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Department of Defense
OFFICE OF PREPUBLICATION AND SECURITY REVIEW



GROUND/AIR TASK ORIENTED RADAR (G/ATOR)

December 2021 Selected Acquisition Report (SAR)



DECEMBER 31, 2021
DEPARTMENT OF THE NAVY

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Common Acronyms and Abbreviations

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(A&S) - Under Secretary of Defense (Acquisition and Sustainment)
USD(AT&L) - Under Secretary of Defense (Acquisition, Technology and Logistics)

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Program Manager

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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 (AD/SR) 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.

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Executive Summary

The program is currently in FRP. The FRP Decision was held and the FRP Contract awarded in June 2019. The program continues to field to the fleet. The G/ATOR program has fielded 17 units horizontally across all three USMC Marine Expeditionary Forces. Follow on production continues with the award of FRP Lot 1 in June 2019 and Lot 2 December 2019. The final awards of FRP were made with Lot 3 in March 2021 and Lot 4 in December 2021.

Significant Accomplishments:

The G/ATOR FRP contract was awarded on June 7, 2019. The program is currently in FRP. As of December 22, 2021 all four lots of the FRP procurement contract have been exercised.

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

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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 (RD&A)).
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.

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History of Significant Developments Since Program Initiation	
Date	Significant Development Description
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.
June-2019	FRP Contract awarded.
September-2019	Fielding of G/ATOR LRIP Units 8 and 10 to 10th Marines.
October-2019	Fielding of G/ATOR LRIP Unit 7 to MACS-4.
December-2019	Awarded FRP Lot 2 for 6 units in accordance with Continuing Resolution guidelines.
January-2020	Awarded FRP remaining 2 units for Lot 2 completion.
February-2021	Awarded FRP Lot 3 for 8 units.
December-2021	Awarded FRP Lot 4 for 8 units.

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Schedule

Schedule Events

Schedule Events					
Events	Development APB Objective	Current APB Development Objective/Threshold		Current Estimate/Actual	Deviation
G/ATOR Milestone B	Aug-2005	Aug-2005	Aug-2005	Aug-2005	
G/ATOR Milestone C	Mar-2014	Mar-2014	Mar-2014	Mar-2014	
AD/SR G/ATOR Block 1 (GB1) Operational Assessment	Aug-2016	Oct-2017	Oct-2017	Apr-2017	
AD/SR G/ATOR Block 1 (GB1) Initial Operational Capability (IOC)	Feb-2017	Feb-2018	Feb-2018	Feb-2018	
AD/SR G/ATOR Block 2 (GB2) Operational Assessment	Oct-2017	May-2018	May-2018	May-2018	
AD/SR G/ATOR Block 2 (GB2) Initial Operational Capability (IOC)	Feb-2018	Mar-2019	Mar-2019	Feb-2019	
G/ATOR Initial Operational Test & Evaluation (IOTE)	Oct-2018	Dec-2018	Dec-2018	Oct-2018	
G/ATOR Full-Rate Production (FRP) Decision	Mar-2019	Jun-2019	Jun-2019	Jun-2019	
G/ATOR Full Operational Capability (FOC)	N/A	Jan-2025	Jul-2025	Jan-2025	

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Significant Schedule Risks

Significant Schedule Risks	
Current Estimate (December 2021)	
1.	None. There are no known significant Schedule or Technical risks with this program at this time. The system is currently undergoing Full Rate Production.
APB AMD (May 2012)	
1.	If the software requirements definition, code & unit test, and software integration is not completed per the defined schedule, then the system integration and test schedule will not meet the Engineering Development Model delivery schedule for Developmental Test. Mitigation: Completion of the Radar Control Signal Processor development and Software Qualification Test. Conduct safety testing.
Milestone B (April 2005)	
1.	Funding profile imposed by Program Objective Memorandum-06 is not conducive to a sound systems engineering approach, and may cause schedule delays. Mitigation: Evaluation of offerors' proposals on approach to mitigate uneven funding. Funding profile released to industry as part of draft Request for Proposal documents in order to ensure that offerors are aware of the situation.
Milestone C (January 2014)	
1.	None.
Full-Rate Production (June 2019)	
1.	None. Current FRP contract is Firm-Fixed Price .

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Performance

Materiel Availability				
N/A	Materiel Availability The GWLR shall have a Materiel Availability of 0.90 (Objective)	Materiel Availability The GWLR shall have a Materiel Availability of 0.85 (Threshold)	Not Yet Evaluated until FOC with fully integrated supporting organizations. (7/31/2025)	Materiel Availability The GWLR shall have a Materiel Availability of 0.90 (Objective)
Operational availability				
N/A	Operational availability The GWLR shall have an Ao of 0.95 (Objective)	Operational Availability The GWLR shall have an Ao of 0.90 (Threshold)	MET .96 at DT1E2 and .93 at IOT&E (12/21/2018)	Operational availability The GWLR shall have an Ao of 0.95 (Objective)

Requirements Source: CPD (GB1) dated December 3, 2012 and CPD (GB2) dated April 4, 2019. Both approved by the Marine Requirements Oversight Council (MROC) and validated by the Joint Requirements Oversight Council (JROC).

