Modernized Selected Acquisition Report (MSAR)

Advanced Arresting Gear (AAG)

FY 2025 President's Budget

Effective: December 31, 2023

Defense Acquisition Visibility Environment

Table of Contents

(U) Common DoD Abbreviations

$B	Billions of Dollars
$K	Thousands of Dollars
$M	Millions of Dollars
ACAT	Acquisition Category
Acq O&M	Acquisition-Related Operations and Maintenance
ADM	Acquisition Decision Memorandum
APA	Additional Performance Attribute
APB	Acquisition Program Baseline
APPN	Appropriation
APUC	Average Procurement Unit Cost
BA	Budget Authority or Budget Activity
Blk	Block
BY	Base Year
CAE	Component Acquisition Executive
CAPE	Cost Assessment and Program Evaluation
CARD	Cost Analysis Requirements Description
CCE	Component Cost Estimate
CCP	Component Cost Position
CDD	Capability Development Document
CLIN	Contract Line Item Number
CPD	Capability Production Document
CY	Calendar Year or Constant Year
DAB	Defense Acquisition Board
DAE	Defense Acquisition Executive
DAES	Defense Acquisition Executive Summary
DAVE	Defense Acquisition Visibility Environment
DoD	Department of Defense
DSN	Defense Switched Network
EMD	Engineering and Manufacturing Development
EVM	Earned Value Management
FD	Full Deployment
FDD	Full-Deployment Decision
FMS	Foreign Military Sales
FOC	Full Operational Capability
FRP	Full-Rate Production
FY	Fiscal Year
FYDP	Future Years Defense Program
ICD	Initial Capabilities Document
ICE	Independent Cost Estimate
Inc	Increment
IOC	Initial Operational Capability
IT	Information Technology
JROC	Joint Requirements Oversight Council
KPP	Key Performance Parameter
KSA	Key System Attribute

LRIP	Low-Rate Initial Production
MDA	Milestone Decision Authority
MDAP	Major Defense Acquisition Program
MILCON	Military Construction
N/A	Not Applicable
O	Objective
O&M	Operations and Maintenance
O&S	Operating and Support
ORD	Operational Requirements Document
OSD	Office of the Secretary of Defense
PAUC	Program Acquisition Unit Cost
PB	President's Budget
PE	Program Element
PEO	Program Executive Officer
PM	Program Manager
POE	Program Office Estimate
R&MF	Revolving and Management Funds
RDT&E	Research, Development, Test, and Evaluation
SAR	Selected Acquisition Report
SCP	Service Cost Position
T	Threshold
TBD	To Be Determined
TY	Then Year
U.S.	United States
U.S.C	United States Code
UCR	Unit Cost Reporting
USD(A&S)	Under Secretary of Defense (Acquisition and Sustainment)

(U) Program Description

Full Name
Advanced Arresting Gear

Short Name
AAG

PNO
529

Decision Authority
Component Acquisition Executive

Lead Component
Department of the Navy

Program Executive Office
PEO Tactical Air

Joint Program
No

International Partners
France

Adaptive Acquisition Pathway
Major Capability Acquisition

Acquisition Type
Major Defense Acquisition Program

Acquisition Category
IC

Acquired Systems
AAG

Acquisition Status
Active Acquisition

Mission
The Advanced Arresting Gear (AAG) program is a system-level acquisition for a new arresting gear for the GERALD R. FORD-class (CVN 78) aircraft carrier. The AAG is designed to provide total life-cycle cost savings by reducing O&M costs when compared to the NIMITZ-class (CVN 68). The AAG provides new operational capabilities required by the CVN 78-class, which include the ability to safely and efficiently recover both heavier and faster aircraft as well as lightweight unmanned air vehicles that will enter the fleet in the future.

(U) Responsible Office

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Advanced Arresting Gear PMO
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(U) Executive Summary

Program Highlights Since Last Report

During the USS Gerald R. Ford (CVN 78) Independent Steaming Events and Post-Planned Incremental Availability underway periods, the AAG system operated on multiple days with 100+ aircraft recoveries, including the completion of 170 arrestments in a single day. The CVN 78 completed her first Composite Training Unit Exercise in March 2023 with 60 CVW-8 aircraft embarked, encompassing 1,600 fixed-wing recoveries. The AAG system has demonstrated steadily improving performance supporting CVN 78's first operational deployment in 2023.
The CVN 78 completed her maiden operational deployment in January 2024 following a 2.5-month extension. The CVN 78 safely and expeditiously launched over 8,700 aircraft during the 8.5-month deployment in support of national objectives. As of February 2024, the AAG system onboard CVN 78 recovered nearly 23,000 fixed-wing aircraft.
The AAG Operational Availability (Ao) is currently below the APB threshold requirement (CDD Ao). The CDD Ao requirement is the expected value after AAG reaches system maturity (25,000 cycles on one ship's system) and based on a four-engine/three-wire system. The as-installed AAG system aboard CVN 78 is a three-engine/three-wire system. The AAG system has insufficient time and cycles to accurately assess the Ao requirement and achieve the APB performance parameter. As the AAG system increases cyclic operations, increases to the system reliability and Ao are expected. The AAG program continues to address system reliability and Ao through hardware and software improvements.
Due to fact-of-life updates in the FY 2025 PB for the AAG program, the PM Estimates for Procurement Cost and APUC result in breaches to the approved APB. Cost drivers include the increased USS Doris Miller (CVN 81) cost estimates, USS Enterprise (CVN 80) engineering changes and technical refresh due to obsolescence, production cut-in of the AAG Water Twister Mod II, replacement cost of materials cannibalized to support CVN 78 deployment, and increased costs due to delayed ship delivery. The APUC growth, the result of the increased procurement costs, is a Significant Nunn-McCurdy Unit Cost Breach. The PM notified the MDA of impending deviations and submitted a program deviation report. Within the next 90 business days, the PM will collaborate with AAG program stakeholders to determine if a program restructure is necessary and submit a revised APB to mitigate the deviation. The revised APB will also address the schedule deviation reported in the previous SAR (reported in a CVN 78 program deviation report acknowledged by the MDA in August 2023).
The AAG program awarded the CVN 81 pre-production planning contract in December 2021, and awarded a modification to add production and delivery-related CLINs to the contract on June 7, 2023. Pre-production efforts have identified 40 bundled obsolescence changes required for incorporation in production and retrofit in the fleet within the FYDP. The AAG Production Team is processing engineering change proposals under the CVN 81 production contract to address the obsolescence issues.
The AAG program is currently evaluating system software performance in an operational environment aboard CVN 78. The AAG team tracks and manages software bugs and artifacts for further investigation consideration. Some high-priority software issues have been addressed and mitigated via issuance of multiple software patches. Other software issues are being prioritized for potential inclusion in planned software engineering change proposals. Specifically, the AAG team is pursuing a funded, long-term software stability effort to address system latency and non-deterministic behavior in an effort to improve overall system performance.

There are no significant software-related issues with this program at this time.

(U) History of Significant Developments Since Program Inception

Date	Description
January 2024	CVN 78 completed her maiden operational deployment following a 2.5-month extension. The AAG system reached nearly 23,000 total arrestments.
June 2023	CVN 81 AAG/EMALS full-production contract awarded.
May 2023	CVN 78 departed on her first planned operational deployment.
March 2023	CVN 78 successfully completed her pre-deployment Composite Training Unit Exercise (COMPTUEX); achieving No-Divert Airfield (Blue Water) Certification. The AAG completed 1,600 arrestments during COMPTUEX.
November 2022	F-35 risk reduction testing conducted.
October 2022	CVN 78 conducted a service-retained deployment from October to November 2022.
February 2022	CVN 78 Planned Incremental Availability I completed.
December 2021	CVN 81 Pre-production Planning contract awarded.
September 2021	CVN 78 Planned Incremental Availability I commenced to address modernization, maintenance, and repairs prior to operational employment.
August 2021	CVN 78 FSST successfully completed with continued operations throughout events.
June 2021	CVN 78 Full Ship-Shock Trials (FSST) commence to evaluate ship and subsystems (including AAG) ability to withstand battle conditions.
April 2021	PDT&T complete; AAG Initial Operating Capability criteria achieved.
December 2020	The French Government announces the FFC will include the AAG system.
March 2020	AAG flight deck certification complete.
February 2020	The AAG APB Change 1 approved February 5, 2020. This revision aligned schedule events with CVN 78 and increased program cost parameters due to the program of record change (increase of one shipset - USS Doris Miller (CVN 81)).
January 2020	AAG aircraft compatibility testing completed; AAG system officially turned-over to CVN 78 crew.
December 2019	All F/A-18E/F, EA-18G, E-2D, E-2C, C-2A, T-45C aircraft launch bulletins, aircraft recovery bulletins, and fleet barricade capability released; AAG system fully supports current air wing.
November 2019	CVN 78 Post-Shakedown Availability - AAG system recertification completed (Formal Certification message containing required information was released January 8, 2020.) Post-delivery Test and Evaluation (PDT&T) commenced.
October 2019	IT-B4 RALS completed at Lakehurst RALS.
August 2019	Integrated Test (IT)-B3 completed at Lakehurst JCTS.
August 2019	The AAG program provided a rough order of magnitude for the Future French Carrier (FFC) Electromagnetic Aircraft Launch System (EMALS)/AAG effort to the French Ministry of Defense.
December 2018	First Future French Carrier Working Group meeting held.
December 2018	AAG completed manned F/A-18E/F and EA-18G aircraft performance testing at Lakehurst Runway Arrested Landing Site (RALS).
September 2018	Letter of Offer and Acceptance for Technical Assistance Case between the U.S. Government and the Government of France signed.
August 2018	AAG completed unmanned F/A-18E/F and EA-18G aircraft performance testing, using

