Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Navy											Date: February 2015	
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 4: *Advanced Component Development & Prototypes (ACD&P)*					R-1 Program Element (Number/Name) PE 0603512N *I Carrier Systems Development*							
COST ($ in Millions)	**Prior Years**	**FY 2014**	**FY 2015**	**FY 2016 Base**	**FY 2016 OCO**	**FY 2016 Total**	**FY 2017**	**FY 2018**	**FY 2019**	**FY 2020**	**Cost To Complete**	**Total Cost**
Total Program Element	1,680.409	78.929	5.959	8.348	-	8.348	7.539	7.531	5.668	5.787	Continuing	Continuing
2208: *CVN 21*	978.823	31.081	-	-	-	-	-	-	-	-	-	1,009.904
3216.: *Tactical Support Center-Integration*	24.919	4.484	4.185	6.131	-	6.131	6.286	6.270	4.367	4.456	Continuing	Continuing
4004: *EMALS*	657.574	41.653	-	-	-	-	-	-	-	-	-	699.227
4005: *In-Service Carrier Systems Development*	19.093	1.711	1.774	2.217	-	2.217	1.253	1.261	1.301	1.331	Continuing	Continuing
Program MDAP/MAIS Code: **Project MDAP/MAIS Code(s):** 223												

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. Funding for this project continues in PE 0604112N in FY 15 and later.

- (3216) - The AN/SQQ-34 Aircraft Carrier Tactical Support Center (CV-TSC) contributes to Aircraft Carrier (CVN) self defense capabilities. The system provides shipboard support of multi-mission aircraft operating organic to the CVN or under control of the Carrier Strike Group (CSG), providing primary mission support for Anti-Submarine Warfare (ASW) and Surface Warfare (SUW). The AN/SQQ-34 also provides auxiliary support for secondary missions such as search and rescue. The system provides the capability to collect, process, analyze, display, and distribute sensor and tactical data in support of detection, classification, and localization of targets. The AN/SQQ-34 is incrementally upgraded to support new air platforms and their sensors, centrally integrate ASW capabilities on the CVN, transition maturing technologies, and maintain interoperability with interfacing systems. The system provides support for both rotary wing aircraft (MH-60R/S) and future support for fixed wing aircraft operating within the CSG (P-8, Triton Unmanned Aircraft System (UAS)).

Beginning in FY16 , Project 3216 will support the design and development of a multi-application, cross-platform boundary defense capability as directed by the Chief of Naval Operations (CNO) and Assistant Secretary of the Navy Research, Development & Acquisition (ASN (RDA)) via the Task Force Cyber Awakening (TFCA) Advisory Board.

- (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

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Navy	Date: February 2015
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 Program Element (Number/Name)** PE 0603512N *I Carrier Systems Development*

reliability and maintainability, increased operational availability and reduced operator and maintainer workload. Funding for this project continues in PE 0604112N in FY 15 and later.

- (4005) - The In-Service Carrier Systems Development 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).

B. Program Change Summary ($ in Millions)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Previous President's Budget	80.899	5.959	6.368	-	6.368
Current President's Budget	78.929	5.959	8.348	-	8.348
Total Adjustments	-1.970	-	1.980	-	1.980
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-1.971	-			
• Program Adjustments	-	-	2.000	-	2.000
• Rate/Misc Adjustments	0.001	-	-0.020	-	-0.020

Change Summary Explanation

Project 3216: Added funding to support the design and development of a Boundary Defense Capability.

Exhibit R-2A, RDT&E Project Justification: PB 2016 Navy			Date: February 2015
Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0603512N / *Carrier Systems Development*	Project (Number/Name) 2208 / *CVN 21*	

COST ($ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
2208: *CVN 21*	978.823	31.081	-	-	-	-	-	-	-	-	-	1,009.904
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Project MDAP/MAIS Code: 223

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, test and evaluation, manpower and program related studies, and design support systems, such as the Integrated Digital Environment (IDE). Funding for this project continues in PE 0604112N in FY 15 and later.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Title: CVN 78 Class Advanced Technology Design & Development	20.776	-	-	-	-
Articles:	-	-	-	-	-
Description: - CVN 78 Class Advanced Technology Design & Development: Continue development and transition of technologies to support CVN 78 Class 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 into the ship.					
FY 2014 Accomplishments: Continued design, development and transition of key technologies to support CVN 21 (CVN 78 Class) KPPs which included sortie generation rate, reductions in manpower, and further recovery of weight and stability service life margins. Continued design activities to integrate new technologies, such as the new propulsion plant and EMALS into the ship. Continued existing studies and commenced new studies required for integrated warfare system and C4I design, integration, test and validation efforts. Developed and reviewed Pre-Planned Product Improvement (P3I) Technical Data Packages. Continued engineering and technical support of aircraft					

Exhibit R-2A, RDT&E Project Justification: PB 2016 Navy		Date: February 2015
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603512N / *Carrier Systems Development*	**Project (Number/Name)** 2208 / *CVN 21*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
launch and recovery systems. Developed ship integration side studies to support NAVSEA documented class baseline changes. Continued shipbuilder system and cost engineering support to assess ship impacts from selected Engineering Change Requests (ECRs) and changes to the GFE/CFE equipment split. ***FY 2015 Plans:*** N/A ***FY 2016 Base Plans:*** N/A ***FY 2016 OCO Plans:*** N/A					
Title: CVN 21 - Test & Evaluation (T&E)	10.305	-	-	-	-
Articles:	-	-	-	-	-
Description: - CVN 21 - Test & Evaluation (T&E) ***FY 2014 Accomplishments:*** Continued conducting the semi-annual Post Delivery Test & Trials (PDT&T) workshops and updating / maintaining the notional PDT&T schedule. Continued the Developmental Test Working Group (DTWG) efforts, focusing on the continued development / refinement of the Developmental Test Database (DTDB) and the collection / analysis of the DT metrics. Stood up the CVN 78 Integrated Test Team (CITT), which was co-chaired by the Program Office and Commander, Operational Test & Evaluation (COMOPTEVFOR). Completed DT/IT-2 and commenced DT/IT-3, which included: (1) completing Sortie Generation Rate Assessment (SGRA) 13; the analysis / report on the Aqueous Film Forming Foam (AFFF) land-based system performance test; the analysis / report on the Aircraft Fueling Station (AFS) land-based testing; and NAVAIR Production Integration Facility (PIF) testing; (2) conducting Combat System Test (CST) Phase 1; and Navigation Integration Testing; and (3) continuing DBR land-based testing; DBR to TPX-42 land-based integration testing; HII-NNS Production Integration Center (PIC) testing; IA testing on CFE during PIC testing; E3 testing; and spiral development of the VCVN Model. ***FY 2015 Plans:*** N/A ***FY 2016 Base Plans:***					

Exhibit R-2A, RDT&E Project Justification: PB 2016 Navy		Date: February 2015
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603512N / *Carrier Systems Development*	**Project (Number/Name)** 2208 / *CVN 21*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
N/A ***FY 2016 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	31.081	-	-	-	-

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
• RDTEN / 0604567N: *Project Units 3108, 3179, 4007*	15.217	18.867	27.648	-	27.648	30.051	30.295	27.645	25.840	Continuing	Continuing
• RDTEN / 0603570N: *Propulsion Plant Development (PU 2692)*	57.499	60.459	-	-	-	-	-	-	-	-	1,526.813
• SCN / 2001: *Carrier Replacement Program*	917.553	1,219.425	2,509.359	-	2,509.359	2,955.056	3,530.762	2,075.957	873.334	Continuing	Continuing
• SCN / 5300: *Completion of Prior Year Shipbuilding Programs*	588.100	663.000	123.760	-	123.760	-	-	-	-	-	1,374.860
• RDTEN / 0604112N: *Project Units 2208, 4004*	-	43.613	48.105	-	48.105	45.386	33.890	25.418	25.951	Continuing	Continuing
• OMN / 1B2B: *CVN 78 Ford Class Training (12BJ0)*	-	4.907	38.389	-	38.389	35.600	3.878	3.880	3.956	Continuing	Continuing

Remarks

D. Acquisition Strategy

The CVN 78 is 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, EMALS, advanced arresting gear (AAG) 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 development of TEMP 1610, Rev C and route for signature. Successfully complete all PEO C4I TIF testing. Successfully execute SGRA 12 and SGRA 13. Gain acceptance of the FSST Alternative Process as a technically-feasible and cost-effective alternative to the traditional FSST. Successfully complete

