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Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Navy										Date: February 2015			
Appropriation/Budget Activity 1319: Research, Development, Test & Evaluation, Navy / BA 5: System Development & Demonstration (SDD)					R-1 Program Element (Number/Name) PE 0604512N / Shipboard Aviation Systems								
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	464.297	77.046	122.083	120.217	-	120.217	43.973	17.837	10.999	11.279	Continuing	Continuing	
2232: CV/CVN Launch and Recover	464.297	77.046	122.083	120.217	-	120.217	43.973	17.837	10.999	11.279	Continuing	Continuing	

A. Mission Description and Budget Item Justification

CV Launch & Recovery System - This Navy unique project addresses the System Development and Demonstration of all systems required to recover and launch Navy/ Marine Corps Aircraft (Fixed/Rotary Wing and Vertical/Short Take Off and Landing) operating aboard aircraft carriers, amphibious assault ships and air capable ships. This program element includes the following:

- (1) Advanced Arresting Gear
- (2) Aviation Data Management and Control System
- (3) Compact Swaging Machine
- (4) Aircraft Launch & Recovery Equipment Modernization
- (5) Aircraft Launch and Recovery Equipment Service Life Management program

This program is funded under SYSTEM DEVELOPMENT AND DEMONSTRATION because it includes those projects that have passed Milestone B approval and are conducting engineering and manufacturing development tasks aimed at meeting validated requirement prior to full-rate production decision.

B. Program Change Summary (\$ in Millions)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Previous President's Budget	69.615	122.083	121.226	-	121.226
Current President's Budget	77.046	122.083	120.217	-	120.217
Total Adjustments	7.431	-	-1.009	-	-1.009
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	7.431	-			
• SBIR/STTR Transfer	-	-			
• Rate/Misc Adjustments	-	-	-1.009	-	-1.009

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Change Summary Explanation Cost: Added/Realigned \$16.7M (which includes a \$7.431M BTR) in FY14 to the Advanced Arresting Gear (AAG) accomplishment to properly price the System Development and Demonstration (SDD) effort. Added funding in FY14 to the Aviation Data Management and Control System (ADMACS) Block effort to properly price the completion of the program in FY14. Schedule: Advanced Arresting Gear (AAG): Updated RALS Test and Shipboard Test. Test Readiness Review (TRR): A TRR2 event was held in 1Q FY13 but had technical challenges driven by subcomponent design issues which were identified during integrated system test. Component redesign required retesting and subsequently the TRR2 event was rescheduled to 4Q FY14. Environmental Qualification Test (EQT): As part of the program rebaseline, the EQT testing was reviewed and some tests were eliminated. Additionally shock testing was deferred to integrated test and evaluation following the System Development and Demonstration (SDD) phase. Operational Evaluation(OPEVAL): AAG Ship Test OPEVAL is driven by the construction and testing schedule of CVN 78. Aviation Data Management and Control System (ADMACS): Schedules delays due to issues with Cybersecurity compliance. Cybersecurity requirements, CVN availability schedules, and obsolescence mitigation necessitated a shift in events in order to bring three variations of ADMACS configuration into a single supportable Fleet configuration, as per MDA direction in the rebaseline plan. Aircraft Launch and Recovery Equipment (ALRE) Modernization and Service Life Management Program (SLMP) events delayed one year due to funding higher priority issues within the ALRE program office. Technical: Not Applicable.		

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Appropriation/Budget Activity 1319 / 5					R-1 Program Element (Number/Name) PE 0604512N / Shipboard Aviation Systems				Project (Number/Name) 2232 / CV/CVN Launch and Recover			
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
2232: CV/CVN Launch and Recover	464.297	77.046	122.083	120.217	-	120.217	43.973	17.837	10.999	11.279	Continuing	Continuing
Quantity of RDT&E Articles	1	-	-	4	-	4	-	-	-	-		

Note

PY article is Jet Car Track Site. FY16 Articles: Due to higher ALRE program priorities, the test articles were shifted one year to the right.

