

# UNCLASSIFIED

FY 2008/2009 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET  
Exhibit R-2

DATE: February 2007

BUDGET ACTIVITY: 01  
PROGRAM ELEMENT: 0601152N  
PROGRAM ELEMENT TITLE: IN-HOUSE LABORATORY INDEPENDENT RESEARCH (ILIR)

COST: (Dollars in Thousands)

Project Number & Title	FY 2006 Actual	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate
IN-HOUSE LABORATORY INDEPENDENT RESEARCH (ILIR)	17,262	15,856	16,556	17,221	18,293	18,676	18,791	18,909

**A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:** This program element (PE) sustains U.S. Naval Science and Technology (S&T) superiority by providing new technological concepts for the maintenance of naval power and national security and by helping to avoid scientific surprise while exploiting scientific breakthroughs and providing options for new Future Naval Capabilities (FNCs). The Department of Navy (DON) component responds to S&T directions of the DON Naval Power 21 transformation plan for long term Navy and Marine Corps improvements and is in consonance with future warfighting concepts and doctrine developed at the Naval Warfare Development Command and the Marine Corps Combat Development Command. It enables technologies to significantly improve the Joint Chiefs of Staff's Future Joint Warfighting Capabilities. The In-house Laboratory Independent Research (ILIR) program also adds increased emphasis to the revitalization of the scientist and engineer workforce component at the Navy's Warfare Centers and Laboratories by attracting superior candidates and retaining our best members through the provision of exciting and meaningful work. It is managed by the Director of Research of the Office of Naval Research (ONR) and executed by the Commanding Officers (COs) and Technical Directors (TDs) of the Naval Warfare Centers, and the Bureau of Medicine and Surgery laboratories.

The vision of the DON S&T strategy is "to inspire and guide innovation that will provide technology-based options for future Navy and Marine Corps Capabilities", where "Innovation is a process that couples Discovery and Invention with Exploitation and Delivery". DON Basic Research, which includes scientific study and experimentation, directed toward increasing knowledge and understanding in national-security related aspects of physical, engineering, environmental, and life sciences is the core of Discovery and Invention. Basic research projects are developed, managed, and related to more advanced aspects of research in some hundred-plus technology and capability-related 'thrusts', which are consolidated in twenty-two research areas. These in turn support the major motivational research focus areas of the Navy and Marine Corps-After-Next: maritime and space environments that impact operational capability; information science/knowledge management in network-centric operations; sensors and electronic systems for surveillance and tactical applications; energy/power/propulsion for performance gain and sustainment; advanced air/surface/undersea and multi-

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environment Naval platforms design/signature reduction; superior human performance/training/care of Sailors and Marines; and combat casualty care/infectious diseases/military operational medicine.

This portion of the DON Basic Research Program provides participating Navy Centers and Laboratories with funding for: basic research to support the execution of their assigned missions; developing and maintaining a cadre of active researchers who can distill and extend results from worldwide research and apply them to solve Naval problems; promoting hiring and development of new scientists; and encouragement of collaboration with universities, private industry, and other Navy and Department of Defense laboratories, in particular the corporate Naval Research Laboratory (NRL).

ILIR projects are selected by Center/Lab COs and TDs near the start of each Fiscal Year through internal competition. Projects typically last three years, and are generally designed to assess the promise of new lines of research. Successful efforts attract external, competitively awarded funding. Because the Warfare Centers and Labs encompass the full range of naval technology interests, the scope of ILIR topics roughly parallels that of PE 0601153N, Defense Research Science. In FY06, about 30 projects were completed and 54 were initiated.

Due to the number of efforts in this PE, the programs described herein are representative of the work included in this PE.

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**B. PROGRAM CHANGE SUMMARY:**

	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>
FY 2007 President's Budget Submission	17,367	15,916	16,506	16,910
Congressional Undistributed Reductions/Rescissions	-18	-60	0	0
Execution Adjustments	9	0	0	0
Non-Pay Inflation Adjustments	0	0	-126	93
Program Adjustments	0	0	255	399
Program Realignment	0	0	-151	-259
Rate Adjustments	0	0	72	78
SBIR Assessment	-96	0	0	0
FY 2008/FY 2009 President's Budget Submission	17,262	15,856	16,556	17,221

**PROGRAM CHANGE SUMMARY EXPLANATION:**

Technical: Not applicable.