Exhibit R-2A, RDT&E Project Justification: PB 2016 Navy		Date: February 2015
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603512N / *Carrier Systems Development*	**Project (Number/Name)** 2208 / *CVN 21*

the NAVAIR PIF testing and the Consolidated Afloat Networks and Enterprise Services (CANES) testing. 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. 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 2016 Navy			Date: February 2015
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603512N / *Carrier Systems Development*	**Project (Number/Name)** 2208 / *CVN 21*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2014 Cost	FY 2014 Award Date	FY 2015 Cost	FY 2015 Award Date	FY 2016 Base Cost	FY 2016 Base Award Date	FY 2016 OCO Cost	FY 2016 OCO Award Date	FY 2016 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Propulsion Plant Development	SS/CPFF	BETTIS : PA	71.627	-		-		-		-		-	-	71.627	-
Propulsion Plant Development	C/CPFF	HII : VA	164.409	-		-		-		-		-	-	164.409	-
Propulsion Plant Development	Various	MISCELLANEOUS : Various	10.562	-		-		-		-		-	-	10.562	-
Propulsion Plant Development	WR	NSWC CARDEROCK : MD	0.050	-		-		-		-		-	-	0.050	-
Advanced Design & Development	C/CPAF	HII : VA	180.701	6.523	Nov 2013	-		-		-		-	-	187.224	-
Advanced Design & Development	WR	NSWC CARDEROCK : MD	86.544	4.796	Nov 2013	-		-		-		-	-	91.340	-
Advanced Design & Development	C/CPFF	SAIC : NM	49.703	0.196	Dec 2013	-		-		-		-	-	49.899	-
Advanced Design & Development	WR	NAWCAD PATUXENT RIVER : MD	55.715	2.099	Nov 2013	-		-		-		-	-	57.814	-
Advanced Design & Development	WR	NAWC LAKEHURST : NJ	8.445	-		-		-		-		-	-	8.445	-
Advanced Design & Development	WR	NSWC DAHLGREN : VA	29.095	1.630	Nov 2013	-		-		-		-	-	30.725	-
Advanced Design & Development	C/CPAF	RAYTHEON : VA	40.226	2.874	Dec 2013	-		-		-		-	-	43.100	-
Advanced Design & Development	WR	NSWC PORT HUENEME : CA	6.068	-		-		-		-		-	-	6.068	-
Advanced Design & Development	WR	SPAWAR : CA	11.660	0.270	Nov 2013	-		-		-		-	-	11.930	-
Advanced Design & Development	C/CPFF	NAVSEA SEAPORT : DC	54.920	2.030	Dec 2013	-		-		-		-	-	56.950	-
Advanced Design & Development	WR	SSC ATLANTIC : SC	0.531	-		-		-		-		-	-	0.531	-

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Navy		Date: February 2015
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603512N / *Carrier Systems Development*	**Project (Number/Name)** 2208 / *CVN 21*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2014 Cost	FY 2014 Award Date	FY 2015 Cost	FY 2015 Award Date	FY 2016 Base Cost	FY 2016 Base Award Date	FY 2016 OCO Cost	FY 2016 OCO Award Date	FY 2016 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Advanced Design & Development	Various	MISCELLANEOUS : Various	44.165	0.358	Dec 2013	-		-		-		-	-	44.523	-
Aircraft Launch, Recovery & Support	C/CPAF	GENERAL ATOMICS (PDRR) : CA	82.719	-		-		-		-		-	-	82.719	-
Aircraft Launch, Recovery & Support	C/CPAF	HIINC : VA	3.126	-		-		-		-		-	-	3.126	-
Aircraft Launch, Recovery & Support	C/CPAF	GENERAL ATOMICS (SDD) - AWARD FEE : CA	3.557	-		-		-		-		-	-	3.557	-
		Subtotal	903.823	20.776		-		-		-		-	-	924.599	-

Remarks

Funds for this project include dollars associated with 22208 (FY97-98, $15,920K) and 42208 (FY99-13, $962,903K). Project Unit 42208 has been transferred to Program Element 0604112N for FY15 out.

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2014 Cost	FY 2014 Award Date	FY 2015 Cost	FY 2015 Award Date	FY 2016 Base Cost	FY 2016 Base Award Date	FY 2016 OCO Cost	FY 2016 OCO Award Date	FY 2016 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	C/CPAF	HII : VA	12.169	1.497	Nov 2013	-		-		-		-	-	13.666	-
Developmental Test & Evaluation	WR	NAWCAD PATUXENT RIVER : MD	24.231	2.405	Nov 2013	-		-		-		-	-	26.636	-
Developmental Test & Evaluation	WR	NSWC DALGREN : VA	6.939	0.842	Nov 2013	-		-		-		-	-	7.781	-
Developmental Test & Evaluation	WR	NSWC CARDEROCK : MD	11.029	1.964	Nov 2013	-		-		-		-	-	12.993	-
Developmental Test & Evaluation	WR	SPAWAR : CA	3.301	0.517	Nov 2013	-		-		-		-	-	3.818	-
Developmental Test & Evaluation	C/CPFF	NAVSEA SEAPORT : DC	0.676	-		-		-		-		-	-	0.676	-

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Navy			Date: February 2015
Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0603512N / *Carrier Systems Development*	Project (Number/Name) 2208 / *CVN 21*	

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2014 Cost	FY 2014 Award Date	FY 2015 Cost	FY 2015 Award Date	FY 2016 Base Cost	FY 2016 Base Award Date	FY 2016 OCO Cost	FY 2016 OCO Award Date	FY 2016 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	C/CPAF	RAYTHEON : VA	3.436	0.374	Dec 2013	-		-		-		-	-	3.810	-
Developmental Test & Evaluation	Various	MISCELLANEOUS : Various	5.062	0.678	Dec 2013	-		-		-		-	-	5.740	-
Developmental Test & Evaluation	WR	SSC ATLANTIC : SC	0.424	0.109	Nov 2013	-		-		-		-	-	0.533	-
Operational Test & Evaluation	WR	COMOPTEVFOR : VA	7.458	1.919	Dec 2013	-		-		-		-	-	9.377	-
		Subtotal	74.725	10.305		-		-		-		-	-	85.030	-

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2014 Cost	FY 2014 Award Date	FY 2015 Cost	FY 2015 Award Date	FY 2016 Base Cost	FY 2016 Base Award Date	FY 2016 OCO Cost	FY 2016 OCO Award Date	FY 2016 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Defense Acquisition Workforce	Various	VARIOUS : Various	0.275	-		-		-		-		-	-	0.275	-
		Subtotal	0.275	-		-		-		-		-	-	0.275	-

	Prior Years	FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	978.823	31.081		-		-		-		-	-	1,009.904	-

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Navy		**Date:** February 2015
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603512N / *Carrier Systems Development*	**Project (Number/Name)** 2208 / *CVN 21*