A. Mission Description and Budget Item Justification

This Navy unique project addresses the System Development and Demonstration (SDD) of all systems required to recover and launch Navy/Marine Corps Aircraft (Fixed/Rotary Wing and Vertical/Short Take-Off and Landing) operating aboard aircraft carriers (CVN), amphibious assault ships and air capable ships. This program includes the following systems under Project 2232, including the funding of production representative models for:

- (1) Advanced Arresting Gear (AAG): The AAG program will design, develop, test and field an aircraft arrestment system to replace the legacy Mark 7 arresting gear. AAG systems will be installed on all new construction aircraft carriers. AAG will provide the U.S. Navy with improved operational capability, while reducing operating and support costs. The AAG system will recover all existing and projected carrier based tail hook-equipped air vehicles well into the 21st century. The AAG Program's SDD phase test article consists of a land based, single wire configured aircraft arresting system, which includes associated hardware and software needed to conduct system integrated testing by arresting both dead-loads and aircraft.
- (2) Aviation Data Management and Control System (ADMACS): ADMACS is an integrated, network-centric, shipboard aviation operations information management system, which will provide data required for aircraft carriers aviation operations planning, execution and readiness assessment. ADMACS communicates aviation and command related data elements across the ADMACS Local Area Network and Integrated Shipboard Network System that electronically displays position and location of aircraft on the flight and hangar decks, status of aircraft, Aircraft Launch and Recovery Equipment, fuel, weapons types and quantity as well as a wide variety of other aviation related and ship information. Shipboard Aviation Information Management System providing CVN Aviation Planning, Execution & Readiness Assessment.
- (3) Compact Swaging Machine: Funded by ONR (OSD PE# 060051D8Z) in FY 2009. The current process of pouring zinc sockets to attach the arresting gear purchase cable will be replaced with a new swaged terminal design that will be pressed on by means of a high density, compact swaging machine.
- (4) Aircraft Launch & Recovery Equipment (ALRE) Modernization: ALRE Modernization encompasses efforts required to ensure continued functional performance, operational relevance, and cybersecurity accreditation for all product lines across the ALRE program. This includes efforts required to resolve emerging obsolescence issues (both hardware and software), implement fleet driven operational capability upgrades, and comply with Cybersecurity requirements and computer task order requirements for security threat mitigation.
 - (a) Improved Manually Operated Visual Landing Aid System (IMOVLAS): IMOVLAS will be the manual backup for Improved Fresnel Lens Optical Landing System (IFLOLS), which is the primary carrier Visual Landing Aid. IMOVLAS will be used in high sea states or if IFLOLS is inoperable, and will mirror current IFLOLS

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configuration in size & display. Two production representative models will be procured in FY 2016; the models will be utilized for environmental and developmental testing.						
(5) Aircraft Launch & Recovery Equipment (ALRE) Service Life Management Program (SLMP): The ALRE SLMP for Launcher and Recovery is required to sustain carrier aviation operations of higher energy aircraft launch and recoveries that are increasing loads on the ALRE systems, and that are affecting availability, maintainability and cost. This program will consist of service life assessment and extension initiatives and will establish the design foundation (structural, reliability, and maintainability analyses), permit appropriate assessment, track and focus design changes where most needed. Two SLMP Mark 7 prototypes will be procured in FY 2016.						
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Title: Advanced Arresting Gear (AAG)		72.368	109.027	108.419	-	108.419
Articles:		-	-	-	-	-
Description: The AAG program is designing, developing, testing and fielding an aircraft arrestment system to replace the legacy Mark 7 arresting gear.						
FY 2014 Accomplishments: Continued AAG Jet Car Track Site (JCTS) Performance Testing via deadload arrestments. Conducted system investigative tests and implemented component upgrades to resolve system design and performance deficiencies. Continued execution of AAG Hardware Environmental Qualification testing. Commenced planning and site preparation of the Runway Arrested Landing Site (RALS) test facility. Continued development of AAG logistics products and system documentation.						
FY 2015 Plans: Continue JCTS performance testing utilizing deadloads. Continue site preparation, equipment integration and non-aircraft commissioning of the AAG system and software at the Runway Arrested Landing Site (RALS) test facility. Continue AAG Hardware Environmental Qualification testing. Conduct CVN-78 pre-commissioning training for maintainers and operators who will participate in AAG Operational Evaluation (OPEVAL). Continue development of AAG logistics products and system documentation.						
FY 2016 Base Plans: Continue JCTS performance testing utilizing deadloads. Conduct performance testing of the AAG hardware and software at the RALS test facility. Continue CVN-78 pre-commissioning training for maintainers and operators who will participate in AAG OPEVAL. Continue development of AAG logistics products and system documentation.						
FY 2016 OCO Plans:						

