



Acquisition Directorate

Research, Development, Test & Evaluation

FY19 RDT&E Project Portfolio



UNCLAS | FY19 RDT&E Project Portfolio
RDC | T. Girton | August 2018



Table of Contents – FY19 CG RDT&E Funded

Branch Area	Project #	Project	Slide #
Aviation	2019-9	U.S. Coast Guard Rotary Wing Covert Study	5
	2019-24	Airborne Use of Force (AUF)	6
	7807	Robotic Aircraft for Maritime Public Safety (RAMPS)	7
	7814	Long Range/Ultra-Long Endurance UAS Analysis	8
C4ISR (Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance)	2019-1	Asset Lay-Down and Tasking System	9
	2019-27	USCG/DoD/DISA Mobile Data Solutions	10
	1103	Enhanced Person in the Water (PIW) Detection	11
	1108	Cell Phone Location for Search and Rescue	12
	2218	Countering GPS Interference	13
	58041	CG Nearshore Use of FirstNet	14
	7759	Evaluation of Potential CG Use of CubeSats	15
	8107	Augmented Reality Capabilities to Improve Coast Guard Mission Support	16
	8116	Intelligence, Surveillance and Reconnaissance (ISR) Enterprise Data Network Study and Analysis	17
	8309	Document and Media Exploitation (DOMEX) Technology Evolution Capability Research	18
8502	Cybersecurity Vulnerabilities, Threats and Risk Mitigation Strategies for Coast Guard Surface and Air Assets	19	
E&W (Environment and Waterways)	2019-3	Market Research of Spilled Oil Recovery System (SORS) and Vessel of Opportunity Skimming System (VOSS) Technologies	20
	1008	Survival Modeling, Reporting, and Statistics	21
	11011	Performance of Daytime Distress Signals	22
	2702	Develop an Environmentally Friendly Buoy Mooring System	23
	3309	Exploring Machine Learning (ML) for Application in USCG Mission Planning and Disaster Response	24
	4705	Oil Sands Products Spill Response	25
	4710	Nearshore and Inland Evaluation of the Estimated Recovery System Potential (ERSP) Calculator	26



Table of Contents – FY19 CG RDT&E Funded (cont.)

Branch Area	Project #	Project	Slide #
M&S COE (Modeling & Simulation Center of Expertise)	2019-4	Iceberg Detection and Information Dissemination Methods	27
	2019-11	Condition-Based Maintenance (CBM) for Coast Guard Product Lines	28
	2019-26	Risk Based Cruise Ship Safety Score	29
	7529	Research into Navigational Safety Risk Modeling and Analysis Tool	30
	7531	Use of Modern Data Analytics to Improve Risk Based Allocation of Prevention Resources	31
	7532	Improved Efficiency in Domestic Inspections	32
	7533	Integration of Geographic Information System (GIS) Capability into Coast Guard Tactical Operations	33
	7937	Nighttime Search Effectiveness Evaluation	34
Surface	2018-22	Counter Unmanned Underwater Vehicle (c-UUV) Anti/Swimmer Technology	35
	2019-32	Arctic Technology Evaluation 2019	36
	4110	Diesel Outboard Development	37
	5301	Safety Parameters for ICE Operations (SPICE Ops)	38
	5921	Define and Communicate Exclusion Zones	39
	62101	Arctic Technology Evaluation 2018	40
	6512	Ice Condition (ICECON) Risk Assessment Tool(s)	41
	7210	Low-Cost Maritime Domain Awareness (MDA) Pilot	42
	7758	Evaluation of Three-Dimensional (3D) Printing Technology for Coast Guard Applications	43
	7760	Corrosion Control and Monitoring	44
	7812	Maritime Counter Unmanned Aircraft Systems (cUAS)	45
STIC (Science & Technology Innovation Center)	6503	Research Existing Vessels Capable of Icebreaking	46
	99952	Science & Technology Innovation Center (STIC)	47



Table of Contents – FY19 Non-CG RDT&E Funded

Fund Type	Project #	Project	Slide#
AC&I	6812	Alternatives Analysis for the Waterways Commerce Cutter	49
	7702	Operational Test Agent (OTA) for the sUAS for NSC Program	50
	9203	H60T Sustainment Alternatives Analysis	51
OE	2018-30	Fleet Performance Analysis	52
Other Government Agencies	47041	In-Situ Oil Burn Research	53
	410131	Shipboard Compliance of Ballast Water Discharge Standards (BWDS)	54
	410136	Illinois Waterway Marine Safety Risk Research	55
	410146	Research and Development of Quality Assurance Protocols for Ballast Water Testing Independent Laboratories (IL)	56
	410147	Ballast Water Management Alternatives for Lakers	57





Acquisition Directorate

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FY19 Project Portfolio



CG RDT&E Funded Projects



U.S. Coast Guard Rotary Wing Covert Study

Mission Need: Develop improved covert Techniques, Tactics and Procedures for rotary wing aircraft.

Project Objectives:

- Determine lateral and vertical distances for the H-65 and H-60 to remain covert from potential targets in the maritime environment.
- Assist C4ISR community with development of better requirements for future remote sensor acquisitions that allow for well-defined covert standoff distances.



Key Milestone / Deliverable Schedule:

Project Start.....	Oct 18
Define/Limit Target Vessel Parameters.....	Nov 18
Data Collection.....	Dec 18
Aircraft Characteristics Modeling and Simulation.....	Apr 19
Execute Operational Field Test.....	Jun 19
★ Coast Guard Rotary Wing Covert Study.....	Oct 19
Project End.....	Oct 19

Sponsor: CG-711

Stakeholder(s): CG-SAR, FORCECOM, AREA-3

Project #: 2019-9
Anticipated Transition: Knowledge Product
 Influence Tactics, Techniques, & Procedures

Notes:

- Leverage prior RDC work: KC-130J Aural Detection Information Paper and C-130H study available as background.

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LT Dillon Sapp

CG-926 Domain Lead:
Mr. Scott Craig

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★ Indicates RDC product.



Acquisition Directorate
Research & Development Center

UNCLAS/USCG Research & Development Center
Internet Release is Authorized

Aug 2018
Version date

Airborne Use of Force (AUF)

Mission Need: Determine appropriate weapon and ammunition combination to disable non-compliant vessel engines and minimize collateral damage during AUF engagements.

Project Objectives:

- Use computational modeling, limited static and dynamic testing to parameterize secondary effects of various 7.62 x 51 mm rounds (ball, armor piercing, frangible, non-jacketed, etc.) when used against representative-sized outboard motors (~75HP and ~200 HP) while employing current CG AUF/Counter Drug (CD) Techniques, Tactics and Procedures (TTP).



Key Milestone / Deliverable Schedule:

Project Start.....	Oct 18
Kick-off/Technical Interchange Meeting	Jan 19
Conduct Model Evaluation and Live Fire Test	Aug 19
★ Terminal Ballistic Effects and Threat Environment Parameterization of Outboard Motors to the 7.62 x 51 NATO Round	Sep 19
Project End.....	Sep 19

Sponsor: CG-711

Stakeholder(s): CG-721, ATC Mobile, CG AUF Units

Project #: 2019-24
Anticipated Transition: Knowledge Product
 Influence Tactics, Techniques, & Procedures

Notes:

- Leverage prior RDC work.
- Potential collaboration with Federally Funded Research & Development Center (FFRDC) for live fire range testing.
- Explore Combatting Terrorism Technical Support Office (CTTSO) collaboration.

RDC POC:
Mr. Jay Carey

CG-926 Domain Lead:
Mr. Scott Craig

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Acquisition Directorate
Research & Development Center

UNCLAS/USCG Research & Development Center
Internet Release is Authorized

Aug 2018
Version date

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.....	Jan 19	

★ Indicates RDC product.

Sponsor: DHS S&T, CG-711
Stakeholder(s): CG-751, CG-761, CG-771, CG-931, JTF-E

Project #: 7807
Anticipated Transition: Knowledge Product
 Future Technology

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.

RDC POC:
Mr. Stephen Dunn

CG-926 Domain Lead:
Mr. Scott Craig

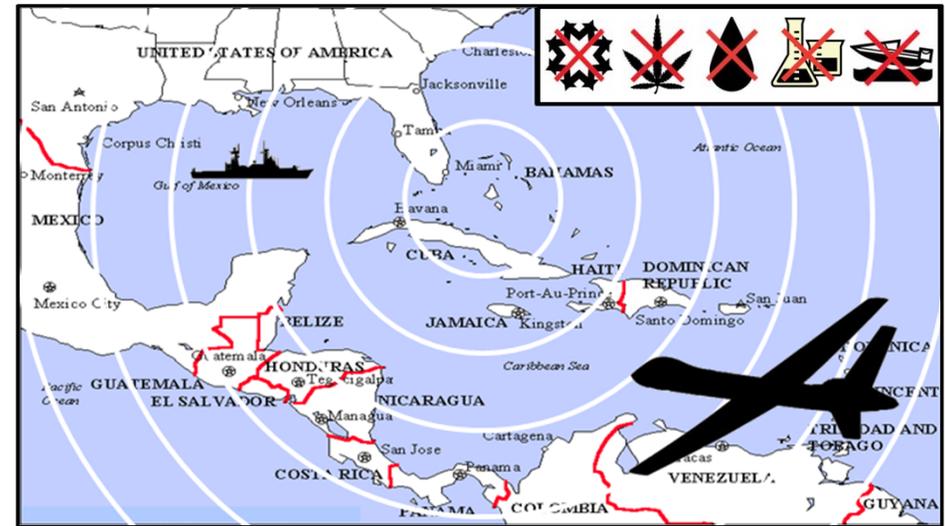
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Long-Range/Ultra-Long Endurance UAS Analysis

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 Tech Demonstrations.....	May 19
★ LR/U-LE UAS AoA	Oct 19
★ LR/U-LE UAS ISR Final Report.....	Oct 19
Brief Demonstration Results to Congress (CG-926).....	Nov 19
Project End.....	Nov 19

★ Indicates RDC product.

Sponsor: CG-711

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

Project #: 7814
Anticipated Transition: Knowledge Product
 Future Technology

Notes:

- Joint assessment in collaboration with Customs and Border Protection and Department of Homeland Security Science & Technology.
- Collaborating with Air Force Research Lab.

RDC POC:
Mr. Evan Gross

CG-926 Domain Lead:
Mr. Scott Craig

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Asset Lay-Down and Tasking System

Mission Need: Comprehensive asset tracking and tasking for CG, Other Government Agencies and volunteers in steady-state and emergency response situations.

