CCD Contracts & Technical Briefs

7 February 2018

Combatant Craft Division

Contents

- *Overview of Active Engineering Support Contracts*
- *Boat Acquisition Engineering*
- *Systems Design & Integration*
- *Prototyping*
- *Life Cycle Management & Sustainment Engineering*
- *Test & Evaluation*
- *Integrated Logistics Support*

Overview of Active Contracts

Combatant Craft Engineering & Marine Service (OCONUS)

Contract Number:	N00178-04-D-4027 FD02
Type:	CPFF, term, Seaport
PoP:	September 28, 2016 – September 14, 2018
Total Contract Amount:	$38,373,352 ODC – 47.8%
Vendor:	CDI Marine
COR:	Bill Grider
Contracting Officer:	Keith Rouch

Scope:
The objective of this contract is to provide engineering and marine services in support of CCD's mission providing Research and Development (R&D), Systems and Design Engineering for new watercraft, in-service and all life cycle support for Outside Continental United States (OCONUS) watercraft efforts. This support covers, and is limited to, all aspects of OCONUS support including program/project management, technical, industrial and Integrated Logistics Support (ILS). Services will cover all disciplines including structural, mechanical, electrical, and electronic systems.

Sample Orders:
Foreign Military Sales (FMS) St. Kitts and Nevis Defense Force Project Coordination and Technical Support
Patrol Coastal Class In-Service Engineering Agent Support
Commander Naval Installation Command (CNIC) (N4) In-Service Engineering Agent and Planning Yard (PY) Support
Littoral Combat ship (LCS) In-Service Engineering

Primary Sponsor(s):
PMS 325F & 326 FMS
PMS 377 Amphibious Warfare
PMS 325G Boats & Craft
CNIC N4
PMS 505 LSC

Overview of Active Contracts

Combatant Craft Engineering & Marine Service (CONUS)

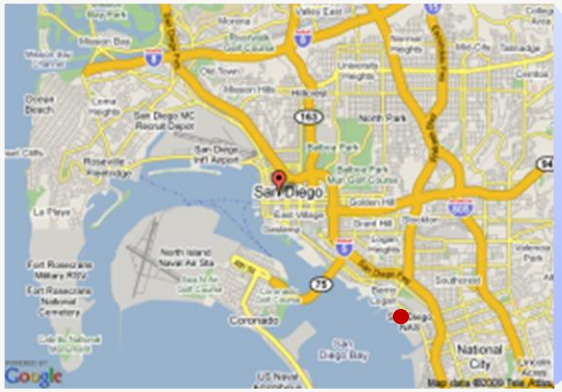
Contract Number:	N00178-04-D-4027 FD03
Type:	CPFF, term, Seaport
PoP:	September 28, 2016 – September 19, 2018
Total Contract Amount:	$41,436,363 ODC – 23.1%
Vendor:	CDI Marine
COR:	Bill Grider
Contracting Officer:	Keith Rouch

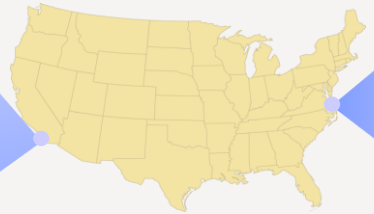
Scope:
The objective of this contract is to provide engineering and marine services for Code 83's mission covering the functional areas of program management and planning, acquisition engineering, in-service engineering, and life cycle management. This is a multi-disciplinary engineering and Alteration Installation Team (AIT) services contract including managerial, structural, mechanical, electrical, electronic, naval architecture, research and development, logistics, test and evaluation, prototyping, and installation, repair, and maintenance in support of Continental United States (CONUS) watercraft.

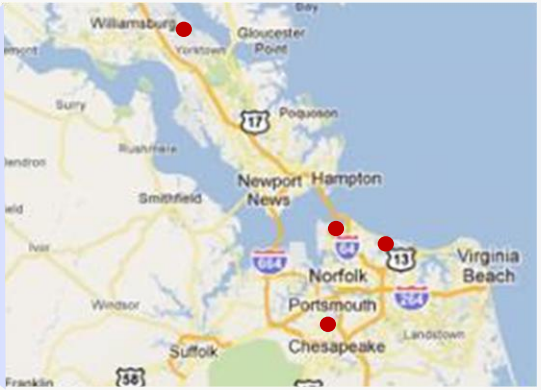
Sample Orders:
- Navy Expeditionary Combat Command (NECC) Boats In-Service Engineering, Life Cycle Management (LCM) and Direct Fleet Support
- United States Fleet Forces Command (USFFC) Technical Support
- Center for Security Forces (CSF) In-Service Engineering and Direct Fleet Support
- PMS 325G In-Service Engineering Agent (ISEA) and Planning Yard (PY) Support
- Boat Inventory Management (BIM) Support
- PMS 325G MKVI Contractor Supported Interim Training for Coastal Riverine Group One (CRG 1)

Primary Sponsor(s):
- NECC
- USFFC
- PMS 325G Boats & Craft
- CSF

Facilities with Contract Support







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

Future Competitive Requirements

Summary Description/ Title	Estimated Total Value	Estimated Award Date*
Advanced Electronics	$30M	4th Quarter FY18
Watercraft Industrial Support ("WIS")	$20M	2nd Quarter FY19
Intelligent Systems	$20M	2nd Quarter FY19
Advanced Systems Prototyping	$20M	3rd Quarter FY19
Engineering Services for Combatant Craft	$60M	4th Quarter FY19

* Award Dates subject to change.

QUESTIONS?

NAVSEA
WARFARE CENTERS
Carderock

Naval Architecture & Boat Acquisition Engineering

Will Sokol

Combatant Craft Division

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.

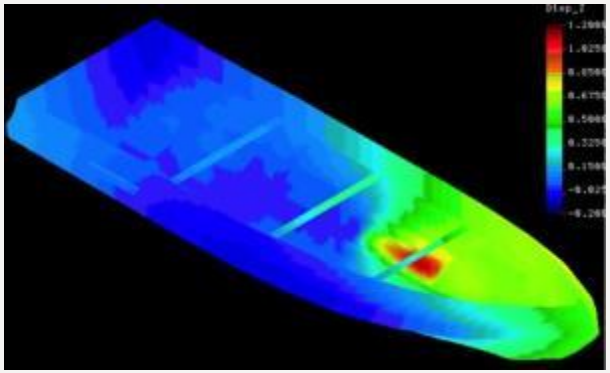
Design & Acquisition

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*

Research & Development

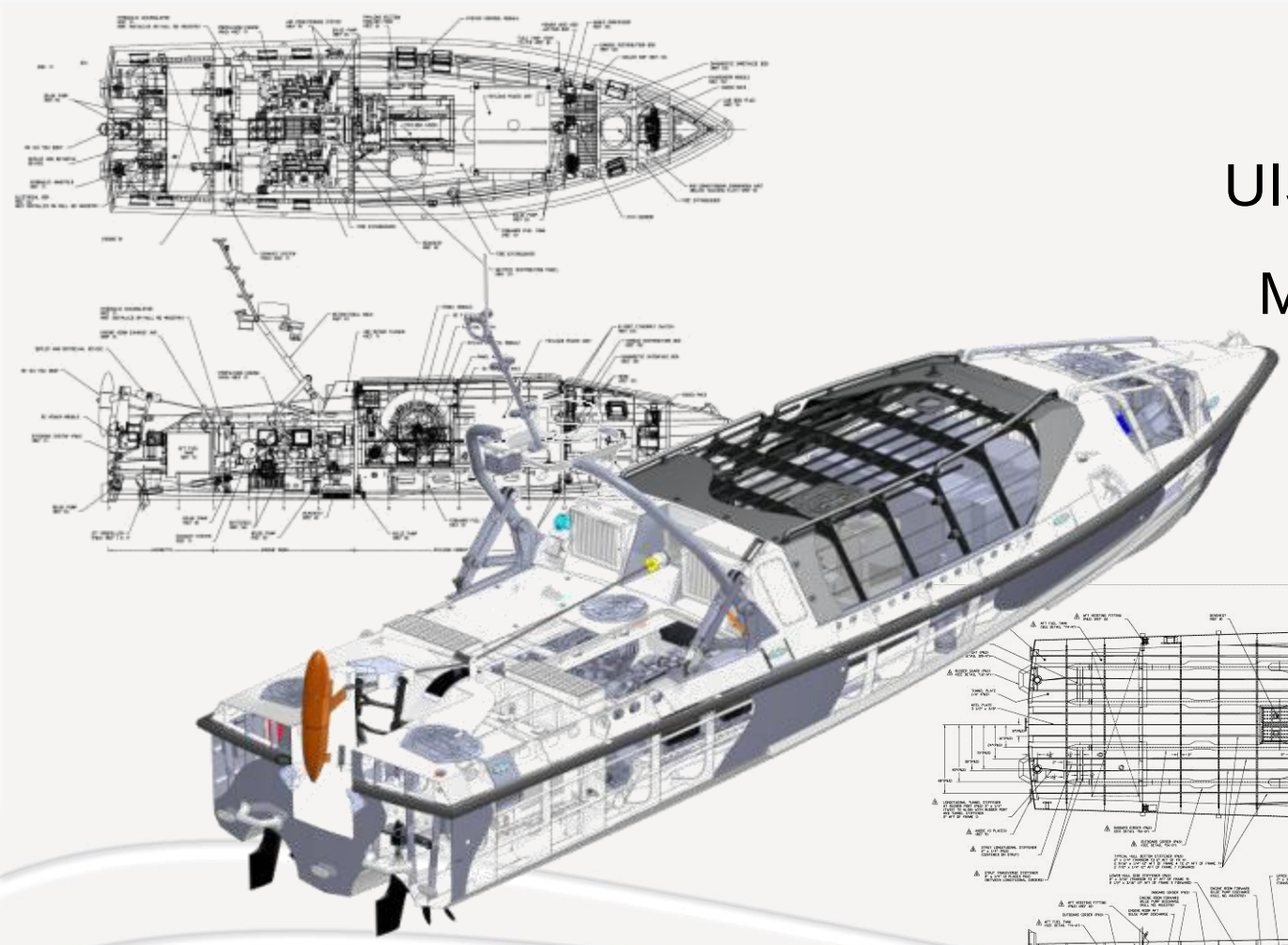
(Photo: John F. Williams/U.S. Navy/Released) – Cover of Carderock WAVES Newsletter May/June 2015



