

## Hazards of Electromagnetic Radiation to Ordnance – Tool Update

In today's global environment, our military forces must be able to operate in multi-theater conflicts and atypical environments that can include hazardous electromagnetic environments (EMEs). One area critical to safe Joint operations is the ability to properly assess and reduce the risks associated with introducing unknown ordnance into an operational RF environment. The Defense Information Systems Agency's (DISA's) Defense Spectrum Organization (DSO) has developed the Joint Spectrum Center (JSC) Ordnance Electromagnetic Environment Effects (E3) Risk Assessment Database (JOERAD) to automate these risk assessments in real time. JOERAD is a tool that can be used to address potential Hazards of Electromagnetic Radiation to Ordnance (HERO) restrictions for Joint operations.

JOERAD aids the warfighter in analyzing various ordnance and RF parameters to determine what operational restriction(s) to observe while conducting ordnance evolutions inclusive of the Stockpile-to-Safe-Separation Sequence (S4) phases (transportation/storage, assembly/disassembly, staging, handling/loading, platform loaded, and immediate post-launch (missile in flight)). These restrictions can include keeping a safe separation distance (SSD) between ordnance and source transmitters or reducing transmitter power to safe levels.

The main function of JOERAD is to create a total electromagnetic conflict resolution package for commanders, planners, and warfighters to use to make safe, informed decisions. JOERAD should be used each time new ordnance items are introduced to the operating area that are not included in the current operational RF safety guidance or procedures, or when operational requirements dictate immediate changes to any existing HERO guidance. JOERAD compares emitter characteristics (power, frequency, and antenna gain) to an ordnance item's susceptibility levels, calculates their potential interactions, and then develops solutions that may allow the use of otherwise restricted ordnance items or emitters. JOERAD software can be used by operational commanders and planners to provide SSDs and safe operating emitter power levels for a particular exercise or operation.

The JOERAD software can be used by agencies, military units, or individuals involved in performing HERO safety analyses or gathering HERO data. Typical users would include Ordnance Handling Officers (OHO), Operations Officers (OPSO), Munitions Accountable Systems Officers (MASO), embarked battle group staff personnel and other service unit commanders involved with the planning of Joint operations. For any combined force scenario, JOERAD allows ordnance handling personnel to determine HERO restrictions, safe separation distances, and operational RF power levels for any mission. The assessment results can be saved and updated as needed providing the unit with a documented way to monitor SSDs and any ordnance handling or RF power restrictions in a joint operation.

The current version of JOERAD (Version 9.5) is available to the Warfighter. This version consists of four modules: the Ordnance Module, the Equipment Characteristics (EC) Module, the Operational Unit/Platform Module, and the Impact Analysis Module. JOERAD is currently packaged on a classified compact disk (CD), requiring installation on a classified workstation, and it has no network connectivity requirement, thus, all calculations and output are saved to a local hard drive on that workstation. It is also available for download via SIPRNet with DISA approval. Users must submit a DSO Access Request Form (DARF) for access. The standalone software is currently being phased out due to the lengthy authority to operate (ATO) certification approval processes which permit local software installation.

JOERAD is transitioning to a web-based system as part of DSO's drive to evolve into a provider of web-based tools and services. JOERAD functionality and data will be integrated into the Joint Spectrum Data Repository (JSDR) online tool set and will provide enhanced HERO safety data via an approved Web browser. The JSDR is the primary DoD source for spectrum-related data to support spectrum management and E3 efforts. As an online tool, JOERAD will provide a faster way to analyze ordnance data as well as the ability to conduct HERO impact assessments without the restrictions of local workstation-installed software. By integrating JOERAD into the JSDR, all DoD customers will have easier access to these online tools used to plan and execute safe ordnance joint operations.

For more information on JOERAD, go to the DSO/Joint Spectrum Center E3 Engineering Support (J5) Joint Service Ordnance E3 Program webpage on ACC DAU to request the software and to fill out the DARF go to: <https://acc.dau.mil/joerad> or contact Mr. Matthew Grenis, Joint Spectrum Center Ordnance E3 Program Manager (matthew.z.grenis.civ@mail.mil).