

Undersea Warfare Weapons, Vehicles, and Defensive Systems Department



*Mrs. Mary Cordeiro, Code 85 Deputy Department Head
&
Mr. Andrew Cumings, Technical Dept. Acquisition Advocate*
Presenting to:

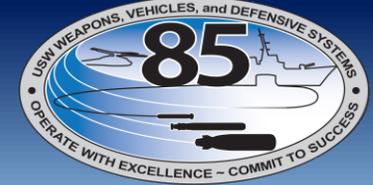
***NCMA RI Chapter Industry Day
20 October 2020***

Department Overview

- Mission / Vision / Products
- Products
- Customers
- Organization / Department Resources
- Division Descriptions
- Major Facilities
- FY21 Funding Projections

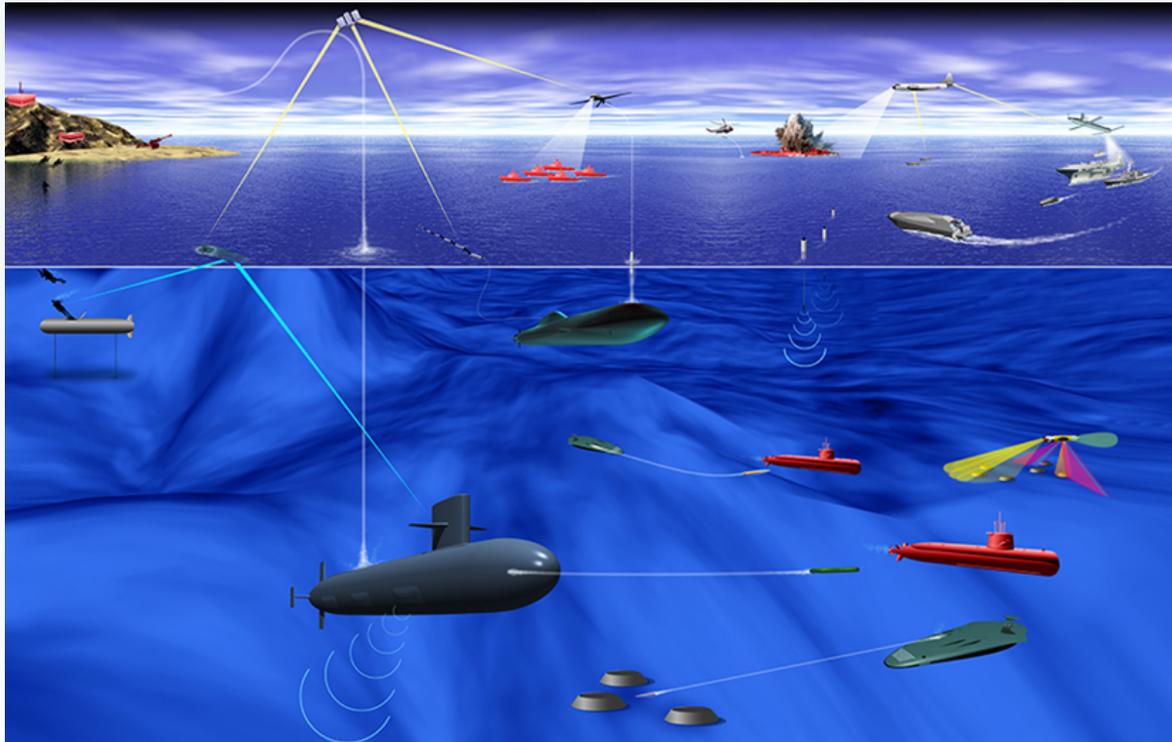
Code 85 Contracting

- Current Major Contractors ~ Summary
- UW/UD Family of Systems MAC ~ Summary
- Projected Contracts FY21 – FY22
- Questions



Department Overview

Department Mission / Vision



Mission

“Provide integrated full spectrum undersea Weapon, Autonomous, and Defensive System solutions to the warfighter through technical expertise, cooperative innovation, engineering, and life cycle stewardship.”

