Selected Acquisition Report (SAR)

RCS: DD-A&T(Q&A)823-386

Ground/Air Task Oriented Radar (G/ATOR)

As of FY 2020 President's Budget

Defense Acquisition Management
Information Retrieval
(DAMIR)

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Sensitivity Originator

Organization: USMC, PEO-LS, PM G/ATOR
Organization Email: john.karlovich@usmc.mil
Organization Phone: 703-432-4245

Common Acronyms and Abbreviations for MDAP Programs

Acq O&M - Acquisition-Related Operations and Maintenance
ACAT - Acquisition Category
ADM - Acquisition Decision Memorandum
APB - Acquisition Program Baseline
APPN - Appropriation
APUC - Average Procurement Unit Cost
$B - Billions of Dollars
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
FOC - Full Operational Capability
FMS - Foreign Military Sales
FRP - Full Rate Production
FY - Fiscal Year
FYDP - Future Years Defense Program
ICE - Independent Cost Estimate
IOC - Initial Operational Capability
Inc - Increment
JROC - Joint Requirements Oversight Council
$K - Thousands of Dollars
KPP - Key Performance Parameter
LRIP - Low Rate Initial Production
$M - Millions of Dollars
MDA - Milestone Decision Authority
MDAP - Major Defense Acquisition Program
MILCON - Military Construction
N/A - Not Applicable
O&M - Operations and Maintenance
ORD - Operational Requirements Document
OSD - Office of the Secretary of Defense
O&S - Operating and Support
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
UCR - Unit Cost Reporting
U.S. - United States
USD(AT&L) - Under Secretary of Defense (Acquisition, Technology and Logistics)
USD(A&S) - Under Secretary of Defense (Acquisition and Sustainment)

Program Information

Program Name
Ground/Air Task Oriented Radar (G/ATOR)

DoD Component
Navy

Responsible Office

Mr. John Karlovich
2200 Lester Ave
Quantico, VA 22134

john.karlovich@usmc.mil

Phone: 703-432-4982
Fax: 703-432-3547
DSN Phone: 378-4982
DSN Fax: 278-3547
Date Assigned: August 1, 2014

References

SAR Baseline (Production Estimate)

Assistant Secretary of the Navy (Research, Development & Acquisition) (ASN(RDA)) Approved Acquisition Program Baseline (APB) dated April 14, 2014

Approved APB

Assistant Secretary of the Navy (Research, Development & Acquisition) (ASN(RDA)) Approved Acquisition Program Baseline (APB) dated April 14, 2014

Mission and Description

The Ground/Air Task Oriented Radar (G/ATOR) is a single material solution for the mobile Multi-Role Radar System and Ground Weapons Locating Radar (GWLR) requirements. It is a three-dimensional, short/medium range multi-role radar designed to detect unmanned aerial systems, cruise missiles, air breathing targets, rockets, artillery, and mortars. G/ATOR satisfies the warfighter's expeditionary needs across the Marine Air Ground Task Force spectrum replacing five legacy radar systems with a single solution. The Air Defense/ Surveillance Radar G/ATOR Block 1 provides capabilities in the Short Range Air Defense and Air Surveillance mission areas; GWLR G/ATOR Block 2 will address Counter-fire Targeting Missions; and Expeditionary Airport Surveillance Radar G/ATOR Block 4 will address Air Traffic Control missions. G/ATOR Block 4 is not included in the Acquisition Program Baseline. Resourcing may be included in future budget builds. G/ATOR provides real-time radar measurement data to the Common Aviation Command and Control System, Composite Tracking Network, and Advanced Field Artillery Tactical Data System.

Executive Summary

Program Highlights Since Last Report

Two of the Nine Gallium Nitride systems under contract delivered to support Initial Operational Test & Evaluation (IOT&E) in FY 2019. First system delivered on July 18, 2018 (almost a month early from the incentivized date of August 15, 2018, and the contractual date of December 31, 2018) and the second system delivered on September 7, 2018 (over five months before the contractual date of February 28, 2018).

The G/ATOR Block 1 (GB1) Early Deployment Decision (EDD) was approved on February 15, 2018 by Program Executive Officer, Land Systems for the early fielding for GB1 Gallium Arsenide Low Rate Initial Production (LRIP) systems.

G/ATOR achieved GB1 Initial Operational Capability on February 28, 2018.

GB2 Operational Assessment started on April 11, 2018.

Developmental Testing (DT)1D was successfully completed on March 15, 2018.

DT1E1/GB1 IOT&E integrated testing started September 5, 2018 and completed on October 13, 2018.

GB2 IOT&E completed on December 14, 2018.

The GB2 EDD was approved on February 14, 2019 by Program Executive Officer, Land Systems for the early fielding for GB2 Gallium Arsenide LRIP systems.

