CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification								February 2004
Appropriation/Budget Activity **RDT&E.A BA4**				R-1 Item Nomenclature: 0603725N/ Facilities Improvement				
COST ($ in millions)		FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Total PE Cost		**3.276**	**1.424**	**1.621**	**1.536**	**1.832**	**1.868**	**1.906**
0995 Facilities System		**2.077**	**1.424**	**1.621**	**1.536**	**1.832**	**1.868**	**1.906**
9208 Photovoltaic Energy Park*		**1.199**	**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 0995 is addressing three Navy facilities requirements during the fiscal years FY 2003 through FY 2006: 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 9208 is a Congressional add.

B. Program Change Summary:

Funding:	FY 2003	FY 2004	FY 2005
Previous President's Budget: (FY 04 Pres Controls)	3.300	1.440	1.567
Current President's Budget:	3.276	1.424	1.621
Total Adjustments	-0.024	-0.016	0.054
Summary of Adjustments			
NWCF Rates Adjustments	0.000	0.000	0.002
Other program adjustments:	-0.024	-0.016	0.052
Subtotal	-0.024	-0.016	0.054

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

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

E. Schedule Profile: Provided in R-4.

R-1 SHOPPING LIST - Item No. 64-1 of 64-10

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: **February 2004**	
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT NUMBER AND NAME 0603725N / Facilities Improvement				PROJECT NUMBER AND NAME 0995/ Facilities System			
COST ($ in Millions)		FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Project Cost		**2.077**	**1.424**	**1.621**	**1.536**	**1.832**	**1.868**	**1.906**
RDT&E Articles Qty		**2**	**3**	**4**	**TBD**	**TBD**	**TBD**	**TBD**

A. Mlission 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 2003 through FY 2006: 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 than60 to 1.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2004**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	PE0603725N / Facilities Improvement	0995/ Facilities System

(U) MODULAR HYBRID PIER (MHP)

(U) Modular Hybrid Pier started in FY 02 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 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 $15M 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.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2004**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	PE0603725N / Facilities Improvement	0995 / Facilities System

B. Accomplishments/Planned Program

	FY 03	FY 04	FY 05
Waterfront Repair and Upgrade	0.000	0.000	0.100
RDT&E Articles Quantity	1		

FY 03: Work deferred to maximize resources allocated to Modular Hybrid Pier to achieve completion required for constrruction acquisition.
FY 04: Work deferred to maximize resources allocated to Modular Hybrid Pier to achieve completion required for constrruction acquisition.
FY 05: 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.

	FY 03	FY 04	FY 05
Sustainment, Restoration & Moderization Tech Redu	0.000	0.000	0.352
RDT&E Articles Quantity			

FY 03: Work deferred to maximize resources allocated to Modular Hybrid Pier to achieve completion required for construction acquisition.
FY 04: Work deferred to maximize resources allocated to Modular Hybrid Pier to achieve completion required for construction acquisition.
FY 05: 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.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2004**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	PE0603725N / Facilities Improvement	0995 / Facilities System

B. Accomplishments/Planned Program (Cont.)

	FY 03	FY 04	FY 05
Modular Hybrid Pier	2.077	1.424	1.169
RDT&E Articles Quantity	3	2	2

FY 03: Initiated mooring design for test structure comprised of two floating modules with full scale mooring. Initiated module fabrication. Demonstrated ability to meet performance requirements for durable, high strenght lightweight concrete on large test articles.
FY 04: Complete module fabrication and ocean tow delivery to NS San Diego. Demonstrate ability to constutct modules to meet durability performance requirements. Initiate construction of test structure mooring and mooring of modules. Demonstrate ability to hold strict tolerances during module assembly and mooring integration.
FY 05: 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. Install and test full scale MHP service utility mock-ups at ramp articulation points. Complete DT/OT of critical subassemblies.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2004**
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT NUMBER AND NAME PE0603725N / Facilities Improvement	PROJECT NUMBER AND NAME 0995 / Facilities System

C. Other Program Funding Summary:

Line Item No. & Name	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost

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 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

E. Major Performers:

Major performers include Naval Facilities Engineering Service Center, Port Hueneme, CA.

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)								DATE: **February 2004**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**		PROGRAM ELEMENT PE0603725N / Facilities Improvement				PROJECT NUMBER AND NAME 0995 / 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	10/04	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					0.202	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					0.150	03/05	cont.	cont.	
Modular Hybrid Pier	WR	NFESC, Pt Hueneme, CA	0.275	0.350	10/02	0.135	10/03	0.745	10/04	nominal varies	cont.	na
	WR	SWDIV, San Diego, CA	0.000			0.142	06/04	0.024	10/04		0.166	
	FP	BergerAbam. Seattle, WA	0.581	1.727	05/03			0.100	10/04		2.408	
	FP	Contractors TBD	0.000			1.147	06/04	0.300	10/04		1.447	
			7.569	2.077		1.424		1.621		0.000	12.691	
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.												

