

Naval Surface Warfare Center, Carderock Division

AMERICA'S FLEET STARTS HERE



Ship Signatures Department (Code 70)

Paul Luehr, Acting Department Head

CAPT Mark Vandroff
Commanding Officer, NSWCCD

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Dr. Paul Shang
Technical Director (Acting), NSWCCD

Briefing Agenda Overview

Ship Signatures Department (Code 70)



- Our Mission and Vision
- Acquisition Product Lifecycle
- Organizational Overview
- Facilities, Detachments and Site Support
- Supporting the Warfighter
- Summary

Mission & Vision

Ship Signatures Department (Code 70)



Mission

To provide technical solutions to the warfighter that ensure a signatures advantage for Navy submarines, surface ships, and small craft and keep our Fleet at sea, capitalizing on the Navy's prior investments in stealth and attendant reduced susceptibility

Vision

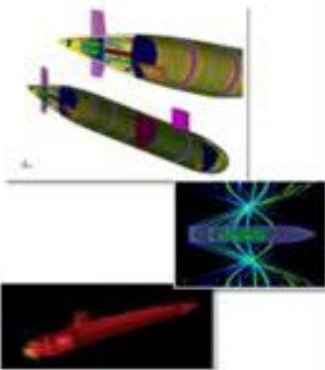
A high-performing technical organization recognized as a world-class innovator for the underwater acoustic, underwater electromagnetic and topside signature reduction technologies required for advanced submarines, ships, unmanned vehicles and their respective systems

Acquisition Product Lifecycle

Ship Signatures Department (Code 70)

Science & Technology

- Basic & Applied Research
- Detailed understanding of Physics
- Modeling & Simulation
- Numerical & Analytical Model Development



Research & Development

- Concept Studies
- Technology Development
- Small and Large Scale Model Experiments



Test & Evaluation

- Signature Measurement
- Systems Development
- Advanced Signal Processing
- Source Localization
- Full Scale Trials



Product Delivery

- Threat Analysis and Requirements Development
- Silencing System Design and Development
- Ship Acquisition & Construction Engineering
- Technical Warrant Holder Support



Fleet Support

- Direct Fleet Support
- SHIPALTS/TEMPALTS
- On-Board Acoustic Measurement Systems
- Fleet Training Systems



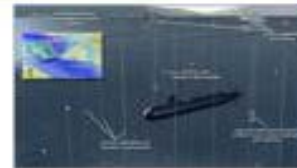
Facilities



• ARD, Bayview



• STAFAC



• SEAFAC



• SFOMF

Organizational Overview

Ship Signatures Department (Code 70)

Ship Signatures Department (70)

Administrative Office

Senior Scientists

Platform and Programs Group

Signatures Characterization & Analysis Division (71)

- Signature Monitoring & Surface Ship Programs
- Susceptibility Assessment and Modeling
- Onboard Signatures and Fleet Support
- Radiated Noise Signatures
- Trial Directors, Facilities & Mission Readiness

Acoustic Signatures Technology Division (72)

- Signatures Materials Physics
- Structural Acoustics & Target Strength
- Hydroacoustics & Propulsor Development
- Acoustic Research Detachment (Lake Operations)

Signatures Measurement Technologies & Systems Division (73)

- Acoustic Systems Development
- Fleet Systems
- Signature Measurement and Processing
- Advanced Signatures Training & Decision Systems

Acoustics

Electromagnetic Signatures Technology Division (74)

- Radio Frequency (RF) Systems Development
- Infrared / Electro-optical (IR/EO) Technology
- Signatures Engineering
- Radio Frequency (RF) Technology Development

Above Water Electromagnetics

Underwater Electromagnetic Signatures & Technology Division (75)

- Theory, Modeling & Analysis
- Systems & Measurement
- Electromagnetic Sensors & Technology
- South Florida Ocean Measurement Facility

Underwater Electromagnetics

Nominally 575 Personnel

Facilities, Detachments & Site Support

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Southeast Alaska Acoustic Measurement Facility (SEAFAC)
KETCHIKAN - ALASKA

