-EMRG-

TRAINED VOLUNTEER RADIO OPERATORS
PREPARED TO PROVIDE COMMUNICATIONS
IN AN EMERGENCY

REVIEW OF ICE STORM 1998

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EDIT HISTORY:

DATE	DESCRIPTION	FILE NAME	AUTHOR
JAN 31/98	Original Release	REVIEW98.DOC	P Gamble
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The updated version was issued to add the following:

1. Some detail of the ice storm to provide the complete picture for anyone reading this document later on, who was not familiar with the storm
2. Add information on the status of the XM49ers in the storm
3. Correct some spelling errors

Comments are welcome and can be forwarded to Peter Gamble EMRG Team Leader Email: gamble@igs.net

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1.0 INTRODUCTION

1.1 DOCUMENT PURPOSE

This document was prepared by Peter Gamble, team leader for the Emergency Measures Radio Group (EMRG). The document contains a summary of radio activities during the January 1998 ice storm in Eastern Ontario and a general overview of amateur radio.

The document was written for two main audiences:

1. Regional Municipality of Ottawa-Carleton (RMOC), Emergency Measures Unit (EMU)
2. Emergency Measures Radio Group (EMRG) Members

The purpose of this document is to:

1. Provide the RMOC with a review of the January ice storm emergency, from the perspective of EMRG and amateur radio in general
2. Provide EMRG members with a review of the emergency, from the perspective of the RMOC and the emergency in general
3. Provide an explanation to EMRG members of why EMRG was not formally called out by the RMOC during the emergency
4. To identify areas of emergency response that can be improved either by the RMOC, by EMRG or jointly

1.2 DOCUMENT FORMAT

The document is written to meet diverse needs, so there is a lot of material. To make it easier to read, the information is organized to provide easy access to the main points, but also provides detailed supporting information.

- The SUMMARY, section 1.4, provides a list of the key points in the document and identifies which section to reference for more detail.

- The ACTION ITEMS list, section 1.5, provides a list of all recommendations that need to be followed up.

- Each detailed section of the document starts with a few lines summarizing the main point(s) of the section. The identifier for these points is an arrow and will look like this:
    - Key point

1.3 AMATEUR RADIO IN INVOLVEMENT

Amateur radio has proven to be an important resource in most major emergencies. During the ice storm in January 1998, there was a lot of activity from amateur radio operators assisting with the emergency.

The amateur activity was typically part of three main activities:

1. Cumberland Emergency Radio Group (CERG)
    - Activated by the Township of Cumberland to provide communications within Cumberland.

1. Ottawa Red Cross
    - Red Cross has a private radio frequency and also operates an amateur radio station for additional communication
    - Coordinated transportation for people, checks on people who had not been heard from and communication with evaluation teams who were out in the field

1. Local Amateurs
    - Relayed messages from areas within the Region, Eastern Ontario and Canada using mobile radios in cars or base stations in their home
    - Assisted the Red Cross with requests such as checking status on a local resident
    - Provided communications with other local amateurs within their municipal unit
    - Traveled to assist amateur radio groups outside the boundaries of the RMOC

1.4 SUMMARY

RMOC (Sections 2.0 & 6.0)

- Communications systems were stressed during the emergency, but never failed
- Cellular phones provided a key element in RMOC communications
- Requests for communications assistance made to the RMOC were resolved without the use of EMRG
- The EOC communications room was reliant on phone connections to the outside world, not radio communications to fire, police etc.

EMRG (Section 3.0)

- EMRG is a volunteer group made up of radio amateurs and members of the XM49ers
- The RMOC and EMRG have a signed agreement regarding emergency communications in the Region
- There are amateurs who are upset that EMRG was not called on during the emergency
- Based on the RMOC requirements and the RMOC-EMRG agreement, amateur radio communication was not required

AMATEUR RADIO (EMERGENCY USE) (Section 4.0)

- Cumberland Township activated the Cumberland Emergency Radio Group (CERG)
- The role of CERG expanded because they were on the air and amateurs throughout the Region were looking for a central point of contact
- Amateur radio provided communications for patrols door to door in several areas
- The Red Cross used amateur radio and CERG to provide some of its communications

IMPROVEMENTS (Sections 5.0 & 6.4)

- There is a need for a central control point for amateur radio during an emergency and EMRG is in the best position to provide this
- It appears that many municipalities were not aware of amateur radio as a resource, so therefore did not make a request for assistance
- None of the amateur radio antennas were operational at the EOC. EMRG & the RMOC are aware that there are problems and are working on it
- Requests for assistance must originate at the problem source, be sent to the destination that can assist and they must be clear and to the point

AMATEUR RADIO (GENERAL) (Sections 5.2 & 7.0)

- Amateur radio operators come from all walks of life and get involved in amateur radio for many reasons
- Amateur radio operators are licensed by Industry Canada (IC) and use frequencies reserved for amateur radio
- In an emergency, amateur radio operators can provide skilled radio operators, radio equipment and transportation
- During an emergency, the role of amateur radio operators goes beyond just forwarding messages. Amateurs may be requested to become active volunteers

