

Selected Acquisition Report (SAR)



Air and Missile Defense Radar Family of Radars (AMDR FoR)

FY 2024 President's Budget

Defense Acquisition Visibility Environment
(DAVE)

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Common Acronyms and 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

APB - Acquisition Program Baseline

APPN - Appropriation

APUC - Average Procurement Unit Cost

BA - Budget Authority/Budget Activity

Blk - Block

BY - Base Year

CAPE - Cost Assessment and Program Evaluation

CARD - Cost Analysis Requirements Description

CDD - Capability Development Document

CLIN - Contract Line Item Number

CPD - Capability Production Document

CY - Calendar Year

DAB - Defense Acquisition Board

DAE - Defense Acquisition Executive

DAMIR - Defense Acquisition Management Information Retrieval

DoD - Department of Defense

DSN - Defense Switched Network

EMD - Engineering and Manufacturing Development

EVM - Earned Value Management

FMS - Foreign Military Sales

FOC - Full Operational Capability

FRP - Full Rate Production

FY - Fiscal Year

FYDP - Future Years Defense Program

ICE - Independent Cost Estimate

Inc - Increment

IOC - Initial Operational Capability

JROC - Joint Requirements Oversight Council

KPP - Key Performance Parameter

LRIP - Low Rate Initial Production

MDA - Milestone Decision Authority

MDAP - Major Defense Acquisition Program

MILCON - Military Construction

N/A - Not Applicable

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
- RDT&E - Research, Development, Test, and Evaluation
- SAR - Selected Acquisition Report
- SCP - Service Cost Position
- TBD - To Be Determined
- TY - Then Year
- U.S. - United States
- UCR - Unit Cost Reporting
- USD(A&S) - Under Secretary of Defense (Acquisition and Sustainment)
- USD(AT&L) - Under Secretary of Defense (Acquisition, Technology and Logistics)

Program Information

Program Name

Air and Missile Defense Radar Family of Radars

DoD Component

Navy

Responsible Office

Program Manager

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Mission and Description

Developed under the Air and Missile Defense Radar (AMDR) program, the AN/SPY-6(V)1 is the Navy's next generation radar system that will address Ballistic Missile Defense (BMD) and Air Defense (AD) capability gaps identified in the Maritime Air and Missile Defense of Joint Forces (MAMDJF) Initial Capabilities Document (ICD). AN/SPY-6(V)1 is an Integrated Air and Missile Defense (IAMD) radar providing sensitivity for long range detection and engagement of advanced threats. The AN/SPY-6(V)1 is currently planned to be deployed on the Arleigh Burke Class Guided Missile Destroyer Flight III with four arrays each populated with 37 Radar Modular Assemblies (RMAs) which achieves the Capability Production Document (CPD) threshold of SPY+16dB sensitivity with margin.

Executive Summary

AMDR FoR

Program Highlights Since Last Report

AN/SPY-6(V) is a family of radars (FoR) which are designed to be scalable and adaptable across multiple ship classes and mission requirements. The AN/SPY-6(V)1 is the Navy's next generation radar system being installed on DDG 51 FLT III that will address Ballistic Missile Defense (BMD) and Air Defense (AD) capability gaps identified in the Maritime Air and Missile Defense of Joint Forces (MAMDJF) Initial Capabilities Document (ICD). AN/SPY-6(V)1 has four 37 Radar Modular Assembly (RMA) arrays to provide Integrated Air and Missile Defense (IAMD) sensitivity for long range detection and engagement of advanced threats. AN/SPY-6(V)4 is a scaled (V)1 system (24 RMAs) currently planned to replace the AN/SPY-1 radar on existing DDG 51 FLT IIA ships to bring IAMD capabilities to the fleet. The AN/SPY-6(V)2 configuration is a single 9 RMA rotating array, and the AN/SPY-6(V)3 configuration is three 9 RMA arrays. (V)2 and (V)3 are developed as one sensor in a new sensor suite that is designed to meet the performance needs contained in the Battlespace Awareness ICD. The specific system performance requirements are documented in the Enterprise Radar Suite Naval Capabilities Document (ERS NCD). AN/SPY-6(V)2 replaces the AN/SPS-48 and AN/SPS-49 radars on large deck Amphibious hulls and Nimitz Class CVNs. The AN/SPY-6(V)3 replaces the AN/SPY-4 Volume Search Radar on Ford Class CVNs and is used as the primary self-defense radar for Constellation Class FFGs. Additional (V)1-3 units have been procured on HP&S (N00024-22-C-5500) FPIF CLINs, but are not included since at the time of this SAR they were pre-Integrated Baseline Review.

History of Significant Developments Since Program Initiation	
History of Significant Developments Since Program Initiation	
Date	Significant Development Description
Dec - 2022	DDG 125 underway for Alpha Trials, first time for AN/SPY-6(V)1 operations at-sea.
Sep - 2022	Completion of DDG 130 SPY-6 deliveries.
Jul - 2022	Completion of DDG 131 SPY-6 deliveries.
May - 2022	Completion of DDG 126 SPY-6 deliveries.
Mar - 2022	Awarded the Hardware Production and Sustainment contract.
Mar - 2022	Completion of DDG 129 SPY-6 deliveries.
Dec - 2021	Completion of the DDG 125 AEGIS Light-Off (ALO)
Mar - 2021	Completion of DDG 128 SPY-6 deliveries.
Oct - 2020	Completion of DDG 125 SPY-6 deliveries.
Dec - 2019	Exercised contract options for two more Low Rate Initial Production units bringing the unit total to nine
Mar - 2019	Exercised contract options for three more Low Rate Initial Production units bringing the unit total to seven.
Jan - 2019	Vigilant Nemesis flight test
Dec - 2018	Awarded Integration and Production Support contract to Raytheon
Apr - 2018	Exercised contract option for a fourth Low Rate Initial Production unit
Mar - 2018	Vigilant Janus flight test
Dec - 2017	Combined Systems Engineering Technical Review (Transition Critical Design Review, System Verification Review/Functional Configuration Audit, and Production Readiness Review)
Sep - 2017	Vigilant Talon flight test
Jul - 2017	Vigilant Titan flight test
May - 2017	Exercised contract options for first three Low Rate Initial Production units
Apr - 2017	Milestone C Acquisition Decision Memorandum
Mar - 2017	Vigilant Hunter flight test
Dec - 2016	Exercised Long Lead Material contract option for first Low Rate Initial Production unit
Sep - 2016	Start of Developmental Test 3 (DT-3)
Apr - 2015	System Critical Design Review
Aug - 2014	System Preliminary Design Review
Oct - 2013	Awarded one 48-month Engineering and Manufacturing Development contract to Raytheon
Oct - 2013	Milestone B Acquisition Decision Memorandum
May - 2012	Pre-Engineering and Manufacturing Development Defense Acquisition Board Review
Sep - 2010	Awarded three 24-month Technology Development contracts to Raytheon, Lockheed Martin, and Northrop Grumman
Sep - 2010	Milestone A Acquisition Decision Memorandum
Jun - 2009	Awarded three 6-month Concept Studies contracts to Raytheon, Lockheed Martin, and Northrop Grumman

AN/SPY-6(V)1 Air and Missile Defense Radar (AMDR)**Program Highlights Since Last Report**

After completing Concept Studies and Technology Development phase contracts with Raytheon, Northrop Grumman, and Lockheed Martin, the Air and Missile Defense Radar (AMDR) program achieved Milestone B in September 2013 and received a signed ADM on October 4, 2013.

After a full and open competition, the EMD contract was awarded to Raytheon on October 10, 2013. The EMD phase included integration and test of a single-faced AN/SPY-6(V)1 Engineering Development Model with an AN/SPQ-9B asset at the land-based test site at the Pacific Missile Range Facility (PMRF) in Kauai, HI. Developmental Testing (DT)-3 live testing commenced on September 6, 2016, and included multiple live Air, Surface, Electronic Attack/Electronic Protection (EA/EP), Ballistic Missile Defense (BMD), Integrated Air and Missile Defense, missile communications test set, satellites, and sphere tracking tests. The Vigilant Janus BMD flight test analysis resulted in the March 2018 decision to close DT-3 and direction to conduct a retest. The Vigilant Nemesis retest, successfully executed in January 2019, demonstrated the AN/SPY-6(V)1 capability to detect, track, and discriminate an AEGIS Readiness Assessment Vehicle-CZ complex short-range ballistic missile target and support the design of the AEGIS Baseline (BL) 10 combat system. AN/SPY-6(V)1 testing will continue at PMRF against live Air, Surface, EA/EP, BMD, satellites and sphere targets and other agency Targets of Opportunity (TOOs). During this continued testing and integration period, the SPY-6 team has supported combat system integration with the AEGIS Baseline 10 development team at the Combat System Engineering Development Site (CSEDS). Significant combat system integration and test efforts have also been completed at PMRF using the BL10 Virtual Test Environment installed at the Advanced Radar Development Evaluation Laboratory (ARDEL). During this integration, the radar has supported several multi-mission tracking exercises and BMD TOOs while being commanded by the combat system.

