



Section 9501

Communications Manual

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Communications Manual

9501.1 Introduction

This document has been prepared for Northwest Area Contingency Plan (NWACP)-Regional Response Team (RRT) agency planners and managers, as well as the communicators that would be involved in the emergency communications aspects of incident response. It describes how the Communications Unit is organized and incorporated within the Incident Command System (ICS) and identifies the main organizational, equipment, and training requirements to be addressed by planners and managers prior to an incident. Appendix A, “Communications,” and Appendix B, “The 5300 (Frequency and Communications Resource Summary)” identify the emergency communications offices and operating frequencies of the principal federal and state agencies and private organizations involved in incident response activities.

9501.1.1 Discussion

Effective communication among all involved parties and agencies is crucial when coordinating an effective response to an incident. Use of ICS and a well thought-out communications plan are imperative to a coordinated response. Within the ICS structure, the Communications Unit is located within the Logistics Section, which is managed by the Logistics Section Chief or Service Branch Director, depending on the size of the incident. The Communications Unit is managed by the Communications Unit Leader.

Planners and managers addressing anticipated communications requirements should consider what personnel, training, and equipment would likely be needed for the “Design Incident,” as well as for preparing for a “Semi-Worst Case.” Prior to an incident, members of the RRT and local government, together with community business representatives, should be involved with the selection and preparation of potential Incident Command Centers and equipment staging areas. With suitable preparation, the initial Communications Unit responders will be able to facilitate rapid installation of an emergency communications system.

Failure to properly plan, position, command, and control resources will prove devastating to the response. Cost and operability are important considerations when obtaining equipment and services.

9501.1.2 Initial Notice

Actions to be taken by planners and managers when receiving initial notification of an incident include designating a reporting location and providing initial assignments for communicators, a reporting time, local travel instructions, and the need for cell or satellite phones, radios, or any special communications equipment. There are likely to be serious delays of equipment or personnel if these initial actions are not considered and addressed prior to an incident.

Following the initial notification, communicators should report to the Staging Area or Logistics Section Chief for assignment to the Communications Unit Leader. The Communications Unit Leader will then assign communicators to specific ICS Sections as necessary.

9501.1.3 Initial Requirement (First 24 Hours)

Prior to an incident, planners and managers of response activities should complete pre-disaster preparations such as determining short- and long-range communications requirements, establishing standard radio communications procedures, selecting and training staff, and obtaining radios and other necessary initial response equipment in coordination with the Communications Unit Leader. RRT Communicators should be familiar with and be able to utilize regional very high frequency (VHF) repeaters and be able to incorporate trained radio operators from the United States Coast Guard (USCG) Reserve, Auxiliary, or Amateur Radio Emergency Services (ARES). Cellular phones, charging units, and landlines are considered basic communications for initial incident response and should be brought to the incident or obtained on site. If the local telephone service cannot provide the number and type of circuits you require, request the Federal Emergency Management Agency (FEMA) and/or Marine Spill Response Corporation (MSRC) van with satellite power branch exchange (PBX) capability. Contact the Lease/Purchase Officer for funding authority. Contact the selected phone company to arrange for installation and request expected delivery date. The Communications Unit Leader or equivalent is to receipt for leased equipment at the Emergency Operations Center (EOC), including satellite telephones, other portable satellite telephone equipment, pagers, and portable VHF/ultra high frequency (UHF) radios, including batteries and charging units.

The Communications Unit Leader or equivalent has overall responsibility for the following communications equipment and personnel requirements with support from the Staging Site Manager.

9501.1.3.1 Distribution and Inventory Control

One of the most important issues associated with incident response is resource inventory and material control. Without a proper inventory, materials become lost or stolen. The Communications Unit Leader or Equipment Staging Area Custodians must thoroughly control equipment issue and recovery. This section outlines the actions to be taken for receipt and resupply of communication equipment and services.

9501.1.3.2 Fixed Landline

The Communications Unit Leader, or equivalent, is responsible for approval and receipt of any commercial telephone installation, reporting damage to leased equipment, and obtaining replacements as required. Requests for hardware, circuit installations, or deinstallations must be approved by the Communications Unit Leader. Contact the appropriate vendor for new or additional services, and obtain an expected delivery date. Receipt for the equipment at the EOC. The Communications Unit Leader will arrange for circuit deinstallations as required or after unit demobilization.

9501.1.3.3 Cellular Phones

The Communications Unit Leader estimates the need for new or additional cellular phones and then obtains funding authority from the Lease/Purchase Officer to purchase or lease the additional equipment. Contact the appropriate cellular service provider to arrange for new or additional services and obtain an expected delivery date. Receipt for the equipment at the EOC and arrange transportation for the equipment to the staging site. The Staging Site Manager accepts, inventories, and disburses the new equipment as required. Unrepairable equipment is to be surveyed and reordered as required. The Staging Site Manager returns the equipment to the Communications Unit Leader after unit demobilization. The Communications Unit Leader returns any leased equipment back to the vendor.

9501.1.3.4 Satellite Phones

The Communications Unit Leader estimates the need for satellite telephone services and obtains funding authority from the Lease/Purchase Officer to purchase or lease the additional equipment. Contact appropriate vendors to arrange for purchase of portable satellite hardware and service. Obtain an expected delivery date. Receipt for the equipment at the EOC and arrange transportation for the equipment to the staging site. The Staging Site Manager accepts, inventories, and disburses the new equipment as required. Unrepairable equipment is to be surveyed and reordered as required. The staging area site manager returns the equipment to the Communications Unit Leader after unit demobilization. The Communications Unit Leader returns any leased equipment back to the vendor.

