



Chapter 9650

Communications Manual

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Communications Manual

9651 Introduction

This document has been prepared for NWACP-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**; identifies the main organizational, equipment and training requirements to be addressed by **Planners and Managers** PRIOR to an incident. **Appendix A, Operations**, and **Appendix B, the “5300”**, identify the Emergency Communications Offices and Operating Frequencies of the principal Federal and State agencies and private organizations involved in **Incident Response** activities.

9651.1 Discussion

Effective communications between all involved parties and agencies are crucial when coordinating an effective response to an incident. Use of the **Incident Command System (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** or **Communications Officer**.

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 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. Costs and Operability shall also be important considerations when obtaining equipment and services.

9651.2 Initial Notice

Actions to be taken by **Planners and Managers** when receiving the Initial Notification of an incident include; Providing initial assignments for **Communicators**; Designating a reporting Location, 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 Officer**. The **Communications Officer** will then assign **Communicators** to specific ICS Sections as necessary.

9651.3 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 or Communications Officer**. RRT **Communicators** should be familiarized with and be able to utilize Regional VHF Repeaters and be able to incorporate trained Radio Operators from the **US Coast Guard Reserve, Auxiliary or Amateur Radio Emergency Services (ARES)**. The following items are considered basic communications for initial incident response and should be brought to the Incident or obtained onsite. **Cellular Phones**; and charging units; **Landlines**; If the local telephone service cannot provide the number and type of circuits you require, request FEMA and/or MSRC Van with Satellite 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 Section 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/UHF Radios**; including batteries and charging units.

The **Communications Section Leader** or equivalent has overall responsibility for the following **Communications Equipment and Personnel** requirements with support from the **Staging Site Manager**.

9651.3.1 Distribution and Inventory Control

One of the most important issues to 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 block outlines the actions to be taken for receipt and resupply of communication equipment and services.

9651.3.1.1 Fixed Landline

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

9651.3.2 Cellular Phones

The **Communications Section Leader** estimates the need for new or additional cellular telephones 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 then obtain an expected delivery date. Receipt for the equipment at the Emergency Operations Center and arrange transportation for the equipment to the staging site. The **Staging Site Manager** accepts, inventories and disburses the new equipment as required. Turn-in unrepairable equipment is to be surveyed and reordered as required. The **Staging Site Manager** returns the equipment to the **Communications Section Leader** after unit demobilization. The **Communications Section Leader** returns any leased equipment back to the vendor.

9651.3.3 Satellite Phones

The **Communications Section 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 Emergency Operations Center and arrange transportation for the equipment to the staging site. The **Staging Site Manager** accepts, inventories and disburses the new equipment as required. Turn-in unrepairable equipment is to be surveyed and reordered as required. The staging area site manager returns the equipment to the **Communications Section Leader** after unit demobilization. The **Communications Section Leader** returns any leased equipment back to the vendor.

9651.3.4 Pagers

The **Communications Section 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 Emergency Operations Center and arrange transportation for the equipment to the staging site. The **Staging Site Manager** accepts, inventories and disburses the new equipment as required. Turn-in unrepairable equipment is to be surveyed and reordered as required. The **Staging Site Manager** returns the equipment to the **Communications Section Leader** after

unit demobilization. The **Communications Section Leader** returns any leased equipment back to the vendor.

9651.3.5 Phone Book (Incident-Specific)

The **Communications Section Leader** or staff develops a small, incident specific phone book to contain E-mail addresses, primary/secondary RF working channels and assigned telephone numbers of Pagers, Satellite and Cellular telephones.

9651.3.6 Portable (Mobile or handheld) Radio

The **Communications Section 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** (NIFC) POC in Section 4. Receipt for the equipment at the Emergency Operations Center 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 Section Leader** after unit demobilization. The **Communications Section Leader** returns any leased equipment back to the vendor.

9651.3.7 Fixed (Base Station) Radio

The **Communications Section Leader** determines short and long-range communications (UHF/VHF/HF) needs. To request fixed radio communications support from State and Federal agencies, private companies or volunteer organizations, refer to Sections 3 and 4.

9652 Equipment Capabilities

9652.1 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.

