EXHIBIT R-2, RDT&E Budget Item Justification						DATE: May 2009		
Appropriation/Budget Activity **RDT&E, N BA4**						R-1 Item Nomenclature: 0603725N / Facilities Improvement		
COST ($ in millions)	FY 2008	FY 2009	FY 2010					
Total PE Cost	**9.175**	**18.832**	**4.002**					
0995 Naval Facilities System	**1.688**	**1.777**	**1.831**					
3155 Force Protection Ashore	**2.329**	**2.295**	**2.171**					
9999 Congressional Adds	**5.158**	**14.760**						

A. Mission Description and Budget Item Justification:

(U) This program provides for capabilities to a) overcome performance limitations and reduce the life cycle cost of shore facilities, and b) provide protection against terrorist attacks for shore installations and their operations. The program focuses on technical and operational issues of specific Navy interest, where there are no unbiased test validated Commercial Off the Shelf (COTS) solutions available, and where timely capabilities may not materialize without specific demonstration or validation by the Navy. Additionally, the program completes the development of technologies originating from Navy, DOD and other sources of Science and Technology programs, including the National Science Foundation (NSF), the National Institute of Standards and Technology (NIST) and Department of Energy (DOE). Validated technologies are implemented in the Navy's Military Construction (MILCON) and Facilities, Sustainment Restoration and Modernization (FSRM) program, and Antiterrorism and Force Protection (ATFP) Other Procurement, Navy (OP,N) program. Project 0995 addresses the following Navy facilities requirements during FY 2008 through FY 2010: Advance Technology for Waterfront Facilities Repair and Upgrade, Facilities Technologies to Reduce the Cost of Facilities Sustainment, Restoration and Modernization, and Modular Hybrid Pier for reducing the total ownership cost of future facilities and enable new planning options through relocatable waterfront facilities. This project is consistent with recommendation of two National Academy of Sciences Reports: "The Role of Federal Agencies in Fostering New Technology and Innovation in Building" and "Federal Policies to Foster Innovation and Improvement in Constructed Facilities." The Force Protection Ashore Project 3155, addresses selective topics in modeling; and material technologies to reduce the vulnerability of installations; and reduce the acquisition and operating costs of protective technologies. The demonstrations and validations provide the independent, technical and operational test data for the development of competitive performance specifications to acquire the required capabilities. The ATFP project is coordinated with other DOD programs.

EXHIBIT R-2, RDT&E Budget Item Justification	DATE: May 2009
Appropriation/Budget Activity **RDT&E,N / BA4**	R-1 Item Nomenclature: 0603725N / Facilities Improvement

B. Program Change Summary:

Funding:	FY 2008	FY 2009	FY 2010
Presidents Budget 2009	9.363	4.086	4.057
Presidents Budget 2010	9.175	18.832	4.002
Total Adjustments	-0.188	14.746	-0.055
Summary of Adjustments			
SBIR Assessments	-0.188		
Congressional Adds		14.800	
Congressional Adjustments		-0.051	
Rate /MISC Adjustments		-0.003	-0.055
Subtotal	-0.188	14.746	-0.055

C. Other Program Funding Summary: Provided in R-2a.

D. Acquisition Strategy: Provided in R-2a.

E. Performance Metrics: Provided in R-4.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification					**DATE: May 2009**			
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT NUMBER AND NAME 0603725N / Facilities Improvement				PROJECT NUMBER AND NAME 0995 / Naval Facilities System			
COST ($ in Millions)	FY 2008	FY 2009	FY 2010					
0995 / Naval Facilities System	**1.688**	**1.777**	**1.831**					

A. Mission Description and Budget Item Justification:

(U) This program provides the Navy with new engineering capabilities that are required to overcome specific performance limitations of Naval shore facilities while reducing the cost of sustaining the Naval shore infrastructure. The program focuses available RDT&E resources on satisfying facility requirements where the Navy is a major stakeholder or where there are no test validated Commercial Off the Shelf (COTS) solutions available, and a timely solution will not emerge without a Navy sponsored demonstration and validation. The program completes the development and validation of facility technologies originating in Navy Science and Technology programs, plus a variety of other sources which includes the National Science Foundation (NSF) and the National Institute of Standards and Technology (NIST). Validated technologies are implemented in the Navy's Military Construction (MILCON) and Facilities, Sustainment Restoration and Modernization Programs (FSRP). Project 0995 is addressing four Navy facilities requirements during the fiscal years FY 2008 through FY 2010: Waterfront Facilities Repair and Upgrade, Facilities Technologies to Reduce the Cost of Facilities, Sustainment, Restoration and Modernization and Modular Hybrid Pier. The execution of this program is consistent with the findings and recommendation of two National Academy of Sciences Reports: "The Role of Federal Agencies in Fostering New Technology and Innovation in Building" and "Federal Policies to Foster Innovation and Improvement in Constructed Facilities."

