

SECTION 10: EMERGENCY OPERATIONS

This section provides basic information about radio operations during emergencies.

Once you complete this section, you will be able to:

- Describe the types of net used during emergency operations
- Understand the types of traffic carried over ARES nets
- Describe best practices for voice communications
- Describe best practices for formal message handling
- Understand how to use cross-band repeaters
- Work with and replace other ARES operators.

TYPES OF NETS

Depending on the nature and duration of the emergency situation, more than one net may be operating at any given time, either on repeaters or on simplex channels.

Two general types of net are used in ARES operations:

- 1 **Directed net.** A formal net with a net controller, who directs all communications on the net. Stations request permission from net control before calling other stations or passing traffic.
- 2 **Open net.** A net that allows informal communications, with or without a net controller. If there is a net controller, the controller acts to provide coordination, recordkeeping, and other support. On an open net, stations do not need to get net control permission before calling or passing traffic.

The specific types of net that may be initiated include the following:

- Operational net. This is a [directed net](#) that carries the bulk of the traffic for the client agencies.
- Task-specific nets. If a need exists for subnets dedicated to specific client groups or tasks (such as inter-municipal EOC communications), new net frequencies will be selected and specific operators will be moved to the new frequencies. Task-specific nets may be an [open net](#) or a [directed net](#).
- Standby (availability) net. This is a [directed net](#) that is a point of first check-in for operators who are announcing availability to participate. Operators are kept on this net until deployed to a location or role and moved to the operational net.
- Support net. This is an [open net](#) used to provide technical and procedural support to operators, and ARES resource coordination (for example, finding spare handhelds). The purpose of the support net is to keep 'maintenance' traffic off the operational net.

TYPES OF TRAFFIC

The types of traffic that ARES communications stations can carry include the following:

Tactical voice traffic

Tactical voice communications is used in situations where messages need to pass back and forth between stations without delays, and do not need to be formal. Examples of tactical traffic include:

- Requests to mobile stations for location or operational status
- Traffic that has not been originated by third parties (such as coordination between telecommunications operators or ECs)
- Informal discussions between officials
- Informal information requests
- General broadcasts from one station to many other stations (point to multipoint)

Formal voice message traffic

Formal voice communications is used in situations where messages need to reach their destinations without any errors, need to be logged and recorded, or are being relayed by intermediate stations. Examples of formal voice message traffic include:

- Formal requests or directives sent to a specific individual or office
- Formal reports or responses sent to a specific individual or office

Digital data messaging

Like formal voice message traffic, digital communications is used in situations where messages need to reach their destinations without any errors, and need to be logged and recorded. Digital messaging is particularly well suited to formal traffic that is lengthy in nature. Examples of tactical traffic include:

- Evacuee lists sent from evacuation shelters to the Canadian Red Cross
- Detailed reports sent from shelter managers to the Canadian Red Cross
- Supply requisitions sent from an emergency measures office to aid agencies
- Public bulletins sent from City Hall to local radio and TV stations

Automated traffic

Automated traffic is any form of communications that does not involve operators at both ends of the connection. Current examples of automated traffic include:

- Vehicle location coordinates (GPS data sent over APRS packet)
- Weather data sent over packet
- Site photos or video sent over SSTV or amateur television (ATV)

BEST PRACTICES FOR VOICE COMMUNICATIONS

The following recommended voice operating practices work well in emergency communications contexts:

- Know what you are going to say before you transmit.
- Listen carefully before transmitting to ensure that you understand the net and that you are not 'speaking over' another station.
- Speak clearly and slowly.
- If the message needs to be written down, speak more slowly.
- Pause after logical phrases.
- Speak at an even pace
- Speak across the microphone, and not into it.
- Key the microphone a second or two before speaking, to ensure that repeater and receiver squelch has opened.
- Identify using your callsign or tactical callsign at the beginning of any transmission.
- If using a handheld, do not move around while transmitting.
- Acknowledge any instructions directed at your station. If you understand the instructions, reply with "acknowledged". If you wish to indicate that you will comply with the instructions, reply with "will comply". If you do not understand the instructions or need more information, request that the sender repeat or clarify the instructions. (Do not say "repeat". Instead, use "say again".)
- Do not use the word "break" when you pause. It is confusing, wastes time and has another meaning in formal message handling. Merely unkey and pause. If the other station has questions, they should key up and make their request known. This also permits other stations to break in if they have emergency traffic.
- Do not make any angry or sarcastic comments on the air. On-air humour is not recommended. During an exercise or emergency, amateur radio becomes a profession, not a hobby. Sound professional.