1.5 ACTION ITEMS

1. Continue EMRG as a group, working to help local amateurs with training and guidance for emergency preparation
2. Discuss with the RMOC, the role of EMRG and amateur radio with respect to:
    - Does the RMOC see itself as a central location for local municipalities to go if they require additional communications assistance in an emergency, even if it is only the one municipality in the state of emergency. If so, would the RMOC be interested in providing information to these municipalities about the kind of communications that amateur radio can provide.
    - Involvement of EMRG early in an emergency to establish a central focal point for amateur radio in the Region

1. Complete repairs to the antenna system at the RMOC building.
    - Peter Gamble to provide RMOC with a report on the problem and a proposal for correcting the problem. (Feb. 2/98)
    - Discuss proposal with RMOC and determine action to be taken, including work required and a time line for completing this work

1. Move forward with the idea that representatives from the various amateur radio emergency groups in and around the Region should be meeting and ensuring that there is coordination between areas.
2. Meet with the Red Cross to discuss the emergency and if there is a requirement for EMRG as a resource available to the Red Cross.

2.0 RMOC EMERGENCY COMMUNICATIONS

⇒ Communications systems were stressed during the emergency, but never failed
⇒ Cellular phones provided a key element in RMOC communications
⇒ Requests for communications assistance made to the RMOC were resolved without the use of EMRG

2.1 RMOC PERSPECTIVE ON THE EMERGENCY

The ice storm created a lot of communications activity and did stress communications systems, however at no time was the RMOC without communications or without a solution to restore communications.

1. CELLULAR PHONES

- During the emergency, the RMOC used cellular phones to fill in areas not covered by mobile radio or wired phones
- The cellular system was becoming overloaded causing the RMOC to discuss the need for EMRG
- The cellular system did not fail and communications continued uninterrupted.

1. REQUESTS FOR ASSISTANCE

- One municipal fire department had a failure of their mobile communications, causing the RMOC to discuss the need for EMRG once more
    - The problem was resolved through the regional fire dispatch and some portable radios

1. RED CROSS

- On Jan 11, the Mayor of Cumberland put forward a question to the RMOC, asking why the Red Cross was requesting continued support from the Cumberland Emergency Radio Group (CERG).
- CERG was running a network control station full time, so the Red Cross had been using the radio operators provided by CERG to relay information to other areas within the Region and bordering communities. The Red Cross was concerned that Cumberland would end its emergency, causing CERG to shut down.
- When contacted by Peter Gamble on Jan 12, the chairman of the Red Cross communications group said he had no problem because the Cumberland fire chief and the head of CERG had agreed to remain in place if required to support the Red Cross.

1. AMATEUR RADIO

- On a daily basis, the RMOC met with the EMRG team leader (Peter Gamble) to discuss the status of the emergency and the status of EMRG with respect to the emergency.
- The RMOC was aware that the Cumberland Emergency Radio Group (CERG) was in operation in Cumberland
- The RMOC Emergency Operations Centre amateur radios were tested and made operational (2 radios) and the station VE3OCE was active on an occasional basis, checking in with Cumberland net control

3.0 EMERGENCY MEASURES RADIO GROUP

- ⇒ EMRG is a volunteer group made up of radio amateurs and members of the XM49ers
- ⇒ The RMOC and EMRG have a signed agreement regarding emergency communications in the Region
- ⇒ There are amateurs who are upset that EMRG was not called on during the emergency
- ⇒ Based on the RMOC requirements and the RMOC-EMRG agreement, amateur radio communication was not required

3.1 INTRODUCTION

There are amateurs in the area, who were upset that the Emergency Measures Radio Group (EMRG) was not called in by the Regional Municipality of Ottawa-Carleton (RMOC) Emergency Measures Unit (EMU) to assist in the emergency. This section attempts to pull together information key to this discussion.

3.2 EMRG DESCRIPTION

The Emergency Measures Radio Group (EMRG) is made up of Federally licensed radio operators, located in the Ottawa-Carleton region, who have made a commitment to volunteer their time and equipment in the event of an emergency. EMRG members are either licensed Amateur Radio operators, or are members of the licensed XM49 Emergency Radio Squadron.

EMRG is not a club, is not incorporated, owns no equipment and collects no money. EMRG acts as the interface between the amateur radio community in Ottawa-Carleton and the Regional Municipality of Ottawa-Carleton, Emergency Measures Unit (EMU).

3.3 RMOC-EMRG AGREEMENT (Key sections)

The RMOC and EMRG have a signed agreement which outlines the reasons for the RMOC to call on EMRG and the capabilities that EMRG is expected to supply. The two key sections relating to the RMOC use of EMRG are:

SERVICES

1. In the event of an emergency within the meaning of the Emergency Plans Act, R.S.O 1990, c.E.9 (hereinafter referred to as "emergency"), as declared by the RMOC, the EMRG may be called upon to provide, to the best of its ability, radio operators for the duration of the emergency for the purpose of providing back-up communications services.

RMOC RESPONSIBILITIES

12. Notification of an emergency shall be issued by the RMOC Environment and Transportation Commissioner or his authorized representative to any one or more of the EMRG's members identified on the contact list.
13. The RMOC is not obliged to utilize the back-up communication services of EMRG or its members.

