



Electronic Warfare Training in the Pacific Northwest





Mission of the U.S. Navy

To maintain, train and equip combat-ready naval forces capable of winning wars, deterring aggression and maintaining freedom of the seas.

Navy Mission in the Pacific Northwest

To prepare Sailors for deployment and homeland defense by providing realistic training environments.

The U.S. Navy conducts training activities in the Pacific Northwest and around the world to prepare Sailors to respond to a wide range of situations, from large-scale conflict to maritime security to humanitarian assistance and disaster relief. The Pacific Northwest is home to Navy units, ships, submarines and aircraft that have to meet certain training requirements, including training in a specialized area called “electronic warfare.”

Electronic warfare involves the use of electromagnetic energy. Militaries around the world rely heavily upon electromagnetic energy to operate their communication, navigation or defense-related systems. With rapid advancements in communication systems and technology, electronic warfare has become an increasingly important mission area for the U.S. military.

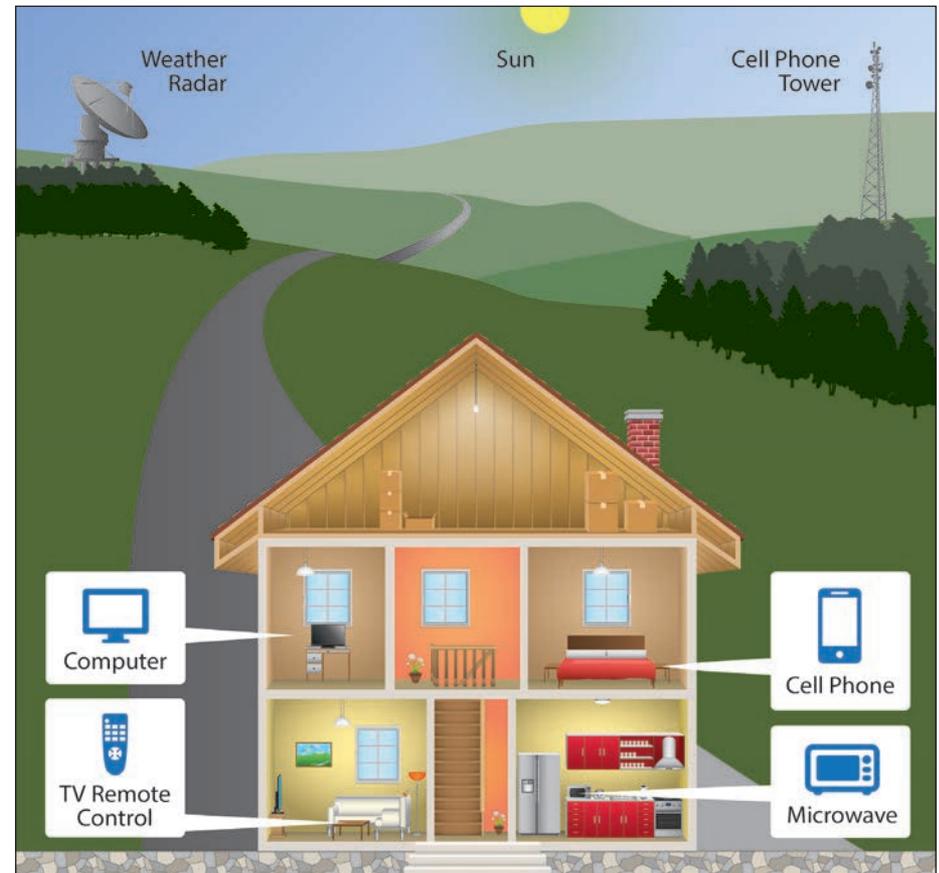
The nature of electronic warfare and the science behind it are complex and can create confusion. The Navy strives to keep the public informed and has taken steps to provide accurate information, answer questions and discuss issues with concerned citizens.

This brochure contains information about the science of electronic warfare; the nature of the training and why it needs to be done in the Pacific Northwest; and the health and safety of people, animals and the environment. For additional information, please visit: <http://go.usa.gov/3B4Mk>

Electromagnetic Energy

Electromagnetic energy is energy that is reflected or emitted from objects in the form of electrical and magnetic waves. The electromagnetic spectrum represents the range of all types of electromagnetic energy, from very long, low-energy radio and microwaves, to visible light, to very short, high-energy X-rays.

