QNI NEWSLETTER

SEPTEMBER, 2016

ANNOUNCING "RADIO RELAY INTERNATIONAL"

A new organization called "Radio Relay International ®" has been incorporated in the State of California. Radio Relay International (RRI) is a nonprofit, public service corporation dedicated to developing and maintaining a high-grade, professional quality emergency communications infrastructure.

RRI is designed to provide both infrastructure and training. The foundation infrastructure will consist of two programs, one of which is the *Digital Traffic Network (DTN)* and the other of which is the *Inter-Area Traffic Network.* Goals for the former program will include the development of a robust RF-based infrastructure utilizing PACTOR technology, which expands the depth and redundancy of the former NTSD network. The latter program will consist of a system of organized "traditional mode" networks, which provide not just common-denominator mode access, but the survivable infrastructure needed to facilitate traffic exchange at the Region through Area Level.

RRI is a 501(c)(3) nonprofit public service corporation dedicated to EMCOMM

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Autumn Issue

In this issue:

QNI MISSION STATEMENT

QNI is an *independent* newsletter dedicated to promoting genuine emergency communications preparedness.

Our newsletter is independently published and distributed free of charge to the Amateur Radio and emergency management community. The opinions contained herein do not reflect the policies or opinions of any particular net or emergency communications organization.

Our mission is to provide a forum for EMCOMM volunteers throughout North America. We operate on the premise that Amateur Radio public service volunteers should be, first and foremost, communicators and technicians.

If you share this vision, please support *QNI.* Submit your news and articles for publication.

Radio Relay International (continued)

By James Wades, WB8SIW

RRI is a transparent and inclusive program. While independent of the ARRL, Radio Relay International will cooperate and coordinate with viable section (state) NTS networks. There is no need to deconstruct effective working relationships between supportive ARRL Section Managers, SECs, STMs and other section assets. However, in those sections in which ARRL management has been neglectful or even oppositional to the NTS program, RRI offers an opportunity to affiliate with a supportive program, which promotes professional standards.

RRI may also offer an outstanding opportunity for those in states or sections without a viable traffic net to create one. Likewise, those municipalities or states with an independent emergency communications program are invited to work with RRI to develop and enhance a viable supplemental infrastructure designed to support medium and long-haul communications for EMCOMM purposes.

Ultimately, RRI is "of, by and for public service communications." The goal of RRI is to be a true, non-profit public service organization in which the goals are not encumbered by a variety of political considerations unrelated to public service and emergency communications preparedness.

Some of the goals of RRI include:

* Expanding the depth and redundancy of the *Digital Traffic Network*, including:

- Increasing the available MBOs and Hubs.
- Implementing procedures for improved emergency response.
- Coordinating with ARES groups to develop VHF/UHF gateways to access the DTN network.

* Improved member recruitment and retention for traditional mode nets.

- Recognize and support the concept of common-denominator modes as a basic method of access, particularly for "last-mile" connectivity.
- Increase the depth of the volunteer base to improve the capacity of traditional-mode nets to function over extended operating periods.

* Standardize training materials in the form of:

- Improved documentation and manuals, which are consistent nationwide.
- Standardized power-point presentations for use at the local/state level.
- Standardized video training made available through "YouTube" and similar outlets.

* The development of a *National Response Plan* similar to the prototype developed for the "Cascadia Rising" exercise.

- Viable and tested frequency matrices for use in national events.
- Specific response guidelines for large-scale events.
- Improved consolidation of situational awareness reports for served agencies.

* Thorough review of policies and procedures, which define and regulate the type of traffic conveyed during both routine and emergency periods.

- Better management of "bulk traffic."
- Review of message precedence definitions and handling instructions.
- Implementation of specific methods for managing radiogram/ICS-213 conversion.
- Implementation of specific guidelines, which emphasize timely routine message delivery

Obviously, none of this will happen overnight. However, RRI is on the way to creating a 21st century vision for traffic handling and emergency communications preparedness. Ideally, RRI will appeal to not just local EMCOMM programs, but the individual radio amateur who wants to be prepared to serve his neighbors, community, relief agency or local area in time of emergency. In this latter case, RRI will offer access to a "ready-made" infrastructure ideal for individual preparedness. All that is necessary to get started will be a small investment of time and a microphone, TNC, or key.

Why not jump on the band wagon!? RRI hopes to lead the way to the future of traffic handling and emergency communications preparedness. The creation of RRI provides a once-in-a-lifetime opportunity to transform traffic handling and emergency communications in a non-political, collegial environment.

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Designing an Emergency Communications Exercise
Cascadia Rising and Amateur Radio

By James Wades, WB8SIW

Amateur Radio EMCOMM groups are often called upon to participate in various functional and full-scale emergency management exercises. Those who design such exercises typically concentrate on testing the "big picture" response. Certain goals and actions, which define success, are identified, and the decision-making process and subsequent actions are observed to determine if the goals were met.

