



Acquisition Directorate

Research, Development, Test & Evaluation

FY18 RDT&E Project Portfolio



UNCLAS | FY18 RDT&E Project Portfolio
RDC | T. Girton | April 2018



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Acquisition Directorate

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FY18 Project Portfolio



CG RDT&E Funded Projects

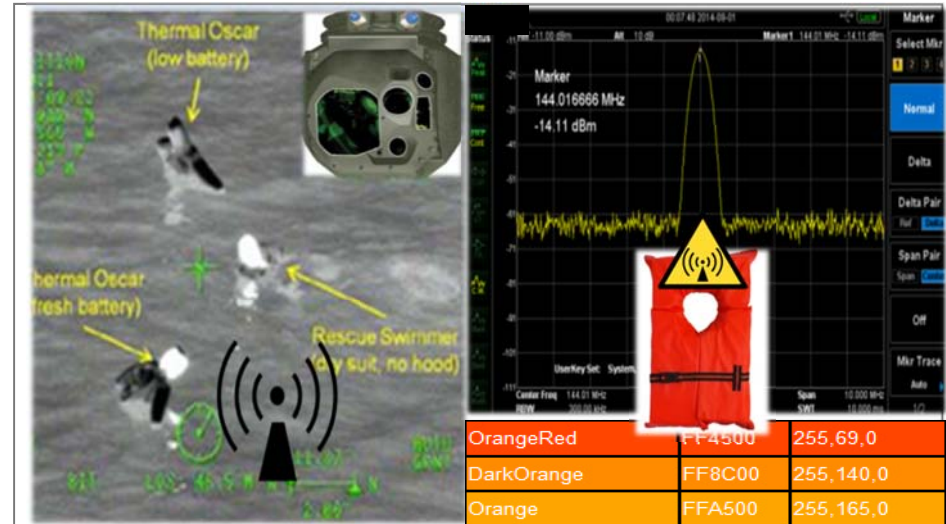


Enhanced Person in the Water (PIW) Detection

Mission Need: Maximize the effectiveness of air and surface asset searches for PIW.

Project Objectives:

- Research smart floatation sensor system augmentation for use by air and surface assets that can:
 - Increase probability of detection of PIW and small targets in an open water environment.
 - Decrease the time required to search a given open water area in various sea-state and weather conditions.
 - Reduce the burden on air and surface asset sensor operators.
- Perform laboratory testing and limited user evaluations of selected technology.



Key Milestone / Deliverable Schedule:

Project Start.....	2 Oct 17 ✓
Prize Challenge Posting Completed.....	Jun 18
Summary of Prize Competition Ideas Phase I	Sep 18
★ Limited User Evaluation Completed Phase II	Jun 19
Enhanced PIW Detection Final Report and Brief.....	Jan 20
★ Project End.....	Feb 20

Sponsor: CG-761

Stakeholder(s): CG-751, CG-411, CG-SAR, CG-ENG, ATC, CG-BSX, CG-INV, CG-CVC

Project #: 1103
Expected Benefit: Improve operational performance/efficiency/mission execution/resiliency

Notes:

- Project execution strategies include use of the DHS Prize Competition process, and possible CRADA(s) with industry.
- Supports the Coast Guard Western Hemisphere Strategy.

RDC POC:
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CG-926 Domain Lead:
Ms. Holly Wendelin

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★ Indicates RDC product.



Acquisition Directorate
Research & Development Center

UNCLAS/USCG Research & Development Center
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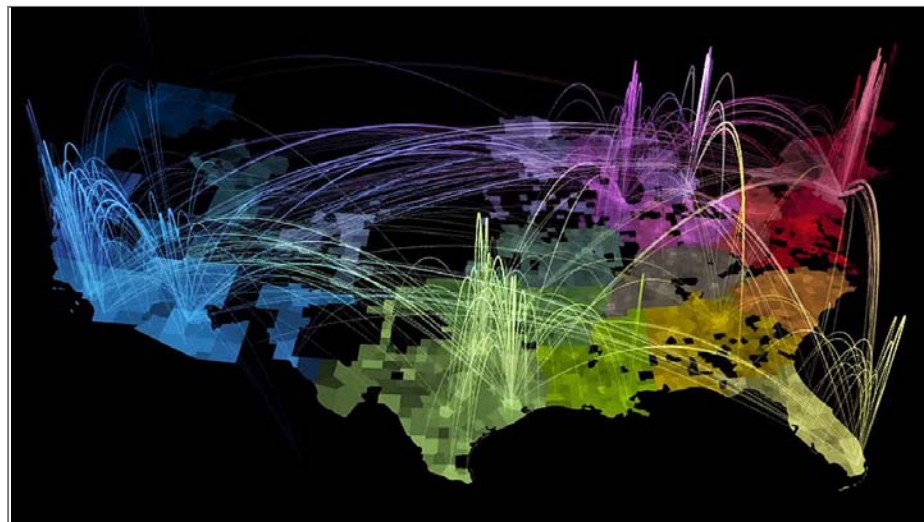
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Cell Phone Location for Search and Rescue

Mission Need: Cell phone technology to support the precise geo-location of distressed mariners in mayday and Search and Rescue (SAR) scenarios.

Project Objectives:

- Conduct market research, identify, and assess state of the market Commercial/Government off the Shelf (COTS/GOTS) geo-locating system(s).
- Inform functional requirements, Tactics, Techniques and Procedures (TTP) and Quick Response Cards (QRC) for cell phone geo-location system and methods for operational and tactical commanders.
- Investigate Coast Guard surface, rotary and fixed wing asset ability to locate signals being emitted from distressed mariner cell phones.
- Inform the current SAR TTPs/QRCs of Command Centers and tactically-controlled fixed wing, rotary and surface assets at the tactical level.
- Contribute to current awareness campaign educating mariners to provide cell phone numbers in float plans, place cell phones in waterproof sleeves, and carry onboard solar cell phone chargers to extend mobile battery life.



Key Milestone / Deliverable Schedule:

Project Start.....	3 Oct 16 ✓
Document Functional Requirements.....	30 Dec 16 ✓
Obtain OTA agreement with DHS S&T.....	24 Aug 17 ✓
Market Research.....	8 Jan 18 ✓
★ Market Research Briefing.....	23 Jan 18 ✓
Obtain COTS/GOTS Solutions for Demonstration.....	May 18
Demonstration Test Plan.....	Jul 18
Conduct Demonstration.....	Sep 18
★ Cell Phone Tracking for SAR Final Brief and Report.....	Feb 19
Project End.....	Mar 19

★ Indicates RDC product.

Sponsor: CG-SAR
Stakeholder(s): CG-761, C4IT SC, CG-BSX, FORCECOM, CBP, AREAS, Districts

Project #: 1108	Expected Benefit: Improve operational performance/efficiency/mission execution/ resiliency
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Notes:

- Leverage DHS Science & Technology's (S&T) efforts in cell phone tracking technologies.
- Supports the Coast Guard Western Hemisphere and Cyber Strategies.
- Use of Cooperative Research and Development Agreements (CRADA)/S&T Other Transaction Activity (OTA)/representation on DHS First Responders Small Business Innovation Research (SBIR).

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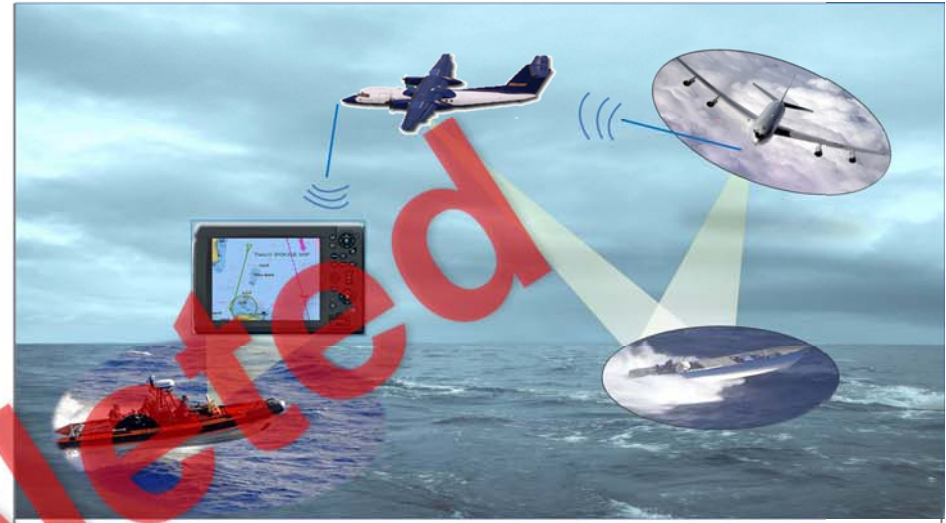


Vectoring Over the Horizon-Cutter Boat (OTH-CB) for Non Compliant Vessel (NCV) Intercept

Mission Need: Ability to vector the OTH-CB to intercept NCVs.

Project Objectives:

- Review current practices to standardize vectoring CG Vessels and in particular, OTH-CBs.
- Identify the OTH-CB system weaknesses in the NCV Intercept chain.
- Evaluate technical solutions to help vector surface assets to targets of interest.



Key Milestone / Deliverable Schedule:

Project Start.....	5 Oct 15 ✓
Determine Gaps and Capabilities	12 Feb 16 ✓
★ Alternative Recommendations Brief.....	11 Mar 16 ✓
Develop Alternative Solution Prototype.....	27 Jun 17 ✓
Evaluate HF System Performance & Develop System Improvements	27 Jun 17 ✓
Conduct Field Test/Demonstration of Alternative Solution.....	23 Oct 17 ✓
★ Results of OTH-CB Vectoring Alternative Evaluation	23 Jan 18 ✓
Project End.....	23 Jan 18 ✓

Sponsor: CG-751
Stakeholder(s): CG-711, CG -731, CG-741, CG-761, CG-MLE, AREA-3, FORCECOM, D7, CBP

Project #: 5711	Expected Benefit: Improve operational performance/efficiency/mission execution/resiliency
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Notes:

- Leverage RDC Projects:
 - Automatic Transport of Search and Rescue Patterns.
 - Tactical Communications to Enhance Coast Guard Operations.
- Supports the Coast Guard Western Hemisphere Strategy and the Department of Homeland Security Southern Border and Approaches Campaign Plan.

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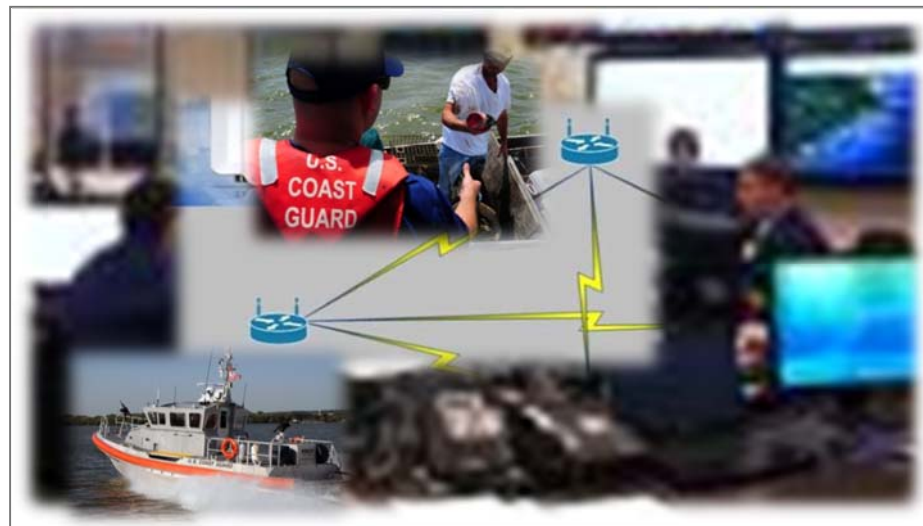
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Tactical Communications to Enhance Coast Guard Operations

Mission Need: Rapidly communicate voice and data among Sector and Cutter Forces; access databases and share data between surface assets, boarding and inspection teams, and command centers.

Project Objectives:

- Review and assess the current state of commercial and government communications technologies suitable for Sector and Cutter Forces (including surface assets, boarding & facility inspection teams, and command centers) to securely share imagery, text, email, documents, and other operational data.
- Review & assess information sharing technologies to:
 - Upload/complete/submit routine boarding documents; and
 - Access law enforcement databases (vessels & people).
- Design a preliminary concept and scalable network architecture (offshore Cutter boarding team network (TCN-BT), and Sector Forces Protected Tactical Communications Network (SFTacNet)).
- Conduct preliminary demonstration of select technologies; report findings.



Key Milestone / Deliverable Schedule:

Project Start.....	19 Nov 13	✓
Task Segment 1 Start – TCN-BT Architecture.....	19 Nov 13	✓
★ Integrated TCN–BT Architecture Briefing.....	1 Dec 14	✓
★ TCN-BT Final Report.....	24 Sep 15	✓
Task Segment 2 Start – SFTacNet Architecture.....	20 Oct 15	✓
Explore FirstNet Partnership.....	29 Jan 16	✓
Cooperative Research Development Agreement (CRADA).....	14 Mar 16	✓
SFTacNet Architecture Design	29 Apr 16	✓
★ Tactical Communications Technology Update.....	Apr 18	
Project End.....	Apr 18	

★ Indicates RDC product.

Sponsor: CG-761
Stakeholder(s): CG-255, CG-642, CG-721, CG-731, CG-741, CG-751, C3CEN, AREA-6

Project #: 5804	Expected Benefit: Improve operational performance/efficiency/mission execution/ resiliency
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Notes:

- **Related projects:** Boarding Team Comms Phase I ; Secure Tactical Connectivity; Mobile Technology for Operational Efficiency.
- **Partners:** NAVSEA Dahlgren; JSOC; DTRA; FirstNet Program Office; DHS S&T; DISA; Industry Tech Reps (CRADA(s)); CBP OA&M; FL FWC.
- Supports the Coast Guard Western Hemisphere Strategy.

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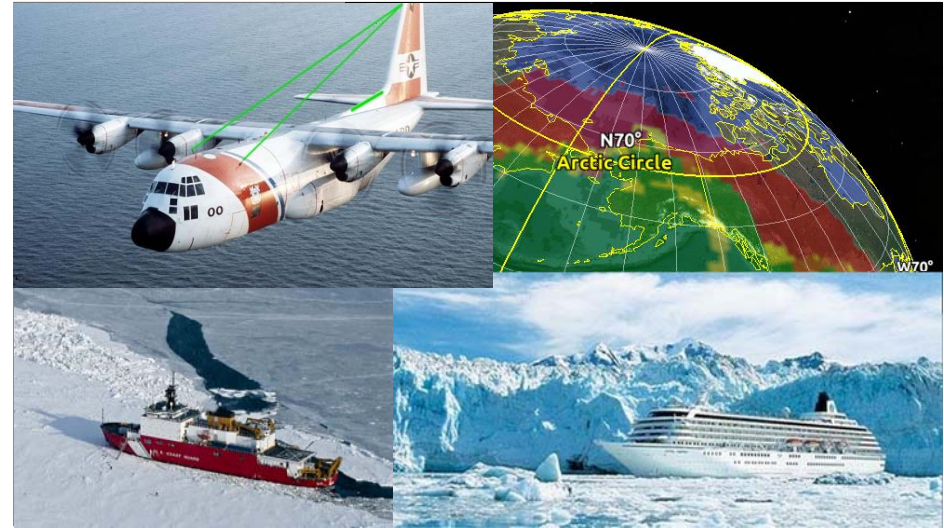


Robust Maritime Arctic Communications

Mission Need: A robust cyber-secure network to increase situational awareness and safety for mariners operating in the Arctic.

Project Objectives:

- Demonstrate a dynamically reconfigurable network that provides the best available communications between users in the Arctic. This network features:
 - Cyber security protection against threats such as hoax callers and other nefarious activity.
 - Ability to automatically switch between commercial satellite and High Frequency communications.
 - Ability to transmit Arctic Virtual Aids to Navigation (AtoN).
 - Automated vessel tracking and dissemination of safety information to all CG and maritime users.
- Continue related Arctic research to support air, surface, and shore communications.



Key Milestone / Deliverable Schedule:

Project Start.....	2 Oct 17 ✓
Refine System Requirements	31 Oct 17 ✓
Dynamic Network Laboratory Testing.....	Jun 18
★ Report and Brief: Architecture of a Robust Maritime Arctic Communications Network	Jul 18
Key Decision Point for New England Testing.....	Jul 18
New England Field Tests/Results.....	Dec 18
Key Decision Point for Arctic Testing.....	Jan 19
Arctic Field Tests (1 year duration).....	Mar 20
★ Report and Brief: Performance of a Robust Maritime Arctic Communications Network.....	Apr 20
Provide Results to the International Telecommunication Union.....	Sep 20
Project End.....	Sep 20

★ Indicates RDC product.

Sponsor: CG-761
Stakeholder(s): CG-6, C3CEN, DHS S&T, Alaska Marine Ex, PAC-6, D17, CG-5PW

Project #: 6213	Expected Benefit: Improve operational performance/efficiency/mission execution/resiliency
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Notes:

- Execution in conjunction with RDC Arctic Operations Support.
- Supports the Coast Guard Arctic Strategy.
- Leverage results of RDC Project 6208: Arctic Communications Technology Assessments.