(U) Waterfront Facilities Repair and Upgrade: About 75% of the Navy's waterfront facilities are over 45 years old. They were designed for a service life of 25 years and to satisfy the mission requirements existing at that time. The over aged reinforced concrete requires costly and repetitive repairs. In addition, to accomplish more pier side ship maintenance and thus reduce drydock costs, these piers must be strengthened to support concentrated crane loads up to 140 tons when piers were originally designed for no concentrated loads. This sub-project addresses new materials and design methods to extend the service life of existing waterfront facilities by an additional 15 or more years, and conventional concrete patches and composite-enhanced repairs. Other initiatives include; new longer-lasting low-maintenance fendering systems that eliminate the need for the frequent replacement of timber piles and fenders ; a new Impulse Load Method (ILM) for accurately and quickly determining the vertical load capacity of piers and wharves; and a new Swinging Weight Deflectometer (SWD) technique to determine the lateral stability of piers for earthquake forces and docking ship's impact. Using this new technology at a cost of $1-2M for repairs and upgrades per pier will result in $50M in cost avoidance for demolition and replacement.

(U) Technologies To Reduce The Cost of Facilities, Sustainment, Restoration and Modernization (FSRM): SRM issues of high operational significance are addressed on a priority basis .The costs to correct these critical facility deficiencies are over $3.1B as reported in the FY 2000 Annual Inspection Summary (AIS). Current Navy FSRM funding levels are insufficient to prevent the continued growth of the backlog of mission and safety critical maintenance and repairs. This effort will demonstrate and validate the cost and reliability of advanced technologies in order to assure their acceptance and implementation in traditionally conservative public works and construction industries. The effort will accelerate the validation, commercialization, and wide-spread implementation of the facility technologies urgently required to reduce the cost of correcting the deficiencies in the Navy's FSRM backlog. Estimated returns on these investments are better than 60 to 1.

EXHIBIT R-2a, RDT&E Project Justification		**DATE: May 2009**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603725N / Facilities Improvement	0995 / Naval Facilities System

A. Mission Description and Budget Item Justification (cont):

(U) MODULAR HYBRID PIER (MHP): Modular Hybrid Pier started in FY02 to achieve completions required by construction acquisition schedules. The Navy is faced with the necessity of recapitalizing a large portion of its waterfront infrastructure over the next several decades. The Modular Hybrid Pier initiative develops and validates innovative material and design technologies for a mission-flexible waterfront infrastructure characterized by significantly reduced total ownership cost and increased mission flexibility. The proceeding sub-project Waterfront Facilities Repair and Upgrade will enable the Navy to economically extend the useful service life of existing piers and wharves. While reducing the need for immediate replacement, eventual replacement will be required. This MHP sub-project provides improved technology for new piers. Emerging innovative structural and materials technologies, particularly those that will transition from the Navy's applied research and advanced development program, will provide enhanced-capability. Structures may have a comparable initial cost yet have far less maintenance and repair costs. Use of advanced materials and high performance lightweight concrete will produce structures that have twice the economic service life of the conventional piers. Modular design will enable off-site fabrication in pre-cast plants that will shorten the duration of construction and lower the cost relative to conventional on-site demolition followed by on site/on base construction. Plant fabrication will vastly improve quality and result in repair-free durability because of superior performance concrete with post-tensioning technologies. The modular concept will facilitate change-out of components for modifications to increase capacity to adapt to future ship designs. Mobility due to barge configuration will enable relocatability of structural platform modules through flotation is a significant new capability option which will save money and provides new military worth/planning and deployment options. An economic analysis has shown that a modular hybrid (deployable) pier will have a Net Present Value (NPV) cost that is $15M less over its service life than that for a conventional pier constructed of ordinary reinforced concrete. The MHP, partly because of following the sea levels will have superior operational benefits to ship/port operations. The knowledge from this pier project will enable other concrete facility options that are fabricated offsite and relocatable for adjustment to basing changes. The technology of concrete and reinforcement and corrosion proofing will have wide spread applicability to all concrete construction.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		**DATE: May 2009**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603725N / Facilities Improvement	0995 / Naval Facilities System

B. Accomplishments/Planned Program

	FY 08	FY 09	FY 10	
Waterfront Repair and Upgrade	0.000	0.100	0.298	

FY 09: Initiate validation testing and evaluation of Swinging Weight Deflectometer (new capability) method for determining the actual new or remaining strength of piers to resist lateral loads from berthing ships. Strength is "an" indication of durability.

FY10: Complete validation testing of Swinging Weight Deflectometer.

	FY 08	FY 09	FY 10	
Facilities, Sustainment, Restoration & Modernization	0.000	0.748	1.036	

FY 09: Complete testing (interim validation) of flexible (non-cracking) marking paint for bituminous airfield pavements. Continue testing and evaluation of pile encasement to extend life of concrete piles currently decomposing from effects of alkali silica reaction (ASR) / delayed entrengite formation. Initiate testing and evaluation of non-destructive methodology for certifying safe load capacity of bollards at heavy weather moorings Initiate data collection to evaluate performance of building envelopes of mission critical facilities to extreme weather events (Katrina, Ivan, Charley). Define materials, energy, and management issues with the maintenance of sustainable design.