Vision

“Undersea Dominance through superior Autonomous and Defensive Systems”

Philosophy

“Operate with Excellence; Commit to Success”

- **Science and Technology for:**
 - ✓ *Torpedoes / Targets*
 - ✓ *Autonomous Undersea Vehicles (AUVs)*
 - ✓ *Countermeasures/Counterweapons*
- **System Development, Integration & Test**
 - ✓ *AUVs*
 - ✓ *Mobile ASW Targets and Torpedoes*
 - ✓ *Undersea Defensive Systems*
 - ✓ *T&E, assessments, and M&S*
- **Acquisition, Fleet Support, & In-Service Engineering**
 - ✓ *HW and LW Torpedoes*
 - ✓ *Mobile ASW Targets*
 - ✓ *Undersea Defensive Systems*

Customers

**DARPA, SCO, ONR,
Internal Investment, ILIR/IAR,
NELO, & Private Partnerships**

**PMS 404, 406, 415, 495,
NELO, ONI, RDSA,
International Sales**

**PMS 404, 406, 415, NELO
International Sales**

**PMS 404, 406, 415, NELO,
International Sales, Fleet**



- Submarine Track and Trail
- Biometrics
- Advanced Propulsion
- Non-Acoustic Technologies
- Supercavitation Technologies
- Advanced Sensor Technologies
- Next Generation CM/CCM
- G&C Technology
- Vehicle Array technologies
- Propulsion, Silencing & Hydrodynamics
- Broad band
- Fiber Optics
- Stealth
- Tactical oceanography
- Next Gen M&S/Live Virtual Constructive

TOTAL: 16%

- LDUUV
- AN-SLQ-25E
- Torpedo Modular Upgrade Program (TI/APB).
- Next Generation CM
- Vehicle Array Technologies
- Advanced Navigation
- Advanced Autonomy
- System Requirements/Specs
- Non-Acoustic Technology
- Tactical Software Development
- System Integration / T&E
- Performance M&S
- **Technical Direction Agent (HWT/LWT and CMs)**

TOTAL: 27%

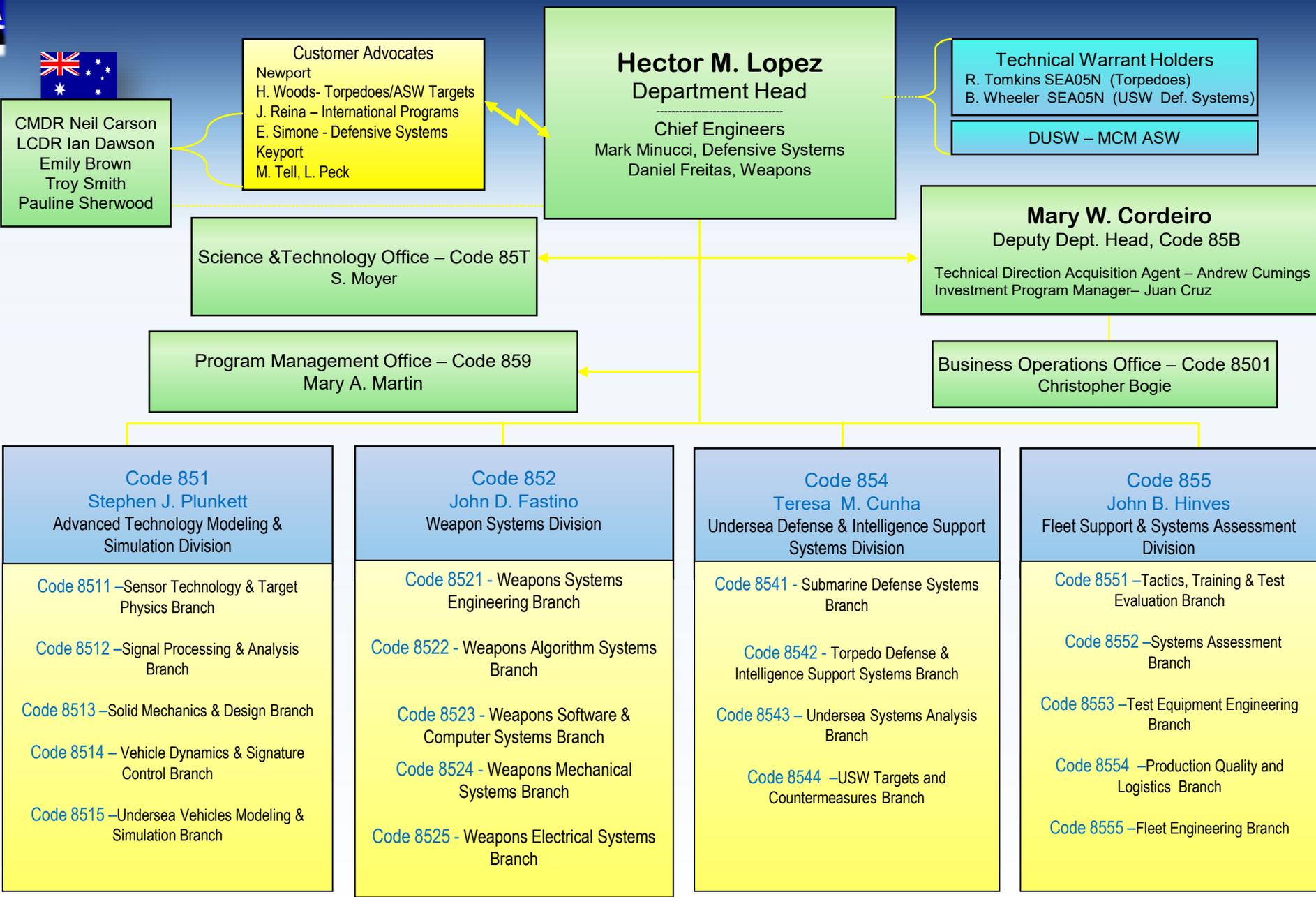
- AN-SLQ-25
- MK30 Mod 1/2
- Technology Refresh Engineering
- Signal Analysis System
- HWT/LWT Sonar Tech Insertion
- ADC MK5
- MK 39 EMATT
- Systems integration
- Production Restart
- Production Engineering Support
- System Evaluation and Acceptance Testing Support
- Fleet Introduction Planning
- Contractor Performance Assessment and Risk reduction

