Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Navy										DATE: February 2011	
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 4: *Advanced Component Development & Prototypes (ACD&P)*				R-1 ITEM NOMENCLATURE PE 0603512N: *Carrier Systems Development*							
COST ($ in Millions)	**FY 2010**	**FY 2011**	**FY 2012 Base**	**FY 2012 OCO**	**FY 2012 Total**	**FY 2013**	**FY 2014**	**FY 2015**	**FY 2016**	**Cost To Complete**	**Total Cost**
Total Program Element	171.441	93.830	54.072	-	54.072	47.867	46.291	47.837	48.723	Continuing	Continuing
2208: *CVN 21*	55.900	33.278	27.817	-	27.817	37.092	37.858	38.727	39.420	Continuing	Continuing
3216: *Tactical Support Center-Integration*	5.881	8.583	2.110	-	2.110	4.631	3.627	4.740	4.826	Continuing	Continuing
3217: *KU-Band Common Data Link*	13.930	-	-	-	-	-	-	-	-	0.000	13.930
4004: *EMALS*	91.011	50.341	22.418	-	22.418	4.403	3.026	2.549	2.621	Continuing	Continuing
4005: *Smart Carrier*	1.771	1.628	1.727	-	1.727	1.741	1.780	1.821	1.856	Continuing	Continuing
9999: *Congressional Adds*	2.948	-	-	-	-	-	-	-	-	0.000	2.948

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:

- (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.

- (3216) - Development of block upgrades to the MH-60R sensor suite into the AN/SQQ-34 Aircraft Carrier Tactical Support Center (CV-TSC). The CV-TSC provides increased situational awareness to the Carrier Strike Group (CSG) in support of force protection, primarily in the area of Anti Submarine Warfare (ASW). Through the integration of
off-board sensors and signal, data and display processors, the AN/SQQ-34 is utilized in detecting, classifying, and localizing threats. An integrated element of the Carrier Combat System, the AN/SQQ-34 supports the tactical deployment of embarked ASW and Surface Warfare (SUW) assets (S-3B until retirement, SH-60F helicopter). This project provides the development and engineering foundation to refresh legacy AN/SQQ-34 systems on all Carriers and shore sites in support of Fleet introduction and shipboard integration of the MH-60R Multi Mission Helicopter. Upgrades to legacy systems enable the exchange of sensor, tactical and imagery data with the MH-60R initially, followed by incremental upgrades to support CVN air integration efforts.

- (3217) - Development of multi-mission shipboard high data rate Ku-Band data link between the embarked air assets and the Carrier Combat System, enabling the exchange of sensor, tactical and imagery data with the MH-60R Multi Mission Helicopter. It also provides capability for on-the-deck mission synchronization with MH-60R. Eventually, the Ku-Band data link will support other Ku-Band equipped aircraft, including the P-8 and Broad Area Maritime Surveillance (BAMS). This effort will provide the Carrier with the capability to support multiple aircraft simultaneously on different missions, and complete the Kill Chain by linking sensor platform to sensor controllers and the ASW/SUW Commanders. This project also establishes an ASW Line of Sight (LoS) network to enable continued combat operations in a satellite communications denied or degraded environment allowing for the exchange of tactical and raw sensor data in real time.

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Navy	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 ITEM NOMENCLATURE** PE 0603512N: *Carrier Systems Development*

- (4004) - Development of an advanced technology aircraft launch system in support of the CVN 78 Class design and construction schedule. The Electro Magnetic Aircraft Launch System (EMALS) will replace the current steam catapult on CVN 78 Class ships. 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.

- (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).

- (10C098) - Develop and validate a full scale composite aircraft carrier topside structure, providing a lightweight fragmentation/structural/fire integrated technology solution that can meet/exceed current performance requirements while reducing costs.

B. Program Change Summary ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	175.823	93.830	65.502	-	65.502
Current President's Budget	171.441	93.830	54.072	-	54.072
Total Adjustments	-4.382	-	-11.430	-	-11.430
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	0.950	-			
• SBIR/STTR Transfer	-4.540	-			
• Program Adjustments	-	-	-9.986	-	-9.986
• Section 219 Reprogramming	-0.786	-	-	-	-
• Rate/Misc Adjustments	-	-	-1.444	-	-1.444
• Congressional General Reductions Adjustments	-0.006	-	-	-	-

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2010	FY 2011
Project: 9999: *Congressional Adds*		
Congressional Add: *Composite Mast for CVNs*	2.948	-

Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Navy	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 ITEM NOMENCLATURE** PE 0603512N: *Carrier Systems Development*

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2010	FY 2011
Congressional Add Subtotals for Project: 9999	2.948	-
Congressional Add Totals for all Projects	2.948	-

Change Summary Explanation

Technical: Not applicable.

Schedule: FY 12 program (Project 2008) was adjusted to properly phase program requirements in accordance with expenditures.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Navy			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603512N: *Carrier Systems Development*	PROJECT 2208: *CVN 21*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
2208: *CVN 21*	55.900	33.278	27.817	-	27.817	37.092	37.858	38.727	39.420	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

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 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).