FY10: Initiate field validation testing and performance monitoring of pavement installed in vertical take-off and landing (VTOL) pads for resistance to high temperature/erosion effects of engine exhausted of joint strike fighter (JSF), F-35B. [Transition from Enterprise and Platform Enabler (FNC-EPE), PE 0602236N]. Complete testing of ASR remediation technology and bollard NDE test system. Initiate validation testing of high return-on-investment facilities/materials technologies from ONR and other science and technology from universities and industry. Determine practicability of retrofitting sustainable engineering concepts to conventional facilities.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		**DATE: May 2009**
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT NUMBER AND NAME 0603725N / Facilities Improvement	PROJECT NUMBER AND NAME 0995 / Naval Facilities System

B. Accomplishments/Planned Program (cont.)

	FY 08	FY 09	FY 10	
Modular Hybrid Pier (MHP)	1.688	0.929	0.497	

FY 08: Complete dynamic tests to validate performance of full-scale HMP fender system to seismic and wind loads. Continue corrosion monitoring of MHP test bed. Continue simulation and modeling of MHP response to hurricane environmental loads and long period waves. Initiate design of prototype MHP to refine MHP geometry, to refine mooring system, to refine access ramp/bearings and to develop critical structural details that meet CNRSW and CNR MIDLANT ship berthing requirements and incorporate lessons-learned from validation testing, simulation and modeling.

FY09: Complete simulation and modeling of MHP hydrodynamic response. Complete design of full scale prototype MHP.

FY10: Develop plans for operational test of 1st MHP prototype. Apply MHP technology lessons to other - than - pier floating/relocatable facility options.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		**DATE: May 2009**
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT NUMBER AND NAME 0603725N / Facilities Improvement	PROJECT NUMBER AND NAME 0995 / Naval Facilities System

C. Other Program Funding Summary:

Line Item No. & Name	FY 2008	FY 2009	FY2010

P-1 Procurement Line Item No. & Name. Not applicable.
C-1 MILCON Project No. & Name. Not applicable.

(U) RELATED RDT&E:
This project transitions waterfront facilities technology from applied research and advanced development programs PE0602234N, Materials, Electronics and Computer Technology, PE0602236N, Warfighter Sustainment Applied Research, and PE0603236N, Warfighter Sustainment Advanced Technology. It also transitions facility technologies developed at universities under the sponsorship of the National Science Foundation (NSF), by the Building and Fire Research Laboratory (BRL) of the National Institute of Standards and Technology (NIST), and by the Construction Engineering Research Laboratories (CERL) and Waterways Experiment Station (WES) of the U. S. Army Engineer Research and Development Center (USAERDC) when they can contribute to the solution of one of the Navy requirements being addressed by this project. The project pursues opportunities to leverage private sector investment through partnerships with private sector organizations, such as the Civil Engineering Research Foundation (CERF), the Marketing Development Alliance (MDA) of Fiberglass Reinforced Plastics Composites Industry and the Strategic Development Council of the American Concrete Institute. The project seeks to leverage and collaborate with the Navy Sustainment, Restoration and efforts including Military Construction.

D. Acquisition Strategy:

(U) This project is categorized as Non-ACAT (Non Acquisition). The know-how produced from this project enables the safe and cost effective application of emerging/advanced technology concepts and products: 1) specifying or describing the performance, 2) enabling innovative design applications, 3) enabling quality control/quality assurance during constructions, 4) enabling reliability and maintainability during operations, and 5) developing lifecycle cost projections and environmental sustainability life cycle data for Navy policy guidance and criteria serving the Navy Facilities, Sustainment, Restoration and Modernization and Military Construction (MILCON) programs. The data from this program enables earliest and safe utilization of advanced technology for cost avoidance in the facilities infrastructure. The technical know-how of this program is transferred to the construction industrythat delivers Navy construction and maintenance through the inclusion of individual firms (using competitive selection processes) and industry organizations/associations in the development and testing activities. MILCON, Repair and Modernization are not serial production acquisition processes but site specific construction acquisitions by the construction industry that fundamentally differs from weapons serial production.

E. Major Performers:

Major performers include Naval Facilities Engineering Service Center, Port Hueneme, CA. , Berger/Abam Engineers, Federal Way, WA, and Marathon Construction, Lakeside, CA.

