



Acquisition Directorate
Research, Development, Test & Evaluation

U.S. Coast Guard FY24 RDT&E Project Portfolio



UNCLAS | FY24 RDT&E Project Portfolio | CG-926 RDC | A. Arsenault | October 2024
RDC Command Video: <https://www.dvidshub.net/video/867068/coast-guard-rdc-overview>

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Beyond Visual Line of Sight (BVLOS) Technology for Coast Guard (CG) Uncrewed Aircraft System (UAS) Operations

7691

Mission Need: BVLOS operations for CG UAS.

- Objectives**
- Leverage U.S. Southern Command (SOUTHCOM), Joint Inter Agency Task Force-South (JIATF-S), and Navy Research Laboratory (NRL) efforts to explore Medium Range UAS (MR-UAS) Vertical Takeoff and Landing (VTOL) operations from a CG Cutter (CGC).
 - Integrate Detect and Avoid (DAA) technologies for conducting BVLOS operations [sUAS 1st].
 - Conduct land and vessel-based evaluations using DAA technology [sUAS 1st].
 - Conduct a VTOL BVLOS Limited User Evaluation (LUE) from a CGC.
 - Inform due regard parameters for CG BVLOS UAS operations.
 - Establish a BVLOS Certificate of Authorization for CG operations.
 - Conduct a land-based Medium Range-UAS Search and Rescue (SAR) demonstration, followed by a LUE onboard a CGC.



- Notes**
- Legislative requirement.
 - Establish Memoranda of Understanding and Cooperative Research and Development Agreements as necessary with industry partners.
 - Leverage efforts of the Federal Aviation Administration, SOUTHCOM, National Oceanic and Atmospheric Administration, Office of Naval Research (ONR), JIATF-S, U.S. Navy 4th Fleet and other government agencies.

Sponsor's Rep: CG-711
Ops Rep: LANT-3

Stakeholder(s): CG-751, CG-931, CG-41, SOUTHCOM, JIATF-S, NRL, CGCYBER, ONR

RDC Research Lead: Mr. Stephen Dunn
CG-926 Portfolio Manager: LCDR Stephen Thomsen

Anticipated Outcome/Transition: Recommendations for Acquisition Milestone Support
 Recommendations for Standards/Regulations/Policy

Project Start: 13 Mar 19

Project Timeline / Key Milestones

MR-UAS VTOL Operations from a CGC (Brief)	9 Nov 20 ✓ ★
BVLOS Technologies Integrated into Small UAS (sUAS) and MR-UAS Complete	24 Dec 22 ✓
Detect and Avoid Technologies Integration (Brief)	27 Jan 23 ✓ ★
Vessel-based sUAS BVLOS Limited User Evaluation D-7 Complete	17 Aug 23 ✓
Initial Vessel-Based MR-UAS DAA Technologies Demonstration Complete	11 Oct 23 ✓
Combined Land-based BVLOS sUAS and MR-UAS Demonstration Complete	Nov 24
Land and Vessel-Based BVLOS Demonstrations (Brief)	Jan 25 ★
Beyond Visual Line of Sight UAS Operations (Report)	Mar 25 ★
Project Completion: Mar 25	

Mission Need: Persistent maritime domain awareness using AUSVs.

Objectives

- Assess potential employment options using Autonomous Underwater and Surface Vehicles (AUSV) to support U.S. Coast Guard (CG) mission areas. Using modeling and simulation techniques, assess AUSV Concept of Operations, including:
 - Effectiveness of single and multiple AUSVs; and
 - Effectiveness of AUSV and unmanned aerial system teaming.
- Inform field testing using modeling analysis results.



Notes

- Partner with the U.S. Department of Homeland Security (DHS) Science, Technology Directorate (S&T) Borders, Immigration and Maritime (BIM), U.S. Naval Research Laboratory, Naval Undersea Warfare Center, Naval Surface Warfare Center – Dahlgren Division.

Sponsor's Rep: CG-26
Ops Rep: LANT-3

Stakeholder(s): DHS S&T BIM, CG-721, CG-MLE, CGCYBER, FORCECOM

RDC Research Lead:
 Mr. Ross Vassallo

CG-926 Portfolio Manager:
 LCDR Stephen Thomsen

Anticipated Outcome/Transition: Recommendations on Tech Availability & Applicability
 Recommendations for Tactics, Techniques & Procedures

Project Start: 1 Oct 19

In House or Contracted Modeling KDP	23 Sep 20 ✓
Vehicle Operations and Control Training	20 Jun 21 ✓
Contract for Modeling Effort Established	14 Sep 21 ✓
MUST: Status Update (Brief)	16 Aug 22 ✓ ★
MUST: Model Progress Status (Brief)	26 Sep 23 ✓ ★
Support for DHS MUST Operational Testing Completed	1 Nov 23 ✓
MUST: Model Simulation Results (Brief)	13 Sep 24 ✓ ★
Maritime Uncrewed System Technology (Report)	May 25 ★
Project Completion: May 25	

Shipboard Based Polar UAS Capability Analysis

1040

Mission Need: Uncrewed aircraft technologies to extend awareness and logistics for polar operations.

Objectives

- Identify and evaluate emerging Uncrewed Aircraft System (UAS) technologies to enhance U.S. Coast Guard (CG) operations in arctic regions.
- Analyze possible UAS and identify integration considerations tailored for CG Polar Security Cutter assets.
- Cultivate joint arctic UAS efforts, interagency cooperation and allied nation information sharing to gain better understanding of uncrewed aerial sensor capability in characterizing marine domain awareness in polar conditions.
- Inform future capabilities and operational documents.



Notes

- Most project 1040 objectives were addressed by ICE PPR and ONR Global in 2023 and 2024 through field experiments. Plan to analyze data from the Office of Naval Research (ONR) Global Frozen Flyer project which was created by the executive officer for the International Cooperative Engagement Program for Polar Research (ICE PPR), (office symbol: DCNO, N9).

Sponsor's Rep: CG-7 UxS
Ops Rep: PAC-3

Stakeholder(s): CG-711, CG-931, CG-6, CG-751, D17, LANT-5, NOAA, CG-MER

RDC Research Lead:
 Mr. Ross Vassallo

CG-926 Portfolio Manager:
 LCDR Stephen Thomsen

Anticipated Outcome/ Transition: Recommendations on Tech Availability & Applicability

Project Start: 1 Apr 24

Project Timeline / Key Milestones

Complete Initial Review of ONR Frozen Flyer Data	26 Jun 24 ✓
Complete Technology Focus Analysis on ONR Data	9 Aug 24 ✓
Shipboard Based Polar UAS Capability Analysis (Report)	Jun 25 ★

Project Completion: Jun 25

Mission Need: Maintain competency/knowledge; provide rapid response; and external liaison.

Objectives

- Maintain U.S. Coast Guard (CG) Research and Development Center (RDC) competency and technical knowledge in understanding present and future aviation and test and evaluation technology/systems including: Crewed and Uncrewed Aircraft Systems (UAS), mission analysis, wide area surveillance, search and rescue, and persistent/strategic Maritime Domain Awareness.
- Maintain Branch infrastructure to support CG RDC portfolio objectives.
- Support Aviation Strategic Project Portfolio Alignment and CG DCO/DCMS Research Priorities.
- Provide expert input to CG stakeholders regarding aviation technologies.
- Foster continued relationships with CG sponsors/stakeholders and external U.S. Department of Defense labs, U.S. Department of Homeland Security (DHS) Science and Technology Directorate (S&T), and other government agency/academic partners.
- Provide service academy, Historically Black College or University, and Minority serving Institution students internship opportunities.



Notes

- Nexus for research and development uncrewed efforts.
- Participating in Medium Range UAS IPT and Small UAS Work Group.
- Sponsor for Naval Postgraduate School (NPS) Graduate Thesis Research on UAS integration.
- Partnered with U.S. Southern Command research efforts.
- Partnered with U.S. Customs and Border Protection, Federal Aviation Administration, U.S. Naval Research Laboratory, National Oceanic and Atmospheric Administration, and National Aeronautics and Space Administration Beyond Visual Line of Sight technology efforts.

Sponsor's Rep: CG-926
Ops Rep: Various

Stakeholder(s): CG-41, CG-711, CG-721, CG-931, CG-SAR, ALC, DHS S&T

RDC Research Lead:
Mr. Sean Lester

CG-926 Portfolio Manager:
LCDR Stephen Thomsen

Anticipated Outcome/ Transition: Various

Project Timeline / Key Milestones

Project Start: Ongoing	
Sponsor NPS Thesis: NPS-23-008: Operationalizing UAS Aboard U.S. Navy and CG Ships	29 Dec 23 ✓
Sector of the Future Support – Field Automatic Identification System Transmit for Search and Rescue in Sector Boston and Sector Long Island Sound	30 Sep 24 ✓
Integrate UAS Tasking of Surface Vessels Through Navigation Systems (STEDS)	30 Sep 24 ✓
Integrate RDC Assets into Team Awareness Kit Environment	30 Sep 24 ✓
Maintain UAS Operator Proficiency	30 Sep 24 ✓
Implement Common Operating Picture Integration of Sensor Data for Uncrewed System Platforms	30 Sep 24 ✓
Joint Capability Technology Demonstration Wide-Area Autonomous Maritime Target Detect and Classification Technology Demonstration Support	Jul 25
Sector of the Future Support	Sep 25
Project Completion: Ongoing	



Handheld Device Applications to Support Post-Storm Damage Assessments

Mission Need: Accurate and timely field imagery and data from response teams.

- Objectives**
- Identify an efficient electronic means for field teams to quickly and accurately communicate data such as vessel damage assessments, Shoreline Cleanup Assessment and Technique forms, facility assessment forms for the Marine Transportation System Recovery Unit, Aids To Navigation verification, and other needed data.
 - This effort will:
 - Assess existing mobile applications such as DAART, MAGE, TAK, ArcGIS, and Microsoft 365 mobile functionality.
 - Create a Damage Assessment tool for mobile field teams to use and evaluate after a major storm.
 - Determine the feasibility of connecting data and developing custom views in a Common Operating Picture (COP) such as Coast Guard One View, FirstNet dispatch console, and the Naval Research Laboratory's PROTEUS global Maritime Domain Awareness system.



- Notes**
- Explore the U.S. Army Space and Missile Defense Command's Domestic Operations Awareness and Assessment Response Tool (DAART), the National Geospatial-Intelligence Agency's (NGA) Mobile Awareness GEOINT Environment (MAGE), and the Team Awareness Kit (TAK) as potential Government Off-The-Shelf (GOTS) solutions.
 - Consider partnerships with the National Oceanic and Atmospheric Administration (NOAA), Federal Emergency Management Agency (FEMA), and Natick Soldier Systems Center TAK lab.

Sponsor's Rep: CG-OEM
Ops Rep: MSU Lake Charles

Stakeholder(s): CG-761/741/5R/67/68, CG-FAC, CG-MER, CG-NAV, C5ISC, CGCYBER

RDC Research Lead:
 Mr. Rob Coburn

CG-926 Portfolio Manager:
 Mr. Joshua Henson

Anticipated Outcome/Transition: Provide Sponsor/Product Line Tested Prototype

Project Start: 1 Oct 21

Complete Market Research	22 Jul 22 ✓
Complete Assessment of GOTS Mobile Solutions	30 Dec 22 ✓
Assessment of Handheld Device Applications to Support Post-Storm Damage Assessments (Brief)	28 Feb 23 ✓ ★
Complete Common Operating Picture Exploration	22 Sep 23 ✓
Complete Field Map Development and Testing	30 Nov 23 ✓
Handheld Device Applications to Support Post-Storm Damage Assessments (Report)	26 Feb 24 ✓ ★
Project Completion: 26 Feb 24	

Completed

Mission Need: Long-range communication options ranked for each mission set and environment.

- Objectives**
- Determine an optimized list of long-range communications (LRC) options for each U.S. Coast Guard (CG) mission in each area of operation, met with available or near-term available equipment. This will be accomplished by:
 - Developing a Beyond Line of Sight (BLOS) Cutter Survey and conducting focus group and site surveys in all districts for Fast Response Cutters (FRC) and larger assets.
 - Identifying baseline, new, and emerging long-range communications options to include technologies such as:
 - Low, medium, and High Frequency (HF).
 - Satellite communications (SATCOMMS).
 - 3G/4G/5G Automatic Link Establishment (ALE).
 - Developing a comprehensive matrix assessing the results of surveys and site visits by mission and geographic area.



- Notes**
- Leverage CG-761-developed Capabilities Based Assessment on current state of U.S. Coast Guard long-range communications.
 - Share findings with Southern Command (SOUTHCOM) and Joint Interagency Task Force-South (JIATF-S) facilities and long-range communications capabilities and other potential U.S. Department of Defense research laboratories solutions as needed.
 - Share findings with Naval Postgraduate School to identify long range communications collaboration opportunities.

Sponsor's Rep: CG-761
Ops Rep: LANT-3, PAC-3

Stakeholder(s): CG-68/751/791, C5ISC, CGCYBER, JIATF-S, SOUTH/FORCE/COMMCOM, LANT, PAC

RDC Research Lead:
 Mr. Mark Wiggins

CG-926 Portfolio Manager:
 TBD

Anticipated Outcome/Transition: Recommendations for Tactics, Techniques & Procedures

Project Start: 1 Oct 20

Long Range Communications Requirements Analysis	1 Jun 21 ✓
Cutter BLOS COMMS Survey Requirements	31 Jan 22 ✓
Mission-Specific Long-Range Communications Analysis (Brief)	15 Mar 22 ✓ ★
Cutter COMMS Focus Groups Survey	23 Oct 22 ✓
Cutter COMMS Site Visits	31 May 23 ✓
Long-Range Communications Matrix	23 Aug 23 ✓
Coordination with FORCECOM, SFLC, and COMMCOM	31 Oct 23 ✓
Project Closeout Memo	30 Sep 24 ✓

Project Completion: 30 Sep 24

Project Timeline / Key Milestones

Advanced Maritime Counter-Uncrewed Aircraft System (C-UAS) Technologies

7815

Mission Need: Operationally effective C-UAS force protection capability.

Objectives

- Assess new developments in kinetic C-UAS solutions in the open market and with other government agencies as technologies evolve.
- Automate object detection and classification based on Electro-Optical/Infrared camera data by collaborating with optics companies to incorporate additional sensor modalities to aid UAS detection and target discrimination.
- Explore applicability of data fusion algorithms and machine learning to combine multiple data types into single threat track to reduce operator workload, uncertainty, and response time.
- Provide technical guidance on system employment for various mission sets based on legal authority and tactics, techniques, and procedures.



Notes

- Follow-on for RDC Project 7812, "Maritime Counter Unmanned Aircraft Systems."

Sponsor's Rep: CG-MSR
Ops Rep: D1 (dr)

Stakeholder(s): CG-711, CG-721, CG-751, LANT-3, PAC, D1, NSWC Dahlgren, CGCYBER

RDC Research Lead:
C-UAS Research Team

CG-926 Portfolio Manager:
C-UAS Research Team

Anticipated Outcome/Transition: Provide Sponsor/Product Line Tested Prototype Recommendations for Acquisition Milestone Support

Project Timeline / Key Milestones

Project Start:

Please e-mail RDC-Info@uscg.mil for information concerning the milestones and deliverable schedule.

Project Completion:



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Research & Development Center



CG Research & Development Center
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Mission Need: Navigation alternatives for the Global Positioning System (GPS).

Objectives

- Identify alternate positioning, navigation, and timing (APNT) solutions that provide robustness and resilience to platforms navigating in areas where the critical GPS signal may be spoofed or jammed, particularly in open water.
- Understand and analyze the state of research, both within the U.S. and North Atlantic Treaty Organization, regarding navigation in GPS –degraded or –denied environments.
- Partner with government and contractors to drive APNT system and sensor development and testing by providing polar research transits and operational afloat systems for testing opportunities.