FY 12 program was adjusted to properly phase program requirements in accordance with expenditures.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2010	FY 2011	FY 2012
Title: CVN 21 Advanced Technology Design & Development	44.644	28.536	19.993
Articles:	0	0	0
Description: - CVN 21 Advanced Technology Design & Development: Continue development and transition of technologies to support CVN 21 Key Performance Parameters (KPPs): maintain sortie generation rate, reductions in manpower, and further recovery of weight and stability service life margins. Continue design activities to integrate the new technologies, such as the new propulsion plant and Electromagnetic Aircraft Launch System (EMALS) into the ship.			
FY 2010 Accomplishments: Technologies and design efforts include continuation of transition planning and execution, including finishing development work, certification / qualification testing, in-service testing, integrated logistics support, and design integration tasks for all projects in the Critical and Non-Critical Technology portfolios. Efforts also encompass those tasks required 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).			
FY 2011 Plans:			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Navy		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603512N: *Carrier Systems Development*	PROJECT 2208: *CVN 21*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2010	FY 2011	FY 2012
Technologies and design efforts include continuation of transition planning and execution, including finishing development work, certification / qualification testing, in-service testing, integrated logistics support, and design integration tasks for all projects in the Critical and Non-Critical Technology portfolios. Efforts also encompass those tasks required 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). ***FY 2012 Plans:*** Funding is essential to technical data package development for the insertion of the latest technology and the development of critical systems and components. Technical data packages provide the plan during ship construction to support the delivery of key warfare and aviation systems necessary for ship certification. The development of key systems (such as Machinery Control and Monitoring System) are required for the safety and control of the warfare and key systems on the ship.			
Title: CVN 21 - Test & Evaluation (T&E)	11.256	4.742	7.824
Articles:	0	0	0
Description: - CVN 21 - Test & Evaluation (T&E) - ***FY 2010 Accomplishments:*** In agreement with COMOPTEVFOR, changed test period terminology from Developmental Test (DT) / Operational Tests (OT) to Integrated Test (IT). Some test events conducted during the IT periods will be mostly DT in nature (i.e., technical and performance compliance with specifications) with OT oversight to determine progression toward addressing effectiveness and suitability Critical Operational Issues (COIs); some test events conducted during the IT periods will be mostly OT in nature, with DT oversight to determine areas of improvement for follow-on ships; and some test events conducted during the IT periods will be truly IT tests, i.e., single test events that address the objectives of both DT and OT and the results are shared with both communities, so that they can conduct their independent assessments of the results. Continued execution of alternative to fulfill the requirements of the Full Ship Shock Trial (FSST). Continued collaboration with the various working groups, PARMS, COMOPTEVFOR, AT&L, DASD(DT&E) and DOT&E to ensure requirements are met for planning of Post Delivery Tests and Trials (PDT&T). Continued to transition from a 5-part to a 4-part Test and Evaluation Management Plan (TEMP) 1610. Used baseline test schedule established by T&E team as the foundation for the development of TEMP 1610. Completed the first draft of DT portion of the 4-part TEMP 1610 for review. Continued development of the Overall Platform Integrated Test Schedule. Continued planning, executing, analyzing and improving the Integrated Strike Planning and Execution Model (ISPEM) and Sortie Generation Rate (SGR) Modeling and Simulation (M&S) improvements to the Virtual Carrier (VCVN) Model to ensure satisfaction of COMOPTEVFOR's Initial Operational Test and Evaluation (IOT&E) requirements. Conducted Sortie Generation Rate Assessment (SGRA) #9. Began development of SGR test strategy with COMOPTEVFOR and various stakeholders.			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Navy		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603512N: *Carrier Systems Development*	PROJECT 2208: *CVN 21*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2010	FY 2011	FY 2012
Continued Topside Electromagnetic Environmental Effects (E3) risk evaluation and testing. Conducted TEMP 1610 development and T&E WIPT meetings. ***FY 2011 Plans:*** Continue executing IT-1 test phase. Begin development of IT-1 Operational Assessment Report 1. Continue execution of alternative to fulfill the requirements of the FSST. Continue revising and updating the TEMP 1610 to Revision C, adding testing and resource definition to Part III and Part IV. Continue development and refinement of the Overall Platform Integrated Test Schedule and provide periodic updates to various stakeholders. Commence IT on WS, NAVAIR and C4I equipment and sensors to define and implement interoperability testing to support JITC certification. Continue collaboration with the various working groups, PARMS, COMOPTEVFOR, AT&L, DASD(DT&E) and DOT&E to ensure requirements are met for planning of PDT&T. Continue planning, executing, analyzing and improving the ISPEM and SGR M&S improvements to the VCVN Model to ensure satisfaction of COMOPTEVFOR's IOT&E requirements. Conduct SGRA #10. Continue development of SGR test strategy with COMOPTEVFOR and various stakeholders. Continue Topside E3 risk evaluation and testing. Conduct TEMP 1610 development and T&E WIPT meetings. ***FY 2012 Plans:*** Continue executing IT-1 test phase. Complete IT-1 Operational Assessment Report 1. Continue execution of alternative to fulfill the requirements of the FSST. Begin defining entrance & exit criteria for NAVSEA FSST Alternative FY13 Gate Review in order to receive approval to replace the traditional FSST with the alternative process for CVN 78. Obtain final approval of TEMP 1610 to support FY 12 Defense Acquisition Board Program Review (DAB PR) for CVN 79. Deliver the JITC draft Interoperability Certification Evaluation Plan (ICEP) for review. Continue collaboration with the various working groups, PARMS, COMOPTEVFOR, AT&L, DASD(DT&E) and DOT&E to ensure requirements are met for planning of PDT&T. Continue planning, executing, analyzing and improving the ISPEM and SGR M&S improvements to the VCVN Model to ensure satisfaction of COMOPTEVFOR's IOT&E requirements. Continue development of SGR test strategy with COMOPTEVFOR and various stakeholders. Conduct T&E WIPT meetings.			
Accomplishments/Planned Programs Subtotals	55.900	33.278	27.817

Exhibit R-2A, RDT&E Project Justification: PB 2012 Navy		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603512N: *Carrier Systems Development*	PROJECT 2208: *CVN 21*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
• BLI 200100: *Carrier Replacement Program*	1,219.927	2,639.569	554.798	0.000	554.798	1,942.385	2,148.395	3,545.752	2,503.034	Continuing	Continuing

D. Acquisition Strategy

The CVN 78 will be the first ship of the CVN 78 Class of aircraft carriers designed to replace USS ENTERPRISE and the ships of the NIMITZ Class. 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 war fighting benefits will be realized: increased sortie generation rate, improved ship
self defense capability, increased launch and recovery capability/flexibility, increased operational availability, and increased flexibility to support future upgrades.