TOTAL: 29%

- AN/SLQ-25
- Countermeasures ADC 2/3/4
- Signal Analysis System
- MK30 Mod 1/2
- MK 39 EMATT
- Weapon performance assessment
- Fleet T&E support
- Fleet Failure Analysis / CA
- Reliability Management
- SCC training
- SW Downloads
- Fleet Procedures
- IMA Certifications
- ORDALT Development
- **In Service Engineering Agent for HWT and CMs)**

TOTAL: 28%

Our Main Thing: Working with industry, academia and Navy labs to deliver solutions to the warfighter



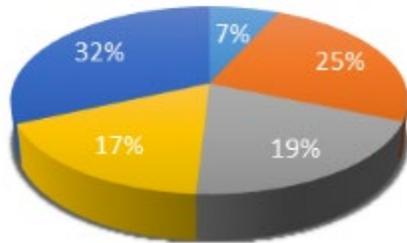
Department Resources

Code 85 On Board Count -

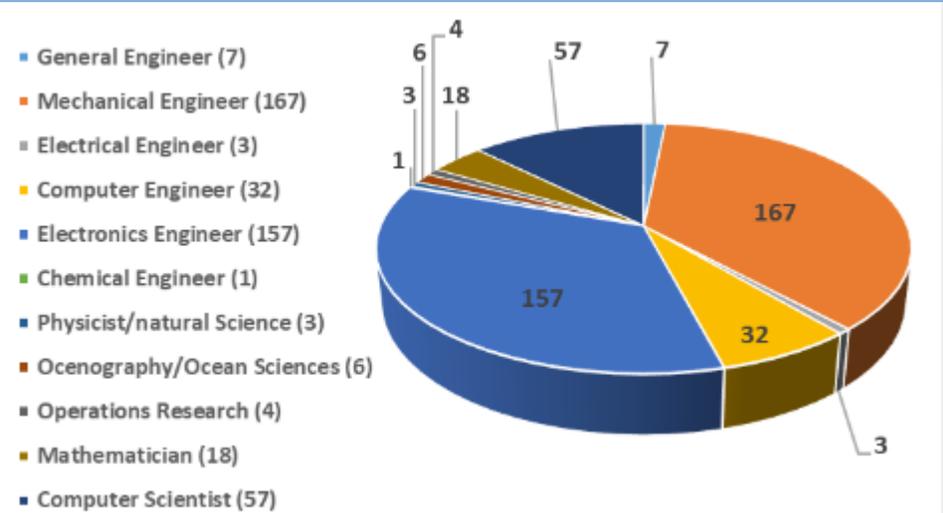
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Code 85 Overview

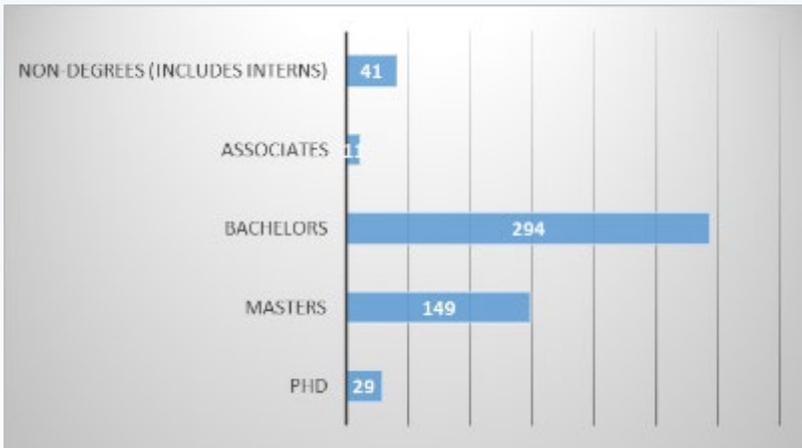
- Department Level (34)
- Advanced Technology Modeling & Simulation Division (124)
- Weapon Systems Division (98)
- Undersea Defense & Intelligence Support Systems Division (87)
- Fleet Support & Systems Assessment Division (160)