Date	Description
	deadloads, at the Lakehurst Jet Car Track Site (JCTS).
August 2018	AAG SDD contract Over Target Baseline/Over Target Schedule re-plan completed.
January 2018	USD(AT&L) delegated MDA to ASN(RDA) and re-designated AAG an ACAT IC program.
December 2017	The AAG program submitted the AAG Software plan addressing software safety and requirements that reflect the operational concept addressed in the AAG Nunn McCurdy Certification ADM.
November 2017	The AAG program proposed an adjusted APB based on the CAPE ICE completed July 2017 for the Nunn McCurdy review. On November 17, 2017, the USD(AT&L) approved the APB, which became the original baseline.
July 2017	The Nunn McCurdy review and certification of AAG completed and documented, and USD(AT&L) designated AAG an ACAT ID program in the July 12, 2017 Acquisition Decision Memorandum.
May 2017	PMA 251 submitted a Nunn McCurdy SAR in accordance with the NDAA FY 2017 Section 125.
May 2017	CVN 79 AAG contract option exercised for the CVN 80 AAG system.
December 2016	Navy Center for Cost Analysis completed the AAG Component Cost Position.
December 2016	Section 125 of the National Defense Authorization Act includes a requirement to perform a Nunn- McCurdy review of AAG using the 2009 APB.
July 2015	USD(AT&L) reclassified AAG as an ACAT IC program.
June 2015	ASN requested USD(AT&L) reclassify AAG as an ACAT IC program.
March 2015	PMA 251 requested the re-designation of Advanced Arresting Gear (AAG) as an ACAT IC program (from an ACAT II program).

(U) Schedule

(U) Schedule Events

Events		Development APB (Milestone) 12/20/2016 Objective	APB Change 1 (Current) 2/5/2020 Objective / Threshold		Current Estimate 12/31/2023	Actual
Milestone A	MS A	Jul 2003	Jul 2003	Jul 2003	-	16 Jul 2003
Milestone B	MS B	Feb 2005	Feb 2005	Feb 2005	-	10 Feb 2005
IT-B3 JCTS complete	DT&E	Mar 2019	Aug 2019	Aug 2019	-	11 Jul 2019
IT-B4 RALS complete	DT&E	Sept 2020	Oct 2019	Oct 2019	-	24 Oct 2019
IOC	IOC	Jul 2021	Jul 2021	Jan 2022	-	30 Apr 2021
IOT&E	IOT&E	Apr 2020	Nov 2023	May 2024	May 2025*	-

* Baseline Deviation

Notes

Acronyms and Abbreviations
IT-B3 - Integrated Test-B3 (Jet Car Track Site Functional and Performance Testing)
JCTS - Jet Car Track Site
RALS - Runway Arrested Landing Site
IOT&E - Initial Operational Test and Evaluation
Schedule Notes:
Current APB: AAG Development APB Change 1, approved February 5, 2020
The AAG IOT&E current estimate changed from Nov 2023 to Mar 2025 for consistency with the CVN 78 IOT&E completion current estimate date.

Schedule Baseline Deviation Explanation

The IOT&E completion date change is based on the projected future Composite Training Unit Exercise schedule planned for early 2025 that incorporates sortie generation rate demonstration. The IOT&E completion current estimate has changed from March 2025 to May 2025 due to the CVN 78's extended deployment. This schedule deviation was reported in the December 2022 SAR and the CVN 78 program deviation report acknowledged by the MDA in August 2023. The PM will submit a revised APB to mitigate this deviation.

(U) Current Significant Schedule Risks and Risks Identified at Milestones/Decisions

None

(U) Performance

(U) Performance Attributes

Aircraft Interoperability		**KPP**
Current Estimate **12/31/2023**		Will meet threshold. Meets threshold requirements for C-2A, E- 2C, E-2D, F/A- 18E/F, EA- 18G and T- 45C. F-35C risk reduction testing conducted in FY 2022; follow-on compatibility testing with deadloads conducted in 2023; manned compatibility testing commenced in January 2024; Aircraft Recovery Bulletin (ARB) expected in FY 2024.
Demonstrated Performance **2/28/2020**		Hookload limits and G-load limits demonstrated to be within limits as defined in ARB NO. 35-12 E.
APB Change 1 **(Current)**	**Objective**	The hookload limits and G-load limits applicable to each aircraft listed in the Development Threshold plus those listed in Table 2 shall not be exceeded when each aircraft engages the AAG at up to its maximum weight, net applied thrust, and maximum aircraft engaging velocity.
2/5/2020	**Threshold**	The hookload limits and G-load limits applicable to C-2A,E-2 Type/Model/Series (TMS), F/A-18, EA-18 TMS, F-35, and T45 aircraft shall not be exceeded when each aircraft engages the AAG at up to its maximum weight, net applied thrust, and maximum aircraft engaging velocity.
Development APB **(Milestone)** **12/20/2016**	**Objective**	The hookload limits and G-load limits applicable to each aircraft listed in the Development Threshold plus those listed in Table 2 shall not be exceeded when each aircraft engages the AAG at up to its maximum weight, net applied thrust, and maximum aircraft engaging velocity.
Cycle Time JCTS and RALS demonstration		**KPP**
Current Estimate **12/31/2023**		**Will meet threshold. Mitigations include new Cable Shock Absorber proximity switch bracket and Software V3.1.1.0 (Release M) to reduce communications faults and aborted retracts in FY 2024. Reassess upon IOT&E completion.***
Demonstrated Performance **3/14/2023**		**Cycle time of 37 seconds demonstrated during Composite Training Unit Exercise.**
APB Change 1 **(Current)**	**Objective**	30 Seconds
2/5/2020	**Threshold**	35 Seconds
Development APB **(Milestone)** **12/20/2016**	**Objective**	30 Seconds
Operational Availability IOT&E demonstration		**KPP**
Current Estimate **12/31/2023**		Will meet threshold. Since July 2020, AAG has demonstrated significant increases in Ao as compared to the early phases of Post-delivery Test and Trials. As the AAG system increases cyclic operations, increases to

		system reliability and Ao are expected.
Demonstrated Performance **1/18/2024**		0.906 = Cumulative Ao based on 22,902 CVN 78 shipboard arrestments for the as-installed three-wire system (0.970 = Ao while deployed May 4 - January 18, 2024)
APB Change 1 (Current)	**Objective**	0.988
2/5/2020	**Threshold**	0.985
Development APB (Milestone) **12/20/2016**	**Objective**	0.988
AAG Operating Envelope		**KPP**
Current Estimate **12/31/2023**		Meets Threshold.
Demonstrated Performance **3/20/2019**		Jet Car Testing Site testing demonstrated the ability to absorb deadload arrestment energy within the threshold operating envelope.
APB Change 1 (Current)	**Objective**	9,000 to 55,000 lbs.
2/5/2020	**Threshold**	13,360 to 55,000 lbs.
Development APB (Milestone) **12/20/2016**	**Objective**	9,000 to 55,000 lbs.
Barricade Interoperability		**KSA**
Current Estimate **12/31/2023**		Meets Objective.
Demonstrated Performance **2/28/2019**		Barricade testing demonstrated 15 seconds/15 seconds time to convert the system.
APB Change 1 (Current)	**Objective**	<1 minute / < 3minutes
2/5/2020	**Threshold**	<3 minutes / <10 minutes
Development APB (Milestone) **12/20/2016**	**Objective**	<1 minute / < 3minutes
Manning		**KSA**
Current Estimate **12/31/2023**		Meets Threshold.
Demonstrated Performance **11/9/2018**		55 is based on November 2018 Manpower Analysis Report.
APB Change 1 (Current)	**Objective**	45
2/5/2020	**Threshold**	55
Development APB (Milestone)	**Objective**	45

