CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification						DATE:	
						Februa	ary 2004
APPROPRIATION/BUDGET ACTIVITY				R-1 ITEM NOMEN	ICLATURE	•	-
RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY /	BA-04	1	•	0603512N - Carri	er Systems Devel	opment	_
COST (\$ in Millions)	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Total PE Cost	88.360	156.603	157.479	132.210	79.999	287.609	369.674
9181 - Advanced Battlestation/Decision Support System	3.428	3.560	0.000	0.000	0.000	0.000	0.000
9349 - Aviation Ship Integration Center	0.000	9.691	0.000	0.000	0.000	0.000	0.000
2208 - CVN 21	30.440	101.662	104.465	95.297	49.548	46.921	49.557
4004 - EMALS	44.679	38.660	51.094	35.083	28.634	47.318	2.539
4005 - Smart Carrier	1.942	1.860	1.843	1.830	1.817	1.804	1.799
4006 - CVN 21 Follow Ship	0.000	0.000	0.000	0.000	0.000	191.566	315.779
1723 - CV Launch and Recovery Systems	7.871	1.170	0.077	0.000	0.000	0.000	0.000

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:

- (U) (9181) The Advanced Battlestation/Decision Support System (ABS/DSS) provides a low-risk decision support capability that has great potential for multiple Navy platforms and possible application for other services. Expected benefits include: improved situational awareness, reduced response time in a multiple threat environment, manpower reductions, and reductions in Total Ownership Costs (TOC).
- (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.
- (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.

R-1 SHOPPING LIST - Item No.

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CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification			DATE:	
		T		February 2004
APPROPRIATION/BUDGET ACTIVITY		R-1 ITEM NOME		
RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY /	BA-04	0603512N - Car	rrier Systems Development	
 (U) (4004) - Development of an advanced technology aircraft launch system in su the current steam catapult on CVN 21 Class ships and will also be retrofit on existin increased operational availability and reduced operator and maintainer workload. 				
 (U) (4005) - The Smart Carrier Demonstration and Validation program exploits avashipboard equipment. The program provides the system architecture, requirements shipboard testing of new technologies to improve shipboard operations and to reduce 	s/specification developmen	t, technology selection, software d	development (including softwa	
 - (U) (4006) - Development of aircraft carrier specific technologies, the infusion of the currently feasible. This project also funds the Contract Design efforts for the CVN 2 		nto existing and future aircraft carri	iers and the potential realization	on of subsystem design capabilities not
- (U) (1723) Development of all systems required to provide approach and landin safety, greater sortie generation rates, enhanced aircraft boarding rates, reduced m				om ships. Payoffs include increased

R-1 SHOPPING LIST - Item No. 38

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification	on						DATE:	
							Februa	ry 2004
APPROPRIATION/BUDGET ACTIVITY					PROJECT NUMB	ER AND NAME		
RDT&E, N / BA-04	PE 0603512N - Ca	rrier Systems Dev	elopment		PU 9181 - Advan	ced Battlestation/	Decision Support	System
COST (\$ in Millions)	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	
Project Cost	3.428	3.560	0.000	0.000	0.000	0.000	0.000	
RDT&E Articles Qty								

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

The Advanced Battlestation/Decision Support System (ABS/DSS) provides a low-risk decision support capability that has great potential for multiple Navy platforms, and possible application for other services. Expected benefits include: improved situational awareness, reduced response time in a multiple threat environment, manpower reductions, and reductions in Total Ownership Costs (TOC).

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification	1		DATE:
			February 2004
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND N	ÂME
RDT&E, N / BA-04	PE 0603512N - Carrier Systems Development	PU 9181 - Advanced Battle	station/Decision Support System

B. Accomplishments/Planned Program (Cont.)

	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	3.428	3.560	0.000
RDT&E Articles Quantity			

- (U) Advanced Battlestation/Decision Support System (ABS/DSS) FY03 accomplishments include the addition of new functionality in the baseline ABS/DSS system based on inputs from USS CARL VINSON (CVN-70) staff and USS ABRAHAM LINCOLN (CVN-72) DESRON staff. Technical accomplishments also include Combat System test and certification at the Integrated Combat System Test Facility (ICSTF), San Diego, CA and approval to install in CV-67 by NAVSEASYSCOM 062 and PEO Carriers. FY04 planned accomplishments include enhancing ABS/DSS capability based on Fleet operator feedback from multiple Fleet demonstrations. ABS/DSS will be fully integrated into the Aircraft Carrier Tactical Support Center (CV-TSC) and Integrated Warfare Commander Cell (IWCC). Fleet demonstrations/requirements working groups are planned for USS JOHN F. KENNEDY (CV-67) and USS ABRAHAM LINCOLN (CVN-72). Potential exercise participation includes RIMPAC '04 with CVN-74.

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CLASSIFICATION:

EXHIBIT R-2a, F	RDT&E Project Justificat	ion				DATE:	Echruary 2004
APPROPRIATION/F	BUDGET ACTIVITY	PROGRAM ELEMENT NUM	IRER AND NAME		PROJECT NUMBER A	ND NAME	February 2004
RDT&E, N /	BA 04	PE 0603512N - Carrier Sys					sion Support System
KDIQL, N /	DA 04	FE 0003312N - Carrier Sys	tems bevelopment		FO 9161 - Auvanceu i	SattleStation/Deci	sion support system
C. PROGRAM	I CHANGE SUMMARY:						
Funding:			FY 2003	FY 2004	FY 2005		
	President's Budget:		3.521	0.000	0.000		
	esident's Budget		3.428	3.560	0.000		
Total Adjı	ustments		-0.093	3.560	0.000		
0							
Sur	mmary of Adjustments SBIR		-0.093				
	Congressional Add		-0.093	3.600			
	Congressional Undistribut	tad Adjustments		-0.040			
	Congressional Ondistribu	ted Adjustitionis		-0.040			
			-0.093	3.560	0.000		
			0.000	0.000	0.000		
Schedule	·						
		EVOA: EVOA Control Annual COEVOA					
FY03	Contract Award Q4F Y03/Q1	FY04; FY04 Contract Award Q3FY04.					
Technica	l·						
Not A	Applicable.						

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E F	DATE:									
									Februar	y 2004
APPROPRIATION/BUDGET A	ACTIVITY	PROGRAM E	ELEMENT NUM	BER AND NAI	ME	PROJECT N	IUMBER AND	NAME		
RDT&E, N / BA-04 PE 0603512N - Carrier Systems Development PU 9181 - Advanced Ba							dvanced Batt	lestation/De	cision Suppo	ort System
D. OTHER PROGRAM	I FUNDING SUMMARY:					•			_	Taral
Line Item No. & Name	<u>e</u>	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total <u>Cost</u>
SCN: 200100 - Ca	rrier Replacement Program	483.663	1,177.242	626.084	611.940	2,968.918	3,250.918	1,568.616	Cont.	Cont.
	N - Ship Contract Design, Live Fire T&E N - Advanced Nuclear Power Systems	196.697 211.314	134.061 198.999	130.908 169.733	110.862 168.955	97.160 171.262	51.263 161.601	22.961 153.581	Cont. Cont.	Cont.

E. ACQUISITION STRATEGY:

This procurement is an SBIR transition and will be awarded on a sole source basis to 21st Century Systems, Inc., Omaha, Nebraska.

