

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification							February 2003	
Appropriation/Budget Activity RDT&E.A BA4				R-1 Item Nomenclature: 0603725N/ Facilities Improvement				
COST (\$ in millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Total PE Cost	1.670	3.300	1.440	1.567	1.570	1.872	1.906	1.941
Y0995 Facilities System	1.670	2.077	1.440	1.567	1.570	1.872	1.906	1.941
Y9208 Photovoltaic Energy Park*	0.000	1.223	0.000	0.000	0.000	0.000	0.000	0.000
A. Mission Description and Budget Item Justification: (U) This program provides the Navy with new civil 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 resources on satisfying facility requirements where the Navy is the stakeholder. 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 Sustainment Restoration and Modernization Programs. Project Y0995 is addressing three Navy facilities requirements during the fiscal years FY 2002 through FY 2005: Waterfront Facilities Repair and Upgrade, Facilities Technologies to Reduce the Cost of Sustainment, Restoration and Modernization and Modular Hybrid Pier for reducing the total ownership cost of future facilities. 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." *Project Y9208 is a Congressional add.								
B. Program Change Summary:								
Funding:		FY 2002	FY 2003	FY 2004	FY 2005			
Previous President's Budget: (FY 03 Pres Controls)		1.713	2.124	1.819	1.856			
Current BES/President's Budget:		1.670	2.077	1.440	1.567			
Total Adjustments		-0.043	-0.047	-0.379	-0.289			
Summary of Adjustments								
Post-Production R&D Continuation		0.000	0.000	-0.214	-0.269			
SBIR/STTR Transfer		-0.034	0.000	0.000	0.000			
NWCF Rates Naval Fac Eng Ser		0.000	0.000	0.047	0.046			
Non-S&T R&D Offset		0.000	0.000	-0.154	0.000			
ACTD offsets		0.000	0.000	-0.025	-0.032			
Miscellaneous Inflation		0.000	0.000	0.000	-0.034			
Nonpay Purchase Inflation		0.000	0.000	-0.025	0.000			
Nonpay Inflation		0.000	0.000	-0.008	0.000			
Business Process Reform		0.000	-0.008	0.000	0.000			
IT Cost Growth		0.000	-0.004	0.000	0.000			
Inflation Savings		0.000	-0.023	0.000	0.000			
Revised Economic Assumptions		-0.009	-0.012	0.000	0.000			
Subtotal		-0.043	-0.047	-0.379	-0.289			
C. Other Program Funding Summary: Provided in R-2a.								
D. Acquisition Strategy: Provided in R-2a.								
E. Schedule Profile: Provided in R-4.								

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EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2003	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME Program Element (PE) No. and Name				PROJECT NUMBER AND NAME Y0995/ Facilities System			
COST (\$ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Project Cost	1.670	2.077	1.440	1.567	1.570	1.872	1.906	1.941
RDT&E Articles Qty	8	2	3	4	TBD	TBD	TBD	TBD

A. Mission Description and Budget Item Justification:

(U) This program provides the Navy with new civil 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 resources on satisfying facility requirements where the Navy is a major stakeholder. 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 Sustainment Restoration and Modernization Programs. Project Y0995 is addressing three Navy facilities requirements during the fiscal years FY 2002 through FY 2005: Waterfront Facilities Repair and Upgrade, Facilities Technologies to Reduce the Cost of 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

(U) Over 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 they 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 respectively; new longer-lasting low-maintenance fendering systems that eliminate the need for the frequent replacement of timber piles, fenders, a new Impluse Load Method (ILM) for accurately and quickly determining the vertical load capacity of piers and wharves, a new Swinging Weight Defelctometer (SWD) technique to determine the lateral stability of piers for earthquake forces and docking ship's impact. In total, for \$1-2M of repairs and upgrades per pier, using this new technology, \$50M for demolition and replacement is avoided.

(U) FACILITY TECHNOLOGIES TO REDUCE THE COST OF SUSTAINMENT, RESTORATION AND MODERNIZATION (SRM)

(U) The costs to correct these critical facility backlog deficiencies are over \$3.1B as reported in the FY 2000 Annual Inspection Summary (AIS). Current Navy SRM 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 clearly validate the cost and reliability of advanced technologies in order to assure their acceptance and implementation in traditionally conservative public works and maintenance 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 SRM backlog by technology to reduce the frequency of failures and repair costs. Estimated returns on these investments are better than 100 to 1.