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)						**DATE: May 2009**						
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**		PROGRAM ELEMENT 0603725N / Facilities Improvement				PROJECT NUMBER AND NAME 0995 / Naval Facilities System						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 09 Cost	FY 09 Award Date	FY 10 Cost	FY 10 Award Date			Cost to Complete	Total Cost	Target Value of Contract
Waterfront Facilities Repair & Upgrade	WX	NFESC, Pt Hueneme, CA	1.760	0.100	10/08	0.298	10/09			Cont.	0.000	na
	WR	NUWC, New London, CT	0.687								0.000	
	WR	EFANW, Poulsbo, WA	0.012								0.000	
	FP	MCA Engrg, Costa Mesa, CA	0.045								0.000	
Facilities, Sustainment, Restoration	WX	NFESC, Pt Hueneme, CA	3.583	0.298	10/08	0.286	10/09			Cont.	0.000	na
and Modernization Tech	FP	CERF, Washington, DC	0.045								0.000	
	RC	LANTDIV, Norfolk, VA	0.051								0.000	
	FP	NAS Misawa, Misawa, Japan	0.028								0.000	
	WR	SWDIV, San Diego, CA	0.002								0.000	
	FP	Han Padron Inc., NY	0.019								0.000	
	FP	Atmos Anal. &Consult, Inc.	0.006								0.000	
	RC	N. State Univ. Aberdeen, MD	0.042								0.000	
	WR	PWD, NWS, Charleston, SC	0.081								0.000	
	FP	ADC, Inc.	0.021								0.000	
	FP	Weston Geophysical, MA	0.025								0.000	
	FP	Northwestern Univ., IL	0.024								0.000	
	FP	Blackledge Diving	0.010								0.000	
	FP	ABC Painting, CA	0.032								0.000	
	FP	Polyspec Corp, TX	0.060									
	FP	Abras. Blast & Coat, CA	0.030									
	MP	U. S. Army Huntsville, AL	0.100									
	RC	Contractors TBD	0.050	0.450	03/08	0.750	03/08					
Modular Hybrid Pier	WX	NFESC, Pt Hueneme, CA	3.393	0.679	10/08	0.497	10/08					
	WR	SWDIV, San Diego, CA	0.347									
	FP	BergerAbam. Seattle, WA	5.006	0.250	10/08							
	RC	Marathon Const., CA	2.207									
	RC	Texas A&M	0.173									
			17.839	1.777		1.831						
Remarks: Total Prior Years Cost summation does not include performing activities from projects completed in prior years.												
Development Support												
Software Development												
Training Development												
Integrated Logistics Support												
Configuration Management												
Technical Data												
GFE												
Award Fees												
Subtotal Support			0.000	0.000		0.000						
Remarks: Included in Product Development costs.												

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)						**DATE: May 2009**						
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**			PROGRAM ELEMENT 0603725N / Facilities Improvement			PROJECT NUMBER AND NAME 0995 / Naval Facilities System						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 09 Cost	FY 09 Award Date	FY 10 Cost	FY 10 Award Date			Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation												
Operational Test & Evaluation												
Live Fire Test & Evaluation												
Test Assets												
Tooling												
GFE												
Award Fees												
Subtotal T&E			0.000	0.000		0.000						
Remarks: Not applicable.												
Contractor Engineering Support												
Government Engineering Support												
Program Management Support												
Travel												
Labor (Research Personnel)												
SBIR Assessment												
Subtotal Management			0.000	0.000		0.000						
Remarks: Not applicable.												
Total Cost			17.839	1.777		1.831						
Remarks: Not applicable.												

CLASSIFICATION:

EXHIBIT R4, Schedule Profile | **Date: May 2009**

APPROPRIATION/BUDGET ACTIVITY: **RDT&E, N / BA-4**

PROGRAM ELEMENT: 0603725N / Facilities Improvement

PROJECT NUMBER AND NAME: 0995 / Naval Facilities System

Fiscal Year	2008				2009				2010																							
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
MHP Acquisition Milestones								MS C																								
MHP Systems Test Bed																																
MHP System Development						PDR																										
Test & Evaluation Milestones	DT/OT																															
Development Test																																
Operational Test																																
Production Milestones									LRIP I Start																							
LRIP (1st MHP) FY 07																																
FRP FY 09																																
Deliveries																																

R-4 Schedule Profile

CLASSIFICATION:

Exhibit R-4a, Schedule Detail				**DATE: May 2009**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT 0603725N / Facilities Improvement			PROJECT NUMBER AND NAME 0995 / Naval Facilities System				
Schedule Profile (MHP)	FY 2008	FY 2009	FY 2010					
Milestone II (MSII)								
MHP Systems (Test Bed) Development								
Combined Developmental/Operational Testing (DT/OT)	1Q-4Q	1Q-4Q						
Preliminary Design Review (PDR)		2Q						
Milestone C (MS C)		4Q						
Start Low-Rate Initial Production I (LRIP)			1Q					

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification					**DATE: May 2009**			
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BS-4**	PROGRAM ELEMENT NUMBER AND NAME 0603725N / Facilities Improvement				PROJECT NUMBER AND NAME 3155 Force Protection Ashore			
COST ($ in Millions)	FY 2008	FY 2009	FY 2010					
3155 / Force Protection Ashore	**2.329**	**2.295**	**2.171**					

A. Mission Description and Budget Item Justification:

(U) Protection of the Navy Installations against terrorist activities requires development and deployment of advanced technology for force protection capabilities that are cost effective. Manpower costs of protection systems with today's technology are very high . Performance is not adequate to reduce vulnerability cost-effectively. This Antiterrorism and Force Protection Ashore Project will develop, demonstrate and validate technologies for the following: access control and perimeter denial; waterside protection against craft and swimmer intrusion; secure and efficient operations centers and emergency centers (including human and information support systems); construction integrated surveillance sensors and robotic systems for intruder detection; material systems to improve utilities security and recovery; and material concepts to reduce injury and death. Through demonstration and validation of risk modeling and simulation models, the potential of emerging technologies will be evaluated and installation security strategies that reduce manpower and other costs will be formulated. Installation protection concepts against attacks from the air will be identified and jointly demonstrated. These demonstrations and validations derive from advanced technology from science and technology programs of government academia and industry. The technology produces data for performance specifications for competitive procurement. All work will be coordinated with other programs and through industry forums as appropriate.