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

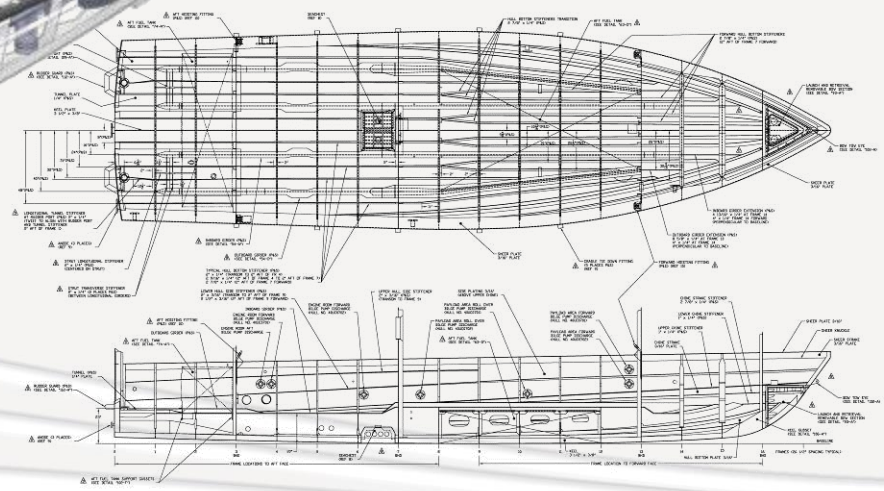
Craft Design & Fielding



UISS-PROTOTYPE

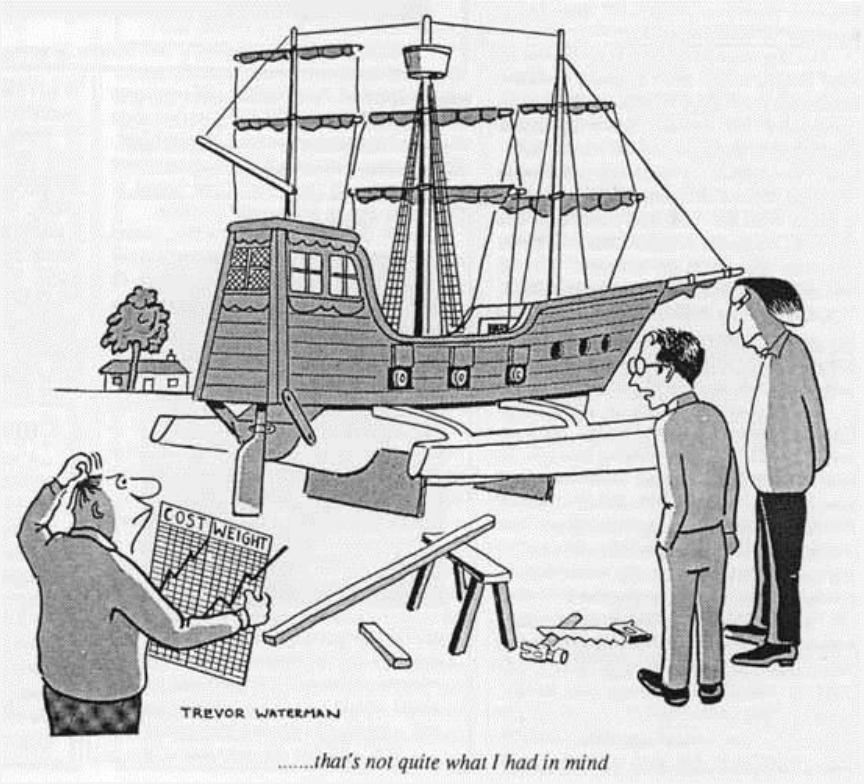
MODELING AND

AS-BUILT DRAWINGS



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

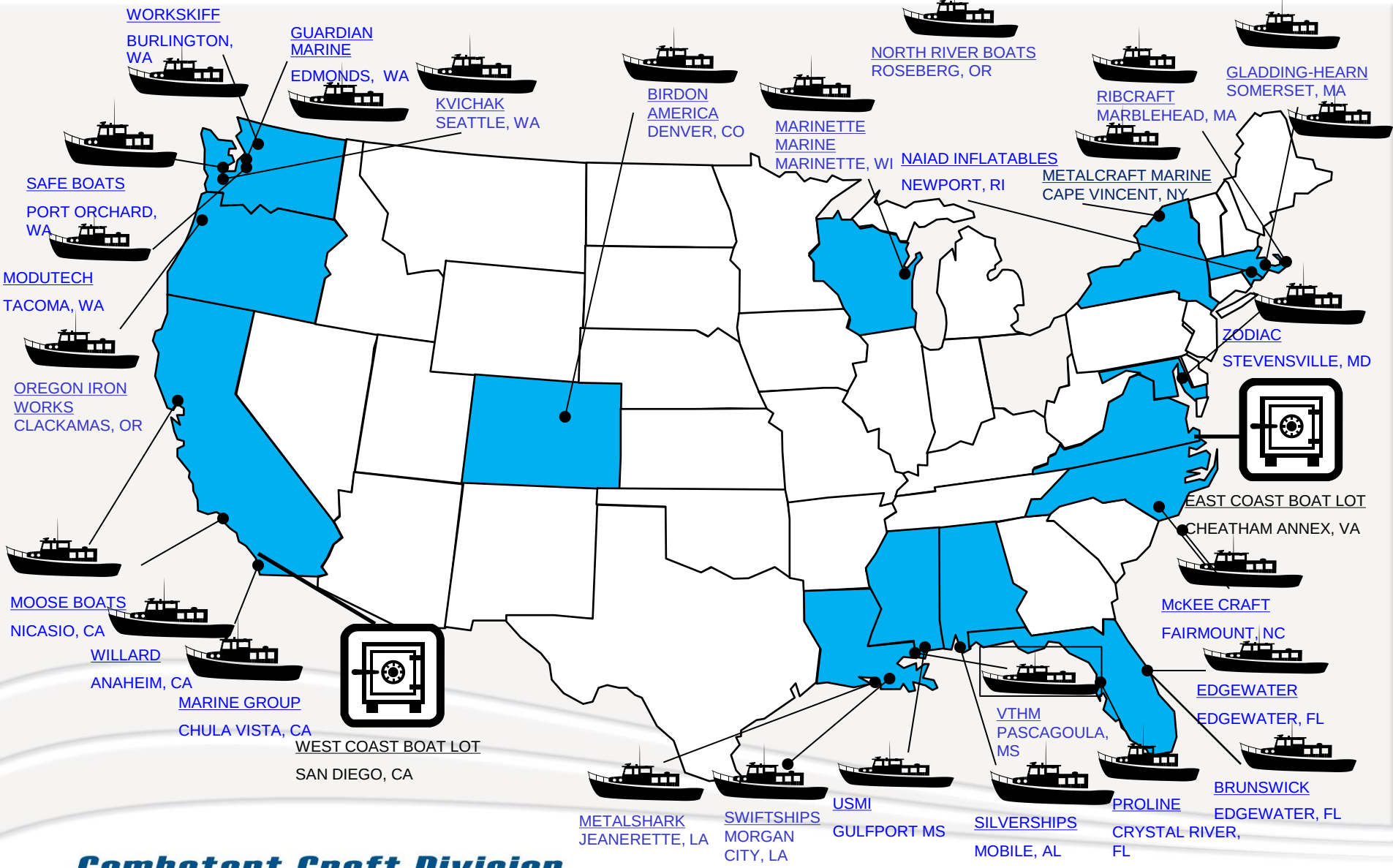
Technical Competencies

- **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**

NAVSEA
WARFARE CENTERS

Where Our Boats Are Built

Carderock



Acquisition Types and Strategies

Alignment to Service

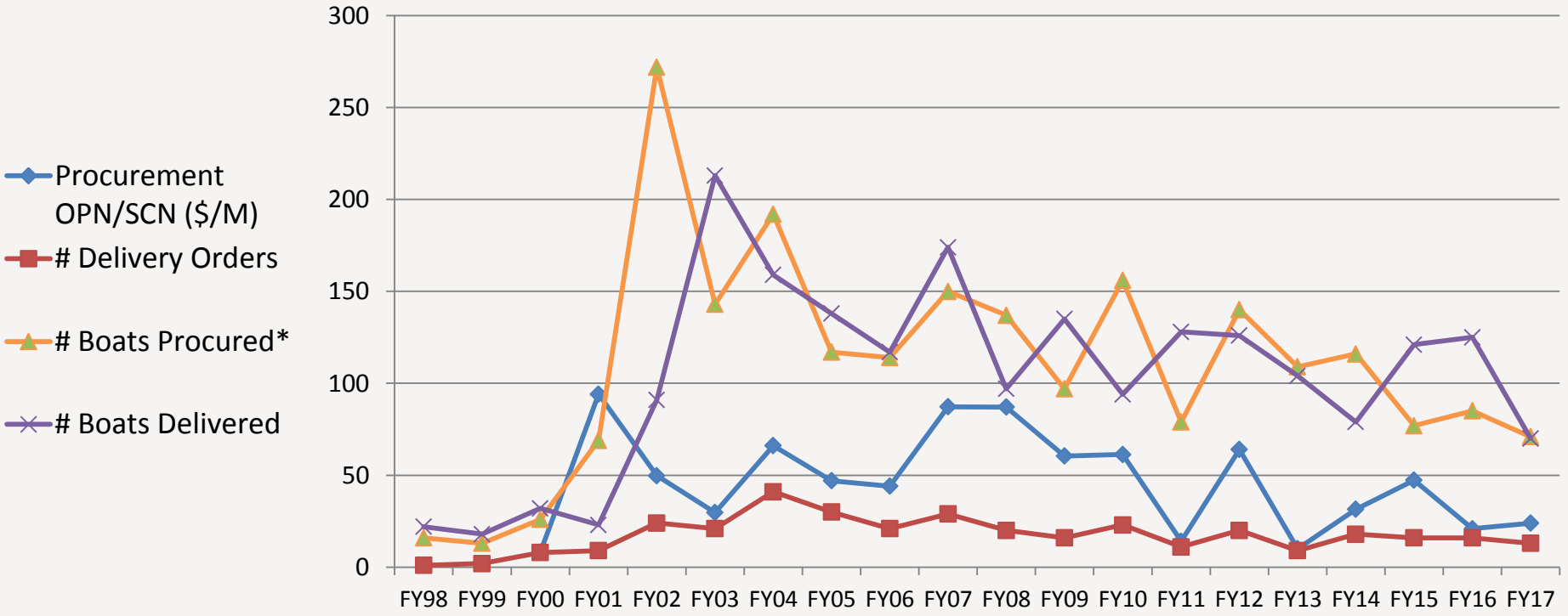
- **Support for all ACAT Levels***: Technical Support for ACAT-level appropriate docs and support;* R&D, studies, specification development, source selection, contract support, construction oversight, and delivery