Project Objectives:

- Define required capabilities for deployment/transition.
- Demonstrate and evaluate **tracking** of Coast Guard Blue Forces, Other Government Agency and Volunteer assets.
- Demonstrate and evaluate **tasking** of Coast Guard Blue Forces, Other Government Agency and Volunteer assets.
- Provide system architecture(s), system dataflow diagram(s), and system operations documentation necessary for deployment/transition of the system.



Key Milestone / Deliverable Schedule:

Project Start.....	Oct 18
Capability Refinement – Stakeholder Summit.....	Dec 18
Asset Lay-Down System Demonstration.....	Jun 19
★ Asset Lay-Down Tracking Brief.....	Jul 19
Develop Asset Tasking System.....	Apr 20
Asset Tasking System Demonstration.....	May 20
★ Asset Lay-Down and Tasking System Final Report & Brief.....	Sep 20
Project End.....	Sep 20

Sponsor: CG-761
Stakeholder(s): CG-CPE, COMMCOM, C3CEN, ALC, AREA-6, CG-711, CG-751, CG-67, CG-741, CG-731

Project #: 2019-1	Anticipated Transition: Knowledge Product Influence Tactics, Techniques, & Procedures
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Notes:
 Leverage:

- RDC REACT Report: Emergency Response Asset Tracking.
- DHS S&T and U.S. Army Research Lab efforts already in progress.
- Information gained and reported in the 2017 hurricane season lessons-learned.

RDC POC: Mr. Alan Arsenault	CG-926 Domain Lead: Ms. Holly Wendelin
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★ Indicates RDC product.

USCG/DoD/DISA Mobile Data Solutions

Mission Need: Leverage DoD mobility solutions to enhance Coast Guard operations and mission support.

Project Objectives:

- Research Department of Defense (DoD)/Defense Information Systems Agency (DISA) mobility programs and architecture.
- Review DoD/DISA mobility capabilities and how they may apply to Coast Guard operations and mission support.
- Develop a technology roadmap and transition recommendations to the Coast Guard Mobility Integrated Product Team (IPT).



Key Milestone / Deliverable Schedule:

Project Start.....	Oct 18
Review DoD/DISA Mobility Programs.....	Feb 19
Capability/Functional Requirements – Stakeholder Summit.....	Mar 19
Limited User Evaluation Completed.....	Jul 19
★ USCG/DoD/DISA Mobile Data Solutions Final Report and Brief.....	Sep 19
Project End.....	Sep 19

Sponsor: CG-761
Stakeholder(s): CG-68, CG-1B3, AREA-6, C4IT SC, TISCOM, FORCECOM

Project #: 2019-27
Anticipated Transition: Knowledge Product
 Influence Tactics, Techniques, & Procedures

Notes:

- Partner with Air Force Research Lab Information Directorate.
- Align project goals with CG Mobility IPT.
- Leverage results of RDC Project 8114: Mobile Technology for Operational Efficiency.
- Align with RDC Project 8107: Augmented Reality Capabilities to Improve CG Mission Support.
- Align with RDC Project 58041: CG Nearshore Use of FirstNet.

RDC POC:
 Mr. John Maloney

CG-926 Domain Lead:
 Ms. Holly Wendelin

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★ Indicates RDC product.

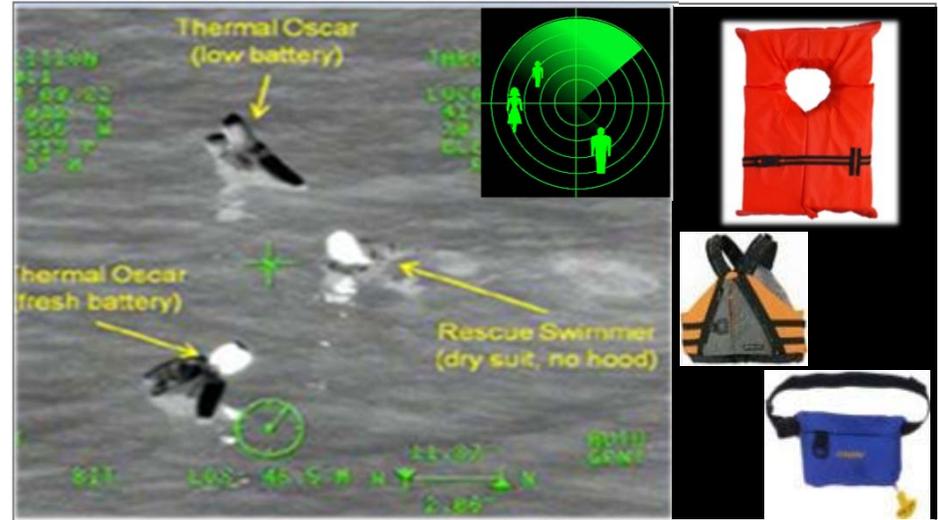


Enhanced Person in the Water (PIW) Detection

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

Project Objectives:

- Research modifications to nominal floatation devices that increase conspicuity and detection probability by existing CG sensor suites. Potential benefits include:
 - 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.....	Sep 18
★ Summary of Prize Competition Ideas.....	Nov 18
Limited User Evaluation Completed.....	Aug 19
★ Enhanced PIW Detection Final Report and Brief.....	Jan 20
Project End.....	Jan 20

Sponsor: CG-ENG-4

Stakeholder(s): CG-731, CG-411, CG-SAR, CG-761, ATC, CG-BSX, CG-INV, CG-CVC

Project #: 1103	Anticipated Transition: Product Fielded Prototype
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Notes:

- Project execution strategies include use of the DHS Prize Competition process, and possible Cooperative Research and Development Agreements (CRADA) with industry.
- Leverage Johns Hopkins University Applied Physics Lab and Air Force Research Lab efforts.

RDC POC:
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Ms. Holly Wendelin

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★ Indicates RDC product.



Acquisition Directorate
Research & Development Center

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.

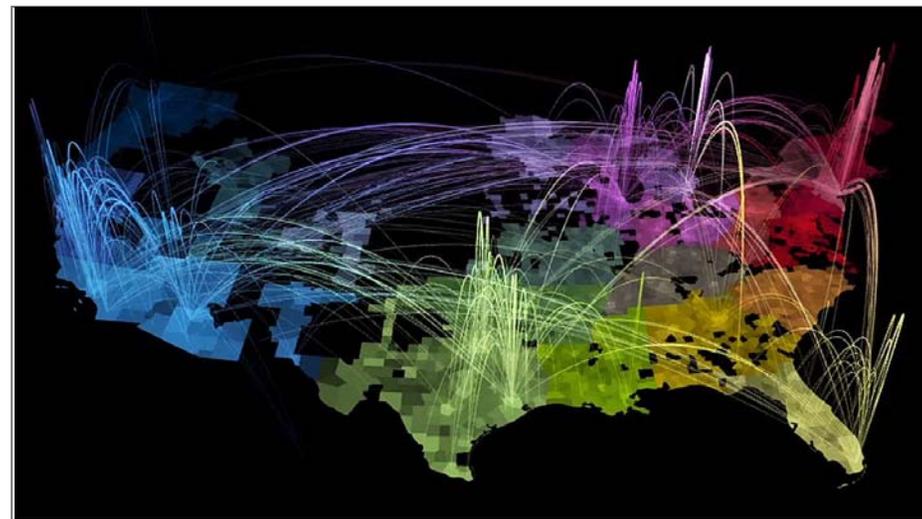
Project Objectives:

- 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.....	17 Jan 18 ✓
Obtain COTS/GOTS Solutions for Demonstration.....	Sep 18
Demonstration Test Plan.....	Dec 18
Conduct Demonstration.....	Apr 19
★ Cell Phone Tracking for SAR Final Brief and Report.....	Aug 19
Project End.....	Aug 19

★ Indicates RDC product.



Sponsor: CG-SAR	
Stakeholder(s): CG-761, C4IT SC, CG-BSX, FORCECOM, CBP, AREAs, Districts	
Project #: 1108	Anticipated Transition: Product Fielded Prototype
Notes:	
<ul style="list-style-type: none"> • Leverage DHS Science & Technology's (S&T) efforts in cell phone tracking technologies. • Use of Cooperative Research and Development Agreements (CRADA)/S&T Other Transaction Activity (OTA)/representation on DHS First Responders Small Business Innovation Research (SBIR). 	
RDC POC: Mr. Donald Decker	CG-926 Domain Lead: Ms. Holly Wendelin
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Countering GPS Interference

Mission Need: Develop a means to detect, localize, alert, and mitigate sources of GPS interference in the maritime domain.

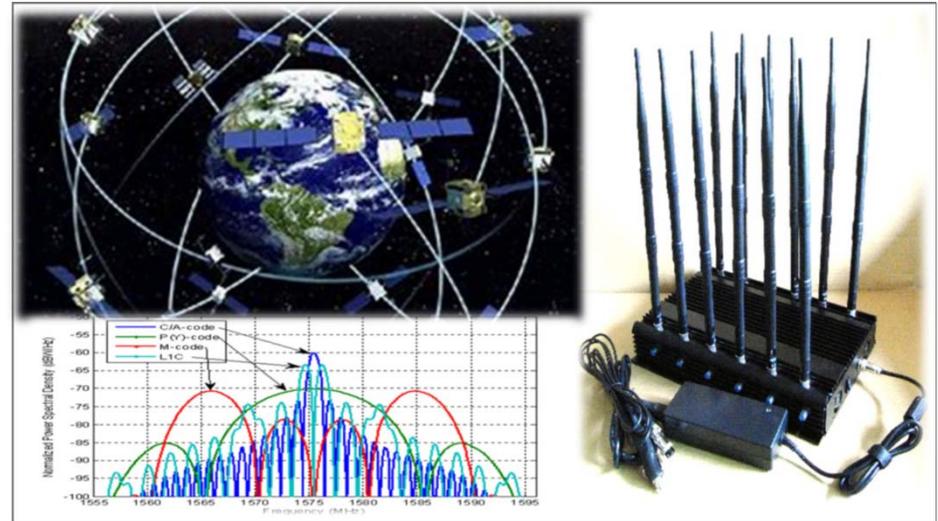
Project Objectives:

- Develop wide area GPS interference detection based on existing networks of GPS receivers such as Nationwide Automatic Identification System (NAIS).
- Investigate GPS interference mitigation technologies to counter effects aboard Coast Guard vessels. Investigate tactical GPS interference detection capability for CG units to operate to find GPS interference sources.
- Develop notification methods for maritime users via marine safety information methods such as Broadcast Notice to Mariners (BNM), Automatic Identification System (AIS) Application Specific Messages (ASM) and Navigation Data (NAVDAT).
- Bring maritime experience to DHS S&T First Responders Group (FRG) Position, Navigation and Timing (PNT) efforts.

