

UNCLASSIFIED

EXHIBIT R-2, RDT&E Budget Item Justification					DATE:		February 2006	
APPROPRIATION/BUDGET ACTIVITY				R-1 ITEM NOMENCLATURE				
RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-04				0603512N - Carrier Systems Development				
COST (\$ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Total PE Cost		161.539	168.283	153.894	117.125	106.872	164.210	98.324
1723 - CV Launch & Recovery Systems		2.595	0.000	0.000	0.000	0.000	0.000	0.000
2208 - CVN 21		100.680	107.699	58.787	49.412	56.532	58.143	42.057
4004 - EMALS		49.499	55.780	58.438	26.175	13.286	0.000	0.000
4005 - Smart Carrier		1.818	1.804	1.773	1.781	1.772	1.762	1.838
4006 - CVN 21 Follow Ship		0.000	0.000	34.896	39.757	35.282	104.305	54.429
9349 - Aviation Ship Integration Center		3.568	0.000	0.000	0.000	0.000	0.000	0.000
9515 - Sentinel Net		1.064	0.000	0.000	0.000	0.000	0.000	0.000
9516 - Surface Ship Composite Moisture Separators		2.315	0.000	0.000	0.000	0.000	0.000	0.000
9999 - Congressional Adds		0.000	3.000	0.000	0.000	0.000	0.000	0.000
<p>A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This Navy unique program addresses all technology areas associated with Navy/Marine Corps aircraft operations aboard ships. The program includes:</p> <p>-(U) (1723) - Development of all systems required to provide approach and landing guidance and control, recovery, service, support and launch aircraft operating onto or from ships. Payoffs include increased safety, greater sortie generation rates, enhanced aircraft boarding rates, reduced manning, increased aircraft service life and fleet modernization.</p> <p>- (U)(2208) - Development of ship hull, mechanical, propulsion, electrical, aviation, and combat support systems, subsystems and components to significantly improve 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 existing and future aircraft carriers.</p> <p>- (U) (4004) - Development of an advanced technology aircraft launch system in support of the CVN 21 Class design and construction schedule. The Electro Magnetic Aircraft Launch System (EMALS) will replace the current steam catapult on CVN 21 Class ships and could also be retrofit on existing CVNs. EMALS provides better control of applied forces, both peak and transient dynamic, improved reliability and maintainability, increased operational availability and reduced operator and maintainer workload.</p>								

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RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-04		0603512N - Carrier Systems Development	
<p>- (U) (4005) - The Smart Carrier Demonstration and Validation program exploits available technologies to deliver an affordable, robust, operator-friendly automation control environment for Navy Aircraft Carrier shipboard equipment. The program provides the system architecture, requirements/specification development, technology selection, software development (including software baseline), as well as land-based and shipboard testing of new technologies to improve shipboard operations and to reduce workload, manpower requirements, and Total Ownership Costs (TOC).</p> <p>- (U) (4006) - Development 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.</p> <p>- (U) (9349) - The Aviation Ship Integration Center provides an environment that supports the development and conceptualization of fully integrated future aircraft carrier advanced technology design. The Center will be used to identify, test, and integrate potential design approaches and products for the CVN 21 Warfare System that are focused on reducing costs by increasing efficiencies in air capable shipbuilding programs. The Center will mitigate CVN 21 advanced technology design risk by enabling detection and resolution of potential problems early in the development cycle, thereby maximizing the Navy's return on its non-recurring design investment and enhancing transformational initiatives necessary to support the CVN 21 Warfare System.</p> <p>- (U) (9515) - Sentinel Net (FY05-06 Congressional Add) provides a low-risk sensor processing method that builds on the Aircraft Carrier's Tactical Support Center's (CV-TSC) Command and Control (C2) Suite to yield a harbor defense or force protection C2 capability aboard the Carriers.</p> <p>- (U) (9516) -Development of Composite Moisture Separators and a related manufacturing process for the CVN 21 Class Aircraft Carrier to replace the stainless steel moisture separators currently in use in NIMITZ Class Aircraft Carrier ventilation systems. The ventilation system has intake air inlets on the shell of the ship. At these inlets there currently are baffled stainless steel moisture separators that reduce the amount of entrained moisture in the air before it gets into the ventilation ducts, thus reducing the amount of corrosion of the ventilation ducts. These stainless steel moisture separators are heavy, and by converting them to a composite moisture separator, topside weight will be reduced. Reducing topside weight supports the CVN 21 Class Key Performance Parameters for Weight and Stability.</p> <p>- (U) (9999N) -Quips Integration with CV Tactical Support (FY06 Congressional Add) - The Quiet Interlude Processing System (QUIPS) will provide an automated data fusion system to detect, track, classify, and neutralize threats in the nearshore environment. QuiPS is state-of-the-art in algorithm development in non plane wave acoustic beamforming to detect and track surface ship and submerged contacts in very shallow water using matched phase matched field processing, as well as the normal plane wave beamformers.</p> <p>- (U) (9999N)-Ship Security perimeter monitoring (FY06 Congressional Add) - The Perimeter Security Monitoring System will provide a solid state millimeter-wave radar uniquely designed to provide 360-degree Ship Perimeter Protection in Port and Littoral Waters. It will provide AT-FP/Harbor Defense Sensor for Networked Connection, be metadata enabled, man-portable and is meant to move the perimeter outward.</p>			

R-1 SHOPPING LIST - Item No. 38

UNCLASSIFIED

Exhibit R-2, RDTEN Budget Item Justification
(Exhibit R-2, page 2 of 37)

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE:
							February 2006
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME				PROJECT NUMBER AND NAME		
RDT&E, N / BA-04	PE 0603512N - Carrier Systems Development				PU 2208 - CVN 21		
COST (\$ in Millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Project Cost	100.680	107.699	58.787	49.412	56.532	58.143	42.057
RDT&E Articles Qty							

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

This project provides for the development 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 transitions the most promising technologies from the Navy technology base, other government laboratories, and the private sector into specific advanced development efforts. 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 significantly improve 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 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).