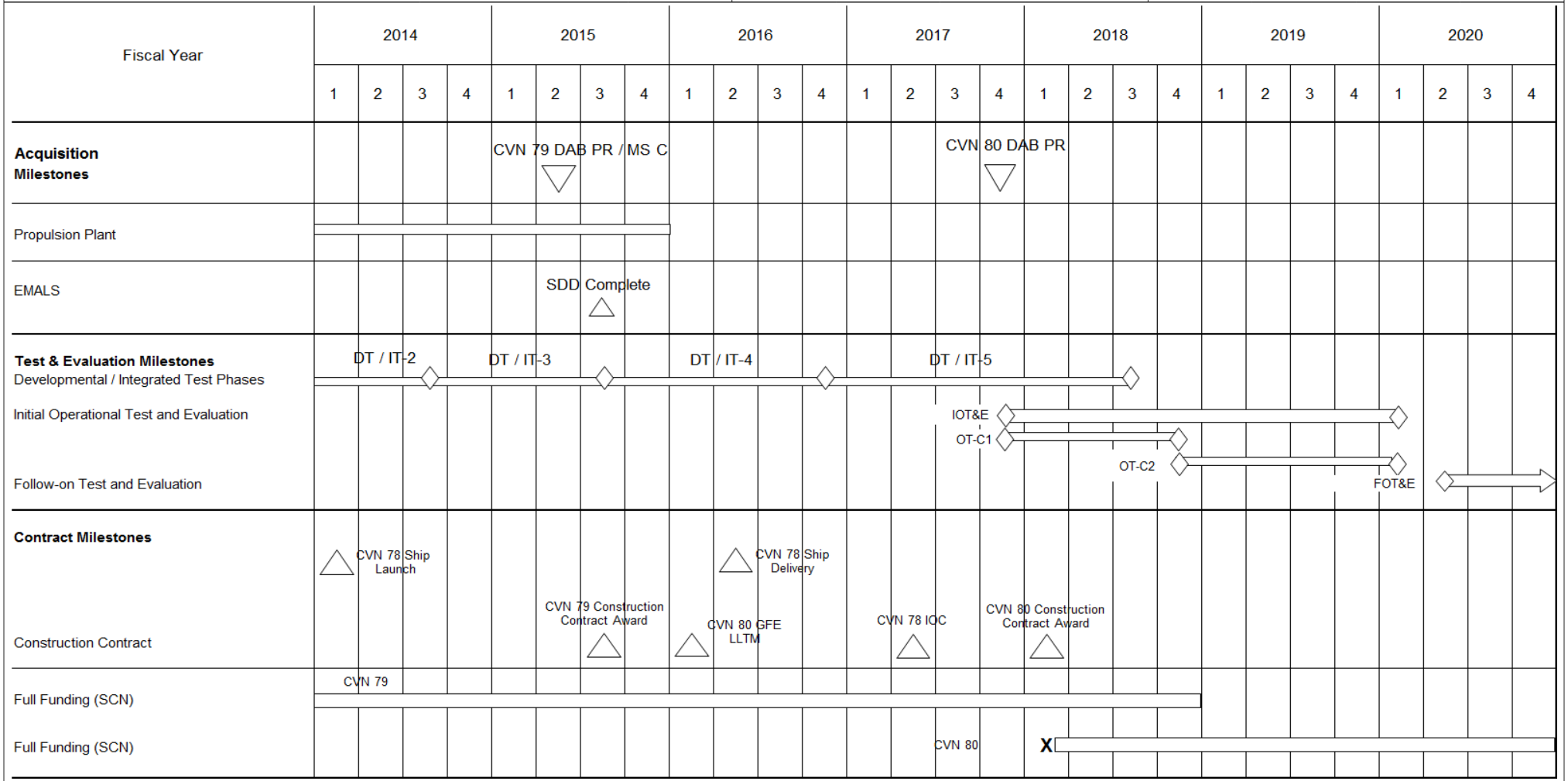


Exhibit R-4A, RDT&E Schedule Details: PB 2016 Navy		Date: February 2015
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603512N / *Carrier Systems Development*	**Project (Number/Name)** 2208 / *CVN 21*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 2208				
CVN 79 DAB PR	2	2015	2	2015
CVN 80 DAB PR	4	2017	4	2017
Milestone C	2	2015	2	2015
Propulsion Plant	1	2014	4	2015
EMALS SDD Complete	3	2015	3	2015
DT/IT -2- Developmental Test / Integrated Test Phase 2	1	2014	3	2014
DT/IT -3- Developmental Test / Integrated Test Phase 3	3	2014	3	2015
DT/IT -4- Developmental Test / Integrated Test Phase 4	3	2015	4	2016
DT/IT -5- Developmental Test / Integrated Test Phase 5	4	2016	3	2018
Initial Operational Test & Evaluation	4	2017	1	2020
OT -C1 - Initial Operational Test & Evaluation - Phase C1	4	2017	4	2018
OT -C2 - Initial Operational Test & Evaluation - Phase C2	4	2018	1	2020
FOT&E - Follow-On Test & Evaluation	2	2020	4	2020
CVN 78 Ship Launch	1	2014	1	2014
CVN 78 Ship Delivery	2	2016	2	2016
CVN 78 Initial Operational Capability (IOC)	2	2017	2	2017
CVN 79 Construction Contract Award	3	2015	3	2015
CVN 80 GFE LLTM Contract Award	1	2016	1	2016
CVN 80 Construction Contract Award	1	2018	1	2018
CVN 79 SCN Full Funding	1	2014	4	2018
CVN 80 SCN Full Funding	1	2018	4	2020

Exhibit R-2A, RDT&E Project Justification: PB 2016 Navy			Date: February 2015
Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0603512N / *Carrier Systems Development*	Project (Number/Name) 3216. / *Tactical Support Center-Integration*	

COST ($ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
3216.: *Tactical Support Center-Integration*	24.919	4.484	4.185	6.131	-	6.131	6.286	6.270	4.367	4.456	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The AN/SQQ-34 Aircraft Carrier Tactical Support Center (CV-TSC) contributes to Aircraft Carrier (CVN) self defense capabilities. The system provides shipboard support of multi-mission aircraft operating organic to the CVN or under control of the Carrier Strike Group (CSG), providing primary mission support for Anti-Submarine Warfare (ASW) and Surface Warfare (SUW). The AN/SQQ-34 also provides auxiliary support for secondary missions such as search and rescue. The system provides the capability to collect, process, analyze, display, and distribute sensor and tactical data in support of detection, classification, and localization of targets. The AN/SQQ-34 is incrementally upgraded to support new air platforms and their sensors, centrally integrate ASW capabilities on the CVN, transition maturing technologies, and maintain interoperability with interfacing systems. The system provides support for both rotary wing aircraft (MH-60R/S) and future support for fixed wing aircraft operating within the CSG (P-8, Triton UAS).

Additionally, this project will mature the development of low-cost multi-beam Ku-Band planar phased arrays and associated integrated radio systems, and addresses the major cost drivers of planar arrays and their associated radios. This effort will be the first spiral of a major cost reduction effort for multi-beam arrays, with the goal of showing a path to a production cost of less than one third the cost of existing array technologies. This development will produce key integrated components needed to reduce the cost of arrays and will provide prototype multi-beam Ku-Band receiving and transmitting arrays/radios using these components. The effort will also emphasize advances in technologies associated with multi-path interference, scan angle losses and networking waveforms.
(Speed to Fleet) 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). A portion of this program will focus on maturing low-cost multi-beam Ku-Band planar phased arrays and associated integrated radio systems that will be used to support data links to multiple MH-60Rs. This specific effort will address the need for low cost communications security (COMSEC) devices that are compatible with phased array systems, and that are needed to secure these data links.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Title: MH-60R Integration Development for CV-TSC	3.549	4.185	4.131	-	4.131
Articles:	-	-	-	-	-
FY 2014 Accomplishments: - Continued development of software version 8.0 to include: acoustic signal processing and analysis improvements; sensor performance predictions and mission planning support for the MH-60R acoustic sensor suite; embedded training for shipboard operators; and interoperability changes to support the Ship Self-Defense System (SSDS) and Common Data Link(CDL). Focus was on transition and integration efforts associated with					

Exhibit R-2A, RDT&E Project Justification: PB 2016 Navy		Date: February 2015
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603512N / *Carrier Systems Development*	**Project (Number/Name)** 3216. / *Tactical Support Center-Integration*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
existing acoustic signal processing capabilities modified for CV-TSC supported sensors, and maturing science and technology efforts associated with data analysis automation/fusion and embedded training products. - Conducted incremental requirements, design, and test reviews. - Continued incremental software development engineering releases to support initial Combat System Test (CST) events for CVN-78. ***FY 2015 Plans:*** - Complete development of software version 8.0. - Conduct final incremental requirements, design, and test reviews. - Deliver final software version to CST facility to support certification events starting in 4Q15. - Begin initial systems engineering and development efforts on software version 9.0. ***FY 2016 Base Plans:*** - Continue systems engineering efforts and development on software version 9.0. - Conduct incremental requirements, design, and test reviews. - Conduct CST events for CVN-78 (2Q16). ***FY 2016 OCO Plans:*** N/A					
Title: NAVSEA Boundary Defense Capability	-	-	2.000	-	2.000
Articles:	-	-	-	-	-
FY 2014 Accomplishments: N/A ***FY 2015 Plans:*** N/A ***FY 2016 Base Plans:*** Design and develop multi-application, cross-platform boundary defense equipment for control system enclaves, followed by engineering for CVN 68 Class integration. ***FY 2016 OCO Plans:*** N/A					
Title: Phased Array COMSEC	0.935	-	-	-	-
Articles:	-	-	-	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2016 Navy		Date: February 2015
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603512N / *Carrier Systems Development*	**Project (Number/Name)** 3216. / *Tactical Support Center-Integration*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Description: 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). A portion of this program will focus on maturing low-cost multi-beam Ku-Band planar phased arrays and associated integrated radio systems that will be used to support data links to multiple MH-60Rs. This specific effort will address the need for low cost communications security (COMSEC) devices that are compatible with phased array systems, and that are needed to secure these data links. ***FY 2014 Accomplishments:*** - Complete development of low cost COMSEC suitable for use with phased array-based Ku-band data links to MH-60R. - Initiate and complete testing and certification activities associated with COMSEC end units. ***FY 2015 Plans:*** N/A ***FY 2016 Base Plans:*** N/A ***FY 2016 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	4.484	4.185	6.131	-	6.131

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
• OPN/2176: *Undersea Support Equipment (CV-TSC/CDL portion)*	6.817	0.299	0.336	-	0.336	0.330	0.337	0.342	0.350	Continuing	Continuing

Remarks

D. Acquisition Strategy

CV-TSC utilizes an incremental development approach that aims to deliver required capability updates on two-year intervals to the Fleet. This approach allows required capability to be delivered in a timely manner and provides frequent opportunities to ensure interoperability is synchronized with the Ship Self Defense System (SSDS) Advanced Capability Builds (ACBs). The acquisition strategy places heavy emphasis on the use of open architecture best practices to ensure ease of upgrades and to make developed products available to other platforms.