12/20/2016		
Peak Aircraft Recovery Rate		**KSA**
Current Estimate **12/31/2023**		Will meet objective. System expected to meet threshold/ objective based on RALS testing.
Demonstrated Performance **10/24/2019**		System analysis (thermal stress) supports recovery of 28 aircraft in 21 minutes for the CVN 78 three-wire system. Aircraft demonstration conducted at RALS October 2019. RALS high-cycle peak recovery of 28 aircraft in 22.3 minutes demonstrated on a 1-wire system.
APB Change 1 (Current)	**Objective**	Recover 28 aircraft in 21 minutes
2/5/2020	**Threshold**	(T=O) Recover 28 aircraft in 21 minutes
Development APB (Milestone) **12/20/2016**	**Objective**	Recover 28 aircraft in 21 minutes
Human Systems Integration		**KSA**
Current Estimate **12/31/2023**		Meets Objective.
Demonstrated Performance **4/30/2021**		Requirement assessed during CVN 78 Aircraft Compatibility Test and Flight Deck Certification.
APB Change 1 (Current)	**Objective**	Operable and maintainable by 5th to 95th percentile range of operators/maintainers. operator-system interfaces (e.g., switches, displays) will be operated with minimal errors.
2/5/2020	**Threshold**	(T=O) Operable and maintainable by 5th to 95th percentile range of operators/maintainers. operator-system interfaces (e.g., switches, displays) will be operated with minimal errors.
Development APB (Milestone) **12/20/2016**	**Objective**	Operable and maintainable by 5th to 95th percentile range of operators/maintainers. operator-system interfaces (e.g., switches, displays) will be operated with minimal errors.

* Baseline Deviation

(U) Requirement Source:
Sponsor(s): None

1. Document Type Not Provided
   Notes: AAG CDD dated July 15, 2008, and the Department of the Navy, Program Executive Officer, Aircraft Carriers, Subject: Transfer of one AAG Engine Set from CVN 78 to CVN 79, dated May 19, 2014, and the Department of the Navy,Director, Air Warfare (N98), Subject: AAG POR Requirements Revision dated February 12, 2016.

Notes

Operation Availability IOT&E demonstration (KPP). The objective and threshold are expected values after system maturity is reached. System maturity is defined as the Navy Support Date plus 25,000 cycles on one ship's system. This should occur not later than CY 2023. The current demonstrated

performance changed from "0.865 (cumulative, 0.938=Instantaneous Ao) based on 12,577 CVN 78 shipboard arrestments for a three-wire system" to "Cumulative Ao = 0.898 based on 18,570 CVN 78 shipboard arrestments for the as-installed three-wire system (0.976 = Ao while deployed May 4 - August 31, 2023)" due to accounting for additional CVN 78 shipboard arrestments. The AAG program will continue to update Ao.
Ao - Operational Availability
ARB - Aircraft Recovery Bulletin
IOT&E - Initial Operational Test and Evaluation
JCTS - Jet Car Track Site
KSA - Key System Attribute
RALS - Runway Arrested Landing Site

Performance Deviation Explanation

Cycle Time JCTS and RALS Demonstration: Mitigations include new Cable Shock Absorber proximity switch bracket and Software V3.1.1.0 (Release M) to reduce communication faults and aborted retracts in FY 2024. Expected to meet threshold based on retract algorithm changes tested at RALS. Will complete verification during CVN 78 IOT&E. This performance deviation was reported in the December 2022 SAR.

(U) Acquisition Budget Estimate

(U) Total Acquisition Estimates and Quantities

Category ($M) Base Year: 2017	Development APB (Milestone) 12/20/2016 CY$ obs Objective	APB Change 1 (Current) 2/5/2020 CY$ obs Objective / Threshold		Current Estimate PB 2025 CY$ obs / TY$ obs	
RDT&E	1,198.8	1,550.1	1,705.1	1,407.9	1,422.2
Procurement	778.7	1,114.8	1,226.3	1,314.6*	1,567.4
MILCON	16.6	16.9	18.6	16.9	15.4
O&M	0.0	0.0	0.0	0.0	0.0
R&MF	-	-	-	0.0	0.0
Total Acquisition	1,994.1	2,681.8	-	2,739.4	3,005.0
Program Acquisition Unit Cost	664.700	670.450	737.495	684.856	751.260
Average Procurement Unit Cost	259.567	278.700	306.570	328.648*	391.850
Program End-Item Quantity					
Development	0	0		-	
Procurement	3	4		4	
O&M-Acquired	-	-		0	

* Baseline Deviation

Budget Notes

1. The current baseline estimate aligns with the FY 2025 PB.
2. The Procurement estimate includes Shipbuilding and Conversion, Navy funding ($1,383.6M TY$) allocated to AAG from the CVN 78 Shipbuilding and Conversion, Navy 17-1611 budget (also captured in the CVN 78 SAR Procurement estimate).
3. The FY 2018 through FY 2025 procurement funding supports the water twister effort accounted for in the APB. Continuing system improvements FY 2025 and beyond are captured in the O&S section of the APB and SAR.

Quantity Notes

None

Cost Baseline Deviation Explanation

Parameter	Explanation
Acquisition Cost (Procurement)	The Procurement Cost breach is attributed to production-related fact-of-life updates to the AAG program. Cost drivers include the increased CVN 81 cost estimates, CVN 80 engineering changes and technical refresh due to obsolescence, production cut-in of the AAG Water Twister Mod II, replacement cost of materials cannibalized to support CVN 78 deployment, and increased costs due to delayed ship delivery. The PM notified the MDA of the breach and submitted a program deviation report.
Average Procurement Unit Cost	The significant APUC breach (18% over the current baseline estimate) is the result of the increased procurement costs.

(U) Risk and Sensitivity Analysis

Current Procurement Estimate Risks (12/31/2023)	
1	The current procurement estimate reflects the May 2, 2019 PLCCE that was approved in support of AAG APB Change 1. The risk and sensitivity analysis performed in support of APB Change 1 remains current and unchanged.
Current Baseline Risks (2/5/2020)	
The current baseline estimate reflects a CAPE ICE approved in July 2017 in support of the AAG Nunn McCurdy certification and establishes the revised APB for the program's reclassification as an ACAT 1C Program. Software development was identified as the primary risk to the System Development & Demonstration program. The new schedule also added deadload and aircraft recoveries to the Dynamic Control System Software releases.	
Revised Original Baseline Risks (11/17/2017)	
None	

(U) Unit Costs

(U) Current Estimate Compared with Current Baseline

Category (CY$M) Base Year: 2017	Current Baseline 02/05/2020	Current Estimate PB 2025	% Change
Program Acquisition Unit Cost			
Acquisition Cost	2,681.8	2,739.4	
Program Quantity	4	4	
PAUC	670.450	684.856	2.15%
Average Procurement Unit Cost			
Procurement Cost	1,114.8	1,314.6	
Procurement Quantity	4	4	
APUC	278.700	328.648	17.92%

Significant Cost Growth

(U) Current Estimate Compared with Original Baseline

Category (CY$M) Base Year: 2017	Original Baseline 11/17/2017	Current Estimate PB 2025	% Change
Program Acquisition Unit Cost			
Acquisition Cost	2,227.8	2,739.4	
Program Quantity	3	4	
PAUC	742.600	684.856	-7.78%
Average Procurement Unit Cost			
Procurement Cost	764.2	1,314.6	
Procurement Quantity	3	4	
APUC	254.733	328.648	29.02%

(U) Significant Cost Growth Details

Current Baseline APUC Breach Explanation

The significant APUC breach (18% over the current baseline estimate) is the result of the increased procurement costs.

Impacts of Schedule Changes on Unit Cost

No expected impact; the SCN allocation from the CVN 78 program fully funds the planned production-related efforts.

