

# Pacific Northwest Growler Training Essential for 21st Century Battles

## Navy Analyzes Environmental Impacts, Shares Data

**THE NAVY'S PREMIER** electronic attack aircraft is the EA-18G Growler, an increasingly essential piece of our country's defense systems. For the past several years, pilot training for the Growler has been conducted in the Pacific Northwest according to the Navy's strict environmental compliance standards.

The Department of Defense identified a need for additional Growler aircraft to enhance the nation's electronic warfare capability. To accommodate training requirements and

the additional aircraft, the Navy is proposing to continue and increase Growler operations at Naval Air Station (NAS) Whidbey Island, Washington and to study the distribution of operations between the base's two airfields. The Navy has proposed to home base up to 36 additional Growler aircraft at NAS Whidbey Island—the only home base in the United States for Navy and Air Force tactical electronic attack squadrons.

The Navy is also analyzing the potential impacts on the environment and

the community from the proposal, and is studying the distribution of operations between the base's two airfields. The analysis and findings will be documented in an Environmental Impact Statement (EIS), which is anticipated to be completed and made available for public review and comment in the spring of 2016.

### About Electronic Warfare

Militaries around the world rely heavily upon electromagnetic energy to operate their communication, navi-



An EA-18G Growler flies over NAS Whidbey Island, Washington.

gation or defense-related systems. Without electromagnetic capability, these systems become inoperable.

Electronic warfare involves the use of electromagnetic energy to control or impede an adversary's access to and ability to use its systems, thereby creating vulnerabilities in the enemy's operations. It also aids in preventing enemy interference with the Navy's own electromagnetic spectrum during military operations.

Electronic warfare has unquestionably saved the lives of U.S. service members. For example, in 2011's Operation Odyssey Dawn, electronic measures were used to locate and disable Libyan radar and anti-aircraft sites, essentially eliminating the threat of Libya's air and missile defense systems and allowing North Atlantic Treaty Organization forces to destroy equipment and communication centers. Today, Navy aircrews are able to remotely disable enemy land mines and improvised explosive devices using electronic measures.

The Growler aircraft plays a critical role in the electronic warfare mission and is currently flying missions against Islamic State of Iraq and Syria (ISIS) targets.

### Training for Electronic Warfare

In combat, aviators are required to make split-second, life-or-death decisions while in flight, which is why training is so critical. Training in electronic warfare allows Navy pilots to practice the skills needed to identify signals and deny an adversary access to and use of the electromagnetic spectrum in real-life situations. However, training is extremely challenging for aircrews because they must learn to detect, identify and locate a specific signal among all the other existing electromagnetic signals present in the area. Electronic warfare is so complex that Captain Scott Farr, deputy commodore of the Electronic Attack Wing at NAS Whidbey Island, said "Electronic warfare training is not like looking for a needle in a haystack. It's more like looking for a needle in a pile of needles."

Because the nature of electronic warfare training and the science behind it is so complex, the introduction of new or additional aircraft such as the EA-18G Growler to an air station can create confusion and raise questions on the need for the aircraft. Some misinformation has circulated about the potential impacts from electronic warfare training and the Growler on human health and the environment. The Navy has taken steps to correct the misin-

formation, provide accurate information, answer questions and discuss issues with concerned citizens.

### About the Growler

The mission of the Navy's electronic attack (EA) aircraft is to restrict, eliminate and counteract enemy air defenses and communications systems. These aircraft are indispensable for American and coalition forces when engaged in combat operations overseas, significantly contributing to mission success and saving service members' lives.

The EA-18G Growler is the most modern, state-of-the-art tactical aircraft in the U.S. Department of Defense inventory for conducting electronic warfare missions. The Growler replaced the EA-6B Prowler as the Navy's electronic attack aerial aircraft, and began operations at NAS Whidbey Island in 2008. The Growler has an advanced electronic system that allows it to identify targets and

### The Basics About Naval Air Station Whidbey Island

**NAS WHIDBEY ISLAND** in Washington State has been in operation since the 1940s and is a key Navy asset and an integral part of the region. It is home to the Navy's electronic warfare training community and to all Navy electronic attack squadrons in the United States.

NAS Whidbey Island and the Pacific Northwest are critical locations for the Growler aircraft because as home to the Navy's electronic warfare community, they have the associated training facilities and substantial infrastructure established during four decades of operation.

The area is ideal for conducting naval aviation training due to relatively uncongested airspace, varied and mountainous terrain, and conducive weather patterns, including a temperate climate. Additionally, the proximity to coastal regions and existing military training routes and special use airspace makes for more efficient training, shorter transit times, and reduced fuel costs, emissions and wear and tear on aircraft.