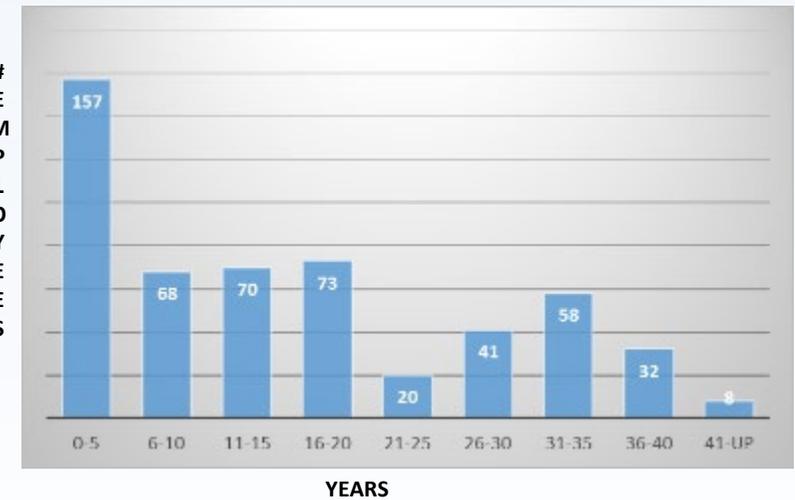
Engineers & Scientists (456)



Code 85 Education



Code 85 Experience



Continuously Managing The Balance of People, Training, Knowledge, and Right Work

Code 851 ~ Advanced Technology Modeling & Simulation Division



Sensor Technology & Target Physics

*NG-CM Development/
Performance Analysis*

*Mission Environmental Data
System– Situational Awareness*

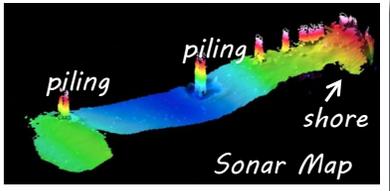
*Non-Traditional
Sensing*

Signal Processing & Analysis

*Forward Look
Sonar (FLS)*

*Relative Autonomous
Navigation On Range (RANR)*

*Non-Traditional
Navigation (NTN)*



Solid Mechanics & Design

URCI Prototyping

*Blue Wolf Electric
Propulsion*

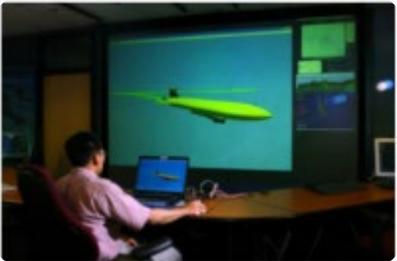
*LDUUV – Structural
Design / Prototype*

Vehicle Dynamics & Signature Control

Bio-Robotics

Propulsor Research

*Ghost Fleet –
Hydro/Vehicle Control
/Deep Diving Vessels*



**Undersea Vehicles
Modeling &
Simulation**

*EC WAF /
Land Based
DT/OT*

“ Provide full-spectrum Science and Technology (S&T) and M&S solutions for diverse Undersea Weapons, Vehicles, and Defensive Systems”

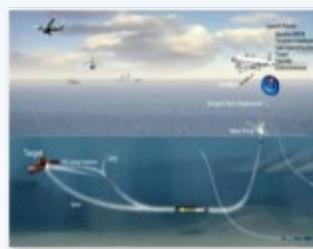
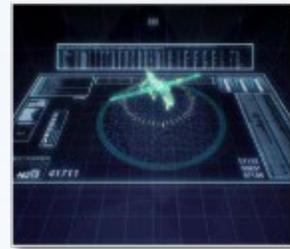
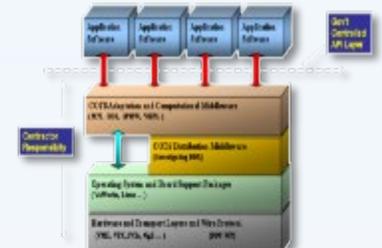
Systems Engineering Process

