QNI NEWSLETTER

AUGUST, 2022

THE FIRST WOMAN TELEGRAPHER

Phebe Cornell Wood has the distinction of being the first woman telegraph operator in the United States. She was able to claim this distinction due to the fact that her brother, Ezra Cornell, helped Samuel Morse develop his invention. Cornell founded the Western Union Telegraph Company in 1855 and Cornell University in 1865.

Phebe was married to Martin B. Wood, who was in charge of laying telegraph lines across the Midwest. In 1846, Ezra Cornell founded the Erie and Michigan Telegraph Company. He asked his sister Phebe to run the Albion, Michigan telegraph office. It opened in 1848. She accepted the position and ran the office from her home on North

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Summer Issue

QNI MISSION STATEMENT

QNI is 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.

Superior Street. Phebe Cornell Wood managed the local telegraph office until 1856 when Western Union took over.
Phebe Cornell Wood is buried at Riverside Cemetery, Albion, Michigan.

REMOTE CONTROL HAZARDS

By James Wades (WB8SIW)

Remote control stations are becoming more common as radio amateurs confront the abrogation of Part 15 and RF pollution, restrictive home-owner associations, and similar problems. Remote stations operated via the Internet are an appealing option for many.

Recently, radio amateurs noticed a continuous carrier near 7033 KHz. The interference went on for weeks with significant signal strength, particularly in the Western United States. After various inquiries, the FCC traced the source to an amateur radio station configured for remote control operation at a vacation property in Colorado. The licensee had set up an FT-991 for remote control, and, when connectivity and control suddenly became problematic, he thought little of it. Unfortunately, he was unaware of the nationwide interference he was creating.

Fortunately for the operator, the power level on the FT-991 was set to 25-watts, so the transceiver seemed no worse for the weeks of key-down carrier transmission, but many hams were inconvenienced due to a “lock-up” in computer connectivity.

This incident points out the need for a “back-channel” method for disabling such systems. If a remote station is to be left unattended for long periods of time, one should have a method to disconnect the power or reset the system. This can be done with something as simple a dial-tone circuit with an auto-answer unit, a DTMF decoder, and a latching relay to remove power. Likewise, an arrangement can be made for a similar “hard-disconnect” circuit controlled via VHF or UHF radio through which a local radio amateur can disconnect power or reset the system by sending a DTMF control sequence. Other methods are also possible. For example, a “home monitoring and remote-control system” of the type used to control lights and appliances could also be used. A neighbor with a key to one’s vacation home also works quite well. However, regardless of the method used, none of these “fail safe” systems should rely on the same computer as that used to control the transceiver.

This incident also points out the need to monitor one’s remote station. Undoubtedly, the operator responsible for the interference meant no harm and one can only imagine his embarrassment when contacted by the FCC. However, let this be a word of warning to those engaged in remote control operation: Monitor your equipment and have a method to disconnect or reset the system should a fault occur.

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WORLD'S FASTEST TELEGRAPHERS

By William E. Shelton

Back during the 1860s, a popular telegraph industry publication called "The Operator" was widely read. At the time, it was tops in its field and all operators, both railroad and commercial, eagerly awaited every new issue for it carried the latest facts and figures in the world of "dots and dashes."

Even in those early times, the question often arose; "Who's the best and fastest telegrapher in the business?" There was much printed on the subject in those early year, but even before this publication began, there was rivalry between the "fists" of the old-timers and as early as 1875, an operator named E.C. Bioleau sent (by hand, of course) a total of 450 words in ten minutes. His record stood unchallenged until 1881 when another crack operator sent 500 words of "straight matter" in 11 minutes and 14-1/2 seconds. His name was W. J. Curtis.

Records Fall

This achievement fell by the wayside two years later when A.S. Ayres performed the same feat in ten minutes flat - without an error and again by hand (standard/straight key). Then in 1890 along came B.R. Pollock who set the record of 260 words by hand in just five minutes, which record stood up until 1902 when F. M. McClintic sent, without error, 517 words in just ten minutes, a record that was to hold for sometime. He had sent 67 more words than had Boileau, 27 years before.

In 1907, Michael J. Dugan, an operator in a St. Louis commercial office sent 835 messages, by hand at one sitting, averaging 92 1/3 messages per hour. Six years later, in 1913, he was still putting it out but had slowed down to 703 messages for one day's work and his average had dropped to ten less, 82 per hour. But even so, he was still fast enough to beat his fellow St. Lousian, Andrew Wachter, who sent 610 messages for an average of 74-1/2 hour, which is still some sending, even with a "bug." In 1914, W.A. Roche of Detroit sent 10,031 messages averaging 49 messages per hour. In 1915, M.J. Wolinsky of San Francisco sent 12,242 messages or 54 per hour. But in 1916, W. B. Oliver appeared to be the fastest of all, doing a total of 925 complete messages at the amazing rate of 102.77 per hour.

Wins Carnegie Medal

However, over a short period of time, the fastest of all operators was T. S. Brickhouse, who sent by hand 60 messages in 28 minutes, in tournament competition, and was awarded the Carnegie Meal. Close behind him in this 1915 speed run was H.C. Emrich who sent the same messages but used one and a one-half seconds longer. Third Place went to C.V. Barfield with 59-1/2 messages in 30 minutes. That, brother telegraphers, was telegraphing at its fastest. This was commercial work. However, in railroad competition in this tournament, R.C. Bartley sent 41-1/2 messages in 30 minutes and R. H. Redmond was second with one less message in the same amount of time.

Press operators Compete

In press sending competition in 1913, A. J. Burkart of Chicago, sent 1967 words in 31 minutes. Fred Proctor, also a Chicagoan, did 1800 words in 30 minutes, and H.S. Muggeridge of Kansas City, sent steadily for 8-hours, 40 minutes totaling 26,000 words. How would you like to tackle that job, fellows?

One of the most amazing of all feats ever made by a telegrapher was that of Bud F. Rupple, who worked the New York - Chicago bonus circuits for Western Union in the early 1900s up to the early 1920s. He held the record of handling 106,254 complete messages and had only ONE error charged against him. That record,

without a doubt, has never been equaled or approached since and now, with the era of Morse Telegraphy having ended, never will be.