- **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

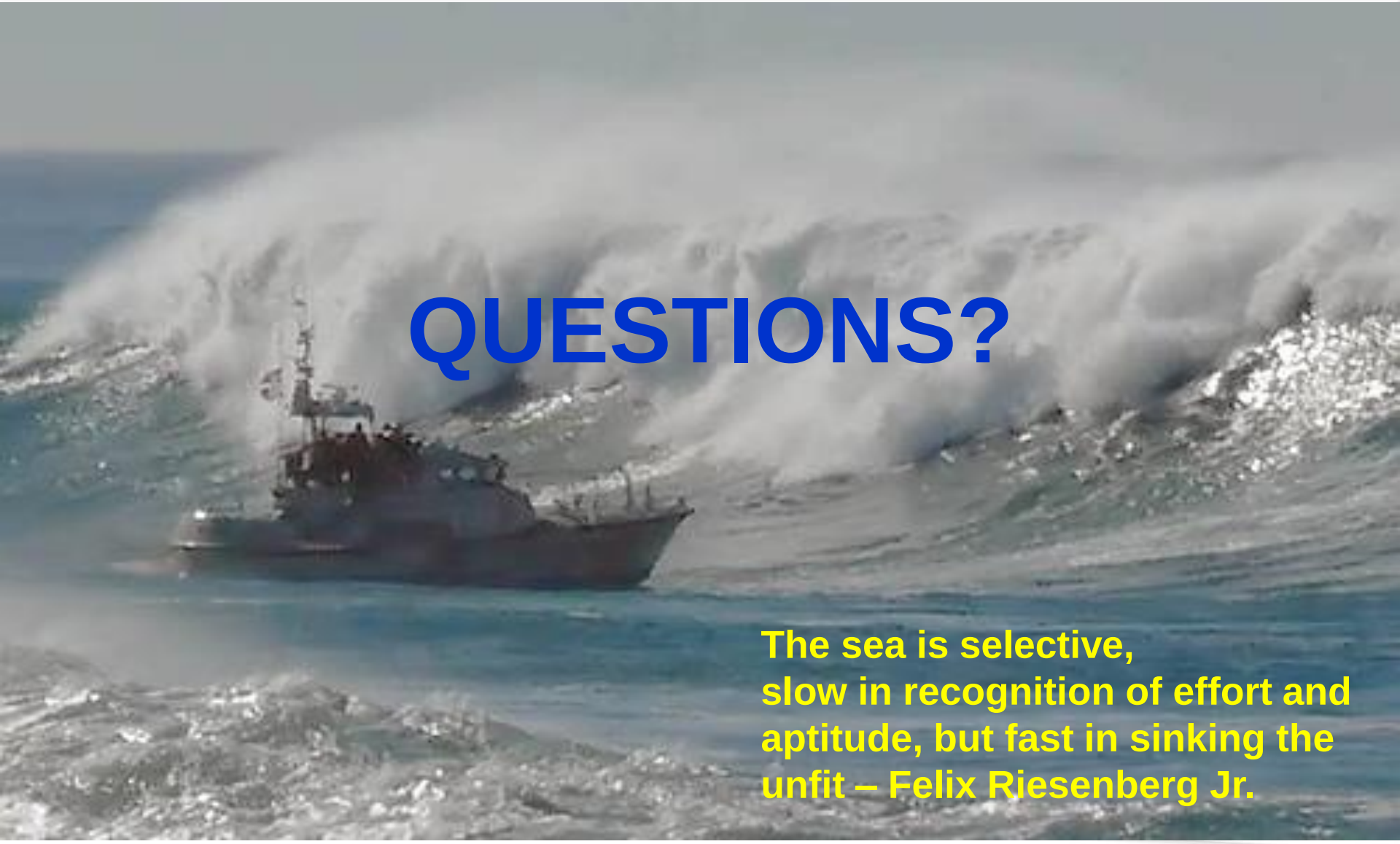
325G Acquisition History (1998 - 2017)



	FY98	FY99	FY00	FY01	FY02	FY03	FY04	FY05	FY06	FY07	FY08	FY09	FY10	FY11	FY12	FY13	FY14	FY15	FY16	FY17
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	47.347	20.944	20.823
# Delivery Orders	1	2	8	9	24	21	41	30	21	29	20	16	23	11	20	9	18	16	16	13
# Boats Procured*	16	13	26	69	272	143	192	117	114	150	137	97	156	79	140	109	116	77	85	71
# Boats Delivered	22	18	32	23	91	213	159	138	117	174	97	135	94	128	126	104	79	121	125	70

Current Other Than Navy

Designation	Contract Award	Customer	Program Office	Number in Contract	First Delivery	Contract Completion
Combatant Craft Medium (CCM)	FY14	NAVSPECWARCOM/ USSOCOM	USSOCOM	24	FY15	FY19
Combatant Craft Assault (CCA)	FY13	NAVSPECWARCOM/ USSOCOM	USSOCOM	30	FY14	FY17
Maneuver Support Vessel (Light)	FY17	U.S. Army	TACOM	37	FY22	FY28
11m NSW RIB	FY17	FMS – Australia	PMS 325F	2	FY17	FY18
7m RIB	FY16	FMS – Bulgaria	PMS 325F	3	FY17	FY18
Force Protection Boat - Medium (FPB-M)	FY16	FMS - Bulgaria	PMS 325F	1	FY17	FY18
7m RIB	FY15	FMS - Jordan	PMS 325F	2	FY17	FY18
7m RIB	FY16	FMS - Jordan	PMS 325F	1	FY17	FY18
27ft Riverine Boats	FY16	FMS - Colombia	PMS 325F	14	FY17	FY18
41ft Patrol Boats	FY17	FMS – Colombia	PMS 325F	2	Expected FY18	Expected FY19
25ft Riverine Boats	FY18	FMS - Colombia	PMS 325F	5	Expected FY18	Expected FY19
27ft Dive Support Boat	FY18	FMS – Colombia	PMS 325F	1	Expected FY18	Expected FY19
27ft Patrol Boat	Expected FY18	FMS – Colombia	PMS 325F	2	Expected FY18	Expected FY19
10M PB	FY15	FMS - Kenya	PMS 325F	6	FY17	FY18
7M RIB (SDAF)	FY15	FMS - Various (SDAF)	PMS 325F	up to 360	FY15	FY21
35m Patrol Boat	FY18	FMS - Jordan	PMS 325F	2	Expected FY19	Expected FY21
9m RIB	Expected FY18	FMS – Philippines	PMS 325F	2	Expected FY18	Expected FY19
9m EOD RIB	Expected FY18	FMS – Philippines	PMS 325F	1	Expected FY18	Expected FY19
4m Inflatable	FY17	FMS – Philippines	PMS 325F	41	FY17	FY18
80ft Near Coastal Patrol Vessel	FY17	FMS – Dominican Rep.	PMS 325F	1	FY18	FY19
80ft Near Coastal Patrol Vessel	FY17	FMS – Various (IDIQ)	PMS 325F	Up to 13	Expected FY18	Expected FY23
Norwegian Combatant Craft Medium	FY17	FMS – Norway	PMS 325F	Planning Case	N/A	FY18
7m RIB	Expected FY18	FMS – Cambodia	PMS 325F	4	Expected FY18	Expected FY19
Force Protection Boat - Medium (FPB-M)	FY17	FMS – Uruguay	PMS 325F	2	Expected FY18	Expected FY19
38ft Patrol Boat	Expected FY18	FMS – Iraq	PMS325F	8	Expected FY19	Expected FY20



QUESTIONS?

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

NAVSEA
WARFARE CENTERS
Carderock

Systems Design & Integration

Scott Petersen

Combatant Craft Division

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”

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

A Primary Tool for Code 8320 but used across division!

Past Contract
Very Broad Technology Coverage

Future Contracts
Advanced Electronics
Intelligent 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

NAVSEA WARFARE CENTERS
Carderock

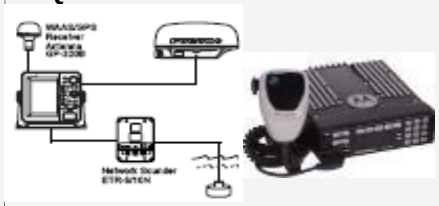
AN/PRC-117F (2 Nets)

- §UHF/VHF LOS
- §UHF SATCOM
- §DAMA
- §SINCGARS
- §Have Quick 2

SeaFLIR III EO/IR

Reconnaissance & Surveillance

COMMERICAL 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

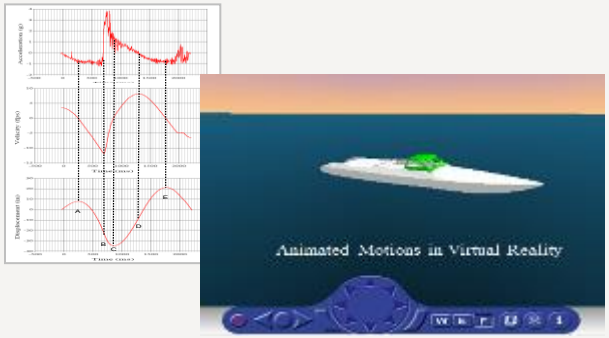
- ▪Defense Advanced GPS Receiver
- ▪Anti-jam security