3.4 REASONS FOR EMRG TO BE ACTIVATED

Summarizing the sections from the RMOC-EMRG agreement and adding a bit of explanation, there are really three reasons for the RMOC to call on the services of EMRG:

1. If during an emergency, existing communications within all or a portion of the Region fail or become overloaded such as:
   - Failure or overload of any or all of the mobile radio systems used by police, fire, regional works etc.
   - Failure of phone communications both wired or wireless

1. If during an emergency, communications systems do not exist for a specified purpose. This could be a way to provide:
   - A common radio system for agencies that do not have radios or have their own private radio systems on different frequencies
   - Communications to an area or building that is not equipped with communications capabilities suitable for the task at hand

1. If a municipality within the RMOC or an agency assisting the RMOC, requests assistance with communications AND the RMOC is unable to meet that request with its existing resources.

3.5 WHY EMRG WAS NOT CALLED

While the ice storm created a lot of activity and did stress communications systems within the Region, at no time was the RMOC without communications or without a solution to restore communications.

Based on the RMOC-EMRG agreement and the communications requirements of the RMOC during the emergency, the RMOC did not have a communications task for EMRG. Therefore EMRG was not called.

It is important to understand that this does not mean that amateur involvement was not happening or that more could not have been used.

It means that the RMOC had no internal need for additional communications and no outside groups such as local municipalities or the Red Cross had requested assistance with communications.

There were some important points made regarding what effect there would have been if EMRG was activated part way through the emergency. Some points of question are:

- With many EMRG members already working in Cumberland and other areas, how many additional resources would have been added if EMRG had been called out?
- While Cumberland took on duties beyond it's formal boundaries, CERG also had access to the bulk of the amateur radio operator resources. If EMRG had been active over the entire Region, Cumberland may have had less resources, not more
- Activating EMRG during the emergency would have established a new central Net Control Station (NCS) in the Region, but what would this have done beyond the expanded role being done by CERG. While a central NCS would be best, is the middle of an emergency a good time to change?

See section 5 for Observations and Recommendations

4.0 AMATEUR RADIO DURING THE EMERGENCY

- ⇒ Cumberland Township activated the Cumberland Emergency Radio Group (CERG)
- ⇒ The role of CERG expanded because they were on the air and amateurs throughout the Region were looking for a central point of contact
- ⇒ The Red Cross used amateur radio and CERG to provide some of its communications

4.1 CUMBERLAND EMERGENCY RADIO GROUP

The Cumberland Emergency Radio Group (CERG) was officially called in by the municipality of Cumberland on Wednesday Jan 7. The role of CERG is to provide amateur communications within the Township of Cumberland.

Initially CERG was only serving the Township of Cumberland, providing communications for basement pumping, generators and shelters. CERG used amateur volunteers gathered through radio contacts or phone calls. Many of the volunteers are members of the Emergency Measures Radio Group. As the severity of the emergency progressed, the boundaries of CERG spread.

4.2 THE EXPANDED ROLE OF CERG

It is important to understand that the Cumberland Emergency Radio Group (CERG) was operating on local amateur repeaters with wide spread coverage across the Region and the frequency was controlled by the CERG Net Control Station (NCS). For several days, CERG was operating 24 hours a day and during this time, it evolved to become the focal point for all amateur related activities in the area.

Three activities now spread the role of CERG beyond the boundaries of Cumberland:

1. The Red Cross was using the CERG Net Control Station to access amateurs throughout the Region and into communities on the edge of the RMOC

2. Local amateurs throughout the Region and surrounding communities were checking into the CERG NCS to relay information from areas not covered by the repeater used by CERG, pose questions for residents in their area and to offer their services

3. Small communities on the edge of the Region were now into the emergency for several days without power and the temperature was dropping. These communities were mounting patrols to go door to door checking on residents, but they needed communications between the patrols and local fire hall or shelter.
    - CERG was getting the requests to provide amateur radio operators for these patrols, some of which were within Cumberland, but some of which were outside of Cumberland or even the Region.

4.3 RED CROSS

Ottawa Red Cross

- Coordinated transportation for people who were unable to stay in their home, but were looking for assistance from the Red Cross to get to another home or shelter
- Home checks for people who called in worried about some one who had not been heard from
- Communication with Red Cross personnel in the field

5.0 OBSERVATIONS & IMPROVEMENTS

⇒ Requests for assistance must originate at the problem source, be sent to the destination that can assist and they must be clear and to the point

⇒ During an emergency, the role of amateur radio operators goes beyond just forwarding messages. Amateurs may be requested to become active volunteers

⇒ There is a need for a central control point for amateur radio during an emergency and EMRG is in the best position to provide this.

⇒ It appears that many municipalities were not aware of amateur radio as a resource, so therefore did not make a request for assistance

5.1 REQUESTS FOR ASSISTANCE

Requests for assistance during an emergency need to follow two important criteria:

1. The request should be from the person/group/organization looking for assistance, to the person/group/organization from whom assistance is being requested.
    - Messages can be relayed through other groups, but third party origination of requests causes confusion as to who needs what & why.
1. Request should state explicitly what is required/expected

    For Example:

    - What assistance/resources are being requested
    - What size, shape, quantity of assistance/resources are required
    - When is the assistance/resources required
    - Where is the assistance/resources required
    - How long is the assistance/resources required

5.2 THE ROLE OF AMATEUR RADIO

Traditional Model

The traditional model (Present RMOC-EMRG agreement) has amateur radio as a resource to provide communications. This view has radio operators at strategic locations, sending formal messages between locations. These messages could be local requests for supplies or requests to or from the Red Cross to anywhere in Canada asking for status on a loved one.

