ARES/RACES FAMILIARIZATION COURSE

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I   Background for Disaster Communication

The Amateur Radio Emergency Service (**ARES**) consists of licensed amateurs who have voluntarily registered their qualifications and equipment for communications duty in the public service when disaster strikes.

There are four levels of ARES organization--**national, section, district** and **local**

At the **section** level, the Section Emergency Coordinator **(SEC)** is appointed by the Section Manager **(SM)** (who is elected by the ARRL members in the section) and works under his/her supervision. In most sections, the SM delegates to the SEC the administration of the section emergency plan and the authority to appoint District and local ECs.

It is at the **local** level where most of the real emergency organizing gets accomplished, because this is the level at which most emergencies occur and the level at which ARES leaders make direct contact with the ARES member-volunteers and with officials of the agencies to be served

The Radio Amateur Civil Emergency Service **(RACES)** is a radio communication service, conducted by volunteer licensed amateurs, designed to provide emergency communications to local or state civil-preparedness agencies. It is important to note that RACES operation is authorized by emergency management officials only.

Traditional ARES/RACES operations involve emergency message handling on Amateur Radio Service frequencies. These operations typically involve messages between critical locations such as hospitals, emergency services, emergency shelters, and any other locations where communication is needed. These communications are handled in any mode available, with 2 meters FM being the most prevalent. ARES/RACES personnel also might become involved in non-amateur public-safety or other government communications, Emergency Operations Center (EOC) staffing, and emergency equipment repair.

In our county, RACES consists of ARES members and other licensed radio amateurs who support the Pacific County Emergency Management Agency.   RACES activities generally have a state mission number for either an actual emergency operation or a training exercise. This number is issued by the Pacific County Emergency Management Director. RACES members are issued a Pacific County Emergency Communications Worker card

(with photo) after completing a background check. Training is provided to support Emergency Operations Center (EOC) operations or serve as Net Control Station (NCS). Operation in an emergency net is little different from operation in any other net, but requires preparation and training. This includes training in handling of written messages--that is, what is generally known as "traffic handling". Handling traffic is covered in detail in the ARRL *Operating Manual.*

 http://www.arrl.org/FandES/field/pscm/index.html

This is recommended reading for all ARES members--in fact, for all amateurs aspiring to participate in disaster communications.

The specifications of an effective communication service depend on the nature of the information that must be communicated. Pre-disaster plans and arrangements for disaster communications include:

   • Identification of clients who will need Amateur Radio communication services.

   • Discussion with these clients to learn the nature of the information they will need to communicate, and the people with whom they will need to communicate.

   • Specification, development and testing of pertinent services.

While much amateur-to-amateur communicating in an emergency is of a procedural or tactical nature, the real meat of communicating is formal written traffic for the record. Formal written traffic is important for:

   • A record of what has happened--frequent status review, critique and evaluation.

   • Completeness, minimizes omission of vital information.

   • Conciseness, which when used correctly actually takes less time than passing informal traffic.

   • Easier copy--receiving operators know the sequence of the information, resulting in fewer errors and repeats.

II   ARES Principles of Disaster Communication

It is impossible to state exact rules that will cover every situation that arises. The good amateur faced with a disaster situation may, however, benefit greatly from certain rules of thumb.

1. Keep the QRM level down. In a disaster, many of the most crucial stations will be weak in signal strength. It is most essential that all other stations remain silent unless they are called upon. If you're not sure you should transmit, don't. Our amateur bands are very congested. If you want to help, study the situation by listening. Don't transmit unless you are sure you can help by doing so. Don't ever break into a disaster net just to inform the control station you are there if needed.

2. Monitor established disaster frequencies. Many localities have established disaster frequencies where someone is always (or nearly always) monitoring for possible calls. When you are not otherwise engaged, it is helpful simply to sit and listen on such

frequencies, some of which are used for general ragchewing as well as disaster preparedness drilling. On CW, SOS is universally recognized, but has some legal aspects that should be considered where the need is not truly crucial. On voice, one can use "MAYDAY" (universal, the phone equivalent of SOS) or, to break into a net or conversation, the word "emergency."

