



2010 ONR Naval S&T Partnership Conference

Next Generation Technologies for Today's Warfighter

Total Ownership Cost Reduction

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O F F I C E O F N A V A L R E S E A R C H

Total Ownership Cost Reduction

Programs featured at this conference include:

- Cost Reduction through Maintenance Minimization
 - **Corrosion Control and the Maintenance-Free Ship**
 - Anti-Biofouling Control: Coatings and Hull Husbandry
 - Service Life Extension
- Cost Reduction through Energy Efficiency
 - **Aviation Propulsion and Turbine Engine Technologies**
 - Weight Reduction
 - Shipboard Power
- Acquisition Cost Reduction
 - **Electronic Technology Cost Reduction**
 - **Cost Reduction in Submarine Construction**
 - High Temperature Superconducting (HTS) Degaussing
- Cost Reduction in Operations
 - **Renewable Sustainable Expeditionary Power**
 - **Advanced Shipboard Desalination**
 - Thermal Management

Corrosion Control and the Maintenance-Free Ship

Corrosion Control Science and Technologies

- **Corrosion is Navy's #1 maintenance problem**
 - Navy spent \$6.14B/yr in corrosion related maintenance
 - The number 1 issue stemming from the 2008 Naval Board of Inspection and Survey report was corrosion control
 - OSD AT&L Office of Corrosion Policy and Oversight, the Duncan-Hunter Act, and DoD Inst. 5000.2

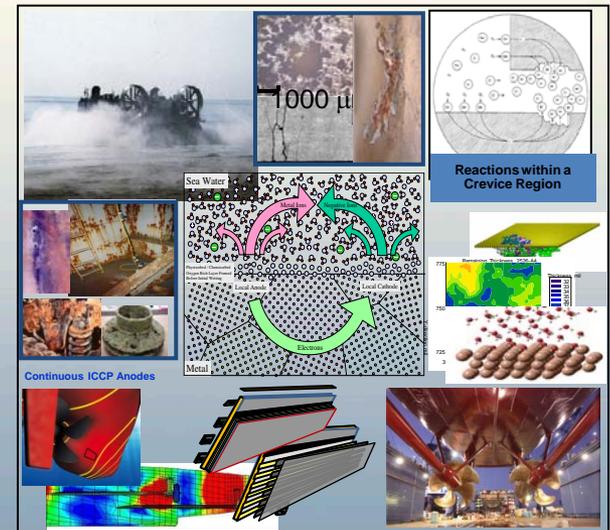
- **Reduce the cost of acquisition/maintenance due to corrosion**
 - Improved materials and processes
 - High performance coatings and application
 - Better treatment methods and technologies
 - Better inspection/detection methods and NDI
 - Smart Design and Engineering

- **Research Opportunities:**
 - Understanding of corrosion mechanism
 - Mechanistic modeling of corrosion damage
 - Advanced smart coatings technology
 - Distributed Impressed Current Cathodic Protection
 - Corrosion mitigation technology

Corrosion Control Program Officer



Dr. Airan J. Perez



Aviation Propulsion and Turbine Engine Technologies

Advanced Materials + Advanced Engine Components = Affordable Critical Naval Propulsion

- **Ensuring Propulsion Systems for Affordability and Operational Readiness**

- Increased performance with no decrease in engine life
- Life Cycle Cost avoidance for production, maintenance, and fuel consumption for Naval turbine powered weapons systems
- Increased availability and operational readiness
- Greater range, maneuverability, reliability and safety
- Increased operational flexibility - Short Take-Off /Vertical Landing (STOVL), greater payload capacity

- **Research Opportunities:**

- 3000 °F structural materials based on thermodynamic/ kinetic interactions for environment-temperature-stress life prediction
- Durable materials and coatings to increase component life
- Advanced cooling schemes
- Advanced aerodynamic, thermodynamic and mechanical engine designs
- Advanced manufacturing processes

