# STK Helps USMC Combat Operations Assess Radar Effectiveness and Save Nearly $300 Million in Acquisition Costs

On Target and In Range with STK

THE BATTLE PLAN: The U.S. Marine Corps Target Acquisition Platoon (TAP) needed to upgrade its AN/TPQ-46A Firefinder radar system. Initial requirements called for a total of ten radar systems per Target Acquisition Platoon (TAP). With the aging nature of the AN/TPQ-46A radar systems in mind, the USMC sought to upgrade to a system with both an increased range and an improved probability of detection. They conducted a Counterbattery Radar (CBR) study to determine exactly how many of the Firefinder's proposed replacement systems—including AN/ TPS-80 and Ground/Air Task Oriented Radar (G/ATOR)—would actually be required in order to support the Marine Air-Ground Task Force (MAGTF) in real-world combat operations.

TARGET ACQUIRED: AGI's Systems Tool Kit (STK) software modeled radar coverage to determine how many of the proposed new radar systems could accomplish the mission of a Marine Expeditionary Force conducting combat operations. Using subject matter experts (SMEs), the study team used STK to tactically position their radar systems within the simulated battle space. In order to determine the percentage of coverage that each radar system was able to achieve, the team used representative enemy rockets and artillery ranges.

As STK can analyze and display the effects of both terrain and system range constraints, the SMEs could place each system for maximum effect. In addition to single-system coverage, the team also depicted those areas covered by two, three, or four systems—which resulted in a significantly improved probability of detection. Once the scenarios were in place, STK's analytical capabilities and quick turnaround of data output made making changes to the number of radar systems in position quick and relatively easy.

Target area based on artillery that can range 53km to each major unit location
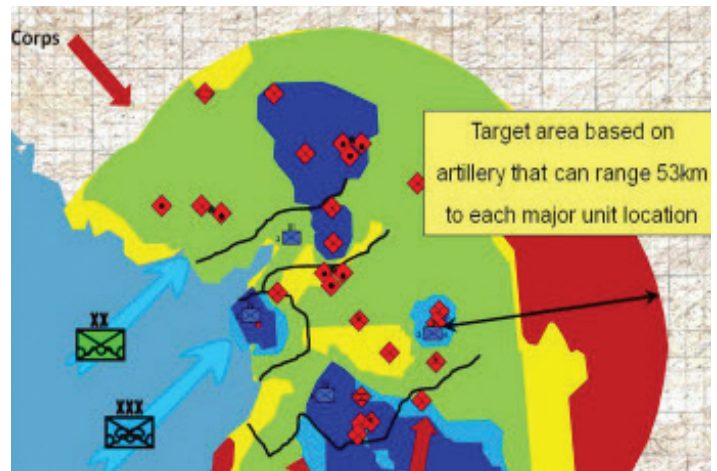
In the United States Marine Corps "USMC", Target Acquisition Platoons (TAPs) locate, track, and assess hostile artillery assets, mortars, infantry units, and formations. These platoons rely on radar section and counterbattery platoon personnel to provide command with surveillance and targeting information across the battle space. Threat acquisition employing ground surveillance radar allows TAP platoons to counter enemy movement through long-range precision fire.

SUCCESSFUL DEPLOYMENT: Using STK, the team determined the number of radars required to satisfy tactical requirements. The software also allowed the study team to conduct a detailed comparative analysis between the Firefinder and G/ATOR systems. While initial documents indicated ten replacement radar systems per TAP, study results revealed six systems would be adequate (with eight systems preferred). These findings reduced the required number of systems from 38 to 28—lowering system acquisition costs by nearly $300 Million. In addition, the reduced number provides manpower savings that could reduce the force or be allocated elsewhere.

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