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Evaluation of Potential CG Use of CubeSats

Mission Need: Investigation and assessment of the operational utility of CubeSat technology for CG missions.

Project Objectives:

- Perform a CubeSat payload mission assessment that includes CubeSat Concept of Operations (CONOP) scenarios that would support CG mission needs and influence CubeSat requirements.
- Build and deploy two ground stations for the Mobile CubeSat Command and Control (MC3) ground network, test and document the performance of the MC3 ground stations.
- Participate/partner in CubeSat technology development, test and document CubeSat performance during on-orbit test and evaluation of Polar Scout.
- Prepare a CubeSat technology roadmap to support the most pressing CG mission needs, including development, deployment and Operations and Maintenance planning factors.



Key Milestone / Deliverable Schedule:

Project Start.....	29 Jun 16 ✓
Partner Collaboration/Integrated Product Team Establishment...	25 Oct 16 ✓
Deploy MC3 Ground Station (Fairbanks, AK).....	26 Sep 17 ✓
★ Performance Test Results of Fairbanks MC3 Ground Station.....	May 18
★ CubeSat Payload Mission Assessment.....	Jul 18
Deploy MC3 Ground Station (New London, CT).....	Jul 18
★ Performance Test Results of New London MC3 Ground Station... Sep 18	
Polar Scout Demonstrations Start.....	Oct 18
Polar Scout Demonstrations End.....	Jul 19
★ Polar Scout User Evaluation Results	Oct 19
★ CubeSat Technology Roadmap.....	Dec 19
Project End.....	Jan 20

★ Indicates RDC product.

Sponsor: CG-SAR
Stakeholder(s): DHS S&T (BMD), CG-25, CG-26, CG-761, CG-771, CG-MLE, CG-MER3, IIP, D17, CGA

Project #: 7759	Expected Benefit: Improve operational performance/efficiency/mission execution/resiliency
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Notes:

- Partner with DHS Science & Technology, USAF Operationally Responsive Space, and NOAA to launch and evaluate CubeSat technology.
- Collaborate with Naval Postgraduate School, Air Force Institute of Technology, USN PEO Space Systems, and other agencies.
- Leverage Lawrence Livermore National Laboratory.
- Supports Coast Guard Western Hemisphere and Arctic Strategies.

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Augmented Reality Capabilities to Improve Coast Guard Mission Support

Mission Need: Improve the efficiency and effectiveness of air, surface and shore maintenance procedures.

Project Objectives:

- Identify maintenance, training, tools, processes, and procedures used by military and industry partners that will enhance the CG's ability to perform maintenance on air, surface, and shore assets with the following goals:
 - Reduce the labor burden of technicians by providing current maintenance information via augmented reality technology.
 - Increase the availability of assets by improving the efficiency of maintenance.
- Develop processes and procedures to ensure tie-in and compliance with CG maintenance procedures.
- Create a roadmap that will enable sponsor to generate requirements and successfully implement augmented reality capabilities throughout the CG.



Key Milestone / Deliverable Schedule:

Project Start.....	30 Nov 17	✓
Augmented Reality Capabilities Market Research.....	6 Feb 18	✓
USCG Mission Support Use Case Selection.....	30 Mar 18	✓
Augmented Reality Use Case Roadmap.....	May 18	
★ Market Research/Technology Assessment Briefing.....	Aug 18	
First Augmented Reality Agile Development Sprint and Demo.....	Sep 18	
Final Augmented Reality Agile Development Sprint and Demo.....	Jan 19	
Limited User Evaluation(s).....	Apr 19	
★ Augmented Reality Capabilities to Improve CG Mission Support Final Report and Brief.....	Aug 19	
Project End.....	Aug 19	

★ Indicates RDC product.

Sponsor: FORCECOM
Stakeholder(s): CG-1B3, CG-751, CG-761, CG-45, SFLC, CGA

Project #: 8107
Expected Benefit: Influence Mission Support efficiencies

Notes:

- Includes partnerships with MIT Lincoln Laboratory, NAVSEA Portsmouth Naval Shipyard, Microsoft Technology Center Boston.
- Explores Agile Scrum development methods.
- Supports the DCO/DCMS chartered Mobile Integrated Product Team objectives and Coast Guard Human Capital Strategy.

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Mobile Technology for Operational Efficiency

Mission Need: Enhance field operations by using mobile technology to capture and access operational data.

Project Objectives:

- Prototype a flexible communications/information system with processes, and procedures to enhance the CG's ability to transfer information that will assist personnel during field operations.
- Review Department of Defense (DoD)/Defense Information Systems Agency (DISA) mobility programs.
- Develop processes/procedures to ensure tie-in and compliance with CG Program of Record/System Architecture/System Development Life Cycle.



Key Milestone / Deliverable Schedule:

Project Start.....	6 Mar 15 ✓
Prototype System.....	Apr 18
Technology Demonstration Start.....	Apr 18
Review DoD/DISA Mobility Programs.....	Jun 18
Technology Demonstration Finish.....	Sep 18
★ Mobile Technology for Operational Efficiency: System Test Results and Recommendations.....	Nov 18
Project End.....	Nov 18

Sponsor: CG-761
Stakeholder(s): CG-1B3, AREA-6, CG-6, C4IT-SC, OSC, TISCOM

Project #: 8114	Expected Benefit: Improve operational performance/efficiency/mission execution/resiliency
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- Notes:**
- Leverage DoD/DISA solutions.
 - Leverage past PDA efforts.
 - Supports the Coast Guard Western Hemisphere Strategy.
 - Align with Mobility Integrated Product Team.

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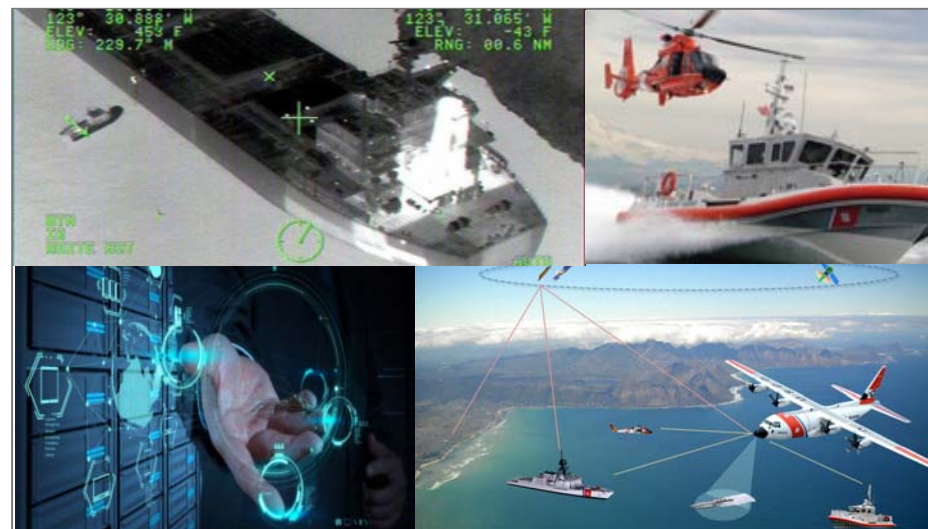
★ Indicates RDC product.

Intelligence, Surveillance and Reconnaissance (ISR) Enterprise Data Network Study and Analysis

Mission Need: Enable intelligence-driven operations and collaboration for continued decision advantage in support of all Coast Guard missions.

Project Objectives:

- Establish the necessary cross-component Joint Requirements Council (JRC) chartered team to support the development and deployment of a Department of Homeland Security (DHS) enterprise ISR data network solution.
- Support all Need Validation Analysis and Mission Need objectives to successfully obtain Acquisition Decision Event (ADE) 0 and 1 approvals.
- Perform technology demonstrations (shore, surface, air) as needed to inform Mission Need documentation deliverables.
- Specifically focus on cyber security related requirements as solution alternatives are analyzed.
- Support development of requisite Coast Guard Resource Proposals.
- Ensure the smooth transition into the Analyze/Select phase of the Acquisition Lifecycle Framework.



Key Milestone / Deliverable Schedule:

Project Start.....	14 Jun 17 ✓
Standup ISR Enterprise Data Network Integrated Product Team (IPT)	24 Nov 17 ✓
<i>Need Validation Analysis – ADE 0</i>	
★ Capability Analysis Study Plan Tactical DHS ISR Data Network.....	20 Dec 17 ✓
★ ISR Enterprise Data Network Capability Analysis Report (CAR).....	Jan 19
<i>Mission Need – ADE 1</i>	
Technology Demonstration(s) to Inform Mission Need.....	Apr 19
★ ISR Enterprise Data Network Mission Needs Statement (MNS).....	Jul 19
★ ISR Enterprise Data Network Concept of Operations (CONOPs).....	Jan 20
Project End.....	Feb 20

★ Indicates RDC product.

Sponsor: CG-26
Stakeholder(s): CG-93, CG-711/731/741/751/761/791/771, CG-64, MIFC, ICC, C4IT SC, CYBERCOM, AREA-6

Project #: 8116
Expected Benefit: Inform follow-on acquisition/enterprise deployment

- Notes:**
- Align with DHS/Department of Defense (DoD) and Intelligence Community IT Enterprise solutions, including the Integrated Maritime Domain Environment (IMDE).
 - Partner with DHS Science and Technology.
 - Supports the Coast Guard Western Hemisphere, Cyber Security, and ISR Strategies.
 - Align with RDC Long Range/Ultra-long Endurance UAS Analysis.

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Document and Media Exploitation (DOMEX) Technology Evolution Capability Research

Mission Need: An agile technology evolution capability to support DOMEX activities to stay ahead of our adversaries.

Project Objectives:

- Research the establishment of a technology evolution component to support DOMEX capabilities that can develop, test and evaluate new technology being utilized by our adversaries to defeat CG operational capabilities.
- Research a Centralized DOMEX Derived Data IT solution. Create an implementation plan that includes costs for the development of a centralized CG DOMEX IT infrastructure. This includes facility costs, data backup/redundancy costs, hardware costs, software costs, network infrastructure costs, data storage costs, installation costs, manpower costs and any other information assurance associated costs. Examine opportunities to leverage existing DHS DOMEX infrastructure, government and commercial cloud solutions.
- Aid in the development of a Resource Proposal (RP) to support enhanced DOMEX lab capabilities.

Key Milestone / Deliverable Schedule:

Project Start.....	2 Oct 17 ✓
Assessment of Current State of CG DOMEX Technology/IT Infrastructure.....	30 Mar 18 ✓
DOMEX Technology/IT Evolution Capability Market Research (IT, Tools, Facilities, Human Capital).....	May 18
DOMEX Functional Requirements Development.....	Aug 18
★ Market Research/Functional Requirements Briefing.....	Oct 18
Develop Courses of Action (COA)	Jan 19
Test Selected Technology/IT Evolution Tools.....	Apr 19
Development of RP Elements.....	Aug 19
★ DOMEX Technology/IT Evolution Capability Final Report	Nov 19
Project End.....	Nov 19

★ Indicates RDC product.



Sponsor: CG-257
Stakeholder(s): CG-MLE, CG-65, CGIS, CGCIS, ICC, C3CEN, CG-INV

Project #: 8309	Expected Benefit: Improve operational performance/efficiency/mission execution/resiliency
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Notes:

- Supports CG Western Hemisphere Strategy (defined in MLE 3.0).
- Supports CG Intelligence Guidance 2018-2020 (Goal 5e).
- Partner with the Defense Intelligence Agency (DIA) National Media Exploitation Center’s Science and Technology Integration Lab and HSI’s Cyber Crime Center.

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Cybersecurity Vulnerabilities, Threats, and Risk Mitigation Strategies for Coast Guard Surface and Air Assets

Mission Need: CG platforms require resistance and resilience to cyber attacks.

Project Objectives:

- Conduct cyber security risk research analysis for Global Positioning System (GPS), Automatic Identification System (AIS) and specific mission oriented systems dependent on position navigation and timing.
- Partner with Department of Homeland Security (DHS) Science and Technology (S&T) and Office of Naval Research (ONR) to test specific equipment vulnerabilities and derive the impact and consequence of attacks to identify defense strategies.
- Review CG platform configurations for computer controlled systems. Using design documentation and ship inspection details, perform cyber assessments of various vessels and aircraft. Partner with ONR Resilient Hull, Mechanical, and Electrical Security (RHIMES), National Labs, and Federally Funded Research and Development Centers (FFRDC) to develop mitigations.



Key Milestone / Deliverable Schedule:

Project Start.....	3 Oct 16 ✓
Inventory and Acquire GPS/AIS Units.....	22 Dec 16 ✓
Conduct GPS/AIS Testing	22 Jul 17 ✓
Inventory Surface Systems for Evaluation.....	26 Oct 17 ✓
★ GPS/AIS Cyber Assessment Report	22 Feb 18 ✓
Conduct Surface Assessment.....	Apr 18
Inventory Airborne Systems for Evaluation.....	May 18
★ Surface Asset Vulnerability Report.....	Jun 18
Conduct Aviation Assessment.....	Oct 18
★ Airborne Asset Vulnerability Report.....	Jan 19
Complete RHIMES Cyber Design Process on USCGC.....	Aug 19
Conduct Cyber Testing on USCGC.....	Nov 19
★ Cybersecurity for Coast Guard Surface and Air Assets.....	Jul 20
Project End.....	Sep 20

★ Indicates RDC product.

Sponsor: CG-791
Stakeholder(s): CG-761, CG-711, CG-751, CG-933, C4IT SC, CYBERCOM

Project #: 8502
Expected Benefit: Direct Product Line/Core Technology Support (Tech refresh, DMS, etc)

Notes:

- Partner with DHS S&T First Responders Group, Cyber Security Division, ONR RHIMES program.
- Leverage internal research and development efforts at MITRE FFRDC.
- Collaborate with Oak Ridge/Pacific National Labs, Johns Hopkins Applied Physics Lab, U.S. Merchant Marine Academy and NPS.
- Supports the Coast Guard Cyber Strategy.

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Survival Modeling, Reporting, and Statistics

Mission Need: Address limitations of survival modeling and statistics before their direct incorporation into the Search and Rescue Optimal Planning System (SAROPS).

Project Objectives:

- Research the state of survival modeling, including the availability of “3rd generation,” human-thermal models, and their ability to accurately predict ranges of survival time in waters warmer than 15°C (59°F).
- Determine whether the existing Probability of Survival Decision Aid or other models can account for, or incorporate, factors and parameters beyond heat production and heat loss.
- Identify and implement strategies to adapt model(s) to include additional parameters.
- Develop a survival database to validate model(s) against statistics.
- Deliver a survival-model module for plug-in application to the SAROPS.



Key Milestone / Deliverable Schedule:

Project Start.....	1 Nov 17 ✓
Investigate Requirements and Application of Requirements.....	Apr 18
Conduct Facilitated Workshop	Jun 18
★ Survival Information Database Implementation Guidance.....	Jul 18
★ Decision Memo - Selection of Candidate Model(s).....	Nov 18
★ Survival Model Enhancement and Adaptation.....	Feb 20
★ Enhanced CG Survival Model and Implementation Guidance	Mar 21
Project End.....	Apr 21

Sponsor:

CG-SAR

Stakeholder(s): AREA-5, CG-5R, CG-761

Project #:
1008

Expected Benefit:

Improve operational performance/efficiency/mission execution/resiliency

Notes:

- Carries forward RDC survival-related work with DoD labs.
- Potential efficiencies in saving lives while reducing time on sortie.
- Explore partnerships with National Labs and University Centers.
- Supports the Coast Guard Western Hemisphere Strategy.

RDC POC:

Mr. M. J. Lewandowski

CG-926 Domain Lead:

Ms. Karin Messenger

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

★ Indicates RDC product.



Alternatives to Pyrotechnic Distress Signals

Mission Need: Improve distress signal devices.

Project Objectives:

- Determine suitability of potential alternatives to pyrotechnic visual distress signals.
- Narrow the optimal distress signal characteristics range by evaluating human-subject response to laboratory generated visual-stimuli.
- Validate laboratory findings through human-subject field test.
- Recommend optimal visual distress signal characteristics.
- Investigate near-infrared signal characteristic to allow detection by filtered night vision imaging systems.
- Conduct field testing to ensure actual capability.



Key Milestone / Deliverable Schedule:

Project Start	1 Nov 10 ✓
★ Suitability of Potential Alternatives to Pyrotechnic Distress Signals.....	21 Feb 12 ✓
★ Alternatives to Pyrotechnic Distress Signals; Laboratory and Field Studies.....	29 Jan 15 ✓
★ Alternatives to Pyrotechnic Distress Signals; Supplemental Report.....	27 Aug 15 ✓
★ Alternatives to Pyrotechnic Distress Signals; Additional Signal Evaluation	29 Jun 17 ✓
Project End	Apr 18

Sponsor: CG-ENG
Stakeholder(s): CG-SAR, CG-BSX, DoD

Project #: 1101
Expected Benefit: Influence international standards

- Notes:**
- Supports the Coast Guard Western Hemisphere Strategy.
 - Establish follow-on project: Distress Signal Performance Baseline.