Acoustic Research Detachment
BAYVIEW - IDAHO



Puget Sound Detachment at Naval Submarine Base Bangor
BANGOR - WASHINGTON

NAVSEA HQ

Mine Warfare Support
BAHRAIN

Carderock Division Headquarters
WEST BETHESDA - MARYLAND

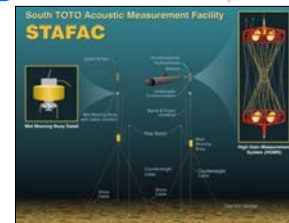
Submarine Force – Pacific Fleet
PEARL HARBOR - HAWAII

Acoustic Trials Detachment
CAPE CANAVERAL - FLORIDA

Mine Warfare Support
SASEBO - JAPAN

Pacific Fleet Support
GUAM

South Florida Ocean Measurement Facility
FT LAUDERDALE - FLORIDA



South TOTO Acoustic Measurement Facility (STAFAC)
ANDROS ISLAND - BAHAMAS

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Signatures Characterization & Analysis Division (71)

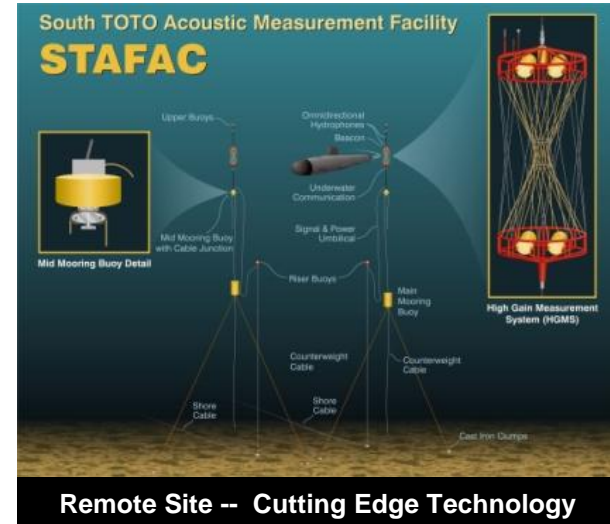
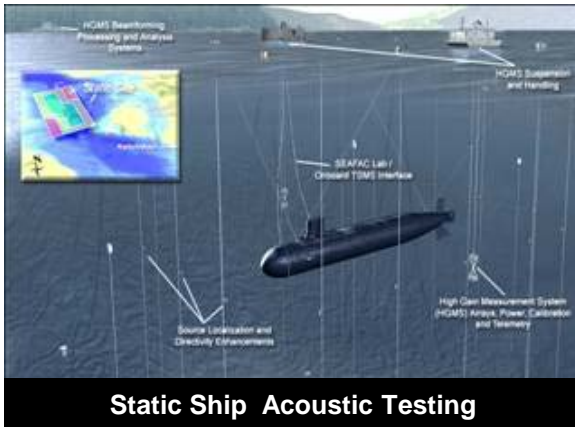
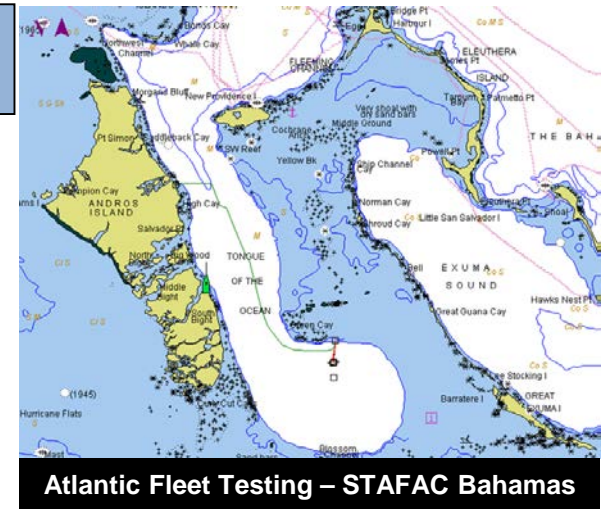
Ship Signatures Department (Code 70)