EXHIBIT R-2a, RDT&E Project Justification		**DATE: May 2009**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603725N / Facilities Improvement	3155 Force Protection Ashore

B. Accomplishments/Planned Program

	FY 08	FY 09	FY 10	
3155 / Force Protection Ashore	2.329	2.295	2.171	

FY 08: Continue developments and demonstrations of advanced concepts and prototypes for ATFP applications at Naval Installations.
- Demonstrate in four different terrains the capability to rapidly estimate (with available GIS data and without laborious ground surveys) perimeter sensor systems to specified security levels.
- Demonstrate for security certification and interoperability over the horizon wireless advanced technology.
- Develop employment concepts, test bed and test plan for demonstrating advanced sensors capable of seeing under inclement weather; to be transitioned in 09 from ONR's Future Navy Capabilities (FNC) Program.

FY 09: Continue and initiate advanced prototype development and demonstrations for ATFP applications at Naval Installations as follows.
- Complete and demonstrate (full scale) a multi-perimeter (both outer and inner) rapid estimating method/model for perimeter security to installations.
- Develop and demonstrate advanced prototypes of inclement weather sensors for detecting intruders; transitioned from ONR Future Navy Capabilities (FNC) program.
- Develop advanced prototypes and test Intelligent Video technology for waterfront and on-land security applications --- transitioned from ONR Future Navy Capabilities (FNC) program.
- Develop advanced prototypes of low frequency continuous wave system to warn and stop (i.e. neutralize) intruding diver/swimmers approaching Navy piers and ships (transitioned from ONR S&T)

FY10: Continue, complete and initiate advanced prototype development and demonstration for ATFP applications at Naval installations as follows:
- Continue the development of inclement weather mid range IR sensors for detecting intruders at installation perimeter.
- Continue development, demonstration and integration of intelligent video in security systems.
- Initiate demonstration of low frequency continuous wave sensors to warn and stop intruding malevolent divers and swimmers approaching Navy piers and ships.
- Develop prototype floating barrier to protect ships against swarms of attacking boats.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		**DATE: May 2009**
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT NUMBER AND NAME 0603725N / Facilities Improvement	PROJECT NUMBER AND NAME 3155 Force Protection Ashore

C. Other Program Funding Summary:

Line Item No. & Name	FY 2008	FY 2009	FY 2010	To Complete	Total Cost
P-1 Procurement Line item No., Name:					
812800 Physical Security Equipment	53.941	56.839	38.086	Con't	Con't
C-1 MILCON Project No. & Name. Not applicable.					
(U) RELATED RDT&E:					

D. Acquisition Strategy: Not applicable.

Demonstration and validation is conducted for maximum transfer and interaction with industry such as to influence the industry COTS with the results of this demonstration and prototype validation. Acquisition is based on performance specifications enabled by this project.

E. Major Performers:

Naval Facilities Engineering Service Center (NFESC), Port Hueneme, CA
Naval Surface Warfare Center (NSWC-DL), Dahlgren, VA
Naval Surface Warfare Center (NSWC) Panama City, FL
Operational Test and Evaluation Force
SPAWAR System Center, San Diego, CA
Naval Surface Warfare Center, Crane, IN

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)						**DATE: May 2009**							
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**			PROGRAM ELEMENT 0603725N / Facilities Improvement			PROJECT NUMBER AND NAME 3155 Force Protection Ashore							
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 09 Cost	FY 09 Award Date	FY 10 Cost	FY 10 Award Date			Cost to Complete	Total Cost	Target Value of Contract
Force Protection Ashore	WR	NFESC, Port Hueneme, CA	0.729	0.500	10/08	0.881	TBD					
Force Protection Ashore	WR	NSWC Dahlgren, Panama City, Crane	1.600	1.200	03/09	0.990	TBD					
Force Protection Ashore	WR	SSC San Diego, CA	0.000	0.595	03/09							
Force Protection Ashore	WR	OPTEVFOR, VA	0.000	0.000		0.300						
			2.329	2.295		2.171						
Development Support												
Software Development												
Training Development												
Integrated Logistics Support												
Configuration Management												
Technical Data												
GFE												
Award Fees												
Subtotal Support			0.000	0.000		0.000						
Remarks: Included in Product Development costs.												