3. Avoid spreading rumors. During and after a disaster situation, especially on the phone bands, you may hear almost anything. Unfortunately, much misinformation is transmitted. Rumors are started by expansion, deletion, amplification or modification of words, exaggeration or interpretation. All addressed transmissions should be officially authenticated as to their source. These transmissions should be repeated word for word, if at all, and only when specifically authorized. In a disaster emergency situation, with everyone's nerves on edge, it is little short of criminal to make a statement on the air without foundation in authenticated fact.

4. Authenticate all messages. Every message that purports to be of an official nature should be written and signed. Whenever possible, amateurs should avoid initiating disaster or emergency traffic themselves. We do the communicating; the agency officials we serve supply the content of the communications.

5. Strive for efficiency. Whatever happens in an emergency, you will find hysteria and some amateurs who must be "sleepless heroes." Instead of operating your own station full time at the expense of your health and efficiency, it is much better to serve a shift at one of the best-located and best-equipped stations, suitable for the work at hand, manned by relief shifts of the best-qualified operators. This reduces interference and secures well-operated stations.

6. Select the mode and band to suit the need. It is a characteristic of all amateurs to believe that their favorite mode and band is superior to all others. For certain specific purposes and distances, this may be true. However, the merits of a particular band or mode in a communications emergency should be evaluated impartially with a view to the appropriate use of bands and modes. There is, of course, no alternative to using what happens to be available, but there are ways to optimize available communications. Long experience has developed the following advantages:

    CW Mode

- Less QRM in most amateur bands.

- Secrecy of communications--contents of communications are much less likely to be intercepted by the general public to start rumors or undue concern.

- Simpler transmitting equipment.

- Greater accuracy in record communications.

- Longer range for a given amount of power.

Voice Mode

- More practical for portable and mobile work.

- More widespread availability of operators.

- Faster communication for tactical or "command" purposes.

- More readily appreciated and understood by the public.

- Official-to-official and phone-patch communication.

Digital Modes

Advantages (1) and (2) of CW, advantage (2) of voice mode, plus greater speed in record communication than some of the other modes, and--in most of these modes--error detection. In addition, digital modes offer the potential for message store-and-forward capability from within the disaster site to the "outside world." Finally, packet provides the capability of "digipeating" messages from point A to point Z via numerous automatically controlled middle points.

The well-balanced disaster organization will have CW, phone, and digital mode capabilities available in order to utilize all of the advantages. Of course, one must make the best use of whatever is available, but a great deal of efficiency is lost when there is lack of coordination between the different types of operation in an emergency. Absolute impartiality and a willingness to let performance speak for itself are prime requisites if we are to realize the best possible results.

7. Use all communications channels intelligently. While the prime object of emergency communications is to save lives and property (anything else is incidental), Amateur Radio is a secondary communications means; normal channels are primary and should be used if available. Emergency channels other than amateur, which are available in the absence of amateur channels, should be utilized without fear of favoritism in the interest of getting the message through.

8. Pause between transmissions. When participating in a net, it is very important to have a pause between transmissions in case emergency traffic needs to break in. The word "Break" is only said when it's life threatening critical. It's best to just give your callsign and stations in their current QSO should recognize you.

9. Support your Emergency Coordinator. Within the disaster area itself, the ARES is primarily responsible for communications support. When disaster strikes, the first priority of those NTS operators who live in or near the disaster area is to make their expertise available to their Emergency Coordinator where and when needed. For timely and effective response, this means that NTS operators need to talk to their ECs before the time of need so that they will know how to best respond.

10. Develop a backup procedure to provide a rotation of relief operators at the EOCs and any other critical facilities. While there currently is a mechanism for getting out-of-county ham support, we need to pre-arrange that support and have contacts already established. Our county hams would be able to maintain our capabilities for several days, but in an extended situation, out-of-county support will be required, and should be requested sooner rather than later.