Key Milestone / Deliverable Schedule:

Project Start.....	14 Jun 18 ✓
Test CG GPS Units at U.S. Army CERDEC.....	Aug 18
DHS S&T GPS Equipment Tests	Sep 18
★ Countering GPS Interference Interim Brief	Mar 19
Demonstration of Wide Area GPS Interference Detection.....	May 19
★ Countering GPS Interference Final Report and Brief	Nov 19
Project End.....	Nov 19

★ Indicates RDC product.



Sponsor: CG-NAV
Stakeholder(s): CG-68, CG-761, CG-791, C4IT SC, C3CEN, NAVCEN, DHS S&T (FRG)

Project #: 2218
Anticipated Transition: Knowledge Product
 Influence Tactics, Techniques, & Procedures

Notes:

- Partner with U.S. Army Communications-Electronics Research, Development and Engineering Center (CERDEC) and Air Force Research Lab (AFRL).
- Continue working with DHS S&T (FRG) PNT Program.
- Leverage GPS/AIS results from RDC Project 8502: Cybersecurity Vulnerabilities, Threats and Risk Mitigation Strategies for CG Surface and Air Assets.

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

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CG Nearshore Use of FirstNet

Mission Need: Interoperable voice and high speed data communications among Sector Forces and First Responders within Sea Area A1 (within 20 nautical miles of shore).

Project Objectives:

- Leverage a Cooperative Research and Development Agreement (CRADA) to investigate USCG operational use of the National Public Safety Broadband Network (commonly called FirstNet).
- Develop, demonstrate and assess the feasibility and effectiveness of leveraging CG infrastructure (e.g., Rescue 21 (R21) towers) to enhance FirstNet designs.
- Adapt 4G/LTE technology for the maritime environment to best support the USCG, public safety, Department of Defense, and Other Government Agencies within 20 nautical miles of shore.
 - Phase 1:* Deploy handsets, vessel routers, Voice over Internet Protocol (VoIP), Blue Force (BF) tracking, and Geosuite.
 - Phase 2:* Optimize Radio Access Network, deploy Band 14 to R21 tower.
 - Phase 3:* Deploy Band 14 hotspot on USCG Fast Response Cutter.



Key Milestone / Deliverable Schedule:

Project Start.....	21 Mar 18 ✓
Limited User Evaluation (LUE) Start.....	Aug 18
★ CG FirstNet Maritime Test Range: Phase 1 Results (Brief)	Oct 18
★ CG FirstNet Maritime Test Range: Phase 2 Results (Brief)	Feb 19
★ CG FirstNet Maritime Test Range: Phase 3 Results (Brief)	Jun 19
LUE Finish.....	Sep 19
★ Coast Guard Nearshore Use of FirstNet: Test Results and Recommendations (Report & Brief).....	Nov 19
Project End.....	Nov 19

Sponsor: CG-68
Stakeholder(s): CG-255, CG-721/31/41/51/61/91, C4IT SC, LANT/PAC-6, C3CEN, TISCOM, D7, JIATF

Project #: 58041
Anticipated Transition: Product
Product: Fielded Prototype

Notes:

- Project includes use of a CRADA.
- Partners: FirstNet Program Office, U.S. Customs and Border Protection Office of Air and Marine, and Florida Fish and Wildlife Conservation Commission (FWC).

RDC POC:
Mr. Jon Turban, P.E.

CG-926 Domain Lead:
Ms. Holly Wendelin

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★ Indicates RDC product.

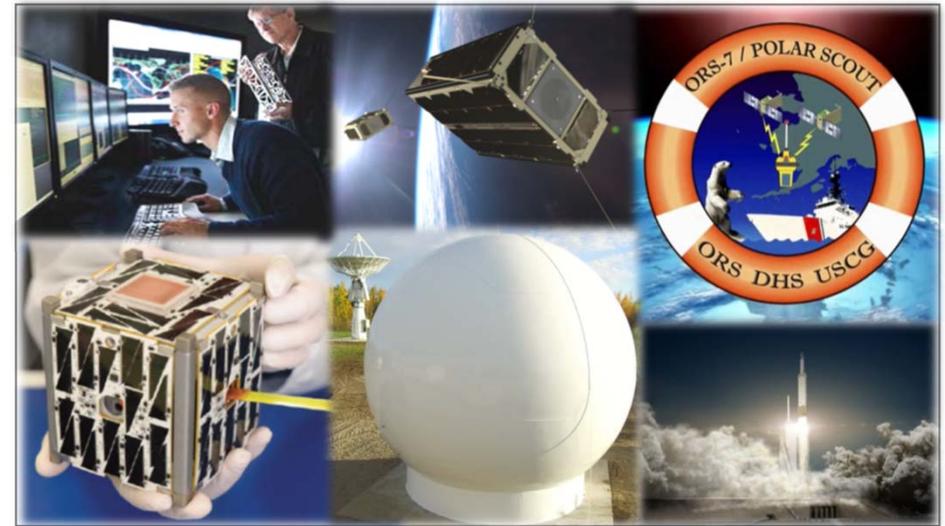


Evaluation of Potential CG Use of CubeSats

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

Project Objectives:

- Develop 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.
- Perform a CubeSat payload mission assessment that includes CubeSat Concept of Operations (CONOP) scenarios that would support CG mission needs and influence CubeSat requirements.
- 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.....	Jul 18
Deploy MC3 Ground Station (New London, CT).....	Oct 18
★ Coast Guard Use of CubeSat Technology Brief	Oct 18
Polar Scout Launch.....	Nov 18
Polar Scout Demonstrations Begin.....	Mar 18
★ Performance Test Results of New London MC3 Ground Station...	Jan 19
★ CubeSat Payload Mission Assessment.....	Oct 19
★ CubeSat Technology Roadmap.....	Aug 20
Project End.....	Aug 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	Anticipated Transition: Fielded Prototype	Product
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Notes:

- Partner with DHS Science & Technology, U.S. Air Force Space Rapid Capabilities Office (SpRCO), National Oceanic and Atmospheric Administration, Naval Postgraduate School (NPS) & Coast Guard Academy to launch and evaluate CubeSat technology.
- Collaborate with NPS, Air Force Institute of Technology, U.S. Navy Program Executive Office Space Systems, and other agencies.
- Leverage Lawrence Livermore National Laboratory.

RDC POC:
LCDR Grant Wyman

CG-926 Domain Lead:
Ms. Holly Wendelin

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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.....	Aug 18	
★ Market Research/Technology Assessment Briefing.....	Oct 18	
First Augmented Reality Agile Development Sprint and Demo.....	Nov 18	
Final Augmented Reality Agile Development Sprint and Demo.....	Mar 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	Anticipated Transition: Knowledge Product Influence Tactics, Techniques, & Procedures
Notes:	
<ul style="list-style-type: none"> • Includes partnerships with Massachusetts Institute of Technology Lincoln Laboratory, Naval Sea Systems Command (NAVSEA) Portsmouth Naval Shipyard, Microsoft Technology Center Boston. • Explores Agile Scrum development methods. • Supports the Mobile Integrated Product Team objectives. 	
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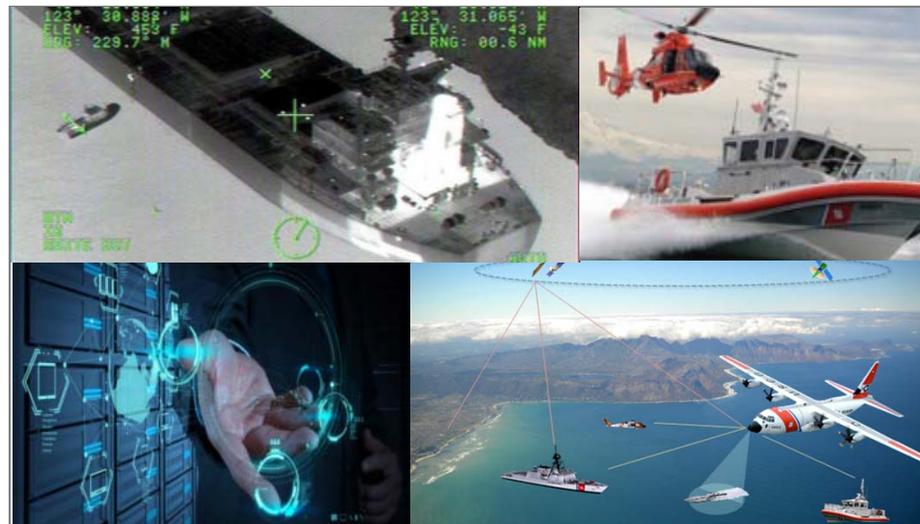


Intelligence, Surveillance and Reconnaissance (ISR) Enterprise Data Network Study and Analysis

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 Analyses 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 ✓
★ Capability Analysis Report (CAR).....	May 19
<i>Mission Need – ADE 1</i>	
Technology Demonstration(s) to Inform Mission Need.....	May 19
★ Mission Needs Statement (MNS).....	Jan 20
★ Concept of Operations (CONOP).....	Feb 20
★ ISR Enterprise Data Network Final Report & Brief.....	May 20
Project End.....	May 20

★ Indicates RDC product.

Sponsor: CG-26, DHS S&T (BMD)
Stakeholder(s): CG-93, CG-711/731/741/751/761/791/771, CG-68, MIFC, ICC, C4IT SC, CYBERCOM, AREA-6

Project #: 8116
Anticipated Transition: Knowledge Product
 Acquisition Milestone Support

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.
- Align with RDC Long Range/Ultra-long Endurance Unmanned Aerial Systems Analysis.

RDC POC:
LT Anne Newton

CG-926 Domain Lead:
Ms. Holly Wendelin

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



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 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.
- Lead the Department of Homeland Security (DHS) Gap 5 Study involving a departmental look at Digital Forensics Tier II and Tier III labs within the sub-component agencies and the possibility of co-location.

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).....	31 May 18 ✓
Commence DHS Gap 5 Study.....	1 Jun 18 ✓
DOMEX Functional Requirements Development.....	Aug 18
★ Market Research/Functional Requirements Briefing.....	Oct 18
Develop Courses of Action (COA)	Jan 19
★ Final Report for DHS Gap 5 Study.....	Jun 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-68, CGIS, CGCIS, ICC, C3CEN, CG-INV, DHS I&A
Project #:	Anticipated Transition: Knowledge Product 8309 Acquisition Milestone Support
Notes:	
<ul style="list-style-type: none"> • Supports CG Intelligence Guidance 2019-2021 (Goal 5c). • Partner with the Defense Intelligence Agency (DIA) National Media Exploitation Center's Science and Technology Integration Lab and Homeland Security Investigation's Cyber Crimes Center. 	
RDC POC: LT Anne Newton	CG-926 Domain Lead: Ms. Holly Wendelin
<p><i>For more information, call (860) 271-2600 or e-mail RDC-Info@uscg.mil</i></p>	



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.....	5 Apr 18 ✓
Select Cutter and Aircraft Systems for Cyber Monitoring.....	Aug 18
Research Cyber Monitoring Systems at Government Labs.....	Nov 18
Complete RHIMES Cyber Design Process on USCGC.....	Aug 19
Conduct Cutter and Aircraft Systems Vulnerability Assessment.....	Nov 19
★ Surface and Air Assets Vulnerability Report.....	Feb 20
Conduct RHIMES Cyber Testing on USCGC.....	May 20
★ Cybersecurity for Coast Guard Surface and Air Assets.....	Sep 20
Project End.....	Sep 20

★ Indicates RDC product.