Unfortunately, the scope of a typically emergency management exercise does not always drill down to the details, which define the efficiency and performance of specific communications networks. This is not because they are unimportant, but rather because it is simply too time-consuming to design an exercise incorporating the necessary methodology and metrics for doing so.

Ideally, those responsible for performing specific emergency management functions within the exercise would structure their operations to collect performance data. However, this rarely happens. Either the technical knowledge and experience is unavailable, or there is a political disincentive in that the agency does not want to expose possible failures or inefficiencies.

Within the Amateur Radio Service, participation in disaster exercises is often viewed in a simplistic manner. it is common to deem the emergency communications component a success if connectivity is established. There are likely several reasons for this limited measure. For example:

- There is a tendency amongst radio amateurs to focus on *technology* rather than focusing on the *quality of customer service*.
- There is often an unnoticed dichotomy between mode and method. In other words, some radio amateurs tend to focus on the mode used to convey operational message traffic, while overlooking the fact that the customer is typically only interested in the quality of *service delivery*.
- Determining the quality of service delivery as defined by message accuracy, timeliness and completion of the messaging process (origination through delivery) requires additional record-keeping. This additional administrative burden is often unwelcome, particular when inexperienced operators are struggling simply to manage the messaging process.

Ultimately, the customer is most interested in factors such as timeliness, accuracy and survivability/reliability. Therefore, let's examine these factors more carefully:

Survivability/Reliability: The customer needs to know that the communications circuit will remain available for the duration of the disaster. A short several-hour period may be insufficient to determine the reliability of a communications network or circuit, particularly in the case of a circuit operating in the high frequency environment. The exercise should consider factors such as propagation changes over time/solar cycle (HF), the loss of electricity, the failure of key nodes or repeaters, or the effects of other vulnerabilities specific to the area.

Timeliness and accuracy: These factors can only be tested under "load." That is, three or four messages transmitted during a several-hour period are likely insufficient to test the quality of the network and operator performance. Furthermore, general tactical messages that consist only of simple instructions directed to a radio operator are likely insufficient to test the training and skills needed to handle genuine record message traffic between agencies or officials.

The Need for Objectivity:

A properly designed emergency management exercise must be objective. In other words, it must be designed in such a manner that negative results cannot be hidden to protect political interests. The exercise must be carefully constructed so that critical actions are not missed through poor design practices. In other words, the exercise must be:

- Realistic
- Attainable
- Objective
- Measurable

Again; let's examine these criteria:

Realism: Before one can design an objective exercise, it must be realistic. The scenario should be based on specific hazards and vulnerabilities, which may occur within the jurisdiction. It is a waste of time and money to test emergency response for an unlikely event. For example; the likelihood of the "zombie apocalypse" occurring is rather small if not outright "silly," but the odds of a major earthquake occurring in Southern California are guaranteed. Only by designing for a realistic event can the lessons learned be applied to improving the emergency management process.

Attainable: The goals of the exercise must also be attainable. For example, one wouldn't send a unit of Hussars against a modern armored unit, because the results would be predictable. It would be futile waste of men (and horses). Therefore, it wouldn't make sense to conduct maneuvers using such a scenario in the 21st Century. The same analogy applies to emergency management exercises. If the scenario is beyond the obvious scope of response assets, then failure is simply guaranteed from the start, and the exercise will prove to be a waste of time and money. By designing an exercise around a realistic scenario and by structuring the objectives to provide a difficult, but nonetheless attainable result, it becomes possible to learn much about the performance and limitations of the participants.

Metrics: Of course, the performance and limitations observed during an exercise must be defined and they are best defined using metrics. Numbers are objective. They can be used to create a baseline from which future results can be measured to determine the extent of improvement or to identify the effects of changes to policy, technology or staffing. In other words, the exercise must be designed in such a manner that certain tasks are subject to some form of measurement to determine efficiency and success. For example, consider:

- How long did it take for law enforcement to set up a perimeter for access control?
- How long did it take for a National Guard unit to mobilize?
- What quantity of medications were available for the simulated bio-terrorism event?

….and so on.

Applying the above factors to Amateur Radio functions:

As stated earlier, ARES®, RACES and similar emergency communications groups are often enamored with technology. The fact that a technology can be deployed and connectivity established is often considered an indication of success. However, this is a very incomplete measure. Technology is simply a tool. It is a medium. *It is the quality and timeliness of the information conveyed via the medium that is the product, and it is the product which is important*. In other words; the fact that one possesses a tool does not make him a skilled craftsman. In this respect, radio amateurs are in the customer service business, and it is service delivery that must be measured.

Cascadia Rising and NTS

When NTS volunteers were asked to provide connectivity between various locations in the Pacific Northwest and the FEMA National Response Coordinating Center (NRCC) in Washington, D.C., every effort was made to develop an *objective* exercise in which NTS assets were subjected to a realistic and measurable test of actual customer service. In this regard, NTS was not just interested in establishing connectivity and conveying a few messages. Rather, NTS was interested in demonstrating and *measuring* the survivability and reliability of communications circuits and the timeliness and accuracy of the product (message traffic).