Notes

- Office of Naval Research Electro-optical/Infrared Celestial Navigation efforts ongoing.
- Leverage ongoing work of Naval Surface Warfare Center Dahlgren Division, Office of Naval Research, and U.S. Fleet Forces Command, and Air Force Research Laboratory.
- Coordinate with CG-NAV and CG Navigation Center (NAVCEN) Positioning, Navigation, and Timing Working Group on alternative solutions.

Sponsor’s Rep: CG-761
Ops Rep: N/A

Stakeholder(s): CG-NAV, C5ISC, NAVCEN, CG-67, CG-68, CG-751, CG-7511, CG-9335

RDC Research Lead: APNT Research Team
CG-926 Portfolio Manager: APNT Research Team

Anticipated Outcome/Transition: Provide Sponsor/Product Line Tested Prototype Recommendations on Tech Availability & Applicability

Project Start: 1 Apr 23

Project Timeline / Key Milestones	Perform Initial APNT Market Research	30 Aug 24 ✓
	Existing Alternatives for Navigation Positioning (Brief)	13 Sep 24 ✓ ★
	Initiate Celestial Navigation Development	Mar 25
	Stationary Celestial Navigation Test	Jan 26
	Stationary Celestial Navigation Test Results (Brief)	Apr 26 ★
	Maritime Celestial Navigation Test	Jul 26
	Maritime Celestial Navigation Test Results (Brief)	Oct 26 ★
	APNT Spectrum/Redundancy Analysis	Feb 27
	Alternate Navigation Positioning Sources (Report)	Jun 27 ★
	Project Completion: Jun 27	

Mission Need: Cyber resilient Operational Technology (OT) systems on CG cutters.

Objectives

- Explore how the US Navy’s Situational Awareness Boundary Enforcement and Response (SABER) program of record for ship/carrier cyber defense could be used to monitor CG Cutter (CGC) OT systems and protect against cyber threats.
- Survey CGC OT systems and determine how SABER could be integrated with a critical OT system to improve cutter cyber resiliency.
- Perform an analysis of SABER’s ability to inform cutter crews of anomalies and cybersecurity threats to OT systems on a Fast Response Cutter (FRC) and a National Security Cutter (NSC).
- Explore, develop, and test SABER’s Boundary Enforcement and Response for the NSC’s Coast Guard Machinery Control System (CGMCS).
- Inform requirements for new acquisition systems to improve cyber resiliency for future CG assets.



Notes

- Effort aligns with Cyber Strategic Outlook 2021 Line of Effort 1: Defend and Operate the Enterprise Mission Platform, by ensuring secure and resilient OT networks on CG assets to support all missions.
- Partnerships with Naval Sea Systems Command (NAVSEA) Cyber Engineering and Digital Transformation Directorate (SEA 03) and the Naval Surface Warfare Center Philadelphia Division for a proof-of-concept demonstration on the FRC Machinery Control and Monitoring System (MCMS).
- NSC CGMCS demonstration integrates with RDC Project 1030, “Remote Diagnostic and Monitoring Systems for Technical Support Engineering.”

Sponsor’s Rep: CG-791
Ops Rep: CG Cyber D11 CPT

Stakeholder(s): CGCYBER, CG-45, CG-68, CG-751, CG-761, CG-932, CG-933, SFLC, C5ISC

RDC Research Lead:
Mr. Rob Coburn

CG-926 Portfolio Manager:
TBD

Anticipated Outcome/ Transition: Recommendations for Product Line Tech Insertion
Provide Sponsor/Product Line Tested Prototype

Project Timeline / Key Milestones

Project Start: 7 Dec 22

SABER Working Group Sessions with NAVSEA 03	29 Mar 23 ✓
MCMS Trainer SABER Lab Test and Data Collection	22 Nov 23 ✓
SABER Proof-of-Concept Demonstration (Brief)	1 Apr 24 ✓ ★
FRC MCMS Pier Side SABER Test and Data Collection	7 May 24 ✓
FRC MCMS Pier Side CGCYBER Red Team Exercise	13 Sep 24 ✓
OT Network Situational Awareness (Report)	Mar 25 ★
NSC CGMCS SABER Validation	Sep 25
CG SABER Capability Expansion (Brief)	Mar 26 ★
NSC CGMCS Pier Side SABER Demonstration	Nov 26
Perform Analysis of Logistics for CG SABER Sustainment	Mar 27
SABER Proof-of-Concept for CG Cutter Operational Technology Cybersecurity (Report)	Aug 27 ★

Project Completion: Aug 27



Mission Need: Ability to directly receive and respond to all types of mariner distress communications.

- Objectives**
- Standardize communication pathway for all electronic distress notifications.
 - Create table of emergency distress devices currently monitored by the CG and those coming available in the next few years to include data transmitted, signal type, and data receiver.
 - Examine how current devices are transferring data to the CG or other Search and Rescue (SAR) service providers, including Search and Rescue Satellite-Aided Tracking Program (SARSAT).
 - Work with industry partners to create a prototype uniform distress signal to be received by Command Centers.
 - Work with Radio Technical Commission for Maritime Services (RTCM) committees to propose a Federal standard for all maritime emergency communications, so that industry partners and other organizations can implement pathway in current and future products.



- Notes**
- Leverage RTCM special committees on Emergency Beacons, Maritime Survivor Locating Devices, and Satellite Emergency Notification and Location Devices; and integration work that SARSAT has accomplished.
 - Leverage RDC Project 1027, "Next Generation Distress Communication Capability for Alaska and the Arctic."
 - Coordinate with USAF Emergency Coordination Center and potentially with similar Canadian or British entities.
 - Utilize Cooperative Research and Development Agreements with industry.
 - Potentially collaborate with the National Association of SAR Coordinators.

Sponsor's Rep: CG-SAR
Ops Rep: PAC-3

Stakeholder(s): CG-761, SILC, CG-68, C5ISC

RDC Research Lead:
 Mr. Robert Riley

CG-926 Portfolio Manager:
 TBD

Anticipated Outcome/Transition: Recommendations for Standards/Regulations/Policy
 Recommendations on Tech Availability & Applicability

Project Start: 1 Apr 24

Kickoff Meeting with CG-SAR and Stakeholders	14 Aug 24 ✓
Conduct Market Research of Emergency Distress Devices	Jun 25
Market Research of Emergency Distress Device Signals (Brief)	Jul 25 ★
Cooperative Research and Development Agreement (CRADA) with Industry Partners	Oct 25
Work with Industry to Assist in Prototype Development	May 26
Conduct Initial Research, Testing, Training, and Evaluation (T&E) with CRADA Partners	Aug 26
Conduct 2 nd Iterative T&E with CRADA Partners	Nov 26
Give Demo to Present Solution to CG-SAR and Other Government Agencies	Feb 27
Single Point Electronic Distress Notifications (Report)	Sep 27 ★

Project Completion: Sep 27

Command, Control, Communications, Computers, Cyber, & Intelligence (C5I) Branch Support

9991A

Mission Need: Maintain competency/knowledge; provide rapid response; and external liaison.

Objectives

- Maintain U.S. Coast Guard (CG) Research and Development Center (RDC) competency and technical knowledge in understanding present and future C5I systems, including: radio frequency communications, electronic navigation systems, software defined radios, cyber security systems, spectrum management, and sensors.
- Maintain Branch infrastructure to support RDC portfolio objectives.
- Support C5I Strategic Project Portfolio Alignment, CG Cyber Strategic Outlook initiatives, and CG DCO/DCMS Research Priorities.
- Provide expert input to CG stakeholders regarding C5I technologies.
- Foster continued relationships with CG sponsors/stakeholders and external U.S. Department of Defense (DOD) labs, U.S. Department of Homeland Security (DHS) Science and Technology Directorate (S&T), and other government agency/academic partners.
- Provide service academy, Historically Black College or University, and Minority Serving Institution students internship opportunities.



Notes

- Develop a “Sector of the Future” lab setup to assess how technology can transform Sector-level operational decision making and communications.
- Continue to provide Extended Reality subject matter expertise and technical support for HoloLens2 devices in support of RDC ITNET Branch.
- Support Polar Communications testing for RDC and DOD Labs collaborative projects.
- Participate with C5I organizations such as the Radio Technical Commission for Maritime Services (RTCM) and Institute of Navigation.

Sponsor’s Rep: CG-926
Ops Rep: Various

Stakeholder(s): CG-2, CG-6, CG-7, CG-933, C5ISC, CGCYBER, DHS S&T

RDC Research Lead:
Ms. Amy Cutting

CG-926 Portfolio Manager:
TBD

Anticipated Outcome/ Transition: Various

Project Timeline / Key Milestones

Project Start: Ongoing

RDC Human Subjects Research RDC SOP Team Support	24 Apr 23 ✓
AR/VR/XR Demo for Senior Leadership Conference	4 May 23 ✓
ION Joint Navigation Conference 2023	15 Jun 23 ✓
“Sector RDC” (SRDC) Lab Setup	4 Aug 23 ✓
Migrant Interdiction Operations Requirements (REACT Report)	8 Aug 23 ✓ ★
C5I Centralized Annual Training – R&D Panel	20 Sep 23 ✓
Support USCGC HEALY Cruise	6 Oct 23 ✓
IUU Fishing Project Support	14 Mar 24 ✓
Propose SRDC Interoperable Comms Infrastructure	Nov 24
RTCM Working Group Support	Sep 25
Sector of the Future Support	Sep 25

Project Completion: Ongoing



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Next Generation Aids to Navigation Buoys & Alternative Moorings

Mission Need: Modernize U.S. Coast Guard (CG) Aids to Navigation (ATON) buoys and moorings.

- Objectives**
- Determine the world-wide state of non-ferrous, Next Generation (Next Gen) aids to navigation (ATON) buoys.
 - In conjunction with CG managers, field trial the most-promising prospects for replacing steel buoys.
 - Provide CG managers technical, cost, and operational benefits (if any) to modernize buoy inventory.
 - Conduct follow-up investigation of an alternative buoy-mooring system to determine CG applicability.
 - Analyze buoy inventory to identify logistical and operational inefficiencies.
 - Develop science-based, analytical tool to aid CG managers with future inventory decisions.
 - Field trial and evaluate promising inland river buoy alternatives.
 - Evaluate the radar signatures of legacy and Next Gen buoy designs.
 - Evaluate mooring analysis software replacement options.



- Notes**
- Coordinate with CG-NAV and the Data Center Optimization initiative to involve International Association of Marine Aids to Navigation and Lighthouse Authorities as partners.
 - Collaborate with Naval Surface Warfare Center (NSWC) Carderock on buoy radar cross section and detection ranges analysis.
 - Coordinate with CG-68 on the transition of MOORSEL replacement.
 - NSWC buoy radar reflector study to continue post project completion.

Sponsor's Rep: SILC-WOPL
Ops Rep: N/A

Stakeholder(s): CG-NAV, Districts (dpw), CG-68

RDC Research Lead:
 Mr. James Spilsbury

CG-926 Portfolio Manager:
 Ms. Karin Messenger

Anticipated Outcome/Transition: Recommendations for Acquisition Milestone Support
 Recommendations for Product Line Tech Insertion

Project Start: 1 Oct 19

Complete World Wide Market Study of Buoys	31 Mar 20 ✓
Next Gen ATON Buoys: Market Study Report (Report)	17 Sep 20 ✓ ★
Draft Test Plan for Buoys and Moorings Complete	20 Oct 20 ✓
Next Gen ATON Buoys & Alternative Moorings - Field Test Update (Brief)	12 Aug 21 ✓ ★
ATON Buoy Inventory Analysis Tool Development (Brief)	15 Jun 22 ✓ ★
Inland River Buoy Field Testing Status (Brief)	9 Jan 23 ✓ ★
Mooring Analysis Software & Radar Reflector Update (Brief)	20 Mar 23 ✓ ★
Field Test for Buoys and Moorings Complete	10 May 23 ✓
Next Gen ATON Buoys & Alternative Moorings: New Buoy and Moorings Field Trial Summary (Report)	19 Oct 23 ✓ ★
Next Gen ATON Buoys & Alternative Moorings: ATON Buoy Cost Comparison Tool & User Guide (Tool & User Guide)	19 Jan 24 ✓ ★
Attend & Present at Annual ATON Conference	3 May 24 ✓
Project Closeout Memorandum (Memo)	6 Jun 24 ✓ ★

Project Completion: 6 Jun 24

Project Timeline / Key Milestones

Completed

Mission Need: Understand the capability of emerging mechanical pollution-response technology.

- Objectives**
- Conduct market research to identify new and emerging pollution response technologies.
 - Conduct independent evaluation of select technologies using the U.S. Coast Guard’s (CG) Oil Spill Response Technology Evaluation Process.
 - Collaborate with other Federal agencies (Bureau of Safety and Environmental Enforcement (BSEE), Environmental Protection Agency, etc.) to conduct in-water testing of the most promising technologies.
 - Provide feedback to equipment providers for consideration in advancing their technologies to enhance the nation's pollution response capability.
 - Provide a knowledge product for Federal On-Scene Coordinator (FOSC) awareness of new technologies.



- Notes**
- Partnership with BSEE.
 - Possible use of Cooperative Research and Development Agreements.
 - Opportunity to partner with Interagency Coordinating Committee for Oil Pollution Research (ICOPR) members, Federal Laboratory Consortium members, and academic institutions involved in this area of research.
 - Possible collaboration with Blue Technology Center of Expertise (BTCOE) for technology market research.

Sponsor’s Rep: CG-MER
Ops Rep: N/A

Stakeholder(s): ICOPR, CG-721, District Response Advisory Teams, FOSCs, National Strike Force, D9 Drat

RDC Research Lead:
 Mr. Alexander Balsley, P.E.

CG-926 Portfolio Manager:
 Ms. Karin Messenger

Anticipated Outcome/ Transition: Recommendations on Tech Availability & Applicability

Project Start: 1 Oct 21

Request for Information (RFI) Issued for Sorbents	5 Jan 22 ✓
In-house Technology Evaluation Conducted	17 May 22 ✓
Emerging Pollution Response Technology (Sorbents), Preliminary Evaluation Results/Way Forward (Brief)	13 Jul 22 ✓ ★
Ohmsett Testing of Sorbents Complete	28 Oct 22 ✓
Emerging Pollution Response Technology: Adsorbents (Report)	28 Jun 23 ✓ ★
Ohmsett Testing of Mechanical Recovery Complete	31 Oct 23 ✓
Emerging Pollution Response Technology Evaluation: Mechanical Recovery, Dielectric Fluids (Report)	13 Aug 24 ✓ ★
Project Completion: 13 Aug 24	

Project Timeline / Key Milestones

Completed

Nearshore and Inland Evaluation of the Estimated Recovery System Potential (ERSP) Calculator

4710

Mission Need: ERSP calculator to include response systems for nearshore/inland operating environment.

- Objectives**
- Determine if an enhanced version of the existing offshore ERSP calculator provides improved efficiency for planning and response to oil spills.
 - Develop an inland ERSP calculator prototype tool.
 - Validate ERSP calculator functionality and usefulness through an independent evaluation by a group of National Academies of Sciences, Engineering, and Medicine reviewers.



- Notes**
- Partnership with Bureau of Safety and Environmental Enforcement (BSEE).
 - Transition partnership with Great Lakes National Center of Expertise.

Project Timeline / Key Milestones

Project Start: 1 Oct 16	
Feasibility Workshop Completed	21 Jun 17 ✓
Feasibility of Extending the ERSP Calculator for Nearshore and Inland Waterways (Report)	20 Sep 17 ✓ ★
Inland ERSP Preliminary Factors, Requirements and Conceptual Model (Report)	14 Nov 19 ✓ ★
Inland ERSP Operational Environment Calculator (Design Document)	29 Jun 20 ✓ ★
Initial Development of Inland ERSP Calculator Complete	4 Jun 21 ✓
National Academy of Sciences (NAS) Review Complete	9 Sep 22 ✓
NAS Recommended ERSP Calculator Updates Complete	19 Jul 24 ✓
Inland Estimated Recovery System Potential Calculator (Prototype and User Guide)	19 Sep 24 ✓ ★
Project Completion: 19 Sep 24	

Sponsor's Rep: CG-MER
Ops Rep: N/A

Stakeholder(s): BSEE, AREAs

RDC Research Lead:
 Mr. Alexander Balsley, P.E.