Sponsor: CG-791
Stakeholder(s): CG-761, CG-711, CG-751, CG-933, C4ITSC, CYBERCOM

Project #: 8502
Anticipated Transition: Knowledge Product
 Influence Tactics, Techniques, & Procedures

Notes:

- Partner with DHS S&T First Responders Group, Cyber Security Division, ONR RHIMES program.
- Leverage internal R&D efforts at MITRE FFRDC.
- Collaborate with Oak Ridge/Pacific/Argonne National Labs, Johns Hopkins Applied Physics Lab, U.S. Merchant Marine Academy, and Naval Postgraduate School.

RDC POC:
Mr. Rob Taylor

CG-926 Domain Lead:
Ms. Holly Wendelin

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

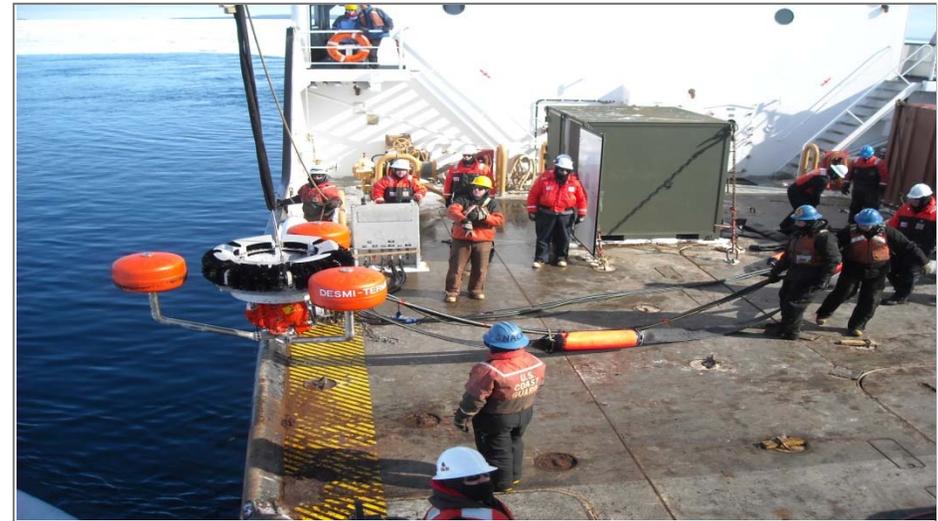


Market Research of Spilled Oil Recovery System (SORS) and Vessel of Opportunity Skimming System (VOSS) Technologies

Mission Need: Replace legacy SORS/VOSS systems with the state-of-the-market, logistically supportable technology.

Project Objectives:

- Research state-of-the-market technologies that can potentially replace the current SORS and VOSS equipment.
- Compile a report for future procurement actions related to SORS and VOSS equipment replacement.



Key Milestone / Deliverable Schedule:

Project Start.....	Oct 18
Site Visits.....	Apr 19
Review Lessons Learned.....	May 19
Key Performance Parameters (KPP)/Requirements.....	Jun 19
Market Research.....	Nov 19
Develop Market Research Results Report.....	Feb 20
Key Decision Point (KDP): Testing Technologies.....	Mar 20
★ Spilled Oil Recovery System and Vessel of Opportunity Skimming System Technologies Market Research.....	Apr 20
Project End.....	Apr 20

Sponsor: CG-MER

Stakeholder(s): CG-751, CG-43, NSFCC

Project #: 2019-3
Anticipated Transition: Knowledge Product
 Acquisition Milestone Support

Notes:

RDC POC:
Ms. Gail Roderick

CG-926 Domain Lead:
Ms. Karin Messenger

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★ Indicates RDC product.



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.....	31 Mar 18 ✓
★ Survival Information Database Implementation Guidance...	Mar 19
Conduct Facilitated Workshop	May 19
★ Decision Memo - Selection of Candidate Model(s).....	Jun 19
★ Survival Model Enhancement and Adaptation.....	Sep 20
★ Enhanced CG Survival Model and Implementation Guidance	Oct 21
Project End.....	Oct 21

Sponsor: CG-SAR	
Stakeholder(s): AREA-5, CG-5R, CG-761	
Project #: 1008	Anticipated Transition: Knowledge Product Influence Tactics, Techniques, & Procedures
Notes:	
<ul style="list-style-type: none"> • Carries forward RDC survival-related work with Department of Defense labs. • Potential efficiencies in saving lives while reducing time on sortie. • Explore partnerships with National Labs and University Centers. 	
RDC POC: Mr. M. J. Lewandowski	CG-926 Domain Lead: Ms. Karin Messenger
<i>For more information, call (860) 271-2600 or e-mail RDC-Info@uscg.mil</i>	

★ Indicates RDC product.



Performance of Daytime Distress Signals

Mission Need: Determine effectiveness of existing daytime distress signals.

Project Objectives:

- Provide the Office of Design and Engineering Standards empirically-derived information to update distress signal carriage requirements.
- Determine effectiveness of presently-approved daytime distress signals.
- Determine if an enhanced, 2-color, quick-flashing SOS electronic visual distress signal will be effective in daytime.
- Determine if project results can apply to Safety of Life at Sea (SOLAS) guidelines.



Key Milestone / Deliverable Schedule:

Project Start.....	25 Apr 18 ✓
Pilot Testing.....	Jul 18
Field Experiment.....	Sep 18
★ Daytime Distress Signal Effectiveness.....	Nov 18
Key Decision Point: SOLAS Equivalence.....	Nov 18
Begin SOLAS Equivalence Investigation	Dec 18
★ SOLAS Electronic Visual Distress Signal Device (eVDSD) Equivalence	Jun 19
Project End	Jun 19

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

Project #: 11011	Anticipated Transition: Knowledge Product Standards/Regulations
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Notes:

- Follow-on to Project 1101, Alternatives to Pyrotechnic Distress Signals Project.

RDC POC:
Mr. M. J. Lewandowski

CG-926 Domain Lead:
Ms. Karin Messenger

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e-mail RDC-Info@uscg.mil*

★ Indicates RDC product.



Acquisition Directorate
Research & Development Center

UNCLAS/USCG Research & Development Center
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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 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/Buoy Deployment.....	3 Apr 18	✓
★ Environmentally Friendly Buoy Mooring System Deployment Summary.....	Sep 18	
Demonstration End.....	May 20	
KDP: Smart Technology.....	Jul 20	
★ Destructive Testing.....	Jul 20	
Environmentally Friendly Buoy Mooring System Final Report.....	Sep 20	
Project End	Sep 20	

★ Indicates RDC product.

Sponsor: CG-NAV

Stakeholder(s): SILC-WOPL, CG-D7, LANT

Project #: 2702	Anticipated Transition: Fielded Prototype	Product
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Notes:

- Supports Coral Reef Protection Executive Order 13089.

RDC POC:
Mr. M. J. Lewandowski

CG-926 Domain Lead:
Ms. Karin Messenger

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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 Course of Action (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 – Execute the proof of concept. Construct an ML implementation plan to explore a CG application w/ University of Southern California (USC), Critical Infrastructure Resilience Institute (CIRI), Air Force Research Lab (AFRL) & Johns Hopkins University (JHU) Applied Physics Lab (APL).
- Phase III – Demonstrate the ability for the strategic, operational and tactical components of the Coast Guard to effectively use this AI algorithm. Use the algorithms developed in Phase II and apply them to either a fictitious disaster response scenario with resource allocation problems or a real world problem (depending on data availability) with AFRL, CIRI & USC.



Key Milestone / Deliverable Schedule:

Project Start.....	20 Oct 17	✓
Phase I - Conduct Literature Review and Assessment.....	30 Apr 18	✓
Pends Approval of DHS S&T CIRI Challenge Package/Approval.....	Oct 18	
★ Phase I, State of the Research/Proposed Proof of Concept.....	Dec 18	
Execute the Phase II Proof of Concept.....	Jan 19	
★ Phase II, PPT W/Decision Memo Key Decision Point (KDP)		
Phase III	Jul 19	
Pends Approval of DHS S&T CIRI Challenge Package/Approval.....	Oct 19	
★ Naval Postgraduate School Thesis - Change Detection of Marine Environment using ML (pending Naval Research Working Group approval)	Dec 19	
Execute the Phase III Proof of Concept/Test Optimization of Algorithm Developed/AFRL M&S.....	Jan 20	
★ Proof of Concept - Case Study Haiti Earthquake Response.....	Jun 20	
★ Project Summary Report and Brief.....	Jul 20	
Project End.....	Jul 20	

★ Indicates RDC product.

Sponsor: CG-CPE
Stakeholder(s): CG-CVC, CG-MER, CG-2, LANT-35, PAC-53

Project #: 3309
Anticipated Transition: Knowledge Product
 Future Technology

Notes:

- Collaboration to be done with the Department of Homeland Security Center – University of Illinois (Champaign-Urbana), Florida International University, USC Center for Artificial Intelligence for Social Justice, AFRL, and JHU APL.

RDC POC:
 Dr. Joe DiRenzo III

CG-926 Domain Lead:
 Mr. Curtis Catanach

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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 ✓
★ Testing of Oil Sands Products Recovery in Fresh Water: White Paper Study	2 Apr 18 ✓
Bottom Mitigation Techniques Part 2 First Inland Test.....	26 Apr 18 ✓
Bottom Mitigation Techniques Part 2 Offshore Test.....	31 May 18 ✓
Bottom Mitigation Techniques Part 2 Second Inland Test	Apr 19
★ Mitigation of Oil Moving Along the Waterway Bottom.....	Sep 19
★ Oil Sands Products Spill Response Final Report.....	Sep 20
Project End	Sep 20

★ Indicates RDC product.