The Navy manages two airfields on NAS Whidbey Island—Ault Field in Oak Harbor and Outlying Landing Field (OLF) Coupeville. Both are often used simultaneously to safely and effectively handle air traffic. OLF Coupeville's sole mission is to provide the most realistic training environment for aircraft carrier landing training.

OLF Coupeville is the most realistic and efficient training environment in which to master the technically demanding and dangerous task of landing on a carrier before an aviator actually goes to an aircraft carrier at sea.

—Vice Admiral Mike Shoemaker

protect itself and other aircraft from those targets. It also has advanced communication capabilities that allow it to interact more effectively with personnel on the ground and in the air, compared to the older Prowler aircraft.

### Flying a Growler

Landing on an aircraft carrier is perhaps the most difficult task in military aviation, particularly landing at night. It is a highly complex and perishable skill, and requires intense periods of training before pilots deploy. A Navy training activity called Field Carrier Landing Practice (FCLP) teaches proper carrier-landing techniques on land before conducting similar activities on an aircraft carrier. FCLP is critical for

Navy pilots to learn to safely conduct landing patterns in as realistic conditions as possible.

Although the Navy uses flight simulation extensively in training, there is no substitute for a Navy pilot practicing on an airfield before landing on an aircraft carrier. Over the years, the Navy believes it has achieved the right mix of simulated and live training to prepare pilots for the demanding task of landing on an aircraft carrier.

According to Captain Benjamin Hewlett, commander of Carrier Air Wing One based at NAS Oceana, the Growler is essential to mission success, and training is critical. “Field Carrier Landing Practice training provides Growler pilots with the necessary training that they need to

safely land on a carrier after flying demanding missions, sometimes multiple times a day,” he said.

Currently at NAS Whidbey Island, there are nine carrier-based Growler squadrons, four land-based or expeditionary Growler squadrons, and one training squadron for new Growler pilots to become proficient in the aircraft prior to assignment in a carrier or expeditionary squadron. Currently, there are five Growlers in each operational squadron. All of the squadrons, with the exception of the expeditionary squadrons, conduct FCLP training at NAS Whidbey Island.

### Outlying Landing Field Coupeville

The Navy manages two airfields on NAS Whidbey Island—Ault Field in Oak Harbor and OLF Coupeville.



Ault Field in Oak Harbor.



OLF Coupeville.

OLF Coupeville is a critical national training asset and provides the most realistic environment for FCLP training in the Pacific Northwest. The field was built in 1943 and has been used almost exclusively for FCLP training since 1967.

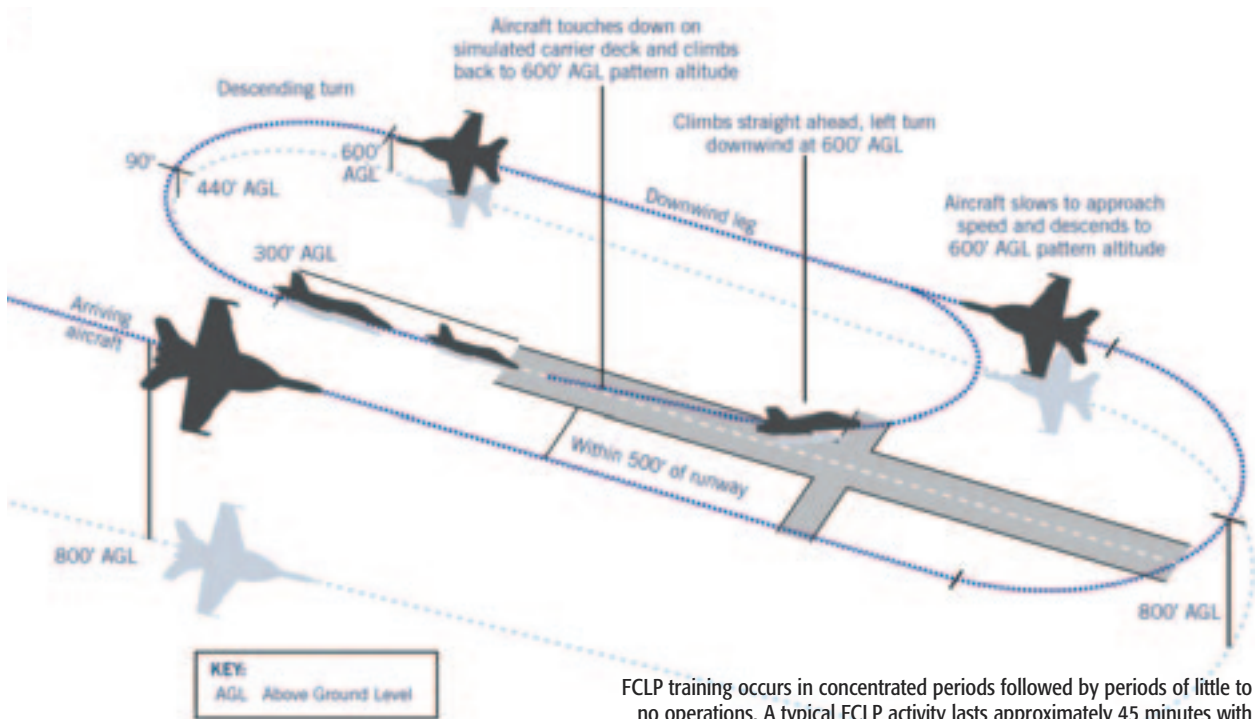
According to Vice Admiral Mike Shoemaker, Commander, Naval Air Force, U.S. Pacific Fleet, “OLF Coupeville is the most realistic and efficient training environment in which to master the