***Direct Fleet Interaction !
Help Ships Stay Undetected !***

Areas of Technical Expertise

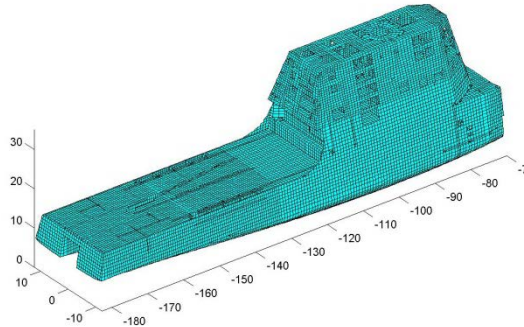
- Underwater Acoustics Measurement & Analysis
- Vibration Transmission Path Analysis
- Machinery Vibration
- Life Cycle Assessment
- Design and Fleet Support



Develop and Deliver Advanced Acoustic Silencing Solutions for the Acquisition Community

Areas of Technical Expertise

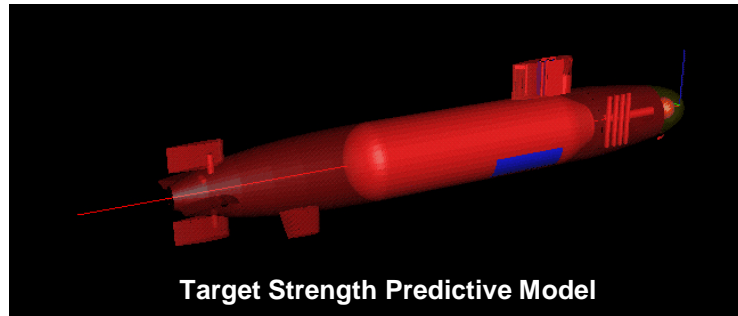
- Hydroacoustics
- Structural Acoustics
- Propulsor Acoustic Design
- Advanced Acoustic Materials Development and Applications
- Target Strength Modeling and Measurement
- Shipboard Airborne Noise and Vibration
- Scale Model and Laboratory Acoustic Testing
- Analytical and Computational Acoustics Tools