RADIO CONTROL/INTERCOM SYSTEM

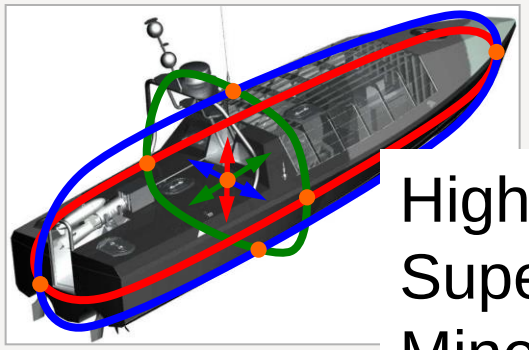
AN/PRC-152

- ▪UHF/VHF LOS
- ▪SINCGARS
- ▪Have Quick 2

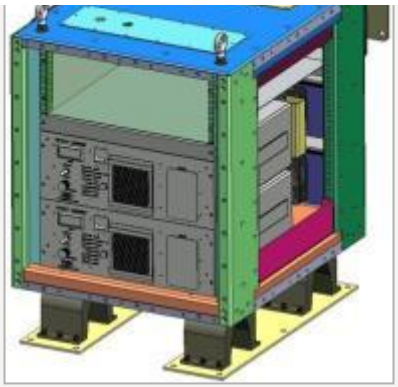
Electronics System Integration

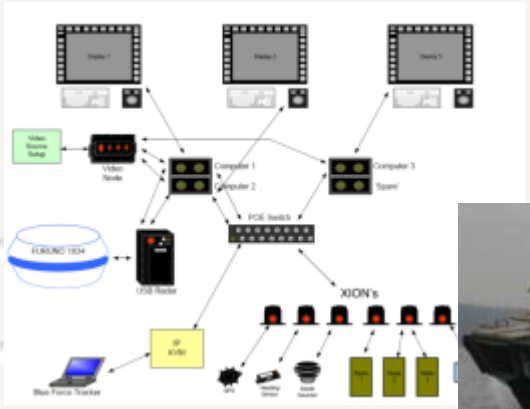


Craft Health Monitoring System & Simulation



High Temperature Superconductor - Minesweeping





Integrated Electronics Suite Prototyping

Intelligent Systems

Full Scale Demonstration

USV and System

Design/Build

Intelligent Systems

Small USV for Reconnaissance

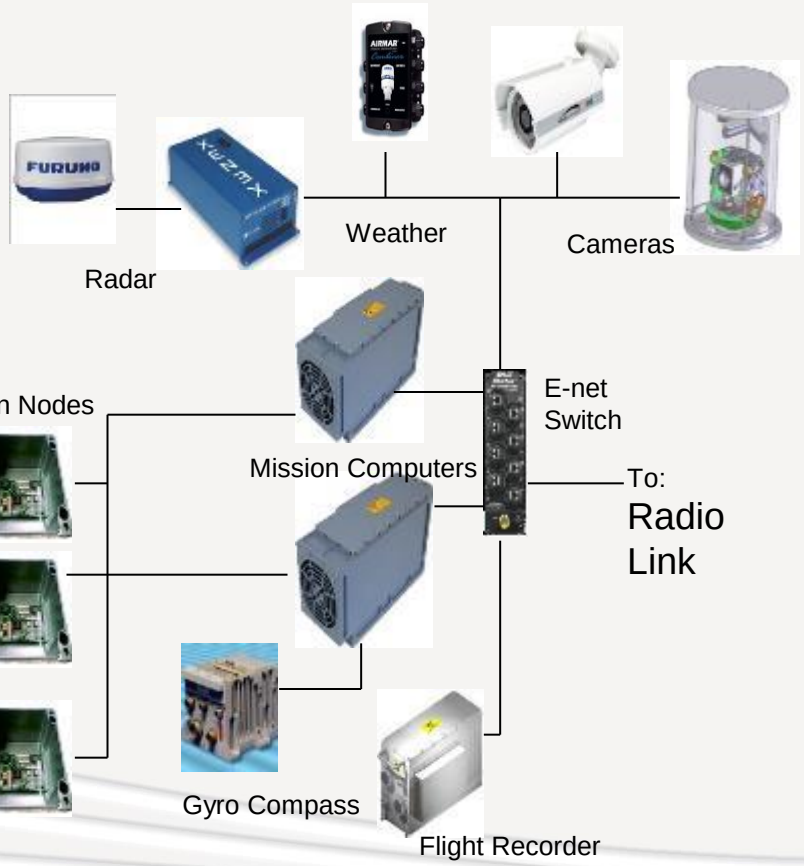
USV Test Center

Intelligent Systems

USV Navigation and Communications

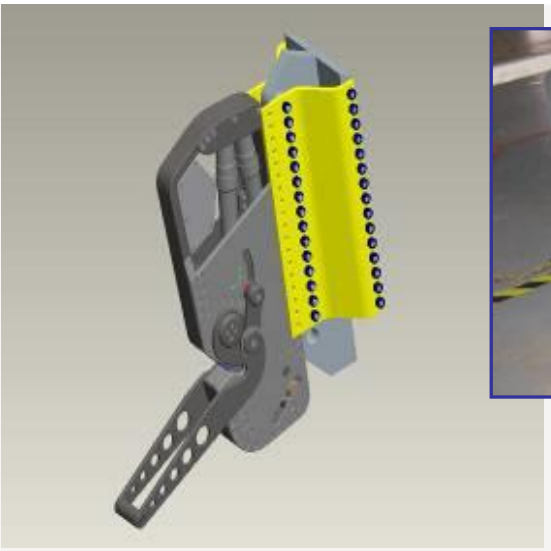
USV Homing

USV Command & Control Architecture and Autonomy

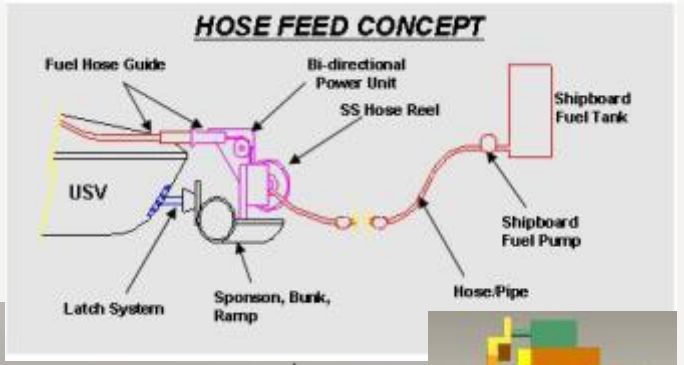


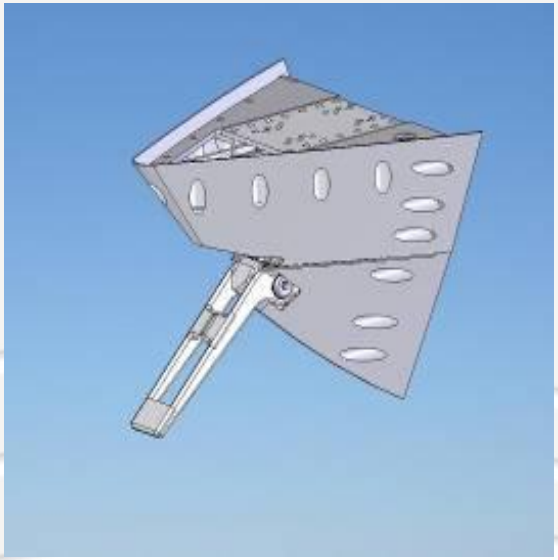
UISS Risk Mitigation Initiatives

Intelligent Systems

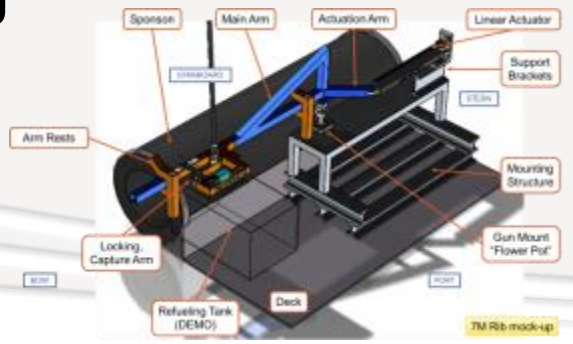


LCS USV Line Catching

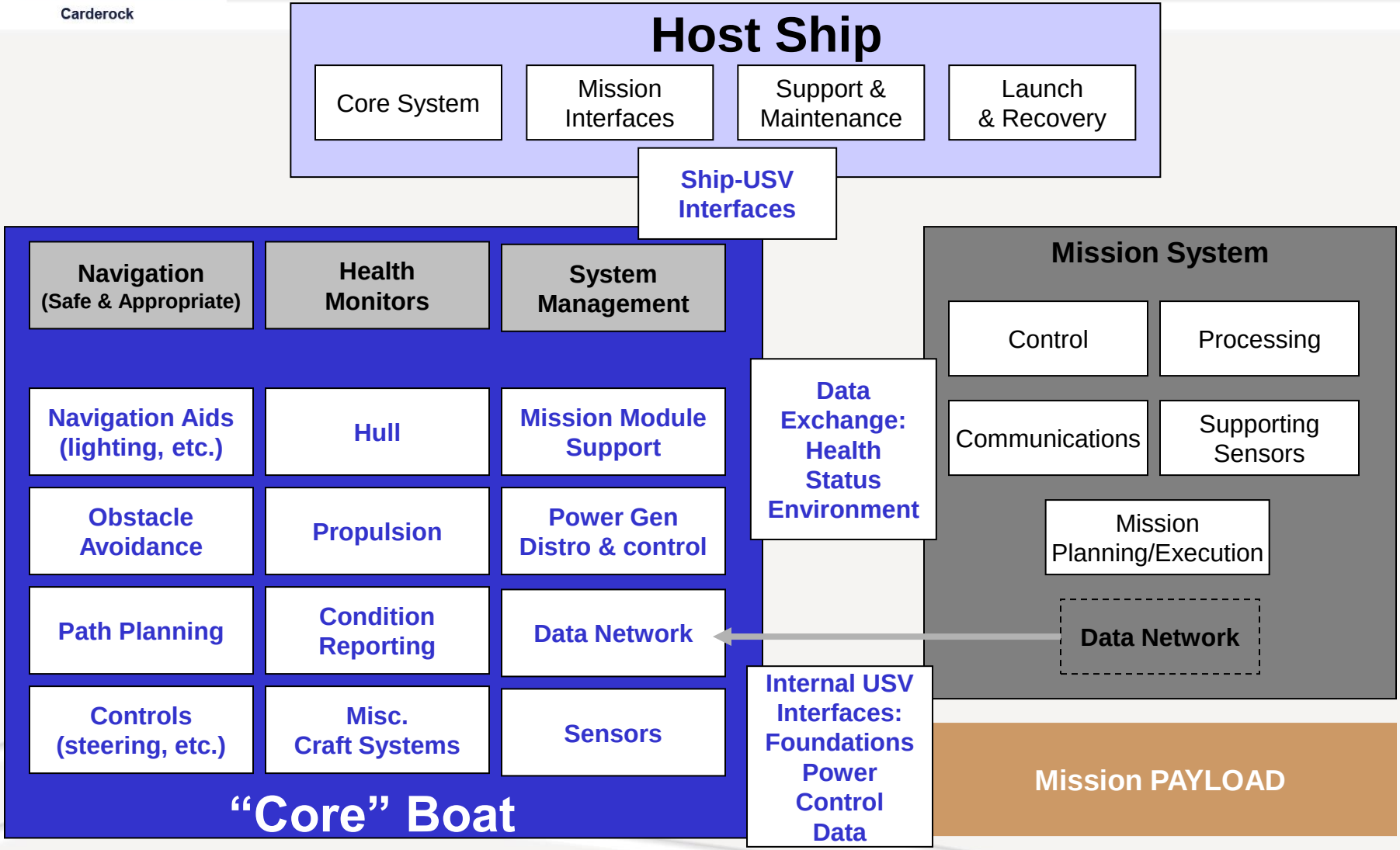




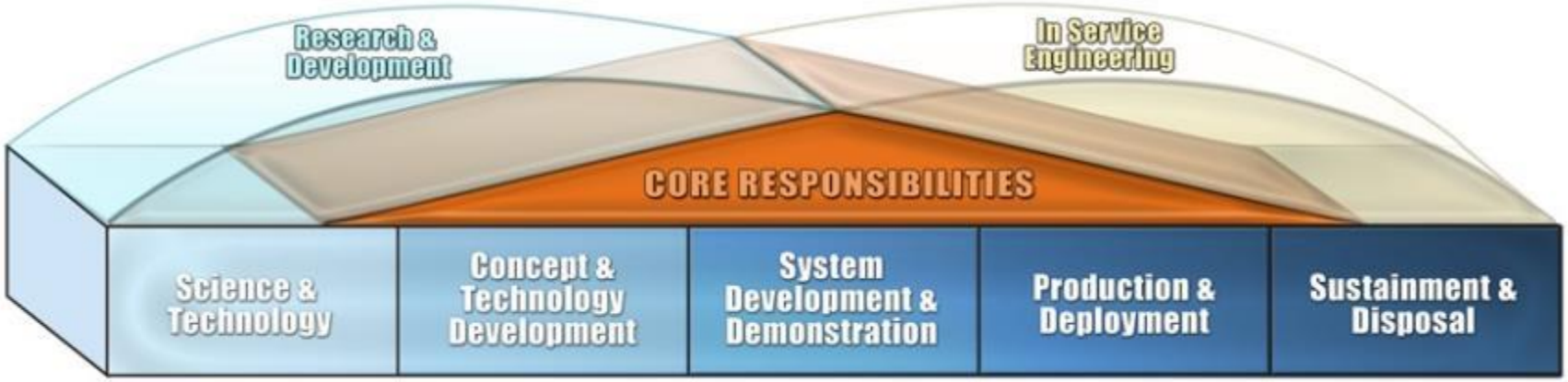
Autonomous USV Refueling



Intelligent Systems



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 covers the left end of this scale where highly technical problems without precedence need solutions

ASE (Future)

The past 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
- 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
- Electromechanical Systems
- Control Systems
- Prototyping
- UUV DnR
- Payload Integration
- Testing

Priority 2

Vision

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

QUESTIONS?

NAVSEA
WARFARE CENTERS
Carderock

Prototyping