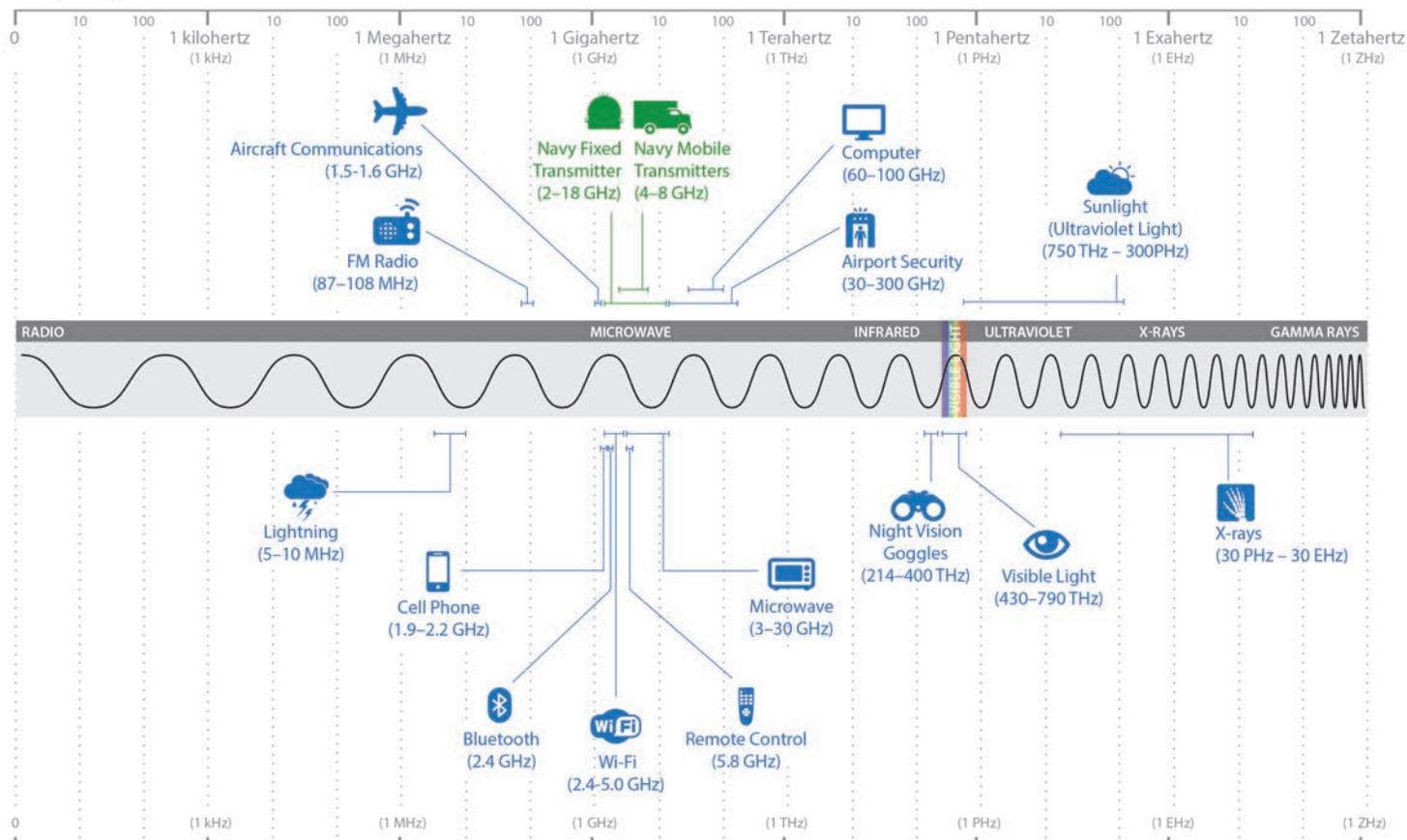
People regularly experience various forms of electromagnetic energy that exist all around us every day when we tune in to our favorite radio station; use a remote control, cell phone or other electronic appliance; stand in the sunlight; go through security screening at airports; or undergo X-rays for medical purposes. We benefit from this energy through improved communication, convenience, safety and health. In general, this energy is not harmful, unless overexposure occurs.