Sponsor: CG-MER	
Stakeholder(s): EPA, AREA-54, NOAA	
Project #: 4705	Anticipated Transition: Knowledge Product Influence Tactics, Techniques, & Procedures
Notes: <ul style="list-style-type: none"> • Cooperative Research and Development Agreement with Enbridge Pipeline. • Leverage research done by academia, U.S. Department of Energy Labs, and International Academic Institutions. 	
RDC POC: Mr. Alexander Balsley, P.E.	CG-926 Domain Lead: Ms. Karin Messenger
<i>For more information, call (860) 271-2600 or e-mail RDC-Info@uscg.mil</i>	



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's challenges experienced during Deepwater Horizon.
- Research inland and nearshore oil recovery equipment and efficiencies.
- Research if ERSP can be expanded to include the entire nearshore 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 Calculator for Nearshore and Inland Waterways	20 Sep 17 ✓
Determine Feasibility to Enhance Current Calculator Tool.....	27 Sep 17 ✓
★ Preliminary Analysis of Mechanical Oil Spill Response Planning Modeling Factors White Paper	Dec 18
★ Inland ERSP Preliminary Factors, Requirements and Conceptual Model	Aug 19
★ Inland ERSP Op Environment Calculator Design Document.....	Nov 19
Key Decision Point (KDP): ERSP Calculator Enhancement.....	Nov 19
KDP: Calculator Tool Validation Testing.....	Nov 19
★ National Academy of Sciences (NAS) Review of Inland ERSP.....	Oct 20
KDP: NAS Review for Upgrading Inland ERSP	Oct 20
★ Inland ERSP Calculator Software and User Guide.....	Feb 21
★ Nearshore & Inland Evaluation of the ERSP Calculator.....	Aug 21
Project End	Aug 21

★ Indicates RDC product.

Sponsor: CG-MER

Stakeholder(s): BSEE, AREA-54

Project #: 4710	Anticipated Transition: Fielded Prototype	Product
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Notes:

- Partner with Bureau of Safety and Environmental Enforcement (BSEE).

RDC POC:
Mr. Alexander Balsley, P.E.

CG-926 Domain Lead:
Ms. Karin Messenger

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Iceberg Detection and Information Dissemination Methods

Mission Need: Improve quality of detection and information using satellite images to improve customer information dissemination.

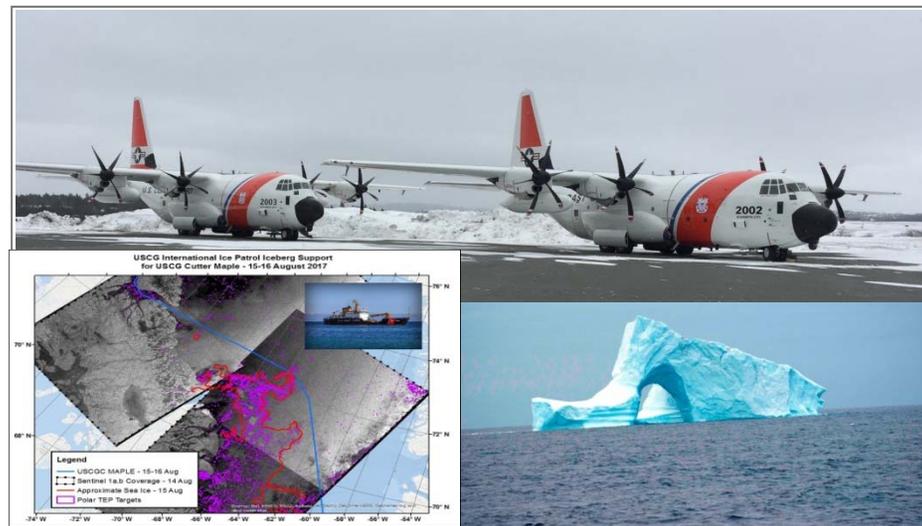
Project Objectives:

- Phase I - Perform a technical evaluation of software and methods to identify and classify icebergs and other relevant targets in satellite images. Include evaluation of Iceberg Detection Software (IDS), machine learning, and satellite image processing technologies. Build on results from the FY18 International Ice Patrol/National Aeronautics and Space Administration Jet Propulsion Laboratory machine learning project.
- Develop recommendations for process improvement and resourcing needs to mature space-based data into an operationally viable iceberg recon method.
- Phase II - Improve customer information dissemination. The iceBerg Analysis and Prediction System (BAPS) is scheduled for replacement. This phase will inform development of new system Concept of Operations (CONOP) and develop new system Functional Requirements (this includes model requirements and product information requirements).

Key Milestone / Deliverable Schedule:

Project Start	Apr 19
Phase I Start	Apr 19
Evaluate IDS Software	Apr 20
Document Process Improvements	Apr 20
★ IDS Evaluation Report	Jun 20
Key Decision Point: Phase II Start	May 20
Inform Development of New System CONOPs	Aug 20
Develop New System Functional Requirements	Feb 21
★ BAPS Replacement CONOPs/Functional Requirements	May 21
Project End	May 21

★ Indicates RDC product.



Sponsor: CG-WWM
Stakeholder(s): IIP, CG-5PW, CG-711, ASEC, LANTAREA

Project #: 2019-4
Anticipated Transition: Knowledge Product
 Acquisition Milestone Support

Notes:

- Supports Safety of Life at Sea.
- Leverage Arizona State University and the Department of Homeland Security Science and Technology Arctic Domain Awareness Center.

RDC POC:
Mr. Jack Cline

CG-926 Domain Lead:
Mr. Curtis Catanach

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 e-mail RDC-Info@uscg.mil*



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

Mission Need: Targeted condition-based maintenance for higher asset availability, better use of resources, and reduced life cycle costs.

Project Objectives:

- Research significant opportunities for using leading indicators and readily available system information to implement condition-based maintenance activities. Use National Security Cutter as the focus of initial demonstration.
- Research system needs for interfaces, data structure, data analysis and data display.
- Conduct market research of available commercial and governmental off-the-shelf systems that meet the requirements.
- Provide recommendations for systems and steps required to meet identified requirements.



Key Milestone / Deliverable Schedule:

Project Start.....	Mar 19
Interim: Systems Requirement Document.....	Nov 19
Interim: Market Research.....	Jan 20
★ CBM for CG Assets Roadmap.....	Mar 20
Project End.....	Mar 20

Sponsor: CG-45
Stakeholder(s): SFLC, ALC

Project #: 2019-11
Anticipated Transition: Knowledge Product
 Acquisition Milestone Support

Notes:

- Partner with the Surface Forces Logistics Center to make recommendations.

RDC POC:
 Ms. Christine Hansen

CG-926 Domain Lead:
 Mr. Curtis Catanach

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

★ Indicates RDC product.



Risk Based Cruise Ship Safety Score

Mission Need: Improve cruise ship risk assessments through a risk assessment score based on a vessel's exam results.

Project Objectives:

- Evaluate current practices to determine a cruise ship's risk for a safety or security incident.
- Working with Subject Matter Experts, evaluate deficiencies (risk and/or consequence) and appropriately categorize deficiencies and assign appropriate weights.
- Develop a prototype, an automated method, to determine a cruise ship's risk assessment via its deficiency exam results and corresponding deficiency category weights.
- Receive feedback from industry on the effectiveness of the prototype's outputs.



Key Milestone / Deliverable Schedule:

Project Start.....	Oct 18
Analysis of Current Practices in Place.....	Dec 18
Categorize & Quantify Deficiency Severity.....	Apr 19
Develop Weighted Deficiency Scoring System.....	Aug 19
Prototype Development and Beta Testing.....	Feb 20
Preliminary Testing and Analysis.....	Mar 20
★ Prototype with Graphical User Interface.....	Apr 20
Project End.....	Apr 20

Sponsor: CG-5P-TI

Stakeholder(s): Cruise Ship National Center of Expertise

Project #: 2019-26	Anticipated Transition: Fielded Prototype	Product
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Notes:

- Leverages prior RDC work using machine learning.

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.

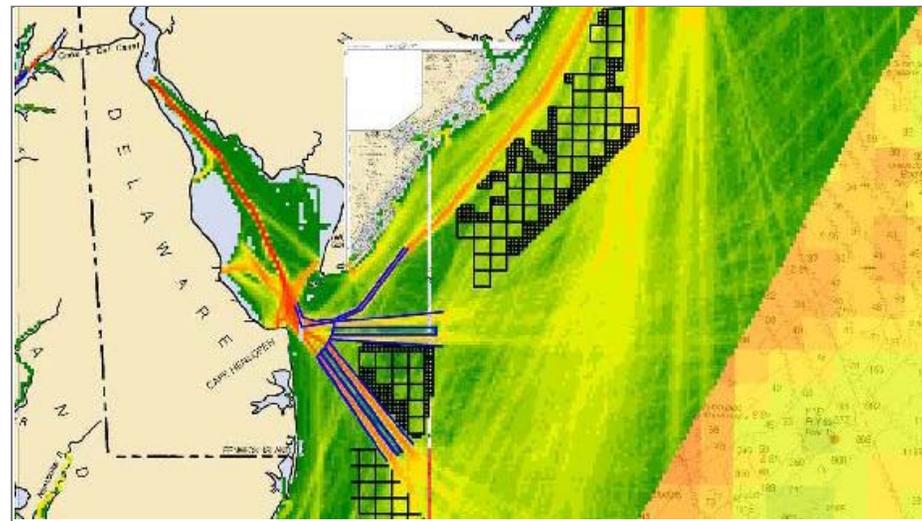


Research into Navigational Safety Risk Modeling and Analysis Tool

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.....	Aug 18
Creation of an Offshore Energy Risk Assessment Tool.....	Dec 18
Automatic Identification System Risk Modeling Data Package.....	Dec 18
Test Risk Modeling Package.....	Feb 19
★ Risk Assessment Model.....	Mar 19
Key Decision Point to Continue	Apr 19
★ After Action Report.....	Aug 19
Project End.....	Aug 19

Sponsor: CG-NAV
Stakeholder(s): LANT-54, CG-5PW

Project #: 7529
Anticipated Transition: Knowledge Product
 Influence Tactics, Techniques, & Procedures

Notes:

- 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

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

★ Indicates RDC product.



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.....	11 Jan 18 ✓
Review Current Use of/Need for Risk Based Decision-making Tools.....	2 Apr 18 ✓
Data Analysis and Review (Marine Information for Safety and Law Enforcement).....	26 Apr 18 ✓
Issue Request for Information/Conduct Market Research of Available Data Analytics/Model Based Risk Management Tools.....	Aug 18
★ Market Research Summary	Sep 18
Key Decision Point: Decision to Continue to Phase 2.....	Nov 18
<u>Phase 2: Develop Automated Vessel Inspection Tool for Foreign Vessel Inspections</u>	
★ Port State Control Optimization Tool and Report	Feb 20
Project End.....	Feb 20

★ Indicates RDC product.

