

CLASSIFICATION:

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EXHIBIT R-2, RDT&E Budget Item Justification								DATE: <b>February 2007</b>	
APPROPRIATION/BUDGET ACTIVITY <b>RESEARCH DEVELOPMENT TEST &amp; EVALUATION, NA BA-5</b>						R-1 ITEM NOMENCLATURE Ship Contract Design / Live Fire T&E PE 0604567N			
COST (\$ in Millions)		FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Total PE Cost		56.415	51.729	62.404	73.698	69.270	101.536	91.287	90.106
1803 / Ship Contract Design		11.035	6.447	4.760	4.793	8.522	6.461	5.341	5.432
2198 / Life Fire Test and Evaluation		2.626	1.440	0.000	0.000	0.000	0.000	0.000	0.000
2465 / LHA Replacement Flight 0		21.634	12.892	5.931	2.435	9.684	19.709	17.019	17.357
3108 / CVN (X) Total Ship Integration		0.000	0.000	0.000	0.000	0.000	42.027	47.924	47.824
3133 / Sea Base to Shore Connector		0.000	0.000	14.633	26.326	10.023	2.030	2.069	2.107
3134 / Intratheater Connectors (Contract Design)		1.871	0.000	0.000	0.000	0.000	0.000	0.000	0.000
3179 / Total Ship Integration		0.000	0.000	26.994	38.042	38.600	28.328	17.199	16.145
4007 / CVN(X) LFT&E		7.375	7.471	3.198	2.102	2.441	2.981	1.735	1.241
4008 / CVN(X) Total Ship Integration		9.384	22.034	6.888	0.000	0.000	0.000	0.000	0.000
9999 Congressional Plus-Up		2.490	1.445	0.000	0.000	0.000	0.000	0.000	0.000
<p><b>A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:</b>            This Program Element (PE) directly supports the Navy's Shipbuilding Plan by providing for the development of engineering, programmatic and acquisition documentation including ship specifications (including performance specifications) and contractual documentation associated with acquisition of Navy ships. This PE also supports the Congressionally mandated Live Fire Test and Evaluation program for new ship designs.</p> <p>Contract Design has traditionally been the engineering development of the technical and contractual definition of the ship design (including ship specifications and drawings) to a level of detail sufficient for shipbuilders to make a sound estimate of the construction cost and schedule. Additionally, the contract design package developed under this PE has provided the technical baseline from which the Navy selects the shipbuilder who then develops the detail design package required to support the construction and eventual delivery of the ship. This PE also supports the development of design methodologies/tools which facilitate and optimize the transition from ship design documents to efficient production of new ships and ship conversions, and supports engineering planning and ship affordability studies.</p> <p>Under Acquisition Reform for new design ships, traditional distinct phasing of the design process has been replaced with a continuous concurrent engineering Integrated Product and Process Development (IPPD) process extending through and after contract award. This serves to maintain the focus of multi-discipline teams consisting of the government, shipbuilder, system programs, and suppliers. Government/Industry Integrated Product Team(s) (IPTs) will utilize the IPPD process to develop the design in an Integrated Product and Data Environment (IPDE). The design approach is part of an acquisition strategy that is based on commercial practices and incorporates a phased technical definition.</p> <p>FY07 through FY11 requirements realigned to new PE 0208058N, Project 3134</p>									

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APPROPRIATION/BUDGET ACTIVITY <b>RESEARCH DEVELOPMENT TEST &amp; EVALUATION, N/BA-5</b>	PROGRAM ELEMENT NUMBER AND NAME Ship Contract Design / Live Fire T&E PE 0604567N	PROJECT NUMBER AND NAME - See R2 for PU Names PU Numbers: 1803, 2198, 2465, 3108, 3133, 3134, 3179, 4007, 4008, 9578			
<b>B. PROGRAM CHANGE SUMMARY:</b>					
Funding:		<b>FY 2006</b>	<b>FY 2007</b>	<b>FY 2008</b>	<b>FY 2009</b>
President's Budget 2007		57.424	72.055	57.237	46.151
President's Budget 2008		<u>56.415</u>	<u>51.729</u>	<u>62.404</u>	<u>73.698</u>
Total Adjustments		-1.009	-20.326	5.167	27.547
Programmatic Adjustments					
Reprogramming			-21.50	0.000	0.000
Programmatic Adjustment		-1.015	-0.27	5.167	27.547
Congressional Adjustment		0.006	1.445	0.000	0.000
Total Adjustment		-1.009	-20.326	5.167	27.547
Schedule:	Not Applicable				
Technical:	Not Applicable				

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EXHIBIT R-2a, RDT&E Project Justification						DATE: <b>February 2007</b>			
APPROPRIATION/BUDGET ACTIVITY <b>RDT&amp;E, N / BA-5</b>		PROGRAM ELEMENT NUMBER AND NAME Ship Contract Design/LFT&E 0604567N				PROJECT NUMBER AND NAME 1803 Ship Contract Design			
COST (\$ in Millions)		FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Project Cost		<b>11.035</b>	<b>6.447</b>	<b>4.760</b>	<b>4.793</b>	<b>8.522</b>	<b>6.461</b>	<b>5.341</b>	<b>5.432</b>
RDT&E Articles Qty									

**A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:**

Mission Description and Budget Item Justification: This project supports development of all technical, programmatic and contractual documentation required for the acquisition of various ships in the Navy's Shipbuilding Program. The major effort is the engineering development of the technical and contractual definition of the ship's design (e.g. ship specifications and drawings), with sufficient details for the prospective shipbuilder to make a sound estimate of construction cost and schedule. It also serves as the technical definition from which the shipbuilder develops the shipbuilding detailed design and testing package required to build and test the ship. This funding also provides for Navy retention of unique ship design knowledge. It provides the Navy with a digital, ship design knowledge base, including lessons learned, required to ensure that a proper development, analysis and evaluation can be conducted of any current or future planned Navy ship. This data base will serve as the basis to evaluate and qualify any future ship design. Another area this project funds is the development of specific Navy ship criteria and standards for newly developed technologies. Additionally, as new laws are passed, new safety regulations and environmental criteria are developed and other legal/Congressional requirements identified, this project funds the translation into Navy ship design criteria and standards. This project also funds the translation of the traditional Ship Specifications into performance-based criteria, which will serve for the future acquisition of Navy Ship and supports the development of design methodologies/tools which facilitate and optimize the transition from ship design documents to efficient production of new ships and ship conversions. This project also funds the research, development, test, and evaluation of shipyard workload and resource management tools. The funding in this project unit supports Cruiser Modernization Program. DDG Modernization Program effort does not start until FY10.