R-1 SHOPPING LIST - Item No. 38

UNCLASSIFIED

UNCLASSIFIED

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APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-04	PROGRAM ELEMENT NUMBER AND NAME PE 0603512N - Carrier Systems Development	PROJECT NUMBER AND NAME PU 2208 - CVN 21													
B. Accomplishments/Planned Program															
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%;"></td> <td style="width: 15%;">FY 05</td> <td style="width: 15%;">FY 06</td> <td style="width: 15%;">FY 07</td> </tr> <tr> <td>Accomplishments/Effort/Subtotal Cost</td> <td>12.794</td> <td>3.531</td> <td>0.000</td> </tr> <tr> <td>RDT&E Articles Quantity</td> <td></td> <td></td> <td></td> </tr> </table>					FY 05	FY 06	FY 07	Accomplishments/Effort/Subtotal Cost	12.794	3.531	0.000	RDT&E Articles Quantity			
	FY 05	FY 06	FY 07												
Accomplishments/Effort/Subtotal Cost	12.794	3.531	0.000												
RDT&E Articles Quantity															
<p>- (U) Non-Nuclear Propulsion Plant Development - (FY05) - Completed fabrication of prototype Main Turbine Generator (MTG) and detailed design. Developed prototype qualification test plans. Initiate and complete MTG prototype qualification testing and shock test. Prepared for post-shock steam testing and prototype disassembly and inspection. Continued development of testing requirements and the identification and evaluation of testing capabilities. Continued development of inputs to the integrated product model. Continued prototyping and implementation of automated workflow for construction deliverables. Continued to integrate analysis and other required functions into product model design. Continued development of mechanical and electrical systems that interface with the propulsion plant. Follow-on testing performed: Generator testing to verify adequate margin on the exciter diode snubber design; Generator Spray Testing; and Shock extension of other MTG components and DDAM shock qualification of the turbine.</p> <p>(FY06) Continue Follow-on testing: VRS/EGS voltage/frequency variation testing; Shock test of the generator and other MTG components; and Post-qualification corona testing on the prototype and on production unit generators. Continue schematic improvements. Continue Independent Over-speed Trip System (IOTS) development. Continue Technical manual development.</p>															
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%;"></td> <td style="width: 15%;">FY 05</td> <td style="width: 15%;">FY 06</td> <td style="width: 15%;">FY 07</td> </tr> <tr> <td>Accomplishments/Effort/Subtotal Cost</td> <td>78.498</td> <td>98.094</td> <td>54.602</td> </tr> <tr> <td>RDT&E Articles Quantity</td> <td></td> <td></td> <td></td> </tr> </table>					FY 05	FY 06	FY 07	Accomplishments/Effort/Subtotal Cost	78.498	98.094	54.602	RDT&E Articles Quantity			
	FY 05	FY 06	FY 07												
Accomplishments/Effort/Subtotal Cost	78.498	98.094	54.602												
RDT&E Articles Quantity															
<p>- (U) CVN 21 Advanced Technology Design & Development – Commence and continue development and transition of technologies to support CVN 21 Key Performance Parameters (KPPs): increased sortie generation rate, further reductions in manpower, and further recovery of weight and stability service life margins. Continue design activities to integrate the new propulsion plant and Electromagnetic Aircraft Launch System, and expand the design build approach to include the whole ship, to optimize various systems and arrangements to meet KPPs, and to improve overall performance. Technologies and design efforts include, but not limited to:</p> <p>(FY 05) – Developed prototypes and design life cycle management plans for high design impact technologies, (Survivability improvements, Advance Weapons Elevators, Reverse Osmosis plant, Heavy Underway Replenishment, 1100 ton AC Plant, and Plasma Arc Waste Destruction System). Continued designs and development of other technologies including, but not limited to the areas of Weapons and Material Handling, lightweight material design and manufacturing and individual component development. Supported system engineering and requirement decomposition for the Integrated Mission System including Combat System, C4I and Aviation.</p> <p>(FY 06) – Construct prototypes, test and finalize integration and life cycle management for high design impact technologies. Develop prototypes and testing as necessary for other technologies. Continue to identify new technologies for later incorporation in the CVN 78 design. Continue system engineering process for the integration of the mission systems.</p> <p>(FY 07) – Finalizes integration for technologies developed and prototyped in previous years to support inclusion into the CVN 78 design. Continue to identify new technologies for later incorporation in the CVN 78 design. Continue system engineering process and high level integration of the mission systems.</p>															

R-1 SHOPPING LIST - Item No.

38

UNCLASSIFIED

Exhibit R-2, RD TEN Budget Item Justification
(Exhibit R-2, page 4 of 37)

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2006													
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-04	PROGRAM ELEMENT NUMBER AND NAME PE 0603512N - Carrier Systems Development	PROJECT NUMBER AND NAME PU 2208 - CVN 21													
B. Accomplishments/Planned Program (Cont.) <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <tr> <td style="width: 60%;"></td> <td style="width: 15%; text-align: center;">FY 05</td> <td style="width: 15%; text-align: center;">FY 06</td> <td style="width: 10%; text-align: center;">FY 07</td> </tr> <tr> <td>Accomplishments/Effort/Subtotal Cost</td> <td style="text-align: center;">9.388</td> <td style="text-align: center;">6.074</td> <td style="text-align: center;">4.185</td> </tr> <tr> <td>RDT&E Articles Quantity</td> <td></td> <td></td> <td></td> </tr> </table> <div style="border: 1px solid black; padding: 10px; margin-top: 20px;"> <p>- (U) CVN 21 - Test & Evaluation - (FY05) - Determined specific developmental test requirements (DT), related modeling and simulation and develop test plans. Conducted actual test events including tests on a Large Test Asset. DT-A2 events were based on CVN 78 system requirements and capabilities. DT-A2g (LTA) was planned and test was completed.</p> <p>(FY06) - Continue DT-A2 events based on CVN 78 system requirements and capabilities. Items such as test articles, instrumentation, support equipment, threat representation, test targets and other expendables, operational force test support, models, simulations, test-beds, special requirements, and funding needs will be finalized and provided in TEMP 1610 Rev B (in support of the FY08 construction contract award). DT-A2g test report will be formalized and related models will be updated to reflect test results.</p> <p>(FY07) - The NGNN T&E IPT will continue planning and execution of DT-A2 events and will identify, plan and begin to execute DT-B events to demonstrate that CVN 78 concepts meet required capabilities. Assess CVN 21 T&E risks by reviewing various PARM test plans and reports, identify any gaps or differences in PARM testing and determine if PARMs are meeting CVN 21 ORD requirements.</p> </div>					FY 05	FY 06	FY 07	Accomplishments/Effort/Subtotal Cost	9.388	6.074	4.185	RDT&E Articles Quantity			
	FY 05	FY 06	FY 07												
Accomplishments/Effort/Subtotal Cost	9.388	6.074	4.185												
RDT&E Articles Quantity															

R-1 SHOPPING LIST - Item No.

38

UNCLASSIFIED

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA 04	PROGRAM ELEMENT NUMBER AND NAME PE 0603512N - Carrier Systems Development	PROJECT NUMBER AND NAME PU 2208 - CVN 21

C. PROGRAM CHANGE SUMMARY:

Funding:	FY 2005	FY 2006	FY 2007
FY 2006 President's Budget	102.372	109.362	59.090
FY 2007 President's Budget	100.680	107.699	58.787
Total Adjustments	-1.692	-1.663	-0.303
Summary of Adjustments			
Rescissions/ General Provisions	-1.692	-1.663	
Miscellaneous			-0.303
Subtotal	-1.692	-1.663	-0.303

Schedule:

The CVN 78 Basic Construction contract will be awarded in FY08 with delivery in FY15.

Technical:

Not Applicable

R-1 SHOPPING LIST - Item No. 38

UNCLASSIFIED

UNCLASSIFIED

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APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-04		PROGRAM ELEMENT NUMBER AND NAME PE 0603512N - Carrier Systems Development			PROJECT NUMBER AND NAME PU 2208 - CVN 21				

D. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Complete	Total Cost
SCN: 200100 - Carrier Replacement Program	623.073	619.097	784.143	3,481.631	3,858.384	1,679.100	541.455	Cont.	Cont.
RDT&E:									
0604567N - Ship Contract Design, Live Fire T&E	118.644	57.424	72.055	57.237	46.151	33.828	87.686	Cont.	Cont.
0603570N - Advanced Nuclear Power Systems	167.951	165.845	174.648	165.165	157.045	137.766	109.429	Cont.	Cont.
*Note: Only a portion of the funding in PE 0603570N is included in the CVN 21 Program									

E. ACQUISITION STRATEGY:

The CVN 78 will be the first ship of the CVN 21 class of aircraft carriers. 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.

F. MAJOR PERFORMERS:

Northrop Grumman Newport News, Newport News, VA, Design/Component Development/Construction

R-1 SHOPPING LIST - Item No. 38

UNCLASSIFIED

UNCLASSIFIED

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)							DATE: February 2006						
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME							
RDT&E, N / BA-04			PE 0603512N - Carrier Systems Development			PU 2208 - CVN 21							
Cost Categories	Contract Method	Performing Activity &	Total PY s	FY 05	FY 05 Award	FY 06	FY 06 Award	FY 07	FY 07 Award	Cost to	Total	Target Value	
	& Type	Location	Cost	Cost	Date	Cost	Date	Cost	Date	Complete	Cost	of Contract	
Product Development													
Propulsion Plant Development	SS,CPFF	BETTIS, PA	71.627								71.627	71.627	
	CPFF	NGNN, VA	140.894	12.700	11/04	3.456	11/05				157.050	157.050	
	Various	Miscellaneous	9.604	0.094	11/04	0.075	02/06				9.773		
Advanced Design & Development	CPAF	NGNN	42.909	34.310	10/04	18.811	02/06	11.420	11/06	Continuing	Continuing		
	WX	NSWC Carderock	39.513	6.683	10/04	17.356	11/05	5.790	11/06	Continuing	Continuing		
	CPFF	SAIC		24.750	10/04-2/05	18.000	11/05	5.000	11/06	Continuing	Continuing		
	WX	NAVAIR	2.929	2.474	11/04	3.162	11/05	3.800	11/06	Continuing	Continuing		
	WX	NAWC Lakehurst	2.466	2.405	10/04	9.167	10/05	4.470	11/06	Continuing	Continuing		
	WX	NSWC Dahlgren	3.243	1.150	11/04	2.550	11/05	3.000	11/06	Continuing	Continuing		
	WX	NSWC P. H.	4.000	1.000	10/04	0.200	11/05			Continuing	Continuing		
	PD	SPAWAR	2.495	1.045	10/04	1.479	11/05	1.840	11/06	Continuing	Continuing		
	CPFF	NAVSEA SEAPORT		0.259	06/05	11.844	01/06	4.875	12/06	Continuing	Continuing		
	Various	Miscellaneous	18.301	4.422	02/05	15.525	11/05	14.407	11/06	Continuing	Continuing		

