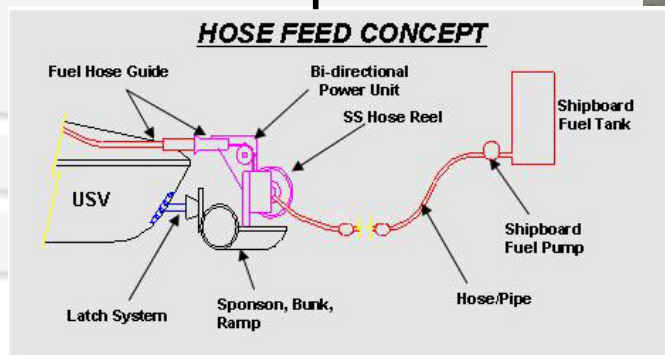
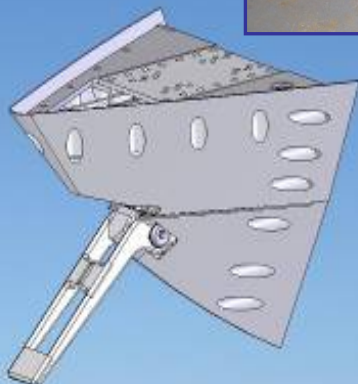
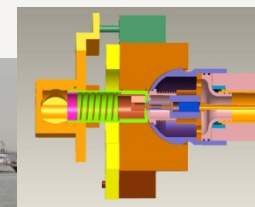


LCS Ramp Bunk



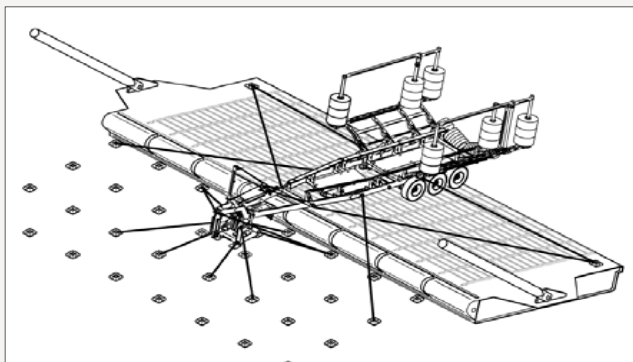
USV Refueling Latch/Sponson

Towed USV Refueling



# Advanced Systems

## Stern Gate Launch and Recovery Trailer



## Hybrid Electric Propulsion

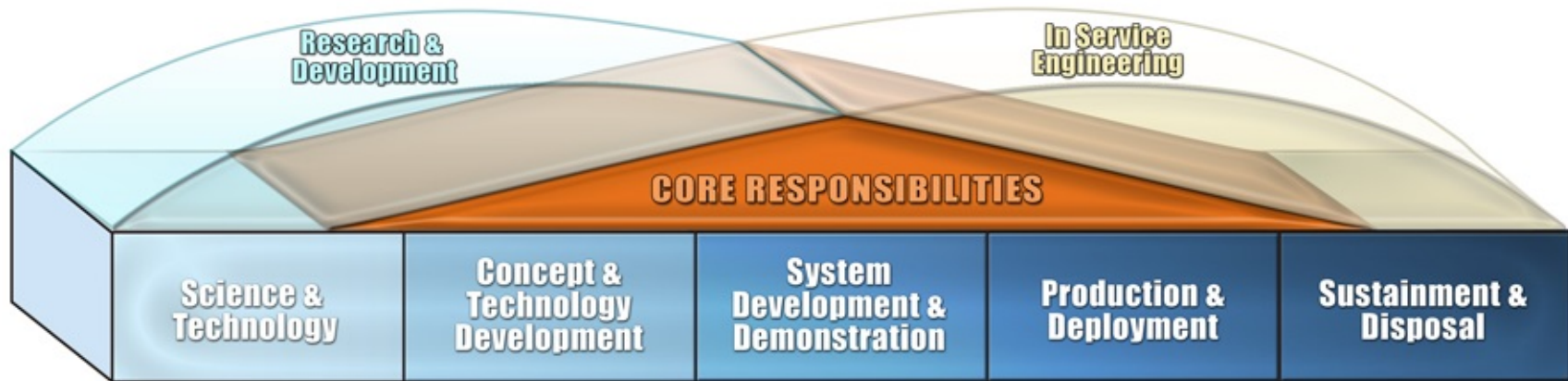
## Advanced Firefighting System, Market Survey, Specification, Testing, and Certification



## Engine development, Integration and Testing

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# System Development



## System Development Life Cycle

- Code 832 integrates both established and emerging mechanical, electrical and electronics systems onto combatant craft
- Code 832 requires niche expertise and high end engineering partnerships in early phases of R&D to cover a broad spectrum of technologies

**ASE Contract(s) covers the left end of this scale where highly technical problems without precedence need solutions**



# Current ASE Contract

- *Very Broad*
- *Multi Award*
  - *Vencore (QinetiQ)*
  - *Gibbs and Cox*
- *Developed to hand off to Engineering Services Contract*
- *3 years up in July 2015, extension granted until 3 separate contracts can be competed*
  - *Advanced Electronics (Heavy on Tactical Communications)*
  - *Intelligent Systems (Primary tool for USV work)*
  - *Advanced H,M, & E (Covers non standard systems)*



# ASE Contracts (Future)

Advanced System Engineering Contract was intended to bring together a broad range of companies to provide engineering support and prototyping of advanced technologies to advance the state of the art in manned and unmanned craft systems, improve operational effectiveness and investigate new paradigms.