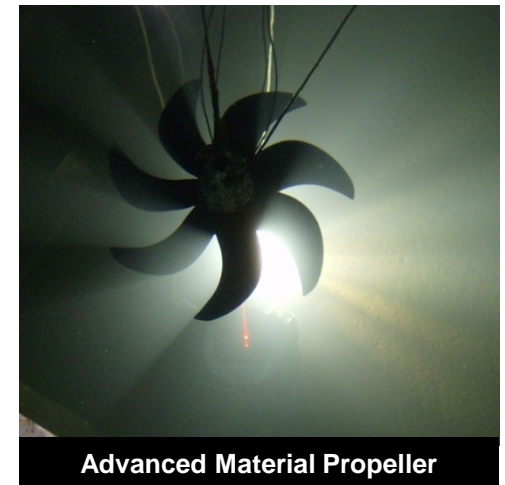
DDG 1000 Stern/Propeller Model



Dolly Varden 1:4 Scale Buoyant Vehicle



Target Strength Predictive Model



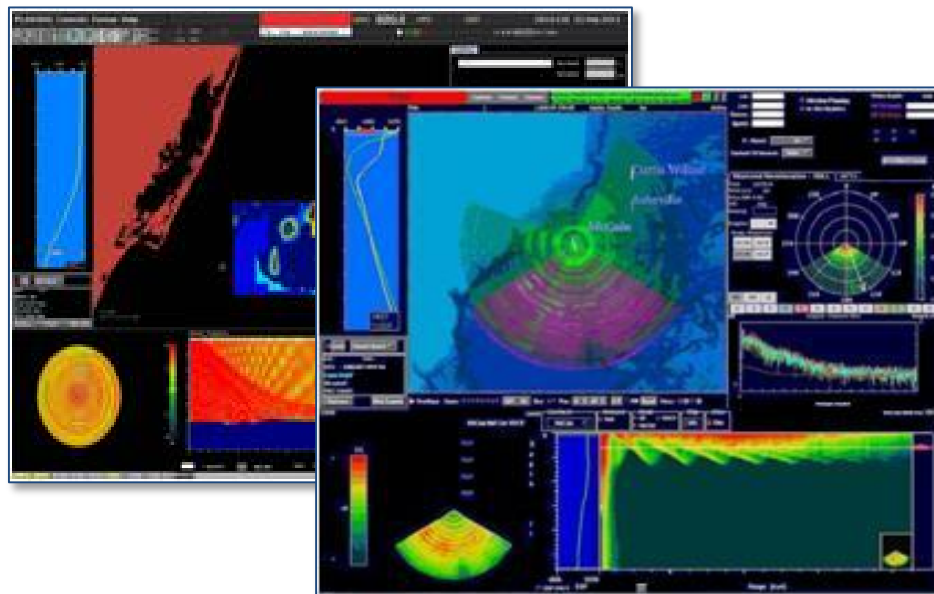
Advanced Material Propeller

Signatures Measurement & Systems Development Division (73)

Ship Signatures Department (Code 70)

Guidance Systems

- Supports signature and sensor modeling for ASW mission planning and assessment
- Common acoustics and displays for Sonar, C2, Reconstruction and Analysis systems



Training Systems

- Common acoustic and visual simulation for Submarine, Surface, and Surveillance Sonar systems
- Delivered fleet schoolhouse trainers also leveraged for on-board training and testing of tactical systems

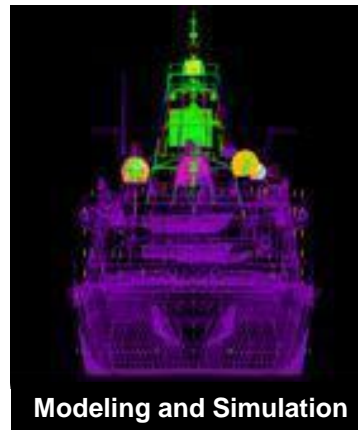
Providing Advanced Acoustic Modeling and Simulation to the Operational and Intelligence Communities