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Exhibit R-2a, RDTEN Project Justification
(Exhibit R-2a, page 2 of 14)

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EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2003
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME Facilities Improvement / PE0603725N	PROJECT NUMBER AND NAME Y0995/ Facilities System
<p>(U) MODULAR HYBRID PIER (MHP)</p> <p>(U) Modular Hybrid Pier started in FY 02 to achieve completions required by construction acquisition schedules.</p> <p>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 that 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 and lower the cost relative to conventional on-site construction. Plant fabrication will vastly improve repair-free durability because of superior quality control and application of high performance concrete and post-tensioning technologies. The modular concept will facilitate change-out of components for modifications to increase or capacity to adapt to future in ship designs. Mobility/relocatability of barge size modules through flotation is a significant new capability option to save money and provide new military worth. An economic analysis has shown that a modular hybrid (deployable) pier will have a Net Present Value (NPV) cost that is \$18M less over its service life than that for a conventional pier constructed of ordinary reinforced concrete. The MHP will have superior operational benefits to ship/port operations.</p>		

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Exhibit R-2a, RDTEN Project Justification
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EXHIBIT R-2a, RDT&E Project Justification			DATE: February 2003	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME Facilities Improvement / PE0603725N	PROJECT NUMBER AND NAME Y0995 / Facilities System		
B. Accomplishments/Planned Program				
	FY 02	FY 03	FY 04	FY 05
Waterfront Repair and Upgrade	0.150	0.000	0.100	0.400
RDT&E Articles Quantity	1		1	1
<div style="border: 1px solid black; padding: 5px;"> <p>FY 02: Successfully completed test and evaluation of pier repair and strengthening systems at SUBASE Bangor Marginal Wharf.</p> <p>FY 03: Work deferred to maximize resources allocated to Modular Hybrid Pier to achieve completion required for construction acquisition.</p> <p>FY 04: Complete validation testing and evaluation of Swinging Weight Deflectometer (new capability) method for determining the remaining strength of piers to resist lateral loads from berthing ships. Initiate testing of agents to reduce corrosion inducing chloride ion penetration rates.</p> <p>FY 05: Continue testing of agents to reduce corrosion inducing chloride ion penetration rates. Initiate testing of sensors for real time monitoring of load safety to increase capacity of aged structures to support ship support and intermediate maintenance.</p> </div>				
	FY 02	FY 03	FY 04	FY 05
Sustainment, Restoration & Modernization Tech Redu	0.664	0.000	0.300	0.667
RDT&E Articles Quantity	7			3
<div style="border: 1px solid black; padding: 5px;"> <p>FY 02: Completed testing or roof inspection and assessment methodology at NAVSTA Bremerton. Completed demonstration of new NDE for measuring depth of embedment of concrete foundation piles. Completed performance testing of marine concrete with high-fly-ash content. Conducted laboratory tests of high heat resistant A/C pavement joint sealant under simulated aircraft exhaust heat and blast. Continued lab testing of durable coatings for steel in the splash zone. Demonstrated method of encapsulating piles below mudline to mediate effects of alkali silica reaction and delayed ettringite formation. Conducted demonstration test of acrylic elastomeric coatings for steel. Initiated lab testing of flexible (non-cracking) airfield pavement marking paints.</p> <p>FY 03: Work deferred to maximize resources allocated to Modular Hybrid Pier to achieve completion required for construction acquisition.</p> <p>FY04: Complete field (validation) testing of high temperature pavement joint sealants. Continue testing of pile encasement to extend life of decomposing concrete. Continue testing (interim validation) of acrylic elastomeric coating of steel. Continue testing (interim validation) of flexible (non-cracking) marking paint for bituminous airfield pavements.</p> <p>FY05: Continue field (validation) testing of durable coatings for steel in the splash zone. Complete field (validation) testing of pile encasement to extend life of decomposing concrete. Complete field (validation) testing of acrylic elastomeric coating of steel. Complete field (validation) testing of flexible marking paint for bituminous airfield pavements. Initiate DEMVAL testing of diagnostics technologies for objective and efficient facilities condition measurements and assessment; Includes systems, such as safety condition testing of bollards, concrete micro crack detection and condition measuring of piles, that will provide objective quantitative data to new engineering management systems such as "Wharfer" to be used Navy-wide to rate facility condition.</p> </div>				

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Exhibit R-2a, RDTEN Project Justification
(Exhibit R-2a, page 4 of 14)