Q codes

Do not use Q codes (such as QSY, QSL or QTH) during emergency operations.

Tactical callsigns

Use tactical callsigns once you have been assigned a task or location. A tactical callsign is a label that identifies either your duties (for example, *Fire One* for an operator attached to the Fire Chief) or your location (for example, *RC* for a station at the Red Cross building). Tactical callsigns reduce confusion.

Use your own callsign periodically in order to satisfy Industry Canada identification requirements, but do not over-use your own callsign. (For example, normally say “EOC this is RC”, and every 15-30 minutes during traffic, say “EOC this is RC, VE9ZYX at the Red Cross.”)

Phonetics

The only phonetics that are acceptable during emergency communications are those of the NATO/ITU phonetic alphabet. This is the phonetic alphabet recommended by Industry Canada, and in general use in amateur radio.

Table 1: NATO/ITU phonetic alphabet

A	ALFA	M	MIKE	Y	YANKEE
B	BRAVO	N	NOVEMBER	Z	ZULU
C	CHARLIE	O	OSCAR	1	ONE
D	DELTA	P	PAPA	2	TWO
E	ECHO	Q	QUEBEC	3	THREE
F	FOXTROT	R	ROMEO	4	FOUR
G	GOLF	S	SIERRA	5	FIVE
H	HOTEL	T	TANGO	6	SIX
I	INDIA	U	UNIFORM	7	SEVEN
J	JULIETTE	V	VICTOR	8	EIGHT
K	KILO	W	WHISKEY	9	NINE-ER (or NINE, if reception is clear or the meaning of the number is trivial - such as the nine in VE9ZYX)
L	LIMA	X	X-RAY	0	ZERO

Note: Do not use other phonetics. “Made up” phonetics, such as “Victor Echo Nine Henry America Kilowatt,” are not acceptable. The use of improper phonetics makes it difficult for receiving stations to copy the traffic, even under normal conditions, and also makes ARES operators appear unprofessional to other emergency responders and agencies.

Frequency designations

Use frequency designations (for example, **F3**) instead of lengthy frequencies or repeater names.

***Note:** Frequency designations are not an attempt to 'conceal' frequency information. (Anyone able to monitor a channel will be able to find other channels easily.) Frequency designations make it easy to communicate frequency information quickly and accurately, and are a best practice in emergency communications.*

TACTICAL VOICE PROCEDURES

Net operations

This section provides guidelines for participating in an ARES [directed net](#) as an ARES station.

Best practices

The following recommended net operating practices work well in emergency communications contexts:

- If you call net control and do not receive a reply, wait a minute or two and call again. (The net controller may be handling off-air or off-frequency activities.)
- Do not relay for another on-net station unless you are asked to do so by the net controller.
- If you move off the net frequency for any reason, try to maintain a watch on the net using a second receiver, in case you are needed on net.
- Stay off the air unless you are certain that you can be of assistance.

Checking in without traffic

When the net controller calls for check-ins, respond with your callsign only. Wait until you are acknowledged, and then stand by for further instructions from the net controller. If you are not acknowledged, wait until the next call for check-ins.

For example:

NCS: This is ARES Net Control. Any new stations, check in now.

VE9FK: V-E-9-Foxtrot-Kilo

VE9BES: V-E-9-B-E-S

VE9ZYX: V-E-9-Z-Y-X

NCS: Acknowledging V-E-9-F-K, V-E-9-B-E-S. Any further check-ins, come now.

VE9ZYX: V-E-9-Zulu-Yankee-Xray

NCS: Acknowledging V-E-9-Z-Y-X

Checking in with traffic

When the net controller calls for check-ins, respond with your callsign and identify your traffic (either with a brief description, or with a destination). Wait until you are acknowledged, and then stand by for further instructions from the net controller. If you are not acknowledged, wait until the next call for check-ins.

For example:

NCS: This is ARES Net Control. Any new stations, check in now.

VE9FK: V-E-9-Foxtrot-Kilo

VE9ZYX: R-C with traffic for E-O-C.

NCS: Acknowledged V-E-9-F-K, acknowledged R-C. R-C, call E-O-C.

VE9ZYX: E-O-C this is R-C with traffic.

VE9BES: Send for E-O-C.

VE9ZYX: E-O-C this is R-C. Coordinator here is asking for an extra generator at St. Rose, if one is available.

VE9BES: Acknowledged R-C, extra generator for St. Rose. Will reply shortly. E-O-C out.

