

**UNCLASSIFIED**

**Exhibit R-2, RDT&E Budget Item Justification:** PB 2024 Navy **Date:** March 2023

<b>Appropriation/Budget Activity</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy / BA 5: System Development &amp; Demonstration (SDD)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0604530N / <i>Advanced Arresting Gear (AAG)</i>
--	--

COST (\$ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	348.041	0.146	0.151	10.658	-	10.658	9.228	14.230	10.721	22.227	0.000	415.402
2367: <i>Advanced Arresting Gear</i>	348.041	0.146	0.151	10.658	-	10.658	9.228	14.230	10.721	22.227	0.000	415.402

**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.

The AAG program will undergo future development efforts for system improvements. AAG Software Stability development effort will address systemic software stability and reliability issues documented in a System Safety Risk Assessment (SSRA) for AAG software, and in a separate investigative report by a NAVAIR Independent Review Team (IRT). The development effort will mitigate specific findings related to non-deterministic behavior and latency of the software that contribute to the SSRA Hazard rating (1D-Serious). Per IRT report recommendations, the effort will address findings via software modernization and re-architecture, with new software adhering to improved Level or Rigor (LOR) standards and processes. A multi-year, competitively sourced software development effort will begin in FY 2024 with evaluation of existing software deficiencies, followed by architecture and design, coding, and test through FY 2028.

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.

**UNCLASSIFIED**

<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Navy	<b>Date:</b> March 2023
---	-------------------------

<b>Appropriation/Budget Activity</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy / BA 5: System Development &amp; Demonstration (SDD)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0604530N / <i>Advanced Arresting Gear (AAG)</i>
--	--

<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024 Base</b>	<b>FY 2024 OCO</b>	<b>FY 2024 Total</b>
Previous President's Budget	0.147	0.151	0.169	-	0.169
Current President's Budget	0.146	0.151	10.658	-	10.658
Total Adjustments	-0.001	0.000	10.489	-	10.489
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.001	0.000			
• Program Adjustments	0.000	0.000	10.432	-	10.432
• Rate/Misc Adjustments	0.000	0.000	0.057	-	0.057

**Change Summary Explanation**

FY 2024 increase to support AAG Software Stability Development.

Technical: N/A

Schedule:

CVN78/CVN79: Events were updated to reflect the most current Post Delivery Test & Trials (PDT&T) ship schedule.

Software Stability was added in 1Q FY 2024 - 4Q FY 2028

Electrical Isolation was added in 1Q FY 2026 - 4Q FY 2028

Mod-II WT DLs start date moved from 3Q FY 2022 to 3Q FY 2023 and end date moved from 3Q FY 2022 to 4Q FY 2023.

Depot Facility BCA start date moved from 1Q FY 2023 to 1Q FY 2025 and end date moved from 4Q FY 2023 to 2Q FY 2025.

**UNCLASSIFIED**

<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Navy										<b>Date:</b> March 2023		
<b>Appropriation/Budget Activity</b> 1319 / 5					<b>R-1 Program Element (Number/Name)</b> PE 0604530N / <i>Advanced Arresting Gear (AAG)</i>				<b>Project (Number/Name)</b> 2367 / <i>Advanced Arresting Gear</i>			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024 Base</b>	<b>FY 2024 OCO</b>	<b>FY 2024 Total</b>	<b>FY 2025</b>	<b>FY 2026</b>	<b>FY 2027</b>	<b>FY 2028</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
2367: <i>Advanced Arresting Gear</i>	348.041	0.146	0.151	10.658	-	10.658	9.228	14.230	10.721	22.227	0.000	415.402
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		
<b>Project MDAP/MAIS Code:</b> 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 will undergo future development efforts for system improvements. AAG Software Stability development effort will address systemic software stability and reliability issues documented in a System Safety Risk Assessment (SSRA) for AAG software, and in a separate investigative report by a NAVAIR Independent Review Team (IRT). The development effort will mitigate specific findings related to non-deterministic behavior and latency of the software that contribute to the SSRA Hazard rating (1D-Serious). Per IRT report recommendations, the effort will address findings via software modernization and re-architecture, with new software adhering to improved Level or Rigor (LOR) standards and processes. A multi-year, competitively sourced software development effort will begin in FY 2024 with evaluation of existing software deficiencies, followed by architecture and design, coding, and test through FY 2028.

