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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy / BA 5: System Development & Demonstration (SDD)</i>					R-1 Program Element (Number/Name) PE 0604512N / <i>Shipboard Aviation Systems</i>							
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	541.343	120.062	120.217	112.158	-	112.158	45.880	46.619	31.576	28.097	Continuing	Continuing
2232: <i>CV/CVN Launch and Recover</i>	541.343	120.062	120.217	112.158	-	112.158	45.880	46.619	31.576	28.097	Continuing	Continuing

A. Mission Description and Budget Item Justification

CV Launch & Recovery System - 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, amphibious assault ships and air capable ships. This program element includes the following:

- (1) Advanced Arresting Gear (AAG)
- (2) Aircraft Launch & Recovery Equipment Modernization
- (3) 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 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	122.083	120.217	43.973	-	43.973
Current President's Budget	120.062	120.217	112.158	-	112.158
Total Adjustments	-2.021	0.000	68.185	-	68.185
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-2.021	0.000			
• Program Adjustments	0.000	0.000	67.435	-	67.435
• Rate/Misc Adjustments	0.000	0.000	0.750	-	0.750

Change Summary Explanation

Cost/Funding:

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Navy		Date: February 2016
Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604512N / <i>Shipboard Aviation Systems</i>	
<p>The FY 2017 funding request was reduced by \$3.416 million to account for the availability of prior years execution balance.</p> <p>Added FY 17 funding for AAG SDD Completion, Integrated Test and Evaluation (IT&E), and AAG interim training. AAG SDD funds were added for SDD completion delays resulting from technical failures. AAG funds for IT&E were added to complete correction of deficiencies. AAG training funds were added to continue training system development including schoolhouse formal courseware and simulators prior to RFT. These funds finance interim training and life-cycle training development and implementation for sailors operating and maintaining these new systems aboard the first in class delivery of CVN 78.</p> <p>SLMP costs were updated to reflect actuals and current planning.</p> <p>AAG Schedule: updated the Runway Arrested Landing Site (RALS) testing to reflect the most current Integrated Master Schedule (IMS). Schedule also updated to include IT&E for AAG and to reflect the shift of Jet Car Test Site (JCTS) Technical Evaluation from 4th quarter FY16 to 2nd quarter FY17.</p> <p>ALRE Modernization schedule: updated to incorporate shock and cyber security requirements to the technical baseline. System Requirements Review (SRR) shift from 3rd quarter FY 2015 to 2nd quarter FY 2016; Preliminary Design Review (PDR) shift from 4th quarter FY 2015 to 4th quarter FY 2016; Critical Design Review (CDR) from 2nd quarter FY 2016 to 1st quarter FY 2017; Test Readiness Review (TRR) shift from 4th quarter FY 2016 to 4th quarter FY 2017; Start of IMOVLAS Integrated Test shift from 1st quarter FY 2017 to 4th quarter FY 2017.</p>		

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy										Date: February 2016		
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>			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
2232: <i>CV/CVN Launch and Recover</i>	541.343	120.062	120.217	112.158	-	112.158	45.880	46.619	31.576	28.097	Continuing	Continuing
Quantity of RDT&E Articles	1	-	2	4	-	4	-	-	-	-		

Note

PY article is Jet Car Track Site. FY16 Articles: Due to higher Aircraft Launch & Recovery Equipment (ALRE) program priorities, the test articles were shifted one year to the right. Service Life Management Program (SLMP) test articles refer to actual units (there are two units per ship set).

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 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) 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. Effort includes:

(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 configuration in size & display. Two production representative models will be procured in FY 2016; the models will be utilized for environmental and developmental testing.

(3) 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. Four SLMP prototypes will be procured in FY 2017.