Exhibit R-2A, RDT&E Project Justification: PB 2016 Navy		Date: February 2015
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603512N / *Carrier Systems Development*	**Project (Number/Name)** 3216. / *Tactical Support Center-Integration*

In support of MH-60R, COMSEC development and certification will be conducted under the auspices of the Naval Center for High Assurance Computer Systems at the Naval Research Laboratory (NRL).

E. Performance Metrics

- Achieve Configuration Control Board (CCB) certification for installation of CV-TSC software version 8.0.
- Achieve Platform Information Technology (PIT) Information Assurance (IA) accreditation on CV-TSC software version 8.0.
- Achieve Consolidate Afloat Network Enterprise System (CANES) interoperability certification for CV-TSC software version 8.0.
- Achieve element certification on CV-TSC software version 8.0.
- Achieve Combat System test certification on CV-TSC software version 8.0.

Successfully complete Certification requirements for COMSEC being developed.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Navy		Date: February 2015
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603512N / *Carrier Systems Development*	**Project (Number/Name)** 3216. / *Tactical Support Center-Integration*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2014 Cost	FY 2014 Award Date	FY 2015 Cost	FY 2015 Award Date	FY 2016 Base Cost	FY 2016 Base Award Date	FY 2016 OCO Cost	FY 2016 OCO Award Date	FY 2016 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Engineering / H/W & S/W Devel / Integration	WR	NAWC/Pax River : MD	0.475	0.150	Feb 2014	0.150	Jan 2015	0.150	Nov 2015	-		0.150	Continuing	Continuing	Continuing
Engineering / H/W & S/W Devel / Integration	WR	NRL : DC	0.325	-		-		-		-		-	-	0.325	-
Engineering / H/W & S/W Devel / Integration	WR	NSWC/Carderock : MD	0.600	0.500	Feb 2014	0.750	Jan 2015	0.500	Nov 2015	-		0.500	Continuing	Continuing	Continuing
Engineering / H/W & S/W Devel / Integration	WR	NSWC/Dahlgren : VA	0.100	-		-		-		-		-	-	0.100	-
Engineering / H/W & S/W Devel / Integration	WR	NUWC/Keyport : WA	13.954	2.015	Nov 2013	2.205	Nov 2014	2.351	Nov 2015	-		2.351	Continuing	Continuing	Continuing
System Eng / S/W Development	C/CPFF	Adaptive Methods : VA	1.075	0.479	Jan 2014	0.600	Jan 2015	0.600	Dec 2015	-		0.600	Continuing	Continuing	Continuing
System Eng / S/W Development	C/CPFF	JHU/APL : MD	0.250	-		-		-		-		-	-	0.250	-
System Eng / S/W Development	WR	SPAWAR : CA	4.160	-		-		-		-		-	-	4.160	-
Engineering / H/W & S/W Development	C/CPFF	VAR* : VAR*	0.679	-		0.200	Feb 2015	0.250	Dec 2015	-		0.250	Continuing	Continuing	Continuing
CVN 68 Boundary Defense Capability Design/ Development	TBD	VAR* : VAR*	0.000	-		-		2.000	Dec 2015	-		2.000	-	2.000	-
Advanced Design & Development	WR	NRL : DC	1.795	-		-		-		-		-	-	1.795	-
		Subtotal	23.413	3.144		3.905		5.851		-		5.851	-	-	-

Remarks

*Consists of multiple performing activities with funding for each not greater than $1M per year.
Engineering/H/W & S/W Development/Integration

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Navy		Date: February 2015
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603512N / *Carrier Systems Development*	**Project (Number/Name)** 3216. / *Tactical Support Center-Integration*

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2014 Cost	FY 2014 Award Date	FY 2015 Cost	FY 2015 Award Date	FY 2016 Base Cost	FY 2016 Base Award Date	FY 2016 OCO Cost	FY 2016 OCO Award Date	FY 2016 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Test and Certification	WR	NUWC//Keyport : WA	1.205	0.225	Nov 2013	0.225	Nov 2014	0.225	Nov 2015	-		0.225	Continuing	Continuing	Continuing
Test and Certification	WR	NUWC/Newport : RI	0.000	0.125	Feb 2014	-		-		-		-	-	0.125	-
Functional and Certification Testing	WR	NRL : DC	0.000	0.935	Oct 2013	-		-		-		-	-	0.935	-
		Subtotal	1.205	1.285		0.225		0.225		-		0.225	-	-	-

Remarks

Testing and Certification

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2014 Cost	FY 2014 Award Date	FY 2015 Cost	FY 2015 Award Date	FY 2016 Base Cost	FY 2016 Base Award Date	FY 2016 OCO Cost	FY 2016 OCO Award Date	FY 2016 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management Support	C/CPAF	BAE Systems : MD	0.301	0.055	Jan 2014	0.055	Feb 2015	0.055	Dec 2015	-		0.055	Continuing	Continuing	Continuing
		Subtotal	0.301	0.055		0.055		0.055		-		0.055	-	-	-

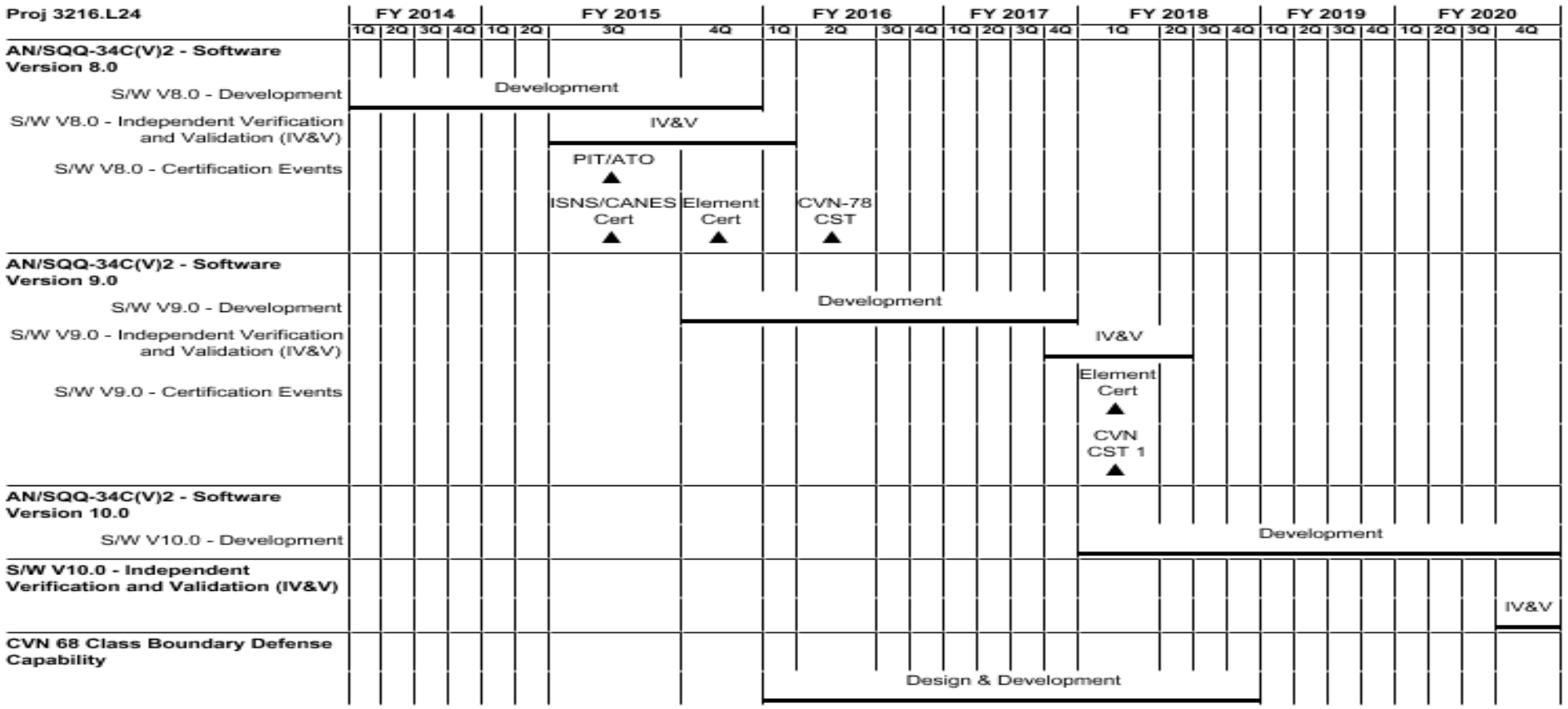
Remarks

N/A

	Prior Years	FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	24.919	4.484		4.185		6.131		-		6.131	-	-	-

