

# COOPERATIVE RESEARCH AND DEVELOPMENT AGREEMENT

No. 13-CRADA-RDC-002

**Marine Exchange of Alaska**

and

**U.S. Coast Guard Research and Development Center**

This Cooperative Research and Development Agreement ("CRADA"), dated 16 OCT 2013, is entered into by and between Marine Exchange of Alaska, hereinafter referred to as "MXAK" and the United States of America, as represented by the U.S. Coast Guard Research and Development Center hereinafter referred to as the "USCG RDC".

## A. BACKGROUND

See Appendix A

## B. OBJECTIVE AND PLAN

See Appendix A

## C. AGREEMENT

A. Whereas, the Congress in enacting the Federal Technology Transfer Act of 1986, Public Law No. 99-502, October 20, 1986, has found that Federal laboratories' developments should be made accessible to private industry, State and local Governments, and has declared that one of the purposes of such Act is to improve the economic, environmental, and social well being of the United States by stimulating the utilization of Federally-funded technology developments by such parties; and

B. Whereas, the Federal Technology Transfer Act of 1986 and Executive Order 12591, April 10, 1987, 52 F.R. 13414, as amended Ex. Ord. No. 12618, Dec. 22, 1987, 52 F.R. 48611, "Facilitating Access to Science and Technology", among other technology transfer innovations (See Title 15, Chapter 63, United States Code), have provided each Federal agency with the authority to permit the Director of Government-operated Federal laboratories to enter into CRADAs with Federal or non-Federal entities, including private firms and organizations, for the purpose of providing to collaborating parties personnel, property, facilities, equipment, intellectual property or other resources (EXCEPT FUNDS), or obtaining from collaborating parties personnel, services, property, facilities, equipment, intellectual property or other resources (INCLUDING FUNDS) toward the conduct of specified research and development efforts which may include the disposition of patent rights in the inventions which may result from such collaboration and

C. Whereas, the USCG RDC desires to define, develop, demonstrate and evaluate, in an operational setting, at least one promising technology approach to the "Next Generation Arctic Maritime Navigational Safety Information System," which provides important, time-critical, information to mariners in order that they may better assess and manage their voyage risks as they transit the remote and hostile waters of the US Arctic Exclusive Economic Zone (EEZ).

D. Whereas, the USCG possesses certain facilities, personnel, special equipment, information, and know-how pertaining to the Technology; and

F. Whereas, MXAK is also interested in the further development of the Technology; and

G. Whereas, MXAK desires to provide resources for the further development of the Technology; and

H. Whereas, the USCG RDC views its cooperation through this CRADA with MXAK to develop the Technology to be in the furtherance of the public interest; and

I. Whereas, upon the successful completion of testing, MXAK may desire to carry out a plan for marketing of such technology; and

J. Whereas, the USCG RDC views the commitment of MXAK to undertake its marketing plan to be in the furtherance of the public interest;

**NOW, THEREFORE, THE PARTIES HEREBY AGREE AS FOLLOWS:**

Article 1. Definitions

As used in this AGREEMENT, the following terms shall have the following meanings and such meanings shall be equally applicable to both the singular and plural forms of the terms defined:

1.0 The term "AGREEMENT" means this Cooperative Research and Development Agreement, or CRADA.

1.1 The term "Cooperative Research and Development Program" means the research and development work as defined in the Obligation of the Parties (OP) in Article 2, paragraph 2.1.

1.2 The term "invention" means any invention or discovery (including software-related invention), which is or may be patentable or otherwise protected under Title 35 of the United States Code or any novel variety of plant which is or may be protectable under the Plant Variety Protection Act (7 U.S.C. 7321 et seq.).

1.3 The term "made" in relation to any invention means the conception or first actual reduction to practice of such invention.

1.4 The term "effective date" means the date stamped on the first page of this AGREEMENT. This date shall be thirty (30) calendar days following the date on which the director (Commanding Officer) of the USCG RDC signs the AGREEMENT. This delay allows 30 days for the disapproval or modification of this AGREEMENT within the Coast Guard Chain of Command.

1.5 The term "proprietary information" means information which could provide a competitive advantage to the party possessing such information and which either embodies trade secrets developed at private expense and outside of any Government contract or is confidential technical, business, or financial information provided that such information:

i) is not generally known, or is not available from other sources without obligations concerning its confidentiality;

ii) has not been made available by the owners to others without obligations concerning its confidentiality; or,

iii) is not already available to the public without obligations concerning its confidentiality.

1.6 The term "subject invention" means any invention conceived or first actually reduced to practice in the performance of work under this AGREEMENT.

1.7 The term "work plan" means a detailed description of how the research objectives of this AGREEMENT are going to be met, including, but not limited to, background, scope, place of performance, and tasks to be accomplished.

1.8 The term "created" in relation to any copyrightable software work means when the work is fixed in any tangible medium of expression for the first time, as provided for at 17 U.S.C. 101.