UNCLASSIFIED

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)								DATE: February 2006				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME						
RDT&E, N / BA-04			PE 0603512N - Carrier Systems Development			PU 2208 - CVN 21						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation												
CVN 21 Class												
	CPAF	NGNN	1.233	0.500	11/04	0.993	01/06	0.925	11/06	Continuing	Continuing	
	WX	NAWC AD	2.301	6.032	10/04	0.360	11/05	0.242	11/06	Continuing	Continuing	
	WX	NSWC Dahlgren	0.874	0.352	10/04	0.820	11/05	0.675	11/06	Continuing	Continuing	
	WX	NSWC CD		0.835	10/04	2.118	11/05	0.300	11/06	Continuing	Continuing	
	Various	Miscellaneous	1.500	1.069	10/04	0.244	11/05	1.243	11/06	Continuing	Continuing	
Operational Test & Evaluation	WX	COMOPTEVFOR	0.448	0.600	10/04	1.539	11/05	0.800	11/06	Continuing	Continuing	
Live Fire Test & Evaluation												
Test Assets												
Tooling												
GFE												
Award Fees												
Subtotal T&E			6.356	9.388		6.074		4.185		Continuing	Continuing	
Remarks:												
Contractor Engineering Support												
Government Engineering Support												
Program Management Support												
Travel												
Transportation												
SBIR Assessment												
Subtotal Management			0.000	0.000		0.000		0.000		Continuing	Continuing	
Remarks:												
Total Cost			344.337	100.680		107.699		58.787		Continuing	Continuing	
Remarks:												

R-1 SHOPPING LIST - Item No. 38

UNCLASSIFIED

Exhibit R-2, RD TEN Budget Item Justification
(Exhibit R-2, page 9 of 37)

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R4, Schedule Profile																								DATE:											
APPROPRIATION/BUDGET ACTIVITY												PROGRAM ELEMENT NUMBER AND NAME												PROJECT NUMBER AND NAME											
RDT&E, N / BA-04												PE 0603512N - Carrier Systems Development												PU 2208 - CVN 21											
Fiscal Year	2005				2006				2007				2008				2009				2010				2011										
	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			SFR △		PDR △				CDR △	DAB △	PR																								
Propulsion Plant																																			
EMALS	SRR ▲	SFR ▲			PDR ▲	CDR 1 △	CDR 2 △		TRR 1 △	TRR 2 △						LRIP △																			
DBR Radar Suite	CDR △																																		
Advanced Arresting Gear		MS B ▲			CDR-1 △	CDR-2 △		TRR 1 △							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	◇							◇	◇	OT B5	◇								
Contract Milestones																																			
IPPD Contract																																			
CP Contract																																			
Construction Contract																																			
Full Funding (SCN)																																			

R-1 SHOPPING LIST - Item No. 38

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

UNCLASSIFIED

Exhibit R-2, RD TEN Budget Item Justification
(Exhibit R-2, page 10 of 37)

CLASSIFICATION:

UNCLASSIFIED

Exhibit R-4a, Schedule Detail							DATE:	
APPROPRIATION/BUDGET ACTIVITY							February 2006	
RDT&E, N / BA-04		PROGRAM ELEMENT				PROJECT NUMBER AND NAME		
		PE 0603512N - Carrier Systems Development				PU 2208 - CVN 21		
Schedule Profile	FY05	FY06	FY07	FY08	FY09	FY10	FY11	
Developmental Tests DT A-2								
Advanced Arresting Gear SRR								
EMALS SDD Phase Initiate								
Dual Band Radar PDR								
CVN 21 Milestone B								
CVN 21 SRR								
Construction Preparation Contract Award			2Q					
Advanced Arresting Gear PDR								
EMALS SRR	1Q							
Developmental Tests DT A-2	1-4Q							
Dual Band Radar CDR	1Q							
Advanced Arresting Gear Milestone B	2Q							
Operational Tests OT-B1	2-3Q							
EMALS SFR	2Q							
CVN 21 SFR	3Q							
EMALSP PDR		1Q						
Advanced Arresting Gear CDR 1		2Q						
CVN 21 PDR		1Q						
Developmental Tests DT A-2		1-4Q						
AAG CDR 2		4Q						
EMALS CDR 1		3Q						
EMALS CDR 2		4Q						
Developmental Tests DT-B1			1-4Q					
Operational Tests OT-B2			1-4Q					
CVN 21 CDR			1Q					
EMALS TRR 1(HALT/HCT)			1Q					
CVN 21 DAB PR			2Q					
AAG TRR 1 (IT)			2Q					
CVN 21 Construction Contract Award				1Q				
CVN 21 SCN Full Funding				1Q				
Developmental Tests DT-B1				1-4Q				
Operational Tests OT-B3				1-4Q				
EMALS TRR 2 (DT/OA)			4Q					
EMALS LRIP					1Q			
AAG TRR 2 (IT)					1Q			
Developmental Tests DT-B1					1Q			
Operational Tests OT-B4					1-4Q			
Developmental Tests DT-B2					3-4Q			
Developmental Tests DT-B2						1-4Q		
AAG LRIP						2Q		
Operational Tests OT-B5							1-4Q	
Developmental Tests DT-B3							2-4Q	
UNCLASSIFIED				Exhibit R-2, RDTEN Budget Item Justification (Exhibit R-2, page 11 of 37)				

UNCLASSIFIED

Exhibit R-2, RDTEN Budget Item Justification

(Exhibit R-2, page 11 of 37)

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-04		PROGRAM ELEMENT NUMBER AND NAME PE 0603512N - Carrier Systems Development			PROJECT NUMBER AND NAME PU 4004 - EMALS			
COST (\$ in Millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	
Project Cost	49.499	55.780	58.438	26.175	13.286	0.000	0.000	
RDT&E Articles Qty		1						
A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: <p>This project provides for the development of an advanced technology aircraft launch system in support of the CVN 78 design and construction schedule. The Electro Magnetic Aircraft Launch System (EMALS) will replace the current steam catapult on CVN 78 and follow ships of the CVN 21 Class. EMALS provides better control of applied forces, both peak and transient dynamic, improved reliability and maintainability, increased operational availability, and reduced operator and maintainer workload.</p>								

R-1 SHOPPING LIST - Item No.

