

AN-TPS 59 RES



The Sensis Radar Environmental Simulator (RES) provides a robust method for injecting Intermediate Frequency (IF) signals containing target, clutter and Electronic Countermeasure (ECM) returns associated with pre-scripted scenarios. The RES can simulate both Theater Ballistic Missiles (TBMs) and Air Breathing Targets (ABTs). RES signals are "summed" with the antenna returns prior to analog pre-processing providing a realistic "sim-over-live" picture to the operator. Capabilities include:

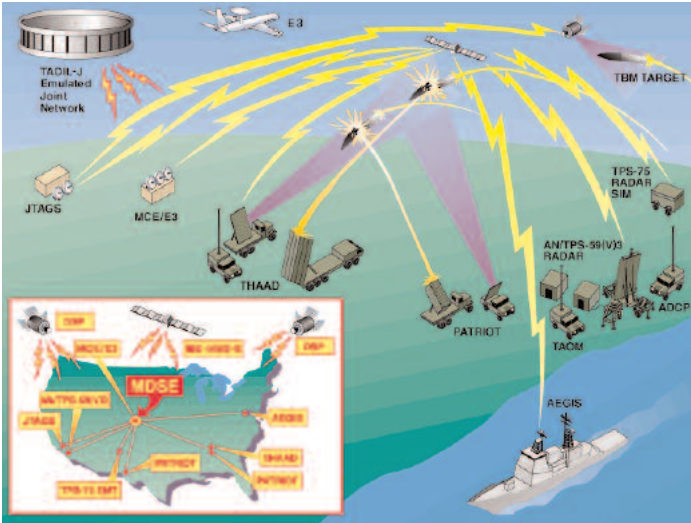
- **Ideal simulation of wartime scenarios.** The RES is designed to participate in Distributed Interactive Simulation (DIS) events such as Missile Defense System Exerciser (MDSE). The RES also has the capability to create its own scenarios.
- **"Virtual" radar placement.** The RES is designed to use terrain data for desired latitude/longitude placement allowing actual radar performance predictions to be made for a desired location.
- **Cost-effective training platform.** Savings when compared to live aircraft and missiles is significant. Also, operators can train against threats that cannot be flown at test ranges.
- **Host radar verification test and debug.**
- **Radar performance data capture.** The RES provides realistic wartime scenario simulation capability. Using the RES scenario generation capability, the user creates a file containing any combination of the following:
 - Air Breathing Targets (ABTs)
 - Theater Ballistic Missiles (TBMs)
 - Weather
 - Clutter



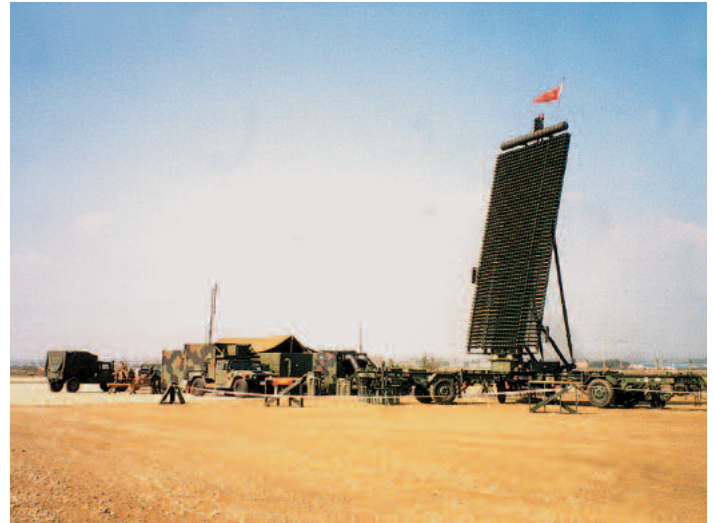
Radar Environmental Simulator

The user enters the desired parameters for the threats and the environment. The scenario file is then stored on the RES workstation and can be played back at any time. The RES reads the file and injects realistic, time synchronized returns to the front end of analog preprocessing.

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Missile System Defense Exerciser



TPS-59

The RES simulation capabilities make it an ideal training platform. Playing back a pre-recorded scenario allows:

- Radar operators to process realistic ABT and TBM threats in a standalone radar configuration.
- Radar operators to participate in training missions as part of a Tactical Air Operations Center (TAOC). AN/TPS-59 (V)3 tracked threats can be sent to the Air Defense Communication Platform (ADCP) and/or the Tactical Air Operations Module (TAOM).

The RES is DIS compliant – allowing participation in sim-over-live exercises. The RES DIS processing front end interprets the messages and injects the information into the radar just as it does a pre-recorded scenario. Exercises that can be participated in include:

- Missile Defense System Exerciser Hardware In The Loop Tests (MDSE HWILT)
- Roving Sands
- Foal Eagle
- Joint Distributed Engineering Plant (JDEP)

The RES operates on a non-interfering basis with tactical radar operators. Radar performance data can be captured for analysis efforts. It has supported real-time distributed simulation in the Korean theater and in the continental United States.

AN/TPS-59 Specifications

Targets:

128 simultaneously up to 500 total per scenario

Radar Cross Section of -60 to +40 dBsm

Accuracy of better than .12 millisines azimuth/0.06 millisines elevation

Clutter:

2 distributed regions per scenario

Land, Rain, or Chaff

Countermeasures:

2 simultaneous per scenario

-20 to +50dB with respect to RMS noise level

Pulsed Asynchronous, Pulsed Synchronous, Continuous Sinusoid, Continuous Noise