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

History of Significant Developments Since Program Initiation

History of Significant Developments Since Program Initiation	
Date	**Significant Development Description**
July 2005	July 26, 2005: G/ATOR Program Milestone B ADM. This memorandum designated G/ATOR as an ACAT II program and approved entry into the System Development and Demonstration (SDD) phase. The MDA at program initiation was Assistant Secretary of the Navy (Research, Development and Acquisition) (ASN (RDA)).
September 2005	Initial development contract awarded to Northrop Grumman and became a subject of protest.
February 2007	The FY 2008 Senate Armed Services Committee Report directed the Secretary of the Navy to conduct an independent assessment, and submit a report to the Congressional Defense Committees, with the FY 2009 budget request on the Marine Corps acquisition of the G/ATOR. The report was provided to the Congressional Defense Committees on February 4, 2008. The report concluded the G/ATOR system design provides optimal capability across a wide variety of operational mission profiles. The system is properly phased to provide the necessary air defense capabilities to Joint forces with performance that exceeds that of the legacy systems it replaces.
March 2007	Deputy Commandant, Combat Development and Integration letter, and the subsequent Director, Force Protection Integration Division letter, dated August 3, 2007, clarified G/ATOR's compliance with Joint Requirements Oversight Council Memorandum 120-05, "Policy for Updating Capabilities Documents to Incorporate Force Protection and Survivability KPPs" dated June 13, 2005, by requiring G/ATOR to procure M1152A1 up-armored High Mobility Multipurpose Wheeled Vehicles. This KPP forced significant system redesign.
March 2007	Awarded SDD Contract to Northrop Grumman.
April 2007	ASN (RDA) directed transition of the G/ATOR Program from Marine Corps Systems Command to the newly established Program Executive Office Land Systems (PEO LS).
February 2009	The G/ATOR Program was designated a Department of Defense Special Interest program by a USD (AT&L) Memorandum.
October 2011	USD (AT&L) ADM, designated G/ATOR an ACAT IC program with the Navy as the lead component. G/ATOR was no longer a special interest program.
March 2014	ASN (RDA) G/ATOR Milestone C ADM authorized the procurement of LRIP Lot 1 units contingent upon approval of all statutory acquisition documentation. The memorandum also required ASN (RDA) authorization for an Early Deployment Decision (EDD) based on Marine Corps Operational Test and Evaluation Activity (MCOTEA) certification of Operational Effectiveness/Operational Suitability (OE/OS).
March 2015	On March 30, 2015, G/ATOR Program received Director, Capabilities Development Directorate letter that clarified G/ATOR reliability requirements and the development of an operationally meaningful Key System Attribute with the timeline for achieving the threshold and objective values.
June 2015	ASN (RDA) memorandum, dated June 11, 2015 amended the Milestone C ADM to require Director, MCOTEA to provide an assessment of progress towards OE/OS to support an EDD for GaAs – based GB1 and GB2 assets, and defer final certification of OE/OS to Initial Operational Test & Evaluation.
August 2015	Contract awarded to develop and verify the GB2 capability. GB2 will address Counterfire Targeting missions.
August 2016	Awarded LRIP GaN Contract to Northrop Grumman.
June 2017	MS C ADM clarification. Delegation of Authority for EDD of GB1 and GB2 systems to PEO LS on June 13, 2017.

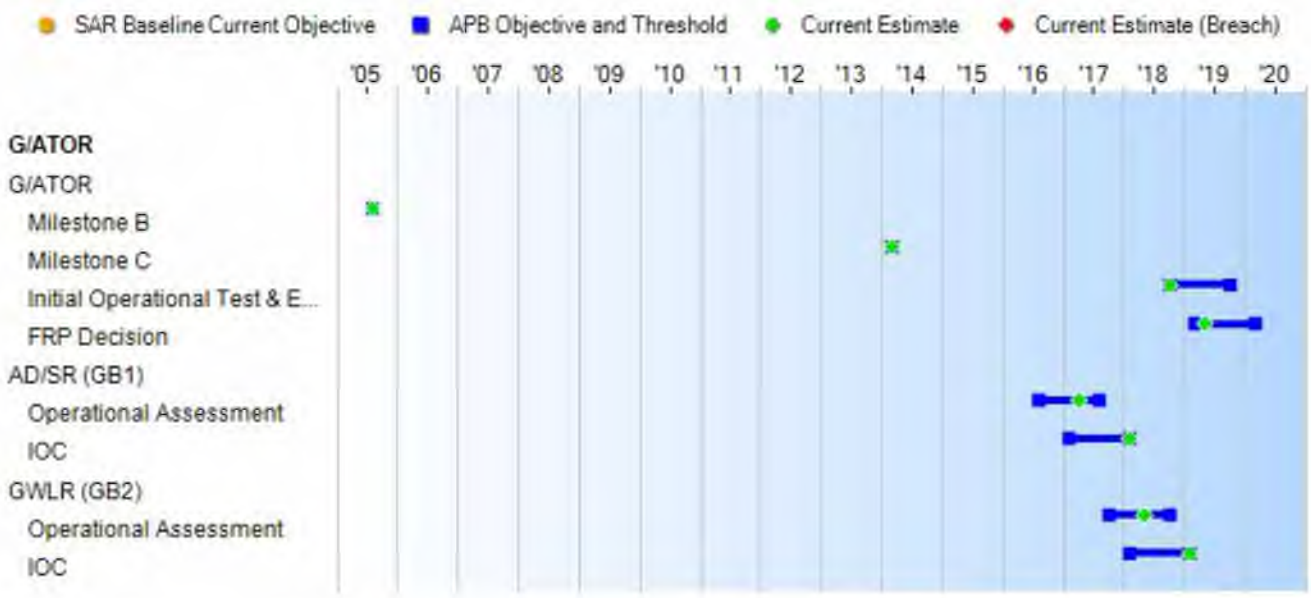
December 2017	Director, MCOTEA provided an assessment of progress towards OE/OS to support an EDD of the G/ATOR GB1 in December 2017.
February 2018	The GB1 EDD was approved on February 15, 2018 by PEO LS allowing for the fielding of G/ATOR LRIP System 1 to Marine Air Control Squadron 2 (MACS) and System 3 to MACS-1.
February 2019	The GB2 EDD was approved on February 14, 2019 by PEO LS allowing for the fielding of G/ATOR LRIP Systems 2, 4, 5, 6 to 11th Marines.