RDC POC:
Mr. M. J. Lewandowski

CG-926 Domain Lead:
Ms. Karin Messenger

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

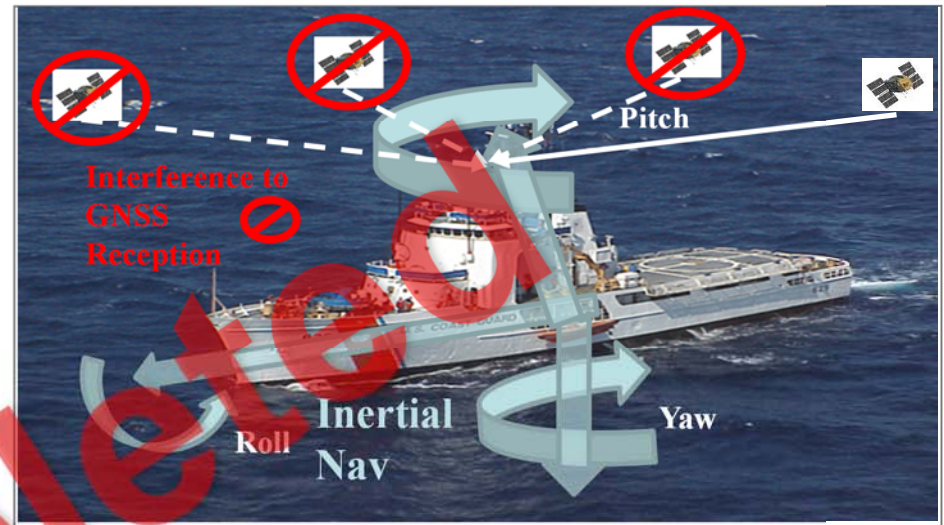
★ Indicates RDC product.

Assessment and Demonstration of Inertial Navigation System (INS) Technology

Mission Need: Reduce reliance on sole means of navigation and harden navigation capabilities to withstand unintentional and intentional outages or hacking of GNSS based navigation.

Project Objectives:

- Research INS technologies that can mitigate the impact losses of Global Navigation Satellite System (GNSS) service on the navigational process.
- Determine existing products available through market research.
- Determine state of technology advancements on near-term and long-term future capabilities.



Key Milestone / Deliverable Schedule:

Project Start.....	1 Oct 16 ✓
Conduct Market Research.....	29 Aug 17 ✓
★ Mitigating Cyber Threats Against Marine Global Navigation Satellite Systems (GNSS) Receivers Using Inertial Navigation Systems.....	2 Jan 18 ✓
Project End.....	2 Jan 18 ✓

Sponsor: CG-5PW, CG-NAV

Stakeholder(s): CG-761, CG-751, CG-731, CYBERCOM

Project #: 2302	Expected Benefit: Improve operational performance/efficiency/mission execution/resiliency
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Notes:

- Supports the Coast Guard Cyber Strategy.
- Leverage Office of Naval Research, national labs, academia including the U.S. Coast Guard Academy, and international/national standards communities.

RDC POC: Mr. Lee Luft	CG-926 Domain Lead: Ms. Karin Messenger
---------------------------------	---

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

★ Indicates RDC product.



Acquisition Directorate
Research & Development Center

Develop an Environmentally Friendly Buoy Mooring System

Mission Need: A buoy mooring system for environmentally sensitive areas that would avoid directly damaging nearby delicate plants and animals in the benthic zone.

Project Objectives:

- Conduct a market research to determine alternatives to traditional buoy mooring systems.
- Develop and test prototypes to determine best buoy mooring technology for environmentally sensitive areas.



Key Milestone / Deliverable Schedule:

Project Start	10 Nov 14	✓
Conduct Market Research.....	25 Feb 15	✓
Key Decision Point (KDP): Broad Area Announcement or Prize Competition.....	14 Oct 15	✓
KDP: Prototype Development.....	2 Jun 16	✓
Demonstration Start.....	Apr 18	
Demonstration End.....	May 20	
KDP: Smart Technology.....	Jul 20	
Destructive Testing.....	Jul 20	
★ Environmentally Friendly Buoy Mooring System Prototype Final Report.....	Sep 20	
Project End	Oct 20	

Sponsor: CG-NAV
Stakeholder(s): CG-AtoN/MER

Project #: 2702	Expected Benefit: Improve operational performance/efficiency/mission execution/resiliency
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- Notes:**
- Supports Coral Reef Protection Executive Order 13089.
 - Supports the Coast Guard Energy Renaissance Action Plan.

RDC POC:
Ms. Danielle Elam

CG-926 Domain Lead:
Ms. Karin Messenger

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

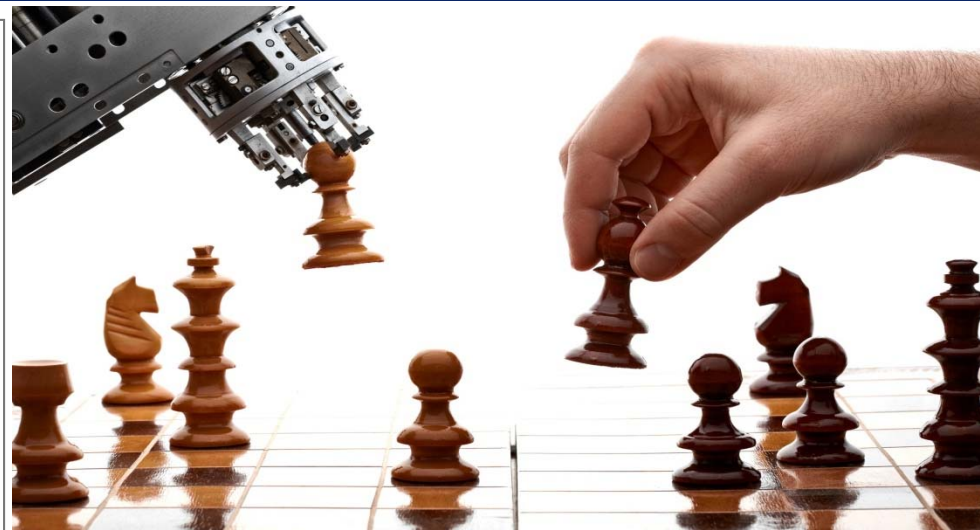
★ Indicates RDC product.

Exploring Machine Learning (ML) for Application In USCG Mission Planning & Disaster Response

Mission Need: Improve the Coast Guard's emergency preparedness and increase response effectiveness in active disasters.

Project Objectives:

- Phase I – Literature research and assessment of the body of knowledge for the application of Artificial Intelligence (AI) and Machine Learning (ML) to disaster response COA development.
- Assess how the use of AI/ML could improve the efficiency of CG planning and response process during a crisis.
- Develop a proof of concept to validate AI/ML support to disaster response using open source data for sponsor approval.
- Phase II – With sponsor approval execute the proof of concept.



Key Milestone / Deliverable Schedule:

Project Start.....	20 Oct 17	✓
Phase I - Conduct Literature Review and Assessment.....	Apr 18	
Key Decision Point (KDP): Brief Sponsor on Lit Review/State of ML Proof of Concept Evaluation	Dec 18	
★ State of the Research/Proposed Proof of Concept.....	Dec 18	
Execute the Phase II Proof of Concept.....	Jun 19	
KDP: Phase II Proof of Concept/Prototype Evaluation	Jun 19	
★ Proof of Concept - Case Study Haiti Earthquake Response.....	Nov 19	
Project End.....	Dec 19	

★ Indicates RDC product.

Sponsor:	CG-CPE
Stakeholder(s):	CG-CVC, CG-2, LANT-35, PAC-53
Project #:	Expected Benefit:
3309	Improve operational performance/efficiency/mission execution/resiliency
Notes:	
<ul style="list-style-type: none"> • Supports the Coast Guard Energy Resilience Action Plan. • Collaboration to be done with the Department of Homeland Security Center – University of Illinois (Champaign-Urbana), FIU Academy for International Preparedness and the University of Southern California Center for Artificial Intelligence for Social Justice. 	
RDC POC:	CG-926 Domain Lead:
Dr. Joe DiRenzo III	Mr. Curtis Catanach
<i>For more information, call (860) 271-2600 or e-mail RDC-Info@uscg.mil</i>	

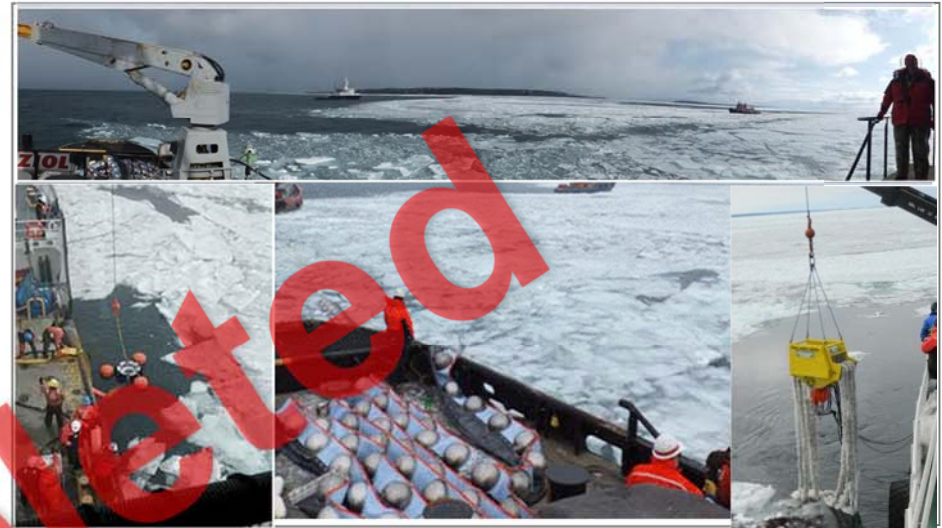


Response to Oil In Ice

Mission Need: A group of methodologies to minimize the damage to the environment caused by spilled oil in extreme cold regions of the Arctic and Northern U.S.

Project Objectives:

- Develop equipment and techniques that can be used successfully to detect, track and recover oil in ice filled waters in all conditions.
- Test operational deployments of equipment by conducting a series of demonstrations in the Great Lakes and the Arctic of increasing complexity.
- Evaluate state of the art for response by supporting National Academy of Science (NAS) Arctic Response Assessment.



Key Milestone / Deliverable Schedule:

Project Start.....	2 Nov 09 ✓
Great Lakes Demonstration 3.....	22 Feb 13 ✓
★ Final Great Lakes Demonstration 3 Report.....	14 Jun 13 ✓
★ Review Recommendations from NAS Report.....	25 Jul 14 ✓
★ Arctic Shield 2014 Demonstration Report.....	16 Mar 15 ✓
Decision Milestone: Follow-on Work and Demonstration 4.....	26 Feb 15 ✓
Oil-in-Ice Demonstration 4	11 Aug 16 ✓
★ Oil in Ice Demonstration 4 Quick-Look Report.....	11 Jan 17 ✓
★ Final Report and Input for FOOSC Guide.....	13 Mar 17 ✓
Project End.....	30 Mar 18 ✓

★ Indicates RDC product.

Sponsor: CG-MER
Stakeholder(s): D9, D17, BSEE, USEPA, LANT, PAC-7

Project #: 4701	Expected Benefit: Improve operational performance/efficiency/mission execution/resiliency
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- Notes:**
- Partnering with Great Lakes Restoration Initiative (GLRI).
 - Supports the Coast Guard Energy Renaissance Action Plan.

RDC POC:
Mr. Alex Balsley

CG-926 Domain Lead:
Ms. Karin Messenger

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Detection and Mitigation of Oil within the Water Column

Mission Need: Accurately detect and mitigate subsurface oil within the water column to 10,000 feet.

Project Objectives:

- Develop new spill response technologies that detect and mitigate oil within the water column down to 10,000 ft.
 - Operate in all environmental conditions.
 - Locate and mark subsurface oil for possible removal.
 - High resolution for detecting small droplets of oil.
- Technology to be capable of operating off vessels of opportunity.
- Addresses near shore and rivers.



Key Milestone / Deliverable Schedule:

Project Start.....	3 Aug 11 ✓
Start Design Phase.....	2 Apr 12 ✓
★ Detection of Oil in Water Column: Sensor Design.....	4 Mar 13 ✓
★ Detection of Oil in Water Column: Detection Prototype Tests ...	28 Jul 14 ✓
Start Mitigation Concept Development.....	23 Jun 15 ✓
★ Mitigation of Oil in Water Column: Concept Development...	2 Jun 16 ✓
Mitigation Prototype Testing (Ohmsett).....	13 Jan 17 ✓
★ Mitigation of Oil in Water Column: Mitigation Prototype Tests.....	19 Jun 17 ✓
★ In situ Monitoring of Dispersion in the Water Column.....	17 Jan 18 ✓
Project End.....	17 Jan 18 ✓

★ Indicates RDC product.

Sponsor: CG-MER, BSEE

Stakeholder(s): ICCOPR

Project #: 4702	Expected Benefit: Improve operational performance/efficiency/mission execution/resiliency
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Notes:

- Includes funding from FY11 Congressionally directed Oil Spill Research.
- Partnering with Bureau of Safety and Environmental Enforcement (BSEE).
- Supports the Coast Guard Energy Renaissance Action Plan.

RDC POC:
Mr. Alexander Balsley

CG-926 Domain Lead:
Ms. Karin Messenger

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e-mail RDC-Info@uscg.mil*



Improved In-Situ Burning (ISB) for Offshore Use

Mission Need: Better decision-making and operational tools for using ISB as a response option.

Project Objectives:

- Identify capability gaps that industry is not addressing.
- Determine best practices for operational use of ISB.
- Develop new equipment, such as igniters or fire boom, and procedures to support ISB.
- Perform short-term and long-term enhancements of Little Sand Island (LSI) and the burn pan.
- Annually collect and publish burn results for use by academia, national labs, and international stakeholders.



Key Milestone / Deliverable Schedule:

Project Start	10 Feb 14 ✓
★ ISB Gaps Analysis	19 Feb 15 ✓
★ Initial Burn Pan Testing Results	3 Mar 16 ✓
Key Decision Point (KDP): Project Path Forward	17 Jun 16 ✓
Pacific Northwest National Lab (PNNL) Testing at LSI.....	21 Oct 16 ✓
Worcester Polytechnic Institute Testing (WPI) at LSI	17 Mar 17 ✓
★ JMTF Summary Burn Report FY17.....	19 Sep 17 ✓
Bureau of Safety and Environmental Enforcement (BSEE)	
Burn Projects Initialized (3-4 Potential).....	Aug 18
★ JMTF Summary Burn Report FY18.....	Sep 18
★ JMTF Summary Burn Report FY19.....	Sep 19
Project End.....	Dec 20

★ Indicates RDC product.

Sponsor: BSEE, CG-MER
Stakeholder(s): NOAA, LANT, PAC

Project #: 4704	Expected Benefit: Improve operational performance/efficiency/mission execution/resiliency
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Notes:

- Joint funding with the BSEE.
- Partner with academia and national labs to ensure result visibility and access.
- Supports the Coast Guard Energy Renaissance Action Plan.

RDC POC:
LT Chuck Clark

CG-926 Domain Lead:
Ms. Karin Messenger

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e-mail RDC-Info@uscg.mil*



Oil Sands Products Spill Response

Mission Need: Research and develop enhanced decision-making tools and recovery/mitigation tools for responding to spilled oil sands products.

Project Objectives:

- Analyze and assess behavior, response issues and strategies in fresh and salt waters; and develop tactics and/or technologies that address gaps.
- Provide decision making/job aid tools for Coast Guard and commercial responders to aid in response planning and execution for spills of oil sand products in fresh and salt water.



Key Milestone / Deliverable Schedule:

Project Start	31 Aug 14 ✓
★ Response to Oil Sands Products Assessment.....	29 Sep 15 ✓
★ Underwater Sediment Sampling Research	19 Jan 17 ✓
Oil Sands Products Skimmer Evaluation.....	16 Jun 17 ✓
Development of Bottom Mitigation Techniques Part 1.....	21 Sep 17 ✓
Bottom Mitigation Techniques Part 2 First Inland Test.....	Apr 18
Bottom Mitigation Techniques Part 2 Offshore Test.....	Jun 18
Bottom Mitigation Techniques Part 2 Second Inland Test	Aug 18
★ Mitigation of Oil Moving Along the Bottom.....	Feb 19
★ Job Aid for Mitigation of Oil Sands Products	Jul 19
Project End	Jul 19

★ Indicates RDC product.

Sponsor: CG-MER

Stakeholder(s): EPA, AREA-54, NOAA

Project #: 4705	Expected Benefit: Improve operational performance/efficiency/mission execution/resiliency
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Notes:

- Partnering with Great Lakes Restoration Initiative under the Clean water Act 33 USC 1251-1387 for FY17 and before.
- Cooperative Research and Development Agreement with Enbridge Pipeline.
- Supports the Coast Guard Energy Renaissance Action Plan.