9501.1.3.5 Pagers

The Communications Unit Leader estimates the need for new or additional paging services and then obtains funding from the Lease/Purchase Officer to purchase or lease the additional equipment. Contact the appropriate vendors to arrange for new or additional services and then obtain an expected activation date. Receipt for the equipment at the EOC and arrange transportation for the equipment to the staging site. The Staging Site Manager accepts, inventories, and disburses the new equipment as required. Unrepairable equipment is to be surveyed and reordered as required. The Staging Site Manager returns the equipment to the Communications

Unit Leader after unit demobilization. The Communications Unit Leader returns any leased equipment back to the vendor.

9501.1.3.6 Phone Book (Incident-Specific)

The Communications Unit Leader or staff develops a small, incident-specific phone book to contain email addresses, primary/secondary radio frequency working channels and assigned telephone numbers of pagers, satellite, and cellular telephones.

9501.1.3.7 Portable (Mobile or handheld) Radio

The Communications Unit Leader estimates the need for additional portable radios and then obtains funding authority from the Logistics Officer to purchase or lease the portable (handheld) radio equipment. Contact commercial vendors to arrange for new or leased portable radio hardware and obtain an expected delivery date. To obtain a cache of portable handheld radio equipment, contact the National Interagency Fire Center point of contact listed in Section 9501.4, below. Receipt for the equipment at the EOC and arrange transportation for the equipment to the staging site. The Staging Site Manager accepts, inventories, and disburses the new equipment as required. Equipment that is inoperable is to be surveyed and reordered as required. The Staging Site Manager returns the equipment to the Communications Unit Leader after unit demobilization. The Communications Unit Leader returns any leased equipment back to the vendor.

9501.1.3.8 Fixed (Base Station) Radio

The Communications Unit Leader determines short and long-range communications (UHF/VHF/high frequency [HF]) needs. To request fixed radio communications support from state and federal agencies, private companies, or volunteer organizations, refer to Sections 9501.3 and 9501.4, below.

9501.2 Equipment Capabilities

9501.2.1 Types of Communication Systems

The following briefly describes some of the many different communications systems that may be employed during incident response. Planners and managers should recognize the capabilities and limitations of such equipment prior to an incident and undertake measures to obtain equipment, train personnel, provide support, and maintain these systems, before, during, and after the incident.

9501.2.1.1 Cellular Telephone Systems

Battery powered cellular phones can free the user from dependence on commercial power or vehicle batteries. Systems are now available that permit facsimile as well as voice transmissions over cellular phone equipment. As cellular telephone service becomes more widely available, it is helping to fill many communication gaps, giving incident response managers immediate access to the telephone system. It should be recognized, however, that cellular communications systems quickly become saturated with traffic during an emergency.

9501.2.1.2 Satellite Telephone Systems

The use of satellite telephones is increasing with improved service capabilities and reduced costs. Due to the limitations of cellular telephones, particularly during emergencies, the satellite telephone has frequently become the preferred form of backup emergency communications for response agencies.

9501.2.1.3 Government Emergency Telecommunications Service

This section is adapted from the United States Department of Homeland Security website: <http://www.dhs.gov/government-emergency-telecommunications-service-gets>

The Government Emergency Telecommunications Service (GETS) is an emergency phone service provided by the National Communications System in the Information Analysis and Infrastructure Protection Division of the Department of Homeland Security. GETS supports federal, state, and local government, industry, and non-governmental organization personnel in performing their National Security and Emergency Preparedness (NS/EP) missions. GETS provides emergency access and priority processing in the local and long distance segments of the Public Switched Telephone Network (PSTN). It is intended to be used in an emergency or crisis situation when the PSTN is congested and the probability of completing a call over normal or other alternate telecommunication means has significantly decreased.

GETS is necessary because of the increasing reliance on telecommunications. The economic viability and technical feasibility of such advances as nationwide fiber optic networks, high-speed digital switching, and intelligent features have revolutionized the way we communicate. This growth has been accompanied by an increased vulnerability to network congestion and system failures. Although backup systems are in place, disruptions in service can still occur. Recent events have shown that natural disasters, power outages, fiber cable cuts, and software problems can cripple the telephone services of entire regions. Additionally, congestion in the PSTN, such as the well-documented "Mother's Day phenomenon," can prevent access to circuits. However, during times of emergency, crisis, or war, personnel with NS/EP missions need to know that their calls will go through. GETS addresses this need. Using enhancements based on existing commercial technology, GETS allows the NS/EP community to communicate over existing PSTN paths with a high likelihood of call completion during the most severe conditions of high-traffic congestion and disruption. The result is a cost-effective, easy-to-use emergency telephone service that is accessed through a simple dialing plan and personal identification number card verification methodology. It is maintained in a constant state of readiness as a means to overcome network outages through such methods as enhanced routing and priority treatment.

GETS uses three major types of networks, described below:

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- The major long-distance networks provided by Interexchange Carriers—AT&T, MCI, and Sprint—including their international services;
- The local networks provided by local exchange carriers; wireless carriers; and
- Government-leased networks, including the Federal Telecommunications System and the Defense Information System Network.

GETS is accessed through a universal access number using common telephone equipment such as a standard desk set, STU-III, fax machine, modem, or wireless phone. A prompt will direct the entry of your personal identification number and the telephone number. Once you are authenticated as a valid user, your call is identified as an NS/EP call and receives special treatment.

See the GETS web site for program information, eligibility, and registration procedures. Interested agencies must establish their own GETS account.

9501.2.1.4 Marine VHF Radio

All marine operations should include provisions for marine VHF radio communications among all vessels in the area and designated coordinators. Communicators on the water should be provided with properly licensed marine VHF radio equipment. Such equipment makes it possible to warn other vessels about operations and can also be used for coordinating the operations. However, other channels may be preferred where suitable equipment is available.