technically demanding and dangerous task of landing on a carrier before an aviator actually goes to an aircraft carrier at sea.” He adds that “OLF Coupeville provides the most efficient environment we can replicate on land to simulate the demanding and extremely dangerous conditions at sea.”

OLF Coupeville is an ideal training location due to its proximity to NAS Whidbey Island, allowing for more efficient training, shorter transit times,

reduced fuel costs, emissions and wear and tear on aircraft. As it is in a low-density population zone, there is also little impact on the surrounding community. The low ambient lighting conditions also more closely replicate nighttime conditions onboard an aircraft carrier.

In contrast, Ault Field is a busy, multi-mission airfield. Conducting FCLP training at Ault Field increases overall activity around a more populated



FCLP training occurs in concentrated periods followed by periods of little to no operations. A typical FCLP activity lasts approximately 45 minutes with three to five aircraft flying in an oval-pattern around the runway.

area, interferes with other base operations, and causes delays or restrictions on other training activities. Conducting FCLP activities at OLF Coupeville reduces congestion and allows the Navy to conclude daily operations in less time, reducing overall community impacts.

### Assessing Potential Environmental Impacts

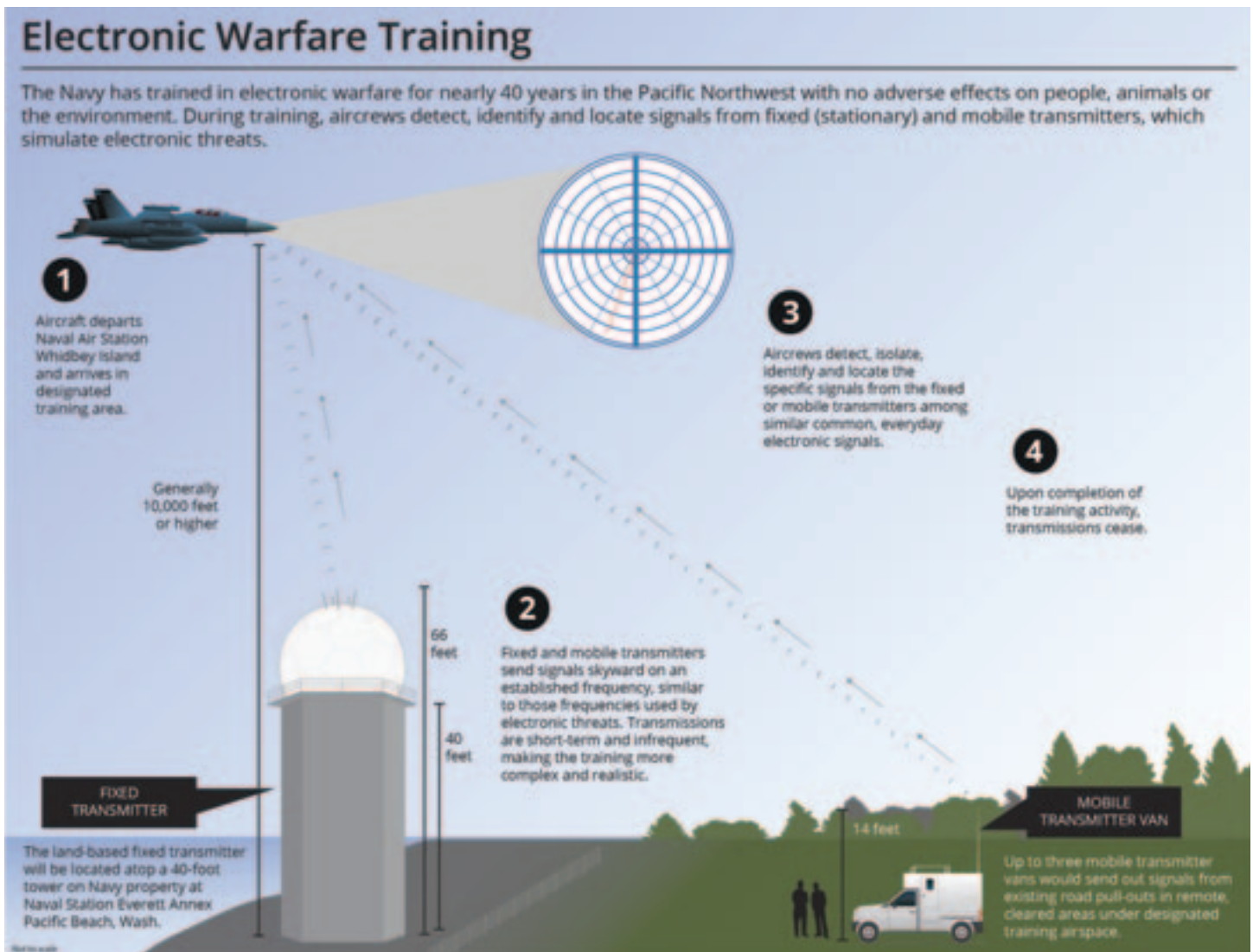
The Navy prepared an Environmental Assessment in 2005 to determine whether the transition from Prowlers to Growlers would have significant