1.9 The term "technology" means the hardware, software, concept of operations, technical expertise, etc. that is involved in the effective and efficient provisioning of critical, time-relevant information to mariners, for the more accurate assessment and management of their voyage risks as they transit the remote and hostile waters of the U.S. Arctic EEZ.

## Article 2. Cooperative Research and Development Program

2.1 Obligation of the Parties (OP). The cooperative research and development program performed under this AGREEMENT shall be performed in accordance with the OP attached hereto as Appendix A. The utilization of the USCG RDC's personnel, resources, facilities, equipment, skills, know-how, computer software and information (**but not funds**) will be consistent with its own policies, missions, and requirements. It is understood that the nature of this cooperative research is such that completion within the period of performance specified, or within the limits of financial support allocated, cannot be guaranteed. Accordingly, it is agreed that all cooperative research is to be performed on a best efforts basis. Any modifications of the OP shall be by mutual AGREEMENT between the parties and shall be incorporated herein by a formally executed written amendment to this AGREEMENT.

2.2 Review of Work. Periodic conferences may be held, when deemed necessary by both parties, between personnel of the USCG RDC and MXAK for the purpose of reviewing the progress of work defined in the OP of paragraph 2.1.

2.3 Principal Investigator. The USCG RDC's portion of the work to be performed pursuant to the OP will be performed under the supervision of Mr. James Fletcher, as principal investigator, who has the responsibility for the scientific and technical conduct of this project.

2.4 Scope Change. If at any time Mr. Fletcher determines that the research data dictates a substantial change in the direction of the work, the USCG RDC shall promptly notify MXAK and the parties shall make a good faith effort to agree on any necessary change to the OP. Any substantial change in the direction of work will be formalized by a written mutual AGREEMENT and a written change to the OP that specifies the changes to the work to be performed.

### Article 3. Reports

The collaborators shall be responsible for the various reports as specified with Appendix A: Obligation of Parties. Copies of all reports shall be forwarded to the addresses listed in Article 19.

### Article 4. Financial Obligation

The performance of research by the USCG RDC under this AGREEMENT is not conditioned on any advance payment of funds by MXAK. Each collaborator will fund its own efforts.

### Article 5. Term

The initial term of this AGREEMENT is for a period of 36 months commencing on the effective date of this AGREEMENT, unless otherwise modified pursuant to Article 13.

### Article 6. Title to Property

6.1 Capital Equipment. All capital equipment developed, acquired, and funded under this AGREEMENT by the USCG RDC shall be the property of the USCG RDC, except that title to the capital equipment provided to the USCG RDC by MXAK or acquired by the USCG RDC with funds supplied by MXAK shall remain or vest in MXAK. The USCG RDC makes no express or implied warranty as to any capital equipment that remains or vests in MXAK.

6.2 Software. Title to software developed by MXAK exclusively at private expense shall remain in MXAK. Except to the extent that such software may be patentable, the Government acquires no additional rights to software developed by MXAK in the course of participating in this AGREEMENT. Rights acquired in patentable software are set out in Article 9.

### Article 7. Publicity, Use of Name, and Endorsement

7.1 MXAK shall not use the name of the USCG RDC or the United States Coast Guard on any product or service which is directly or indirectly related to either this AGREEMENT or any patent license or assignment Agreement which implements this AGREEMENT without the prior approval of the Commandant, United States Coast Guard.

7.2 By entering into this AGREEMENT, neither the USCG RDC nor the United States Coast Guard directly or indirectly endorse any product or service provided, or to be provided by MXAK, its successors, assignees, or licensees. MXAK shall not in any way imply that this AGREEMENT is an endorsement by the USCG RDC or the United States Coast Guard of any such product or service.

## Article 8. Publication

The USCG RDC and MXAK agree to confer and consult with each other prior to publication or other public disclosure of the results of work under this AGREEMENT to ensure that no proprietary information or military critical technology is released. Furthermore, prior to submitting a manuscript for publication or before any other public disclosure, each party will offer the other party ample opportunity, and at a minimum ten (10) business days, to review such proposed publication or disclosure, to submit objections, and to file applications for patent in a timely manner.

## Article 9. Patents

9.1 Reporting. The USCG RDC shall promptly report to MXAK each subject invention reported to the USCG RDC by its employees made under this AGREEMENT. MXAK shall promptly disclose to the USCG RDC each subject invention reported to MXAK by any of its employees made under this AGREEMENT. Each party shall provide the other party with copies of the patent applications it files on any subject invention along with the power to inspect and make copies of all documents retained in the official patent application files by the applicable patent office, except as may be prohibited by 35 U.S.C. 181, relating to inventions affecting the national security.