9652.1.1 Spoken Word

Ordinary face-to-face speech, though not generally considered a “Communications System” is central in nearly any human interaction. Though it may lack the precision of more formal methods of communication, the feedback that conversation provides helps the speaker know that what is said, has been heard and understood by those listening. Without good voice communications, commands will not be understood so cannot be followed, and information from the field will not reach persons who must act on it.

9652.1.2 Voice Transmission Over Telephone Circuits

Emergency planners must recognize that remote areas may not be prepared to fill the telephone requirements of a given incident. Lightly populated areas may have limited phone service or no service at all, or the reserve capacity of the system may be so small that temporary planning must address these problems. Solutions to such potential telephone bottlenecks might include hardware for microwave or satellite links in the inventories of response cooperatives.

9652.1.3 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 could/will quickly become saturated with traffic during an emergency.

9652.1.4 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.

9652.1.5 Government Emergency Telecommunications Service (GETS)

“The Government Emergency Telecommunications Service (GETS) is an emergency phone service provided by the National Communications System (NCS) 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 (NGO) 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 (PIN) 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:

The major long-distance networks provided by Interexchange Carriers (IXCs) - AT&T, MCI, and Sprint - including their international services
The local networks provided by Local Exchange Carriers (LECs)
Wireless carriers

Government-leased networks, including the Federal Telecommunications System (FTS) and the Defense Information System Network (DISN)

GETS is accessed through a universal access number using common telephone equipment such as a standard desk set, STU-III, facsimile, modem, or wireless phone. A prompt will direct the entry of your PIN 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.” (From <http://gets.ncs.gov>)

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

9652.1.6 Marine VHF Radio

All marine operations should include provisions for marine VHF radio communications between 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.

9652.1.7 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 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.

9652.1.8 HF Single Sideband Radios

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

9652.1.9 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 permit an individual to be paged and receive a short message in virtually any populated area throughout the US and Canada.

9652.1.10 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.

9652.1.11 Telex

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

9652.1.12 Facsimiles

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

9652.1.13 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 facsimile equipment.

9652.1.14 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.

9652.1.15 Radio Communication Support Systems

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

9652.1.16 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 twenty-four volt dc radios are available for use in vehicles and boats. Output wattages are the same as for 120-volt ac 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 (UPS) 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.

9652.1.17 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.

9652.2 Incident Response Communications

9652.2.1 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.

Planners may consider an **Incident Website**, produced by WDE, Foss, State EM and/or other involved parties, which could be developed to receive and organize information, prepare ICS reports as required, build the historical database, help to analyze data and provide a site for public information.

9652.2.2 Logistics Coordination

Food, transportation, and in some cases, shelter must be provided to workers during incident response operations. This is generally conducted over landline 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 **Logistics Section** to have communications channels separate from those used for directing and coordinating the incident.

9653 State/Volunteer Radio Communications

9653.1 State of Washington

The Washington State Emergency Management Division (EMD) maintains a 24-hour communications center for the State of Washington, located in the Emergency Operations Center 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 Emergency Operations Center 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:	www.wa.gov/wsem

9653.1.1 Washington State Department of Ecology (Ecology)

The Washington Department of Ecology does not operate or maintain its own statewide radio system, but has permission to utilize both the CEMNET system and the Department of Natural Resources 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 RCW) 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 hazmat 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

Central Regional Office (Yakima) 509-575-2490

Eastern Regional Office (Spokane) 509-456-2926

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

9653.1.2 CEMNET

The Comprehensive Emergency Management Network is a statewide, Lo-band VHF radio system. This system is the primary backup communications link between the State Emergency Operations Center (EOC) and the local EOCs throughout the state. This network also supports the daily operation of the Department of Ecology (WDOE) 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 (OSCCR) 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 the Emergency Management Division. 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 (DNR)** 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 overlap in the repeater system occurs. 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. The **Department of 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.”

9653.2 State of Oregon

The Oregon Emergency Response System (OERS) is the 24-hour communications center component for the Emergency Management Division. Initial notification will be made with a Duty Officer, who will then make appropriate Local, State and Federal notifications as prescribed in standard operating procedures. 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, OR)
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)
E-MAIL ADDRESS	oemd@oem.state.or.us

WEB PAGE ADDRESS
http://www.oregon.gov/OMD/OEM/tech_resp/oers.shtml

9653.3 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 hr)

addition, Clean Sound has all normal marine VHF and SSB frequencies on its operating vessels as well as 16 cellular phones assigned to individuals.