CG-926 Portfolio Manager:
 Ms. Karin Messenger

Anticipated Outcome/ Transition: Provide Sponsor/Product Line Tested Prototype



Hazardous Substance Pollution Response Technology Analysis

Mission Need: Improve response readiness to hazardous substance pollution release incidents.

- Objectives**
- Address hazardous substance pollution risk knowledge gaps in Area Contingency Plans.
 - Identify and analyze existing hazardous substance response technologies, capabilities, and resources.
 - Provide reference guidance for area contingency planners.
 - Enhance Captain of the Port (COTP) and Federal On Scene Coordinators (FOSC) response capabilities.
 - Support inclusion of hazardous substance release response resources in facility and vessel response plans.



- Notes**
- Coordinate with area contingency planners to connect project focus with specific field needs.
 - Engage with the U.S. Environmental Protection Agency (EPA) emergency response program, CG National Strike Force Coordination Center (NSFCC), firefighters and other local hazardous-materials responders to leverage existing hazardous substance pollution response expertise.
 - Engage with D8 and LANTAREA to increase efficiency moving forward in the project.

Sponsor's Rep: CG-MER
Ops Rep: N/A

Stakeholder(s): EPA, NSFCC, FAC, NCR, CG-D8, LANTAREA, CG-721

RDC Research Lead:
 Benedette Adewale, PhD

CG-926 Portfolio Manager:
 Ms. Karin Messenger

Anticipated Outcome/Transition: Recommendations for Tactics, Techniques & Procedures

Project Start: 3 Oct 22

Project Timeline / Key Milestones	Complete COTP/FOSC/Other Agency Information Gathering	15 Aug 23 ✓
	Hazardous Substance Pollution for Sector New Orleans Project Status (Brief)	25 Mar 24 ✓ ★
	Complete Geographic Information System Layer for Sector New Orleans and Information of Hazardous Substance and facilities	28 Jun 24 ✓
	Complete Request for Information Review/Research of Available Technology among Other Agencies and First Responders	12 Jul 24 ✓
	Tool to Develop Hazardous Substance Locations Geographic Information System in Captain of the Port Zones (Report)	Nov 24 ★
	Project Completion: Nov 24	

Mass Rescue Lifesaving Appliance (MRLSA)

Mission Need: Lightweight, easy to use, temporary, mass rescue survivor platform.

- Objectives**
- Find, promote, or develop the technology to manufacture an extremely compact, lightweight, rescue intervention device to safely keep 100+ persons out of the water for up to 24 hours.
 - Phase 1 includes developing a prototype device and testing in a controlled environment, including weight tests, and human subject boarding exercises.
 - Phase II option includes final design for testing in open water including deploying from USCG assets (air, afloat).
 - Transition the developmental result to the Office of Search and Rescue and capability stakeholders for implementation as a mass rescue tool.



- Notes**
- Partnership with Air Force Research Laboratory.
 - U.S. Department of Homeland Security (DHS) Science & Technology (S&T) funded Broad Agency Announcement for prototype development.
 - Investigate National Aeronautics and Space Administration or other government agency partnership.

Sponsor's Rep: CG-SAR
Ops Rep: N/A

Stakeholder(s): DHS S&T, CG-711, CG-731, CG-751

RDC Research Lead:
 Ms. Monica Cisternelli

CG-926 Portfolio Manager:
 Ms. Karin Messenger

Anticipated Outcome/Transition: Provide Sponsor/Product Line Tested Prototype Recommendations for Standards/Regulations/Policy

Project Start: 1 Oct 19

Request for Information/Technology Assessment Complete	1 Mar 20 ✓
MRLSA: Market Research Summary (Report)	13 May 20 ✓ ★
Industry Day Webinar Complete	25 May 21 ✓
DHS Issues BAA	21 Jun 21 ✓
Interim Brief Complete	28 Sep 21 ✓
MRLSA: Phase 1 Consensus Results (Brief)	30 Mar 22 ✓ ★
DHS Contract Award	12 Sep 22 ✓
Prototype Development Complete, Phase 1 Testing	19 Apr 24 ✓
MRLSA: Phase 1 Test Results (Brief)	19 Jul 24 ✓ ★
Phase 2 Testing	Jan 25
Mass Rescue Lifesaving Appliance (Report)	Apr 25 ★
Project Completion: Apr 25	



Evaluate Visibility of Colors for CG Approved Lifesaving Equipment in Marine Conditions

Mission Need: Optimal lifesaving equipment detectability.

Objectives

- Conduct literature review of High Visibility Safety Apparel (HSVA) and lifesaving equipment visibility/probability of detection research.
- Carry out industry/professional society review of standards for HSVA and Search and Rescue (SAR) equipment colors and/or color schemes.
- Perform domestic and international governmental review of approved/required colors in SAR scenarios.
- Define optimal visual detectability and conspicuity color characteristics in marine conditions via a marine environment high visibility color standard.
- Conduct field trials to validate high visibility color standard from shore, afloat and aviation assets in various weather, light and sea-state conditions.
- Enable sponsor and stakeholders to use for lifesaving equipment color evaluations and standards revision, if appropriate.



Notes

- Engage RDC Human Factors Subject Matter Experts and CG-926 Portfolio Manager, as well as CG Aux for experiment support.
- Review previous RDC visibility, visual distress signal, and detectability projects for experiment techniques, findings and conclusions.
- Involve global maritime stakeholders in results review for possible revisions to international policy and regulations.
- Leverage DOD, North Atlantic Treaty Organization, Maritime Administration, and Cruise Lines Industry Association interest.

Sponsor's Rep: CG-ENG
Ops Rep: N/A

Stakeholder(s): CG-BSX, CG-5P, CG-5R, CG-711, CG-731, CG-751, WOPL, NMC, NBSAC, IMO NCSR

RDC Research Lead:
Mr. Josh Pennington

CG-926 Portfolio Manager:
Ms. Karin Messenger

Anticipated Outcome/ Transition: Recommendations for Standards/Regulations/Policy

Project Timeline / Key Milestones

Project Start: 3 Oct 22	
Technical Review	8 Mar 23 ✓
Lifesaving Equipment Colors; Literature Review (Report)	19 Jul 23 ✓ ★
Research & Define Color Characteristics	27 Oct 23 ✓
Objective Metrics for Lifesaving Equipment Color Characteristics (Report)	6 Jun 24 ✓ ★
KDP – Sponsor Concurrence on Color Characteristics	14 Jun 24 ✓
Field Trial Test Plan	30 Aug 24 ✓
Field Trials Complete	Apr 25
Data Analysis Complete	Jun 25
Visibility of Potential Colors for CG Approved Lifesaving Equipment (Report)	Sep 25 ★
Project Completion: Sep 25	

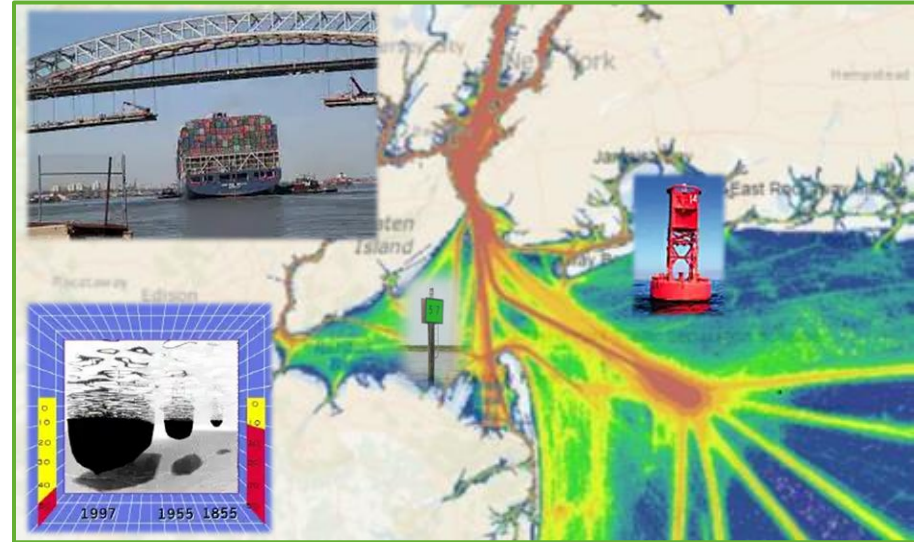


Improve Efficiency and Resiliency in Aids to Navigation (ATON) System Design

Mission Need: Modernize ATON design standards for the future.

Objectives

- Identify the functional characteristics of the current and future Marine Transportation System needed to be included in ATON system design.
- Identify and review existing CG and international guidelines, studies, and tools on ATON system design.
- Analyze current ATON physical characteristics (lighting, visual, radar signatures and effective ranges).
- Update 1990's-based ATON system design tool standards to reflect the physical characteristics of modern ATON, the characteristics of modern vessels (e.g., increased draft and size), or the emergence of electronic navigation technologies in use today.
- Develop a quantitative, Geographic Information System (GIS)-based tool to aid decision makers with modernizing ATON system design under a range of operating scenarios.



Notes

- Leverage the Coast Guard Academy Ship Control and Navigation Training Simulator.
- Leverage Department of Homeland Security Science and Technology efforts on novel waterway use risks and ATON system resilience.
- Collaborate with U.S. Army Corps of Engineers, National Oceanic and Atmospheric Administration, and maritime industry partners.
- Leverage International Association of Marine Aids to Navigation & Lighthouse Authorities and international partners' work (through DCO-I).
- Leverage previous RDC ATON risk assessment work.

Sponsor's Rep: CG-NAV
Ops Rep: Districts (dpw)

Stakeholder(s): CG-5PW, WWM, NAVCEN, SILC-WOPL, CG-68, CG-761

RDC Research Lead:
Mr. James Spilsbury

CG-926 Portfolio Manager:
Ms. Karin Messenger

Anticipated Outcome/Transition: Recommendations for Tactics, Techniques & Procedures
Provide Sponsor Tested Prototype

Project Timeline / Key Milestones

Project Start: 1 Apr 24	
Identify Existing Tools, Guidelines, and Studies used for ATON System Design	Oct 24
Complete Literature Review	Nov 24
Develop Test Plan for Additional Studies Required	Nov 24
Literature Review of ATON System Design (Brief)	Dec 24 ★
Key Decision Point 1 – Path Forward on Methodology for Modernizing ATON System Design	Dec 24
ATON System Design Summary (Report)	Oct 26 ★
Key Decision Point 2 - Continue to ATON System Design Visualization Tool Development	Oct 26
Complete Beta Testing of ATON System Design Tool	Dec 26
ATON System Design Tool (GIS Layer & User Guide)	Mar 27 ★
Project Completion: Mar 27	



Enhance Understanding of Fire Protection and Safety Measures for Alternative Energy in the Maritime Environment

Mission Need: Address vessel-safety knowledge gaps concerning lithium batteries and alternative fuels.

- Objectives**
- Inform fire mitigation strategies, suppression technologies, shipboard battery storage space classifications, and emergency response actions through marine lithium-ion (li-ion) battery and maritime alternative fuels literature reviews.
 - Determine effect of differing marine li-ion battery chemical properties, configuration, and quantity on fire behavior and propagation.
 - Identify knowledge, policy, and regulatory gaps in safety, fire protection, and vessel survivability for marine li-ion and maritime alternative fuels.
 - Assist sponsor in developing fire experimental test plans to address fire risks, personnel hazards, optimal fire suppression procedures, and post-fire safety guidelines.
 - Inform future policy, procurement, and regulatory considerations among CG-ENG, CG-5RI, and CG platform managers through literature review and fire-test data analysis.



- Notes**
- Review previous and ongoing RDC alternative energy projects.
 - Engage community of interest including RDC power/propulsion project staff; CG fire protection engineers; U.S. Department of Defense, U.S. Department of Transportation (DOT), U.S. Department of Energy, and other government agencies; classification societies; marine fire and salvage; maritime industry leaders, etc. to leverage expertise.
 - International Maritime Organization (IMO), DOT, Maritime Administration and first responder organization interest.

Sponsor's Rep: CG-ENG
Ops Rep: Districts (drm) (dpi)

Stakeholder(s): CG-5P, CG-5R, CG-5PS, CG-45, CG-47, CG-731, CG-751, CG-LMI, MSC, DOT, IMO

RDC Research Lead: Mr. Josh Pennington
CG-926 Portfolio Manager: Ms. Karin Messenger

Anticipated Outcome/Transition: Recommendations for Standards/Regulations/Policy
 Recommendations on Tech Availability & Applicability

Project Start: 1 Apr 24

Commence Marine Li-ion Battery Literature Review	19 Sep 24 ✓
Maritime Lithium-ion Battery Literature Review (Report)	May 25 ★
KDP 1 – Continue Li-ion Battery Focus or Transition to Marine Alternative Fuels Focus	May 25
Commence KDP-dependent Efforts	May 25
Maritime Lithium-ion Battery Targeted Research (Report)	Apr 26 ★
KDP 2 – Continue Focus on Maritime Li-ion Batteries, Focus New Efforts on Select Marine Alternative Fuels, or Close Out Project	Apr 26
Marine Alternative Fuels Targeted Research (Report)	May 27 ★
Project Completion: May 27	

Mission Need: Determine the impacts of windfarms on search and rescue operations.

Objectives

- Literature review and workshop with sponsor and stakeholders to determine current state of wind farms and SAR impacts.
- Collect and analyze real-time wind and current measurements to determine impact of changes due to wind turbines on wind farms with Leeway Drift Studies.
- Research, verify and implement updates to atmospheric and oceanographic models to account for wind farms.
- Conduct modeling and field tests to determine the impact to search object detection using prioritized sensors at US or United Kingdom (UK) based wind farm.



Notes

- Partnership with the Bureau of Safety and Environmental Enforcement, U.S. Coast Guard Academy, National Oceanographic and Atmospheric Administration Integrated Ocean Observing System and, with the Bureau of Ocean Energy Management.
- International partners (UK, Denmark, Norway, Dutch, Sweden).
- Possible collaboration with the State of NY Maritime College - SUNY Maritime.
- Leverage Maritime Risk Symposium.

Sponsor's Rep: CG-SAR
Ops Rep: LANT-3

Stakeholder(s): NAVCEN, CG-NAV, CG-MER, CG-711/731/751/741/761, LANT, D1, FORCECOM

RDC Research Lead:
LT Brian Hwang

CG-926 Portfolio Manager:
Ms. Karin Messenger

Anticipated Outcome/ Transition: Recommendations for Standards/ Regulations/Policy

Project Timeline / Key Milestones

Project Start: 3 Oct 22	
UK Leeway Drift	24 Mar 23 ✓
US Leeway Drifts: Pre – Construction of Turbines	3 May 24 ✓
Investigate Effects of Wind Farms on Search Planning: FY24 Annual Update (Brief)	Oct 24 ★
Overseas Leeway Drifts: UK and Baltic Sea	May 25
US Leeway Drifts: Post – Construction	Oct 25
Investigate Effects of Wind Farms on Search Planning: FY25 Annual Update (Brief)	Oct 25 ★
Detection Modeling and Experiments	May 26
Investigate Effects of Wind Farms on Search Planning: FY26 Annual Update (Brief)	Oct 26 ★
Investigate Effect of Wind Farms on Search Planning (Report)	Aug 27 ★
Project Completion: Aug 27	



Environment & Waterways (E&W) Branch Support

9993A

Mission Need: Maintain competency/knowledge; provide rapid response; and external liaison.

Objectives

- Maintain U.S. Coast Guard (CG) Research and Development Center (RDC) competency and technical knowledge in understanding present and future E&W technology, systems, and regulatory directives/policies, including: environmental protection, pollution detection/response, ballast water standards, marine and navigation safety Improvements, and search and rescue improvements.
- Maintain Branch infrastructure to support RDC portfolio objectives.
- Support E&W Strategic Project Portfolio Alignment and CG DCO/DCMS Research Priorities.
- Provide expert input to CG stakeholders regarding E&W technologies.
- Foster continued relationships with CG sponsors/stakeholders and external U.S. Department of Defense labs, U.S. Department of Homeland Security (DHS) Science and Technology Directorate (S&T), and other government agency/academic partners.
- Provide service academy, Historically Black College & University, and Minority Serving institution students internship opportunities.