In this traditional model the amateur radio operator does not originate any messages, they are prepared by an official, on a message form. The radio operator then passes (sends) this traffic (message) to another amateur radio operator for routing towards its destination, or directly to the radio operator at the destination location.

At the destination location, the radio operator receives the message, recording in on a new message form. The completed message form is handed to the official listed as the recipient. With this model, amateur radio operators become a type of intelligent facsimile network, taking messages in at one end and reproducing it at the other end.

Participant Model

During the ice storm emergency, radio amateurs operated under a different model which I call the Participant Model. In the participant model, radio operators were active volunteers with radios, using radio as a means to report progress and status of their volunteer activity.

In the participant model, there is still a net controller and their are still designated officials. However a shortage of volunteers may mean that the radio operator is doing more than just providing communications.

This model does not suggest that the radio operator is overburdened with activities. What it does mean is that the radio operator may also be driving the delivery vehicle, rather than riding along as the passenger radio operator.

The participant model is really about cooperation, after all this is an emergency situation. Radio operators may be called on to do more than just provide radio communications, because that is what’s required at the time.

This does not imply that there is no control and that radio operators can be directed by anyone anywhere. It simply means that the radio coordinator, in conjunction with emergency officials and radio operators, may agree to do more than just provide radio communications.

SUMMARY OF THE ROLE OF AMATEUR RADIO

Be flexible to provide the most assistance possible. There will still be a need for formal messages between some locations, but many amateur radio operators will be working directly in the field, providing more than just radio communications.

Flexibility and individual preparation are important to success. Amateur radio operators need to be able to respond to a variety of situations, locations and duties.

5.3 CENTRAL COORDINATION OF AMATEUR RADIO

When the emergency began, amateur radio operators started to check into local repeaters, looking for a focal point. Some of these were people offering assistance, some were offering or looking for information and others were in motion already providing assistance in some way.

During the height of the emergency there were several pockets of amateur radio operating in and around the Region. Each of these groups had similar requirements:

- Provide communications within their area
- Communicate with the Red Cross in Ottawa
- Communicate with other amateurs for pooling of resources

The RMOC is looked to as the centre or core of the Region where people look for leadership and assistance. In that same way, amateur radio operators look to the Emergency Measures Radio Group to provide a central control and administration for amateur radio.

The Cumberland Radio Group provided this central function during the emergency. However CERG was called out when the Township of Cumberland declared an emergency. Once Cumberland ends its state of emergency, CERG would theoretically shut down, even though there are other areas still in a state of emergency. This would have left a hole in the amateur communications structure.

With the present model for EMRG, activation is only at the request of the RMOC and that is only if communications is required by the RMOC. There is a need for EMRG to operate as a net control station during an emergency to establish a central focal point. Should this be done outside of the RMOC or incorporated into the RMOC response?

Emergency communications for amateur radio can be of two types:

1. Registered volunteer for a municipal government or agency such as the Red Cross or Saint John Ambulance
2. Non registered volunteer using amateur radio to help people in any way possible.

Two important distinctions between the two items above are:

1. Recognition by other groups or agencies
2. Liability coverage (Non registered volunteers operate at their own risk)

EMRG can establish a net control station outside of the RMOC. This would require a location (perhaps some ones house) but there would be two missing elements, contact with other agencies and liability coverage.

RECOMMENDATION
In the event of an emergency, where the RMOC is involved, EMRG should be part of the early response. The initial EMRG involvement would be to establish a presence within the amateur radio community through a net control station operating from the EOC.

5.4 EMRG AS A RESOURCE FOR ASSISTANCE

The important distinction that resulted in EMRG not being called out during this emergency, was the fact that there were no requests for communications assistance made to the RMOC from local municipalities or the Red Cross that required EMRG.

Knowing the state of chaos that existed in many small municipalities, the actual use of amateur radio during the emergency and the last minute attempts to use amateur radio, it appears that these small municipalities were not aware of amateur radio as a resource so therefore did not make a request for assistance.

In most cases, these areas lack a means of providing mobile communications that can cover a dispersed area. Some of the problems are:

- No pool of extra radios on hand (Cannot afford it)
- Hand held radios don’t provide sufficient coverage
- Local obstacles may limit communications without a repeater

The main reasons for these areas to use amateur radio are for:

- Local communication such as door to door patrols or shelter to operations centre (Some rural shelters do not have convenient phone access, use pay phones or only have 1 line available)
- Communications to central locations such as the Red Cross for shelter supplies

The present EMRG agreement is with the Regional Municipality of Ottawa-Carleton. One way to provide assistance to local municipalities would be for EMRG to establish individual agreements with each municipal unit within the Region. These agreements would all need to identify EMRG's primary responsibility to the RMOC.

This is really a two part issue:

1. How to make local municipal leaders aware of amateur radio as a communications resource

2. Establish a means for these municipalities to access amateur radio assistance if they need it during an emergency

Once item 2 is resolved, information can be provided from many sources including EMRG, Radio Amateurs of Canada (RAC), Preparedness Canada and groups who have successfully used amateur radio communications during an emergency.