E. Performance Metrics

Successfully complete Developmental Test - B2 (DT-B2) Net Ready / Interoperability Event. Successfully complete Operational Test - B3 (OT-B3). Successfully complete Operational Test (OT) Report. Successfully complete Operational Test Readiness Review (OTRR). Successfully conduct and support feasibility and tradeoff studies and data packages on new and modified shipboard systems, technologies and proposed modification. Data packages shall include information to support program decisions to integrate these efforts into the whole ship design efforts. Successfully conduct IDC shock testing and reporting in order to finalize IDC R&D efforts. Successfully complete Advanced Weapons Elevator Shock and Electromagnetic Interference (EMI) Test qualifications. Successfully complete Plasma Arc Waste Destruction System (PAWDS) Land-Based Test. Successfully create and deliver 21 Decision Memorandums (DM) for Bents/Bays 1-21.on the 03 Level (Gallery Deck) with Layer 31 information. This effort includes comment and adjudication for each ODWG delivered DM. Successfully develop the baseline Technical Data Packages for 39 systems and mature packages in preparation for final GFI arrival.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603512N: *Carrier Systems Development*	PROJECT 2208: *CVN 21*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2011 Cost	FY 2011 Award Date	FY 2012 Base Cost	FY 2012 Base Award Date	FY 2012 OCO Cost	FY 2012 OCO Award Date	FY 2012 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Propulsion Plant Development	SS/CPFF	Bettis:PA	71.627	-		-		-		-	0.000	71.627	
Propulsion Plant Development	C/CPFF	NGSB-NN:VA	164.409	-		-		-		-	0.000	164.409	
Propulsion Plant Development	Various	Miscellaneous:Various	10.562	-		-		-		-	0.000	10.562	
Propulsion Plant Development	WR	NSWC Carderock:MD	0.050	-		-		-		-	0.000	0.050	
Advanced Design & Development	C/CPAF	NGSB-NN:VA	152.916	10.097	Dec 2010	2.710	Oct 2011	-		2.710	0.000	165.723	
Advanced Design & Development	WR	NSWC Carderock:MD	72.802	0.029	Feb 2011	0.220	Oct 2011	-		0.220	0.000	73.051	
Advanced Design & Development	C/CPFF	SAIC:NM	49.313	0.144	Feb 2011	0.180	Nov 2011	-		0.180	0.000	49.637	
Advanced Design & Development	WR	NAWCAD Patuxent River:MD	46.069	4.596	Dec 2010	3.333	Oct 2011	-		3.333	0.000	53.998	
Advanced Design & Development	WR	NAWC Lakehurst:NJ	8.249	-		-		-		-	0.000	8.249	
Advanced Design & Development	WR	NSWC Dahlgren:VA	23.587	2.986	Feb 2011	3.428	Oct 2011	-		3.428	0.000	30.001	
Advanced Design & Development	C/CPAF	Raytheon:MA	27.487	5.309	Dec 2010	4.968	Dec 2011	-		4.968	0.000	37.764	
Advanced Design & Development	WR	NSWC Port Hueneme:CA	5.859	0.130	Feb 2011	-		-		-	0.000	5.989	
Advanced Design & Development	WR	SPAWAR:CA	9.995	0.485	Feb 2011	0.467	Oct 2011	-		0.467	0.000	10.947	
Advanced Design & Development	C/CPFF	NAVSEA Seaport:DC	31.216	4.578	Feb 2011	4.503	Dec 2011	-		4.503	0.000	40.297	
Advanced Design & Development	Various	Miscellaneous:Various	39.725	0.182	Feb 2011	0.184	Oct 2011	-		0.184	0.000	40.091	
		Subtotal	713.866	28.536		19.993		-		19.993	0.000	762.395	

Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603512N: *Carrier Systems Development*	PROJECT 2208: *CVN 21*

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2011 Cost	FY 2011 Award Date	FY 2012 Base Cost	FY 2012 Base Award Date	FY 2012 OCO Cost	FY 2012 OCO Award Date	FY 2012 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	C/CPAF	NGSB-NN:VA	8.516	1.305	Dec 2010	1.350	Dec 2011	-		1.350	0.000	11.171	
Developmental Test & Evaluation	WR	NAWCAD Patuxent River:MD	15.248	1.579	Feb 2011	2.312	Oct 2011	-		2.312	0.000	19.139	
Developmental Test & Evaluation	WR	NSWC Dahlgren:VA	3.900	-		0.337	Oct 2011	-		0.337	0.000	4.237	
Developmental Test & Evaluation	WR	NSWC Carderock:MD	11.011	-		-		-		-	0.000	11.011	
Developmental Test & Evaluation	WR	SPAWAR:CA	3.239	-		0.410	Oct 2011	-		0.410	0.000	3.649	
Developmental Test & Evaluation	C/CPFF	NAVSEA SeaPort:DC	0.143	-		-		-		-	0.000	0.143	
Developmental Test & Evaluation	C/CPAF	Raytheon:Not Specified	1.283	0.725	Dec 2010	0.742	Dec 2011	-		0.742	0.000	2.750	
Developmental Test & Evaluation	Various	Miscellaneous:Various	7.932	0.615	Feb 2011	1.690	Oct 2011	-		1.690	0.000	10.237	
Operational Test & Evaluation	WR	COMOPTEVFOR:VA	5.114	0.518	Feb 2011	0.983	Oct 2011	-		0.983	0.000	6.615	
		Subtotal	56.386	4.742		7.824		-		7.824	0.000	68.952	

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2011 Cost	FY 2011 Award Date	FY 2012 Base Cost	FY 2012 Base Award Date	FY 2012 OCO Cost	FY 2012 OCO Award Date	FY 2012 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
DAWF	Various	Various:Various	0.275	-		-		-		-	0.000	0.275	
		Subtotal	0.275	-		-		-		-	0.000	0.275	

	Total Prior Years Cost	FY 2011 Cost	FY 2011 Award Date	FY 2012 Base Cost	FY 2012 Base Award Date	FY 2012 OCO Cost	FY 2012 OCO Award Date	FY 2012 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	770.527	33.278		27.817		-		27.817	0.000	831.622	

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2012 Navy		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 ITEM NOMENCLATURE** PE 0603512N: *Carrier Systems Development*	**PROJECT** 2208: *CVN 21*