## Advanced Electronics

- Tactical Comms
- Integrated Bridge
- Navigation
- Networks
- Tempest
- Displays
- Antenna
- Prototyping
- Training
- COP
- MDA
- EMI
- Computers
- Cyber
- Security/IA
- CM/CMMI
- C4I Software
- Systems
- RF Engineering
- SOVT

**Priority 1**

## Intelligent Systems

- Autonomy V&V
- HRI
- Software for Autonomy
- Modeling & Simulation
- Perception
- Sensor Modeling
- Behavior Development
- Situational Awareness
- Sensor Integration
- Automated Systems
- Control Systems
- Mechatronics
- Prototyping
- Testing

**Priority 2**

## Advanced Craft Systems Engineering

- Ballistic Protection
- Electromechanical
- Mission System
- Integration
- Weapon System
- Integration
- Machinery
- Weight Handling
- Equipment
- Energy/ Emissions/
- Green Technologies
- Noise Analysis
- Heat Load Analysis
- Electric Propulsion
- Corrosion
- Advance Materials
- Batteries
- Hybrid Electric
- FEA/ CFD
- Hull Forms
- Hydraulics
- DnR & LnR
- Health Monitoring
- Shock and Vibe
- Engine Analysis/
- DYNO
- Advanced Propulsion

**Priority 3**

# Vision

Set the standard for delivering the right solution at the right time.



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# QUESTIONS?



# Prototyping

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# Why a Prototyping Contract?

## Limited Contracting Options Available

- Engineering services contract

  - Low ODCs

- Simplified Acquisition Procedures

  - Limited dollar amounts

  - Longer lead time

- Large Purchase

  - Longest lead time

  - Potential funds expiration prior to work completion

# Prototyping Needs

Focused on physical hardware

Fabrication engineering as needed

Specialty engineering as needed

Testing

Support



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# Scope

This scope is for the acquisition of prototyping services and engineering, production and marine services in support developing test articles, physical engineering models, science and technology models, functional and operational prototypes.

Prototypes are developed in support of the development of science and technology and the validation of operational requirements. Prototypes are often used to examine scientific hypotheses, validate engineering solutions, or demonstrate operational effectiveness.

The intent is to support prototyping from initial conception through prototype production and throughout life of the prototype.

# Work Areas

Program Management and Planning –cost estimating, scheduling, reporting, etc.

Prototype Development - production engineering support, technical analyses or other specialty technical services

Prototype Fabrication - may include material samples, test articles, individual components, systems and sub systems, partial scale and full scale craft, support gear and equipment required for the testing and fielding of prototypes

Prototype Support and Installation - support boat checks or ship checks as required, refurbish, repair or upgrade GFE in support of a successful installation, provide specialty tools or rigging, unique safety items, templates or jigs required.



## Work Areas (cont'd)

Prototype Testing - This may include material testing of samples, coupons or panels, bench testing of individual component, systems or subsystems. This may also include builder's trials and support of government trials in the development of prototype watercraft as required. May be required to supply test gear, instrumentation, consumables and fixtures as necessary. Testing may occur at the contractor facility, a government facility, test range or a public waterway anywhere in the United States.

Post-Delivery Support - This support may include repair, modification, refurbishment and upgrades to the prototype or its components and materials throughout the prototype's useful life.

# Past Prototyping Efforts

S&T model watercraft  
Polymer Kelp material prototypes  
Pop up gun  
Army workboat  
MK V/ Jetski L&R  
UISS watercraft prototype  
MHU watercraft prototype  
Jet array box (Small Structural box)  
SEAMOB USV  
Various antennas  
USV bow latch  
Mk VI Integrated Electronics Suite

Black box/health monitoring system  
Multi-vehicle comms system  
EOD dynamic positioning system  
Hand Held USV Operator Control Unit  
Sealion Technology demonstrator  
Towable sled  
LCS launch and retrieval bunks  
Small Catamaran  
USV refueling gear  
Towbodies

# Ideal Vehicle

Boat Builders

Metal and Composite

Machine Shops

Electrical/Electronic Shops

High ODCs

Supports Design/Build

Easy access to specialty contractors

Can withstand lumpy activity

Supports tasks \$10k-10M+

# Status

## Initial stages

- Statement of Work being developed

- ICGE being developed

- Explore contract options and structure  
single award, multi-award?

- Timeline TBD



# QUESTIONS?



# Life Cycle Management & Sustainment Engineering

**Bob Bradford**

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# Mission, Functions, Products

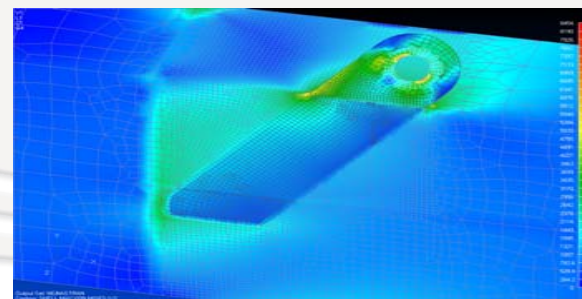
## PROVIDE TIMELY BOAT AND CRAFT IN-SERVICE ENGINEERING SUPPORT TO MEET CUSTOMER MISSION REQUIREMENTS

- In-Service Engineering Agent
- Planning Yard
- Engineering and Design
- Direct Fleet Support
- Marine Boatyard Services
- Distance Support
- Obsolete Equipment Replacement
- Alteration Installation Team

- Drawings
- Boat Alteration Record
- Liaison Action Records (LARs)
- Design Histories
- Validation Sheets
- Calculations
- Weight & Configuration Tracking
- Industrial Work Packages
- Industrial Support
- Familiarization
- Boat Inspections
- Transportability Issues



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# In-Service Teams

- ***Boats, Mission Modules***
- ***CNIC, SSP***
- ***NECC***
- ***Patrol Coastal***
- ***Landing Craft***
- ***Life Raft***
- ***Army***
- ***SPECWAR/Unmanned Vehicles***
- ***Foreign Military Sales In-Service***
- ***INSURV, Misc. Craft***

