

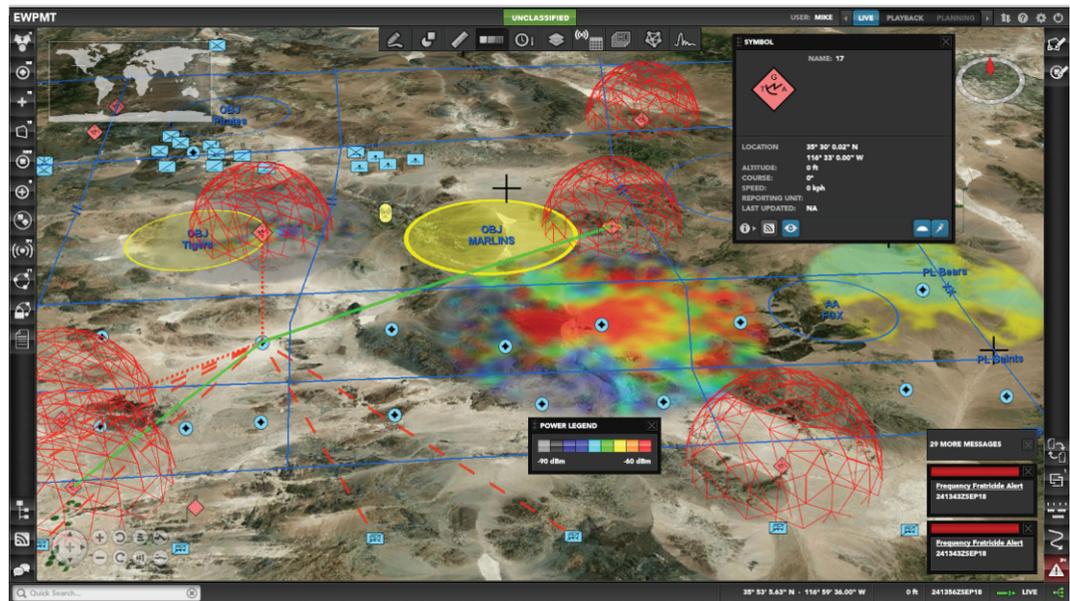
## Electronic Warfare Planning and Management Tool (EWPMT)

### Executive Summary

- In response to a U.S. Army Europe (USAREUR) Operational Needs Statement (ONS), the Program Executive Office Intelligence Electronic Warfare and Sensors (PEO IEW&S) deployed an early version of the Electronic Warfare Planning and Management Tool (EWPMT) to conduct command and control of direct connect, non-networked sensors. The Army deployed this early capability, Raven Claw, in conjunction with Versatile Radio Observation and Direction Finding Modular Adaptive Transmitter (VMAX) and Sabre Fury. Collectively, this capability is referred to as USAREUR ONS Phase I.
- DOT&E observed the employment of USAREUR ONS Phase I capabilities by the 173rd Airborne Brigade and 2nd Brigade/1st Infantry Division (2/1 ID) during Joint Warfighting Assessment (JWA) 18.1 at Hohenfels, Germany. JWA 18.1 provided an opportunity to observe initial employment of USAREUR ONS Phase I systems and collect operator feedback.
- The Army is in the process of restoring its tactical EW capabilities and personnel, and will need to continue to refine doctrine and systems.

### System

- In response to a USAREUR ONS, the Army Rapid Capabilities Office selected EW capabilities for accelerated development and deployment under a proof of concept called "USAREUR ONS Phase I." This collection of capabilities includes Raven Claw, VMAX, and Sabre Fury. Raven Claw is a hardened laptop with an early version of EWPMT software from Capability Drop 1 and other software applications that physically connect to VMAX and Sabre Fury sensors. Dismounted soldiers use VMAX systems to direction find and jam. Sabre Fury is a vehicle-mounted system for direction finding and jamming. EW teams employ Raven Claw to capture sensor feeds, conduct analysis, and pass refined data back to the EW officer at the command post.
- EWPMT provides the EW officer, the electromagnetic spectrum manager, and the cyber electromagnetic activities



Screenshot of EWPMT

- cell, from battalion to theater level, with an EW battle management capability to plan, coordinate, and synchronize EW in support of the commander's tactical plan.
- EWPMT is a software application that will reside in the Command Post Computing Environment as a server-client web-based application and/or a server-client laptop configuration.
- EWPMT will provide the ability to conduct remote control and management of networked EW assets to conduct offensive and defensive electronic attack, EW targeting, and synchronization of EW and spectrum management operations.
- Increment 1 consists of four capability drops with each successive drop building on the previous baseline.
  - Capability Drop 1: EW planning and targeting
  - Capability Drop 2: Spectrum management
  - Capability Drop 3: Disconnected, intermittent, and latent integration of USAREUR ONS Phase I sensors
  - Capability Drop 4: EW effectiveness, remote control and management, and enhanced targeting
- USAREUR ONS Phase II will provide additional sensor capabilities to the field in FY19.