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APPROPRIATION/BUDGET ACTIVITY <b>RDT&amp;E, N / BA5</b>	PROGRAM ELEMENT NUMBER AND NAME Ship Contract Design / LFT&E 0604567N	PROJECT NUMBER AND NAME 1803 Ship Contract Design		
<b>B. Accomplishments/Planned Program</b>				
Cruiser Modernization Program	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	<b>11.035</b>	<b>6.447</b>	<b>4.760</b>	<b>4.793</b>
RDT&E Articles Quantity				
<div style="border: 1px solid black; padding: 10px; min-height: 80px;"> <p>Continued CG modernization design and engineering efforts; continued government efforts for design products, data base development, specifications development, program planning, and system integration efforts for lead ship. Continued system integration efforts, baseline preliminary and detail design for combat systems, manning reduction studies, and improved embedded training efforts.</p> </div>				

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**C. OTHER PROGRAM FUNDING SUMMARY:**

<u>Line Item No. &amp; Name</u>	<u>2006</u>	<u>2007</u>	<u>2008</u>	<u>2009</u>	<u>2010</u>	<u>2011</u>	<u>2012</u>	<u>2013</u>	To <u>Complete</u>	Total <u>Cost</u>
OPN 096000 CG Modernization	125.518	232.563	267.809	299.298	361.199	454.542	463.652	472.962	669.709	3,347.252
WPN 422300 CG Modernization	5.355	18.396	23.561	45.535	52.843	54.565	55.602	55.662	43.288	354.807

**D. ACQUISITION STRATEGY:**

N/A

**E. MAJOR PERFORMERS:**

N/A

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Exhibit R-3 Cost Analysis (page 1)											DATE: February 2007			
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME								
<b>RDT&amp;E, N / BA-5</b>			Ship Contract Design / LFT&E 0604567N			1803 Ship Contract Design								
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Complete	Total Cost	Target Value of Contract
CG Mod Electronic Systems Eng	C/CPAF	Lockheed Martin, Moorestown, NJ	1.000	7.828	03/06	3.971	02/07	2.230	11/07	2.256	11/08		17.285	
Systems Integration and B/L Design	C/CPAF	Northrop Grumman	0.000			1.000	02/07	1.000	11/07	1.000	11/08		3.000	
													0.000	
													0.000	
													0.000	
													0.000	
Subtotal Product Development			1.000	7.828		4.971		3.230		3.256		0.000	20.285	
Remarks:														
Program / Engineering Spt	MISC	NSWC SSES	0.157	0.730	03/06	01/00		1.000		1.000			3.887	
Program / Engineering Spt	MISC	NSWC DD	0.111	0.806	03/06								0.917	
Program / Engineering Spt	MAC	CSC / BAE	0.000	2.000	03/06	0.500	02/07	0.500	11/07	0.500	11/08		3.500	
													0.000	
													0.000	
													0.000	
													0.000	
Subtotal Support			0.268	3.536		1.500		1.500		1.500		0.000	8.304	
Remarks:														

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Exhibit R-3 Cost Analysis (page 2)											DATE: <b>February 2007</b>			
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME								
<b>RDT&amp;E, N / BA-5</b>			Ship Contract Design / LFT&E 0604567N			1803 Ship Contract Design								
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Complete	Total Cost	Target Value of Contract
													0.000	
													0.000	
													0.000	
													0.000	
													0.000	
													0.000	
Subtotal T&E			0.000			0.000		0.000		0.000		0.000	0.000	
Remarks:														
													0.000	
													0.000	
													0.000	
													0.000	
													0.000	
Subtotal Management			0.000			0.000		0.000		0.000		0.000	0.000	
Remarks:														
Total Cost			1.268	11.364		6.471		4.730		4.756		0.000	28.589	
Remarks:														





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APPROPRIATION/BUDGET ACTIVITY <b>RDT&amp;E, N / BA-5</b>	PROGRAM ELEMENT NUMBER AND NAME 0604567N Ship Contract Design / LFT&E				PROJECT NUMBER AND NAME 2465 LHA(R)				
COST (\$ in Millions)		FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Project Cost		<b>21.634</b>	<b>12.892</b>	<b>5.931</b>	<b>2.435</b>	<b>9.684</b>	<b>19.709</b>	<b>17.019</b>	<b>17.357</b>
RDT&E Articles Qty									

**A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:**

The mission of the LHA Replacement (R) Program is an incremental development ship construction program designed to: provide a functional replacement for the LHA 1 Class ships which will reach the end of their extended service lives in consecutive years beginning in FY2009; ensure that the Amphibious Fleet remains capable of Expeditionary Strike Warfare in support of the Navy and Marine Corp's Global Concept of Operations (CONOPS) well into the 21st century; and provide for an affordable and sustainable amphibious ship development program. LHA(R) ships will provide forward presence and power projection as an integral part of Joint, interagency, and multi-national maritime expeditionary forces. Additionally, they will be designed to operate for sustained periods in transit to and operations in an Amphibious Objective Area to include the embarkation, deployment, and landing of a Marine Landing Force in an assault by helicopters and tilt rotors supported by Joint Strike Fighters.

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APPROPRIATION/BUDGET ACTIVITY <b>RDT&amp;E, N / BA-5</b>	PROGRAM ELEMENT NUMBER AND NAME 0604567N Ship Contract Design / LFT&E	PROJECT NUMBER AND NAME 2465 LHA(R)

**B. Accomplishments/Planned Program**

LHA(R) Lead Ship		FY 06	FY 07	FY 08	FY 09			
Accomplishments/Effort/Subtotal Cost		21.634	12.892	5.931	2.435			
RDT&E Articles Quantity								

Continue warfare system design refinement. Resolve low confidence areas in analytical models for Live Fire Test and Evaluation (LFT&E) concerns and continue the LFT&E surrogate test program.

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APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME	
<b>RDT&amp;E, N / BA-5</b>	0604567N Ship Contract Design / LFT&E	2465 LHA(R)	

**C. OTHER PROGRAM FUNDING SUMMARY:**

<u>Line Item No. &amp; Name</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>FY 2012</u>	<u>FY 2013</u>	<u>To Complete</u>	<u>Total Cost</u>
SCN 304100 LHA(R) Lead Ship	148.398	1,131.121	1,377.414	0.000	0.000	0.000	0.000	0.000	0.000	2,656.933
SCN 304100 LHA(R) Lead Ship (Outfitting)	0.000	0.000	0.000	9.910	5.645	27.798	6.000	0.000	0.000	49.353

**D. ACQUISITION STRATEGY:**

Acquisition strategy signed February 7, 2005 approved strategy for sole source to Northrup Grumman Ship Systems (NGSS) to incorporate previous LHD engineering, design and producibility lessons-learned into LHA(R). Advanced Procurement contract for Long Lead-Time Material (LLTM) procurement and engineering support awarded July 05 with continuation of these efforts in FY06 prior to award of Detail Design and Construction (DD&C) contract in early FY07. Advance Procurement contract will be subsumed by FPI DD&C contract.

**E. MAJOR PERFORMERS:**

NGSS - Funds have been provided for preliminary and contract design including ship design management, design integration, hull systems engineering, machinery control, human system integration, mission systems and total ship survivability analysis for preliminary and contract design.

CSC Corp. - Funds have been provided for preliminary and contract design. Specific efforts include ship design management, design integration, hull systems engineering, machinery control, human system integration, mission systems and total ship survivability analysis for preliminary and contract design.

NSWC, Carderock (Bethesda, MD) - Funds have been provided for preliminary and contract design. Specific efforts include ship design management, design integration, hull systems engineering, machinery control, human system integration, mission systems and total ship survivability analysis for preliminary and contract design. Additionally, the activity will function as Live Fire Test and Evaluation (LFT&E) manager, perform/conduct surrogate tests and develop survivability analysis.