9.2 Inventions by Employees of MXAK. The USCG RDC, on behalf of the U.S. Government, waives any ownership rights the U.S. Government may have in subject inventions made by MXAK employees and agrees that MXAK shall have the option to retain title to any such employee invention. MXAK shall notify the USCG RDC promptly upon making this election and agrees to file timely patent applications on such subject inventions at its own expense in such countries which MXAK, in its own discretion, deems expedient. MXAK agrees to grant to the U.S. Government, for reasonable compensation, a worldwide, non-exclusive, irrevocable, paid-up license to practice, or to have practiced on behalf of the U.S. Government, the patents covering its employee's subject inventions arising out of MXAK's performance under this AGREEMENT. This patent license shall be evidenced by a confirmatory license AGREEMENT prepared by MXAK in a form satisfactory to the USCG RDC. Nothing in this AGREEMENT shall be interpreted to require MXAK to continue the prosecution of such patents, nor to maintain them in force. Should MXAK choose to abandon an application once filed or decide not to pay any maintenance fee when due MXAK shall immediately grant title to such application or patent to the Government of the United States.

9.3 Inventions by Government Employees and Joint Inventions. The USCG RDC, on behalf of the U.S. Government shall have the initial option to retain title to each subject invention made by its employees and in each subject invention made jointly by MXAK and the USCG RDC employees. In the event that the USCG RDC informs MXAK that it elects to retain title to such joint subject invention, MXAK agrees to assign to the Government whatever right, title and interest MXAK has in and to such joint subject invention.

9.4 Filing of Patent Application. The party having the right to retain title and file patent applications on a specific subject invention may elect not to file patent applications thereon provided it so advises the other party within sixty (60) calendar days from the date it discloses the subject invention to the other party. Thereafter, the other party may elect to file patent applications on such subject invention and the party initially reporting such subject invention agrees to assign its right, title and interest in such subject invention to the other party and cooperate with such party in the preparation and filing of patent applications thereon. The

assignment of the entire right, title, and interest to the other party pursuant to this paragraph shall be subject to the retention by the party assigning title of a non-exclusive, irrevocable, paid-up license to practice, or have practiced on its behalf, the subject invention throughout the world. In the event neither of the parties to this AGREEMENT elect to file a patent application on a subject invention, either or both (if a joint invention) may, at their sole discretion and subject to reasonable conditions, release the right to file to the inventor(s) with a license in each party of the same scope as set forth in the immediately preceding sentence.

9.5 Patent Expenses. The expenses attendant to the filing of patent applications as specified in 9.4 above, and all maintenance fees, shall be borne by the party filing the patent application. Any party having an obligation to pay a maintenance fee who decides not to pay such maintenance fee, shall so notify the other party of that decision in sufficient time to permit the other party to act to preserve its interest in the patent.

9.6 Nonexclusive License. The USCG RDC, on behalf of the U.S. Government, agrees to grant to MXAK, for reasonable compensation, a nonexclusive license in any invention made under this AGREEMENT, in whole or in part, by a Government employee.

9.7 Exclusive License. The USCG RDC on behalf of the U.S. Government, hereby agrees to grant to MXAK, for reasonable compensation, a limited term exclusive license in any invention made under this AGREEMENT, in whole or in part, by a Government employee in the specific field of use of TECHNOLOGY; subject to the reservation of a nonexclusive, nontransferable, irrevocable, paid-up license to practice, and to have practiced throughout the world, by or on behalf of the U.S. Government, the subject invention and such other terms and conditions as are specified by the USCG RDC in such exclusive license.

9.8 Retention of Government Rights in Inventions Made Under this AGREEMENT.

9.8.1 Government License. MXAK agrees to grant to the U.S. Government a nonexclusive, nontransferable, irrevocable, paid-up license to practice or have practiced throughout the world by or on behalf of the Government each invention made in whole or in part by its employees under this AGREEMENT. This license shall be evidenced by a confirmatory license agreement prepared by MXAK in a form satisfactory to the R&D Center.

9.8.2 March-in Rights. In the event the USCG RDC assigns title or grants an exclusive license to subject invention made in whole or in part by a Government employee, the Government shall retain the right:

a) to require the collaborating party to grant to a responsible applicant a nonexclusive, partially exclusive, or exclusive license to use the invention in the applicant's licensed field of use, on terms that are reasonable under the circumstances; or

b) if the collaborating party fails to grant such a license, to grant the license itself.  
See 15 U.S.C. 3710a(b)(1)(B).

9.8.3 Government Exercise of March-in Rights. The Government may exercise its rights under Article 9.8.2 only in exceptional circumstances and only if the Government determines that:

a) the action is necessary to meet health or safety needs that are not reasonably satisfied by the collaborating party;

b) the action is necessary to meet requirements for public use specified by Federal regulations, and such requirements are not reasonably satisfied by the collaborating party; or

c) the collaborating party has failed to comply with an agreement containing provisions described at 15 U.S.C. 3710a(c)(4)(B) pertaining to domestic manufacture of products embodying subject inventions. See 15 U.S.C. 3710a(b)(1)(C) and Article 15.1.3 of this AGREEMENT.

9.9 Rights in Inventions Made by Third Parties. MXAK shall have no rights in any inventions made by third parties to this AGREEMENT, except as provided by separate AGREEMENT between MXAK and such third party. Such separate AGREEMENT regarding rights in inventions shall not denigrate any rights allocated by this AGREEMENT between MXAK and the U.S. Government. Should an invention be made jointly by an employee of the U.S. Government, and one or more third parties to this AGREEMENT, and not by any employee of MXAK, MXAK shall have no rights in any such invention, except as provided by separate AGREEMENT among all inventors or their assignees. Should an invention be made jointly by employees of the U.S. Government, MXAK, and any third parties to this AGREEMENT, all joint inventors, or their assignees, agree to negotiate such cross licenses as may be necessary to effect the maximum commercialization of the invention.

