

Naval Surface Warfare Center, Carderock Division

# AMERICA'S FLEET STARTS HERE



## Platform Integrity (Code 60)

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**DEPARTMENT**

**60**

Platform Integrity

**UNRIVALED.**

# Mission

## Mission

**Provide fundamental enabling technologies for enhanced ship integrity and performance. Conduct full spectrum research, development, testing, life-cycle management, and in-service engineering in the areas of:**

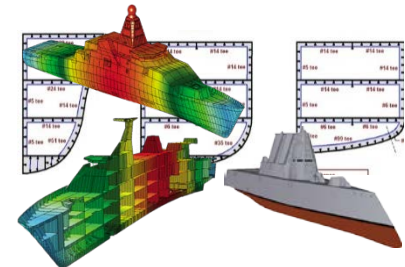
### **SURVIVABILITY & WEAPONS EFFECTS**

Navy Unique  
Requirements



### **STRUCTURES & COMPOSITES**

Architecture  
of the Ship System



### **MATERIALS & MANUFACTURING**

Foundation for All  
Capabilities



### **ENVIRONMENTAL & ENERGY**

Green and Safe  
Operations





# Vision & Technical Capabilities

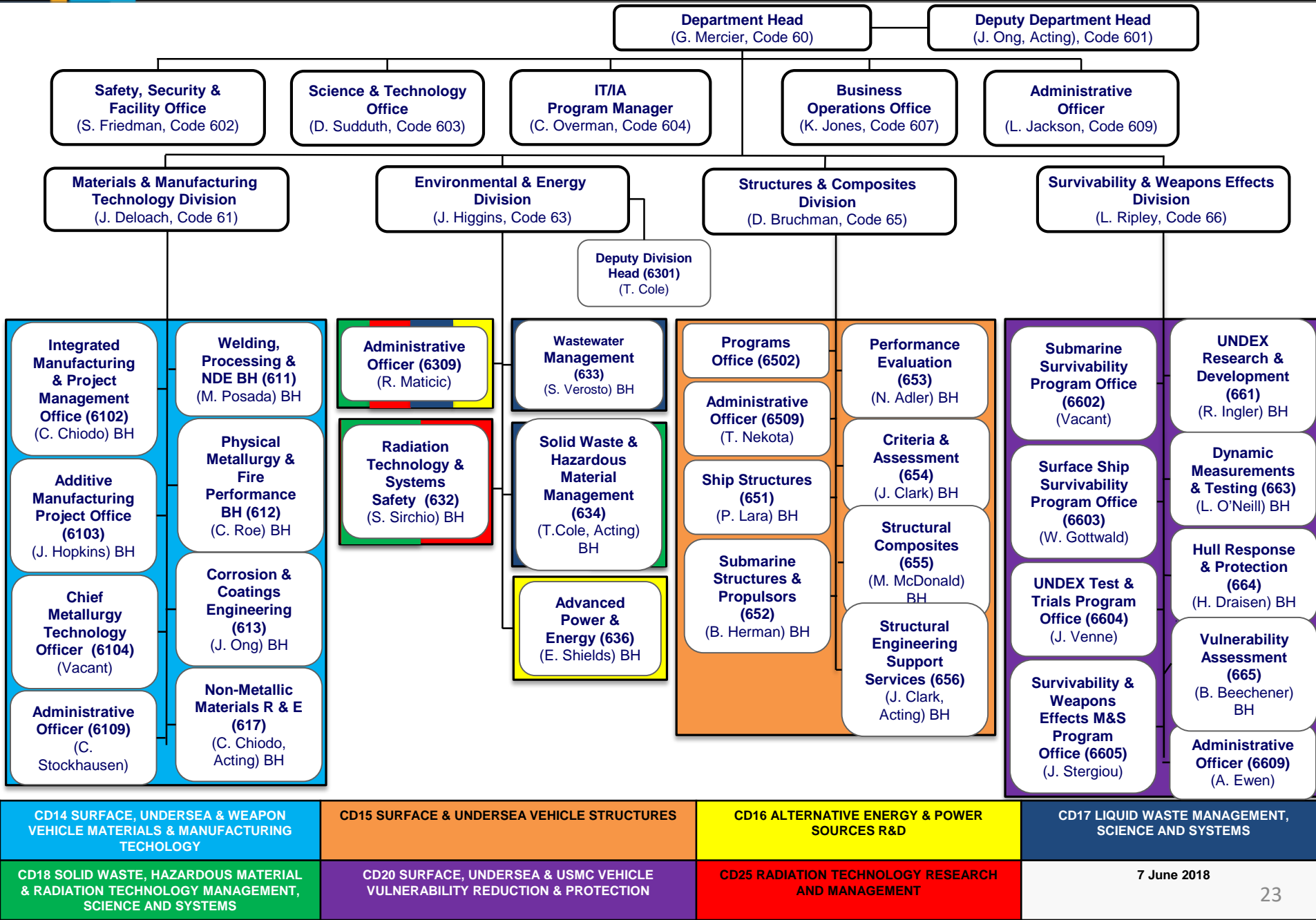
## **Vision**

**We will be the Navy's premier provider in survivability, structures, materials and environmental knowledge enabling the fleet and its warfighters to perform all missions safely and effectively.**

## **Technical Capabilities**

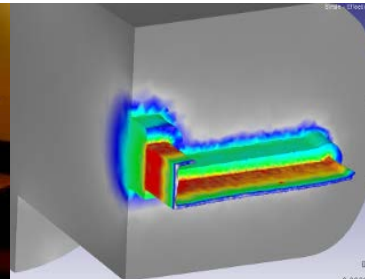
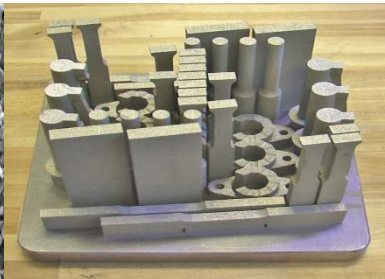
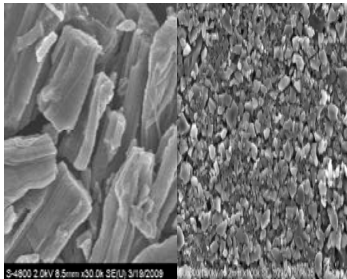
- CD 14: Surface, Undersea and Weapon Vehicle Materials and Manufacturing Technologies**
- CD 15: Surface & Undersea Vehicle Structures**
- CD 16: Alternative Energy and Power Sources R&D**
- CD 17: Liquid Waste Management, Science and Systems**
- CD 18: Solid Waste, Hazardous Material & Radiation Technology Management, Science and Systems**
- CD 20: Surface, Undersea and USMC Vehicle Vulnerability Reduction and Protection**
