

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification						DATE:	
						February 2004	
APPROPRIATION/BUDGET ACTIVITY RESEARCH DEVELOPMENT TEST & EVALUATION (BA-4)				R-1 ITEM NOMENCLATURE 0603563N/Ship Concept Advanced Design			
COST (\$ in Millions)	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Total PE Cost	24.685	20.846	3.723	1.721	21.646	1.692	1.714
2196/Design Tools, Plans & Concepts	5.586	7.594	3.723	1.721	21.646	1.692	1.714
9041/Small Combatant Craft	7.720	8.900	0.000	0.000	0.000	0.000	0.000
9042/Sealion Tech Demo	0.959	0.988	0.000	0.000	0.000	0.000	0.000
9043/Metallic Materials Adv Dev & Certification	3.265	0.000	0.000	0.000	0.000	0.000	0.000
9044/DocumentAutomation Of ICAS Maint	2.450	1.682	0.000	0.000	0.000	0.000	0.000
9192/Autonomous Maritime Navigation	1.448	0.000	0.000	0.000	0.000	0.000	0.000
9193/Total Fleet Support	0.000	1.682	0.000	0.000	0.000	0.000	0.000
9194/Adv Integ Low-Profile Antenna (HF,VHF,UHF)	2.298	0.000	0.000	0.000	0.000	0.000	0.000
9195/Advanced Stealth Ship Radars	0.959	0.000	0.000	0.000	0.000	0.000	0.000
Defense Emergency Response Funds (DERF) Funds: Not Applicable.							
A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:							
A. (U) Mission Description and Budget Item Justification: The mission of the PE is to explore alternative surface ship force structures, the advanced surface ship & unmanned surface vehicles concepts, and the potential technologies for these force structures and the advanced concepts in support pre-acquisition mission needs analysis, mission area analysis, SCN and R&D planning. The objective is more affordable mission capable surface ship force including ships with reduced manning, increased producibility, reduced operating and support costs, and greater utilization of the latest technology. The program directly supports the Navy Shipbuilding Plan with state-of-the-art design tools and methods for surface ship force structure alternative studies, ship & unmanned vehicle concept studies, and the actual conduct of surface ship force structure alternative studies and advanced design concept studies for the ships that may become part of the SCN plan.							
(U) Project 2196 - This project funds concept develop engineering, mission effectiveness analysis, and other analysis for formulation of future surface ship force structure along with development of the tools to accomplish these efforts. Advanced ship concept studies, ship and ship systems technology assessments, and the development and upgrade of ship concept design and engineering tools, methods, and criteria are also funded in this project.							
(U) Project 9041 - Congressional add. This project funds only acquisition, test and evaluation of a high speed variable freeboard planning craft and related special warfare high speed support craft and equipment. This was a Congressional add project in FY 2000 and FY 2001 in a different PE.							

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Exhibit R-2, RDTEN Budget Item Justification
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EXHIBIT R-2, RDT&E Budget Item Justification		DATE:	February 2004
APPROPRIATION/BUDGET ACTIVITY		R-1 ITEM NOMENCLATURE	
RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY BA-4		0603563N/Ship Concept Advanced Design	
<p>(U) Project 9042 - Congressional add. This project funds Situation Awareness Module, related to the Sealion Craft (project S9041).</p> <p>(U) Project 9043 - Congressional add. This project funds the Metallic Material Advanced Development and Certification Program.</p> <p>(U) Project 9044 - Congressional add. This project funds Documentation Automation of Integrated Condition Assessment System (ICAS) Maintenance and other Navy procedures in XML format.</p> <p>(U) Project 9192 - Congressional add. This project funds development of autonomous operation technologies in maritime vehicles and their payloads.</p> <p>(U) Project 9193 - Congressional add. This project funds development and analysis of fleet support technologies.</p> <p>(U) Project 9194 - Congressional add. This project funds design and test construction of conformal antennas related to SEALION craft (project S0941).</p> <p>(U) Project 9195 - Congressional add. This project funds adaptive design and test construction of low probability of intercept (LP1) radar, related to SEALION craft (project S0941).</p>			

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Exhibit R-2, RDTEN Budget Item Justification
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EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2004	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4		PROGRAM ELEMENT NUMBER AND NAME 0603563N/ship Concept Advanced Design			PROJECT NUMBER AND NAME 2196/Design Tools, Plans, and Concepts			
COST (\$ in Millions)	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	
Project Cost	5.586	7.594	3.723	1.721	21.646	1.692	1.714	
RDT&E Articles Qty								