The Electromagnetic Spectrum

Electromagnetic energy travels in waves and spans a broad spectrum from very long radio waves to very short gamma rays. The human eye can only detect a small portion of this spectrum, visible light. The Navy's transmitters use energy that falls between radio and microwave frequencies, similar to common civilian communication and radar systems.

Frequency



Turn to page 14 for information on how potential health risks from electromagnetic energy are determined.

Electronic Warfare Training

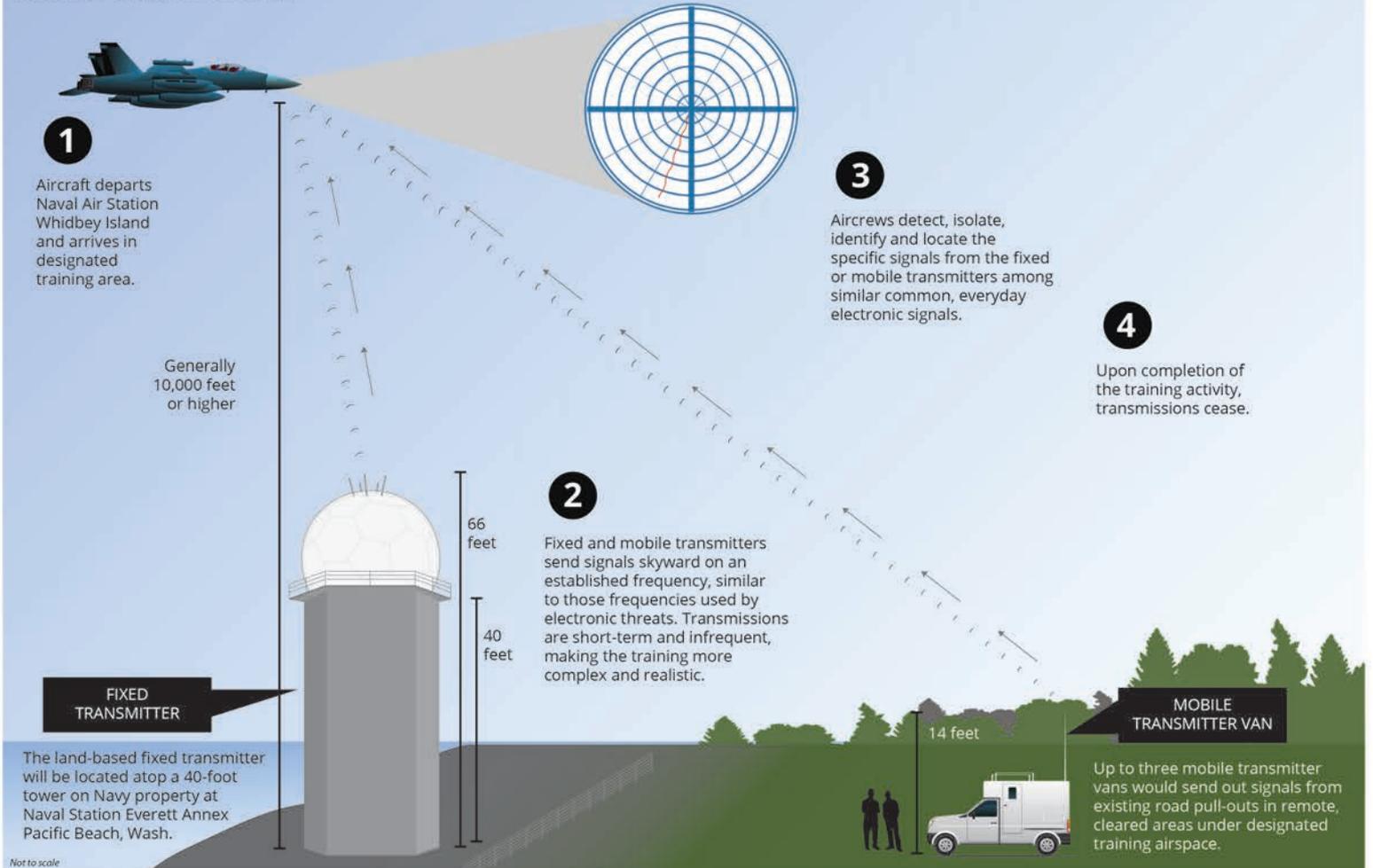
Electronic warfare involves the use of electromagnetic energy to control or impede an adversary's ability to use its electronic systems, thereby creating vulnerabilities in the enemy's operations. It also aids in ensuring unimpeded access to the electromagnetic spectrum for U.S. military operations.