28 Gov  
People

We Have a  
Permanent  
Presence  
West Coast



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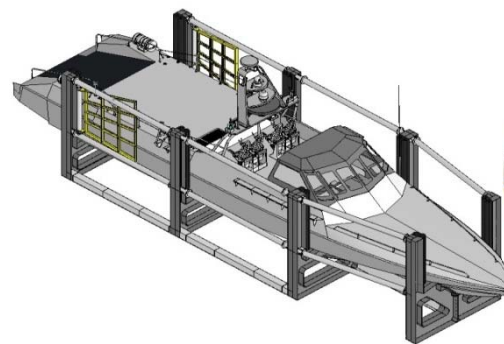
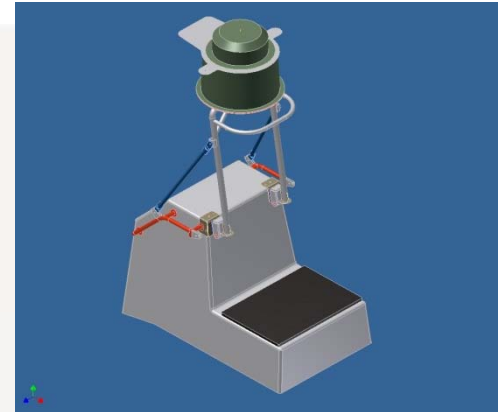
# Planning Yard and ISEA Support

## Planning Yard

- ☐ Design / Engineering
- ☐ Alteration and Drawing Development
- ☐ BOATALTs, LARs / RLARs
- ☐ Alteration Installation Support
- ☐ Prototyping Support
- ☐ Weight and Stability Tracking
- ☐ Configuration Control
- ☐ Estimating
- ☐ Maintain Drawing Data Base
- ☐ ILS

## ISEA

- ☐ Direct Fleet Support
- ☐ Repair Support / Problem Resolution
- ☐ Engineering Analysis
- ☐ Obsolete Equipment
- ☐ Inspections
- ☐ ILS



**ENSURE SAFE, RELIABLE, EFFECTIVE  
AND  
EFFICIENT SYSTEMS**

# Configuration Control



**Aft Deck House**



**New Pilot Houses**

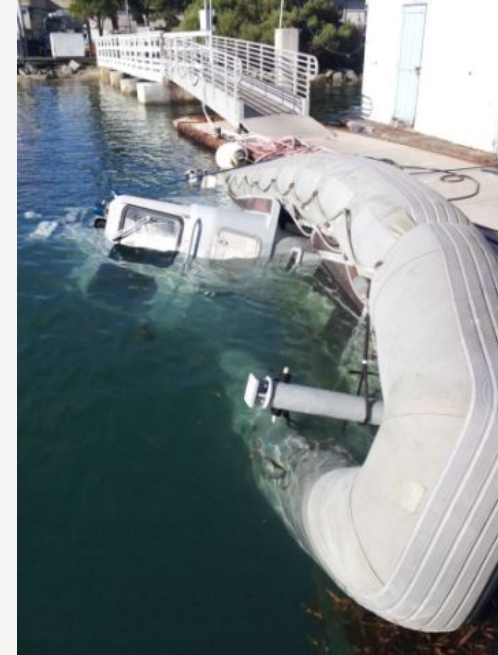


**Gun Mount**

**NO UNAUTHORIZED BOATALS**



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# Industrial Support

## RMC Support (as tasked by customers)

- ☐ MARMC, SERMC, FDRMC
- ☐ Regional CHENG Support
- ☐ Technical Oversight
- ☐ Technical Validation, Acceptance
- ☐ Alteration Installation Verification
- ☐ Overhaul Trials

## Alteration Installation

- ☐ Work with Prime and Subs
- ☐ Alteration Prototype
- ☐ Installation Feedback
- ☐ Purchase / Kitting
- ☐ Storage and Shipping
- ☐ Installation World-Wide (Testing, QC...)
- ☐ Trials
- ☐ Turnover