It is interesting to note that in tournaments the "copy" most used was "The command of Gideon," taken from the scriptures but rewritten to modern style. Some of it reads:

"There is no problem greater that stares us continually in the face than this: vis, what is the real purpose of Life? Just as you give an answer to that do you make life great or small. Men have thought and worked at many an answer to this problem. The stoic, the epicurean, the philosopher, the miser, the man who seeks pleasure, the deeply religious soul, each has given his answer. They are aiming at this; "how to be happy." and the answer, at first, seems very easy and natural. "Get what you want and you will be happy."

That is only a third of the entire text, all punctuations and proper space had to be respected, with competent judges listening in. It was no doubt a trying problem, one that perhaps no other telegrapher will have the occasion to sit on. But as we can say now, "Those were the good old days." Gone but not forgotten.

HOW TO SET UP A MESSAGE CENTER

By James Wades (WB8SIW)

Radio amateurs involved in ARES® and similar organizations are, first and foremost, communicators. Whether providing services needed to fill gaps caused by disruption of telecommunications network, or when providing value-added services for a served agency, ARES members should be prepared to *manage* the communications process. Some important examples include:

- Keeping accurate radio logs in which summaries of tactical communications are recorded against time.
- Accurately transmitting and receiving message traffic.
- Retaining copies of all transmitted and received record message traffic.
- Ensuring messages are not misplaced or misrouted during the origination and delivery process.
- Ensuring that messages are stored sequentially based on date-time-group (temporal sequence) and/or message serial number.

These processes are best done by adopting the basic concepts of a “message center.” A message center can be either a permanent installation at a facility such as an Emergency Operations Center or a temporary facility set up when deployed within a disaster area such as an incident command post, large shelter facility or a service center of some type.

While the obvious components central to the message center are the various communications equipment and antennas required to establish connectivity, there are many additional, important requirements that are peripheral to the communications devices. These peripherals are often taken for granted at the expense of efficiency and professionalism.

Accurate Time:

While it may be taken for granted in the era of cellular data networks, accurate time is important in the emergency management environment. The ability to place messages and data in the proper temporal con-

text ensures that decisions are not based on obsolete or superseded information, which can indicate the wrong trend or evolution of the emergency response. In an era during which most people rely on their cell phones for accurate time, the emergency communications specialist may want to have an alternative, standalone method available for access to accurate time (in case cellular networks become inoperative). A basic digital or analog clock periodically checked against a standard such as WWV is more than adequate to the purpose. Super accuracy is not required, but the clock should be within a minute or two of accurate time.

Another convenient time-keeping option for use in a fixed location, such as an EOC, might be a basic time clock like those used for employee timecards in factories. A timeclock can be used to automatically stamp each message as it is transmitted or received. Emergency communicators should note that this may not be the same as the "time of origin" in a message preamble or header. That latter time should always represent the time the message was drafted and presented to the radio operator for origination.

Proper Radio Logs:

Proper radio logs are also based on time. A served agency official may approach a radio operator and ask a question such as "when were the two water buffalos dispatched from Biloxi?" By referencing a radio log in which a summary of basic tactical communications is recorded, one can easily answer such a question.

As with the radio log, each record message (e.g. radiogram/ICS213) transmitted and received must include data such as:

- To/from whom each message was transmitted or received.
- The network/circuit on which the message was transmitted or received.
- The time at which a message was delivered to the functional representative or an EOC message router.
- The header or radiogram preamble DTG (time of origin) must reflect the time the message was drafted and presented to the radio operator (or EOC message router) for transmission.

Storing and managing messages:

ARES® and similar groups should be qualified to run a basic message center either the "old-school" way with paper message forms, or, for those assigned to a modern "wired" EOC, the electronic way using electronic methods. How this is done is largely up to the emergency communications organization and their partner emergency management agency, VOAD, or the like.

Properly serviced messages can be retained virtually on a computer, in which case the file name can be structured for quick location based on emergency management function (within the EOC) followed by date-time-group (e.g. "071524Z Law Enforcement" for a message addressed to the law enforcement rep originated at/

on “July 7 at 1524 UTC,” or something similar).

File folder trees should contain a mission name, with sub-folders for each emergency management function (“fire service,” “law enforcement,” “DPW,” etc.).

Radio operators should be prepared for situations in which simple “old-school” methods need to be used. Paper copies of messages transmitted can be printed out and filed sequentially in a file cabinet or appropriate folder. Messages received can be sorted by function and stored sequentially based on message number or time of origin.

The Delivery Interface:

Obviously, the radio operator only acts as a facilitator in the emergency communications process. Most likely, messages will be addressed to a generic functional representative or a specific individual. This may be done either directly or through a message router within an NIMS or EOC environment. Regardless of the method used, a copy of the message must be retained with the time of delivery noted on it. This shields the EmComm unit and the served agency from liability and aids in investigation of response failures.

Delivery in tactical environments such as an incident command post or when embedded in a field operation can be problematic. It is not practical to expect an addressee to walk up to your laptop computer or similar device to read his message. Therefore, hard copy is often best in these environments. This can be as simple as a message hand printed on a duplex form (carbon copy retained by the radio operator), or it might be a message printed on a computer printer. As in any operational environment, the radio operators should always retain a copy of the message notated with the time it was delivered and to whom.

Layering Nets:

During a major event, an emergency communications organization should not concentrate operations on a single frequency. Sufficient circuit capacity does not exist on most radio networks to support multiple phases of a disaster response. Rather, separate radio networks can be established to support each emergency management function or served agency (depending on scope).

It is at the message center that the traffic between these networks can be exchanged. This process enhances the record-keeping process and keeps the operators assigned to the various agencies in the field on their assigned radio circuit while minimizing the problems associated with conflicts in message prioritization when traffic moves from one functional network to another. It also eliminates the problem of temporary loss of connectivity within the functional network when an operator has to move (QSY) to another network to clear a message.

The Virtual Message Center:

Nearly everyone involved in the emergency management process is familiar with “WebEOC” which operates much like a message center. This has pros and cons. The benefits are obvious in the form of convenience and flexibility. The obvious negative is the fact that it requires network access. Most EOCs will have a fairly solid network infrastructure, but radio operators deployed within a disaster area may need to fall back on traditional manual, paperwork methods. There is no substitute for basic skills, whether one is flying an airplane or serving as a radio operator in the EmComm environment.