38

UNCLASSIFIED

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2006												
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-04	PROGRAM ELEMENT NUMBER AND NAME PE 0603512N - Carrier Systems Development	PROJECT NUMBER AND NAME PU 4004 - EMALS												
B. Accomplishments/Planned Program <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"><tr><td style="width: 30%;"></td><td style="width: 20%; text-align: center;">FY 05</td><td style="width: 20%; text-align: center;">FY 06</td><td style="width: 30%; text-align: center;">FY 07</td></tr><tr><td>Accomplishments/Effort/Subtotal Cost</td><td style="text-align: center;">49.499</td><td style="text-align: center;">55.780</td><td style="text-align: center;">58.438</td></tr><tr><td>RDT&E Articles Quantity</td><td></td><td style="text-align: center;">1</td><td></td></tr></table> <div style="border: 1px solid black; padding: 10px; margin-top: 10px;"><p>-(U) EMALS -</p><p>FY-05: Continued System Development and Demonstration phase. Conducted Functional and Systems Requirements reviews. Conducted Preliminary Design Review and initiate detailed design. Conducted follow on development testing on Program Definition and Risk Reduction phase system. Continued CVN 78 integration development. Provided management, systems engineering, test, and ship integration support.</p><p>FY-06: Continue System Development and Demonstration phase. Conducted Preliminary Design Review and initiated detailed design of shipboard representative system. Complete Critical design reviews. Initiate manufacture of shipboard representative system and procurement of dead load test articles and instrumentation. Initiate installation in the EMALS land based test facility. Continue CVN 78 integration development. Provide management, systems engineering, test, and ship integration support.</p><p>FY-07: Continue System Development and Demonstration phase. Continue shipboard representative system development effort. Conduct environmental, high cycle and highly accelerated life testing. Complete installation of the production representative EMALS system in the land based test facility. Initiate system integration testing. Continue CVN 78 integration development. Provide management, systems engineering, test, and ship integration support.</p></div>				FY 05	FY 06	FY 07	Accomplishments/Effort/Subtotal Cost	49.499	55.780	58.438	RDT&E Articles Quantity		1	
	FY 05	FY 06	FY 07											
Accomplishments/Effort/Subtotal Cost	49.499	55.780	58.438											
RDT&E Articles Quantity		1												

R-1 SHOPPING LIST - Item No.

38

UNCLASSIFIED

Exhibit R-2, RDTEN Budget Item Justification
(Exhibit R-2, page 13 of 37)

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-04	PROGRAM ELEMENT NUMBER AND NAME PE 0603512N - Carrier Systems Development	PROJECT NUMBER AND NAME PU 4004 - EMALS	
C. PROGRAM CHANGE SUMMARY:			
Funding:	FY 2005	FY 2006	FY 2007
FY 2006 President's Budget	50.600	56.630	58.538
FY 2007 President's Budget	49.499	55.780	58.438
Total Adjustments	-1.101	-0.850	-0.100
Summary of Adjustments			
Rescissions/ General Provisions	-1.101	-0.850	
Miscellaneous			-0.100
Subtotal	-1.101	-0.850	-0.100
Remarks:			
Schedule:			
The CVN 78 Basic Construction contract will be awarded in FY08 with delivery in FY15.			
Technical:			
Not Applicable			

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2006		
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-04			PROGRAM ELEMENT NUMBER AND NAME PE 0603512N - Carrier Systems Development			PROJECT NUMBER AND NAME PU 4004 - EMALS			

D. OTHER PROGRAM FUNDING SUMMARY:

<u>Line Item No. & Name</u>	<u>FY 2005</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>Complete</u>	<u>Total Cost</u>
SCN: 200100 - Carrier Replacement Program	623.073	619.097	784.143	3,481.631	3,858.384	1,679.100	541.455	Cont.	Cont.
RDT&E:									
0604567N - Ship Contract Design, Live Fire T&E	118.644	57.424	72.055	57.237	46.151	33.828	87.686	Cont.	Cont.
0603570N - Advanced Nuclear Power Systems	167.951	165.845	174.648	165.165	157.045	137.766	109.429	Cont.	Cont.

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

E. ACQUISITION STRATEGY:

The CVN 78 will be the first ship of the CVN 21 class of aircraft carriers. 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.

F. MAJOR PERFORMERS:

General Atomics, San Diego, CA, EMALS Design and Development
 Naval Air Warfare Center, Aircraft Division, Lakehurst, NJ: EMALS Development and Test.

R-1 SHOPPING LIST - Item No.

38

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CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)								DATE:		February 2006			
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME							
RDT&E, N / BA-04			PE 0603512N - Carrier Systems Development			PU 4004 - EMALS							
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract	
Product Development													
Aircraft Launch, Recovery & Support	CPAF	Northrop Grumman	83.352							Continuing	Continuing	Continuing	
	CPAF	General Atomics (PDRR)	82.719							Continuing	Continuing	Continuing	
	CPIF	General Atomics (SDD)	16.924	41.234	11/04-8/05	39.178	01/06	36.340	11/06	Continuing	Continuing	Continuing	
	WX	NAWC Lakehurst, NJ	14.912	5.207	10/04	5.521	10/06	5.631	11/06	Continuing	Continuing	Continuing	
	CPAF	NGNN, VA	2.270	0.266	11/04					Continuing	Continuing	Continuing	
	Various	Miscellaneous	0.000	0.577	11/04	3.952	02/06	4.182	11/06	Continuing	Continuing	Continuing	
Subtotal Product Development			200.177	47.284		48.651		46.153		Continuing	Continuing	Continuing	
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		

R-1 SHOPPING LIST - Item No. 38

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Exhibit R-2, RD TEN Budget Item Justification
(Exhibit R-2, page 16 of 37)

UNCLASSIFIED

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)										DATE: February 2006			
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-04			PROGRAM ELEMENT PE 0603512N - Carrier Systems Development			PROJECT NUMBER AND NAME PU 4004 - EMALS							
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract	
Developmental Test & Evaluation													
Aircraft Launch, Recovery & Support	WX	Lakehurst NJ	6.431	2.215	10/04	7.129	10/05	12.285	11/06	Continuing	Continuing		
Subtotal T&E			6.431	2.215		7.129		12.285		Continuing	Continuing		
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		
Total Cost			206.608	49.499		55.780		58.438		Continuing	Continuing		
Remarks: FY02 and Prior Years were funded under PE 0603512N, PU 42208													

R-1 SHOPPING LIST - Item No. 38

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Exhibit R-2, RDTEN Budget Item Justification
(Exhibit R-2, page 17 of 37)

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CLASSIFICATION:

EXHIBIT R4, Schedule Profile																								DATE:											
APPROPRIATION/BUDGET ACTIVITY												PROGRAM ELEMENT NUMBER AND NAME												PROJECT NUMBER AND NAME											
RDT&E, N / BA-04												PE 0603512N - Carrier Systems Development												PU 4004 - EMALS											
Fiscal Year	2005				2006				2007				2008				2009				2010				2011										
	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			SFR △		PDR △				CDR △	DAB △	PR																								
Propulsion Plant																																			
EMALS	SRR ▲	SFR ▲			PDR ▲		CDR 1 △	CDR 2 △		TRR 1 △		TRR 2 △					LRIP △																		
DBR Radar Suite	CDR △																																		
Advanced Arresting Gear		MS B ▲				CDR-1 △		CDR-2 △		TRR 1 △						TRR 2 △				MSC △															
Test & Evaluation Milestones																																			
Development Test	◇-----DT A2-----◇◇-----DT B1-----◇◇-----DT B2-----◇◇-----DT B3-----◇																																		
Operational Test	◇-----OT B1-----◇◇-----OT B2-----◇◇-----OT B3-----◇◇-----OT B4-----◇◇-----OT B5-----◇																																		
Contract Milestones																																			
IPPD Contract																																			
CP Contract	Contract Award △																																		
Construction Contract	Contract Award △																																		
Full Funding (SCN)	X																																		

R-1 SHOPPING LIST - Item No. 38

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

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Exhibit R-2, RD TEN Budget Item Justification
(Exhibit R-2, page 18 of 37)

CLASSIFICATION:

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Exhibit R-4a, Schedule Detail							DATE:
APPROPRIATION/BUDGET ACTIVITY							February 2006
RDT&E, N / BA-04			PROGRAM ELEMENT			PROJECT NUMBER AND NAME	
			PE 0603512N - Carrier Systems Development			PU 4004 - EMALS	
Schedule Profile	FY05	FY06	FY07	FY08	FY09	FY10	FY11
Developmental Tests DT A-2							
Advanced Arresting Gear SRR							
EMALS SDD Phase Initiate							
Dual Band Radar PDR							
CVN 21 Milestone B							
CVN 21 SRR							
Construction Preparation Contract Award			2Q				
Advanced Arresting Gear PDR							
EMALS SRR	1Q						
Developmental Tests DT A-2	1-4Q						
Dual Band Radar CDR	1Q						
Advanced Arresting Gear Milestone B	2Q						
Operational Tests OT-B1	2-3Q						
EMALS SFR	2Q						
CVN 21 SFR	3Q						
EMALSP PDR		1Q					
Advanced Arresting Gear CDR 1		2Q					
CVN 21 PDR		1Q					
Developmental Tests DT A-2		1-4Q					
AAG CDR 2		4Q					
EMALS CDR 1		3Q					
EMALS CDR 2		4Q					
Developmental Tests DT-B1			1-4Q				
Operational Tests OT-B2			1-4Q				
CVN 21 CDR			1Q				
EMALS TRR 1(HALT/HCT)			2Q				
CVN 21 DAB PR			2Q				
AAG TRR 1 (IT)			2Q				
CVN 21 Construction Contract Award				1Q			
CVN 21 SCN Full Funding				1Q			
Developmental Tests DT-B1				1-4Q			
Operational Tests OT-B3				1-4Q			
EMALS TRR 2 (DT/OA)			4Q				
EMALS LRIP					1Q		
AAG TRR 2 (IT)					1Q		
Developmental Tests DT-B1					1Q		
Operational Tests OT-B4					1-4Q		
Developmental Tests DT-B2					3-4Q		
Developmental Tests DT-B2						1-4Q	
AAG LRIP						2Q	
Operational Tests OT-B5							1-4Q
Developmental Tests DT-B3							2-4Q

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Exhibit R-2, RDTEN Budget Item Justification

(Exhibit R-2, page 19 of 37)

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603512N - Carrier Systems Development				PROJECT NUMBER AND NAME PU 4005 - Smart Carrier			
COST (\$ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Project Cost		1.818	1.804	1.773	1.781	1.772	1.762	1.838
RDT&E Articles Qty		2	1	1				

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

The Smart Carrier Demonstration and Validation program exploits available technologies to deliver an affordable, robust, operator-friendly automation control environment for Navy Aircraft Carrier shipboard equipment. The program provides the system architecture, requirements/specification development, technology selection, software development (including software baseline), as well as land-based and shipboard testing of new technologies to improve shipboard operations and to reduce workload, manpower requirements, and Total Ownership Costs. Initial technologies include Aviation Fuels (JP-5) Automation, the Advanced Damage Control System (ADCS), Automated Material Handling Systems, Damage Control Inventory Management and Stowage System (DCIMSS), List Control, Firemain Control, Integrated Condition Assessment System, Interior Communications/Systems Monitoring Alarm Upgrades, and the Digital Video Surveillance System. Demonstration technologies include Aviation Fuels On-Board Training (OBT) System, Smart Vent, Machinery Online Monitoring, Superior Sound Technology, Flat Plane Speakers, Smart Circuit Breakers, Distilling Unit Automation, Reboiler Automation, In-line Aviation Fuels Sampling, Advanced Oil Purification System, Oil Monitoring Sensors, and Voice Interactive Display. Wireless systems, smart sensors, knowledge-based systems, automated casualty control, automated technology for workload reduction, linked smart devices, common software tools for interoperability, and self-healing network are technologies being considered for future applications. This project was previously funded under Project 42208, Future Carrier R&D.

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: February 2006																
APPROPRIATION/BUDGET ACTIVITY RDT&E, N /BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603512N - Carrier Systems Development	PROJECT NUMBER AND NAME PU 4005 - Smart Carrier																	
B. Accomplishments/Planned Program <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <tr> <th style="width: 30%;"></th> <th style="width: 15%;"></th> <th style="width: 15%;">FY 05</th> <th style="width: 15%;">FY 06</th> <th style="width: 15%;">FY 07</th> </tr> <tr> <td>Accomplishments/Effort/Subtotal Cost</td> <td></td> <td style="text-align: center;">1.818</td> <td style="text-align: center;">1.804</td> <td style="text-align: center;">1.773</td> </tr> <tr> <td>RDT&E Articles Quantity</td> <td></td> <td style="text-align: center;">2</td> <td style="text-align: center;">1</td> <td style="text-align: center;">1</td> </tr> </table> <div style="border: 1px solid black; padding: 10px; margin-top: 10px;"> <p>- (U) Smart Carrier - Fiscal Year 2005 efforts developed the multiple-sensor in-line fuel sampling monitoring system and completed shipboard demonstration/test of a four sensor system to evaluate the sensor group effectiveness, accuracy, reliability, and end-user response; completed software development and land based test facility as well as shipboard testing for the Aviation Fuels On-Board Training (OBT) system for subsequent implementation in USS JOHN C. STENNIS (CVN74) and USS GEORGE WASHINGTON (CVN73); completed software development and land-based test facility testing for Smart Carrier Condition-Based Maintenance Capability; and began software development for Smart Carrier Automated System Logs.</p> <p>Fiscal Year 2006 efforts implement in-line fuel sampling design changes resulting from FY2005 shipboard tests into a 29 sensor engineering developmental model, including both hardware and software changes, to support final system developmental testing; completes software development and land-based test facility testing for Smart Carrier Automated System Logs and subsequent shipboard testing in USS HARRY S. TRUMAN (CVN75); and begins development of Advanced Damage Control System (ADCS) software improvements for the Advanced Fire and Smoke Sensor System (AFSSS) and the Flooding Casualty Control System (FCCS).</p> <p>Fiscal Year 2007 efforts complete the system developmental testing of the in-line fuel sampling engineering developmental model; continue software development, land-based testing, and shipboard testing of ADCS software improvements for the Advanced Fire and Smoke Sensor System (AFSSS) and the Flooding Casualty Control System (FCCS) in USS THEODORE ROOSEVELT (CVN71); and initiate software development for Aviation Fuels System Electronic Valve Operator (EVO) automation.</p> <p>Future efforts include Superior Sound Technology (5MC), vibration monitoring/rotating machinery diagnostic tools, and expanded condition-based maintenance for rotating machinery, all via modifications and improvements to the existing Smart Carrier hardware and software suite.</p> </div>							FY 05	FY 06	FY 07	Accomplishments/Effort/Subtotal Cost		1.818	1.804	1.773	RDT&E Articles Quantity		2	1	1
		FY 05	FY 06	FY 07															
Accomplishments/Effort/Subtotal Cost		1.818	1.804	1.773															
RDT&E Articles Quantity		2	1	1															

R-1 SHOPPING LIST - Item No. 38

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2006																																					
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603512N - Carrier Systems Development	PROJECT NUMBER AND NAME PU 4005 - Smart Carrier																																					
<p>C. PROGRAM CHANGE SUMMARY:</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left; width: 45%;"></th> <th style="text-align: right; width: 15%;">FY 2005</th> <th style="text-align: right; width: 15%;">FY 2006</th> <th style="text-align: right; width: 15%;">FY 2007</th> </tr> </thead> <tbody> <tr> <td>Funding:</td> <td></td> <td></td> <td></td> </tr> <tr> <td>FY 2006 President's Budget:</td> <td style="text-align: right;">1.825</td> <td style="text-align: right;">1.831</td> <td style="text-align: right;">1.820</td> </tr> <tr> <td>FY 2007 President's Budget</td> <td style="text-align: right;">1.818</td> <td style="text-align: right;">1.804</td> <td style="text-align: right;">1.773</td> </tr> <tr> <td>Total Adjustments</td> <td style="text-align: right; border-top: 1px solid black;">-0.007</td> <td style="text-align: right; border-top: 1px solid black;">-0.027</td> <td style="text-align: right; border-top: 1px solid black;">-0.047</td> </tr> <tr> <td colspan="4" style="padding-top: 10px;">Summary of Adjustments</td> </tr> <tr> <td style="padding-left: 20px;">Rescissions</td> <td style="text-align: right;">-0.007</td> <td style="text-align: right;">-0.027</td> <td></td> </tr> <tr> <td style="padding-left: 20px;">Miscellaneous</td> <td></td> <td></td> <td style="text-align: right;">-0.047</td> </tr> <tr> <td style="padding-left: 20px;">Subtotal</td> <td style="text-align: right; border-top: 1px solid black;">-0.007</td> <td style="text-align: right; border-top: 1px solid black;">-0.027</td> <td style="text-align: right; border-top: 1px solid black;">-0.047</td> </tr> </tbody> </table> <p style="margin-top: 20px;">Schedule: Not Applicable</p> <p style="margin-top: 40px;">Technical: Not Applicable</p>					FY 2005	FY 2006	FY 2007	Funding:				FY 2006 President's Budget:	1.825	1.831	1.820	FY 2007 President's Budget	1.818	1.804	1.773	Total Adjustments	-0.007	-0.027	-0.047	Summary of Adjustments				Rescissions	-0.007	-0.027		Miscellaneous			-0.047	Subtotal	-0.007	-0.027	-0.047
	FY 2005	FY 2006	FY 2007																																				
Funding:																																							
FY 2006 President's Budget:	1.825	1.831	1.820																																				
FY 2007 President's Budget	1.818	1.804	1.773																																				
Total Adjustments	-0.007	-0.027	-0.047																																				
Summary of Adjustments																																							
Rescissions	-0.007	-0.027																																					
Miscellaneous			-0.047																																				
Subtotal	-0.007	-0.027	-0.047																																				