environmental effects requiring the preparation of an EIS. After extensive review, the Navy determined that there would be no significant effects and that the preparation of an EIS was therefore not required. In 2013 however, Congress authorized more Growlers, so the Navy began the process to start an EIS which is slated to be finished in 2016.

The 2005 Environmental Assessment analyzed 57 Growler aircraft replacing 72 Prowler aircraft. Based on interim directives by the Department of Defense, the 72 legacy

Prowlers were ultimately replaced with 82 Growlers, an overall increase of 10 aircraft. Due to this increase, a second Environmental Assessment was prepared in 2012.

The Northwest Training Range Complex prepared its own Environmental Impact Statement/Overseas Environmental Impact Statement analyzing the initial concept to improve ongoing electronic warfare training, along with other Navy training activities. This was completed with community input in 2010.



An EA-18G Growler participating in a training exercise overseas.

*MC2 Shannon Heavin*



Subsequently, more information and technology became available regarding the transmitters, and a design concept for siting the fixed and mobile transmitters was proposed, after which the Navy prepared an Environmental Assessment discussing all the potential impacts of the transmitters and the new Growler aircraft. (Note: Fixed and mobile transmitters on the ground send signals skyward for the aircraft to detect.) The assessment was completed and a Finding of No Significant Impact was issued on August 28, 2014.

### How Loud is the Growler?

Though the sound may seem different, noise levels for the Growler and its predecessor, the Prowler are comparable in most flight profiles. The noise study conducted for the Environmental Assessment does acknowledge that the Growler is 1 decibel (dB) Sound Exposure Level (SEL) louder during arrival than the Prowler but 2 to 8 dB SEL quieter in other flight profiles. Generally, a change of less than 3 dB is not perceptible. (Noise exposure varies depending on where you are in relation to the flight path.)

While the Growler is not louder, it has a slightly higher potential to cause noise-induced vibrations. The Growler is recognizable by the low frequency “rumble” of its jet engines, whereas the Prowler’s engines are associated with a higher frequency sound.

### About Noise Assessment & Modeling

Noise modeling is the most accurate and comprehensive method for estimating aircraft noise and evaluating

potential noise mitigations, including working with the community on land-use compatibility. As part of the EA-18G Growler Airfield Operations EIS, a thorough noise assessment of current and proposed operations will be conducted for Ault Field and OLF Coupeville.

The U.S. Environmental Protection Agency, Federal Aviation Administration and Department of Defense measure aircraft operational noise levels in decibels using two common

### Determining Aircraft Noise Profiles

**THE EA-18G GROWLER’S** noise profile was developed based on the existing F/A-18F Super Hornet’s profile because of the similarities between the two aircraft. The Growler and the Super Hornet share the same airframe, same engine, and have approximately the same in-flight weight. The difference between the two aircraft is the mission-related electronics inside each aircraft.

In 1997, acoustic data for the F/A-18E/F Super Hornet was collected at NAS Patuxent River, Maryland using a microphone array at the airfield. These acoustic data were validated with a second series of measurements conducted at NAS Lemoore in November 2000. The acoustic data were then incorporated into the Department of Defense database for future use in noise modeling. To support the upcoming Growler acoustic analysis, operational flight profiles were developed based on numerous pilot interviews regarding flight parameters (e.g., engine power settings, aircraft speed and altitudes) for different flight procedures (e.g., normal flight, departures, arrivals, and field carrier landing practice). These profiles were validated with data from F/A-18E/F aircrews at NAS Lemoore.