Develop and Deliver Topside Signature Solutions



Areas of Technical Expertise

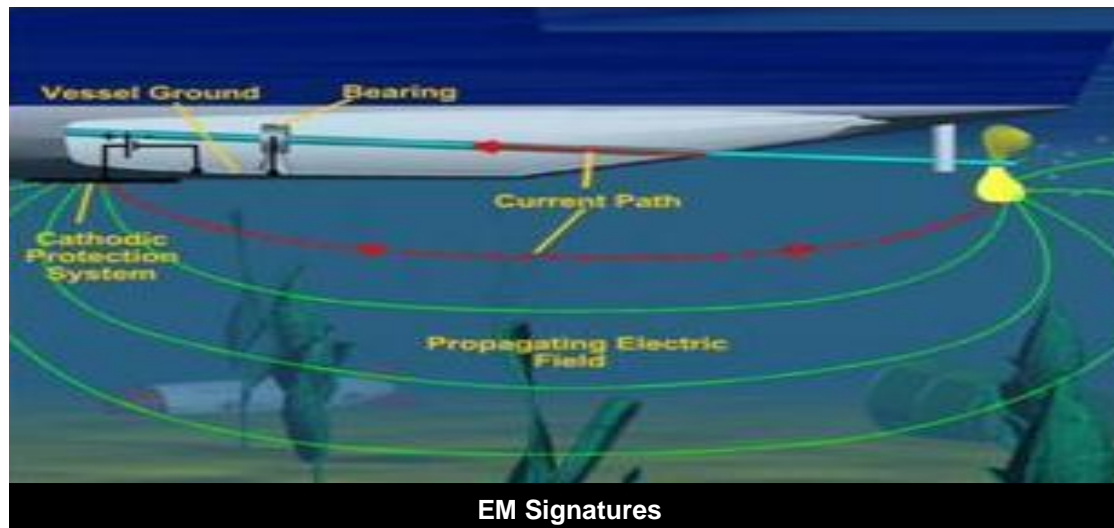
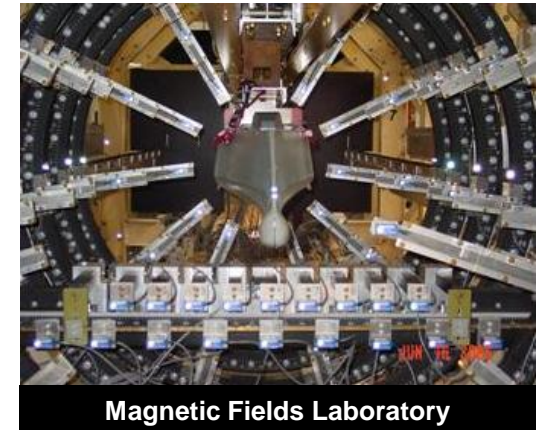
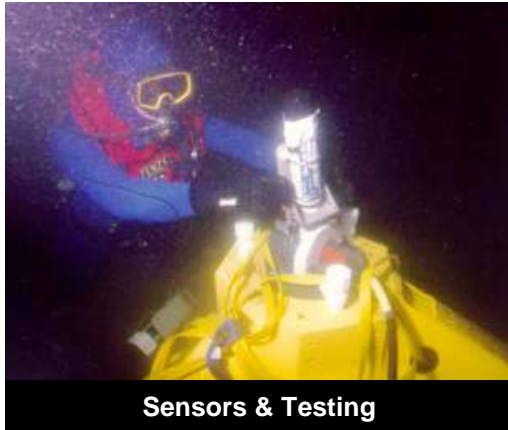
- Radar Cross Section Measurement and Reduction
- IR and Electro-Optical Signatures Measurement and Reduction
- Topside Design Integration
 - Combatants
 - Auxiliaries
 - Carriers
 - Special Warfare Personnel and Craft
 - Submarine Masts



Mines and Ships Don't Mix

Areas of Technical Expertise

- UEM Fields Modeling/ Measurement
- UEM Silencing Systems Design
- UEM Advanced Modeling & Simulation
- Finite Element Analysis
- Electromagnetic R&D
- UEM Sensor Development



Summary

Ship Signatures Department (Code 70)

Continuously improving, transitioning cost-effective stealth technologies, and maintaining readiness:

- Collaboration across Naval Research & Development Establishment
- Real-world signatures data improves S&T, R&D
- Affordable technologies for back fit and new design applications
- Stealth and reduced susceptibility through Fleet diagnostics and tune-ups



Ship Signatures Competitive Requirement Opportunities Through 2019



Requirements Description	Incumbent Contractor	Anticipated Total Value	Anticipated Acquisition Strategy	Anticipated Solicitation Date	Anticipated Award Date
Signature Trainers Scenario Control	Leidos	\$50M	Small Business Set-Aside	Released on 23 May 2018	Q4- FY18
Magnetic Silencing Facility Upgrades and Electromagnetic Support	AECOM/URS	\$10M	Unrestricted	Q3- FY18	Q1- FY19
Synthetic Signature Generation Based Training Systems	Leidos	\$65M to \$95M	Unrestricted	Q4- FY18	Q3- FY19
Staves Contract	Channel Technologies Group (CTG)	\$10M	TBD	Q3- FY19	Q3- FY20
Acoustic Research Detachment Support Contract	General Dynamics Information Technology	\$50M	TBD	Q4- FY19	Q3- FY20
Virtual Reality Support	New Requirement	\$25M	TBD	Q4- FY19	Q4- FY20
Underwater Electromagnetic Engineering Services Contract	ATR	\$45M	Small Business Set-Aside	Q4- FY19	Q4- FY20
Acoustic Trials Engineering Support	ManTech	\$45M	TBD	Q4- FY19	Q4- FY20