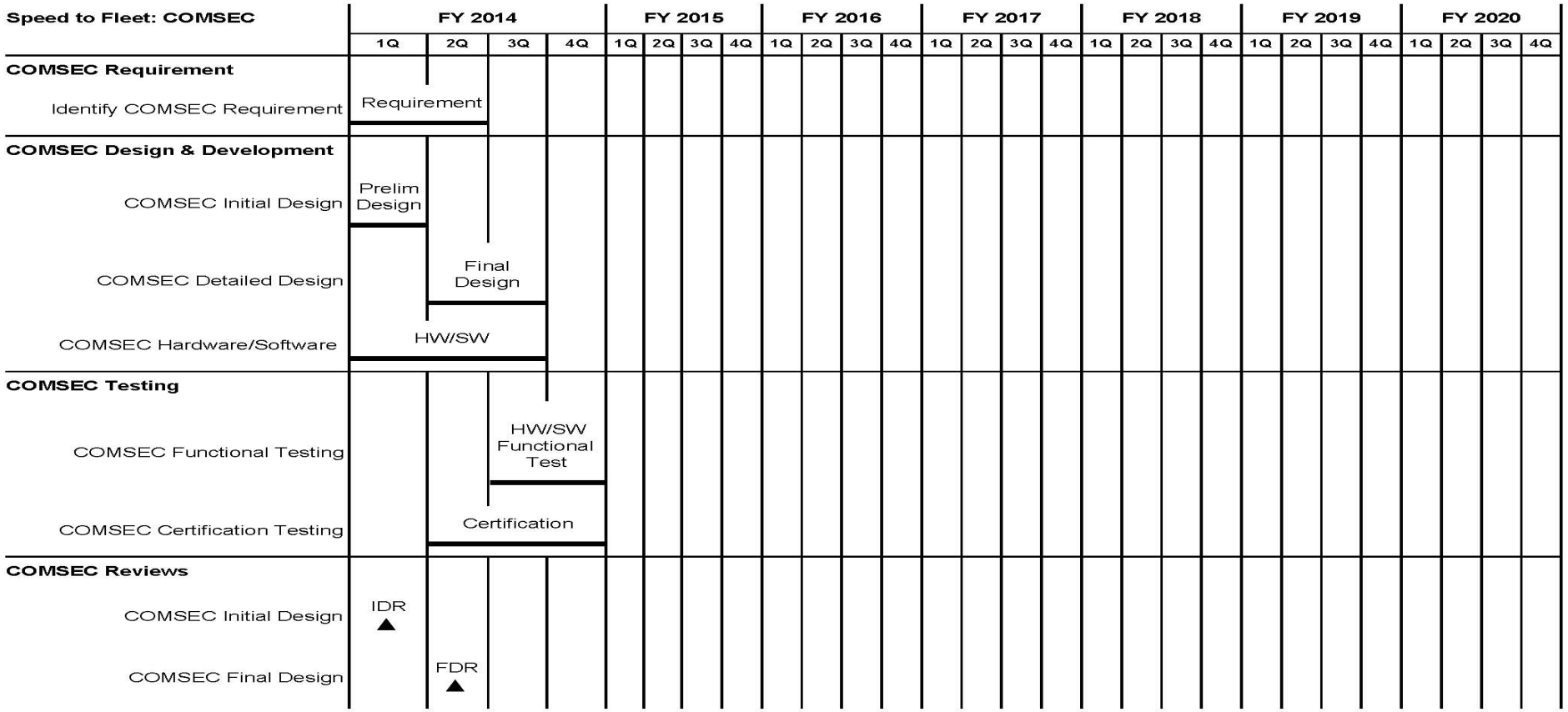
Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Navy		Date: February 2015
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603512N / *Carrier Systems Development*	**Project (Number/Name)** 3216. / *Tactical Support Center-Integration*



2016PB - 0603512N - 3216.L24

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Navy		Date: February 2015
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603512N / *Carrier Systems Development*	**Project (Number/Name)** 3216. / *Tactical Support Center-Integration*



2016OSD - 0603512N - 3216.S14

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Navy		Date: February 2015
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603512N / *Carrier Systems Development*	**Project (Number/Name)** 3216. / *Tactical Support Center-Integration*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 3216.L24				
AN/SQQ-34C(V)2 - Software Version 8.0: S/W V8.0 - Development: S/W V8.0 - Development (continued)	1	2014	4	2015
AN/SQQ-34C(V)2 - Software Version 8.0: S/W V8.0 - Independent Verification and Validation (IV&V): S/W V8.0 - IV&V	3	2015	1	2016
AN/SQQ-34C(V)2 - Software Version 8.0: S/W V8.0 - Certification Events: S/W V8.0 - Platform IT/Authority to Operate (PIT/ATO) Certification	3	2015	3	2015
AN/SQQ-34C(V)2 - Software Version 8.0: S/W V8.0 - Certification Events: S/W V8.0 - ISNS/CANES Certification	3	2015	3	2015
AN/SQQ-34C(V)2 - Software Version 8.0: S/W V8.0 - Certification Events: S/W V8.0 - Element Certification	4	2015	4	2015
AN/SQQ-34C(V)2 - Software Version 8.0: S/W V8.0 - Certification Events: S/W V8.0 - CVN-78 Combat System Test (CST)	2	2016	2	2016
AN/SQQ-34C(V)2 - Software Version 9.0: S/W V9.0 - Development: S/W V9.0 - Development	4	2015	4	2017
AN/SQQ-34C(V)2 - Software Version 9.0: S/W V9.0 - Independent Verification and Validation (IV&V): S/W V9.0 - IV&V	4	2017	2	2018
AN/SQQ-34C(V)2 - Software Version 9.0: S/W V9.0 - Certification Events: S/W V9.0 - Element Certification	1	2018	1	2018
AN/SQQ-34C(V)2 - Software Version 9.0: S/W V9.0 - Certification Events: S/W V9.0 - CVN Combat System Test (CST) 1	1	2018	1	2018
AN/SQQ-34C(V)2 - Software Version 10.0: S/W V10.0 - Development: S/W V10.0 - Development	1	2018	4	2020
S/W V10.0 - Independent Verification and Validation (IV&V): S/W V10.0 - IV&V	4	2020	4	2020

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Navy		Date: February 2015
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603512N / *Carrier Systems Development*	**Project (Number/Name)** 3216. / *Tactical Support Center-Integration*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
CVN 68 Class Boundary Defense Capability: CVN 68 Class Boundary Defense Capability Design & Development	1	2016	4	2018
Speed to Fleet: COMSEC				
COMSEC Requirement: Identify COMSEC Requirement: COMSEC Requirement	1	2014	2	2014
COMSEC Design & Development: COMSEC Initial Design: Preliminary Design	1	2014	1	2014
COMSEC Design & Development: COMSEC Detailed Design: Final Design	2	2014	3	2014
COMSEC Design & Development: COMSEC Hardware/Software: Hardware/Software Completion	1	2014	3	2014
COMSEC Testing: COMSEC Functional Testing: Hardware/Software Functional Testing	3	2014	4	2014
COMSEC Testing: COMSEC Certification Testing: Formal Certification Testing	2	2014	4	2014
COMSEC Reviews: COMSEC Initial Design: Initial Design Review	1	2014	1	2014
COMSEC Reviews: COMSEC Final Design: Final Design Review	2	2014	2	2014