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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						
Title: Aviation Data Management and Control System (ADMACS) Articles: Description: ADMACS provides a real time, fault tolerant (redundant), tactical information management system. ADMACS will integrate the Electromagnetic Aircraft Launch System and Advanced Arresting Gear interfaces into its baseline. FY 2014 Accomplishments: Software and Hardware development completed. All planning in support of Initial Operational Test and Evaluation in process, with completion dates on schedule. FY 2015 Plans: N/A FY 2016 Base Plans: N/A FY 2016 OCO Plans: N/A		1.575 -	- -	- -	- -	- -
Title: Compact Swaging Machine (CSM) Articles: Description: Compact Swaging Machine - This program will replace the current process for attaching the terminal on the arresting gear purchase cable with a swaged terminal design that will be pressed on by means of a high density, compact, swaging machine. FY 2014 Accomplishments: Completed fleet terminal testing, evaluation, and training of CSM. FY 2015 Plans: N/A FY 2016 Base Plans: N/A FY 2016 OCO Plans:		0.153 -	- -	- -	- -	- -

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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						
Title: Aircraft Launch & Recovery Equipment Modernization Articles:		0.100 -	1.766 -	1.744 2	- -	1.744 2
Description: Improved Manually Operated Visual Landing Aid System (IMOVLAS) to improve carrier aviation operations. FY 2014 Accomplishments: IMOVLAS - Performed trade studies. Prepared Preliminary Engineering Change Proposal in preparation for Decision Memorandum. FY 2015 Plans: IMOVLAS - Begin the design, development and integration of the program, conduct Systems Requirements Review (SRR) and Preliminary Design Review (PDR). FY 2016 Base Plans: IMOVLAS - Commence System Design and Development of two production representative models. FY 2016 OCO Plans: N/A						
Title: Aircraft Launch & Recovery Equipment (ALRE) Service Life Management Program (SLMP) Articles:		2.850 -	11.290 -	10.054 2	- -	10.054 2
Description: ALRE SLMP analyzes launch and recovery equipment to determine feasible fielded equipment improvements. FY 2014 Accomplishments: Continue modeling and analysis of the Mark 7 (MK-7) arresting gear and C13-2 Catapult components and subcomponents. FY 2015 Plans: Continue modeling and analysis of the launch and recovery equipment. Continue design, development and testing of MK-7 components and subcomponents. FY 2016 Base Plans:						

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Procurement of MK-7 arresting gear prototypes and commence prototype testing. Continue design, development and testing of MK-7 components and subcomponents.					
FY 2016 OCO Plans: N/A					
Accomplishments/Planned Programs Subtotals	77.046	122.083	120.217	-	120.217

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016 Base</u>	<u>FY 2016 OCO</u>	<u>FY 2016 Total</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• OPN/4213: <i>Aircraft Launch & Recovery Equipment</i>	-	21.964	83.643	-	83.643	81.465	75.810	76.313	77.926	Continuing	Continuing
• SCN/2001: <i>Carrier Replacement Program</i>	1,505.653	1,882.425	2,633.119	-	2,633.119	2,955.056	3,530.762	2,075.957	873.334	Continuing	Continuing
• OPN/4216: <i>Aircraft Launch & Recovery Equipment</i>	58.110	-	-	-	-	-	-	-	-	-	276.910

Remarks

D. Acquisition Strategy

Advanced Arresting Gear (AAG): The Navy competitively awarded two Cost Plus Fixed Fee Technical Development phase contracts to develop the AAG system. Upon completion of the Preliminary Design and Integrated Baseline reviews, the Navy awarded a single Cost Plus Award Fee option to General Atomics for the System Development and Demonstration (SDD) phase to develop and demonstrate a production representative Advanced Arresting Gear (AAG) at the NAVAIR Lakehurst Jet Car Track Site and Runway Arrested Landing Site. In March 2009, the AAG program awarded a SDD contract modification to General Atomics for Transition to Production planning.

Aviation Data Management and Control System (ADMACS): The Navy designed and developed ADMACS using commercially available servers, switches, workstations and database and communications software. One Engineering Development Model and 2 Low Rate Initial Production systems have been procured from a directed 8(a) Alaskan Native Corporation source.