Threshold Breaches

APB Breaches		
Schedule		☐
Performance		☐
Cost	RDT&E	☐
	Procurement	☐
	MILCON	☐
	Acq O&M	☐
O&S Cost		☐
Unit Cost	PAUC	☐
	APUC	☐

Nunn-McCurdy Breaches		
Current UCR Baseline		
	PAUC	None
	APUC	None
Original UCR Baseline		
	PAUC	None
	APUC	None

Schedule



Schedule Events					
Events	**SAR Baseline Production Estimate**	**Current APB Production Objective/Threshold**		**Current Estimate**	
G/ATOR					
Milestone B	Aug 2005	Aug 2005	Aug 2005	Aug 2005	
Milestone C	Mar 2014	Mar 2014	Mar 2014	Mar 2014	
Initial Operational Test & Evaluation	Oct 2018	Oct 2018	Oct 2019	Oct 2018	
FRP Decision	Mar 2019	Mar 2019	Mar 2020	May 2019	(Ch-1)
AD/SR (GB1)					
Operational Assessment	Aug 2016	Aug 2016	Aug 2017	Apr 2017	
IOC	Feb 2017	Feb 2017	Feb 2018	Feb 2018	
GWLR (GB2)					
Operational Assessment	Oct 2017	Oct 2017	Oct 2018	May 2018	
IOC	Feb 2018	Feb 2018	Feb 2019	Feb 2019	(Ch-2)

Change Explanations

(Ch-1) The current estimate ~~for~~ the FRP Decision changed from March 2019 to May 2019 to align with the MDA's schedule.
(Ch-2) The current estimate ~~for~~ IOC changed from September 2018 to February 2019 based on GB2 Operational Assessment. The PM determined the Marines associated with GB2 would benefit with more time to familiarize themselves with the G/ATOR System.

Acronyms and Abbreviations

AD/SR - Air Defense/Surveillance Radar
GB1/2 - Ground/Air Task Oriented Radar Block 1/2
GWLR - Ground Weapons Locating Radar

(U//~~FOUO~~) Performance

(U//~~FOUO~~) Performance Characteristics			
SAR Baseline Production Estimate	**Current APB Production Objective/Threshold**	**Demonstrated Performance**	**Current Estimate**
AD/SR (GB1)			
Tier 1: Net-Centric Tier 2: Information Transport, Information Assurance			
Enter and be managed in the network			
(b)(3) 10 USC § 130			

[redacted]

[redacted]

[redacted]

[redacted]

Classified Performance information is provided in the classified annex to this submission.

Requirements Reference

CPD (GB1) dated December 3, 2012 and ORD (GB2) dated July 20, 2004

Change Explanations

(Ch-1) The current estimates for KPPs changed since the last SAR to reflect the latest changes as a result of testing or guidance..

Acronyms and Abbreviations

AD/SR - Air Defense/Surveillance Radar
AIMS - Air Traffic Control Radar Beacon System Identification Friend or Foe Management System
CAC2S - Common Aviation Command and Control System
CEP50 - Circular Error Probable 50
CTN - Composite Tracking Network
EPLRS - Enhanced Position Location Reporting System
GB1/2/4 - Ground/Air Task Oriented Radar Block 1/2/4
GWLR - Ground Weapons Locating Radar
HVT - High Value Target
IFF - Identification Friend or Foe
JITC - Joint Interoperability Test Command
kbps - kilobits per second
km - Kilometers
m - meters
mils - milliradians
min - minutes
NRT - Near Real Time
TAOM - Tactical Air Operations Modules
TFOCA - Tactical Fiber Optic Cable Assembly

Track to Budget

RDT&E

Appn	BA	PE
Navy	1319 07	0204460M

Project	Name
9C89	Marine Ground-Air Radar

Appn	BA	PE
Navy	1319 04	0206313M

Project	Name		
3099D	Radar Systems	(Shared)	(Sunk)

Notes: .

Appn	BA	PE
Navy	1319 07	0206313M

Project	Name		
9C89	G/ATOR	(Shared)	(Sunk)

Procurement

Appn	BA	PE
Navy	1109 04	0204460M

Line Item	Name		
4650	Radar Systems	(Shared)	(Sunk)

Appn	BA	PE
Navy	1109 04	0206313M

Line Item	Name		
4650	Radar Systems	(Shared)	(Sunk)

Appn	BA	PE
Navy	1109 04	0506313M

Line Item	Name
4655	Ground/Air Task Oriented Radar

Notes: G/ATOR Reserves

Appn	BA	PE
Navy	1109 04	0204460M

Line Item	Name
4655	Ground/Air Task Oriented Radar

Appn	BA	PE
Navy	1109 07	0204460M

Line Item	Name	
7000	Spares and Repairs Parts	(Shared)