Schedule: Not applicable.

**C. OTHER PROGRAM FUNDING SUMMARY:**

Not applicable.

**D. ACQUISITION STRATEGY:**

Not applicable.

**E. PERFORMANCE METRICS:**

The ILIR initiative seeks to improve the quality of defense research conducted predominantly through the Navy warfare center laboratories. It also supports the development of technical intellect and education of engineers and scientists in disciplines critical to national defense needs through the development of new knowledge in a military laboratory environment. Initial research focus is often conducted in an unfettered environment since it is basic research, but many projects focus on applying recently developed theoretical knowledge to real world military problems with the intention of developing new capabilities and improving the

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performance of existing systems. Individual project metrics then become more tailored to the needs of specific applied research and advanced development programs. Example metrics include a recent project that is expected to result in a ten fold improvement in the ability to optimize the search for underwater mines in a defined region using multiple, cooperating autonomous vehicles through the development of new adaptive sampling algorithms. The National Research Council of the National Academies of Science and Engineering's Congressionally directed "Assessment of Department of Defense Basic Research" concluded that the DoD is managing its basic research program effectively.

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COST: (Dollars in Thousands)

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**A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:** This project sustains U.S. Naval S&T superiority, provides new technological concepts for the maintenance of naval power and national security, and mitigates scientific surprises, while exploiting scientific breakthroughs and providing options for new Future Naval Capabilities. It responds to S&T directions of the DON Naval Power 21 transformation plan for long term Navy and Marine Corps improvements. It is in consonance with future warfighting concepts and doctrine developed at the Naval Warfare Development Command (NWDC) and the Marine Corps Combat Development Command (MCCDC), and enables technologies to significantly improve the Joint Chiefs of Staff's Future Joint Warfighting Capabilities. It is managed by the ONR Director of Research and executed by the COs and TDs of the Naval Warfare Centers, Bureau of Medicine and Surgery laboratories.

This portion of the DON Basic Research Program provides participating Navy Centers and Laboratories with funding for basic research to support the execution of their assigned missions, for developing and maintaining a cadre of active research scientists who can distill and extend results from worldwide research and apply them to naval problems, to promote hiring and development of new scientists, and to encourage collaboration with universities, private industry, and other Navy and Department of Defense laboratories, in particular the corporate NRL.

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## B. ACCOMPLISHMENTS/PLANNED PROGRAM:

	FY 2006	FY 2007	FY 2008	FY 2009
OCEAN/SPACE SCIENCES	3,865	4,129	4,332	4,591

### FY 2006 Accomplishments:

- Continued research into Beaked Whale bioacoustic and spatial/temporal habitat characterization in the Tongue of the Ocean, Bahamas.
- Continued research into in the field of Nonparametric Tolerance Intervals to construct a distribution-free method to generalize the performance of decision trees and neural networks. This work allows for effective adaptive classification in uncertain environments.
- Continued research into 3D elastic wave propagation in layered prolate spheroids with losses using the vector wave equation in prolate spheroidal coordinates for sonar array applications.
- Continued Naval Research Enterprise Intern Program (NREIP) to support undergraduate and graduate students performing Navy-related research at Naval R&D Centers under the supervision and mentorship of DON scientists, thus exposing them to interesting and challenging work done at these centers.
- Completed automatic classification and tracking with assignment uncertainties to address fundamental issues in signal processing, especially accurate estimation of tracker error covariance matrices.
- Initiated investigation into and application of level sets to the problem of acoustic propagation in shallow water regimes, providing a robust theoretical and numerical foundation for accurate range-dependent acoustic modeling at a feasible computational cost. This will provide greater flexibility for simulating propagation in littoral environments, and improved accuracy.
- Initiated research to determine whether chaos based communication can be applied to typical range tracking scenarios. Challenges that have not been previously explored include the differences in littoral environments and the higher range of Doppler encountered when tracking underwater vehicles like torpedoes and submarines.
- Initiated research to develop methods to automatically segment and characterize data using Bayesian networks. Resulting algorithms will be verified with data collected from a new Airborne-Laser Swath Mapping (ALSM) system for Unmanned Aerial Vehicles (UAVs) called photon-counting ALSM.