#### 9.10 Prior Patents of MXAK.

This AGREEMENT does not grant to the Government any rights in any invention conceived of and actually reduced to practice, by MXAK prior to the date of the AGREEMENT.

### Article 10. Copyrights

10.1 Ownership of Copyright. MXAK shall own the copyright in all software (including modifications and enhancements thereto), documentation, and other works created in whole or in part by MXAK under this AGREEMENT, which is subject to being copyrighted under Title 17, United States Code. MXAK shall mark any such works with a copyright notice showing MXAK as the author or co-author and shall in its reasonable discretion determine whether to file applications for registration of copyright. Should MXAK choose not to own the copyright in any such software, it will execute an assignment of the copyright to the U.S. Government.

10.2 Copyright Notice. MXAK will clearly mark all copyrighted material/software or other works provided to the U.S. Government with appropriate notices on the material/software.

### Article 11. Copyright Royalties

11.1 Royalties for Preexisting Copyrighted Material. MXAK shall grant to the USCG RDC a non-exclusive, royalty free license for material which is copyrighted by MXAK, and is necessary for the completion of this AGREEMENT. Such license shall be for the duration of this AGREEMENT.

11.2 Royalties for Material Copyrighted as Part of this AGREEMENT. MXAK shall grant to the USCG RDC, as representative for the U.S. Government, a non-exclusive, royalty free license for material copyrighted by GDC4S in accordance with paragraph 10.1. This license shall include third parties when they are acting in the U.S. Government's interest. The U.S. Government, as represented by the USCG RDC, agrees to license to MXAK any material for which the U.S.

Government can claim copyright in accordance with paragraph 10.1 on terms acceptable to the parties.

#### Article 12. Proprietary Information

12.1 Ownership of Proprietary Information. Subject to Articles 9 and 10, any proprietary information developed solely by a party under this AGREEMENT shall be owned by the party which developed it. When proprietary information (except for computer software) is developed solely by MXAK, MXAK agrees to grant the U.S. Government a non-exclusive, irrevocable, royalty-free license to use, duplicate, and disclose in confidence, such proprietary information. Any jointly developed proprietary information shall be jointly owned by the USCG RDC and MXAK. With respect to any such jointly owned proprietary information or proprietary information developed solely by the USCG RDC, MXAK shall have the option to obtain from the U.S. Government an exclusive royalty-free license with respect to the U.S. Government's interest in the proprietary information, provided, however, that MXAK shall exercise its option within twenty-four (24) months after termination or expiration of the AGREEMENT. This license is subject to reservation by the U.S. Government of a royalty-free right to use, duplicate, and disclose in confidence, the licensed proprietary information for Governmental purposes, and to permit others to do so on behalf of the U.S. Government and on behalf of any foreign Government or international organization pursuant to any existing or future treaty or AGREEMENT with the United States. The terms of any license respecting proprietary information developed solely by the USCG RDC, under the AGREEMENT, shall be limited in accordance with 15 U.S.C. 3710a(c)(7)(B) concerning exemptions to the Freedom of Information Act, 5 U.S.C. 552. Computer software developed solely by MXAK is covered by Article 6.2, "Software." Each party agrees not to disclose proprietary information provided by the other party to anyone other than the CRADA participant and the Government without written approval of the providing party. All proprietary information shall be protected for a period of five (5) years from the effective date of the CRADA and agree not to disclose such information except with the participant's consent.

12.2 Proprietary Notice. The parties will mutually develop an appropriate proprietary notice(s) for use in connection with this AGREEMENT. The parties agree to cooperate in removing or remarking any information marked as proprietary information which ceases to be proprietary information because the information was publicly disclosed in a patent, copyrighted work, or as may be required by law.

#### Article 13. Expiration, Termination, Disputes and Extensions

13.1 Expiration and Termination. This AGREEMENT shall expire as specified in Article 5 unless both parties hereto agree in writing to extend it further. However, either party may terminate this AGREEMENT upon delivery of written notice at least ninety (90) calendar days prior to such termination. Each party shall bear its own costs resulting from or related to the termination.

13.2 Disputes. MXAK and the USCG RDC recognize that disputes arising under this AGREEMENT are best resolved at the local working level by the parties directly involved. Any dispute arising under this AGREEMENT which is not disposed of by AGREEMENT of the parties shall be submitted jointly to the signatories of this AGREEMENT. A joint decision of the signatories or their designees shall be the disposition of such dispute. If the parties are unable to jointly reach a good-faith resolution of the issues through negotiation or other forms of



nonbinding alternative dispute resolution, either party may terminate this AGREEMENT immediately.

13.3 Continuation of Cooperative Research Pending Resolution. Pending the resolution of any dispute under this Article, work under this AGREEMENT will continue as elsewhere provided herein.