Exercise Scope: The first step in designing the Cascadia Rising proof-of concept exercise involved defining the scope of the exercise. FEMA had originally planned for NTS operators to originate situational awareness reports from within the simulated disaster area to the NRCC. These situational reports would be keyed against the Master Event Scenario List. Upon receipt of these reports, each message would trigger a specific decision making process within the NRCC. However, a variety of inter-agency operational factors, as well as some of the usual "ham radio politics," eventually rendered this idea impractical. Because of these concerns, an alternate plan was developed. The exercise was redesigned as a standalone, parallel test of circuit reliability, message timeliness and accuracy. The exercise design can be summarized as follows:

1. Message traffic consisted of simulated five-letter cipher groups. This type of format ensured that the traffic was "decision neutral." This eliminated the parallel requirement for message delivery to the local or state EOC and allowed NTS to conduct the exercise in a "hermetically sealed" manner, involving only NTS assets and the FEMA NRCC.

2. Approximately 189 pre-formatted, controlled-inject messages were drafted. These messages were then distributed to NTS volunteers in the simulated disaster area for injection into the disaster operation networks. These messages were keyed against a time-line to simulate load on available circuits.

3. Within the full set of messages, approximately a dozen contained small, intentional errors designed to trip-up the radio operators. For example, a few of the five-letter cipher groups actually contained six letters. In a few cases, an incorrect date-time group was purposely introduced. These "tests" were incorporated to determine if operators would transmit the messages as presented by the served agency, or if they would take it upon themselves to correct the content.

4. The messages drafted by the exercise design team were placed in sealed envelopes, which the radio operator was to open at the time indicated on the outside of the envelope. A control copy of each message was retained against which the final product received at the NRCC could be compared. As stated above, this process allowed the exercise design team to key the message traffic against time and therefore provide a steady stress on the network infrastructure and operators, which approximated message flow in time of emergency. The ability to control the content at the injection point allowed each delivered message to be scored against the original version presented for transmission, thereby providing a measure of accuracy and transmission time.

5. Each inject message contained a complete preamble with an assigned serial number, which facilitated tracking as radiograms propagated through the network layers. The use of an assigned serial number along with the associated record keeping (see below) used at each point in the network process, allowed the evaluation team to

identify “pinch points” or “holes” in the process through which messages were either lost or delayed.

6. Three exercise periods, or “phases” were specified over a two-day period. This allowed connectivity to be tested during a morning, afternoon, and evening period across variable High-Frequency radio propagation conditions. This method allowed the exercise evaluator to determine the effects of variable propagation on circuit/network reliability.

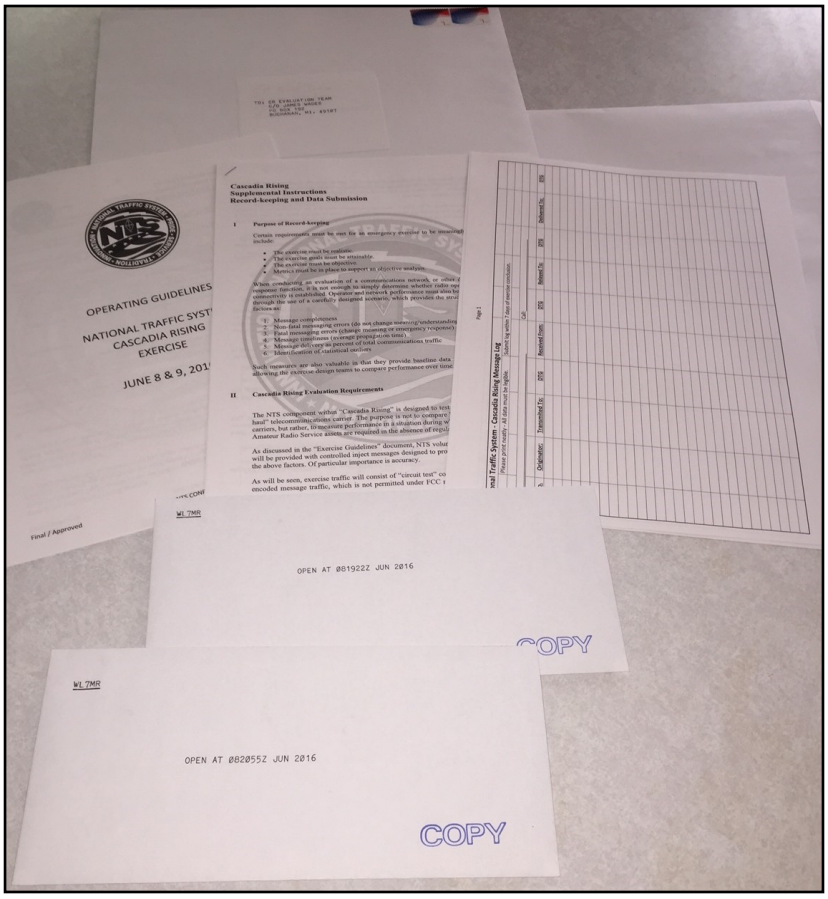
7. Data were collected in the background on High Frequency conditions during the exercise period, for use in the evaluation process.