Acronyms and Abbreviations:

AD/SR - Air Defense/Surveillance Radar
 AIMS - Air Traffic Control Radar Beacon System Identification Friend or Foe Management System
 Ao - Operational Availability
 CAC2S - Common Aviation Command and Control System
 CTIC - Communication/Transmission Integrated Circuit
 CTN - Composite Tracking Network
 CUI - Controlled Unclassified Information
 DOT&E - Director, Operational Test and Evaluation
 DT - Developmental Test
 EPLRS - Enhanced Position Location Reporting System
 GaAs - Gallium Arsenide
 GaN - Gallium Nitride
 G/ATOR - Ground/Air Task Oriented Radar
 GB 1/2/4 - G/ATOR Block 1/2/4
 GWLR - Ground Weapons Locating Radar
 HVT - High Value Target
 IAW - In accordance with
 IFF - Identification Friend or Foe
 IROAN - Inspect and Repair Only As Necessary
 J&A - Justification and Authorization
 JITC - Joint Interoperability Test Command
 kbps - kilobits per second
 km - kilometers
 KSA - Key System Attribute
 MET - Mission Essential Task
 MTBF - Mean Time Between Failure
 mils - milliradians
 min - minutes
 MK - Mark

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MROC - Marine Requirements Oversight Council
NRT - Near Real Time
O&M - Operations and Maintenance
TAOM - Tactical Air Operations Modules
TFOCA - Tactical Fiber Optic Cable Assembly

Acquisition Budget Estimate

Total Acquisition Cost

Category	Base Year	Development APB 05/22/2012	Production APB (Current) 06/04/2019		Budget Estimate PB 2023		Deviation
		Objective (BY\$M)	Objective (BY\$M)	Threshold (BY\$M)	BY\$M	TY\$M	
RDT&E	2012	878.2	1042.0	1146.2	1083.2	1125.4	No
Procurement	2012	2103.1	1711.5	1887.7	1743.6	2039.1	No
MILCON	2012	6.0	0.0	0.0	0.0	0.0	No
Acq. O&M	2012	0.0	0.0	0.0	0.0	0.0	No
Total		2987.3	2753.5	3033.9	2826.8	3164.5	No
PAUC	2012	52.409	61.189	67.402	62.818	70.323	No
APUC	2012	36.896	38.033	41.949	38.747	45.314	No

Total End Item Quantity

Quantity Category	Current APB Quantity	Current Estimate Quantity
Development	0	0
Procurement	45	45

Budget Notes:

Current APB Cost Estimate Reference Source Documents: FRP Decision Program Office Estimate for Ground/Air Task Oriented Radar (G/ATOR); Naval Center for Cost Analysis Independent Cost Estimate (ICE) for AN/TPS-80 of April 29, 2019. The Total Acquisition Costs include fact-of-life changes through PB 2022.

Quantity Notes:

The Production (Current) APB PAUC and APUC are based on 45 units. The Development APB PAUC and APUC were based on 57 units of which twelve (12) were not funded.

Risk and Sensitivity Analysis

Risks and Sensitivity Analysis	
Current Procurement Cost (December 2021)	
1.	None, current FRP contract is Firm-Fixed Price (FFP).
Original Baseline Estimate (May 2012)	
1.	The original baseline estimate was developed after G/ATOR was officially designated as an ACAT IC program by Assistant Secretary of the Navy for Research, Development, and Acquisition (ASN (RDA)). The estimate was based on a production quantity of 57 (of which only 45 were funded) and supported an FY 2024 FOC.
Revised Original Estimate (N/A)	
1.	None.
Current Baseline Estimate (June 2019)	
1.	The current baseline estimate reflects the Service Cost Position (SCP) that the Naval Center for Cost Analysis developed in support of the FRP. The SCP was also used as the basis for the June 2019 APB. The estimate is based on a production quantity of 45 and supports an FOC of FY 2025.

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Unit Cost

Current Baseline Compared with Current Estimate

Category (BY12 \$M)	Current APB (Jun 2019)	Current Estimate	% Change	NMC Breach
PAUC				
Cost	2753.5	2826.8	2.66%	-
Quantity	45	45	0.00%	-
Unit Cost	61.189	62.818	2.66%	None
APUC				
Cost	1711.5	1743.6	1.88%	-
Quantity	45	45	0.00%	-
Unit Cost	38.033	38.747	1.88%	None

Original Baseline Compared with Current Estimate

Category (BY12 \$M)	Original APB (May 2012)	Current Estimate	% Change	NMC Breach
PAUC				
Cost	2987.3	2826.8	-5.37%	-
Quantity	57	45	-21.05%	-
Unit Cost	52.409	62.818	19.86%	None
APUC				
Cost	2103.1	1743.6	-17.09%	-
Quantity	57	45	-21.05%	-
Unit Cost	36.896	38.747	5.02%	None

Unit Cost Notes: All Costs are BY 2012 \$M.