13.4 Obligations Surviving Termination. Termination of this AGREEMENT by either party for any reason shall not affect the rights and obligations of the parties accrued prior to the effective date of termination of this AGREEMENT. No termination of this AGREEMENT, however effectuated, shall release the parties hereto from their rights, duties and obligations under Articles 3, 4, 6, 7, 8, 9, 10, 11, 12, 16, and 18 of this document.

13.5 Extensions. Extensions of the term of this AGREEMENT may be made prior to the termination of the AGREEMENT without the need for additional review beyond that of the Director of the USCG RDC. If the parties wish to continue the work called for under the OP after the termination of this AGREEMENT, they may enter into a new CRADA.

#### Article 14. Independent Contractors

The parties to this AGREEMENT are independent contractors and are not agents of each other, joint ventures, partners or joint parties to a formal business organization of any kind. Neither party is authorized or empowered to act on behalf of the other with regard to any contract, warranty nor representation as to any matter and neither party will be bound by the acts or conduct of the other. Each party will maintain sole and exclusive control over its own personnel and operations.

#### Article 15. Representations and Warranties

15.1 Representations and Warranties of the USCG RDC. The USCG RDC hereby represents and warrants as follows:

15.1.1 Mission. The performance of the activities specified by this AGREEMENT is consistent with the mission of the USCG RDC.

15.1.2 Authority. All prior reviews and approvals required by regulations or law have been obtained by the USCG RDC prior to the execution of the AGREEMENT. The USCG RDC official executing this AGREEMENT has the requisite authority to do so. Notwithstanding the delegation of authority to execute the AGREEMENT to the Director of the USCG RDC, the Chief, Procurement Policy and Oversight, U.S. Coast Guard Headquarters (Commandant (CG-913)), pursuant to 15 U.S.C. 3710a(c)(5)(A), may disapprove or require the modification of this AGREEMENT within thirty (30) calendar days of the date it is presented by the USCG RDC.

15.1.3 Statutory Compliance. The USCG RDC, prior to entering into this AGREEMENT, has (1) given special consideration to entering into CRADAs with small business firms and consortia involving small business firms; (2) has given preference to business units located in the United States, which agree that products embodying inventions made under the AGREEMENT or produced through the use of such inventions will be manufactured substantially in the United States and; (3) in the event this AGREEMENT is made with an industrial organization or other person subject to the control of a foreign company or Government, taken into consideration whether or not such foreign Government permits United

States agencies, organizations, or other persons to enter into CRADAs and licensing agreements with such foreign country.

15.2 Representations and Warranties of MXAK. MXAK hereby represents and warrants to the USCG RDC as follows:

15.2.1 Corporate Organization. MXAK, as of the date hereof, is a non-profit business corporation, duly organized, validly existing, and in good standing under the applicable laws/regulations of the State of Alaska.

15.2.2 Statement of Ownership. MXAK is neither foreign-owned nor a subsidiary of a foreign-owned entity and will inform the USCG RDC prior to entering into any arrangement for substantial manufacture or foreign acquisition or control.

15.2.3 Power and Authority. MXAK has the requisite power and authority to enter into this AGREEMENT and to perform according to the terms thereof.

15.2.4 Due Authorization. The Board of Directors and shareholders of MXAK have taken all actions required to be taken by law, MXAK's Certificate or Articles of Incorporation, its bylaws or otherwise, to authorize the execution and delivery of this AGREEMENT.

15.2.5 No Violation. The execution and delivery of this AGREEMENT does not contravene any material provision of, or constitute a material default under any material AGREEMENT binding on MXAK or any valid order of any court, or any regulatory agency or other body having authority to which MXAK is subject.

#### Article 16. Liability

16.1 Tort Liability of Government. The U.S. Government shall not, except for gross negligence, fraud, abuse, or misuse, be responsible for any property of MXAK consumed, damaged, or destroyed in the performance of this AGREEMENT. Any liability of the U.S. Government is determined pursuant to the Federal Tort Claims Act, 28 U.S.C. 2671 et seq.

16.2 Personal Injury and Damage to Property. MXAK agrees to hold and save the U.S. Government, its officers, agents, and employees harmless from liability of any nature or kind, including costs and expenses, for, or on account of, any or all suits or damages of any character whatsoever resulting from injuries or damages sustained by any person or persons or property by virtue of negligence on the part of MXAK, its officers, agents, and employees in the performance of this AGREEMENT.

16.3 No Warranty. Except as specifically stated in Article 15, the USCG RDC makes NO express or implied warranty as to any matter whatsoever, including the conditions of the research or any invention or product, whether tangible or intangible, made or developed under this AGREEMENT, or the ownership, MERCHANTABILITY, or fitness for a particular purpose of the research or any invention or product.

16.4 Indemnification. MXAK holds the U.S. Government harmless and indemnifies the Government for all liabilities, demands, damages, expenses and losses arising out of the use by MXAK, or any party acting on its behalf or under its authorization, of the USCG RDC's research and technical developments or out of any use, sale or other disposition by MXAK, or others

acting on its behalf or with its authorization, of products made by the use of the USCG RDC's technical developments. This provision shall survive termination of this AGREEMENT.