Be prepared to do both. Traffic handlers are often better than EmComm volunteers at these tasks because they have the basic skills to *manage* message traffic. However, many tools and opportunities exist to get the rank-and-file EmComm volunteer up to speed.

The Message Center Exercise:

One can prepare EmComm volunteers to establish a simple message center in the field by conducting occasional exercises. The process is not particularly complicated, but it does require some pre-planning and staffing to conduct the exercise. A simple outline might be:

- A simple disaster scenario and functional exercise can be established, which includes a cellular data network and Internet outage.

- Preformatted messages are provided to off-site players representing radio operators in the field. These messages are time-stamped to indicated when they should be transmitted to the message center. Likewise, a similar stack of messages is provided for origination from the temporary message center. Off-site players may be recruited from a neighboring EmComm group, a traffic net or the local radio club.

- A field location is selected at which a temporary message center is to be established. This can be anywhere from a fire station to a gymnasium to an outdoor picnic pavilion.

- On the day of the exercise, the EmComm group deploys operators and equipment to the pre-determined temporary message center location. Connectivity is established with various VHF, UHF and HF networks.

- The nets are activated at the designated hour and messages begin to flow. Evaluators monitor both the on-air traffic and procedures and performance at the temporary message center.

- Message center personnel will be responsible for keeping radio logs, transcribing manual mode traffic accurately, recording the time at which each message is tendered for origination, and transmitted, or received and delivered, assigning message serial numbers for traffic leaving the message center, and so forth.

Such an exercise is guaranteed to be an eye-opening activity for an ARES unit or similar type of organization. Some volunteers may be shocked to discover that they really don't have the skills needed to properly support a served agency. However, it's better to experience such an epiphany during an exercise than during a real disaster in which important messages must be processed.

Always remember; millions of teenagers have an advanced, high-tech communications tool in their hand 24-hours a day. However, we wouldn't trust them to support a critical emergency response operation because connectivity is only one small component in the complex communications process. In other words, possession of a ham radio license and transceiver does NOT make one an emergency communicator.

Origination

- Functional rep draft message tenders for origination.
- Clerk reviews for clarity and correct DTG.
- Clerk assigns message serial number.
- Message routed to appropriate radio circuit operator.

Transmission

- Operator transmits message.
- Operator records service data on message form:
- *Time Transmitted*
- *To whom/which station transmitted.*
- *On which network transmitted.*

Record keeping:

- Radio operator notes station to which message was transmitted and message serial number (or DTG) in log.
- Message moved to "transmitted" folder in "dead" file in appropriate serial number sequence.
- (Option) Copy of message as transmitted returned to functional representative.

Message Received

- Radio operator receives and verifies complete message.
- *Operator records service data on form:*
- *Time received.*
- *From whom/which station received.*
- Message transferred to clerk.

Delivery

- Clerk transfers <u>copy one</u> of message to message router or addresee/functional repreentative.
- Clerk notes on message form to whom delivered and the time delivered.
- Where appropriate or so directed, message appears in data stream (e.g. at EOC).

Record keeping:

- Radio log notated with:
- *Station from whom received.*
- *Time message received.*
- *Message number, precedence, and station of origin from preamble..*
- <u>Copy two</u> of message as received transferred to "received" folder in dead file.

SKINNING A MULE

An Editorial by James Wades (WB8SIW)

The author and a mule.

Most people today have never "skinned" a mule. For the uninitiated, "skinning a mule" is an old-time expression for outsmarting and sometimes "outlasting" a mule or otherwise manipulating the animal to get it to do what you ask. The term "stubborn as a mule" exists as a colloquialism for a reason!

Getting ham radio operators to agree on some subjects seems to be like skinning a mule. Over the past three or more decades the author has tried desperately to "skin the mule" by convincing his fellow radio amateurs to use our own networks to conduct basic business. The idea is to grow and enhance our own emergency communications skills and capabilities by sending routine business via our own networks, instead of using commercial email or cellular data networks. Unfortunately, the success of these initiatives seems to always meet with failure.

Many radio amateurs also see emergency communications response as a simplistic process in which they will employ their favorite mode or rely on a specific communications tool to support an agency or their community. This monolithic perspective is often seen with respect to Winlink and its roll in emergency communications planning.

Certainly, Winlink is a very useful tool. The Winlink team has spent years building an outstanding network of great value. It's a hybrid system offering many of the benefits of commercial common carrier network combined with a beneficial level of survivability redundancy. The interface is simple and easily understood. Yet, like all networks, Winlink has its disadvantages, some of which can be summarized as follows:

- In a widespread, major disaster in which commercial services are disrupted, it is quite possible that multiple county or even multiple states may be trying to access the limited number of access points (nodes) available within favorable RF propagation range.

- EmComm groups may be competing with individual radio amateurs for access to the limited number of access-points (nodes) available on the network. For example, imagine a major earthquake and tsunami in the Pacific Northwest. Not only will many ARES® and AUXCOM groups be expecting to use Winlink, but perhaps every Winlink equipped "prepper" and individual radio amateur in the area as well.

- Except when used in the peer-to-peer mode, Winlink operates on the assumption that the email addressee will read his message. Within the EmComm environment, this is often true, but it is not assured. Requesting confirmation messages from addressees is one way to manage this, but this does increase de-

mand on circuit capacity (and therefore "connect" times) and it also requires those operating the message center to track outgoing messages against replies, at least for unique messages.

The order wire:

ARRL Sections and Regions can develop methods to manage the demand on Winlink circuit capacity. One method is to establish a specialized "order wire" net serving a state or region. Authorized EmComm groups can check into the net and request access to digital circuits based on message priority. For example, if Cowlitz County requests access to a specific Winlink node or a specialized digital circuit (e.g. the State EOC, etc.) with 3 EMERGENCY precedence messages, they would connect and upload before Spokane County, which might be holding 8 PRIORITY precedence messages.

The "order wire" can also be used to investigate technical problems or seek solutions to connectivity issues. However, it would not be used to handle traffic because this would not be its *emergency management function*.

The "order wire" can be a simple HF voice network supporting a digital operation. Such methods should also be exercised periodically to prioritize message traffic during drills and exercises. All users should be very familiar with basic radiotelephone (voice) procedures to ensure net efficiency. However, one will still encounter independent users of resources such as Winlink that are not "networked-into" the coordination process. Furthermore, inter-section coordination would have to be defined in the state emergency communications plans for the affected states or sections.