9501.2.1.5 VHF and UHF Channels in the Petroleum Radio Service

Much of the VHF and UHF equipment in the Petroleum Radio Service utilizes automatic coded audio frequency signals to open the target receiver's squelch. "Private Line" (PL) codes must be controlled during incident response for proper radio reception. Multiple PL codes on a frequency during a response will limit the effectiveness of the radio hardware likely to arrive on the scene. Operators may wish to consider deactivation of squelch controls during emergencies so that all users of the frequencies will be aware of and give priority to emergency communications.

Some of the Petroleum Radio Service VHF channels are close in frequency to the band assigned to the Marine VHF Radiotelephone Service (156.025-157.425 megahertz [MHz]). This presents the technical possibility that a single radio and antenna system can be used to access both services. Equipment with digital frequency control and scanning capability could thus be used to monitor radio traffic and communicate on several channels in both services.

9501.2.1.6 HF Single Sideband Radios

For communications over long distances, at sea, and in undeveloped areas such as much of northern Canada and Alaska, HF, 2MHz to 30 MHz, single-sideband (SSB) voice radio equipment is commonly used. Contingency Planners should recognize that radio propagation by HF radio changes widely over daily and

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yearly cycles and is strongly influenced by changes in solar activity. One may have an excellent radio communications link with a station several hundred miles away, and a few hours later, be completely unable to hear that station. Despite these limitations, HF radio remains the primary backup emergency communications system in the United States.

9501.2.1.7 Paging System

The familiar “beeper” is essentially a one-way radio communication system that enables persons within range of the paging system transmitter to be alerted or receive a brief message.

Pagers are widely used by persons with response contingency responsibilities. Integrated paging systems are now in commercial use, which permits an individual to be paged and receive a short message in virtually any populated area throughout the United States and Canada.

9501.2.1.8 Written Documentation

Memos, letters, reports, journals of activities, phone logs, radio logs, and other written documents all play important roles in coordinating emergency response activities and building a history of decisions and activities in response to an incident. Careful and accurate documentation will help produce orderly and efficient incident response. Poor documentation produces only confusion.

9501.2.1.9 Telex

Telex service, which permits wire communication through automated exchanges, can be useful for responders. This service permits passing written communication quickly between subscribers.

9401.2.1.10 Fax

Fax systems permit text and graphic information (maps, diagrams, signatures, etc.) to be transmitted over telephone lines or by radio. With special attachments, cell phones can be used for transmission of facsimile traffic.

9501.2.1.11 Microcomputers with Modem

Microcomputers with telephone modems, particularly battery-operated laptop units, offer a wide variety of communication options previously not available. For example, a control computer can be set up to receive telephone or radio calls from other computers at any time. With proper authentication, portable computers at widely separated locations can “upload” information to the control computer or “download” information from it. With appropriate software and accessories, a microcomputer can be made to emulate fax equipment.

9501.2.1.12 Internet

The Internet has wide applicability for incident response. In addition to the preparatory communications activities that are conducted prior to an event, such as training notifications, equipment research and procurement, etc., public announcements and warnings may be quickly sent to a widespread audience.

9501.2.1.13 Radio Communication Support Systems

Regardless of the frequency band involved (HF, VHF, or UHF) all radio communication systems require certain resources and ancillary equipment to operate. These are briefly discussed in the following subsections.

9501.2.1.14 Power

The source of electrical power for a given radio may be domestic power, internal or external batteries (rechargeable or one-time use), or a dedicated electrical generator. Twelve- or 24-volt direct current radios are available for use in vehicles and boats. Output wattages are the same as for 120-volt alternating current systems. Battery recharging energy may come from a domestic power source, from a vehicle electrical system, or from solar cells. Where power outages would cause unacceptable disruption of communication, an uninterruptible power supply may be provided. Uninterruptible power supplies for communications generally utilize a storage battery and power inverter system to provide temporary ac power at an appropriate voltage.

9501.2.1.15 Shelter

Some radio equipment is designed with weather-resistant cases, permitting considerable flexibility in where the equipment may be transported. However, much of the communication equipment in common use must be protected from harmful weather conditions. Heating may be required at some locations, and air conditioning at others. Security guards or a suitable alarm or security system should be considered at locations where vandalism or theft of equipment may occur. Some operators may also require shelter.

9501.2.2 Incident Response Communications

9501.2.2.1 Communication of Initial Observations

Communication of initial observations will typically be made by telephone or radio. Written confirmation to appropriate governmental agencies should be made as soon as possible after the initial report. In a given situation, there may be a number of federal, state, and local government entities each with requirements for incident reporting. Each may need a somewhat different set of information, each may impose different reporting time constraints, and each may specify a unique reporting format. Because of the complexity of reporting requirements, organizations may wish to assign the responsibility for reporting an incident to a single interagency office. This will facilitate the use of consistent information, avoid duplicate reporting, and permit the accumulation of a historical database.

Current best practice is for Unified Command to publish information through an incident-specific website.

9501.2.2.2 Logistics Coordination

Food, transportation, and, in some cases, shelter, must be provided to workers during incident response operations. This is generally conducted over landline

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phone, but could require a radio net in some cases. Supplies such as fuel, sorbents, and machine parts must be procured and delivered to locations where needed. Worn and broken equipment must be repaired or replaced. All of these activities require good communication. For large operations, it may be desirable for the Logistics Section to have communications channels separate from those used for directing and coordinating the incident.

9501.3 State/Volunteer Radio Communications

9501.3.1 State of Washington

The Washington State Emergency Management Division (EMD) maintains a 24-hour communications center for the State of Washington, located in the EOC at Camp Murray. Initial notification should be made to EMD, and the Duty Officer will record the information and make the appropriate local, state, and federal notifications as prescribed in Washington's Standard Operating Procedures. The phone numbers for contacting the EOC are as follows.