**FY14 AIT WAS APPROXIMATELY 33%  
OF CONTRACTOR FUNDING**



# Craft Supported

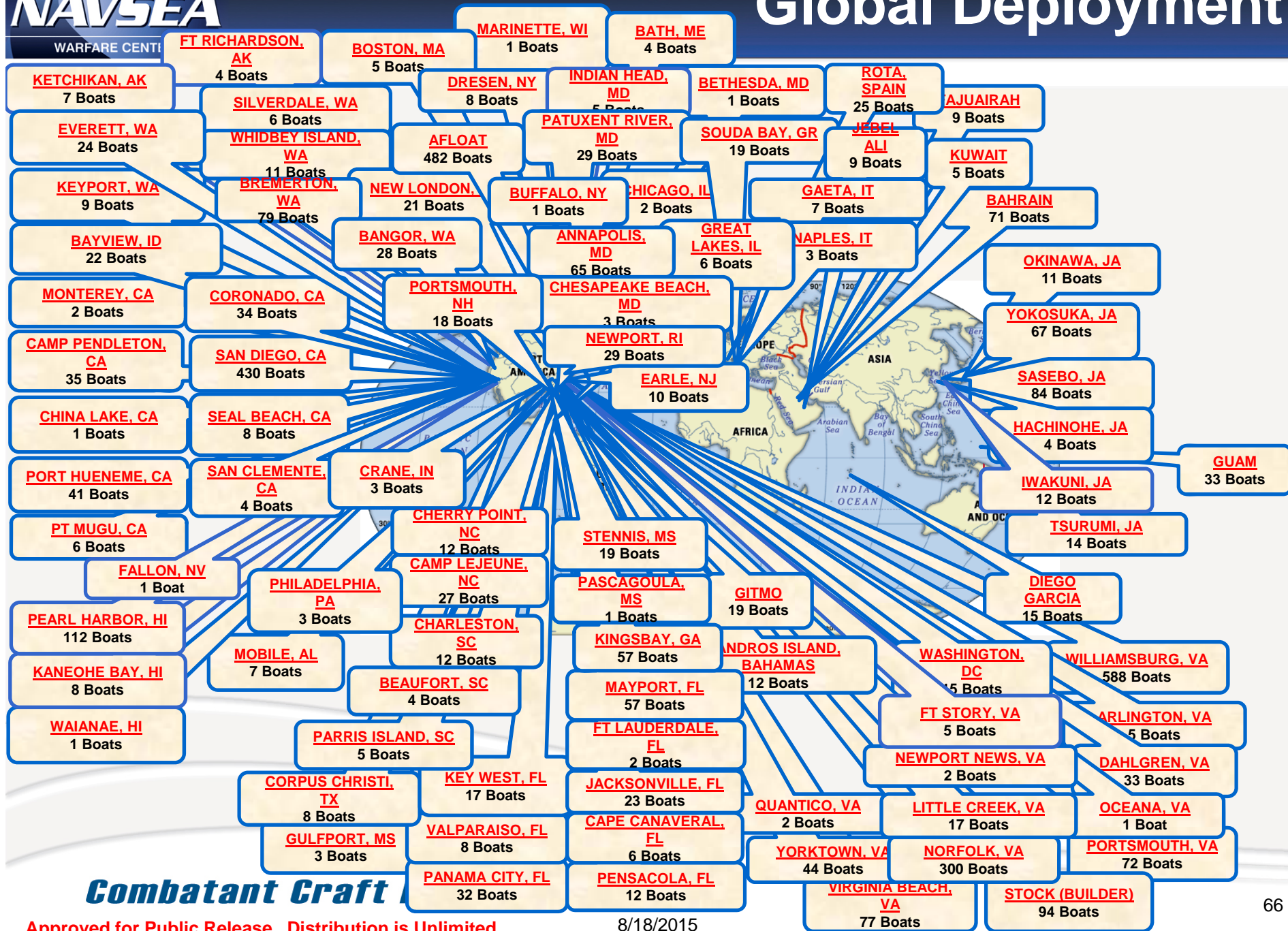
**Number of Boats - 3559**

**Boat Allowance Types - 77**

## Customers

- PMS 325
- PMS326
- PMS 377
- PMS 470
- PMS 420
- PMS 480
- NAVSEA 05
- Fleet Users
- NECC
- ACUs
- SSP
- CNIC
- NAVFAC
- Shipyards
- INSURV
- CNSL
- CNSP
- CSF
- PACFLT
- SPECWAR