Impacts of Performance Changes on Unit Cost

No expected impact

Actions taken or Proposed to Control Future Cost Growth

The AAG program is evaluating acquisition strategies for potential future shipsets to maximize cost savings and control future cost growth. Proposed actions include a multiple-shipset procurement strategy and maximizing cost-sharing opportunities with France.

Status of Each Major Contract and Significant Factors Contributing to Cost and Schedule Variance; Projected Effects on Future Program Costs

See Contracts section.

Notes

The PM notified the MDA of the breach and submitted a program deviation report. Within the next 90 business days, the PM will collaborate with AAG program stakeholders to determine if a program restructure is necessary and submit a revised APB to mitigate the deviation.

(U) Life-Cycle Costs

(U) Operating and Support and Disposal Cost Estimates Compared with Baseline

Category ($M) Base Year: 2017	Development APB (Milestone) 12/20/2016 CY$ obs Objective	APB Change 1 (Current) 2/5/2020 CY$ obs Objective / Threshold		Current Estimate CY$ obs / TY$ obs	
Total O&S	2,746.8	3,701.1	4,071.2	3,083.5	7,315.1
Total Disposal	-	-	-	-	-

(U) Current Cost Estimate Sources

Operating and Support Cost
Type: Program Office Estimate
Approved by: PMA-251, January 15, 2024
Note: a. Disposal/Demilitarization Cost Estimate and Source of Estimate (cost can be total or unitized): AAG disposal costs are included in the CVN 78 Class Disposal Cost.

b. Sustainment Strategy: The AAG is currently in operation onboard the CVN 78. The maintenance concept for AAG utilizes a three-level strategy (organizational (O), intermediate (I), and depot). The fleet performs O-level repairs while the ship's Aircraft Intermediate Maintenance Department, as well as the Carrier and Field Service Unit, perform minimal I-level repairs. For depot-level repair, the Commander, Fleet Readiness Centers, issued a depot source of repair decision on October 25, 2021, based on a joint service capability review, for both organic and contractor facilities at the Naval Air Warfare Center Aircraft Division (NAWCAD) Lakehurst and General Atomics, respectively. The Naval Air Systems Command (NAVAIR) awarded an AAG depot stand-up contract to General Atomics, the AAG original equipment manufacturer (OEM), in January 2021. Depot stand-up commenced in FY 2024 to include OEM repairs of depot-level repairables and some organic repair capability. PMA-251 designated NAWCAD Lakehurst the AAG Software Support Activity, establishing a software support concept that leverages organic advanced test capability at NAWCAD Lakehurst and OEM subject matter experts for software development, in the fourth quarter of FY 2023. The AAG program achieved the Material Support Date on February 3, 2020, and the Naval Systems Supply Command and Defense Logistics Agency awarded spares and repair contracts for the AAG system. For fleet training, NAVAIR awarded contracts to General Atomics for interim training that will continue until the formal training curriculum and training schoolhouse are complete at the Center for Naval Aviation Technical Training Unit Norfolk in the fourth quarter of FY 2023.

c. Antecedent System(s) O&S Costs: No antecedent. The AAG system is specifically designed to meet the requirements of the CVN 78 Class. The advanced technologies and capabilities, and unique ship interface requirements of AAG do not exist in any legacy recovery systems. As such, there are no comparable antecedent systems.

Operating and Support Baseline Deviation Explanation

None

Cost Notes

The O&S Cost Estimate (TY$) is 6.450.3.

(U) Operating and Support Variance with Prior Estimate

(CY$M) Base Year: 2017	Estimate	
Prior Estimate (1/26/2021)	3,059.2	
Current Estimate	3,083.5	
Category	**Variance**	**Explanation**
Unit-Level Manpower	1.6	Updated escalation and labor rates
Unit Operations	-	Not applicable
Maintenance	0.1	Updated escalation and labor rates
Sustaining Support	18.6	Updated delivery dates, escalation, and labor rates
Continuing System Improvements	4.0	Updated delivery dates, escalation, and labor rates
Other	-	Not applicable
Not Categorized	0.0	

(U) Operating and Support Cost Element Structure Estimates by Acquired System

(CY$M) Base Year: 2017							
System	**Unit-Level Manpower**	**Unit Operations**	**Maintenance**	**Sustaining Support**	**Continuing System Improvements**	**Other**	**Total**
AAG	889.2	-	824.6	646.0	723.7	-	**3,083.5**
Program	**889.2**	**-**	**824.6**	**646.0**	**723.7**	**-**	**3,083.5**

(U) Annual Operating and Support Costs per Unit Compared with Antecedent System

(CY$M) Base Year: 2017							
System	**Unit-Level Manpower**	**Unit Operations**	**Maintenance**	**Sustaining Support**	**Continuing System Improvements**	**Other**	**Total**
AAG	889.2	-	824.6	646.0	723.7	-	**3,083.5**

(U) Operating and Support Cost Estimate Assumptions

System	Quantity to Sustain	Unit Expected Service Life (Years)	Unit of Measure	Fiscal Years Operational
AAG	4	50.0	shipset	2017 - 2082

Additional O&S Estimate Assumptions

None

Antecedent Estimate Assumptions

None

O&S Annual Cost Calculation Memo

Total Cost (CY17$M) = Average Annual Cost Per Shipset * Number of Shipsets * Service Life = $15.418M * 4 * 50 = $3,083.5M

(U) Technologies and Systems Engineering

(U) Current Significant Technical Risks and Risks Identified at Milestones/Decisions

Event	Date	Description
Current	6/30/2026	1. AAG Reliability, Availability, and Maintainability (RAM). If RAM requirements are not being met due to system immaturity and component failures, then insufficient number of operational cycles may limit the program's ability to identify, analyze, and address critical AAG RAM degraders.
Current	6/20/2026	3. Acceptable Level of Cyber Risk. If the AAG cyber-risk is not reduced to an acceptable level within the A25 build, then the system may lose the Authority to Operate (ATO) for the 2023 ATO period (2023-2026).
Current	3/30/2026	2. AAG Obsolescence. If AAG obsolescence does not have a sufficient and continuous funding stream, then ship readiness and supportability will be impacted due to inability to field timely solutions.

(U) Performing Activities and Contracts

(U) External Government Activities

None

(U) Contracts and Efforts

Contract Title	Contract Number / Effort	Contractor	Phase
AAG/EMALS CVN 79/80 Production	N0001914C0037	General Atomics	Production
AAG/EMALS CVN 81 Pre-production Planning/ Production	N0001922C0033	General Atomics	Production

(U) Contract and Effort Identification, Price, Quantity and Performance

Contract Number:	N0001914C0037	**Order Number:**	-
Contract Title:	AAG/EMALS CVN 79/80 Production	**Strategy:**	FAR 15: Negotiated Contracts
CAGE:	4V360 - General Atomics	**Contracting Office:**	Naval Air Systems Command, Patuxent River, MD
City, State/Province:	San Diego, CA		
Effort Number:	-	**Supported Phase:**	Production
Type:	Firm-Fixed-Price	**Award Date:**	May 8, 2014
Latest Modification Date:	January 30, 2024	**Definitization Date:**	December 22, 2016
Latest Modification No.:	P00095	**Work Start Date:**	May 8, 2014
Technical Data Rights:	Limited Rights		

Notes: Contract N0001914C0037 is a combined Electromagnetic Aircraft Launch System (EMALS) and AAG CVN 79/CVN 80 Production contract with a total contract value of $1,700.21M. The Naval Air Systems Command (NAVAIR) awarded the base (original) contract for the procurement of EMALS and AAG long lead-time materials. The difference between the Initial Contract Price Target and the Current Contract Price Target is due to contract modifications to add the CVN 79 and CVN 80 AAG shipsets as well as other AAG production-related requirements. The Current Target Price reflects the AAG-related contract funding.