Kent Beachy

Combatant Craft Division

Why a Prototyping Contract?

Contracting Options Limits

- 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

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
- Supports Design-Build: Services (high ODCs) and / or Supplies
- Easy access to specialty contractors
- Can withstand lumpy activity
- Supports tasks $10k to $10M+

Status

- Initial stages
  - Statement of Work being developed
  - ICGE being developed
- Explore contract options and structure
  - single award, multi-award?
- Timeline TBD

QUESTIONS?

NAVSEA
WARFARE CENTERS
Carderock

Life Cycle Management & Sustainment Engineering

Robert Bradford

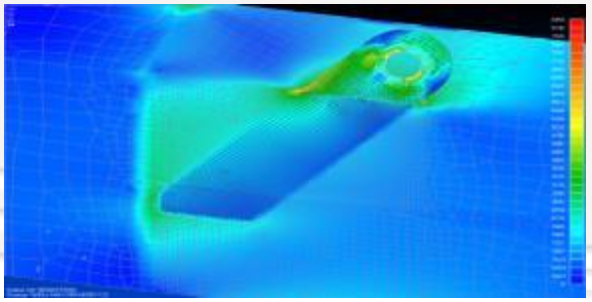
Combatant Craft Division

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



In-Service Teams

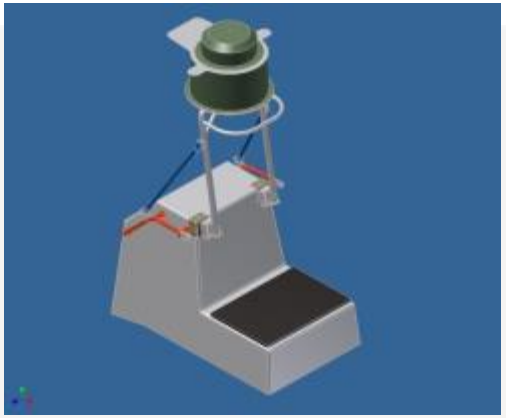
- *Boats, Mission Modules*
- *CNIC, SSP*
- *NECC*
- *Patrol Coastal*
- *Landing Craft*
- *Life Raft*
- *Army*
- *SPECWAR/Unmanned Vehicles*
- *Foreign Military Sales In-Service*
- *INSURV, Misc. Craft*

38 Gov People

We Have a Permanent Presence West Coast

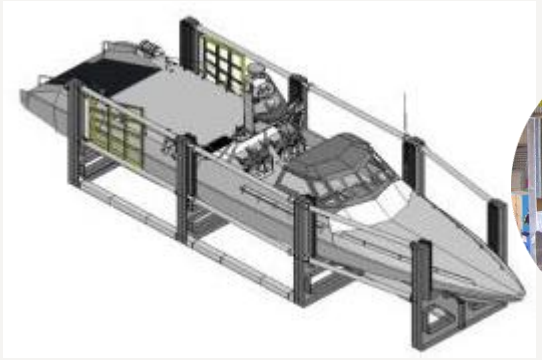
Combatant Craft Division

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 EFFFICIENT SYSTEMS

Configuration Control

Aft Deck House

New Pilot Houses

NO UNAUTHORIZED BOATALTS

Gun Mount

ISEA

Industrial Support

RMC Support (as tasked by customers)

- ❑ MARMC, SWRMC, 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

Craft Supported

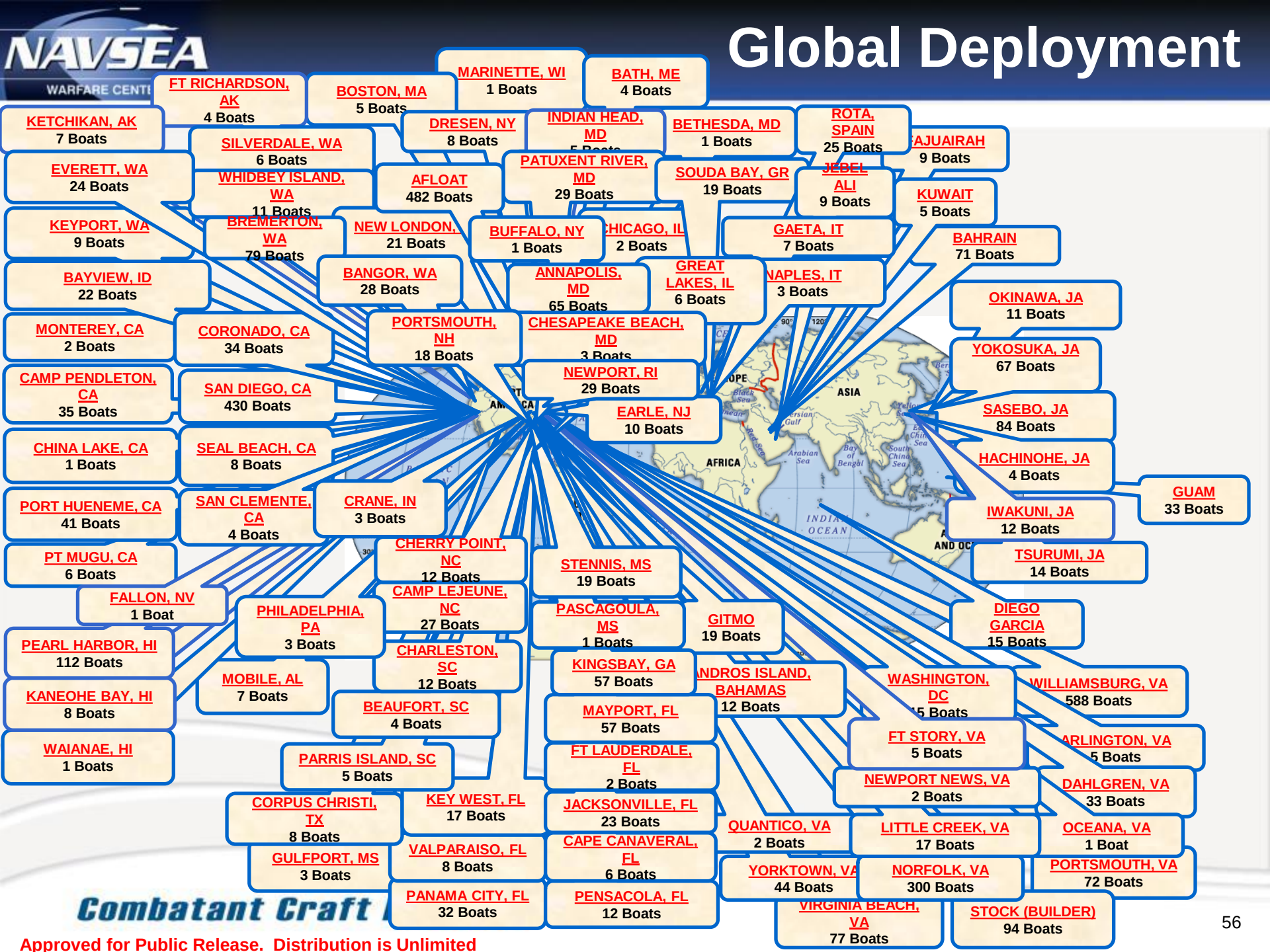
Number of Boats - 3536 (including those under construction)