R-1 SHOPPING LIST - Item No. 64-7 of 64-10

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)										DATE: **February 2004**		
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**			PROGRAM ELEMENT PE0603725N / Facilities improvement			PROJECT NUMBER AND NAME 0995 / 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		1.424		1.621		0.000	12.691	
Remarks:												

R-1 SHOPPING LIST -Item Nol 64-8 of 64-10

CLASSIFICATION:

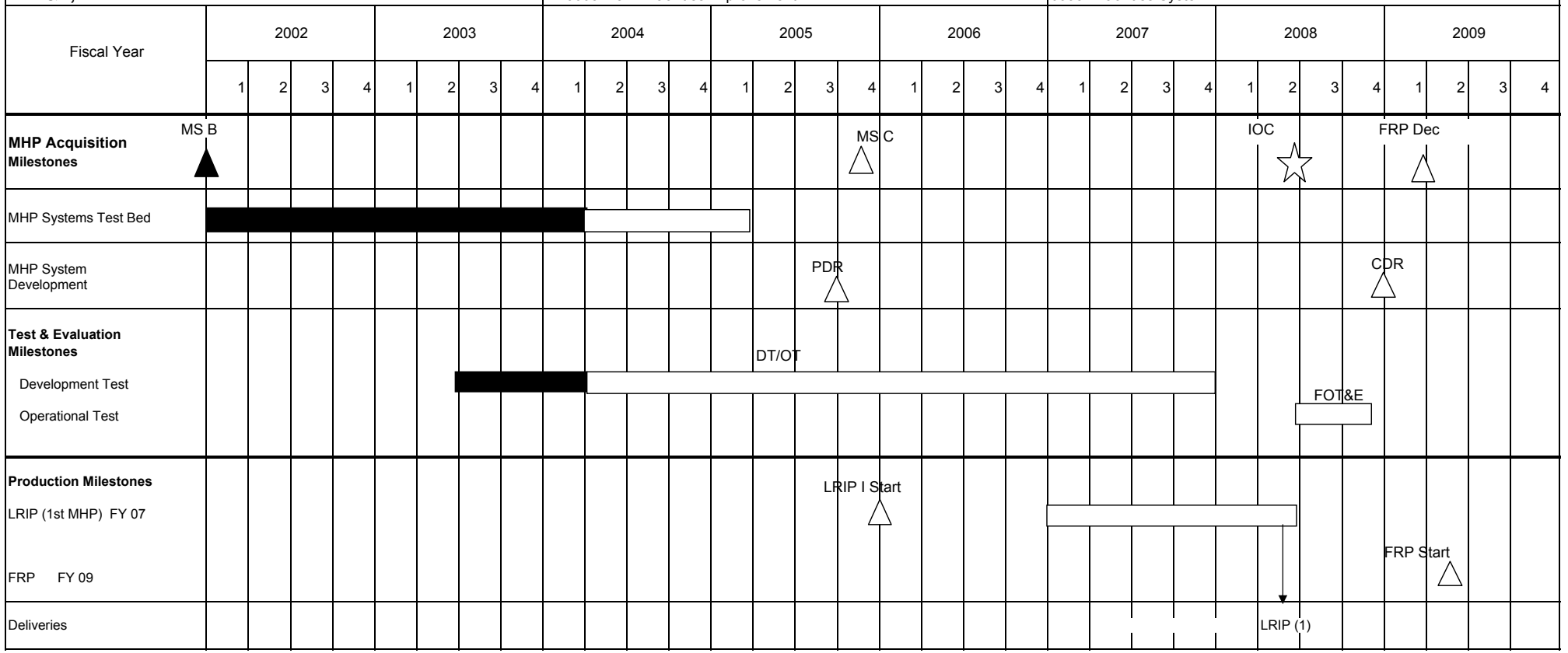
EXHIBIT R4, Schedule Profile

DATE: **February 2004**

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

PROGRAM ELEMENT NUMBER AND NAME: PE0603725N / Facilities Improvement

PROJECT NUMBER AND NAME: 0995 / Facilities System



R-4 Schedule Profile - Item No. 64-9 of 64-10

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

CLASSIFICATION:

Exhibit R-4a, Schedule Detail						DATE: **February 2004**		
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT PE0603725N / Facililties Improvement				PROJECT NUMBER AND NAME 0995 / Facilities System			
Schedule Profile (MHP)	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	
Milestone II (MSII)								
MHP Systems (Test Bed) Development	1Q-4Q	1Q-4Q	1Q					
Combined Developmental/Operational Testing (DT/OT)	3Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q			
Preliminary Design Review (PDR)			3Q					
Milestone C (MS C)			4Q					
Start Low-Rate Initial Production I (LRIP)				1Q				
Low-Rate Initial Production Delivery						2Q		
Follow-On Operational Test & Evaluation (FOT&E)						3Q-4Q		
IOC						3Q		
Critical Design Review (CDR)						4Q		
Full Rate Production (FRP) Decision							1Q	
Full Rate Production Start							2Q	

R-4 Schedule Profile - Item No 64-10 of 64-10