MC3 Siobhana R. McEwen



MC2 Scott Fenaroli



MC2 John Philip Wagner, Jr.



CLOCKWISE FROM TOP LEFT: Conducting realistic electronic warfare training with the EA-18G Growler is vital to save U.S. service member lives in combat; An EA-18G Growler launches from the flight deck of an aircraft carrier; An EA-18G Growler, the Navy's electronic attack aircraft, flies over the Pacific Ocean; An EA-18G Growler on an aircraft carrier; Simulators are critical in electronic warfare training and are used extensively, but they cannot replace the feel and physiological conditions experienced through live training; Aircrews from NAS Whidbey Island practice detecting, identifying and locating the kind of electronic signals they can expect to encounter when deployed into hostile territory.



metrics—the Day-Night Average Sound Level (DNL) and the SEL.

The DNL represents the average sound energy of events over a 24-hour period, with a penalty added for night operations conducted between the hours of 10:00 p.m. and 7:00 a.m. The DNL takes into account all of the factors that influence our perception of noise, including loudness, number and duration of events, and time of day.

The SEL represents the total noise energy of a single event. This can be represented by a single flyover. This metric takes into account the loudness of the flyover, as well as the time of the flyover. SEL is useful in determining sleep disturbance and speech interference.

Noise is modeled using a computer program called NOISEMAP, which factors in the number and type of flight operations planned over the course of a year. It should be noted that noise modeling data are based on sound measurements of actual aircraft, both in flight and on the ground. The NOISEMAP program uses computerized simulation of aircraft activity at an installation and reflects airfield-specific data, such as the type of aircraft, number of flights, flight tracks, altitude, power settings, speed of the aircraft and environmental factors, such as temperature, humidity and terrain. Engine maintenance testing and surface types for touch down are also included. The final results are presented on land use maps in the form of noise contours.

The map below depicts DNL for OLF Coupeville and Ault Field. These contours are not expected to change with the phase-in of Growler aircraft.

Supplemental tools and metrics are also used to provide another measure of noise exposure by evaluating community annoyance, potential hearing loss, sleep disturbance, and interference with indoor speech or classroom learning. The Navy's noise assessment as part of the EA-18G Growler Airfield Operations EIS will

also include an analysis of non-auditory health effects based on peer-reviewed literature studies.

It is important to keep in mind that many of the studies that have been conducted on this subject have focused on very busy commercial airports, conducting 300,000 annual operations or more annually, unlike a Navy OLF that conducts far fewer operations, with busy periods followed by times with little or no activity.





It is also important to remember that the Navy has been flying the Super Hornet aircraft—an aircraft with the same airframe and the same engines (and therefore, the same noise impacts) as the Growler—at air stations throughout the nation for well over a decade. At many of these installations—NAS Oceana in Virginia Beach, Virginia, is one example—the population density in the area is far

greater than that of either Oak Harbor or Coupeville.

The Navy is not aware of any documented impacts to the health of individuals in the Virginia Beach community resulting from aircraft noise, even though this installation conducts far more operations annually than those conducted at NAS Whidbey Island. The OLF serving

aircraft based at NAS Oceana, Naval Auxiliary Landing Field Fentress, is located in Chesapeake, Virginia. Nearly 100,000 FCLP operations are conducted annually at Fentress.

### More About Training

Electronic warfare training has been an instrumental part of military training for decades with no

## Public Health & Safety

**ONE OF THE** concerns voiced by the public in this instance has to do with exposure to electromagnetic energy. 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 fixed or mobile transmitters because the signal is pointed skyward as a narrowly focused beam toward the aircraft, and the transmitters are at least 14 feet off 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. The transmitters would also be located in remote, cleared areas, and there would be a 100-foot safety zone around the mobile transmitters. If a person or animal enters this safety zone, transmission would cease.

The fixed transmitter would be located atop a 40-foot tower at Naval Station Everett Annex Pacific Beach, Washington, a Navy-owned and operated site. The surrounding area would be fenced for security purposes.

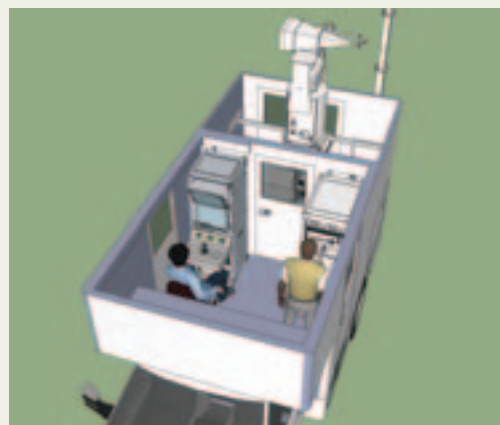
These precautions ensure there is virtually no chance that anyone would come near the transmitters while in operation without the operators knowing about it.