- CD 25: Radiation Detection Technology Research and Management**

# Platform Integrity Department



# Materials & Manufacturing Div (Code 61)

- **Welding, Processing & NDE**
  - Acquisition, RDT&E, S&T, and ISE support
  - Focus on welding, surface engineering, NDE, hull husbandry automation, and computational materials engineering
  - Experts in solid state manufacturing, robotics/automation, welding consumable design and development, and ICME
- **Additive Manufacturing Project Office**
  - Naval Center of Knowledge in R&D and S&T
  - Accelerating implementation of AM including Navy specific standard and specification development
  - Fleet reach-back, application and training support
  - Coordinating SYSCOM and DoN efforts
- **Integrated Manufacturing Office**
  - Navy lead for Marine Corps Mobile Manufacturing
  - Management and oversight of CPSD and RIP
  - Composite materials for Maintainability and Affordability
- **Physical Metallurgy and Fire**
  - Acquisition, RDT&E, S&T, and ISE services for naval alloys
  - Metallurgical analyses and characterization
  - Material failure analyses
  - Magnetostrictive materials
  - Evaluating the fire performance
- **Corrosion & Coatings Engineering**
  - Acquisition, RDT&E, S&T, and ISE support for naval and expeditionary environments
  - Preventative and corrective maintenance strategy planning, recommendations, evaluations, and training
  - Experts in biofouling and antifouling agents
- **Non-Metallic Mat'ls Research & Eng.**
  - RDT&E, S&T, acquisition, and ISE services
  - Experts in high temperature ceramic applic.
  - Experts in polymer processing applic.
  - Fabricator of acoustic absorbing/reflecting tiles