Notes

- Radio Technical Commission for Maritime Services meetings and special committees.
- Interagency Coordinating Committee on Oil Pollution Research (ICCOPR).
- Great Lakes Oil Spill Center of Expertise liaison.
- CG-SAR/CGA leeway drift collaboration.
- National Oceanic & Atmospheric Administration Response Oil Assay Work Group.
- USGS/Canadian Multi-Partner Research Initiative collaboration.
- Multi-spectral imaging and air quality monitoring sensor evaluation.

Sponsor's Rep: CG-926
Ops Rep: Various

Stakeholder(s): CG-5, CG-SAR, CG-MER, CG-ENG, CG-OES, D9, D11, DHS S&T

RDC Research Lead:
Mr. M. J. Lewandowski

CG-926 Portfolio Manager:
Ms. Karin Messenger

Anticipated Outcome/ Transition: Various

Project Timeline / Key Milestones

Project Start: Ongoing

Puma sUAS Training	3 May 24 ✓
International Oil Spill Conference	16 May 24 ✓
Interagency Coordinating Committee on Oil Pollution Research Q3 Meeting	13 Jun 24 ✓
Great Lakes Oil Spill COE Advisory Committee Review	19 Jul 24 ✓
USGS/CA MPRI Diluted Bitumen Research Field Test	16 Aug 24 ✓
Next-Gen Mooring Transition Support	21 Aug 24 ✓
CG-MER Hazardous Materials Response Working Group	Dec 24
Sector of the Future Support	Sep 25

Project Completion: Ongoing



Acquisition Directorate
Research & Development Center



CG Research & Development Center
UNCLAS//Internet Release is Authorized

Indicates RDC Product ★
October 2024 25

Extended Reality (XR) Capabilities for Coast Guard Mission Support

8107

Mission Need: Improve efficiency and effectiveness of maintenance and training across the CG.

Objectives

- Enhance the U.S. Coast Guard’s (CG) ability to train personnel and perform maintenance on CG assets by identifying maintenance, training, tools, processes, and procedures used by military and industry that will:
 - Reduce the labor burden of technicians by providing current maintenance information via XR technologies.
 - Increase the availability of assets by improving the efficiency of maintenance and reducing costly errors.
 - Improve the effectiveness of training and reduce the time to train personnel.
- Create a roadmap that will enable the sponsor to generate requirements and successfully implement extended reality capabilities throughout the CG to improve the performance of mission support services.



Notes

- Includes partnerships with Naval Sea Systems Command Portsmouth Naval Shipyard, Microsoft Technology Center Boston and other U.S. Department of Defense components that have successfully adopted XR technologies in their mission support programs.
- Uses agile scrum development and rapid contracting through Defense Logistics Agency’s Tailored Logistic Support Program.

Completed

Sponsor’s Rep: FORCECOM
Ops Rep: FC-Teps

Stakeholder(s): ALC, ATTC, CGA, SFLC, MSC, CG-1B3/41/45/5PC/67/751/761/933, TRACEN Yorktown, MSC

RDC Research Lead:
Mr. Jack Cline

CG-926 Portfolio Manager:
TBD

Anticipated Outcome/Transition: Recommendations on Tech Availability & Applicability
Recommendations for Tactics, Techniques & Procedures

Project Timeline / Key Milestones

Project Start: 30 Nov 17	
Market Research/Technology Assessment (Brief)	19 Dec 18 ✓ ★
HoloLens 2 Upgrade Completed	3 Sep 20 ✓
87’ WPB Augmented Reality Maintenance Prototype	18 Sep 19 ✓
Aviation Augmented Reality Maintenance Prototype	2 Feb 21 ✓
Limited User Evaluation - Surface Community (Brief)	20 Apr 21 ✓ ★
Marine Inspection XR Training Prototype Delivered	31 Jan 22 ✓
Limited User Evaluation - Aviation Community (Brief)	18 Aug 22 ✓ ★
Limited User Evaluation - Training Community (Brief)	16 Sep 22 ✓ ★
Mission Support XR Roadmap Complete	17 Nov 23 ✓
Extended Reality Capabilities for Coast Guard Mission Support: Transition Opportunities (Brief)	21 Dec 23 ✓ ★
XR Capabilities for CG Mission Support (Report & Brief)	30 Sep 24 ✓ ★
Project Completion: 30 Sep 24	

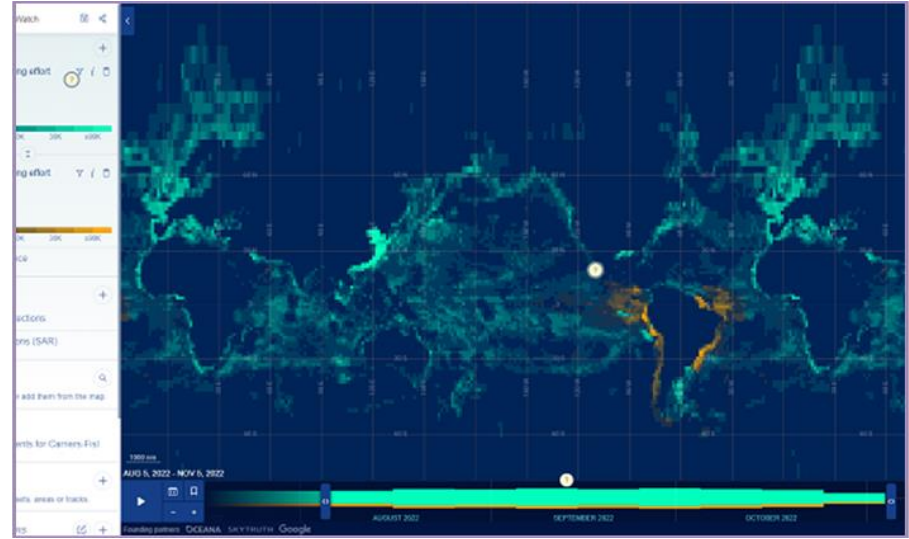


ArcGIS Enterprise Integration of IUU Fishing Detection Information

Mission Need: Integrate and display IUU fishing activity for Maritime Law Enforcement operations.

Objectives

- Determine requirements for Illegal, Unreported and Unregulated Fishing (IUUF) Activity detection and display.
- Determine existing and needed sources/sensors/inputs for IUU Fishing display on an Environmental Services Research Institute (ESRI) platform.
- Investigate creation of an ESRI platform that captures and manages data input for C-IUUF.
- Create repeatable and adaptable process for all geographic locations that support C-IUUF.



Notes

- Leverage previous RDC and Maritime Intelligence Fusion Center IUU work as much as possible.
- Explore the link between historical and real-time data within the ESRI system.
- Identify how content and format of data sources come together within the ESRI system. Determine what kind of information would increase system effectiveness.

Sponsor's Rep: CG-MLE Ops Rep: PAC-53	Stakeholder(s): CG-2, CG-68, MIFC LANT/PAC, ICC, D14, D17, CGCYBER
RDC Research Lead: Mr. Jack Cline	CG-926 Portfolio Manager: TBD
Anticipated Outcome/Transition:	Recommendations on Tech Availability & Applicability Provide Sponsor/Product Line Tested Prototype

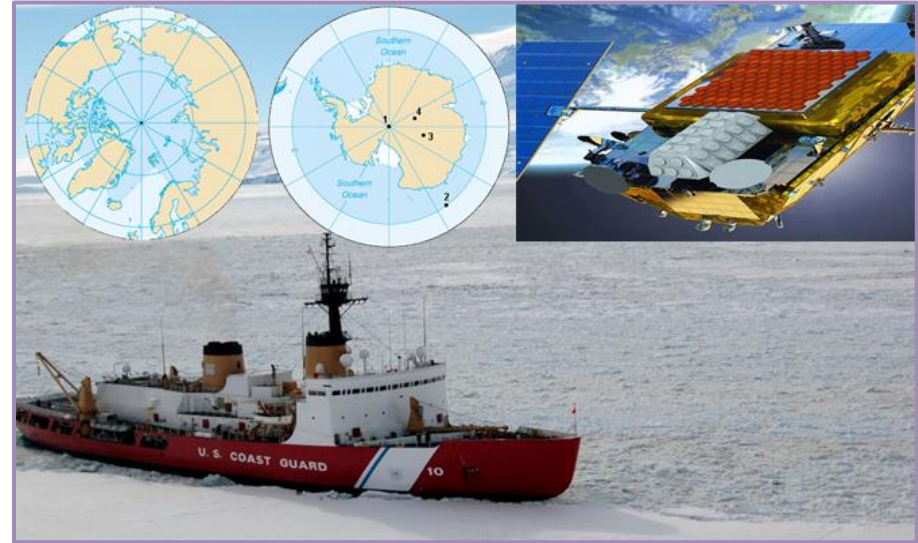
Project Timeline / Key Milestones

Project Start: 1 Oct 21	
AIS Data Quality/Analysis Investigation	31 Aug 22 ✓
IUU Requirements Determined	16 Dec 22 ✓
ArcGIS Data Integration Status Update (Brief)	29 Mar 23 ✓ ★
First Round Prototype Development	24 Nov 23 ✓
Prototype Demonstration	15 Dec 23 ✓
Prototype Revision	31 Jan 24 ✓
The Use of ArcGIS to Detect and Display IUU Fishing Activity (Report & Brief)	Dec 24 ★
Project Completion: Dec 24	

Mission Need: Provide network connectivity to Cutters operating at high latitudes.

Objectives

- Influence the desired minimum connectivity functional characteristics by analyzing previous U.S. Coast Guard (CG) Research and Development Center (RDC) arctic communications and cutter connectivity projects within last 10 years.
- Influence the desired minimum connectivity functional characteristics by analyzing prior U.S. Department of Defense (DOD) High Latitude (Hi-Lat) research projects within last 10 years, including U.S. Navy (USN) and North Atlantic Treaty Organization Combined Joint Operations from the Sea.
- Deploy a prototype solution and perform a limited user evaluation and report on system capabilities.



Notes

- Leverage RDC Projects 6208, “Arctic Communications Technology Assessments,” 8702, “Evaluate Network Accelerator Technology to Improve Cutter Information Technology Performance,” and 7759, “Evaluation of Potential CG Use of CubeSats.”
- Partner with the U.S. Department of Homeland Security Science and Technology Directorate; Command, Control, Communications, Computers, Cyber, and Intelligence Service Center (C5ISC) Deployed Connectivity Section; Air Force Research Lab; Naval Information Warfare Center.
- Inform C5ISC SATCOM procurement.
- Link with DOD Lab Sync Arctic Comms effort and International Cooperative Engagement Program for Polar Research.

Sponsor’s Rep: CG-761	Stakeholder(s): CG-67, CG-68, CG-751, C5ISC,
Ops Rep: AREA-6	ALC, CGCYBER
RDC Research Lead: Mr. Jon Turban, P.E.	CG-926 Portfolio Manager: TBD

Anticipated Outcome/ Transition: Provide Sponsor/Product Line Tested Prototype Recommendation for Acquisition Milestone Support

Project Timeline / Key Milestones

Project Start: 1 Oct 20	
Review of Previous Projects and Research Completed	18 Mar 21 ✓
High Latitude Satellite Systems Market Research Completed	18 Mar 21 ✓
High Latitude Underway Connectivity – Status Update (Brief)	12 Aug 21 ✓ ★
High Latitude Underway Connectivity – Status Update 2 (Brief)	5 Oct 23 ✓ ★
Cooperative Research & Development Agreement (CRADA) Established	10 Jun 24 ✓
CGC POLAR STAR Hughes (OneWeb) CRADA Complete	Mar 25
Limited User Evaluation Complete	Mar 25
High Latitude Underway Connectivity – Final Report (Report)	May 25 ★
Project Completion: May 25	



Next Generation Distress Communication Capability for Alaska and the Arctic

Mission Need: Effective and modernized distress communications for Alaska and Arctic.

- Objectives**
- Evaluate current environmental and geographic challenges of the existing emergency communications system, Rescue 21 (R21) Alaska, in D17.
 - Identify potential i911 integration opportunities with commercial Satellite (SAT) phones.
 - Support U.S. Department of Homeland Security (DHS) Science and Technology Directorate’s (S&T) satellite payload testing for Digital Selective Calling (DSC) relay.
 - Perform testing of new Iridium Global Maritime Distress and Safety System (GMDSS) and aid in the integration and training of command centers.



- Notes**
- Leverage findings from RDC Project 8503, “Radio Frequency (RF) Communications in a Cloud Environment.”
 - Leverage partnerships within the U.S. Department of Defense (DOD) and DHS for alternative distress communications methods.
 - Identify possible synergies with the DOD Lab Commander Sync and seek to leverage the Ted Stevens Center for Arctic Security Studies.
 - Liaise with International partners to include Canadian Coast Guard/ Defense Research and Development Canada (DRDC).

Sponsor’s Rep: CG-761 Ops Rep: N/A	Stakeholder(s): CG-68, CG-67, CG-741, CG-SAR, C5ISC, CGCYBER, AFRL, Space Force, DHS S&T
RDC Research Lead: LT Clifford Rosenberg	CG-926 Portfolio Manager: TBD

Anticipated Outcome/ Transition: Recommendations in Tech Availability & Applicability

Project Start: 3 Oct 22

Project Timeline / Key Milestones	Initial Cellular-Over-Satellite D17 Field Demonstration	31 Aug 23 ✓
	Conclude Cellular-Over-Satellite Market Research	31 Aug 23 ✓
	Arctic Demonstration of Iridium GMDSS on HEALY	31 Oct 23 ✓
	Cellular-Over-Satellite Market Research (Brief)	27 Nov 23 ✓ ★
	DHS S&T Contract Award with L3 Harris	29 Mar 24 ✓
	DHS S&T/Aerospace Satellite Capability Alternative Analysis (Report)	Feb 25
	Next Generation Distress Communication Capability for Alaska and the Arctic (Report)	May 25 ★
	Project Completion: May 25	

Evaluation and Testing of VHF Data Exchange System (VDES) Impacts on the Automatic Identification System (AIS)

8703

Mission Need: Determine VDES benefits and path to implementation to support CG operations.

Objectives

- Understand the capabilities and limitations of VDES.
- Identify steps for U.S. Coast Guard (CG) Implementation of VDES.
- Identify steps to shift CG tactical data transmissions from AIS channels to VDES application specific message channels.
- Evaluate VDES capabilities to disseminate various types of Maritime Safety Information (MSI).
- Understand the requirements for CG shore-side management of VDES.
- Develop AIS/VDES-transmit application to disseminating search patterns.
- Assess feasibility, accuracy and technical limitations of VDES Ranging Mode (R-Mode) implementation in the United States.
- Investigate the ability to use VDES R-Mode to detect position spoofing efforts by bad actors.
- Evaluate VDES satellite capabilities and limitations for transmitting MSI in the high-latitudes, offshore, and other remote regions.

Notes

- Work closely with the Canadian Coast Guard; Electronics and Information Services, Quebec; U.S. Army Corps of Engineers, Engineer Research & Development Center.
- Leverage prior CG Research and Development Center work completed concerning options and impacts for VDES and AIS.
- Establish Cooperative Research and Development Agreement with VDES satellite commercial providers on test evaluation.