Exhibit R-4A, RDT&E Schedule Details: PB 2012 Navy		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 ITEM NOMENCLATURE** PE 0603512N: *Carrier Systems Development*	**PROJECT** 2208: *CVN 21*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 2208				
CVN 79 DAB PR	1	2012	1	2012
Propulsion Plant	1	2010	4	2016
EMALS SDD Complete	3	2012	3	2012
Advanced Arresting Gear (AAG) TRR 1 (IT)	4	2010	4	2010
AAG Config Review	1	2011	1	2011
AAG TRR 2 (IT)	2	2012	2	2012
Integrated Tests IT-1	1	2010	4	2014
Integrated Tests IT-2	4	2014	3	2016
Integrated Tests IT-3	3	2016	4	2016
Operational Assessment Report 1 (OAR1 IT-1)	2	2012	2	2012
Operational Assessment Report 2 (ORA2 IT-1)	3	2013	3	2013
Developmental Test Report (DP RPT IT-1)	1	2015	1	2015
Operational Assessment Report 3 (OAR3 IT-1)	1	2015	1	2015
Developmental Test Report (DT RPT IT-2)	4	2016	4	2016
Operational Assessment Report (OAR IT-2)	4	2016	4	2016
Assessment of Operational Test Readiness - Phase C1 (AOTR-C1)	4	2016	4	2016
Operational Test Readiness Review - Phase C1 (OTRR-C1)	4	2016	4	2016
CVN 80 IPPD Contract Award	1	2013	1	2013
CVN 79 Construction Contract Award	1	2013	1	2013
CVN 80 CP Contract Award	1	2015	1	2015
CVN 78 Ship Delivery	4	2015	4	2015

Exhibit R-4A, RDT&E Schedule Details: PB 2012 Navy		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 ITEM NOMENCLATURE** PE 0603512N: *Carrier Systems Development*	**PROJECT** 2208: *CVN 21*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
CVN 79 SCN Full Funding	1	2013	4	2016

Exhibit R-2A, RDT&E Project Justification: PB 2012 Navy			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603512N: *Carrier Systems Development*	PROJECT 3216: *Tactical Support Center-Integration*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
3216: *Tactical Support Center-Integration*	5.881	8.583	2.110	-	2.110	4.631	3.627	4.740	4.826	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

A. Mission Description and Budget Item Justification

The CV-TSC program provides increased situational awareness to the Carrier Strike Group (CSG) in support of force protection, primarily in the area of Anti-Submarine Warfare (ASW). Through the integration of off-board sensors and signal, data and display processors, the AN/SQQ-34 is utilized in detecting, classifying, and localizing threats. An integrated element of the Carrier Combat System, the AN/SQQ-34 supports the tactical deployment of embarked ASW and Surface Warfare (SUW) assets (S-3B until retirement, SH-60F helicopter). This project provides the design, development and engineering foundation to refresh legacy AN/SQQ-34 systems on all Carriers and shore sites in support of fleet introduction and shipboard integration of the MH-60R Multi Mission Helicopter. Upgrades to legacy systems enable the exchange of sensor, tactical and imagery data with the MH-60R initially, followed by incremental upgrades to support CVN air integration efforts.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2010	FY 2011	FY 2012
Title: MH-60R Integration Development for CV-TSC	5.881	8.583	2.110
Articles:	0	0	0
FY 2010 Accomplishments: Completed development of the AN/SQQ-34(V)2 MH-60R Integration Increment 1 which establishes the initial link with the MH-60R through the Ku-Band Common Data Link System (CDL-S) and Aircraft Carrier Tactical Support Center (CV-TSC). Completed Critical Design Review (CDR) and detailed design documentation to support software development. Developed the software code baseline. Completed upgraded hardware design and built Engineering Development Model (EDM) units for development and environmental testing. Began development and certification of a CV-TSC software update to permit scenario training tracks to be shared between the Ship Self Defense System (SSDS) and CV-TSC. The efforts requires an update to the CV-TSC and SSDS interface requirements, design and implementation of the updated requirements into the AN/SQQ-34C(V)2 CV-TSC system baseline, and testing/certifying the update to the system and the interface. Began development of requirements and initiated design of AN/SQQ-34(V)2 Increment 2 which expands system capability to include support of multiple MH-60R and ship control of MH-60R sensors. Completed System Requirements Review (SRR) and System Functional Review (SFR) of Increment 2 baseline. Initiated high-level design efforts. ***FY 2011 Plans:*** Complete AN/SQQ-34(V)2 MH-60R Integration Increment 1 system verification and validation and Combat System Certification.			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Navy		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603512N: *Carrier Systems Development*	PROJECT 3216: *Tactical Support Center-Integration*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2010	FY 2011	FY 2012
Complete detailed design work on AN/SQQ-34(V)2 MH-60R Integration Increment 2 and begin software code development. Complete Critical Design Review (CDR) and begin generating software code and test plan. Complete development and certification of a CV-TSC software update to permit scenario training tracks to be shared between the Ship Self Defense System (SSDS) and CV-TSC. Complete hardware/software development for a modification to the existing CDL system to support multiple MH-60R users with pre-flight and in-flight communication links within the Ku-Band. Investigate the technologies available for the next generation Ku-Band system that will support between two and four simultaneous users including MH-60R, BAMS, P-3s and other potential users. Begin development of Joint Capabilities Integration and Development (JCID) documentation to support those new user requirements. Start development of requirements for AN/SQQ-34(V)2 Increment 3 to include additional acoustic processing capabilities and shipboard integration of CDL capable aircraft. ***FY 2012 Plans:*** Complete development of AN/SQQ-34(V)2 MH-60R Integration Increment 2. Complete software baseline and verification testing. Conduct Test Readiness Review (TRR) and Combat System certification. Complete requirements definition for development of AN/SQQ-34(V)2 Increment 3 and begin high-level design activities. Conduct a System Requirements Review (SRR) and a System Functional Review (SFR).			
Accomplishments/Planned Programs Subtotals	5.881	8.583	2.110

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
• OPN/2176: *Undersea Support Equipment (CV-TSC/CDL portion)*	20.530	19.866	19.740	0.000	19.740	8.390	0.351	0.367	0.408	Continuing	Continuing

D. Acquisition Strategy

The CV-TSC will be upgraded to support full deployments of Ku-Band equipped MH-60R aircraft. The CV-TSC development activity is a government field activity, Naval Undersea Warfare Center (NUWC), Division Keyport. Hardware procurements and back fit of the CV-TSC will use the AN/SQQ-34C as a baseline with additional

Exhibit R-2A, RDT&E Project Justification: PB 2012 Navy		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603512N: *Carrier Systems Development*	PROJECT 3216: *Tactical Support Center-Integration*

hardware necessary for MH-60R support. Hardware shall be procured via a Request For Proposal (RFP) with industry. To the maximum extent possible, CV-TSC will use enterprise hardware initiatives being developed by the Navy in support of DDG-1000 and Aegis Modernization.