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Exhibit R-3 Cost Analysis (page 1)										DATE: February 2007				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME								
RDT&E, N / BA-5			0604567N Ship Contract Design / LFT&E			2465 LHA(R)								
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development														
Ancillary Hardware Development														
Component Development														
Ship Design	Various	Various	110.273	11.833	10/05	0.000		0.000		0.000		0.000	122.106	
Ship Suitability														
Systems Engineering														
Training Development														
Licenses														
Tooling														
GFE														
Award Fees														
Subtotal Product Development			110.273	11.833		0.000		0.000		0.000		0.000	122.106	
Remarks:														
Development Support														
Software Development														
Training Development														
Integrated Logistics Support														
Configuration Management														
Technical Data														
GFE														
Award Fees														
Subtotal Support			0.000	0.000		0.000		0.000		0.000		0.000	0.000	
Remarks:														

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Exhibit R-3 Cost Analysis (page 2)										DATE: February 2007				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT				PROJECT NUMBER AND NAME							
RDT&E, N / BA-5			0604567N Ship Contract Design / LFT&E				2465 LHA(R)							
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	Reimb.	Various	0.834	0.700	10/05	0.200	10/06	0.400	10/07	0.400	10/08	4.590	7.124	
Operational Test & Evaluation	Reimb.	COMOPTEVFOR	0.520	0.600	10/05	0.923	10/06	1.110	10/07	0.648	10/08	9.454	13.255	
Live Fire Test & Evaluation	Reimb.	Various	19.886	4.200	10/05	8.800	10/06	4.400	10/07	1.300	10/08	8.400	46.986	
Pra Testing	Reimb.	Various										32.690	32.690	
Tooling														
GFE														
Award Fees														
Subtotal T&E			21.240	5.500		9.923		5.910		2.348		55.134	100.055	
Remarks:														
Contractor Engineering Support														
Government Engineering Support														
Program Management Support				4.261	Various	2.929	Various	0.021		0.087		9.435	16.733	
Travel				0.040	Various	0.040	Various						0.080	
Labor (Research Personnel)														
SBIR Assessment														
Subtotal Management			0.000	4.301		2.969		0.021		0.087		9.435	16.813	
Remarks:														
Total Cost			131.513	21.634		12.892		5.931		2.435		64.569	238.974	
Remarks:														

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EXHIBIT R4, Schedule Profile																								DATE: <b>February 2007</b>								
APPROPRIATION/BUDGET ACTIVITY <b>RDT&amp;E, N / BA-5</b>												PROGRAM ELEMENT NUMBER AND NAME 0604567N Ship Contract Design / LFT&E								PROJECT NUMBER AND NAME 2465 LHA(R)												
Fiscal Year	2006				2007				2008				2009				2010				2011				2012				2013			
	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
<b>Acquisition Milestones</b>																																
Overarching Integrated Product Team Review																																
Detailed Design - Lead Ship																																
Feasibility Studies - Lead Ship																																
Milestones																																
Preliminary/ Contract Design - Follow Ship																																
<b>Test &amp; Evaluation Milestones</b>																																
Developmental Testing																																
Vulnerability Assessment Report (VAR)																																
Survivability Assessment Record (SAR)																																
Surrogate Testing																																
TEMP Update																																
<b>Production Milestones</b>																																
Shipbuilding Contract Award - Lead Ship																																
Lay Keel - Lead Ship																																



**Exhibit R-2a, RDT&E Project Justification**

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APPROPRIATION/BUDGET ACTIVITY <b>RESEARCH DEVELOPMENT TEST &amp; EVALUATION, NAVY / BA-5</b>		PROGRAM ELEMENT NUMBER AND NAME <b>Ship Contract Design/Live Fire T&amp;E PE 0604567N</b>				PROJECT NUMBER AND NAME <b>3133 Sea Base to Shore Connector</b>		
COST (\$ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Project Cost	0.000	0.000	14.633	26.326	10.023	2.030	2.069	2.107
RDT&E Articles Qty								

**A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:**

**(3133) Sea Base to Shore Connector-** This program will meet the requirements of the Navy's Sea Base-to-Shore Connector initiatives and will provide an Over-the-Horizon, ship to objective amphibious lift capability as well as the capability to move across the beach. This project provides for the Systems Development and Demonstration package required for the solicitation for detail design/construction and test of the initial article. Test and evaluation of components and systems will also be completed under this project.

**B. Accomplishments/Planned Program**

	FY 2006	FY 2007	FY 2008	FY 2009
Accomplishments/Effort/Subtotal Cost	0.000	0.000	14.633	26.326
RDT&E Articles Quantity	0.000	0.000	0.000	0.000

Start Technology Development in FY08: Reduces technology risk and determines the appropriate set of technologies to be integrated into a full system.  
 Initiate preparation, in FY08, for start of Preliminary Design in FY09.  
 Start the contract design package required for solicitation for detail design/construction and test of the initial article.  
 Perform Test and Evaluation of components and system's initial articles.

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APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT NUMBER AND NAME						PROJECT NUMBER AND NAME	
RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-5			Ship Contract Design/Live Fire T&E PE 0604567N						3133 Sea Base to Shore Connector	
<b>C. OTHER PROGRAM FUNDING SUMMARY:</b>										
<u>Line Item No. &amp; Name</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>FY 2012</u>	<u>FY 2013</u>	<u>To Complete</u>	<u>Total Cost</u>
<b>Related SCN:</b>										
PE 0204411N / Construction	0.000	0.000	0.000	0.000	0.000	217.080	0.000	215.881	4,158.000	4,590.961
<b>Related RDT&amp;E:</b>										
PE 0603564N SHIP PRELIM Design (3127)	14.026	13.329	13.181	0.000	0.000	0.000	0.000	0.000	0.000	40.536
<b>D. ACQUISITION STRATEGY:</b>										
FY06-07 - AoA, FY06-08 Concept Design, FY09-10 Preliminary Design/Contract Design, FY10-11 Systems Development, FY11-13 Production										
<b>E. MAJOR PERFORMERS:</b>										
<b>Field Activities &amp; Locations - Work Performed</b>										
NSWC Carderock, Bethesda, MD		Systems Engineering								
NSWC Panama City, FL		Systems Engineering								
<b>Contractors &amp; Locations - Work Performed</b>										
TBD										
<b>Universities &amp; Locations - Work Performed</b>										
TBD										

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APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME						
<b>RD TEN/BA-5</b>			<b>Ship Contract Design/Live Fire T&amp;E PE 0604567N</b>			<b>3133 Sea Base to Shore Connector</b>						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development	CPFF	Various				2.130	01/08	3.246	01/09	0.900	6.276	
Ancillary Hardware Development	CPFF	Various				0.890	01/08	3.107	01/09	0.250	4.247	
Component Development	CPFF	Various				1.370	01/08	3.200	01/09	0.300	4.870	
Ship Design	CPFF	Various				1.935	01/08	3.773	01/09	1.209	6.917	
Ship Suitability											0.000	
Systems Engineering	CPFF	Various				1.950		3.200	01/09	0.800	5.950	
Training Development												
Licenses												
Tooling												
GFE												
Award Fees												
Subtotal Product Development			0.000	0.000		8.275		16.526		3.459	28.260	
Remarks:												
Development Support	WX	Various				1.300		1.650		1.350	4.300	
Software Development	CPFF	Various				0.700		1.750	01/09	1.050	3.500	
Training Development												
Integrated Logistics Support	CPFF	Various				0.275		0.500		0.550	1.325	
Configuration Management												
Technical Data												
Studies & Analyses	FFP	Various				0.769		0.800		0.550	2.119	
GFE												
Award Fees												
Subtotal Support			0.000	0.000		3.044		4.700		3.500	11.244	
Remarks:												