The EMD phase contract included options for nine LRIP units. The program received Milestone C approval on April 27, 2017 and subsequently exercised contract options for three LRIP systems. In April 2018, the AMDR program received an ADM that authorized award of one additional FY 2018 LRIP radar system, and upon successful Vigilant Nemesis test, authorized award of up to five additional LRIP radar systems. On March 14, 2019 three additional options were exercised, and on December 20, 2019 two additional options were exercised bringing the exercised options to a total of nine units. A third ADM dated April 26, 2019, authorized the award of one additional LRIP unit, bringing the total authorized to ten units. This was followed by a fourth ADM issued October 9, 2021, which authorized the AN/SPY-6(V)1 Air and Missile Defense Radar (AMDR) program to procure its remaining six AN/SPY-6(V)1 Low Rate Initial Production (LRIP) units, subject to authorization by Congress of DDG 51 Flight III associated with each unit. The Hardware Production and Sustainment (HP&S) contract was awarded 31 March 2022, and AN/SPY-6(V)1 units 10-16 have been put on contract.

The AMDR program remains within budget. The first six shipset deliveries have been completed for DDG 125, DDG 126, DDG 128, DDG 129, DDG 130 and DDG 131, while the remaining 3 LRIP unit deliveries (for DDG 132-134) are underway and expected to complete within 2023. All delivery outlooks to the shipyards are ahead of need to support shipbuilding schedules. The program supported the successful completion of the DDG 125 AEGIS Light-Off (ALO) milestone in December 2021. In December 2022, the program supported the initial underway (Alpha Trials) and integrated underway testing in DDG 125. The program's focus continued on installation support as well as production and test of the follow-on units, and the continued integration activities with AEGIS BL10. Software deliveries, integration, and testing continues with BL10 to support continued stage testing and ship trials leading to ship delivery. AN/SPY-6(V)1 has design co-dependencies with the combat system that requires further planned software work for integration with AEGIS BL10.

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

History of Significant Developments Since Program Initiation

History of Significant Developments Since Program Initiation

Date

Significant Development Description

Date	Significant Development Description

N/SPY-6(V)2 Enterprise Air Surveillance Radar (EASR Rotating Radar)**Program Highlights Since Last Report**

In Jan 2023, AN/SPY-6(V)2 was officially added to the AMDR ACAT 1C program as a Post-MS C major subprogram via APB. Initial units for this variant were awarded on the Enterprise Air Surveillance Radar (EASR) EMD/LRIP contract, with four (4) AN/SPY-6(V)2 units awarded in 2020. There are now a total of eight (8) AN/SPY-6(V)2 units on contract. The first (V)2 unit was loaded aboard LPD29 starting in 2022. The program's focus continued on installation support as well as production and test of the follow-on units, and the continued integration activities with SSDS BL12. Software deliveries, integration, and testing continues with SSDS to support continued stage testing and ship trials leading to ship delivery. AN/SPY-6(V)2 has design co-dependencies with the combat system that requires further planned software work for integration with SSDS BL12.

History of Significant Developments Since Program Initiation

History of Significant Developments Since Program Initiation

Date	Significant Development Description
Dec - 2022	Completion of LPD 29 SPY-6 deliveries.

AN/SPY-6(V)3 Enterprise Air Surveillance Radar Fixed Face (EASR FF)**Program Highlights Since Last Report**

In Jan 2023, AN/SPY-6(V)3 was officially added to the AMDR ACAT 1C program as a Post-MS C major subprogram via APB. Initial units for these variants were awarded on the Enterprise Air Surveillance Radar (EASR) EMD/LRIP contract, with two (2) AN/SPY-6(V)3 units awarded in 2020. There are now a total of six (6) AN/SPY-6(V)3 units on contract. The first (V)3 unit was loaded aboard CVN79 in 2022. The program's focus continued on installation support as well as production and test of the follow-on units, and the continued integration activities with SSDS BL12 (for CVN Ford (V)3 units) as well as AEGIS BL10F (for Constellation Class FFG (V)3 units). Software deliveries, integration, and testing continues with SSDS and BL10F to support continued stage testing and ship trials leading to ship delivery. AN/SPY-6(V)3 has design co-dependencies with the combat system that requires further planned software work for integration with SSDS BL12 and AEGIS BL10F.

History of Significant Developments Since Program Initiation

History of Significant Developments Since Program Initiation

Date	Significant Development Description
May - 2022	Completion of CVN 79 SPY-6 deliveries.

Schedule

AMDR FoR

Events	Milestone Baseline Objective	Current Baseline Objective/Threshold	Current Estimate/Actual	Deviation

Notes

Deviation Explanation

No deviations for this program/subprogram

AN/SPY-6(V)1 Air and Missile Defense Radar (AMDR)

Events	Milestone Baseline Objective	Current Baseline Objective/Threshold		Current Estimate/Actual	Deviation
Milestone B	Oct 2013	Oct 2013	Oct 2013	Oct 2013	
System CDR	Apr 2015	Apr 2015	Apr 2015	Apr 2015	
Milestone C	Apr 2017	Apr 2017	Apr 2017	Apr 2017	
DT-3	Aug 2017	Aug 2017	Mar 2018	Mar 2018	
IOT&E	Feb 2024	Feb 2024	Aug 2024	Aug 2024	
IOC	Feb 2024	Feb 2024	Aug 2024	Aug 2024	

Notes

DT-3 completion date was updated to reflect the actual completion of DT-3.

Deviation Explanation

No deviations for this program/subprogram

AN/SPY-6(V)2 Enterprise Air Surveillance Radar (EASR Rotating Radar)

Events	Milestone Baseline Objective	Current Baseline Objective/Threshold		Current Estimate/Actual	Deviation
IOC	Aug 2028	Aug 2028	Aug 2029	Aug 2028	

Notes

None

Deviation Explanation

No deviations for this program/subprogram

AN/SPY-6(V)3 Enterprise Air Surveillance Radar Fixed Face (EASR FF)

Events	Milestone Baseline Objective	Current Baseline Objective/Threshold		Current Estimate/Actual	Deviation
IOC	Aug 2028	Aug 2028	Aug 2029	Aug 2028	

Notes

None

Deviation Explanation

No deviations for this program/subprogram

Performance

AMDR FoR

Performance Characteristics					
Milestone Baseline	Current Baseline Objective/Threshold	Demonstrated Performance	Current Estimate/Actual	Deviation	

Requirement Reference

Deviation Explanation

No deviations for this program/subprogram

Notes

None

AN/SPY-6(V)1 Air and Missile Defense Radar (AMDR)

Classified performance information is provided in the classified annex to this submission

Performance Characteristics					
Milestone Baseline	Current Baseline Objective/Threshold		Demonstrated Performance	Current Estimate/Actual	Deviation
(KPP) - Availability					
	Ao >=0.98	(T=O) Ao >=0.98	TBD	Ao >=0.99	
(KPP) - Energy Efficiency					
	Two reduced power states to minimize platform fuel consumption: State 1 consumes no more than 1100 kW total prime power; State 2 consumes no more than 850 kW total prime power.	(T=O) Two reduced power states to minimize platform fuel consumption: State 1 consumes no more than 1100 kW total prime power; State 2 consumes no more than 850 kW total prime power.	TBD	Reduced Power Substate 1 consumes 1100kW total power; Reduced Power Substate 2 consumes 850kW total power	
(KPP) - Force Protection					
	Exemption - AN/SPY-6(V)1 will support host platform requirement	(T=O) Exemption - AN/SPY-6(V)1 will support host platform requirement	N/A - Exempt	Exemption - Will support host platform requirement	
(KPP) - Net Ready					
	Exemption: Net Ready KPP is not applicable to AN/SPY-6(V)1 due to the lack of Joint Interfaces and Joint Information Exchanges.	(T=O) Exemption: Net Ready KPP is not applicable to AN/SPY-6(V)1 due to the lack of Joint Interfaces and Joint Information Exchanges.	N/A - Exempt	Exemption - AN/SPY-6(V)1 is an embedded element of the AEGIS combat system and does not produce, consume or process joint information.	
(KPP) - Survivability					

	Exemption - AN/SPY-6(V)1 will be integrated into the DDG 51 Flt III with no decrease in survivability of the hull based on DDG 51 live fire equivalent testing (DDG 81 shock trial)	(T=O) Exemption - AN/SPY-6(V)1 will be integrated into the DDG 51 Flt III with no decrease in survivability of the hull based on DDG 51 live fire equivalent testing (DDG 81 shock trial)	N/A - Exempt	Exemption - AN/SPY-6(V)1 will not decrease the survivability of the DDG 51 hull based on live fire equivalent testing (DDG 81 shock trial)	
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(KPP) - System Training