RDC POC:
Ms. Danielle Elam

CG-926 Domain Lead:
Ms. Karin Messenger

*For more information, call (860) 271-2600 or
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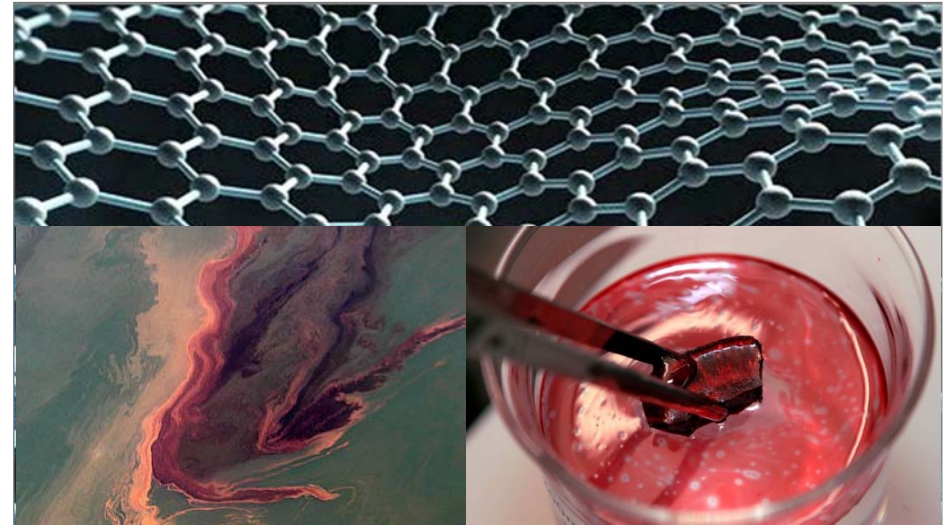


Oil Spill Response Technology Evaluation Process Research

Mission Need: A process for the evaluation of proposed oil spill response technologies for the Coast Guard's use and determination of their technology maturity and economic feasibility.

Project Objectives:

- Research repeatable technology evaluation process that can be followed during a non-emergency scenario when an oil spill response technology has been submitted for consideration.
- Determine the efficacy of the evaluation process by using it to analyze submitted technologies' technical maturity, potential usefulness, and economic feasibility.
- Provide the final evaluation process to the Office of Marine Environmental Response Policy (CG-MER) as part of the Oil Spill Response Technology Evaluation report.



Key Milestone / Deliverable Schedule:

Project Start.....	1 Oct 16 ✓
Market Research.....	20 Jan 17 ✓
Develop Process Framework.....	9 Feb 17 ✓
Key Decision Point: Review Initial Evaluation Process.....	13 Mar 17 ✓
Evaluate Proposal Submissions.....	31 Jan 18 ✓
★ Oil Spill Response Technology Evaluation Report.....	Jun 18
Project End.....	Aug 18

Sponsor: CG-MER

Stakeholder(s): ICCOPR

Project #: 4708	Expected Benefit: Improve operational performance/efficiency/mission execution/resiliency
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Notes:

- Supports the Coast Guard Energy Renaissance Action Plan.

RDC POC:
Mr. Alexander Balsley

CG-926 Domain Lead:
Ms. Karin Messenger

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★ Indicates RDC product.

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

Mission Need: An ERSP calculator to include response systems for the entire nearshore and inland operating environment.

Project Objectives:

- Research the viability of the current ERSP and the calculator's initial impact in the offshore oil spill response industry.
- With industry and interagency (U.S. Environmental Protection Agency) representatives, assess ERSP as a whole to determine if it effectively rectifies the Economic and Development Review Committee challenges experienced during Deepwater Horizon.
- Research inland and nearshore oil recovery equipment and efficiencies.
- Research if ERSP can be expanded to include the entire near shore and inland operating environment.
- Expand ERSP to include inland and nearshore recovery modeling in calculator.



Key Milestone / Deliverable Schedule:

Project Start.....	1 Oct 16	✓
Feasibility Workshop.....	21 Jun 17	✓
★ Feasibility of Extending the ERSP Report	20 Sep 17	✓
Determine Feasibility to Enhance Current Calculator Tool.....	27 Sep 17	✓
★ Preliminary Analysis of Planning Factors White Paper	Nov 18	
★ Preliminary Factors, Requirements and Conceptual Model	Oct 19	
★ Operational Environment Calculator Design Document.....	Jan 20	
Key Decision Point (KDP): ERSP Calculator Enhancement.....	Jan 20	
KDP: Calculator Tool Validation Testing.....	Jun 20	
★ National Academy of Sciences Review of Inland ERSP.....	Dec 20	
KDP: NAS Review for Upgrading Inland ERSP	Dec 20	
★ Inland ERSP Calculator Software and User Guide.....	Apr 21	
Project End	Apr 21	

★ Indicates RDC product.

Sponsor: CG-MER
Stakeholder(s): BSEE, AREA-54

Project #: 4710	Expected Benefit: Improve operational performance/efficiency/mission execution/resiliency
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Notes:

- Partner with BSEE.
- Supports the Coast Guard Energy Renaissance Action Plan.

RDC POC:
LTJG Hessamoddin Shafeian

CG-926 Domain Lead:
Ms. Karin Messenger

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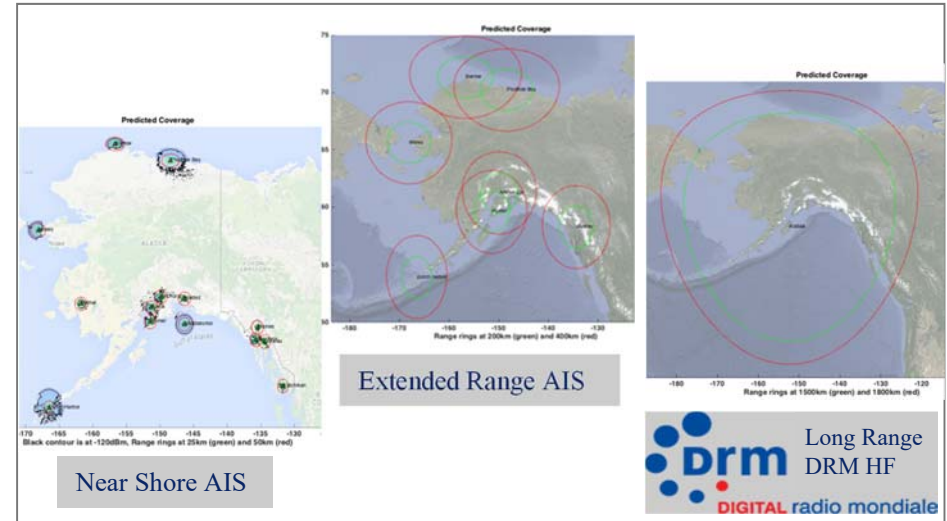


Next Generation Arctic Navigational Safety Information System

Mission Need: Reliable critical navigational safety information to identify, assess, and mitigate navigational risks in the Arctic region.

Project Objectives:

- Partner with Marine Exchange Alaska (MXAK) to:
 - Define the prototype near shore system that will be developed under this public/private partnership.
 - Develop the near shore Arctic Navigation Safety Information System (ANSIS) prototype system for the technology demonstration.
 - Install, test, and utilize ANSIS technology demonstration system.
 - Monitor ANSIS technology demonstration system performance and mariner utilization.
- Evaluate/test other technologies to extend range of near shore ANSIS:
 - Extended range Automatic Identification System (AIS) - Enhancements to improve AIS radio-link performance.
 - Long range (Digital Radio Mondiale (DRM) 30 High Frequency (HF)) ANSIS.



Key Milestone / Deliverable Schedule:

Project Start.....	4 Nov 13	✓
★ ANSIS Functional Design Letter Report.....	9 Sep 14	✓
Develop/Test ANSIS Near Shore Tech Demo System	27 Jul 15	✓
★ Maritime Geo-Fence Letter Report.....	25 Jul 16	✓
Evaluate/Test ANSIS Long Range DRM HF Tech Demo System...	24 Oct 16	✓
Develop/Test ANSIS AIS Extended Range Tech Demo System.....	23 Jan 17	✓
★ White Paper Review of International Maritime Organization Maritime Safety Information Systems.....	23 Oct 17	✓
★ Long Range (DRM30 HF) ANSIS Tech Demo Report	Apr 18	
★ Extended Range (AIS Enhancements) to Improve Radio-Link Performance.....	Jul 18	
★ Near Shore (AIS Transmit) ANSIS Tech Demo/Transition Report.....	Aug 18	
Project End.....	Sep 18	

★ Indicates RDC product.

Sponsor: CG-NAV

Stakeholder(s): CG-761, C3CEN, D17, PAC, CG-5PW, CG-652

Project #: 6211	Expected Benefit: Improve operational performance/efficiency/mission execution/resiliency
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Notes:

- Project includes use of a Cooperative Research and Development Agreement.
- Supports development and implementation of CG Arctic strategy and public/private partnerships.
- Leverage other RDC efforts, including Project 2722, 5711, & 8113.

RDC POC: Ms. Irene Gonin	CG-926 Domain Lead: Ms. Karin Messenger
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For more information, call (860) 271-2600 or e-mail RDC-Info@uscg.mil



Building and Retaining a Cyber Workforce

Mission Need: Identify CG personnel with the potential to serve in the Cyber field.

Project Objectives:

- Research and evaluate to determine the utility of existing tools (such as the Tailored Adaptive Personality Assessment System (TAPAS) and the ASVAB Cyber Test), as well as tools under development (e.g., the Adaptive Vocational Interest Diagnostic (AVID) and the Cyber Aptitude and Talent Assessment (CATA)).
- Develop a repeatable method to use relevant tools to test current and potential Cyber Workforce personnel. Determine whether these tools have predictive validity.
- Ultimately, provide CGCYBER and CG-791 with one or more tools that will more effectively identify personnel with the aptitude and personality traits to be successful in CG cyber jobs.

Key Milestone / Deliverable Schedule:

Project Start.....	13 Nov 17 ✓
Become Familiar with Cyber Aptitude Tools (TAPAS and the Cyber Test).....	16 Mar 18 ✓
Use Cyber Tools to Test Current and Prospective CG IT and IS Staff.....	Nov 18
Compare TAPAS & Cyber Test Scores with IT/IS Success.....	Mar 19
★ Value of TAPAS & Cyber Tests to Predict Success in Coast Guard Cyber Jobs	Aug 19
Key Decision Point (KDP): Evaluate CATA & AVID in FY20?...	Aug 19
Transition Successful Cyber Tool(s) to the Personnel Service Center (PSC) to Continue Validation	Nov 19
Project End (KDP dependent).....	Nov 19

★ Indicates RDC product.



Sponsor: CG-PSC

Stakeholder(s): CG-791, CGCYBER, FORCECOM, DCMS-81

Project #: 8205	Expected Benefit: Influence Mission Support efficiencies
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Notes:

- Supports the Coast Guard Human Capital and Cyber Strategies.
- Ties into national cyber workforce initiative. Will examine U.S. CERT Cybersecurity Workforce Framework for application.

RDC POC:
Dr. Anita Rothblum

CG-926 Domain Lead:
Ms. Karin Messenger

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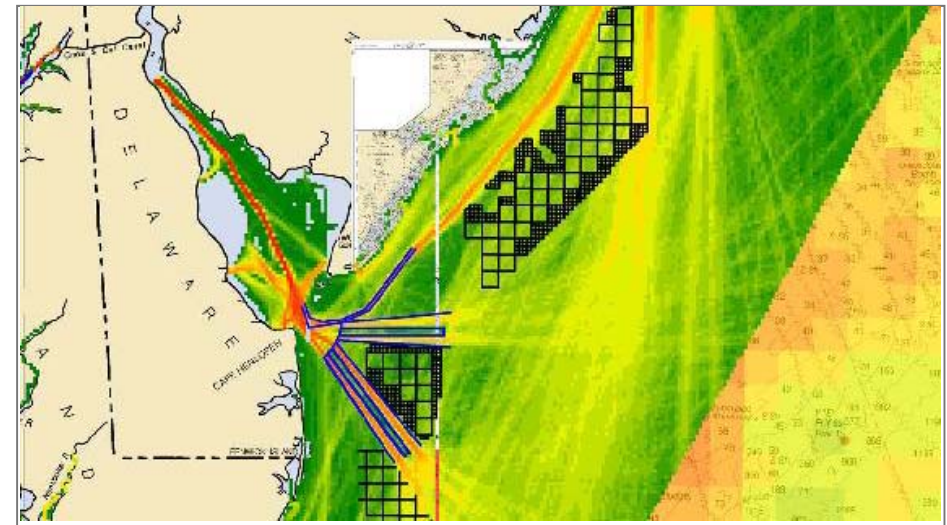


Research into Navigational Safety Risk Modeling and Analysis Tool

Mission Need: Capability to fully characterize the impact of rerouting traffic, funneling traffic, and placement of offshore structures in terms of risk.

Project Objectives:

- Analytical modeling process and analysis tools to predict changes in traffic patterns and determine the resultant changes in navigational safety risk.
- The ability to assess the proposed wind energy areas to further refine appropriate distances between shipping and structures.
- The ability to assess the need to create routing measures to mitigate risk posed by fixed structures.
- Review Pacific Northwest National Laboratory tool.



Key Milestone / Deliverable Schedule:

Project Start.....	3 Oct 16 ✓
Assessment of Risk Modeling Tools.....	Jun 18
Creation of an Offshore Energy Risk Assessment Tool.....	Oct 18
AIS Risk Modeling Data Package.....	Dec 18
Test Risk Modeling Package.....	Jan 19
★ Risk Assessment Model.....	Feb 19
Key Decision Point to Continue	Mar 19
★ After Action Report.....	Jun 19
Project End.....	Jul 19

Sponsor: CG-5PW, CG-NAV

Stakeholder(s): LANT -54

Project #: 7529	Expected Benefit: Influence Mission Support efficiencies
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Notes:

- Supports the Coast Guard Western Hemisphere Strategy and Energy Renaissance Action Plan.
- Continuation of the Atlantic Coast Port Access Route Study (ACPARS) with requirements as documented in the Interim Report from Jul 2012 and the Final Report from Feb 2016.

RDC POC:
Ms. Christine Hansen

CG-926 Domain Lead:
Mr. Curtis Catanach

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★ Indicates RDC product.



Acquisition Directorate
Research & Development Center

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Use of Modern Data Analytics to Improve Risk Based Allocation of Prevention Resources

Mission Need: Risk based operational resource allocation for improved inspections efficiency.

Project Objectives:

- Improve understanding of risk drivers to streamline Port State Control (PSC) inspection activities.
- Complete comprehensive market research assessment.
- Prioritize resource allocation through careful consideration of risk.



Key Milestone / Deliverable Schedule:

Project Start.....	16 Oct 17 ✓
<u>Phase 1: Investigation</u>	
Refine List of Risk Drivers.....	May 18
Review Current Use of/Need for Risk-based Decision-making Tools.....	May 18
Data Analysis and Review (Marine Information for Safety and Law Enforcement).....	Jun 18
Issue Request for Information/Conduct Market Research of Available Data Analytics/Model Based Risk Management Tools.....	Jul 18
★ Recommendations to Streamline PSC Inspections Using Risk-based Decision Tools.....	Sep 18
KDP: Decision to Continue to Phase 2.....	Nov 18
<u>Phase 2: Develop Automated Vessel Inspection Tool for Foreign Vessel Inspections</u>	
Project End.....	Feb 20

Sponsor: CG-CVC

Stakeholder(s): CG-5P, CG-741, MFIC, LANT, PAC

Project #: 7531	Expected Benefit: Improve operational performance/efficiency/mission execution/resiliency
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Notes:

- Supports the Coast Guard Western Hemisphere Strategy and Energy Renaissance Action Plan.

RDC POC:
Ms. Grace Python

CG-926 Domain Lead:
Mr. Curtis Catanach

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★ Indicates RDC product.



Acquisition Directorate
Research & Development Center

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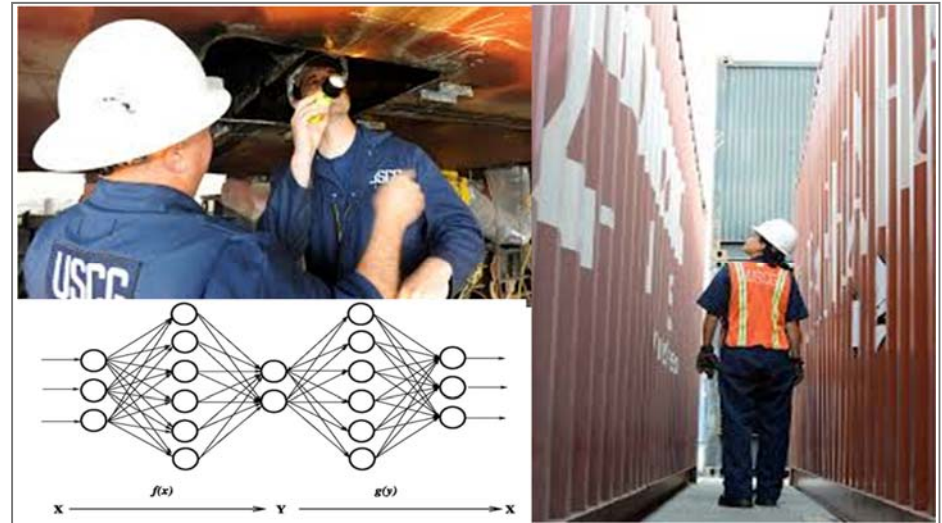
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Improved Efficiency in Domestic Inspections

Mission Need: Improve risk based allocation of prevention resources.