F. MAJOR PERFORMERS:

NUWC Keyport, WA 21st Century Systems, Inc., Omaha, NE, Development, (FY03 Award)

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CLASSIFICATION:

Exhibit P. 2 Cost An	alveie (page	1)							DATE:		February 20	0.4	
Exhibit R-3 Cost Ana APPROPRIATION/BUD	aiysis (page	1)	IDDOODAM	- FACENT			IDDO IDOT N	LIMBED AND N	1		rebluary 20	U 4	
APPROPRIATION/BUD	GET ACTIVITY	Y	PROGRAM I					UMBER AND N					
RDT&E, N /	BA-04		PE 0603512	N - Carrier Syst	ems Develop		PU 9181 - A	dvanced Battle	station/Decisi	on Support S	ystem		
Cost Categories	С	Contract	Performing	Total		FY 03		FY 04		FY 05			
	N	1ethod	Activity &	PY s	FY 03	Award	FY 04	Award	FY 05	Award	Cost to	Total	Target Value
	&	Туре	Location	Cost	Cost	Date	Cost	Date	Cost	Date	Complete	Cost	of Contract
Product Development Advanced													
Battlestation/Decision													
Support System			NSWC Dahlgren	0.000		10/03						3.384	
			NUWC Keyport, WA	0.000	0.000		3.560	03/04-06/04				3.560	
	V	arious/	Miscellaneous	0.000	0.044	01/04-06/04						0.044	
							-						
							-						
Subtotal Product Deve	lopment			0	3.428		3.560		0.000			6.988	

Remarks: Contract Award 4th Quarter FY03

CLASSIFICATION:

										DATE:				
Exhibit R-3 Cost Ar	alysis (pag	je 2)										February 20	04	
APPROPRIATION/BUI	OGET ACTIV	ITY		PROGRAM E				PROJECT N						
RDT&E, N /	BA-04			PE 0603512N	l - Carrier Syst	ems Develop		PU 9181 - A	dvanced Ba	ttlestation/Decis	ion Support S	System		
Cost Categories		Contract	Performing		Total		FY 03		FY 04		FY 05			
		Method	Activity &			FY 03	Award	FY 04	Award	FY 05	Award	Cost to	Total	Target Value
		& Type	Location		Cost	Cost	Date	Cost	Date	Cost	Date	Complete	Cost	of Contract
Developmental Test &		-									-			
Operational Test & Eva														
Live Fire Test & Evalua	ition													
Test Assets														
Tooling														
GFE														
Award Fees														
Subtotal T&E					0.000	0.00	0	0.00	0	0.000)	0.000	0.000	
Contractor Engineering	Support		1		1	1			1			1	1	
Government Engineering											+			
Program Management											+			
Travel	Зирроп													
Transportation														
SBIR Assessment											+			
Subtotal Management					0.000	0.00	0	0.00	n	0.000)	0.000	0.000	
Remarks:														
Total Cost					0.000	3.42	8	3.56	0	0.000		0.000	6.988	
Remarks:														

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CLASSIFICATION:

		3	4	20			PROG PE 060	03512	N - Ca														D NAM		alala:	. Sunr	ort St	otom			
:		3	4				PE 060			rrier S	System	s Deve	lopm	ent					DII 04	Q1 _ A-		d Da				Sun	ort St	otom			
		3	4			1		200	04										PU 91	01 - AC	ivance	o Dai	attlestation/Decision Support System								
1	2	3	4	1 2					2002 2003 2004 2005 2006		2003 2004 2005 2006)5			200	06			200	7			200	08			200)9	
					3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	1 2 3 4			1	2	3	4	1	2	3	4	
									PDR			$\sqrt{\log}$	0																		
								CV-6	7 CV	N-72																					
			-	OT C1							DT C2																				
				71101											\Rightarrow	•															
						Cor	tract A	ward	Cont	ract A	ward																				
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					DTIC1	DTIC1		DTIC1 🔷	DTIC1	DTIC1	DTIC1 CV-67 CVN-72 Contract Award Contract A	DTIC1 CV-67 CVN-72 DT C2 Contract Award Contract Award	CV-67 CVN-72 DTIC1 DT C2 Contract Award Contract Award	DTIC1 CV-67 CVN-72 DT C2 Contract Award Contract Award	CV-67 CVN-72 DTIC1 DT C2 Contract Award Contract Award	CV-67 CVN-72 DTIC1 DT C2 Contract Award Contract Award X	DTIC1 CV-67 CVN-72 DT C2 Contract Award Contract Award X	CV-67 CVN-72 DT C1 Contract Award Contract Award X	CV-67 CVN-72 DT C1 Contract Award Contract Award X	CV-67 CVN-72 DTC1 Cortract Award Contract Award X	DTIC1 Contract Award Contract Award X	CV-67 CMN-72 DTIC1 DT C2 Contract Award Contract Award X	CV-67 CVN-72 DTC1 DT C2 Contract Award Contract Award X	CV-67 CVN-72 DT C1 DT C2 Contract Award Contract Award X	CV-6r CVN-72 DTC1 DTC2 Contract Award Contract Award X	CV-67 CVN-72 DTC1 DT C2 Contract Award Contract Award X	CV-6r CVN-72 DT C2 Contract Award Contract Award X	CV-6r CVN-72 DTC1 DTC2 Contract Award Contract Award	CV-67 CVN-72 DTC1 DTC2 Contract Award X	CV-67 CVN-72 DTC1 DTC2 Contract Award Contract Award X	

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

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification	on						DATE:	
ADDDODDIATION/DUDGET ACTIVITY					DDO IECT NILIMD	ED AND NAME	Februa	ary 2004
APPROPRIATION/BUDGET ACTIVITY			_		PROJECT NUMB		_	
RDT&E, N / BA-04	PE 0603512N - Ca	rrier Systems Deve	elopment		PU 9349 Aviation	Ship Integration	Center	T
COST (\$ in Millions)	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	
Project Cost	0.000	9.691	0.000	0.000	0.000	0.000	0.000	
RDT&E Articles Qty								

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

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.

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE:	
				February 2004
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND N	AME	
RDT&E, N / BA-04	PE 0603512N - Carrier Systems Development	PU 9349 Aviation Ship Inte	gration Center	

B. Accomplishments/Planned Program (Cont.)

	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.000	9.691	0.000
RDT&E Articles Quantity			

- (U) Aviation Ship Integration Center - Develop modeling and simulation capability through integration of existing M&S assets with new M&S Systems. Investigate and develop connectivity to various government and industry M&S activities. Relocate the existing M&S facility to the VASCIC Research Center. Build a support structure in the Center, procure hardware and software, and integrate various commercial and government M&S software programs. Develop and implement an Aircraft Carrier Compartment Flexibility/Modularity Program and laboratory to provide an evaluation environment for investigating, prototyping, testing and qualifying new compartment outfitting techniques and products focusing on reducing the construction cost and schedule impacts associated with the installation of electronic systems during new construction and improving fleet maintenance and modernization after delivery. Investigate existing commercial and military technologies that have the potential to simplify and accelerate the equipment installation process during ship construction and technology refresh/reconfiguration updates.

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CLASSIFICATION:

PROPRIATION/BUDGET ACTIVITY PROGRAM ELEMENT NUMBER AND NAME PROJECT NUMBER AND NAME	XHIBIT R-2a, I	RDT&E Project Justification					DATE:	February 2004
C. PROGRAM CHANGE SUMMARY: Funding:	PPROPRIATION/	BUDGET ACTIVITY	PROGRAM ELEMENT	NUMBER AND NAME		PROJECT NUMBER AN	ND NAME	1 051 441 y 200 -
Funding:	DT&E, N /	BA 04	PE 0603512N - Carrier	Systems Development		PU 9349 Aviation Ship	Integration Center	
Previous President's Budget:	C. PROGRAM	I CHANGE SUMMARY:						
Previous President's Budget:	Funding			FY 2003	FY 2004	FY 2005		
FV05 President's Budget Total Adjustments Summary of Adjustments Congressional Indistributed Adjustments Congressional Undistributed Adjustments 0 9.691 0 9.691 0 9.691 Technical:								
Total Adjustments Summary of Adjustments Congressional Add Congressional Undistributed Adjustments 0 9.800 0 9.691 0 Schedule: Not Applicable Technical:								
Congressional Add Congressional Undistributed Adjustments 0 9.691 0 Schedule: Not Applicable Technical:					9.691	0.000		
Congressional Add Congressional Undistributed Adjustments 0 9.691 0 Schedule: Not Applicable Technical:		6 A B						
Congressional Undistributed Adjustments -0.109 0 9.691 0 Schedule: Not Applicable Technical:	Su	mmary of Adjustments Congressional Add			9 800			
O 9.691 O Schedule: Not Applicable Technical:			Adjustments					
Schedule: Not Applicable Technical:		Congressional Ondistributed	Adjustifierits		-0.109			
Schedule: Not Applicable Technical:								
Not Applicable Technical:				0	9.691	0		
Not Applicable Technical:								
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Not Applicable Technical:	Cobodul	A.						
Technical:								
	Not A	pplicable						
	Technica	al:						
Not Applicable.								
	Not a	аррисавіе.						

