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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Navy **Date:** April 2022

Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604530N / <i>Advanced Arresting Gear (AAG)</i>
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COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
Total Program Element	284.339	63.702	0.147	0.151	-	0.151	0.169	0.174	0.182	0.186	0.000	349.050
2367: <i>Advanced Arresting Gear</i>	284.339	63.702	0.147	0.151	-	0.151	0.169	0.174	0.182	0.186	0.000	349.050

Program MDAP/MAIS Code:
Project MDAP/MAIS Code(s): 529

Note

FY18 and prior year funding for Advanced Arresting Gear (AAG) is funded under Shipboard Aviation Systems program element 0604512N, CV/CVN Launch and Recover project unit 2232.

A. Mission Description and Budget Item Justification

The Advanced Arresting Gear (AAG) program designs, develops, tests and fields 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.

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)	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023 Base</u>	<u>FY 2023 OCO</u>	<u>FY 2023 Total</u>
Previous President's Budget	65.834	0.147	0.000	-	0.000
Current President's Budget	63.702	0.147	0.151	-	0.151
Total Adjustments	-2.132	0.000	0.151	-	0.151
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-2.132	0.000			
• Program Adjustments	0.000	0.000	0.000	-	0.000
• Rate/Misc Adjustments	0.000	0.000	0.000	-	0.000
• Adjustments to Budget Year	-	-	0.151	-	0.151

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Change Summary Explanation FY 2021 funding shown in the R-2 includes \$4.0 million rescinded by the Department of Defense Appropriations Act, 2022. Technical: N/A Schedule: Updates include the following: AAG Milestone: IOC moved from 4Q FY 2021 to 3Q FY 2021 JCTS J2 Regression moved from 1Q FY 2022 to 3Q FY 2021 Mod-II WT DLs start moved from 1Q FY 2022 to 3Q FY 2022 Half-Bridge DLs removed, further investigation required JCTS CoD Test end moved from 1Q FY 2022 to 4Q FY 2022 Renamed Jet Car Test Site (JCTS) Test to Jet Car Test Site (JCTS) CoD Test for clarification. Removed SW Development milestones for Dynamic Control System (DCS), Health Monitoring and Prognostics (HMAP) and Power Conditioning Subsystem (PCS) due to completion of System Design and Development (SDD). Corrected Hardware Development milestone for System Design & Development (SDD Phase) to Primary Hardware Development in support of Depot Planning/Standup. --- FY 2023 funding increase reflects the fact that the FY 2022 President's Budget request did not include out-year funding.		

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy **Date:** April 2022

Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604530N / <i>Advanced Arresting Gear (AAG)</i>	Project (Number/Name) 2367 / <i>Advanced Arresting Gear</i>
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COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
2367: <i>Advanced Arresting Gear</i>	284.339	63.702	0.147	0.151	-	0.151	0.169	0.174	0.182	0.186	0.000	349.050
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Project MDAP/MAIS Code: 529

Note

Advanced Arresting Gear (AAG) was previously funded under Shipboard Aviation Systems program element 0604512N, CV/CVN Launch and Recovery project unit 2232 in FY 2018 and prior.

A. Mission Description and Budget Item Justification

The Advanced Arresting Gear (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.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Title: Advanced Arresting Gear (AAG) Primary Hardware Development	37.281	0.147	0.151	0.000	0.151
Articles:	-	-	-	-	-
FY 2022 Plans: Continue the AAG system refinement and improvement efforts.					
FY 2023 Base Plans: Continue the AAG system refinement and improvement efforts, to include operational test.					
FY 2023 OCO Plans: N/A					
FY 2022 to FY 2023 Increase/Decrease Statement: The increase in FY 2022 to FY 2023 is due to inflation.					
Title: Advanced Arresting Gear Test & Evaluation	15.088	0.000	0.000	0.000	0.000
Articles:	-	-	-	-	-

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Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604530N / <i>Advanced Arresting Gear (AAG)</i>	Project (Number/Name) 2367 / <i>Advanced Arresting Gear</i>

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
FY 2022 Plans: N/A FY 2023 Base Plans: N/A FY 2023 OCO Plans: N/A					
Title: Advanced Arresting Gear Depot Planning Articles:	6.675 -	0.000 -	0.000 -	0.000 -	0.000 -
FY 2022 Plans: N/A FY 2023 Base Plans: N/A FY 2023 OCO Plans: N/A					
Title: Advanced Arresting Gear Software Support Activity (SSA) Articles:	2.802 -	0.000 -	0.000 -	0.000 -	0.000 -
FY 2022 Plans: N/A FY 2023 Base Plans: N/A FY 2023 OCO Plans: N/A					
Title: Advanced Arresting Gear Training Articles:	1.856 -	0.000 -	0.000 -	0.000 -	0.000 -
FY 2022 Plans: N/A FY 2023 Base Plans:					

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Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604530N / <i>Advanced Arresting Gear (AAG)</i>	Project (Number/Name) 2367 / <i>Advanced Arresting Gear</i>

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
N/A					
FY 2023 OCO Plans: N/A					
Accomplishments/Planned Programs Subtotals	63.702	0.147	0.151	0.000	0.151