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## **FY 2007 Plans:**

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## **FY 2008 Plans:**

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	FY 2006	FY 2007	FY 2008	FY 2009
<b>ADVANCED MATERIALS</b>	2,931	3,035	3,148	3,326

## **FY 2006 Accomplishments:**

- Continued exploration of high performance nanocomposite barrier coatings for next generation acoustic sensors.
- Continued studies applying synthetic chemistry techniques to ferromagnetic materials to control their properties and then elucidate the roles they play in microwave absorption.
- Continued research into applying refined scattering measurement techniques to a range of suitable sample media in order to investigate the sensitivity and range of applicability (e.g., from the single scattering

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limit to multiple scattering and beyond).

- Completed exploring new materials and advanced structure-property-process relationships involving tougheners for high-temperature polymer-matrix composites that are suitable for naval aviation applications.
- Completed studying shear-enhanced configurations and tailorability of chemical thresholds for polymer materials.
- Completed researching new magnetic materials for weapons, vibration/noise reduction, energy scavenging, sensors, and sonar transducers.
- Completed exploring the scientific merit of using the decomposition by x-rays and electrolysis of Class II fluoride salts like BaF<sub>2</sub> and SrF<sub>2</sub> to develop a solid state battery and x-ray detector with physical dimensions less than 1 micrometer on silicon (Si) devices.
- Completed a model for the mechanism of self-healing through the characterization of the thermal and rheological behavior of ethylene-methacrylic acid (EMAA) ionomers with known self-healing behavior.
- Completed development of understanding of the effects of surface-immobilization on the function of antimicrobial and germinant molecules.
- Completed three-pronged approach to identifying new n-doping systems based on current and new theories of charge stability and transport.
- Completed researching the fundamental electromechanical behavior of single crystal ferroelectric materials (PiezoCrystals).
- Initiated development of a fracture criterion for piezocrystals (piezoelectric single crystals). The traditional stress intensity factor and energy release rate are not suitable as a fracture criteria for piezoelectric materials. The energy density theory shows qualitative promise for piezoelectric materials, but recent work indicates possible shortcomings in the existing the theory.
- Initiated research to seek a substrate to maximize the Surface enhanced Raman Spectroscopy (SERS) effect. The SERS effect has been shown to be dependant on nanostructure size and distance between neighbors. SERS has been studied using roughened surfaces, nanocolloids, deposited films, electrode tips, metal islands, and a few other variations. This research seeks to deposit self-assembled monolayers (SAMs) of conducting organic molecules on a gold surface and then attach gold nanoparticles to the SAMs. The distance between the nanoparticles will be optimized to create more SERS "hot spots" by varying the concentration and lengths of the molecules used for the SAMs.
- Initiated research to identify a method of protecting underwater structures from bio-fouling without using toxins. Recent advances in conductive polymers (which can also be piezoelectric), plastic film technology, nano-release mechanisms and non-chromate metal finishing indicate that technology is now mature enough to mimic natural non-toxic antifouling methods on artificial structures with the added benefit of electric fields and piezoelectric movement.

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## **FY 2007 Plans:**

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	FY 2006	FY 2007	FY 2008	FY 2009
<b>ELECTRONICS SENSOR SCIENCES</b>	2,243	2,322	2,408	2,468

## **FY 2006 Accomplishments:**

- Completed researching a programmable nonlinear dynamical array to provide a low-power and low-cost integrated sensor-processor consisting of a novel architecture that uses dynamical circuits as the fundamental computational building blocks.
- Completed exploring the effects of the chalcogen element selenium on undoped semi-insulating (USI) gallium arsenide (GaAs) towards new Navy sensors.

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- Completed developing the theory and algorithms to support a numerically tractable, mathematically sound approach to determining the proper allocation of distributed sensor assets (both active and passive) in a tactical environment.
- Completed researching metal/dielectric periodic multilayer structures thought to exhibit a new type of photonic transmission band corresponding to resonant tunneling of evanescent waves.
- Completed investigating grating diffraction and its polarization by experiment and theory on surface gratings and volume gratings.
- Completed examining and characterized the detection statistics at an analog receiver's decision circuit when the dominant noise source is the optical phase noise of the lasers used in a proceeding coherent fiber-optic antennaremoting link.
- Completed investigating the possibilities of using nanoscale ferromagnet and superconductor joined systems to serve as ultra-sensitive sensors of weak magnetic fields.
- Initiated research to numerically model the reduction of semiconductor laser phase noise and linewidth through optical injection locking, and then experimentally verify the model.
- Initiated research investigating Particle Filtering (PF) techniques to improve Global Positioning System/Inertial Navigation System (GPS/INS) navigation performance within an environment subject to platform motion and location constraints. This effort is particularly appropriate for combat in urban settings, the type of environment in which anti-terrorist operations are likely to be conducted.
- Initiated research to extend negative index materials (NIM) wavelengths into the visible region. Near-field scanning optical microscopy (NSOM) lithography is utilized in the fabrication of nanophotonic component structures. The component structure of primary interest is layered parallel nanowire pair arrays separated by dielectric. According to recently published models, such layered nanowire pair arrays are NIMs.