Technology Assessment Prototypes

Algorithm /SW Development

Electrical and Mechanical Systems

Integration & Test



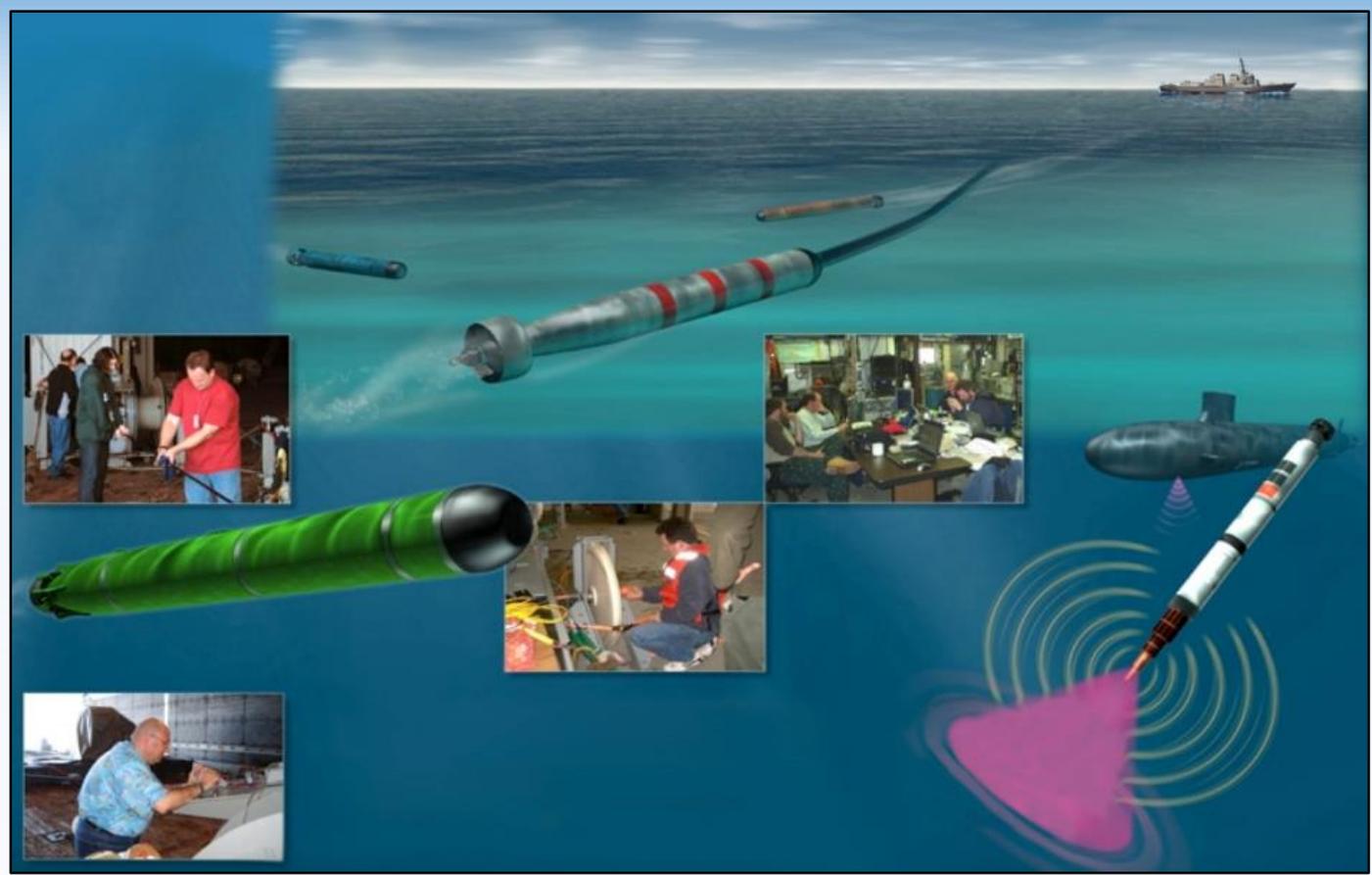
“ Provide the Navy with well integrated undersea weapons solutions that address today’s challenges and tomorrow’s vision...”

Code 854 ~ Undersea Defense & Intelligence Support Systems Division

Torpedo Defense & Intelligence Support Systems

Undersea Systems Analysis

Submarine Defense Systems



“ Develop and deliver innovative undersea warfare defense systems, including sensors, detection subsystems, soft and hard-kill devices, signal processing, and related deployment systems which provide effective torpedo self-defense for surface ships and submarines. Provide computer modeling, engineering evaluation, in water testing and submarine installations in support of intelligence programs.”