8. Detailed record keeping was required throughout the exercise. Each participant was required to record the serial number of all incoming and outgoing messages along with such associated information as:

    - From whom (call sign) the message was received
    - To whom the message was transmitted
    - The date and time at which the message was received, relayed or delivered.

9. All of the blank log forms along with detailed record-keeping instructions were supplied to each exercise participant. This ensured that record-keeping consistency was present and it also eased the administrative burden for each operator.

10. Qualitative assessment at each stage in the process was also present. The exercise evaluators monitored the radio circuits throughout the two-day period to develop insights, that would not be exposed by metrics. Likewise, each exercise participant was asked to submit his or her qualitative comments in a separate narrative submitted with the message logs.



A typical exercise packet including exercise procedures, blank log-forms for data collection, messages in sealed envelopes, record-keeping instructions and SASE for returning data to evaluation team.

The exercise was ultimately a test of long-haul messaging capabilities. As such, certain restrictions were placed on the operators, the most important of which was a requirement that messages could NOT be delivered to Washington, D.C. until they reached designated delivery area. This prevented messages from being delivered from intermediate points, the ultimate goal being the demonstration of the capability to efficiently handle long-haul message traffic in the absence of commercial or government telecommunications infrastructure. Likewise, the Internet or commercial common-carrier infrastructure could NOT be used to convey message traffic.

Network management traffic was also included in the message flow. A properly managed national-level response requires specific data, such as:

- A running record of what stations/personnel are available on which network (s).
- The locations of the above stations.
- What liaison is available with specific local or state agencies.
- Operator limitations or support requirements.

- Modes and networks with which the operator is associated.

For the exercise, a specific individual was assigned the duties of network manager. Each exercise participant transmitted a periodic message to the network manager containing the above information. While these messages were not scored for accuracy (a control copy would not be available in this case), they simulated conditions associated with a real operation and added additional qualitative insights into the performance of the radio amateurs.

In addition to the controlled inject messages, each exercise participant was provided with a large, SASE envelope for returning their logs, copies of all message traffic sent or received and other important data.

Modes utilized during the exercise consisted of:

- CW
- Voice
- Data (PACTOR) using NTSD assets (now Radio Relay International DTN)
- Alaska Intrastate PACTOR network.

Message integrity scoring:

As stated above; accuracy scoring is an integral component in the evaluation of a disaster telecommunications exercise. Two types of failures may be found in message traffic:

1. Non-fatal errors: These errors do not alter the meaning of the message. Examples include minor misspellings of a word, the accidental elimination of a conjunctive, punctuation errors or minor errors in network management data.

2. Fatal errors: Fatal errors include factors, which either alter the meaning of a message or misplace the message against a time-line. For example:

    - If more than one message is originated in reference to a particular subject, functional representatives within an EOC or the NRCC must be able to place each message in its proper temporal context. If an error is present in a date-time group, a message that should modify a response may be overlooked or it may trigger an inappropriate decision.

    - Some messages are critical to a proper decision making process. Examples include etiological information identifying a pathogen during a bio-terrorism event, complex chemical names, quantities associated with supply or personnel requests, and so forth. Errors in spelling, quantities or missing information can result in mission failure.

In order to simplify the evaluation process, accuracy and message propagation time scoring was limited to those messages transmitted to the NRCC. Because these messages were transmitted in simulated five-letter cipher groups, an analytical method had to be developed to determine the difference between fatal and non-fatal errors. These criteria can be summarized as follows:

1. Each letter or figure within the radiogram was treated as a unique data point.

2. Each distinct error, such as an improperly transcribed letter or figure was grade as a single error.

3. Up to three errors associated with different cipher groups were treated as individual errors. Four or more errors within an entire message were treated as a fatal error and the message was discarded.

4. Two errors within a single group (five letter cipher group or word) were counted as five errors.

5. Three errors within a single group were counted as a fatal error and the message was discarded.

Accuracy chain:

As alluded to earlier, the accuracy check was designed to inclusively identify all errors from point of origination to the final product delivered to the NRCC. In the case of the NRCC messages, the inject messages were already formatted in order to provide a reference point against which the delivered product could be compared. Typical errors in message traffic include:

Data entry errors: NTS digital networks incorporate automatic error checking. However, data entry errors are still possible. Therefore, operators must still exercise care when entering message traffic into a data terminal.

Transcription errors: Manual mode networks, such as high-speed radiotelegraph networks, require an operator to not only decode Morse, but also transcribe the message at intermediate relay points, such as within a message center. An error during the transcription (receiving) process is possible.