Primary Phone	1-800-258-5990
Secondary Phone	253-912-4901 Or 4904
Business Phone	1-800-562-6108
Satellite Phone	888-862-8459
Fax	253-512-7203
Email Address:	Dutyofficer@Emd.Wa.Gov
Website:	http://mil.wa.gov/emergency-management-division

9501.3.1.1 Washington State Department of Ecology

The Washington State Department of Ecology (Ecology) does not operate or maintain its own statewide radio system but has permission to utilize both the Comprehensive Emergency Management Network (CEMNET) system and the Washington State Department of Natural Resources (DNR) statewide VHF system. Ecology also has a cache of 30 high band programmable radios that are available for use in case of a major incident.

As the designated On-Scene Coordinator for statewide environmental emergencies, Ecology is required to be notified through Emergency Management (as per Chapter 90.56.280 Revised Code of Washington) of any spill or release of hazardous material into the environment. Ecology maintains, on 24-hour duty, up to eight spill response specialists located throughout the state. They can be contacted in case of any environmental or hazardous materials incident by calling one of the following numbers.

Emergency Management Division	1-800-258-5990
OR	
Department of Ecology (24 hours)	
SW Regional Office (Olympia)	360-407-6300
NW Regional Office (Bellevue)	425-649-7000

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Central Regional Office (Yakima) 509-575-2490
Eastern Regional Office (Spokane) 509-329-3400

Headquarters (M-F 0800-1700) 360-407-6000

9501.3.1.2 Comprehensive Emergency Management Network

CEMNET is a statewide, Lo-band VHF radio system. This system is the primary backup communications link between the State EOC and the local EOCs throughout the state. This network also supports the daily operation of Ecology statewide. CEMNET is the only state network capable of providing communications between base stations and mobiles, and mobiles to mobiles statewide. The CEMNET system utilizes base stations and repeaters controlled through the Washington State Patrol microwave system and operates on the following frequencies:

Lo Band Channel F1 transmits on 45.200 MHz.

Lo Band Channel F2 transmits on 45.360 MHz.

Lo Band Channel F3 transmits on 45.480 MHz.

The **On-Scene Command and Coordination Radio** operates on 156.135 MHz. This network is managed by EMD through a mutual planning agreement between the Associated Public Safety Communications Officers (APCO), the Washington Department of Transportation, and EMD. All potential emergency responders are eligible to apply through APCO for authorization to operate mobile and portable units on this network for on-scene use only.

The **Washington State Department of Natural Resources** operates a statewide VHF system, with communication provided on a regional basis. Radio repeaters support each of the seven DNR regions. Each region is assigned area frequencies for operations within the region. Any communications between regions occurs only where there is overlap in the repeater system. Each region is also licensed to operate on the DNR Common and State channels to coordinate with other agencies.

DNR State channel transmits on 151.295 and receives on 159.420. Ecology has permission to use the DNR frequencies on an emergency basis. Use of these frequencies for emergency purposes should be coordinated with the DNR radio communications manager.

9501.3.2 State of Oregon

The Oregon Emergency Response System is the 24-hour communications center component for EMD. Initial notification will be made to a Duty Officer, who will then make appropriate local, state, and federal notifications as prescribed in standard operating procedures.

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To contact the Duty Officer with the Oregon Emergency Response System, call:

Primary Phone	1-800-452-0311 (nationwide) 1-503-378-6377 (local to Salem, Oregon)
Secondary Phone	1-888-695-1674 (Satellite phone)
Secondary Radio	State Fire Net (154.280 MHz). 800 MHz radio system (National Calling Frequency 866.0125MHz) Amateur radio (ARES/RACES)
Email Address	oemd@oem.state.or.us
Web Page Address	https://www.oregon.gov/OMD/OEM/Pages/tech_resp/oers.aspx

9501.3.3 State of Idaho

The Idaho Bureau of Hazardous Materials
Military Division

Primary Phone	208-846-7610 (24/7)
Secondary Phone	800-632-8000 (Idaho only, 24 hours)
Web Page Address	https://ioem.idaho.gov/Pages/HazardousMaterials.aspx

9501.3.4 Volunteer Radio Communications Resources

ARES consists of trained radio communications enthusiasts who can provide communicators and operate from numerous locations throughout the Pacific Northwest.

ARES is accessed through EMD or County Emergency Management offices.

Primary Radio	146.5200 MHz ARES Communications GEN Hailing & Emergency Notification
145.6300MHz	ARES Packet Operations Packet Communications

9501.3.5 Industrial-Commercial Radio Communications Resources

9501.3.5.1 The Petroleum Radio Service

(See Appendix B for individual frequencies)

The Petroleum Radio Service (PRS) was one of 20 networks of radio frequencies once assigned to business and commercial entities. The PRS network connects parties working with petroleum or petroleum products, including natural gas. In June 1995, the Federal Communications Commission (FCC) created a

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narrowband channel plan and determined that the 20 Private Land Mobile Radio Services would be consolidated. In February 1997, the FCC created the Public Safety and the Industrial/Business Frequency Pools. As a result, the PRS frequencies dealing with incident response are now located in the Industrial/Business Frequency Pool.

9501.3.5.2 Marine Spill Response Corporation Communications Van 1-800-OIL-SPILL

The MSRC van contains a full suite of radio, satellite, and telephone equipment. It is a fully mobile, self-contained unit capable of being deployed on short notice to any drivable location. The MSRC maintains one of these vans at their facility in Everett, Washington. Other such vehicles are maintained nationwide.