Cost and Funding

Cost Summary

Total Acquisition Cost							
Appropriation	BY 2012 $M			BY 2012 $M	TY $M		
	SAR Baseline Production Estimate	Current APB Production Objective/Threshold		Current Estimate	SAR Baseline Production Estimate	Current APB Production Objective	Current Estimate
RDT&E	986.5	986.5	1085.2	1062.8	1019.2	1019.2	1106.8
Procurement	1625.3	1625.3	1787.8	1725.6	1894.8	1894.8	2014.9
Flyaway	--	--	--	1520.5	--	--	1776.7
Recurring	--	--	--	1327.9	--	--	1532.7
Non Recurring	--	--	--	192.6	--	--	244.0
Support	--	--	--	205.1	--	--	238.2
Other Support	--	--	--	107.5	--	--	123.4
Initial Spares	--	--	--	97.6	--	--	114.8
MILCON	3.5	3.5	3.9	0.0	3.9	3.9	0.0
Acq O&M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	2615.3	2615.3	N/A	2788.4	2917.9	2917.9	3121.7

Cost Notes

No cost estimate for the program has been completed in the previous year.

Total Quantity			
Quantity	SAR Baseline Production Estimate	Current APB Production	Current Estimate
RDT&E	0	0	0
Procurement	45	45	45
Total	45	45	45

Cost and Funding

Funding Summary

Appropriation Summary									
FY 2020 President's Budget / December 2018 SAR (TY$ M)									
Appropriation	Prior	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	To Complete	Total
RDT&E	944.4	44.6	23.9	10.5	12.2	12.3	12.6	46.3	1106.8
Procurement	682.7	232.1	286.2	298.1	311.8	33.4	34.1	136.5	2014.9
MILCON	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Acq O&M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PB 2020 Total	1627.1	276.7	310.1	308.6	324.0	45.7	46.7	182.8	3121.7
PB 2019 Total	1637.5	283.0	310.1	308.7	324.1	45.7	84.4	131.2	3124.7
Delta	-10.4	-6.3	0.0	-0.1	-0.1	0.0	-37.7	51.6	-3.0

Quantity Summary										
FY 2020 President's Budget / December 2018 SAR (TY$ M)										
Quantity	Undistributed	Prior	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	To Complete	Total
Development	0	0	0	0	0	0	0	0	0	0
Production	0	15	6	8	8	8	0	0	0	45
PB 2020 Total	0	15	6	8	8	8	0	0	0	45
PB 2019 Total	0	15	6	8	8	8	0	0	0	45
Delta	0	0	0	0	0	0	0	0	0	0

Cost and Funding

Annual Funding By Appropriation

Annual Funding 1319 | RDT&E | Research, Development, Test, and Evaluation, Navy							
Fiscal Year	Quantity	TY $M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2004	--	--	--	--	--	--	6.7
2005	--	--	--	--	--	--	8.9
2006	--	--	--	--	--	--	13.5
2007	--	--	--	--	--	--	37.2
2008	--	--	--	--	--	--	88.9
2009	--	--	--	--	--	--	127.3
2010	--	--	--	--	--	--	67.2
2011	--	--	--	--	--	--	63.2
2012	--	--	--	--	--	--	102.5
2013	--	--	--	--	--	--	70.2
2014	--	--	--	--	--	--	74.4
2015	--	--	--	--	--	--	90.6
2016	--	--	--	--	--	--	61.3
2017	--	--	--	--	--	--	78.9
2018	--	--	--	--	--	--	53.6
2019	--	--	--	--	--	--	44.6
2020	--	--	--	--	--	--	23.9
2021	--	--	--	--	--	--	10.5
2022	--	--	--	--	--	--	12.2
2023	--	--	--	--	--	--	12.3
2024	--	--	--	--	--	--	12.6
2025	--	--	--	--	--	--	--
2026	--	--	--	--	--	--	10.8
2027	--	--	--	--	--	--	--
2028	--	--	--	--	--	--	5.5
2029	--	--	--	--	--	--	--
2030	--	--	--	--	--	--	5.7
2031	--	--	--	--	--	--	--
2032	--	--	--	--	--	--	5.9
2033	--	--	--	--	--	--	--
2034	--	--	--	--	--	--	2.7
2035	--	--	--	--	--	--	--
2036	--	--	--	--	--	--	2.8
2037	--	--	--	--	--	--	--
2038	--	--	--	--	--	--	3.0

2039	--	--	--	--	--	--	--
2040	--	--	--	--	--	--	3.1
2041	--	--	--	--	--	--	--
2042	--	--	--	--	--	--	3.2
2043	--	--	--	--	--	--	--
2044	--	--	--	--	--	--	3.6
Subtotal	--	--	--	--	--	--	1106.8