E. Performance Metrics

- Successfully complete Preliminary Design Review (PDR) and Critical Design Review (CDR) for MH-60R system upgrade.
- Utilize Commercial Off-The-Shelf (COTS) based Common Processor/Common Display Systems (CPS/CDS) to minimize Total Ownership Costs.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603512N: *Carrier Systems Development*	PROJECT 3216: *Tactical Support Center-Integration*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2011 Cost	FY 2011 Award Date	FY 2012 Base Cost	FY 2012 Base Award Date	FY 2012 OCO Cost	FY 2012 OCO Award Date	FY 2012 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Engineering / H/W & S/W Devel / Integration	WR	NUWC/Keyport:WA	5.331	4.378	Feb 2011	1.535	Oct 2011	-		1.535	Continuing	Continuing	Continuing
System Eng / S/W Development	C/CPFF	Adaptive Methods:VA	0.300	-		-		-		-	0.000	0.300	
System Eng / S/W Development	C/CPFF	JHU/APL:MD	0.250	-		-		-		-	0.000	0.250	
System Eng / S/W Development	WR	SPAWAR:CA	-	3.610	Feb 2011	-		-		-	0.000	3.610	
		Subtotal	5.881	7.988		1.535		-		1.535			

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2011 Cost	FY 2011 Award Date	FY 2012 Base Cost	FY 2012 Base Award Date	FY 2012 OCO Cost	FY 2012 OCO Award Date	FY 2012 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Test and Certification	WR	NUWC//Keyport:WA	-	0.500	Feb 2011	0.500	Oct 2011	-		0.500	Continuing	Continuing	Continuing
		Subtotal	-	0.500		0.500		-		0.500			

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2011 Cost	FY 2011 Award Date	FY 2012 Base Cost	FY 2012 Base Award Date	FY 2012 OCO Cost	FY 2012 OCO Award Date	FY 2012 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management Support	C/CPAF	BAE Systems:MD	-	0.095	Feb 2011	0.075	Dec 2011	-		0.075	Continuing	Continuing	Continuing
		Subtotal	-	0.095		0.075		-		0.075			

	Total Prior Years Cost	FY 2011 Cost	FY 2011 Award Date	FY 2012 Base Cost	FY 2012 Base Award Date	FY 2012 OCO Cost	FY 2012 OCO Award Date	FY 2012 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	5.881	8.583		2.110		-		2.110			

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2012 Navy		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 ITEM NOMENCLATURE** PE 0603512N: *Carrier Systems Development*	**PROJECT** 3216: *Tactical Support Center-Integration*

Exhibit R-4A, RDT&E Schedule Details: PB 2012 Navy		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 ITEM NOMENCLATURE** PE 0603512N: *Carrier Systems Development*	**PROJECT** 3216: *Tactical Support Center-Integration*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 3216				
Increment 1: Initial MH-60R Capabilities Development	2	2010	1	2011
Increment 1: Critical Design Review (CDR)	2	2010	2	2010
Increment 1: Test Readiness Review (TRR)	1	2011	1	2011
Increment 1: MH-60R Verification and Validation	2	2011	3	2011
Increment 1: MH-60R Combat System Certification	4	2011	4	2011
Increment 2: MH-60R Block Upgrades Development	3	2010	2	2012
Increment 2: System Requirements Review (SRR)	4	2010	4	2010
Increment 2: System Functional Review (SFR)	4	2010	4	2010
Increment 2: Critical Design Review (CDR)	1	2011	2	2011
Increment 2: Test Readiness Review (TRR)	2	2012	2	2012
Increment 2: MH-60R Verification and Validation	2	2012	3	2012
Increment 2: MH-60R Combat System Certification	3	2012	4	2012
Increment 3: MH-60R Block Upgrades (P-8/BAMS Integration)	3	2012	2	2014
Increment 3: System Requirements Review (SRR)	3	2012	4	2012
Increment 3: System Functional Review (SFR)	4	2012	4	2012
Increment 3: Critical Design Review (CDR)	2	2013	2	2013
Increment 3: Test Readiness Review (TRR)	2	2014	2	2014
Increment 3: Verification and Validation	3	2014	4	2014
Increment 3: Combat System Certification	4	2014	1	2015
Increment 4: MH-60R Block Upgrades (P-8/BAMS Integration)	3	2014	2	2016
Increment 4: System Requirements Review (SRR)	3	2014	3	2014

Exhibit R-4A, RDT&E Schedule Details: PB 2012 Navy		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 ITEM NOMENCLATURE** PE 0603512N: *Carrier Systems Development*	**PROJECT** 3216: *Tactical Support Center-Integration*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Increment 4: System Functional Review (SFR)	4	2014	4	2014
Increment 4: Critical Design Review (CDR)	1	2015	2	2015
Increment 4: Test Readiness Review (TRR)	2	2016	2	2016
Increment 4: Verification and Validation	2	2016	3	2016
Increment 4: Combat System Certification	4	2016	4	2016

Exhibit R-2A, RDT&E Project Justification: PB 2012 Navy			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603512N: *Carrier Systems Development*	PROJECT 3217: *KU-Band Common Data Link*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
3217: *KU-Band Common Data Link*	13.930	-	-	-	-	-	-	-	-	0.000	13.930
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

A. Mission Description and Budget Item Justification

Develops a multi-mission, shipboard, high data rate Ku-Band data link between the embarked air assets and the Carrier Combat System, enabling the exchange of sensor, tactical and imagery data with the MH-60R Multi Mission Helicopter. It also provides capability for on-the-deck mission synchronization with MH-60R. Eventually, the Ku-Band data link will support other Ku-Band equipped aircraft, including the P-8 and Broad Area Maritime Surveillance (BAMS). This effort will provide the Carrier with the capability to support multiple simultaneous aircraft on different missions, also completing the Kill Chain by linking sensor platform to sensor controllers and the Anti-Submarine Warfare (ASW) and Surface Warfare (SUW) Commanders. This development effort will support the initial deployments of the Ku-Band equipped MH-60R Air Wing for new construction Carriers, Refueling Complex Overhauls (RCOH) Carriers, and NIMITZ Class back-fits.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2010	FY 2011	FY 2012
Title: Common Data Link Development	13.930	-	-
Articles:	0		
FY 2010 Accomplishments: Developed a Ku-Band data link between the embarked air assets and the Carrier Combat System. Established an ASW Line of Sight network to enable continued combat operations in a satellite communications denied or degraded environment allowing for the exchange of tactical and raw sensor data in real time.			
Accomplishments/Planned Programs Subtotals	13.930	-	-