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: A. (U) Mission Description and Budget Item Justification: This project develops and explores alternative surface ship force structures, the advanced surface ship & unmanned surface vehicles concepts, and the potential technologies for these force structures and the advanced concepts in support pre-acquisition mission needs analysis, mission area analysis, SCN and R&D planning. The objective is more affordable mission capable surface ship force including ships with reduced manning, increased producibility, reduced operating and support costs, and greater utilization of the latest technology. The program directly supports the Navy Shipbuilding Plan with state-of-the-art design tools and methods for surface ship force structure alternative studies, ship & unmanned vehicle concept studies, and the actual conduct of surface ship force structure alternative studies and advanced design concept studies for the ships that may become part of the SCN plan.

(U) This project provides the foundation for affordable and mission capable surface ship force. It also supports the next step in the development of a transformed naval force by accomplishing the pre-milestone A (especially pre-concept decision) efforts for all potential surface ships and craft. These efforts are the required first step in the integration of total ship systems, including combat systems and hull, mechanical and electrical (HM&E) systems. Inadequate early planning and ship concept formulation can result in down-stream design/construction and operational problems. A more subtle and severely negative impact of neglecting this early effort is that the "best" concepts and technologies may never even be considered and our greatest potential ship design advances never realized. Designs and technologies must meet the threat. This project supports this requirement.

(U) This project funds concept develop engineering, mission effectiveness analysis, and other analysis for formulation of future surface ship force structure along with development of the tools to accomplish these efforts. Advanced ship concept studies, ship and ship systems technology assessments, and the development and upgrade of ship concept design and engineering tools, methods, and criteria are also funded in this project.

(U) This project accomplishes the following: (1) Develops alternative surface ship force structure concepts including the ships and unmanned vehicles; (2) Evaluates the mission capability effectiveness and costs for these alternatives surface fleet architectures; (3) Performs fleet warfighting / mission effectiveness assessment studies; (4) identifies future surface ship requirements and characteristics necessary to meet future threats and support mission needs; (5) investigates new affordable ship concepts and evaluates technologies necessary to support these concepts; (6) provides design methods and automated design tools to develop and evaluate ship concepts; and (7) supports development of Mission Need Statements (MNS) for future ships. These efforts are done to support mission analysis, mission needs development and technology assessment in support of future fleet concepts and potential ship acquisition programs. These efforts are foundational to the Navy's formulation of the future fleet.

(U) Efforts under Project S2196 transition directly to early stage ship design in PE 0603564N, Ship Preliminary Design and Feasibility Studies. While these efforts support concept exploration and mission needs assessment for potential future ship acquisition programs, they are not direct efforts for specific authorized shipbuilding programs. This project is the only R&D effort (Government or commercial) that supports and maintains this country's naval ship design and engineering capabilities in the area of very early stage (Concept Design) design tools, criteria, and methods.

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Exhibit R-2a, RDTE Project Justification
(Exhibit R-2a, page 3 of 11)