9501.3.5.3 Maritime Fire and Safety Association Columbia River Communications System

503-220-2055

Web page: www.mfsa.com

The Maritime Fire and Safety Association communications system is actually four different systems combined to provide an integrated communication network for communicating on marine and oil spill communication channels. The system provides radio coverage on the lower Columbia and Willamette Rivers from approximately the city of Portland to greater than 3 miles beyond the Columbia River bar. The four communications systems are:

- **Marine Channel Radio System.** This system provides communications on various marine channels for communicating directly to ships and other marine traffic.
- **Oil Spill Command and Control Radio System.** This system provides continuous coverage from the city of Portland to Astoria and will allow mobile units in Portland to communicate directly with units along the Columbia River.
- **Oil Spill Tactical Radio System.** This system provides a series of radio repeaters that are designed to provide coverage over a local area for the local communications needs of incident response.
- **Microwave Radio System.** This system links all of the radio sites and radio equipment back to the Merchant's Exchange for control and to the radio consoles located there.

9501.4 Federal-Canadian Radio Communications

The Region 10 United States Environmental Protection Agency (EPA) is Co-Chair (with the USCG) of the RRT. The Region 10 EPA headquarters is located in Seattle, Washington, with an area of responsibility that includes Alaska, Washington, Idaho, Oregon, and Native Tribes. EPA operates a VHF Base Station in Seattle, with access to the FEMA and USCG radio repeaters.

EPA Communications point of contact is Jeffrey Rodin.
Primary telephone 206-553-6709
Fax # - 206-553-0175
Primary Radio Frequency -
Email – rodin.jeffrey@epa.gov

The 13th Coast Guard District is Co-Chair (with EPA) of the RRT. The 13th District's Information Technology and Communications Office, located in Seattle, Washington, coordinates the USCG communications system throughout the region. The system incorporates numerous fixed base radios operating within the VHF-FM marine band, MF/HF maritime frequencies, and specific VHF-FM land/mobile frequencies. These radios monitor distress calls, provide liaison with the public, and include USCG command and control working channels, which are operated by USCG telecommunications personnel at designated group units.

Phone # - (206) 220-7147
Fax # - (206) 220-7009
After Hours Phone (800) 982-8813 or (206) 220-7001

Transportable Communications Center: The Commander, Pacific Area, maintains a Transportable Communications Center (TCC), located at the Coast Guard Communications Area Master Station Pacific at Pt. Reyes, California. It is a self-contained, rapidly deployable USCG resource that can provide a full range of telecommunications capabilities to support a major incident response in a six-hour recall status. Electronic Technicians and Telecommunications Specialists accompany the unit. The TCC can be powered by generator (included) or directly connect to a power source. The full antenna array setup requires an open area of approximately 200 by 200 feet. These are important considerations in the decision where to locate the unit and perhaps the forward command post. Requests for the TCC are coordinated through the 13th District Seattle office. Capabilities include point to point, air/ground and ship/shore communications in the HF/VHF/UHF bands. Agency interoperability is enhanced through use of an ACU-100.

The **USCG Reserve** capabilities consist primarily of providing trained radio Communicators. Requests for this support are coordinated through the 13th District office.

The **USCG Auxiliary** consists of volunteer Auxiliarist Communicators, who operate radios from fixed base stations, land mobiles, boats, and aircraft throughout the Pacific Northwest. Requests for this support are coordinated through the 13th District office.

The **Federal Emergency Management Agency** operates a number of communications assets in Alaska, Oregon, Idaho, and Washington from the Region 10 headquarters buildings located in Bothell, Washington. FEMA can also support incident response with a large self-propelled, self-contained radio van

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containing HF, VHF, UHF, KU band and Citizens Band radios, Merlin Switch capability, cellular phone, fax, antennas, testing and repair facilities.

Point of Contact – 24/7 Watch Desk

Phone # - 425-487-4600 or (800) 395-6042, (425) 487-4448

Secondary Phone – 888-579-0019 (Satellite)

Email – bothell.moc@fema.gov

Web Page– <http://www.fema.gov>

The Seattle District **United States Army Corps of Engineers** operates HF and VHF radios within most of Washington, northern Idaho, and northwestern Montana in support of the Northwestern Division. Satellite and cellular telephones are also used, in conjunction with normal commercial telephone and fax systems. Other VHF radio communications facilities are located at Chief Joseph Dam, Albeni Falls Dam, and Libby Dam.

	Primary Phone
Emergency Management Branch	(206)-764-3406
Northwestern Division EM	(503)-808-3902/3901/3903

Primary VHF Radio Frequencies -

Seattle District Office	163.4125 MHz	South of Seattle
Mud Mountain Dam	163.4125 MHz	Enumclaw
Lake Washington Ship Canal	163.0000 MHz/163.4125 alt.	North of Seattle

Fax # - (206)-764-3319

Email vic.k.yoshino@nws02.usace.army.mil

Other United States Army Corps of Engineers offices within the NWACP-RRT10 area of operations include Portland and Walla Walla Districts; however, the Seattle District is the primary support to Northwestern Division and the RRT.

Portland District Emergency Management

Emergency Operations (24-hour) 503-808-4402

Walla Walla District Emergency Management

Emergency Operations Center 509-527-7146

Email CENWW-EOC@usace.army.mil

Satellite Telephone 877-559-4651 NWW EOC

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The **National Interagency Fire Center** is located at the Boise, Idaho, airport and owns and operates a large cache of portable radio and satellite communications equipment. Although this equipment is used primarily by the United States Forest Service for fighting forest fires, certain components and training may be available for RRT incident response.