VE9ZYX: R-C out.

NCS: This is ARES Net Control. Any new stations, check in now.

Breaking in with urgent traffic

If you have urgent traffic and need to interrupt ongoing communications, wait until an end of transmission and then break in.

For example:

VE9BES: Blah blah blah blah.

VE9FK: Blah blah blah blah.

VE9ZYX: VE9ZYX, traffic.

NCS: Send traffic.

VE9ZYX: Site 0-5 with priority traffic for E-O-C.

VE9BES: Send for E-O-C.

VE9ZYX: E-O-C this is Site 0-5. We've had a power failure at St. Joseph's Hospital. Generators are urgently required.

VE9BES: Acknowledged Site 0-5. Stand by.

NCS: All stations stand by.

VE9BES: Site 0-5 from E-O-C.

VE9ZYX: E-O-C send.

VE9BES: Two five thousand kilowatt generators are being sent now. Time to delivery is 20, two-zero, minutes.

VE9ZYX: Acknowledged E-O-C. Thank you. Site 0-5 out.

VE9BES: E-O-C out.

NCS: This is ARES Net Control. Any stations with traffic, check in now.

Breaking in with information

If you have information that will be of value to two stations that are currently communicating, wait until an end of transmission and then break in with information.

For example:

VE9FK: *Ongoing.* We need to have an ambulance or first aid team here at this site. We have a number of elderly here and some medical support may be needed.

VE9BES: Understood. We are checking into available first-aid teams.

VE9ZYX: Info, VE9ZYXX.

NCS: Send info.

VE9ZYX: E-O-C, this is Site 0-5. EMTs have been dispatched to all evac centres.

VE9BES: Acknowledged, Site 0-5. Site 2-0, stand by for now. Notify us when you receive your EMT.

VE9ZYX: Will comply. Site 2-0, out.

VE9BES: E-O-C out.

NCS: This is ARES Net Control. Any stations with traffic, check in now.

Letting third parties speak with each other on-air

If you are providing tactical or command communications, there will be times when the most effective way to facilitate communications is to allow third parties to speak directly with each other over the amateur radio channel.

When this is required, consider changing to an alternate channel that is not used to carry formal message traffic.

Establish contact with the other station before handing over the microphone to the third party.

Be sure that the third party is comfortable with the use of the equipment before the conversation begins.

Once the traffic is completed, take back the microphone, sign off in the normal way, and return to your designated channel.

Remember that you are in charge of the station and that you are responsible for all transmissions from that station.

If you have concerns about the content of the traffic (for example, due to the use of offensive language, or possible commercial traffic), politely terminate the exchange, ask the other station to stand by, and explain the 'rules of the road' to the third party.

Log any informal traffic in your station log, noting time, participants, and a brief description of topic or content.

FORMAL MESSAGE HANDLING

Formal message handling can be done using voice, packet, or even CW or RTTY. Formal message handling involves a simple process at the sending and receiving stations to ensure accuracy, delivery, and tracking.

The sending station transcribes the message onto a radiogram form (or has the sender fill in the form themselves).

If you are sending the message across the NTS, use the standard RAC ARES radiogram form. (See "[ARES forms and stationery](#)" on page 33.1 for an example of an ARES message radiogram form.)