	Ships Force performs $\geq 99\%$ of corrective and preventative maintenance procedures, as defined in the maintenance manual, within the Time to Repair (TTR) specified to achieve the AN/SPY-6(V)1 Ao KPP.	(T=O) Ships Force performs $\geq 99\%$ of corrective and preventative maintenance procedures, as defined in the maintenance manual, within the Time to Repair (TTR) specified to achieve the AN/SPY-6(V)1 Ao KPP.	TBD	Ships Force will be sufficiently trained to keep AN/SPY-6(V)1 operating at or above the Ao KPP threshold of 0.98	
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Requirement Reference

Sponsor(s): United States Navy
 1.CDD, AMDR CDD
 Validated by: JROC, June 27, 2013
 2.CPD, AMDR CPD
 Validated by: JROC, March 26, 2018

Deviation Explanation

No deviations for this program/subprogram

Notes

- 1.Air and Missile Defense Radar Family of Radars: 1-6. Aligns with AMDR CPD
- 2.Air and Missile Defense Radar Family of Radars: The first two performance parameter values, not reflected here, are classified.
- 3.The AMDR CDD was approved by the JROC on June 27, 2013 (JROCM 123-13). Specific KPP values have been established in the CDD/CPD and those requirements have been flowed down to the AMDR System Requirements Document and the contractor's ASpecification.
- 4.The AMDR CPD was approved by the JROC on 26 March 2018 (JROCM 025-18). The CPD reflects lessons learned from the AMDR EMD Phase and includes updates relative to the AMDR CDD. The Pre-EMD DAB's ADM, dated May 21, 2012, directed a change to the program structure so that it includes only the AMDR S-band system. This APB represents only the S-band radar capabilities from the AMDR CDD/CPD. The X-band capabilities in the AMDR CDD will be addressed in a separate future Program of Record.

AN/SPY-6(V)2 Enterprise Air Surveillance Radar (EASR Rotating Radar)

Classified performance information is provided in the classified annex to this submission

Performance Characteristics				
Milestone Baseline	Current Baseline Objective/Threshold	Demonstrated Performance	Current Estimate/Actual	Deviation
(KPP) - Above Horizon Search (AHS) Firm Track Range on Key Driving Threat				
	Firm track range of a representative threat within the radar's field of view (T=O)	Firm track range of a representative threat within the radar's field of view (T=O)		
(KPP) - Air Traffic Control (ATC) Update Rate				
	Track report rate to meet Air Traffic Control mission (T=O)	Track report rate to meet Air Traffic Control mission (T=O)		
(KPP) - Operational Availability				
	Ao>=0.98 (T=O)	Ao>=0.98 (T=O)		

Requirement Reference

Sponsor(s): United States Navy

1.NCD, Enterprise Requirements Suite (ERS) NCD

Validated by: RADM M. C. Mizener, DCNO for Warfare Systems (N9) and VADM J. P. Mulloy, DCNO for Integration of Capabilities and Resources (N8), November 29, 2018

Deviation Explanation

No deviations for this program/subprogram

Notes

- 1.The Enterprise Radar Suite (ERS) NCD was approved on 29 Nov 2018. The NCD reflects inputs from the Capabilities Based Assessment to identify replacement radars for Carriers and Amphibious Ships. Specific KPP values have been established in the NCD and those requirements have been flowed down to the SPY-6(V)3 System Requirements Document and the contractor's A-Specification.
- 2.Air and Missile Defense Radar Family of Radars: The first two performance parameter values, not reflected here, are classified.

AN/SPY-6(V)3 Enterprise Air Surveillance Radar Fixed Face (EASR FF)

Classified performance information is provided in the classified annex to this submission

Performance Characteristics				
Milestone Baseline	Current Baseline Objective/Threshold	Demonstrated Performance	Current Estimate/Actual	Deviation
(KPP) - Above Horizon Search (AHS) Firm Track Range on Key Driving Treat				
	Firm Track range of a representative threat within the radars field of view (T=O)	Firm Track range of a representative threat within the radars field of view (T=O)		
(KPP) - Air Traffic Control (ATC) Update Rate				
	Track report rate to meet Air Traffic Control mission (T=O)	Track report rate to meet Air Traffic Control mission (T=O)		
(KPP) - Operational Availability (Ao)				
	Ao >= 0.98 (T=O)	Ao >= 0.98 (T=O)		

Requirement Reference

Sponsor(s): United States Navy

1.NCD, Enterprise Requirements Suite (ERS) NCD

Validated by: RADM M. C. Mizener DCNO for Warfare Systems (N9) and VADM J.P. Mulloy DCNO for Integrations of Capabilities and Resources (N8), November 29, 2018

Deviation Explanation

No deviations for this program/subprogram

Notes

1.The Enterprise Radar Suite (ERS) NCD was approved on 29 Nov 2018. The NCD reflects inputs from the Capabilities Based Assessment to identify replacement radars for Carriers and Amphibious Ships. Specific KPP values have been established in the NCD and those requirements have been flowed down to the SPY-6(V)3 System Requirements Document and the contractor's A-Specification.

2.Air and Missile Defense Radar Family of Radars: The first two performance parameter values, not reflected here, are classified.

Acquisition Budget Estimate

AMDR FoR

Total Acquisition Cost

		Milestone APB	Current Baseline		Budget Estimate PB 2024		
Category	Base Year	Objective (BY\$M)	Objective (BY\$M)	Threshold (BY\$M)	BY\$M	TY\$M	Deviation
RDT&E							
Procurement							
MILCON							
Acq. O&M							
Total							
PAUC							
APUC							

Budget captured at subprogram level.

Appropriation Category Deviation Explanations

PAUC Deviation Explanation

APUC Deviation Explanation

Budget Notes

Budget captured at subprogram level.

Total End Item Quantity

Quantity Category	Current APB Quantity	Current Estimate Quantity
Development		
Procurement		
O&M-Acquired		

Quantity Notes

AN/SPY-6(V)1 Air and Missile Defense Radar (AMDR)

Total Acquisition Cost

		Milestone APB	Current Baseline		Budget Estimate PB 2024		
Category	Base Year	Objective (BY\$M)	Objective (BY\$M)	Threshold (BY\$M)	BY\$M	TY\$M	Deviation
RDT&E	2013	1,986.6	1,924.2	2,116.7	1,795.1	1,862.3	
Procurement	2013	3,278.3	3,303.2	3,633.5	4,389.9	5,758.0	
MILCON	2013	28.6	28.6	31.5	28.6	27.5	
Acq. O&M	2013	0					
Total		5,293.5	5,256.0		6,213.6	7,647.8	
PAUC	2013	240.614	238.909	262.800	230.133	283.250	
APUC	2013	149.014	150.144	165.158	162.589	213.260	

Appropriation Category Deviation Explanations

PAUC Deviation Explanation

APUC Deviation Explanation

Budget Notes

Total procurement cost has increased based on the addition of 5 ship sets (27 vs 22) in comparison to the APB. Also, the cost reflects the HW increase impacts of the HP&S contract for DDG 135+ (unit 10 and out)

1) Total Acquisition Cost includes RDT&E, Procurement, and Military Construction. Numbers reflect PB 2024.

2) Procurement funding for AN/SPY-6(V)1 is also included in the DDG 51 SAR under Program Element: 0204222N. AN/SPY-6(V)1 ship-set procured with FY 2016 funds was used for an FY 2018 FLT III.

3) RDT&E associated with efforts outside the scope of the original AMDR (AN/SPY-6(V)1) APB (i.e., AN/SPY-6(V)2 and(V)3, DDG 51 FLT IIA backfit, AN/SPY-6 (V)1A Phase 1 Aspire Hardware Transition and Advanced Distributed Radar capability enhancement)) is excluded from this report.

Total End Item Quantity

Quantity Category	Current APB Quantity	Current Estimate Quantity
Development	0	0
Procurement	22	27
O&M-Acquired		

Quantity Notes

1) This SAR aligns with PB 2024.

AN/SPY-6(V)2 Enterprise Air Surveillance Radar (EASR Rotating Radar)

Total Acquisition Cost

		Milestone APB	Current Baseline		Budget Estimate PB 2024		
Category	Base Year	Objective (BY\$M)	Objective (BY\$M)	Threshold (BY\$M)	BY\$M	TY\$M	Deviation
RDT&E	2013	143.8	143.8	158.1	157.4	188.0	
Procurement	2013	471.6	471.6	518.8	418.8	569.1	
MILCON	2013						
Acq. O&M	2013						
Total		615.4	615.4		576.2	757.1	
PAUC	2013	47.337	47.337	52.071	44.322	58.238	
APUC	2013	36.278	36.278	39.905	32.215	43.775	

Appropriation Category Deviation Explanations

PAUC Deviation Explanation

APUC Deviation Explanation

Budget Notes

- 1) Total Acquisition Cost includes RDT&E, and Procurement. Numbers reflect PB 2024.
- 2) Procurement funding for AN/SPY-6(V)2 is also included in the CVN-68 SAR under Program Element: 0204112N; LHA-6 and LPD-17 SARs under Program Element: 0204411N.
- 3) RDT&E associated with efforts outside the scope of the original AMDR (AN/SPY-6(V)2) APB (i.e., AN/SPY-6(V)1 and(V)3, DDG 51 FLT IIA backfit, AN/SPY-6 (V)2A Phase 1 Aspire Hardware Transition and Advanced Distributed Radar capability enhancement)) is excluded from this report.