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
• OPN/2176: *Undersea Support Equipment (CV-TSC/CDL Portion)*	20.530	19.866	19.740	0.000	19.740	8.390	0.351	0.367	0.408	Continuing	Continuing

D. Acquisition Strategy

The Ku-Band Common Data Link will be upgraded on the Carrier to support full deployments of Ku-Band equipped MH-60R aircraft. Procurements and back-fit of the Ku-Band capability will be fielded starting in FY11. SPAWAR Systems Center (SSC) shall develop the additional capabilities by implementing an Engineering Change Proposal (ECP) to the AN/USQ-167 Communications Data Link System (CDL-S). ECP implementation shall be procured via a Request For Proposal (RFP) with industry. This would ensure the most efficient and cost effective implementation for Navy.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Navy		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603512N: *Carrier Systems Development*	PROJECT 3217: *KU-Band Common Data Link*

E. Performance Metrics

- Increase capability from one (1) 360 degree aircraft link to four (4) simultaneous 360 degree aircraft links, while reducing overall manning.

Exhibit R-2A, RDT&E Project Justification: PB 2012 Navy			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603512N: *Carrier Systems Development*	PROJECT 4004: *EMALS*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
4004: *EMALS*	91.011	50.341	22.418	-	22.418	4.403	3.026	2.549	2.621	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

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 78 design and construction schedule, as well as Engineering and Life Cycle System (ELCS) design. The Electromagnetic Aircraft Launch System (EMALS) will be the aircraft catapult for CVN 78 Class ships. 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.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2010	FY 2011	FY 2012
Title: EMALS	91.011	50.341	22.418
Articles:	0	0	0
Description: EMALS			
FY 2010 Accomplishments: (1) EMALS SDD Phase - Continued System Design and Development (SDD) Phase. Continued shipboard representative system development effort. Completed Highly Accelerated Life Test (HALT) and Environmental Testing. Performed System Functional Demonstration. Provided management, system engineering, test, and ship integration support. (2) EMALS Engineering and Life Cycle Support Development (E&LCSD) - Developed E&LCSD requirements. Provided technical services, program management and logistics management in support of EMALS CVN 78 shipset efforts.			
FY 2011 Plans: (1) EMALS SDD Phase - Continue shipboard representative system development effort. Continue testing and perform risk mitigation. Provide management, system engineering, test, and ship integration support. (2) EMALS E&LCSD - Award the E&LCSD Contract. Provide technical services, program management and logistics management in support of EMALS CVN 78 shipset efforts.			
FY 2012 Plans: (1) EMALS SDD Phase - Finalize shipboard representative system development effort. Finalize testing and perform risk mitigation. Provide management, system engineering, test, and ship integration support. (2) EMALS E&LCSD - Provide technical services, program management and logistics management in support of EMALS CVN 78 shipset efforts.			
Accomplishments/Planned Programs Subtotals	91.011	50.341	22.418

Exhibit R-2A, RDT&E Project Justification: PB 2012 Navy		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603512N: *Carrier Systems Development*	PROJECT 4004: *EMALS*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
• BLI 200100: *Carrier Replacement Program*	1,219.927	2,639.569	554.798	0.000	554.798	1,942.385	2,148.395	3,545.752	2,503.034	Continuing	Continuing

D. Acquisition Strategy

The CVN 78 will be the first ship of the CVN 78 Class of aircraft carriers designed to replace USS ENTERPRISE and the ships of the NIMITZ Class. 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 war fighting benefits will be realized: increased sortie generation rate, improved ship
self defense capability, increased launch and recovery capability/flexibility, increased operational availability, and increased flexibility to support future upgrades.

E. Performance Metrics

Successfully complete Highly Accelerated Life Test (HALT) Phase II. Successfully complete System Functional Demonstration (SFD) testing. Successfully complete Environment Qualification Testing (EQT). Successfully complete Shipset Controls Lab testing.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603512N: *Carrier Systems Development*	PROJECT 4004: *EMALS*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2011 Cost	FY 2011 Award Date	FY 2012 Base Cost	FY 2012 Base Award Date	FY 2012 OCO Cost	FY 2012 OCO Award Date	FY 2012 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Aircraft Launch, Recovery & Support	C/CPAF	Northrop Grumman:VA	86.673	-		-		-		-	0.000	86.673	
Aircraft Launch, Recovery & Support	C/CPAF	General Atomics (PDRR):CA	82.719	-		-		-		-	0.000	82.719	
Aircraft Launch, Recovery & Support	C/CPAF	General Atomics (SDD):CA	348.786	33.504	Feb 2011	20.718	Dec 2011	-		20.718	12.599	415.607	408.301
Aircraft Launch, Recovery & Support	WR	NAWC Lakehurst:NJ	44.704	-		-		-		-	0.000	44.704	
Aircraft Launch, Recovery & Support	C/CPAF	NGSB-NN:VA	2.770	-		-		-		-	0.000	2.770	
Aircraft Launch, Recovery & Support	C/CPAF	General Atomics (SDD) - Award Fee:CA	13.149	1.104	May 2011	-		-		-	0.000	14.253	14.253
		Subtotal	578.801	34.608		20.718		-		20.718	12.599	646.726	

Remarks

A 36.9 million prior approval reprogramming action (FY 2007 funding) was approved in April 2008 and is included in Total Prior Year Cost.