## **FY 2007 Plans:**

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## **FY 2008 Plans:**

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## **FY 2009 Plans:**

ILIR projects are intended to be roughly three years long. Typically 30% of ILIR projects turn over each year. Projects selected for FY 2009 will focus on supporting ONR Grand Challenges in Electric Power Sources and Multifunctional Electronics for Intelligent Naval Sensors, Innovative Naval Prototypes initiatives in Electromagnetic Gun and Persistent Surveillance, and the National Naval Responsibility Initiative in Undersea Weaponry.

	FY 2006	FY 2007	FY 2008	FY 2009
<b>INFORMATION SCIENCES</b>	1,898	1,905	2,038	2,089

## **FY 2006 Accomplishments:**

- Continued research into Wavelet inspired data mining.
- Continued exploration of natural language communications between humans and information systems.
- Completed research into advancing and simplifying the state of the art in quantum dense coding using an optical communications system that will convey, on average, two bits of information from the transmitter to the receiver per transmitted single-frequency photon.
- Completed research into high-data-rate communication in underwater channels using space-time coding and processing.
- Completed investigating capture and implementation of the international maritime rules, as provided in the Coast Guard Collision Regulations (COLREGS), into a multi-objective decision framework, to prove a level of autonomous tactical decision making capability for both unmanned underwater vehicles and unmanned surface vehicles and tactical decision aids aboard submarines.

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- Completed research on sea state determination for an autonomous surface craft.
- Completed exploring threat management using passive inference of network infrastructure topology.
- Completed research directing the chemical reaction between the electrode surface and a specific ligand of the metal complex, to enable the molecular dipoles to be aligned at the interface generating the asymmetric environment important for nonlinear optics.
- Initiated research to develop software mechanisms to be inserted between chat servers and their associated server-to-server communication transceivers to improve performance and user efficiency over low-bandwidth intermittent tactical links and to permit bridging between chat protocols in support of pending transition from current Internet Relay Chat (IRC) protocols to Extensible Messaging and Presence Protocol (XMPP).
- Initiated research to develop Active Conceptual Modeling technology to enhance understanding how to model continual learning from past experiences and how to capture knowledge from transition of system states.
- Initiated research focusing on abnormality detection/classification and blood vessel detection with respect to Diabetes, a disease that affects blood vessels throughout the body. The goal is to advance development of an automated image analysis system, capable of detecting/diagnosing diabetic retinopathy to help improve quality of life for those at risk.

## **FY 2007 Plans:**

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## **FY 2008 Plans:**

ILIR projects are intended to be roughly three years long. Typically 30% of ILIR projects turn over each year. Projects selected for FY 2008 will focus on supporting ONR Grand Challenges in Naval Battlespace Awareness and Intelligent Naval Sensors, Innovative Naval Prototypes initiatives in Persistent Surveillance and Sea Basing, and National Naval Responsibility Initiatives in Undersea Weaponry.

## **FY 2009 Plans:**

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Awareness and Intelligent Naval Sensors, Innovative Naval Prototypes initiatives in Persistent Surveillance and Sea Basing, and National Naval Responsibility Initiatives in Undersea Weaponry.