# Navy Support



Life Rafts

Personnel  
Boats

FP Boats

Security Boats

Port Ops Boats



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# Navy Support



FP Boats  
Barrier Boats  
Security Boats  
Port Ops Boats



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# Navy Support



LCUs

Work Boats

Utility Boats

Dive Boats



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# Navy Support



Ship's Boats  
Mission Modules



# Navy Support



Riverine Patrol Boat

34' Patrol Boat

Riverine Assault Boat

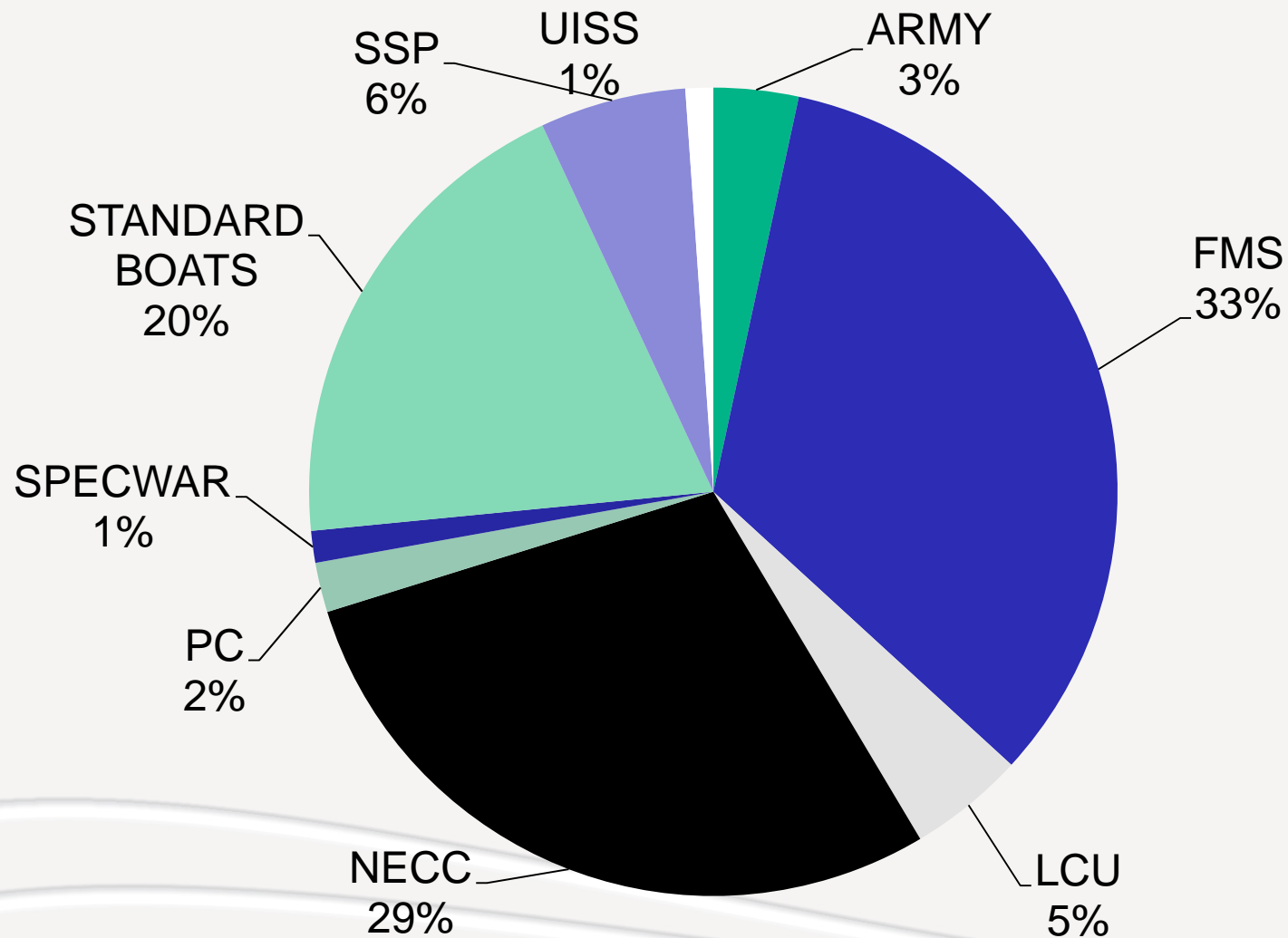
Riverine Command Boat

11M RX





# FY14 Total Allocation (Gov't and Contractor)





# FY14 Metrics

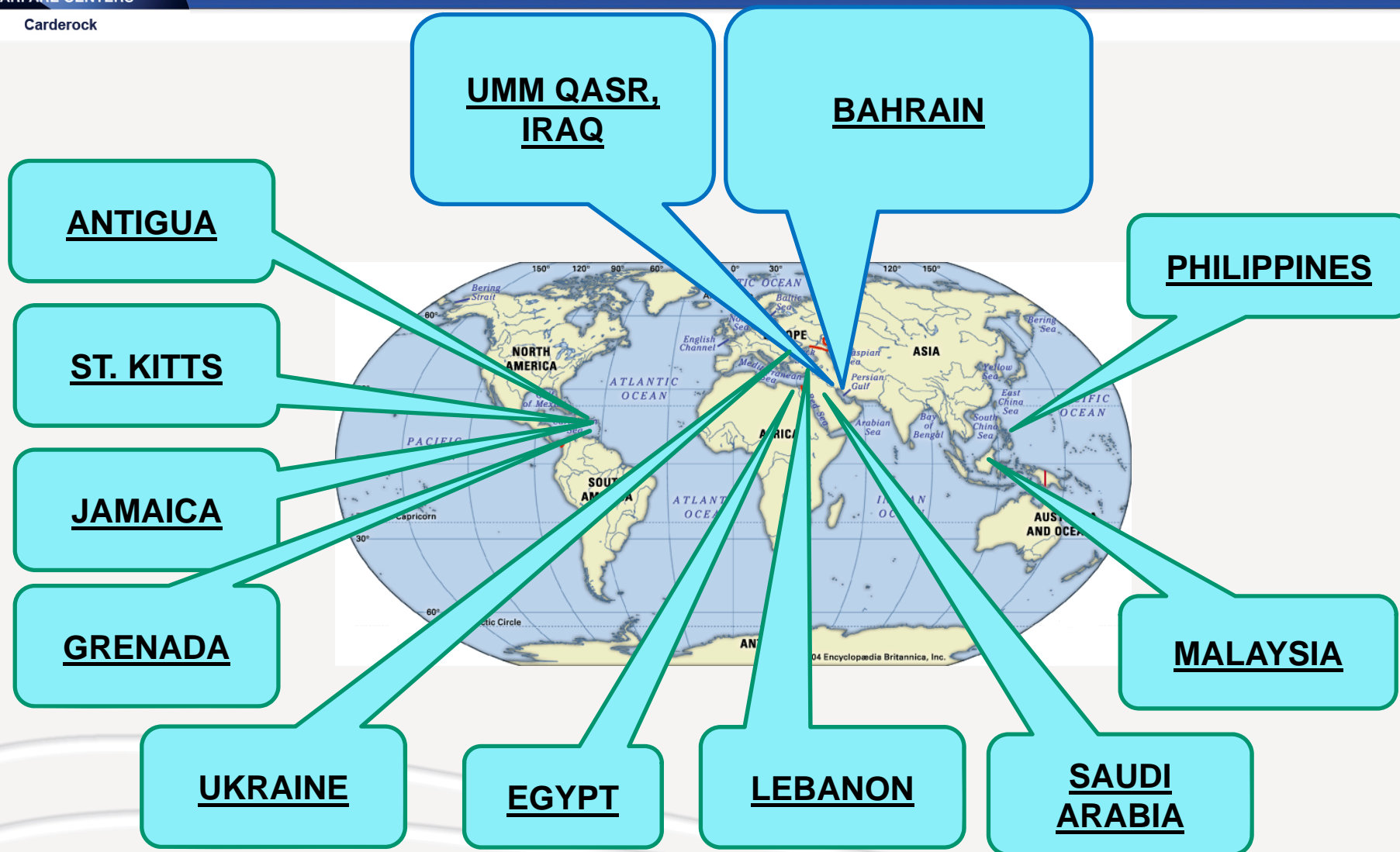
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TEAM	In-Service Dwgs Developed	In-Service Dwg Sheets	In-Service DWGS Revision	In-Service Drawing Sheets Revision	Design History	LAR	Boat Insp	BoatAlt/CraftAlt	BoatAlt/CraftAlt Revision	Boats Modified / Rehab	Industrial SOW	AIT Instl	MCP/MWO	ECP	Other Tech Document	Briefs	CSRD
ARMY	9	319	3	22	9	0	7	0	0	0	3	3	2	4	0	0	0
IRAQI FMS	1	11	0	0	0	5	200	5	0	70	45	0	0	0	425	50	6005
LANDING CRAFT	32	233	44	677	76	42	0	1	1	0	1	0	0	0	4	3	0
NECC	128	755	49	386	525	428	108	40	8	131	83	70	0	0	1590	71	5013
PATROL COASTAL	0	0	0	0	5	5	110	0	0	0	6	0	0	0	41	2	0
SPECWAR	0	0	1	4	1		18	2	0	0	2	0	0	0	1	1	0
STND BOATS	30	180	17	154	112	39	159	39	0	65	95	5	0	0	0	12	174
MSC	7	47	4	13	11			3	0	0	0	0	0	0	0	0	0
<b>834 Totals</b>	<b>207</b>	<b>1545</b>	<b>118</b>	<b>1256</b>	<b>739</b>	<b>519</b>	<b>602</b>	<b>90</b>	<b>9</b>	<b>266</b>	<b>235</b>	<b>78</b>	<b>2</b>	<b>4</b>	<b>2061</b>	<b>139</b>	<b>11192</b>

# Code 834 List Of Processes

- Boat / Craft Alteration Record Development Process
- Boat Yard Production
- Customer Support Documentation
- Drawing Standard and Development
- Historical Tech Documentation
- Job Jacket Standard
- Parts Validation
- LAR
- Reverse LAR
- Short Form Boat Alt Process
- Technical Documentation Review
- Touch Time and Quality Defects

# FMS Current Country Support



# FMS Support



## 35 Meter Patrol Boat

- Maintenance/Repair
- BOATALTS
- Design Shop Improvements



## Ship Repair Facility

- Dyno and Dyno Enclosure Support
- Developed 35M and 60M training for craft
- Electrical Drawing Redlines/Calcs for power requirements