Resolution of item 2 can take two possible forms:

1. Establish the RMOC as the central point through which municipalities can make requests for communications assistance. This needs to be discussed with the RMOC to see if it fits within their mandate. Some advantages include:
    - There is only one agreement to maintain
    - This ensures that the RMOC is the focal point, so it is easier to serve more than one municipality

1. Establish individual agreements for EMRG with each municipal unit. There are downsides to this, such as:
    - This creates a lot of work to establish and maintain the agreements
    - There is a finite quantity of amateur radio operators so this resource must be distributed across municipalities if more than one municipality has a state of emergency. Amateur radio communications cannot be assigned on a first come first served basis
    - EMRG must interface directly with all the municipalities involved, including explaining during an emergency why resources are being moved from one municipality to another
    - It appears we are headed for reduced municipal government with the mega city concept, so expending effort to establish individual agreements may be a short lived solution

RECOMMENDATION
The RMOC should be the central point of contact for amateur radio communications assistance in the Region. This needs to be discussed with the RMOC and if acceptable, communicated to the local municipal units along with some information on what amateur radio can provide.

5.5 EMRG & THE RED CROSS

In the past, there was an agreement between EMRG and the Red Cross, but this agreement became void with the new RMOC-EMRG agreement. The Red Cross and EMRG did plan to set up a meeting to discuss the possibility and requirements for an agreement, but the meeting never took place due to schedule conflicts and was never pursued by the EMRG team leader.

The role of EMRG and the possibility of assisting the Red Cross in an emergency needs to be explored to see if the Red Cross has requirements that could be met by working with EMRG.

5.6 WORKING TOGETHER

There are several groups in and around the Region who provide voluntary emergency communications. One item that came from the debriefing session held by the Cumberland Emergency Radio Group, was a need to get together and coordinate resources and activities to ensure the best possible assistance can be made available in the area regardless of the boudoirs which define each group.

6.0 EMERGENCY OPERATIONS CENTRE

⇒ None of the amateur radio antennas were operational. EMRG & the RMOC are aware that there are problems and were working on this

⇒ Of the four operator positions in the EOC for EMRG, only one was available for use by EMRG.

⇒ The EOC communications room was reliant on phone connections to the outside world, not radio communications to fire, police etc.

6.1 OVERVIEW

The Emergency Operations Centre (EOC) operated by the Regional Municipality of Ottawa-Carleton (RMOC) is located at the RMOC main building at 111 Lisgar St. in Ottawa. The EOC forms the heart of the RMOC emergency response.

The core of the EOC is made up of several rooms, which includes a:

- boardroom style meeting room with TV monitors, a map of the Region and a mechanized pad board. This is where decisions were made regarding the emergency.
- communications room with two rows of operator positions, equipped with radios and telephones
- three offices, access to copiers, printers and other supplies
- large meeting room for other agencies, such as the Regional Police and a large room which served many tasks, including a serving area for meals.

There were also many other sections of the Regional headquarters used for emergency response.

- There were around 100 people answering the special RMOC response line.
- The usual dispatch and coordination for the Regional works crews, called “Window On The Region” was busy with an increased load.
- The press conferences were held every day so people had to prepare information for each department, ensure outside visitors made it to the room and the room had to be ready to seat all the people and they had to have working microphones.
- Various offices within the building were busy providing coordination and support activities

6.2 THE EOC COMMUNICATIONS ROOM

The layout of the EOC communications is a rectangular room with two rows of operator positions, one on each side wall. Each position is assigned to a specific organization and is equipped with a radio and telephone. Some of the organizations represented are Police, fire, OC Transpo, Red Cross, Regional Hospital and EMRG.

EMRG has four operator positions in the EOC communications room, one with no radio, two with tri band radios and one with a 2M only radio. There is a TV monitor at one end of the room and a large rectangular table in the middle of the room.

6.3 ACTIVITY IN THE EOC

The traditional view of the role of the communications room, is as the radio communications centre with a series of radio operators, each representing an agency involved in the emergency. Messages to and from the EOC, flow through these operators.

It is important to understand that within the EOC communications room, there were the normal groups such as fire, police and OC Transpo, but they were very low profile. However there were additional activities within the communications room that were very noticeable. During the emergency, there was an ongoing activity of:

1. Recording requirements and placing them in a priority based list for generators, heat, water etc.
    - This included places such as nursing homes, shelters, private homes with medical equipment that required power and farmers
1. Finding sources of wood, fuel, candles etc.
2. Finding generators of all sizes from across Canada and then coordinating:
    - What size is the generator, watts & voltage
    - How to get the generator if it can't be delivered
    - Keeping track of where the generator came from, where it was at all times and how to return it to its owner
1. Shelter support such as delivering supplies for the Red Cross and getting generators for sites with no power
2. Water coordination for people needing water, mostly farmers and pumping for those who had too much water

The busiest activity by far was the generators. This activity involved 6 people full time, made up of people from the RMOC, Ontario Hydro, plus one military person. This group had to look at each request based on priority and power required. Every generator, including those provided by the military had to be listed and identified by its capacity before it could be put into the field.