**Air Vehicle FNC
Program Officer**



Ms. Malinda Pagett

**Propulsion Materials
Program Officer**



Dr. David Shifler

Electronic Technology Cost Reduction

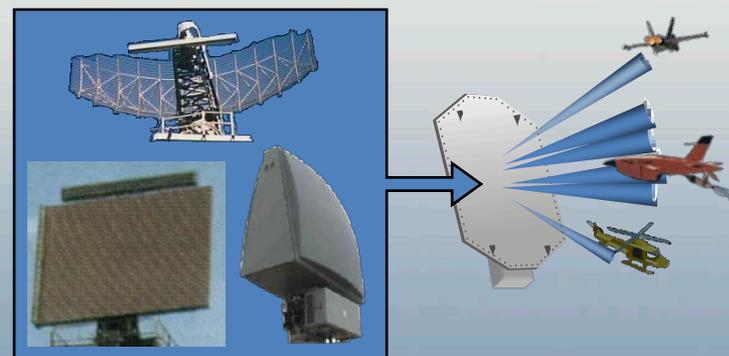
Affordable Common Radar Architecture (ACRA)

- Objective
 - Provide common scalable architecture.
 - Extend the lifetime of legacy radar systems.
 - Improve reliability and supportability.
- Benefits of Open Architecture Radar Design
 - Implement open standards and interfaces.
 - Lower Cost by enabling hardware and software re-use.
 - Lower Cost by increasing competition at the subsystem level.
- Research Opportunities
 - Approaches to ultra high reliability.
 - Matching and improving performance within extremely challenging weight and cost targets of legacy systems.

Surface & Aerospace
Surveillance Program Officer



Dr. Michael A. Pollock



Cost Reduction in Submarine Construction

VIRGINIA Class Submarine Cost Reduction

■ Background / Goal:

- Navy ManTech -- key contributor to the VIRGINIA Class cost reduction effort to achieve goal of \$2B/sub in FY12
- Initiated in FY06 with focus on acquisition cost savings
- Now expanding focus to Block IV and reduction of Total Ownership Cost (TOC)
 - Includes acquisition cost savings; maintenance cost savings; and reducing total time in drydock to improve operational availability
 - Supporting VIRGINIA Class Submarine Reduction of Total Ownership Cost (RTOC) effort

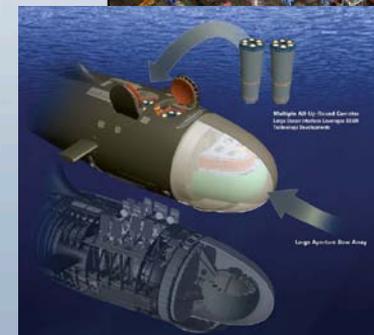
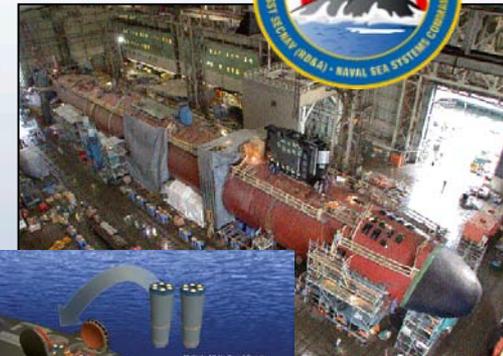
■ Implementation / Payoff:

- With current portfolio of approximately \$60M, ManTech has facilitated –
 - \$20.68M/hull of realized cost savings in Block III (18 projects implemented or in process of implementation (GD Electric Boat figure as of Jun 2010)
 - Additional projects in work and in the pipeline for future implementation
 - Projecting \$32.2M/hull cost savings total

Director, Navy ManTech Program



Mr. John Carney



Renewable Sustainable Expeditionary Power

Renewable Energy

- Energy which comes from natural resources such as sunlight, wind, rain, tides, and geothermal heat, which are naturally replenished.