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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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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>Title: Advanced Arresting Gear (AAG)</p> <p align="right">Articles:</p> <p>Description: The Advanced Arresting Gear (AAG) program is designing, developing, testing and fielding an aircraft arrestment system to replace the legacy Mark 7 arresting gear.</p> <p>FY 2015 Accomplishments: Continued System Development & Demonstration (SDD) Jet Car Track Site (JCTS) performance testing utilizing deadloads. Continued test site preparation, equipment integration and non-aircraft commissioning of the AAG system and software at the Runway Arrested Landing Site (RALS) test facility. Conducted AAG Hardware Environmental Qualification Testing (EQT). Conducted CVN-78 Pre-Commissioning Unit (PCU) training for maintainers and operators who will participate in AAG's shipboard testing. Continued development of AAG logistics products and system documentation.</p> <p>FY 2016 Plans: Continue SDD execution of system integrated performance testing at the JCTS utilizing deadloads. Conduct commissioning and Aircraft Compatibility Testing (ACT) performance testing of the AAG hardware and software at the RALS test facility which results in aircraft recovery bulletins (ARB) for F/A-18 E/F enabling CVN-78 flight deck certification. Continue AAG component EQT and CVN 78 PCU training for maintainers and operators who will participate in AAG shipboard testing. Continue development of AAG logistics products and system documentation.</p> <p>FY 2017 Base Plans: Continue SDD execution of system integrated performance testing at the JCTS, ACT at RALS and continued development of AAG shipboard system/flight deck certification products (recovery bulletins for F/A-18 variants, and E-2/C-2) and logistics products (e.g. technical manuals and PCU courseware). Continue developing formal curriculum for fleet operations and maintenance training and schoolhouse training systems for future Ford class carrier crews. Provide interim training for crews until formal curriculum is completed and approved. Conduct AAG Integrated Test & Evaluation (IT&E) land-based testing using deadloads and aircraft for development of T-45 and barricade ARBs, correction of deficiency testing, EQT, shock, and reliability growth testing to achieve fleet operational requirements and maintain test unit cycles above shipboard cycles.</p> <p>FY 2017 OCO Plans: N/A</p>	107.489	108.011	102.033	0.000	102.033
Articles:	-	-	-	-	-
<p>Title: Aircraft Launch & Recovery Equipment Modernization</p> <p align="right">Articles:</p>	1.381	1.947	1.722	0.000	1.722
Articles:	-	2	-	-	-

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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>				
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)						
		FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>Description: Improved Manually Operated Visual Landing Aid System (IMOVLAS) to improve carrier aviation operations.</p> <p>FY 2015 Accomplishments: IMOVLAS - Began the design, development and integration of the program.</p> <p>FY 2016 Plans: IMOVLAS - IMOVLAS - Conduct Systems Requirements Review (SRR), Preliminary Design Review (PDR) and manufacture two production representative models.</p> <p>FY 2017 Base Plans: IMOVLAS - Conduct Critical Design Review (CDR) and Test Readiness Review (TRR).</p> <p>FY 2017 OCO Plans: N/A</p>						
<p>Title: Aircraft Launch & Recovery Equipment (ALRE) Service Life Management Program (SLMP)</p> <p align="right">Articles:</p> <p>Description: ALRE SLMP analyzes launch and recovery equipment to determine feasible fielded equipment improvements.</p> <p>FY 2015 Accomplishments: Continue modeling and analysis of the launch and recovery equipment. Continue design, development and testing of Mark 7 components and subcomponents.</p> <p>FY 2016 Plans: Continue design, development and testing of Mark 7 components and subcomponents.</p> <p>FY 2017 Base Plans: Award Crosshead and Fixed Sheave contracts and procure four Crosshead and Fixed Sheave prototypes. Continue analysis of the launch and recovery equipment.</p> <p>FY 2017 OCO Plans: N/A</p>		11.192	10.259	8.403	0.000	8.403
		-	-	4	-	4
Accomplishments/Planned Programs Subtotals		120.062	120.217	112.158	0.000	112.158

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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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C. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u> <u>Base</u>	<u>FY 2017</u> <u>OCO</u>	<u>FY 2017</u> <u>Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• OPN/4213: <i>Aircraft Launch & Recovery Equipment-Aircraft Launch & Recovery Equipment</i>	21.964	83.643	82.179	-	82.179	77.519	78.973	84.111	79.311	Continuing	Continuing
• SCN/2001: <i>Carrier Replacement Program</i>	1,882.425	2,555.689	2,662.567	-	2,662.567	4,361.180	1,650.189	1,734.546	3,095.202	3,375.820	38,153.421

Remarks

OPN 4213 includes portion of line item for funding Aircraft Launch & Recovery Equipment.

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 AAG at the NAVAIR Lakehurst Jet Car Track Site and Runway Arrested Landing Site. Continuing development on the SDD contract awarded in 2004.

Aircraft Launch & Recovery Equipment Modernization:

Improved Manually Operated Visual Landing Aid System (IMOVLAS): The Navy will develop IMOVLAS using commercial equipment racks, processors and Light Emitting Diodes (LEDs).

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.

E. Performance Metrics

Advanced Arresting Gear (AAG) will complete System Development and Demonstration and 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 2017 Navy **Date:** February 2016