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Exhibit R-3 Cost Analysis (page 2)						Date: February 2007						
APPROPRIATION/BUDGET ACTIVITY		PROGRAM ELEMENT				PROJECT NUMBER AND NAME						
<b>RDTE/BA-5</b>		<b>Ship Contract Design/Live Fire T&amp;E PE 0604567N</b>				<b>3133 Sea Base to Shore Connector</b>						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	CPFF	Various				0.804	01/08	1.375	Cont.	2.500	4.679	
Operational Test & Evaluation	CPFF	Various				0.000		0.000	11/08	3.100	3.100	
Live Fire Test & Evaluation	CPFF	Various				0.000		0.000	11/08	0.970	0.970	
Test Assets												
Tooling												
GFE												
Award Fees												
Subtotal T&E			0.000	0.000		0.804		1.375		6.570	8.749	
Remarks:												
Contractor Engineering Support	CPFF	Various				0.900	11/07	1.200	Cont.	0.800	2.900	
Government Engineering Support	WX	NSWC				0.900		1.250		1.020	3.170	
Program Management Support	CPFF	Various				0.650	11/07	1.175	Cont.	0.800	2.625	
Travel	TO	NAVSEA Travel				0.060		0.100		0.080	0.240	
Labor (Research Personnel)												
SBIR Assessment												
Subtotal Management			0.000	0.000		2.510		3.725		2.700	8.935	
Remarks:												
Total Cost			0.000	0.000		14.633		26.326		16.229	57.188	
Remarks:												

**EXHIBIT R4, Schedule Profile**

Date: February 2007

APPROPRIATION/BUDGET ACTIVITY				PROGRAM ELEMENT NUMBER AND NAME																PROJECT NUMBER AND NAME															
<b>RD TEN/BA-5</b>				<b>PE 0604567N/Ship Contract Design/Live Fire T&amp;E</b>																<b>3133 Sea Base to Shore Connectors</b>															
Fiscal Year	2006				2007				2008				2009				2010				2011				2012				2013						
	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			
Acquisition Milestones							MS A	△												MS B	△														
Decision Reviews/ Contract Award				CD	△															CDR	△														
Concept/Tech Development			△													△																			
Initial Capabilities Document (ICD)	△			△																															
Analysis of Alternatives (AoA)							AoA	△				△																							
Concept Refinement		△						△																											
Capability Development Document (CDD)												△								GDD	△														
Technology Development												△				△					△				△										
Preliminary Design/ Dontract Development																																			
System Development & Demonstration																																			

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<b>Exhibit R-4a, Schedule Detail</b>						#REF!				
APPROPRIATION/BUDGET ACTIVITY		PROGRAM ELEMENT				PROJECT NUMBER AND NAME				
<b>RD TEN/BA-4</b>		<b>Ship Contract Design/Live Fire T&amp;E PE 0604567N</b>				<b>3133 Sea Base to Shore Connectors</b>				
Schedule Profile	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013		
Acquisition Milestones		4Q			4Q					
Contract Award (construction et...)						1Q				
Concept/Tech Development	1Q-4Q	1Q-4Q	1Q-4Q	1Q						
Initial Capabilities Document	1Q-4Q	1Q								
Analysis of Alternatives		1Q-3Q								
Concept Refinement	2Q-4Q	1Q-4Q	1Q-4Q							
Capability Development Document			3Q-4Q	1Q-4Q	1Q-2Q					
Technology Development			3Q-4Q	1Q-4Q	1Q-4Q	1Q				
Preliminary Design/Contract Design			4Q	1Q-4Q	1Q-3Q					
System Development & Demonstration					2Q-4Q	1Q				

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification								DATE: <b>February 2007</b>
APPROPRIATION/BUDGET ACTIVITY <b>RDT&amp;E, N / BA-05</b>		PROGRAM ELEMENT NUMBER AND NAME <b>Ship Contract Design/LFT&amp;E PE 0604567N</b>			PROJECT NUMBER AND NAME <b>PU 3179 - CVN 79 Total Ship Integration</b>			
COST (\$ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Project Cost	<b>0.000</b>	<b>0.000</b>	<b>26.994</b>	<b>38.042</b>	<b>38.600</b>	<b>28.328</b>	<b>17.199</b>	<b>16.145</b>
RDT&E Articles Qty								

**A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:**

Development and related testing of aircraft carrier specific technologies, the infusion of the ship technology base into existing and future aircraft carriers, and the potential realization of subsystem design capabilities not currently feasible. This project also funds the Contract Design efforts for the CVN 79. This project transitions the minimum sustaining technologies required to address obsolescence, critical survivability shortfalls as identified in CVN 78 testing, future requirements, and technologies which did not mature in time to support the CVN 78. All systems developed in this project have the potential to support emerging requirements and other promising systems technologies for insertion into new aircraft carrier designs. The emphasis is directed toward developing ship hull, mechanical, propulsion, electrical, aviation, warfare systems, and combat support systems, sub-systems and components to maintain aircraft carrier affordability, manpower requirements, survivability, and operational capabilities and to meet the requirements of existing and pending regulations and statutes critical to the operation of future aircraft carriers. This project also encompasses those tasks required to develop the contract data package necessary to support CVN 79 procurement, including, but not limited to engineering support, programmatic and program support, logistics support, modeling and simulation, manpower and program related studies, and design support systems, such as the Integrated Digital Environment.

R-1 SHOPPING LIST - Item No. 116

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: <b>February 2007</b>		
APPROPRIATION/BUDGET ACTIVITY <b>RDT&amp;E, N / BA-05</b>	PROGRAM ELEMENT NUMBER AND NAME <b>Ship Contract Design/LFT&amp;E PE 0604567N</b>	PROJECT NUMBER AND NAME <b>PU 3179 - CVN 79 Total Ship Integration</b>		
<b>B. Accomplishments/Planned Program</b>				
	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.000	0.000	26.994	38.042
RDT&E Articles Quantity				

**- (U) CVN 21 Follow Ship Total Ship Integration:** The CVN 79 will incorporate advanced technologies to support efforts to address obsolescence, technology refresh, critical survival improvements, as well as continued improvements in manpower reduction and weight savings.

CVN 79 Total Ship Integration (TSI) will be accomplished through an IPPD contract with Northrop Grumman Newport News to incorporate technology advancements into the CVN 78 class baseline design. TSI efforts are focused on continued activities that integrate and optimize systems arrangements and design to maintain the Key Performance Parameters (KPPs) for weight and kg/service life allowance to the ORD threshold values. CVN 79 design efforts will provide required program management and logistics support.

U(FY08): CVN 79 efforts will continue to reduce the ship acquisition cost through the establishment of the CVN 79 initial cost estimate supported by process initiatives, material selections, and lessons learned from the CVN 78 activities will be studied and analyzed to support the development of the CVN 78 class planning yard and life cycle support plan.

U(FY09): Follow on efforts established under CVN 79 IPPD contract will transition for further development under the CVN 79 construction preparation contract.