The generators had various kilowatt ratings from 1KW up to 700KW. They also had various voltage ratings such as 110V, 240V & 660V. Farmers needed high capacity (30KW) generators rated at 240V, while many shelters or nursing homes needed similar wattage but 660V. There was not always a generator available to match the need.

Coordination of generators was also linked to other participants in the emergency. For example getting a generator to a nursing home, avoided the need to evacuate the nursing home. As the emergency progressed, and some areas had power restored, the generators were moved to other locations. This coordination activity kept up a feverish pace during the entire emergency.

6.4 ADDITIONAL REQUIREMENTS

The space in the communications room was at a premium. With the generator coordination, they required access to phones and to white boards. One temporary white board was brought into the room and another was installed on the wall after a few days. Three of the four EMRG positions were in use for this, as was the middle table.

Items which were not originally integrated into a communications room are extra convenient power outlets for computers, printers and cell phone battery chargers. These items also require space which is not available within an operating position causing organizations such as the police to spread out onto the middle table for their computer. There was also a FAX machine which took up one unused operating position, not out of carelessness, but because it needed a phone line and there was really nowhere else it could go.

6.5 EMRG OPERATIONAL STATUS

The RMOC and EMRG are aware that there are some problems with the antenna system at the RMOC for the EMRG radio positions. This is been under investigation, but was not resolved prior to the emergency. In preparation for a possible call out, Peter Gamble, EMRG team leader tested the radio positions, finding that now none of the radio positions had a usable antenna.

With a couple trips to the roof, a car magnet mount antenna and a lot of SWR testing, two antennas were made operational into the EMRG operator positions. One antenna was a tri bander and one was a 5/8 mobile for 2M only.

The radios in the EOC have not been programmed and tested. During the emergency, the two Kenwood tri band radios were programmed and tested, as well as two hand held dual band radios. Operating out of the EOC identified some areas for improvement, such as:

- The radio must be separated from the power supply because with the mobile radio mounted on top of the power supply, the radio gets hot
- The radio and power supply should be on the shelf above the work area because with the telephone and radio, there is no space left on the desk top
- Intermod on 2 meters is very evident in the EOC, making it difficult to monitor a radio while wearing headphones. Testing using the small Digital Communications intermod filter was not successful, so the larger filter will be tested to see if it would make the use of 2 meters acceptable
- One duplex receptacle near the floor for each operator position is not enough. Installing a power bar would allow for a computer, battery charger or other devices to be plugged in with minimal effort

Space in the EOC communications room was also a problem, with only one of the four EMRG positions available for EMRG use. If EMRG was called in, something would have been worked out, but this is worth exploring in advance.

With the limited space in the communications room it may be beneficial to have some space for EMRG outside of the EOC. This could be an office which EMRG could use for limited radio communications and coordination, allowing only the required radio operators in the communications room.

7.0 AMATEUR RADIO OVERVIEW

- ⇒ Amateur radio operators come from all walks of life and get involved in amateur radio for many reasons
- ⇒ Amateur radio operators are licensed by Industry Canada (IC) and use frequencies reserved for amateur radio
- ⇒ In an emergency, amateur radio operators can provide skilled radio operators, radio equipment and transportation

7.1 WHAT IS AMATEUR RADIO

Hams, as amateur radio operators are called, get involved in Amateur Radio for many reasons. They all have in common a basic knowledge of radio technology, regulations, and operating principles, demonstrated by passing an examination for a license to operate on radio frequencies known as the Amateur Bands. These frequencies are reserved by Industry Canada (formerly the federal Department of Communications, or DOC), for use by Hams.

Amateur Radio operators come from all walks of life -- movie stars, missionaries, doctors, students, politicians, truck drivers, and just plain folks! They are all ages, sexes, income levels, and nationalities, have an interest in what's happening in the world and use radio to reach out.

Some Hams are attracted by the ability to communicate across the country, around the globe, even with astronauts on space missions. Others build and experiment with electronics. Those with a competitive streak enjoy DX contests, where the object is to see how many distant locations they can contact. Some like the convenience of a technology that gives them portable communication. Others use it to open the door to new friendships over the air or through participation in one of more than 2000 Amateur Radio clubs throughout the world.

*From the web site of VE3JV at: www.qsl.net/ve3jv/

7.2 WHAT CAN AMATEUR RADIO PROVIDE

Amateur radio operators are equipped with hand held, mobile and base station radios, which they own & operate at their own expense. The equipment forms the basis for a hobby which has a long history of community service.

The repeater network which forms the backbone of amateur communications, is owned and operated by local amateur radio clubs or interest groups in the area. These clubs establish and maintain this equipment as part of the amateur radio hobby and for public service work.

In an emergency, amateur radio operators can provide:

1. **Skilled radio operators**. They know how to use the radio, they use it every day!
2. **Radio Equipment**. Members already have the radios and they know they are working because they are used every day!
3. **Transportation**. Members have vehicles for transportation and many vehicles are equipped with mobile radios, making them portable communications centres.

Some amateurs hold a valid Restricted Operators Certificate (ROC) & an Amateur Radio license. The ROC provides licensed operation of commercial Land mobile, Air & Marine radios.