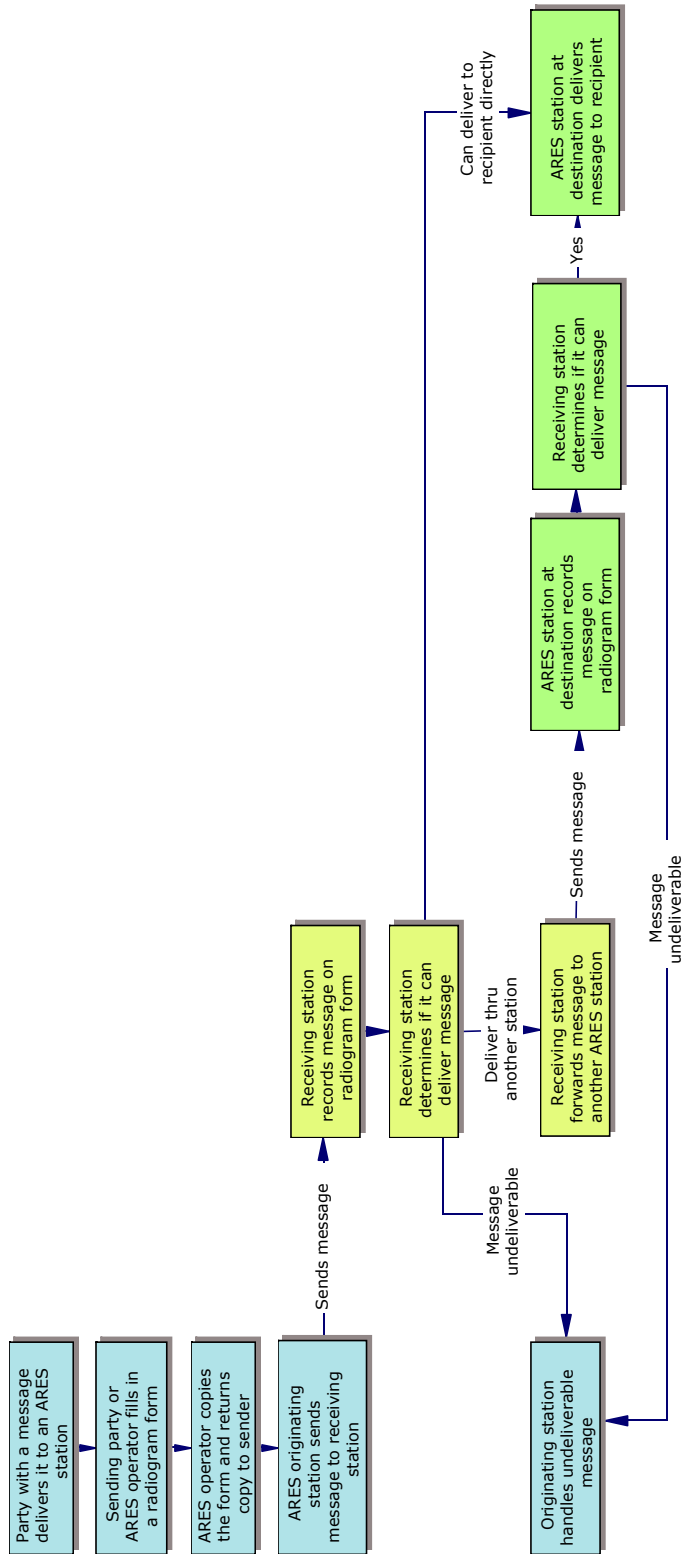
If you are sending the message locally, use the RAC ARES radiogram form unless the served agency has supplied its own customized message forms.

The sender keeps one copy of the radiogram for message processing and record keeping, and can give another copy of the form back to the sender if required. (At some locations, copying can be done using a photocopier; at other locations, carbon paper may be useful. Operators who do not have carbon paper or a photocopier could fill out a second copy of the form themselves, if required.)

The operator then transmits the message to another station for delivery. In most cases, the message will be transmitted to a station that is capable of directly delivering it to the recipient. In some cases (for example, where the NTS or a relay operator is needed), the message is sent to another station (or series of stations) that in turn transmit it to a station capable of delivering it.

If a message cannot be delivered, a second message is sent back to the originating station, notifying it that the message could not be delivered. Depending on the situation, the cause of the delivery failure, the precedence of the message, and the preference of

the sender, the originating station then either attempts retransmission, or abandons the attempt.



Elements in a formal message (radiogram)