Project Objectives:

- Determine factors that influence a vessel's probability of having a safety/security violation.
- Develop an algorithm to predict vessel's risk of non-compliance with safety/security regulations.
- Determine optimal classification decision rule for vessel violation probabilities to optimize detection with limited inspections resources.
- Create a tool with a Graphical User Interface (GUI) to implement force dependent fleet schedules for individual units/Areas of Responsibility.



Key Milestone / Deliverable Schedule:

Project Start.....	16 Oct 17 ✓
Data Analysis and Review (Marine Information for Safety and Law Enforcement).....	May 18
Develop Fleet Risk Assessment Model.....	Aug 18
Develop Optimization of Classification Rule.....	Aug 18
GUI Development and Beta Testing.....	Mar 19
★ Operational Tool with GUI.....	Apr 19
Project End.....	May 19

Sponsor: CG-CVC

Stakeholder(s): LANTAREA, LANT-7, PACAREA, D8

Project #: 7532	Expected Benefit: Improve operational efficiency/mission execution /resiliency
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Notes:

- Supports the Coast Guard Western Hemisphere Strategy.

RDC POC:
Ms. Christine Rostowfske

CG-926 Domain Lead:
Mr. Curtis Catanach

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★ Indicates RDC product.

Integration of Geographic Information System (GIS) Capability into Coast Guard Tactical Operations

Mission Need: Improve provision of actionable information for tactical decision making.

Project Objectives:

- Test and evaluate the capabilities of commercial off the shelf software to develop actionable information in the form of geo-referenced two dimensional orthomosaic images and three dimensional meshes.
- Investigate methods to incorporate developed imagery products into existing CG information systems to provide situational awareness to inform CG tactical operations.
- Develop a Geographic Information Systems (GIS) Capability Report summarizing the results of the project and identifying how this capability can contribute to improvements in operational effectiveness.



Images courtesy of DVIDS.

Key Milestone / Deliverable Schedule:

Project Start.....	2 Oct 17 ✓
Acquire Software.....	23 Oct 17 ✓
Develop Test Plans.....	6 Dec 17 ✓
Conduct Field Tests.....	Jul 18
Evaluate Test Results.....	Aug 18
★ Geographic Information Systems (GIS) Capabilities Report.	Oct 18
Project End.....	Nov 18

Sponsor: CG-26

Stakeholder(s): CG-5R, CG-MER, MFIC

Project #: 7533	Expected Benefit: Inform follow-on acquisition/enterprise deployment
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Notes:

- Supports the Coast Guard Western Hemisphere Strategy.
- Links to RDC Project 8116.

RDC POC:
Mr. Jack Cline

CG-926 Domain Lead:
Mr. Curtis Catanach

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

★ Indicates RDC product.

Night Time Search Effectiveness Evaluation

Mission Need: Improve efficiency and effectiveness of night time searches by CG boats.

Project Objectives:

- Develop Tactics, Techniques, and Procedures (TTP) recommendations for night time searches conducted by CG boats: specifically for the 47' Motor Lifeboat (MLB), 45' Response Boat-Medium (RBM), and 29' Response Boat-Small II (RBS II).
- Develop Lateral Range Curves and new sweep widths for night time searches for the MLBs, RBMs, and RBS IIs.
- Analyze alternative search methods – ice rescue searching, in particular the concept of radial range curves, to determine effectiveness.



Key Milestone / Deliverable Schedule:

Project Start.....	2 Oct 17 ✓
Conduct Data Gathering and Workshops – Phase I.....	May 18
Search Object Suite + Analyze – Phase I Field Tests.....	Aug 18
Workshops with Field/Program Managers for Phase II.....	May 19
Conduct Data Gathering for Phase II Field Tests.....	Sep 19
Analyze Data, Review, and Recommend New TTPs.....	Mar 20
★ Night Time Search Effectiveness Evaluation Report.....	Aug 20
Project End.....	Sep 20

Sponsor: CG-SAR
Stakeholder(s): LANT, PAC, FORCECOM, D1, D7, D9, D11, D13, Boat Forces

Project #: 7937	Expected Benefit: Improve operational performance/efficiency/mission execution/resiliency
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Notes:

- Leverages RDC's researched method of ice rescue searching.
- Supports the Coast Guard Western Hemisphere Strategy.

RDC POC:
Mr. Sam Cheung

CG-926 Domain Lead:
Mr. Curtis Catanach

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

★ Indicates RDC product.



Mass Migration Modeling and Analysis

Mission Need: Improved planning for a mass migration event.

Project Objectives:

- Develop a modeling suite that would provide a capability for force-on-force modeling and optimization of force package employment for Migrant Interdiction Operations. Create a portfolio of optimized deployment and support options based on the nature and volume of the migrant flow and capability/capacity of the Coast Guard Forces.
- Use existing campaign-level modeling to estimate the effect redeployment of additional assets to mass migration response will have on other missions during the event and recovery period.



Key Milestone / Deliverable Schedule:

Project Start.....	28 Oct 14	✓
Project Placed On Hold.....	30 Jun 15	✓
Project Re-Start.....	3 Oct 16	✓
Develop Areas of Responsibility (AOR) 1 Model	30 Nov 17	✓
Key Decision Point.....	22 Mar 18	✓
Reengage with Sponsor to Determine Path Forward.....	Jul 18	
Project End.....	Sep 18	

Sponsor: CG-MLE
Stakeholder(s): D7, CG-771, Homeland Security Task Force-Southeast

Project #: 9365	Expected Benefit: Improve operational performance/efficiency/mission execution/resiliency
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Notes:

- Supports the Coast Guard Western Hemisphere Strategy.

RDC POC:
Mr. Sam Cheung

CG-926 Domain Lead:
Mr. Curtis Catanach

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

★ Indicates RDC product.

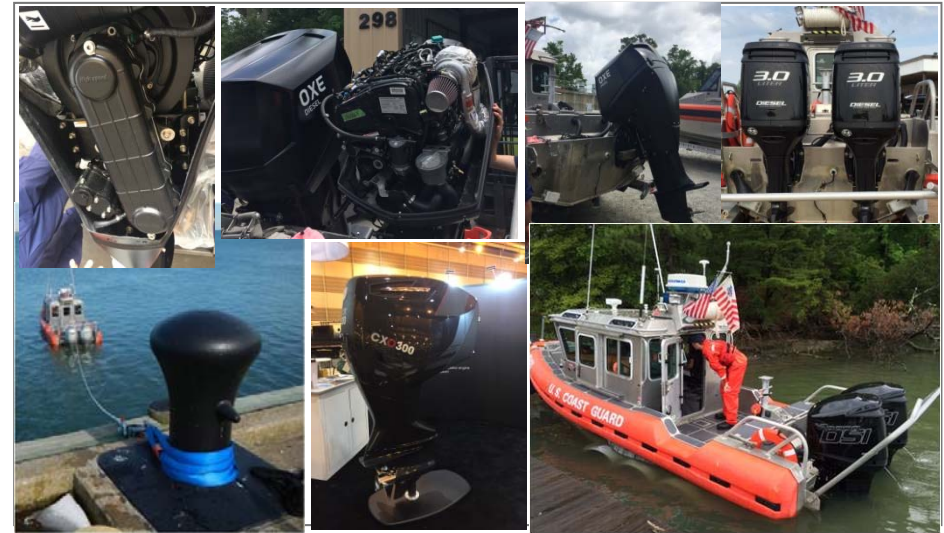


Diesel Outboard Development

Mission Need: Single fueled fleet.

Project Objectives:

- Document current developmental stage of diesel outboards applicable to Coast Guard usage.
- Conduct cost-benefit analysis of implementing diesel outboard engines in the Coast Guard.
- Investigate partnership options with manufacturers and other government agencies and test promising diesel outboard engine technologies to better understand performance capabilities.
- Provide recommendations for potential future acquisition initiatives, as appropriate.



Key Milestone / Deliverable Schedule:

Project Start.....	27 Feb 14 ✓
Issue Request for Information.....	3 Apr 14 ✓
★ Market Availability PowerPoint.....	18 Sep 14 ✓
★ Cost Benefit Analysis Report.....	24 Jul 15 ✓
Key Decision Point to Determine Path Forward.....	24 Jul 15 ✓
Conduct Spark-Ignited Diesel Outboard Engine Testing.....	31 May 17 ✓
Conduct Compression-Ignited Diesel Outboard Engine Testing.....	Dec 18
★ Diesel Outboard Feasibility Report.....	Jun 19
Project End.....	Jul 19

Sponsor: CG-731

Stakeholder(s): CG-46, CG-451

Project #: 4110	Expected Benefit: Improve operational performance/efficiency/mission execution/resiliency
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Notes:

- Project will include Cooperative R&D Agreements.
- RDC will establish partnerships with Joint Task Force-East, CBP, ICE, and DHS Science & Technology and will continue to leverage partnership with Navy Combatant Craft Division to test diesel outboard engines, where possible.
- Supports the Coast Guard Energy Renaissance Action Plan.

RDC POC:
LT Carlon Brietzke

CG-926 Domain Lead:
LT Steve Hager

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

★ Indicates RDC product.



Acquisition Directorate
Research & Development Center

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12/12/2017
Version date

Safety Parameters for ICE Operations (SPICE Ops)

Mission Need: Technical data for personnel and equipment performance in extreme cold weather during Ice Operations.

Project Objectives:

- Establish exposure limits for Search and Rescue (SAR) team members wearing dry suits while exposed in open air.
- Evaluate the impact of extreme cold on the SAR vest and other electronic equipment to determine degradation values based on environmental conditions.
- Provide safe guidelines and identify risk mitigation strategies for personnel conducting operations on the ice.



Key Milestone / Deliverable Schedule:

Project Start.....	1 Dec 17	✓
Conduct Human Physiological Data Collection at D9 Units.....	8 Feb 18	✓
Develop Electronic Equipment Test Plan	Apr 18	
Acquire Electronic Equipment for Testing	Apr 18	
Develop PPE Test Plan	May 18	
Acquire Personal Protective Equipment (PPE) for Testing...	Jun 18	
Conduct Electronic Equipment Testing	Jun 18	
★ Results of Equipment Testing.....	Jul 18	
Conduct PPE Testing	Jul 18	
Conduct Human Modeling with PPE Test Results.....	Nov 18	
★ Safe Parameters for Ice Operations	Jan 19	
Project End.....	Jan 19	

★ Indicates RDC product.

Sponsor: CG-731

Stakeholder(s): CG-SAR, D1, D9, FORCECOM

Project #: 5301	Expected Benefit: Improve operational performance/efficiency/mission execution/resiliency
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Notes:

- Partnering with U.S. Army Natick Soldier Research, Development & Engineering Center, Army Corps of Engineers' Cold Regions Research and Engineering Lab.
- Supports the Coast Guard Arctic Strategy.
- CRADA planned for PPE testing.

RDC POC:
LT Ryan Huebner

CG-926 Domain Lead:
LT Steve Hager

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



Define and Communicate Exclusion Zones

Mission Need: Capability to physically mark and clearly communicate the boundaries of an area of exclusion, including both fixed and moving security zones.

Project Objectives:

- Review user needs, consider short-term and longer-term solutions.
- Investigate solutions on the market to determine the best possible solutions to evaluate.
- Select and test prototype solution(s) that will unambiguously mark fixed and moving security zones.



Key Milestone / Deliverable Schedule:

Project Start.....	4 Feb 14 ✓
Unit Visit/Market Research Request for Information.....	6 Aug 14 ✓
★ Define and Communicate Exclusion Zones (DCEZ): Summary of Current Market Research.....	21 Oct 14 ✓
Sponsor Change to CG-721.....	6 Mar 15 ✓
Manufacturing Delay of Test Articles.....	19 Feb 16 ✓
Demonstration of Capabilities.....	15 Aug 16 ✓
★ DCEZ: Short-Term Field Evaluation Report	13 Jan 17 ✓
Go/No-Go Decision Point	6 Jul 17 ✓
Conduct Long-Term Solution Field Evaluation	Jan 19
★ DCEZ: Long-Term Field Evaluation Report	Sep 19
Project End.....	Sep 19

★ Indicates RDC product.

Sponsor: CG-721

Stakeholder(s): CG-MSR, MSRT, AREA-3

Project #: 5921	Expected Benefit: Improve operational performance/efficiency/mission execution/resiliency
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Notes:

- Leverages previous work on Project Unambiguous Warning Devices.
- Supports the Coast Guard Western Hemisphere Strategy.
- Potential partnership with National Urban Security Technology Laboratory (NUSTL) and First Responders Group (FRG).

RDC POC:
Ms. D.J. Hastings

CG-926 Domain Lead:
LT Steve Hager

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



Arctic Operations Support

Mission Need: Provide support for expanded operational and resource capabilities assessments in the Arctic.

Project Objectives:

- Based on previous years' demonstrations and evaluations, continue to support projects that will develop capability improvements in the execution of Coast Guard missions in the Arctic.
- Continue to nurture joint efforts and interagency cooperation between government sectors and civilian entities on the North Slope and abroad.
- Facilitate and provide support to other Arctic projects, including Department of Homeland Security (DHS) Science & Technology (S&T) Office of University Programs (OUP), in accomplishing their testing objectives.
- Continue to monitor technology progression.



Key Milestone / Deliverable Schedule:

Project Start.....	10 Oct 13 ✓
★ After Action Report from Arctic Technology Evaluation 2014...	12 Dec 14 ✓
★ Arctic Operations Planning Guide.....	9 Apr 15 ✓
★ Arctic After Action Report 2015.....	11 Aug 15 ✓
★ Arctic After Action Report 2016.....	30 Nov 16 ✓
Identify Available Assets for Testing.....	15 Apr 17 ✓
Test Plans Finalized.....	21 Jul 17 ✓
Conduct Technology Evaluations.....	14 Aug 17 ✓
★ After Action Report – Arctic Technology Evaluation 2017...	19 Jan 18 ✓
Project End.....	19 Jan 18 ✓

★ Indicates RDC product.

Sponsor: CG-5PW

Stakeholder(s): D17, PAC, CG-7, DHS S&T OUP

Project #: 6210	Expected Benefit: Influence Mission Support efficiencies
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Notes:

- Project will leverage other organizations with Arctic interests/efforts to the maximum extent possible.
- Follow on to 2012/2013/2014/2015 and 2016 efforts.
- Supports the Coast Guard Arctic Strategy.
- Partner with CG-DCO-X for engagement with Arctic Evergreen project.
- Collaborate with DHS S&T OUP for principle investigator engagement.

RDC POC:
Mr. Scot Tripp

CG-926 Domain Lead:
Ms. Holly Wendelin

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



Arctic Technology Evaluation 2018

Mission Need: Provide support for expanded operational and resource capabilities assessments in the Arctic.

Project Objectives:

- Based on previous years' demonstrations and evaluations, continue to support projects that will develop capability improvements in the execution of Coast Guard missions in the Arctic.
- Continue to nurture joint efforts and interagency cooperation between government sectors and civilian entities on the North Slope and abroad.
- Facilitate and provide support to other Arctic projects, including Department of Homeland Security (DHS) Science & Technology (S&T) Office of University Programs (OUP), in accomplishing their testing objectives.
- Continue to monitor technology progression.

Key Milestone / Deliverable Schedule:

Project Start.....	30 Nov 17 ✓
Identify Available Assets for Testing.....	Dec 18
Test Plan Finalized.....	Jun 18
Conduct Technology Evaluations.....	Aug 18
★ Arctic Technology After Action Report 2018.....	Dec 18
Project End.....	Dec 18



Sponsor: CG-5PW
Stakeholder(s): D17, PAC-5, LANT

Project #: 62101	Expected Benefit: Influence Mission Support efficiencies
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- Notes:**
- Project will leverage other organizations with Arctic interests/efforts to the maximum extent possible.
 - Follow on to 6210 - 2012/2013/2014/2015/2016 and 2017 efforts.
 - Supports the Coast Guard Arctic Strategy.
 - Partner with CG-DCO-X for engagement with Arctic Evergreen project.
 - Collaborate with DHS S&T OUP for principle investigator engagement.

RDC POC:
Mr. Scot Tripp

CG-926 Domain Lead:
Ms. Holly Wendelin

*For more information, call (860) 271-2600 or
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★ Indicates RDC product.