The power output levels of the Navy's fixed and mobile transmitters are comparable to the levels of a television news satellite van or navigational radar found on many recreational boats. For example, the 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.

Low power output from the fixed and mobile transmitters makes training more realistic and challenging for aircrews because they need to detect, identify and locate these specific signals among all the other existing electronic signals produced by everyday devices. This training is critical because it enables Navy aircrews to learn and practice the steps needed to safely and successfully counter enemy defenses before going into harm's way.



Mobile transmitter vans are similar to television news satellite trucks 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 start at least 14 feet above the ground.

adverse effects on people or the environment.

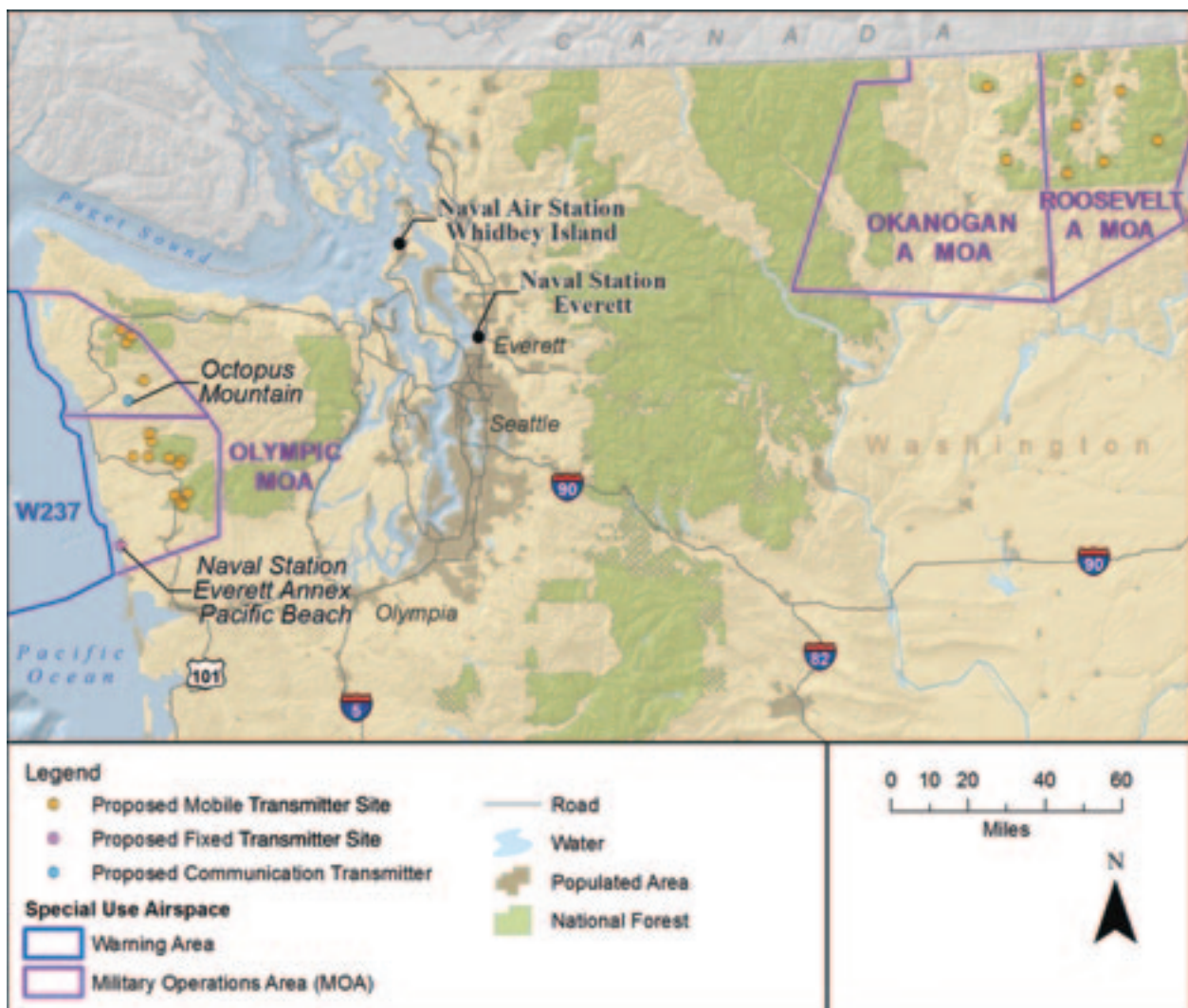
The training is conducted with the aircraft at 10,000 feet above sea level or higher and does not involve the use of any weapons. Fixed and mobile transmitters on the ground send signals skyward for the aircraft to detect. The aircraft does not send signals to the transmitters. The transmitters' frequencies, which are similar to common civilian communication and radar systems, do not harm people, animals or the environment.