Exhibit R-2A, RDT&E Project Justification: PB 2016 Navy			Date: February 2015
Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0603512N / *Carrier Systems Development*	Project (Number/Name) 4004 / *EMALS*	

COST ($ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
4004: *EMALS*	657.574	41.653	-	-	-	-	-	-	-	-	-	699.227
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Project MDAP/MAIS Code: 223

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 (E&LCS) 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. Funding for this project continues in PE 0604112N in FY 15 and later.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Title: EMALS	41.653	-	-	-	-
Articles:	-	-	-	-	-
Description: EMALS					
FY 2014 Accomplishments: (1) EMALS SDD - Completed Aircraft Compatibility Testing (ACT) Phase 2. Conducted full system and risk mitigation testing at the System Functional Demonstration (SFD) site by conducting repeated cycles with deadload testing. Ran multiple cycles with deadloads and aircraft launches as part of the reliability growth program. Maintained and replenished test spares for the Lakehurst, NJ test site. (2) EMALS BOA ILS Order - Continued the execution of the EMALS ILS Development Program. Conducted annual logistics reviews, training in-process review (IPR) and Organizational and Intermediate (O & I) Technical Manual (TM) IPRs. Based on the development and availability of engineering source data for each of the six (6) EMALS subsystems and allocated resources, developed / updated Failure Mode Effectiveness and Criticality Analyses (FMECAs), the Logistics Management Information (LMI) database, Calibration Analysis, Calibration/Measurements Requirements Summary / Instrument Calibration Procedures (CMRS/ICP), manpower analyses, O&I maintenance plans, provisioning documentation, Post Production Support Planning / Diminishing Manufacturing Sources & Material Shortages (PPSP/DMSMS) screening and analyses, and support equipment					

Exhibit R-2A, RDT&E Project Justification: PB 2016 Navy		Date: February 2015
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603512N / *Carrier Systems Development*	**Project (Number/Name)** 4004 / *EMALS*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
identification and technical data. Continued to develop training documents, the Navy Formal Training Course. Developed the Shipboard Facility Requirements Document (FRD) and the Training FRD. ***FY 2015 Plans:*** N/A ***FY 2016 Base Plans:*** N/A ***FY 2016 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	41.653	-	-	-	-

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
• RDTEN / 0604567N: *Project Units 3108, 3179, 4007*	15.217	18.867	27.648	-	27.648	30.051	30.295	27.645	25.840	Continuing	Continuing
• RDTEN / 0603570N: *Propulsion Plant Development (PU 2692)*	57.499	60.459	-	-	-	-	-	-	-	-	1,526.813
• SCN / 2001: *Carrier Replacement Program*	917.553	1,219.425	2,509.359	-	2,509.359	2,955.056	3,530.762	2,075.957	873.334	Continuing	Continuing
• SCN / 5300: *Completion of Prior Year Shipbuilding Programs*	588.100	663.000	123.760	-	123.760	-	-	-	-	-	1,374.860
• RDTEN / 0604112N: *Project Units 2208, 4004*	-	43.613	48.105	-	48.105	45.386	33.890	25.418	25.951	Continuing	Continuing
• OMN / 1B2B: *CVN 78 Ford Class Training (12BJ0)*	-	4.907	38.389	-	38.389	35.600	3.878	3.880	3.956	Continuing	Continuing

Remarks

D. Acquisition Strategy

The CVN 78 is 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 (EMALS), advanced arresting gear (AAG) system, all electric auxiliaries, warfare system improvements, survivability enhancements, improved weapons handling, and improved aircraft servicing. These design features

Exhibit R-2A, RDT&E Project Justification: PB 2016 Navy		Date: February 2015
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603512N / *Carrier Systems Development*	**Project (Number/Name)** 4004 / *EMALS*

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 Environmental Qualification Testing (EQT). Successfully complete Shipset Controls Lab testing.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Navy		Date: February 2015
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603512N / *Carrier Systems Development*	**Project (Number/Name)** 4004 / *EMALS*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2014 Cost	FY 2014 Award Date	FY 2015 Cost	FY 2015 Award Date	FY 2016 Base Cost	FY 2016 Base Award Date	FY 2016 OCO Cost	FY 2016 OCO Award Date	FY 2016 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Aircraft Launch, Recovery & Support	C/CPAF	Northrop Grumman : VA	0.000	-		-		-		-		-	-	-	-
Aircraft Launch, Recovery & Support	C/CPAF	General Atomics (PDRR) : CA	0.000	-		-		-		-		-	-	-	-
Aircraft Launch, Recovery & Support	C/CPAF	General Atomics (SDD) : CA	494.711	28.292	Dec 2013	-		-		-		-	-	523.003	421.098
Aircraft Launch, Recovery & Support	C/CPFF	General Atomics (BOA) : CA	14.083	8.415	Nov 2013	-		-		-		-	-	22.498	44.469
Aircraft Launch, Recovery & Support	WR	NAWC Lakehurst : NJ	44.704	-		-		-		-		-	-	44.704	-
Aircraft Launch, Recovery & Support	C/CPAF	HIINC : VA	0.000	-		-		-		-		-	-	-	-
Aircraft Launch, Recovery & Support	C/CPAF	General Atomics (SDD) - Award Fee : CA	10.696	-		-		-		-		-	-	10.696	10.696
		Subtotal	564.194	36.707		-		-		-		-	-	600.901	-

Remarks

The All Prior Years figure has been adjusted to reflect only the funding allocated to 44004 from FY2003 - FY2013. Funds provided under 42208 have been incorporated into the All Prior Years figure for that project unit. Project Unit 4004 has been transferred to Program Element 0604112N for FY15 out.

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2014 Cost	FY 2014 Award Date	FY 2015 Cost	FY 2015 Award Date	FY 2016 Base Cost	FY 2016 Base Award Date	FY 2016 OCO Cost	FY 2016 OCO Award Date	FY 2016 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Aircraft Launch, Recovery & Support	WR	NAWC Lakehurst : NJ	93.081	4.946	Dec 2013	-		-		-		-	-	98.027	-
		Subtotal	93.081	4.946		-		-		-		-	-	98.027	-

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Navy			Date: February 2015
Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0603512N / *Carrier Systems Development*	Project (Number/Name) 4004 / *EMALS*	

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2014 Cost	FY 2014 Award Date	FY 2015 Cost	FY 2015 Award Date	FY 2016 Base Cost	FY 2016 Base Award Date	FY 2016 OCO Cost	FY 2016 OCO Award Date	FY 2016 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Defense Acquisition Workforce	Various	Not Specified : Not Specified	0.299	-		-		-		-		-	-	0.299	-
		Subtotal	0.299	-		-		-		-		-	-	0.299	-

	Prior Years	FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	657.574	41.653		-		-		-		-	-	699.227	-

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Navy		**Date:** February 2015
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603512N / *Carrier Systems Development*	**Project (Number/Name)** 4004 / *EMALS*