In the Pacific Northwest, the Navy has trained aircrews in electronic warfare for nearly 40 years. Aircrews practice detecting, identifying and locating the kind of electronic signals they can expect to encounter when deployed into hostile territory. This training is extremely challenging because pilots must be able to detect, identify and locate, while in flight, specific Navy signals among all the other existing electromagnetic signals present in the area. Training under realistic conditions allows aircrews to gain required qualifications before deployment and to perfect the necessary skills that can save the lives of service members in combat.

The Navy is in the process of enhancing electronic warfare training in the Pacific Northwest by adding equipment, including a land-based fixed (stationary) transmitter and up to three mobile transmitter vans, to meet training requirements and to provide a more realistic training environment.

Electronic Warfare Training

The Navy has trained in electronic warfare for nearly 40 years in the Pacific Northwest with no adverse effects on people, animals or the environment. During training, aircrews detect, identify and locate signals from fixed (stationary) and mobile transmitters, which simulate electronic threats.





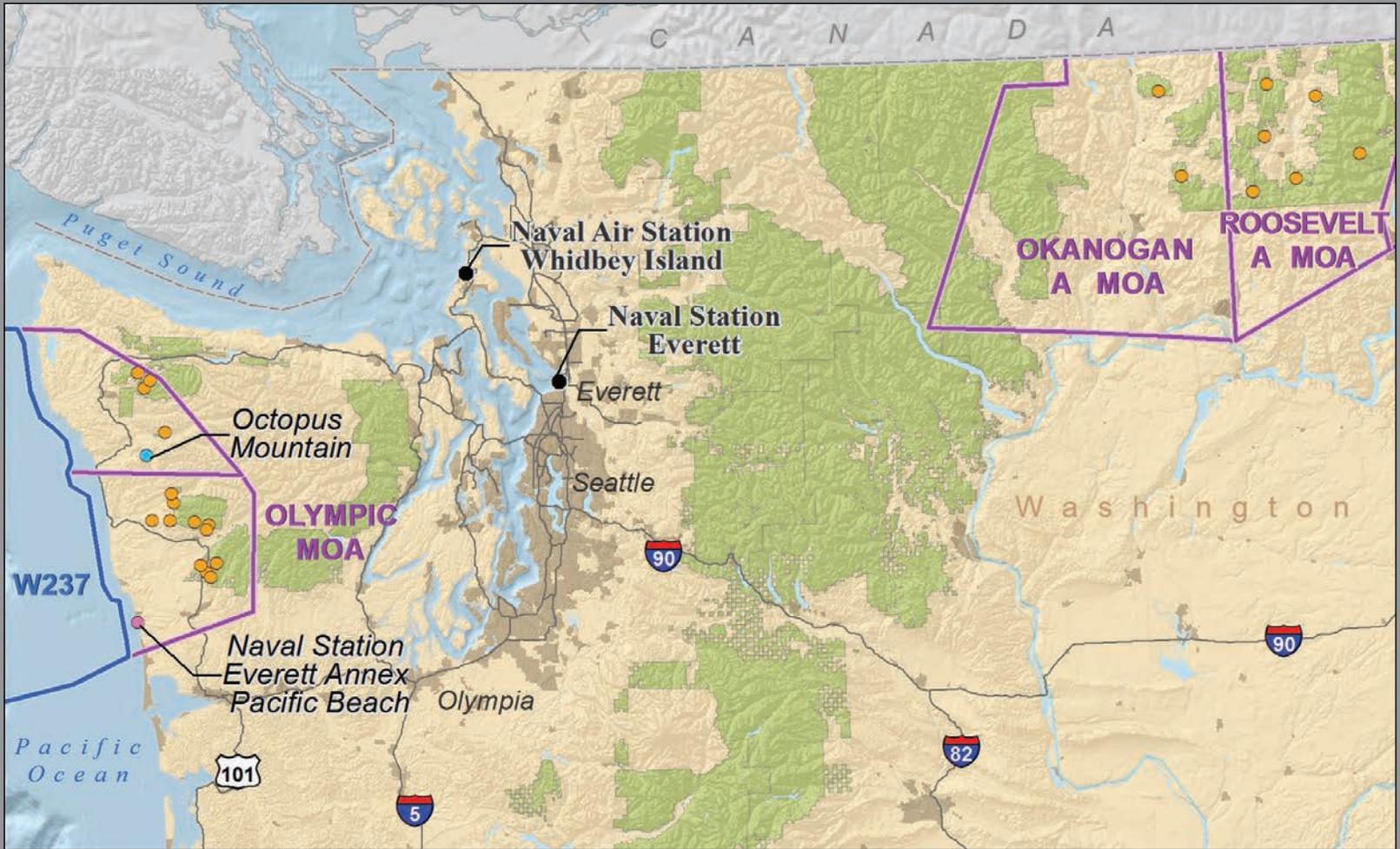
Electronic Warfare Training in the Pacific Northwest