Boat Allowance Types - 68

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

Global Deployment



Combatant Craft

Navy Support

- Life Rafts
- Personnel Boats
- FP Boats
- Security Boats
- Port Ops Boats

Navy Support

- FP Boats
- Barrier Boats
- Security Boats
- Port Ops Boats

Navy Support

- LCUs
- Work Boats
- Utility Boats
- Dive Boats

Navy Support

Ship's Boats

Mission Modules

Navy Support

Riverine Patrol Boat

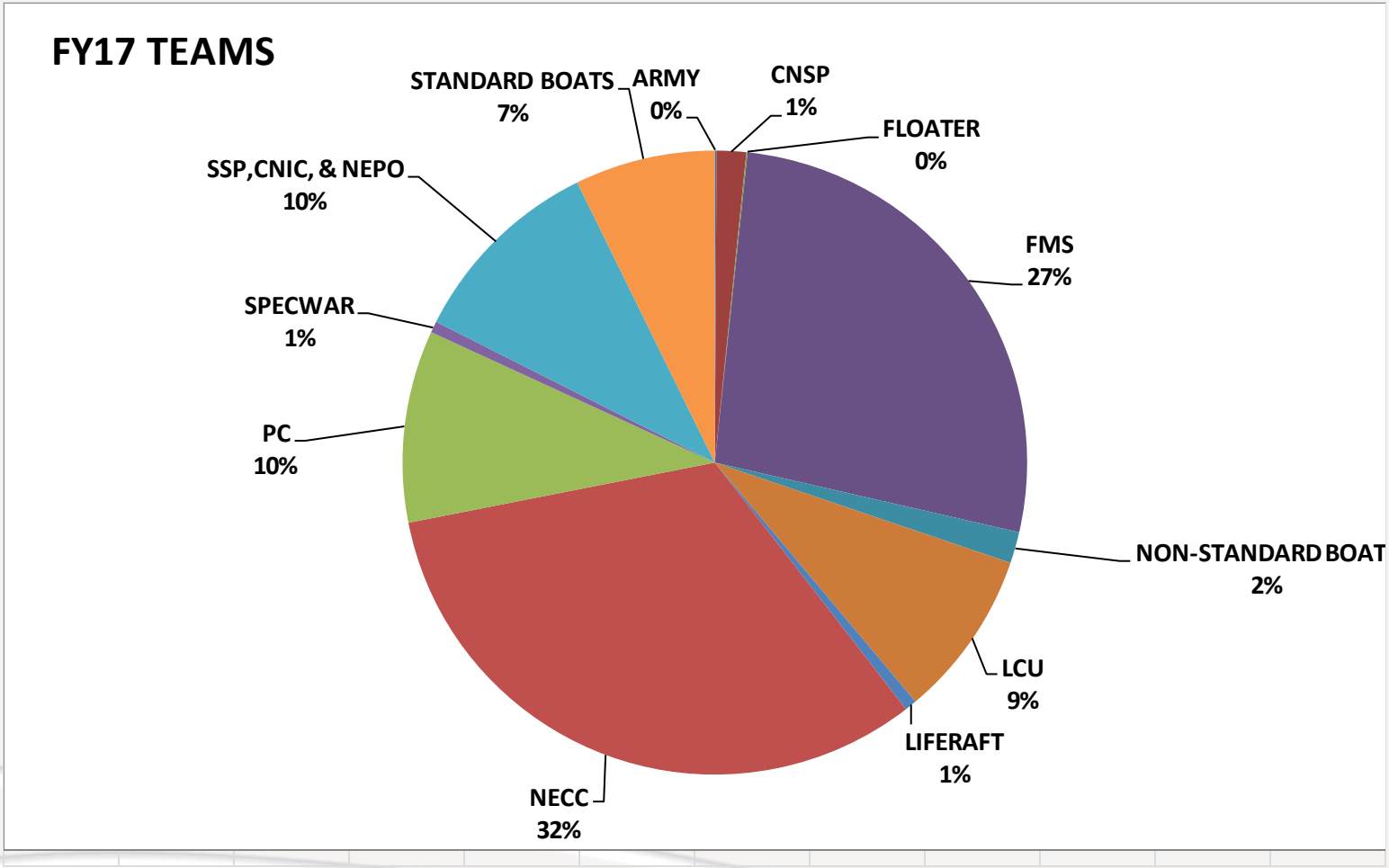
34’ Patrol Boat

Riverine Assault Boat

Riverine Command Boat

11M RX

FY17 Total Allocation
(Gov't and Contractor)



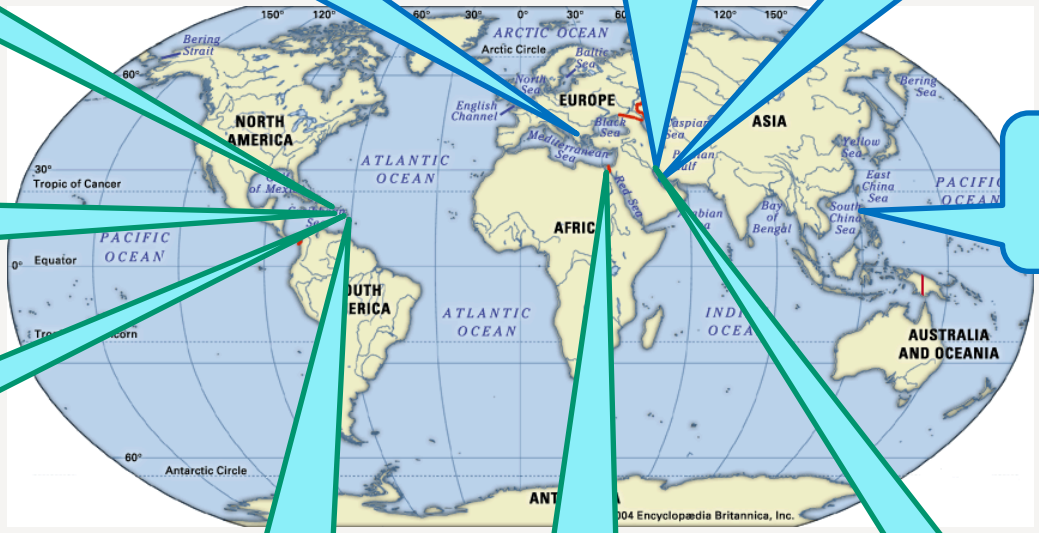
FY17 Metrics

TEAM	In-Service Dwgs Developed	In-Service Dwg Sheets	New Acq Dwg Review	New Acq Dwg Review (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
FMS	3	37					10	16	17								75
LANDING CRAFT	57	436	-	-	21	207	78	20		7	-	-		8	-	-	1
NECC	25	150	0	0	41	288	78	108		26	3						
NON-STD BOATS	19	119			7	44	26	7									
PAC									90			73	42				
PATROL COASTAL								10	8				3	12			3
SPECWAR	0	0	0	0	0	0	0	0	8	0	0	4	4	0	0	0	0
SSP, CNIC, & NEPO	28	216	0	0	13	77	97	18	53	26	0	22	19	0	0	0	0
STND BOATS	9	54	0	0	14	99	52	6	34	14	1	54	35	0	0	0	5
834 Totals	**141**	**1012**	**0**	**0**	**96**	**715**	**341**	**185**	**210**	**73**	**4**	**153**	**103**	**20**	**0**	**0**	**84**

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 Recent Country Support



ANTIGUA

GREECE

IRAQ

BAHRAIN

ST. KITTS

PHILIPPINES

DOMINICA

GRENADA

EGYPT

KUWAIT

Future Needs Prediction CONUS

- *Slight increase for Standard Navy support as fleet grows*
- *Decrease of Fleet funding for overhaul support – RMCs performs their own work*
- *Increase in ISEA support for RMCs and regions along with CCD possibly contracting out more boat overhaul work*
- *Increase in CNIC support*
- *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 will cause this to increase*
- *Steady state for Life Raft funding and support*
- *Continued backlog of BOATALT designs mostly due to lack of funding*
- *Increase in SPECWAR support*
- *Increase in MSC support*
- *Increase in commonality support and obsolescence management which will reduce life cycle support long term*
- *Increase in Uniform National Discharge Standards support*
- *Increase in configuration tracking and management*
- *Increase in cybersecurity support*
- *Decrease long term in LCU 1600 support as LCU 1700 program progresses*

Future Needs Prediction OCONUS

- *Slower Growth in FMS ISEA support worldwide*
  - *Partially related to State department policy and budget*
  - *Increase in FMS Excess Defense Article (EDA) transfer as lower cost approach for countries to build capability*
- *Continued support for Iraq*
- *Steady state to decline in PC support as they age*
- *Continued Growth in NECC support as NECC expands operations world-wide*
- *Increase in support in Bahrain, UAE and Guam*
- *Increase in in-country familiarization and activations*

Life Cycle Management & Sustainment Engineering

Life Cycle Management & Sustainment Engineering

QUESTIONS?

Test & Evaluation

Dave Pogorzelski

Our Mission

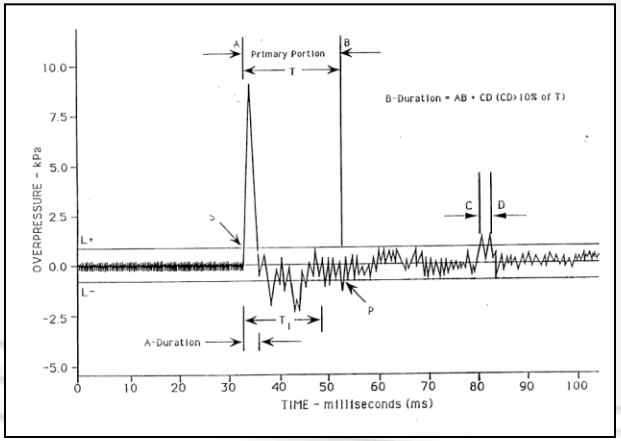
"The test and evaluation capability of the [Division] has provided the Navy with the ability to technically evaluate the capabilities of boats or prototypes under procurement. Such evaluations can insure that the expenditure of funds for any new Navy craft resulting in the procurement of performance 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

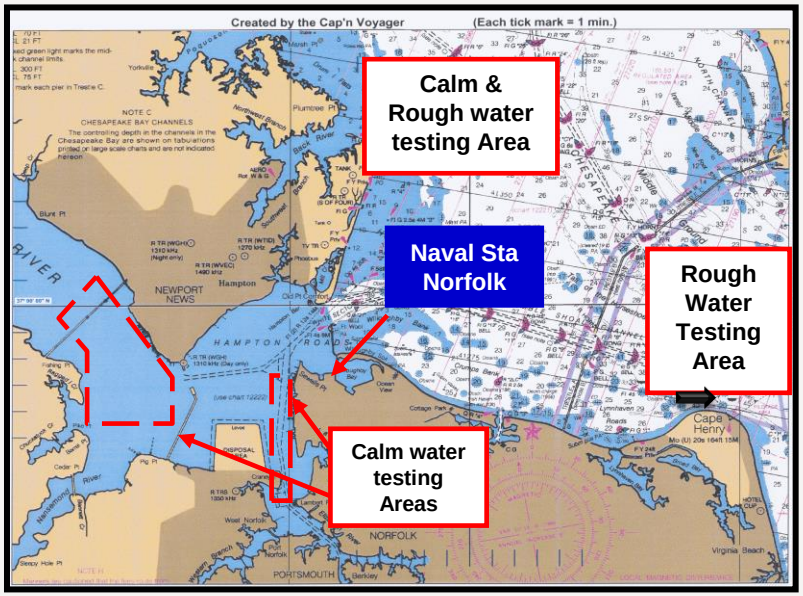
- *Conduct Underway Boat Trials to Quantify Performance Characteristics on:*
  - *Hull*
  - *Electrical*
  - *Mechanical*
  - *Propulsion Systems*
  - *Human Factors*
- *Data*
  - *Acquisition*
  - *Reduction/Analysis*
  - *Technical Reporting*
- *Risk Management*
  - *Requirements Definition*
  - *Contractual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



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



- 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

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?