R-1 SHOPPING LIST - Item No. 38

UNCLASSIFIED

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2006		
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4		PROGRAM ELEMENT NUMBER AND NAME 0603512N - Carrier Systems Development			PROJECT NUMBER AND NAME PU 4005 - Smart Carrier				

D. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	To Complete	Total Cost
098100 Items Under \$5 million Smart Carrier (LT 140)	38.726	22.668	28.434	16.063	18.093	16.816	13.301	Cont.	154.101

E. ACQUISITION STRATEGY:

Investigate, demonstrate, and implement available technologies to deliver a robust, operator-friendly automation control environment for Navy Aircraft Carrier shipboard equipment to reduce workload, manpower requirements, and Total Ownership Costs (TOC).

F. MAJOR PERFORMERS:

Naval Sea Systems Command - Philadelphia (formerly Naval Surface Warfare Center, Carderock Division), Philadelphia, PA and Naval Air Systems Command - Lakehurst (formerly Naval Air Warfare Center, Lakehurst), Lakehurst NJ, perform software development, test and evaluation, integration and program management to include training development and integrated logistics support development. Funds are typically issued in the first fiscal quarter.

R-1 SHOPPING LIST - Item No. 38

UNCLASSIFIED

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CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)										DATE: February 2006				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT					PROJECT NUMBER AND NAME						
RDT&E, N / BA-4			0603512N - Carrier Systems Development					PU 4005 - Smart Carrier						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost			FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development														
Ancillary Hardware Development														
Component Development														
Ship Integration	WX	NAVSEA, Phil./NAVAIR Lke	0.300			0.100	11/04	0.100	11/05	0.100	11/06	Continuing	Continuing	
Ship Suitability														
Systems Engineering	CPAF	NGNN, VA	0.205										0.205	
	Various	Miscellaneous	7.978										7.978	
Training Development														
Licenses														
Tooling														
GFE														
Award Fees														
Subtotal Product Development			8.483			0.100		0.100		0.100		0.000	8.783	
Development Support													0.000	
Software Development	WX	NAVSEA, Phil./NAVAIR Lke	1.928			0.818	11/04	0.854	11/05	0.773	11/06	Continuing	Continuing	
Training Development	WX	NAVSEA, Phil./NAVAIR Lke	0.100			0.080	11/04	0.050	11/05	0.080	11/06	Continuing	Continuing	
Integrated Logistics Support	WX	NAVSEA, Phil./NAVAIR Lke	0.250			0.120	11/04	0.150	11/05	0.120	11/06	Continuing	Continuing	
Configuration Management													0.000	
Technical Data													0.000	
GFE													0.000	
Award Fees													0.000	
Subtotal Support			2.278	0.000		1.018		1.054		0.973		0.000	5.323	

R-1 SHOPPING LIST - Item No.

38

UNCLASSIFIED

Exhibit R-2, RDTE Budget Item Justification
(Exhibit R-2, page 24 of 37)

UNCLASSIFIED

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)										DATE:					February 2006				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT					PROJECT NUMBER AND NAME											
RDT&E, N / BA-4			0603512N - Carrier Systems Development					PU 4005 - Smart Carrier											
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost				FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract				
Developmental Test & Evaluation	WX	NAVSEA, Phil./NAVAIR Lke	0.700				0.450	11/04	0.400	11/05	0.450	11/06	Continuing	Continuing					
Operational Test & Evaluation																			
Live Fire Test & Evaluation																			
Test Assets																			
Tooling																			
GFE																			
Award Fees																			
Subtotal T&E			0.700				0.450		0.400		0.450		0.000	2.000					
Contractor Engineering Support																			
Government Engineering Support																			
Program Management Support	WX	NAVSEA, Phil./NAVAIR Lke	0.500				0.250	11/04	0.250	11/05	0.250	11/06	Continuing	Continuing					
Travel																			
Labor (Research Personnel)																			
SBIR Assessment																			
Subtotal Management			0.500				0.250		0.250		0.250		0.000	1.250					
Total Cost			11.961	0.000			1.818		1.804		1.773		0.000	17.356					

R-1 SHOPPING LIST - Item No.

38

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Exhibit R-2, RD TEN Budget Item Justification
(Exhibit R-2, page 25 of 37)

UNCLASSIFIED

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EXHIBIT R-4, Schedule Profile																DATE:															
																February 2006															
APPROPRIATION/BUDGET ACTIVITY				PROGRAM ELEMENT NAME AND NUMBER								PROJECT NAME AND NUMBER																			
RDT&E, N/BA-4				0603512N - Carrier Systems Development								PU 4005 - Smart Carrier																			
				FY 2005				FY 2006				FY 2007				FY 2008				FY 2009				FY 2010				FY 2011			
				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
In-Line Fuel Sampling																															
System Development and Carrier Demonstration Engineering Development Model				■				■																							
Carrier Machinery Control Systems:																															
Software Development, Integration & Test for:																															
Aviation Fuels Automation On-Board Training				■																											
Condition-Based Maintenance				■																											
Automated System Logs				■				■																							
ADCS Software Improvements (AFSSS & FCCS)								■				■																			
Electronic Valve Operator Automation												■				■															
Superior Sound Technology (5MC)																■				■											
Vibration Monitoring/Rotating Machinery Diagnostic Tools																				■				■							
Expanded Condition-Based Maintenance																								■				■			
Reboiler Automation																								■				■			
Liquid Load Management																												■			
Advanced Fire and Smoke Sensors																												■			

R-1 SHOPPING LIST - Item No. 38

Exhibit R-4, Schedule Profile
(Exhibit R-4, Page 38 of 46)

UNCLASSIFIED

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Exhibit R-2, RD TEN Budget Item Justification
(Exhibit R-2, page 26 of 37)

UNCLASSIFIED

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R-1 SHOPPING LIST - Item No.

38

UNCLASSIFIED

Exhibit R-2, RD TEN Budget Item Justification
(Exhibit R-2, page 27 of 37)

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-04	PROGRAM ELEMENT NUMBER AND NAME PE 0603512N - Carrier Systems Development				PROJECT NUMBER AND NAME PU 4006 - CVN 21 Follow Ship		
COST (\$ in Millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Project Cost	0.000	0.000	34.896	39.757	35.282	104.305	54.429
RDT&E Articles Qty							
<p>A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:</p> <p>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 significantly improve 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.</p>							

R-1 SHOPPING LIST - Item No.