# Environmental & Energy Div (Code 63)

- **Radiation Technology and Systems Safety**
  - Certified Principal for Safety services for Navy ship acquisition programs
  - Environmental and radiation OSH technologies and processes
  - Radiation technical standards development
  - RDT&E, calibration, and fielding of radiation instruments and sensors
- **Wastewater Management**
  - Experts on domestic and international environmental policies, leaders of the DoD Uniform National Discharge Standards (UNDS) Program
  - RDT&E of oily, ballast, grey, and black wastewater treatment technologies and processes
  - Engineering support for shipboard treatment systems, shore facilities, and installations
  - Advise acquisition programs on system selection
- **Solid Waste and Hazardous Material Management**
  - RDT&E of solid waste systems and equipment for surface and submarine fleet integration
  - Development of procedures and processes for hazardous material management in the fleet
  - ISE services for subsurface fleet
  - Advanced non-skid and hull surface cleaning technologies
  - Engineering support for shore facilities and installations
- **Advanced Power and Energy**
  - RDT&E, S&T, and acquisition support to NAVSEA programs and USMC
  - Experts on energy storage (batteries), certification, and safety
  - Engineering support of portable and hybrid power systems and fuel cells for forward deployed expeditionary sites





# Structures & Composites Div (Code 65)

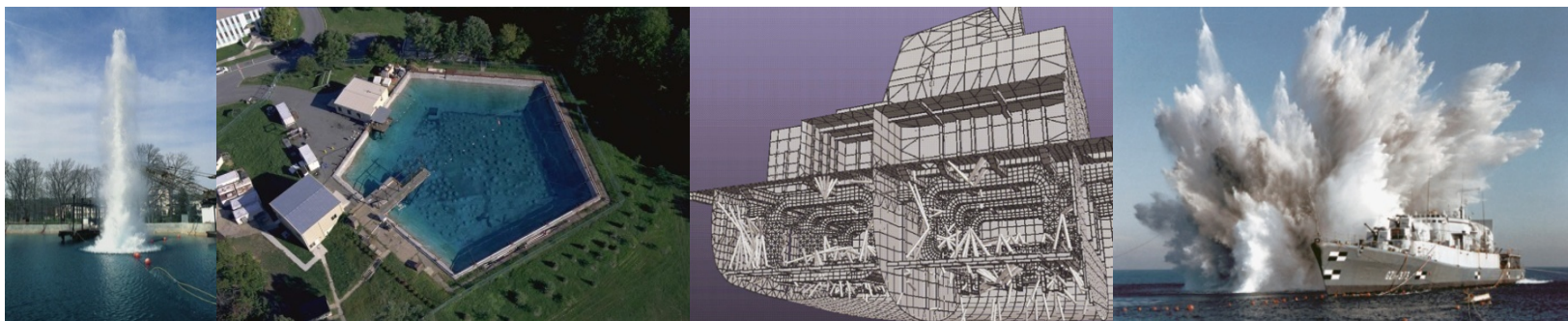
- **Ship Structures**
  - RDT&E, S&T, acquisition, and ISE services
  - Validate contractor designs to standards via FEA
  - Develop design methodologies for surface ships and composite structures
- **Submarine Structures & Propulsors**
  - RDT&E, S&T, acquisition, and ISE services
  - Validate contractor designs to standards
  - Develop design methodologies and software tools for pressure hulls, composite structures and propulsors
- **Performance and Evaluation**
  - RDT&E, S&T, acquisition, and ISE services
  - Large-scale structural laboratory testing
  - Full and model scale trials to validate design loads
  - 3D measurement capabilities
- **Criteria and Assessment**
  - RDT&E, S&T, acquisition, and ISE services
  - Develop criteria to assess naval structures
  - Develop and maintain Navy structural analysis tools
  - Develop monitoring systems for loads and damage detection (SHM)
- **Structural Composites**
  - RDT&E, S&T, acquisition, and ISE services for composite materials
  - Develop and evaluate composite and lightweight design and evaluations
  - Composite patch repair of cracked alloys
- **Structural Engineering Support Services**
  - ISE Services
  - Degraded structure evaluations for in-service vessels
  - Aviation flight deck certifications





# Survivability & Weapons Effect Div (Code 66)

- **Underwater Explosions R&D**
  - R&D and acquisition support services
  - Improving methods and procedures for shock hardening
  - Provide advanced M&S services to predict damaging effects of UNDEX on surface and submarine hulls
- **Dynamic Measurements & Testing**
  - RDT&E and acquisition support services
  - Measure dynamic pressure loads of ship and submarine structures
  - Preparing for the LCS-5 and-6 Full Ship Shock trials
  - Validate analytical predictions
- **Hull Response & Protection**
  - RDT&E, S&T, and acquisition services
  - M&S of ship, sub, and USMC vehicle responses from weapons effects
  - Develop structure, armor, and mitigation techniques to improve survivability
- **Vulnerability Assessment**
  - Experts in Live Fire Test & Evaluation and Total Ship Survivability Trials
  - M&S to assess primary and secondary damage and recoverability actions
- **Survivability and Weapon Effects M&S**
  - R&D and eventual acquisition services
  - Developing new MS technologies for advanced weapon effect simulations