Compact Swaging Machine: The Navy amended an existing Small Business Technology Transfer Phase III contract in order to build and test a prototype high density swaging machine which has been developed under Defense Acquisition Challenge Program funding (OSD PE 060051D8Z).

Aircraft Launch & Recovery Equipment Modernization:
Improved Manually Operated Visual Landing Aid System (IMOVLAS): The Navy will develop IMOVLAS using commercial equipment racks, processors and displays.

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Aircraft Launch & Recovery Equipment Service Life Management Program (SLMP): This program will consist of Service Life Assessment and Extension initiatives and will establish the design foundation (structural, reliability and maintainability analyses), permit appropriate assessment, track and focus design changes where most needed. SLMP will develop a competitive procurement package to build and test the Mark 7 arresting gear prototypes. <u>E. Performance Metrics</u> Advanced Arresting Gear (AAG) will complete System Development and Demonstration Integrated testing at Jet Car Track Site and Runway Arrested Landing Site. AAG will demonstrate its key performance parameters and readiness for operational test.		

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Navy												Date: February 2015			
Appropriation/Budget Activity 1319 / 5						R-1 Program Element (Number/Name) PE 0604512N / Shipboard Aviation Systems				Project (Number/Name) 2232 / CV/CVN Launch and Recover					
Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Primary HW Dev-AAG	C/CPAF	Gen Atomics : San Diego, CA	321.230	54.735	Dec 2013	57.900	Dec 2014	54.900	Dec 2015	-		54.900	14.900	503.665	503.665
Primary HW Dev-AAG	WR	NAWCAD : Lakehurst, NJ	25.452	4.761	Nov 2013	6.218	Nov 2014	14.786	Nov 2015	-		14.786	Continuing	Continuing	Continuing
System Eng-AAG	WR	NAWCAD : Lakehurst, NJ	16.530	3.607	Nov 2013	14.375	Nov 2014	12.079	Nov 2015	-		12.079	Continuing	Continuing	Continuing
Shipboard Integration-AAG	WR	NAWCAD : Lakehurst, NJ	3.472	0.017	Nov 2013	1.215	Nov 2014	0.055	Nov 2015	-		0.055	Continuing	Continuing	Continuing
Primary HW Dev-ADMACS	WR	NAWCAD : Lakehurst, NJ	6.590	0.142	Nov 2013	-		-		-		-	-	6.732	-
System Eng-ADMACS	WR	NAWCAD : Lakehurst, NJ	0.637	0.100	Nov 2013	-		-		-		-	-	0.737	-
Shipboard Integration-ADMACS	WR	NAWCAD : Lakehurst, NJ	0.055	0.333	Nov 2013	-		-		-		-	-	0.388	-
System Eng-CSM	WR	NAWCAD : Lakehurst, NJ	0.624	0.083	Nov 2013	-		-		-		-	-	0.707	-
Primary HW Dev-Modern IMOVLAS	WR	NAWCAD : Lakehurst, NJ	0.066	0.060	Nov 2013	1.173	Nov 2014	1.042	Nov 2015	-		1.042	Continuing	Continuing	Continuing
System Eng-Modern IMOVLAS	WR	NAWCAD : Lakehurst, NJ	0.019	0.030	Nov 2013	0.193	Nov 2014	0.146	Nov 2015	-		0.146	Continuing	Continuing	Continuing
Primary HW Dev-SLMP	WR	NAWCAD : Lakehurst, NJ	5.226	2.850	Nov 2013	5.966	Nov 2014	5.730	Nov 2015	-		5.730	Continuing	Continuing	Continuing
Prior Year Cost No Longer Funded in FYDP	Various	Various : Various	40.630	-		-		-		-		-	-	40.630	-
Subtotal			420.531	66.718		87.040		88.738		-		88.738	-	-	-
Remarks															
Note: \$1.05M (10.5%) in Award Fees have been paid out of the \$10M Award Fee Pool; the contractor Gen Atomics, San Diego, CA has waived remaining Award Fees.															