Annual Funding 1319 | RDT&E | Research, Development, Test, and Evaluation, Navy							
Fiscal Year	Quantity	BY 2012 $M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2004	--	--	--	--	--	--	7.8
2005	--	--	--	--	--	--	10.1
2006	--	--	--	--	--	--	14.8
2007	--	--	--	--	--	--	39.8
2008	--	--	--	--	--	--	93.5
2009	--	--	--	--	--	--	132.1
2010	--	--	--	--	--	--	68.7
2011	--	--	--	--	--	--	63.1
2012	--	--	--	--	--	--	100.7
2013	--	--	--	--	--	--	68.2
2014	--	--	--	--	--	--	71.3
2015	--	--	--	--	--	--	85.8
2016	--	--	--	--	--	--	57.0
2017	--	--	--	--	--	--	72.1
2018	--	--	--	--	--	--	48.0
2019	--	--	--	--	--	--	39.1
2020	--	--	--	--	--	--	20.6
2021	--	--	--	--	--	--	8.9
2022	--	--	--	--	--	--	10.1
2023	--	--	--	--	--	--	10.0
2024	--	--	--	--	--	--	10.0
2025	--	--	--	--	--	--	--
2026	--	--	--	--	--	--	8.2
2027	--	--	--	--	--	--	--
2028	--	--	--	--	--	--	4.0
2029	--	--	--	--	--	--	--
2030	--	--	--	--	--	--	4.0
2031	--	--	--	--	--	--	--
2032	--	--	--	--	--	--	4.0
2033	--	--	--	--	--	--	--
2034	--	--	--	--	--	--	1.8
2035	--	--	--	--	--	--	--
2036	--	--	--	--	--	--	1.8
2037	--	--	--	--	--	--	--
2038	--	--	--	--	--	--	1.8
2039	--	--	--	--	--	--	--
2040	--	--	--	--	--	--	1.8
2041	--	--	--	--	--	--	--
2042	--	--	--	--	--	--	1.8
2043	--	--	--	--	--	--	--

2044	--	--	--	--	--	--	1.9
Subtotal	--	--	--	--	--	--	1062.8

Annual Funding 1109 | Procurement | Procurement, Marine Corps							
Fiscal Year	Quantity	TY $M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2012	--	--	--	4.2	4.2	--	4.2
2013	2	74.0	--	10.6	84.6	1.8	86.4
2014	2	74.0	--	10.6	84.6	9.2	93.8
2015	2	72.6	--	6.4	79.0	11.9	90.9
2016	3	108.9	--	1.0	109.9	17.2	127.1
2017	3	108.4	--	10.8	119.2	14.5	133.7
2018	3	110.3	--	3.3	113.6	33.0	146.6
2019	6	180.0	--	18.4	198.4	33.7	232.1
2020	8	242.6	--	18.6	261.2	25.0	286.2
2021	8	243.8	1.8	24.3	269.9	28.2	298.1
2022	8	246.8	8.6	21.8	277.2	34.6	311.8
2023	--	3.6	6.8	8.6	19.0	14.4	33.4
2024	--	6.5	10.2	2.7	19.4	14.7	34.1
2025	--	--	33.8	25.6	59.4	--	59.4
2026	--	--	--	9.8	9.8	--	9.8
2027	--	--	--	9.9	9.9	--	9.9
2028	--	--	--	--	--	--	--
2029	--	--	--	--	--	--	--
2030	--	--	--	10.1	10.1	--	10.1
2031	--	--	--	--	--	--	--
2032	--	--	--	--	--	--	--
2033	--	--	--	10.9	10.9	--	10.9
2034	--	--	--	--	--	--	--
2035	--	--	--	--	--	--	--
2036	--	--	--	11.5	11.5	--	11.5
2037	--	--	--	--	--	--	--
2038	--	--	--	--	--	--	--
2039	--	--	--	12.1	12.1	--	12.1
2040	--	--	--	--	--	--	--
2041	--	--	--	--	--	--	--
2042	--	--	--	12.8	12.8	--	12.8
Subtotal	45	1471.5	61.2	244.0	1776.7	238.2	2014.9

Annual Funding 1109 | Procurement | Procurement, Marine Corps							
Fiscal Year	Quantity	BY 2012 $M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2012	--	--	--	4.1	4.1	--	4.1
2013	2	71.3	--	10.2	81.5	1.7	83.2
2014	2	70.4	--	10.1	80.5	8.7	89.2
2015	2	68.0	--	6.0	74.0	11.2	85.2
2016	3	100.2	--	0.9	101.1	15.9	117.0
2017	3	97.8	--	9.7	107.5	13.1	120.6
2018	3	97.5	--	2.9	100.4	29.2	129.6
2019	6	156.0	--	15.9	171.9	29.3	201.2
2020	8	206.1	--	15.9	222.0	21.2	243.2
2021	8	203.1	1.5	20.3	224.9	23.4	248.3
2022	8	201.6	7.0	17.8	226.4	28.3	254.7
2023	--	2.9	5.4	6.9	15.2	11.5	26.7
2024	--	5.1	8.0	2.1	15.2	11.6	26.8
2025	--	--	26.0	19.7	45.7	--	45.7
2026	--	--	--	7.4	7.4	--	7.4
2027	--	--	--	7.3	7.3	--	7.3
2028	--	--	--	--	--	--	--
2029	--	--	--	--	--	--	--
2030	--	--	--	7.0	7.0	--	7.0
2031	--	--	--	--	--	--	--
2032	--	--	--	--	--	--	--
2033	--	--	--	7.2	7.2	--	7.2
2034	--	--	--	--	--	--	--
2035	--	--	--	--	--	--	--
2036	--	--	--	7.1	7.1	--	7.1
2037	--	--	--	--	--	--	--
2038	--	--	--	--	--	--	--
2039	--	--	--	7.1	7.1	--	7.1
2040	--	--	--	--	--	--	--
2041	--	--	--	--	--	--	--
2042	--	--	--	7.0	7.0	--	7.0
Subtotal	45	1280.0	47.9	192.6	1520.5	205.1	1725.6

