

GROUND/AIR TASK ORIENTED RADAR



Program Background

G/ATOR is expeditionary, lightweight, and radar employed by units within the Air Combat Element (ACE) and Ground Combat Element (GCE) of the Marine Air Ground Task Force (MAGTF). The Marine Corps will operate G/ATOR in both global and regional conflicts in support of operations ranging from low-intensity deterrence to conventional high-intensity conflicts. G/ATOR will be forward deployed and employable from the Marine Expeditionary Unit (MEU) to the Marine Expeditionary Force (MEF). G/ATOR will provide the MAGTF with the operational flexibility and speed of employment necessary for enhanced situational awareness in support of Expeditionary

Maneuver Warfare, Operational Maneuver from the Sea, ship-to-objective movement, prolonged operations ashore, Sea-Basing, Sea Shield, Sea Strike, and FORCE Net.

G/ATOR Block 1 (GB1) will provide radar measurement data to the Common Aviation Command and Control System (CAC2S) and the Composite Tracking Network (CTN). GB1 will replace the legacy Marine Air Command and Control System (MACCS) AN/TPS-63, AN/UPS-3, and AN/MPQ-62 radars. G/ATOR Block 2 (GB2) will provide radar-determined launch and impact point data to the Advanced Field Artillery Tactical Data

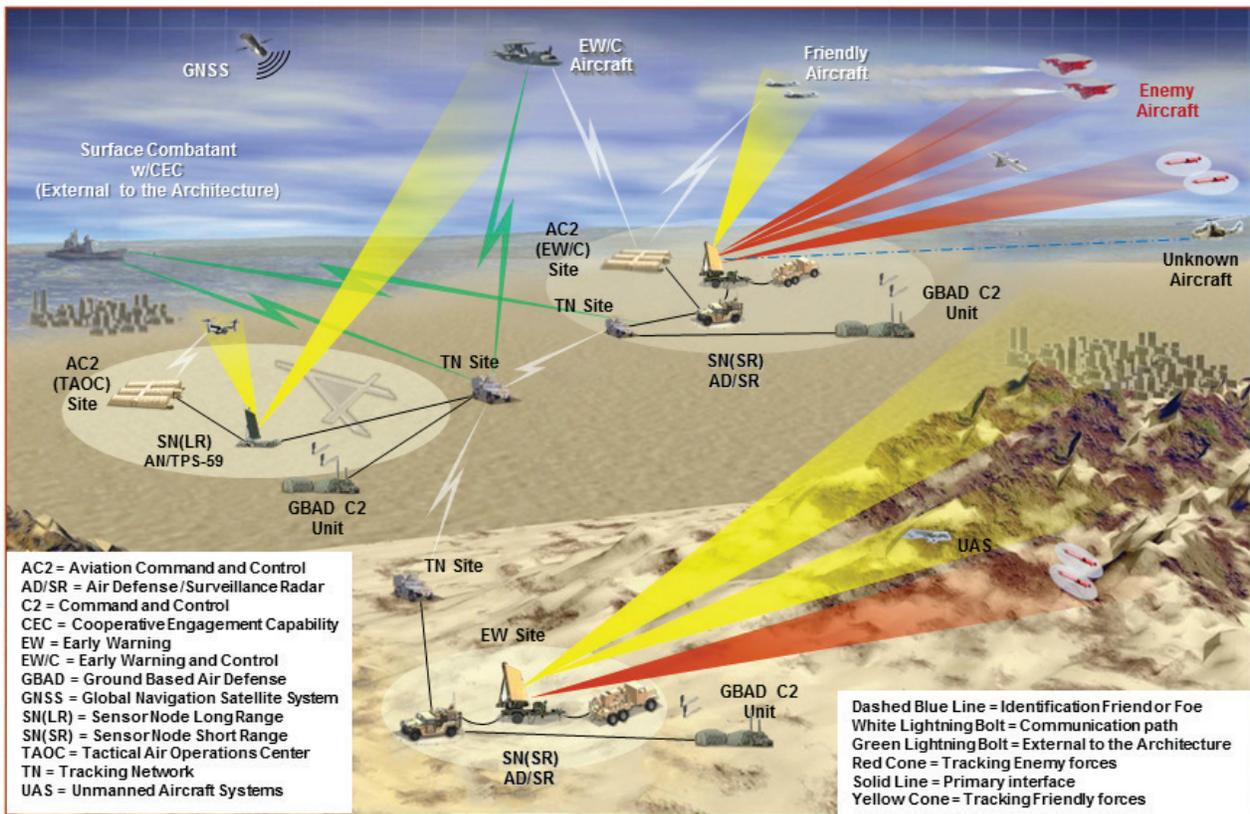
System (AFATDS) in the Fire Support Coordination Center (FSCC) and Fire Direction Center (FDC) in the Marine Artillery Regiments. GB2 will replace the legacy Marine Artillery Regiment ground Counter-Battery/Counter-Fire radar, which is the AN/TPQ-46.