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EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2003		
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME Facilities Improvement / PE0603725N	PROJECT NUMBER AND NAME Y0995 / Facilities System		
B. Accomplishments/Planned Program (Cont.)				
	FY 02	FY 03	FY 04	FY 05
Modular Hybrid Pier	0.856	2.077	1.040	0.500
RDT&E Articles Quantity		2	2	
<p>FY 02: Drafted Test & Evaluation Master Plan (TEMP), formed working integrated product team (WIPT), designed test structure to demonstrate structural performance and component durability and to validate analytical models.</p> <p>FY 03: Fabricate two floating modules for test structure. Complete test structure mooring design. Initiate demonstration of constructability and attainment of quality for high performance marine concrete, demonstrate ability to hold strict tolerances, module assembly and mooring integration..</p> <p>FY 04: Complete construction of test structure mooring and moor modules. Initiate structural and hydrodynamic tests on demonstration structure (assembled modules and moorings). Install and test shore access ramp and support bearings for required strength and rotational/traditional capabilities.</p> <p>FY 05: Continue DT/OT of critical subassemblies. Complete data analyses and documentation of DEMVAL tests and transition to engineering criteria and specifications for construction acquisition.</p>				

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EXHIBIT R-2a, RDT&E Project Justification			DATE:	
			February 2003	
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME		
RDT&E, N / BA-4	Facilities Improvement/ PE0603725N	Y0995 / Facilities System		
C. Program Change Summary:				
Funding:	FY 2002	FY 2003	FY 2004	FY 2005
Previous President's Budget: (FY 03 Pres Controls)	1.713	2.124	1.819	1.856
Current BES/President's Budget:	1.670	2.077	1.440	1.567
Total Adjustments	-0.043	-0.047	-0.379	-0.289
Summary of Adjustments				
Post-Production R&D Continuation	0.000	0.000	-0.214	-0.269
SBIR/STTR Transfer	-0.034	0.000	0.000	0.000
NWCF Rates Naval FAC Eng Ser	0.000	0.000	0.047	0.046
Non-S&T R&D Offset	0.000	0.000	-0.154	0.000
ACTD Offsets	0.000	0.000	-0.025	-0.032
Miscellaneous Inflation	0.000	0.000	0.000	-0.034
Nonpay Purchase Inflation	0.000	0.000	-0.025	0.000
Nonpay Inflation	0.000	0.000	-0.008	0.000
Business Process Reform	0.000	-0.008	0.000	0.000
IT Cost Growth	0.000	-0.004	0.000	0.000
Inflation Savings	0.000	-0.023	0.000	0.000
Revised Economic Assumptions	-0.009	-0.012	0.000	0.000
Subtotal	-0.043	-0.047	-0.379	-0.289
Schedule: Not applicable.				
Technical: Not applicable.				

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APPROPRIATION/BUDGET ACTIVITY RDTE&E, N / BA-4			PROGRAM ELEMENT NUMBER AND NAME Facilities Improvement / PE0603725N			PROJECT NUMBER AND NAME Y0995 / Facilities System			

D. Other Program Funding Summary:

Line Item No. & Name	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
<p>P-1 Procurement Line Item No. & Name. Not applicable.</p> <p>C-1 MILCON Project No. & Name. Not applicable.</p> <p>(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..</p>										
<p>E. Acquisition Strategy:</p> <p>(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 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 industry that 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.</p>										
<p>F. Major Performers:</p> <p>Major performers include Naval Facilities Engineering Service Center, Port Hueneme, CA.</p>										