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Contracts

Contract Data (\$TYM)		
Contract Number	M67854-19-C-0043	
Effort Number	N/A	
Modification Number	P00029	
Award Date	June 7, 2019	
Definitization Date	December 22, 2021	
Order Number	N/A	
CAGE Code/CAGE Legal Name	2S209 / Northrop Grumman Systems Corporation	
Contract Title	Full Rate Production (FRP)	
Contract Address	1580 West Nursery Road Linthicum Heights, MD 21090	
Contracts/Effort Price, Quantity, and Performance (\$M)		
Initial Target Price	Current Target Price	
\$963,173,943.10	\$963,173,943.10	
Initial Ceiling Price	Current Ceiling Price	
Contract's EAC	PM's EAC	
Initial Quantity	Current Quantity	Delivered Quantity
45	45	18
BAC	BCWP	ACWP
BCWS	Cost Variance	Schedule Variance

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Technologies and Systems Engineering

Significant Technical Risks

Significant Technical Risks	
Current Estimate (December 2021)	
1.	Inspect and Repair Only As Necessary Depot Core Capability Will Not Be Established IAW Title 10 USC 2464: Core Log Capabilities: If Tobyhanna Army Depot is not properly tasked and resourced, then G/ATOR Depot Core Capability-IROAN will not be established by 4QFY23 and will not meet statutory requirement of Title 10 USC 2464: Core Logistics Capabilities.
Milestone B (April 2005)	
1.	Inadequate cooling design of array and electronic equipment bays may decrease reliability and increase weight and power requirements. Mitigation: Investigation and fabrication of composite prototype structures. Establishment of a cooling margin (reserve) as a proposal evaluation factor. Investigation of high power transmit/receive (T/R) devices.
Milestone C (January 2014)	
1.	If system reliability does not improve system will not meet Mean Time Between Failure Key System Attribute. Mitigation: Received clarification from Combat, Development and Integration regarding timeframe for compliance, i.e. at conclusion of GB2 Follow-on Test and Evaluation. Execute Software hardening efforts to improve software stability. Incorporate Design for Reliability into LRIP.
2.	The 2014 SCP identified the primary areas of risk and uncertainty for this program was associated with Gallium Nitride (GaN) technology insertion. The SCP accounted for uncertainty in the area of GaN T/R Module development and GaN antenna array depopulation. Mitigation: Costs for additional test events associated with GaN technology insertion were included in the ICE based on discussions with Director, Operational Test and Evaluation staff.

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Deliveries and Expenditures

Deliveries				
Delivered to Date	Planned to Date	Actual to Date	Total Quantity	Percent Delivered
Development	0	0	0	0.00%
Production	45	16	45	35.56%
Total Program Quantity Delivered	45	16	45	35.56%

Expended and Appropriated (TY \$M)

Total Acquisition Cost:	3537.5
Expended to Date:	2042.7
Percent Expended:	57.75%
Total Funding Years:	42
Years Appropriated:	18
Percent Years Appropriated:	42.86%
Appropriated to Date:	2844.2
Percent Appropriated:	80.40%

The above data is current as of April 18, 2022.

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. 15077 Amendment (1)
Start Year	2014	2014
End Year	2018	2018

Rationale if Current Total LRIP Quantity exceeds 10% of the total Procurement quantities:

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

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Operating and Support Costs

Total Program O&S Cost Compared with Baseline

	Current APB Objective (BY\$M)	Current APB Threshold (BY\$M)	Current Estimate (BY\$M)	Current Estimate (TY\$M)	Deviation
Total O&S (\$Millions)	2124.8	2337.3	2051.3	3058.8	

O&S Cost Breakdown

Allocate O&S estimate by each weapon system (or system variants) acquired by the program) into the CAPE Cost Categories. Add a fresh column for each variant/system.

Category (BY12\$ Million)	G/ATOR
Unit-Level Manpower	183.51
Unit Operations	9.56
Maintenance	1209.99
Sustaining Support	315.44
Continued System Improvements	275.33
Other (Indirect Support)	57.44
Total O&S	2051.28

Cost Estimate Source: The Program Lifecycle Cost Estimate (PLCCE) is dated March 2022 aligned to PB 2023 with fact-of-life changes.

Disposal/Demilitarization Cost Estimate and Source of Estimate:

Date of Estimate: March 2022
 Source of Estimate: POE
 Disposal/Demilitarization Total Cost (BY 2012 \$M): 5.0

TY Total disposal costs: 5.6

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 15 LRIP systems through Interim CLS on the Gallium Nitride 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.

For Each Acquired System or System Variant:

Quantity to Sustain	45
First Operational Fiscal Year	2018
Final Operational Fiscal Year	2045
Unit Expected Service Life	20.00

Antecedent System(s) O&S Costs:

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

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