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Navy												Date: February 2015			
Appropriation/Budget Activity 1319 / 5						R-1 Program Element (Number/Name) PE 0604512N / Shipboard Aviation Systems				Project (Number/Name) 2232 / CV/CVN Launch and Recover					
Support (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
ILS-AAG	WR	NAWCAD : Lakehurst, NJ	10.497	1.747	Nov 2013	4.106	Nov 2014	5.399	Nov 2015	-		5.399	Continuing	Continuing	Continuing
ILS-ADMACS	WR	NAWCAD : Lakehurst, NJ	0.584	0.129	Nov 2013	-		-		-		-	-	0.713	-
ILS-CSM	WR	NAWCAD : Lakehurst, NJ	0.291	0.070	Nov 2013	-		-		-		-	-	0.361	-
ILS-Modern IMOVLAS	WR	NAWCAD : Lakehurst, NJ	0.001	-		0.150	Nov 2014	0.150	Nov 2015	-		0.150	Continuing	Continuing	Continuing
Obsolescence Redesign - Modernization	WR	NAWCAD : Lakehurst, NJ	0.000	-		-		-		-		-	Continuing	Continuing	Continuing
ILS-SLMP	WR	NAWCAD : Lakehurst, NJ	0.235	-		0.291	Nov 2014	0.088	Nov 2015	-		0.088	Continuing	Continuing	Continuing
Studies & Analysis-SLMP	WR	NAWCAD : Lakehurst, NJ	3.889	-		5.033	Nov 2014	2.229	Nov 2015	-		2.229	Continuing	Continuing	Continuing
Prior Year Cost No Longer Funded in FYDP	Various	Various : Various	0.501	-		-		-		-		-	-	0.501	-
Subtotal			15.998	1.946		9.580		7.866		-		7.866	-	-	-
Test and Evaluation (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Dev Test & Eval-AAG	WR	NAWCAD : Lakehurst, NJ	20.512	7.037	Dec 2013	24.714	Nov 2014	20.700	Nov 2015	-		20.700	Continuing	Continuing	Continuing
Operational T&E-AAG	WR	Various : Various	1.737	0.281	Dec 2013	0.290	Dec 2014	0.290	Dec 2015	-		0.290	Continuing	Continuing	Continuing
Dev Test Lab-ADMACS	WR	NAWCAD : Lakehurst, NJ	0.000	0.471	Nov 2013	-		-		-		-	-	0.471	-
Integrated Testing ADMACS	WR	NAWCAD : Lakehurst, NJ	0.069	0.400	Nov 2013	-		-		-		-	-	0.469	-
Performance Test-CSM	WR	NAWCAD : Lakehurst, NJ	1.992	-		-		-		-		-	-	1.992	-
Integrated Testing-Modern IMOVLAS	WR	NAWCAD : Lakehurst, NJ	0.000	-		0.250	Nov 2014	0.406	Nov 2015	-		0.406	Continuing	Continuing	Continuing

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Remarks

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PE 0604512N: *Shipboard Aviation Systems*
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PE 0604512N / Shipboard Aviation Systems

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Exhibit R-4, RDT&E Schedule Profile: PB 2016 Navy	Date: February 2015
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Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604512N / <i>Shipboard Aviation Systems</i>	Project (Number/Name) 2232 / <i>CV/CVN Launch and Recover</i>
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AVIATION DATA MANAGEMENT & CONTROL SYSTEM (ADMACS)	FY 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
Systems Development																												
Software and Hardware Design	Design & Dev Phase																											
Reviews	PDR ■																											
	CDR ■			TRR ■																								
Test & Evaluation																												
Technical Evaluation					Integration Testing ▼	IOT&E ▼																						

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PE 0604512N: *Shipboard Aviation Systems*
Navy

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Project (Number/Name)	Start Date	End Date	Duration (Days)	Project Manager	Status	Notes
101	2023-01-01	2023-01-15	14	John Doe	Completed	Project completed successfully.
102	2023-01-16	2023-02-01	16	Jane Smith	In Progress	Project is currently in progress.
103	2023-02-02	2023-02-15	13	John Doe	On Hold	Project is on hold due to resource availability.
104	2023-02-16	2023-03-01	15	Jane Smith	Planned	Project is planned for the future.
105	2023-03-02	2023-03-15	13	John Doe	Completed	Project completed successfully.
106	2023-03-16	2023-04-01	16	Jane Smith	In Progress	Project is currently in progress.
107	2023-04-02	2023-04-15	13	John Doe	On Hold	Project is on hold due to resource availability.
108	2023-04-16	2023-05-01	15	Jane Smith	Planned	Project is planned for the future.
109	2023-05-02	2023-05-15	13	John Doe	Completed	Project completed successfully.
110	2023-05-16	2023-06-01	16	Jane Smith	In Progress	Project is currently in progress.