## 60 Meter Off Shore Vessel

- Maintenance/Repair
- BOATALTS
- Design Shop Improvements



# FMS Support



## **78 FT Fast Coastal Patrol Craft (PCF)**

- Engineering evaluations
- Analysis
- Investigations and reports to PMS 326
- PCF Hull Cracking



## **42 Meter Coastal Security Craft**

- Maintenance/Repair
- Dry Docking
- Part Procurement

# FMS Support



## **MK V Special Operations Craft**

- Transfer of MK V's, Industrial Support CONUS and OCONUS
- Familiarization and operational training of MK V's



## **7 Meter & 11 Meter Rigid Inflatable Boats**

- Develop reactivation and training plan. Identify material and part deficiencies

Anticipate huge growth  
in this area

# FMS Support



## **25 Meter Fast Patrol Craft**

- Engine/generator room ventilation
- BOATALT Design/Installation



## **78 FT Patrol Craft Fast**

- Main Engine
- A/C
- Marine Gear
- Reverse Osmosis
- Propeller Replacement Engineering,
- Engine
- Exhaust Mod
- BOATALT Development
- Engine Exhaust Mod



# FMS Support



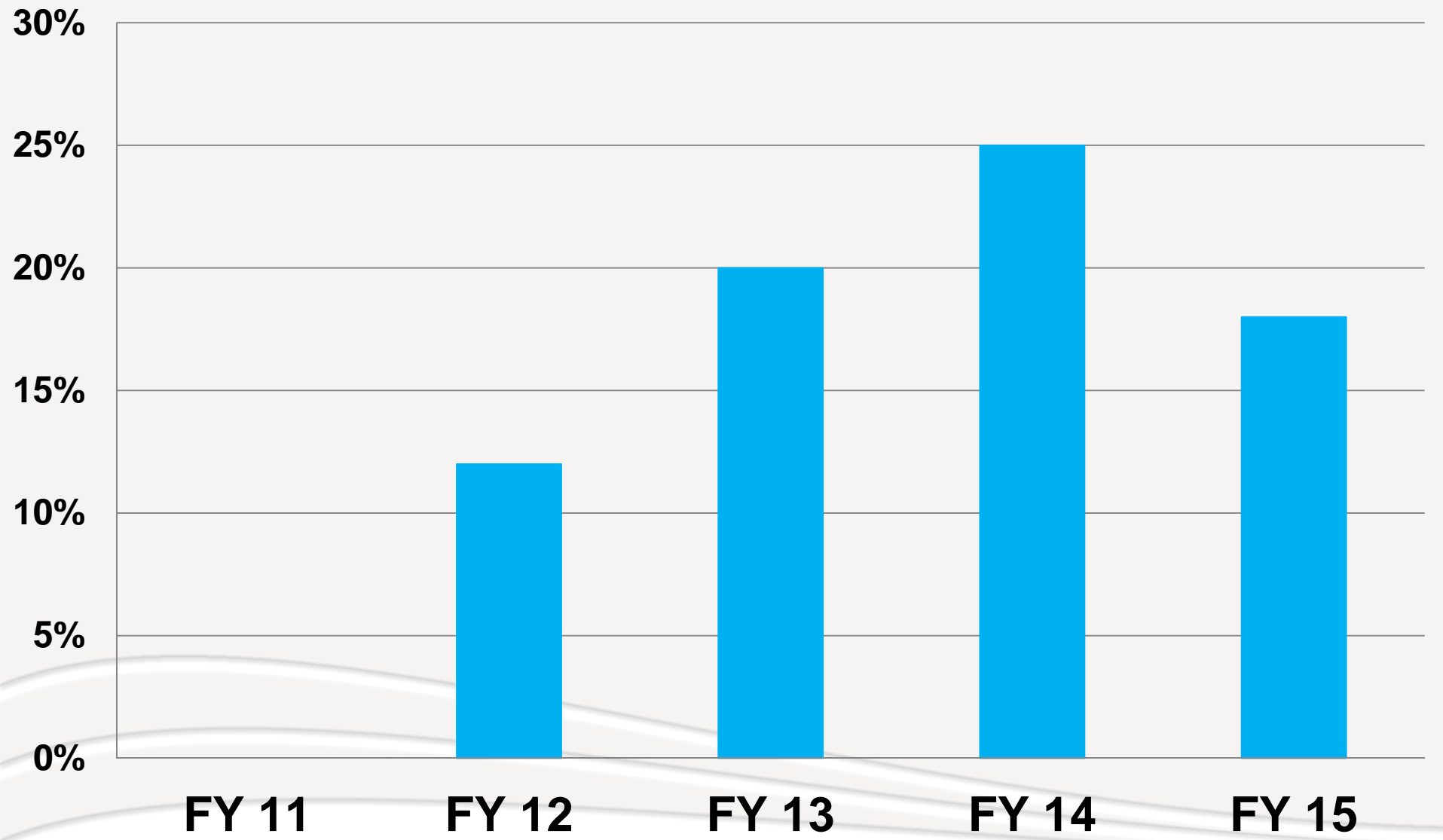
## 40 Foot SeaArk

- Developed BOATALT for Engine Replacement
- Design/Installation
- Developed Logistic Package/Parts Validation
- Developed BOATALT for 12V DC Electrical System
- Operation and Maintenance Support



# FMS Funding Growth (Last 5 Years)

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# Future Needs Prediction **CONUS**

- *Decrease to steady-state for Standard Navy support*
- *Decrease of Fleet funding for overhaul support – RMCs performs their own work*
- *Increase in ISEA support for RMCs and regions*
- *Overall slight growth after initial decline in In-Service funding*
- *Decrease slightly near term in industrial work (AIT, Repair), mostly due to contract limitations and limits on purchasing material...long term expect contract type and changes in policy could cause this to increase*
- *Increase in Life Raft funding and support*
- *Continued backlog of BOATALT designs mostly due to lack of funding*
- *Increase in MSC and Non-Standard boat support*
- *Increase in Commonality support which will long term reduce life cycle support*
- *Increase in Uniform National Discharge Standards support*

# Future Needs Prediction **OCONUS**

- ***Continued Growth in FMS ISEA support – Possibly to the point of being another branch***
- ***Growth in FMS in Africa, Southeast Asia, Caribbean, South America***
- ***Continued Growth in NECC support as MK VI arrive and NECC expands operations world-wide***
- ***Increase in continuous support in Bahrain***
- ***Increase in on-site support OCONUS – often continuous***
- ***Increase in OCONUS travel***
- ***Increase of placing government and contractors in foreign countries...mostly contractors***
- ***Increase in in-country familiarization and activations***

# Life Cycle Management & Sustainment Engineering



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# QUESTIONS?