Excessive reliance on Winlink as the <u>only tool</u> for medium/long-haul communications is fraught with potential mission failure. If one is not also regularly using and exercising alternatives, such as voice, CW and RRI DTN, he is not establishing sufficient diversity to ensure a survivable and effective emergency communications response.

The RRI-Winlink Radiogram Template:

RRI supports Winlink and sees its value as an important EmComm resource. Therefore, we have worked with the Winlink Development Team to improve and develop a process through which radiograms can be injected into the iNTS. This program has worked well, but its success is predicated on two important requirements:

- As with any messaging process, the originator MUST provide a reasonably complete address. Ideally:
  Name and title
  Address
  Phone
  Email
- The messages must be brief to support interoperability. 250 or 500 word messages do not support interoperability should they need to be transferred to an amateur radio voice network or a public safety talk group to achieve delivery through the last mile.

- DRILLS and EXERCISES require notification of the RRI Emergency Management Director (833-377-0722 x700). This allows RRI to notify gateway operators of a pending exercise, modify connect frequencies and/or provide additional staffing at the region level. <u>NOTE</u>: No one wants to do this for some odd rea-

son, but if you want to use NTS resources for an exercise involving networks at the Region, Area, International, or IATN levels, *you must notify the RRI Emergency Management Director*.

The radiogram and radiogram-ICS213 templates incorporated in the Winlink forms library is an excellent tool for *non-traditional* traffic operators. However, it is NOT a substitute for direct access to manual mode traffic nets or DTN for the above stated reasons. When an ARES or similar EmComm group develops NTS capabilities, they are also developing redundancy.

The Mortal Sin:

If there is a "mortal sin" in traffic handling, it is that of using Winlink to support a high-level RRI/NTS network function. Far too many NTS operators are using Winlink to clear traffic at the area or IATN (TCC) level. *This is a sure recipe for disuse atrophy* and the ultimate failure of the traffic system should it ever be really needed.

It makes no sense to maintain NTS or its DTN component as a partner in the emergency communications process if key pieces of the network are "farmed out" to Winlink, or worse yet, commercial systems such as the Internet. If traffic is going to be routed via the Internet or Winlink, we might as well save everyone a lot of time and trouble and simply shut down DTN and NTS. With rare propagation exceptions, those operating at the RRI infrastructure level should ensure sufficient station efficiency to hold schedules under a wide range of RF propagation conditions.

The process of emailing groups of messages between sections, regions or Areas is becoming a major problem. At the risk of upsetting some individuals, **let us state unequivocally that such activity is prohibited.** In a rare instance, it may be acceptable. For example, if an operator is holding a large file of messages and his transceiver has failed, or if one is holding a large file of messages and must leave in a few hours to go on vacation. However, generally, using Winlink or the Internet to move traffic undermines the traffic system.

Summary:

All public service networks must be maintained and exercised. This is the purpose of routine radiograms. The process of handling routine messages provides training for "the real thing." ***One should not equate routine radiogram content with the value or importance of the skills developed and the maintenance of the network infrastructure and relationships. A network that can handle routine messages reliably can also handle important messages. The process is the exactly the same.***

An effective EmComm group should have access to Winlink and RRI/NTS nets, including either direct or indirect access to DTN via the Digital Traffic Station (DTS) function. It requires some training and a commitment to genuine preparedness, but it's also a sensible policy.

Always remember! A diversity of communications tools is essential to an effective emergency communications response.

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THE NATIONAL RESPONSE PLAN

By James Wades (WB8SIW)

Radio Relay International seems to be having a difficult time convincing ARES units and NTS section level nets that a National Response Plan has been in place since 2016. Formerly called the "National Emergency Communications Response Guidelines, their purpose is to govern the transfer of NTS infrastructure from routine to emergency configuration.

For the plan to function properly, there are two critical actions that EmComm organizations and individual traffic operators must take. These are:

- Each EmComm group activated for a major disaster in which NTS assets will be utilized must originate an "activation request message." This message serves as both alert and notification while also providing some general information that the RRI Emergency Management Director and his team can use to configure the RRI/NTS response, and ensure efficient transfer of welfare, priority, or emergency traffic.

- Each traffic operator must originate an "operational readiness" message. These messages are utilized by an assigned "network coordinator" to develop a modified ICS205 spread sheet that associates each traffic operator with a local or state ARES group as well as those agencies with which the traffic network or its cooperating ARES/EmComm group has connectivity.

These tools accomplish several tasks, which ensure that procedures are in place to expedite the flow of message traffic. For example, special point-to-point circuits may be established between a state EOC and a distant agency. "Priority Entry Points" may be established on watch frequencies for priority or emergency traffic. Connect and download frequencies may be increased or they may be placed on a rotating basis for DTS and RRI-Winlink gateways, thereby ensuring rapid traffic relay/transfer between the infrastructure level and the section/local level.

It is extremely important to understand that TWO RRI/NTS CONFIGURATIONS EXIST.

Routine configuration governs day-to-day operations. All traffic is treated as routine because RRI/NTS is a volunteer organization. We cannot expect all relay and liaison functions, particularly on the manual net side to operate continuously. This is the configuration with which we are all familiar.

Emergency configuration greatly improves net efficiency; however, it is much more labor intensive, and it requires an "all-hands-on-deck" approach to expedite message transfer and to ensure that all automated functions at hubs, nodes and gateways are monitored for proper functioning.

The National Response Plan can be found on our web page at www.radiorelay.org/publications.

Emergency Exercises:

Local and state emergency management exercises do not necessarily require the establishment of emergency configuration UNLESS message transfer is TIMED; that is, if it is desired to measure the time elapsed from which a message is tendered for origination in the field to the time of arrival at the point of delivery. This is a very time-consuming process, which we recommend ONLY for major, multi-jurisdictional exercises, such as Cascadia Rising in 2016.

RRI also conducts periodic exercises in which message accuracy is measured. Under these circumstances, it is essential that stations originating and delivering message traffic at the last mile send copies of all radiograms or radiogram-ICS213 messages to the RRI emergency management team for analysis. This facilitates the scoring of traffic and the development of a resulting analytical product that not only provides an accuracy score, but which provides metrics for both fatal and non-fatal errors. For more information on this process, EmComm volunteers may want to attend the RRI course entitled "Designing an Emergency Communications Exercise."