R-1 SHOPPING LIST - Item No. 38

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification	HBIT R-2a, RDT&E Project Justification									
								Februar	y 2004	
APPROPRIATION/BUDGET ACTIVITY	PROGRAM E	LEMENT NUME	BER AND NAI	UMBER AND	NAME					
RDT&E, N / BA-04	PE 0603512N	I - Carrier Syste	ems Develop	ment	PU 9349 Avi	ation Ship Int	tegration Ce	nter		
D. OTHER PROGRAM FUNDING SUMMARY:								.	Tetal	
Line Item No. & Name	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To <u>Complete</u>	Total <u>Cost</u>	
SCN: 200100 - Carrier Replacement Program	483.663	1,177.242	626.084	611.940	2,968.918	3,250.918	1,568.616	Cont.	Cont.	
RDT&E: 0604567N - Ship Contract Design, Live Fire T&E 0603570N - Advanced Nuclear Power Systems	196.697 211.314	134.061 198.999	130.908 169.733	110.862 168.955	97.160 171.262	51.263 161.601	22.961 153.581	Cont. Cont.	Cont. Cont.	

E. ACQUISITION STRATEGY:

The CVN 21 will be the first ship of the new 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 21 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

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CLASSIFICATION:

Exhibit R-3 Cost Analysis (pa	ige 1)									February	2004	
APPROPRIATION/BUDGET ACTI	√ITY		PROGRAM ELEMENT				NUMBER AND NAM					
RDT&E, N / BA-04			PE 0603512N - Carrier S	stems Develo	pment	PU 9349 Av	iation Ship Integra	tion Center				
Cost Categories	Contract	Performing	Total		FY 03		FY 04		FY 05			
	Method	Activity &	PY s	FY 03	Award	FY 04	Award	FY 05	Award	Cost to	Total	Target Value
	& Type	Location	Cost	Cost	Date	Cost	Date	Cost	Date	Complete	Cost	of Contract
Product Development												
Aviation Ship Integration Center	CPAF	NGNN, VA	0.0	0.000		9.691	12/03-05/04					9.691
						+						
Subtotal Product Development				0.000		9.691		0.000				9.691
Remarks: Contract Award 4th Qua	arter FY03											

R-1 SHOPPING LIST - Item No. 38

CLASSIFICATION:

										DATE:				
Exhibit R-3 Cost A	Analysis (pag	e 2)										February 200)4	
APPROPRIATION/BI	JDGET ACTIVI	TY		PROGRAM E				PROJECT N						
RDT&E, N /	BA-04			PE 0603512N	- Carrier Syst	tems Develop	ment	PU 9349 Av		ntegration Cente	r			
Cost Categories		Contract Method & Type	Performing Activity & Location		Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test &	& Evaluation											·		
Operational Test & Ev														
Live Fire Test & Evalu	uation													
Test Assets														
Tooling														
GFE														
Award Fees														
Subtotal T&E					0.000	0.000)	0.00	0	0.000)	0.000	0.000	
Contractor Engineerir Government Enginee														
Program Managemen														
Travel														
Transportation														
SBIR Assessment														
Subtotal Manageme	nt				0.000	0.000)	0.00	0	0.000)	0.000	0.000	
Remarks:														
Total Cost					0.000	0.000		9.69	1	0.000		0.000	9.691	
Remarks:					•	•		•	•	•				

R-1 SHOPPING LIST - Item No. 38

CLASSIFICATION:

EXHIBIT R4, Schedule																									DATE		Fe	ebrua	ry 20	04		
APPROPRIATION/BUDGET RDT&E, N /	ACTIVIT' BA-04												UMBE System												ID NAN Integra		enter					
Fiscal Year		200)2			200)3			200	04			200	05			20	06			200	07			20	08			200)9	
	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 B		PDR				CDR	DAB	PR													
Propulsion Plant		j																														
EMALS					PDRR					\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	lor Do	un Co	h at	S	DD													Syst	em Ma	nufact	ure	
DBR Radar Suite										PD		VII SE	CDR																			
Advanced Arresting Gear							MS _	A S	RR	P Z	DR M	S B			<u> </u>	DR	CDR															
Test & Evaluation Milestones Development Test					DT	A1								DT	A2					\ \					DT	B1			<u> </u>		DT	B2
Operational Test		♦												ОТ	B1	\			<		ОТ	B2	\Rightarrow		<u> </u>	ОТ	В3	>	' {	ОТ	B4	
Contract Milestones																																
PPD Contract CP Contract Construction Contract									Co	ontract	Award									Con	tract A	ward										
Full Funding (SCN)		\int					_														Х											

 $^{^{\}star}$ Not required for Budget Activities 1, 2, 3, and 6

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification	on						DATE: Februa	ary 2004
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-04								•
COST (\$ in Millions)	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	
Project Cost	30.440	101.662	104.465	95.297	49.548	46.921	49.557	
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 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.

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE:	
				February 2004
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND N	IAME	
RDT&E, N / BA-04	PE 0603512N - Carrier Systems Development	PU 2208 - CVN 21		

B. Accomplishments/Planned Program

	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	20.900	21.900	13.400
RDT&E Articles Quantity			

- (U) Non-Nuclear Propulsion Plant Development - Complete fabrication of prototype MTG and detailed design. Develop prototype qualification test plans. Initiate and complete MTG prototype qualification testing and shock test. Prepare for post-shock steam testing and prototype disassembly and inspection.

Continue development of testing requirements and the identification and evaluation of testing capabilities. Continue development of inputs to the integrated product model.

Continue prototyping and implementation of automated workflow for construction deliverables. Continue to integrate analysis and other required functions into product model design. Continue development of mechanical and electrical systems that interface with the propulsion plant.

	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	9.540	73.002	85.365
RDT&E Articles Quantity			

- (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 are not limited to: Advanced Weapons Elevators technologies to increase throughput and improve survivability; Heavy Underway Replenishment technologies to increase individual payload limits and transfer rates per station per hour; Improved Material and Weapons Handling Arrangements and Equipment Modifications to improve the flow of material and weapons while simultaneously reducing required manpower; Improved Survivability technologies; Warfare Systems design; and an Improved/Enlarged Flight Deck to improve aircraft spotting and movement and to incorporate the Advanced Arresting Gear.

R-1 SHOPPING LIST - Item No. 38

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification				DATE:
				February 2004
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUM	IBER AND NAME	PROJECT NUMBER AND N	AME
RDT&E, N / BA-04	PE 0603512N - Carrier Sys	tems Development	PU 2208 - CVN 21	
B. Accomplishments/Planned Program (Cont.)				
	EV 02	EV 04	EV 05	

Accomplishments/Effort/Subtotal Cost	0.000	6.760	5.700
RDT&E Articles Quantity			
	•	•	-

- (U) CVN 21 - Test & Evaluation - Determine specific developmental test requirements (DT) and related modeling and simulation and conduct actual test events including Large Test Asset. DT-A2 events will be based on CVN 21 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 FY07 construction contract award). Furthermore, the NGNN T&E IPT will begin to plan and execute DT-A2 events to demonstrate the CVN 21 concepts meet required capabilities.