- This provides a resource of trained & licensed radio operators who can operate equipment belonging to primary agencies if required

Many amateurs are involved in electronics or communications professionally, providing tools and expertise which can prove very useful in an emergency.

7.3 AMATEUR RADIO RESOURCES AVAILABLE

Amateur radio resources available for emergency use are made up of three main components:

1. Amateur radio operators with radios in their homes, in their cars and/or hand held radios
2. Distributed repeaters(1) serving the area with each repeater having a different physical location, height and power
3. Cooperation among operators to pass information between operators or between different radio networks

(1)The design and location of a repeater is based on the resources available to the group that built it and the community of interest that the repeater is meant to serve. For Example the Pioneer Amateur Radio club has access to Bell Canada radio sites and designed their repeater to provide good coverage over a wide area. The repeater is made up of three receiving sites (Kanata, Bank St. and Cumberland) with one transmitter in the middle (160 Elgin street).

Other groups have affiliation with local radio/TV stations, the RCMP and some are just local people using their own resources. The Manotick repeater is an example of a design meant to serve a local need in the Manotick-Kemptville area.

8.0 ICE STORM

8.1 REGION OF OTTAWA-CARLETON DECLARES STATE OF EMERGENCY

OTTAWA-CARLETON-January 8, 1998, 10:00 am--As Regional Chair I am declaring a state of emergency in Ottawa-Carleton as of 10 am this morning. Based on current weather forecasts, we expect this state of emergency to remain in place until at least Saturday at noon. The emergency is based on the increasing number of people without power, and the increasing number of trees falling on power lines and trees. This is the first time in Regional history that we have taken this step.

We ask everyone to stay where they are if they are in a safe place. Community centres are open throughout the Region on a 24 hour basis.

There are currently at least 50-60,000 hydro customers in Ottawa-Carleton without power and this number is constantly rising. The greatest danger is of falling power lines and trees. If you see a downed power line sparking, please call 9-1-1 immediately.

The local fire departments are currently meeting all demands for their services, and the central water supply is available to them. We have had four major fires overnight with one fatality.

The Queensway in the east end is now closed from the 417 split through to the Quebec border. Major regional arterials are open and passable. Local roads are ice covered, and dangerous due to falling trees and down power lines. Please stay off the roads to leave them available to emergency vehicles.

8.2 CBC REPORT: Posted Jan 09, 1998 01:55 PM EST

The worst ice storm in Quebec in almost 40 years turned even uglier Thursday. Freezing rain continued to lash the province, as well as eastern Ontario before heading into the Maritimes. Seven people are dead as a result of the storm which has left more than three million people without electricity.

The storm began Tuesday, dumping 45 millimetres of freezing rain around Montreal. Another 25 millimetres are expected over the Next few days.

The arrival of 2,500 Canadian Forces troops in the Montreal area on Thursday capped a day that began with many people waking to the sound of exploding overloaded power transformers.

Emergency crews were kept hopping in Quebec and Ontario as they responded to reports of trees pulling down power lines, prompting the evacuation of several residences.

Hydro-Quebec reported that more than one million Quebec households were without power as of Thursday evening. That figure translates into an estimated three million people.

The worst of the devastation stretches more than 300 kilometres from the area around Ottawa, through Montreal to Drummondville, Quebec.

Since the ice storm began, more than 100 cases of carbon monoxide inhalation have been reported, mostly on Montreal's south shore, as people tried to heat their homes with camp stoves and other devices.

The troops will be used to reinforce weary Hydro-Quebec workers and municipal crews trying to cope with debris from the storm, which battered the Ottawa area and forced authorities Thursday to declare a state of emergency.

In the Maritimes, schools were closed in several regions and hydro crews battled to clear overhead lines of ice.

Bordering states also felt the storm's wrath. At least 205,000 customers lost electricity in Maine, nearly 100,000 in upstate New York, 33,000 in New Hampshire and 10,000 in Vermont.

Prime Minister Jean Chretien discussed federal aid for stricken areas of Quebec and Ontario. Chretien also said he would delay by a day the start of the Team Canada trade trip to South America that was to begin Saturday.

Via Rail was also forced to interrupt service on most of its trains in Quebec and eastern Ontario.

Between 50,000 and 60,000 customers in the Ottawa-Carleton region were without electricity Thursday and the number grew as trees, weighed down by thick ice, tore down power lines and closed city streets.

Floods also hit parts of the United States, forcing residents from their homes, closing highways and damaging homes. The flooding claimed several lives.

Premier Lucien Bouchard said that besides the power outages, one of the biggest problems facing relief workers was providing enough shelters for people forced from their homes.

The premier described the storm conditions as unprecedented and said they require the most rigorous emergency measures.

"If there is a real cold tomorrow (Friday) and the next night, it's obvious that we will have to provide people with a lot of shelter," said Bouchard, who had to move into a hotel with his family after power went out at his Montreal home.

He said about 1,000 people had taken advantage of emergency shelters by Thursday but "it might increase to 5,000 or 6,000."

Hospitals have also been swamped with people suffering from a variety of ailments such as fractures from slipping on treacherous sidewalks.

Some shelters were also being hit by blackouts, as were hotels and Canadian Forces armories.