Code 855 ~ Fleet Support & Systems Assessment Division

Quality, Production, & Logistics



Test Equipment Engineering & LCSF



Fleet Engineering



Tactics, Training, T&E



Systems Assessment

“Assure maximum Fleet readiness through superior engineering and technical support across undersea weapons, vehicles, and defensive systems’ life cycles; including development, acquisition, in-service operation, operations assessment, performance analysis, tactics development, training, and communication....”

Unique Facilities/Capabilities

Undersea Warfare Development Complex



Weapon Analysis Facility Super Computers



Weapon Analysis Facility H-W-I-L



Torpedo Analysis Facility



Weapon Analysis Facility-User Area



Simulation Based Design Laboratory

Specialized Laboratories



Materials Laboratory



Chemistry Laboratory



Motor Laboratory



Undersea Defense Laboratory



AUV & Target Laboratory



Small Tow Tank



Research Water Tunnel



Battery Laboratory



Anechoic Chamber



Acoustic Wind Tunnel

Undersea Tactical Vehicles Complex



Life Cycle Support Facility



Shapes Laboratory



Acoustic Test Facilities



Torpedo Electronics Lab

Torpedo Industrial Complex



Undersea Weapons Collaboration Center



Land Based Propulsion Test Facility Complex



Electric Propulsion Test Facility



Deep Depth Test Facility



Propulsion Noise Test Facility



Torpedo Component Test Facility



High Energy Chamber

Collaboration with In-Water Test Facilities across the Enterprise



Portable Ranges



Littoral Undersea Test Facilities



AUTECH Range Complex



Nanoose, Canada USW Range & Control Facility

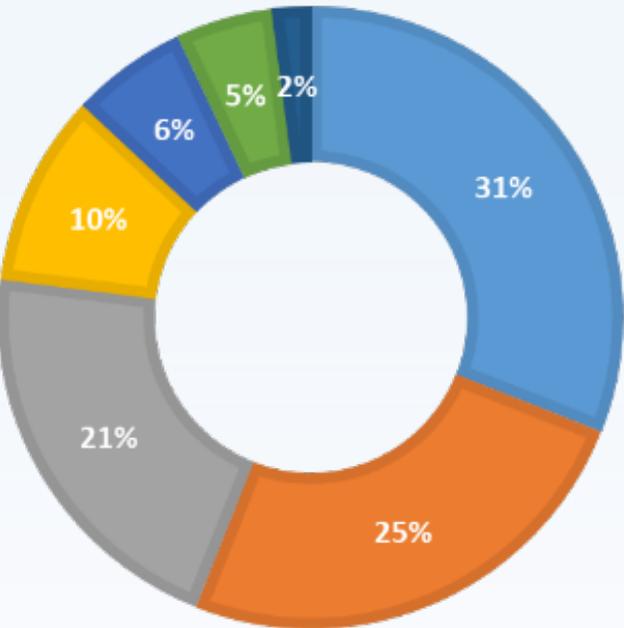


Dabob Bay USW Range

FY21 Projections

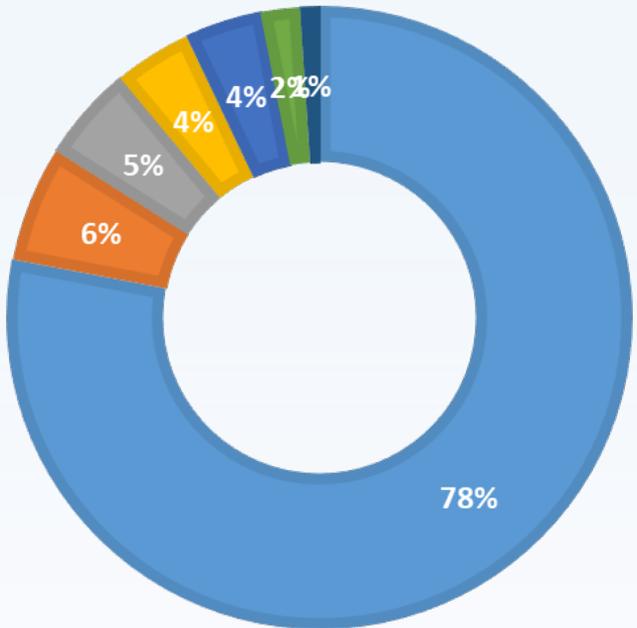
FUNDING BY APPROPRIATION

■ RDT&E ■ WPN ■ FMS ■ OMN ■ SPDP & Priv Party ■ OPN ■ Other



FUNDING BY SPONSOR

■ PEO SUB* ■ SPDP/PP ■ ONR ■ NELO ■ Other (e.g., Fleet, SCO) ■ ONI ■ DARPA



* "PEO SUB" includes PMS404/PMS415 domestic and FMS funding

Total LRE for FY21 estimated at \$210-225M

Code 85 Contracting

Current Major Contractors (1)