R-1 SHOPPING LIST - Item No. 38

CLASSIFICATION:

XHIBIT R-2a, F	RDT&E Project Justification	า				DATE:	
							February 2004
	BUDGET ACTIVITY	PROGRAM ELEMENT	NUMBER AND NAME	P	ROJECT NUMBER A	ND NAME	
OT&E, N /	BA 04	PE 0603512N - Carrie	r Systems Development	P	U 2208 - CVN 21		
C. PROGRAM	M CHANGE SUMMARY:						
Funding:			FY 2003	FY 2004	FY 2005		
Previous	President's Budget:		52.895	102.806	108.874		
FY05 Pro	esident's Budget		30.440	101.662	104.465		
Total Ad	justments		-22.455	-1.144	-4.409		
Su	mmary of Adjustments						
	Technical Adjustment		-21.300				
	Reprogrammings				-3.497		
	SBIR		-0.834				
	Congressional Undistributed	d Adjustments		-1.144			
	PBD 604 Inflation Adjustmen				-0.338		
	Navy Working Capital Fund				-0.574		
	Miscellaneous Adjustments	rtato riajuotinonio	-0.321		0.07		
	Subtotal		-22.455	-1.144	-4.409		
Schedule							
The (CVN 21 Basic Construction cont	ract will be awarded in FY07 with o	lelivery in FY14. Funding ir	this R&D pr	oject supports this sch	nedule.	
Technica	al:						
Not	Applicable						
INUL /	ημηισανίε						
		D. (I SHOPPING LIST - Ite		8		20 of 46

R-1 SHOPPING LIST - Item No. 38

CLASSIFICATION:

EXHIBIT R-2a, RDT&E	Project Justification							DATE:				
									February	y 2004		
APPROPRIATION/BUDGET	FACTIVITY	PROGRAM	I ELEMENT N	IUMBER AND I	NAME	PROJECT I	NUMBER AN	D NAME				
RDT&E, N /	&E, N / BA-04			Systems Devel	opment	PU 2208 - 0	VN 21					
D. OTHER PROGRA	AM FUNDING SUMMARY:											
Line Item No. & Na	<u>ame</u>	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To <u>Complete</u>	Total <u>Cost</u>		
SCN: 200100 - 0	Carrier Replacement Program	483.663	1,177.242	626.084	611.940	2,968.918	3,250.918	1,568.616	Cont.	Cont.		
	77N - Ship Contract Design, Live Fire T&E 70N - Advanced Nuclear Power Systems	196.697 211.314	134.061 198.999	130.908 169.733	110.862 168.955	97.160 171.262	51.263 161.601	22.961 153.581	Cont. Cont.	Cont. Cont.		

E. ACQUISITION STRATEGY:

The CVN 21 will be the first ship of the new 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 21 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.

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CLASSIFICATION:

5 1 11 11 D 0 0 1 A 1 1 1 1	43								DATE:				
Exhibit R-3 Cost Analysis (pa APPROPRIATION/BUDGET ACTIV RDT&E, N / BA-04	ge 1) /ITY		PROGRAM ELE PE 0603512N -		tems Develor	ment	PROJECT N	UMBER AND N	AME		February 20	004	
Cost Categories	Contract	Performing		otal		FY 03		FY 04		FY 05			
		Activity &	F	PY s	FY 03	Award	FY 04	Award	FY 05	Award	Cost to	Total	Target Valu
	& Type	Location	(Cost	Cost	Date	Cost	Date	Cost	Date	Complete	Cost	of Contract
Product Development												0.000	
Propulsion Plant Development	SS,CPFF	BETTIS, PA		71.627								71.627	71.627
	CPFF	NGNN, VA		101.547	18.800	11/02-01/03	20.547	11/03	12.864	11/04		153.758	153.758
<u> </u>	Various	Miscellaneous		6.962	2.100	11/02-01/03	1.353	11/03	0.536	11/04	Continuing	Continuing	10.474
Advanced Design & Development	CPAF	NGNN		11.717	1.409	11/02-05/03	29.985	11/03	40.000	11/04	Continuing	Continuing	
	WX	NSWC Cardero	ock	16.161	2.140	11/02-05/03	21.625	11/03	32.000	11/04	Continuing	Continuing	
	WX	NAWC Lakehui	rst	0.000	1.500	11/02-05/03	1.166	11/03	3.500	11/04	Continuing	Continuing	
	WX	NSWC Dahlgre	n	0.000	1.938	11/02-05/03	0.885	11/03	1.080	11/04	Continuing	Continuing	
	WX	NSWC P. H. SPAWAR		0.000	0.000	11/02-05/03	4.000	11/03	1.000	11/04	Continuing	Continuing	
	PD			0.000	0.715	11/02-05/03	1.177	11/03	0.000		Continuing	Continuing	
	WX	NAWC AD		0.000	0.000	11/02-05/03	2.148	11/03	0.000		Continuing	Continuing	
	WX	SUPSHIP		0.000	1.000	11/02-05/03	0.498	11/03	0.000		Ĭ .	1.000	
		MANTECH		0.000			0.929	11/03-05/04	0.000				
	Various	Miscellaneous		12.285	0.838	11/02-05/03	10.589	11/03	7.785	11/04	Continuing	Continuing	
	1												
													+
													1
Subtotal Product Development				220.299	30.440		94.902		98.765			444.406	

Remarks: Prior Year values for FY98-FY02 for applicable efforts within PU 2208 that were consistent with the purpose were shifted to the Advanced Design and Development category. Prior year values for Aircraft Launch, Recovery and EMALS were shifted in PB04 from PU 2208 to PU 4004 as part of the realignment of Aircraft Carrier funds to more discreet projects. Prior year values for Smart Carrier were shifted in PB04 from PU 2208 to PU 4005 as part of the realignment of Aircraft Carrier funds to more discreet projects.

R-1 SHOPPING LIST - Item No.

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page	ne 2)								DATE:		February 200	14	
APPROPRIATION/BUDGET ACTIV	/ITY		PROGRAM EI	FMFNT			PROJECT NU	IMBER AND N	AMF		1 Columny 200	, -	
RDT&E, N / BA-04			PE 0603512N		ems Developr	nent	PU 2208 - CV		<u>-</u>				
Cost Categories	Contract Method & Type	Performing Activity & Location	•	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	7,1										, , , , , ,		
CVN 21 Class													
	CPAF	NGNN		0.000	0.000		0.990	01/04-03/04	2.650	11/04	Continuing	Continuing	
	WX	NSWC Carde	rock	0.000	0.000		1.379	01/04-03/04	0.000		Continuing	Continuing	
	WX	NSWC Dahlg		0.000	0.000		0.674		0.000		Continuing	Continuing	1
	WX	NAWC AD		0.000	0.000		0.275		0.000		Continuing	Continuing	
	WX	NUWC Newp	ort	0.000	0.000		0.934		0.000		Continuing	Continuing	
	Various	Miscellaneous	3	0.000	0.000		2.112	11/03-03/04	2.250	11/04	Continuing	Continuing	
Operational Test & Evaluation	WX	COMOPTEVE	FOR	0.000	0.000		0.396	01/04	0.800	11/04	Continuing	Continuing	
Live Fire Test & Evaluation												•	
Test Assets													
Tooling													
GFE													
Award Fees													
Subtotal T&E				0.000	0.000		6.760		5.700		0.000	12.460)
Remarks:	1	1		.	Γ			Γ	T	T	1	ı	T
Contractor Engineering Support		1											
Government Engineering Support		1											
Program Management Support													
Travel													
Transportation CDID Assessment													
SBIR Assessment		1		0.000	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				220.299	30.440		101.662		104.465		0.000	456.866	;
Remarks:													
					DING LICT		20			00 (10			

CLASSIFICATION:

EXHIBIT R4, Schedule																									DATI		F	ebrua	ary 20	004		
APPROPRIATION/BUDGE RDT&E, N /	T ACTIVIT BA-0												UMBE System								PROJ PU 22				ID NAI	ИE						
Fiscal Year		200	02			200)3			200	04			200	05			20	06			20	07			20	08			200	09	
	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 B		PDR				CDR	DAB	PR													
Propulsion Plant																																
EMALS				F	PDRR										SDD													Sys	tem Ma	anufact	ure	
DBR Radar Suite										PD	lor Dov	vn Se	cDR																			
Advanced Arresting Gear							MS _	A S	RR _	P 	DR M	S B				DR	CDR															
Test & Evaluation Milestones Development Test					DT	A1		\ /						DT	A2					_					Dī	· B1			,		DT	B2
Operational Test		♦ OT A											<	ОТ	B1	>			<		ОТ	B2	\Rightarrow	·	>	ОТ	B3	>	`	ОТ	B4	
Contract Milestones IPPD Contract											•																					
CP Contract Construction Contract										ntract	Award									Cor	tract A	ward										
Full Funding (SCN)																					х											
	1			<u> </u>								R-1	SHO	PPIN	G LIS	T - It	em N	0.	38			1	1	1	- :	24 of 4	6					

 $^{^{\}star}$ Not required for Budget Activities 1, 2, 3, and 6

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE:	
							Februa	ry 2004
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEM	ENT NUMBER AN	D NAME		PROJECT NUMBE	ER AND NAME		
RDT&E, N / BA-04	PE 0603512N - Ca	rrier Systems De	velopment		PU 4004 - EMALS	;		
COST (\$ in Millions)	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	
Project Cost	44.679	38.660	51.094	35.083	28.634	47.318	2.539	
RDT&E Articles Qty								

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

This project provides for the development of an advanced technology aircraft launch system in support of the CVN 21 design and construction schedule. The Electro Magnetic Aircraft Launch System (EMALS) will replace the current steam catapult on CVN 21 and follow-on 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.

R-1 SHOPPING LIST - Item No.

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE:	
				February 2004
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND N	IAME	
RDT&E, N / BA-04	PE 0603512N - Carrier Systems Development	PU 4004 - EMALS		

B. Accomplishments/Planned Program

	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	44.679	38.660	51.094
RDT&E Articles Quantity			

-(U) EMALS -

FY-03: Continue and complete EMALS Program Definition and Risk Reduction phase. Complete prototype test facility construction. Complete full scale EMALS system manufacture, subsystem integration, and system installation at NAVAIR Lakehurst. Conduct installation checkout and commissioning tests. Conduct full scale, full power, half-length EMALS demonstration testing and technical evaluation using deadloads. Continue CVN 21 integration development. Provide management, systems engineering, test and ship integration support.

FY-04: Complete full scale, full power, half-length EMALS demonstration testing and technical evaluation using deadloads. Analyze test data, proposed contractor production system configurations, and program proposals. Select contractor for and begin System Development and Demonstration phase. Conduct Systems Requirements review. Initiate production design effort. Conduct follow on development testing. Conduct Preliminary Design Review. Continue CVN 21 integration development. Provide management, systems engineering, test, and ship integration support.

FY-05: Continue System Development and Demonstration phase. Complete Critical Design Reviews and initiate manufacture of production representative system for Technical Evaluation and Operational assessment. Continue CVN 21 integration development. Provide management, systems engineering, test, and ship integration support.

R-1 SHOPPING LIST - Item No. 38

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification					DATE:	
ADDRODDIATION (DUDOFT ACTIVITY)	IDDO OD AM EL EMENT			DD0 1507 111 14D5D 41		February 2004
APPROPRIATION/BUDGET ACTIVITY		NUMBER AND NAME		PROJECT NUMBER AN	D NAME	
RDT&E, N / BA-04	PE 0603512N - Carrie	r Systems Development		PU 4004 - EMALS		
C. PROGRAM CHANGE SUMMARY:						
Funding:		FY 2003	FY 2004	FY 2005		
Previous President's Budget:		45.366	39.095	51.249		
FY05 President's Budget		44.679	38.660	51.094		
Total Adjustments		-0.687	-0.435	-0.155		
Summary of Adjustments						
SBIR		-0.988				
Congressional Undistributed	d Adjustments	0.000	-0.435			
PBD 604 Inflation Adjustme	ents			-0.165		
Navy Working Capital Fund				0.010		
Miscellaneous	,	0.301				
Subtotal		-0.687	-0.435	-0.155		
Remarks:						
Schedule:						
Not Applicable.						
T. 1 3 4						
Technical:						
Not Applicable						
	D.4	SHOPPING LIST - Item No		38		27 of 46

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE:				
·								Februar	y 2004		
APPROPRIATION/BUDGET ACTIVITY	PROGRAM	/ ELEMENT	NUMBER ANI	D NAME	PROJECT N	NUMBER AN	D NAME				
RDT&E, N / BA-04	PE 0603512	2N - Carrier Sy	stems Develo	pment	PU 4004 - E	MALS	S				
D. OTHER PROGRAM FUNDING SUMMARY:											
D. OTHER PROGRAM I ONDING SUMMART.								To	Total		
Line Item No. & Name	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	Complete	Cost		
SCN: 200100 - Carrier Replacement Program	483.663	1,177.242	626.084	611.940	2,968.918	3,250.918	1,568.616	Cont.	Cont.		
RDT&E: 0604567N - Ship Contract Design, Live Fire T&E	196.697	134.061	130.908	110.862	97.160	51.263	22.961	Cont.	Cont.		
0603570N - Advanced Nuclear Power Systems	211.314	198.999	169.733	168.955	171.262	161.601	153.581	Cont.	Cont.		

E. ACQUISITION STRATEGY:

The CVN 21 will be the first ship of the new 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 21 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, Sunnyvale, CA, EMALS Design and Development General Atomics, La Jolla, CA, EMALS Design and Development NAWC, Lakehurst, NJ, EMALS Interface.

R-1 SHOPPING LIST - Item No.

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CLASSIFICATION:

								DATE:				
Exhibit R-3 Cost Analysis (page 1	1)									February 200)4	
APPROPRIATION/BUDGÉT ACTIVITY	/	PROGRAM E	LEMENT			PROJECT NU	IMBER AND I	NAME		•		
RDT&E, N / BA-04		PE 0603512N	l - Carrier Sys	tems Developr	nent	PU 4004 - EM	ALS					
Cost Categories	Contract	Performing	Total		FY 03		FY 04		FY 05			
	Method	Activity &	PY s	FY 03	Award	FY 04	Award	FY 05	Award	Cost to	Total	Target Value
	& Type	Location	Cost	Cost	Date	Cost	Date	Cost	Date	Complete	Cost	of Contract
Product Development												
Aircraft Launch, Recovery & Support	CPAF	Northrop Grumman	53.306	16.900	11/02-06/03	5.549	11/03			Continuing	Continuing	
	CPAF	General Atomics	52.592	22.600	11/02-06/03	6.845	11/03			Continuing	Continuing	
	CPIF	EMALS Contractor TBD				20.000	11/03	46.485	11/04	Continuing	Continuing	
	WX	NAWC Lakehurst, NJ	8.224	2.660	11/02-06/03	3.200	11/03	2.609	11/04	Continuing	Continuing	
	CPAF	NGNN, VA	2.270								2.270	
	Various	Miscellaneous	46.715								46.715	
Subtotal Product Development			163.107	42.160		35.594		49.094		0.000	289.955	;

Remarks: Prior Years were funded under PE 0603512N, PU 42208; however, prior year values have been shifted to PU 44004 in keeping with the CVN 21 Project realignment and in order to reflect program continuity on the PU 44004 Exhibit.

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	

Remarks: Prior Years were funded under PE 0603512N, PU 42208; however, prior year values have been shifted to PU 44004 in keeping with the CVN 21 Project realignment and in order to reflect program continuity on the PU 44004 Exhibit.