Initial Price (TY$M) Target / Ceiling		Current Price (TY$M) Target / Ceiling		Est. Price at Completion (TY$M) Contractor / PM		Initial Quantity	Current Quantity	Delivered Quantity
8.9	8.9	519.0	519.0	519.0	519.0	-	2	-

(U) Contract and Effort Identification, Price, Quantity and Performance

Contract Number:	N0001922C0033	**Order Number:**	-
Contract Title:	AAG/EMALS CVN 81 Pre-production Planning/ Production	**Strategy:**	FAR 15: Negotiated Contracts

CAGE:	4V360 - General Atomics	**Contracting Office:**	Naval Air Systems Command, Patuxent River, MD
City, State/Province:	San Diego, CA		
Effort Number:	-	**Supported Phase:**	Production
Type:	Firm-Fixed-Price	**Award Date:**	December 28, 2021
Latest Modification Date:	February 26, 2024	**Definitization Date:**	December 28, 2021
Latest Modification No.:	P00012	**Work Start Date:**	December 28, 2021
Technical Data Rights:	Limited Rights		

Notes: Contract N0001922C0033 is a combined EMALS and AAG CVN 81 Pre-production contract with a total contract value of $1,362.39M. NAVAIR awarded a modification to the base contract to add CVN 81 EMALS and AAG shipset production and delivery-related CLINs. The difference between the Initial Contract Price Target and the Current Contract Price Target is due to contract modifications to add the CVN 81 AAG shipset as well as other AAG production-related requirements.

Initial Price (TY$M) Target / Ceiling		Current Price (TY$M) Target / Ceiling		Est. Price at Completion (TY$M) Contractor / PM		Initial Quantity	Current Quantity	Delivered Quantity
0.9	0.9	434.3	434.3	434.3	434.3	-	1	-

(U) Production

(U) Low-Rate Initial Production

	Original LRIP Determination	Current LRIP Determination
Total LRIP Quantity	5	2
Date	2/10/2005	12/22/2015
Reference	Milestone B ADM	Revision to Milestone B ADM
LRIP Period	FY 2009 - 2012	FY 2009 - 2014
Total Procurement Quantity	20	3
LRIP Percentage of Total	25.0%	66.7%

Rationale if LRIP Quantity Exceeds 10% of Total Procurement Quantity (Current Determination)

The Original Total LRIP Quantity is more than 10% of the total production quantity as MDA approved and documented in the Milestone B ADM, dated February 10, 2005. The initial LRIP quantities were required to establish an initial production base for the system. Assistant Secretary of the Navy for Research, Development and Acquisition memorandum, "Revision to Milestone B Approval of Advanced Arresting Gear Program Decision Memorandum" of December 22, 2015, approved the procurement of the first full-rate production shipset to be installed on CVN 80, starting in FY 2017. Therefore, the only two LRIP shipsets are CVN 78 and CVN 79.

LRIP Notes

None

(U) Deliveries and Expenditures

(U) Acquisition Funding

	Total Estimate	Actual to Date	Actual, Percent Complete
Years Appropriated	27	27	100.0%
Appropriations (TY, $M)	3,005.0	3,005.1	100.0%
Expenditures (TY, $M)	3,005.0	1,969.4	65.5%

(U) End Items Delivered

	Total Required	Planned to Date	Actual to Date	Actual, Percent Complete
Procurement	4			
AAG		1	1	
Total	**4**	**1**	**1**	**25.0%**

Notes

The above data is current as of March 11, 2024.

(U) International Program Aspects

General Memo

The U.S. Navy (USN) is currently working with the French under multiple FMS cases for the Future French Carrier (FFC). Performance under the first FFC-related FMS Letter of Offer and Acceptance (LOA) (with three amendments) for trade studies and technical assistance ended in December 2022. The U.S. and French signed a second LOA in July 2021 for the AAG/Electromagnetic Aircraft Launch System (EMALS) Risk Reduction Case; the case was amended in December 2022 to extend performance through April 2024 and further amended in October 2023 to extend performance through Jan 2025. A third case was signed in March 2022 for AAG/EMALS long lead-time materials. This case was amended in July 2023 to include Development Phase 1 efforts through 2025. The Aircraft Launch and Recovery Equipment program office (PMA-251) intends to recommend amending this case in 2025 to include Development Phase 2 efforts through 2027 and Production efforts through 2038. The USN will continue to refine the rough order of magnitude (ROM) cost estimate until the production decision in 2025. A fourth case was signed in September 2022 for feasibility studies and planning for the future Rafale Aircraft Compatibility Testing (ACT) campaign. An amendment signed in May 2023 extended the case period of performance through September 2023. A second amendment to further extend the case through May 2024 was signed in December 2023.
After Rafale ACT planning case signature, a working group convened at Lakehurst, NJ where France requested a shift in the Rafale test plan. A limited ACT campaign is planned for 2025 to support the AAG/EMALS production decision. A new schedule and updated cost estimate were developed to support a 2024 LOA Amendment for the 2025 ACT campaign. The LOA amendment was offered to the French on February 15, 2024 and is pending acceptance.
A combined USN/France ship integration team was established in January 2023 and will meet quarterly through ship delivery in 2036.

Exportability and Business Issues

The USN and the Indian Navy conducted several face-to-face meetings and continued monthly discussions under their Information Exchange Agreement on Aircraft Carrier Technologies. PMA-251 provided a Pricing and Availability (P&A) ROM statement for AAG/EMALS to India in 2017 and is supporting a PEO(Carriers) LOA for a training capsule on ship-design aspects related to aviation.

Is design for international exportability planned?	No	**Industry/Partner Exportability Cost-Sharing?**	No
If not, has the MDA approved an exportability waiver for a U.S.-only design?	Not Applicable		

Program Protection: Technology Security and Foreign Disclosure Issues

The AAG system is U.S. critical technology and not openly distributable to foreign countries. Foreign participation is restricted due to critical program information. The AAG Technology Transfer and Security Assistance Review Board documentation is complete and an Exception to National

Disclosure Policy is in place. The AAG program will comply with these policy documents when considering the possible export of any AAG technologies and/or capabilities.

(U) Agreements

Activity Date	Type	Agreement Number	International Partner(s)	Quantity	Funding (TY$M)
12/5/2023	FMS LOA	FR-P-GAJ A2	France (FR)	-	-
10/12/2023	FMS LOA	FR-P-LIE A3	France (FR)	-	-
7/11/2023	FMS LOA	FR-P-LID A1	France (FR)	-	-
5/15/2023	FMS LOA	FR-P-GAJ A1	France (FR)	-	-
12/9/2022	FMS LOA	FR-P-LIE A2	France (FR)	-	-
9/9/2022	FMS LOA	FR-P-GAJ	France (FR)	-	-
8/17/2022	FMS LOA	FR-P-GXG A3	France (FR)	-	-
3/17/2022	FMS LOA	FR-P-LID	France (FR)	-	0.4
11/4/2021	FMS LOA	FR-P-LIE A1	France (FR)	-	-
7/23/2021	FMS LOA	FR-P-LIE	France (FR)	-	3.4
11/24/2020	FMS LOA	FR-P-GXG A2	France (FR)	-	1.9
10/25/2019	FMS LOA	FR-P-GXG A1	France (FR)	-	1.6
9/11/2018	FMS LOA	FR-P-GXG	France (FR)	-	2.2

(U) Agreement Information

Partner(s): France (FR) **Activity Date:** 12/5/2023

Type: Foreign Military Sales: Letter of Offer and Acceptance **Agreement Number:** FR-P-GAJ A2

Notes: This is a no-change-in-price LOA amendment

France (FR) Fiscal Year	Funding (TY$M)	Quantity
2024	-	-
Total	-	-

(U) Agreement Information

Partner(s): France (FR) **Activity Date:** 10/12/2023

Type: Foreign Military Sales: Letter of Offer and Acceptance **Agreement Number:** FR-P-LIE A3

Notes: This is a no-change-in-price administrative LOA amendment

France (FR) Fiscal Year	Funding (TY$M)	Quantity
2024	-	-
Total	-	-

(U) Agreement Information

Partner(s): France (FR) **Activity Date:** 7/11/2023

Type: Foreign Military Sales: Letter of Offer and Acceptance **Agreement Number:** FR-P-LID A1

Notes: Development Phase 1 support for the AAG and EMALS preliminary designs for the FFC

France (FR)

Fiscal Year	Funding (TY$M)	Quantity
Total	-	-

(U) Agreement Information

Partner(s): France (FR) **Activity Date:** 5/15/2023

Type: Foreign Military Sales: Letter of Offer and Acceptance **Agreement Number:** FR-P-GAJ A1

Notes: This is a no-change-in-price LOA amendment

France (FR)

Fiscal Year	Funding (TY$M)	Quantity
2023	-	-
Total	-	-

(U) Agreement Information

Partner(s): France (FR) **Activity Date:** 12/9/2022

Type: Foreign Military Sales: Letter of Offer and Acceptance **Agreement Number:** FR-P-LIE A2