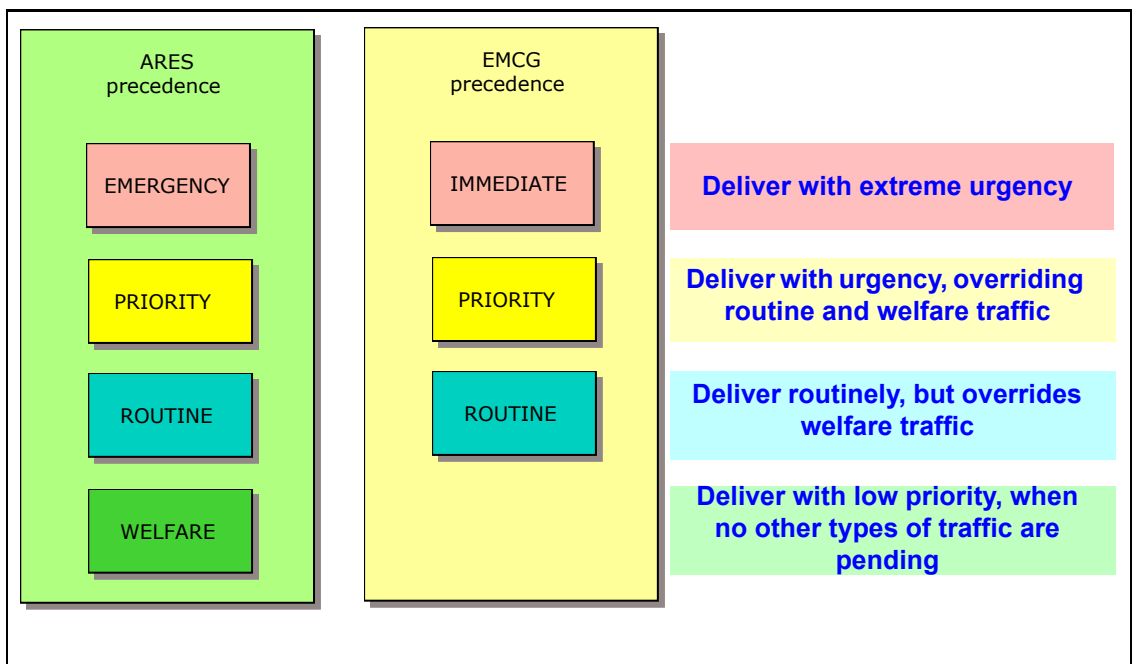
A formal radio message contains the following information elements:

- Preamble
- Address
- Message body
- Signature

Preamble

The Preamble block contains all of the handling and routing information for the message, including the message's urgency.

- **Number.** The number is the originating station's counter for traffic. The number begins at one for the first message sent during an operation.
- **Precedence.** This is the urgency of the message. Emergency or immediate traffic is handled with the highest priority. Priority traffic is handled with maximum dispatch and care. Routine traffic is handled when there is no emergency, immediate or priority traffic waiting. Finally, welfare traffic is handled when there is no other traffic waiting. (EMO EMCG stations in the Maritimes do not use the Welfare precedence, and use Immediate instead of Emergency.)



- Precedence codes are:
 - **E:** Emergency (ARES only) - written out in full
 - **O:** Immediate (EMCG only)
 - **P:** Priority
 - **R:** Routine
 - **W:** Welfare (ARES only)

EMCG messages can have dual precedence (if sent to more than one recipient). Each recipient can have an associated precedence.

- **Handling instructions (HX).** This may be optional, depending on the situation. This category provides a statement of what is to be done with the message when it arrives at the delivery point (for example, make a collect call to recipient, or discard if any problems are encountered).
- **Station of origin.** The call letters or tactical callsign of the originating station. This provides a path back to the originator in case of a problem or a request for confirmation.
- **Check.** A count of the total number of words making up the message. This ensures the message is intact, like a parity check in data. Count individual words, punctuation signs, and letter/number groups. Remember to perform the wordcount check very carefully. The loss of a single word could have a radical effect on the meaning of the message.

Note: The total message should be limited to less than 25 words if possible. This helps reduce errors, and shortens the handling time at each transport point. In the case of a Disaster Welfare Message, there are seven preset messages that can be used.

Note: Wordcounts are not used by some communications organizations with which ARES interacts, including EMCG.

- **Place of origin.** The location (City and Province, or tactical site) where the message originated. If a message originates at a site and given to the ARES station over the telephone, the *place of origin* is the site, not the station.
- **Time filed.** ARES only. An optional entry stating the time when the message was submitted to the originating station for transmission. (Use 24-hour military time format. Use either local time or UTC, as instructed by the emergency coordinator, communication supervisor or net controller at the beginning of operations.)
- **Date-Time Group (DTG).** EMCG only. A code representing the time and date when a message was originated. The format is DDHHMM MONTH YR (for example, 281430 AUG 05 representing 1430 hours, 28th August 2005).
- **Date.** The month and day when the message was submitted to the originating station for transmission.

Address

This must be as complete as possible. Include the postal code and the telephone number, or any other information needed by the receiving station to deliver the message to the recipient.

Message body

This is the content of the message itself. Keep this as short as possible, preferable under 25 words. The total message should be limited to less than 25 words if possible. This helps reduce errors, and shortens the handling time at each transport point. In the case of a Disaster Welfare Message, there are seven preset messages that can be used.

Signature

This identifies who sent the message.

Accepting messages for transmission

When you accept a formal message for transmission to another station, you must collect the following information from the sender:

- The exact title and address of the addressee. This is extremely important to guarantee the accurate, prompt delivery of the message.
- The exact title of the sender, so that if any return traffic is required, the addressee will know who should receive the message.