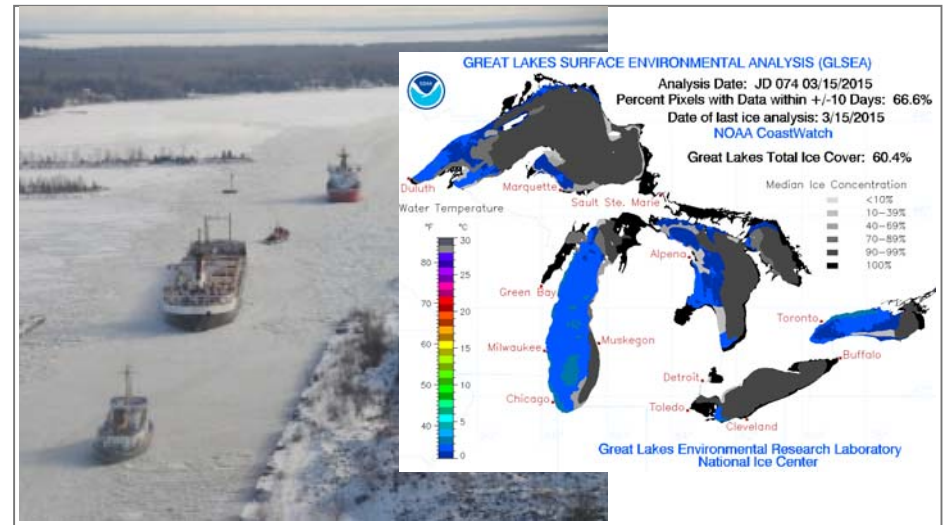


Ice Condition (ICECON) Risk Assessment Tool(s)

Mission Need: Method to forecast and share ice conditions.

Project Objectives:

- Develop ice condition classification methodology.
- Develop ship classifications for Great Lakes.
- Validate ice and ship classifications with observed conditions.
- Develop ICECON nowcast and forecast methodology.
- Adjust forecast methodology with icebreaker activity.
- Provide ICECON forecast system for decision support.



Key Milestone / Deliverable Schedule:

Project Start.....	1 Oct 16 ✓
ICECON Workshop.....	29 Nov 16 ✓
★ ICECON Update	22 Sep 17 ✓
★ ICECON Forecast Model Briefing	Aug 18
ICECON Model Validation.....	Dec 18
★ Final ICECON Forecast Model Briefing	Aug 19
Project End.....	Aug 19

Sponsor: CG-WWM, CG-5PW

Stakeholder(s): D1, D9, D17, LANT, PAC-5, DHS S&T OUP

Project #: 6512	Expected Benefit: Improve operational performance/efficiency/mission execution/resiliency
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Notes:

- Collaboration with Arctic Domain Awareness Center.
- Supports the Coast Guard Arctic Strategy.

RDC POC:
Mr. Mark VanHaverbeke

CG-926 Domain Lead:
Mr. Curtis Catanach

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

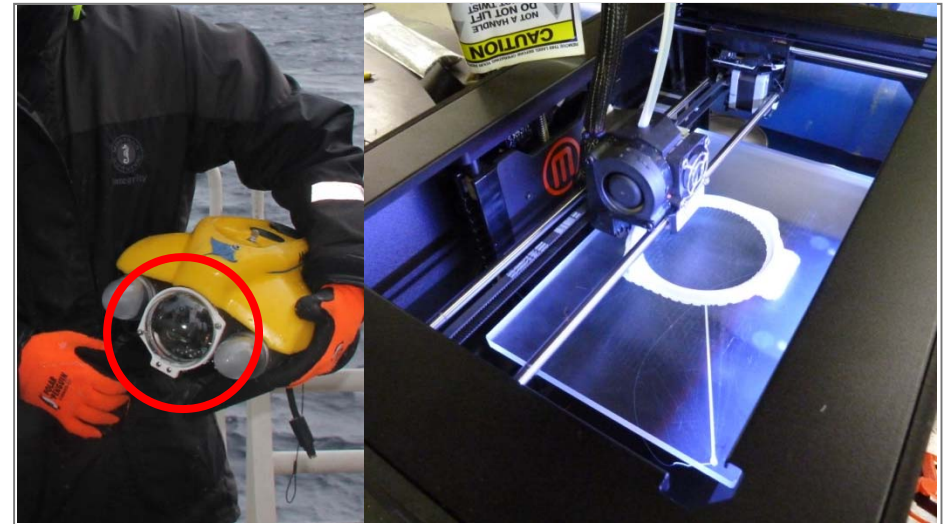
★ Indicates RDC product.

Evaluation of Three-Dimensional (3D) Printing Technology for Coast Guard Applications

Mission Need: Assessment of the potential for 3D printers to improve mission readiness by reducing logistical support lead times.

Project Objectives:

- Research the advancements made with the spiral development of 3D printing technology with respect to Coast Guard applications.
- Identify CG units that are best suited to implement additive manufacturing, conduct training, and trial 3D printing technologies.
- Research cost, logistical, and performance issues that could be addressed with 3D printing and additive manufacturing.
- Work with Surface Forces Logistics Center and Aviation Logistics Center to develop the required process for approving 3D printed parts for operational use.
- Document findings and provide recommendations for decision makers.



Key Milestone / Deliverable Schedule:

Project Start.....	11 Jan 16 ✓
Identify Units for 3D Printing Trial.....	23 Feb 16 ✓
★ Evaluation of 3D Printing Technology for Coast Guard Applications	26 Apr 17 ✓
Underway Additive Manufacturing Demonstration	29 Jun 17 ✓
Use Additive Manufacturing to Produce a Critical Metal Part for Evaluation.....	Aug 18
★ Roadmap for Integration of Additive Manufacturing.....	Mar 19
Project End.....	Apr 19

★ Indicates RDC product.

Sponsor: CG-44
Stakeholder(s): CG-11, CG-41, CG-43, CG-45, CG-731, CG-751, CG-DOL, DIUx

Project #: 7758
Expected Benefit: Influence Mission Support efficiencies

- Notes:**
- Partnering with the Chief of Naval Operations' Rapid Innovation Cell, Naval Warfare Development Command.
 - Will work through CG-STIC for integration into the fleet.
 - Partner with Oak Ridge and Lawrence Livermore National Labs.

RDC POC: Mr. Jason Story	CG-926 Domain Lead: LT Steve Hager
------------------------------------	--

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

Corrosion Control and Monitoring

Mission Need: Research and mitigate corrosion impacts on cutters by increasing mission support efficiencies and reducing costs.

Project Objectives:

- Identify and benchmark current CG corrosion mitigation strategies.
- Research the recent advancements in commercial anti-corrosion coating technologies with respect to CG surface fleet applications.
- Coordinate with U.S. Navy and other Government/Military services to gather their corrosion mitigation strategies.
- Stand up a CG Corrosion Integrated Product Team (IPT) to down-select promising corrosion technologies.
- Based on the research, compile a report and provide recommendations in a Corrosion Roadmap.
- Conduct operational and laboratory testing and evaluation of selected methods in Phase II.
- Research cutter hull blasting and recoating intervals.
- Research remote buoy condition monitoring systems.



Key Milestone / Deliverable Schedule:

Project Start.....	3 Oct 16 ✓
Benchmark CG Corrosion Strategies.....	15 May 17 ✓
Conduct Market Research	1 Jul 17 ✓
Review Request for Information Results.....	15 Oct 17 ✓
Review Research Results and IPT Efforts.....	8 Nov 17 ✓
★ Corrosion Control Roadmap	Apr 18
Validation of Hull Blasting & Buoy Condition Monitoring.....	Sep 18
Conduct Operational & Laboratory Testing.....	Jun 19
★ Cutter Hull Validation/Testing Report.....	Aug 19
Project End.....	Sep 19

★ Indicates RDC product.

Sponsor: CG-45

Stakeholder(s): SFLC, CG-41, CG-43, CG-44, CG-751, AREA-3

Project #: 7760	Expected Benefit: Influence Mission Support efficiencies
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Notes:

- Potential partnership with similar Navy Lab efforts.
- Will leverage substantial ongoing research by other entities on this topic.
- Supports the Coast Guard Western Hemisphere and Arctic Strategies.

RDC POC:
Mr. Mike Coleman

CG-926 Domain Lead:
LT Steve Hager

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



Maritime Counter Unmanned Aircraft Systems (cUAS)

Mission Need: Methods to search, detect, classify, identify, mitigate, and defeat illicit use of unmanned aircraft systems in a maritime environment.

Project Objectives:

- Collect Key Performance Parameters (KPP) for cUAS for the non-Transport Protection System (TPS) and Ports, Waterways, and Coastal Security (PWCS) missions.
- Identify technologies that satisfy KPPs & assist Directorate and Defense Advanced Research Project Agency (DARPA)/Department of Homeland Security (DHS) Science and Technology (S&T) in market research, including advances from the academic community.
- Design, build, integrate and test a maritime cUAS prototype.
- Conduct a limited user evaluation of RDC cUAS prototype at an operational PWCS unit.
- Support DARPA's Mobile Force Protection (MFP) Phase III initiative.
- Influence Tactics, Techniques, and Procedures development in collaboration with FORCECOM.



Key Milestone / Deliverable Schedule:

Project Start.....	3 Oct 16 ✓
<u>Maritime cUAS Test w/ CG-MSR, DARPA, and DHS S&T</u>	
Conduct cUAS Commercial Off the Shelf Assessment.....	14 Apr 17 ✓
Conduct land-based Test & Evaluation of cUAS prototype.....	Dec 17 ✓
Conduct Limited User Evaluation overseas.....	TBD
Conduct C-SHIELD Radar Evaluation	TBD
Conduct Operational Test & Evaluation.....	TBD
★ cUAS Test & Evaluation Report for PWCS Mission (interim)...Oct 19	
Conduct Test & Evaluation in support of DARPA MFP.....	Jun 20
★ cUAS Test & Evaluation Report for PWCS Mission (final).....Nov 20	
Project End.....	Dec 20

Sponsor: CG-MSR
Stakeholder(s): CG-731, CG-721, CG-751, DCMS-34, CG-2, CG-6, C3CEN, SFLC, AREA-3, DARPA, DIUx, DHS S&T

Project #: 7812	Expected Benefit: Improve operational performance/efficiency/mission execution/resiliency
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- Notes:**
- This effort will leverage partnerships with DHS S&T Directorate and DARPA.
 - Supports the Western Hemisphere and Cyber Strategies.

RDC POC:
LT Joseph DiRenzo

CG-926 Domain Lead:
LT Steve Hager

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

★ Indicates RDC product.

Other Government Laboratory Research

Mission Need: Leverage Other Government Agency Laboratory research to support RDC efforts to further CG missions.

Project Objectives:

- Use appropriate *Other Government Laboratory Research* projects to enhance CG mission accomplishments, strategic analysis, and effectiveness. The partnerships will mutually support other Government labs national research goals.
- Stay abreast of long term research goals of other national labs.



Key Milestone / Deliverable Schedule:

Project Start.....	19 Oct 16 ✓
★ Other Govt Labs Research Summary FY17 Q1&2.....	27 Apr 17 ✓
★ Other Govt Labs Research Summary FY17 Q3&4	27 Oct 17 ✓
Project End.....	13 Dec 17 ✓

Sponsor: CG-926

Stakeholder(s): DCO, DCMS, LANT-35, PAC-53, CG-2, DHS S&T

Project #: 8602	Expected Benefit: Improve operational performance/efficiency/mission execution/resiliency
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Notes:

- Support all Coast Guard strategies and action plans.
- CG-926 Domain Lead's assigned to liaison with other Government labs and programs within CG Headquarters as required.

RDC POC:
Mr. Brian Dolph

CG-926 Domain Lead:
CDR James Small

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

★ Indicates RDC product.



Cockpit Laser Strike Protection

Mission Need: A reliable and unburdensome mechanism for protecting CG aviators against laser strike hazards.

Project Objectives:

- Investigate Government and industry developments in the area of cockpit laser filtering technologies.
- Conduct CG airborne asset windshield configuration and coating logistics study.
- Conduct aviation external indicator wavelength study.
- Develop Cooperative Research and Development Agreement(s) (CRADA) with developers of cockpit laser strike solutions.
- Perform optical performance evaluations in the RDC General Engineering Laboratory Support (GELS) laboratory.
- Perform environmental, adhesion, installation, and logistics related evaluations.
- Analyze results and report on cockpit laser strike protection solutions.



Key Milestone / Deliverable Schedule:

Project Start.....	1 Oct 14 ✓
CRADA(s) with Technology Developers.....	29 Jul 16 ✓
Degradation and Adhesion Evaluations.....	13 Jul 17 ✓
Optical Performance Evaluation.....	10 Aug 17 ✓
Market Survey Refresh.....	19 Oct 17 ✓
★ Cockpit Laser Strike Filtering Technology.....	19 Mar 18 ✓
Project End.....	19 Mar 18 ✓

Sponsor: CG-113

Stakeholder(s): CG-711, CG-731, CG-721, CG-41, ALC

Project #: 7755	Expected Benefit: Improve operational performance/efficiency/mission execution/resiliency
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Notes:

- Supports the Coast Guard Western Hemisphere and Human Capital Strategies.

RDC POC:
LT Dillon Sapp

CG-926 Domain Lead:
Mr. Scott Craig

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

★ Indicates RDC product.



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Robotic Aircraft for Maritime Public Safety (RAMPS)

Mission Need: Better understanding the risks, benefits and limitations of operating existing Commercial off the Shelf Small Unmanned Aircraft System (sUAS) technology in a maritime environment for cutter forces other than the National Security Cutter.

Project Objectives:

- Develop requirements, standards and Concept of Operations.
- Evaluate realistic maritime security and first responder scenarios.
- Create a knowledge resource database.
- Guide future platform and sensor development to meet maritime first responder requirements.
- Evaluate sUAS payloads in different environmental areas focusing on logistics, maintenance, SUAS qualification requirements and data dissemination with CGC assets.
- Conduct an assessment for potential demonstration and evaluation facilities with special use air space establishing an Federal Aviation Administration approved Certificate of Waiver or Authorization for Department of Homeland Security (DHS) use.



Key Milestone / Deliverable Schedule:

Project Start.....	30 Oct 13	✓
RAMPS Request For Information (RFI) Release.....	10 Oct 14	✓
RAMPS Course Validation Phase I-A	28 Apr 15	✓
RAMPS Phase I-A Demos 01-05	10 Jun 16	✓
★ RAMPS – RDC Summary Report (Phase 1A)	3 Oct 16	✓
RAMPS Phase I-B Issue Payload RFI.....	21 Feb 17	✓
RAMPS Phase I-B Re-Issue Payload RFI.....	19 Jul 17	✓
RAMPS Phase I-B Payload Demo.....	16 Jan 18	✓
Robotic Aircraft Sensors Program-Maritime (RASP-M) Capabilities Demos 01-05.....	Oct 18	
★ RASP-M Compilation Report (Phase 1B)	Jan 19	
Project End.....	Feb 19	

★ Indicates RDC product.

Sponsor:

DHS S&T, CG-711

Stakeholder(s):

CG-751, CG-761, CG-771, CG-931, JTF-E

Project #:
7807

Expected Benefit:

Direct Acquisition Support (MAR, MNS, CONOPS, ORD, AA, LCCE, T&E, etc.)

Notes:

- Partnership with DHS Science and Technology (S&T) Borders and Maritime Division.
- Establish Cooperative Research and Development Agreements with industry partners for sUAS demonstrations.
- Supports the Coast Guard Western Hemisphere Strategy.

RDC POC:

Mr. Stephen Dunn

CG-926 Domain Lead:

Mr. Scott Craig

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e-mail RDC-Info@uscg.mil*



Acquisition Directorate
Research & Development Center

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Assessment of Unmanned Maritime Systems for CG Missions

Mission Need: Economical, effective, persistent Maritime Domain Awareness to support CG missions.

Project Objectives:

- Understand state-of-the-market autonomous sensors and platforms.
- Evaluate effectiveness of sensors and platforms for CG mission support.
- Model and evaluate full-scale application.
- Prepare rough order of magnitude business case.
- Conduct technology demonstration.
- Identify system development needs (C2, sensors, processors, and vehicles) for CG application.



Key Milestone / Deliverable Schedule:

Project Start.....	4 Nov 13 ✓
Market Research Report.....	24 Jul 14 ✓
★ The Applicability of Persistent Unmanned Maritime Vehicles to Coast Guard Missions.....	30 Oct 14 ✓
Technology Demonstration/Execution of Plan.....	27 Jun 16 ✓
★ Unmanned Maritime Systems for Coast Guard Missions Test Report	31 Jan 17 ✓
Evaluate UMV Sensors and Systems	14 Sep 17 ✓
★ Persistent Unmanned Maritime Vehicle System Capability Requirements for USCG Missions.....	29 Sep 17 ✓
Develop UMS Development Roadmap for CG Applications	May 18
★ UMS Developmental Requirements for USCG Applications.....	Jun 18
Project End.....	Jul 18

★ Indicates RDC product.

Sponsor:	CG-761	
Stakeholder(s):	CG-25, CG-731, CG-MLE, DHS S&T OUP, DHS S&T BMD, JIATF-S, JTF-E	
Project #:	Expected Benefit:	
7808	Improve operational performance/efficiency/mission execution/resiliency	
Notes:		
<ul style="list-style-type: none"> • Partner with ONR/Naval Undersea Warfare Center or National Oceanic and Atmospheric Administration. • Project derived from Congressional language. • Anticipate leveraging/partnering with new Department of Homeland Security Science & Technology Office of University Programs Center for Maritime Research. • Supports the Coast Guard Western Hemisphere Strategy. 		
RDC POC:		CG-926 Domain Lead:
Mr. Mark VanHaverbeke		LT Steve Hager
<p><i>For more information, call (860) 271-2600 or e-mail RDC-Info@uscg.mil</i></p>		



Advanced sUAS Sensor Investigations

Mission Need: Small Unmanned Aircraft System (sUAS) advanced sensors to meet USCG Wide Area Surveillance needs.