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EXHIBIT R-2a, RDT&E Project Justification			DATE: February 2004																
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603563N/Ship Concept Advanced Design	PROJECT NUMBER AND NAME 2196/Design Tools, Plans, and Concepts																	
B. Accomplishments/Planned Program																			
<table border="1" style="width: 100%; border-collapse: collapse;"><tr><td style="width: 25%;"></td><td style="width: 15%; text-align: center;">FY 03</td><td style="width: 15%; text-align: center;">FY 04</td><td style="width: 15%; text-align: center;">FY 05</td><td style="width: 30%;"></td></tr><tr><td>Accomplishments/Effort/Subtotal Cost</td><td style="text-align: center;">1.255</td><td style="text-align: center;">2.005</td><td style="text-align: center;">0.700</td><td></td></tr><tr><td>RDT&E Articles Quantity</td><td></td><td></td><td></td><td></td></tr></table>						FY 03	FY 04	FY 05		Accomplishments/Effort/Subtotal Cost	1.255	2.005	0.700		RDT&E Articles Quantity				
	FY 03	FY 04	FY 05																
Accomplishments/Effort/Subtotal Cost	1.255	2.005	0.700																
RDT&E Articles Quantity																			
<div style="border: 1px solid black; padding: 5px; min-height: 60px;"><p>(U) Ship Concepts and Mission Need Analysis: Develop ship concepts and perform mission area analysis (MAA) for potential ships 5-10 years out in the SCN plan, including ship size, configuration, capabilities and rough order of magnitude (ROM) ship costs. Conduct pre-Milestone A ship concept studies for potential ship concepts / configurations in support of SCN planning. Assess the future ship concepts as part of potential future fleet architecture concepts.</p></div>																			
<table border="1" style="width: 100%; border-collapse: collapse;"><tr><td style="width: 25%;"></td><td style="width: 15%; text-align: center;">FY 03</td><td style="width: 15%; text-align: center;">FY 04</td><td style="width: 15%; text-align: center;">FY 05</td><td style="width: 30%;"></td></tr><tr><td>Accomplishments/Effort/Subtotal Cost</td><td style="text-align: center;">0.550</td><td style="text-align: center;">0.754</td><td style="text-align: center;">0.550</td><td></td></tr><tr><td>RDT&E Articles Quantity</td><td></td><td></td><td></td><td></td></tr></table>						FY 03	FY 04	FY 05		Accomplishments/Effort/Subtotal Cost	0.550	0.754	0.550		RDT&E Articles Quantity				
	FY 03	FY 04	FY 05																
Accomplishments/Effort/Subtotal Cost	0.550	0.754	0.550																
RDT&E Articles Quantity																			
<div style="border: 1px solid black; padding: 5px; min-height: 60px;"><p>(U) Total Ship Technology Assessment: Analyzed the benefits and impacts of new ship and hull, mechanical & electrical (HM&E) concepts and technologies. Identified characterize and assess new and emergent technologies. Developed methodologies for assessment of benefits and impacts of technologies in total ship concepts. Supported development of total ship and HM&E technology roadmaps.</p></div>																			
<table border="1" style="width: 100%; border-collapse: collapse;"><tr><td style="width: 25%;"></td><td style="width: 15%; text-align: center;">FY 03</td><td style="width: 15%; text-align: center;">FY 04</td><td style="width: 15%; text-align: center;">FY 05</td><td style="width: 30%;"></td></tr><tr><td>Accomplishments/Effort/Subtotal Cost</td><td style="text-align: center;">1.046</td><td style="text-align: center;">0.965</td><td style="text-align: center;">0.945</td><td></td></tr><tr><td>RDT&E Articles Quantity</td><td></td><td></td><td></td><td></td></tr></table>						FY 03	FY 04	FY 05		Accomplishments/Effort/Subtotal Cost	1.046	0.965	0.945		RDT&E Articles Quantity				
	FY 03	FY 04	FY 05																
Accomplishments/Effort/Subtotal Cost	1.046	0.965	0.945																
RDT&E Articles Quantity																			
<div style="border: 1px solid black; padding: 5px; min-height: 60px;"><p>(U) Ship Concept Design and Engineering Tools, Methods, and Criteria. Improve capability for rapid and accurate ship performance/cost/risk assessments and tradeoff studies. Improve the US Navy's Advanced Surface Ship Evaluation Tool (ASSET) surface ship synthesis/assessment models in the following areas: improve performance assessment capabilities, update and enhance capabilities to handle new ship configurations, hull form alternatives, signature reduction features, characterize advanced machinery technologies, address optimal required shipboard manning, reduced total ownership cost, and increased capabilities to determine ship size impacts of new technologies including warfare systems. Improve interoperability of Navy and shipbuilder design systems.</p></div>																			