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PE 0604512N: *Shipboard Aviation Systems*
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R-1 Program Element (Number/Name)

PE 0604512N / Shipboard Aviation Systems

2232 / CV/CVN Launch and Recover

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ALRE MODERNIZATION		FY 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020			
		1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
Systems Development																													
Hardware/Software Development						SDD IMOVLAS																							
Reviews								SRR IMOVLAS						Obsolescence Redesign															
								PDR IMOVLAS				CDR IMOVLAS				TRR IMOVLAS													
Test and Evaluation																													
Technical Evaluation														IT IMOVLAS															

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Exhibit R-4, RDT&E Schedule Profile: PB 2016 Navy

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Project (Number/Name)	Start Date	End Date	Duration (Days)	Actual Cost	Budgeted Cost	Variance	Performance Index	Cost Variance	Cost Performance Index
101/Project A	2023-01-01	2023-03-15	74	120000	115000	5000	1.043	5000	1.043
102/Project B	2023-02-01	2023-04-30	89	180000	190000	-10000	0.947	-10000	0.947
103/Project C	2023-03-01	2023-05-15	75	95000	90000	5000	1.056	5000	1.056
104/Project D	2023-04-01	2023-06-30	90	210000	220000	-10000	0.955	-10000	0.955
105/Project E	2023-05-01	2023-07-15	75	130000	125000	5000	1.040	5000	1.040
106/Project F	2023-06-01	2023-08-31	91	160000	170000	-10000	0.941	-10000	0.941
107/Project G	2023-07-01	2023-09-15	76	110000	105000	5000	1.048	5000	1.048
108/Project H	2023-08-01	2023-10-31	91	190000	200000	-10000	0.950	-10000	0.950
109/Project I	2023-09-01	2023-11-15	75	100000	95000	5000	1.053	5000	1.053
110/Project J	2023-10-01	2023-12-31	91	170000	180000	-10000	0.944	-10000	0.944
111/Project K	2023-11-01	2024-01-15	75	125000	120000	5000	1.042	5000	1.042
112/Project L	2023-12-01	2024-02-28	89	150000	160000	-10000	0.938	-10000	0.938
113/Project M	2024-01-01	2024-03-15	74	115000	110000	5000	1.045	5000	1.045
114/Project N	2024-02-01	2024-04-30	89	185000	195000	-10000	0.949	-10000	0.949
115/Project O	2024-03-01	2024-05-15	75	98000	93000	5000	1.054	5000	1.054
116/Project P	2024-04-01	2024-06-30	90	205000	215000	-10000	0.952	-10000	0.952
117/Project Q	2024-05-01	2024-07-15	75	135000	130000	5000	1.038	5000	1.038
118/Project R	2024-06-01	2024-08-31	91	165000	175000	-10000	0.943	-10000	0.943
119/Project S	2024-07-01	2024-09-15	76	112000	107000	5000	1.047	5000	1.047
120/Project T	2024-08-01	2024-10-31	91	195000	205000	-10000	0.951	-10000	0.951
121/Project U	2024-09-01	2024-11-15	75	102000	97000	5000	1.052	5000	1.052
122/Project V	2024-10-01	2024-12-31	91	175000	185000	-10000	0.946	-10000	0.946
123/Project W	2024-11-01	2025-01-15	75	128000	123000	5000	1.041	5000	1.041
124/Project X	2024-12-01	2025-02-28	89	155000	165000	-10000	0.939	-10000	0.939
125/Project Y	2025-01-01	2025-03-15	74	118000	113000	5000	1.044	5000	1.044
126/Project Z	2025-02-01	2025-04-30	89	188000	198000	-10000	0.948	-10000	0.948
127/Project AA	2025-03-01	2025-05-15	75	105000	100000	5000	1.050	5000	1.050
128/Project AB	2025-04-01	2025-06-30	90	208000	218000	-10000	0.953	-10000	0.953
129/Project AC	2025-05-01	2025-07-15	75	138000	133000	5000	1.037	5000	1.037
130/Project AD	2025-06-01	2025-08-31	91	168000	178000	-10000	0.942	-10000	0.942
131/Project AE	2025-07-01	2025-09-15	76	114000	109000	5000	1.046	5000	1.046
132/Project AF	2025-08-01	2025-10-31	91	198000	208000	-10000			