Total End Item Quantity

Quantity Category	Current APB Quantity	Current Estimate Quantity
Development	0	0
Procurement	13	13
O&M-Acquired		

Quantity Notes

- 1) This SAR aligns with PB 2024.

AN/SPY-6(V)3 Enterprise Air Surveillance Radar Fixed Face (EASR FF)***Total Acquisition Cost***

		Milestone APB	Current Baseline		Budget Estimate PB 2024		
Category	Base Year	Objective (BY\$M)	Objective (BY\$M)	Threshold (BY\$M)	BY\$M	TY\$M	Deviation
RDT&E	2013	213.7	213.7	235	228	276.2	
Procurement	2013	1,347.9	1,347.9	1,482.6	1,269.2	1,902.5	
MILCON	2013						
Acq. O&M	2013						
Total		1,561.5	1,561.5		1,497.2	2,178.7	
PAUC	2013	65.064	65.064	71.571	62.384	90.780	
APUC	2013	56.161	56.161	61.777	52.885	79.270	

Appropriation Category Deviation Explanations

PAUC Deviation Explanation

APUC Deviation Explanation

Budget Notes

- 1) Total Acquisition Cost includes RDT&E and Procurement. Numbers reflect PB 2024.
- 2) Procurement funding for AN/SPY-6(V)3 is also included in the CVN-78 SAR under program element: 0204112N; and the FFG-62 SAR under Program Element: 0204224N.
- 3) RDT&E associated with efforts outside the scope of the original AMDR (AN/SPY-6(V)3) APB (i.e., AN/SPY-6(V)1 and(V)2, DDG 51 FLT IIA backfit, AN/SPY-6 (V)3A Phase 1 Aspire Hardware Transition and Advanced Distributed Radar capability enhancement)) is excluded from this report.

Total End Item Quantity

Quantity Category	Current APB Quantity	Current Estimate Quantity
Development	0	
Procurement	24	24
O&M-Acquired		

Quantity Notes

- 1) This SAR aligns with PB 2024.

Unit Cost
AMDR FoR

Current UCR Baseline and Current Estimate (Base-Year Dollars)			
Category (\$M) Base Year:	Current UCR Baseline	Current Estimate	% Change

Program Acquisition Unit Cost

Cost			
Quantity		0	
Unit Cost			

Average Procurement Unit Cost

Cost
Quantity
Unit Cost

Original UCR Baseline and Current Estimate (Base-Year Dollars)			
Category (\$M) Base Year:	Original UCR Baseline	Current Estimate	% Change

Program Acquisition Unit Cost

Cost			
Quantity		0	
Unit Cost			

Average Procurement Unit Cost

Cost
Quantity
Unit Cost

Cost Growth Details

Current Baseline PAUC Breach Explanation

Current Baseline APUC Breach Explanation

Original Baseline PAUC Breach Explanation

Original Baseline APUC Breach Explanation

Impacts of Schedule Changes on Unit Cost

Impacts of Performance Changes on Unit Cost

Actions Taken or Proposed to Control Future Cost Growth

Notes: Unit costs captured at subprogram level IAW statute.

AN/SPY-6(V)1 Air and Missile Defense Radar (AMDR)

Current UCR Baseline and Current Estimate (Base-Year Dollars)

Category (\$M) Base Year:2013	Current UCR Baseline	Current Estimate	% Change
Program Acquisition Unit Cost			
Cost	5,256.0	6,213.6	
Quantity	22	27	
Unit Cost	238.909	230.133	-3.67%
Average Procurement Unit Cost			
Cost	3,303.2	4,389.9	
Quantity	22	27	
Unit Cost	150.144	162.589	8.29%

Original UCR Baseline and Current Estimate (Base-Year Dollars)

Category (\$M) Base Year:2013	Original UCR Baseline	Current Estimate	% Change
Program Acquisition Unit Cost			
Cost	5,735.7	6,213.6	
Quantity	22	27	
Unit Cost	260.714	230.133	-11.73%
Average Procurement Unit Cost			
Cost	3,846.9	4,389.9	
Quantity	22	27	
Unit Cost	174.859	162.589	-7.02%

Cost Growth Details

Current Baseline PAUC Breach Explanation

Current Baseline APUC Breach Explanation

Original Baseline PAUC Breach Explanation

Original Baseline APUC Breach Explanation

Impacts of Schedule Changes on Unit Cost

Impacts of Performance Changes on Unit Cost

Actions Taken or Proposed to Control Future Cost Growth

Competition and Second Sourcing for top hardware drivers in the next Hardware Procurement & Sustainment (HP&S) contract (FY26 and out).

Notes

Note, Budget Estimate PB 2024 Procurement value was adjusted to exclude activities beyond MS C planned efforts which include additional Land Based Testing and System Engineering Baseline 10 efforts.

AN/SPY-6(V)2 Enterprise Air Surveillance Radar (EASR Rotating Radar)

Current UCR Baseline and Current Estimate (Base-Year Dollars)			
Category (\$M) Base Year:2013	Current UCR Baseline	Current Estimate	% Change
Program Acquisition Unit Cost			
Cost	615.4	576.2	
Quantity	13	13	
Unit Cost	47.337	44.322	-6.37%
Average Procurement Unit Cost			
Cost	471.6	418.8	
Quantity	13	13	
Unit Cost	36.278	32.215	-11.20%

Original UCR Baseline and Current Estimate (Base-Year Dollars)			
Category (\$M) Base Year:	Original UCR Baseline	Current Estimate	% Change
Program Acquisition Unit Cost			
Cost			
Quantity		13	
Unit Cost			
Average Procurement Unit Cost			
Cost			
Quantity		13	
Unit Cost			

Cost Growth Details

Current Baseline PAUC Breach Explanation

Current Baseline APUC Breach Explanation

Original Baseline PAUC Breach Explanation

Original Baseline APUC Breach Explanation

Impacts of Schedule Changes on Unit Cost

Impacts of Performance Changes on Unit Cost

Actions Taken or Proposed to Control Future Cost Growth

AN/SPY-6(V)3 Enterprise Air Surveillance Radar Fixed Face (EASR FF)

Current UCR Baseline and Current Estimate (Base-Year Dollars)			
Category (\$M) Base Year:2013	Current UCR Baseline	Current Estimate	% Change
Program Acquisition Unit Cost			
Cost	1,561.5	1,497.2	
Quantity	24	24	
Unit Cost	65.064	62.384	-4.12%
Average Procurement Unit Cost			
Cost	1,347.9	1,269.2	
Quantity	24	24	
Unit Cost	56.161	52.885	-5.83%

Original UCR Baseline and Current Estimate (Base-Year Dollars)			
Category (\$M) Base Year:	Original UCR Baseline	Current Estimate	% Change
Program Acquisition Unit Cost			
Cost			
Quantity		24	
Unit Cost			
Average Procurement Unit Cost			
Cost			
Quantity		24	
Unit Cost			

Cost Growth Details

Current Baseline PAUC Breach Explanation

Current Baseline APUC Breach Explanation

Original Baseline PAUC Breach Explanation

Original Baseline APUC Breach Explanation

Impacts of Schedule Changes on Unit Cost

Impacts of Performance Changes on Unit Cost

Actions Taken or Proposed to Control Future Cost Growth

Risk and Sensitivity Analysis

AMDR FoR

Risk and Sensitivity Analysis		
Current Procurement Cost(December - 2022)		
Original Baseline Estimate ()		
Current Baseline Estimate ()		
Schedule Risk		
Technical Risks		

AN/SPY-6(V)1 Air and Missile Defense Radar (AMDR)**Risk and Sensitivity Analysis****Current Procurement Cost(December - 2022)**

1 AMDR (BY 2013\$M): Total Procurement Cost - \$4,389.9; APUC - \$162.589 Risk and Sensitivity analysis - AMDR procurement cost for non-negotiated AMDR units (FY26 and out)

2 In the Milestone C ICE, CAPE identified the risk of production approval absent the completion of planned Developmental Testing (DT)-3 activities. There is a risk of discovering issues during testing that could result in the need for design changes.

Note: The ICE prepared for Milestone C is the most recent ICE. An ICE was not prepared for the current estimate.