R-1 SHOPPING LIST - Item No. 38

CLASSIFICATION:

								DATE:				
Exhibit R-3 Cost Analysis (page :										February 20	004	
APPROPRIATION/BUDGET ACTIVITY	,		PROGRAM ELEMENT				NUMBER AND	NAME				
RDT&E, N / BA-04			PE 0603512N - Carrier Sys	tems Develo	•	PU 4004 - E						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	w .,po	2004	000.	000.	Jaio	000.	Date	000.	Jaio	Complete	0001	0. 00
Aircraft Launch, Recovery & Support	WX	Lakehurst NJ	2.519	2.519	11/02	3.066	11/03	2.000	11/04	Continuing	Continuing	
7 moran Zaanon, noodvor, a Cappon	117	Lantonardina	2.0.0	2.0.0	11,02	0.000	1.,00	2.000	1.,01	- Communing	Continuing	
Subtotal T&E			2.519	2.519		3.066		2.000		0.000	10.104	
	· ·				I		· ·		· ·			·
		1	1			T					1	
Contractor Engineering Support							_					
Government Engineering Support												
Program Management Support												
Travel							_				0.00	0
Labor (Research Personnel)							_	1				
SBIR Assessment							_					
Subtotal Management			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks: Prior Years were funded the PU 44004 Exhibit.	under PE	0603512N, PU 4	12208; however, prior year	values have	been shifted to	PU 44004 in	keeping with t	he CVN 21 Pr	oject realignm	ent and in order to	reflect program o	continuity on
Total Cost	1		165.62	6 44.6	70	38.66	sol .	51.09	24	0.00	0 300.05	ما
Total Cost	1	<u> </u>	100.02	0 ++.0	13	30.00	50	31.03	74	0.00	0 500.05	3
Remarks: FY02 and Prior Years we	ere funded	under PE 0603			T. Itom No.	20			20 of 40			

R-1 SHOPPING LIST - Item No. 38

CLASSIFICATION:

EXHIBIT R4, Schedule																									DATI		F	ebrua	ary 20	004		
APPROPRIATION/BUDGE RDT&E, N /	T ACTIVIT BA-0												UMBE System								PROJ PU 40				ID NAN	ИE						
Fiscal Year		20	02			200)3			200	04			200	05			20	06			20	07			20	08			200	09	
	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 B		PDR				CDR	DAB	PR													
Propulsion Plant																																
EMALS				F	PDRR									S	SDD													Sys	tem Ma	anufact	ure	
DBR Radar Suite										PD	lor Dov	vn Se	cDR																			
Advanced Arresting Gear							MS _	A S	RR _	P Z	DR M	S B				DR	CDR															
Test & Evaluation Milestones Development Test					DT	A1		\ \ \ \ \	<u></u>					DT	A2					<u> </u>					דם	B1				_	DT	B2
Operational Test		♦ OT A											<	ОТ	B1	>			<		ОТ	B2		>	>	ОТ	B3	>	`	ОТ	B4	
Contract Milestones IPPD Contract											A																					
CP Contract Construction Contract										ntract	Award									Cor	tract A	ward										
Full Funding (SCN)																					х											
												R-1	SHO	PPIN	G LIS	T - It	em N	0.	38	1	1		l	1	' ;	31 of 4	6		1			

 $^{^{\}star}$ Not required for Budget Activities 1, 2, 3, and 6

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE:	
							Februa	ry 2004
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEM	ENT NUMBER AN	D NAME		PROJECT NUMBI	ER AND NAME		
RDT&E, N / BA-4	0603512N - Carrie	er Systems Develo	pment		PU 4005 - Smart	Carrier		
COST (\$ in Millions)	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	
Project Cost	1.942	1.860	1.843	1.830	1.817	1.804	1.799	
RDT&E Articles Qty			2					

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 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.

Remarks: Prior Years were funded under PE 0603512N, PU 42208; however, prior year values have been shifted to PU 4005 in keeping with the CVN 21 Project realignment and in order to reflect program continuity on the PU 4005 exhibit.

R-1 SHOPPING LIST - Item No.

- 38

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification	n		DATE:
			February 2004
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND N	AME
RDT&E, N /BA-4	0603512N - Carrier Systems Development	PU 4005 - Smart Carrier	
B. Accomplishments/Planned Program			

	FY 03	FY 04	FY05
Accomplishments/Effort/Subtotal Cost	1.942	1.860	1.843
RDT&E Articles Quantity			

- (U) Smart Carrier - In Fiscal Year 2003, completed software development for and initiated/completed test, evaluation and demonstration/validation of Aviation Fuels (JP-5) Automation and In-Line Fuel Monitoring for Smart Carrier technology insertion on USS ABRAHAM LINCOLN (CVN 72) and USS GEORGE WASHINGTON (CVN 73). Efforts continue in Fiscal Years 2004 and 2005 to identify, evaluate, demonstrate, install, test and measure the effectiveness of revised processes and selected technologies with the highest potential to meet Aircraft Carrier goals for manpower and Total Ownership Cost (TOC) reductions, such as an On-Board Training System for Aviation Fuels Operations, In-Line Fuel Monitoring, and Condition-Based Maintenance.

Remarks: Prior Years were funded under PE 0603512N, PU 42208; however, prior year values have been shifted to PU 4005 in keeping with the CVN 21 Project realignment and in order to reflect program continuity on the PU 4005 exhibit.

R-1 SHOPPING LIST - Item No. 38

CLASSIFICATION:

BIT R-2a, RDT&E Project Justification					DATE:	February 2004
OPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT	T NUMBER AND NAME	F	PROJECT NUMBER	R AND NAME	1 oblidary 2004
&E, N / BA-4	0603512N - Carrier S	ystems Development	F	PU 4005 - Smart Ca	arrier	
C. PROGRAM CHANGE SUMMARY:						
Funding:		FY 2003	FY 2004	FY 2005		
Previous President's Budget:		1.967	1.881	1.880		
FY05 President's Budget		1.942	1.860	1.843		
Total Adjustments		-0.025	-0.021	-0.037		
Summary of Adjustments						
BSO Adjustments		-0.005				
Congressional Undistributed A	djustments		-0.021			
PBD 604 Inflation Adjustments				-0.006		
Navy Working Capital Fund Ra	ite Adjustments			-0.031		
Miscellaneous		-0.020				
Subtotal		-0.025	-0.021	-0.037		
Schedule: Not Applicable						
Technical: Not Applicable						

R-1 SHOPPING LIST - Item No. 38

CLASSIFICATION:

EXHIBIT R-2a, RDT&	E Project Justification							DATE:			
									Februa	ary 2004	
APPROPRIATION/BUDG	ET ACTIVITY	PROGRAM E	LEMENT NUM	BER AND NAM	ΜE	PROJECT NU	IMBER AND N	IAME			
RDT&E, N /	BA-4	0603512N - C	arrier System	s Developmer	nt	PU 4005 - Sm	art Carrier				
D. OTHER PROGI	RAM FUNDING SUMMARY:								To	Total	
Line Item No. & N	<u>Name</u>	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	<u>Complete</u>	Cost	
098100 Items Smart Carrier	Under \$5 million	45.554	6.988	44.946	33.495	33.850	25.277	26.463	26.000	242.573	

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. 3

CLASSIFICATION:

								DATE:				
Exhibit R-3 Cost Analysis (page	ge 1)									February 20	04	
APPROPRIATION/BUDGET ACTIV		PROGRAM E	LEMENT			PROJECT NU	JMBER AND I	NAME				
RDT&E, N / BA-4		0603512N - C	arrier System	s Developmen	t	PU 4005 - Sn	nart Carrier					
Cost Categories	Contract	Performing	Total		FY 03		FY 04		FY 05			
	Method	Activity &	PY s	FY 03	Award	FY 04	Award	FY 05	Award	Cost to	Total	Target Value
	& Type	Location	Cost*	Cost	Date	Cost	Date	Cost	Date	Complete	Cost	of Contract
Primary Hardware Development												
Ancillary Hardware Development												
Component Development												
Ship Integration	WX	NAVSEA, Phil./NAVAIR Lke		0.200	12/02	0.100	11/03	0.100	11/04	0.500	0.900)
Ship Suitability												
Systems Engineering	CPAF	NGNN, VA	0.205								0.205	5
	Various	Miscellaneous	7.978								7.978	3
Training Development												
Licenses												
Tooling												
GFE												
Award Fees												
Subtotal Product Development			8.183	0.200		0.100)	0.100		0.500	9.083	3

Remarks: Prior Years were funded under PE 0603512N, PU 2208; however, prior year values have been shifted to PU 4005 in keeping with the CVN 21 Project realignment and in order to reflect program continuity on the PU 4005 exhibit.