Notes: Risk Reduction support for the AAG and EMALS program

France (FR)

Fiscal Year	Funding (TY$M)	Quantity
Total	-	-

(U) Agreement Information

Partner(s): France (FR) **Activity Date:** 9/9/2022

Type: Foreign Military Sales: Letter of Offer and Acceptance **Agreement Number:** FR-P-GAJ

Notes: Feasibility investigation and technical assistance in preparation for Rafale Aircraft Compatibility Testing

France (FR)

Fiscal Year	Funding (TY$M)	Quantity
Total	-	-

(U) Agreement Information

Partner(s): France (FR) **Activity Date:** 8/17/2022

Type: Foreign Military Sales: Letter of Offer and Acceptance **Agreement Number:** FR-P-GXG A3

Notes: This is a no-change-in-price modification to extend the LOA period of performance

France (FR)

Fiscal Year	Funding (TY$M)	Quantity
2023	-	-
Total	-	-

(U) Agreement Information

Partner(s):	France (FR)	**Activity Date:**	3/17/2022
Type:	Foreign Military Sales: Letter of Offer and Acceptance	**Agreement Number:**	FR-P-LID
Notes:	Early long-lead AAG and EMALS forgings		

France (FR) Fiscal Year	Funding (TY$M)	Quantity
2022	0.4	-
Total	**0.4**	**-**

(U) Agreement Information

Partner(s):	France (FR)	**Activity Date:**	11/4/2021
Type:	Foreign Military Sales: Letter of Offer and Acceptance	**Agreement Number:**	FR-P-LIE A1
Notes:	This is a no-change-in-price LOA amendment.		

France (FR) Fiscal Year	Funding (TY$M)	Quantity
2022	-	-
Total	**-**	**-**

(U) Agreement Information

Partner(s):	France (FR)	**Activity Date:**	7/23/2021
Type:	Foreign Military Sales: Letter of Offer and Acceptance	**Agreement Number:**	FR-P-LIE
Notes:	Risk Reduction support for the AAG and EMALS program		

France (FR) Fiscal Year	Funding (TY$M)	Quantity
2021	3.4	-
Total	**3.4**	**-**

(U) Agreement Information

Partner(s):	France (FR)	**Activity Date:**	11/24/2020
Type:	Foreign Military Sales: Letter of Offer and Acceptance	**Agreement Number:**	FR-P-GXG A2
Notes:	Data to support preliminary design for AAG and EMALS integration		

France (FR) Fiscal Year	Funding (TY$M)	Quantity
2021	1.9	-
Total	**1.9**	**-**

(U) Agreement Information

Partner(s):	France (FR)	**Activity Date:**	10/25/2019
Type:	Foreign Military Sales: Letter of Offer and Acceptance	**Agreement Number:**	FR-P-GXG A1
Notes:	Data to support a preliminary design decision for the AAG and EMALS integration		

France (FR) Fiscal Year	Funding (TY$M)	Quantity

France (FR)

Fiscal Year	Funding (TY$M)	Quantity
2020	1.6	-
Total	**1.6**	**-**

(U) Agreement Information

Partner(s):	France (FR)	**Activity Date:**	9/11/2018
Type:	Foreign Military Sales: Letter of Offer and Acceptance	**Agreement Number:**	FR-P-GXG
Notes:	Data to support a preliminary design decision for AAG and EMALS integration		

France (FR)

Fiscal Year	Funding (TY$M)	Quantity
2019	2.2	-
Total	**2.2**	**-**

Modernized Selected Acquisition Report Supplement

Advanced Arresting Gear (AAG)

FY 2025 President's Budget
As of: December 31, 2023

MSAR Supplement Sections

Program Description

Program Use of the Adaptive Acquistion Framework

Technologies and Systems Engineering

Funding Sources (Acquisition)

Funding Sources (Operating and Support)

Acquisition Estimate and Quantity Summary

Annual Acquisition Estimates by Appropriation Account

Acquired System Annual End-Item Quantities by Appropriation Account

Nuclear Costs

Operational Fielding Plan

O&S Independent Cost Estimate

Annual Operating and Support Estimates by Cost Element

Program Description

Full Name
Advanced Arresting Gear

Short Name
AAG

PNO
529

Lead Component
Navy

AAF Pathway
MCA

Acquisition Type
MDAP

Acquired Systems
AAG

Related Programs

Full Name	PNO	Pathway	Type	ACAT/ BCAT	Acquisition Status	Costs in SAR? Acq	O&S

Program Use of the Adaptive Acquisition Framework

The AAG program is a system-level acquisition for a new arresting gear for the GERALD R. FORD-class (CVN 78) aircraft carrier. The AAG is designed to provide total life-cycle cost savings by reducing O&M costs when compared to the legacy NIMITZ-class arresting gear. The AAG provides new operational capabilities necessary to achieve the CVN 78-class performance requirements, which include the ability to safely and efficiently recover both faster, heavier aircraft and future lightweight unmanned air vehicles.

As government-furnished equipment for the CVN 78-class aircraft carrier, the AAG program of record is four shipsets for CVN 78-CVN 81. The U.S. Navy delivered the CVN 78 to the fleet; production for the remaining AAG shipsets is underway.

The AAG program follows the CVN 78 program major milestone schedule. Additionally, AAG production is dependent on CVN 78 program funding allocated to support shipset and production-related procurements.

This acquisition is accomplished by a single program in the Major Capability Acquisition Pathway.

Technologies and Systems Engineering

Advanced Arresting Gear

Major Software Efforts

Title	Status	Fielding Date	Description
None			

Major Engineering Changes

Title	Original Need Date	Fielding Date	Description, Rationale and Program Impacts
ECP-I-AAG-0014 Water Twister Mod II		May 2025	ECP-I-AAG-0014 encompasses designing, testing, and fielding a new Water Twister (WT) configuration (Mod II) to retrofit the WTs at the Jet Car Test Site (JCTS) and aboard CVN 78 and CVN 79. It also includes forward-fit WT Mod II for CVN 80 and forward. The preliminary ECP (Part 1) encompasses developing the WT Mod II, producing units to be tested at the JCTS, and completing a Technical Data Package including updated Integrated Product Support products. The formal ECP (Part 2) will encompass procuring and fielding WT Mod II aboard Ford-class carriers and retrofitting the Runway Arrested Landing Site. This WT Mod II solution incorporates new, redesigned hardware subcomponents to meet established threshold requirements of the AAG operating envelope. Component design changes will maintain system performance while addressing design deficiencies that resulted in fatigue, fracture and service-life concerns, thus improving factors of safety.

Funding Sources (Acquisition)

Acquisition Funding Notes

The CVN 78 program allocates Shipbuilding and Conversion, Navy (SCN) funding to AAG from the CVN 78 SCN 17-1611 budget.

Advanced Arresting Gear

Category	Account	BA	Line Item	Program Element	RDT&E Project	Shared	Sunk
RDT&E	1319N	05	0604512N - Shipboard Aviation Systems	0604512N	2232 - CV/CVN Launch and Recover	x	
Note:	This appropriation is shared with all Aircraft Launch and Recovery Equipment (ALRE) products, except Expeditionary Airfields.						
RDT&E	1319N	05	0604530N - Advanced Arresting Gear (AAG)	0604530N	2367 - Advanced Arresting Gear		
Procurement	1810N	08	9020 - Spares and Repair Parts	0204112N	-	x	
Note:	This appropriation is shared with all ALRE products.						
Procurement	1810N	03	4213 - Aircraft Support Equipment	0204112N	-	x	x
Note:	This appropriation is shared with all ALRE products and encompasses 4216 as a cost type starting in FY 2015.						
Procurement	1810N	03	4216 - Aircraft Launch & Recovery Equipment	0204112N	-	x	x
Note:	This appropriation is active per the PB. However, it is sunk in FY 2014 per DON 2017, as reported in the POM 2017 ad hoc report. This appropriation is categorized a cost type in the 4213 sub-activity aircraft support equipment program element. The AAG is a separate individual modification procurement exhibit (P-3a) in the budget.						
Procurement	1810N	03	4217 - Advanced Arresting Gear (AAG)	0204112N	-		
Procurement	1611N	02	2001 - Carrier Replacement Program	0204112N	-	x	
Note:	This appropriation is shared with all GERALD R. FORD-class ships.						
MILCON	1205N	XX	OTHER - Other or New 1205N Line Item	XXX	XXX - --		x
Note:	Advanced Arresting Gear Test Site (BLI 148558251, PE 0805376N						

Funding Sources (Operating and Support)

Note: Budget lines fund activites executed by the Program Office or Sustainment Office.