Cost Quantity Information 1109 | Procurement | Procurement, Marine Corps		
Fiscal Year	**Quantity**	**End Item Recurring Flyaway (Aligned With Quantity) BY 2012 $M**
2012	--	--
2013	2	73.8
2014	2	73.1
2015	2	70.8
2016	3	100.2
2017	3	97.8
2018	3	97.5
2019	6	156.0
2020	8	206.1
2021	8	203.1
2022	8	201.6
2023	--	--
2024	--	--
2025	--	--
2026	--	--
2027	--	--
2028	--	--
2029	--	--
2030	--	--
2031	--	--
2032	--	--
2033	--	--
2034	--	--
2035	--	--
2036	--	--
2037	--	--
2038	--	--
2039	--	--
2040	--	--
2041	--	--
2042	--	--
Subtotal	45	1280.0

Low Rate Initial Production

Item	Initial LRIP Decision	Current Total LRIP
Approval Date	3/10/2014	8/8/2016
Approved Quantity	14	15
Reference	MS C ADM	Justification and Authorization (J&A) No. 15,077 Amendment (1)
Start Year	2014	2014
End Year	2018	2018

The Current Total LRIP Quantity is more than 10% of the total production quantity The MDA authorized additional LRIP units to mitigate risk associated with conversion to Gallium Arsenide (GaN) technology and associated testing (no change to total Approved Acquisition Objective (AAO) quantity).

Foreign Military Sales

None

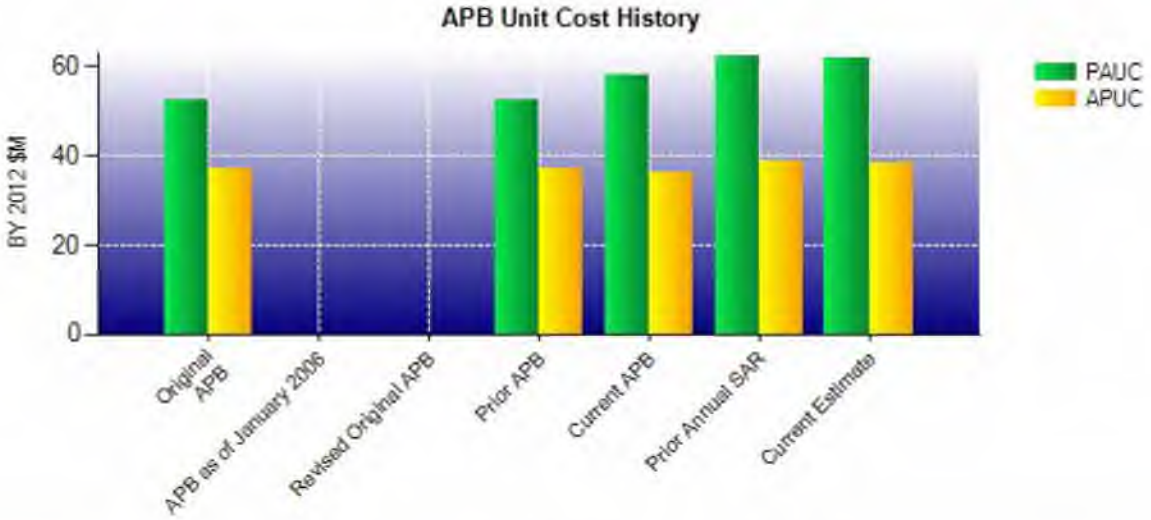
Nuclear Costs

None

Unit Cost

Current UCR Baseline and Current Estimate (Base-Year Dollars)			
Item	BY 2012 $M Current UCR Baseline (Apr 2014 APB)	BY 2012 $M Current Estimate (Dec 2018 SAR)	% Change
Program Acquisition Unit Cost			
Cost	2615.3	2788.4	
Quantity	45	45	
Unit Cost	58.118	61.964	+6.62
Average Procurement Unit Cost			
Cost	1625.3	1725.6	
Quantity	45	45	
Unit Cost	36.118	38.347	+6.17

Original UCR Baseline and Current Estimate (Base-Year Dollars)			
Item	BY 2012 $M Original UCR Baseline (May 2012 APB)	BY 2012 $M Current Estimate (Dec 2018 SAR)	% Change
Program Acquisition Unit Cost			
Cost	2987.3	2788.4	
Quantity	57	45	
Unit Cost	52.409	61.964	+18.23
Average Procurement Unit Cost			
Cost	2103.1	1725.6	
Quantity	57	45	
Unit Cost	36.896	38.347	+3.93



APB Unit Cost History					
Item	Date	BY 2012 $M		TY $M	
		PAUC	APUC	PAUC	APUC
Original APB	May 2012	52.409	36.896	58.349	42.665
APB as of January 2006	N/A	N/A	N/A	N/A	N/A
Revised Original APB	N/A	N/A	N/A	N/A	N/A
Prior APB	May 2012	52.409	36.896	58.349	42.665
Current APB	Apr 2014	58.118	36.118	64.842	42.107
Prior Annual SAR	Dec 2017	62.404	38.962	69.438	45.120
Current Estimate	Dec 2018	61.964	38.347	69.371	44.776