If you are handed a written message to send, do not modify it. Send the message as it is written by the sender. You do not need to understand the message content.

Record the date and time when the sender dictated or delivered the message to you.

If the originator has not already assigned a message number to the message, assign a message number yourself. The message number should be the number of the last message you assigned, plus one. As soon as you assign the number, record the number in the station message log.

Fill in the radiogram form, if it has not already been filled out. If the sender has not specified a priority, assign the message a ROUTINE precedence.

ARES INTERNAL TASKING (ORDERS) AND INFORMATION MESSAGES

In addition to passing messages for third parties (our served agencies), ARES operators will also send and receive messages to provide other ARES stations with important information, or to provide tasking (orders, instructions or rules of operation). This 'internal' ARES network traffic is not intended to go to any third party, but may be just as important as third-party traffic if it impacts ARES operator safety or the health of the ARES communications network.

Examples of **ARES internal tasking and information messages** might include:

- An instruction to shut down an ARES station, or move that station to a different location
- An instruction to impose radio silence for a period of time
- A notification that relief operators have been dispatched to a station
- A request for a station's operational status
- A bulletin providing an update of the overall emergency, intended to provide ARES operators with situational awareness.

ARES internal tasking and information messages may be formal or informal. Informal messages are suitable when the sender is certain that errors in reception of the message will not have a significant operational or safety impact, and no formal record of the message is required. Formal message handling is required when errors could have a significant impact, or when a formal record is required.

Format for tasking instructions (orders)

If you are a communications supervisor or emergency coordinator, you will issue 'orders' to ARES operators or stations to set up, maintain and manage the ARES communications network.

As an ARES operator or station manager, you will receive orders for you or your station.

When possible, these tasking messages should be delivered in person, rather than by radio. Do not interrupt during tasking. Wait until the instructions are complete before asking questions. .

The format for orders is broken in to several distinct units:

- 1 Situation
- 2 Mission
- 3 Execution
- 4 Coordinating instructions
- 5 Service and support
- 6 Command and communications
- 7 Safety
- 8 Time check (self explanatory)

Situation

A brief overview is given of the current situation and expected changes during the current operational period.

Mission

- An overview of what is to be accomplished during the operational period
- Any attached agencies
- Agencies you will be attached to or working with

Execution

- Details of what is to be done
- By whom
- When
- How
- Why

Service and support

- Transportation
- Meals
- Special equipment required
- Availability of air support etc.
- Accommodations if required
- Location of medical services

Command and communications

- Who is in command
- Location of command or CP
- Chain of command
- Where and from whom command instructions will come from
- Where information, situation reports, etc. are to be passed
- Radio frequencies/channels, tactical callsigns
- Emergency procedures and frequencies

- Radio frequencies/channels, tactical callsigns of adjacent units/agencies/sectors
- Special signals, whistles, warnings, etc.
- Nicknames for reference points
- Code words or phrases for confidential messages if required

Coordinating instructions

- Information of who you will be working with
- Meet points, identification if required
- Entry and exit routes
- Timings
- Time and place of debriefing
- Boundaries and control points
- Priorities of work

Safety

- Must include daily safety briefing
- Emergency procedures and instructions
- Weather forecasts
- Possible hazards in area
- If a forest fire, forecasted fire behavior
- If air support is available, safety procedures

CROSS-BAND REPEATING

If you are using cross-band repeating, remember the following guidelines:

- Count 1001, 1002 before talking after pressing the PTT switch. The 1001 provides time for your radio to transmit and bring up the repeater. The 1002 provides time for the repeater to bring up the cross-band repeater.
- In bi-directional repeat, repeater tails will lock you out until the tail drops. (The cross band radio will not drop out until the repeater tail drops.)
- Other users can slip in before the tail drops, keeping the person using cross band from getting in.

- Amateur radios are not designed for heavy use. Configure your radio to minimize transmit power. Consider using a computer CPU fan to keep the CBR transceiver cool.
- Use CTCSS to keep out intermod or other users on the same frequency.
- Make sure your radio is capable of cross-band repeating, and that you know how to set it up.

WORKING WITH AND REPLACING OTHER OPERATORS

When you are replacing another operator at a site or station (or when you are being replaced), ensure that the handoff of responsibility goes smoothly by discussing:

- Basic procedure, policy, net, and stations
- How messages are routed, and local delivery procedures
- Who the location manager is, and where
- Any equipment concerns or issues
- General activities within the location
- Planned activities over the next shift or 24 hour period.