The Armed Forces supplied about 8,000 cots to the Red Cross before troops were called in. The soldiers have been using hovercraft to break up ice on area rivers.

Their main mission now will be to assist Hydro-Quebec and public works crews. Quebec Hydro has 3,300 technicians working around the clock to restore electricity, primarily in the Montreal area and eastern townships.

It's expected things won't be close to normal until early next week at the earliest. The freezing rain continues in many regions and is expected to be followed by cold temperatures.

8.3 RMOC NEWS RELEASE: January 13, 1998 3:30 p.m.

FOR IMMEDIATE RELEASE - Ottawa-Carleton – Tuesday, January 13, 1998 3:30 p.m.

State of Emergency Remains in Effect in Cumberland, Osgoode, Rideau, Goulbourn and West Carleton where schools remain closed.

The Region of Ottawa-Carleton is announcing that the state of emergency has been lifted in the urban areas of the region. However, the state of emergency remains in effect in the hard hit rural municipalities of Cumberland, Osgoode, Rideau, Goulbourn and West Carleton.

Hydro

For an update from Ontario Hydro on power restoration schedules please call 1-888-664-9376. In Eastern Ontario, a total of 966 field staff are participating in the restoration of the customers. 70,800 Ontario Hydro customers in Eastern Ontario remain without power.

> It is expected that Richmond North will have the majority of its customers on power within 24 hours. Goulbourn and Horton townships should have the majority of customers returned to service within two days. McNabb, West Carleton, Ramsay townships and Pakenham are predicted to have the majority restored in three days.

It is anticipated that service should be restored to Osgoode, Ingleside, Kemptville, Navan and Metcalfe within 24 hours; and to the areas of Berwick, Kars, Vars, Long Sault, Manotick and Sarsfield in 48 hours; North Gower, Newington, Burritts Rapids and Casselman by Thursday. Friday restoration is estimated for Beckett`s Landing, Finch, Riverside Heights; Saturday restoration is scheduled for Avonmore, Greely, Marionville, Morewood, Ormon and Vernon.

8.4 INDUSTRY CANADA REPORT (Exerpts From the IC Web page)

Eastern Ice Storm Tuesday 06 January to Thursday 22 January 16:00

TELEPHONE LINES:

The number of telephone lines out of service went from 100,000 lines (January 6) to approx: 20,000 lines (January 22). 80% of telephone line failures were due to lack of hydro power. Telephone switches are fed by hydro power. If there is a hydro failure, those switches are able to continue their operation using batteries. After approx. four hours without hydro power the batteries go down and need to be recharged. Once a switch battery is drained a generator is requested to maintain the switch operational.

On January 12, 950,000 telephone lines were operating on generator power.

5,000 telephone poles went down during the ice storm, 300 to 500 KM of cable and 600Km of service cable "drops" to homes had to be replaced. Between 1500 and 2000 Bell Canada workers on duty in Qubec and Ontario. Support was received from Qubec Telephone, NBTel, Island Tel, MT&T and MTS. USA companies are on standby.

Bell Canada advised that the telephone network should be completely restored by Monday 19 January except for the Ice Triangle (South of Montreal) and a few rural areas in Ontario.

CELLULAR AND PCS /SYSTEMS

Bell Mobility and Cantel reported their respective network operating in good condition. Many additional channels were added to the normal network to avoid overload situations.

Most of the cellular and PCS cells did operate on generators in affected areas. The systems lost many cells however were always operational.

In Montreal, DND operated using the Clearnet PCS system. The PCS system is digital and secure.

STOLEN GENERATORS:

Major problem for the telephone and cellular companies: in Ontario, 50 generators were stolen from Bell Canada. One person has been assigned to help the telecommunications companies. In Quebec, Industry Canada had the support of the "Suret du Quebec" and from DND (Via the Provincial EMO) to patrol cellular sites in order to discourage theft.

9.0 TERMINOLOGY

9.1 ACRONYMS

CERG	Cumberland Emergency Radio Group
DOC	Department of Communications (Now replaced by IC)
EMRG	Emergency Measures Radio Group
EMU	Emergency Measures Unit
IC	Industry Canada
NCS	Net Control Station
RAC	Radio Amateurs of Canada
RMOC	Regional Municipality of Ottawa-Carleton
ROC	Restricted Operators Certificate

9.2 EXPLANATION OF TERMS

Amateur or Amateur Radio Operator

- Person who is licensed to operate a ratio in the frequency space allocated as the amateur radio bands

Repeater

- This is a special radio unit designed to receive and transmit at the same time. The purpose is to provide communications over a wider area than that covered with two radios communicating directly.
- The repeater is typically installed on a high point such as a mountain, tall building or on a tall tower.

Net Control Station

- Amateur radio is effective because many people are using the same frequency, so they all hear the same messages. In order to keep communications orderly, all communications is coordinated through the Net Control Station where one person, called the Net Controller determines who should be next to communicate.
- The NCS may just coordinate for other stations to talk to each other, or it may be the focal point to send and receive information.

Radio Amateurs of Canada

Radio Amateurs of Canada (RAC) is the national organization representing amateur radio in Canada. The US counterpart is the American Radio Relay League (ARRL). RAC is located in Ottawa and represents amateur interests in Canada and around the world.