Project Objectives:

- Evaluate current and near term state of the market sensor capabilities using RDC sUAS Final Report Modeling and Simulation supplement as a baseline.
- Obtain and test applicable sensor technologies from shore based test site.
- Conduct analysis of results to determine impact of improved sensor capabilities on USCG mission performance.
- Validate modeled results that NextGen sUAS sensors can significantly increase the target detection capability of National Security Cutter over baseline sUAS sensor configurations tested in 2014.

Key Milestone / Deliverable Schedule:

Project Start.....	30 Jul 15 ✓
Review NextGen Modeling Results Government Furnished Information.....	12 Oct 15 ✓
Select NextGen Sensors for sUAS Integration.....	9 Nov 15 ✓
Integrate NextGen Sensors on Test Assets.....	10 Aug 16 ✓
Evaluate NextGen Sensors on Target Set.....	29 Sep 16 ✓
Post Test Modeling.....	25 Apr 17 ✓
★ Advanced sUAS Sensors Investigations Final Report.....	Apr 18
Project End.....	Apr 18



Sponsor: CG-711
Stakeholder(s): CG-931, CG-761, FORCECOM, JTF-E, JTF-W, CBP

Project #: 7810	Expected Benefit: Improve operational performance/efficiency/mission execution/resiliency
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Notes:

- Supports the Coast Guard Western Hemisphere and Arctic Strategies.

RDC POC: Mr. Evan Gross	CG-926 Domain Lead: Mr. Scott Craig
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For more information, call (860) 271-2600 or e-mail RDC-Info@uscg.mil

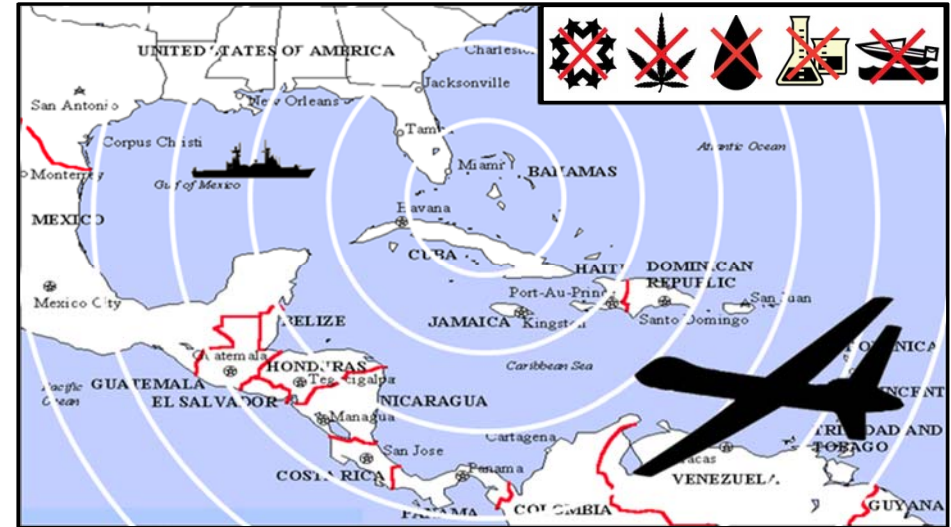
★ Indicates RDC product.

Long-Range/Ultra-Long Endurance UAS Analysis

Mission Need: Efficient and effective means of conducting persistent Intelligence, Surveillance, and Reconnaissance (ISR) in transit zones.

Project Objectives:

- Examine the feasibility, costs, and benefits of conducting intelligence, surveillance, and reconnaissance missions in transit zones using Long Range (LR)/Ultra-long Endurance(U-LE), land-based, Unmanned Aerial Systems (UAS).
- Perform an Analysis of Alternatives (AoA) on available LR/U-LE UAS and mission equipment packages.
- Conduct a proof of concept demonstration of selected LR/U-LE UAS.



Key Milestone / Deliverable Schedule:

Project Start.....	6 Jun 17 ✓
Brief of AoA Plans to Congress.....	29 Nov 17 ✓
LR/U-LE UAS AoA Draft.....	16 Jan 18 ✓
Key Decision Point: Market Research Review.....	31 Jan 18 ✓
Technology Demonstration Plan.....	Aug 18
Airspace/Spectrum Authorization.....	Jan 19
Conclude Demonstrations.....	Aug 19
★ LR/U-LE UAS AoA	Oct 19
★ LR/U-LE UAS ISR Final Report.....	Oct 19
Brief Demonstration Results to Congress.....	Nov 19
Project End.....	Nov 19

Sponsor: CG-711

Stakeholder(s): CG-2, CG-4, CG-5, CG-6, CG-7, CG-8, CG-9

Project #: 7814	Expected Benefit: Inform follow-on acquisition/enterprise deployment
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Notes:

- Joint assessment in collaboration with Customs and Border Protection and Department of Homeland Security Science & Technology.
- Supports the Coast Guard Western Hemisphere Strategy.

RDC POC:
Mr. Evan Gross

CG-926 Domain Lead:
Mr. Scott Craig

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

★ Indicates RDC product.



University Research Partnership

Mission Need: Leverage university research to further Coast Guard missions.

Project Objectives:

- Foster relationships between Department of Defense agencies, universities, university affiliated research centers, and the CG to minimize duplication of work efforts and reduce the costs to implement technology and methods applicable to the CG maritime missions.
- Identify and leverage cutting edge university research to improve the CG's readiness and ability to adapt to change.
- Collect and report out the status of university research. Currently, one year into the project, multiple partnerships have been established with efforts underway on cyber security, Search and Rescue, Arctic, and coastal resiliency.
- Continue to provide engagement on CG posed maritime cyber research questions via Rutgers Department of Homeland Security Centers of Excellence.



Key Milestone / Deliverable Schedule:

Project Start.....	29 Jun 16 ✓
★ University Research Summary FY16 Q3&4.....	17 Oct 16 ✓
★ University Research Summary FY17 Q1&2	13 Apr 17 ✓
USC Maritime Risk Symposium on Game Theory/Cyber.....	8 Sep 17 ✓
★ University Research Summary FY17 Q3&4.....	8 Dec 17 ✓
Project End.....	13 Dec 17 ✓

Sponsor: CG-926

Stakeholder(s): DHS S&T, CG CYBERCOM, LANT-35, PAC-53

Project #: 8601	Expected Benefit: Improve operational performance/efficiency/mission execution/resiliency
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Notes:

- Partnering with universities for this effort.
- CG-926 Domain Lead's assigned to liaison with university centers and programs within CG Headquarters as required.

RDC POC:
Dr. Joseph DiRenzo III

CG-926 Domain Lead:
CDR James Small

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

★ Indicates RDC product.



Acquisition Directorate
Research & Development Center

UNCLAS/USCG Research & Development Center
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FY18 Science & Technology Innovation Center (CG-STIC) Tasks

Purpose:

To establish a collaborative relationship between the U.S. Coast Guard Innovation Center and the Department of Homeland Security Science and Technology Directorate to share and advance technologies that will be mutually beneficial to both parties.

Task	Title	Objective	Office Supported	Funding Type	RDC POC	CG-926 Domain Lead	Due/Delivery Date
99952001	Maritime Object Tracking Technology (MOTT)	<i>MOTT enabling CG assets to increase tracking precision while decreasing detection time to re-acquire objects of interest in a maritime environment. MOTT design, prototypes, technical data package and tactics, techniques, and procedures will be available for the homeland security enterprise.</i>	CG-5R	DHS S&T	LT Carl Brietzke	CDR James Small	May 18
99952002	Underwater Imager within the Marine Transportation System (MTS)	<i>After action report on the performance and utility of an installed underwater imager after one year of use. The report will address installation, maintenance, and any issues that develop within installation period.</i>	Sector Buffalo, NY	DHS S&T	Mr. Scot Tripp	CDR James Small	Apr 19
99952005	D14 Operational Planning Tool	<i>Identify optimal operational effectiveness of the limited resources within D14.</i>	D14	DHS S&T	LT Ben Walsh	CDR James Small	Jan 19
99952006	Enclosed Space Breaching	<i>Investigate techniques for quickly defeating (breaching) various openings (scuttles, doorways, voids) while in poorly ventilated or unventilated spaces.</i>	CG-721	DHS S&T	LT Carl Brietzke	CDR James Small	May 18
99952007	Unmanned Maritime Vehicle Sensors	<i>Investigate use of unmanned systems (including sensors) for mission execution.</i>	CG-731	DHS S&T	LT Carl Brietzke	CDR James Small	Dec 18
99952008	Buoyancy Compensator Technology Analysis and Standardization for CG Dive Operations	<i>Investigate Buoyancy Compensators (BC) technology to recommend a standardized BC.</i>	CG-721	DHS S&T	Mr. Scot Tripp	CDR James Small	Sep 18

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



FY18 Short Term Analytical Support Efforts

Purpose:

Provide short term analytical support to CG decision makers with a means to access quick, inexpensive analyses to investigate a wide range of technology issues relating to current or planned CG operations or procurements. Larger analytical support projects will typically require funding to cover the cost of RDC labor & overhead and other direct costs.

Branch	Title	Objective	Office Supported	RDC POC	CG-926 Domain Lead	Due/Delivery Date
C4ISR	REACT Report: Emergency Response Asset Tracking	Analysis and recommendation for use of COTS satellite based asset trackers.	Incident Commands	Mr. Al Arsenault	Ms. Holly Wendelin	5 Mar 18
C4ISR	Application Note: Contraband Tracker Mitigation	Recommendations on the operational use of available technology to reduce the operational risk associated with trackers embedded in recovered contraband.	CGD ELEVEN (dre)	Mr. Al Arsenault	Ms. Holly Wendelin	Jun 18
C4ISR	Application Note: X/KA Band Alternatives Analysis	Conduct market research for Wideband Global SATCOM System (WGS) antenna system.	CG-761	Mr. Al Arsenault	Ms. Holly Wendelin	Jul 18
Surface	REACT Report: Inland Waterway Tender Hybrid Drive Analysis	To investigate hybrid propulsion for the marine environment, and its potential to reduce fuel costs for Coast Guard Inland Waterways and Western Rivers Aids to Navigation Cutters (IWWRAC).	CG-751	Mr. Brian Dolph	LT Steve Hager	20 Oct 17
E&W	Navy 7th Fleet Incidents: Lessons for the CG	A white paper describing the four recent Navy vessel casualties in the Pacific and lessons learned for the CG to avoid similar mishaps.	CG-113	Mr. James Fletcher	Ms. Karin Messenger	27 Mar 18
Surface	Technical Note: SurfEllent Anti-Icing Coating	Technical note assessing SurfEllent coating relative to CG anti-icing use.	CG-5RI	Mr. Brian Dolph	LT Steve Hager	10 Jan 18

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





Acquisition Directorate

Research, Development, Test & Evaluation

FY18 Project Portfolio



Non-CG RDT&E Funded Projects



Alternatives Analysis for Inland Tender Recapitalization

Mission Need: Support replacing the outdated fleet of inland cutters and boats.

Project Objectives:

- Leverage Sponsor's Integrated Project Team (IPT):
 - Identify replacement options for the inland fleet.
 - Review new design options for replacement hulls.
 - Review the cost and consequences of buying, leasing, or contracting other boats to perform similar missions.
 - Support drafting and brief the Study Plan and Alternatives Analysis for the Inland Tender Recapitalization.



Key Milestone / Deliverable Schedule:

Project Start.....	1 Jun 17 ✓
★ Study Plan for the Alternatives Analysis for Inland Tender Recapitalization	Apr 18
GO/NO-GO Decision to Execute the AA.....	Apr 18
★ Alternatives Analysis for Inland Tender Recapitalization	Aug 19
Project End.....	Sep 19

Sponsor: CG-932
Stakeholder(s): CG-7513, LANT-5, D8

Project #: 6812	Expected Benefit: Direct Acquisition Support (MAR, MNS, CONOPS, ORD, AA, LCCE, T&E, etc)
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Notes:

- Will leverage all previous approved and signed Acquisition documents.
- Supports the Coast Guard Energy Renaissance Action Plan.

RDC POC: Ms. D.J. Hastings	CG-926 Domain Lead: LT Steve Hager
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For more information, call (860) 271-2600 or e-mail RDC-Info@uscg.mil

★ Indicates RDC product.

Options Study: CG-LIMS Financial Interface with Legacy CG Systems

Mission Need: CG-LIMS interface with Coast Guard legacy financial system(s) to meet supply-chain, cybersecurity, and maintenance management requirements.

Project Objectives:

Provide analytic and decision support to the CG-LIMS PM faced with the possibility of escalating risk due to delay of the Financial Management Service Improvement Initiative (FMSII) capability.

- Collect data on CG-LIMS requirements needed to interface with legacy CG financial management systems.
- Assess the feasibility of establishing CG-LIMS financial services interface with the pool of legacy CG systems (include CAS, NESSS, SAM, and AMMIS).
 - Technical viability of establishing CG-LIMS interface with legacy systems (and/or identification of “fixes” required to enable interface).
 - Compliance with cybersecurity and financial policy.
 - ROM LCCE for development of CG-LIMS interface(s).
- Report findings/recommendations to sponsor.

Key Milestone / Deliverable Schedule:

Project Start.....	31 May 17 ✓
Sponsor Approval.....	21 Jun 17 ✓
SETA II Technical Task Order Awarded.....	15 Sep 17 ✓
Research Legacy CG Financial Systems.....	15 Jan 18 ✓
Informal White Paper on Requirements and Alternatives.....	23 Feb 18 ✓
Data Collection.....	May 18
Draft Deliverable: CG-LIMS Interface AA Report.....	Jul 18
★ CG-LIMS Financial Interface Report.....	Aug 18
Project End.....	Aug 18



Sponsor: CG-9334
Stakeholder(s): CG-41, CG-44, CG-63, CG-86, C4ITSC, CG ALC

Project #: 9509	Expected Benefit: Direct Acquisition Support (MAR, MNS, CONOPS, ORD, AA, LCCE, T&E, etc)
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Notes:

- Supports the Coast Guard Cyber Strategy.

RDC POC: ENS Ryan Major	CG-926 Domain Lead: Mr. Scott Craig
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For more information, call (860) 271-2600 or e-mail RDC-Info@uscg.mil

★ Indicates RDC product.

General Engineering Laboratory Support (GELS)

Mission Need: Test and Evaluation (T&E) of Aids to Navigation (AtoN) to improve performance, lower costs and extend maintenance intervals.

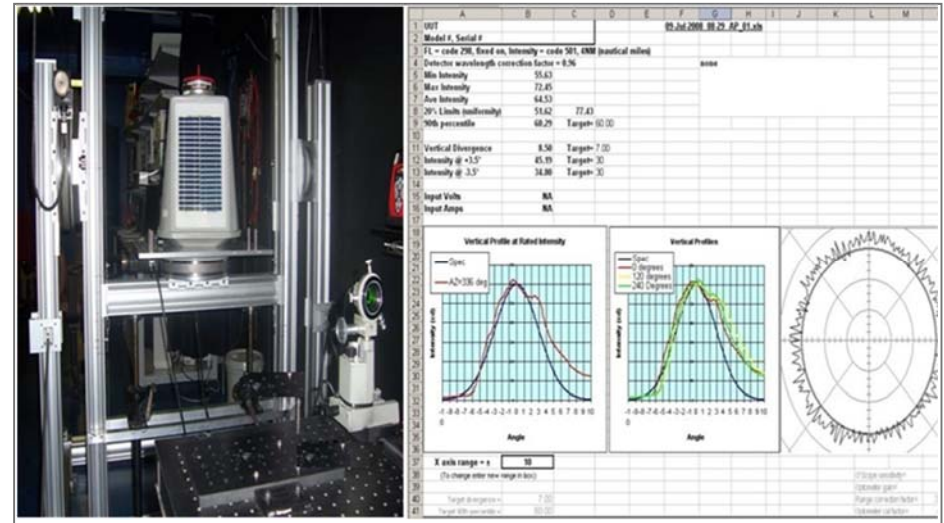
Project Objectives:

- Provide a laboratory and T&E services in support of the CG AtoN program.
- Conduct test and evaluation of AtoN to ascertain conformance with established regulatory and certification criteria.
- Evaluate the viability of emerging technologies to reduce CG operating/maintenance costs or alleviate (AtoN signal) problem areas.
- Assimilate geographic and environmental modeling capability into GELS for appropriate sizing of lights and support equipment.
- Update and document solar sizing programs.