# Major Facilities

## ■ Materials & Manufacturing Technology

- Additive Manufacturing R&D Lab
- Manufacturing Knowledge and Education (MAKE) Lab
- Materials Characterization Facility
- Fatigue and Fracture
- Nondestructive Evaluation Lab
- Ceramics Processing lab
- Polymers Processing Lab
- Fusion/Solid State Joining and Allied Processes Lab
- Robotic Welding Lab
- Physical Simulation Labs
- Computational Materials Science Lab
- Coatings Applications and Analysis Site
- Fire Protection Materials Facility
- Composites Materials Lab



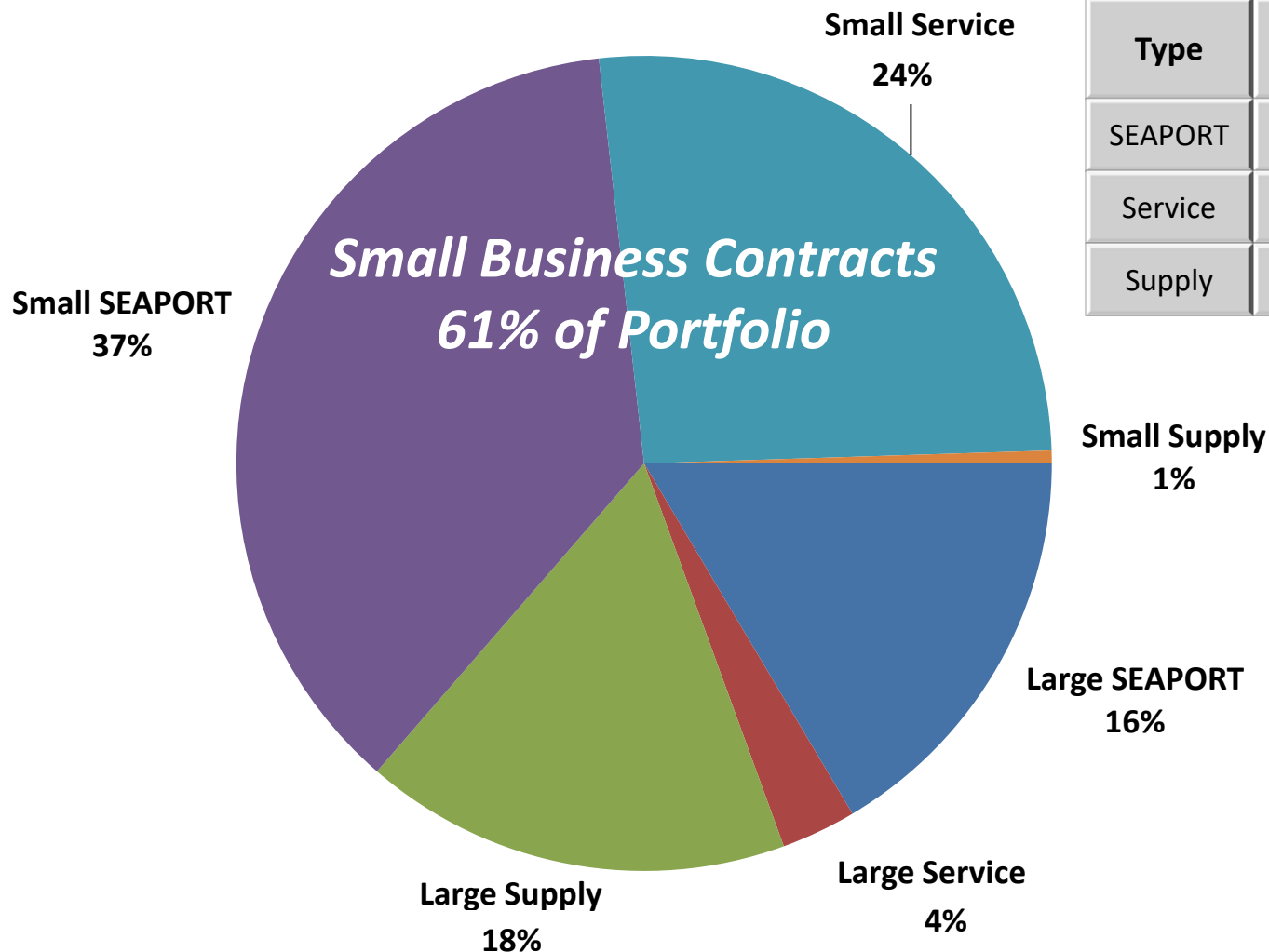
# Major Facilities

- Environmental & Energy
  - Abusive Battery Lab
  - High Voltage Test Facility
  - Radiation Range
  - Liquid Waste Lab
  - Solid Waste, Medical Waste and Pollution Prevention Lab
  - Thermal Destruction Facility
- Structural Mechanics Facility
  - Deep Submergence Pressure Test Facility
  - Large Scale Structural Evaluation Facility
  - Fatigue and grillage Test Facility
- Vulnerability & Protection Complex
  - Explosives Test Pond & Dynamics Measurements Complex
  - Large Scale Underwater Explosions Test Complex (APG)
  - Protection Analysis Center





# Overview of Active Contracts



Type	# of Contracts	% of Total	Total Value
SEAPORT	4	53%	\$163.5M
Service	6	28%	\$87.8M
Supply	7	19%	\$60.1M

# Current Contracts

## Materials & Manufacturing Division (C/61)

Contract Title	Total Value	Service/ Supply	Contractor	Concludes (Qtr/FY)
Electrochemical Power Sources and Composite Material Engineering Services	\$20.5M	SEAPORT	Spectrum Technology Group	Q3/FY21
U.S. Marine Corp Corrosion and Materials Engineering Services	\$49.2M	SEAPORT	Vision Point Systems	Q3/FY21
U.S. Navy Corrosion Control Assistance Team (CCAT)	\$43.9M	SEAPORT	Excet Inc.	Q2/FY21
NGD9 castable urethane polymer	\$2.8M	Supply	Goodrich Corp.	Q3/FY20
Rubber Compound (NXAS126)	\$0.51M	Supply	Burke Industries Inc.	Q4/FY19