Sponsor's Rep: CG-761
Ops Rep: D1

Stakeholder(s): CG-67, CG-68, CG-933, CG-NAV, NAVCEN, C5ISC, CGCYBER

RDC Research Lead:
LCDR Ryan Cassidy

CG-926 Portfolio Manager:
TBD

Anticipated Outcome/Transition: Recommendations for Standards/Regulations/Policy
Recommendations for Product Line Tech Insertion



Project Timeline / Key Milestones

Project Start: 1 Oct 19	
Technology Roadmap Investigation Complete	30 Sep 20 ✓
Very High Frequency Data Exchange System (VDES) Technology Roadmap (Report)	27 Jan 21 ✓ ★
Phase 1 Field Trials – VDES Evaluation of CG Tactical Data Transmission	1 Oct 21 ✓
Sensitive but Unclassified Tactical Information Exchange and Display System Using VDES (Report)	13 Dec 21 ✓ ★
Phase 2 Field Trials – VDES Evaluation of the Dissemination of MSI	8 Dec 22 ✓
Disseminating MSI Using VDES Field Trial Summary (Report)	22 Mar 23 ✓ ★
VDES R-Mode Field Trial Update (Brief)	Jan 25 ★
Complete Phase 3 & Phase 4 Field Trials – Evaluation of R-Mode & VDES-Satellite	Dec 25
VDES R-Mode and Satellite Field Trial Summary (Report)	May 26 ★
Project Completion: May 26	



Acquisition Directorate
Research & Development Center



CG Research & Development Center
UNCLAS//Internet Release is Authorized

Indicates RDC Product ★
October 2024 30

Mission Need: Comprehensive and cohesive dispatch system to enhance effectiveness of CG operations.

Objectives

- Capability and limitation understanding of candidate Search and Rescue (SAR) systems from a technical integration and intercommunications standpoint.
- Comprehensive knowledgebase of capabilities of Commercial Off-The-Shelf (COTS) Computer Aided Dispatch (CAD) solutions.
- Compatibility understanding of candidate SAR systems with COTS CAD solutions based on SAR system capability evaluation.
- Feasibility understanding of the implementation of a CAD system in Coast Guard command centers.
- Concept of operations plan based on feasibility assessment.
- Ready design for potential Coast Guard integration of a CAD system to include interface design and control documentation.



Notes

- Computer Aided Dispatch project is related to project Minerva. CAD project will need to be cognizant of the direction and outcome of Minerva.
- Partner with Next Generation (NG) 911 call centers, including the U.S. Department of Defense base dispatch centers to determine a best fit for CG operations. Possible use of a Cooperative Research and Development Agreement with NG 911 vendors.
- Leverage prior RDC Project 8112, "Maritime Smartphone Public Safety Answering Point (PSAP) Forwarding into CG-IT/Rescue21."

Sponsor's Rep: CG-SAR
Ops Rep: N/A
Stakeholder(s): CG-68, CG-67, CG-741, C5ISC, CGCYBER

RDC Research Lead: LT Clifford Rosenberg
CG-926 Portfolio Manager: TBD

Anticipated Outcome/Transition: Recommendations for Product Line Tech Insertion
 Recommendations for Cost/Risk Avoidance

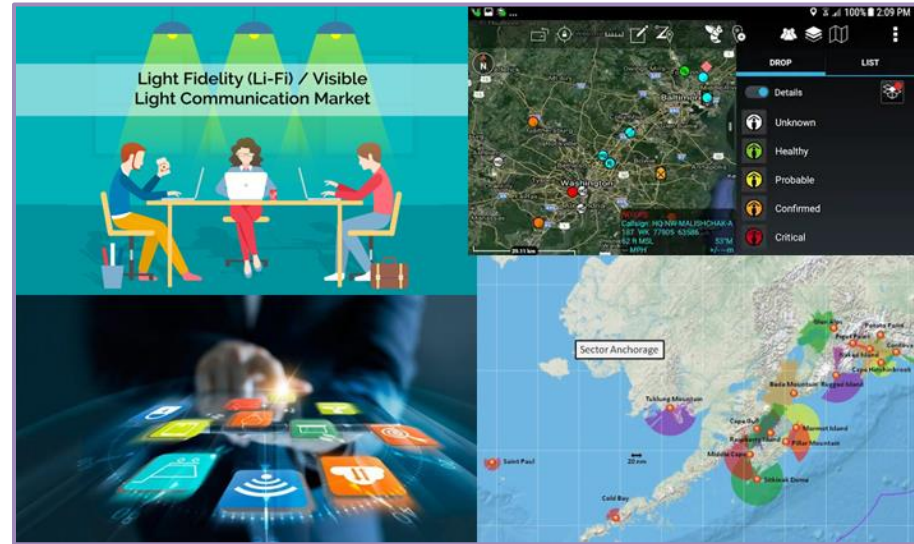
Project Timeline / Key Milestones

Project Start: 1 Apr 24	
Complete Candidate Systems Capability Analysis	Dec 24
Complete COTS CAD Systems Capability Market Research	Dec 24
Candidate Systems and Computer Aided Dispatch Compatibility and Feasibility (Brief)	Mar 25 ★
Complete Development of Concept of Operations Plan	May 25
Request for Information Responses Received from Potential Software Vendors	Sep 25
Complete Contract Action for Interface and Control Design Development	Jan 26
Receive Vendor Interface and Control Design	Jan 27
Computer Aided Dispatch Design and Interface Control Documents (Report)	Mar 27 ★
Project Completion: Mar 27	

Mission Need: Maintain competency/knowledge; provide rapid response; and external liaison.

Objectives

- Build U.S. Coast Guard (CG) Research and Development Center (RDC) competency and technical knowledge/understanding of innovative Information Technology, Networked Systems & Cyber Tools, including: CG mobility, software prototyping, cloud computing, software defined networks, mixed reality, next generation networking, space-based systems, and cyber security systems.
- Support ITNET Strategic Project Portfolio Alignment and CG DCO/DCMS Research Priorities; Maintain Branch infrastructure to support RDC Portfolio objectives.
- Establish robust relationships with CG sponsors/stakeholders and external U.S. DOD labs, U.S. Department of Homeland Security (DHS) Science and Technology Directorate (S&T), and other government agency/academic partners.
- Partner with CGCYBER & C5ISC – learn about Cyber Protection/Mission Team business and toolkits to position future research support.



Notes

- Support development of a “Sector of the Future” (SoF) lab to assess how technology can transform Sector-level operation decision-making and communications.
- Test and evaluate proof-of-concept for unit level implementation of software defined radios over an Internet connection.
- Develop Team Awareness Kit capability.
- Evaluate light fidelity (LiFi) network as next generation networking capability.
- Support DHS S&T to evaluate Push to Talk tech for integration with local and state Other Government Agencies.
- Engage with the Federal Emergency Management Agency to support congressional mandate for cellular distress alerting.

Sponsor’s Rep: CG-926

Ops Rep: Various

RDC Research Lead:

LCDR Ryan Cassidy

Stakeholder(s): CG-2, CG-6, CG-7, C5ISC, CGCYBER, DHS S&T

CG-926 Portfolio Manager:

TBD

Anticipated Outcome/ Transition: Various

Project Timeline / Key Milestones

Project Start: Ongoing	
Functional ISR Buoy Prototype	31 May 24 ✓
SMS Distress Alerting Report: Aqua Alerts Ferry Test	30 Sep 24 ✓
LiFi Technical Note	Dec 24
Software-Defined Radio Technical Note	Mar 25
CGMOES Transition to CG-771	May 25
Sector of the Future Support	Sep 25
Project Completion: Ongoing	



Generative Artificial Intelligence Across Disparate Data Sources Tailored for CG Applications

Mission Need: Actionable mission support insights from large data sets.

Objectives

- Digest resources and return an efficient, immediate route to solutions to queries with advanced Artificial Intelligence (AI) tools using a repeatable, exportable process.
- Develop a capability that includes:
 - Model development, and
 - Model deployment.
- Use the developed process to inform U.S. Coast Guard (CG) use of tools such as natural language processing, large language models, and generative AI.



Notes

- Use cases may include case narrative analysis, maintenance assistance, law enforcement procedure verification, and more.
- Partnership opportunity with the Department of Defense (DOD) research labs who have begun exploring generative AI models inside DOD information network firewalls.
- Partnership opportunity with CG-ODA and CG Academy (CGA).
- Consideration for collaboration with a CG grad/TAB student and U.S. Naval Academy to address components of this effort.

Sponsor's Rep: TBD
Ops Rep: N/A

Stakeholder(s): CG-ODA, CG-DCO-51, CG-2, CG-4, CG-6, CG-PAE, CG-SAR, CGA, CG-MER

RDC Research Lead:
 LT Ardy Effendi

CG-926 Portfolio Manager:
 Dr. David Wiesenbahn

Anticipated Outcome/Transition: Recommendations on Tech Availability & Applicability
 Provide Sponsor/Product Line Tested Prototype

Project Start: Oct 24

Define a Data Preparation Process	Apr 25
Explore Modeling Environments	Oct 25
Generative AI Across Disparate Data Sources Tailored for CG Applications – Update Brief 1 (Brief)	Oct 25 ★
Evaluate Modeling Approaches	Nov 25
Train Model	Apr 26
Generative AI Across Disparate Data Sources Tailored for CG Applications – Update Brief 2 (Brief)	Oct 26 ★
Develop Deployment Use Case	Oct 26
Derive Mission Performance Insights	Jan 27
Generative AI Across Disparate Data Sources Tailored for CG Applications (Report)	Sep 27 ★
Project Completion: Sep 27	

Cancelled

Mission Need: Enhance cognitive skills and decision-making in high-risk operations.

- Objectives**
- Research objective measurements that demonstrate the influence of selected cognitive training program(s) on training environment evaluations.
 - Develop a research framework for collecting empirical evidence of performance enhancement in the training environment.
 - Develop understanding of impact cognitive training programs have on trainees' performance.
 - Develop recommendations for one or more cognitive training programs for evaluation in an operational setting.



Notes

- Potential collaboration with CG Auxiliary, Naval Health Research Center in San Diego, Naval Medical Research Unit Dayton, and Naval Special Warfare Command.

Completed

Sponsor's Rep: CG-721
Ops Rep: N/A

Stakeholder(s): FORCECOM, MLEA, SMTC, CG-1, MSRT/MSSTs, DoD Spe. Ops, NUSTL, LE/DSF Cmty's

RDC Research Lead:
 Dr. Jared Peterson

CG-926 Portfolio Manager:
 Dr. David Wiesenbahn

Anticipated Outcome/Transition: Recommendations for Tactics, Techniques & Procedures
 Recommendations on Tech Availability & Applicability

Project Start: 30 Nov 20

Researched Objective Measures	31 Mar 21 ✓
Experimental Design and Cognitive Training Market Research Selection (Brief)	25 Jan 22 ✓ ★
Cognitive Training Influence on Cognitive Skills and Decision-Making (Report & Brief)	9 Jan 24 ✓ ★

Project Completion: 9 Jan 24

Project Timeline / Key Milestones

Artificial Intelligence/Machine Learning (AI/ML) for Computer Imagery and Sensor Data

Mission Need: Develop, deploy, and sustain artificial intelligence in support of CG missions.

Objectives

To maintain efficiency and improve mission performance, the CG must capitalize on new sensor data sources and technologies such as artificial intelligence and machine learning. To realize the benefits, the CG must:

- Understand the algorithms, software, platform, and service infrastructures available from Department of Homeland Security (DHS), Department of Defense (DoD), National Geospatial-Intelligence Agency (NGA), and other Federal partners for Artificial Intelligence development, deployment, and sustainment.
- Understand the hardware, network, edge, and cloud computing infrastructures in the CG and from Federal partners for AI deployment and operations to support the “edge to watchstander pipeline.”
- Examine how imagery and other sensor data can be used in real time to support operators and in post-analysis to support analysts.



Notes

- Track and report on federal partner and commercial AI models and methods in sensor fusion, maritime domain awareness, and pattern of life.
- Track and report on what other DoD, DHS, NGA partners are using and building for their physical and networking AI infrastructure.
- Follow Small Business Innovation Research-Other Agency Technology Solutions, Naval Postgraduate School, U.S. Navy, Joint Artificial Intelligence Center, Air Force Institute of Technology, CT National Guard, National Security Innovation Network, and Intelligence Coordination Center.

Sponsor’s Rep: CG-2
Ops Rep: D11(dre)

Stakeholder(s): CG-741, CG-62, CG-MLE, AREAs, Districts, CGCYBER, CG-MER

RDC Research Lead:
 LT Ardy Effendi

CG-926 Portfolio Manager:
 Dr. David Wiesenbahn

Anticipated Outcome/Transition: Recommendations on Tech Availability & Applicability

Project Timeline / Key Milestones

Project Start: 1 Oct 21	
Understand the Current State of CG Edge Sensors	30 Mar 22 ✓
Explore Development Platforms	29 Jul 22 ✓
AI/ML for Computer Imagery and Sensor Data – Progress Update 1 (Brief)	21 Nov 22 ✓ ★
Understand State of Edge Sensor Networking	30 Dec 22 ✓
Explore Deployment Platforms	29 Sep 23 ✓
AI/ML for Computer Imagery and Sensor Data – Progress Update 2 (Brief)	6 Nov 23 ✓ ★
Capture and Understand Asset Sensor Vignette	28 Feb 24 ✓
Investigate and Compare Development Platforms	11 May 24 ✓
AI/ML for Computer Imagery and Sensor Data (Report)	5 Sep 24 ✓ ★
Project Completion: 5 Sep 24	

Mission Need: Simulation tool to forecast strategic workforce needs and inform HR policy decisions.

- Objectives**
- Provide an efficient approach to make quantitative analysis-based recommendations about Human Resource (HR) policy decisions at a strategic level.
 - Explore and/or build a modeling framework and predictive simulation tool that will help analysts examine HR data in a more efficient manner to forecast workforce demands at various points in the future (e.g., 2, 5, 10, or etc. years).
 - Develop a framework for a Verification, Validation, and Accreditation approach to address policy/strategy workforce questions for decision-makers and programs.



- Notes**
- Conduct research to support the Ready Workforce 2030 strategy and Commandant's Intent.
 - Agent based simulation modeling is a well-known approach in literature, and it's promising for this instance.
 - Explore collaboration with other partner and military agencies who have addressed this problem space.
 - Explore collaboration with the U.S. Department of Homeland Security Science and Technology Directorate Office of University Programs.
 - Collaborate with CG Academy faculty on model development.

Sponsor's Rep: DPR
Ops Rep: N/A

Stakeholder(s): CG-5, CG-7, CG-12, CG-13, CG Recruiting Command, CG-PSC, CGA, CG-PAE

RDC Research Lead:
 Mr. Sam Cheung

CG-926 Portfolio Manager:
 Dr. David Wiesenbahn

Anticipated Outcome/ Transition: Provide Sponsor/Product Line Tested Prototype Recommendations on Tech Availability & Applicability

Project Start: 3 Oct 22

Project Timeline / Key Milestones	Investigate Current Research Efforts and Explore Current Commercial/ Government Off The Shelf (COTS/GOTS) Products that Supports this Effort's Decision Framework and Simulation Modeling Concept	16 Dec 22 ✓
	Decide On Whether to Purchase COTS/GOTS, Acquire Contractor Services, and What Resources Are Required	30 Dec 22 ✓
	Persistent Simulation for the CG Workforce – Key Decision Point (KDP) (Brief)	26 Apr 23 ✓ ★
	Develop the Framework and Simulation Model In-line with KDP Outcome	31 Oct 23 ✓
	Test/ Evaluate the Framework and Model in RDC Test Evaluation Cloud Environment	28 Jun 24 ✓
	Persistent Simulation for the CG Workforce (Report)	27 Sep 24 ✓ ★
	Project Completion: 27 Sep 24	

Condition-Based Maintenance (CBM) for Coast Guard Asset Product Lines

9204

Mission Need: Targeted CBM for higher asset availability and reduced life cycle costs.

Objectives

- Implement condition-based and predictive maintenance activities within the surface and aviation communities by researching and documenting significant opportunities for using leading indicators and readily available system information, including the following system characteristics: interfaces, data structure, data analysis, and data display that support a data driven system.
- Develop demonstration case studies using predictive maintenance with U.S. Coast Guard (CG) data to provide recommendations for systems and steps required to accommodate desired functional characteristics of a data driven system.