	FY 2006	FY 2007	FY 2008	FY 2009
<b>HUMAN PERFORMANCE SCIENCES</b>	1,898	1,965	2,038	2,089

## **FY 2006 Accomplishments:**

- Continued investigation of the distribution of free subspace identification for data exploration and bi-clustering.
- Continued development of a specific and sensitive biological sensor for microbial agents employing a partial complement fixation reaction.
- Continued research into short-term statin administration that can reduce the volume or frequency of precordial bubbles detected immediately following decompression from a hyperbaric exposure.
- Continued research in the potentiation of B-cell immune responses to Enterotoxigenic Escherichia Coli Surface Antigen 3 (CS3) Adhesin by genetic fusion with a binding peptide.
- Completed development of capsule vaccines against Campylobacter Jejuni. Such a class of vaccine would protect against one of the major world wide causes of bacterial diarrhea.
- Completed exploitation of the biology of IC-21 macrophages to develop novel detectors and decontaminants for anthrax.
- Completed researching the precision with which people can abstract information from graphics-based radar displays about the range, speed and angle of approach of contacts.
- Completed researching human-in-the-loop intelligent software agent learning.
- Completed deriving basic guidance for the use of animated graphic material for delivery in electronic performance support applications.
- Initiated research to develop and demonstrate a chemical and biological sensor based on the use of a miniature array of Micro-Electro-Mechanical Systems (MEMS) based Fabry-Perot Interferometers (FPIs). The goal of the research is to yield a very small, inexpensive (potentially disposable) arrayable device capable of rapidly detecting a variety of biological warfare agents (BWA) with low levels of false positives.
- Initiated research proposing a series of experiments designed to prove a theory that adding spark arc conditions during the electrospin process will have tremendous impact on the chemistry of polymer formation

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and more accurately describes the electrospinning phenomena. A thorough understanding of the fundamental science of the electrospinning phenomena will allow for a more intelligent approach--system engineering--to the design of new formulations of nanotechnology-based materials of military importance.

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## **FY 2009 Plans:**

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	FY 2006	FY 2007	FY 2008	FY 2009
NAVAL PLATFORM DESIGN SCIENCES	1,208	1,250	1,296	1,329

## **FY 2006 Accomplishments:**

- Continued experimental investigation and theoretical modeling of microscale processes associated with phase change heat transfer.

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- Continued development & integration of high-lift actuators and neuro-science based control for Maritime Reconnaissance Autonomous Vehicle (MRAV).
- Continued developing and validating analysis procedures to predict powering, cavitation and unsteady shaft forces for specific water jet designs.
- Continued activities to measure the Hugoniot shock wave equation of state and fracture strength for structural steels.
- Completed conducting experimental studies and modeling of information embedded shipboard power systems.
- Completed investigating nonlinear control theory for electric machines and components.
- Completed investigating strontium fluoride-based heteroepitaxial systems of silicon using compliant substrate techniques.
- Completed spectroscopic and electrochemical investigations of nanophase vanadium oxides.
- Completed developing new formulations of behavior-based approaches that are appropriate for unmanned air vehicle control and determined appropriate metrics for measuring system performance.
- Completed investigating new ceramic dielectric materials that enable the development of high-voltage/high frequency/low loss/thermally stable multilayer ceramic capacitors (MLCC).
- Completed conducting an investigation of polarization and mode changes depending on the environmental stress in single mode fibers as they relate to aircraft control.
- Initiated research to extend the use of a well-developed fault detection algorithm, based on a multi-model identification, to apply to nonlinear models and models which have been designed in Simulink. Extending this algorithm will make it widely applicable to support Naval efforts in intelligent systems and condition based maintenance (CBM), increasing both reliability and survivability of the systems.
- Initiated research into basic understanding of the unsteady turbulent airwake flow field, necessary to support modeling and simulation of flight operations and the design of future Navy ships. In investigating these flows, a method for quickly identifying and tracking pertinent flow features would greatly aid in ship design, operational evaluation of aircraft deployed at sea, and simulation of new flow control concepts.
- Initiated research to understand the influence of various metallurgical factors on the strengthening or softening mechanisms of Iron-based friction stir welds. The ultimate goal is to develop a predictive tool that will interchangeably correlate process parameters to mechanical property requirements for any given material and thickness.

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FY 2008/2009 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET  
Exhibit R-2a

DATE: February 2007

BUDGET ACTIVITY: 01

PROGRAM ELEMENT: 0601152N PROGRAM ELEMENT TITLE: IN-HOUSE LABORATORY INDEPENDENT RESEARCH (ILIR)

PROJECT TITLE: IN-HOUSE LABORATORY INDEPENDENT RESEARCH (ILIR)

and Naval Materials by Design, Innovative Naval Prototypes initiatives in Electromagnetic Gun and Sea Basing, and the National Naval Responsibility Initiative in Naval Engineering.