9653.5.4 Maritime Fire and Safety Association Columbia River Communications System (MFSA)

503-220-2098

Email: MFSA.com

The MFSA 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 three 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 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 area 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.

9654 Federal-Canadian Radio Communications

The **Region 10 US Environmental Protection Agency is Co-Chair (with the USCG) of the RRT.** The Region 10 EPA headquarters is located in Seattle, WA 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 POC is Jeffrey Rodin.

Primary telephone 206-553-6709

Fax # - 206-553-0175

Primary Radio Frequency -

Email – rodin.jeffry@epa.gov

The **Thirteenth 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 U.S. Coast Guard 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 Coast Guard command and control working channels, which are operated by USCG telecommunications personnel at designated Group units.

Phone # - (206) 220-7147

Fax # - (206) 220-7187

After Hours Phone (800) 982-8813 or (206) 220-7001

Transportable Communications Center (TCC) The Commander, Pacific Area, maintains a Transportable Communications Center (TCC), located at the Coast Guard Communications Area Master Station Pacific (CAMSPAC) at Pt. Reyes, CA It is a self-contained, rapidly deployable Coast Guard 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 200ft by 200 ft.** 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 **US Coast Guard Reserve (USCGR)** capabilities consist primarily of providing trained radio **Communicators**. Requests for this support are coordinated through the 13th District office.

The **USCG Auxiliary (USCG-Aux)** 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, (FEMA)** operates a number of communications assets in Alaska, Oregon, Idaho and Washington from the Region X headquarters buildings located in Bothell, WA. FEMA can also support incident response with a large self-propelled, self-contained radio van containing HF, VHF, UHF, KU band and Citizens Band radios, Merlin Switch capability, cell phone, fax, antennas, testing and repair facilities.

POC – 24/7 Watch Desk
 Phone # - 425-487-4600 or (800) 395-6042, (425) 487-4448
 Secondary Phone – 888-579-0019 (Satellite)
 E-Mail – bothell.moc@fema.gov
 Web Page– <http://www.fema.gov>

The Seattle District **US Army Corps of Engineers** (USACE) operates HF and VHF radios within most of Washington, northern Idaho and northwestern Montana in support of 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.

Emergency Management Branch Northwestern Division EM	Primary Phone (206)-764-3406 (503)-808-3902/3901/3903
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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
E-Mail	vic.k.yoshino@nws02.usace.army.mil

Satellite Telephones		
Federal Center South	877-602-4006	District Office
Chief Joseph Dam,	877-602-4009	Bridgeport, WA
Libby Dam	877-873-6853	Libby, MT

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

Portland District Emergency Management

Emergency Operations (not 24 hour)	503-808-4400
	503-808-4401
	503-808-4402

Walla Walla District Emergency Management

Emergency Operations Center	509-527-7146
Fax	509-527-7821
E-mail	CENWW-EOC@usace.army.mil
Satellite Telephone	877-559-4651 NWW EOC

The **National Interagency Fire Center** (NIFC), is located at the Boise, ID airport, and owns and operates a large cache of portable radio and satellite communications equipment. Although this equipment is used primarily by the US 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
E-Mail –<http://www.nifc.gov/>

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

POC - Regional Manager for National Communications Systems
Phone # - (206) 850-9415
Fax # - (206) 931-7507

9654.1 Canadian Communications Resources

Environment Canada is the primary contact for incidents that may affect Canadian lands or waters. The Environment Canada **Liaison for Communications, Chris LaRock**, will provide contacts and other information necessary for incident response.

Phone # - (604) 666-8241
Repeater Tx 150.980 Rx 154.485 ;Tone 103.6
Simplex 158.445 Tone 103.5; 159.480 Tone 103.5

Appendix A Communications

9650A.1 Background

This Section incorporates the Operational aspects of the RRT Communications Plan. **Appendix A** provides considerations for Communications Operators when initiating an incident response, as well as background information for less experienced Operators. **Appendix B**, the “**5300 Communications Section**” referred to in the 1 Nov 1998 memo as the “**Frequency and Communications Resource Summary**”, states that the 5300 will provide further detail on topics such as communications terminology, equipment setup, types of communications systems and more.

9650A.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 U.S. Federal Communications Commission. Agency Managers and Planners should address such interoperability issues during 2003 RRT Communications exercises.