The G/ATOR hardware consists of three major subsystems: the Radar Equipment Group (REG), the Communications Equipment Group (CEG) and the Power Equipment Group (PEG) with pallet assembly. The REG and its transport trailer are designed as an integral package. The CEG is mounted on one M1152 High Mobility Multi-purpose Wheeled Vehicle (HMMWV) and the PEG is mounted on one AMK23 Medium Tactical Vehicle Replacement (MTVR). Both vehicles are government-furnished equipment (GFE). These vehicles are the prime movers within the G/ATOR system configuration. In addition, one GFE Mobile Electric Power (MEP) 1070 60kW generator and GFE

radio communications components are included in the PEG and CEG design. The GFE radios are the AN/VRC-110 and the AN/VRC-114.

Program Status

The AN/TPS-80 G/ATOR system received a successful Milestone C on 24 January 2014 from the Assistant Secretary of the Navy (Research, Development and Acquisition). Northrop Grumman was awarded the Low-Rate Initial Production (LRIP) Option 1 contract in October 2014 for four LRIP systems. In March 2015, the G/ATOR LRIP contract was modified to add LRIP Option Period 2 for two additional LRIP systems. In August 2015, Northrop Grumman was also awarded the G/ATOR Block 2 development contract to produce the Ground Weapons Locating Radar (GWLR) software that will enable the common G/ATOR hardware to perform the counter-battery radar mission. Delivery of the first LRIP system is scheduled for the 2nd Quarter



G/ATOR Operational View (From U.S. Marine Corps Concepts & Programs)

of FY17 and Developmental Testing will begin in the 3rd Quarter FY17.

G/ATOR's Top Technical Issues:

1. Lowering Manufacturing Costs

Technologies are needed that reduce manufacturing cost across multiple areas of production, including:

- 1) Air ducts that provide precise mounting and cooling of the Transmit/Receive (T/R) modules and array elements (the air duct is very time consuming to produce and assemble, and thus is very expensive);
- 2) T/R module packaging, which requires expensive materials and hermetic sealing that reduces yield; and
- 3) Circulator Isolator Radiator Filter (CIRF) boards, which are required for the T/R modules and which require a multi-step, medium yield manufacturing process.

2. Increased Dynamic Range

Under certain adverse conditions, G/ATOR needs additional dynamic range. Dynamic range is limited by the Third Order Intercept of the receive chain and the number of effective bits in its analog to digital converters. Increasing the dynamic range of these components would improve the G/ATOR performance in certain adverse (other than nominal) environments. Avenues of improvement include improvements in T/R module design, as well as receiver design.

3. Advanced Electronic Protection

The G/ATOR PMO is seeking advanced electronic protection technologies and techniques that will diminish G/ATOR susceptibility to electronic attack measures. This is an area for research into not merely what is available today to defeat the current electronic attack capabilities but also to look to the future, to predict the next generation of electronic attack means/methods and to development techniques/technologies to negate or defeat them.



G/ATOR Technical Issue #3 Advanced Electronic Protection