Net Procedures (General Traffic Net)

The following procedures are recommended as NTS standards. Deviations from these procedures are made at the discretion of the net manager in cognizance of either necessity or desirability arising out of extraordinary circumstances, but always as a temporary expedient until standard procedure can be resumed. The following procedures apply to all NTS nets:

1. The net control station (NCS) transmits a net call up promptly at the pre-established net meeting time.

2. Stations reporting in indicate their function or the destination(s) for which they can take traffic, followed by the list of traffic on their hook, if any.

3. Time-consuming pleasantries and other superfluous matters are not to be a part of the procedure while the net is in session.

4. Net stations follow the direction of the NCS without question or comment if such directions are understood.

5. Explanations of any kind are not transmitted unless they are absolutely essential to the net's conduct.

6. Stations reporting into a net are held for 15 minutes, after which they are excused if there is no further traffic for them at that time. Stations in the net do not leave the net without being excused and do not ask to be excused unless absolutely necessary.

7. All nets follow the general precepts of net operation outlined in the ARRL *Operating Manual.*

Pacific County Net Control Levels

 There is a hierarchy of net formality levels determined by the situation, traffic load and the nature of the traffic. These levels are:

1. **NORMAL**: Everyday non-emergency usage with no structure or formal control.

2. **PRE-ACTIVATION – INFORMAL**: No specific Net Control Station (NCS). Participating Amateurs commit to listen and occasionally make their presence known subject to power requirements. Keep track of any traffic. Messages are handled as they come up.

3. **PRE-ACTIVATION – LOCAL DIRECTED NET**: NCS at a home location establishes and runs a formal, directed net. NCS Relief is coordinated on the net. Recommend net participant polling take place at 15 and 45 minutes past the hour to save on power. Any net participant event observations would be collected and collated by the NCS who can provide a summary to the Dept. of Emergency Management (DEM) periodically, if requested.

4. **FORMAL ACTIVATED NET** WITH MISSION NUMBER: This occurs when the DEM makes an official request for ARES/RACES support, typically including Amateur staffing of the EOC. The NCS for this net may be located at the EOC or elsewhere depending on circumstances. Once requested by DEM, Amateur operators are said to be "Activated".

Levels 3 and 4 specify a formal net, with all traffic directed to or through NCS, and permission of the NCS required to contact other parties on the net. This net is run like our Thursday Emergency Training Net and the Simulated Emergency Test (SET).

The NCS should always keep a log. Each log entry should contain, at a minimum, the time, call signs and a brief description of traffic involved. In cases where NCS is receiving reports of local conditions, these data should be noted in the log. Summaries of reports can be periodically passed to the EOC, preferably by packet radio, if available.

When checking into a formal net, be sure your call sign was recognized and acknowledged by NCS. Once you have checked into a formal net, you are expected to monitor until either, (1) dismissed by NCS, (2) you have checked out and been acknowledged as checking out, or (3) the net closes. One of the reasons for holding a formal net during a disaster situation is to keep track of the available Amateur operators, in case a need arises or conditions change. "They also serve who only sit and wait."

IV   Message Handling:

Standard ARRL message format should be used. The record should show, whenever possible:

1. A message number for reference purposes. (Items 1, 3 and 7 comprise the msg. ID)

2. A precedence indicating the importance of the message.

3. A station of origin so any reply or handling inquiries can be referred to that station.

4. A check (count of the number of words in the message text) so receiving stations will know whether any words were missed.

5. A place of origin, so the recipient will know where the message came from (not necessarily the location of the station of origin).

6. Filing time, ordinarily optional but of great importance in an emergency message.

7. Date of origin.

The address should be complete and include a telephone number if known. The text should be short and to the point, and the signature should contain not only the name of the person sending the message but his title or connection also, if any.