Naval Air Station (NAS) Whidbey Island has supported the electronic warfare community for nearly 40 years. Due to insufficient ground-based transmitters and instrumentation, electronic warfare units currently homebased at NAS Whidbey Island must commute more than 400 miles to Mountain Home Air Force Base in Idaho, which takes 50-60 minutes each way, to complete required training.

To address deficiencies in instrumentation and systems, the Navy is proposing to install a land-based fixed (stationary) transmitter at Naval Station Everett Annex Pacific Beach, Wash., and to operate up to three mobile transmitter vans, similar to television news satellite vans, in remote, previously cleared areas underneath existing military airspace.



Training in existing military airspace near Naval Air Station Whidbey Island would save the U.S. government and taxpayers about \$5 million each year. The Navy's proposed enhancements to its equipment and systems would allow for more efficient use of aircraft when training; shorter transit times; and reduced fuel use, emissions, and wear and tear on aircraft.



Legend

- Proposed Mobile Transmitter Site
- Proposed Fixed Transmitter Site
- Proposed Communication Transmitter

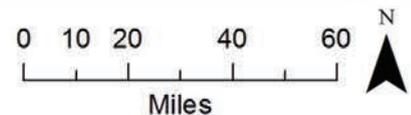
Special Use Airspace

 Warning Area

— Road
 Water

National Forest
 Populated Area

 Military Operations Area (MOA)



Projection: WGS84, UTM 10N
 Sources: ESRI, NGA, ManTech
 Map Document: EWR03179v01

Health and Safety

The health and safety of the public, military personnel and the environment are of utmost importance to the Navy, and there would be no harm from the transmission of signals during electronic warfare training. This type of training has been conducted across the nation for decades, and there have been no adverse effects on people, animals or the environment.

The fixed transmitter would be located atop a 40-foot tower at Naval Station Everett Annex Pacific Beach, Wash., a Navy-owned and operated site. The surrounding area would be fenced for security purposes. Mobile transmitters would be at least 14 feet above the ground, and would send out narrowly-focused electronic signals pointed skyward toward the aircraft, thus presenting no threat to people or animals on the ground. Birds flying through the signal would not be affected because they would not be in the path for an extended period of time.

Fixed and Mobile Transmitters

Signals sent from the fixed and mobile transmitters would fall between radio and microwave frequencies, similar to common civilian communication systems such as Wi-Fi and Bluetooth devices. Using signals that are similar in frequency and strength to the civilian signals in use every day makes training more challenging.