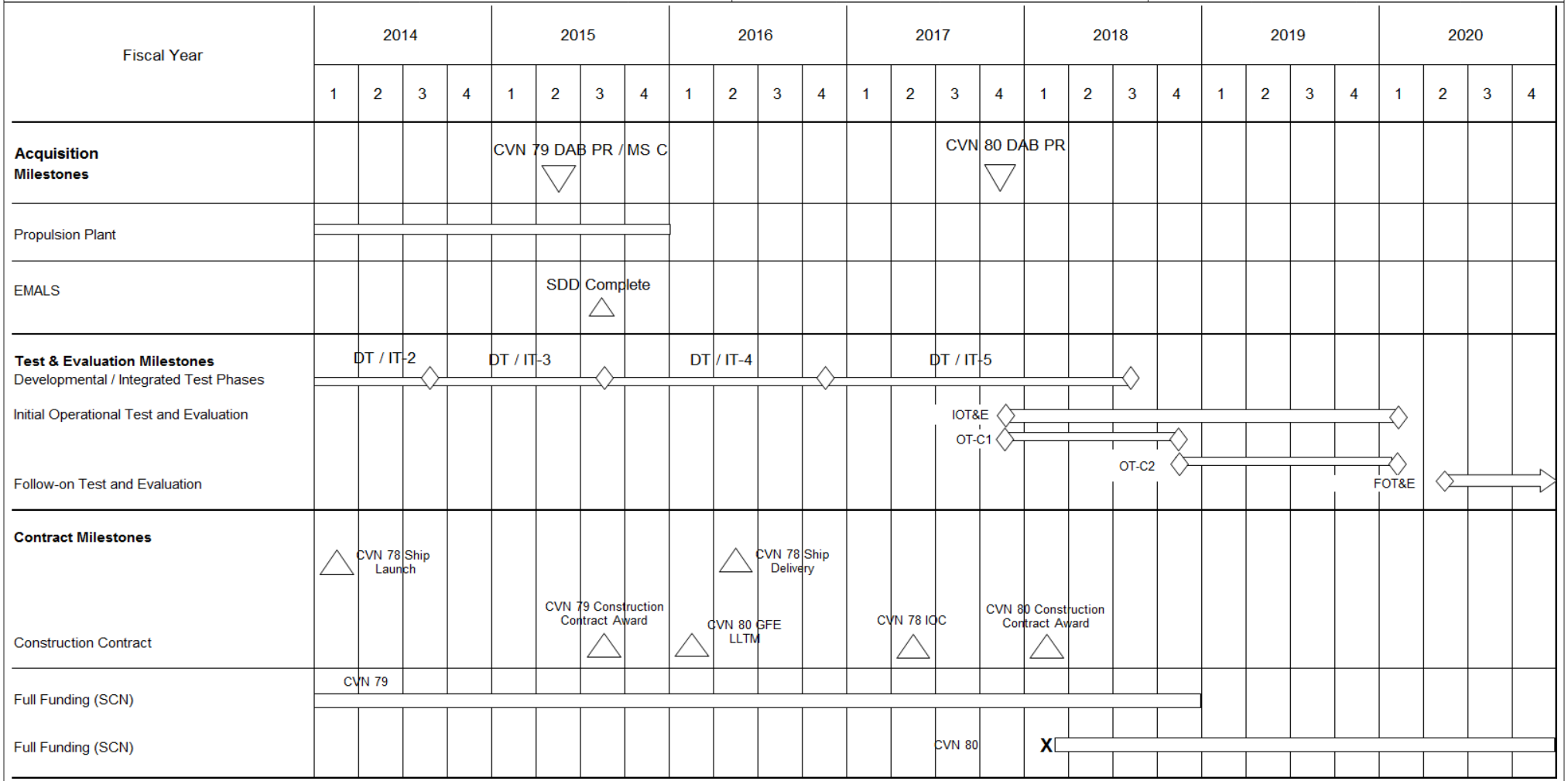


Exhibit R-4A, RDT&E Schedule Details: PB 2016 Navy		Date: February 2015
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603512N / *Carrier Systems Development*	**Project (Number/Name)** 4004 / *EMALS*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 4004				
CVN 79 DAB PR	2	2015	2	2015
CVN 80 DAB PR	4	2017	4	2017
Milestone C	2	2015	2	2015
Propulsion Plant	1	2014	4	2015
EMALS SDD Complete	3	2015	3	2015
DT/IT -2- Developmental Test / Integrated Test Phase 2	1	2014	3	2014
DT/IT -3- Developmental Test / Integrated Test Phase 3	3	2014	3	2015
DT/IT -4- Developmental Test / Integrated Test Phase 4	3	2015	4	2016
DT/IT -5- Developmental Test / Integrated Test Phase 5	4	2016	3	2018
Initial Operational Test & Evaluation	4	2017	1	2020
OT -C1 - Initial Operational Test & Evaluation - Phase C1	4	2017	4	2018
OT -C2 - Initial Operational Test & Evaluation - Phase C2	4	2018	1	2020
FOT&E - Follow-On Test & Evaluation	2	2020	4	2020
CVN 78 Ship Launch	1	2014	1	2014
CVN 78 Ship Delivery	2	2016	2	2016
CVN 78 Ship Initial Operational Capability (IOC)	2	2017	2	2017
CVN 79 Construction Contract Award	3	2015	3	2015
CVN 80 GFE LLTM Contract Award	1	2016	1	2016
CVN 80 Construction Contract Award	1	2018	1	2018
CVN 79 SCN Full Funding	1	2014	4	2018
CVN 80 SCN Full Funding	1	2018	4	2020

Exhibit R-2A, RDT&E Project Justification: PB 2016 Navy			Date: February 2015
Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0603512N / *Carrier Systems Development*	Project (Number/Name) 4005 / *In-Service Carrier Systems Development*	

COST ($ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
4005: *In-Service Carrier Systems Development*	19.093	1.711	1.774	2.217	-	2.217	1.253	1.261	1.301	1.331	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The In-Service Carrier Systems 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, Uninterruptible Power Supply (UPS) Replacements, Advanced Damage Control System (ADCS), Weapons Elevator Control Accumulator Replacement, and the Integrated Condition Assessment System, and On-Machine I/O development for LPAPs. Demonstration technologies include Advanced Damage Control System (ADCS) software improvements, A/C Plant Model, Input/Output Controller (IOC) Replacement, Fleet Wireless Personal digital Assistant (PDA), Weapons Elevator Laser Positioning System, Legacy Steering Interface upgrades, CVN Integrated Topside Design (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: Integrated Bridge control Data Logger, C4I Network Performance Modeling and Analysis, NCDS Packet Filtering Device, Network Data Logger Device, Portable Communication System (PCS) proof of concept, Ship Control System (SCS) Onboard trainer, Universal Portable Command and Control Unit (PCCU), CVN78 CL Platform support for Joint Strike Fighter Integration.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Title: In-Service Carrier Systems Development	1.711	1.774	2.217	-	2.217
Articles:	-	-	-	-	-
FY 2014 Accomplishments: Continued support of technologies with modifications, upgrades and development of systems and software support of In-Service aircraft carrier modernization initiatives.					
FY 2015 Plans: Fiscal Year 2015 plans include support to Aircraft Carrier technologies. Modifications, upgrades and development of systems and software will be ongoing in support of In-Service aircraft carrier modernization initiatives and TOC reduction initiatives.					
FY 2016 Base Plans:					

Exhibit R-2A, RDT&E Project Justification: PB 2016 Navy		Date: February 2015
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603512N / *Carrier Systems Development*	**Project (Number/Name)** 4005 / *In-Service Carrier Systems Development*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Fiscal Year 2016 plans include support to Aircraft Carrier technologies. Modifications, upgrades and development of systems and software will be ongoing in support of In-Service aircraft carrier modernization initiatives and TOC reduction initiatives. ***FY 2016 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	1.711	1.774	2.217	-	2.217

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

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, Uninterruptible Power Supply (UPS) Replacements, Advanced Damage Control System (ADCS) Software Improvements, Automatic Fire Sensing and Suppression System/Flooding and Casualty Control Software (AFSSS/FCCS) Software Development Test, Input/Output Controller (IOC) replacement demonstration, Tank Preservation models, Weapons Elevator Laser Positioning demonstration, Legacy Steering Interface Upgrades, CVN Integrated Topside Design (ITD) location option evaluation tool development, Antenna to Antenna coupling analysis tool development, Universal Portable Command and Control Unit (PCCU) development, Ship Control System (SCS) Trainer, Integrated Bridge Control Data Logger, Weapons Elevator Control Accumulator Replacement, and C4I Network Performance Requirements Modeling and Analysis.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Navy			Date: February 2015
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603512N / *Carrier Systems Development*	**Project (Number/Name)** 4005 / *In-Service Carrier Systems Development*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2014 Cost	FY 2014 Award Date	FY 2015 Cost	FY 2015 Award Date	FY 2016 Base Cost	FY 2016 Base Award Date	FY 2016 OCO Cost	FY 2016 OCO Award Date	FY 2016 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Ship Integration	WR	NAVSEA : Phil	1.414	0.235	Mar 2014	0.270	Nov 2014	0.229	Nov 2015	-		0.229	-	2.148	-
Ship Integration	WR	NAVSEA : Dahlgren	0.177	0.020	Mar 2014	-		-		-		-	-	0.197	-
Ship Integration	WR	Norfolk Naval Shipyard : Norfolk	0.000	-		-		0.400	Nov 2015	-		0.400	-	0.400	-
		Subtotal	1.591	0.255		0.270		0.629		-		0.629	-	2.745	-