SAR Unit Cost History

Initial SAR Baseline to Current SAR Baseline (TY $M)									
Initial PAUC Development Estimate	Changes								PAUC Production Estimate
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
58.349	0.367	5.249	0.813	0.000	1.451	0.000	-1.387	6.493	64.842

Current SAR Baseline to Current Estimate (TY $M)									
PAUC Production Estimate	Changes								PAUC Current Estimate
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
64.842	-0.664	0.000	-0.076	2.576	-0.124	0.000	2.817	4.529	69.371

Initial SAR Baseline to Current SAR Baseline (TY $M)									
Initial APUC Development Estimate	Changes								APUC Production Estimate
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
42.665	0.276	1.067	0.813	0.000	-1.327	0.000	-1.387	-0.558	42.107

Current SAR Baseline to Current Estimate (TY $M)									
APUC Production Estimate	Changes								APUC Current Estimate
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
42.107	-0.511	0.000	-0.076	1.429	-0.871	0.000	2.698	2.669	44.776

SAR Baseline History				
Item	SAR Planning Estimate	SAR Development Estimate	SAR Production Estimate	Current Estimate
Milestone A	N/A	N/A	N/A	N/A
Milestone B	N/A	Aug 2005	Aug 2005	Aug 2005
Milestone C	N/A	Jul 2013	Mar 2014	Mar 2014
IOC	N/A	Aug 2016	Feb 2017	Feb 2018
Total Cost (TY $M)	N/A	3325.9	2917.9	3121.7
Total Quantity	N/A	57	45	45
PAUC	N/A	58.349	64.842	69.371

Cost Variance

Summary TY $M				
Item	RDT&E	Procurement	MILCON	Total
SAR Baseline (Production Estimate)	1019.2	1894.8	3.9	2917.9
Previous Changes				
Economic	-8.2	-39.1	-0.1	-47.4
Quantity	--	--	--	--
Schedule	--	-3.4	--	-3.4
Engineering	+51.6	+64.3	--	+115.9
Estimating	+26.3	+15.7	-3.8	+38.2
Other	--	--	--	--
Support	+5.4	+98.1	--	+103.5
Subtotal	+75.1	+135.6	-3.9	+206.8
Current Changes				
Economic	+1.4	+16.1	--	+17.5
Quantity	--	--	--	--
Schedule	--	--	--	--
Engineering	--	--	--	--
Estimating	+11.1	-54.9	--	-43.8
Other	--	--	--	--
Support	--	+23.3	--	+23.3
Subtotal	+12.5	-15.5	--	-3.0
Total Changes	+87.6	+120.1	-3.9	+203.8
CE - Cost Variance	1106.8	2014.9	--	3121.7
CE - Cost & Funding	1106.8	2014.9	--	3121.7

Summary BY 2012 $M				
Item	**RDT&E**	**Procurement**	**MILCON**	**Total**
SAR Baseline (Production Estimate)	986.5	1625.3	3.5	2615.3
Previous Changes				
Economic	--	--	--	--
Quantity	--	--	--	--
Schedule	--	--	-0.1	-0.1
Engineering	+44.7	+53.8	--	+98.5
Estimating	+23.7	-11.8	-3.4	+8.5
Other	--	--	--	--
Support	--	+86.0	--	+86.0
Subtotal	+68.4	+128.0	-3.5	+192.9
Current Changes				
Economic	--	--	--	--
Quantity	--	--	--	--
Schedule	--	--	--	--
Engineering	--	--	--	--
Estimating	+7.9	-45.5	--	-37.6
Other	--	--	--	--
Support	--	+17.8	--	+17.8
Subtotal	+7.9	-27.7	--	-19.8
Total Changes	+76.3	+100.3	-3.5	+173.1
CE - Cost Variance	1062.8	1725.6	--	2788.4
CE - Cost & Funding	1062.8	1725.6	--	2788.4

Previous Estimate: December 2017

RDT&E	$M	
Current Change Explanations	Base Year	Then Year
Revised escalation indices. (Economic)	N/A	+1.4
Revised estimate reconcile POE to OSD out-year inflation (Estimating)	-1.6	-2.0
Revised estimate in FY 2018 to reflect actuals (Estimating)	-0.9	-1.0
Engineering Change Order/Engineering Change Proposal (ECO/ECP) costs increase as a function of Hardware and rephasing. (Estimating)	+11.4	+15.1
Adjustment for current and prior escalation. (Estimating)	-1.0	-1.0
RDT&E Subtotal	+7.9	+12.5

Procurement	$M	
Current Change Explanations	Base Year	Then Year
Revised escalation indices. (Economic)	N/A	+16.1
Adjustment for current and prior escalation. (Estimating)	-3.9	-4.2
Adjustment for current and prior escalation to POE. (Estimating)	0.0	-0.2
Updated estimating methodology factor to incorporate actuals and associated learning curve, through delivery of the final production lot. (Estimating)	-8.7	-9.5
Adopted new methodology and phasing for depot facilitization. (Estimating)	0.0	0.0
Revised estimate to reflect the application of new outyear inflation indices. (Estimating)	-1.0	-1.3
Revised estimated associated with program support strategy and align support. (Estimating)	-27.3	-34.3
Revised estimate due to Congressional reduction. (Estimating)	-4.6	-5.4
Adjustment for current and prior escalation. (Support)	-0.7	-1.0
Increase in Other Support was: Revised estimate and phasing for facilitization costs to support FOC (Support)	+13.6	+16.9
Increase in Initial Spares due to refined cost estimates.please review (Support)	+4.9	+7.4
Procurement Subtotal	-27.7	-15.5