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2011 Cost	FY 2011 Award Date	FY 2012 Base Cost	FY 2012 Base Award Date	FY 2012 OCO Cost	FY 2012 OCO Award Date	FY 2012 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Aircraft Launch, Recovery & Support	WR	NAWC Lakehurst:NJ	56.613	15.733	Nov 2010	1.700	Dec 2011	-		1.700	0.000	74.046	
		Subtotal	56.613	15.733		1.700		-		1.700	0.000	74.046	

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2011 Cost	FY 2011 Award Date	FY 2012 Base Cost	FY 2012 Base Award Date	FY 2012 OCO Cost	FY 2012 OCO Award Date	FY 2012 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
DAWF	Various	Not Specified:Not Specified	0.299	-		-		-		-	0.000	0.299	

Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603512N: *Carrier Systems Development*	PROJECT 4004: *EMALS*

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2011 Cost	FY 2011 Award Date	FY 2012 Base Cost	FY 2012 Base Award Date	FY 2012 OCO Cost	FY 2012 OCO Award Date	FY 2012 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
		Subtotal	0.299	-		-		-		-	0.000	0.299	

	Total Prior Years Cost	FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	635.713	50.341		22.418		-		22.418	12.599	721.071	

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2012 Navy		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 ITEM NOMENCLATURE** PE 0603512N: *Carrier Systems Development*	**PROJECT** 4004: *EMALS*

Exhibit R-4A, RDT&E Schedule Details: PB 2012 Navy		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 ITEM NOMENCLATURE** PE 0603512N: *Carrier Systems Development*	**PROJECT** 4004: *EMALS*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 4004				
CVN 79 DAB PR	1	2012	1	2012
Propulsion Plant	1	2010	4	2016
EMALS SDD Complete	3	2012	3	2012
Advanced Arresting Gear (AAG) TRR 1 (IT)	4	2010	4	2010
AAG Config Review	1	2011	1	2011
AAG TRR 2 (IT)	2	2012	2	2012
Integrated Tests IT-1	1	2010	4	2014
Integrated Tests IT-2	4	2014	3	2016
Integrated Tests IT-3	3	2016	4	2016
Operational Assessment Report 1 (OAR1 IT-1)	2	2012	2	2012
Operational Assessment Report 2 (OAR2 IT-1)	3	2013	3	2013
Development Test Report (DT RPT IT-1)	1	2015	1	2015
Operational Assessment Report 3 (OAR3 IT-1)	1	2015	1	2015
Development Test Report (DT RPT IT-2)	4	2016	4	2016
Operational Assessment Report 1 (OAR IT-2)	4	2016	4	2016
Assessment of Operational Test Readiness - Phase C1 (AOTR-C1)	4	2016	4	2016
Operational Test Readiness Review - Phase C1 (OTRR-C1)	4	2016	4	2016
CVN 80 IPPD Contract Award	1	2013	1	2013
CVN 79 Construction Contract Award	1	2013	1	2013
CVN 80 CP Contract Award	1	2015	1	2015
CVN 78 Ship Delivery	4	2015	4	2015

Exhibit R-4A, RDT&E Schedule Details: PB 2012 Navy		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603512N: *Carrier Systems Development*	PROJECT 4004: *EMALS*

	Start		End	
Events by Sub Project	Quarter	Year	Quarter	Year
CVN 79 SCN Full Funding	1	2013	4	2016

Exhibit R-2A, RDT&E Project Justification: PB 2012 Navy			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603512N: *Carrier Systems Development*	PROJECT 4005: *Smart Carrier*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
4005: *Smart Carrier*	1.771	1.628	1.727	-	1.727	1.741	1.780	1.821	1.856	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

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 the Ship Control System Governor Software Development, Tank Preservation, UPS Replacements, Advanced Damage Control System (ADCS), Damage Control Inventory Management and Stowage System (DCIMSS), and the Integrated Condition Assessment System. Demonstration technologies include Advanced Damage Control System (ADCS) software improvements, A/C Plant Model, IOC Replacement, Fleet Wireless PDA, Weapons Elevator Laser Positioning System, Legacy Steering Interface upgrades, CVN ITD location option evaluation tools, Antenna to Antenna coupling analysis tools. Wireless systems, smart sensors, lighting systems, 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 including the following: Smart Carrier HM&E to INS Network Connection, Underwater insulation system, Smart Carrier Sealed Industrial PCs, NCDS Packet Filtering Device, Network Data Logger Device, PCS proof of concept, SCS Onboard trainer, Universal PCCU.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2010	FY 2011	FY 2012
Title: Smart Carrier	1.771	1.628	1.727
Articles:	0	0	0
FY 2010 Accomplishments: Fiscal Year 2010 efforts include liquid load management, advanced fire and smoke sensors, and Integrated Condition Assessment System software improvements, all via modifications and improvements to the existing Smart Carrier hardware and software suite.			
FY 2011 Plans: Fiscal Year 2011 plans include continuation of liquid load management, advanced fire and smoke sensors, and Integrated Condition Assessment System software improvements, all via modifications and improvements to the existing Smart Carrier hardware and software suite.			
FY 2012 Plans:			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Navy		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603512N: *Carrier Systems Development*	PROJECT 4005: *Smart Carrier*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2010	FY 2011	FY 2012
Fiscal Year 2012 plans include support to Smart Carrier technologies. Modifications, upgrades and development of systems and software will be ongoing in support of In-Service aircraft carrier modernization initiatives.			
Accomplishments/Planned Programs Subtotals	1.771	1.628	1.727

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
• OPN/ 0981: *Items Under $5M (Smart Carrier (LT 140))*	15.566	16.325	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	31.891
• OPN/0981: *Items Under $5M (Machinery Plant Upgrades (LT 160))*	0.000	0.000	5.410	0.000	5.410	5.911	15.811	9.501	13.589	0.000	50.222

D. 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).

E. Performance Metrics

Successfully complete Ship Control System Governor Software Development, AC Plant Model Capacity Optimization, UPS Replacements, ADCS Software Improvements (AFSSS/FCCS) Software Development Test, IOC replacement demonstration, Tank Preservation models, Weapons Elevator Laser Positioning demonstration, Legacy Steering Interface Upgrades, CVN ITD location option evaluation tool development, and Antenna to Antenna coupling analysis tool development.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603512N: *Carrier Systems Development*	PROJECT 4005: *Smart Carrier*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2011 Cost	FY 2011 Award Date	FY 2012 Base Cost	FY 2012 Base Award Date	FY 2012 OCO Cost	FY 2012 OCO Award Date	FY 2012 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Ship Integration	WR	NAVSEA:Phil	0.965	0.147	Dec 2010	0.103	Nov 2011	-		0.103	0.000	1.215	
Ship Integration	WR	NAVSEA:Dahlgren	-	0.060	Dec 2010	0.090	Nov 2011	-		0.090	0.000	0.150	
		Subtotal	0.965	0.207		0.193		-		0.193	0.000	1.365	