Phone # - (208) 387-5485

Fax # - (208) 387-5560

Web Page– <http://www.nifc.gov/>

Coordination Duty Officer

Phone # - (208) 387-5644

Fax # - (208) 387-5892

The **General Services Administration** manages numerous United States Government facilities. Locally, the Regional Manager coordinates RRT incident-specific requirements with the appropriate General Services Administration facility.

Point of Contact - Regional Manager for Emergency Management

Phone # - (253) 931-7508

9501.4.1 Canadian Communications Resources

Environment Canada is the primary contact for incidents that may affect Canadian lands or waters. Contact the National Environmental Emergencies Centre for communications contacts and other information necessary for incident response.

Phone # - 866-283-2333

9501A Appendix A: Communications

9501A.1 Background

This section incorporates the Operational aspects of the RRT Communications Plan.

9501A.1.1 Repeater Frequency Assignments and Access Systems Coordination

There will likely be increasing use of multiple repeaters to serve incident response communication needs in many geographic areas. Coordination among the sponsors of repeater systems is needed to ensure that communication systems in various areas will remain compatible, avoiding radio interference but permitting portable radios from one area to supplement the radios from other areas, based on guidelines developed by the American Petroleum Institute and the United States Federal Communications Commission. Agency managers and planners should address such interoperability issues during 2003 RRT Communications exercises.

9501A.1.2 Command and Control Communications

Incident response plans generally specify internal documentation and reporting procedures in addition to properly completed ICS Forms. A bound logbook or similar permanent record may be required for legal purposes. Plans typically call for periodic reports from supervisors, pinpointing problems, and providing information on expenditures for labor and materials. Portable computers can also be used to help organize the information in such reports and transmit it over radio or telephone communication channels.

9501A.1.3 Voice Communication Procedures Standardization

Standardized communications procedures, emphasizing brevity and clarity, will help responders make optimum use of available communications resources. Voice communication procedures should be included in all emergency response training plans. Coordination of radio frequency usage will ensure that neighboring response operators do not conflict with one another.

9501A.1.4 Mobile Communications Staging Areas

The selected shoreside staging areas for multi-agency operations will be directed via landline, cell or satellite phone, or radio from the Incident Command System (ICS) Command Post. Once a communications site has been selected, mobile

communications vehicles and trailers should be located no closer than 25 feet to each other. The need for alternate or multiple staging areas and attendant communications coverage will depend upon the extent of the area affected by the incident.

9501A.1.5 Security Awareness

Radio communications, unless encrypted for secure transmission, are subject to electronic surveillance and monitoring by private citizens and the public media. All agencies should be security conscious before transmitting information by radio that may be considered media sensitive, proprietary, or private. Good judgment is the only rule that applies; however, public affairs officers should be consulted for guidance in specific instances if necessary.

9501A.1.6 Incident Command System Forms

Under the ICS, the roles of different people, their lines of command, and specific tasks are carefully defined. An important aspect of ICS implementation is the use of standard ICS forms. For example, early in a response, the people responsible for planning the response complete a Response Objectives Form. Responders refer to this form when they need to review the objectives of the response. The Communications Unit is responsible for preparing the following Radio and Frequency Assignment Forms to provide adequate ICS documentation.

**9501A.1.6.1 Radio Frequency Assignment Worksheet (ICS Form 217)
Purpose**

The Radio Frequency Assignment Worksheet is used by the Communications Unit Leader to assist in determining frequency allocations.

Preparation

Cache radio frequencies available to the incident are listed on the Radio Frequency Assignment Worksheet. Major agency frequencies assigned to the incident should be added to the bottom of the worksheet.

Distribution

The worksheet, prepared by the Communications Unit, is for internal use only.

**9501A.1.6.2 Radio Requirements Worksheet (ICS Form 216)
Purpose**

The Radio Requirements Worksheet, ICS 216, is used to develop the total number of personal portable radios required for each Division, Group, and Branch involved in the incident. It provides a listing of all units assigned and thus depicts the total incident radio needs.

Preparation of Form 216

The worksheet is prepared by the Communications Unit for each operational period and can only be completed after specific resource assignments are made and designated on Assignment Lists. This worksheet need not be used if the

Communications Unit Leader can easily obtain the information directly from assignment lists.

Distribution

The worksheet is for internal use by the Communications Unit, and therefore there is no outside distribution of this form.

9501A.1.6.3 Incident Radio Communications Plan Worksheet (ICS Form 205)

Purpose

The Incident Radio Communications Plan provides, in one location, information on all radio frequency assignments for each operational period. ICS Form 205 is a summary of information obtained from the Radio Requirements Worksheet (ICS Form 216) and the Radio Frequency Assignment Worksheet (ICS Form 217). Information from the Radio Communications Plan on frequency assignments is also placed on the appropriate assignment list (ICS Form 204).

Preparation

The Incident Radio Communications Plan is prepared by the Communications Unit Leader and given to the Planning Section Chief. Detailed instructions on preparing this form may be found in ICS 223-5, the Communications Unit Position Manual.

Distribution

The Incident Radio Communications Plan is duplicated and given to all recipients of the Incident Action Plan including the Incident Communications Center. Information from the plan is normally placed on the appropriate assignment list (ICS Form 204).

9501A.2 Glossary

Common Definitions

Effective incident response depends on good communication at all levels, from the initial planning, through management of personnel, equipment selection, and interagency training, to the final restoration, finance and accounting, and project documentation efforts. Information from the initial observation must be quickly brought to the attention of responders and specific government agencies and transmitted without delay to the appropriate parties. Response Team members must be contacted without delay and critical information conveyed to them in an efficient manner. Persons responding at the scene must have instant communication with others, sometimes over a considerable distance. Response managers must be able to communicate with government permit authorities and with individuals and teams in the field. Coordination of transportation, material support, equipment repair and other logistics matters also require good communication. The use of common terms will reduce misunderstandings and provide clearer messages.