R-1 SHOPPING LIST - Item No. 116

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification								DATE: <b>February 2007</b>			
APPROPRIATION/BUDGET ACTIVITY				PROGRAM ELEMENT NUMBER AND NAME				PROJECT NUMBER AND NAME			
<b>RDT&amp;E, N / BA-05</b>				<b>Ship Contract Design/LFT&amp;E PE 0604567N</b>				<b>PU 3179 - CVN 79 Total Ship Integration</b>			
<b>C. OTHER PROGRAM FUNDING SUMMARY:</b>											
<u>Line Item No. &amp; Name</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>FY 2012</u>	<u>FY 2013</u>	<u>Complete</u>	<u>Total Cost</u>	
SCN: 200100 - Carrier Replacement Program	762.457	1,106.950	2,848.354	4,470.640	1,620.491	464.957	3,539.599	3,715.132	Cont.	Cont.	
PE 0603512N Carrier System Development	165.429	156.248	84.806	72.683	61.070	44.864	44.477	46.373	Cont.	Cont.	
PE 0603570N Adv. Nuclear Power Systems	165.971	173.988	166.196	158.276	138.891	124.417	124.051	121.840	Cont.	Cont.	
*Note: Only a portion of the funding in PE 0603570N is included in the CVN 21 Program											
<b>D. ACQUISITION STRATEGY:</b>											
<p>The CVN 78 will be the first ship of the CVN 21 Class of aircraft carriers consisting of 12 ships. Due to the length and cost of construction, each carrier will be contracted for separately. The CVN 78 will feature a new nuclear propulsion and electrical generation/distribution system, new electromagnetic aircraft launching system, advanced arresting gear system, all electric auxiliaries, warfare system improvements, survivability enhancements, improved weapons handling, and improved aircraft servicing. These design features will result in lower manpower and total ownership costs as compared to the Nimitz Class. Additionally, the following warfighting benefits will be realized: increased sortie generation rate, improved ship self defense capability, increased launch and recovery capability/flexibility, increased operational availability, and increased flexibility to support future upgrades.</p>											
<b>E. MAJOR PERFORMERS:</b>											
<p>Northrop Grumman Newport News, Newport News, VA, Design/Component Development/Construction                  Naval Surface Warfare Center, Carderock, MD, Technology Design &amp; Development                  Naval Surface Warfare Center, Dahlgren, Virginia, Technology Design &amp; Development</p>											

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CLASSIFICATION:

EXHIBIT R4, Schedule Profile																									DATE: February 2007							
APPROPRIATION/BUDGET ACTIVITY										PROGRAM ELEMENT NUMBER AND NAME										PROJECT NUMBER AND NAME												
RDT&E, N / BA-05										Ship Contract Design/LFT&E PE 0604567N										PU 3179 - CVN 79 Total Ship Integration												
Fiscal Year	2006				2007				2008				2009				2010				2011				2012				2013			
	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
Acquisition Milestones								△ DAB PR																△ DAB PR								
Propulsion Plant																																
EMALS		▲ PDR				▲ CDR 1		△ CDR 2			△ TRR 1		△ TRR 2						△ LRIP													
Advanced Arresting Gear							△ CDR 1		△ TRR 1						△ CDR 2	△ TRR 2							△ MS C									
Test & Evaluation Milestones																																
Development Test	◇ DT A2 ◇				◇ DT B1 ◇				◇ DT B2 ◇				◇ DT B3 ◇																			
Operational Test	◇ OT B1 ◇				◇ OT B2 ◇				◇ OT B3 ◇				◇ OT B4 ◇																			
Contract Milestones							△ CVN 79 IPPD Contract Award																△ CVN 80 IPPD Contract Award									
IPPD Contract																																
CP Contract																																
Construction Contract												△ CVN 78 Construction Contract Award																△ CVN 79 Construction Contract Award				
Full Funding (SCN)												X																				

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

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CLASSIFICATION:

Exhibit R-4a, Schedule Detail							DATE:	
APPROPRIATION/BUDGET ACTIVITY							PROJECT NUMBER AND NAME	
RDT&E, N / BA-05		PROGRAM ELEMENT			PU 3179 - CVN 79 Total Ship Integration			
		Ship Contract Design/LFT&E PE 0604567N						
Schedule Profile	FY06	FY07	FY08	FY09	FY10	FY11	FY12	FY13
Operational Tests OT-B1	2-4Q	1Q						
EMALSP PDR	1Q							
Advanced Arresting Gear CDR 1		1Q						
Developmental Tests DT A-2	1-4Q	1-2Q						
AAG CDR 2			3Q					
EMALS CDR 1		1Q						
EMALS CDR 2		2Q						
Developmental Tests DT-B1		4Q	1-4Q	1-4Q				
Operational Tests OT-B2			1-4Q					
EMALS TRR 1(HALT/HCT)			2Q					
CVN 21 DAB PR		3Q				2Q		
AAG TRR 1 (IT)		3Q						
CVN 21 Construction Contract Award			1Q					
CVN 21 SCN Full Funding			1Q					
Developmental Tests DT-B2				4Q	1-4Q	1-3Q		
Operational Tests OT-B3				4Q	1-4Q	1Q		
EMALS TRR 2 (DT/OA)			4Q					
EMALS LRIP				4Q				
AAG TRR 2 (IT)				1Q				
Developmental Tests DT-B3						4Q	1-4Q	1-4Q
Operational Tests OT-B4						4Q	1-4Q	1Q
Developmental Tests DT-B4								
Operational Tests OT-B5					1-4Q			
Developmental Tests DT-B3						4Q	1-4Q	
CVN 79 IPPD Contract Award		1Q						
CVN 79 CP Contract Award				1Q				
AAG MS C / LRIP					3Q			
CVN 80 IPPD Contract Award						1Q		
CVN 79 Construction Contract Award							1Q	
CVN 80 CP Contract Award								1Q

R-1 SHOPPING LIST - Item No. 116

## CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: <b>February 2007</b>	
APPROPRIATION/BUDGET ACTIVITY <b>RDT&amp;E, N / BA 5</b>	PROGRAM ELEMENT NAME AND NUMBER <b>Ship Contract Design/LFT&amp;E PE 0604567N</b>				PROJECT NAME AND NUMBER <b>CVN 21 LFT&amp;E 4007</b>			
COST (\$ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Project Cost	<b>7.375</b>	<b>7.471</b>	<b>3.198</b>	<b>2.102</b>	<b>2.441</b>	<b>2.981</b>	<b>1.735</b>	<b>1.241</b>
RDT&E Articles Qty								

**A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:**

This project encompasses LFT&E efforts for the CVN 21 class. Title 10, US Code, Section 2366, CVN 21 Operational Requirements Document (ORD) and the CVN 21 Test and Evaluation Master Plan , prescribe requirements for Live Fire Test and Evaluation (LFT&E). The purpose of LFT&E is to evaluate weapons and weapons systems in a realistic combat environment and to identify any mission threatening vulnerabilities early in the development process when there is time to take corrective action. The CVN 21 LFT&E Management Plan details the efforts, through testing and engineering analyses, to address potential design vulnerabilities.

The high unit cost of the CVN 21 class and its shipboard systems preclude consideration of destructive testing of a full-up CVN 21 class hull with threats of the type that might be expected in combat. Consequently, the Navy must rely on other means to determine that CVN 21 class ships will be able to survive and carry out its missions in the face of the threats identified in the CVN 21 System Threat Assessment Report.