Notes

- Partner with the CG Surface Forces Logistics Center (SFLC) and Aviation Logistics Center (ALC) to make recommendations.
- Partner with U.S. Naval Academy (USNA), U.S. Department of Defense Chief Digital and Artificial Intelligence Office (CDAO), U.S. Navy's Naval Air System Command and Naval Sea Systems Command, and U.S. Army Combat Capabilities Development Command Aviation & Missile Center, U.S. Army's Aviation and Missile Research Development and Engineering Center Engineering Directorate Quality Information Systems Branch.

Sponsor's Rep: CG-45, CG-41
Ops Rep: N/A

Stakeholder(s): SFLC, ALC

RDC Research Lead:
Ms. Christine Hansen

CG-926 Portfolio Manager:
Dr. David Wiesenbahn

Anticipated Outcome/Transition: Recommendations for Cost/Risk Avoidance
Recommendations on Tech Availability & Applicability

Project Timeline / Key Milestones	Project Start: 1 Apr 19	
	Initial Surface Asset Review and Benchmarking	1 Dec 19 ✓
	CBM for CG Asset Product Lines (Brief)	14 Feb 20 ✓ ★
	Initial Aviation Asset Review and Benchmarking	1 Oct 20 ✓
	CBM for CG Asset Product Lines: Update Brief (Brief)	7 Oct 21 ✓ ★
	DoD CDAO Predictive Maintenance Representative	1 Jan 22 ✓
	CBM for CG Asset Product Lines: Update Brief Two (Brief)	17 Oct 22 ✓ ★
	DoD H-60 Health and Usage Monitoring System Data Translation Complete	1 Oct 23 ✓
	CBM for CG Asset Product Lines: Update Brief Three (Brief)	30 Oct 23 ✓ ★
	DoD ASET H-60 Sensor Data Analytics	Dec 24
	USNA NSC Sensor Data Analysis	Dec 24
	CBM for CG Asset Product Lines Summary Report (Report)	Mar 25 ★
Project Completion: Mar 25		

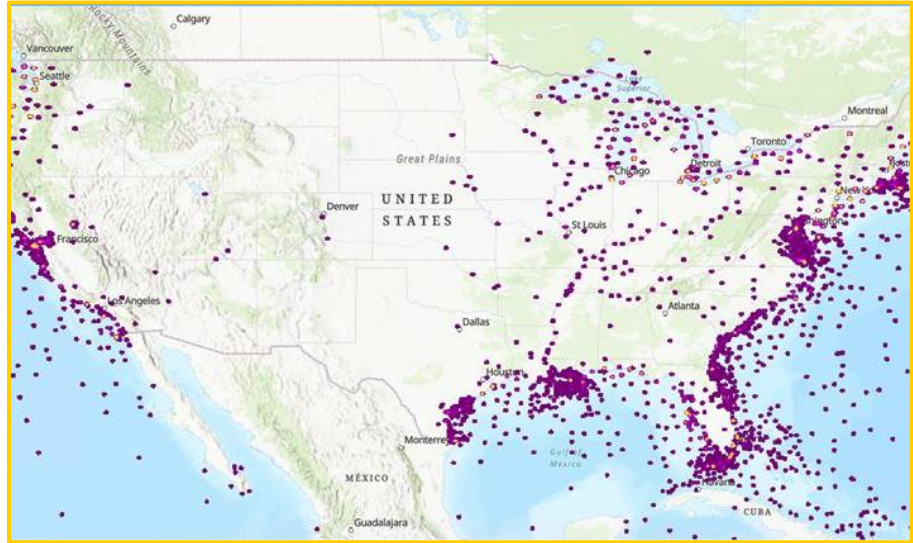
SAR Risk Matrix to Reexamine the 2-Hour Response Standard

Mission Need: Position response resources efficiently around the CG's Area of Responsibility.

Objectives

Current U.S. Coast Guard (CG) asset siting is based, in part, on a 2-hour Search and Rescue (SAR) response standard, but this standard is based on limited, and potentially outdated, factors.

- Identify and evaluate potential risk and response paradigms for CG SAR.
- If a feasible paradigm is identified, develop a prototype SAR risk and response tool that leverages the new methodology.
- Improve effectiveness of SAR system.
- Optimize basing and siting of SAR resources.



Notes

- Research may benefit from existing tools for siting decision support:
 - CG SAR Visual Analytic (cgSARVA) model (Purdue) is a tool to support surface asset siting.
 - CG SAR Simulation and Value Modeling of Air Station Closures (SAVMASC) is analysis proposing methodology for making risk-based decisions on CG Air Station siting and closures.
- Emergency response organizations employ a host of risk factors in siting determinations. Potential partners include National Urban Security Technology Laboratory, State/local response organizations, and Department of Energy National Laboratories.

Sponsor's Rep: CG-SAR Ops Rep: N/A	Stakeholder(s): CG-MLE, CG-MSR, CG-MER, CG-771, CG-731, CG-741, AREAs, CG-PAE
RDC Research Lead: Ms. Christine Mahoney	CG-926 Portfolio Manager: Dr. David Wiesenbahn
Anticipated Outcome/Transition:	Recommendations for Standards/Regulations/Policy Provide Sponsor/Product Line Tested Prototype

Project Start: 1 Apr 24

Project Timeline / Key Milestones	Literature Review of SAR Response Standard and Emergency Response Siting Methodologies Complete	30 Aug 24 ✓
	Definition of Constraints for New Siting Methodology Complete	Oct 24
	Develop Analytical Approach to Model SAR Risk and Response Complete	May 25
	SAR Risk and Response Methodology (Brief)	Jun 25 ★
	Prototype Risk and Response Tool Complete	Apr 26
	SAR Risk and Response Tool (Report)	Jun 26 ★
	Project Completion: Jun 26	

Mission Need: A time and cost-effective methodology to incorporate sensor capabilities in SAROPS.

- Objectives**
- Establish empirical Lateral Range Curves (LRC) for one selected sensor type through field experiments.
 - Determine if LRCs produced by physics-based models appropriately estimate empirical LRCs for selected sensor type.
 - Define the optimal employment of the selected sensor type for Search and Rescue (SAR) missions.
 - Define LRCs for inclusion in the Search and Rescue Optimal Planning System (SAROPS). The basis of these LRCs will be either physics-based models or the traditional analysis approach, based on the findings of the second objective.
 - Define a process to compute LRCs for sensors enabled with object detection algorithms.
 - Determine if LRCs computed for AI enabled sensors appropriately estimate empirical LRCs.



- Notes**
- Validates LRC modeling approaches identified in RDC Project 7937, "Incorporating Sensor Performance in SAROPS."
 - Leverages RDC's previous work developing SAROPS sensor inputs.

Sponsor's Rep: CG-SAR Ops Rep: N/A	Stakeholder(s): CG-931, CG-7, AREAs, Districts, Sectors, FORCECOM
RDC Research Lead: Dr. Maggie Exton	CG-926 Portfolio Manager: Dr. David Wiesenbahn
Anticipated Outcome/Transition: Recommendations on Tech Availability & Applicability Recommendations for Cost/Risk Avoidance	

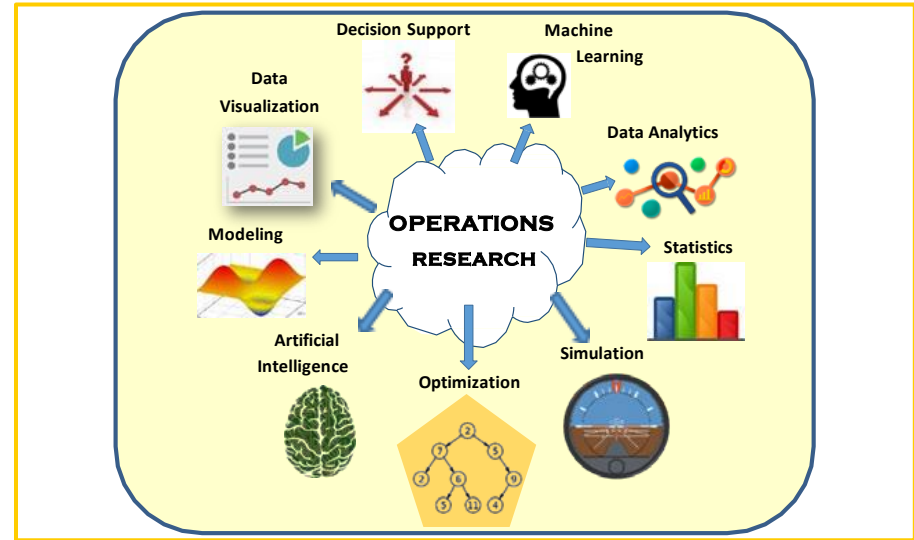
Project Start: 4 Apr 24

Project Timeline / Key Milestones	Definition of Combinations of Sensor, Search Asset, and Search Object for Validation Complete	Dec 24	
	Develop Improved Sensor Performance Models for SAR: LRCs Test Plan (Brief)	Feb 25	★
	Develop Improved Sensor Performance Models for SAR: Validity of Modeled LRCs (Brief)	Nov 27	★
	Define Optimal Use of Sensor for SAR (Brief)	Dec 28	★
	Develop Improved Sensor Performance Models for SAR: LRCs for SAROPS (Report)	Jun 29	★
	Develop Improved Sensor Performance Models for SAR: Validity of LRCs for AI Enabled Sensors (Brief)	Aug 30	★
	Develop Improved Sensor Performance Models for Search and Rescue (Report)	Sep 30	★
	Project Completion: Sep 30		

Mission Need: Maintain competency/knowledge; provide rapid response; and external liaison.

Objectives

- Maintain competency and technical knowledge in understanding present and future Operations Research (OR)/Data Analytics (DA) tools and techniques including: modeling & simulation, data analytics, Artificial Intelligence (AI) & Machine Learning (ML), process automation, risk analysis, and human factors.
- Maintain Branch infrastructure to support RDC portfolio objectives.
- Support MSA Strategic Project Portfolio Alignment and CG DCO/DCMS Research Priorities.
- Provide expert input to CG stakeholders regarding use and application of AI/ML and OR/DA technologies and techniques.
- Foster continued relationships with CG sponsors/stakeholders and external Department of Defense labs, Department of Homeland Security (DHS) Science and Technology Directorate (S&T), and other government agency/academic partners.
- Provide service academy, Historically Black Colleges and Universities, and Minority Serving Institutions students internship opportunities.



Notes

- Represent CG on Chief Digital and Artificial Intelligence Office (CDAO) Service Lab AI Research and Development Subcommittee; CDAO Predictive Maintenance Subcommittee; and Tri-Service Lab Commander's Sync Data Analytics Working Group.
- Member of CG-7 Unmanned Systems Integrated Product Team (AI Subcommittee); CG OR/DA Working Group, CG Data Readiness Task Force Advisory Group, CG Modeling & Simulation Advisory Council, and RDC Institutional Review Board.

Sponsor's Rep: CG-926
Ops Rep: N/A

Stakeholder(s): CG-1/2/6/7/9, CG-5R, CG-5P, DRTF/OD&A, CG-PAE, DCO-X, DHS S&T

RDC Research Lead:
CDR Julia Harder

CG-926 Portfolio Manager:
Dr. David Wiesenbahn

Anticipated Outcome/ Transition: Various

Project Timeline / Key Milestones

Project Start: Ongoing	
Natural Language Processing Analysis of Unstructured Search and Rescue Narratives (CGA Partnership)	18 May 23 ✓
Great Lakes Ice Breaker Analysis Alternatives	9 Jun 23 ✓
MORS 2024 (Naval Post-graduate School)	28 Jun 24 ✓
Joint Capability Technology Demonstration: Wide-Area Autonomous Maritime Target Detect and Classifications Technology Demonstration Support	Jul 25
Sector of the Future Support	Sep 25
Project Completion: Ongoing	



Bromine-Free Water Purification System

5507

Mission Need: Evaluate newer, less hazardous water purification systems.

Objectives

- Deliver decision support information regarding effective utilization of bromine-free water purification systems for National Security Cutters (NSC), Fast Response Cutters (FRC), and Operational Patrol Cutters (OPC).



Notes

- Legislative requirement.
- Collaborating with the U.S. Army Engineer Research and Development Center Construction Engineering Research Laboratory; Naval Surface Warfare Center – Carderock Division, Corona Division, Crane Division, Philadelphia Division; and U.S. Naval Research Laboratory.

Sponsor's Rep: SFLC
Ops Rep: N/A

Stakeholder(s): CG-45, SFLC-LRE

RDC Research Lead:
 Ms. D. J. Hastings

CG-926 Portfolio Manager:
 LCDR Stephen Thomsen

Anticipated Outcome/Transition: Recommendations for Acquisition Milestone Support

Project Start: 27 Jul 19

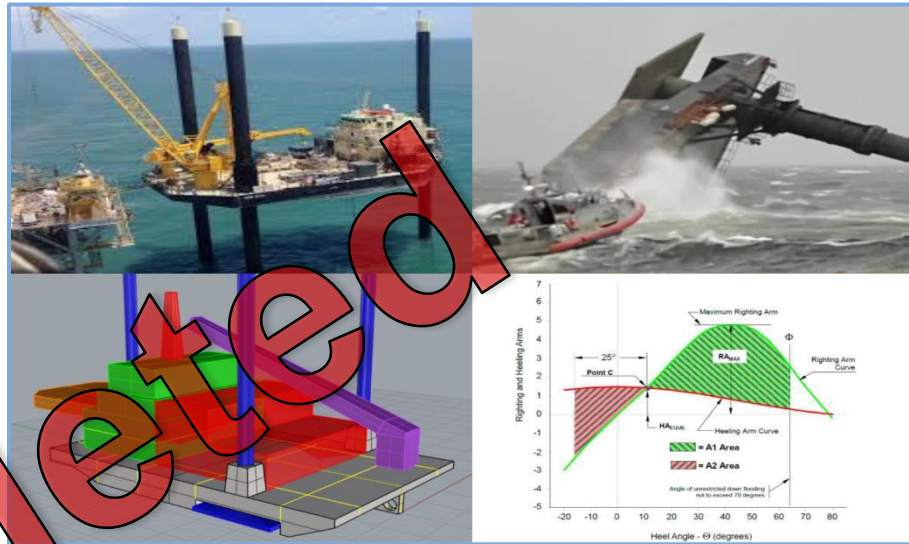
Bromine-Free Water Purification Partners Identified and Pilot Study Started (Phase 1)	19 Jun 20 ✓
Bromine-Free Water Purification System Pilot Study (Brief) (Phase 1)	9 Jul 20 ✓ ★
Begin CG Compatibility Review of Bromine-Free Systems on FRC and OPC with NSWC Carderock (Phase 2)	8 Sep 21 ✓
Bromine-Free Water Purification System Summary: Phase I (Report)	8 Dec 22 ✓ ★
Bromine-Free Systems Integration Feasibility Study (Phase 2)	27 Oct 23 ✓
Phase II Bromine-Free Disinfection Final Report (Report)	20 Dec 23 ✓ ★
Project Completion: 20 Dec 23	

Project Timeline / Key Milestones

Improve Liftboat Stability Standards

Mission Need: Mitigate stability-related hazards to Liftboats/operators.

- Objectives**
- Conduct “Non-Ship Shape Vessel Stability Requirements” study.
 - Investigate current CFR, ABS, and CG Liftboat Stability Standards and Regulations.
 - Analyze critical axes of hull design and construction variations through different stability calculation methods.
 - Incorporate Time Domain Simulations to investigate effects of wind and waves on Non-Traditional Hull Forms.
 - Develop mitigation strategies tailored to Liftboat classifications.
 - Support classification and regulation revision process as appropriate.



- Notes**
- Leverage Sponsor activities to conduct “Non-Ship Shape Vessel Stability Requirements” study.
 - Leverage current American Bureau of Shipping guidance for building and classing Liftboats.
 - Leverage the National Academies of Sciences, Engineering, and Medicine resources.
 - Leverage State Maritime Academies.