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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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Primary HW Dev-AAG	C/CPAF	Gen Atomics : San Diego, CA	378.953	72.568	Dec 2014	77.462	Dec 2015	44.154	Dec 2016	-		44.154	17.589	590.726	590.726
Primary HW Dev-AAG	WR	NAWCAD : Lakehurst, NJ	29.686	6.776	Nov 2014	12.196	Nov 2015	7.566	Nov 2016	-		7.566	Continuing	Continuing	Continuing
System Eng-AAG	WR	NAWCAD : Lakehurst, NJ	19.487	6.265	Nov 2014	2.431	Nov 2015	1.577	Nov 2016	-		1.577	Continuing	Continuing	Continuing
Primary HW/Development - AAG	WR	NAWCAD : Lakehurst, NJ	0.000	0.000		0.000		27.044	Nov 2016	-		27.044	Continuing	Continuing	Continuing
Training Development - AAG	WR	NAWCAD : Orlando, FL	0.000	0.000		0.000		6.000	Nov 2016	-		6.000	Continuing	Continuing	Continuing
Primary HW Dev-Modern IMOVLAS	WR	NAWCAD : Lakehurst, NJ	0.126	0.944	Nov 2014	1.245	Nov 2015	1.148	Nov 2016	-		1.148	Continuing	Continuing	Continuing
System Eng-Modern IMOVLAS	WR	NAWCAD : Lakehurst, NJ	0.049	0.319	Nov 2014	0.146	Nov 2015	0.140	Nov 2016	-		0.140	Continuing	Continuing	Continuing
Primary HW Dev-SLMP	WR	NAWCAD : Lakehurst, NJ	8.076	2.188	Nov 2014	2.546	Nov 2015	3.668	Nov 2016	-		3.668	Continuing	Continuing	Continuing
Prior Year Cost No Longer Funded in FYDP	Various	Various : Various	52.975	0.000		0.000		0.000		-		0.000	0.000	52.975	-
Subtotal			489.352	89.060		96.026		91.297		-		91.297	-	-	-

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.

SLMP costs were updated in FY16 and FY17 to support modeling, analysis, design and development of Mark 7 components.

New Cost Categories added in FY17 and out to support AAG Integrated Test & Evaluation and training development efforts. Cost category "Primary HW/Development - AAG" is a continuation of HW development during the Integrated Test & Evaluation (IT&E) period starting in FY17.

FY14 costs updated for actuals. FY16 costs updated to support the AAG re-baseline that is required for General Atomics Primary Hardware contract to fund critical lien resolution. FY 17 provides funding for System Development and Demonstration (SDD) completion, IT&E and training development.

Primary HW Dev - AAG (General Atomics) - FY 15/FY16 funds realigned for SDD Completion. Delays due to technical failures. System Engineering - FY 15/FY16 AAG costs were realigned to support the extension of SDD and more product development occurring in the near term. Primary HW/Development - AAG at Lakehurst in FY17 provides support for IT&E land based testing, correction of deficiencies (COD), environmental qualification testing (EQT), shock and reliability growth testing. Training development - AAG provides continued training for systems development prior to ready for training and funds for interim training and life cycle training development and implementation.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

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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Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
ILS-AAG	WR	NAWCAD : Lakehurst, NJ	12.117	2.596	Nov 2014	2.643	Nov 2015	1.706	Nov 2016	-		1.706	Continuing	Continuing	Continuing
ILS-Modern IMOVLAS	WR	NAWCAD : Lakehurst, NJ	0.010	0.118	Nov 2014	0.150	Nov 2015	0.200	Nov 2016	-		0.200	Continuing	Continuing	Continuing
ILS-SLMP	WR	NAWCAD : Lakehurst, NJ	0.235	0.210	Nov 2014	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Studies & Analysis-SLMP	WR	NAWCAD : Lakehurst, NJ	3.889	3.445	Nov 2014	3.855	Nov 2015	2.140	Nov 2016	-		2.140	Continuing	Continuing	Continuing
Prior Year Cost No Longer Funded in FYDP	Various	Various : Various	1.506	0.000		0.000		0.000		-		0.000	0.000	1.506	-
Subtotal			17.757	6.369		6.648		4.046		-		4.046	-	-	-

Remarks

FY15 costs updated for actuals.

ILS-AAG - FY16 costs updated to support SDD completion delays due to technical failures

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Dev Test & Eval-AAG	WR	NAWCAD : Lakehurst, NJ	25.897	18.488	Nov 2014	12.743	Nov 2015	7.932	Nov 2016	-		7.932	Continuing	Continuing	Continuing
Operational T&E-AAG	WR	Various : Various	1.893	0.495	Dec 2014	0.207	Dec 2015	0.126	Nov 2016	-		0.126	Continuing	Continuing	Continuing
Integrated Test & Evaluation - AAG	WR	NAWCAD : Lakehurst, NJ	0.000	0.000		0.000		5.596	Nov 2016	-		5.596	Continuing	Continuing	Continuing
Integrated Testing-Modern IMOVLAS	WR	NAWCAD : Lakehurst, NJ	0.000	0.000		0.406	Nov 2015	0.234	Nov 2016	-		0.234	Continuing	Continuing	Continuing
Materials/Validation Testing-SLMP	WR	NAWCAD : Lakehurst, NJ	1.194	5.349	Nov 2014	3.858	Nov 2015	2.595	Nov 2016	-		2.595	Continuing	Continuing	Continuing
Prior Year Cost No Longer Funded in FYDP	Various	Various : Various	3.570	0.000		0.000		0.000		-		0.000	0.000	3.570	-
Subtotal			32.554	24.332		17.214		16.483		-		16.483	-	-	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

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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Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			

Remarks
 FY15 costs updated for actuals.