The LFT&E strategy for the CVN 21 class accounts for the uncertainty in its design features. The strategy assumes that as the program progresses through the stages of ship design, prior to the award of the construction contract, descriptive detail of CVN 21 will increase and so will the ability to evaluate its survivability.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: <b>February 2007</b>
APPROPRIATION/BUDGET ACTIVITY <b>RDT&amp;E, N / BA-5</b>	PROGRAM ELEMENT NUMBER AND NAME <b>Ship Contract Design/LFT&amp;E PE 0604567N</b>	PROJECT NUMBER AND NAME <b>CVN 21 LFT&amp;E 4007</b>

**B. Accomplishments/Planned Program**

	FY06	FY07	FY08	FY09
Accomplishments/Effort/Subtotal Cost	<b>7.375</b>	<b>7.471</b>	<b>3.198</b>	<b>2.102</b>
RDT&E Articles Quantity				

(U) FY06: Conducted susceptibility assessment of the CVN 78 class. Continued to resolve low confidence areas in analytical models for Live Fire Test and Evaluation (LFT&E) concerns and continued to conduct LFT&E surrogate test program. This included testing underwater protection features (innerbottom structure), and conducting of recoverability tests on ex-USS SHADWELL. Continued survivability modeling improvements. Continued with analytical bridge work between scaled model test results and analytical correlations. Continued updating and developing new Ship Vulnerability Model (SVM)/Advanced Survivability Assessment Program (ASAP) models. Accredited the Fire & Smoke Simulator (FSSIM) Model for VAR 3. Prepared, constructed and tested full and scaled surrogate model targets as required by TEMP 1610 and the LFT&E Management Plan. Refurbished Flight Deck Model. Finalized vulnerability analyses and drafting of Vulnerability Assessment Report #3. Continued survivability model improvements to support CVN 78 class vulnerability assessment. In support of ORD vulnerability requirements testing, conducted representative CVN 78 class fire and smoke spread tests, flight deck fire tests, and main drainage tests; conducted test of the passive damage control features and conduct recoverability modeling tests.

(U) FY07: Completing susceptibility assessment of the CVN 78 class. Continue to resolve low confidence areas in analytical models for LFT&E concerns and continue to conduct LFT&E surrogate test program. This includes the conduct of one test of an underwater protection features (innerbottom structure), the conduct of network recoverability tests on the ex-USS SHADWELL, and deliver the CVN 21 Program Vulnerability Assessment Report #3. Initiate survivability modeling improvements. Continue with analytical bridge work between scaled model test results and analytical correlations. Update and develop new SVM/ASAP, Dynamic System Mechanics advanced Simulation (DYSMAS) & FSSIM models based on test results. Prepare to test full and scaled surrogate model targets as required by TEMP 1610 and the LFT&E Management Plan.

(U) FY 08: The focus is towards improving the computer models, through the Verification, Validation and Accreditation (VV&A) process, used in susceptibility assessments of the CVN 78 class. Continue to resolve low confidence areas in analytical models for LFT&E concerns and continue to conduct LFT&E surrogate test program. Initiate the CVN 21 Vulnerability Assessment Report #3 UPDATE including any survivability modeling improvements. Continue with analytical bridge work between scaled model test results and analytical correlations. VV&A SVM, DYSMAS & FSSIM models for VAR 3 UPDATE. Investigate feasibility of conducting weapons effect test using a decommissioned aircraft carrier to fulfill the requirements of the full ship shock trial.

(U) FY 09: Continue CVN 21 Vulnerability Assessment Report #3 UPDATE including any survivability modeling improvements. Conduct weapons effect test using a decommissioned aircraft carrier to fulfill the requirements of the full ship shock trial.

## CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification								DATE: <b>February 2007</b>		
APPROPRIATION/BUDGET ACTIVITY <b>RDT&amp;E, N / BA-5</b>			PROGRAM ELEMENT NUMBER AND NAME <b>Ship Contract Design/LFT&amp;E PE 0604567N</b>			PROJECT NUMBER AND NAME <b>CVN 21 LFT&amp;E 4007</b>				
<b>C. OTHER PROGRAM FUNDING SUMMARY:</b>										
<u>Line Item No. &amp; Name</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>FY 2012</u>	<u>FY 2013</u>	<u>To Complete</u>	<u>Total Cost</u>
BLI 200100 Carrier Replacement Program	762.457	1,106.950	2,848.354	4,470.640	1,620.491	464.957	3,539.599	3,715.132	Cont.	Cont.
PE 0603512N Carrier System Development	165.429	156.248	84.806	72.683	61.070	44.864	44.477	46.373	Cont.	Cont.
PE 0603570N Adv. Nuclear Power Systems	165.971	173.988	166.196	158.276	138.891	124.417	124.051	121.840	Cont.	Cont.
*Note: Only a portion of the funding in PE 0603570N is included in the CVN 21 Program										
<b>D. ACQUISITION STRATEGY:</b>										
The CVN 78 will be the first ship of the CVN 78 class of aircraft carriers consisting of 12 ships. Due to the length and cost of construction, each carrier will be contracted for separately. The CVN 78 will feature a new nuclear propulsion and electrical generation/distribution system, new electromagnetic aircraft launching system, advanced arresting gear system, all electric auxiliaries, warfare system improvements, survivability enhancements, improved weapons handling, and improved aircraft servicing. These design features will result in lower manpower and total ownership costs as compared to the Nimitz Class. Additionally, the following warfighting benefits will be realized: increased sortie generation rate, improved ship self defense capability, increased launch and recovery capability/flexibility, increased operational availability, and increased flexibility to support future upgrades.										
<b>E. MAJOR PERFORMERS:</b>										
NSWC Carderock Maryland										

CLASSIFICATION:

Exhibit R-3 Cost Analysis												DATE: February 2007		
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-5			PROGRAM ELEMENT Ship Contract Design/LFT&E PE 0604567N					PROJECT NUMBER AND NAME CVN 21 LFT&E 4007						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY09 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Live Fire Test & Evaluation	WX	NSWC Carderock, MD	22.813	5.950	10/05-02/06	5.470	10/06-11/06	1.878	12/07	1.051	12/08	Continuing	Continuing	
	CPAF	NGNN	3.304	1.425	01/06	1.570	11/06	1.097	12/07	0.906	12/08	Continuing	Continuing	
	WX	NAVAIR	0.000	0.000		0.000		0.000		0.000				
	WX	NSWC, Dahlgren	0.000	0.000		0.000		0.000		0.000				
	WX	Miscellaneous	0.000			0.431	10/06-02/07	0.223	12/07	0.144	12/08	Continuing	Continuing	
Subtotal T&E			26.117	7.375		7.471		3.198		2.101		Continuing	Continuing	
Remarks:														
Contractor Engineering Support														
Government Engineering Support														
Program Management Support														
Travel														
Labor (Research Personnel)														
SBIR Assessment														
Subtotal Management			0.000	0.000		0.000		0.000		0.000		0.000	0.000	
Remarks:														
Total Cost			26.117	7.375		7.471		3.198		2.101		Continuing	Continuing	
Remarks:														

CLASSIFICATION:

EXHIBIT R4, Schedule Profile																									DATE: <b>February 2007</b>							
APPROPRIATION/BUDGET ACTIVITY <b>RDT&amp;E, N / BA-05</b>										PROGRAM ELEMENT NUMBER AND NAME <b>Ship Contract Design/LFT&amp;E PE 0604567N</b>										PROJECT NUMBER AND NAME <b>CVN 21 LFT&amp;E 4007</b>												
Fiscal Year	2006				2007				2008				2009				2010				2011				2012				2013			
	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
<b>Acquisition Milestones</b>								DAB PR △																DAB PR △								
Propulsion Plant																																
EMALS		PDR ▲				CDR 1 ▲		CDR 2 △			TRR 1 △				TRR 2 △				LRIP △													
Advanced Arresting Gear							CDR 1 △			TRR 1 △					CDR 2 △		TRR 2 △						MS C △									
<b>Test &amp; Evaluation Milestones</b>																																
Development Test	DT A2				DT B1				DT B2				DT B3																			
Operational Test	OT B1				OT B2				OT B3				OT B4																			
<b>Contract Milestones</b>																																
IPPD Contract								CVN 79 IPPD Contract Award △																CVN 80 IPPD Contract Award △								
CP Contract																																
Construction Contract												CVN 78 Construction Contract Award △																				
Full Funding (SCN)												X																				