#### Article 17. Force Majeure

Neither party shall be liable for any unforeseeable event beyond its reasonable control not caused by the fault or negligence of such party, which causes such party to be unable to perform its obligations under this AGREEMENT (and which it has been unable to overcome by the exercise of due diligence), including, but not limited to, flood, drought, earthquake, storm, fire, pestilence, lightning and other natural catastrophes, epidemic, war, riot, civic disturbance or disobedience, strikes, labor dispute, or failure, threat of failure, or sabotage, or any order or injunction made by a court or public agency. In the event of the occurrence of such a force majeure event, the party unable to perform shall promptly notify the other party. It shall further use its best efforts to resume performance as quickly as possible and shall suspend performance only for such period of time as is necessary as a result of the force majeure event.

#### Article 18. Miscellaneous

18.1 No Benefits. No member of, or delegate to the United States Congress, or resident commissioner, shall be admitted to any share or part of this AGREEMENT, nor to any benefit that may arise therefrom; but this provision shall not be construed to extend to this AGREEMENT if made with a corporation for its general benefit.

18.2 Governing Law. The construction, validity, performance, and effect of this AGREEMENT for all purposes shall be governed by the laws applicable to the Government of the United States.

18.3 Entire AGREEMENT. This AGREEMENT constitutes the entire AGREEMENT between the parties concerning the subject matter of this AGREEMENT.

18.4 Headings. Titles and headings of the Sections and Subsections of this AGREEMENT are for the convenience of references only and do not form a part of this AGREEMENT and shall in no way affect the interpretation thereof.

18.5 Waivers. None of the provisions of this AGREEMENT shall be considered waived by any party hereto unless such waiver is given in writing to all other parties. The failure of any party to insist upon strict performance of any of the terms and conditions hereof, or failure or delay to exercise any rights provided herein or by law, shall not be deemed a waiver of any rights of any party hereto.

18.6 Severability. The illegality or invalidity of any provisions of this AGREEMENT shall not impair, affect or invalidate the other provisions of this AGREEMENT.

18.7 Amendments. If either party desires a modification in this AGREEMENT, the parties shall, upon reasonable notice of the proposed modification by the party desiring the change, confer in good faith to determine the desirability of such modification. Such modification shall not be effective until a written amendment is signed by all the parties hereto by their representatives duly authorized to execute such amendment.

18.8 Assignment. Neither this AGREEMENT nor any rights or obligations of any party hereunder shall be assigned or otherwise transferred by either party without the prior written consent of the other party.

18.9 Export Controls. It is anticipated that no information and/or products developed pursuant to this AGREEMENT will contain information for which export is restricted by the Arms Control Act (22 U.S.C 2571 et seq.) or the Export Administration Act (50 U.S.C. 2401 et seq.). Nothing in this AGREEMENT shall be construed to permit any disclosure in violation of those restrictions.

18.10 Classified Information. No classified information will be required for, or involved in the conduct of the work described under this CRADA.

#### Article 19. Notices

Notices, communications, and payments hereunder shall be deemed made if given by registered or certified envelope, postage prepaid, and addressed to the party to receive such notice, communication or payment at the address given below, or such other address as may hereafter be designated by notice in writing.

A. Formal notices under this AGREEMENT shall be addressed as follows:

##### USCG RDC:

Name:	Alan N. Arsenault, CAPT USCG Commanding Officer/Director	Tel: (860) 271-2601
Address:	USCG Research & Development Center 1 Chelsea Street New London, CT 06320	Fax: (860) 271-2792 <a href="mailto:Alan.N.Arsenault@uscg.mil">Alan.N.Arsenault@uscg.mil</a>

##### MXAK:

Name:	Ed Page Executive Director	Tel: (907) 463-5078
Address:	Marine Exchange of Alaska 1000 Harbor Way, Suite 204 Juneau, AK 99801	Fax: (800) 682-2898 <a href="mailto:edpage@mxak.org">edpage@mxak.org</a>

B. Correspondence relating to technical matters should be addressed as follows:

##### USCG RDC:

Name:	James Fletcher Chief, Environment & Waterways Branch	Tel: (860) 271-2659
Address:	USCG Research & Development Center 1 Chelsea Street New London, CT 06320	Fax: (860) 271-2792 <a href="mailto:James.E.Fletcher@uscg.mil">James.E.Fletcher@uscg.mil</a>

MXAK:

Name: William Benning  
Chief Technical Officer  
Address: Marine Exchange of Alaska  
1000 Harbor Way, Suite 204  
Juneau, AK 99801


Tel: (907) 463-3937  
Fax: (800) 682-2898  
[billbenning@mxak.org](mailto:billbenning@mxak.org)

Article 20. Review and Ratification

20.1 Review of CRADA by Commandant (CG-913). One copy of this document must be forwarded to Commandant (CG-913), United States Coast Guard, for review. Receipt of this document by Commandant (CG-913) will begin a thirty (30) calendar days period during which the AGREEMENT may be disapproved or modification required. If no notice of disapproval or required modification is received from Chief, Procurement Policy and Oversight, U.S. Coast Guard Headquarters (Commandant (CG-913)), by the USCG RDC during the review period, this AGREEMENT shall enter into effect as of the date stamped on the first page of the AGREEMENT per Article 1.4.