## **FY 2008 Plans:**

ILIR projects are intended to be roughly three years long. Typically 30% of ILIR projects turn over each year. Projects selected for FY 2008 will focus on supporting ONR Grand Challenges in Electric Power Sources and Naval Materials by Design, Innovative Naval Prototypes initiatives in Electromagnetic Gun and Sea Basing, and the National Naval Responsibility Initiative in Naval Engineering.

## **FY 2009 Plans:**

ILIR projects are intended to be roughly three years long. Typically 30% of ILIR projects turn over each year. Projects selected for FY 2009 will focus on supporting ONR Grand Challenges in Electric Power Sources and Naval Materials by Design, Innovative Naval Prototypes initiatives in Electromagnetic Gun and Sea Basing, and the National Naval Responsibility Initiative in Naval Engineering.

	FY 2006	FY 2007	FY 2008	FY 2009
<b>ENERGY SCIENCES</b>	1,208	1,250	1,296	1,329

## **FY 2006 Accomplishments:**

- Continued research into kinetics measurement studies and understanding the reaction mechanisms of energetic and binder materials during the combustion process using T-Jump Fourier transform infrared (FTIR) spectroscopy.
- Continued the study of the effects of impurities and defects on the absorption spectra of material that exhibits a range of shock sensitivity.
- Continued the effort to develop structures that are conceptually the products of fusing rings such as nitrotriazole, 1,2,4,5-tetrazine, 1,2,3,5-tetrazine, and triazine.
- Completed research into the decomposition pathways of reactive materials which enhance the Navy's effectiveness in their use of guide formulators in developing new, tailored reactive materials for future use.
- Completed impact shock experiments with shear-enhanced configurations for polymer-based materials.

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- Initiated work to determine the effect of defects on properties of energetic materials from first principles calculations in conjunction with experimental measurements.
- Initiated research into the cure chemistry and aging characteristics of hydroxy terminated polybutadiene (HTPB) prepolymer. A characterization and accelerated aging program is being conducted on the polymer to determine the chemical and physical changes that occur as the material ages.
- Initiated research to prepare and study new high-nitrogen heterocyclic anion-metal oxidizer complexes for use as initiating materials sensitive to LASER initiation.

## **FY 2007 Plans:**

ILIR projects are intended to be roughly three years long. Typically 30% of ILIR projects turn over each year. Projects selected for FY 2007 will focus on supporting ONR Grand Challenges in Electric Power Sources and Naval Materials by Design, Innovative Naval Prototypes initiatives in Electromagnetic Gun and Sea Basing, and National Naval Responsibility Initiatives in Undersea Weaponry and Naval Engineering.

## **FY 2008 Plans:**

ILIR projects are intended to be roughly three years long. Typically 30% of ILIR projects turn over each year. Projects selected for FY 2008 will focus on supporting ONR Grand Challenges in Electric Power Sources and Naval Materials by Design, Innovative Naval Prototypes initiatives in Electromagnetic Gun and Sea Basing, and National Naval Responsibility Initiatives in Undersea Weaponry and Naval Engineering.

## **FY 2009 Plans:**

ILIR projects are intended to be roughly three years long. Typically 30% of ILIR projects turn over each year. Projects selected for FY 2009 will focus on supporting ONR Grand Challenges in Electric Power Sources and Naval Materials by Design, Innovative Naval Prototypes initiatives in Electromagnetic Gun and Sea Basing, and National Naval Responsibility Initiatives in Undersea Weaponry and Naval Engineering.

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## CONGRESSIONAL PLUS-UPS:

	FY 2006	FY 2007
NAVY S&T OUTREACH	2,011	0

The Naval Science and Technology for America's Readiness (N-STAR) effort included the development of an outreach activity at Navy R&D Centers collaborating with universities, community colleges, high schools, and middle schools to create a pipeline of students who are interested in pursuing careers in science and engineering fields. The FY 2006 effort supported Navy S&T Outreach research.

## C. OTHER PROGRAM FUNDING SUMMARY:

NAVY RELATED RDT&E:

PE 0601153N Defense Research Sciences

NON-NAVY RELATED RDT&E:

PE 0601101A In-House Laboratory Independent Research (Army)

PE 0601102F Defense Research Sciences (Air Force)

## D. ACQUISITION STRATEGY:

Not applicable.