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Exhibit R-2a, RDTEN Project Justification
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EXHIBIT R-2a, RDT&E Project Justification			DATE: February 2004																
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603563N/Ship Concept Advanced Design	PROJECT NUMBER AND NAME 2196/Design Tools, Plans, and Concepts																	
B. Accomplishments/Planned Program (Cont.)																			
<table border="1" style="width: 100%; border-collapse: collapse;"><thead><tr><th style="width: 30%;"></th><th style="width: 15%;">FY 03</th><th style="width: 15%;">FY 04</th><th style="width: 15%;">FY 05</th><th style="width: 25%;"></th></tr></thead><tbody><tr><td>Accomplishments/Effort/Subtotal Cost</td><td style="text-align: center;">1.550</td><td style="text-align: center;">2.050</td><td style="text-align: center;">0.428</td><td></td></tr><tr><td>RDT&E Articles Quantity</td><td></td><td></td><td></td><td></td></tr></tbody></table>						FY 03	FY 04	FY 05		Accomplishments/Effort/Subtotal Cost	1.550	2.050	0.428		RDT&E Articles Quantity				
	FY 03	FY 04	FY 05																
Accomplishments/Effort/Subtotal Cost	1.550	2.050	0.428																
RDT&E Articles Quantity																			
<div style="border: 1px solid black; padding: 5px;"><p>(U) Future Force Formulation (Core): Continue development of methodology for force architecture alternatives and analysis. Conduct analysis of force architecture concepts that can illuminate the high level interfaces between surface ship warfare communities and other force elements such as aviation and submarines. Examine the distribution of functions between various existing and postulated ship classes, the interface between diverse force elements such as platform configuration and mission, network connectivity, force level logistics and concept of operations, with a particular focus on total force level cost, performance and risk.</p></div>																			
<table border="1" style="width: 100%; border-collapse: collapse;"><thead><tr><th style="width: 30%;"></th><th style="width: 15%;">FY 03</th><th style="width: 15%;">FY 04</th><th style="width: 15%;">FY 05</th><th style="width: 25%;"></th></tr></thead><tbody><tr><td>Accomplishments/Effort/Subtotal Cost</td><td style="text-align: center;">0.550</td><td style="text-align: center;">0.655</td><td style="text-align: center;">1.000</td><td></td></tr><tr><td>RDT&E Articles Quantity</td><td></td><td></td><td></td><td></td></tr></tbody></table>						FY 03	FY 04	FY 05		Accomplishments/Effort/Subtotal Cost	0.550	0.655	1.000		RDT&E Articles Quantity				
	FY 03	FY 04	FY 05																
Accomplishments/Effort/Subtotal Cost	0.550	0.655	1.000																
RDT&E Articles Quantity																			
<div style="border: 1px solid black; padding: 5px;"><p>(U) Future Force Formulation (Demo): Conduct first Future Force Formulation case study, selecting a limited case of force architecture for practical execution and feedback into the process development. Selection of a family of ships within a community will be made and the developing methodology of Future Force Formulation exercised in a one year study with deliverables and for presentation before decision authority for a pre-MS A project.</p></div>																			
<table border="1" style="width: 100%; border-collapse: collapse;"><thead><tr><th style="width: 30%;"></th><th style="width: 15%;">FY 03</th><th style="width: 15%;">FY 04</th><th style="width: 15%;">FY 05</th><th style="width: 25%;"></th></tr></thead><tbody><tr><td>Accomplishments/Effort/Subtotal Cost</td><td style="text-align: center;">0.635</td><td style="text-align: center;">1.165</td><td style="text-align: center;">0.100</td><td></td></tr><tr><td>RDT&E Articles Quantity</td><td></td><td></td><td></td><td></td></tr></tbody></table>						FY 03	FY 04	FY 05		Accomplishments/Effort/Subtotal Cost	0.635	1.165	0.100		RDT&E Articles Quantity				
	FY 03	FY 04	FY 05																
Accomplishments/Effort/Subtotal Cost	0.635	1.165	0.100																
RDT&E Articles Quantity																			
<div style="border: 1px solid black; padding: 5px;"><p>(U) This task funds requirement development for ship and technologies to counter such threats as part of a netted distributed family of ships that will project power forward and enable naval and joint task force commander to dominate the littoral battlespace. The transformation of the surface combatant fleet starts with highly capable, multi-mission destroyers, advanced cruisers and a new breed of focused mission ships designed to defeat enemy littoral defenses including mines, small boats, and submarines, ultimately ensuring maritime access in any environment. This study focuses on requirements for a ship with the newest generation hull form and tailored, modularized combat systems package designs to accommodate: small boats, Littoral mine countermeasures and Littoral ASW.</p></div>																			

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Exhibit R-2a, RDTEN Project Justification
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EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2004	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603563N/Ship Concept Advanced Design	PROJECT NUMBER AND NAME 2196/Design Tools, Plans, and Concepts	
C. PROGRAM CHANGE SUMMARY:			
Funding:	FY 2003	FY 2004	FY 2005
Previous President's Budget (FY 04 Pres Controls):	5.691	7.679	7.545
President's Budget: (FY05 Pres Controls)	5.586	7.594	3.723
Total Adjustments	-0.105	-0.085	-3.822
Summary of Adjustments			
Programmatic Adjustment	0.000	0.000	-3.770
Minor adjustments	-0.105	-0.085	-0.053
Subtotal	-0.105	-0.085	-3.823
Schedule:			
Not Applicable.			
Technical:			
Not Applicable.			