(Exhibit R-3, page 1 of 2)

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)					**DATE: May 2009**							
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**		PROGRAM ELEMENT 0603725N / Facilities Improvement			PROJECT NUMBER AND NAME 3155 Force Protection Ashore							
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 09 Cost	FY 09 Award Date	FY 10 Cost	FY 10 Award Date			Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	NA											
Operational Test & Evaluation												
Live Fire Test & Evaluation												
Test Assets												
Tooling												
GFE												
Award Fees												
Subtotal T&E			0.000	0.000		0.000						
Remarks: Not applicable.												
Contractor Engineering Support												
Government Engineering Support												
Program Management Support												
Travel												
Labor (Research Personnel)												
SBIR Assessment												
Subtotal Management			0.000	0.000		0.000						
Remarks: Not applicable.												
Total Cost			2.329	2.295		2.171						
Remarks:												

CLASSIFICATION:

EXHIBIT R4, Schedule Profile													**DATE: May 2009**																			
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**							PROGRAM ELEMENT 0603725N / Facilities Improvement						PROJECT NUMBER AND NAME 3155 / Force Protection Ashore/Subproj: Perimeter Estimating Model/Method																			
Fiscal Year	2008				2009				2010																							
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Technology Assessment																																
Concept of Employment																																
System Development Spiral 1 Development Spiral 2 Development			△																													
Test & Evaluation Milestones Development Test Operational Test				△		△																										
Production Milestones Procurement Specification																																
Deliveries																																

R-4 Schedule Profile

CLASSIFICATION:

EXHIBIT R4, Schedule Profile																																				
DATE: May 2009																																					
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**									PROGRAM ELEMENT 0603725N / Facilities Improvement				PROJECT NUMBER AND NAME 3155 / Force Protection Ashore/Subproj: Inclement Weather Sensor System (mid range IR)																							
Fiscal Year	2008				2009				2010																											
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Technology Assessment			△																																	
Concept of Employment				△																																
System Development Spiral 1 Development (LPR) Spiral 2 Development (TF&I9)					△		△		△																											
Test & Evaluation Milestones Development Test Operational Test						△			△		△																									
Production Milestones Procurement Specification												△																								
Deliveries																																				

R-4 Schedule Profile

CLASSIFICATION:

EXHIBIT R4, Schedule Profile			**DATE: May 2009**
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT 0603725N / Facilities Improvement	PROJECT NUMBER AND NAME 3155 / Force Protection Ashore/Subproj: Intelligent Video	

Fiscal Year	2008				2009				2010																							
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Technology Assessment					△																											
Concept of Employment					△																											
System Development Spiral 1 Development (LPR) Spiral 2 Development (TF&I9)						△		△																								
Test & Evaluation Milestones Development Test Operational Test						△	△		△	△																						
Production Milestones Procurement Specification											△																					
Deliveries																																

R-4 Schedule Profile

CLASSIFICATION:

EXHIBIT R4, Schedule Profile			**DATE: May 2009**
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT 0603725N / Facilities Improvement	PROJECT NUMBER AND NAME 3155 / Force Protection Ashore/Subproj: Low Frequency Continuous Wave	

Fiscal Year	2008				2009				2010																							
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Technology Assessment					△																											
Concept of Employment																																
System Development Spiral 1 Development (LPR) Spiral 2 Development (TF&I9)						△					△																					
Test & Evaluation Milestones Development Test Operational Test									△																							
Production Milestones Procurement Specification																																
Deliveries																																

R-4 Schedule Profile

CLASSIFICATION:

EXHIBIT R4, Schedule Profile			**DATE: May 2009**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT		PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603725N / Facilities Improvement		3155 / Force Protection Ashore/Subproj: Floating Barrier Against Swarm Boat Attacks

Fiscal Year	2008				2009				2010																							
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Technology Assessment									△																							
Concept of Employment									△																							
System Development Spiral 1 Development (LPR) Spiral 2 Development (TF&I9)										△		△																				
Test & Evaluation Milestones Development Test Operational Test											△																					
Production Milestones Procurement Specification																																
Deliveries																																

R-4 Schedule Profile

CLASSIFICATION:

Exhibit R-4a, Schedule Detail				DATE: May 2009					
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT PE0603725N / Facilities Improvement			PROJECT NUMBER AND NAME 3155 / Force Protection Ashore/Subproj: Perimeter Estimating Model/Method					
Schedule Profile		FY 2008	FY 2009	FY 2010					
System Development (Spiral Development)									
Spiral Development		3Q							
Test & Evaluation									
Test & Evaluation (DT)		4Q							
Test & Evaluation (OT)			2Q						

R-4a Schedule Detail

CLASSIFICATION:

Exhibit R-4a, Schedule Detail				DATE: May 2009					
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT PE0603725N / Facilities Improvement			PROJECT NUMBER AND NAME 3155/Force Protection Ashore/Subproj:Inclement Weather Sensor System(mid range IR)					
Schedule Profile		FY 2008	FY 2009	FY 2010					
Technology Assessment		3Q							
Concept of Employment		4Q							
System Development									
Sprial Development (LPN)			1Q						
Spiral Development (TF&I9)			3Q	1Q					
Test & Evaluation									
Test & Evaluation (DT)				1Q					
Test & Evaluation (OT)			2Q	3Q					
Production Milestones									
Procurement Specification				4Q					