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Exhibit R-3 Cost Analysis (page 1)							DATE:		February 2003				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME							
RDT&E, N / BA-4			Facilities Improvement/ PE0603725N			Y0995 / Facilities System							
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract	
Waterfront Facilities Repair & Upgrade	WX	NFESC, Pt Hueneme, CA	1.760			0.100	10/03	0.400	10/04	nominal varies	cont.	na	
	WR	NUWC, New London, CT	0.687								0.687		
	WR	EFANW, Poulsbo, WA	0.012								0.012		
	FP	MCA Engrg, Costa Mesa, CA	0.045								0.045		
Sustainment, Restoration & Modernization Tech	WX	NFESC, Pt Hueneme, CA	3.583			0.200	10/03	0.350	10/04	nominal varies	cont.	na	
	FP	CERF, Washington, DC	0.045								0.045		
	RC	LANTDIV, Norfolk, VA	0.051								0.051		
	FP	NAS Misawa, Misawa, Japan	0.028								0.028		
	WR	SWDIV, San Diego, CA	0.002								0.002		
	FP	Han Padron Inc., NY	0.019								0.019		
	FP	Atmos Anal. &Consult, Inc.	0.006								0.006		
	RC	N. State Univ. Aberdeen, MD	0.042								0.042		
	WR	PWD, NWS, Charleston, SC	0.081								0.081		
	FP	ADC, Inc.	0.021								0.021		
	FP	Weston Geophysical, MA	0.025								0.025		
	FP	Northwestern Univ., IL	0.024								0.024		
	FP	Blackledge Diving	0.010								0.010		
	FP	ABC Painting, CA	0.032								0.032		
	FP	Polyspec Corp, TX	0.060								0.060		
	FP	Abras. Blast & Coat, CA	0.030								0.030		
	MP	U. S. Army Huntsville, AL	0.100								0.100		
	RC	Contractors TBD	0.050			0.100	03/04	0.317	03/05	cont.	cont.		
Modular Hybrid Pier	WR	NFESC, Pt Hueneme, CA	0.275	0.350	10/02	0.344	10/03	0.400	10/04	nominal varies	cont.	na	
	FP	BergerAbam. Seattle, WA	0.581	1.727	05/03	0.250	03/04	0.100	03/05		2.658		
	FP	Contractors TBD	0.000			0.446	06/04				0.446		
			7.569	2.077		1.440		1.567		0.000	12.653		
Remarks: Total Prior Years Cost summation does not include performing activities from projects completed in prior years.													
Development Support											0.000		
Software Development											0.000		
Training Development											0.000		
Integrated Logistics Support											0.000		
Configuration Management											0.000		
Technical Data											0.000		
GFE											0.000		
Award Fees											0.000		
Subtotal Support			0.000	0.000		0.000		0.000		0.000	0.000		
Remarks: Included in Product Development costs.													

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Exhibit R-3, Project Cost Analysis
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Exhibit R-3 Cost Analysis (page 2)									DATE: February 2003			
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME						
RDT&E, N / BA-4			Facilities Improvement/ PE0603725N			Y0995 / Facilities System						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation											0.000	
Operational Test & Evaluation											0.000	
Live Fire Test & Evaluation											0.000	
Test Assets											0.000	
Tooling											0.000	
GFE											0.000	
Award Fees											0.000	
Subtotal T&E			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks: Not applicable.												
Contractor Engineering Support											0.000	
Government Engineering Support											0.000	
Program Management Support											0.000	
Travel											0.000	
Labor (Research Personnel)											0.000	
SBIR Assessment											0.000	
Subtotal Management			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks: Not applicable.												
Total Cost			7.569	2.077		1.440		1.567		0.000	12.653	
Remarks:												

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Exhibit R-3, Project Cost Analysis
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Exhibit R-3, Project Cost Analysis
(Exhibit R-3, page 11 of 14)

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Exhibit R-3 Cost Analysis (page 2)									DATE: February 2003			
APPROPRIATION/BUDGET ACTIVITY RDTE, N / BA-4			PROGRAM ELEMENT Facilities Improvement / PE0603725N			PROJECT NUMBER AND NAME Y0995 / Facilities System						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation											0.000	
Operational Test & Evaluation											0.000	
Live Fire Test & Evaluation											0.000	
Test Assets											0.000	
Tooling											0.000	
GFE											0.000	
Award Fees											0.000	
Subtotal T&E			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks: Not applicable.												
Contractor Engineering Support											0.000	
Government Engineering Support											0.000	
Program Management Support											0.000	
Travel											0.000	
Transportation											0.000	
SBIR Assessment											0.000	
Subtotal Management			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks: Not applicable.												
Total Cost			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks: Not applicable.												

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Exhibit R-3, Project Cost Analysis
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EXHIBIT R4, Schedule Profile																								DATE:											
APPROPRIATION/BUDGET ACTIVITY												PROGRAM ELEMENT NUMBER AND NAME												PROJECT NUMBER AND NAME											
RDT&E, N / BA-4												Facilities Improvement / PE0603725N												Y0995 / Facilities System											
Fiscal Year	2002				2003				2004				2005				2006				2007				2008				2009						
	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 B															MSC																			
MHP Systems Test Bed																																			
MHP System Development																																			
Test & Evaluation Milestones																																			
Development Test																																			
Operational Test																																			
Production Milestones																																			
LRIP (1st MHP) FY 07																																			
FRP FY 09																																			
Deliveries																																			

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* Not required for Budget Activities 1, 2, 3, and 6

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Exhibit R-4, Schedule Profile
(Exhibit R-4, page 13 of 14)

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Exhibit R-4a, Schedule Detail
(Exhibit R-4a, page 14 of 14)