Original Baseline Estimate (October - 2013)

(1) AMDR (BY13\$M): Total Acquisition Cost - \$5,735.7 (Qty 22); PAUC - \$260.7; APUC - \$174.9 Risk and Sensitivity analysis - AMDR full and open competition (EMD and 9 LRIP Options) - AMDR EMD phase aggressive software schedule. (2) In the Milestone B ICE, CAPE assessed technical risk as modest for a new development program of AMDR's scale. Software development was identified as the primary concern, particularly with regard to its potential schedule impacts (i.e., completion of development testing, authority to begin LRIP, and delivery of the first production radar). AMDR system weight was identified as an additional concern (i.e., increased weight of AMDR compared to AN/SPY-1D(V) could affect the ship's center of gravity and the service life).

Current Baseline Estimate (January - 2023)

In the Milestone C ICE, CAPE identified the risk of production approval absent the completion of planned Developmental Testing (DT)-3 activities. There is a risk of discovering issues during testing that could result in the need for design changes.

Note: The ICE prepared for Milestone C is the most recent ICE. An ICE was not prepared for the current baseline.

Schedule Risk		
Current	2021-12-31	<p>1. There are other Radio Frequency (RF) systems on board each of the AMDR supported ship classes (DDG FLT II, Backfit DDG 51), that operate concurrently. If sufficient electromagnetic isolation between AMDR and other electromagnetic dependent systems on the ship's topside and off board environments cannot be achieved, then electromagnetic CONOPS may be required to successfully integrate AMDR with other collocated equipment and/or topside design changes may be needed to the various ship classes.</p> <p>2. If a well-tested initial deceptive Electronic Protection (EP) architecture and capability is not delivered as part of Baseline (BL) 10.0, Then the Flight III combat system will be vulnerable to deceptive Electronic Attack (EA) threats, negatively impacting Developmental and Operational Testing (DT/OT).</p>
Technical Risks		
Current	December 02, 2021	<p>1. There are other RF systems on board each of the AMDR supported ship classes (DDG FLT II, Backfit DDG 51), that operate concurrently. If sufficient electromagnetic isolation between AMDR and other electromagnetic dependent systems on the ship's topside and off board environments cannot be achieved, then electromagnetic CONOPS may be required to successfully integrate AMDR with other collocated equipment and/or topside design changes may be needed to the various ship classes.</p> <p>2. If a well-tested initial deceptive Electronic Protection (EP) architecture and capability is not delivered as part of Baseline (BL) 10.0, then the Flight III combat system will be vulnerable to deceptive Electronic Attack (EA) threats, negatively impacting Developmental and Operational Testing (DT/OT)</p>

AN/SPY-6(V)2 Enterprise Air Surveillance Radar (EASR Rotating Radar)

Risk and Sensitivity Analysis		
Current Procurement Cost(December - 2022)		
Original Baseline Estimate ()		
Current Baseline Estimate (January - 2023)		
Schedule Risk		
Current	2022-12-31	Power Management Testing and Ship Power Model
Current	2022-12-31	Spectrum Compliance
Technical Risks		
Current	December 14, 2022	Power Management Testing and Ship Power Model: If the common power requirements are not verified and behavior of SPY-6(V)2/3 power is not accurately modeled prior to shipboard installation, the requirements will not be verified and ship's power generation plant may be damaged.
Current	December 14, 2022	Spectrum Compliance: If electromagnetic isolation between SPY-6(V)2/3 and other electromagnetic dependent systems on the ship's topside and in the on board environment cannot be achieved, then electromagnetic CONOPs may be required to successfully integrate SPY-6(V)2/3 with other co-located equipment and/or topside design changes may be needed to the various ship classes.

AN/SPY-6(V)3 Enterprise Air Surveillance Radar Fixed Face (EASR FF)

Risk and Sensitivity Analysis		
Current Procurement Cost(December - 2022)		
Original Baseline Estimate ()		
Current Baseline Estimate (January - 2023)		
Schedule Risk		
Current	2022-12-31	Power Management Testing and Ship Power Model
Current	2022-12-31	Spectrum Compliance
Technical Risks		
Current	December 14, 2022	Power Management Testing and Ship Power Model: If the common power requirements are not verified and behavior of SPY-6(V)2/3 power is not accurately modeled prior to shipboard installation, the requirements will not be verified and ship's power generation plant may be damaged.
Current	December 14, 2022	Spectrum Compliance: If electromagnetic isolation between SPY-6(V)2/3 and other electromagnetic dependent systems on the ship's topside and in the on board environment cannot be achieved, then electromagnetic CONOPs may be required to successfully integrate SPY-6(V)2/3 with other co-located equipment and/or topside design changes may be needed to the various ship classes.

Low Rate Initial Production**AMDR FoR**

Item	Initial LRIP Decision	Current Total LRIP
Approval Date	10/4/2013	10/4/2013
Approved Quantity	16	16
Reference	MS-B ADM	MS-B ADM
Start Year	2016	2016
End Year	2024	2024

Rationale if quantity exceeds 10% of the total number of articles to be procured:

The Current Total LRIP Quantity is more than 10% of the total production quantity due to timing of Initial Operational Test and Evaluation, IOC, and the need to meet the shipbuilding plan. The Milestone B ADM dated October 4, 2013 included approval for a planned LRIP quantity not to exceed 16 units.

Notes

AMDR FoR LRIP agreement established 10/4/2013 did not include quantities for (V)2 EASR and (V)3 EASR FF.

Contracts & Efforts

Contract Data	
Contract Number	N00024-19-C-5501
Effort Number	6
Modification Number	P00058
Award Date	12/08/2018
Definitization Date	12/18/2018
Order Number	
CAGE Code/CAGE Legal Name	70U39/Raytheon Company
Contract Title	AMDR Integration and Production Support (I&PS)
Contract Address	Marlborough, MA
Contracting Office	Tom Kostyo
Supported Phase	Production
Contract Strategy	
Contract Type	Other
Modification Date	February 14, 2023
Work Start Date	
Technical Data Rights	
Work Completed	

Contracts/Effort Price, Quantity, and Performance (TY\$M)

Initial Target Price	Current Target Price	
Initial Ceiling Price	Current Ceiling Price	
Contractor EAC	PM EAC	
Initial Quantity	Current Quantity	Delivered Quantity
BAC	BCWP	ACWP
BCWS	Cost Variance	Schedule Variance

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Contract Notes:

1. The program will not be collecting EVM data on the I&PS contract because it is exclusively level of effort. The program will collect monthly cost data on planned and actual dollars and hours by tasking to assess and manage Contractor performance.2. The table above reflects incremental funding for exercised options. Contract includes options that were extended through FY 2024.

Factors Contributing to Cost Variance and Projected Effects on Program Costs

Factors Contributing to Schedule Variance and Projected Effects on Program Schedule

Contract Data	
Contract Number	N00024-14-C-5315
Effort Number	9
Modification Number	103
Award Date	03/11/2019
Definitization Date	03/14/2019
Order Number	
CAGE Code/CAGE Legal Name	70U39/Raytheon Company
Contract Title	AMDR Low Rate Initial Production (CLIN 0503AC)
Contract Address	Marlborough, MA
Contracting Office	Holly Danner
Supported Phase	Production
Contract Strategy	
Contract Type	Cost-Plus-Fixed-Fee
Modification Date	September 27, 2022
Work Start Date	
Technical Data Rights	
Work Completed	87.59%

Contracts/Effort Price, Quantity, and Performance (TY\$M)		
Initial Target Price	Current Target Price	
\$156.7	\$156.7	
Initial Ceiling Price	Current Ceiling Price	
\$174.1	\$174.1	
Contractor EAC	PM EAC	
\$137.5	\$160.9	
Initial Quantity	Current Quantity	Delivered Quantity
1	1	0
BAC	BCWP	ACWP
\$136.2	\$119.3	\$126.7
BCWS	Cost Variance	Schedule Variance

\$134.6	-\$7.4	-\$15.3
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Contract Notes:

1. On March 14, 2019 LRIP option (CLIN0503AC) was exercised: \$156,665,464. 2. IBR conducted on October 22, 2019 for LRIP units five through seven. 3. EVM table based on Integrated Program Management Report (IPMR) delivered February 21, 2023 and reflects performance through January 29, 2023. 4. Recent EMD/LRIP contract modification changed multiple radar delivery dates to more closely align with DDG-51 FLT III contract need dates (Schedule A). These modifications have been coordinated with SHIPS. 5. Cost for this shipset reflects a single buy purchase.

Factors Contributing to Cost Variance and Projected Effects on Program Costs

Negative Cost Variance of (\$7.4M) from CLIN 0503AC due to primarily by price variance increases over plan (DREX, RF Head), and Radio Frequency (RF) Head Advanced Process Center (APC) Circulators IOT driven by higher cost per wafer, lower yield, and unfavorable assembly allowance.

Factors Contributing to Schedule Variance and Projected Effects on Program Schedule

Negative Schedule Variance of (\$15.3M) for CLIN 0503AC due to positive cumulative schedule burn down for early receipt of material (DREXs).