R-4a Schedule Detail

CLASSIFICATION:

Exhibit R-4a, Schedule Detail				**DATE:**	**May 2009**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT PE0603725N / Facilities Improvement			PROJECT NUMBER AND NAME 3155 / Force Protection Ashore/Subproj: Intelligent Video					
Schedule Profile		FY 2008	FY 2009	FY 2010					
Technology Assessment			1Q						
Concept of Employment			1Q						
System Development									
Sprial Development (LPR)			2Q						
Spiral Development (TF&I9)			4Q						
Test & Evaluation									
Test & Evaluation (DT)			2Q	1Q					
Test & Evaluation (OT)			3Q	2Q					
Production Milestones									
Procurement Specification				3Q					

R-4a Schedule Detail

CLASSIFICATION:

Exhibit R-4a, Schedule Detail				DATE: May 2009					
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT PE0603725N / Facilities Improvement			PROJECT NUMBER AND NAME 3155 / Force Protection Ashore/Subproj: Low Frequency Continuous Wave					
Schedule Profile		FY 2008	FY 2009	FY 2010					
Technology Assessment			1Q						
System Development									
Sprial Development (LPR)			2Q						
Spiral Development (TF&I9)				3Q					
Test & Evaluation									
Test & Evaluation (DT)				1Q					

R-4a Schedule Detail

CLASSIFICATION:

Exhibit R-4a, Schedule Detail				DATE: May 2009					
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT PE0603725N / Facilities Improvement			PROJECT NUMBER AND NAME 3155 / Force Protection Ashore/Subproj: Floating Barrier Against Swarm Boat Attacks					
Schedule Profile		FY 2008	FY 2009	FY 2010					
Technology Assessment				1Q					
Concept of Employment				1Q					
System Development									
Sprial Development (LPR)				2Q					
Spiral Development (TF&I9)				4Q					
Test & Evaluation									
Test & Evaluation (DT)				3Q					
Test & Evaluation (OT)									
Production Milestones									

R-4a Schedule Detail

EXHIBIT R-2a, RDT&E Project Justification		**DATE: May 2009**
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT NUMBER AND NAME 0603725N / Facilities Improvement	PROJECT NUMBER AND NAME 9999 / Congressional Adds

CONGRESSIONAL PLUS-UPS:

	FY 08	FY 09	FY 10	
9B91A				
Advanced Photovoltaic Material Integration Development	0.916	0.000	0.000	

(U) Investigate material issues and advanced material opportunities suitable for advanced prototyping development and demonstration to improve the performance of photovoltaics of the categories suitable for Naval facilities applications.

	FY 08	FY 09	FY 10	
9B92A				
Kinetic Hydropower System (KHPS) Turbine	3.085	2.393	0.000	

(U) Conduct a technical, operational, environmental and business study to determine the feasibility of generating power at a suitable location in Puget Sound using the Kinetic Hydropower Turbine System, from which power can be transmitted to a local commercial power grid or to a naval base(s) grid. The study, including the explorations for data will address: 1) the presence of suitably strong tidal currents to generate electricity with the kinetic turbines; 2) Proximity of such sites to ports and other infrastructure to facilitate cost effective construction and operational sustainment; 3) Proximity to electrical power grids/interconnections for distribution; 4) Adequate avoidance considerations for navigational Channels; 5) Regulatory and permitting issues; and 6) Environmental compatibility with fish/fisheries, marine mammals, other water uses and other environmental and demographic considerations. The study will conclusively identify all issues to enable effective discussions for agreements among Navy and Industry parties for the project continuation with design, fabrication, installation and demonstration of power generation, transmission, and cost effective power generation-grid operations and business activities to serve the Navy needs. Initiate critical design and tests of long lead components concurrently with the feasibility engineering and business study.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		**DATE: May 2009**
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT NUMBER AND NAME 0603725N / Facilities Improvement	PROJECT NUMBER AND NAME 9999 / Congressional Adds

CONGRESSIONAL PLUS-UPS:

	FY 08	FY 09	FY 10	
9B93A				
Swimmer Detection Sonar Network	1.157	3.190	0.000	

(U) Develop, install and demonstrate at the Portsmouth, NH Naval Shipyard water environment the Swimmer Detection Sonar Network, previously demonstrated successfully at Singapore and elsewhere. An advanced development prototype will be developed, installed, and tested to demonstrate performance in the temperature, salinity, currents, aqua-life, debris and industrial noise regime of the shipyard's waters. Consideration shall be given to installation designs to enable potential continuing development or operation if the fiscal year 2008 activities demonstrate adequate performance.

9D49A	FY 08	FY 09	FY 10	
Regenerative Fuel Cell Back-up Power	0.000	1.197	0.000	

(U) Investigate material issues, hydrogen storage issues, and improved fuel cells to allow and fabrication of a regenerative proton exchange membrane (PEM) fuel power system suitable for tactical applications.