When training, transmitters on ships or on land send electromagnetic signals skyward using frequencies that are similar to those used for some satellite communications, Wi-Fi and Bluetooth devices, and weather radar systems. The frequencies used by the Navy are approved and licensed for Navy training, and are similar to other frequencies used for commercial or recreational purposes. Mobile transmitters (affixed to vans) present real-life testing challenges and locations of these transmitters can be altered with each training activity. "Fixed

and mobile transmitters would challenge aviators and their systems with a more complex threat for training scenarios," states Captain Farr.

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 increase training efficiencies, improvements and additions to the Navy's systems are proposed, to



include land-based fixed and mobile transmitters under existing military airspace above the Olympic Peninsula and north-central Washington State. The proposal includes a land-based fixed (stationary) transmitter at Naval Station Everett Annex Pacific Beach, Washington, and the operation of up to three mobile transmitter vans, similar to television news satellite trucks, on fire access roads in remote, previously cleared areas underneath existing military airspace. The Navy is pursuing appropriate property access to lands managed by the U.S. Forest Service and other landowners to use the areas proposed for driving the vans.

The proposed enhancements would allow aircrews to train more effectively closer to home, reducing fuel costs, air emissions and flight-hour

expenses. Conducting this training within an upgraded Pacific Northwest Electronic Warfare Range would save the government and taxpayers about five million dollars each year.

### Flight Activity

The Navy has been training in Military Operations Areas in the Pacific Northwest for decades. While flight requirements and actual flight training activities fluctuate yearly, the average number of flights in the Military Operations Area above the Olympic Peninsula has averaged about 1,250 annually for the past two years. Improving existing electronic warfare training by adding land-based mobile and fixed transmitters would not significantly change the amount of training runs currently conducted.

The Navy has estimated a 10 percent increase in the current average number of flights for electronic warfare training activities. This 10 percent increase amounts to less than one additional flight per day.

It is important to note that the Navy's planning documents generally use conservative overestimates of required training and actual airspace usage and training activities may not be as extensive as what was analyzed. The Navy is not anticipating an increase in electronic training activities for the Military Operations Areas in north-central Washington State (Okanogan and Roosevelt counties).

Vice Admiral Shoemaker sums up the importance of electronic warfare training by saying, "I consider the continued use of the Pacific Northwest

## The Electromagnetic Spectrum

**ELECTROMAGNETIC ENERGY IS** energy that is reflected or emitted from objects in the form of electrical and magnetic waves. Electromagnetic waves create patterns as they travel through space, and each wave has a certain shape and length. The distance between peaks, or high points, of a wave is called wavelength. It is the difference in wavelengths that distinguishes between the various types of electromagnetic energy.

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. The human eye can only detect a small portion of this spectrum, visible light. There are seven categories of electromagnetic energy that make up the electromagnetic spectrum:

1. Radio
2. Microwave
3. Infrared (heat)
4. Visible (light)
5. Ultraviolet light
6. X-rays
7. Gamma-rays

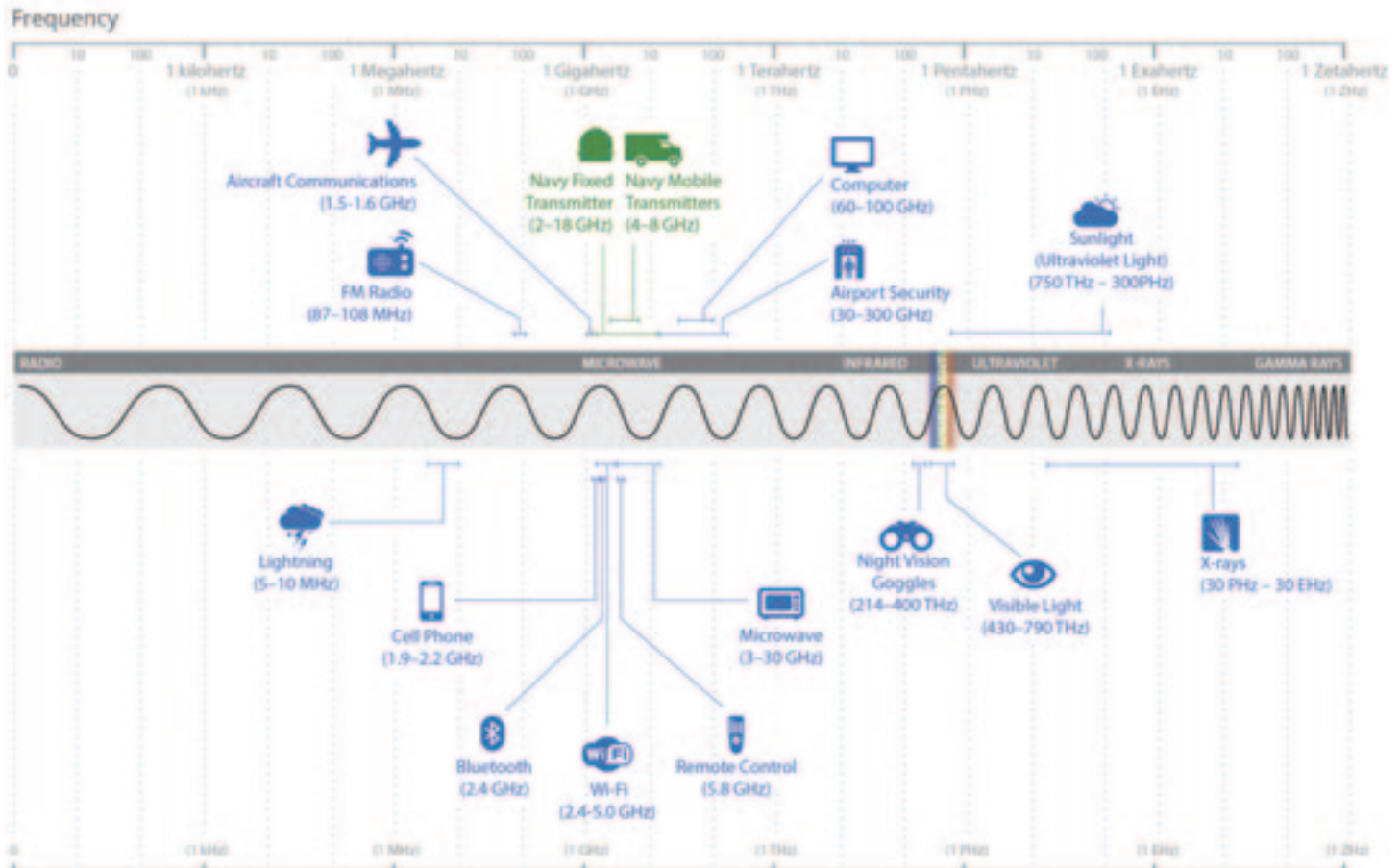
People regularly experience various forms of electromagnetic energy that exist all around us every day when we tune in to our favorite radio station; use a remote control, cell phone or other electronic appliance; stand in the sunlight; go through security screening at airports; or undergo X-rays for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

When conducting electronic warfare training in the Pacific Northwest, the Navy's use of electromagnetic energy falls between radio and microwave frequencies, similar to common civilian communication and radar systems, such as Wi-Fi devices, cordless phones, Bluetooth devices, and weather radars.

"Electromagnetic radiation" is a phrase that has been used to describe the transmission of electronic signals during electronic warfare training. Electromagnetic radiation is a general term used to describe the energy output of all kinds of electronic devices. Electromagnetic radiation is electromagnetic energy; it is not the same thing as nuclear radiation. There is no nuclear radiation associated with electronic warfare training.

# 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.



Electronic Warfare Range key to aircrews’ ability to accomplish their missions as they deploy around the world.”

## Public Information & Involvement

The Navy continually strives to minimize impacts on the community from its activities, and recognizes the importance and value of public involvement. Navy personnel make a concerted effort to notify, inform and involve the community in the environmental analysis processes for projects proposed in the Pacific Northwest and across the globe.

In 2014, the Navy began sharing the weekly flight schedule for OLF Coupeville with the media and posting it on the Navy’s website and Facebook page. Also, a tele-

phone call-in line was established to better monitor and track noise issues and to improve the Navy’s responsiveness to community concerns.

Additionally, the Navy has established a website to provide accurate information directly to the public about electronic warfare training and the Growler aircraft. This site (<http://go.usa.gov/3B4Mk>) contains fact sheets, a downloadable copy of the Environmental Assessment, and more. [📍](#)

Mike Welding  
Naval Air Station Whidbey Island  
360-257-2286  
DSN: 312-2286  
[michael.welding@navy.mil](mailto:michael.welding@navy.mil)

Liane Nakahara  
Commander Navy Region Northwest  
360-396-1630  
DSN: 744-1630  
[liane.nakahara@navy.mil](mailto:liane.nakahara@navy.mil)