Development Support											0.000	
Software Development	WX	NAVSEA, Phil./NAVAIR Lke		1.042	12/02	0.910	11/03	0.843	11/04	3.250	6.045	
Training Development	WX	NAVSEA, Phil./NAVAIR Lke		0.050	12/02	0.050	11/03	0.080	11/04	0.300	0.480	
Integrated Logistics Support	WX	NAVSEA, Phil./NAVAIR Lke		0.100	12/02	0.150	11/03	0.120	11/04	0.600	0.970	
Configuration Management											0.000	
Technical Data											0.000	
GFE											0.000	
Award Fees											0.000	
Subtotal Support			0.000	1.192		1.110		1.043		4.150	7.495	

Remarks: Prior Years were funded under PE 0603512N, PU 42208; however, prior year values have been shifted to PU 4005 in keeping with the CVN 21 Project realignment and in order to reflect program continuity on the PU 4005 exhibit.

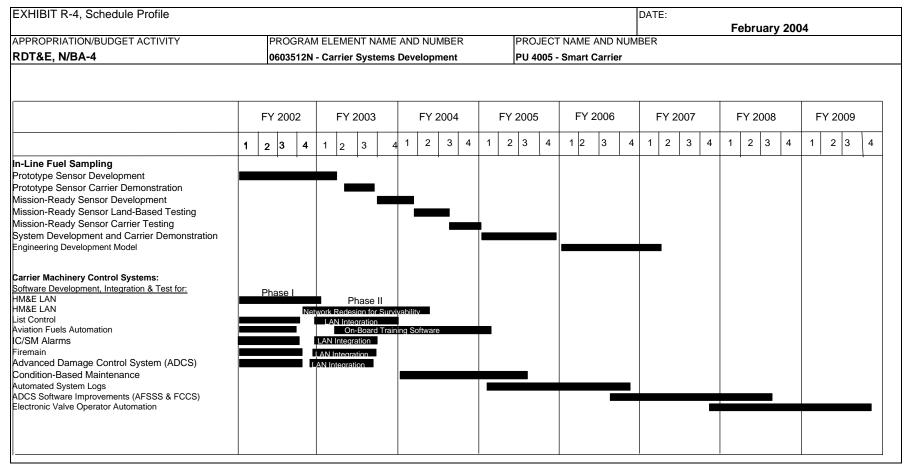
CLASSIFICATION:

								DATE:				
Exhibit R-3 Cost Analysis (February 200)4	
APPROPRIATION/BUDGET AC	TIVITY	PROGRAM				PROJECT N		NAME				
RDT&E, N / BA-4			Carrier System	s Developmen		PU 4005 - Sr		1		1	1	1
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost *	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	n WX	NAVSEA, Phil./NAVAIR Lk	e	0.300	12/02	0.400	11/03	0.450	11/04	1.600	2.750	D
Operational Test & Evaluation												
Live Fire Test & Evaluation												
Test Assets												
Tooling												
GFE												
Award Fees												
Subtotal T&E			0.000	0.300		0.400)	0.450		1.600	2.750)
Contractor Engineering Cuppert				<u> </u>	T	-	T			1	I	
Contractor Engineering Support												
Government Engineering Support												
Program Management Support	WX	NAVSEA, Phil./NAVAIR Lk	е	0.250	12/02	0.250	11/03	0.250	11/04	1.000	1.750)
Travel												
Labor (Research Personnel)			_	1								
SBIR Assessment			0.000	0.050		0.05		2.050		4.000	4.75	
Subtotal Management			0.000	0.250		0.250)	0.250		1.000	1.750)
Remarks: Prior Years were to on the PU 4005 exhibit.	unded under	PE 0603512N, PU 2208; ho	wever, prior ye	ar values have	been shifte	d to PU 4005 ir	ı keeping wit	h the CVN 21 Pr	oject realig	nment and in order	to reflect progran	n continuity
Total Cost			8.183	1.942		1.860		1.843		7.250	21.078	3
	<u>.</u>					•	•					•

R-1 SHOPPING LIST - Item No. 38

CLASSIFICATION:

UNCLASSIFIED



R-1 SHOPPING LIST - Item No.

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

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE:	
							Februa	ry 2004
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEM	ENT NUMBER AN	D NAME		PROJECT NUMBI	ER AND NAME		
RDT&E, N / BA-4	0603512N Carri	er Systems Devel	opment		PU 1723 CV Laur	nch and Recovery	y Systems	
COST (\$ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Project Cost		7.871	1.170	0.077	0.000	0.000	0.000	0.000
RDT&E Articles Qty			2					

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

This project addresses the development of systems providing approach and landing guidance, recovery, service, support, and launch of aircraft operating on or from ships. Payoffs include increased safety, greater sortie generation rates, enhanced aircraft boarding rates, reduced manning, and increased aircraft service life. Specific programs include:

- (U) Advanced Recovey Control (ARC) System: The ARC system development effort will replace the existing control valve and valve actuation control system on the MK7 arresting gear, providing enhanced performance, improved reliability, and restoring operational margins of safety.
- (U) Cost Reduction Effective Improvement Initiative (CREI) Arresting Gear Fairlead Sheaves: This program seeks to replace the arresting gear fairlead drive system sheaves with a more durable product that will have a longer service life, thus decreasing system life cycle costs.
- (U) JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under DEMONSTRATION AND VALIDATION because it develops and integrates hardware for experimental tests related to specific ship or aircraft application.

R-1 SHOPPING LIST - Item No.

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE:
		February 2004
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603512N Carrier Systems Development	PU 1723 CV Launch and Recovery Systems
(U) B. Accomplishments/Planned Program		

- (U) ARC -

 FY 02
 FY 03
 FY 04
 FY 05

 Accomplishments/Effort/Subtotal Cost
 7.664
 1.043

 RDT&E Articles Quantity
 2

Developed ARC System Specification, contract Statement of Work, and Request for Proposal. Conducted source selection process, completed Milestone B review and awarded development contract. Conducted testing to characterize existing Constant Run Out Valve (CROV) performance in support of ARC control system development. Completed System Requirements Review, Preliminary Design Review, Critical Design Review and fabricated/delivered two (2) test articles. Conducted developmental testing of test articles on arresting gear. Conducted development testing using deadloads at the Jet Car Track Site (JCTS) and aircraft at the Runway Arrested Landing Site (RALS). Conducted rapid cycle reliability testing and environmental testing. Complete Tech Evaluation and achieve Milestone C. Provide engineering and management support to the program.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost		0.207	0.127	0.077
RDT&E Articles Quantity				

- (U) CREI -

(Arresting Gear Fairlead Sheaves) - Selected candidate materials and conducted laboratory testing on samples. Award contract, conduct design and manufacture prototype of CREI Sheaves. Conduct developmental and environmental testing of prototype sheaves. Provide engineering and management support to the program.