Sponsor: CG-CVC

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

Project #: 7531	Anticipated Transition: Product Fielded Prototype
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Notes:

RDC POC:
Ms. Grace Python

CG-926 Domain Lead:
Mr. Curtis Catanach

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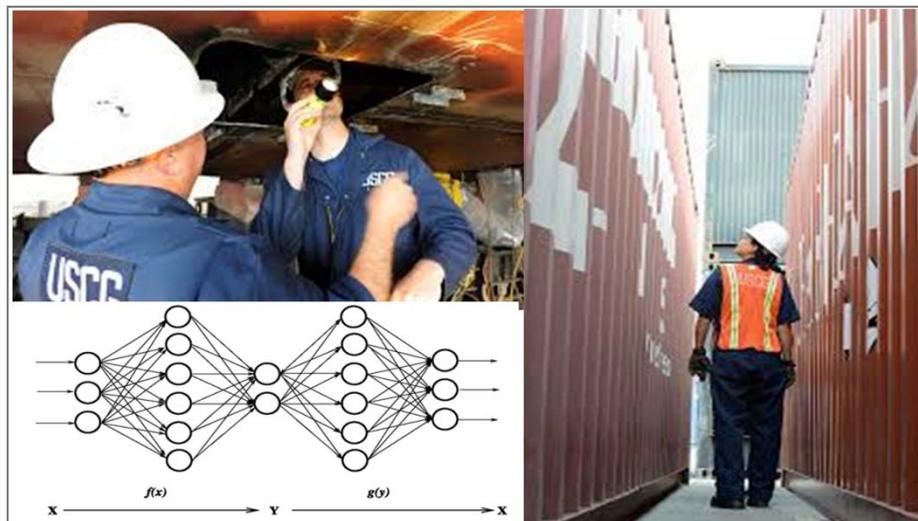


Improved Efficiency in Domestic Inspections

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).....	15 Jun 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.....	Apr 19

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

Project #: 7532
Anticipated Transition: Product
 Fielded Prototype

Notes:

RDC POC:
 Ms. Christine Rostowfske

CG-926 Domain Lead:
 Mr. Curtis Catanach

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

★ 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 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.....	May 19
Evaluate Test Results.....	Jun 19
★ Geographic Information Systems (GIS) Capabilities Report...	Aug 19
Project End.....	Aug 19

Sponsor: CG-26

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

Project #: 7533 **Anticipated Transition:** Knowledge Product
Influence Tactics, Techniques, & Procedures

Notes:

RDC POC:
Mr. Leonard Kingsley

CG-926 Domain Lead:
Mr. Curtis Catanach

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

★ Indicates RDC product.



Nighttime Search Effectiveness Evaluation

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

Project Objectives:

- Develop Tactics, Techniques, and Procedures (TTP) recommendations for nighttime 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 nighttime 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.....	31 Jul 18 ✓
Search Object Suite + Analyze – Phase I Field Tests.....	Sep 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
★ Nighttime Search Effectiveness Evaluation Report.....	Aug 20
Project End.....	Aug 20

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

Project #: 7937
Anticipated Transition: Knowledge Product
 Influence Tactics, Techniques, & Procedures

Notes:

- Leverages RDC's researched method of ice rescue searching.

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.



Counter Unmanned Underwater Vehicle (c-UUV)/Anti-Swimmer Technology

Mission Need: Improved detection, tracking, classification, and deterrence of underwater threats to CG assets.

Project Objectives:

- Phase I – Summarize currently available high Technology Readiness Level (TRL) anti-swimmer technologies that can meet USCG requirements and influence notional c-UUV requirements.
- Phase II – Conduct a Limited User Evaluation (LUE) that analyzes and ranks down-selected technologies.



Key Milestone / Deliverable Schedule:

Project Start.....	Oct 18
Review CG Requirements for Protection.....	Feb 19
Review other Government Request for Information (RFI) Market Research.....	Apr 19
Investigate Government Anti-Swimmer/c-UUV Capabilities.....	Jul 19
Assess Commercial Anti-Swimmer/c-UUV Technologies.....	Jul 19
★ Develop Anti-Swimmer/c-UUV Technology Report.....	Dec 19
Key Decision Point: Determine Path Forward.....	Jan 20
Phase II – LUE of Selected Technologies.....	Jul 20
★ Final Report.....	Nov 20
Project End.....	Nov 20

★ Indicates RDC product.

Sponsor: CG-721

Stakeholder(s): CG-45, CG-731, CG-761, AREA-3

Project #: 2018-22	Anticipated Transition: Fielded Prototype	Product
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Notes:

- Will leverage capabilities of other military services including the North Atlantic Treaty Organization.
- Possible Cooperative Research & Development Agreements for Phase II.
- Build on past RDC anti-swimmer work.

RDC POC: Mr. Mike Coleman	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



Arctic Technology Evaluation 2019

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

Project Objectives:

- Support projects that will develop capability improvements in the execution of Coast Guard missions in the Arctic.
- Nurture joint efforts and interagency cooperation between government sectors and civilian entities on the North Slope and abroad.
- Facilitate and support other Arctic projects, including Department of Homeland Security (DHS) Science & Technology (S&T) Office of University Programs (OUP), in accomplishing their testing objectives.
- Monitor technology progression.



Key Milestone / Deliverable Schedule:

Project Start.....	Oct 18
Key Decision Point: Identify Specific Research Efforts.....	Oct 18
Test Plan Finalized.....	Feb 19
Conduct Technology Evaluations.....	Aug 19
★ Arctic Technology Evaluation After Action Report 2019.....	Dec 19
Project End.....	Dec 19

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

Project #: 2019-32
Anticipated Transition: Knowledge Product
 Future Technology

Notes:

RDC POC:
 LT Ryan Huebner

CG-926 Domain Lead:
 Ms. Karin Messenger

*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:

- Research 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.....	Sep 19
Project End.....	Sep 19

Sponsor: CG-731

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

Project #: 4110
Anticipated Transition: Knowledge Product
 Acquisition Milestone Support

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.

RDC POC: Mr. Jason Story	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.

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	6 Jun 18	✓
Acquire Electronic Equipment for Testing	6 Jun 18	✓
Develop Personal Protective Equipment (PPE) Test Plan.....	Sep 18	
Acquire PPE for Testing.....	Sep 18	
Complete Electronic Equipment Testing	Oct 18	
★ Results of Equipment Testing.....	Nov 18	
Conduct PPE Testing	Nov 18	
Conduct Human Modeling with PPE Test Results.....	Feb 19	
★ Safe Parameters for Ice Operations	May 19	
Project End.....	May 19	

★ Indicates RDC product.

Sponsor: CG-731

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

Project #: 5301	Anticipated Transition: Knowledge Product Influence Tactics, Techniques, & Procedures
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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.
- Cooperative Research and Development Agreement 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	Feb 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, CG-MLE	
Project #: 5921	Anticipated Transition: Product Fielded Prototype
Notes: • Leverages previous work on Project Unambiguous Warning Devices.	
RDC POC: Ms. D.J. Hastings	CG-926 Domain Lead: LT Steve Hager
<i>For more information, call (860) 271-2600 or e-mail RDC-Info@uscg.mil</i>	



Arctic Technology Evaluation 2018

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

Project Objectives:

- Evaluate unmanned technologies' ability to conduct oil spill identification and notification tasks for the Coast Guard's Oil Response mission.
- Support the Robotic Aircraft for Maritime Public Safety (RAMPS) project conduct payload testing in Arctic environment.
- Nurture joint efforts and interagency cooperation between government sectors and civilian entities on the North Slope.
- Monitor technology progression.



Key Milestone / Deliverable Schedule:

Project Start.....	30 Nov 17	✓
Identify Available Assets for Testing.....	7 Mar 18	✓
Test Plan Finalized.....	17 Jul 18	✓
Conduct Technology Evaluation.....	Aug 18	
★ Arctic Technology After Action Report.....	Dec 18	
Project End.....	Dec 18	

Sponsor: CG-5PW

Stakeholder(s): D17, PAC-5, LANT

Project #: 62101	Anticipated Transition: Knowledge Product Influence Tactics, Techniques, & Procedures
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Notes:

- Project will leverage other organizations with Arctic interests/efforts to the maximum extent possible.
- Follow on to 6210 FY18 efforts.
- Partner with CG-DCO-X for engagement with Arctic Evergreen project.
- Collaborate with Department of Homeland Security (DHS) Science and Technology (S&T) Office of University Programs (OUP) for principle investigator engagement.

RDC POC:
LT Ryan Huebner

CG-926 Domain Lead:
Ms. Karin Messenger

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

★ Indicates RDC product.



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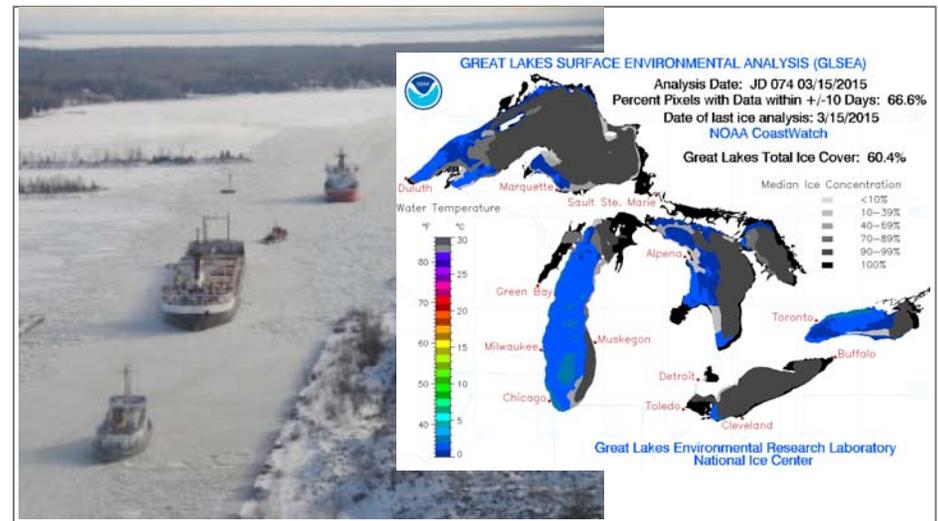
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Ice Condition (ICECON) Risk Assessment Tool(s)

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.
- Conduct a feasibility analysis for the development of an Arctic ICECON.



Key Milestone / Deliverable Schedule:

Project Start.....	1 Oct 16 ✓
ICECON Workshop.....	29 Nov 16 ✓
★ ICECON Update	22 Sep 17 ✓
★ ICECON Forecast Model Briefing	Oct 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	Anticipated Transition: Fielded Prototype	Product
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Notes:

- Collaboration with Department of Homeland Security Science and Technology Arctic Domain Awareness Center.