## Environmental and Energy Division (C/63)

Contract Title	Total Value	Service/ Supply	Contractor	Concludes (Qtr/FY)
Battlefield Doimeter (MBD-2)	\$11.7M	Supply	RSCS, Inc.	Q4/FY21
Full Spectrum Environmental Quality Systems	\$49.8M	SEAPORT	BMT Designers and Planners	Q1/FY21
Thermoluminescent Dosimeter (TLD) Equipment	\$19.9M	Supply	Thermo Eberline Inc.	Q2/FY20
8800 Reader Maintenance	\$2.6M	Service	Thermo Eberline Inc.	Q3/FY19
Air Particle Sampler	\$1.6M	Supply	Spectral Labs	Q3/FY19
Electronic Personal Dosimeter (EPD)	\$4.6M	Supply	Thermo Eberline Inc.	Q3/FY19
Air Particle Detector (APD) – Ships	\$20.0M	Supply	SAIC/Leidos	Q4/FY18

## Structures and Composites Division (C/65)

Contract Title	Total Value	Service/ Supply	Contractor	Concludes (Qtr/FY)
Composite Systems for Marine Components (SBIR Phase III)	\$49.9M	Service	Seemann Composites Inc.	Q3/2020
Non Destructive Testing and Evaluation (SBIR Phase III)	\$24.5M	Service	Materials Sciences Corp	Q3/FY20

## Survivability and Weapons Effect Division (C/66)

Contract Title	Total Value	Service/ Supply	Contractor	Concludes (Qtr/FY)
Engineering Services for Advanceed Survivability Program (ASAP)	\$4.0M	Service	SURVICE Engineering, Inc.	Q3/FY23
Engineering Services for Software Development and Shock Assessments	\$5.9M	Service	Thorton Tomasetti Inc.	Q4/FY21
Data Recording Equipment and Calibration/Repair	\$3.6M	Service	Pacific Instruments Inc.	Q2/FY20

# Long Range Acquisition Forecast

Division	Requirements Title	Incumbent	Anticipated Total Value	Anticipated Acq Strategy	Anticipated Solicitation Date
61	U.S. Marine Corp Corrosion and Materials Engineering Services	Vision Point Systems	\$50M	SEAPORT	Q4/FY18
61	U.S. Marine Corp Corrosion and Materials Technician Services	Vision Point Systems	\$50M	SEAPORT	Q4/FY18
63	Radiation Air Particle Detector (APD) Ships	Leidos	\$15M	Competitive	Q4/FY18