### Mission

- A unit equipped with EWPMT plans, coordinates, and synchronizes EW throughout the operations process. Staff from battalion through theater employ EWPMT to manage EW capabilities and integrate battlefield information and management systems into mission command systems.

# FY18 ARMY PROGRAMS

- The Army intends a brigade equipped with USAREUR ONS Phase I systems to be capable of conducting spectrum situational awareness, EW planning, dismounted and vehicle-based direction finding and electronic attack.

## Major Contractor

Raytheon Space and Airborne Systems – Fort Wayne, Indiana

## Activity

- The PEO IEW&S deployed USAREUR ONS Phase I to three active duty brigades in Europe: 173rd Airborne Brigade, 2/1 ID, and 2nd Armored Cavalry Regiment.
- The 173rd Airborne Brigade and 2/1 ID employed USAREUR ONS Phase I systems during the JWA 18.1 in April through May 2018 at Hohenfels, Germany. Joint Modernization Command conducted JWA at the Joint Multinational Readiness Center. JWA 18.1 was a coalition-level force-on-force training exercise.
- JWA 18.1 provided an opportunity to observe employment and collect operator feedback on USAREUR ONS Phase I systems. Since JWA 18.1 was a training exercise, the Army did not develop an operational test plan for DOT&E approval.

## Assessment

- DOT&E used JWA as an opportunity to gain early insights into initial employment and capabilities of USAREUR ONS Phase I systems and collect operator feedback.
- The EW operators collected spectrum emissions with VMAX and Sabre Fury, and determined lines of bearing with the Raven Claw Laptop. As a proof-of-concept, the EW teams notionally demonstrated the ability to pass data from VMAX and Sabre Fury through Raven Claw to the brigade headquarters. Given the nature of the event, DOT&E could not verify the capability to move data accurately and consistently.
- The Army is in the initial stage of rebuilding EW capabilities lost after the end of the Cold War. During JWA 18.1, the 173rd and 2/1 ID employed their USAREUR ONS Phase I equipment and personnel differently. The 173rd organized the EW equipment and personnel underneath the brigade's Military Intelligence Company. 2/1 ID created a section of EW crews underneath the brigade EW officer in the S-3 section. The current Army publications do not have the fidelity to assist units with refining their tactics, techniques, and procedures and organizing and employing tactical EW.
- The procedures for coordination between intelligence and EW are evolving. As the Army refines doctrine, it will need to

place emphasis on coordination between EW and intelligence to provide EW crews with the essential information required to discern between friendly and enemy signals.

- As fielded at JWA 18.1, the 2/1 ID EW teams deployed in High Mobility Multipurpose Wheeled Vehicles (HMMWVs) with shelters limited to two crew members. Two soldiers are not sufficient to conduct 24-hour operations. EW teams in HMMWVs could not keep up with scout security elements. Soldiers were concerned that the HMMWV with shelter posed a rollover hazard in rough terrain.
- The 173rd EW Crews operating in Mine Resistant Ambush Protected (MRAP) – All Terrain Vehicle (M-ATVs) did not have the appropriate equipment (computers, cables, etc.) installed to network with VMAX systems. The effect was no depiction of dismounted direction finding information displayed in the Raven Claw. While M-ATVs provided improved mobility and protection, they do not have the deployability necessary for an airborne unit.
- Due to the lack of detailed terrain elevation map data, EW teams were not able to provide accurate planning models to the commander.
- Soldiers commented that the startup process for Raven Claw was too long and required multiple passwords.
- To date, the Army has not conducted cybersecurity testing on USAREUR ONS Phase I systems.

## Recommendations

The Army should:

1. Conduct a Cooperative Vulnerability and Penetration Assessment and Adversarial Assessment as soon as practicable.
2. Consider integrating USAREUR ONS Phase I capabilities in vehicles appropriate for the brigade's mission.
3. Continue to refine doctrine to support tactical EW employment.