Message Transfer: Messages originated by both digital and manual modes required transfer to WebEOC, during which transcription errors might occur. Likewise, during disaster operations, a message may be transferred from one radio network to another for final routing to its destination. Errors can occur during this process as well.

The Results:

Now…the important part….What were the results?

The results of the exercise were quite gratifying. Operators in five states participated in the exercise. These being:

- Alaska
- Idaho
- Northern California
- Oregon
- Washington State

The accuracy provided by the NTS operators was outstanding. They can be summarized as follows:

Radiotelegraph:	99.998 percent 15 non-fatal errors in 10220 data points
NTSD:	99.997 percent 16 non-fatal errors in 7008 data points
Alaska Intrastate:	100.00 percent no errors

It should be noted that traffic was scored over the TOTAL message propagation path, from the point of injection (controlled) to the point of delivery. The control copy of each message was compared against the actual messages, which arrived at the FEMA NRCC. This ensured that any errors within the communications process could be identified.

Voice networks are not represented in the above statistics because only CW and digital methods (PACTOR) were used for the transcontinental infrastructure (and subsequent delivery). However, messages originated by voice methods, which would typically occur at the state or region level, were ultimately incorporated into the above statistics.

Timeliness:

Timeliness was measured for three different networks:

Alaska Intrastate: Within Alaska, message traffic was conveyed using PACTOR mode to a CW gateway. The CW gateway then transferred the traffic received to a CONUS gateway in the Pacific Northwest. It was then conveyed to the NRCC via the TCC (trans-continental) CW circuit. Within Alaska, no errors were detected (see above). Timeliness was also excellent:

Average message propagation time:	5 minutes
Minimum propagation time:	1 minute
Maximum propagation time:	11 minutes

TCC Radiotelegraph Circuits: The Transcontinental Corps CW Unit carried the bulk of the exercise traffic. This was not by design. The NTS volunteers were at liberty to choose the mode deemed best for traffic origination depending upon operational requirements, propagation and other factors. CW simply provided a superior option. Timeliness for the entire process using CW was also excellent:

Average radiotelegraph message propagation time:	30.5 minutes
Minimum propagation time:	1 minute
Maximum propagation time:	110 minutes

Again, it should be noted that the times reflect the entire messaging process, that is; the time at which the message is presented for transmission to the time at which the message was delivered to the NRCC.

In the case of the CW network; if one removes a couple of statistical outliers, which were messages delayed by administrative error (misplaced), ***the average propagation time actually decreases to the range of 10 to 15 minutes*.** This is an excellent figure. However, several methods for even further improvement in message propagation times, which could be easily implemented, were identified in the final evaluation report.

NTSD PACTOR Network: The NTSD PACTOR Network (now DTN) performed well during those periods in which propagation was adequate. However, problems arose during the two daytime exercise phases, during which extremely poor propagation occurred. During these latter situations, the CW circuits continued to function well, while PACTOR network faltered. Several causative factors were identified for the connectivity delays observed within the PACTOR system. These include:

- The relatively low power levels used at hub stations (to prevent interference during routine operations).
- The use of low-gain, non-directional antennas to facilitate automatic connection from multiple directions.
- The lack of an attendant ("sysop") to monitor PACTOR hub functions and throughput during a major disaster.
- The crowded conditions within the automated sub-bands due to the extensive number of ARES groups relying on WinLink2000 (One operator described it as "sounding like a RTTY contest").

It is important to note that the NTSD network was left in its "routine" configuration for the duration of the exercise. This was done to expose any shortcomings, which might arise in the event of a "short-fuse" disaster event during which insufficient time is available to reconfigure the network or assign a sysop to target specific operational areas.

Overall timeliness of the NTSD resources was measured as follows:

Average message propagation time:	82.14 minutes
Minimum message propagation time:	26 minutes
Maximum message propagation time:	147 minutes

It should be noted that these figures are somewhat biased to a more favorable measure due to the elimination of some messages due to total connectivity failure during periods of poor propagation. With the transition of NTSD assets to the new Radio Relay International "Digital Traffic Network" (DTN) organization, steps will be taken to correct some of the connectivity issues.

Propagation Considerations:

As mentioned earlier; propagation was extremely poor during the event. The Cascadia Rising exercise once again proves that CW can be an excellent option for emergency communications functions utilizing the High Frequency radio spectrum. In the event of a genuinely catastrophic disaster, CW offers the following advantages:

- Narrow bandwidth and excellent efficiency under unfavorable RF conditions.
- Universality (all HF transceivers are capable of CW operation).

- Useable at lower power levels – ideal for renewable energy sources or extended battery operations.

While further development of the new Digital Traffic Network (DTN) is essential to modernization and automation, the Cascadia Rising exercise also proves that it would be unwise to allow the "traditional" CW traffic networks to fade away. The mode continues to prove itself as a unique asset, combining the best characteristics of natural language with efficient narrow-bandwidth characteristics and the accuracy of a unique character set.