 Dev Test & Eval - AAG FY16 costs updated to support SDD completion due to technical failures.
 Materials/Validation Testing - Service Life Management Program FY16 costs were updated to support modeling, analysis design, development and testing of Mark 7 components. A schedule delay with the commissioning of the test site pushed testing further into FY16.

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Prgm Mgmt Supt	C/CPFF	Sierra : California, MD	1.157	0.261	Dec 2014	0.289	Dec 2015	0.295	Dec 2016	-		0.295	0.215	2.217	2.217
Travel	Reqn	NAVAIR : Patuxent River, MD	0.388	0.040	Oct 2014	0.040	Oct 2015	0.037	Oct 2016	-		0.037	Continuing	Continuing	Continuing
Prior Year Cost No Longer Funded in FYDP	Various	Various : Various	0.135	0.000		0.000		0.000		-		0.000	0.000	0.135	0.135
Subtotal			1.680	0.301		0.329		0.332		-		0.332	-	-	-

Remarks
 FY15 costs updated for actuals.

 FY16 costs updated to support contract estimates and actuals.

	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals		541.343	120.062	120.217	112.158	112.158	-	-	-

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy **Date:** February 2016

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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ADVANCED ARRESTING GEAR (AAG)	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	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
Aquisition Milestones																												
Milestones																												
Systems Development																												
Hardware Development	SDD																											
Software Development																												
Reviews/Assessments	<div style="display: flex; justify-content: space-around;"> TRR3 ILA </div>																											
Test & Evaluation																												
Technical Evaluation	<div style="display: flex; justify-content: space-around;"> JCTS Test EQT RALS Test Shipboard Test IT&E </div>																											
Operational Evaluation	<div style="display: flex; justify-content: space-around;"> DTR JCTS DTR RALS </div>																											
Production Milestones																												
Deliveries	LRIP																											

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy **Date:** February 2016

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

ALRE MODERNIZATION	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				
	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																												
													Obsolence Redesign																
SRR IMOVLAS					■																								
PDR IMOVLAS									■																				
CDR IMOVLAS											■																		
TRR IMOVLAS															■														
Reviews																													
Test and Evaluation																													
Technical Evaluation													IT IMOVLAS																

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy **Date:** February 2016

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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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	2015	4	2017
Systems Development: Reviews/Assessments: Integrated Logistic Assessment (ILA)	4	2017	4	2017
Systems Development: Reviews/Assessments: Technical Readiness Review (TRR3) RALS	1	2016	1	2016
Test & Evaluation: Technical Evaluation: Jet Car Test Site (JCTS) Test	1	2015	2	2017
Test & Evaluation: Technical Evaluation: Environmental Qualification Test (EQT)	1	2015	3	2016
Test & Evaluation: Technical Evaluation: Runway Arrested Landing Site Test (RALS)	2	2015	4	2017
Test & Evaluation: Technical Evaluation: Shipboard Test / OPEVAL	3	2016	1	2019
Test & Evaluation: Technical Evaluation: Integrated Test and Evaluation	1	2017	4	2021
Test & Evaluation: Technical Evaluation: JCTS Development Test Report (DTR)	2	2017	2	2017
Test & Evaluation: Technical Evaluation: RALS Development Test Report (DTR)	1	2018	1	2018
Production Milestones: Deliveries: Low Rate Initial Production (LRIP) OPN	2	2015	2	2015
ALRE MODERNIZATION				
Systems Development: Hardware/Software Development: Design and Development	1	2015	4	2017
Systems Development: Hardware/Software Development: System Requirements Review	2	2016	2	2016
Systems Development: Hardware/Software Development: Obsolescence Redesign Development and Testing	1	2017	4	2021
Systems Development: Reviews: Preliminary Design Review (PDR)	4	2016	4	2016
Systems Development: Reviews: Critical Design Review (CDR)	1	2017	1	2017
Systems Development: Reviews: Test Readiness Review (TRR)	4	2017	4	2017

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy **Date:** February 2016

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
Test and Evaluation: Technical Evaluation: Integrated Test	4	2017	3	2018
<i>ALRE SERVICE LIFE MANAGEMENT PROGRAM (SLMP)</i>				
Systems Development: Hardware/Software Development: Engineering Analysis	1	2015	4	2021
Systems Development: Hardware/Software Development: System Design and Development	1	2015	4	2021
Test & Evaluation: Technical Evaluation: Material and Validation Testing	1	2015	4	2021