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2011 Cost	FY 2011 Award Date	FY 2012 Base Cost	FY 2012 Base Award Date	FY 2012 OCO Cost	FY 2012 OCO Award Date	FY 2012 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Software Development	WR	NAVSEA:Phil	6.231	0.395	Dec 2010	0.340	Nov 2011	-		0.340	0.000	6.966	
Program Management Support	WR	NAVSEA:Phil	2.010	0.208	Dec 2010	0.190	Nov 2011	-		0.190	0.000	2.408	
Training Development	WR	NAVSEA:Phil	0.565	0.087	Dec 2010	0.093	Nov 2011	-		0.093	0.000	0.745	
Integrated Logistics Support	WR	NAVSEA:Phil	1.080	0.080	Dec 2010	0.068	Nov 2011	-		0.068	0.000	1.228	
Software Development	WR	NAVSEA:Dahlgren	-	0.115	Dec 2010	0.182	Nov 2011	-		0.182	0.000	0.297	
Program Management Support	WR	NAVSEA:Dahlgren	-	0.150	Dec 2010	0.185	Nov 2011	-		0.185	0.000	0.335	
		Subtotal	9.886	1.035		1.058		-		1.058	0.000	11.979	

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2011 Cost	FY 2011 Award Date	FY 2012 Base Cost	FY 2012 Base Award Date	FY 2012 OCO Cost	FY 2012 OCO Award Date	FY 2012 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WR	NAVSEA:Phil	3.356	0.336	Dec 2010	0.326	Nov 2011	-		0.326	Continuing	Continuing	Continuing
Developmental Test & Evaluation	WR	NAVSEA:Dahlgren	-	0.050	Dec 2010	0.150	Nov 2011	-		0.150	0.000	0.200	
		Subtotal	3.356	0.386		0.476		-		0.476			

Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603512N: *Carrier Systems Development*	PROJECT 4005: *Smart Carrier*

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2011 Cost	FY 2011 Award Date	FY 2012 Base Cost	FY 2012 Base Award Date	FY 2012 OCO Cost	FY 2012 OCO Award Date	FY 2012 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
DAWF	Various	Various:Various	0.008	-		-		-		-	0.000	0.008	
		Subtotal	0.008	-		-		-		-	0.000	0.008	

	Total Prior Years Cost	FY 2011 Cost	FY 2011 Award Date	FY 2012 Base Cost	FY 2012 Base Award Date	FY 2012 OCO Cost	FY 2012 OCO Award Date	FY 2012 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	14.215	1.628		1.727		-		1.727			

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2012 Navy		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 ITEM NOMENCLATURE** PE 0603512N: *Carrier Systems Development*	**PROJECT** 4005: *Smart Carrier*

Exhibit R-4A, RDT&E Schedule Details: PB 2012 Navy		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 ITEM NOMENCLATURE** PE 0603512N: *Carrier Systems Development*	**PROJECT** 4005: *Smart Carrier*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 4005				
Ship Control System Governor Software Development: Ship Control System Governor Software Development	1	2010	4	2011
AC Plant Model - Capacity Optimization: AC Plant Model - Capacity Optimization	1	2010	4	2011
IOC Replacement: IOC Replacement	1	2010	1	2012
Tank Preservation: Tank Preservation	1	2010	4	2011
Fleet Wireless PDA (Blackberry): Fleet Wireless PDA (Blackberry)	1	2010	1	2011
Weapons Elevator Laser Positioning System (CVN76): Weapons Elevator Laser Positioning System (CVN76)	1	2010	3	2011
UPS Replacements: UPS Replacements	1	2010	2	2011
ADCS Software Improvements (AFSSS&FCCS): ADCS Software Improvements (AFSSS&FCCS)	1	2010	2	2011
Legacy Steering Interface Upgrade: Legacy Steering Interface Upgrade	2	2011	4	2014
CVN Integrated Topside Design location option evaluation tool: CVN Integrated Topside Design location option evaluation tool	2	2011	4	2012
Antenna to Antenna coupling analysis tool: Antenna to Antenna coupling analysis tool	2	2011	4	2012
Smart Carrier HM&E to INS Network Connection: Smart Carrier HM&E to INS Network Connection	2	2012	3	2014
Underwater insulation system: Underwater insulation system	2	2012	3	2014
Smart Carrier Sealed Industrial PCs: Smart Carrier Sealed Industrial PCs	2	2012	3	2013
NCDS Packet Filtering Device: NCDS Packet Filtering Device	2	2013	3	2015
Network Data Logger Device: Network Data Logger Device	2	2013	3	2015
PCS proof of concept: PCS proof of concept	2	2013	4	2015

Exhibit R-4A, RDT&E Schedule Details: PB 2012 Navy		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 ITEM NOMENCLATURE** PE 0603512N: *Carrier Systems Development*	**PROJECT** 4005: *Smart Carrier*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Universal PCCU: Universal PCCU	2	2013	3	2016
SCS Onboard trainer: SCS Onboard trainer	2	2014	4	2016
Integrated Condition Assessment System SE Improvements: Integrated Condition Assessment System SE Improvements	3	2014	3	2016

Exhibit R-2A, RDT&E Project Justification: PB 2012 Navy			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603512N: *Carrier Systems Development*	PROJECT 9999: *Congressional Adds*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
9999: *Congressional Adds*	2.948	-	-	-	-	-	-	-	-	0.000	2.948
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

A. Mission Description and Budget Item Justification

Congressional Adds

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011
Congressional Add: Composite Mast for CVNs	2.948	-
FY 2010 Accomplishments: Define the loads and design requirements specific to the mast using the CVN78 Ship Specifications. Review specifications and existing metallic/steel drawings for the CVN78 mast and ECM. Obtain input from the Structural Design, Electromagnetic (EM) Bonding, Grounding and Lightning, RCS, Outfitting, and Corrosion technical areas. Initiate global design.		
Congressional Adds Subtotals	2.948	-

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

Congressional Adds