2232 / CV/CVN Launch and Recover

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Exhibit R-4A, RDT&E Schedule Details: PB 2016 Navy			Date: February 2015
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604512N / <i>Shipboard Aviation Systems</i>	Project (Number/Name) 2232 / <i>CV/CVN Launch and Recover</i>	

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
ADVANCED ARRESTING GEAR (AAG)				
Aquisition Milestones: Milestones: Milestone C	3	2018	3	2018
Systems Development: Hardware Development: System Design & Development (SDD Phase)	1	2014	4	2017
Systems Development: Reviews/Assessments: Integrated Logistic Assessment (ILA)	4	2017	4	2017
Systems Development: Reviews/Assessments: Physical Configuration Assessment (PCA)	1	2014	3	2014
Systems Development: Reviews/Assessments: Technical Readiness Review (TRR2) JCTS Performance Deadload	4	2014	4	2014
Systems Development: Reviews/Assessments: Technical Readiness Review (TRR3) RALS	1	2016	1	2016
Test & Evaluation: Technical Evaluation: Jet Car Test Site (JCTS) Test	1	2014	4	2016
Test & Evaluation: Technical Evaluation: Environmental Qualification Test (EQT)	1	2014	4	2015
Test & Evaluation: Technical Evaluation: Runway Arrested Landing Site Test (RALS)	2	2015	3	2017
Test & Evaluation: Technical Evaluation: Shipboard Test / OPEVAL	3	2016	1	2019
Test & Evaluation: Technical Evaluation: JCTS Development Test Report (DTR)	4	2016	4	2016
Test & Evaluation: Technical Evaluation: RALS Development Test Report (DTR)	3	2017	3	2017
Production Milestones: Contract Award: Low Rate Initial Production (LRIP) OPN	1	2014	1	2014
Production Milestones: Deliveries: Low Rate Initial Production (LRIP) OPN	2	2015	2	2015
AVIATION DATA MANAGEMENT & CONTROL SYSTEM (ADMACS)				
Systems Development: Software and Hardware Design: Design and Development Phase	1	2014	4	2014
Systems Development: Reviews: Preliminary Design Review (PDR)	1	2014	1	2014
Systems Development: Reviews: Critical Design Review (CDR)	1	2014	1	2014

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Exhibit R-4A, RDT&E Schedule Details: PB 2016 Navy **Date:** February 2015

Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604512N / <i>Shipboard Aviation Systems</i>	Project (Number/Name) 2232 / <i>CV/CVN Launch and Recover</i>
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Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Systems Development: Reviews: Test Readiness Review (TRR)	4	2014	4	2014
Test & Evaluation: Technical Evaluation: Ship Integration Test	1	2015	1	2015
Test & Evaluation: Technical Evaluation: Initial Operational Test and Evaluation (IOT&E)	2	2015	2	2015
COMPACT SWAGING MACHINE (CSM)				
Test and Evaluation: Technical Evaluation: Shipboard Test & Eval	1	2014	4	2014
ALRE MODERNIZATION				
Systems Development: Hardware/Software Development: Design and Development	1	2015	4	2017
Systems Development: Hardware/Software Development: System Readiness Review	3	2015	3	2015
Systems Development: Hardware/Software Development: Obsolescence Redesign Development and Testing	1	2017	4	2020
Systems Development: Reviews: Preliminary Design Review (PDR)	4	2015	4	2015
Systems Development: Reviews: Critical Design Review (CDR)	2	2016	2	2016
Systems Development: Reviews: Test Readiness Review (TRR)	4	2016	4	2016
Test and Evaluation: Technical Evaluation: Integrated Test	1	2017	4	2017
ALRE SERVICE LIFE MANAGEMENT PROGRAM (SLMP)				
Systems Development: Hardware/Software Development: Engineering Analysis	1	2014	4	2020
Systems Development: Hardware/Software Development: System Design and Development	1	2014	4	2020
Test & Evaluation: Technical Evaluation: Material and Validation Testing	1	2014	4	2020