R-1 SHOPPING LIST - Item No. 38

CLASSIFICATION:

XHIBIT R-2a, RDT&E Project Justification					DA	ATE:
PPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT I	NI IMBER AND NAME	Ip.	ROJECT NUMBE	R AND NAM	February 2004
DT&E, N / BA-4	0603512N Carrier Sy			U 1723 CV Laun		
DIGE, N / DA-4	0003312N Carrier 3y	stems Development	I.	U 1723 CV Laur	icii aliu Necc	overy Systems
(U) C. PROGRAM CHANGE SUMMARY:						
(U) Funding:		FY 2003	FY 2004	FY 2005		
Previous President's Budget:		7.646	1.183	0.077		
Current President's Budget		7.871	1.170	0.077		
Total Adjustments		0.225	-0.013	0.000		
Summary of Adjustments						
Congressional program reductions						
Congressional undistributed reductions			-0.013			
Congressional rescissions						
SBIR/STTR Transfer		-0.110				
Economic Assumtions						
Reprogrammings		0.335				
Sponsor/FMB/NAVAIR Adjustments						
Congressional increases						
Subtotal		0.225	-0.013	0.000		
(U) Schedule:						
Change in ARC schedule due to additional EA-1						
delivery slips from 4Q/03 to 2Q/04; Milestone C	slips from 3Q/04 to 4Q/0	04; PRR slips from 2Q/0	4 to 4Q/04; FF	RP decision slips	from 3Q/04 to	o 4Q/04 and IOC slips from 4Q/05 to 1Q/06.
(U) Technical:						
Not Applicable						
	D 1	SHUDDING LIST I	tom No 3	0		41 of 46

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE:			
								Februa	ary 2004	
APPROPRIATION/BUDGET ACTIVITY	PROGRAM	ELEMENT NUM	BER AND NAI	ΛE	PROJECT NU	JMBER AND N	IAME			
RDT&E, N / BA-4	0603512N	Carrier System	s Developme	nt	PU 1723 CV	Launch and R	Recovery Syste	ems		
(U) D. OTHER PROGRAM FUNDING SUMMARY:								_		
Line Item No. & Name OPN Aircraft Launch & Recovery Equipment, 43SJ	FY 2003 0.248	FY 2004 0.000	FY 2005 3.616	FY 2006 5.959	FY 2007 6.470	FY 2008 9.535	FY 2009 7.390	To <u>Complete</u> 5.789	Total <u>Cost</u> 39.007	

(U) E. ACQUISITION STRATEGY:

The ARC acquisition strategy calls for full and open competition leading to a single contract award for the System Development and Demonstration Phase. Production quantities are included as options to the development contract.

CREI A/G Fairlead Sheaves: The A/G Fairlead Sheave Development effort will be competitively awarded to industry to develop sample materials and perform laboratory testing for resistance. Based on the results of the testing, one material and heat treatment process will be selected and prototype sheaves manufactured and tested on two arresting gear engines at NAVAIR Lakehurst.

(U) F. MAJOR PERFORMERS:

Major Performer	Location	Description of Work	FY03 Amt &	Award Date	FY04 Amt & Award	Date	FY05 Amt & Awa	rd Date
NAWCAD	Lakehurst, NJ	Systems Engineering and	2.402	11/02	1.170	11/03	0.077	11/04
		Developmental Test and Evaluation						
		Primary H/W Development						
Northrup Grumman	Sykesville, MD	Primary H/W Development	5.469	12/02				

R-1 SHOPPING LIST - Item No. 3

CLASSIFICATION:

									DATE:				
Exhibit R-3 Cost Analysis (pag	e 1)										February	2004	
APPROPRIATION/BUDGET ACTIVI	TY	PROGRAM	ELEMEN	1T			PROJECT N	JMBER AND	NAME				
RDT&E, N / BA-4				System	s Developme		PU 1723 CV		Recovery S				
Cost Categories			Total			FY 03		FY 04		FY 05			
	Method	Activity &	PY s		FY 03	Award	FY 04	Award	FY 05	Award	Cost to	Total	Target Value
	& Type	Location	Cost		Cost	Date	Cost	Date	Cost	Date	Complete	Cost	of Contract
Primary Hardware Development (AR				1.970								7.439	
Primary Hardware Development (AR		NAWCAD Lakehurst, NJ		3.636			0.996	11/03				5.317	
Primary Hardware Development (CR		Advanced Dev. Mfg. Corp			0.108							0.108	
Systems Engineering (ARC)	WX	NAWCAD Lakehurst, NJ			1.125	11/02	0.005	11/03				1.130	
Systems Engineering (CREI)	WX	NAWCAD Lakehurst, NJ			0.099	11/02						0.099	
Award Fees													
Subtotal Product Development				5.606	7.486		1.00	1				14.093	
Subtotal Support													
		·I				1				I	I	l	
Remarks:													
Tromaine.													
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CLASSIFICATION:

Exhibit R-3 Cost Analysis (nago 2)							DATE:		February	2004	
APPROPRIATION/BUDGET AC	page z)	PROGRAM	EI EMENIT			PROJECT NU	IMBER AND	NAME		rebruary	2004	
RDT&E, N / BA-4			Carrier System	ns Developme	nt			Recovery Syste	ems			
Cost Categories	Contract Method & Type		Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental T&E (ARC)	wx	NAWCAD Lakehurst, NJ		0.335						·	0.	335
Developmental T&E (CREI)	WX	NAWCAD Lakehurst, NJ				0.127	11/03	0.077	11/04			204
Award Fees												
Subtotal T&E				0.335	5	0.127	7	0.077	,		0.	539
TI	lwy	NAWCAD Lakaburat NJ		0.05	11/00	0.046	40/00		1			002
Travel	WX	NAWCAD Lakehurst, NJ		0.050	11/02	0.042	2 10/03				0.	092
Subtotal Management				0.050	o e	0.042	2				0.	092
Remarks:												
Total Cost			5.60	6 7.87°	1	1.170	D	0.077	,		14.	724
Remarks:												

R-1 SHOPPING LIST - Item No. 38

CLASSIFICATION:

EXHIBIT R4, Schedule	Profile																								DATE	i:	F	ehrua	ry 20	04		
APPROPRIATION/BUDGET	ACTIVI	TY							PROC	GRAM	ELEM	ENT N	UMBE	R AND	NAM	=					PROJ	ECT N	IUMBE	R AN	D NAM	1E		5 D I G C	, 20			
RDT&E, N /	BA-4	1			1				06035	512N	Carrie	er Sys	tems I	Develo	pment						PU 17	23 C\	/ Laur	nch an	d Rec	overy	Systen	ns				
Fiscal Year		20	002			20	03			20	04			20	05			200	06			20	07			20	08			200	09	
	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
ARC Acquisition Milestones			MS B									MS C	FRP	Fir	st Dep		nt IOC															
Prototype Phase	Compo	nent Ad pment	lvance	Sys	stem D	evelop	ment &	& Dem	nonstra	tion																						
System Development				SRR	PDR	CDR	H/W-S	w			FCA /	 PRR																				
EDM Delivery of 2 units									4	Tw	PCA o EDM	l Units																				
Software Delivery										A																						
ARC Test & Evaluation Milestones Development Test Operational Test									Т	RR 			TECI	HEVAL																		
ARC Production Milestones FRP															P I Sta	rt																
FKF															i i Sta																	
Deliveries										2																						

 $^{^{\}star}$ Not required for Budget Activities 1, 2, 3, and 6

CLASSIFICATION:

Exhibit R-4a, Schedule Detail						DATE:	ebruary 20	04						
APPROPRIATION/BUDGET ACTIVITY	PROGRAM E	LEMENT			PROJECT NU	T NUMBER AND NAME								
RDT&E, N / BA-4		arrier Systems	s Developmen	t		Launch and Re		ms						
Schedule Profile - ARC	FY 2002	FY 2003		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009						
System Requirements Review (SRR)	4Q													
Milestone B (MSB)	3Q													
Contract Preparation	1Q-3Q													
Contract Award	3Q													
Preliminary Design Review (PDR)		1Q												
System Development	4Q	1Q-4Q	1Q-3Q											
Critical Design Review (CDR) H/W & S/W		3Q												
Test Readiness Review (TRR)			2Q											
Eng Dev Model (EDM) Delivery			2Q											
Software Delivery			2Q											
Preproduction Readiness Review (PRR)			4Q											
Milestone C (MS C)			4Q											
Technical Evaluation (TECHEVAL)			2Q-4Q											
IOC			20,10		1Q									
Full Rate Production (FRP) Decision			4Q		1 3									
Full Rate Production Start			100	1Q										
First Deployment				4Q										
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					-									
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Exhibit R-4a, Schedule Detail (Exhibit R-4a, page 46 of 46)