GROUND WAVE EMERGENCY NETWORK

FINAL OPERATIONAL CAPABILITY

FACT SHEET

The Ground Wave Emergency Network (GWEN) is a system of radio towers similar to those used by commercial broadcast station transmitters. GWEN is an essential part of the President's Strategic Modernization program to upgrade and improve our Nation's communication system thereby strengthening deterrence.

Our ability to deter Soviet nuclear attack rests upon the credibility of our threat to retaliate if attacked. Our strategic forces, our bombers and our land- and sea-based missiles, are only as effective, however, as the command, control and communications systems which support them. If the Soviet military were able to convince the Soviet leadership that a well-planned attack could, by destroying our military communications system, prevent U.S. forces from retaliating, then deterrence would be threatened indeed. A crucial, in fact the most important, part of our Strategic Modernization Program is to upgrade the command links necessary for credible deterrence. In this context we are undertaking a number of initiatives of which the GWEN program is but one.

GWEN will provide a communications network immune to the effects of Electromagnetic Pulse (EMP) to carry critical attack warning and force execution data. As a result GWEN will remove any possibility that the Soviets could believe that, due to the electromagnetic pulse generated by a high altitude nuclear burst, a few weapons or even a single weapon either could prevent attack warning messages from reaching the President or impede his ability to order retaliation. By blocking a technique of which the Soviets are well aware, the GWEN system, therefore, strengthens deterrence and enhances our ability to prevent war.

The GWEN system, developed by the Air Force Electronic Systems Division, has three types of stations. The first type of station, the input/output terminal, is able to both transmit and receive messages. These use 50-watt transmitters, usually on 150-foot towers, that broadcast ultra-high frequency (225-400 MHz) signals. The second station, the receive-only terminal, cannot transmit messages. These are generally on roofs of communications buildings. Their signals are low frequency (150-175 kHz). Both of these stations are located on existing military installations. Ground mobile and airborne input/output and receive-only terminals will also use the system. A nationwide network of unmanned, very-low frequency radio relay nodes, the third type of station, distributes messages throughout the GWEN system via computerized traffic controllers. Relay nodes are 299-foot towers and equipment located at 150-200 mile intervals throughout the U.S. The sites are on government land or on private land leased or purchased by the government. Input/output terminals are connected to tower relay nodes by line-of-sight, ultra-high frequency radio links.

A partial GWEN network, called the Thin Line Connectivity Capability (TLCC) is under construction. It contains 8 input/output, 29 receive-only, and 56 tower relay nodes.

The Final Operational Capability (FOC) phase of GWEN involves adding 200 to 300 stations, including approximately 70 unmanned relay nodes, across the nation. A

typical relay node is located on a site of approximately 11 acres. It contains a tower 299 feet tall, 2 feet wide, supported by 15 guy wires. The site uses existing commercial electric power. Other equipment includes a back-up diesel generator (with fuel tanks) for use during power outages, an antenna tuning unit, and a radio processor. This equipment is housed in three shelters, each about the size of a pick-up truck camper unit. Two of the shelters are at the perimeter of the property and one is at the base of the tower. Both of these shelter areas are surrounded by a locked, 8 foot high chain link fence topped with barbed wire to provide safety and to inhibit unauthorized entry. A radial ground plane extending out from the base of the tower contains 100 copper wires approximately 330 feet long each, buried about 12 inches underground. A four foot high barbed wire or fabric fence would be installed around the perimeter of the ground plane. The ground plane helps strengthen the tower's broadcast signal. The tower also contains 12 top-loading elements to further strengthen the signal. A gravel road provides access to the site.

In addition to the main tower, each relay node contains an ultra-high frequency antenna mounted on a pole 30 feet high (depending on site conditions) and a 10-foot low frequency receive antenna located in the equipment area.

GWEN operates intermittently in the very-low frequency band at 150-175 kHz (for comparison, the bottom of the AM band is 530 kHz). The peak broadcast power for each GWEN tower is from 2,000 to 3,000 watts. GWEN does not interfere with commercial television or radio broadcasts, nor would it interfere with ham radio operations, garage door openers, or pacemakers.

THE GWEN ENVIRONMENTAL IMPACT ANALYSIS PROCESS

The purpose of the GWEN Environmental Impact Statement (EIS) is to evaluate possible environmental impacts associated with the FOC portion of the GWEN program and to identify mitigations that could be used to avoid or lessen these impacts. The EIS will also describe the process and criteria used to identify, evaluate, and select specific sites for FOC relay nodes. The GWEN EIS is being prepared in compliance with the National Environmental Policy Act (NEPA) of 1969, which is intended to help public officials make decisions based on an understanding of environmental consequences and take actions that protect, restore, and enhance the environment.

Since GWEN relay node sites for FOC have not yet been identified, the EIS will be programmatic rather than site-specific. This means that the EIS will address general impacts and mitigations that will apply to all GWEN sites rather than focus on impacts at individual sites. The sites themselves would be selected after the EIS is completed, using the processes and criteria defined in the EIS. At that point, the Air Force would consult with regional, state, and local agencies to acquire their assistance in locating suitable sites and identifying issues and concerns to be addressed at the site-specific level. Additional environmental documentation identifying site-specific impacts and mitigations would be prepared for each site. Using this two-tiered approach to impact analysis, the Air Force will comply with NEPA and the Council on Environmental Quality (CEQ) regulations implementing NEPA.

For more information contact:

United States Air Force
Hq Electronic Systems Division
Office of Public Affairs (ESD/PAM)
Hanscom AFB, Massachusetts 01731-5000
Area Code 617-377-4064