Contract Data	
Contract Number	N00024-14-C-5315
Effort Number	10
Modification Number	103
Award Date	12/20/2019
Definitization Date	12/20/2019
Order Number	
CAGE Code/CAGE Legal Name	70U39/Raytheon Company
Contract Title	AMDR Low Rate Initial Production (CLIN 0602AA)
Contract Address	Marlborough, MA
Contracting Office	Holly Danner
Supported Phase	Production
Contract Strategy	
Contract Type	Cost-Plus-Fixed-Fee
Modification Date	September 27, 2022
Work Start Date	
Technical Data Rights	
Work Completed	91.94%

Contracts/Effort Price, Quantity, and Performance (TY\$M)		
Initial Target Price	Current Target Price	
\$125.2	\$125.2	
Initial Ceiling Price	Current Ceiling Price	
\$139.1	\$139.1	
Contractor EAC	PM EAC	
\$134.4	\$154.3	
Initial Quantity	Current Quantity	Delivered Quantity
1	1	0
BAC	BCWP	ACWP
\$111.5	\$102.5	\$130.2
BCWS	Cost Variance	Schedule Variance

\$111.5	-\$27.7	-\$9
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Contract Notes:

1. On December 20, 2019 the AMDR program exercised contract options for two LRIP units and associated non-recurring engineering. 2. IBR conducted on November 19, 2020 for LRIP units eight and nine. 3. EVM table based on Integrated Program Management Report (IPMR) delivered February 21, 2023 and reflects performance through January 29, 2023. 4. EMD/LRIP contract modification changed multiple radar delivery dates to more closely align with DDG-51 FLT III contract need dates (Schedule A). These modifications have been coordinated with SHIPS.

Factors Contributing to Cost Variance and Projected Effects on Program Costs

Negative Cost Variance of (\$27.7M) for CLIN 0602AA is driven mainly by material price variances over bid (DREXs, RF Head) and performance update (RF Head, DC to DC Converters).

Factors Contributing to Schedule Variance and Projected Effects on Program Schedule

Negative Schedule Variance of (\$9.0M) for CLIN 0602AA driven by material distribution (pegging) off of the shipset (DC to DC Converters) and positive cumulative schedule burn down for early receipt material (Mechanical Structure, Radome/Radiator).

Contract Data	
Contract Number	N00024-14-C-5315
Effort Number	11
Modification Number	103
Award Date	12/20/2019
Definitization Date	12/20/2019
Order Number	
CAGE Code/CAGE Legal Name	70U39/Raytheon Company
Contract Title	AMDR Low Rate Initial Production (CLIN 0602AB)
Contract Address	Marlborough, MA, MA
Contracting Office	Holly Danner
Supported Phase	Production
Contract Strategy	
Contract Type	Cost-Plus-Fixed-Fee
Modification Date	September 27, 2022
Work Start Date	
Technical Data Rights	
Work Completed	66.98%

Contracts/Effort Price, Quantity, and Performance (TY\$M)		
Initial Target Price	Current Target Price	
\$124.8	\$124.8	
Initial Ceiling Price	Current Ceiling Price	
\$138.6	\$138.6	
Contractor EAC	PM EAC	
\$161.4	\$192.4	
Initial Quantity	Current Quantity	Delivered Quantity
1	1	0
BAC	BCWP	ACWP
\$120.3	\$80.6	\$111.7
BCWS	Cost Variance	Schedule Variance

\$106.2	-\$31.1	-\$25.6
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Contract Notes:

1. On December 20, 2019 the AMDR program exercised contract options for two LRIP units and associated non-recurring engineering. 2. IBR conducted on November 19, 2020 for LRIP units eight and nine. 3. EVM table based on Integrated Program Management Report (IPMR) delivered February 21, 2023 and reflects performance through January 29, 2023. 4. EMD/LRIP contract modification changed multiple radar delivery dates to more closely align with DDG-51 FLT III contract need dates (Schedule A). These modifications have been coordinated with SHIPS.

Factors Contributing to Cost Variance and Projected Effects on Program Costs

Negative Cost Variance of (\$31.1M) for CLIN 0602AB is driven primarily by material pricing over bid (DREXs, RF Head).

Factors Contributing to Schedule Variance and Projected Effects on Program Schedule

Negative Schedule Variance of (\$25.6M) for CLIN 0602AB driven mainly by material distribution (pegging) off of the shipset (DC to DC Converters) and positive cumulative schedule burn down of early receipt of material (Non LRU RF Hardware, Radome/Radiator).

Contract Data	
Contract Number	N00024-16-C-5370
Effort Number	Rotator 1
Modification Number	77
Award Date	07/01/2020
Definitization Date	07/01/2020
Order Number	
CAGE Code/CAGE Legal Name	70U39/Raytheon Company
Contract Title	EASR Rotating Radar Low Rate Initial Production (CLIN 0402AA)
Contract Address	Marlborough, MA
Contracting Office	Holly Danner
Supported Phase	Production
Contract Strategy	
Contract Type	Firm-Fixed-Price
Modification Date	March 21, 2023
Work Start Date	
Technical Data Rights	
Work Completed	

Contracts/Effort Price, Quantity, and Performance (TYSM)		
Initial Target Price	Current Target Price	
Initial Ceiling Price	Current Ceiling Price	
Contractor EAC	PM EAC	
Initial Quantity	Current Quantity	Delivered Quantity
BAC	BCWP	ACWP
BCWS	Cost Variance	Schedule Variance

Contract Notes:

1. Option Award Date, July 2020 2. No EV Data required and no IBR was conducted*

Factors Contributing to Cost Variance and Projected Effects on Program Costs

Factors Contributing to Schedule Variance and Projected Effects on Program Schedule

Contract Data	
Contract Number	N00024-16-C-5370
Effort Number	
Modification Number	77
Award Date	07/01/2020
Definitization Date	
Order Number	
CAGE Code/CAGE Legal Name	70U39/Raytheon Company
Contract Title	EASR Rotating Radar Low Rate Initial Production (CLIN 0402AB)
Contract Address	Marlborough, MA
Contracting Office	Holly Danner
Supported Phase	Production
Contract Strategy	
Contract Type	Firm-Fixed-Price
Modification Date	March 21, 2023
Work Start Date	
Technical Data Rights	
Work Completed	

Contracts/Effort Price, Quantity, and Performance (TYSM)		
Initial Target Price	Current Target Price	
Initial Ceiling Price	Current Ceiling Price	
Contractor EAC	PM EAC	
Initial Quantity	Current Quantity	Delivered Quantity
BAC	BCWP	ACWP
BCWS	Cost Variance	Schedule Variance

Contract Notes:

1. Option Award Date, July 2020
2. Given the contract type is Firm Fixed Price, there is no EV data to report.

Factors Contributing to Cost Variance and Projected Effects on Program Costs

Factors Contributing to Schedule Variance and Projected Effects on Program Schedule

Contract Data	
Contract Number	N00024-16-C-5370
Effort Number	
Modification Number	77
Award Date	07/01/2020
Definitization Date	
Order Number	
CAGE Code/CAGE Legal Name	70U39/Raytheon Company
Contract Title	EASR Rotating Radar Low Rate Initial Production (CLIN 0402AC)
Contract Address	Marlborough, MA
Contracting Office	Tom Kostyo
Supported Phase	Production
Contract Strategy	
Contract Type	Firm-Fixed-Price
Modification Date	March 21, 2023
Work Start Date	
Technical Data Rights	
Work Completed	

Contracts/Effort Price, Quantity, and Performance (TYSM)		
Initial Target Price	Current Target Price	
Initial Ceiling Price	Current Ceiling Price	
Contractor EAC	PM EAC	
Initial Quantity	Current Quantity	Delivered Quantity
BAC	BCWP	ACWP
BCWS	Cost Variance	Schedule Variance

Contract Notes:

1. Option Award Date, July 2020
2. Given the contract type is Firm Fixed Price, there is no EV data to report.

Factors Contributing to Cost Variance and Projected Effects on Program Costs

Factors Contributing to Schedule Variance and Projected Effects on Program Schedule

Contract Data	
Contract Number	N00024-16-C-5370
Effort Number	3
Modification Number	77
Award Date	07/01/2020
Definitization Date	
Order Number	
CAGE Code/CAGE Legal Name	70U39/Raytheon Company
Contract Title	EASR Rotating Radar Low Rate Initial Production (CLIN 0402AD)
Contract Address	Marlborough, MA
Contracting Office	Tom Kostyo
Supported Phase	Production
Contract Strategy	
Contract Type	Firm-Fixed-Price
Modification Date	March 21, 2023
Work Start Date	
Technical Data Rights	
Work Completed	

Contracts/Effort Price, Quantity, and Performance (TYSM)		
Initial Target Price	Current Target Price	
Initial Ceiling Price	Current Ceiling Price	
Contractor EAC	PM EAC	
Initial Quantity	Current Quantity	Delivered Quantity
BAC	BCWP	ACWP
BCWS	Cost Variance	Schedule Variance