20.2 Ratification by MXAK. In the event that the Chief, Procurement Policy and Oversight, U.S. Coast Guard Headquarters (Commandant (CG-913)), exercises their authority reserved by Article 15.1.2, MXAK shall have thirty (30) calendar days from notification of the required modifications to ratify, in writing, the modifications or terminate the AGREEMENT. This AGREEMENT shall enter into effect as of the date of receipt by the USCG RDC of such ratification.

IN WITNESS THEREOF, the Parties have caused this AGREEMENT to be executed in duplicate by their duly authorized representatives as follows:

Marine Exchange of Alaska  
  
BY: \_\_\_\_\_

NAME: Ed Page  
TITLE: Executive Director

DATE: 09 3, 2013

U.S. Coast Guard  
Research and Development Center  
  
BY: \_\_\_\_\_

NAME: Alan N. Arsenault, Capt USCG  
TITLE: Commanding Officer/Director  
USCG RDC

DATE: 16 OCT 2013

**APPENDIX A  
OBLIGATION OF THE PARTIES  
COOPERATIVE RESEARCH AND DEVELOPMENT AGREEMENT  
U.S. COAST GUARD USCG RDC/MXAK**

**I. Statement of Work**

This statement of work will apply to all research conducted under CRADA No. 13-CRADA-RDC-002

**1.0 BACKGROUND**

There is considerable concern over the increasing maritime activity in the Arctic, along with the potential for maritime accidents and serious environmental harm to the fragile Arctic environment, warranting the need to implement enhanced maritime safety measures. One challenge is that the dynamic, constantly changing environmental and safety information, which mariners need to identify, assess, and mitigate the risks of operating in the Arctic, is not presently available due to the lack of infrastructure that is typically in place in other maritime regions. The maritime community and other stakeholders are looking to the Coast Guard for providing important oversight of expanding maritime activity, as well as critical tools required to ensure safe, efficient and environmentally sound maritime operations. It should also be noted that various governmental agencies (NOAA, USN, NASA, etc.) are striving to improve the quality of Arctic weather and ice forecasting. As these governmental agencies improve the quality of Arctic weather and ice forecasts, the timely delivery, and relevant presentation of this information to mariners, particularly commercial mariners, operating in this high risk environment, also needs to be improved in order to realize fully the benefits.

Given the present austere federal budgetary environment, the development, operation, and maintenance of additional government-funded, maritime communications systems, and their associated infrastructure, is a difficult problem. Both the recently published, U.S. and USCG Arctic Strategies stress the important role that public-private partnerships will play in developing the critical infrastructure needed for effective, efficient, and safe operations in this emerging remote and hostile environment. This CRADA strives to promote a public-private analysis and eventual solution to this problem.

**2.0 OBJECTIVE**

The USCG RDC's objective for this CRADA is to define, develop, demonstrate, and evaluate, in an operational setting, at least one promising technology approach to the "Next Generation Arctic Maritime Navigational Safety Information System," which provides important, time-critical, information to mariners in order that they may better assess and manage their voyage risks as they transit the remote and hostile waters of the US Arctic Exclusive Economic Zone (EEZ). MXAK has expressed their agreement to support this objective.

**3.0 PLACE OF PERFORMANCE**

Research by the collaborators under this agreement will be performed at various USCG, MXAK, and other mutually agreed upon facilities, and aboard various USCG, MXAK, and other mutually agreed upon vessels.

#### **4.0 APPROACH**

The USCG RDC and MXAK will collaborate to design, develop, implement, and utilize on a trial basis, within US Arctic EEZ waters, at least one technology approach to the "Next Generation Arctic Maritime Navigational Safety Information System." This "Technology Demonstration (Tech Demo)" is anticipated to be conducted over several Arctic shipping seasons. The results of this prototype system(s) will be documented so that the insights gained can be incorporated into future maritime safety systems, which conform to future USCG and IMO policies and requirements, whether they be owned / operated by private or government entities.

#### **5.0 TASKS**

5.1 Design "Arctic Navigation Safety Information System (ANSIS)" for Tech Demo. The collaborators will mutually define the prototype system that will be developed, installed, utilized, and evaluated under this CRADA. It is anticipated that this system will be a to-be-determined combination of (a) AIS-Transmit, (b) SATCOM, (c) DSC VHF, and (d) other components / sub-systems such as the proposed 500 kHz, 47,400 bits/sec, NAVTEX Replacement being considered by the International Telecommunications Union and the IMO's International NAVTEX Coordinating Panel. Arctic mariner navigational information requirements will drive the design of this prototype system. Care will be taken to (a) minimize and define any additional vessel equipment carriage requirements and (b) define the specific content and format of the information presented to the mariner. An Interim CRADA Report will be developed at the conclusion of this task to document the mutually-agreed-upon prototype ANSIS design.