Key Milestone / Deliverable Schedule:

Project Start.....	circa 72 ✓
★ Ongoing Project, Historically 2-3 Deliverables/Year	✓
★ GELS Activity Summary 1st & 2nd Qtr FY15.....	13 Apr 15 ✓
★ GELS Activity Summary 3rd & 4th Qtr FY15.....	12 Oct 15 ✓
★ GELS Activity Summary 1st & 2nd Qtr FY16.....	6 Apr 16 ✓
★ GELS Activity Summary 3rd & 4th Qtr FY16.....	9 Nov 16 ✓
★ GELS FY17 Activity Summary	26 Sep 17 ✓
★ GELS FY18 Activity Summary	Oct 18
Project End.....	TBD

★ Indicates RDC product.



Sponsor: CG-43

Stakeholder(s): SILC Miami

Project #: 2784	Expected Benefit: Direct Product Line/Core Technology Support (Tech refresh, DMS, etc)
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Notes:

- Use of RDC's Light Evaluation Laboratory capable of measuring light intensity and chromaticity.

RDC POC: Mr. Vinnie Reubelt	CG-926 Domain Lead: Ms. Karin Messenger
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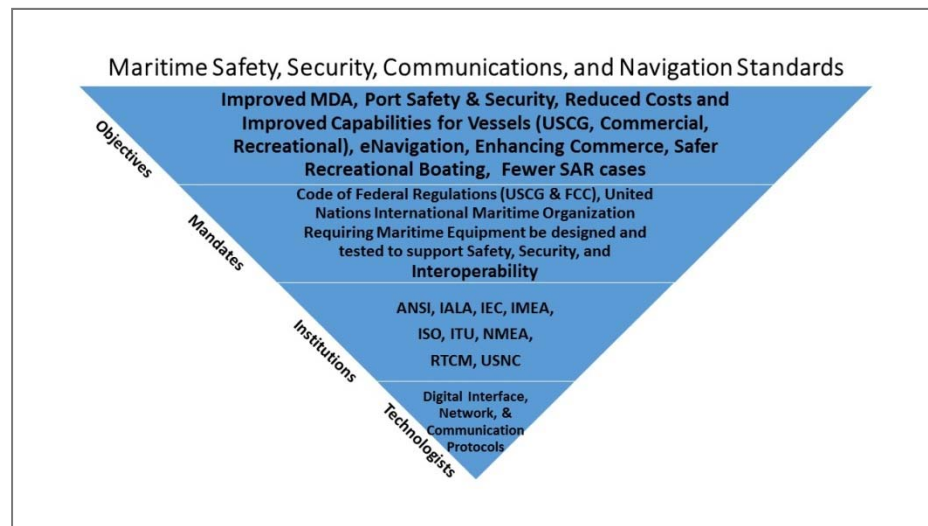
For more information, call (860) 271-2600 or e-mail RDC-Info@uscg.mil

Maritime Safety, Security, Communication, and Navigation Standards

Mission Need: Development and advancement of national and international standards effecting CG interests.

Project Objectives:

- To preserve the integrity of existing, and support the development and advancement of national and international standards effecting USCG interests – through participation in standards committee meetings.



Key Milestone / Deliverable Schedule:

Project Start.....	1 Oct 15 ✓
IEC TC80 WG17 CMDS Standards Meetings (3)	Sep 18
IEC TC80 WG6 Interface Standards Meetings (3)	Sep 18
IEC TC80 WG15 AIS Standards Meetings (5)	Sep 18
NMEA 0183 Interface Standard Meetings (3)	Sep 18
NMEA 2000 Interface Standard Meetings (5)	Sep 18
NMEA OneNet Interface Standard Meetings (8)	Sep 18
RTCM Special Committee Standards Meetings (10)	Sep 18
GMDSS Task Force Meetings (1)	Sep 18
★ Inputs to NMEA 0183/2000/OneNet Standards.....	Sep 18
★ Inputs IEC Interface Standards &, AIS Standards.....	Sep 18
★ U.S. National Committee Support.....	Sep 18
Project End.....	Sep 18

★ Indicates RDC product.

Sponsor: C4IT SC

Stakeholder(s): CG-65, CG-761, CG-NAV, C3CEN

Project #: 7205	Expected Benefit: Influence international standards
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Notes:

- Supports the Coast Guard Cyber Strategy.

RDC POC:
Mr. Lee Luft

CG-926 Domain Lead:
Ms. Karin Messenger

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



Electronic Health Records Alternatives Analysis

Mission Need: An effective electronic health records system.

Project Objectives:

- Conduct market research to collect electronic health record vendor information.
- Develop an Alternatives Analysis (AA) Study Plan that outlines the ground rules and assumptions by which the analysis will be bounded.
- Conduct the AA based on the approved Study Plan including cost benefit analysis and rough order of magnitude life cycle costs for each viable alternative.
- Develop findings and make recommendations in a report and briefing.



Key Milestone / Deliverable Schedule:

Project Start.....	14 Dec 16 ✓
Market Research.....	5 Jun 17 ✓
Electronic Health Records Acquisition (eHRA) AA Study Plan.....	31 Jul 17 ✓
eHRA AA Interim Report.....	18 Sep 17 ✓
★ AA Final Report for the eHRA.....	25 Oct 17 ✓
Project End.....	25 Oct 17 ✓

Sponsor: CG-9336

Stakeholder(s): CG-926

Project #: 8220	Expected Benefit: Improve operational performance/efficiency/mission execution/resiliency
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Notes:

- Supports the Coast Guard Human Capital Strategy.

RDC POC:
Ms. Monica Cisternelli

CG-926 Domain Lead:
Mr. Curtis Catanach

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

★ Indicates RDC product.



Financial Management System Improvement Initiative (FMSII) Operational Test Agent (OTA) Support

Mission Need: An OTA is required for the new Financial Management System (FMS) to conduct independent Operational Test and Evaluation (OT&E).

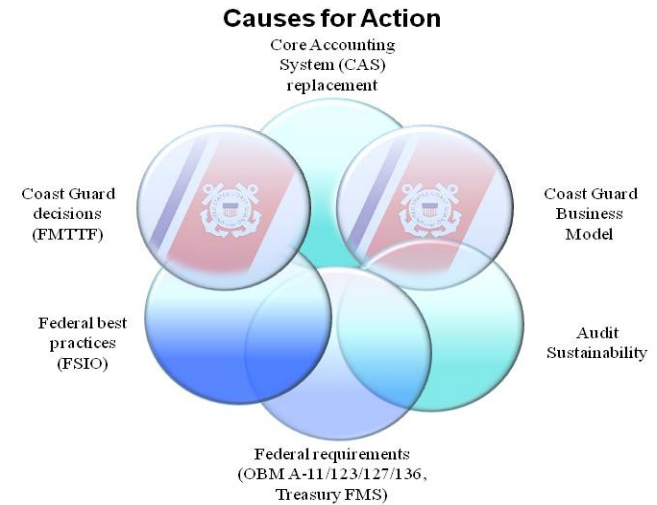
Project Objectives:

- Develop, update, and execute in accordance with the FMSII OT&E strategy.
- Obtain Department of Homeland Security (DHS) Director of T&E (DOT&E) approval of the strategy and its updates as defined in the Test and Evaluation Master Plan (TEMP).
- Identify, track, and assess risks and progress that may impact FMSII operational effectiveness and suitability.
- Provide input and feedback to the acquisition to mitigate risks.
- Leverage information from the Domestic Nuclear Detection Office Transportation Security Administration financial upgrade projects.
- Perform and independently report on Test and Evaluation (T&E) activities and artifacts.
- To the extent feasible and practical, work jointly with other OTAs to gain efficiencies and improve effectiveness.

Key Milestone / Deliverable Schedule:

Project Start.....	4 Apr 14 ✓
Provide OT&E Input to TEMP V1.....	24 Apr 14 ✓
Initial Risk Assessment.....	21 Jan 15 ✓
OT&E Update to TEMP V2 (draft).....	18 Aug 15 ✓
R2.0 Testing Completed	23 Dec 15 ✓
R2.1 Testing Completed	28 Mar 16 ✓
R2.2 Testing Completed	9 Oct 16 ✓
R3 E2E-1 Completed	15 Jul 16 ✓
R4 E2E-1 Completed	14 Apr 17 ✓
R3 E2E-2 Completed	24 Jul 17 ✓
R3 UAT Completed	20 Sep 17 ✓
TEMP Update	TBD
★ OT&E Test Plan	TBD
CG FMSII User Acceptance Testing (UAT).....	TBD
OT&E Event	TBD
★ OT&E Report	TBD
Post OT&E Support.....	TBD
Project End.....	TBD

★ Indicates RDC product.



Sponsor: CG-86

Stakeholder(s): CG-926, CG-933

Project #: 9507	Expected Benefit: Direct Acquisition Support (MAR, MNS, CONOPS, ORD, AA, LCCE, T&E, etc)
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Notes:

- Due to the ongoing DHS Financial Systems Modification transition to a Joint Program Management Office, dates for future milestones and deliverables are unknown and will be updated when re-planning concludes.

RDC POC:
Ms. Kim Babcock

CG-926 Domain Lead:
Ms. Holly Wendelin

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



Shipboard Compliance of Ballast Water Discharge Standards (BWDS)

Mission Need: The tools to quickly and reliably determine vessel compliance with the BWDS.

Project Objectives:

- Determine the availability and capabilities of existing technologies that could be utilized for compliance verification of the BWDS.



Key Milestone / Deliverable Schedule:

Project Start	12 Jan 11 ✓
★ Proceedings of Ballast Water Discharge Standards Compliance Subject Matter Expert Workshop.....	7 Sep 11 ✓
★ Market Research Assessment: Verification Technologies for BWDS Compliance.....	17 Oct 12 ✓
Prototype Development of Compliance Tools.....	15 Mar 14 ✓
Protocol for the Independent Testing of Compliance Tools.....	8 May 15 ✓
Independent Testing of Compliance Tools.....	15 Jul 16 ✓
★ Performance Evaluations of Fluorometry-Based Tools: The Relationship between Bulk Metrics and Direct Counts of Living Organisms in Ballast Water Compliance Testing....	27 Sep 17 ✓
★ Independent Testing of Total Residual Oxidant Compliance Technologies.....	Dec 19
Project End.....	Dec 19

★ Indicates RDC product.

Sponsor: CG-OES	
Stakeholder(s): USEPA-GLNPO, CG-CVC	
Project #: 410131	Expected Benefit: Influence international standards
Notes:	
<ul style="list-style-type: none"> • Funded by Great Lakes Restoration Initiative. • Supports the Coast Guard Energy Renaissance Action Plan. 	
RDC POC: Ms. Gail Roderick	CG-926 Domain Lead: Ms. Karin Messenger
<i>For more information, call (860) 271-2600 or e-mail RDC-Info@uscg.mil</i>	



Analysis Support for the Mandated Periodic & Practicability Reviews of Ballast Water Standards

Mission Need: To determine the practicability of implementing Ballast Water Discharge Standards (BWDS) more stringent than the current standards.

Project Objectives:

- Develop a plan for determining the practicability of implementing more stringent ballast water discharge standards.
- Carry out the plan by evaluating the current capabilities of ballast water treatment technologies and of current testing methods.



Key Milestone / Deliverable Schedule:

Project Start.....	28 Jan 13	✓
Phase I: BWDS Practicability Planning Meeting.....	22 May 14	✓
KDP: Conduct BWDS Practicability Review.....	13 Jun 14	✓
★ Recommendations for Evaluating Multiple Filters in Ballast Water Management Systems for U.S. Type Approval.....	7 May 15	✓
★ Ballast Water Discharge Standards Practicability Review Plan.....	24 Aug 16	✓
★ A Review of Available Performance Data for Ballast Water Management Systems	30 Oct 17	✓
★ Applicability of Non-maritime Treatment Approaches to Shipboard Ballast Water Treatment.....	May 18	
Project End.....	May 18	

★ Indicates RDC product.

Sponsor: CG-OES
Stakeholder(s): USEPA - GLNPO

Project #: 410133	Expected Benefit: Influence international standards
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Notes:

- Funded by Great Lakes Restoration Initiative.
- Supports the Coast Guard Energy Renaissance Action Plan.

RDC POC:
Ms. Gail Roderick

CG-926 Domain Lead:
Ms. Karin Messenger

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

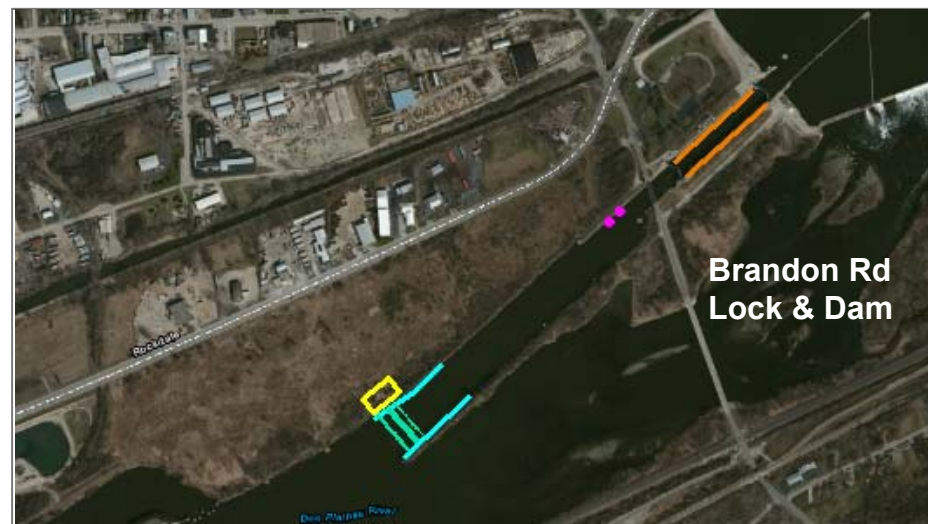


Illinois Waterway Marine Safety Risk Research

Mission Need: Provide technical support in determining marine safety risks; recommend mitigation strategies.

Project Objectives:

- Assist in developing appropriate safety tests for new Aquatic Nuisance Species control measures at Romeoville (Chicago Sanitary & Ship Canal CSSC)) and Rockdale (Brandon Road Lock and Dam (BRLD)) Illinois.
- Participate in United States Army Corps of Engineers (USACE) prototype-related testing as CG technical lead.
- Analyze results and determine marine safety-related risks.
- Develop marine-safety risk assessment model and determine appropriate risk-mitigation measures.
- Make recommendations to CG operational commanders.



Key Milestone / Deliverable Schedule:

Project Start.....	1 Jun 16 ✓
★ Preliminary Marine Safety Risk Assessment, Brandon Road Lock & Dam Invasive Species Control Measures.....	5 Dec 16 ✓
Participate in USACE Safety Testing (CSSC).....	Sep 18
★ CSSC Safety Testing Research Results and Analysis-New Barrier I.....	Jun 19
★ Brandon Road Lock and Dam Quantitative Marine Safety Risk Assessment.....	Feb 22
Project End.....	Feb 22

★ Indicates RDC product.

Sponsor: USEPA-GLNPO, CGD9
Stakeholder(s): MSU Chicago, CG SLM, USACE, LANT

Project #: 410136	Expected Benefit: Improve operational performance/efficiency/mission execution/resiliency
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Notes:

- Project under Great Lakes Restoration Initiative/Great Lakes Mississippi River Interbasin Study.
- Supports the Coast Guard Energy Renaissance Action Plan.

RDC POC:
Mr. M. J. Lewandowski

CG-926 Domain Lead:
Ms. Karin Messenger

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



Research and Development of Quality Assurance Protocols for Ballast Water Testing Independent Laboratories (IL)

Mission Need: CG needs to assure that the ILs are meeting established scientific standards for Ballast Water Management Systems (BWMS) type approval.

Project Objectives:

- Research how audit procedures and protocols are used by other Federal Agencies, Industry, and Academia to ensure Quality Assurance (QA)/Quality Control (QC) programs of contracted laboratories maintain a high standard of quality.
- Develop robust, science-based technical QA protocols that can be used as by the sponsor to verify the efficacy of ILs' QA/QC programs supporting BWMS type approval.
- Evaluate the QA protocols by auditing CG-accepted laboratories and make minor adjustments as necessary.
- Document research activities and test results in a final report.



Key Milestone / Deliverable Schedule:

Project Start.....	7 Jun 16 ✓
Literature Review	29 Mar 17 ✓
Subject Matter Experts Workshop.....	13 May 17 ✓
Initial QA Protocol Development.....	18 Oct 17 ✓
Initial Trial QA Protocol Test at Naval Research Laboratory...	30 Oct 17 ✓
Shore-based Tests at Non-US ILs.....	Jul 18
Shipboard Tests at Non-US ILs	Feb 19
★ Final Report and QA Protocols.....	Sep 20
Project End.....	Sep 20

Sponsor: CG-ENG-3

Stakeholder(s): CG-OES-3, USEPA-GLNPO

Project #: 410146	Expected Benefit: Improve operational performance/efficiency/mission execution/resiliency
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Notes:

- Partnering with Great Lakes Restoration Initiative under the Clean Water Act 33 USC 1251-1387.
- Supports the Coast Guard Energy Renaissance Action Plan.

RDC POC:
Ms. Gail Roderick

CG-926 Domain Lead:
Ms. Karin Messenger

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