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

	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024 Base</b>	<b>FY 2024 OCO</b>	<b>FY 2024 Total</b>
<b>Title:</b> Advanced Arresting Gear (AAG) Product Development	0.146	0.151	10.658	0.000	10.658
<b>Articles:</b>	-	-	-	-	-
<b>FY 2023 Plans:</b> Continue the AAG system refinement and improvement efforts, to include operational test.					
<b>FY 2024 Base Plans:</b> Begin Software Stability Development effort.					
<b>FY 2024 OCO Plans:</b> N/A					
<b>FY 2023 to FY 2024 Increase/Decrease Statement:</b>					

**UNCLASSIFIED**

<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Navy		<b>Date:</b> March 2023
<b>Appropriation/Budget Activity</b> 1319 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604530N / <i>Advanced Arresting Gear (AAG)</i>	<b>Project (Number/Name)</b> 2367 / <i>Advanced Arresting Gear</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024 Base</b>	<b>FY 2024 OCO</b>	<b>FY 2024 Total</b>
The increase from FY 2023 to FY 2024 is due to the AAG Software Stability upgrade.					
<b>Accomplishments/Planned Programs Subtotals</b>	0.146	0.151	10.658	0.000	10.658

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

<u>Line Item</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024 Base</u>	<u>FY 2024 OCO</u>	<u>FY 2024 Total</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>FY 2028</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• OPN/4217: <i>Advanced Arresting Gear (AAG)</i>	22.265	13.544	11.930	-	11.930	3.253	0.406	5.772	10.682	10.419	121.009
• SCN/2001: <i>Carrier Replacement Program</i>	1,353.205	1,927.580	1,739.896	-	1,739.896	2,416.717	1,159.211	1,842.376	2,119.562	12,208.659	56,159.211
• SCN/2004: <i>CVN-81</i>	1,287.719	1,052.024	800.492	-	800.492	666.045	1,922.144	2,011.766	1,724.982	0.000	12,929.104

**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. AAG is transitioning from the design and development phase into concurrent production and sustainment phase.

**UNCLASSIFIED**

**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Navy** **Date:** March 2023

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

<b>Product Development (\$ in Millions)</b>				<b>FY 2022</b>		<b>FY 2023</b>		<b>FY 2024 Base</b>		<b>FY 2024 OCO</b>		<b>FY 2024 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>			
Primary HW Development	WR	NAWCAD : Lakehurst, NJ	42.307	0.089	Nov 2021	0.093	Nov 2022	0.000		-		0.000	0.434	42.923	-
Systems Engineering	WR	NAWCAD : Lakehurst, NJ	11.907	0.057	Nov 2021	0.058	Nov 2022	0.000		-		0.000	0.277	12.299	-
Primary SW Development - Software Stability	C/CPFF	TBD : TBD	0.000	0.000		0.000		8.974	Nov 2023	-		8.974	19.075	28.049	-
Prior Year Cost No Longer Funded in FYDP	Various	Various : Various	202.935	0.000		0.000		0.000		-		0.000	0.000	202.935	-
<b>Subtotal</b>			257.149	0.146		0.151		8.974		-		8.974	19.786	286.206	N/A

**Remarks**  
The increase from FY 2023 to FY 2024 is due to the AAG Software Stability upgrade.

<b>Support (\$ in Millions)</b>				<b>FY 2022</b>		<b>FY 2023</b>		<b>FY 2024 Base</b>		<b>FY 2024 OCO</b>		<b>FY 2024 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>			
Government Engineering Support	WR	NAWCAD : Lakehurst, NJ	16.983	0.000		0.000		1.684	Nov 2023	-		1.684	10.925	29.592	-
Prior Year Cost No Longer Funded in FYDP	Various	Various : Various	28.477	0.000		0.000		0.000		-		0.000	0.000	28.477	-
<b>Subtotal</b>			45.460	0.000		0.000		1.684		-		1.684	10.925	58.069	N/A