Operating and Support Funding Notes

None

Advanced Arresting Gear

Category	Account	BA	Line Item	Program Element	RDT&E Project	Shared	Sunk

Acquisition Estimate and Quantity Summary

Advanced Arresting Gear

Acquisiton Estimates

Category PB 2025	TY ($M)	Current Base Year CY2017 ($M)	Original Base Year CY2017 ($M)	Report Fiscal Year CY2024 ($M)
RDT&E	1,422.2	1,407.9	1,407.9	1,756.8
Procurement	1,567.4	1,314.6	1,314.6	1,640.4
MILCON	15.4	16.9	16.9	21.1
O&M	-	-	-	-
Total Acquisition	3,005.0	2,739.4	2,739.4	3,418.3
PAUC	751.260	684.856	684.856	854.575
APUC	391.850	328.648	328.648	410.092

Acquisiton End-Item Quantities

System PB 2025	Development	Procurement
AAG	-	4
Total	**-**	**4**

Unit Description

The AAG system consists of the energy absorbing subsystem (includes mechanical brake, water twister, and electric motor), dynamic control subsystem, cross-deck pendant, thermal management system, workstation management subsystem (with interactive HealthMAP display system), prime power subsystem, power conditioning subsystem, and drive fairlead subsystem (includes cable shock absorber and retractable sheaves).

Current and Future Years Defense Program Summary, TY($M)

Appropriation	Prior	2024	2025	2026	2027	2028	2029	To Complete	Total
RDT&E	1,333.7	10.7	9.1	14.0	10.6	21.9	22.3	-	1,422.2
Procurement	963.9	113.3	137.7	93.3	97.0	162.2	-	-	1,567.4
MILCON	15.4	-	-	-	-	-	-	-	15.4
O&M	-	-	-	-	-	-	-	-	-
PB 2025 Total	**2,313.0**	**124.0**	**146.9**	**107.3**	**107.5**	**184.0**	**22.3**	**-**	**3,005.0**

Annual Acquisition Estimates by Appropriation Account

(Aligned to Budget Position: PB 2025)

Advanced Arresting Gear

Source for TY$-CY$ Conversion: ASN FMB-6 Inflation Rates and Outlay Factors for DA, DoN and DW accounts: 17 Jan 2024

1319N - Research, Development, Test & Eval, Navy					
fiscal year		Other/ Unallocated	Total TY($M)	Weighted Rate	Total CY2017 ($M)
Total		**1,422.2**	**1,422.2**	**-**	**1,407.9**
2003		12.300	12.3	0.781970	15.7
2004		15.730	15.7	0.803798	19.6
2005		24.190	24.2	0.824954	29.3
2006		33.450	33.5	0.850659	39.3
2007		26.700	26.7	0.871495	30.6
2008		34.390	34.4	0.887392	38.8
2009		45.480	45.5	0.898786	50.6
2010		64.480	64.5	0.912268	70.7
2011		65.160	65.2	0.934050	69.8
2012		40.400	40.4	0.949541	42.5
2013		52.940	52.9	0.959512	55.2
2014		72.260	72.3	0.973069	74.3
2015		117.480	117.5	0.985313	119.2
2016		106.770	106.8	1.003600	106.4
2017		100.400	100.4	1.022378	98.2
2018		166.630	166.6	1.047421	159.1
2019		168.430	168.4	1.067594	157.8
2020		122.500	122.5	1.106854	110.7
2021		63.700	63.7	1.156600	55.1
2022		0.150	0.2	1.217024	0.1
2023		0.150	0.2	1.253255	0.1
2024		10.660	10.7	1.281864	8.3
2025		9.140	9.1	1.309056	7.0
2026		14.040	14.0	1.336546	10.5
2027		10.560	10.6	1.364614	7.7
2028		21.850	21.9	1.393271	15.7
2029		22.300	22.3	1.422529	15.7

Annual Acquisition Estimates by Appropriation Account

(Aligned to Budget Position: PB 2025)

Advanced Arresting Gear

Source for TY$-CY$ Conversion: ASN FMB-6 Inflation Rates and Outlay Factors for DA, DoN and DW accounts: 17 Jan 2024

1810N - Other Procurement, Navy									
fiscal year	End Item Recurring Flyaway	Non-End Item Recurring Flyaway	Non-Recurring Flyaway	Initial Spares	Depot Activation	Other/ Unallocated	Total TY($M)	Weighted Rate	Total CY2017 ($M)
Total	**183.8**	**-**	**-**	**-**	**-**	**-**	**183.8**	**-**	**170.9**
2003							-	0.792647	-
2004							-	0.812203	-
2005							-	0.835071	-
2006							-	0.862741	-
2007							-	0.881521	-
2008							-	0.895847	-
2009							-	0.907656	-
2010							-	0.925199	-
2011							-	0.938728	-
2012	1.400						1.4	0.953663	1.5
2013	52.860						52.9	0.966722	54.7
2014	7.070						7.1	0.979587	7.2
2015	15.990						16.0	0.993714	16.1
2016	9.660						9.7	1.011703	9.5
2017	2.230						2.2	1.033192	2.2
2018	10.900						10.9	1.056737	10.3
2019	11.050						11.1	1.082380	10.2
2020	4.730						4.7	1.120493	4.2
2021	16.060						16.1	1.175308	13.7
2022	22.270						22.3	1.225155	18.2
2023	15.410						15.4	1.260622	12.2
2024	11.930						11.9	1.289197	9.3
2025	2.240						2.2	1.316536	1.7

Annual Acquisition Estimates by Appropriation Account

(Aligned to Budget Position: PB 2025)

Advanced Arresting Gear

Source for TY$-CY$ Conversion: ASN FMB-6 Inflation Rates and Outlay Factors for DA, DoN and DW accounts: 17 Jan 2024

1611N (BLS Hist) - Shipbuilding and Conversion, Navy									
fiscal year	End Item Recurring Flyaway	Non-End Item Recurring Flyaway	Non-Recurring Flyaway	Initial Spares	Depot Activation	Other/ Unallocated	Total TY($M)	Weighted Rate	Total CY2017 ($M)
Total	**1,383.6**	**-**	**-**	**-**	**-**	**-**	**1,383.6**	**-**	**1,143.7**
2003							-	0.701354	-
2004							-	0.726797	-
2005							-	0.759012	-
2006							-	0.785780	-
2007							-	0.821887	-
2008	0.710						0.7	0.849880	0.8
2009	52.350						52.4	0.875879	59.8
2010	36.320						36.3	0.906310	40.1
2011	44.230						44.2	0.936042	47.3
2012	20.260						20.3	0.957515	21.2
2013	6.520						6.5	0.977541	6.7
2014	15.690						15.7	0.997336	15.7
2015	55.380						55.4	1.020322	54.3
2016	51.470						51.5	1.046414	49.2
2017	81.800						81.8	1.076431	76.0
2018	95.800						95.8	1.111495	86.2
2019	99.390						99.4	1.152852	86.2
2020	46.900						46.9	1.200357	39.1
2021	38.550						38.6	1.248889	30.9
2022	27.570						27.6	1.292497	21.3
2023	121.360						121.4	1.322912	91.7
2024	101.380						101.4	1.351292	75.0
2025	135.470						135.5	1.379719	98.2
2026	93.300						93.3	1.408693	66.2
2027	96.980						97.0	1.438276	67.4
2028	162.170						162.2	1.468480	110.4

Annual Acquisition Estimates by Appropriation Account

(Aligned to Budget Position: PB 2025)

Advanced Arresting Gear

Source for TY$-CY$ Conversion: ASN FMB-6 Inflation Rates and Outlay Factors for DA, DoN and DW accounts: 17 Jan 2024

1205N - Military Construction, Navy					
fiscal year		Other/ Unallocated	Total TY($M)	Weighted Rate	Total CY2017 ($M)
Total		**15.4**	**15.4**	**-**	**16.9**
2003			-	0.798714	-
2004			-	0.819628	-
2005			-	0.842891	-
2006			-	0.865753	-
2007			-	0.883359	-
2008			-	0.898414	-
2009		15.400	15.4	0.910724	16.9

Acquired System Annual End-Item Quantities by Appropriation Account

(Aligned to Budget Position: PB 2025)

Advanced Arresting Gear

1611N (BLS Hist) - Shipbuilding and Conversion, Navy				
fiscal year	AAG			Total
Total	**4**			**4**
Undistributed				-
2008	1			1
2009				-
2010				-
2011				-
2012				-
2013	1			1
2014				-
2015				-
2016				-
2017				-
2018	1			1
2019				-
2020				-
2021				-
2022				-
2023	1			1

Nuclear Costs

Advanced Arresting Gear

Program's Use of Department of Energy Resources

None

Operational Fielding Plan

Advanced Arresting Gear

System: AAG

Fielding and Inventory Notes

The U.S. Navy delivered the USS Gerald R. Ford with the first AAG shipset to the fleet in 2018. The AAG service-life is approximately 50 years. The USS John F. Kennedy delivery is scheduled in Jul 2025 and the USS Enterprise projected delivery is Sep 2029. The last program of record AAG shipset (scheduled for delivery onboard the future USS Doris Miller in Feb 2032) is expected to end service in 2082.