Sponsor’s Rep: CG-ENG
Ops Rep: D8 (do)

Stakeholder(s): CG-5P/INV, D8, CG Outer Continental Shelf National COE, CG Marine Safety Center, LANT

RDC Research Lead:
 LT Dean Gilbert

CG-926 Portfolio Manager:
 LCDR Stephen Thomsen

Anticipated Outcome/Transition: Recommendations for Standards/Regulations/Policy

Project Start: 1 Oct 21

Liftboat Observation at D8	11 Mar 22 ✓
Liftboat Stability Standards Recommendations (Brief)	31 Jul 23 ✓ ★
Stability Analysis and Testing Complete	15 Sep 23 ✓
Developed/Revised Liftboat Regulation Changes	27 Oct 23 ✓
Non-Traditionally Shaped Vessel Stability Standards (Report)	12 Feb 24 ✓ ★

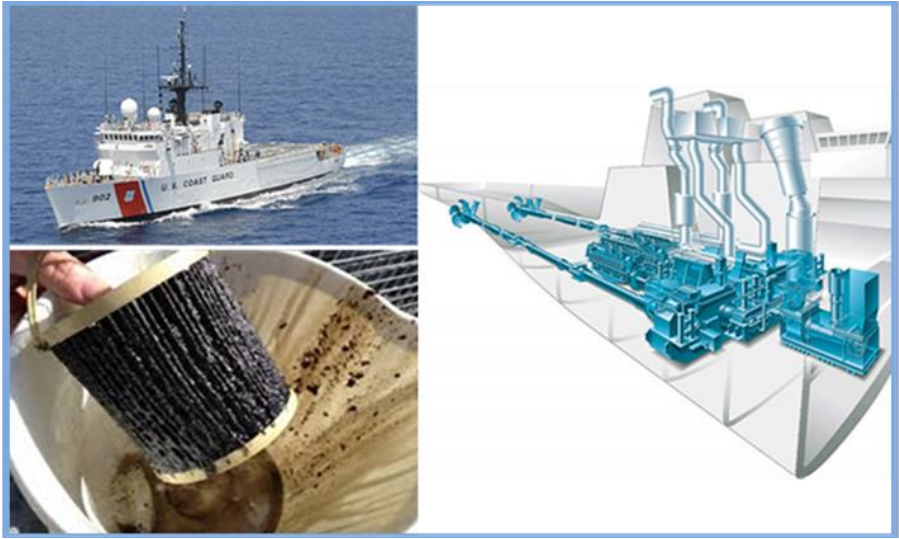
Project Completion: 12 Feb 24

Project Timeline / Key Milestones

Completed

Mission Need: Enhance combustion efficiency to improve engine performance and reduce pollution.

- Objectives**
- Query the U.S. Navy (USN) and other organizations to leverage possible solutions for enhancing combustion efficiency in diesel fuel for energy/propulsion.
 - Identify quantitative parameters for testing the efficacy of using new fuel additives, and combustion enhancement products.
 - Perform field evaluations of available commercial technology with the goal of countering incomplete combustion to improve fuel efficiency, reducing pollution, and reduce maintenance costs.
 - Assess cost and benefits for technology based on test results.
 - Report results on product performance and provide recommendations.
 - Evaluate technologies on engines representative of U.S. Coast Guard (CG) assets.



- Notes**
- Partner with Naval Surface Warfare Center Philadelphia Division on ongoing combustion efficiency research.
 - Leverage CG Academy (CGA) research on biocide additives.
 - Technologies could also be applicable to gasoline and aviation fuel.
 - This project ties into Project Evergreen climate change event.

Sponsor's Rep: CG-46 Ops Rep: N/A	Stakeholder(s): CG-45, Surface Forces Logistics Center, CGA, CG-47D
RDC Research Lead: Mr. Derek Meier	CG-926 Portfolio Manager: LCDR Stephen Thomsen
Anticipated Outcome/ Transition: Provide Sponsor/Product Line Tested Prototype Recommendations for Product Line Tech Insertion	

Project Start: 1 Oct 21

Project Timeline / Key Milestones	Engine Combustion Enhancement Technology: Down Selection (Brief)	9 Feb 23 ✓ ★
	Biocide Laboratory Testing Complete	29 Sep 23 ✓
	Engine Prototype Testing Complete	10 May 24 ✓
	Fuel Additive Analysis for Ultra Low Sulfur Marine Gas Oil, JP-5, and F-76 (Application Note)	Oct 24 ★
	Engine Combustion Enhancement Technology (Report)	Dec 24 ★
	Project Completion: Dec 24	

Cutter-Based Uncrewed Systems (UxS) Integration Analysis

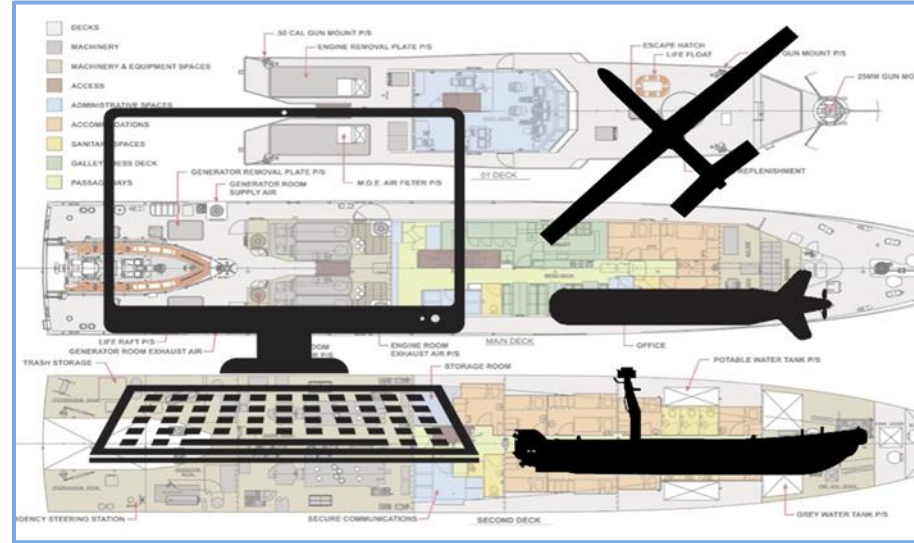
Mission Need: Integrated UxS across cutter fleet to augment operational capabilities.

Objectives

- Determine the capacity for FRC/WLM/WLB cutter classes to integrate, deploy, and support UxS.
- Identify applicable UxS classes, based on space, weight, power, capability, and personnel requirements for specified afloat platforms.
- Strategize and assess possible cutter/UxS combinations and integration considerations through facilitated stakeholder workshops.
- Identify design efficiencies related to human, mission, system and infrastructure integration.
- Deliver decision support information regarding UxS integration by performing and documenting results of Operational Demonstration (OP DEMO).
- Inform future capability and operational documents.
- Help inform the operationalization of the U.S. Coast Guard (CG) UxS Strategic Plan while leveraging the results of the Autonomy Evergreen event.

Notes

- UxS integration considers maritime air, surface, and subsurface systems of all scales that can be based onboard a cutter.
- Leverages RDC Project 7820, "Maritime Uncrewed System Technology," to highlight capabilities.
- Addresses imperatives highlighted by National Academies of Science UxS study.
- Leverage research by the Naval Postgraduate School, Navy Surface Warfare Centers, Naval War College, and Naval Research Laboratory.



Sponsor's Rep: CG-751

Ops Rep: D7 (dre)

Stakeholder(s): CG-7 UxS, CG-731, CG-711, CG-721, CG-771, CG-4, CG-2, CG-93, DCMS DPR-23

RDC Research Lead:

LTJG Jorge Wismar

CG-926 Portfolio Manager:

LCDR Stephen Thomsen

Anticipated Outcome/Transition: Recommendations for Product Line Tech Insertion
Recommendations on Tech Availability & Applicability

Project Timeline / Key Milestones

Project Start: 3 Oct 22

Cutter Capacities and UxS Characterization Crosswalk 28 Sep 23 ✓

Cutter / UxS Teaming Concept of Operations Exercises 23 Apr 24 ✓

D7 OP DEMO 27 Sep 24 ✓

Cutter-based UxS Integration (Brief) Oct 24 ★

Mission Integration Workshop Dec 24

Cutter-based UxS Integration (Report) Apr 25 ★

Project Completion: Apr 25



Mission Need: Improved response outcomes through UxS integration into CG SAR operations.

- Objectives**
- Identify critical gaps in current U.S. Coast Guard (CG) Search and Rescue (SAR) operations where integration of UxS technologies could significantly enhance operational effectiveness.
 - Characterize current capabilities within the UxS market, focusing on technological maturity and potential adaptability to SAR operations.
 - Investigate how other SAR organizations, both domestic and international, currently utilize UxS.
 - Conduct targeted trials to evaluate the feasibility and integration potential of selected UxS technologies within simulated SAR scenarios.
 - Deliver SAR-specific UxS integration recommendations to facilitate the implementation and operationalization of the CG UxS Strategic Plan.



- Notes**
- Leverages RDC Project 1028 “Cutter-Based Uncrewed Systems (UxS) Integration Analysis.”
 - Benchmark U.S. Department of Defense, Other Government Agencies, and allied nations’ UxS programs.
 - Addresses imperatives highlighted by Unmanned Systems Strategic Plan to integrate UxS in CG operations.

Sponsor’s Rep: CG-SAR
Ops Rep: LANT-3

Stakeholder(s): CG-7 UxS, CG-711, CG-731, CG-741, CG-751, CG-5RI, DCMS-DPR-23

RDC Research Lead:
 Ms. Marie Whalen

CG-926 Portfolio Manager:
 LCDR Stephen Thomsen

Anticipated Outcome/ Transition: Recommendations on Tech Availability & Applicability

Project Start: 3 Jun 24

UxS SAR Capabilities Baseline	Oct 24
UxS Test Assets Acquired	Feb 25
UxS for SAR Technology Deployment Plan (Brief)	May 25 ★
UxS for SAR Technology Deployment Complete	Sep 25
Uncrewed Systems Integration in Coast Guard Search and Rescue Operations (Report)	Jan 26 ★

Project Completion: Jan 26

Remote Diagnostic and Monitoring Systems for Technical Support Engineering

Mission Need: Improve shore-side access to cutter engineering data.

- Objectives**
- Assess Supervisory Control and Data Acquisition (SCADA) implementation across U.S. Coast Guard (CG) cutter classes.
 - Investigate Military/Other Government Agency (OGA)/Commercial vessel SCADA data transfer technology maturity and implementation framework.
 - Creation of SCADA Working Group to develop use cases and roadmap SCADA solutions.
 - Develop a demonstration plan for a data transfer system on a selected CG asset.
 - Perform demonstration of selected SCADA technologies.
 - Deliver decision support information and technology transition report and use case roadmaps.



- Notes**
- Leverage Naval Sea Systems Command and Military Sealift Command for technology framework application.
 - Partner with Surface Forces Logistics Center (SFLC) and RDC Project 9204, "Condition Based Maintenance for Coast Guard Asset Product Lines," Project Manager for solution integration with CG systems (e.g., CG-LIMS, ALMIS, etc.).
 - Collaboration with Naval Surface Warfare Center Philadelphia for SCADA prototype and demonstration.
 - Potential collaboration with the Naval Postgraduate School and Johns Hopkins Applied Physics Laboratory.

Sponsor's Rep: SFLC Ops Rep: N/A	Stakeholder(s): CG-761, CG-751, CG-45, CGCYBER, CG-ODA
RDC Research Lead: Mr. Matthew Lees	CG-926 Portfolio Manager: LCDR Stephen Thomsen

Anticipated Outcome/Transition: Recommendations for Product Line Tech Insertion
Provide Sponsor/Product Line Tested Prototype

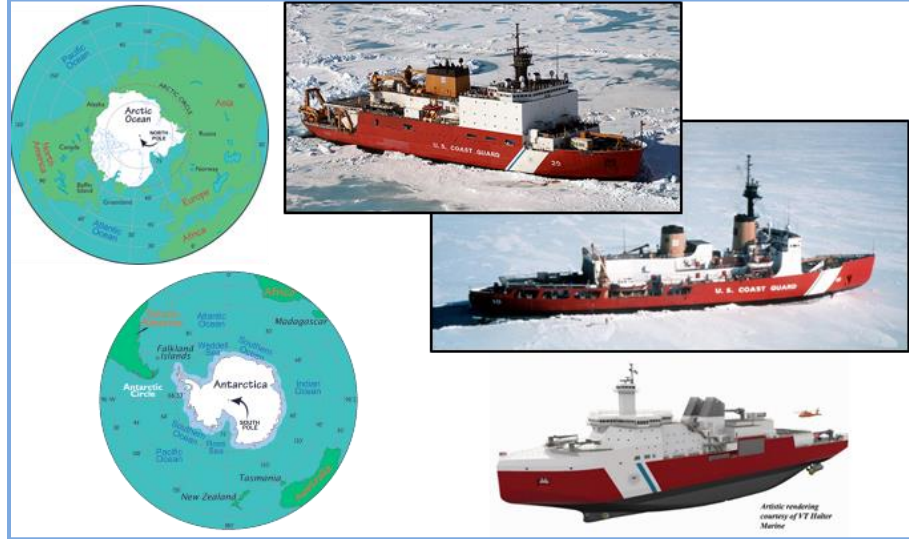
Project Timeline / Key Milestones

Project Start: 3 Oct 22	
Cutter Surveys and SCADA Assessment	31 May 23 ✓
Military/OGA/Commercial SCADA Data Transfer Technology Benchmarking	30 Jun 23 ✓
Supervisory Control and Data Acquisition Data Transfer Technology Investigation (Brief)	6 Sep 23 ✓ ★
SCADA Prototype Demonstration	Jun 25
SCADA Demonstration Evaluation Complete	Sep 25
Remote Diagnostics and Monitoring Systems for Technical Support Engineering (Report)	Feb 26 ★
Project Completion: Feb 26	

Mission Need: Innovative capability solutions for enhanced operations in the Polar Regions.

Objectives

- Provide support to projects which develop capability improvements in the execution of U.S. Coast Guard (CG) missions in Polar Regions.
- Cultivate joint efforts and interagency cooperation between government sectors and civilian entities.
- Evaluate emerging technologies to enhance CG operations in Polar Regions including UxS.
- Develop improved ice and near-ice navigation tools and procedures for surface vessels conducting operations in the Polar Regions.



Notes

- Anticipate partnerships with the U.S. Department of Defense Labs, U.S. Northern Command, National Labs, Office of Naval Research Science, International Cooperative Engagement Program for Polar Research, and the National Science Foundation U.S. Antarctic Program (McMurdo Station).

Sponsor's Rep: CG-5PW
Ops Rep: PAC-3, LANT-5, D17

Stakeholder(s): CG-751, CG-761

RDC Research Lead:
 Ms. Shalane Regan

CG-926 Portfolio Manager:
 Ms. Karin Messenger

Anticipated Outcome/Transition: Recommendations on Tech Availability & Applicability

Project Start: 3 Oct 22

Project Timeline / Key Milestones	Polar Regions Technology Evaluation (PRTE) – FY23 Planning Summary (Brief)	31 Jan 23 ✓ ★
	HEALY 2023 Tests/Demos Complete	12 Oct 23 ✓
	Scientific Roundtable – Tromsø, Norway (Quick-look Report)	18 Dec 23 ✓ ★
	PRTE – FY24 Planning Summary (Brief)	13 May 24 ✓ ★
	FY23 PRTE (Application Note)	Oct 24 ★
	HEALY 2024 Tests/Demos Complete	Nov 24
	PRTE – FY25 Planning Summary (Brief)	Jan 25 ★
	NextGen Ice Nav RFI Decision	Jan 25
	ODF 25 Tests/Demos Complete	Apr 25
	Polar Regions Technology Evaluation Exercise	Sep 25
	HEALY 2025 Tests/Demos Complete	Nov 25
	FY25 PRTE (Application Note)	Jun 26 ★

Project Completion: Jun 26

Mission Need: Maintain competency/knowledge; provide rapid response; and external liaison.

