

AGI USER EXCHANGE

EAST • WEST 2006

Sicily RADHAZ Model

Nicholas Gavin

MAXIM Systems, San Diego, CA



Company Overview

- Systems engineering company specializing in:
 - Space and communications systems
 - Knowledge management
 - Command and control
 - Trusted systems
 - Intelligence
- Headquartered in San Diego, CA, with locations nationwide, and in the U.K. and South Korea
- Founded in 1998 and employee-owned

Program Overview

- MAXIM Systems provides systems engineering support to PMW-146 Satellite Communications Office
 - Acquisition of Mobile User Objective System (MUOS)
 - RF modeling and analysis

Challenge

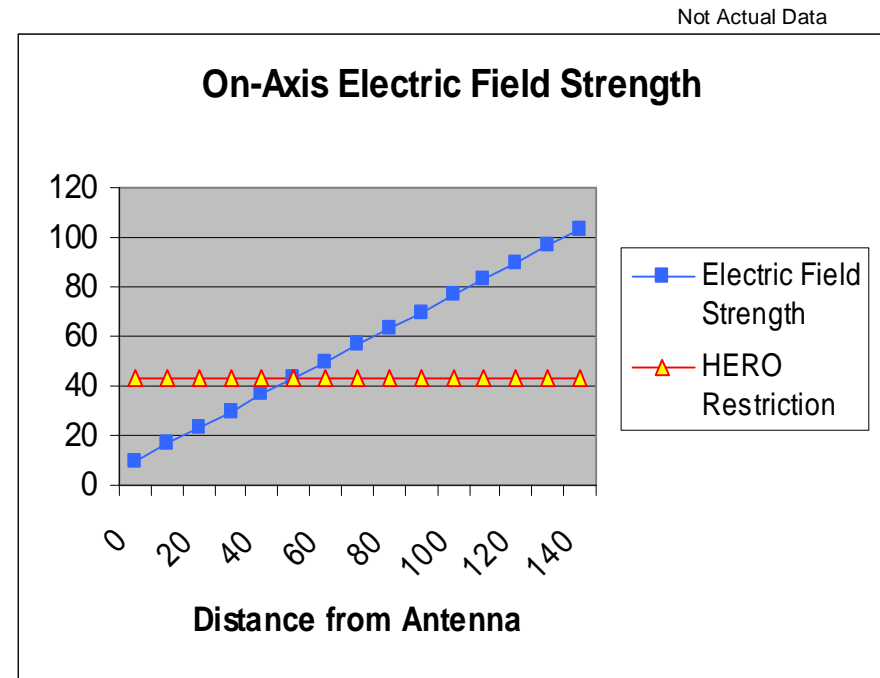
- Exploring possible sites for MUOS Earth terminals
 - Multiple high-gain Ka-band antennas
 - Possible site located on Sigonella airfield in Sicily
- Hazards of Electromagnetic Radiation to Ordnance (HERO)
 - High levels of EM radiation can trigger detonation of ordnance on aircraft

Solution Criteria

- PMW-146 approached MAXIM to build upon previous HERO analysis
 - Better characterization of the problem
 - Visualization for a more visceral understanding
- Build an interactive STK scenario with an HTML interface
 - Assess standard flight patterns to and from the airfield
 - Adjust power levels for the Ka-band antennas
 - Quickly assess the “what ifs”
 - Off-pattern approaches
 - Relocation of antennas

Initial PMW-146 Analysis

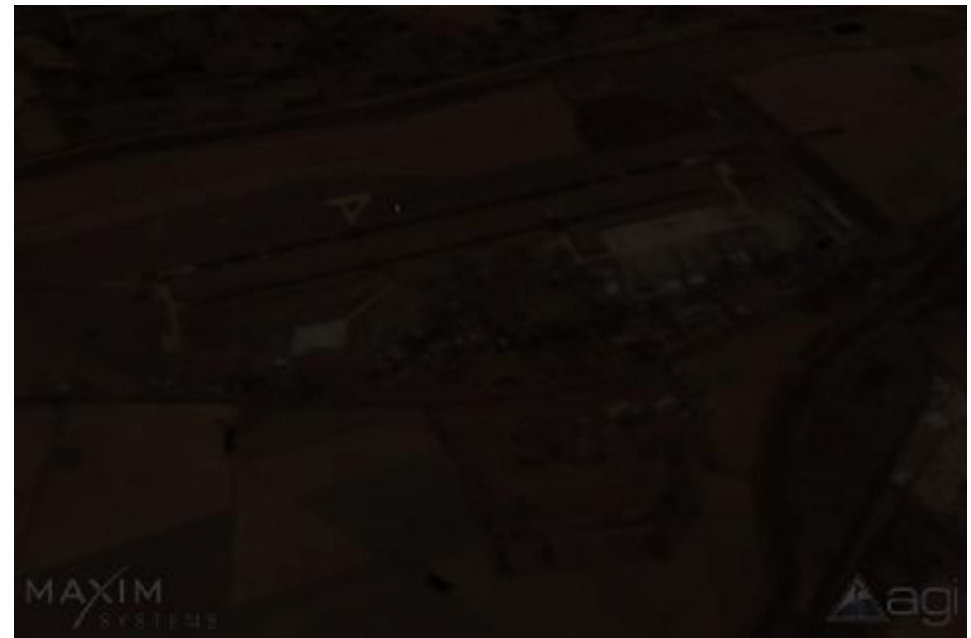
- Excel charts provided in previous HERO analysis
 - On- and Off-axis graphs of electric field strength
 - HERO restriction guidelines
- Limitations
 - No visual characterization of the problem
 - Data difficult to interpret



Solution

- Sicily RADHAZ Model
 - Support previous analysis using STK/Comm
 - STK/Advanced VO to visualize the proximity of flight patterns to antenna beams

- Advantage of STK approach
 - Instant interpretation
 - Easily accommodate unanticipated questions



Results

- STK scenario successfully presented to PMW-146
 - Two week turnaround
 - Requested that scenario be presented to key decision makers at Sigonella
- Scenario provides Sigonella decision makers with deeper understanding
 - Final decision to find a new location for the MUOS Earth terminal

Contact

- For questions about MAXIM Systems or the Sicily RADHAZ Model, contact:

Nicholas Gavin
Software Engineer
ngavin@maximsys.com
619-574-2335