AAG Fielding Plan and Inventory

fiscal year	Store	Field	Expend/Loss	Decommission	Inventory
2023					1
2024					1
2025		1			2
2026					2
2027					2
2028					2
2029		1			3

O&S Independent Cost Estimate

Advanced Arresting Gear

Independent and Current Cost Estimate Comparison

Category CY2017 ($M)	Independent Cost Estimate 7/12/2017	Current Estimate 1/15/2024	Variance with ICE (%)
Unit-Level Manpower	586.7	889.2	52%
Unit Operations	-	-	-
Maintenance	915.4	824.6	-10%
Sustaining Support	398.3	646.0	62%
Continued System Improvements	508.6	723.7	42%
Other	-	-	-
Total O&S	**2,409.1**	**3,083.6**	**28%**

Independent Cost Estimate Source

Event: CAPE Nunn-McCurdy Certification of Cost Estimates for the AAG Program
Type: Independent Cost Estimate
Approved by: OSD Cost Assessment & Program Evaluation, July 12, 2017
Note: The CAPE estimate was based on acquisition of three AAG systems, which was the program of record quantity at that time.

Current Cost Estimate Source

Type: Program Office Estimate
Approved by: POE, January 15, 2024

Cost Estimate Variance Explanation

1.0 Unit Level Manpower - Increased billets assigned per hull, annual DoD paygrade changes and additional ship added to program of record
2.0 Unit Operations - N/A
3.0 Maintenance - Updated data and methodology impacted average cost per year
4.0 Sustaining Support - Revised methodology and additional ship added to program of record impacted average cost per year
5.0 Continued System Improvements - Updated methodology and additional ship added to program of record impacted average cost per year

The 2017 ICE occured when the CAPE O&S structure reflected 2014 guidance, including 6.0 Indirect Support. Current CAPE 2020 structure removed element 6.0. Therefore 6.0 costs are not shown in the 1/15/2024 Current Estimate in the comparison table.

Annual Operating and Support Estimates by Cost Element

Advanced Arresting Gear

System: AAG

Source for TY-CY Conversion: ASN FMB-6 Inflation Rates and Outlay factors for Army, Navy, and Defense-wide Accounts

Operating and Support Cost Elements							
fiscal year	1.0 Unit-Level Manpower	2.0 Unit Operations	3.0 Maintenance	4.0 Sustaining Support	5.0 Continuing System Improvements	Other	Total CY2017 ($M)
Total	**889.2**	**-**	**824.6**	**646.0**	**723.7**	**-**	**3,083.6**
2017	-	-	-	2.895	-	-	2.9
2018	4.468	-	1.476	1.684	-	-	7.6
2019	4.468	-	1.476	5.252	-	-	11.2
2020	4.468	-	1.476	7.765	-	-	13.7
2021	4.468	-	4.185	8.906	8.276	-	25.8
2022	4.468	-	4.185	8.794	5.288	-	22.7
2023	4.468	-	4.185	9.795	5.189	-	23.6
2024	4.468	-	4.185	9.603	9.737	-	28.0
2025	8.937	-	8.369	10.377	11.003	-	38.7
2026	8.937	-	8.369	9.862	10.904	-	38.1
2027	8.937	-	8.369	9.862	10.904	-	38.1
2028	8.937	-	8.369	9.862	11.003	-	38.2
2029	8.937	-	8.369	9.862	11.065	-	38.2
2030	13.405	-	12.554	10.381	12.232	-	48.6
2031	13.405	-	12.554	9.866	12.331	-	48.2
2032	13.405	-	12.554	9.866	12.232	-	48.1
2033	17.873	-	16.739	10.187	13.559	-	58.4
2034	17.873	-	16.739	10.187	13.820	-	58.6
2035	17.873	-	16.739	10.702	13.559	-	58.9
2036	17.873	-	16.739	10.187	13.559	-	58.4
2037	17.873	-	16.739	10.187	13.659	-	58.5
2038	17.873	-	16.739	10.187	13.559	-	58.4
2039	17.873	-	16.739	10.187	13.721	-	58.5
2040	17.873	-	16.739	10.702	13.659	-	59.0
2041	17.873	-	16.739	10.187	13.559	-	58.4
2042	17.873	-	16.739	10.187	13.559	-	58.4
2043	17.873	-	16.739	10.187	13.659	-	58.5
2044	17.873	-	16.739	10.187	13.721	-	58.5
2045	17.873	-	16.739	10.702	13.559	-	58.9
2046	17.873	-	16.739	10.187	13.659	-	58.5
2047	17.873	-	16.739	10.187	13.559	-	58.4
2048	17.873	-	16.739	10.187	13.559	-	58.4
2049	17.873	-	16.739	10.187	13.820	-	58.6

System: AAG

Source for TY-CY Conversion: ASN FMB-6 Inflation Rates and Outlay factors for Army, Navy, and Defense-wide Accounts

Operating and Support Cost Elements							
fiscal year	1.0 Unit-Level Manpower	2.0 Unit Operations	3.0 Maintenance	4.0 Sustaining Support	5.0 Continuing System Improvements	Other	Total CY2017 ($M)
2050	17.873	-	16.739	10.702	13.559	-	58.9
2051	17.873	-	16.739	10.187	13.559	-	58.4
2052	17.873	-	16.739	10.187	13.659	-	58.5
2053	17.873	-	16.739	10.187	13.559	-	58.4
2054	17.873	-	16.739	10.187	13.721	-	58.5
2055	17.873	-	16.739	10.702	13.659	-	59.0
2056	17.873	-	16.739	10.187	13.559	-	58.4
2057	17.873	-	16.739	10.187	13.559	-	58.4
2058	17.873	-	16.739	10.187	13.659	-	58.5
2059	17.873	-	16.739	10.187	13.721	-	58.5
2060	17.873	-	16.739	10.702	13.559	-	58.9
2061	17.873	-	16.739	10.187	13.659	-	58.5
2062	17.873	-	16.739	10.187	12.232	-	57.0
2063	17.873	-	16.739	10.187	12.232	-	57.0
2064	17.873	-	16.739	10.187	12.492	-	57.3
2065	17.873	-	16.739	10.702	12.232	-	57.5
2066	17.873	-	16.739	10.187	12.232	-	57.0
2067	13.405	-	12.554	10.095	12.331	-	48.4
2068	13.405	-	12.554	10.095	12.232	-	48.3
2069	13.405	-	12.554	10.095	12.393	-	48.4
2070	13.405	-	12.554	10.610	11.003	-	47.6
2071	13.405	-	12.554	10.095	10.904	-	47.0
2072	13.405	-	12.554	10.095	10.904	-	47.0
2073	13.405	-	12.554	10.095	11.003	-	47.1
2074	13.405	-	12.554	10.095	11.065	-	47.1
2075	8.937	-	8.369	10.377	9.576	-	37.3
2076	8.937	-	8.369	9.862	9.675	-	36.8
2077	8.937	-	8.369	9.862	9.576	-	36.7
2078	8.937	-	8.369	9.862	5.189	-	32.4
2079	8.937	-	8.369	9.862	5.450	-	32.6
2080	4.468	-	4.185	10.448	5.189	-	24.3
2081	4.468	-	4.185	9.933	5.189	-	23.8
2082	4.468	-	4.185	9.933	5.288	-	23.9