**Remarks**  
The increase from FY 2023 to FY 2024 is due to the AAG Software Stability upgrade.



UNCLASSIFIED

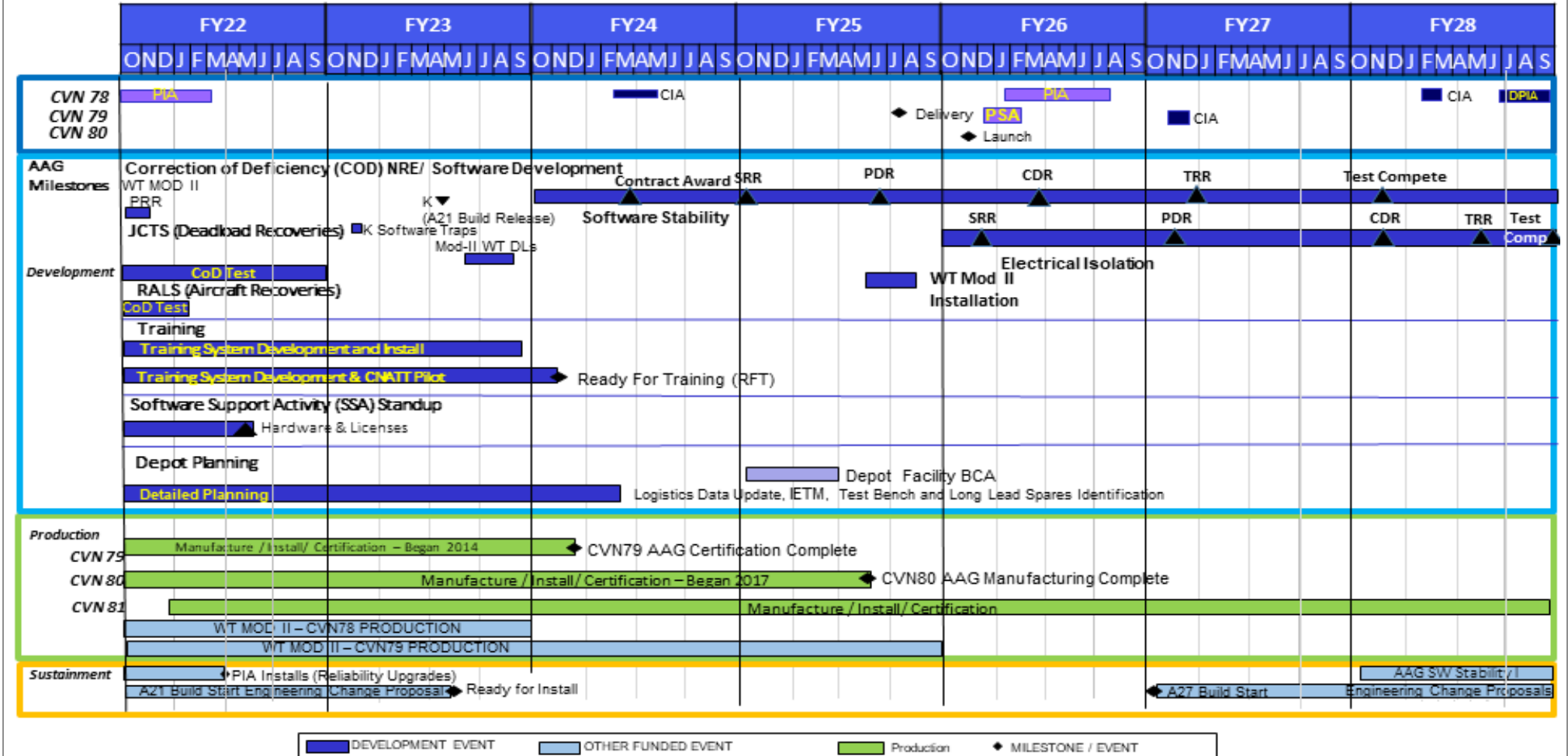
Exhibit R-4, RDT&E Schedule Profile: PB 2024 Navy

Date: March 2023

Appropriation/Budget Activity  
1319 / 5

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

Project (Number/Name)  
2367 / Advanced Arresting Gear



**UNCLASSIFIED**

<b>Exhibit R-4A, RDT&amp;E Schedule Details: PB 2024 Navy</b>		<b>Date: March 2023</b>
<b>Appropriation/Budget Activity</b> 1319 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604530N / <i>Advanced Arresting Gear (AAG)</i>	<b>Project (Number/Name)</b> 2367 / <i>Advanced Arresting Gear</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>ADVANCED ARRESTING GEAR (AAG)</b>				
System Development: Software Stability	1	2024	4	2028
System Development: Electrical Isolation	1	2026	1	2028
Training: Training System / Schoolhouse Curriculum Development	1	2022	4	2023
Training: Ready for Training (RFT)	1	2024	1	2024
Software Support Activity (SSA): Software Support Activity (SSA)	1	2022	3	2022
Depot Planning: Depot Planning	1	2022	2	2024
Test & Evaluation: Technical Evaluation: Jet Car Test Site (JCTS) CoD Test	1	2022	4	2022
Test & Evaluation: Technical Evaluation: Runway Arrested Landing Site Test (RALS)	1	2022	2	2022