Sustainable Energy

- Provision of energy such that it meets the needs of the present without compromising the ability of future generations to meet their needs.
- Sustainable energy sources are most often regarded as including all renewable sources, such as plant matter, solar power, wind power, wave power, geothermal power and tidal power.
- Sustainable energy also includes technologies that improve energy efficiency.

Aligns with SecNav energy goals

Addresses Marine Corps Commandant's 2012 Critical Strategic Priorities

Supports Power & Energy Focus Area in the ONR S&T Strategic Plan

Renewable Sustainable Expeditionary Power (RSEP)

- **Fiscal Year 2012 start FNC Enabling Capability (EC)**
- **Objectives:**
 - Improve logistics support for distributed operations through reduced fuel consumption and increased use of renewable & self-sustainable energy solutions
- **Goal:**
 - Forward-deployed providing 3 kW Continuous for 24-hours x 15 days with no resupply and compatible with HMMWV-towed Light Tactical Trailer platform with >40% less fuel usage, no appreciable increase in system cost and >10% reduction in aural signature
- **Approach:**
 - Maximize use of renewable energy solutions
 - Improve conversion & part-load efficiencies
 - Optimize balance-of-plant (sources, converters, storage, controls)
 - Reduce aural signature for improved survivability
- **Opportunities:**
 - Broad Agency Announcement published
 - Multiple awards planned for October 2011

Logistics Thrust Manager



Mr. Cliff Anderson

Shipboard Power & Energy Program Officer



Dr. H. Scott Coombe



Advanced Shipboard Desalination FNC

- Current Shipboard Reverse Osmosis Systems were designed in the 1980s
 - Units have higher Operational Availability than distillers
 - Units were designed for operation in the deep ocean
- Current Navy Deployments place ships in littoral waters or waters with rich marine biology or pollution
 - Operational Availability drops
 - Increased Maintenance
 - Increased logistics support
 - Costly Water Barging
- Research Opportunities:
 - Improved RO membranes
 - Improved pre-filtration approaches
 - Energy recovery strategies

Functional Polymeric/Organic
Materials Program Officer



Dr. Paul Armistead





Other Program Officers You Should Meet

Name	Program	ONR Code	Room
Carney, John	Director, Navy ManTech	03MT	Potomac
Anderson, Cliff	Logistics Thrust Portfolio Manager	30	Arlington
Bradel, Jeff	Maneuver Thrust Portfolio Manager	30	Arlington
Duncan, Dr. Michael	EO/IR Program Officer	31	Fairfax
Hintz, Bob	EO/IR Program Officer	31	Fairfax
Pollock, Dr. Michael A.	Surface & Aerospace Surveillance	31	Fairfax
Anderson, Dr. Michele	Electrochemical Materials and Fuel Cells	33	Roosevelt
Armistead, Dr. Paul	Functional Polymeric/Organic Materials	33	Roosevelt
Coombe, Dr. H. Scott	Shipboard Power & Energy	33	Roosevelt
Hoffman, Don	Power Generation Systems	33	Roosevelt



Other Program Officers You Should Meet (Cont)

Name	Program	ONR Code	Room
Kabacoff, Dr. Larry	Bulk Nano-structured Materials; Optical Ceramics	33	Roosevelt
McElvany, Dr. Stephen	Anti-Biofouling Control and Hull Husbandry	33	Roosevelt
Mullins, Dr. William	Structural Mechanical Materials; Alloy Design and Development	33	Roosevelt
Perez, Dr. Airan J.	Corrosion Control	33	Roosevelt
Shifler, Dr. David	Propulsion Materials	33	Roosevelt
Spector, Dr. Mark	Thermal Management	33	Roosevelt
Stimak, George	HTS Degaussing	33	Roosevelt
Pagett, Malinda	Air Vehicle FNC	35	Jefferson

Questions?