Regardless of the scope of an exercise, if RRI/NTS assets are involved, the necessary activation request message and the operational readiness messages should be originated to familiarize operators with the necessary formats. The RRI emergency management staff respectfully requests at least two weeks' notice before an exercise utilizing RRI/NTS resources is to be conducted. A simple email transmitted in advance is sufficient, or a call can be made to:

Radio Relay International
C/O Emergency Preparedness Services, LLC
PO Box 43
Niles, MI. 49120
james.wades@eps-sca.com
(833) 377-0722 x 700

RRI has spent the last six years rebuilding the traffic system and implementing the training, plans and procedures needed to modernize the system and ensure its ability to serve the needs of both the amateur radio community and the public. However, we cannot do it alone. Success requires teamwork including the cooperation of the broader amateur radio community.

RRI conducts several emergency communications exercises per year, both internally and with served agencies and local/state EmComm organizations to build cooperation, test the network, and prepare for the moment when we are really needed. We have proven we can do the job during both exercises and in actual activations, such as Hurricane Maria when just one RRI operator handled over 2000 welfare messages out of Puerto Rico.

Let's all work together. RRI has done much of the heavy lifting. All that is necessary to help is to follow the plan.

American District Telegraph

The American District Telegraph Company was organized in 1872. It offered messenger, policing, and a variety of other services in addition to bank and fire alarm services. In an 1875 pamphlet issued by ADT, they reported having 500 uniformed messengers, reporting to 21 district offices, some of them apparently with police power. The booklet went on to say:

"The variety of purposes for which our policemen are called would astonish anyone unfamiliar with our business. They have been summoned to search houses, disperse crowds, arrest drunken people and suspicious characters, to remove drunken servants, to take sick people home, to open doors (servants or others bring absent with keys), to watch houses during owner's absences, collecting bills, disperse disorderly crowds of boys, prevent abuse and dishonesty among trades people and peddlers, to kill or remove vicious animals, search rooms and trunks of suspicious persons, to prevent fights....and perform many other services required."

The National and "Northern Radio" NC-183 NR
By James Wades (WB8SIW)

The NC-183 receiver and its successor NC-183D double conversion receiver were quite popular with radio amateurs and some commercial operations during the 1950s. Both receivers offer excellent sensitivity and stable operation for their era.

Recently, the author obtained a rather dirty, worn looking NC-183NR from a liquidated estate in Illinois. It turned out to be an interesting journey into the unknown. In this case the "NR" stands for "Northern Radio," an engineering firm that specialized in modifying stock communications receivers for specialized applications, amongst other related activities. In this case, the receiver was likely modified for specialized point-to-point service, perhaps radio teleprinter service or something similar.

It's easy to forget that before the era of satellite communications and the Internet, high frequency radio circuits served a variety of important functions. For example, the author remembers using model 28 teletype at 74-baud to provide weather data (surface observation, 500 mb data, etc.) via HF circuits for aviation purposes back in the late 1970s. In earlier years, *Press Wireless* built out an extensive electronic news gathering and distribution network, which remained in service from before the World War Two era well into the post war years. In other words, there was a market for modified receivers, specialized terminal units, FSK modulators and similar devices well into recent memory. Undoubtedly, the NC-183NR was a specialized receiver serving a similar, specialized purpose.

If one expects to find a diagram or tube line-up for an NC-183NR somewhere on the "boat anchor manual archive" or a similar resource, he is in for a surprise. Documentation is about as scarce as the proverbial unicorn. However, with a bit of knowledge of receiver design and basic electronics, one can decode the mystery

and restore an NC-183NR back to operation.

The NC-183NR is heavily modified with a substitute, heavy-duty power transformer, three IF circuits and several vacuum tube changes, a selectable AVC arrangement (for diversity configuration) and a variety of related component changes. The BFO is permanently activated as well, and while the modification is easily reversed, the receiver is well suited to current use on Amateur frequencies.

The NC-183NR burning in after a rebuild.

Once the receiver was carefully inspected, several problematic areas were identified, including at least one modification that was incomplete. A careful cleaning, replacement of paper and electrolytic capacitors and out-of-tolerance resistors, and several minor repairs and tube replacements (verified based on overall circuit design) were sufficient to restore the receiver to full operation. It turned out to be a good performer, which can hear anything an IC-7300 can hear.

Three levels of selectivity are available, designated “broad,” “medium,” and “sharp” (BMS) in addition to the stock crystal filter originally provided by National. The audio section is mostly unchanged for obvious reasons. The “sharp” filter does a respectable job on crowded CW bands and SSB reception is quite good, even at somewhat higher RF gain levels.

The receiver is configured for rack mount as one would expect for commercial service. Whether it will permanently replace a nice HRO-60 in the boat anchor line-up is yet to be determined, but its an interesting receiver that holds its own, particularly for CW operation.

Press Wireless
By Donald K. deNeuf

Press Wireless was formed in 1929 by seven of the country’s largest newspapers and four big press associations. It as licensed by the Federal Radio Commission to act not as a news gathering agency, but as a common carrier for all entities disseminating news and information to the public. Few people outside of the magazine, newspaper and broadcasting fields ever heard of the company or knew what it did. Yet, virtually everyone around the globe red or heard the information it transmitted and received. By 1944, it was handling over one hundred million words of press dispatches a year. Among its pioneering developments in the transmission field was “precasting,” and “newsphoto-casting,” whereby HF radio was made to as many as 100 points simultaneously around the world. Such new techniques made possible a fantastic growth in the volume of news, information and news photos.

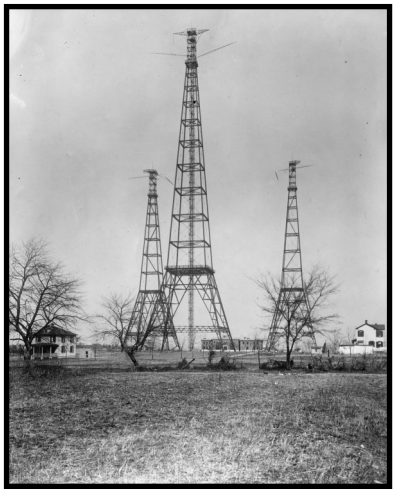
Prior to the formation of Press Wireless, because of limited cable and other point-to-point facilities, press rates were comparatively high – 14 cents per word between the U.S. and Europe….China was 35 cents per word, for example. The average cost on PW precasts reached something under one tenth of a cent per word. Much of this was accomplished with the genius of the president of the company, Joe Pierson, former cable editor of the Chicago Tribute, and through the skills of a superb engineering staff in developing such things as frequency shift keying, high gain antenna techniques, and highly sensitive and selective receivers. Names like Bergatedt, Eldredge, Hilferty and Simpson will go down in the history of HF radio development as great contributors to the art.