- **Boeing**
 - ✓ *Data Co-Processor*
- **BST**
 - ✓ *Batteries*
- **General Dynamics Information Technology (GDIT)**
 - ✓ *SAS / CM Support; Eng. and Tech. Support to Surface Ship Torpedo Defense (SSTD)*
- **Indus Technologies**
 - ✓ *WAF SimOps Support*
- **Lockheed Martin**
 - ✓ *MK 39 Expendable Mobile ASW Training Target (EMATT)*
 - ✓ *Torpedo Engineering Support*
- **L3**
 - ✓ *Cables*
- **McLaughlin Research Corp. (MRC)**
 - ✓ *Torpedo Engineering, Logistics, and Analysis Support*
- **MC Test**
 - ✓ *EEA & TSOB Production*

Current Major Contractors (2)

- **Northrup Grumman**
 - ✓ *Transducer Array Production*
 - ✓ *Torpedo IMU Replacement*
- **Ocean Acoustical Services and Instrumentation Systems (OASIS)**
 - ✓ *Computational & Experimental Mechanics Lab (CEML) Facility*
- **Progeny Systems**
 - ✓ *Torpedo Engineering Support (torpedoes)*
- **Purvis**
 - ✓ *Defensive Systems Engineering Support*
- **Science Applications International Corporation(SAIC)**
 - ✓ *Financial, Service Cost Ctr. ; Prop. Test Facility; FMS Support; Engineering and Technical Support, SSTD support.*
- **SeaCorp**
 - ✓ *WAF Engineering Support*
- **SECHAN Electronics**
 - ✓ *MK48 Signal Assemblies*
- **Ultra Systems**
 - ✓ *MK 710 Torpedo System Test Set (TSTS)*

UW/UD Family of Systems MAC

- **Undersea Weapon and Undersea Defensive (UW/UD) Family of Systems (FoS) Multiple Award Contract (MAC):**
 - 17 Indefinite Delivery, Indefinite Quantity (IDIQ) contracts awarded MAR 2020
 - Post Award Conference: 01 MAY 2020
 - Three-year ordering period, ceiling of \$75M (“Mini-MAC”)
 - Contracts awarded in 12 Functional Areas
 - A contract awardee is qualified for the opportunity to compete for specific requirements under the awarded functional area(s)
- **Orders Projection for FY21:**
 - By the end of Q1, intend to have five orders awarded
 - Total potential contract value about \$24M, covering seven different functional areas
 - Another two orders in development for Q2, which will round out first year of the Mini-MAC

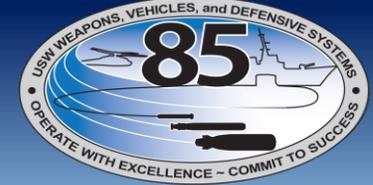
Projected FoS MAC Orders

Order Description	Anticipated RFP Release (QTR of FY21)	Functional Areas
Torpedo Engineering SME Services	RFP Active	1, 6, 7, 8, 9, 11, 12
APB6 OPSW Development	RFP Active	6
Algorithm Development and Maintenance	Expect RFP in Q1	6
FMS DCP CCA Software Development	Expect RFP in Q1	1, 6, 8
MK48 Warhead Electronics Subsystem ORDALT Kit Limited Production	Expect RFP Q2	1

Functional Areas											
1	2	3	4	5	6	7	8	9	10	11	12
Payloads	Hull and Structure	Propulsion	Energy Storage / Conversion	Electrical Power	Software	Non-payload Sensors	Guidance & Control	Launch Platform Interface	Auxiliary & Test Equipment	Modeling & Simulation	Data Analysis