Point-to-point services for direct delivery of emergency and priority traffic do not involve relays. The full ARRL format is often not needed to record written traffic. Shortened forms should be used to save time and effort. For example, the call sign of the originating station usually identifies the place of origin. Also, the addressee is usually known and close by at

the receiving station, so full address and telephone number are often superfluous. In many cases, message blanks can be designed so that only key words, letters or numbers have to be filled in and sent. In some cases, the message form also serves as a log of the operation and assist our customers with more efficient communications.

ARRL Precedence and Handling Instructions

All messages handled by Amateur Radio should contain a "precedence"--that is, an evaluation of each message's importance, made by the originating station. A precedence is an "order of handling." There are four precedence levels in the ARRL message form: EMERGENCY, Priority (P), Welfare (W) and Routine (R), in that order of handling. When and as they appear on a net or any other kind of circuit, messages will be handled in this order.

1 Emergency

Any message having life and death urgency to any person or group of persons, which is transmitted by Amateur Radio in the absence of regular commercial facilities. This includes official messages of welfare agencies during emergencies requesting supplies, materials or instructions vital to relief to stricken populace in emergency areas. During normal times, it will be very rare. On CW, RTTY, AMTOR and packet this designation will always be spelled out. When in doubt, do not use this designation.

2 Priority

Use abbreviation P on CW, RTTY, AMTOR and packet. This classification is for important messages having a specific time limit, official messages not covered in the emergency category, press dispatches and emergency-related traffic not of the utmost urgency.

3 Welfare

This classification, abbreviated as W on CW, RTTY, AMTOR and packet, refers to either an inquiry as to the health and welfare of an individual in the disaster area or an advisory from the disaster area that indicates all is well. Welfare traffic is handled only after all emergency and priority traffic is cleared. The Red Cross equivalent to an incoming Welfare message is DWI (Disaster Welfare Inquiry).

4 Routine

Most traffic in normal times will bear this designation. In disaster situations, traffic labeled Routine (R on CW, RTTY, AMTOR and packet) should be handled last, or not at all when circuits are busy with higher-precedence traffic.

The precedence will follow, but is not a part of the message number. For example, a message may begin with NR 207 R on CW, "Number Two Zero Seven, Routine" on phone.

Handling Instructions

Handling instructions (HX) are optional but can be useful in handling messages. They serve to convey any special instructions to handling and delivering operators. This "prosign," when used, is inserted in the message preamble between the precedence and the station

of origin. Its use is optional with the originating stations, but once inserted is mandatory with all relaying stations. The following definitions apply:

We use these mostly:

HXC-- Report date and time of delivery (TOD) to originating station

HXE-- Delivering station get reply from addressee, originate message back.
The following are used for general messages and welfare messages. Obsolete due to cell phone calling.

HXA-- (Followed by number) Collect landline delivery authorized by addressee within...miles. (If no number, authorization is unlimited.)

HXB-- (Followed by number) Cancel message if not delivered within...hours of filing time; service originating station.

HXD-- Report to originating station the identity of station from which received, plus date and time. Report identity of station to which relayed, plus date and time, or if delivered report date, time and method of delivery.

HXF-- (Followed by number) Hold delivery until...(date).

HXG-- Delivery by mail or landline toll call not required. If toll or other expense involved, cancel message and service originating station.

Message Forms

We have two basic forms for message handling; voice and digital. They both emulate the ARRL (NTS) message standard.

Digital Messages: Packet or Pactor either for direct transmission or via Winlink-email, should have each item of the ARRL NTS format labeled. The labels are not part of the message, and do not count in the "Check".