This glossary describes communications terms that should be familiar to those members that Plan, Manage or Respond to a Northwest Area Contingency Plan-Regional Response Team incident.

Amplitude Modulation (AM). Refers to radio signals in which the information content is created by varying the power level or amplitude of an electromagnetic carrier wave. With sufficient power, this can result in longer range communications.

Antennas. Every radio requires some sort of antenna system. For efficient operation, an antenna must be electrically resonant at the intended operating frequency. The length requirement dictates that larger antennas be used for lower radio frequencies. As a rule, the higher the antenna, the greater its coverage area. Areas designated for antenna placement should be large enough to erect the largest antennas that would be used at the site.

When a radio must operate on various widely spaced frequencies within a band, or where space for antennas is limited, an antenna tuning circuit may be required. Antenna towers or poles may be required to raise the antenna system above the surrounding terrain. A given antenna system generally radiates better in certain directions than in other, and some “high gain” antennas are designed with the ability to focus their output in desired directions. Antenna feed lines should be kept short to reduce energy losses, particularly at high frequencies, and lines must be selected to match the electrical impedance of radio equipment and antennas. Special matching circuits may be required to correct poor impedance matches. In cold regions, it may be necessary to design antenna systems strong enough to resist the destructive effects of ice build-up. The presence of ice may also affect electrical properties of the antenna and ground system resulting in shifts in the resonant frequencies for the system.

Frequency Modulation (FM). Refers to radio signals in which the information content is created by varying the wavelength or frequency of an electromagnetic carrier wave. FM transmissions can eliminate much of the noise found in an AM signal. Short-range communications using VHF and UHF radios commonly utilize the FM mode.

High Frequency (HF). Includes those radio frequencies between 2 and 30MHz. Generally, this method is employed when long-range communications are required, i.e., beyond 100 miles. HF radio is subject to solar and atmospheric conditions and requires trained radio operators, suitable HF radios, and antennas for use.

Hertz (Hz). Refers to the number of cycles per second and is often preceded by “kilo” (kilohertz; kHz), “mega” (megahertz; MHz), or “giga” (gigahertz; GHz); referring to the radio frequency ranges of thousands to millions of cycles per second.

Single Sideband (SSB). With ordinary amplitude modulation (AM) transmissions, audio frequency information is electronically combined with a radio frequency carrier wave. This results in a complex signal that includes an upper sideband component (which is the sum of the carrier frequency plus the audio frequencies present) and a lower sideband component (which is the difference between the carrier and the audio frequencies present).

With single-sideband transmissions, the AM signal is processed to remove the carrier and one of the sidebands. The signal then occupies a smaller part of the radio spectrum and uses all of its energy for the transmission of information. Single-sideband emissions are commonly used for long distance HF transmissions.

Ultra-High Frequency (UHF). Those radio frequencies between 300 MHz and 3 GHz. Transmission distances over UHF are limited to line of sight and terrain; generally, point-to-point range at sea level is approximately 5 miles.

Very High Frequency (VHF). Those (frequencies) between 30MHz and 300 MHz. Transmission distances over VHF are limited to line of sight and terrain; generally, point-to-point range at sea level is approximately 7 miles.

Communications Pro-Words

Pro-Word	Meaning
Break	(As a statement) A separation between portions of a message. (As a request) An interruption in conversation (usually to request use of the frequency during an emergency).
Clear	Transmission has ended; no response is expected.
Monitoring	Station is clear of last transmission; no response is expected; station will continue monitoring this frequency.
Out	My transmission is ended and no response is expected.
Over	My transmission is ended and I expect a response from you.
Roger	I have received all of your last transmission.
Say Again	Please repeat last transmission.
Words Twice	(As a request) Communication is difficult; please send every phrase twice. (As information) Since communication is difficult, every phrase in this message will be sent twice.

Radio-Phonetic Alphabet

The phonetic alphabet is one in which each letter is associated with a particular word. The phonetic alphabet is used to ensure that certain letters or words are clearly understood.

Letter	Word	Letter	Word
A	Alpha	N	November
B	Bravo	O	Oscar
C	Charlie	P	Papa
D	Delta	Q	Quebec
E	Echo	R	Romeo
F	Foxtrot	S	Sierra
G	Golf	T	Tango
H	Hotel	U	Uniform
I	India	V	Victor
J	Juliet	W	Whiskey
K	Kilo	X	X-ray
L	Lima	Y	Yankee
M	Mike	Z	Zulu

9501B Appendix B: The 5300 (Frequency and Communications Resource Summary)

9501B Radio Frequencies

The following is a list of working frequencies used by federal, state, local, and private agencies. A list of frequencies to be used during incident reporting and response are located in the National Interoperability Field Operations Guide (U.S. Department of Homeland Security office of Emergency Communications Version 1.4).

9501B.1 Federal Government Frequencies

9501B.1.1 Coast Guard Frequencies

Group	Channel/Frequency	Purpose
Port Angeles	81A ¹ (157.075 Mhz)	Primary Working Frequency
Port Angeles	83A (157.175 Mhz)	Secondary Working
Sector Puget Sound	21A (157.05 Mhz)	Working
Sector Columbia River	23A (157.15 Mhz)	Working
Station Portland	83A (157.175 Mhz)	Working
Group Northbend	21A (157.05 Mhz)	Working
Non-Coast-Guard Ships 22A Marine	(157.100 Mhz)	Coast Guard Liaison

Note:

¹ Channel 81A shall be preempted for oil discharge removal operations whenever necessary.