When World War Two broke out, Press Wireless sent a mobile station unit and staff with the invasion forces to handle press dispatches filed by war correspondents. The British had organized a similar unit, but it sank in the English Channel during the invasion. As a result, the PW unit carried all the press dispatches and voice broadcasts from the front. The operating crew faced many hardships. Briefly, it rolled 2214 miles between Normandy and Berlin, where it arrived on July 1, 1945, making 24 set-up stops. It stretched 26,000 feet of antenna wire and operated 8600 hours to handle over eight million words of press copy and over 400 voice programs for CBS, NBC, MBS and ABC. A very similar PW unit and staff accompanied McArthur's invasion of the Philippines and it turned in a similar performance with a story all its own.

Back at home, PW engineers had also been hard at work designing and building hundreds of transmitters (with powers up to 40 kW) and receivers for the Signal Corps. These units were sent all over the world. Some years after the end of World War Two, global travelers found these transmitters even in Cuba working Fidel Castro's private circuit to Moscow!

Press Wireless had no publicity staff and most of its accomplishments were carried out as a sort of "silent service," recognize only by those using its facilities. At its peak, it had over 100 HF radio transmitters operating in its own stations in New York, San Francisco, Manila, Rio de Janeiro, and Montevideo, and it maintained press and telephoto circuits with government telecommunications agencies in England, France, Germany Russia, Italy, Japan, Taiwan, and Argentina. It handled press material in a multitude of languages – even in Japanese and Chinese characters by means of facsimile systems.

Its telecommunications efforts, without doubt, made the peoples of the world better informed than ever before in history.



NAA—Arlington, VA.

Updated "ARL" Numbered Radiograms

The Radio Relay International Emergency Communications Committee has developed a new set of numbered radiogram texts. This new version retains the texts and numbers of the older ARL Numbered Radiogram Texts and adds a variety of new texts, some of which are in response to developments involving ARES ® organizations, the American Red Cross and other organizations, whereas others are designed to conform with the alert and notification functions specified in the RRI *National Response Plan*.

Considerable public input was received on the first version. Whereas the Committee originally envisioned grouping the texts by general subject/application, this precluded keeping the older ARL Numbers and in association with the original texts. Therefore, we eliminated a number of proposed texts and we instead color-coded the radiogram texts based on function.

Another concern expressed regarding the original draft list was the "service specific" texts. We therefore made them more generic in nature, which will hopefully provide flexibility and eliminate possible areas of confusion.

The new codes will be designated as "RRC" codes, which is an abbreviation for "radio relay codes." Some suggested that we use "RRI," but we want the list to be inclusive and not representative of a single organization. With ARES®, RACES, AUXCOM, REACT, and similar organizations accessing RRI networks, it seemed best to keep things neutral.

The draft two list remains subject to change. At this point, we anticipate only minor revisions. On October 1, 2022, the final list will become final. In the meantime, any traffic operator or EmComm member/organization is welcome to offer input or recommend changes.

We would like to thank all who provided input on the original draft list. Whether it was positive or "hate mail," we tried to be responsive to the needs of our stakeholders.

The draft two version of the list is included on pages 18 to 20 of this issue of *QNI.*

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From the desk of U.S. President Harry S. Truman

		Radio Relay International Numbered Radiogram Texts
		Draft 2 for public comment. Release 1 August 2022. Comments by October 1, 2022
		Instructions:
		1. Place "RRC" ahead of the check (group count). The check is the number of groups in text as originated, NOT as translated.
		2. Spell out the text number. For example "RRC NINE." Spelling the number will prevent serious errors in translation.
		3. Fill in the blanks in the order they appear in the numbered radiogram text.
		4. Numbered radiogram texts are designed to preserve circuit capacity by minimizing transmit and formatting time, particularly when using "book traffic" techniques or when circuit capacity is limited.
		5. When deliverying a radiogram, translate the text and transcribe in all capitals as additional content may be relayed using non-case-sensitive modes.
		Color Codes:
		No color code: Routine message texts
		Light green: Welfare messages corresponding to older ARL Numbered Radiogram Texts.
		Light blue: Network management and possible emergency communications use.
		Gold: Special "safe and well" texts approved by ARC. These correspond to the RRI-Winlink Radiogram Templates available on RMS software
		Texts in italics correspond to older ARL Numbered Radiogram Texts
		New texts inserted within old ARL Numbered Radiogram grouping indented slightly.
1	*ONE*	Everyone safe here. Please don't worry.
2	*TWO*	Coming home as soon as possible.
3	*THREE*	Am in _____ hospital. Receiving excellent care and recovering fine.
4	*FOUR*	Only slight property damage here. Do not be concerned about disaster reports.
5	*FIVE*	Am moving to new location. Send no further mail or communication. Will inform you of new address when relocated.
6	*SIX*	Will contact you as soon as possible.
7	*SEVEN*	Please reply by Amateur Radio through the amateur delivering this message. This is a free public service.
8	*EIGHT*	Need additional _____ mobile or portable equipment for immediate emergency use.
9	*NINE*	*Additional _____ radio operators needed to assist with emergency at this location.*
10	*TEN*	*Please contact _____. Advise to standby and provide further emergency information, instructions or assistance.*
11	*ELEVEN*	*Establish Amateur Radio emergency communications with _____ on _____ MHz.*
12	*TWELVE*	*Anxious to hear from you. No word in some time. Please contact me as soon as possible.*
13	*THIRTEEN*	*Medical emergency situation exits here.*
14	*FOURTEEN*	*Situation here becoming critical. Losses and damage from _____ increasing.*
15	*FIFTEEN*	*Please advise your condition and what help is needed.*
16	*SIXTEEN*	*Property damage very severe in this area.*
17	*SEVENTEEN*	*REACT communications services also available. Establish REACT communication with _____ on channel _____.*
18	*EIGHTEEN*	*Please contact me as soon as possible at _____.*
19	*NINETEEN*	*Request health and welfare report on _____. (State name, address and telephone number)*
20	*TWENTY*	*Temporarily stranded. Will need some assistance. Please contact me at _____.*
21	*TWENTY ONE*	*Search and Rescue assistance is needed by local authorities here. Advise availability.*
22	*TWENTY TWO*	*Need accurate information on the extent and type of conditions now existing at your location. Please furnish this information and reply without delay.*
23	*TWENTY THREE*	*Report at once the accessibility and best way to reach your location.*

