Non Traditional Center of Excellence for Advanced Anti Corrosion Technologies for Undersea Applications (NTCAACTUS)

By
The Pacific Coalition for Applied Research (PACCAR)
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Pearl Harbor Naval Ship Yard, Honolulu Hawaii
American Heritage Defense Corporation, Mitchellville MD
Pacific Engineering Inc., Pasadena CA
Epitaxial Technologies Inc., Baltimore MD
And others.

Summary

A key component of the reduction of total ownership costs of the U.S. Navy's fleet of Submarines and other Undersea assets is the reduction of the cost of corrosion prevention via the utilization of the most effective innovative technologies available. NAVSEA Undersea Technology Directorate has adopted a collaborative open innovation approach that broadens the participation of entities engaged in its research, development, test and evaluation programs. Innovation companies of all sizes, Universities and Government Agencies are collaborating under this program to develop Non Traditional Centers of Excellence (NTCE) aimed at transitioning the latest emerging technologies to the Navy's operational arena. NTCAACTUS is proposed as the pilot for these centers, and will focus on reducing the cost of corrosion prevention of the Navy's fleet of submarines and other undersea assets, starting with the operations at Pearl Harbor Naval Ship Yard.

Introduction

The war against corrosion entails a yearly battle that costs the Navy anywhere from $2.4 to $6 billion, depending on how the cost is estimated[1]. Coatings and corrosion control improvement eats up 25 percent of NAVSEA's total maintenance budget, according to NAVSEA Commander Vice Adm. Kevin M. McCoy, whose strategic business plan ties rust control toward achieving the Secretary of the Navy's goal of building and sustaining a 313-ship Fleet. However, emerging advanced technologies that could help win this war are bogged down on the wrong side of the so-called "valley of death", and are not being transitioned in a timely fashion to the operational arena, where they could have impact on helping the Navy to reduce the total cost of ownership of its undersea assets. To rectify this situation, NAVSEA 073B Undersea Technology Directorate has adopted a collaborative open innovation approach that broadens the participation of entities engaged in its research, development, test and evaluation programs. Innovation companies of all sizes, Universities and Government Agencies are collaborating under

[1] Cherry, Timothy [PMS 312C Code 1822] Navy Preservation Cost/Technical Working Group Final Brief 05 June 2007.

this program to develop Non Traditional Centers of Excellence (NTCE) aimed at transitioning the latest emerging technologies to the Navy's operational arena. NTCAACTUS is proposed as the pilot for these centers, and will focus on reducing the cost of corrosion prevention of the Navy's fleet of submarines and other undersea assets, starting with the operations at Pearl Harbor Naval Ship Yard.

NTCAACTUS Goal

- Expedite the transition of new scientific discoveries to practical deployment of anti corrosion technologies into the operations of existing, and the design of new systems in order to cut the cost of corrosion prevention by half every 10 years, while extending corrosion maintenance intervals to last the life of the boat.

NTCAACTUS Objectives

- Engage open networks of academic and industrial entities in collaborative efforts to solve the practical problems associated with the achievement of the NTCAACTUS goal.
- Broaden the base of participation of academic and business entities in NAVSEA applied research and technology development programs.

NAVSEA 073B Applied Innovation Challenge Program

In December 2009 NAVSEA 073B in partnership with a coalition of businesses based in Hawaii and elsewhere, co-sponsored a Summit in Honolulu, where direct engagement between the innovation community and the Pearl Harbor Naval Ship Yard leadership took place. The Summit discussed a number of priority areas that would serve as initial targets for emerging technology transition efforts e.g.:

- Through-the-hull communication
- Ballast Tank Paint Removal and Surface Preparation
- Personal Protective Equipment
- Conductive (static-free) Hoses
- Tank Interior Environmental Monitoring
- Improved Paint Application Systems

As a result of this, a program has been initiated to hold the first NAVSEA Undersea Technology Applied Innovation Challenge, which will be held in Honolulu in December 2010. Businesses that have developed the latest and most effective technologies to address the Shipyard's most challenging problems will be invited to showcase their technologies in a head-to-head contest. The winning technologies will be endorsed for further development to meet the operational qualifications of the Navy. This Challenge will be held annually for different technology objectives, and will utilize the technical support capabilities of the proposed non-traditional center of excellence in Hawaii.

NTCAACTUS/PACCAR

The NTCAACTUS center is aimed at providing a shared infrastructure consisting of technical personnel and physical facilities, to support the research, design, prototyping,

test and evaluation of new technologies that have been developed by businesses participating in the annual Innovation Challenge contests to support the Navy's operations. Such a shared infrastructure will level the playing field so that the very best technologies could be available to the Navy regardless of the size or capitalization of the entities that have developed the intellectual property for those technologies. Among the capabilities anticipated for this center will be:

- Commercial-scale production of newly developed laboratory-scale products.
- Technical support for staging Applied Innovation Challenges.
- Prototype production support to contestants in Applied Innovation Challenges.
- Technical support to companies for Navy product qualification.
- Characterization of novel advanced materials and processes.
- Clearinghouse for technology transition from discovery to deployment.