9650A.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.

9650A.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.

9650A.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 ICS Command Post. Once a communications site has been selected, mobile communications vehicles and trailers should be located no closer than 25 ft 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.

9650A.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.

9650A.1.6 Incident Command System Forms

Under the **Incident Command System**, 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.

9650A.1.6.1 Radio Frequency Assignment Worksheet (ICS Form 217)

Purpose

The RFAW 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 RFAW. 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.

9650A.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.

9650A.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. The **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)**.

9650A.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 an NWACP-RRT 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 effect 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 MHz and 30MHz. Generally this method is employed when long-range communications are required; i.e. beyond 100 miles. High Frequency 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' (KHz), 'mega' (MHz), or 'giga' (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.

Communications Pro-Words

Pro-Word	Meaning
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

Appendix B

The 5300 (Frequency and Communications Resource Summary)

5300 Radio Frequencies

The following is a list of frequencies to be used by Federal, State, local and private agencies during incident reporting and response.

5311 Federal Government Frequencies

5311.1 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
Seattle	21A (157.05 Mhz)	Working
Astoria	23A (157.15 Mhz)	Working
Portland	83A (157.175 Mhz)	Working
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.

5311.2 NOAA Weather Radio Frequencies

May be received on multiple frequencies, depending on location.

5311.3 Environmental Protection Agency (EPA)

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

5311.4 Federal Emergency Management Agency (FEMA)

Bothell MERS Detachment

139.950 MHz Transmit 143.250 Receive 118.80 Tone

5312 State of Washington

5312.1 Wildlife Operations

147.5800MHz Wildlife Response

Beach Crew Wildlife Cleanup

146.4400MHz Wildlife Response relay

Beach Crew Wildlife Cleanup Relay

5312.2 Fish & Wildlife

151.4150MHz

DNR Common (WDOE)

Branch Tactical

5312.3 CEMNET (Comprehensive Emergency Management Network)

The 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.

5312.4 Search and Rescue (SAR)

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

5312.5 Law Enforcement Radio Net (LERN)

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

5312.6 On-Scene Command and Coordination Radio (OSCCR)

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

5312.7 Department of Natural Resources (DNR)

State DNR transmits on 151.295 and receives on 159.420 MHz.

5313 State of Oregon

5313.1 Department of Environmental Quality (DEQ)

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

The State Fire Net transmits on 154.280 MHz.

5313.2 Maritime Fire and Safety Association Columbia River Communication System (MFSA)

Channel	Description	Transmit	Receive	RX
11	Marine Ch 16	156.800	156.800	CSQ
12	Marine Ch 11	156.550	156.550	CSQ
13	Marine Ch 13	156.650	156.650	CSQ
14	Marine Ch 14	156.700	156.700	CSQ
15	Marine Ch 18A	156.900	156.900	CSQ
16	Marine Ch 80	157.025	157.025	CSQ

5314 State of Idaho

5314.1 State of Idaho Bureau of Disaster Services (BDS)

Transmit	Varies
Receive	Varies

5314.2 National Interagency Fire Center (NIFC)

Transmit	Varies
Receive	Varies

5315 Private/Commercial Frequencies

5315.1 Clean Sound Cooperative (CSC)

Transmit	454.000 MHz	Ch 1	Internal Comms
Receive	459.000		

5315.2 Marine Safety Response Corporation (MSRC)

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

5315.3 FOSS Telecommunications Network (FOSS)

All Foss Maritime vessels have VHF-FM capability. Operating tugs and 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 stand-by on channel 8B (8297.000Khz). 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 IAW 47 CFR 80.373.

2182.0000KHz	8297.000KHz
4149.000KHz	12353.000KHz
8294.000KHz	16534.000KHz

5315.4 The Petroleum Radio Service (PRS)

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

Frequency (MHz)	Mode/PL 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

5315.5 Amateur Radio Emergency Services (ARES)

Volunteer Communicators and various Frequencies are available for emergency use, Contact ARES via Washington State EM Division or County EM offices.

5316 International Frequency Listing

5316.1 Environment Canada (EC)

Environment Canada coordinates incident response with the US Coast Guard and EPA in the lands and waters of British Columbia.

150.980MHz	154.585MHz	Tone 103.5
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5316.2 Future International Contacts