24	*TWENTY FOUR*	*Evacuation of residents from this area urgently needed. Advise plans for help.*
25	*TWENTY FIVE*	*Furnish as soon as possible the weather conditions at your location.*
26	*TWENTY SIX*	*Help and care for evacuation of sick and injured from this location needed at once.*
27	*TWENTY SEVEN*	I am safe and well.
28	*TWENTY EIGHT*	Household safe and well.
29	*TWENTY NINE*	Currently at shelter.
30	*THIRTY*	Currently at home.
31	*THIRTY ONE*	Currently at family/friend's house.
32	*THIRTY TWO*	Currently at hotel.
33	*THIRTY THREE*	Safe but moving to a safer location.
34	*THIRTY FOUR*	Evacuating to a shelter.
35	*THIRTY FIVE*	Evacuating to family member/friend's house.
36	*THIRTY SIX*	Evacuating and safe.
37	*THIRTY SEVEN*	At home and plan to remain here.
38	*THIRTY EIGHT*	Will contact you when able.
39	*THIRTY NINE*	All communications are down.
40	*FORTY*	Share this message with others.
41		(Reserved for future use)
42		(Reserved for future use)
43		(Reserved for future use)
44		(Reserved for future use)
45		(Reserved for future use)
46	*FORTY SIX*	*Greetings on your birthday and best wishes for many more to come.*
47	*FORTY SEVEN*	*Reference your message number _____ to _____ delivered on _____ at _____ UTC.*
48	*FORTY EIGHT*	Reference your message number _____ to _____ not delivered. Telephone _____ (insert number as received) inoperative. Please give better address.
49	*FORTY NINE*	Reference your message number _____ to _____ . Unable to contact addressee or receive confirmation of delivery.
50	*FIFTY*	*Greetings by Amateur Radio.*
51	*FIFTY ONE*	*Greetings by Amateur Radio. This message is sent as a free public service by ham radio operators at _____. Am having a wonderful time.*
52	*FIFTY TWO*	*Really enjoyed being with you. Looking forward to getting together again.*
53	*FIFTY THREE*	*Received your _____. It's appreciated; many thanks.*
54	*FIFTY FOUR*	*Many thanks for your good wishes.*
55	*FIFTY FIVE*	*Good news is always welcome. Very delighted to hear about yours.*
56	*FIFTY SIX*	*Congratulations on your _____, a most worthy and deserved achievement.*
57	*FIFTY SEVEN*	*Wish we could be together.*
58	*FIFTY EIGHT*	*Have a wonderful time. Let us know when you return.*
59	*FIFTY NINE*	*Congratulations on the new arrival. Hope mother and child are well.*
60	*SIXTY*	*Wishing you the best of everything on _____.*
61	*SIXTY ONE*	*Wishing you a very Merry Christmas and a Happy New Year.*
62	*SIXTY TWO*	*Greetings and best wishes to you for a pleasant _____ holiday season.*
63	*SIXTY THREE*	*Victory or defeat, our best wishes are with you. Hope you win.*
64	*SIXTY FOUR*	*Arrived safely at _____.*

65	*SIXTY FIVE*	*Arriving _____ on _____. Please arrange to meet me there.*
66	*SIXTY SIX*	*DX QSLs are on hand for you at the _____ QSL Bureau. Send _____ self addressed envelopes.*
67	*SIXTY SEVEN*	*Your message number _____ undeliverable because of _____. Please advise.*
68	*SIXTY EIGHT*	*Sorry to hear you are ill. Best wishes for a speedy recovery.*
69	*SIXTY NINE*	*Welcome to the _____. We are glad to have you with us and hope you will enjoy the fun and fellowship of the organization.*
70	*SEVENTY*	Thank you for the QSO on _____ (frequency/band) _____ (mode) at _____ (time) _____ (date).
71	*SEVENTY ONE*	Order wire net established on _____ (frequency) to coordinate and prioritize access to _____ (digital network name) on _____ (frequency)_____ (mode).
72	*SEVENTY TWO*	Establish communications with _____ (name of EmComm group) on _____ frequency _____ mode.
73	*SEVENTY THREE*	Establish communications with _____ agency on channel _____ (spell channel number) _____ (mode).
74	*SEVENTY FOUR*	Establish communications with _____ agency on _____ (frequency) _____ mode.
75	*SEVENTY FIVE*	Priority Entry Point frequencies established on _____ (list frequencies and modes)
76	*SEVENTY SIX*	Point to point circuit established on _____ (frequency) _____ (mode). Please establish liaison.
77		(Reserved for future use)
78	*SEVENTY EIGHT*	SITREP messages requested every _____ (spell number) hours your location. Transmit to station _____ (call sign) in _____ (state/section).
79	*SEVENTY INE*	WXOBS messages requested every _____ (spell number) hours your location. Transmit to station _____ (call sign) in _____ (state/section).
80	*EIGHTY*	OPRED messages requested your station. Update when changes occur. Transmit to station _____ (call sign) in _____ (state/section).
81		(Reserved for future use)
82	*EIGHTY TWO*	Digital Traffic Station connect/download frequency at _____ (spell number) minute intervals requested in support of disaster operations.
83	*EIGHTY THREE*	RRI Winlink gateway connect/download frequency at _____ (spell number) minute intervals requested in support of disaster operations.
84	*EIGHTY FOUR*	Request activate _____ Region Net until further notice.
85	*EIGHTY FIVE*	Request activate _____ Area Net until further notice.
86	*EIGHTY SIX*	Advise frequency and mode of _____ state/section nets.
87	*EIGHTY SEVEN*	Request assistance with establishment of a temporary message center at _____ (address and/or agency).
88	*EIGHTY EIGHT*	Welfare traffic being originated on (frequency/mode). Request assistance with RRI/NTS liaison
89	*EIGHTY NINE*	Priority and/or emergency traffic being originated on _____ (frequency/mode). Request assistance with RRI/NTS liaison.
90	*NINETY*	Please provide a list of stations operational on National SOS Radio Network.
91	*NINETY ONE*	Widespread disruptions to cellular data and public switched telephone network this location.
92	*NINETY TWO*	Widespread disruptions to Internet service this location.
93	*NINETY THREE*	The following broadcast stations are off-air in this area (list call sign, frequency/channel).
94		
95		
96		
97		
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Fire Alarms by Telegraph
By Donald K. deNeuf