Conclusions:

The Cascadia Rising event proves that NTS and Radio Relay International personnel have the necessary training and skills needed to provide a *high level* of customer service to critical served agencies. However, some improvements are certainly necessary. A few recommendations include:

- Better member recruiting and retention.
- Integration of contesters and others with access to high-grade stations using directional antennas and amplifiers into RRI.
- A greater diversity of DTN (NTSD) nodes.
- Improved cooperation with ARES and AUXCOMM assets.
- The implementation of a permanent National Response Plan.

A complete, formal evaluation report has been developed for use by Federal Agencies. For more details about Cascadia Rising, please contact the Editor/Publisher of "QNI."

More on Disuse Atrophy

By James Wades, WB8SIW

Denial is a powerful human emotion. "It will never happen to me" is likely the common subconscious response when the average person is confronted with information about disaster preparedness. The fact that radio amateurs have an interest in the art and science of radio communications does not make them fundamentally different from the average citizen. Many of us simply assume that disasters happen to someone else.

Another form of denial can be heard in the familiar statement "I will be there if needed." This is a comment familiar to ARRL Emergency Coordinators, net managers and others who recruit ham radio volunteers for organized emergency communications programs. The same person who believes training and practice are unnecessary for his own volunteer activities would likely be the person who screamed loudest if he dialed 911 only to discover that the volunteer fire department members did not have proper training and exercising before showing up to extinguish the fire in his home!

While many EMCOMM programs are well run, let's face a few facts:

- Some bear a strong resemblance to "Keystone Cops."
- Many are supported by just a few percent of the entire ham radio population.
- The majority of EMCOMM program members have inadequate traffic handling skills and are therefore incapable of handling important interagency traffic, whether using radiogram or ICS213 format.

Ultimately, the choice to participate in traffic work or your local EMCOMM organization is an individual choice. However, it's a small price to pay for the privileges granted Amateur Radio Operators. It's also allows one to prepare to help friends and neighbors or one's community when the "big one" hits.

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Health and Welfare Radiograms

By Kate Hutton, K6HTN, LAX STM

Would you like to spice up the next disaster drill in your Section or District? Would you like to involve traffic handlers more? Why not add some Health and Welfare messages from your group members and/or members of the public who might be participating in the drill? We have had some success doing this in southern California with the "Great California ShakeOut" earthquake drill.

Among much other preparedness advice, the Earthquake Country Alliance, which sponsors the annual ShakeOut, recommends that a family emergency preparedness plan include designation of an out-of-state relative or family friend, whom all family members can contact with their status after a serious quake. That person can then act as a news source for other members of the extended family. If it's hard to get a dial tone or a cell connection, the affected person's one phone call or text message would be to the out-of-state contact and their status would be available to all relatives.

Our LAX Section group carries this idea one step further, to encourage people to carry with them a hard copy of their out-of-state contact's current and correct address, telephone numbers and email addresses. That way, if mobile devices aren't working, the information is still readily available for use in a radiogram, if the opportunity arises.

We encourage CERT groups and Neighborhood Watch groups to learn who the local ham radio operators are. Disaster planning guidelines encourage these neighborhood groups to "Map Your Neighborhood," to find out who of the local residents have skills such as CERT training, first aid, construction, etc. skills that might be useful immediately after an earthquake. Amateur radio operators definitely should be on this list, with additional information on their equipment and capabilities, if possible. (Do they have HF? Do they know how to use WL2K? Do they know how to format a radiogram? Etc.)

To get people to send radiograms in a drill, the organizers can start with the hams already involved in the drill. If they are too busy being deployed, perhaps they can get their family members to send the radiograms. If the drill involves an organization of non-hams, train one or more members of that group to collect messages and hand them to you. Active collegiate radio clubs, if you can find one, can often coerce radiograms out of the dormitory population or, better yet, those in the administration responsible for disaster preparedness and response. Any active radio club may be able to scrounge up messages. Just tell them the event is an impromptu Field Day!

The following "Q&A" may be of help to you in convincing them …

What is an Out-of-State contact and should I have one?

In a large disaster, telephone and internet service may be very spotty, if it is available at all. You should make as few calls as possible. If the phones are working and you can get one phone call out of the area, you should call a relative or friend outside the area, who has *agreed ahead of time* to disseminate your status information to other family members. This person is your out-of-state contact. You should have the person's correct address and telephone number, say, in your wallet, in case your cell phone or other digital repository is not accessible. Your contact should be out-of-state, to cover situations where normal communications are disrupted over a large area.

What is a disaster H&W radiogram message?

If you are in a disaster zone where phones and internet are not working for an extended period of time, you can send your out-of-town relatives or friends a radiogram via amateur radio, telling them your status and where you will be

located, or other information you want to send. Radiograms are short, like text messages, except that amateur radio operators send them by radio, instead of using the cell phone system or internet.

What do they look like?