# Test & Evaluation

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# Our Mission

*“The test and evaluation capability of the Department has provided the Navy with the ability to technically evaluate the capabilities of boats or prototypes under procurement. Such evaluations can insure that the expenditure of funds for any new Navy craft resulting in the procurement of performance proven craft, technically capable of achieving required design goals, including the necessary documentation to predict performance as mission requirements are modified to suit new tactical situations.”*

*(excerpted from “Boat Engineering Department, NAVSEC, Norfolk Division” , presentation given to the Hampton Roads SNAME sections, dtd 07 Oct 1970)*

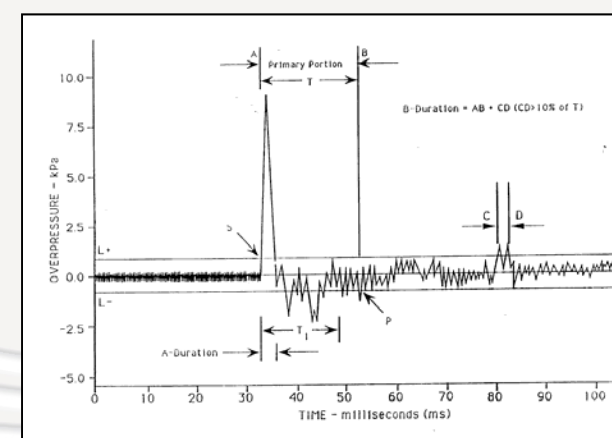
**To provide an unbiased, independent assessment of craft and craft systems performance.**



# What we do

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- *Conduct Underway Boat Trials to Quantify Performance Characteristics on:*
  - *Hull*
  - *Electrical*
  - *Mechanical*
  - *Propulsion Systems*
  - *Human Factors*
- *Data*
  - *Acquisition*
  - *Reduction/Analysis*
  - *Technical Reporting*
- *Risk Management*
  - *Requirements Definition*
  - *Contractual Compliance*
- *Expanding Knowledge*
  - *Validate Design Tools*
  - *R&D/New Craft Systems Evaluations*
  - *RDT&E - Rapid Technology Transfer*



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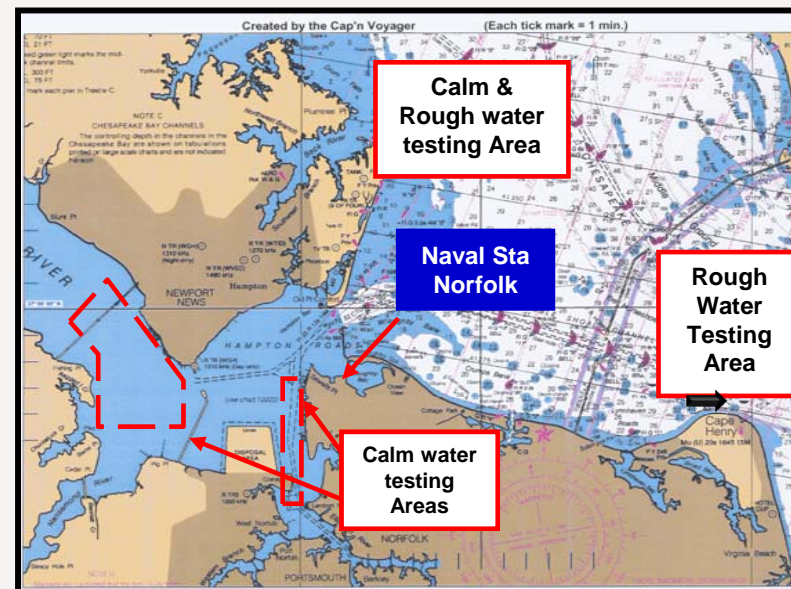
# Full Spectrum Testing

- *Seakeeping Trials*
- *Structural Response*
- *Propulsion Trials*
- *Maneuvering Trials*
- *Noise & Vibration*
- *Forensics / Failure Analysis*
- *Acceptance Testing*
- *Craft Characterization*
- *Signature Trials*
- *Operational Assessments*
- *Human Factors Assessments*
- *Craft & Systems Operation*
- *Reliability, Maintainability, Availability*



# Norfolk Waterfront Facility

Carderock



- Located on Naval Station Norfolk
  - Close proximity to various operational commands
  - A variety of test environments nearby
  - 30,000 sqft building on approximately seven acres
- Facility maintains
  - Detachment Test and Support Craft
  - Fleet Loaners
  - Craft in Transition
- Facility enables
  - RDT&E
  - System Integration
  - Rapid Fleet Response
- Administrative Offices
- Conference/Training Rooms
- High Bays
- Warehousing
- Machine / Metal Fabrication Shop
- Electronics Shop
- Calibration & Test Lab
- Engine Shop
- Weld Shop
- Dive Locker
- Outboard Engine Test Shop

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# Waterfront Operations Contract

- *Direct Fleet Support*
  - *Boat Repair, Troubleshooting*
  - *Boat De-Preservation*
  - *Transportation*
  - *Crew Familiarizations*
- *Test & Evaluation Support*
  - *Range & Safety Craft Crews*
  - *Hardware and Sensor Installation*
  - *Detachment Support Craft Upkeep & Repair*
  - *Minor Prototyping*
- *Facilities Support*
  - *ESH Compliance*
  - *Vehicle Operation*
- *General categories of labor:*
  - *Boat Captains*
  - *Able Body Seaman*
  - *Mechanics*
  - *Electronics Technicians*
  - *Supporting administrative personnel*
  - *Supply Chain Management*
  - *Divers*
  - *Medical*