38

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Exhibit R-2, RDTEN Budget Item Justification
(Exhibit R-2, page 28 of 37)

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: February 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-04	PROGRAM ELEMENT NUMBER AND NAME PE 0603512N - Carrier Systems Development	PROJECT NUMBER AND NAME PU 4006 - CVN 21 Follow Ship	
B. Accomplishments/Planned Program			
	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost	0.000	0.000	12.181
RDT&E Articles Quantity			
<div style="border: 1px solid black; padding: 5px;"> <p>- (U) CVN 21 Follow Ship Advanced Technology Design & Development: Commence development and transition of technologies to support obsolescence and technology refresh, sortie generation rate, manpower reduction, and recovery of weight and stability service life margins. Technologies and design efforts include, but are not limited to: Enhanced Weapons / Material Movement (Advanced Storage and Retrieval System and Advanced Weapons Movement) to further reduce manpower and increase sortie generation rates; Advanced Materials (Lightweight Materials and JBD Materials) development and integration to reduce total weight and improve stability while reducing shipboard maintenance; Improved Survivability technologies (Advanced Damage Countermeasures); and Advanced Ship Self Defense technologies (Surface Ship Torpedo Defense (SSTD), Advanced Point Defense Weapons, and Advanced Force Protection.</p> </div>			
	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost	0.000	0.000	2.816
RDT&E Articles Quantity			
<div style="border: 1px solid black; padding: 5px;"> <p>- (U) CVN 21 Follow Ship Testing: Initiate efforts to determine specific developmental test and related modeling and simulation requirements. Assess the CVN 79 hull design survivability in terms of susceptibility, vulnerability and recoverability. Initiate planning of UNDEX, AIREX, Damage Control/Fire Fighting and Recoverability modeling and simulation and plan surrogate testing for model validation. Commence CVN 79 susceptibility assessment. Commence UNDEX, AIREX, Damage Control/Fire Fighting and Recoverability modeling and simulation. Commence surrogate testing of models. Continue CVN 79 susceptibility assessment and continue initiating and validating any additional modeling deemed necessary.</p> </div>			

R-1 SHOPPING LIST - Item No.

38

UNCLASSIFIED

Exhibit R-2, RD TEN Budget Item Justification
(Exhibit R-2, page 29 of 37)

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2006													
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-04	PROGRAM ELEMENT NUMBER AND NAME PE 0603512N - Carrier Systems Development	PROJECT NUMBER AND NAME PU 4006 - CVN 21 Follow Ship													
B. Accomplishments/Planned Program <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <tr> <td style="width: 30%;"></td> <td style="width: 15%; text-align: center;">FY 05</td> <td style="width: 15%; text-align: center;">FY 06</td> <td style="width: 15%; text-align: center;">FY 07</td> </tr> <tr> <td>Accomplishments/Effort/Subtotal Cost</td> <td style="text-align: center;">0.000</td> <td style="text-align: center;">0.000</td> <td style="text-align: center;">19.899</td> </tr> <tr> <td>RDT&E Articles Quantity</td> <td></td> <td></td> <td></td> </tr> </table> <div style="border: 1px solid black; padding: 10px; margin-top: 10px;"> <p>- (U) CVN 21 Follow Ship Total Ship Integration: The CVN 79 will incorporate advanced technologies including, but not limited to: Enhanced Weapons / Material Movement to further reduce manpower and increase sortie generation rates; Advanced Materials development and integration to reduce total weight and improve stability while reducing shipboard maintenance; Improved Survivability technologies; and Advanced Ship Self Defense technologies. These technologies support efforts to address obsolescence, technology refresh, critical survival improvements, as well as continued improvements in manpower reduction and weight savings.</p> <p>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 21 baseline design. TSI efforts are focused on continued design activities that integrate and optimize systems arrangements to improve KPPs and overall performance towards ORD objectives. CVN 79 design efforts will resolve issues related to incorporation of new technologies, the development of the CVN 79 contract data package, including design drawings and specifications, and will provide required program management and logistics support.</p> </div>					FY 05	FY 06	FY 07	Accomplishments/Effort/Subtotal Cost	0.000	0.000	19.899	RDT&E Articles Quantity			
	FY 05	FY 06	FY 07												
Accomplishments/Effort/Subtotal Cost	0.000	0.000	19.899												
RDT&E Articles Quantity															

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EXHIBIT R-2a, RDT&E Project Justification			DATE: February 2006																																					
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-04	PROGRAM ELEMENT NUMBER AND NAME PE 0603512N - Carrier Systems Development	PROJECT NUMBER AND NAME PU 4006 - CVN 21 Follow Ship																																						
<p>C. PROGRAM CHANGE SUMMARY:</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left; width: 40%;"></th> <th style="text-align: right; width: 15%;">FY 2005</th> <th style="text-align: right; width: 15%;">FY 2006</th> <th style="text-align: right; width: 15%;">FY 2007</th> </tr> </thead> <tbody> <tr> <td>Funding:</td> <td></td> <td></td> <td></td> </tr> <tr> <td>FY 2006 President's Budget</td> <td style="text-align: right;">0.000</td> <td style="text-align: right;">0.000</td> <td style="text-align: right;">78.947</td> </tr> <tr> <td>FY 2007 President's Budget</td> <td style="text-align: right;">0.000</td> <td style="text-align: right;">0.000</td> <td style="text-align: right;">34.896</td> </tr> <tr> <td>Total Adjustments</td> <td style="text-align: right; border-top: 1px solid black;">0.000</td> <td style="text-align: right; border-top: 1px solid black;">0.000</td> <td style="text-align: right; border-top: 1px solid black;">-44.051</td> </tr> <tr> <td colspan="4" style="padding-top: 10px;">Summary of Adjustments</td> </tr> <tr> <td style="padding-left: 20px;">Programmatic change</td> <td></td> <td></td> <td style="text-align: right;">-43.900</td> </tr> <tr> <td style="padding-left: 20px;">Miscellaneous</td> <td></td> <td></td> <td style="text-align: right;">-0.151</td> </tr> <tr> <td style="padding-left: 20px;">Subtotal</td> <td style="text-align: right; border-top: 1px solid black;">0.000</td> <td style="text-align: right; border-top: 1px solid black;">0.000</td> <td style="text-align: right; border-top: 1px solid black;">-44.051</td> </tr> </tbody> </table> <p style="margin-top: 20px;">Remarks:</p> <p style="margin-top: 20px;">Schedule:</p> <p style="margin-left: 20px;">The CVN 79 Basic Construction contract will be awarded in FY12.</p> <p style="margin-top: 20px;">Technical:</p> <p style="margin-left: 20px;">Not Applicable</p>						FY 2005	FY 2006	FY 2007	Funding:				FY 2006 President's Budget	0.000	0.000	78.947	FY 2007 President's Budget	0.000	0.000	34.896	Total Adjustments	0.000	0.000	-44.051	Summary of Adjustments				Programmatic change			-43.900	Miscellaneous			-0.151	Subtotal	0.000	0.000	-44.051
	FY 2005	FY 2006	FY 2007																																					
Funding:																																								
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Subtotal	0.000	0.000	-44.051																																					

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EXHIBIT R-2a, RDT&E Project Justification							DATE:		
							February 2006		
APPROPRIATION/BUDGET ACTIVITY		PROGRAM ELEMENT NUMBER AND NAME			PROJECT NUMBER AND NAME				
RDT&E, N / BA-04		PE 0603512N - Carrier Systems Development			PU 4006 - CVN 21 Follow Ship				
D. OTHER PROGRAM FUNDING SUMMARY:									
Line Item No. & Name	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Complete	Total Cost
SCN: 200100 - Carrier Replacement Program	623.073	619.097	784.143	3,481.631	3,858.384	1,679.100	541.455	Cont.	Cont.
RDT&E:									
0604567N - Ship Contract Design, Live Fire T&E	118.644	57.424	72.055	57.237	46.151	33.828	87.686	Cont.	Cont.
0603570N - Advanced Nuclear Power Systems	167.951	165.845	174.648	165.165	157.045	137.766	109.429	Cont.	Cont.
*Note: Only a portion of the funding in PE 0603570N is included in the CVN 21 Program									
E. ACQUISITION STRATEGY:									
The CVN 78 will be the first ship of the CVN 21 class of aircraft carriers. 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.									
F. 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									