5.2 Develop ANSIS Tech Demo System. The collaborators will jointly develop the prototype system, which was mutually defined under Task 5.1. It is anticipated that the collaborators will develop / provide those elements of the system based upon the guidance provided under the "Obligation of USCG RDC" and "Obligation of MXAK" Sections of this Statement of Work.

5.3 Install, Test, and Utilize ANSIS Tech Demo System. The collaborators will jointly install, test, and certify as "Ready for Tech Demo Utilization," the prototype system, which was developed under Task 5.2. They will then jointly support the utilization of the prototype for the jointly-agreed upon duration of the Tech Demo. It is anticipated that the collaborators will accomplish those sub-tasks / responsibilities assigned within the guidance provided under the "Obligation of USCG RDC" and "Obligation of MXAK" Sections of this Statement of Work.

5.4 Monitor ANSIS Tech Demo System Performance and Mariner Utilization. The collaborators will jointly monitor the performance of prototype system, which was installed under Task 5.3 as it is being utilized during the Tech Demo by mariners. It is anticipated that the collaborators will accomplish those sub-tasks / responsibilities assigned within the guidance provided under the "Obligation of USCG RDC" and "Obligation of MXAK" Sections of this Statement of Work.

#### **6.0 Data Analysis and Reporting**

The collaborators shall be responsible for the various CRADA reports as specified under Section II: Obligations of USCG RDC and Section III: Obligations of MXAK.

## II. Obligations of USCG RDC

### 1.0 Specific SOW Task Obligations

- (A) Design "Arctic Navigation Safety Information System (ANSIS)" for Tech Demo. USCG RDC will review and comment on MXAK's preliminary functional design of the prototype system. After discussion and agreement between the CRADA collaborators, USCG RDC will develop an Interim CRADA Report, which documents the mutually-agreed-upon design.
  - (B) Develop ANSIS Tech Demo System. USCG RDC will support MXAK in the development of the AIS-Transmit, SATCOM, and DSC VHF components of the prototype system. It is anticipated that this support will include technology expertise and authorization to transmit on specific frequencies for the AIS-Transmit and DSC VHF components. USCG RDC will also provide the proposed 500 kHz, NAVTEX Replacement component if it is mutually agreed by the collaborators to be part of the prototype system.
  - (C) Install, Test, and Utilize ANSIS Tech Demo System. USCG RDC will support MXAK with the installation, testing, operation, and maintenance of the prototype system at specific, jointly-agreed-upon, field locations. USCG RDC will develop the test plan and provide any test and network monitoring equipment/capabilities needed, to ensure that the prototype system is "Ready for Tech Demo Utilization" and continues to meet the jointly-agreed-upon performance criteria through the duration of the Tech Demo.
  - (D) Monitor ANSIS Tec Demo System Performance and Mariner Utilization. USCG RDC will monitor the performance of the prototype system during the Tech Demo. This monitoring will be accomplished in accordance with the above mentioned test plan. USCG RDC will also develop an appropriate CRADA report, which documents the prototype system, its performance, and its utilization by mariners during the Tech Demo period.
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## III. Obligations of MXAK

### 1.0 Specific SOW Task Obligations

- (A) Design "Arctic Navigation Safety Information System (ANSIS)" for Tech Demo. MXAK will develop a preliminary functional design of the prototype system to be developed and evaluated under this CRADA. MXAK will collaborate with USCG RDC on the final prototype system design and the Interim Report which USCG RDC will develop to document said design.
- (B) Develop ANSIS Tech Demo System. MXAK will provide the AIS-Transmit, SATCOM, and DSC VHF components of the prototype system. MXAK will support USCG RDC with the development of the proposed 500 kHz, NAVTEX Replacement, if it is mutually-agreed-upon to be part of the prototype system. It is anticipated that this support will include technical guidance / assistance with any integration with the other components of the prototype system, particularly at the planned field installation sites.



- (C) Install, Test, and Utilize ANSIS Tech Demo System. MXAK will install, test, operate, and maintain the prototype system at specific, mutually-agreed-upon, field locations. MXAK provide site space, power, security, and back-haul communications capability for all prototype system components, including the 500 kHz NAVTEX Replacement, if it is mutually-agreed-upon to be part of the prototype system. MXAK will support USCG RDC in their development and conduct of the test plan to ensure that the prototype system is "Ready for Tech Demo Utilization" and continues to meet the mutually-agreed-upon performance criteria through the duration of the Tech Demo.
- (D) Monitor ANSIS Tec Demo System Performance and Mariner Utilization. MXAK will support USCG RDC in its monitoring of the performance of the prototype system during the Tech Demo. MXAK will also support USCG RDC in the development of an appropriate CRADA report, which documents the prototype system, its performance, and its utilization by mariners during the Tech Demo period.
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#### **IV. SCOPE Changes**

Both parties must agree to any changes in writing to this Statement of Work.