Contract Notes:

1. Option Award Date, July 2020
2. Given the contract type is Firm Fixed Price, there is no EV data to report.

Factors Contributing to Cost Variance and Projected Effects on Program Costs

Factors Contributing to Schedule Variance and Projected Effects on Program Schedule

Contract Data	
Contract Number	N00024-16-C-5370
Effort Number	Rotator 3
Modification Number	77
Award Date	07/01/2020
Definitization Date	07/01/2020
Order Number	
CAGE Code/CAGE Legal Name	70U39/Raytheon Company
Contract Title	EASR Rotating Radar Low Rate Initial Production (CLIN 0502AA)
Contract Address	Marlborough, MA
Contracting Office	Holly Danner
Supported Phase	Production
Contract Strategy	
Contract Type	Firm-Fixed-Price
Modification Date	March 21, 2023
Work Start Date	
Technical Data Rights	Unlimited Rights to Technical Data--Noncommercial Items & Software
Work Completed	

Contracts/Effort Price, Quantity, and Performance (TYSM)		
Initial Target Price	Current Target Price	
Initial Ceiling Price	Current Ceiling Price	
Contractor EAC	PM EAC	
Initial Quantity	Current Quantity	Delivered Quantity
BAC	BCWP	ACWP
BCWS	Cost Variance	Schedule Variance

Contract Notes:

1. Option Award Date, July 2020 2. No EV Data required and no IBR was conducted

Factors Contributing to Cost Variance and Projected Effects on Program Costs

Factors Contributing to Schedule Variance and Projected Effects on Program Schedule

Contract Data	
Contract Number	N00024-16-C-5370
Effort Number	Fixed Face 2
Modification Number	77
Award Date	07/01/2020
Definitization Date	07/01/2020
Order Number	
CAGE Code/CAGE Legal Name	70U39/Raytheon Company
Contract Title	EASR Fixed Face Low Rate Initial Production (CLIN 0404AB)
Contract Address	Marlborough, MA
Contracting Office	Holly Danner
Supported Phase	Production
Contract Strategy	
Contract Type	Cost-Plus-Fixed-Fee
Modification Date	March 21, 2023
Work Start Date	
Technical Data Rights	Unlimited Rights to Technical Data--Noncommercial Items & Software
Work Completed	

Contracts/Effort Price, Quantity, and Performance (TYSM)		
Initial Target Price	Current Target Price	
Initial Ceiling Price	Current Ceiling Price	
Contractor EAC	PM EAC	
Initial Quantity	Current Quantity	Delivered Quantity
BAC	BCWP	ACWP
BCWS	Cost Variance	Schedule Variance

Contract Notes:

1. Option Award Date, July 2020 2. No EV Data required and no IBR was conducted

Factors Contributing to Cost Variance and Projected Effects on Program Costs

Factors Contributing to Schedule Variance and Projected Effects on Program Schedule

External Government Activities

Activity Title		Government Entity	Supported Phase
CAGE		Work Start Date	
City		State/Province:	
Notes			

Deliveries and Expenditures

AN/SPY-6(V)1 Air and Missile Defense Radar (AMDR)

Deliveries				
Delivered to Date	Planned to Date	Actual to Date	Total Quantity	Percent Delivered
Development				
Production	6	6	27	22.22%
Total Program Quantity Delivered				
6	6	27	22.22%	
Expended and Appropriated (TY \$M)				

Years Appropriated to date: 17

Total Years Appropriated Funding (Current Baseline): 23

Percent Years Appropriated: 73.91%

Then-Year Funding Appropriated as Percentage of Total Acquisition Estimate: 68.78%

Then-Year Funding Expended as Percentage of Total Acquisition Estimate: 49.25%

Total Acquisition Cost: 7,710.77

Deliveries & Expenditures Notes:

Deliveries and Expenditures

AN/SPY-6(V)2 Enterprise Air Surveillance Radar (EASR Rotating Radar)

Deliveries				
Delivered to Date	Planned to Date	Actual to Date	Total Quantity	Percent Delivered
Development				
Production	1	1	13	7.7%
Total Program Quantity Delivered				
	1	1	13	7.7%

Expended and Appropriated (TY \$M)				
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Years Appropriated to date: 9

Total Years Appropriated Funding (Current Baseline): 20

Percent Years Appropriated: 45%

Then-Year Funding Appropriated as Percentage of Total Acquisition Estimate: 62.274%

Then-Year Funding Expended as Percentage of Total Acquisition Estimate: 19.115%

Total Acquisition Cost: 757.1

Deliveries & Expenditures Notes:

Deliveries and Expenditures**AN/SPY-6(V)3 Enterprise Air Surveillance Radar Fixed Face (EASR FF)**

Deliveries				
Delivered to Date	Planned to Date	Actual to Date	Total Quantity	Percent Delivered
Development				
Production	1	1	24	4.2%
Total Program Quantity Delivered				
	1	1	24	4.2%

Expended and Appropriated (TY \$M)				
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Years Appropriated to date: 9

Total Years Appropriated Funding (Current Baseline): 36

Percent Years Appropriated: 25%

Then-Year Funding Appropriated as Percentage of Total Acquisition Estimate: 26.093%

Then-Year Funding Expended as Percentage of Total Acquisition Estimate: 10.135%

Total Acquisition Cost: 2,178.7

Deliveries & Expenditures Notes:

Operating and Support Costs

AMDR FoR

O&S Cost Breakdown:

Category (BY\$ Million)	
Unit-Level Manpower	
Unit Operations	
Maintenance	
Sustaining Support	
Continued System Improvements	
Other	
Total	

Cost Estimate Source:

O&S Cost Notes:

See subprogram-level breakdowns on subsequent pages.

AN/SPY-6(V)1 Air and Missile Defense Radar (AMDR)***O&S Cost Breakdown:***

Category (BY\$ Million)	
Unit-Level Manpower	
Unit Operations	
Maintenance	2,118.7
Sustaining Support	2,849.0
Continued System Improvements	494.0
Other	
Total	5,461.7

Cost Estimate Source: POE dated March 16, 2023

O&S Cost Notes:

Type: Program Office Estimate

Approved by: Steve Hoerst, PAPM Advanced Radars, March 16, 2023

Total Program O&S Cost Compared with Baseline

	Current Baseline		Current Estimate (BY\$M)	Current Estimate (TY\$M)	Deviation
	Objective (BY\$M)	Threshold (BY\$M)			
Total O&S	3,821.0	4,203.1	5,461.7	10,928.3	1,640.7

Cost Notes:

For SPY-6(V)1, Unit-Level Manpower, Unit Operations, and Indirect Support are not reported because these costs are considered Ship Level costs. Current Estimate includes System Operations and Maintenance, Navy (OMN) (TY \$10,556.2M, BY 2013 \$5,281.9M) and Fleet OMN (TY \$372.1M, BY 2013 \$179.8).

O&S Cost Deviation Explanation

Increases in the SPY-6 (V)1 radar system estimate from the APB to the current estimate are due to programmatic updates (addition of 5 ships), cost estimating methodology modifications, and design maturity.

AN/SPY-6(V)2 Enterprise Air Surveillance Radar (EASR Rotating Radar)

O&S Cost Breakdown:

Category (BY\$ Million)	
Unit-Level Manpower	
Unit Operations	
Maintenance	145.3
Sustaining Support	661.2
Continued System Improvements	145.9
Other	
Total	952.5

Cost Estimate Source: POE dated March 16, 2023

O&S Cost Notes:

Type: Program Office Estimate

Approved by: Steve Hoerst, PAMP Advanced Radars, March 16, 2023

Total Program O&S Cost Compared with Baseline

	Current Baseline		Current Estimate (BY\$M)	Current Estimate (TY\$M)	Deviation
	Objective (BY\$M)	Threshold (BY\$M)			
Total O&S	733.1	806.4	952.5	1,839.7	219.4

Cost Notes:

For SPY-6(V)2, Unit-Level Manpower, Unit Operations, and Indirect Support are not reported because these costs are considered Ship Level costs. Current Estimate includes System Operations and Maintenance, Navy (OMN) (TY \$1,751.2M, BY 2013 \$907.8M) and Fleet OMN (TY \$88.5M, BY 2013 \$44.6M).

O&S Cost Deviation Explanation

Increases in the SPY-6 (V)2 radar system estimate from the APB to the current estimate are due to cost estimating methodology modifications, and design maturity.