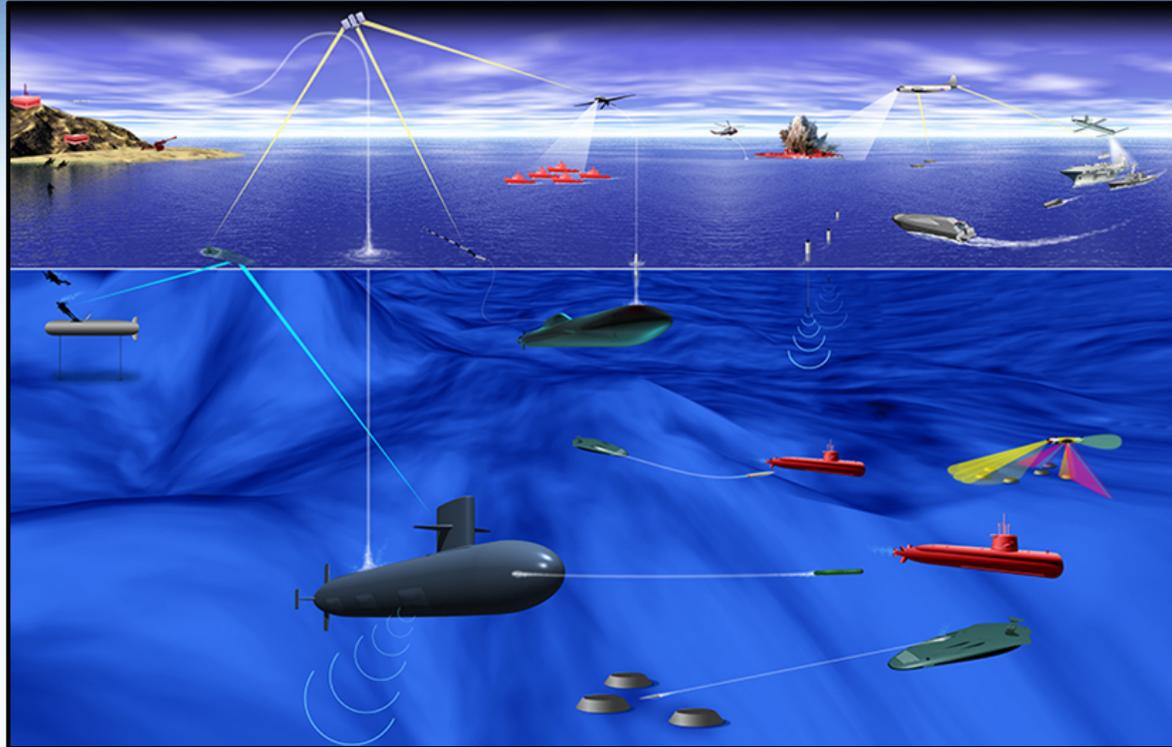


Projected Contracting Requirements



Code	Task Description	Estimated Value (\$M)	Anticipated Strategy	Action Type	Current Contract #	Incumbent	Anticipated RFP Release FY QTR
C85	851: Computational & Experimental Mechanics Laboratories (CEML) family of labs operations and technical services	\$7.5	TBD	Seaport	N00178-04-D-4095/ N402	OCEAN ACOUSTICAL SERVICES AND INSTRUMENTATION SYSTEMS INC DBA OASIS	2021 QTR 1
C85	851: WAF technical services	\$17.0	Full and Open Competition	Seaport	N00178-04-D-4122/ N436	SYSTEMS ENGINEERING ASSOCIATES CORPORATION, DBA SEA CORP	2021 QTR 1
C85	855 - Produce & test MK 48 WES & ST assemblies; sole source to Advanced Acoustic Concepts	\$13.3	Sole Source	C-Type	N/A	N/A	2021 QTR 1
C85	855 - MK 695 Test Set Spares	\$25.0	TBD	IDIQ	NA	NA	2021 QTR 1
C85	854 - Spare Outboard Cables	\$10.5	TBD	IDIQ	N66604-16-D-1367	L-3 UNIDYNE	2021 QTR 1
C85	859 - FMS Eng Support Services (f/o to N432)	\$5.3	TBD	Seaport	N00178-04-D-4119/ N432	SAIC	2021 QTR 2
C85	854: SLQ-25/TWS ISEA (f/o to N00178-04-D-4012/N440)	\$57.0	Full and Open Competition	Seaport	N00178-04-D-4012/ N440	GENERAL DYNAMICS INFORMATION TECH., INC.	2021 QTR 2
C85	854 - MK39 Mod 3 EMATT production	TBD	TBD	IDIQ	N66604-16-D-1326	LMS	2021 QTR 4
C85	851 - WAF Lab Operations Contract	TBD	TBD	Seaport	N00178-04-D-4067/ N66604-17-F-3009	INDUS	2022 QTR 2

Questions



Code 85 Mission

“Provide integrated full spectrum undersea Weapon, Autonomous, and Defensive System solutions to the warfighter through technical expertise, cooperative innovation, engineering, and life cycle stewardship.”