R-1 SHOPPING LIST - Item N 38

UNCLASSIFIED

Exhibit R-2, RDTE Budget Item Justification
(Exhibit R-2, page 32 of 37)

UNCLASSIFIED

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R-1 SHOPPING LIST - Item No. 38

UNCLASSIFIED

Exhibit R-2, RD TEN Budget Item Justification
(Exhibit R-2, page 33 of 37)

UNCLASSIFIED

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)								DATE: February 2006				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME						
RDT&E, N / BA-04			PE 0603512N - Carrier Systems Development			PU 4006 - CVN 21 Follow Ship						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation												
CVN 21 Follow Ship	CPAF	NGNN, VA	0.000					0.185	11/06	Continuing	Continuing	
	Various	Miscellaneous	0.000					0.162	11/06	Continuing	Continuing	
Operational Test & Evaluation												
CVN Follow Ship												
Live Fire Test & Evaluation												
CVN 21 Follow Ship	CPAF	NGNN, VA	0.000					0.301	11/06	Continuing	Continuing	
	WX	NSWC Carderock	0.000					0.626	11/06	Continuing	Continuing	
Test Assets	Various	Miscellaneous	0.000					1.542	11/06	Continuing	Continuing	
Tooling												
GFE												
Award Fees												
Subtotal T&E			0.000	0.000		0.000		2.816		Continuing	Continuing	
Remarks:												
Contractor Engineering Support												
Government Engineering Support												
Program Management Support												
Travel												
Transportation												
SBIR Assessment												
Subtotal Management			0.000	0.000		0.000		0.000		Continuing	Continuing	
Remarks:												
Total Cost			0.000	0.000		0.000		34.896		Continuing	Continuing	
Remarks:												

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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-04												PE 0603512N - Carrier Systems Development												PU 4006 - CVN 21 Follow Ship											
Fiscal Year	2005				2006				2007				2008				2009				2010				2011										
	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			SFR △		PDR △				CDR △	DAB △	PR																								
Propulsion Plant																																			
EMALS	SRR ▲	SFR ▲			PDR ▲	CDR 1 △	CDR 2 △		TRR 1 △	TRR 2 △						LRIP △																			
DBR Radar Suite	CDR △																																		
Advanced Arresting Gear		MS B ▲			CDR-1 △	CDR-2 △			TRR 1 △						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		◇					◇	OT B5		◇							
Contract Milestones																																			
IPPD Contract																																			
CP Contract									Contract Award △																										
Construction Contract												Contract Award △																							
Full Funding (SCN)													X																						

R-1 SHOPPING LIST - Item No. 38

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

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Exhibit R-2, RD TEN Budget Item Justification
(Exhibit R-2, page 35 of 37)

CLASSIFICATION:

UNCLASSIFIED

Exhibit R-4a, Schedule Detail							DATE:
APPROPRIATION/BUDGET ACTIVITY							February 2006
RDT&E, N / BA-04		PROGRAM ELEMENT				PROJECT NUMBER AND NAME	
		PE 0603512N - Carrier Systems Development				PU 4006 - CVN 21 Follow Ship	
Schedule Profile	FY05	FY06	FY07	FY08	FY09	FY10	FY11
Developmental Tests DT A-2							
Advanced Arresting Gear SRR							
EMALS SDD Phase Initiate							
Dual Band Radar PDR							
CVN 21 Milestone B							
CVN 21 SRR							
Construction Preparation Contract Award			2Q				
Advanced Arresting Gear PDR							
EMALS SRR	1Q						
Developmental Tests DT A-2	1-4Q						
Dual Band Radar CDR	1Q						
Advanced Arresting Gear Milestone B	2Q						
Operational Tests OT-B1	2-3Q						
EMALS SFR	2Q						
CVN 21 SFR	3Q						
EMALSP PDR		1Q					
Advanced Arresting Gear CDR 1		2Q					
CVN 21 PDR		1Q					
Developmental Tests DT A-2		1-4Q					
AAG CDR 2		4Q					
EMALS CDR 1		3Q					
EMALS CDR 2		4Q					
Developmental Tests DT-B1			1-4Q				
Operational Tests OT-B2			1-4Q				
CVN 21 CDR			1Q				
EMALS TRR 1(HALT/HCT)			2Q				
CVN 21 DAB PR			2Q				
AAG TRR 1 (IT)			2Q				
CVN 21 Construction Contract Award				1Q			
CVN 21 SCN Full Funding				1Q			
Developmental Tests DT-B1				1-4Q			
Operational Tests OT-B3				1-4Q			
EMALS TRR 2 (DT/OA)			4Q				
EMALS LRIP					1Q		
AAG TRR 2 (IT)					1Q		
Developmental Tests DT-B1					1Q		
Operational Tests OT-B4					1-4Q		
Developmental Tests DT-B2					3-4Q		
Developmental Tests DT-B2						1-4Q	
AAG LRIP						2Q	
Operational Tests OT-B5							1-4Q
Developmental Tests DT-B3							2-4Q

UNCLASSIFIED

 Exhibit R-2, RDTEN Budget Item Justification
 (Exhibit R-2, page 36 of 37)

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: February 2006																																														
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603512N Carrier Systems Development	PROJECT NUMBER AND NAME 9999 Congressional Plus-Ups : VARIOUS																																															
<p>CONGRESSIONAL PLUS-UPS:</p> <table border="1" style="width: 100%; border-collapse: collapse; margin-bottom: 10px;"> <tr> <td style="width: 25%;"></td> <td style="width: 10%; text-align: center;">FY 06</td> <td style="width: 25%;"></td> <td style="width: 25%;"></td> <td style="width: 15%;"></td> </tr> <tr> <td>9515C</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Sentinel Net</td> <td style="text-align: center;">1.000</td> <td></td> <td></td> <td></td> </tr> </table> <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> <p>Sentinel Net provides a low-risk sensor processing method that builds on CV-TSC's Command and Control Suite to yield a harbor defense or Force Protection C2 Capability on board Carriers.</p> </div> <table border="1" style="width: 100%; border-collapse: collapse; margin-bottom: 10px;"> <tr> <td style="width: 25%;"></td> <td style="width: 10%; text-align: center;">FY 06</td> <td style="width: 25%;"></td> <td style="width: 25%;"></td> <td style="width: 15%;"></td> </tr> <tr> <td>9801N</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Quips Integration with CV Tactical Support Center</td> <td style="text-align: center;">1.000</td> <td></td> <td></td> <td></td> </tr> </table> <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> <p>The Quiet Interlude Processing System (QUIPS) will provide an automated data fusion system to detect, track, classify, and neutralize threats in the nearshore environment. QuiPS is state-of-the-art in algorithm development in non plane wave acoustic beamforming to detect and track surface ship and submerged contacts in very shallow water using matched phase matched field processing, as well as the normal plane wave beamformers.</p> </div> <table border="1" style="width: 100%; border-collapse: collapse; margin-bottom: 10px;"> <tr> <td style="width: 25%;"></td> <td style="width: 10%; text-align: center;">FY 06</td> <td style="width: 25%;"></td> <td style="width: 25%;"></td> <td style="width: 15%;"></td> </tr> <tr> <td>9802N</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Ship Security Perimeter Monitoring Using Millimeter</td> <td style="text-align: center;">1.000</td> <td></td> <td></td> <td></td> </tr> </table> <div style="border: 1px solid black; padding: 5px;"> <p>The Perimeter Security Monitoring System will provide a solid state millimeter-wave radar uniquely designed to provide 360-degree Ship Perimeter Protection in Port and Littoral Waters. It will provide AT-FP/Harbor Defense Sensor for Networked Connection, be metadata enabled, man-portable and is meant to move the perimeter outward.</p> </div>						FY 06				9515C					Sentinel Net	1.000					FY 06				9801N					Quips Integration with CV Tactical Support Center	1.000					FY 06				9802N					Ship Security Perimeter Monitoring Using Millimeter	1.000			
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R-1 SHOPPING LIST - Item No.

38

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