There are two basic types of messages you can send in a disaster drill. One is a "ROUTINE" message to your family out-of-state contact, reminding them that they have been so appointed. It might look like this:

NR 13 R K5KAV 23 FEDERAL WAY WA JUN 10
GRANDMA JONES
1234 MAIN ST
LITTLE ROCK AR 72201
501 853 1212
EADDRESS AT PROVIDER DOT COM
BT
THIS IS ONE WAY I
MIGHT CONTACT YOU AFTER AN
EARTHQUAKE OR OTHER DISASTER X
ASK DELIVERING HAM FOR MORE
INFO X LOVE
BT
MARIA
AR

Or, if the drill is to be more realistic, you can send a "TEST WELFARE" message, with wording appropriate for the drill. Certain conventions are included in the routing preamble and the text to indicate that it is "only a drill."

NR 14 TEST W W5KAV 21 FEDERAL WAY WA JUN 10
GRANDMA JONES
1234 MAIN ST
LITTLE ROCK AR 72201
501 853 1212
BT
TEST WANT YOU TO KNOW
THAT THE EARTHQUAKE WAS BAD
BUT WE ARE ALL OK
X MORE LATER X LOVE
TEST
BT
MARIA
AR

Either way, you need to call your contact before the drill to 1) make sure the phone number is still up-to-date and 2) let them know that a ham operator may be calling them with a message that has been relayed via amateur radio, as part of a disaster drill.

How do they get where they are going?

Amateur radio operators in the US and Canada have set up (and test daily!) procedures for relaying message traffic like this to its destination, if it should ever be necessary. Each relay gets the message closer to its destination. When it gets to a location where the phones and internet are working, a ham operator will call the recipient on the telephone and deliver the message, or email it if an email address is included. The relay process can be digital, from computer to

computer via radio, or it can be by voice or Morse code. Operators will choose the best method based on equipment and operators available and other factors.

What would I say?

Tell your out-of-state contact that you are ok (or not!) and perhaps where you are located. Remind them to contact other important family members and friends, so you don't have to send a radiogram to each one. See the two examples above.

You supply the message, normally 25 words or less. The radio operators may have some "canned" messages for you to use. Or they can help you format your own message. Radiograms are not case sensitive, since some radio modes don't use lower case. We also don't use punctuation; just separate sentences with an "X". Use the word "QUERY" instead of a question mark.

What other information must be included?

The first line is the routing "preamble" and is supplied by the radio operator who starts your message on its way.

You need to supply as much delivery information as possible. Include a correct address and telephone number. Also include an email address, if possible. The more accurate information you supply, the more likely it is that your message can be delivered.

Your name goes at the end. If you have different contact information than usual, you may want to include that.

How long does it take?

A radiogram may be in transit for a day or two. Disaster-related "EMERGENCY" and "PRIORITY" traffic from responding agencies, if any, has precedence over "WELFARE" traffic, which in turn has precedence over "ROUTINE" traffic. Short-wave propagation depends on factors, such as solar activity that are outside the control of the operators. The operator who delivers your message may have to call several times before getting someone on the phone, or may even have to track down the recipient for hand delivery.

Can I get a reply?

Normally only EMERGENCY and PRIORITY message are processed coming INTO a disaster area, at least for the first 48 hours. So, the answer is; "no, not right away"

Don't know any ham operators?

Actually, you probably do. There are a lot of them out there. If your local CERT or Neighborhood Watch has "Mapped Your Neighborhood" to determine who has skills that might be useful in a disaster, they probably have a list. There may also be a local radio club, whose members can help you. Active shelters often include ham radio operators.

If that fails, look for the neighbors who have the biggest antennas in their yard!

If you get into the habit of sending your relatives regular greetings by radiogram on birthdays and other occasions, you will get to know who the local message traffic handlers are. And they will be happy for the practice. You may even want to think about getting involved in ham radio yourself!

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Debut of the Radio Relay International East Net

By Jeff Miller, WB8WKQ

With both the Central Area Net (CAN) and Pacific Area Net (PAN – now WAN) becoming independent and joining RRI, there became an apparent need for the Eastern section to have a "sister" area net. Due to some lingering political problems, there wasn't an option of having EAN becoming RRI affiliated.

Polling of many of the Eastern Area TCC staff indicated an overwhelming support for independence. Hence the birth of RRIE, The Radio Relay International East net. RRIE emphasizes that all are welcome, regardless of ARRL affiliation, to check in and pass traffic.

RRIE debuted on Wednesday August 3, 2016. There were an amazing 11 check-ins and 5 pieces of traffic were passed on this first night. Due to overwhelming support, RRIE hasn't been completely traditional in its check in procedure. Since we weren't sure if the regional nets (1RN, 2RN, 3RN, 4RN and 8RN) would immediately send representatives to both EAN and RRIE, we welcomed all check-ins with or without regional representation. It has lead to a very robust net with nearly all regions represented nightly along with TCC reps to both CAN and PAN.