R-1 SHOPPING LIST - Item No. 116

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

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CLASSIFICATION:

Exhibit R-4a, Schedule Detail							DATE: <b>February 2007</b>	
APPROPRIATION/BUDGET ACTIVITY <b>RDT&amp;E, N / BA-05</b>		PROGRAM ELEMENT <b>Ship Contract Design/LFT&amp;E PE 0604567N</b>			PROJECT NUMBER AND NAME <b>CVN 21 LFT&amp;E 4007</b>			
Schedule Profile	FY06	FY07	FY08	FY09	FY10	FY11	FY12	FY13
Operational Tests OT-B1	2-4Q	1Q						
EMALSP PDR	1Q							
Advanced Arresting Gear CDR 1		1Q						
Developmental Tests DT A-2	1-4Q	1-2Q						
AAG CDR 2			3Q					
EMALS CDR 1		1Q						
EMALS CDR 2		2Q						
Developmental Tests DT-B1		4Q	1-4Q	1-4Q				
Operational Tests OT-B2			1-4Q					
EMALS TRR 1(HALT/HCT)			2Q					
CVN 21 DAB PR		3Q				2Q		
AAG TRR 1 (IT)		3Q						
CVN 21 Construction Contract Award			1Q					
CVN 21 SCN Full Funding			1Q					
Developmental Tests DT-B2				4Q	1-4Q	1-3Q		
Operational Tests OT-B3				4Q	1-4Q	1Q		
EMALS TRR 2 (DT/OA)			4Q					
EMALS LRIP				4Q				
AAG TRR 2 (IT)				1Q				
Developmental Tests DT-B3						4Q	1-4Q	1-4Q
Operational Tests OT-B4						4Q	1-4Q	1Q
Developmental Tests DT-B4								
Operational Tests OT-B5					1-4Q			
Developmental Tests DT-B3						4Q	1-4Q	
CVN 79 IPPD Contract Award		1Q						
CVN 79 CP Contract Award				1Q				
AAG MS C / LRIP					3Q			
CVN 80 IPPD Contract Award						1Q		
CVN 79 Construction Contract Award							1Q	
CVN 80 CP Contract Award								1Q

R-1 SHOPPING LIST - Item No. 116

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification

DATE:  
February 2007

APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NAME AND NUMBER				PROJECT NAME AND NUMBER			
<b>RDT&amp;E, N / BA 5</b>	<b>Ship Contract Design/LFT&amp;E PE 0604567N</b>				<b>CVN 21 Total Ship Integration 4008</b>			
COST (\$ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Project Cost	<b>9.384</b>	<b>22.034</b>	<b>6.888</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>
RDT&E Articles Qty								

**A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:**

This project encompasses CVN 78 Total Ship Integration efforts. The traditional distinct phasing of the design process for aircraft carriers has been replaced with a continuous concurrent engineering regime incorporating the methodology, measurement, and management elements of the Navy's Integrated Product and Process Development (IPPD) process, extending it beyond contract award. The CVN 78 total ship integration effort will be managed within a technology change management process at contract award to allow further system development. This will ensure that the latest technologies are properly incorporated during the 8 year construction period for an aircraft carrier, without costly contract changes. The IPPD process serves to maintain the focus of multi-discipline teams consisting of the government, shipbuilder, aviation programs, and suppliers. This project also encompasses those tasks required to develop the contract data package necessary to support CVN 78 procurement, including, but not limited to engineering support, programmatic and program support, logistics support, modeling and simulation, manpower and program related studies, and design support systems, such as the Integrated Digital Environment (IDE). The CVN 21 class design approach is part of an acquisition strategy that is based on incorporating best available commercial practices and a phased technical definition.

CVN 78 Total Ship Integration, the integration of major systems into ship design, includes redesign and rearrangement of ship components; redesign of hull, mechanical and electrical (HM&E) and auxiliary systems (air-conditioning and ventilation, power distribution and generation, airborne noise management, reduction of steam, environmental safety and health (ESH) and interface control; redesign of water production and tankage; electric loads analysis; redesign of power distribution; analysis and redesign of structure; analysis, tracking and management of changes in weight distribution and stability; analysis and redesign of survivability systems, and analysis and design of all associated ship hull, mechanical, electrical, propulsion, combat/warfare system, survivability and other related components.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: <b>February 2007</b>
APPROPRIATION/BUDGET ACTIVITY <b>RDT&amp;E, N / BA-5</b>	PROGRAM ELEMENT NUMBER AND NAME <b>Ship Contract Design/LFT&amp;E PE 0604567N</b>	PROJECT NUMBER AND NAME <b>CVN 21 Total Ship Integration 4008</b>

**B. Accomplishments/Planned Program**

	FY06	FY07	FY08	FY09
Accomplishments/Effort/Subtotal Cost	<b>9.384</b>	<b>22.034</b>	<b>6.888</b>	<b>0.000</b>
RDT&E Articles Quantity				

(U) FY06: Continued to resolve CVN 78 whole ship design issues related to aviation systems, combat and integrated warfare systems, auxiliary systems, and HM&E systems. Provided required logistics support and program management support leading up to the FY07 Defense Acquisition Board (DAB) Program Review and the FY08 Construction Contract Award for the lead ship.

(U) FY07: Continue to resolve CVN 78 whole ship design issues related to aviation systems, combat and integrated warfare systems, auxiliary systems, and HM&E systems. Provide logistics support and program support leading up to the FY08 Construction Contract Award.

(U) FY08: Continue to resolve CVN 78 whole ship design issues related to aviation systems, combat and integrated warfare systems, auxiliary systems, and HM&E systems. Provide logistics support and program support for the FY08 Construction Contract Award. Closeout the construction preparation contract component development process.

**CLASSIFICATION:**

EXHIBIT R-2a, RDT&E Project Justification	DATE: <b>February 2007</b>
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APPROPRIATION/BUDGET ACTIVITY <b>RDT&amp;E, N / BA-5</b>	PROGRAM ELEMENT NUMBER AND NAME <b>Ship Contract Design/LFT&amp;E PE 0604567N</b>	PROJECT NUMBER AND NAME <b>CVN 21 Total Ship Integration 4008</b>
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**C. OTHER PROGRAM FUNDING SUMMARY:**

<u>Line Item No. &amp; Name</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>FY 2012</u>	<u>FY 2013</u>	<u>To Complete</u>	<u>Total Cost</u>
BLI 200100 Carrier Replacement Program	762.457	1,106.950	2,848.354	4,470.640	1,620.491	464.957	3,539.599	3,715.132	Cont.	Cont.
PE 0603512N Carrier System Development	165.429	156.248	84.806	72.683	61.070	44.864	44.477	46.373	Cont.	Cont.
PE 0603570N Adv. Nuclear Power Systems	165.971	173.988	166.196	158.276	138.891	124.417	124.051	121.840	Cont.	Cont.

\*Note: Only a portion of the funding in PE 0603570N is included in the CVN 21 Program

**D. ACQUISITION STRATEGY:**

The CVN 78 will be the first ship of the CVN 78 class of aircraft carriers consisting of 12 ships. Due to the length and cost of construction, each carrier will be contracted for separately. The CVN 78 will feature a new nuclear propulsion and electrical generation/distribution system, new electromagnetic aircraft launching system, advanced arresting gear system, all electric auxiliaries, warfare system improvements, survivability enhancements, improved weapons handling, and improved aircraft servicing. These design features will result in lower manpower and total ownership costs as compared to the Nimitz Class. Additionally, the following warfighting benefits will be realized: increased sortie generation rate, improved ship self defense capability, increased launch and recovery capability/flexibility, increased operational availability, and increased flexibility to support future upgrades.