The center will also serve as the focal point for building collaboration between businesses that own complementary intellectual property that could be combined to solve specific technology challenges of the Navy. The center will develop strong ties with the University of Hawaii and Innovation Community in Hawaii, but will also be accessible to Universities and businesses from all over the United States. A Pacific Coalition for Applied Research (PACCAR), which is the Hawaii node of a nationwide Coalition for Applied Research (CAR) will serve as the umbrella organization to coordinate and promote partnerships between the various entities participating in this program. Founding members of this coalition include the following companies:

Guide Star Engineering LLC, Kapolei Hawaii
Oceanit Inc., Honolulu Hawaii
University of Hawaii Manoa Hawaii
Pearl Harbor Naval Ship Yard, Honolulu Hawaii
American Heritage Defense Corporation, Mitchellville MD
Pacific Engineering Inc., Pasadena CA
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A forum has been created at http://coalitionforappliedreseach.ning.com to encourage other innovation companies to join the coalition.

Program Element

PE 0603561N/2033 – Advanced Submarine Systems Development

FY 11 Congressional Add Request

$5 Million.

Coalition for Applied Research
Non Traditional Center of Excellence for Advanced Anti-Corrosion Technologies for Undersea Applications (NT-CAACTUS)

STATUS QUO

• Failure to Transition Emerging Technologies to the Fleet is Costly to the Navy's Corrosion Control and Preservation Efforts

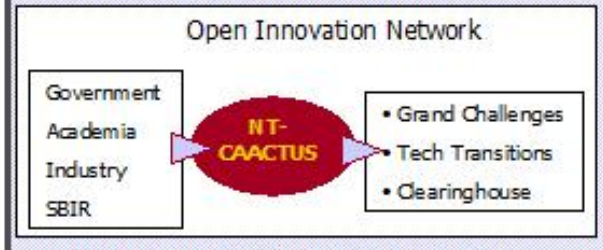
WAR ON CORROSION

- $2.4 Billion/yr challenge across the U.S. Navy
- Challenge comprises 25% of NAVSEA's total maintenance budget
- Ballast Tank Surface Preparation, Advanced Coating, Autonomous Cathodic Protection and Corrosion Sensing are top Priorities
- NT-CAACTUS Goal: Expedite transition of advanced technologies to cut the cost of corrosion by half every 10 yrs, while extending maintenance interval towards life of boat.

INSIGHTS

APPROACH:

Coalition for Applied Research brings together Government, Industry, Academia and SBIR companies to engage in grand challenges, technology transitions and Open Innovation.

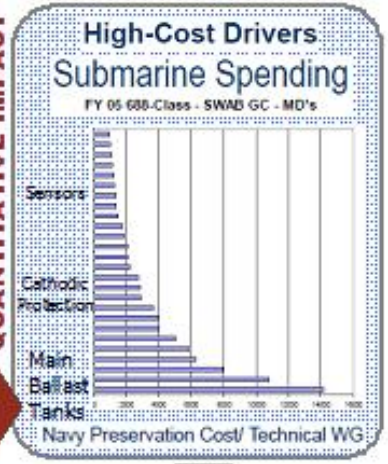


TEAM MEMBERS, COST AND SCHEDULE:

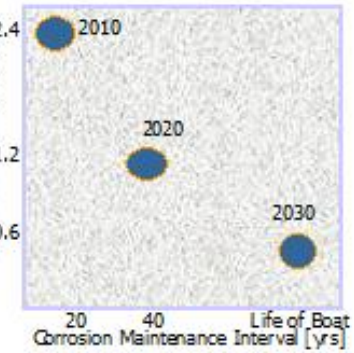
NAVSEA, DARPA, ONR, PHNSY, NRL, AHDC, UH, GSE LLC, OI, PEI, ETI, TSSC, and others.

	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10
BTSP Challenge	⟷					⟷				
Hawaii Site		→	→	→	→	→	→	→	→	→
AC Challenge		⟷					⟷			
DC Site			→	→	→	→	→	→	→	→
ACP Challenge			⟷					⟷		
TBD Site				→	→	→	→	→	→	→
ACS Challenge				⟷					⟷	
2TBD Sites					→	→	→	→	→	→
ASP Challenge					⟷					⟷
Est. Cost ($M)	2	5	8	11	14	17	17	17	17	17

QUANTITATIVE IMPACT



END-OF-PROGRAM GOALS



Win the War on Corrosion by Expediting Transition of Emerging Technologies to the Naval Fleet