NAVSEA
WARFARE CENTERS
Carderock

Integrated Logistics Support

David Hartley, PMP

Combatant Craft Division

Mission & Objectives

OUR MISSION:

Provide Integrated Logistics Support &
Inventory Management for Combatant Craft and Boats…
at the right place, at the right time, at the right cost every time

VISION:

We will continually align ILS product focus with fleet mission needs through proactive support & commitment that enables Affordable System Operational Effectiveness (ASOE)

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)

ILS Assigned Navy Boat Functions

1. Integrated Logistics Support Manager (ILSM)
2. Boat Inventory Manager (BIM)

Core Business Areas:

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

Core Functions

Acquisition ILS

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

Lifecycle ILS

- Provide Direct Fleet Logistics Support
- Synchronize Configuration Changes & ILS
- Maintain ILS Products on over 3,400 boats

Boat Inventory Management

- Centrally manage Navy inventory of over 3400 boats
- Provide the *right boats at the place at the right time*
- Manage wholesale stock at boat inventory control points

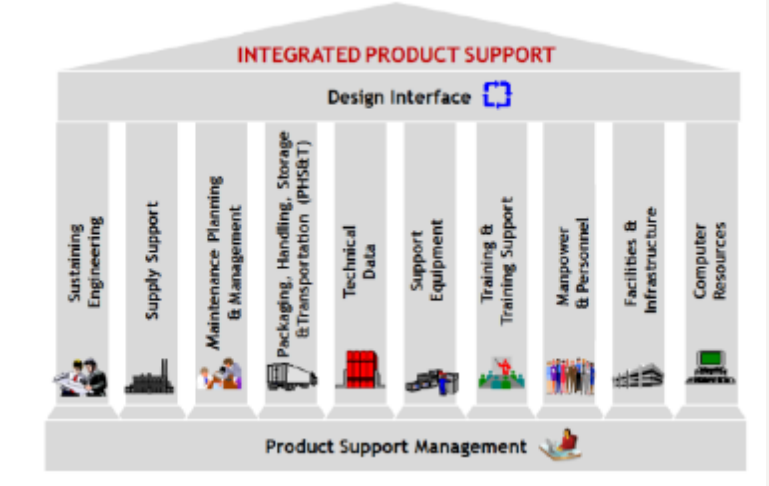
CCD Customers

- **U.S. Navy**
  - NAVSEA
    - Warfare Centers
    - NAVSUP
    - NSLC
  - Fleet
    - CNIC
    - Fleet Forces
    - NECC
  - NAVFAC
  - Strategic Systems Program (SSP)
- **SOCOM/SPECWAR**
- **U.S. ARMY**
  - TACOM
- **FMS**

Contract Requirements

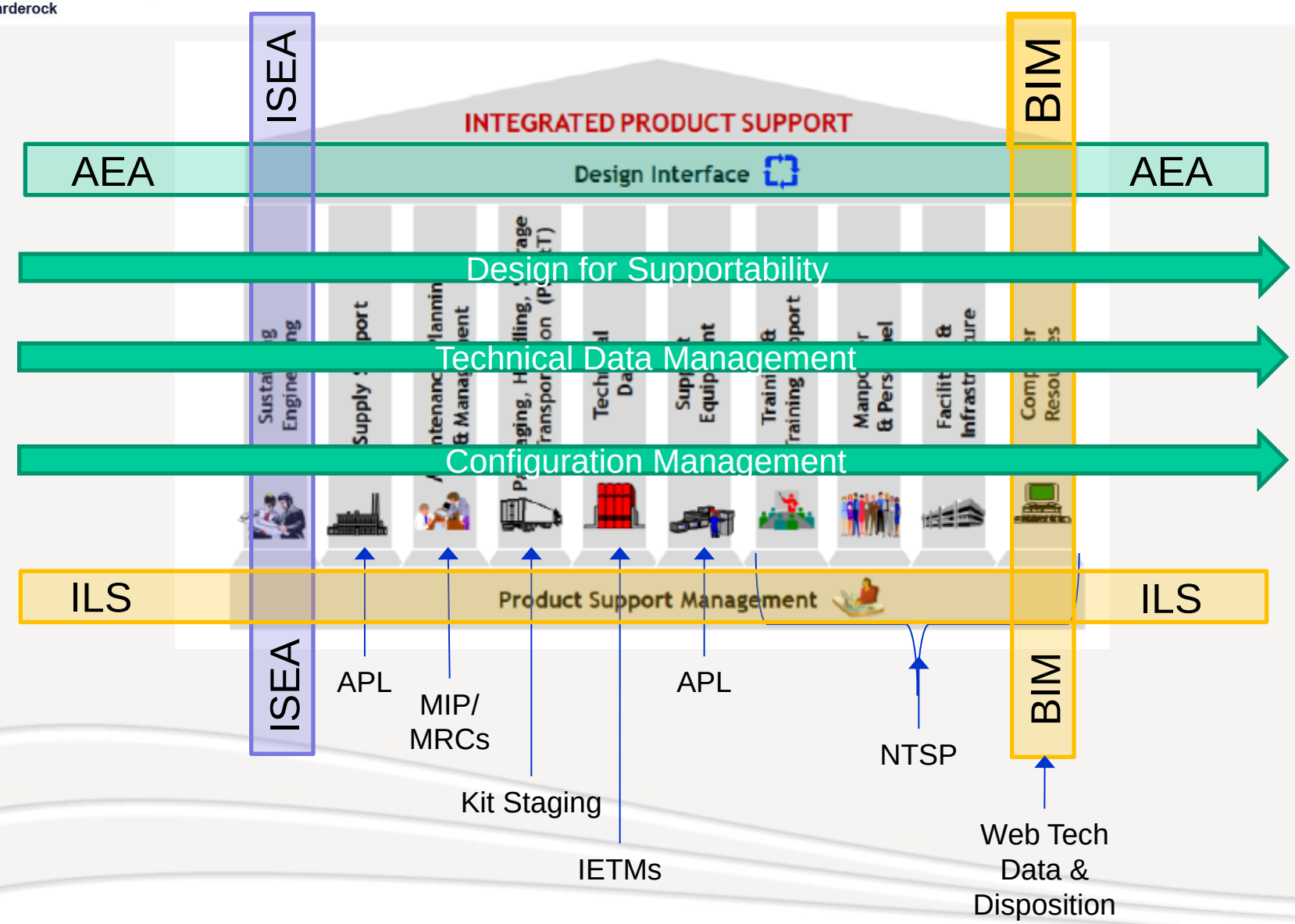
Provide technical support for:

- Integrated Logistics Support (ILS) Product development & sustainment
  - enabled by 12 Integrated Product Support (IPS) Elements
  - to deliver system readiness and availability
  - optimizing total system life cycle cost.



- Boat Inventory Management (BIM) Watercraft Custodial Assignment, Configuration and Condition Management and Accounting in support of 3400 U.S. Navy watercraft
- Boat Inventory Management System (BIMS) management support of Navy Life Raft Tracking (LIFERAFT), Warfare Center Web Library Database (TDR), and Craft and Boat Support System (CBSS) web based applications.