**E. MAJOR PERFORMERS:**

Northrop Grumman Newport News, Newport News, VA, Design/Component Development/Construction  
 Naval Surface Warfare Center, Carderock, MD, Technology Design & Development  
 Naval Surface Warfare Center, Dahlgren, Virginia, Technology Design & Development

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)												DATE: February 2007		
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT					PROJECT NUMBER AND NAME						
RDT&E, N / BA-5			Ship Contract Design/LFT&E PE 0604567N					CVN 21 Total Ship Integration 4008						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Complete	Totql Cost	Target Value of Contract
Total Ship Integration	WX	NSWC Carderock	15.173	0.010	10/05	0.010	10/06					Continuing	Continuing	
	SS, CPAF	NGNN, Newport News Va	63.422	1.470	01/06	18.012	11/06	3.045	10/07-12/07			Continuing	Continuing	
	IPR	GSA	5.888									Continuing	Continuing	
	WX	NAWC, Lakehurst	4.123									Continuing	Continuing	
	WX	NSWC Dahlgren	6.550	0.517	03/06							Continuing	Continuing	
	CPAF	Raytheon	2.747									Continuing	Continuing	
	WX	NSWC, Port Hueneme	4.000									Continuing	Continuing	
	CPFF	NAVSEA SEAPORT	23.363	4.599	01/06	1.928	01/07	2.184	10/07-12/07			Continuing	Continuing	
	WX	NAWC AD, PAX River	10.257	1.802	11/05-2/06			0.964	10/07-12/07			Continuing	Continuing	
	PD	SPAWAR, San Diego	10.776	0.347	02/06	0.023	10/06					Continuing	Continuing	
	Various	Miscellaneous	12.207	0.489	11/06	1.911	10/06-02/07	0.469	10/07-12/07			Continuing	Continuing	
Subtotal Product Development			158.506	9.234		21.884		6.662		0.000		Continuing	Continuing	
Remarks:														
Development Support														
Software Development														
Training Development														
Integrated Logistics Support														
Configuration Management														
Technical Data														
GFE														
Award Fees														
Subtotal Support			0.000	0.000		0.000		0.000		0.000				
Remarks:														

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)												DATE: February 2007		
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-5			PROGRAM ELEMENT Ship Contract Design/LFT&E PE 0604567N					PROJECT NUMBER AND NAME CVN 21 Total Ship Integration 4008						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY09 Cost	FY09 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		0.000		0.000				
Remarks:														
Contractor Engineering Support														
Government Engineering Support														
Program Management Support														
Travel			0.385	0.150	10/06	0.150	10/06	0.226	10/07					
Labor (Research Personnel)														
SBIR Assessment														
Subtotal Management			0.385	0.150		0.150		0.226		0.000				
Remarks:														
Total Cost			158.891	9.384		22.034		6.888		0.001				
Remarks:														

CLASSIFICATION:

EXHIBIT R4, Schedule Profile																									DATE: February 2007							
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-05										PROGRAM ELEMENT NUMBER AND NAME Ship Contract Design/LFT&E PE 0604567N										PROJECT NUMBER AND NAME CVN 21 Total Ship Integration 4008												
Fiscal Year	2006				2007				2008				2009				2010				2011				2012				2013			
	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
Acquisition Milestones								△ DAB PR																								
Propulsion Plant																																
EMALS	▲ PDR				▲ CDR 1		△ CDR 2		△ TRR 1		△ TRR 2					△ LRIP																
Advanced Arresting Gear						△ CDR 1		△ TRR 1						△ CDR 2	△ TRR 2					△ MS C												
Test & Evaluation Milestones																																
Development Test	◇ DT A2				◇ DT B1				◇ DT B2				◇ DT B3																			
Operational Test	◇ OT B1				◇ OT B2				◇ OT B3				◇ OT B4																			
Contract Milestones								△ CVN 79 IPPD Contract Award								△ CVN 79 CP Contract Award				△ CVN 80 IPPD Contract Award												△ CVN 80 CP Contract Award
IPPD Contract																																
CP Contract																																
Construction Contract								△ CVN 78 Construction Contract Award																								△ CVN 79 Construction Contract Award
Full Funding (SCN)												X																				X

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

UNCLASSIFIED

CLASSIFICATION:

Exhibit R-4a, Schedule Detail							DATE: <b>February 2007</b>	
APPROPRIATION/BUDGET ACTIVITY <b>RDT&amp;E, N / BA-05</b>		PROGRAM ELEMENT <b>Ship Contract Design/LFT&amp;E PE 0604567N</b>			PROJECT NUMBER AND NAME <b>CVN 78 Total Ship Integration 4008</b>			
Schedule Profile	FY06	FY07	FY08	FY09	FY10	FY11	FY12	FY13
Operational Tests OT-B1	2-4Q	1Q						
EMALSP PDR	1Q							
Advanced Arresting Gear CDR 1		1Q						
Developmental Tests DT A-2	1-4Q	1-2Q						
AAG CDR 2			3Q					
EMALS CDR 1		1Q						
EMALS CDR 2		2Q						
Developmental Tests DT-B1		4Q	1-4Q	1-4Q				
Operational Tests OT-B2			1-4Q					
EMALS TRR 1(HALT/HCT)			2Q					
CVN 21 DAB PR		3Q				2Q		
AAG TRR 1 (IT)		3Q						
CVN 21 Construction Contract Award			1Q					
CVN 21 SCN Full Funding			1Q					
Developmental Tests DT-B2				4Q	1-4Q	1-3Q		
Operational Tests OT-B3				4Q	1-4Q	1Q		
EMALS TRR 2 (DT/OA)			4Q					
EMALS LRIP				4Q				
AAG TRR 2 (IT)				1Q				
Developmental Tests DT-B3						4Q	1-4Q	1-4Q
Operational Tests OT-B4						4Q	1-4Q	1Q
Developmental Tests DT-B4								
Operational Tests OT-B5					1-4Q			
Developmental Tests DT-B3						4Q	1-4Q	
CVN 79 IPPD Contract Award		1Q						
CVN 79 CP Contract Award				1Q				
AAG MS C / LRIP					3Q			
CVN 80 IPPD Contract Award						1Q		
CVN 79 Construction Contract Award							1Q	
CVN 80 CP Contract Award								1Q

R-1 SHOPPING LIST - Item No. 116

**CLASSIFICATION:**

EXHIBIT R-2a, RDT&E Project Justification		DATE: <b>February 2007</b>
APPROPRIATION/BUDGET ACTIVITY <b>RDT&amp;E, N / BA-5</b>	PROGRAM ELEMENT NUMBER AND NAME Ship Contract Design/LFT&E 0604567N	PROJECT NUMBER AND NAME 9999 Congressional Plus-Up

**A. Mission Description And Budget Item Justification:**

This project will develop an NMCI compatible Integrated Modernization Environment (IME) with a real time information sharing capability to improve the ability to manage program information and facilitate collaboration engineering. Post implementation Planning efforts in developing future system upgrade and maintenance requirements after completion of the initial phase will also be completed.

**B. Accomplishments/Planned Program**

	FY 06	FY07		
9578				
Integrated Modernization Environment	2.490	1.445		

Continue development of the web based IME initiated in Project 9578 in FY05.