Objectives

- Maintain U.S. Coast Guard (CG) Research and Development Center (RDC) competency and technical knowledge in understanding present and future surface asset technology and systems including: uncrewed surface and sub-surface systems; boarding team tools; compel compliance; law enforcement; Chemical, Biological, Radiological, Nuclear, and Explosives countermeasures; alternative energy; and polar region capabilities.
- Maintain Branch infrastructure to support RDC portfolio objectives.
- Support Surface Strategic Project Portfolio Alignment and CG DCO/DCMS Research Priorities.
- Provide expert input to CG stakeholders regarding surface technologies.
- Foster continued relationships with CG sponsors/stakeholders and external U.S. Department of Defense labs, U.S. Department of Homeland Security (DHS) Science & Technology Directorate (S&T) and other government agency/academic partners.
- Provide service academy, Historically Black College or University, and Minority Serving Institution students internship opportunities.

Notes

- Explore uncrewed surface vessel infrastructure and mission integration.
- RDC Arctic/Polar Coordinator and Representative to U.S. Arctic Research Commission.



Project Timeline / Key Milestones

Project Start: Ongoing	
Uncrewed Aerial System/USV Collaborative Tasking	17 Jul 23 ✓
Cutter-based USV Concept of Operations Development	6 Sep 23 ✓
Drug and Explosive Detection Tech Capstone Support	31 Jul 24 ✓
Counter-Uncrewed Underwater Vehicle Benchmarking	30 Aug 24 ✓
Joint Capability Technology Demonstration Wide-Area Autonomous Maritime Target Detect and Classification Technology Demonstration Support	Jul 25
Sector of the Future Support	Sep 25
Project Completion: Ongoing	

Sponsor's Rep: CG-926
Ops Rep: Various

Stakeholder(s): CG-43, CG-45, CG-5PW, CG-721, CG-731, CG-751, CG-7 UxS, CG-932, SFLC, DHS S&T

RDC Research Lead:
Mr. Evan Gross

CG-926 Portfolio Manager:
LCDR Stephen Thomsen

Anticipated Outcome/ Transition: Various



Rapid Reaction Technology (RRT) Tasks

Purpose: Evaluate high Technology Readiness Level Commercial Off-the-Shelf and Government Off-the-Shelf technologies through field tests and limited user evaluations.

RRT Funding Type: R&D & OSLTF		RDC Research Lead: Mr. Scott Fields	CG-926 Portfolio Manager: Various	
RRT Note Title	Objective	Office Supported	Due/Delivery Date	
Smart Buoy 2.0	Develop deployable ISR Buoy prototype that incorporates enhancements identified in ISR buoy 1.0 deployed in Long Island Sound. <i>Result: The Smart Buoy is RDC asset to test sensors and data packet transmission. Individual summaries of different sensor, data, power, system evaluations will be identified and released throughout lifecycle of the asset.</i>	N/A	N/A	
FlightWave Edge 130 Uncrewed Aircraft System (UAS)	Evaluate FlightWave Edge 130 UAV as an enhanced GUPPI Program UAV. <i>Result: RDC evaluated the sUAS FlightWave Edge 130 as a possible commercial sUAS solution. It was determined that at this time the sUAS is not a viable solution and is not ready to be used in field operations. Additional engineering is needed to ensure marine operations and ease of use.</i>	N/A	N/A	
29ft Response Boat Recovery Ladder	Evaluate prototype 29' RBS II rescue ladder. Conduct Limited User Evaluation.	CG-731	24 Jan 2024	✓
Electric P-6 Pump	Conduct market research and evaluate potential replacement gasoline operated P-6 Pump with other non-gas operated pumps.	CG-731	2 Jul 2024	✓
Milo Action Communicator	Conduct field test and obtain feedback on Milo Walkie Talkies.	CG-761	31 Jul 2024	✓
ExplorIR	Test capabilities of direct-read FTIR gas and vapor detector and obtain feedback from Strike Teams.	CG-7214/NSF	Jan 2025	
Garmin Montana 700i Multi-Function GPS Device	Provide 2-way satellite messaging and SOS capabilities to RBMs operating outside of VHF range.	Sector Charleston	Mar 2025	
Sharrow Propeller Performance Testing	Conduct field test and evaluate Sharrow Propellor on 29ft RBS to determine power and efficiency.	CG-731/SBPL	May 2025	
GLOROPE	Conduct fields tests and obtain feedback from operation units on glow-in-the-dark rope, buoys, life rings, and post bumpers.	CG-731	Jun 2025	
Electric P-6 Pump (Continued)	Building upon CGA capstone from 2024, conduct test and evaluation of electric P-6 Pump prototype from Darley.	CG-731	Jul 2025	
Element E100 Fire Extinguisher Stick	Evaluate new fire extinguishing technology for A, B, C and K fire classes.	CG-4	Dec 2025	

For more information, call (860) 271-2600 or e-mail RDC-Info@uscg.mil.



Rapid Reaction Technology (RRT) Branch Support

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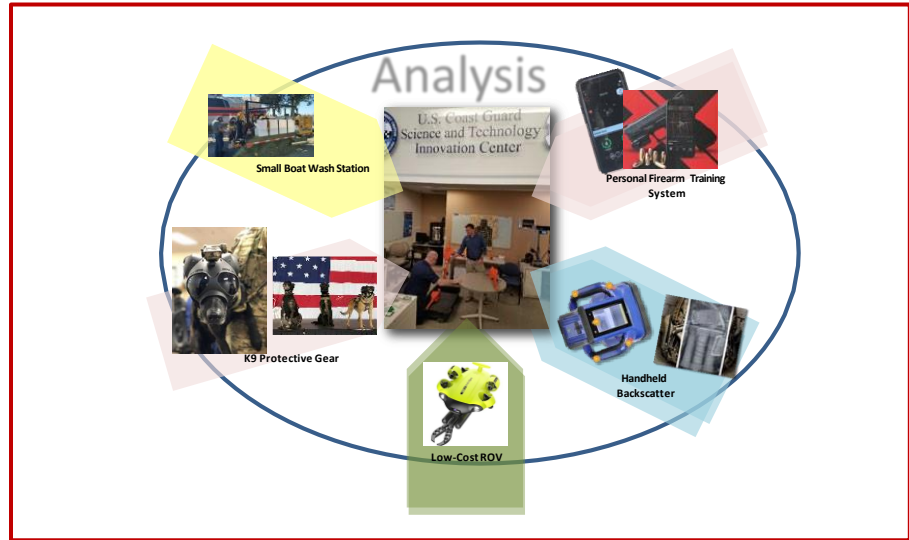
Mission Need: Maintain competency/knowledge; provide rapid response; and external liaison.

Objectives

- Maintain U.S. Coast Guard (CG) Research and Development Center (RDC) competency and technical knowledge in understanding present and future technology to support CG mission execution.
- Maintain a collaborative relationship between the CG's Research, Development, Test and Evaluation Program Office and the U.S. Department of Homeland Security (DHS) Science & Technology Directorate (S&T) along with Department of Defense, Department of Energy, and the Federal Laboratory Consortium to share and advance technologies that will be mutually beneficial to both parties.
- Provide Tactics, Techniques and Procedures for use in development of requirements for new technology evaluations and transitions.
- Maintain Branch infrastructure to support RDC portfolio objectives.
- Support Strategic Project Portfolio and CG DCO/DCMS Research Priorities.
- Provide expert input to CG stakeholders regarding advanced technologies.
- Provide service academy, Historically Black College or University, and Minority Serving Institution students internship opportunities.

Notes

- Align with DHS S&T Integrated Project Team gaps and CG Idea Submission Review input.
- Support RDC tasks as requested.



Project Timeline / Key Milestones

Project Start: Ongoing	
Waterways Commerce Cutter Sonar Evaluation (RRT Note)	28 Apr 23 ✓ ★
FY24 Support	30 Sep 24 ✓
ISR Buoy for MDA	Jun 25
Joint Capability Technology Demonstration Wide-Area Autonomous Maritime Target Detect and Classification Technology Demonstration Support	Jul 25
Sector of the Future Support	Sep 25
FY25 Support	Sep 25
Project Completion: Ongoing	

Sponsor's Rep: CG-926

Ops Rep: Various

Stakeholder(s): DHS S&T, Various

RDC Research Lead:

Mr. Scott Fields

CG-926 Portfolio Manager:

Ms. Minh-Thu Phan

Anticipated Outcome/ Various

Transition: Provide Sponsor/Product Line Tested Prototype



Acquisition Directorate
Research & Development Center



CG Research & Development Center
UNCLAS//Internet Release is Authorized

Indicates RDC Product ★

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Operational Test Agent (OTA) for the sUAS for NSC Program Re-compete

OTA

Mission Need: Independent and objective evaluation of sUAS operational suitability/effectiveness.

Objectives

- Generate test plan for Small Unmanned Aerial Systems (sUAS) for the National Security Cutter (NSC).
- Perform Operational Testing & Evaluation (OT&E) of sUAS.
- Provide OT&E report to the sponsor program office.



Notes

- Work with Sponsor and CG-926 to develop test plan for sUAS.

Project Timeline / Key Milestones

Project Start: 5 Feb 24	
Develop Test Plan	Oct 24
Conduct OT&E	Mar 25
Summary Report of OT&E	May 25
NSC Program sUAS OT&E Report	Aug 25 ★
Project Completion: Aug 25	

Sponsor's Rep: CG-9313
Ops Rep: N/A

Stakeholder(s): CG-711, CG-926

RDC Research Lead:
Ms. Shelly Wyman, P.E.

CG-926 Portfolio Manager:
Mr. Scott Craig

Anticipated Outcome/ Transition: Recommendations for Acquisition Milestone Support



Acquisition Directorate
Research & Development Center



CG Research & Development Center
UNCLAS//Internet Release is Authorized

Indicates RDC Product ★

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RDC Evergreen Pinecone in Collaboration with DCO-X

Mission Need: Understand strategic research and development science-based issues.

Objectives

- Evergreen was meant not only to develop long-range plans or strategies, but also to instill strategic intent throughout the U.S. Coast Guard (CG). Strategic intent is a shared organizational understanding of where the Service as a whole is going and why.
- Each Evergreen Pinecone frames future CG strategies, operational approaches, and research areas to address impact concerns specific to the topic over the next 10-50 years. The event output will help the Service formulate adaptation, mitigation, resilience strategies and focus research and development initiatives for the coming decades.
- RDC supports Pinecone events as Science Advisors to the Service.
- This joint RDC/DCO-X collaboration provides another opportunity for strategic foresight which will serve the organization for years to come.

Notes

- DCO-X & RDC will collaborate and conduct at least one strategic foresight exercise each year. Each event will involve:
 - Identifying a mutual area of strategic research or emerging technology.
 - Convene leadings Subject Matter Experts to discuss focused questions.
 - Produce a Quick Look and Final Report for Senior service decision makers.



Project Timeline / Key Milestones

Project Start: Ongoing	
Space Evergreen Pinecone	23 Sep 21 ✓
Space Evergreen (Report)	28 Oct 21 ✓ ★
Climate Evergreen Pinecone	31 Aug 22 ✓
Climate Evergreen (Report)	20 Dec 22 ✓ ★
Autonomous Systems Evergreen Pinecone	14 Sep 23 ✓
Autonomous Systems Evergreen Quick Look	1 Oct 23 ✓
Autonomous Systems Evergreen (Report)	6 Dec 23 ✓ ★
Integrated Deterrence Evergreen Pinecone	28 Aug 24 ✓
Integrated Deterrence Evergreen Quick Look	25 Sep 24 ✓
Integrated Deterrence Evergreen (Report)	Jan 25 ★
Sustainment/Contested Logistics Evergreen Pinecone	Aug 25
Sustainment/Contested Logistics Evergreen (Quick Look)	Oct 25 ★
Sustainment/Contested Logistics Evergreen (Report)	Jan 26 ★
Project Completion: Ongoing	

Sponsor's Rep: DCO-X Ops Rep: LANT-2	Stakeholder(s): LANTAREA/PACAREA
RDC Research Lead: Dr. Joe DiRenzo	CG-926 Portfolio Manager: N/A
Anticipated Outcome/ Transition:	Recommendations on Tech Availability & Applicability Recommendations for Tactics, Techniques & Procedures

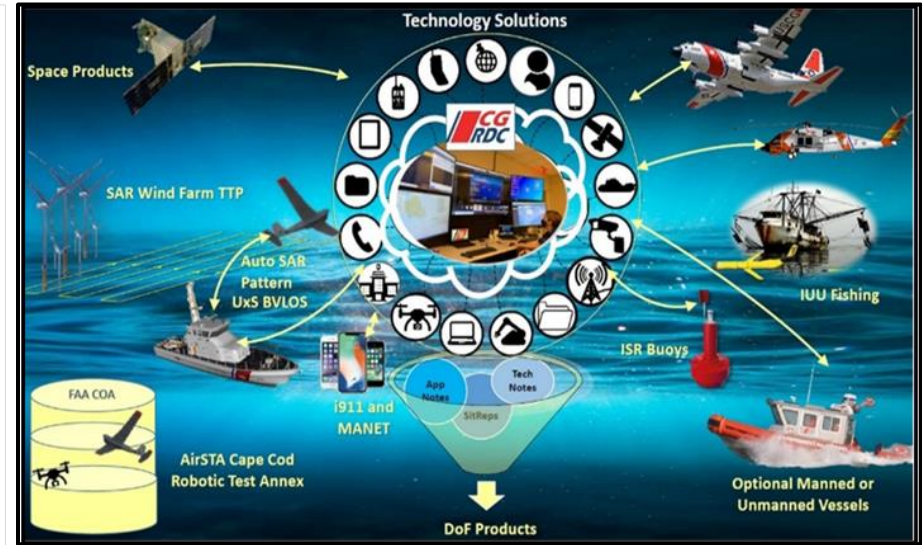
Mission Need: Rapid tech evaluation to inform operational, requirement, and acquisition decisions.

Objectives

- Provide an R&D testbed for exploration/integration of advanced solutions, to help the U.S. Coast Guard (CG) understand, prepare, acquire, operationalize tomorrow's technologies to achieve more rapid and agile tech transition.
- Serve as an operational test environment for Technology Readiness Level (TRL) 7-8 technology.
- Inform operational use cases, Tactics, Techniques and Procedure (TTP), requirements, acquisitions, asset siting, and workforce optimization.
- Provide a recognized research forum that adheres to enterprise authorities required to integrate/evaluate new IT systems, cybersecurity, privacy, environmental, and human subject research.
- Provide opportunities to advance emergent technology in CG Concept f Operations (CONOPS) and TTPs through cooperative research and partnerships.

Notes

- Build on past and future technology and Maritime Domain Awareness (MDA) sprints, e.g., D14 Low-Cost MDA project (2020), D8 MBL Autonomy (2023), and D7 BVLOS (2023).
- Aligns with 2022 VCG Search and Rescue and Coastal Strategic Study.
- Agreement with CG-741 focuses initial efforts on Sectors Boston and Long Island Sound. Proximity to RDC researchers, new comms lab, and use of Fisher's Island STA reduce initial logistics costs.
- Efforts will primarily focus on higher TRL efforts within the RDC's research portfolio but will allow for efforts of particular importance to the Sectors.
- Transition to a continual, standing effort initially targeted to two locations. RDC may also conduct in-situ sprints at other locations where appropriate.



Sponsor's Rep: CG-741
Ops Rep: D1

Stakeholder(s): CG-PAE, CG-2/ 5R/5P/6/711/721/ 731/751/761/771, AREAs, Districts, C5ISC

RDC Research Lead:
LCDR Paul Larouche

CG-926 Portfolio Manager:
N/A

Anticipated Outcome/ Transition: Recommendations on Tech Availability & Applicability
Recommendations for Tactics, Techniques & Procedures

Project Start: Ongoing

Project Timeline / Key Milestones

Initial/Introduction Meeting with Sector Boston and Sector LIS	5 Jun 23 ✓
Unit Visits	31 Aug 23 ✓
SAR Pattern Transmit Over AIS (Sector LIS)	12 Mar 24 ✓
Sector Technology Roll-out(s)	30 Sep 24 ✓
Aqua Alert (D1, D11)	Feb 25
RDC Technology Demonstration(s)/Project Updates Invitations to SoF-related Demos/Tech Sprints	As Needed

Project Completion: Ongoing