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
• OPN/4217: <i>Advanced Arresting Gear (AAG)</i>	16.059	22.265	22.717	-	22.717	22.852	15.408	9.674	8.218	59.539	203.411
• SCN/2001: <i>Carrier Replacement Program</i>	1,029.933	1,353.205	1,943.230	-	1,943.230	1,744.326	2,416.628	1,159.211	1,810.540	0.000	41,819.145
• SCN/2004: <i>Enter Other Funding Description.</i>	1,606.432	1,287.719	1,052.024	-	1,052.024	774.268	634.080	1,959.244	2,035.477	1,723.251	12,929.995

Remarks

D. Acquisition Strategy

The Navy competitively awarded two Cost Plus Fixed Fee Technical Development phase contracts to develop the Advanced Arresting Gear (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. The AAG program is transitioning from System Design and Development (SDD) to Integrated Test and Evaluation.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Navy **Date:** April 2022

Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604530N / <i>Advanced Arresting Gear (AAG)</i>	Project (Number/Name) 2367 / <i>Advanced Arresting Gear</i>
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Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 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 Development	C/CPAF	General Atomics : San Diego, CA	162.797	28.905	Nov 2020	0.000		0.000		-		0.000	0.000	191.702	191.702
Primary HW Development	WR	NAWCAD : Lakehurst, NJ	37.314	4.993	Nov 2020	0.090	Nov 2021	0.093	Nov 2022	-		0.093	0.434	42.924	-
Systems Engineering	WR	NAWCAD : Lakehurst, NJ	10.080	1.827	Nov 2020	0.057	Nov 2021	0.058	Nov 2022	-		0.058	0.277	12.299	-
Training Development	C/CPFF	Carley Corporation : Orlando, FL	9.677	1.556	Nov 2020	0.000		0.000		-		0.000	0.000	11.233	11.233
Subtotal			219.868	37.281		0.147		0.151		-		0.151	0.711	258.158	N/A

Remarks
 The increase in FY 2022 to FY 2023 is due to inflation.
 FY 2021 Primary HW Development increased to reflect award for AAG Software Build which addresses critical software network communication issues and cybersecurity vulnerabilities found during CVN78 PDT&T. Increase also includes Primary HW Dev for AAG Depot Standup contract.

Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 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			
Integrated Logistics Support	WR	NAWCAD : Lakehurst, NJ	6.531	1.100	Nov 2020	0.000		0.000		-		0.000	0.000	7.631	-
Government Engineering Support	WR	Various : Various	0.837	0.173	Nov 2020	0.000		0.000		-		0.000	0.000	1.010	-
Training Support	WR	NAWCAD : Orlando, FL	0.676	0.300	Nov 2020	0.000		0.000		-		0.000	0.000	0.976	-
Government Engineering Support	WR	NAWCAD : Lakehurst, NJ	12.813	4.170	Nov 2020	0.000		0.000		-		0.000	0.000	16.983	-
Depot Planning	TBD	General Atomics : San Diego, CA	10.675	5.425	Mar 2021	0.000		0.000		-		0.000	0.000	16.100	16.100
Engineering Support	C/CPFF	ARL/PSU : State College, PA	1.097	0.000		0.000		0.000		-		0.000	0.000	1.097	1.097
SW Engineering	C/CPIF	ESL : Cranston, RI	1.663	0.000		0.000		0.000		-		0.000	0.000	1.663	1.663

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Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 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			
Subtotal			34.292	11.168		0.000		0.000		-		0.000	0.000	45.460	N/A

Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 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			
Developmental T&E	WR	NAWCAD : Lakehurst, NJ	28.306	10.566	Nov 2020	0.000		0.000		-		0.000	0.000	38.872	-
Operational T&E	WR	Various : Various	0.617	0.279	Nov 2020	0.000		0.000		-		0.000	0.000	0.896	-
T-45 Test and Evaluation	MIPR	DCMA : Birmingham, AL	0.668	0.000		0.000		0.000		-		0.000	0.000	0.668	-
Integrated Test & Evaluation	WR	NAWCAD : Lakehurst, NJ	0.000	4.243	Nov 2020	0.000		0.000		-		0.000	0.000	4.243	-
Subtotal			29.591	15.088		0.000		0.000		-		0.000	0.000	44.679	N/A

Remarks

FY 2021 IT&E planned for General Atomics removed to support AAG Software Build and Depot Standup.

Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 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			
Program Mgmt Support	C/CPFF	Sierra Management & Technologies : California, MD	0.521	0.150	Nov 2020	0.000		0.000		-		0.000	0.000	0.671	0.796
Travel	Various	Various : Various	0.067	0.015	Oct 2020	0.000		0.000		-		0.000	0.000	0.082	-
Subtotal			0.588	0.165		0.000		0.000		-		0.000	0.000	0.753	N/A

	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract	
Project Cost Totals		284.339	63.702	0.147	0.151	-	0.151	0.711	349.050	N/A

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	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract	

Remarks

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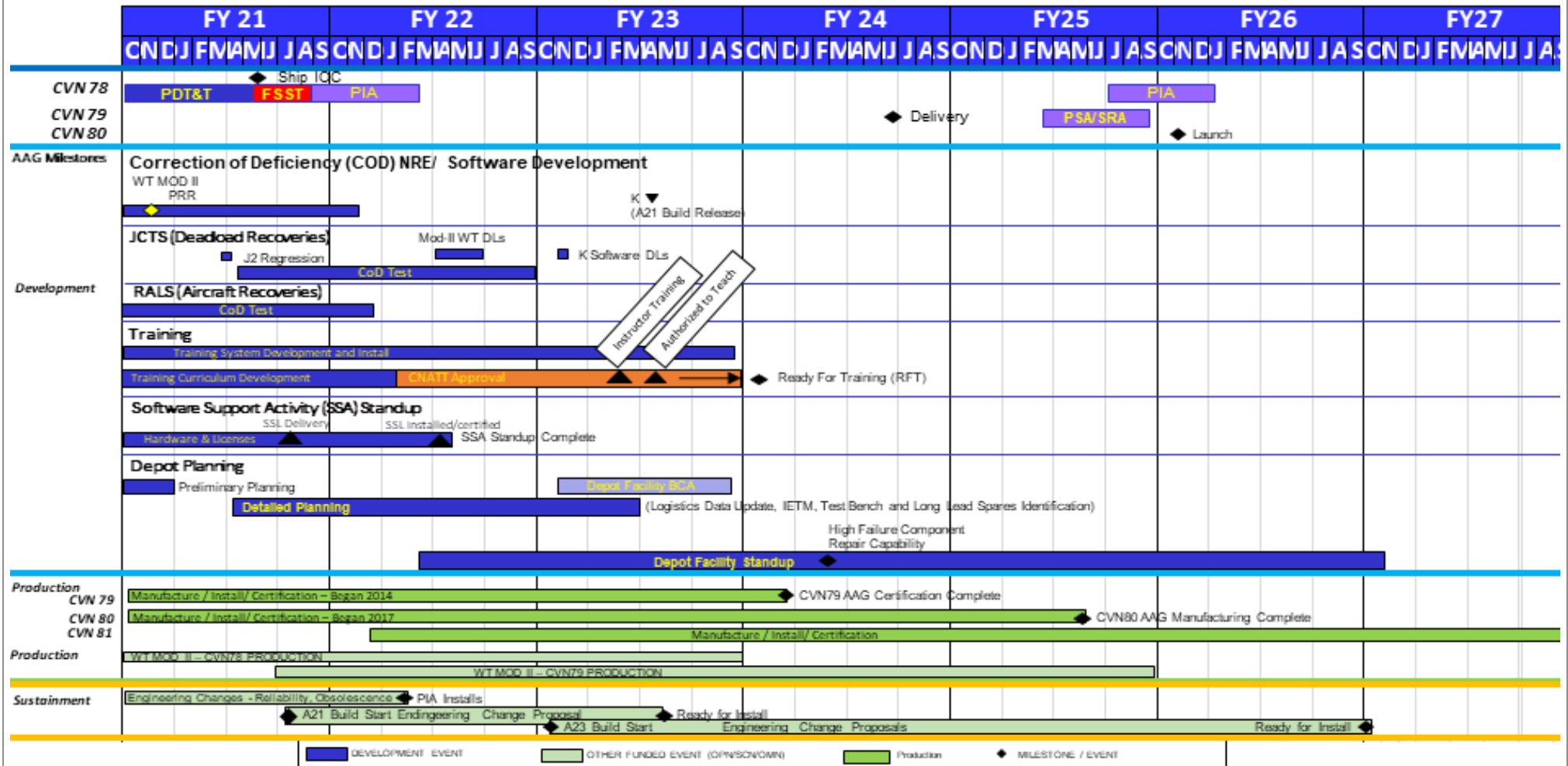
Exhibit R-4, RDT&E Schedule Profile: PB 2023 Navy

Date: April 2022

Appropriation/Budget Activity
1319 / 5

R-1 Program Element (Number/Name)
PE 0604530N / Advanced Arresting Gear (AAG)

Project (Number/Name)
2367 / Advanced Arresting Gear



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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604530N / <i>Advanced Arresting Gear (AAG)</i>	Project (Number/Name) 2367 / <i>Advanced Arresting Gear</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
ADVANCED ARRESTING GEAR (AAG)				
System Development: Hardware Development: Primary HW Development in support of Depot Planning / Standup	1	2021	4	2027
System Development: Training: Training System / Schoolhouse Curriculum Development	1	2021	4	2023
System Development: Training: Ready for Training (RFT)	1	2024	1	2024
System Development: Software Support Activity (SSA) Standup: Software Support Activity (SSA)	1	2021	3	2022
Depot Planning/Standup: Depot Planning/Standup	1	2021	1	2027
Test & Evaluation: Technical Evaluation: Jet Car Test Site (JCTS) CoD Test	3	2021	4	2022
Test & Evaluation: Technical Evaluation: Runway Arrested Landing Site Test (RALS)	1	2021	1	2022