AN/SPY-6(V)3 Enterprise Air Surveillance Radar Fixed Face (EASR FF)

O&S Cost Breakdown:

Category (BY\$ Million)	
Unit-Level Manpower	
Unit Operations	
Maintenance	438.2
Sustaining Support	1,458.6
Continued System Improvements	354.8
Other	
Total	2,251.6

Cost Estimate Source: POE dated March 16, 2023

O&S Cost Notes:

Type: Program Office Estimate

Approved by: Steve Hoerst, PAMP Advanced Radars, March 16, 2023

Total Program O&S Cost Compared with Baseline

	Current Baseline		Current Estimate (BY\$M)	Current Estimate (TY\$M)	Deviation
	Objective (BY\$M)	Threshold (BY\$M)			
Total O&S	2,123.6	2,335.9	2,251.6	5,276.2	495.7

Cost Notes:

For SPY-6 (V)3, Unit-Level Manpower, Unit Operations, and Indirect Support are not reported because these costs are considered Ship Level costs. Current Estimate includes System Operations and Maintenance, Navy (OMN) (TY \$5,082.7M, BY 2013 \$2,172.0M) and Fleet OMN (TY \$193.4M, BY 2013 \$79.6M).

O&S Cost Deviation Explanation

Increases in the SPY-6 (V)3 radar system estimate from the APB to the current estimate are due to cost estimating methodology modifications, and design maturity.

Operating and Support Costs - Disposal and Unitized Costs**AN/SPY-6(V)1 Air and Missile Defense Radar (AMDR)****Annual Unitized O&S Cost Definition and Calculation Relative to Total O&S Cost:**

Sustainment Factors	System Name: AN/SPY-6(V)1	Antecedent System Name: AN/SPY-1D(V)
Quantity to Sustain	27	32
Unit of Measure	Ship Set	Ship Set
Unit Expected Service Life	40	35

Base Year:

Annual Unitized O&S Cost by Category Base Year \$ Unit:(\$K)	System Name: AN/SPY-6(V)1	Antecedent System Name: AN/SPY-1D(V)
Unit-Level Manpower		
Unit Operations		
Maintenance	1,961.8	2,542.0
Sustaining Support	2,638.0	1,488.9
Continued System Improvements	457.4	1,416.6
Other		
Total O&S	5,057.1	5,447.4

Disposal/Demilitarization Cost Estimate

(Base Year \$Millions)	System Name: AN/SPY-6(V)1	Antecedent System Name: AN/SPY-1D(V)
Total Disposal	19.3	TBD

Cost Estimate Source - Disposal	
Type:	Program Office Estimate
Approval Authority and Date:	Program Office 02/27/2023
Note:	
Estimated Disposal/Demilitarization cost for 27 SPY-6(V)1 systems following decommission dates.	
Disposal Cost Notes:	
Disposal/Demilitarization Cost Estimate and Source of Estimate: Source of Estimate POE	

Additional O&S Estimate Assumptions:**Sustainment Strategy:**

In order to meet Operational Availability (Ao) KPP and O&S Cost Key System Attribute requirements AMDR will implement a performance-based product support strategy involving Naval Surface Warfare Center (NSWC) Crane Division, NSWC Port Hueneme Division, and NSWC Dahlgren Division, Defense Logistics Agency, Naval Supply Systems Command, and Center for Surface Combat Systems Dahlgren. The AMDR system employs a two level maintenance philosophy (organizational to depot) with onboard maintenance performed by the ship's crew. The ship's operational tempo is assumed to be 180 days on station. Maintenance (preventative and corrective) can occur anytime during the 180 days on station as long as the system is not degraded by the maintenance activity. Commercial Off The Shelf (COTS) processing equipment refresh and upgrades will be implemented using a 'refresh by attrition' approach combined with an six year refresh cycle. The planned software sustainment strategy for AMDR includes post-delivery routine software maintenance and software updates every two years to address new threats and other emergent capability requirements.

Antecedent Estimate Assumptions:

The antecedent system is AN/SPY-1D(V). AN/SPY-1D(V) has fielded 32 systems, each with a planned service life of 35 years. The source of the cost estimate is the Naval Sea Systems Command Systems Engineering Directorate - Cost Engineering and Industrial Analysis Division AN/SPY-1D(V) FRP ICE dated November 14, 2011 with the following adjustment: incorporated same forward pricing rate recommendation (FPRR) escalation rate as AMDR and added hardware modification costs based on percentage allocation of AEGIS weapon system MK-7 hardware modification cost. The AN/SPY-1D(V) Sustaining Support cost element does not include costs for Operating Equipment Replacement, whereas AMDR does.

Operating and Support Costs - Disposal and Unitized Costs**AN/SPY-6(V)2 Enterprise Air Surveillance Radar (EASR Rotating Radar)****Annual Unitized O&S Cost Definition and Calculation Relative to Total O&S Cost:**

Sustainment Factors	System Name: AN/SPY-6(V)2	Antecedent System Name: none
Quantity to Sustain	13	
Unit of Measure	Ship Set	
Unit Expected Service Life	34.5	

Base Year:

Annual Unitized O&S Cost by Category Base Year \$ Unit:(\$K)	System Name: AN/SPY-6(V)2	Antecedent System Name: none
Unit-Level Manpower		
Unit Operations		
Maintenance	324.4	
Sustaining Support	1,475.9	
Continued System Improvements	325.7	
Other		
Total O&S	2,126.1	

Disposal/Demilitarization Cost Estimate

(Base Year \$Millions)	System Name: AN/SPY-6(V)2	Antecedent System Name: none
Total Disposal	1.5	

Cost Estimate Source - Disposal	
Type:	Program Office Estimate
Approval Authority and Date:	Program Office 02/27/2023
Note:	
Estimated Disposal/Demilitarization cost for 13 SPY-6(V)2 systems following decommission dates.	
Disposal Cost Notes:	
Disposal/Demilitarization Cost Estimate and Source of Estimate: Source of Estimate POE	

Additional O&S Estimate Assumptions:**Sustainment Strategy:**

In order to meet Operational Availability (Ao) KPP and O&S Cost Key System Attribute requirements AMDR will implement a performance-based product support strategy involving Naval Surface Warfare Center (NSWC) Crane Division, NSWC Port Hueneme Division, and NSWC Dahlgren Division, Defense Logistics Agency, Naval Supply Systems Command, and Center for Surface Combat Systems Dahlgren. The AMDR system employs a two level maintenance philosophy (organizational to depot) with onboard maintenance performed by the ship's crew. The ship's operational tempo is assumed to be 180 days on station. Maintenance (preventative and corrective) can occur anytime during the 180 days on station as long as the system is not degraded by the maintenance activity. Commercial Off The Shelf (COTS) processing equipment refresh and upgrades will be implemented using a 'refresh by attrition' approach combined with an six year refresh cycle. The planned software sustainment strategy for AMDR includes post-delivery routine software maintenance and software updates every two years to address new threats and other emergent capability requirements.

Antecedent Estimate Assumptions:

N/A

Operating and Support Costs - Disposal and Unitized Costs**AN/SPY-6(V)3 Enterprise Air Surveillance Radar Fixed Face (EASR FF)****Annual Unitized O&S Cost Definition and Calculation Relative to Total O&S Cost:**

Sustainment Factors	System Name: AN/SPY-6(V)3	Antecedent System Name: none
Quantity to Sustain	24	
Unit of Measure	Ship Set	
Unit Expected Service Life	34.4	

Base Year:

Annual Unitized O&S Cost by Category Base Year \$ Unit:(\$K)	System Name: AN/SPY-6(V)3	Antecedent System Name: none
Unit-Level Manpower		
Unit Operations		
Maintenance	531.1	
Sustaining Support	1,768.0	
Continued System Improvements	430.0	
Other		
Total O&S	2,729.2	

Disposal/Demilitarization Cost Estimate

(Base Year \$Millions)	System Name: AN/SPY-6(V)3	Antecedent System Name: none
Total Disposal	5.4	

Cost Estimate Source - Disposal	
Type:	Program Office Estimate
Approval Authority and Date:	Program Office 02/27/2023
Note:	
Estimated Disposal/Demilitarization cost for 24 SPY-6(V)3 systems following decommission dates.	
Disposal Cost Notes:	
Disposal/Demilitarization Cost Estimate and Source of Estimate: Source of Estimate POE	

Additional O&S Estimate Assumptions:**Sustainment Strategy:**

In order to meet Operational Availability (Ao) KPP and O&S Cost Key System Attribute requirements AMDR will implement a performance-based product support strategy involving Naval Surface Warfare Center (NSWC) Crane Division, NSWC Port Hueneme Division, and NSWC Dahlgren Division, Defense Logistics Agency, Naval Supply Systems Command, and Center for Surface Combat Systems Dahlgren. The AMDR system employs a two level maintenance philosophy (organizational to depot) with onboard maintenance performed by the ship's crew. The ship's operational tempo is assumed to be 180 days on station. Maintenance (preventative and corrective) can occur anytime during the 180 days on station as long as the system is not degraded by the maintenance activity. Commercial Off The Shelf (COTS) processing equipment refresh and upgrades will be implemented using a 'refresh by attrition' approach combined with an six year refresh cycle. The planned software sustainment strategy for AMDR includes post-delivery routine software maintenance and software updates every two years to address new threats and other emergent capability requirements.

Antecedent Estimate Assumptions:

N/A