The first month of August (minus a couple days) produced a very impressive 249 check-ins and 195 pieces of traffic passed. This equates to a nightly average of 8.6 check-ins and 6.7 pieces of traffic passed. We've had check-ins from Michigan to Miami, Florida and everywhere in between in the Eastern Area. On a humorous note, one night Sergey, UA6YT from Russia, even checked in when the net QSY'd to 40M! Talk about putting the "I" in International! Of course, Sergey's statistics were not included in the monthly reports.

Radio Relay International East Net meets at 8:00 pm local time on 3552 khz. All are more than welcome to check in and participate. RRIE has excellent coverage for all the Eastern regions and "TCC" outlets for CAN and PAN traffic. Please come join us! For those who have participated, thank you very much for making RRIE's debut spectacular.

73 and see you on RRIE,

Jeff Miller WB8WKQ, Avid Radio Relay International member

Editorial—Importance of Fraternalism

By James Wades

As the traffic handling and EMCOMM community recovers from some unfortunate politics, it is important to remember that our goal is to be constructive in purpose and fraternal in spirit. There remain within the traffic handling community some individuals who remain fiercely loyal to the ARRL. On the other hand, others, myself included, feel a bit like the abused spouse who finally obtains a divorce and, unencumbered by the past, decides to make the best of his future.

The concept of divorce is instructive. Just as many divorced couples must cooperate in the best interest of the children, interface with former in-laws and the like, we must keep the best interest of Amateur Radio at the center of our thoughts. This may mean placing the success of Amateur Radio and the EMCOMM mission ahead of our disagreements with others. This is not to suggest that we should trust those who have acted dishonorably. However, the wise man does not live a reactive life. Instead, he governs his actions based on morals and ethics. In this case, we must do our best to seek the high ground and set an example of professionalism.

Ideally, the day will come when RRI and the ARRL can work together as peers within the Amateur Radio community. That day is probably a long way off. Nonetheless, we should do our best to keep the door open so that when the dust settles and inflamed passions subside, we still share some common ground on which we can build a relationship that is fair, balanced and equitable.

73, James Wades, WB8SIW

QNI NEWSLETTER

QNI
PO Box 192
Buchanan, MI. 49107

Editor: James Wades
(WB8SIW)
Email: jameswades@gmail.com
Tel: 269-548-8219

Assistant Editor: Kate Hutton
(K6HTN)
Email: katehutton@gmail.com

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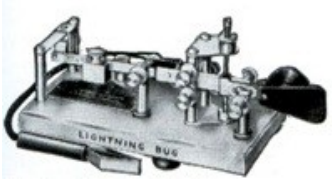
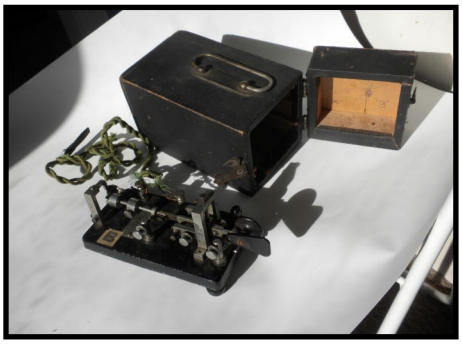


TELEGRAPHER'S PARALYSIS

BY JAMES WADES



Pictured above is an early Vibroplex key from the Museum Archive of the Morse Telegraph Club. It is not the first "bug" manufactured, but it is certainly a very early version, with serial number 877. It may have even been assembled by Horace Martin himself!

Martin was a telegrapher who developed "glass arm," a malady referred to as "telegrapher's paralysis" in early medical journals. In an era in which operators worked 12-hour shifts, typically 6-days per week, the manipulation of a standard key ("straight key") during much of that time resulted in an illness now known as "carpal tunnel syndrome."

Martin developed the Vibroplex to prevent such repetitive motion injuries. However, it proved to have hidden benefits. The introduction of the Vibroplex key at the same time economical mass-produced typewriters emerged greatly increased the speed of manual Morse circuits. This allowed operators to conduct business at speeds similar to teleprinters, often with greater flexibility. This greatly extending the life of manual Morse telegraphy well into the recent post-war era.

"QNI" WELCOMES NEW STAFF MEMBER

We would like to welcome James Geschwindner, N1PZP to the staff of *QNI*. James will serve as Statistician. Beginning with the upcoming winter issue, he will collect traffic data reports from both RRI and NTS networks throughout the United States and Canada and consolidate them into a concise monthly summary. These monthly summaries will then be published in spreadsheet format in subsequent issues of *QNI*.

It is obviously beyond the scope of one person to consolidate detailed information from all local and section nets. Therefore, we ask that Region and Area Nets send their monthly statistics to James directly. DTN (NTSD) Area Digital Coordinators should consolidate their data and then send it to James in a single report. Likewise, Section Traffic Managers are encouraged to consolidate their state data before sending it along. This will ease administrative burden and make it possible to provide a summary within the publication.

Contact information for James is:

James Geschwindner N1PZP
192 Manchester St. Apt. 8
Concord, NH. 03301
603-856-5275
lafrance26@yahoo.com

Radiogram reports are encouraged.