RDC POC:
Mr. Mark VanHaverbeke

CG-926 Domain Lead:
Mr. Curtis Catanach

*For more information, call (860) 271-2600 or
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Low-Cost Maritime Domain Awareness (MDA) Pilot

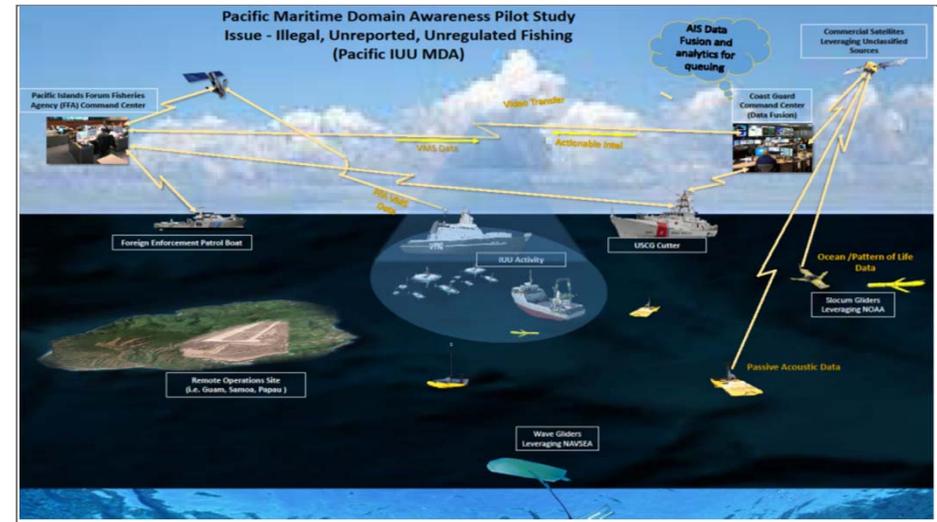
Mission Need: Improve MDA in remote areas.

Project Objectives:

- Conduct a pilot study and assessment to determine the efficacy of using low-cost commercially available technology solutions, in combination with or on existing fleet platforms, to enhance maritime domain awareness. The effort will test technology solutions across the fleet, including with the Coast Guard Auxiliary if applicable. The project will consider systems that have been used by small, remote Pacific Island states and other technologies with little or no logistics funding trail. The effort will plan for industry engagement and technology demonstrations. The demonstration will be with contractor owned and operated technology.

Key Milestone / Deliverable Schedule:

Project Start.....	6 Jun 18 ✓
Establish Initial MDA CONOPs.....	Nov 18
Issue Request for Information (RFI) for Industry Engagement.....	Jan 19
Issue Request for Proposal (RFP) for Industry Owned and Operated Solutions.....	Jun 19
Award Contract(s).....	Jun 19
Conduct Demonstration.....	Feb 20
★ Low Cost Maritime Domain Awareness (MDA) Pilot Study....	Nov 20
Project End.....	Nov 20



Sponsor: D14, PACAREA
Stakeholder(s): CG-711, CG-721, CG-761, CG-MLE, LANTAREA

Project #: 7210
Anticipated Transition: Knowledge Product
 Future Technology

Notes:

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

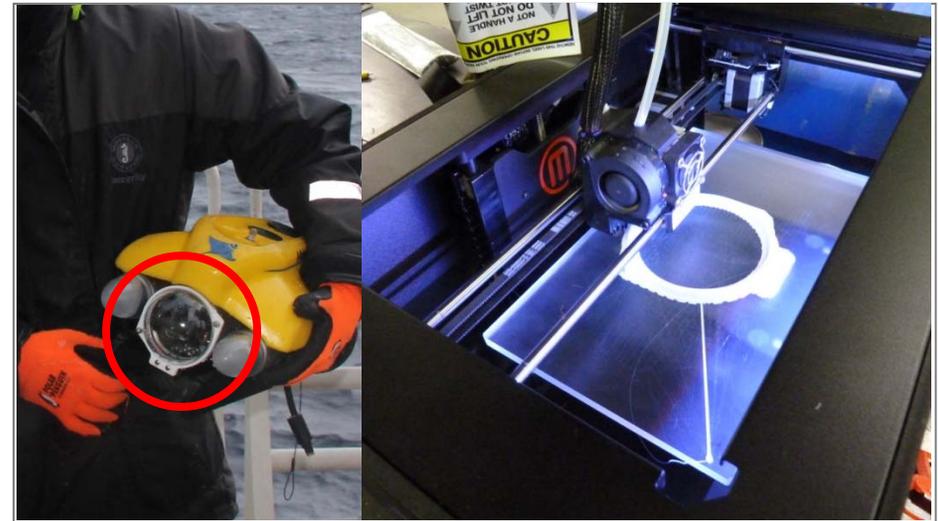
★ Indicates RDC product.

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.....	Nov 18
★ Roadmap for Integration of Additive Manufacturing.....	Jun 19
Project End.....	Jun 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	Anticipated Transition: Fielded Prototype	Product
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Notes:

- Partnering with the Chief of Naval Operations' Rapid Innovation Cell, Naval Warfare Development Command.
- Partner with Oak Ridge and Lawrence Livermore National Labs.

RDC POC:
Mr. Jason Story

CG-926 Domain Lead:
LT Steve Hager

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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 Limited User Evaluations (LUE) of selected technologies in Phase II.
- Research USCG cutter hull blasting and recoating intervals.
- Research remote buoy corrosion 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	24 Apr 18	✓
Validation of Hull Blasting & Buoy Condition Monitoring.....	Dec 18	
Conduct Limited User Evaluations	May 20	
★ LUE/Cutter Hull Validation Report.....	Sep 20	
Project End.....	Sep 20	

★ Indicates RDC product.

Sponsor: CG-45

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

Project #: 7760
Anticipated Transition: Knowledge Product
 Influence Tactics, Techniques, & Procedures

Notes:

- Potential partnership with similar Navy Lab efforts.

RDC POC:
Mr. Mike Coleman

CG-926 Domain Lead:
LT Steve Hager

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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 unit.
- Conduct an extended user evaluation of RDC cUAS prototype at an operational 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:

- Milestones and Deliverables Schedule information are For Official Use Only and Sensitive Security Information (FOUO/SSI)
- For detailed information please contact the LT Joseph DiRenzo:

NIPR: joseph.direnzo2@uscg.mil

SIPR: joseph.n.direnzo.mil@mail.smil.mil

Phone: (860) 271-2894



Sponsor: CG-MSR
Stakeholder(s): CG-711, CG-731, CG-721, CG-751, DCMS-34, CG-2, CG-6, C3CEN, SFLC, AREA-3, DARPA, DHS S&T

Project #: 7812	Anticipated Transition: Product Fielded Prototype
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Notes:

- This effort will leverage partnerships with DHS S&T Directorate, DARPA, Air Force Research Lab (AFRL), Naval Surface Warfare Centers (NSWC) and the Office of Naval Research (ONR).

RDC POC:
LT Joseph DiRenzo

CG-926 Domain Lead:
LT Steve Hager

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★ Indicates RDC product.



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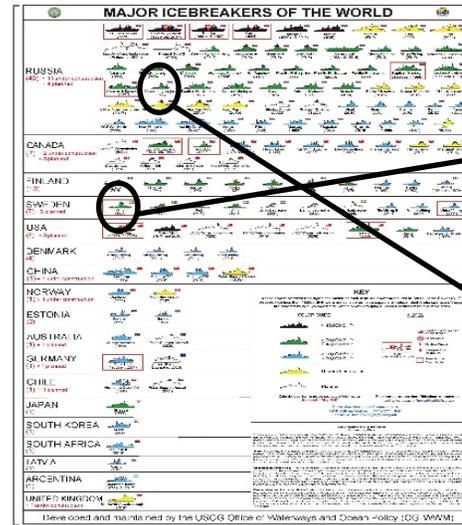
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Research Existing Vessels Capable of Icebreaking

Mission Need: A short-term backup plan to support existing polar icebreaking capabilities.

Project Objectives:

- Conduct market analysis in accordance with CGHQ IPT direction.
- Evaluate cost and operating potential of identified vessels.
- Prepare report.



Key Milestone / Deliverable Schedule:

Project Start.....	20 Jun 18 ✓
Contract for Engineering Support	Dec 18
Contract for Data	Jan 19
★ RDC Product Report of Findings.....	Aug 19
Project End.....	Aug 19

Sponsor: CG-751

Stakeholder(s): CG-WWM, CG-933, CG-459, CG-932

Project #: 6503
Anticipated Transition: Knowledge Product
 Acquisition Milestone Support

Notes:

RDC POC:
Mr. Mark VanHaverbeke

CG-926 Domain Lead:
LT Steve Hager

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 e-mail RDC-Info@uscg.mil*

★ Indicates RDC product.

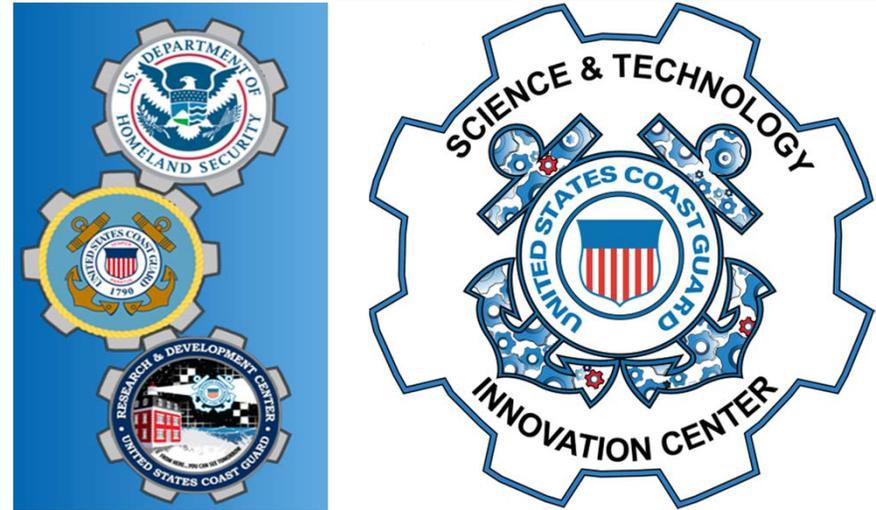


Science & Technology Innovation Center (STIC)

Mission Need: Increase the unity of effort, share knowledge, create a culture of innovation and transition technology to end-users.

Project Objectives:

- Establish a collaborative relationship between the U.S. Coast Guard's Research and Development Test and Evaluation (RDT&E) Program Office and the Department of Homeland Security (DHS) Science & Technology (S&T) Directorate to share and advance technologies that will be mutually beneficial to both parties.
- Provide Tactics, Techniques and Procedures for use in development of requirements for new technology evaluations and transitions.
- Evaluate/validate Coast Guard requirements for STIC technologies.
- Deploy new technology meeting STIC exit criteria to the field as quickly as possible.