**Waterfront Support Contract Personnel  
SUPPORT but DO NOT Conduct T&E!**



# QUESTIONS?



# Integrated Logistics Support

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# Code 836 Authority & Functions

## Policy References for Authority and Functions:

- OPNAVINST 4780.6F (POLICY FOR ADMINISTERING SERVICE CRAFT AND BOATS IN THE U.S. NAVY)
- NSTM Chapter 583, Vol 1 (BOATS AND SMALL CRAFT)

## Assigned Navy Boat Functions

- Acquisition Engineering Agent (AEA) – ILS
- Technical Support Activity (TSA)
- Technical Manual Management Activity (TMMA)
- In-Service Engineering Agent (ISEA) – ILS
- Boat Inventory Management (BIM)



## Core Business Areas:

1. Acquisition ILS
2. Life Cycle ILS
3. Boat Inventory Management (BIM)



# Code 836 Core Functions

## Acquisition ILS

- Develop Supportability Plans
- Review Technical Data Package
- Develop ILS Products



## Lifecycle ILS

- Provide Direct Fleet Support – Logistics
- Revise with Configuration Changes
- Maintain ILS Products on more than 3000 boats

## Boat Inventory Management

- Centrally manage Navy inventory of more than 3400 boats
- Issue and disposition authority to provide the right boats at the right time based on validated custodian boat allowances
- Manage wholesale boat inventory control points (i.e., stock)





# Our Customers

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- **Customers**

- **U.S. Navy**

- Fleet (all Ship's boats and embarked boats, SURFLANT/PAC, USFFC)
    - NECC
    - Ashore (CNIC, etc.)
    - SYSCOMs
      - NAVSEA
      - NAVSUP
      - NAVFAC
      - MSC
      - SPAWAR
      - Strategic Systems Program (SSP)
    - NETC (Training Commands)



- **U.S. ARMY**
  - **SPECWAR**
  - **FMS**



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# Contract Requirements

Engineering Services Contracts provide technical support for:

- Cost effective development of acquisition logistics deliverables such as technical manuals, planned maintenance and supply support.
- Cost effective life cycle management of ILS products, including revisions and updates.
- Requirements to post-disposal inventory management and configuration management of over 3400 U.S. Navy boats and combatant craft

# Contract Requirements

- The effectiveness of the Integrated Logistics Support Branch hinges on our ability to utilize engineering services contracts.
- Work includes:
  - Projects with discrete deliverables
  - ‘Level of effort’ tasks (especially in the life cycle sustainment realm), wherein experienced logisticians, technicians, analysts and engineers play a vital role in responding to emergent operational needs for boats from inventory or for logistics support.



## Acquisition (Initial) ILS

### – Provisioning

- Develop APL/AEL Provisioning Technical Documentation (PTD) and Data for Provisioning (DFP)
- Review resulting APLs for completeness and accuracy

### – Planned Maintenance

- Conduct RCM analysis on newly acquired craft and HM&E systems / equipment
- Develop and/or Edit MRCs and MIPs for issue and submit to NSLC for incorporation/issue

### – Technical Manuals

- Develop Boat Information Books (BIBs)
- Develop Custom Parts Manuals
- Develop Operation and Maintenance Manuals
- Develop interactive CDs
- Distribute publications





# Integrated Logistics Support

- **Acquisition (Initial) ILS (continued)**
  - **Configuration Data Accounting**
    - Provide Configuration Accounting for boats using CDMD-OA via applicable CDM
  - **Supportability Plans**
    - Life Cycle Management Plan
    - Naval Training System Plans
    - Maintenance Plans
    - Supply Support Plans
    - Facilities Analysis
  - **Commercial Off the Shelf (COTS) Technical Documentation Reviews**
    - Vendor manuals
    - Drawings
    - Configuration/Parts Data
    - Maintenance requirements



# Integrated Logistics Support

- **In-Service ILS**
  - **Provisioning**
    - Develop, update and maintain APLs and AELs with changes resulting from BOATALTs or LARs
    - Resolve Automated COSAL Improvement Program (ACIP) issues
    - Process and resolve Technical Referral Requests (TRRs) and DD Form 339's
    - Support re-procurement or obsolescence related issues
  - **Planned Maintenance**
    - Maintain maintenance documentation per configuration
    - Receive, research, evaluate & respond to Technical Feed Back Reports (TFBRs)
  - **Technical Manuals**
    - Maintain technical manuals per configuration
    - Perform Technical Manual Management Activity (TMMA) functions for boat related publications
    - Respond to fleet Technical Manual Deficiency Evaluation Reports (TMDER)

# Integrated Logistics Support

- **In-Service ILS (continued)**
  - **Configuration Data Accounting**
    - Provide Configuration Accounting using CDMD-OA via applicable CDM
    - Transfer boat configuration data upon issue/transfer/stock/disposition
    - Make configuration changes resulting from BOATALTS
    - Make any corrections to configuration along with updating the boat APL
  - **Supportability Plans**
    - Update plans per programmatic/operational changes
  - **Direct Fleet Support and Trouble desk**
    - Provide information or resolution of issues as requested:
      - Configuration
      - Boat APLs
      - Parts obsolescence
      - Drawings
      - PMS
      - Publications
    - Interfaces with Navy Call Center



# Integrated Logistics Support

## Boat Inventory Management (BIM) Functions

- **Central accountability and management of more than 3000 Navy boats**
- **Manage Boat Disposition & Boat Allowances**
  - Authorize initial issue to fill a boat allowance, custody transfer, turn in and ultimately disposal of the boat; provide disposition instructions and track
- **Maintain and Validate Navy Boat Inventory**
  - Perform Boat Inventory Validation/Physical Inventory IAW OPNAVINST 4780.6F
- **Broker Best Use of Available Boat Assets**
  - Match available boats to validated needs/requirements
- **Capture Boat Budget Requirements**
  - Develop boat budget inputs for both phased replacements and emergent requirements
- **Manage Wholesale Stock Points**
  - San Diego
  - Williamsburg
- **Disposal via GSA Sales Program**





# QUESTIONS?