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Exhibit R-2a, RD TEN Project Justification
(Exhibit R-2a, page 6 of 11)

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EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2004		
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4			PROGRAM ELEMENT NUMBER AND NAME 0603563N/Ship Concept Advanced Design			PROJECT NUMBER AND NAME 2196/Design Tools, Plans, and Concepts			

D. 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
(U) Related RDT&E									
(U) PE 0603512N (Carrier Systems Development)									
(U) PE 0603513N (Shipboard Systems Component Development)									
(U) PE 0603564N (Ship Preliminary Design and Feasibility Studies)									
(U) PE 0604300N (SC21 Total Ship Systems Engineering)									
(U) PE 0604567N (Ship Contract Design/Live Fire T&E)									

E. ACQUISITION STRATEGY: *

This is a non acquisition program that develops, evaluates, and validates early stages of total ship concepts and technologies in support of SCN planning and potential future ship acquisition programs. This program also supports development, demonstration, evaluation, and validation of engineering tools, methods, and criteria for those concept designs and assessments.

F. MAJOR PERFORMERS: **

List major contractors, universities, colleges, government facilities, federally funded research and development centers, laboratories, center, or other organizations contributing to this effort through BY2 (FY 2005). Only list those who were primary recipients of funds (e.g., received 15% or over \$10 million, whichever is less). Include name or titles, locations and brief description of work performed. Include actual or projected award date (month/year).

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

** Required for DON and OSD submit only.

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Exhibit R-3 Cost Analysis (page 1)								DATE: February 2004				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME						
RDT&E, N / BA-4			0603563N/Ship Concept Advanced Design			2196/Design Tools, Plans, and Concepts						
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
Primary Hardware Development											0.000	
Systems Engineering	various	Other Various Contractors	55.097	0.935	various	2.312	various	1.171	various		59.515	
Engineering Developemnt	WR	NAVSEA, Dahlgren Div,		1.497	various	1.908	various	0.937	various		4.342	
		Dahlgren, VA									0.000	
											0.000	
Demonstration & Evaluation	WR	NAVSEA, Carderock Div,	29.958	2.338	various	1.908	various	0.983	various		35.187	
		West Bethesda, MD									0.000	
Licenses											0.000	
Tooling	WR & RC	Other Govt. Activities	8.828	0.801	various	1.446	various	0.612	various		11.687	
GFE											0.000	
Award Fees											0.000	
Subtotal Product Development			93.883	5.571		7.574		3.703		0.000	110.731	
Remarks:												
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:												

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Exhibit R-3, Project Cost Analysis
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Exhibit R-3 Cost Analysis (page 2)								DATE: February 2004				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME						
RDTE, N / BA-4			0603563N/Ship Concept Advanced Design			2196/Design Tools, Plans, and Concepts						
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:												
Contractor Engineering Support											0.000	
Government Engineering Support											0.000	
Program Management Support											0.000	
Travel				0.015		0.020		0.020			0.055	
Labor (Research Personnel)											0.000	
SBIR Assessment											0.000	
Subtotal Management			0.000	0.015		0.020		0.020		0.000	0.055	
Remarks:												
Total Cost			93.883	5.586		7.594		3.723		0.000	110.786	
Remarks:												

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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												0603563N/Ship Concept Advanced Design												2196/Design Tools, Plans, and Concepts											
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	1	2	3	4			
Engineering Milestones																																			
Pre-MS A Ship Concept Studies																																			
Ship Synthesis Modeling Tool																																			
Extension to Small & Alt Hull Modular Framework & Interface Interface to Performance																																			
Commencement of Early Stage Multi Discipline Eval Model																																			
Initial Trial & Dev of Multi-disciplinary Evaluation Model																																			
Capability to Assess Alt & Adv Hull Forms																																			
Commence Force Architecture Methodology																																			
Force Architecture Including Futures & Force Structure Alt																																			
Initial Open Systems Architecture & other Technology Assessments																																			
Assessment of Technology Benefits																																			
Technology Management & Cost Assessment Methods																																			

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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 10 of 11)

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[illegible]

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Exhibit R-4a, Schedule Detail
(Exhibit R-4a, page 11 of 11)