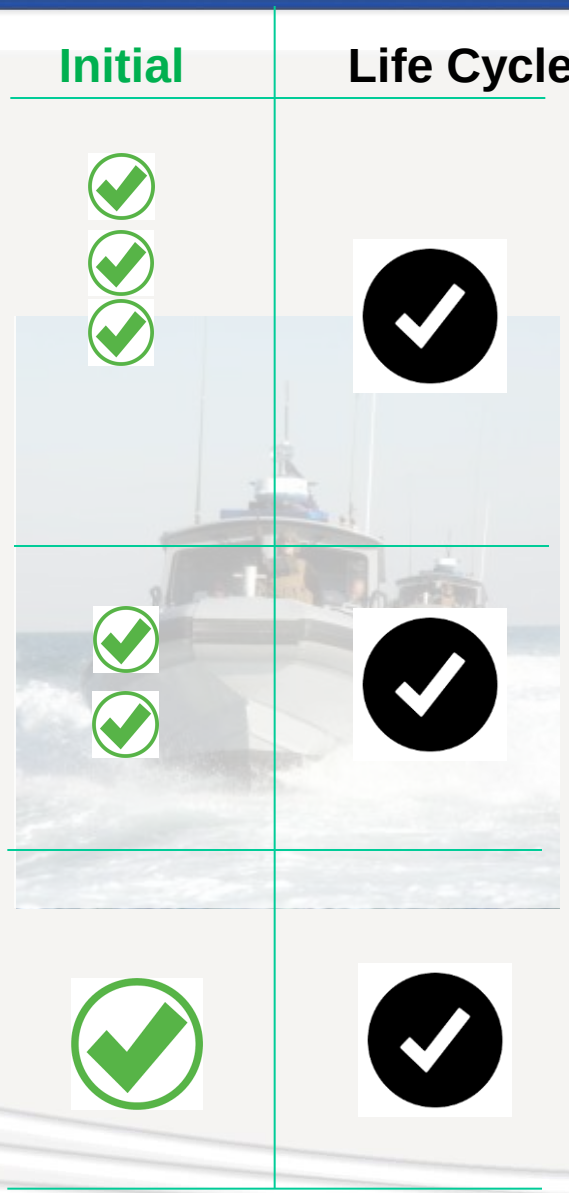
Role and Product Alignment



ILS Requirements

Discrete Deliverables

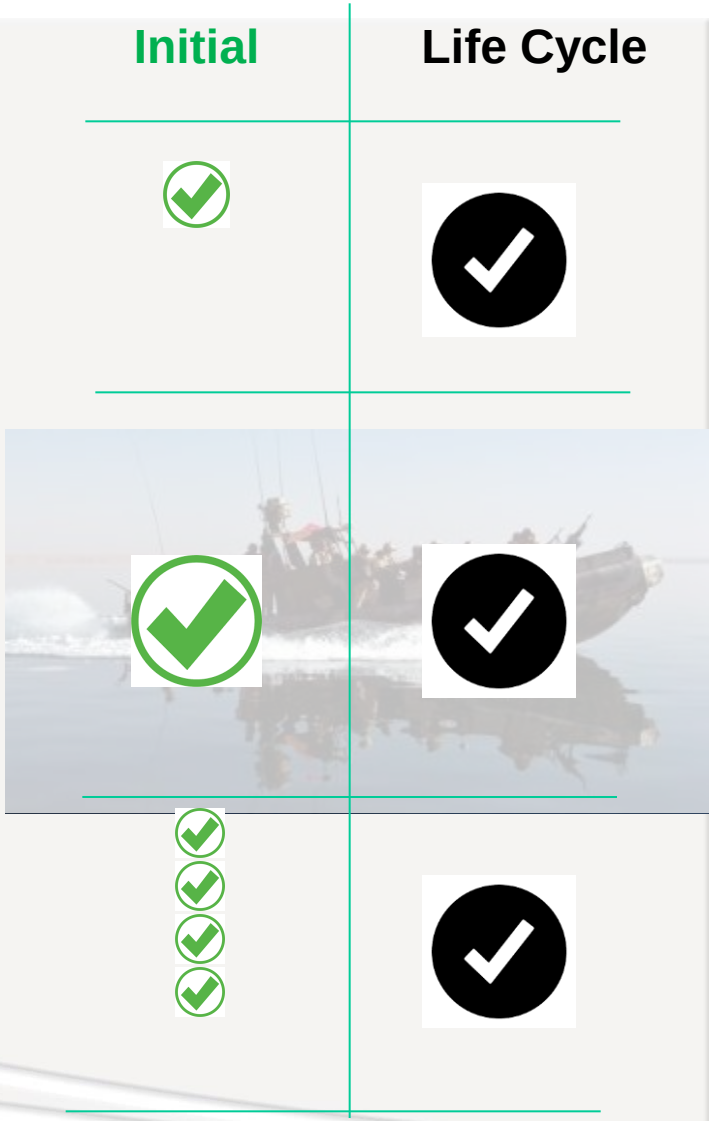
- **Supply Support**
  - APL/AEL Provisioning Technical Documentation (PTD) and Engineering Data for Provisioning (EDFP)
  - APL review for completeness and accuracy
  - Obsolescence Management / DMSMS
  - BOATALT driven and APL and AEL updates
  - Automated COSAL Improvement Program (ACIP) issue resolution
  - Technical Referral Requests (TRRs) and DD Form 339 resolution
- **Maintenance Planning & Management**
  - RCM analysis on craft and HM&E systems / equipment
  - Maintenance Requirement Cards (MRC) and Maintenance Index Pages (MIP) develop / update in concert with NSLC
  - Technical Feed Back Reports (TFBRs) research & response
- **Technical Data / Interactive Electronic Technical Manuals**
  - Boat Information Books (BIBs)
  - Custom Engine Parts Manuals (CEPMs)
  - Operations and Maintenance manuals (O&M)
  - Safe Engineering and Operations manuals (SEAOPS)



ILS Requirements

Discrete Deliverables

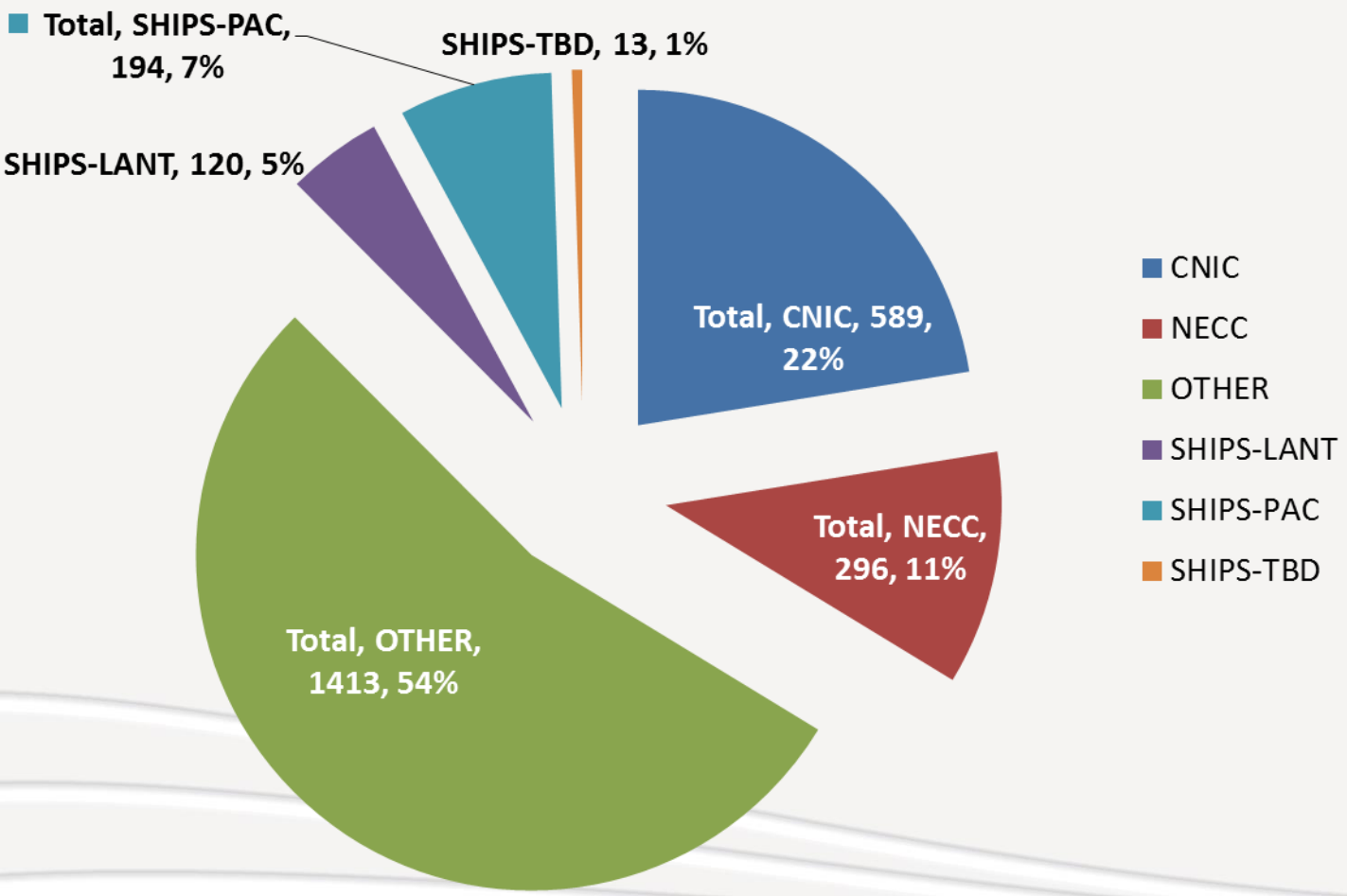
- **Configuration Management / Accounting**
  - Provide Configuration Accounting using CDMD-OA via applicable CDM
  - Make BOATALT driven configuration changes
- **Supportability Analysis & Planning**
  - RCM Analysis
  - Life Cycle Management Plan*
  - Naval Training Support Plans
  - Maintenance Plans
  - Supply Support Plans
  - Facilities Analysis
- **Technical Documentation Reviews**
  - Vendor Manuals
  - Drawings
  - Configuration/Parts Data
  - Maintenance requirements
  - Fleet Technical Manual Deficiency Evaluation Reports (TMDER) response



* ACAT Program of Record

Boat Inventory Profile

Boat Quantity by Enterprise



Boat Inventory Management Functions

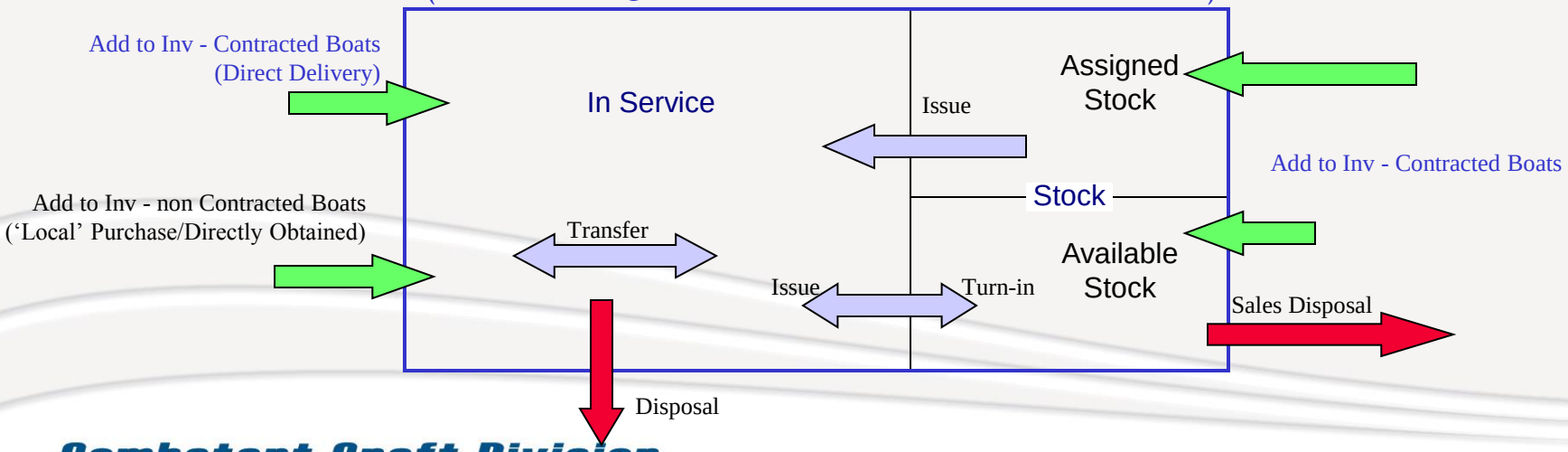
- **Central accountability and management of more than 3000 Navy boats**
- **Manage Boat Disposition & Boat Allowances**
  - Authorize initial issue to fill a boat allowance, custody transfer, turn in and ultimately disposal of the boat; provide disposition instructions and track
- **Maintain and Validate 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**

Boat Disposition Support

- Centrally accounted personal property assets - boats are issued to fill authorized allowances and tracked lust to dust
- Chief of Naval Operations (CNO) 'owns' the boats; PMS325/BIM has 'accountable ownership'
- BIM has disposition authority; user command is responsible 'custodian'
- Allowance Authority
  - CNO authorizes Afloat Activity changes
  - BIM authorizes Ashore Activity changes in concert with Chain of Command

The Boat Inventory

(~ 3400+ Boats @ 450+ Activities Worldwide incl Stock Points)



Integrated Watercraft Process Support

AEA:	KEY EVENT COLLABORATION	:BIM:	:ILS
1. Review and document First Boat Weapon Systems for Certification process 2. Review and document First Boat RadHaz and Air Transport certification process (as applicable) 3. Validate final data for CBSS Characteristics, Boat Profile (BP) and Fleet Introduction Document (FI Doc) 4. Transition Project to ISEA	Post-RFA Boat Ready for Issue (RFI) Follow-On Boats All Boats in Contract RFI Life Cycle	1. Process and finalize Weapon System Certificate (WSC) 2. Finalize BP and FI Doc 3. Confirm ILS Products 4. Issue/Assign Boat 5. Transition Project from Acquisition to Life Cycle	1. Develop ILS • Maintenance • Supply • Tech Data • Config Status Accounting 2. Validate ILS 3. Deploy ILS

GSA Sales

Inventory Tracking

Acquisition Project Tracking

Fleet Introduction

Boat Delivery

QUESTIONS?