Contracts

Contract Identification

Appropriation: Procurement
Contract Name: LRIP GaN
Contractor: Northrop Grumman Corporation
Contractor Location: 1580 West Nursery Road
Linthicum Heights, MD 21090
Contract Number: M67854-16-C-0211/9
Contract Type: Fixed Price Incentive(Firm Target) (FPIF), Cost Plus Fixed Fee (CPFF), Firm Fixed Price (FFP)
Award Date: August 31, 2016
Definitization Date: August 31, 2016

Contract Price							
Initial Contract Price ($M)			Current Contract Price ($M)			Estimated Price At Completion ($M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
126.2	132.1	3	443.4	460.1	9	372.4	376.2

Target Price Change Explanation

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to exercising 2 additional lots of 6 units, bringing total LRIP unit quantity to 9 and the incorporation of Interim Contractor Logistics Support efforts.

Contract Variance		
Item	Cost Variance	Schedule Variance
Cumulative Variances To Date (12/31/2018)	+4.0	-7.7
Previous Cumulative Variances	+3.2	-2.1
Net Change	+0.8	-5.6

Cost and Schedule Variance Explanations

The favorable net change in the cost variance is due to efficiencies gained in Program Management and Manufacturing efforts.

The unfavorable net change in the schedule variance is due to the late delivery of materials for Lot 4. There is no impact to the critical path in meeting the program milestones.

Notes

Option for Lot 5 (quantity of 3 units) exercised in March 2018 for a total of 9 units to-date.

Deliveries and Expenditures

Deliveries				
Delivered to Date	**Planned to Date**	**Actual to Date**	**Total Quantity**	**Percent Delivered**
Development	0	0	0	--
Production	45	8	45	17.78%
Total Program Quantity Delivered	45	8	45	17.78%

Expended and Appropriated (TY $M)			
Total Acquisition Cost	3121.7	Years Appropriated	16
Expended to Date	1353.0	Percent Years Appropriated	39.02%
Percent Expended	43.34%	Appropriated to Date	1903.8
Total Funding Years	41	Percent Appropriated	60.99%

The above data is current as of March 11, 2019.

Operating and Support Cost

Cost Estimate Details

Date of Estimate:	December 29, 2017
Source of Estimate:	POE
Quantity to Sustain:	45
Unit of Measure:	System
Service Life per Unit:	20.00 Years
Fiscal Years in Service:	FY 2018 - FY 2044

A system consists of the Radar Equipment Group, the Communications Equipment Group, and the Power Equipment Group.

Sustainment Strategy

The sustainment strategy includes organic support with contract support for the depot level. Current Product Support Strategy employs Contractor Logistics Support (CLS) during the EMD phase to provide support for the two Engineering Development Models and up to 18 LRIP systems through Interim CLS on the Gallium Nitride (GaN) and FRP contracts. During production some components may remain under CLS, others may transition to Performance Based Logistics and others may transition to traditional organic support. Final determination of these elements will be made by Full Rate Production Decision (FRPD).

Antecedent Information

The AN/TPS-63B Radar is the antecedent system. There is no data in the Naval Visibility and Management of Operating and Support Costs database for the antecedent system.

Annual O&S Costs BY2012 $M		
Cost Element	**G/ATOR Average Annual Cost Per System**	**AN/TPS-63B Radar (Antecedent) Average Annual Cost Per System**
Unit-Level Manpower	0.261	0.000
Unit Operations	0.007	0.000
Maintenance	1.145	0.000
Sustaining Support	0.599	0.000
Continuing System Improvements	0.732	0.000
Indirect Support	0.009	0.000
Other	--	--
Total	2.753	--

Item	Total O&S Cost $M			
	G/ATOR			AN/TPS-63B Radar (Antecedent)
	Current Production APB Objective/Threshold		Current Estimate	
Base Year	2522.6	2774.9	2477.9	N/A
Then Year	3326.3	N/A	3565.5	N/A

Disposal Cost is included in the Operating and Support Cost of the current APB objective and threshold ~~for~~ this program.

Equation to Translate Annual Cost to Total Cost

Total O&S cost = Average Annual Cost Per System * # of systems * Service Life = $2.753M * 45 * 20 = $2477.9M

O&S Cost Variance		
Category	**BY 2012 $M**	**Change Explanations**
Prior SAR Total O&S Estimates - Dec 2017 SAR	2477.9	
Programmatic/Planning Factors	0.0	
Cost Estimating Methodology	0.0	
Cost Data Update	0.0	
Labor Rate	0.0	
Energy Rate	0.0	
Technical Input	0.0	
Other	0.0	
Total Changes	0.0	
Current Estimate	2477.9	

Disposal Estimate Details

Date of Estimate: December 03, 2018
Source of Estimate: POE
Disposal/Demilitarization Total Cost (BY 2012 $M): 9.0

TY Total disposal cost are $16M.

PLCCE Dec 2018 aligned to PB20.