9D48A	FY 08	FY 09	FY 10	
Over The Horizon Vessel Tracking	0.000	0.798	0.000	

(U) Over The Horizon Vessel Tracking Congressional Add funding is being transferred to NAVSEA for proper execution.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		**DATE: May 2009**
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT NUMBER AND NAME 0603725N / Facilities Improvement	PROJECT NUMBER AND NAME 9999 / Congressional Adds

CONGRESSIONAL PLUS-UPS:

9D47A	FY 08	FY 09	FY 10	
Hydrokinetic Power Generator (HPG)	0.000	1.596	0.000	

(U) This project will build and demonstrate a low-head hydrokinetic power generation system based on the phenomenon of vortex induced vibration. A fully developed system will be capable of supplying power to Navy facilities or instrumentation clusters. Vortex Hydrokinetic Power technology, (AKA Vortex Induced Vibration Aquatic Clean Energy or VIVACE), uses the phenomenon of vortex induced vibrations to extract useful kinetic energy from ocean and river currents. The technology is scalable and can produce energy over a wide range of current speeds, starting as low as 1 knot. VIVACE installations are submerged, non-obtrusive, environmentally compatible, modular, and have a high energy density. Once developed, this type of power generation can used for supporting Navy power needs in a number of areas including: power for coastal naval bases, instrumentation stations, autonomous underwater vehicle (AUV) battery recharge, off-shore stations, and idle ships.

9A12A	FY 08	FY 09	FY 10	
Permanent Magetic Linear Generator (PMLG)	0.000	1.995	0.000	

(U) The program will involve numerical and physical modeling to facilitate scaling the Phase I PMLG buoy design from 5kW to full capacity, estimated at between 100 kW and 250 kW. This effort will perform the remaining hydrodynamic modeling, identify the preferred direct drive rotary system, create a functional conceptual design, perform key experimental testing in Oregon State University wave and electric motor research laboratories, complete a preliminary design and design review, and establish the plan for a full scale design and build including cost and energy production estimates. These project and research steps are sequentially accomplished and are necessary to ensure a plan with flexibility and integrity toward identifying a cost effective and survivable wave energy conversion device. Through the sequential development of numerical modeling and experimental tests, the most feasible direct drive rotary power take-off system design concept will be identified. This will then become the subject of a preliminary full-scale design. The preliminary design will be used for system evaluation, energy production estimates, cost estimates, and a preliminary design review. This project will provide the information necessary for the determination of commercial feasibility before proceeding to a complete system design and full scale

EXHIBIT R-2a, RDT&E Project Justification		**DATE: May 2009**
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT NUMBER AND NAME 0603725N / Facilities Improvement	PROJECT NUMBER AND NAME 9999 / Congressional Adds

CONGRESSIONAL PLUS-UPS:

9D50A	FY 08	FY 09	FY 10	
Test Critical OTEC Components (TCCOA)	0.000	1.995	0.000	

(U) The contractor will design, construct and operate a heat exchanger test facility at the Hawaii Natural Energy Laboratory of Hawaii Authority (NELHA). The goal of this project is to provide heat transfer performance, corrosion and biofouling testing of heat exchangers in order to develop heat exchangers for use in commercial size Ocean Thermal Energy Conversion (OTEC) Plants. Heat exchanger performance modeling and new design development is intended to proceed in parallel with testing and share data and results from the test program. Heat exchanger test goals include: Design, develop and fully test a practical set of heat exchangers for use in commercial size OTEC plant; Determine the long term and short term corrosion characteristics of heat exchanger designs currently being considered for use; Determine if any difference exists between corrosion characteristics of 2200 feet deep water from 40" intake pipe at NELHA and 3000 feet deep water on 55" intake pipe at NELHA; evaluate anti-fouling techniques and demonstrate their successful operation; Test the performance of evaporators and condensers with both seawater and ammonia flows at various seawater and ammonia flow rates; Evaluate heat exchangers in parallel and series flow arrangements on both the seawater and ammonia circuits; Identify and/or originate heat exchanger design software that can accurately predict the performance obtained from heat exchanger testing; Analyze, evaluate and put into prototype form new heat exchanger designs to investigate heat exchanger arrangements, candidate materials, anti-corrosion processes and fabrication alternatives that require testing and evaluation.

9D51A	FY 08	FY 09	FY 10	
Wave Energy Power Generator System (WEPGS)	0.000	1.596	0.000	

(U) In conjunction with the U.S. Navy, the contractor will continue development of wave power technology as an alternate electric power source on DoD Bases and ultimately deliver power to Hawaiian Electric's grid. An advanced and efficient PowerBuoy will be interconnected at the offshore test site and deliver power to the Marine Corps Base, Hawaii (MCBH) grid through the submarine power cable. Buoy ocean testing will generate an operating history for wave power electrical generating systems at Naval bases. Program Objectives: Demonstrate wave power as a reliable alternative electric power source for power systems for DoD Bases; Evaluate the feasibility of wave power unit as a scaled up capacity power station; Deliver power to Hawaiian Electric's electrical grid.