Key Milestone / Deliverable Schedule:

- Tasks identified and executed on a continuous basis.

Sponsor: CG-926, DHS S&T BMD

Stakeholder(s): Homeland Security Enterprise, CG-7

Project #: 99952	Anticipated Transition: Product Fielded Prototype
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Notes:

- Aligns with DHS S&T Integrated Project Team gaps and prioritize.

RDC POC:
LT Carlon Brietzke

CG-926 Domain Lead:
CDR James Small

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e-mail RDC-Info@uscg.mil*

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Acquisition Directorate

Research, Development, Test & Evaluation

FY19 Project Portfolio



Non-CG RDT&E Funded Projects



Alternatives Analysis for the Waterways Commerce Cutter

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 the Alternatives Analysis Study Plan (AASP) for the Waterway Commerce Cutter.
 - Support execution of the AASP.



Key Milestone / Deliverable Schedule:

Project Start.....	1 Jun 17 ✓
Additional Time in Routing for DHS Office of Program Accountability and Risk Management (PARM) and Program Analysis and Evaluation Division (PAE) Approval.....	Aug 18
★ Alternatives Analysis Study Plan for the Waterways Commerce Cutter.....	Sep 18
AASP Liaison Support.....	Oct 18
★ Alternatives Analysis Study Plan Support Summary.....	Dec 20
Project End.....	Dec 20

Sponsor: CG-932	
Stakeholder(s): CG-7513, LANT-5, D8	
Project #: 6812	Anticipated Transition: Knowledge Product Acquisition Milestone Support
Notes: <ul style="list-style-type: none"> • Will leverage all previous approved and signed Acquisition documents. 	
RDC POC: Mr. Mark VanHaverbeke	CG-926 Domain Lead: LT Steve Hager
<i>For more information, call (860) 271-2600 or e-mail RDC-Info@uscg.mil</i>	

★ Indicates RDC product.

Operational Test Agent (OTA) for the sUAS for NSC Program

Mission Need: Independent and objective evaluation of Small Unmanned Aerial Systems (sUAS) operational suitability and effectiveness.

Project Objectives:

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



Key Milestone / Deliverable Schedule:

Project Start.....	27 Jun 18 ✓
Develop Test Plan.....	Nov 18
Conduct OT&E.....	May 19
Summary Report of OT&E	Sep 19
★ NSC Program sUAS OT&E Report.....	Oct 19
Project End.....	Oct 19

Sponsor: CG-9313
Stakeholder(s): CG-7114

Project #: 7702
Anticipated Transition: Knowledge Product
 Acquisition Milestone Support

Notes:

RDC POC:
 LT Ben Walsh

CG-926 Domain Lead:
 Mr. Scott Craig

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 e-mail RDC-Info@uscg.mil*

★ Indicates RDC product.



H60T Sustainment Alternatives Analysis

Mission Need: Analyze the most efficient and effective avenue to maintain current MH-60T capabilities without operational gaps.

Project Objectives:

- Conduct site visits to collect data on MH-60T sustainability alternatives, including costs and benefits for a Service Life Extension Program and a Navy airframe rebuild.
- 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.



Key Milestone / Deliverable Schedule:

Project Start.....	27 Feb 18 ✓
Interim AA Study Plan.....	31 May 18 ✓
Final AA Study Plan.....	11 Jul 18 ✓
Data Collection/Site Visits.....	Oct 18
Interim AA Report.....	Nov 18
★ H60T Sustainment Alternatives Analysis Final Report.....	Mar 19
Project End.....	Mar 19

Sponsor: CG-931

Stakeholder(s): ALC

Project #: 9203 **Anticipated Transition:** Knowledge Product
Acquisition Milestone Support

Notes:

RDC POC:
ENS Ryan Major

CG-926 Domain Lead:
Mr. Scott Craig

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e-mail RDC-Info@uscg.mil*

★ Indicates RDC product.



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Fleet Performance Analysis

Mission Need: Determine the impact of not implementing the Crew Rotation Concept for Major Cutters and the relative performance of various cutter fleets.

Project Objectives:

- Exercise alternative fleets of cutter and aircraft in the CGMOES 3.0 model to compare and assess the impacts of asset quantity and capabilities in the expected environment (weather and sea state).
- Focus on modeled performance in the Counter Drug (CD), Alien Migration Interdiction Operations (AMIO), Living Marine Resource (LMR), and Other Law Enforcement (OLE) mission performance.
- Search and Rescue (SAR) and Port, Waterways And Coastal Security (PWCS) missions will also be modeled but are not the major measures of effectiveness for this study.
- The relative performance of the varied fleet will be contrasted to provide information on future fleet mix acquisition recommendations.

Key Milestone / Deliverable Schedule:

Project Start.....	1 Aug 18 ✓
Draft Fleet Performance Analysis Report.....	Feb 19
★ Final Fleet Performance Analysis Report.....	Mar 19
Project End.....	Mar 19



Sponsor: CG-771

Stakeholder(s): CG-8

Project #: 2018-30
Anticipated Transition: Knowledge Product
 Acquisition Milestone Support

Notes:

RDC POC:
 CDR Meghan Steinhaus

CG-926 Domain Lead:
 Mr. Curtis Catanach

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 e-mail RDC-Info@uscg.mil*

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In-Situ Oil Burn Research

Mission Need: Testing and evaluation of operational tools for using In-situ Burn (ISB) as a response option.

Project Objectives:

- Determine best practices for operational use of ISB.
- Develop and test new equipment, such as igniters or fire boom, and procedures to support ISB.
- Collect and publish burn results for use by academia, national labs, and international stakeholders.



Key Milestone / Deliverable Schedule:

Project Start	Oct 18
Key Decision Point (KDP): Identify specific research for FY19....	Nov 18
Potential Bureau of Safety and Environmental Enforcement (BSEE) Projects:	
Emulsion Combustor Test	May 19
Intentional Wellhead Ignition	Jun 19
Operational Test of Flame Refluxer	Jul 19
Quantifying In-Situ Burns	Aug 19
★ ISB Research Summary Burn Report FY19.....	Sep 19
Project End.....	Sep 19

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

Project #: 47041 **Anticipated Transition:** Knowledge Product
 Future Technology

Notes:

- Joint funding with BSEE.
- Partner with academia and national labs to ensure result visibility and access.

RDC POC:
 LT Liz Tichenor

CG-926 Domain Lead:
 Ms. Karin Messenger

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★ Indicates RDC product.



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.....	27 Sep 17 ✓
★ Independent Testing of Total Residual Oxidant Compliance Technologies.....	Apr 20
★ Final Summary for Shipboard Compliance of BWDS.....	Apr 20
Project End.....	Apr 20

★ Indicates RDC product.

Sponsor: CG-OES	
Stakeholder(s): USEPA-GLNPO, CG-CVC	
Project #: 410131	Anticipated Transition: Knowledge Product Standards/Regulations
Notes: <ul style="list-style-type: none"> • Funded by Great Lakes Restoration Initiative. 	
RDC POC: Ms. Gail Roderick	CG-926 Domain Lead: Ms. Karin Messenger
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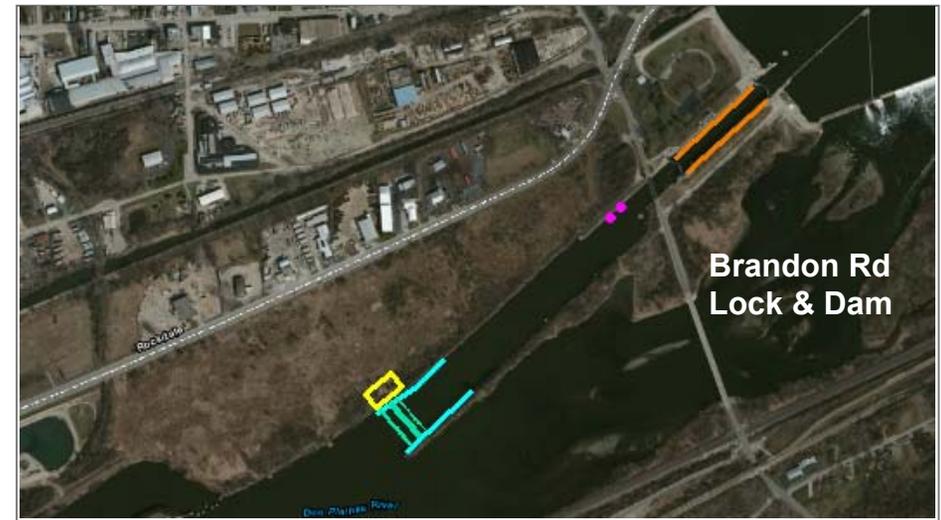


Illinois Waterway Marine Safety Risk Research

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 ✓
★ Illinois Waterway Risk Research Project Closeout Report	Nov 18
Project End.....	Nov 18

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

Project #: 410136
Anticipated Transition: Knowledge Product
 Influence Tactics, Techniques, & Procedures

Notes:

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Research and Development of Quality Assurance (QA) 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.....	Oct 18
Shipboard Tests at Non-US ILs	Sep 19
★ Final Report and QA Protocols.....	Dec 20
★ Final Project Summary Report: R&D of QA Protocols For Ballast Water Testing ILs.....	Dec 20
Project End.....	Dec 20

Sponsor: CG-ENG-3

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

Project #: 410146 **Anticipated Transition:** Knowledge Product Standards/Regulations

Notes:

- Partnering with Great Lakes Restoration Initiative under the Clean Water Act 33 USC 1251-1387.

RDC POC:
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Ballast Water Management Alternatives for Lakers

Mission Need: Reduce aquatic nuisance species transport risks by confined vessels (Lakers) carrying untreated ballast water within the Great Lakes.

Project Objectives:

- Determine the most practical ballast water management practices that Laker operators can use to reduce the risks of transporting invasive organisms from one region of the Great Lakes to another when they are introduced from the outside by ocean-going shippers.
- Inform the Coast Guard Office of Operating and Environmental Standards of possible actions and policy decisions to reduce transport of aquatic nuisance species within the Great Lakes ecosystem.



Key Milestone / Deliverable Schedule:

Project Start.....	2 Apr 18 ✓
Begin Literature Review and Research of Alternative BWM Practices.....	Aug 18
Literature Review/Research Results.....	Jan 19
Report Development.....	Apr 19
★ Ballast Water Management Alternatives for Lakers.....	Jul 19
Project End.....	Jul 19

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

Project #: 410147
Anticipated Transition: Knowledge Product Standards/Regulations

Notes:

- Partnering with Great Lakes Restoration Initiative under the Clean Water Act 33 USC 1251-1387.
- RDC will investigate potential:
 - Partnership with DOT MARAD.
 - International collaboration with Canadian counterparts.

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