PACIFIC COUNTY DEPT. OF EMERGENCY MANAGMENT MESSAGE FORM

MSG #: _____   PRECEDENCE:___ HX:___ STATION OF ORIGIN: _____ CHECK:_____

PLACE OF ORIGIN:_____ TIME FILED:_____ DATE:_____

TO:_____

EMAIL ADDRESS: _____

MESSAGE TEXT:

<body of message>

END OF MESSAGE TEXT

RECEIVED: - TIME: _____ DATE: _____- BY OPERATOR: _____

Voice Messages: Use the ARRL NTS Message Form (next page). All messages received by Voice should be placed into this format, even if originating in another. Many jurisdictions are adopting the "ICS-213" form. The information is the same.

Number_____ Precedence_____ Handling_____ Station of Origin_____ Check_____

Place of Origin_____ Time Filed_____ Date_____

TO: (Name/Address)_____

: _____

(Say: " BREAK – FOR TEXT")

_____ _____ _____ _____ _____ 5

_____ _____ _____ _____ _____ 10

_____ _____ _____ _____ _____ 15

_____ _____ _____ _____ _____ 20

_____ _____ _____ _____ _____ 25

_____ _____ _____ _____ _____ 30

_____ _____ _____ _____ _____ 35

_____ _____ _____ _____ _____ 40

_____ _____ _____ _____ _____ 45

_____ _____ _____ _____ _____ 50

(Say- "BREAK – FOR SIGNATURE")

Signature (From Agency)_____

(Say-" BREAK - End-Of-Message…Request Time-Of-Receipt")

Received From Station_____ Time_____ Date_____ By Operator_____

Sent/Delivered To Station_____ Time_____ Date_____ By Operator_____

Pacific County WA, ARES/RACES General Message Form. This page may be copied as necessary.

Message Logs

The General Log form (next page) is used to record all incoming and outgoing messages, all transmissions of any significance, and any other relevant items. This provides insight into what has occurred at the radio room and who performs each transmission. In a busy EOC with several positions, each position should keep a separate log. At the end of the exercise/mission, turn all logs into the EC/RO, Facility Ham Team Leader or DEM representative. If no form is available, a log may be kept on a blank sheet of paper. Entries may be "carried down". For example; "YOUR CALL" need not be entered on every line, but only when the information changes (operator relief).

These Logs are a part of the official station records. Except for Logs for exercises or drills, they should be retained permanently, or as advised by Pacific County Emergency Management Agency, with copies held by the EC/RO. They can be valuable, not only as a record of events, but to document time spent by volunteers. Logs do not have to be typed, but should be kept in a neat and legible fashion.

AMATEUR RADIO LOG FOR South Bend EOC / Winter Storm Activation 2007_____

DATE	TIME	STATION	YOUR CALL	NATURE OF TRANSMISSION
.12/26/07 .	2320		N7XYZ	Log for SBEOC VHF/UHF position, WA7PC, RACES activated for winter storm.
.12/26/07 .	2345		N7XYZ	Arrived at South Bend EOC, Opened Station
.	2350	QST		Announced Net now operating on VHF/UHF Rptrs
.	2353	W7ABC		In route to SBEOC
.	2355	K7HAM		Check-in Available in Long Beach
.12/27/07 . .	0002	W7RDR		LBAEOC, Checking in, up on 75-m, packet & 220 Voice through KO repeater, W7RBB at station with One more on the way.
.12/27/07 .	0020		W7ABC	Taking over VHF/UHF operation at WA7PC
.	0025	N7ZZZ		Check-in from Naselle, River 3-feet above normal
.	0030	N7AAA		Joe from Oysterville, heavy wind, power out
..	0033	W7EOC		Grays Harbor EOC with Msg 001 P W7EOC for PC DEM re: Request for info Hwy 101 TOR 0037.
	0039	W7CQ		Mobile on Hwy 101, road washed out just north of Bay Center, one lane barely passable.
	0045	K7CAT		K7CAT called W7DOG to pass message: PSE Call N7GUY, to come to net, K7CAT phone is dead in

AMATEUR RADIO LOG FOR_____

DATE	TIME	STATION	YOUR CALL	NATURE OF TRANSMISSION

Pacific County WA, ARES/RACES General Log Form. This page may be copied as necessary.