The power output levels of the transmitters are comparable to the levels of a television news satellite van or navigational radar found on recreational boats. Power output from the fixed transmitter would be about 90 to 100 watts. The output of the mobile transmitters can vary from 100 to 300 watts, but is expected to be about 100 watts. For comparison, people commonly use 60 to 100-watt light bulbs at home, and many commercial radio stations in the Puget Sound area have antenna power output levels of 100,000 watts or more.



Mobile transmitter vans



Fixed transmitter

Determining Health Risks

In determining potential health risks from electromagnetic energy, certain factors must be considered, including whether or not there is exposure to electromagnetic energy; the route of exposure (how the energy entered the body); and the magnitude (how much), frequency (how often) and duration (how long) of exposure.

In the case of the Navy's electronic warfare training, there is no exposure to electromagnetic energy and therefore there is no health risk. The public is not exposed to electromagnetic energy from the transmitters because signals are pointed skyward toward the aircraft, and the transmitters are not at ground level.

Civilian operators of similar equipment, such as television news satellite vans, are not required to implement extraordinary safety precautions when operating around people or animals. The Navy, however, has taken extra measures to ensure there is no exposure to people or animals during equipment operation.

The Navy has taken extraordinary precautions to further ensure people and animals are not exposed to electromagnetic signals during operation, including:

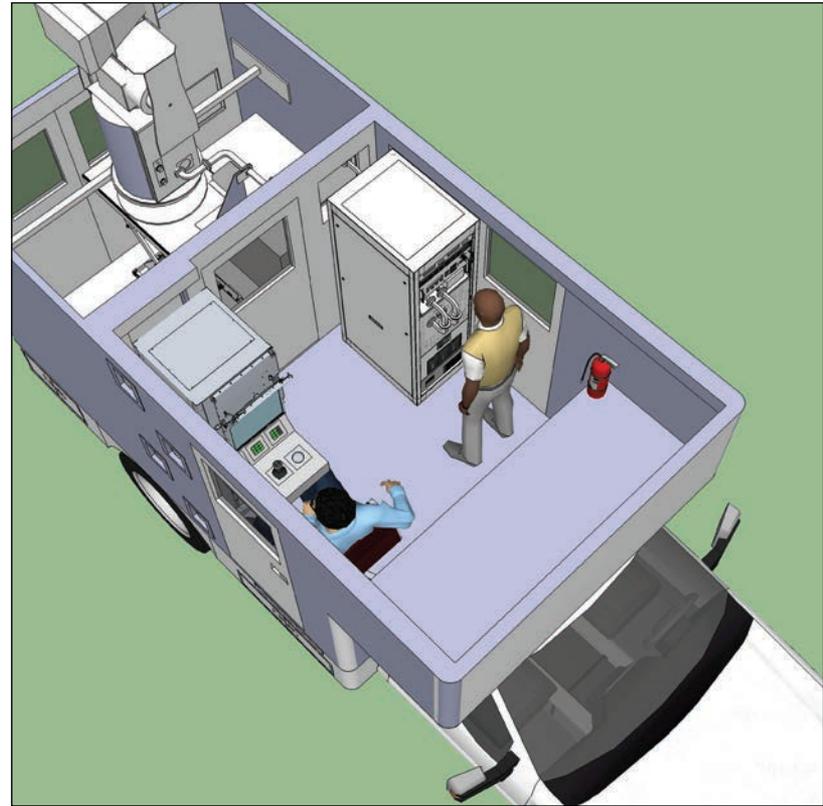
- Positioning mobile transmitter vans in remote, previously cleared areas, which enables crews to have a clear line of sight to look for people or animals
- Establishing a 100-foot safety zone around the vans
- Requiring crews to shut down transmissions if people or animals are within the safety zone when operating



There is no danger to people, animals or the environment from electronic warfare training.



Mobile transmitter vans are similar to television news satellite vans in that they broadcast a signal skyward, but rather than broadcasting to a satellite, signals are aimed at the aircraft.



Navy personnel in the mobile transmitter vans do not need to wear protective gear because they are underneath the signal transmissions, which would be at least 14 feet above the ground.