9501B.1.2 National Oceanic and Atmospheric Administration Weather Radio Frequencies

May be received on multiple frequencies, depending on location.

9501B.1.3 Environmental Protection Agency

May monitor/transmit on various frequencies, depending on location.

9501B.1.4 Federal Emergency Management Agency

Bothell Mobile Emergency Response System Detachment

139.950 MHz Transmit 143.250 Receive 118.80 Tone

9501B.2 State of Washington

9501B.2.1 Wildlife Operations

Radio frequencies for wildlife response operations will be assigned by the Communications Unit leader.

9501B.2.2 Fish & Wildlife

151.4150 megahertz (MHz) DNR Common (WDOE)
Branch Tactical

9501B.2.3 Comprehensive Emergency Management Network

The Comprehensive Emergency Management Network (CEMNET) system utilizes base stations and repeaters controlled through the Washington State Patrol microwave system.

Lo Band Channel F1 transmits on 45.200 MHz

Lo Band Channel F2 transmits on 45.360 MHz

Lo Band Channel F3 transmits on 45.480 MHz

Channel F3 is the primary contact channel for the Washington State Emergency Management Department.

9501B.2.4 Search and Rescue

The Search and Rescue frequency transmits on 155.160MHz and is also managed by the Emergency Management Division.

9501B.2.5 Law Enforcement Radio Net

The Law Enforcement Radio Net operates on 155.37 MHz and is a mutual frequency used by state and local law enforcement agencies.

9501B.2.6 On-Scene Command and Coordination Radio

The On-Scene Command and Coordination Radio operates on 156.135 MHz.

9501B.2.7 Department of Natural Resources

State DNR transmits on 151.295 and receives on 159.420 MHz.

9501B.3 State of Oregon

9501B.3.1 Department of Environmental Quality

The State of Oregon Department of Environmental Quality utilizes the Oregon State Fire Net during a pollution or potential pollution incident.

The State Fire Net transmits on 154.280 MHz.

9501B.3.2 Maritime Fire and Safety Association Columbia River Communication System

Channel	Description	Transmit	Receive	RX
	Marine Ch 16	156.800	156.800	Carrier Squelch (CSQ)
	Marine Ch 11	156.550	156.550	CSQ
	Marine Ch 13	156.650	156.650	CSQ
	Marine Ch 14	156.700	156.700	CSQ
	Marine Ch 18A	156.900	156.900	CSQ
	Marine Ch 80	157.025	157.025	CSQ

9501B.4 State of Idaho

9501B.4.1 State of Idaho Office of Emergency Management

Transmit	Varies
Receive	Varies

9501B.4.2 National Interagency Fire Center

Transmit	Varies
Receive	Varies

9501B.5 Private/Commercial Frequencies

9501B.5.1 Clean Sound Cooperative

Transmit	454.000 MHz	Ch 1	Internal Comms
Receive	459.000		

9501B.5.2 Marine Safety Response Corporation

150.9800 MHz	S	Ch 1	Internal Comms
150.9800MHz	TX	Ch2	Internal Comms
154.5850Mhz	RX		
159.4800MHz	S	Ch3	Internal Comms
159.4800MHz	TX	Ch4	Internal Comms
158.4450MHz	RX		
454.0000MHz	TX	Ch8	Internal Comms PL 100
459.0000MHz	RX		PL 136

9501B.5.3 FOSS Telecommunications Network

All Foss Maritime vessels have VHF-FM capability. Operating tugs and tank barges monitor the appropriate VHF-FM channel for the house/working frequency as denoted below.

State	Foss Maritime Location	Channel	Frequency (MHz)
WA	Seattle	7A	156.350
	North Sound	7A	156.350
	Everett	18A	156.900
	Tacoma	18A	156.900
	Port Angeles	7A	156.350
OR	Portland	10A	156.500
	Astoria	10A	156.500

Ocean and coastwise tugs, while at sea, monitor single sideband radio, and standby on channel 8B (8297.000 kilohertz; kHz). Foss Maritime tugs also monitor the following frequencies:

SSB	2182.0000kHz	International Distress
VHF	156.800MHz	International Distress
Bridge to Bridge	156.650MHz	

The following Single Sideband radio frequencies are available aboard all Foss ocean-going tugs and shoreside base stations for conducting private communications in agreement with 47 Code of Federal Regulations (CFR) 80.373.

2182.0000kHz	8297.000kHz
4149.000kHz	12353.000kHz
8294.000kHz	16534.000kHz

9501B.5.4 The Petroleum Radio Service

47 CFR Part 90.65 designates the frequencies listed below as available for use in oil spill containment and cleanup operations.

Frequency (MHz)	Mode/Private Line Tone	Use
25.040	simplex	Base/Mobile
25.080	simplex	Base/Mobile
36.250	simplex	Base/Mobile
41.710	simplex	Base/Mobile
150.980	simplex/repeater, Pair 1 103.5	Base/Mobile
154.585	repeater receive, Pair 1	Mobile
158.445	simplex or repeater receive, Pair 2 103.5	Mobile
159.480	simplex or repeater transmit, Pair 2	Base/Mobile
454.000	simplex or repeater transmit, Pair 3 103.5	Base/Mobile
459.000	repeater receive, Pair 3	Base/Mobile

9501B.5.5 Amateur Radio Emergency Services

Volunteer Communicators and various frequencies are available for emergency use. Contact ARES via the Washington State Emergency Management Division or County Emergency Management offices.

9501B.6 International Frequency Listing

9501B.6.1 Environment Canada

Environment Canada coordinates incident response with the United States Coast Guard and Environmental Protection Agency in the lands and waters of British Columbia.

150.980MHz	154.585MHz	Tone 103.5
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9501B.6.2 Future International Contacts