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2014 Cost	FY 2014 Award Date	FY 2015 Cost	FY 2015 Award Date	FY 2016 Base Cost	FY 2016 Base Award Date	FY 2016 OCO Cost	FY 2016 OCO Award Date	FY 2016 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Software Development	WR	NAVSEA : Phil	7.224	0.419	Mar 2014	0.489	Nov 2014	0.300	Nov 2015	-		0.300	-	8.432	-
Program Management Support	WR	NAVSEA : Phil	2.627	0.225	Mar 2014	0.225	Nov 2014	0.300	Nov 2015	-		0.300	-	3.377	-
Training Development	WR	NAVSEA : Phil	0.911	0.174	Mar 2014	0.180	Nov 2014	0.150	Nov 2015	-		0.150	-	1.415	-
Integrated Logistics Support	WR	NAVSEA : Phil	1.330	0.109	Mar 2014	0.115	Nov 2014	0.150	Nov 2015	-		0.150	-	1.704	-
Software Development	WR	NAVSEA : Dahlgren	0.297	0.011	Mar 2014	-		-		-		-	-	0.308	-
Program Management Support	WR	NAVSEA : Dahlgren	0.317	-		-		-		-		-	-	0.317	-
Program Management Support	WR	Norfolk Naval shipyard : Norfolk	0.000	-		-		0.192	Nov 2015	-		0.192	-	0.192	-
		Subtotal	12.706	0.938		1.009		1.092		-		1.092	-	15.745	-

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2014 Cost	FY 2014 Award Date	FY 2015 Cost	FY 2015 Award Date	FY 2016 Base Cost	FY 2016 Base Award Date	FY 2016 OCO Cost	FY 2016 OCO Award Date	FY 2016 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WR	SPAWAR : Atlantic	0.214	-		-		-		-		-	-	0.214	-

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Navy			Date: February 2015
Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0603512N / *Carrier Systems Development*	Project (Number/Name) 4005 / *In-Service Carrier Systems Development*	

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2014 Cost	FY 2014 Award Date	FY 2015 Cost	FY 2015 Award Date	FY 2016 Base Cost	FY 2016 Base Award Date	FY 2016 OCO Cost	FY 2016 OCO Award Date	FY 2016 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WR	NAVSEA : Phil	4.343	0.488	Mar 2014	0.495	Nov 2014	0.496	Nov 2015	-		0.496	Continuing	Continuing	Continuing
Developmental Test & Evaluation	WR	NAVSEA : Dahlgren	0.231	0.030	Mar 2014	-		-		-		-	-	0.261	-
		Subtotal	4.788	0.518		0.495		0.496		-		0.496	-	-	-

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2014 Cost	FY 2014 Award Date	FY 2015 Cost	FY 2015 Award Date	FY 2016 Base Cost	FY 2016 Base Award Date	FY 2016 OCO Cost	FY 2016 OCO Award Date	FY 2016 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
DAWF	Various	Various : Various	0.008	-		-		-		-		-	-	0.008	-
		Subtotal	0.008	-		-		-		-		-	-	0.008	-

	Prior Years	FY 2014 Cost	FY 2014 Award Date	FY 2015 Cost	FY 2015 Award Date	FY 2016 Base Cost	FY 2016 Base Award Date	FY 2016 OCO Cost	FY 2016 OCO Award Date	FY 2016 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	19.093	1.711		1.774		2.217		-		2.217	-	-	-

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Navy		Date: February 2015
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603512N / *Carrier Systems Development*	**Project (Number/Name)** 4005 / *In-Service Carrier Systems Development*

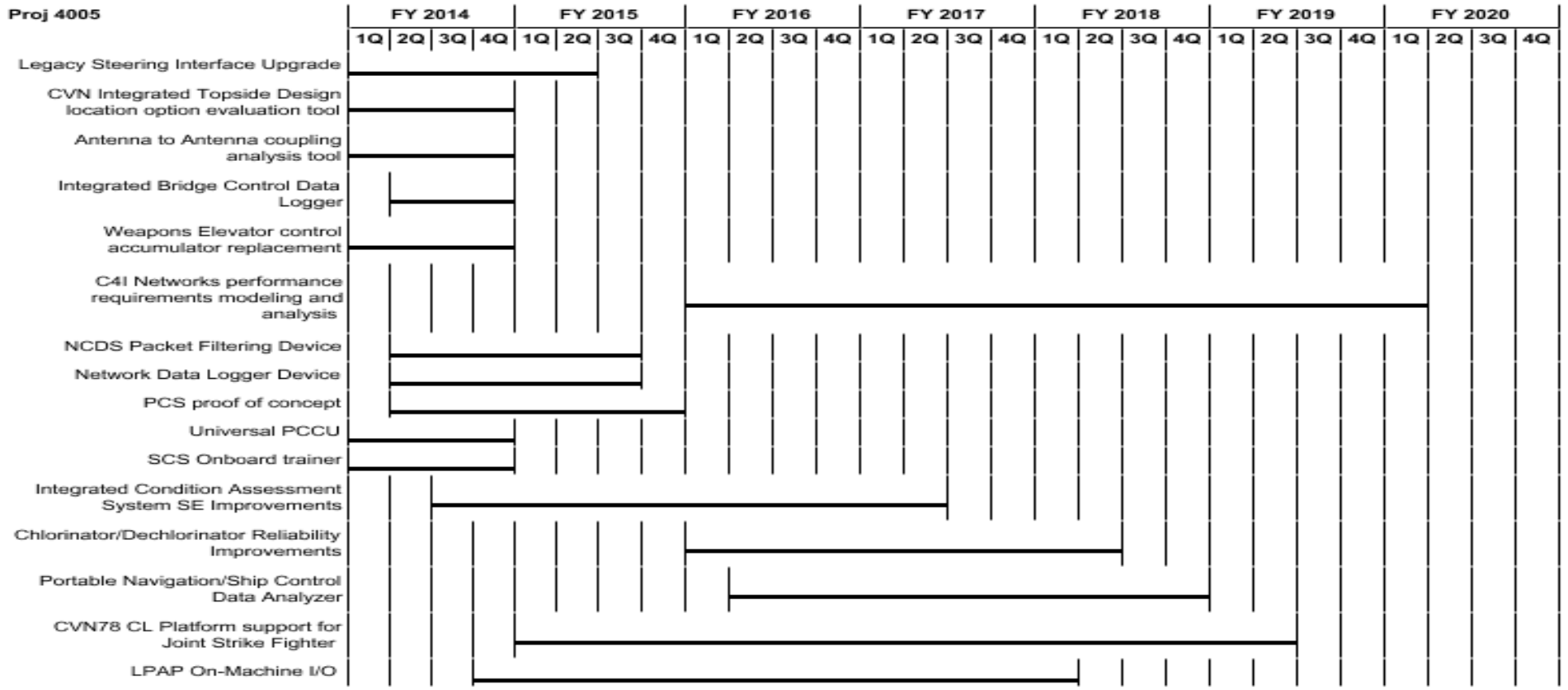


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Exhibit R-4A, RDT&E Schedule Details: PB 2016 Navy		Date: February 2015
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603512N / *Carrier Systems Development*	**Project (Number/Name)** 4005 / *In-Service Carrier Systems Development*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 4005				
Legacy Steering Interface Upgrade: Legacy Steering Interface Upgrade	1	2014	2	2015
CVN Integrated Topside Design location option evaluation tool: CVN Integrated Topside Design location option evaluation tool	1	2014	4	2014
Antenna to Antenna coupling analysis tool: Antenna to Antenna coupling analysis tool	1	2014	4	2014
Integrated Bridge Control Data Logger: Integrated Bridge Control Data Logger	2	2014	4	2014
Weapons Elevator control accumulator replacement: Weapons Elevator control accumulator replacement	1	2014	4	2014
C4I Networks performance requirements modeling and analysis: C4I Networks performance requirements modeling and analysis	1	2016	1	2020
NCDS Packet Filtering Device: NCDS Packet Filtering Device	2	2014	3	2015
Network Data Logger Device: Network Data Logger Device	2	2014	3	2015
PCS proof of concept: PCS proof of concept	2	2014	4	2015
Universal PCCU: Universal PCCU	1	2014	4	2014
SCS Onboard trainer: SCS Onboard trainer	1	2014	4	2014
Integrated Condition Assessment System SE Improvements: Integrated Condition Assessment System SE Improvements	3	2014	2	2017
Chlorinator/Dechlorinator Reliability Improvements: Chlorinator/Dechlorinator Reliability Improvements	1	2016	2	2018
Portable Navigation/Ship Control Data Analyzer: Portable Navigation/Ship Control Data Analyzer	2	2016	4	2018
CVN78 CL Platform support for Joint Strike Fighter: CVN78 CL Platform support for Joint Strike fighter	1	2015	2	2019
LPAP On-Machine I/O: LPAP On-Machine I/O	4	2014	1	2018