Those of a certain age undoubtedly remember the old fire alarm pull boxes that were an omnipresent fixture on urban street corners. Many of these systems remained in service well into the early 2000s. Your editor recalls the Emmaus, Pennsylvania fire department's "telegraph repair" vehicle still maintaining a fire alarm telegraph system during the early 2000s. In this article, Don deNeuf (SK) explains a bit about the evolution of these once ubiquitous systems…..Editor

As recently as 1850, the sounding by electricity of a fire alarm was unknown. Even in the largest cities there was no means of sending in alarms, nor was there any way to direct a firefighting force to the scene of the fire except by the primitive method of shouting and striking bells manually in random fashion. The telephone was still far in the future.

Dr. W. F. Channing, a Boston physician, in 1842 studied the early successful experiments by Professor Morse with his telegraph. In 1845, he published an article outlining a method whereby the telegraph could be used for fire alarm purposes. By 1851, the first fire alarm telegraph system was installed in Boston. It utilized red "boxes" at strategic street corners, connected in series fashion to fire department headquarters. A rudimentary telegraph code was adopted using simple "make and break" principle over the line. For example, two pulses over the line, followed by a space, followed by three pulses, signified that the alarm was being transmitted from alarm box 23 at a specific location.

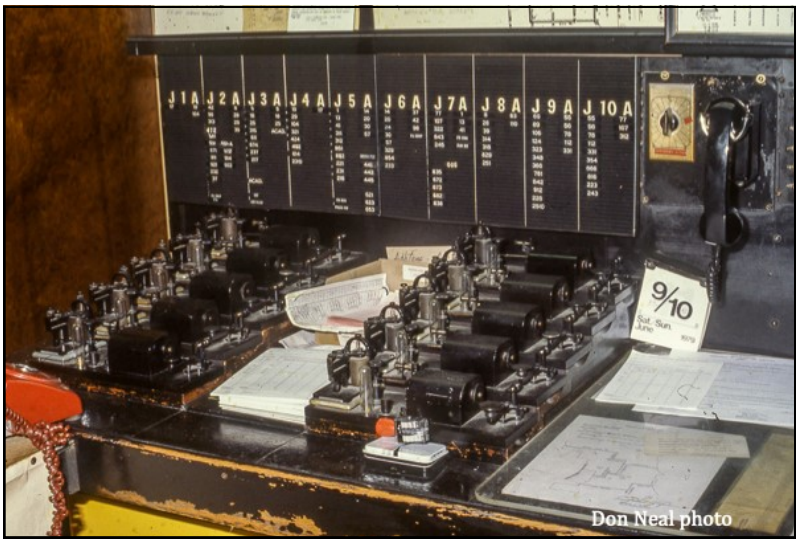
The box contained a spring-wound clock device, which when set in action by pulling a lever outside the box, would drive a wheel appropriately notched. Contacts riding on the wheel would open and close the circuit to form the code. This code was sounded at the fire house by single-stroking electric gongs—sometimes in the form of large church-type bells, which not only aroused the volunteers to the fact that a fire was discovered, but told them where it was. This ended years of confusion and saved much valuable time in getting the firefighters to the location of the fire quickly.

Unique telegraphic types of devices for closed circuits were rapidly developed. It was soon discovered that occasionally two boxes were activated almost simultaneously, and since all boxes were in series electrically, garbled and unintelligible alarm signals would result. This was cured by designing new boxes, which would not interfere with one another if two or more were pulled at the same time. A solenoid in series with the line circuit arranged to lock out a pulled box if another was already transmitting a signal. This posed another problem because the signal from the locked-out box was forever lost, and the second fire could go unreported.

An ingenious mechanical arrangement in the boxes overcame the problem through a "holding" technique. Thus the signal from the second box would follow the first, the third follow the second, and so on.

This basic system was used in virtually every city and town. At one time the system in San Francisco had the additional feature of being an actual Morse telegraph order circuit. Each department response to an alarm was accompanied by a Morse telegrapher, who immediately went to the nearest street corner box and

manned the key and sounder, reporting to his fire headquarters whatever additional equipment, personnel, and ambulance as required, an so on, or that the alarm was false and that fire fighting apparatus was returning to the station.



Telegraphic equipment at the Chicago Fire Department. Photo courtesy "chicagoareafire.com

In recent years, many cities and towns replaced the aging lines and boxes with new telephone systems and radio networks, particularly in the hope of reducing the number of expensive false alarms transmitted by pranksters and "nuts." But the replacement has commonly been far from a panacea. Not only has the telephone failed to reduce the number of false alarms, but language barriers, human panic and confusion, or the inability to speak have introduced new problems. The old telegraphic box, when tripped, had one distinct advantage—it said it loud and clear—"I'm box number 354 reporting a fire at Third and Market."

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NEWS FLASH

The Radio Relay International Web Page has migrated to a new URL.

www.radiorelay.org

The new website is currently under construction, but there is already plenty of information available. Check-out the new website today

QNI
NEWSLETTER

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A Traffic Operator's Newsletter

QNI is published quarterly…or more often when the Editor feels like it!

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Motivations?

Radio amateurs who become involved in public service communications can probably be divided into three categories.

The first group might be classified as the "altruists." These are the individuals who wish to use their equipment, talents and energy in a way that benefits society.

The second group is those motivated by a sense of duty. They understand that the Amateur Radio Service must justify its existence so the contribute a portion of their time to programs like RRI, ARES®, REACT, MARS, and so forth.

The third group is the egotist. These individuals are motivated by a desire to feel self-important. They seek status either through association with public safety officials or through "leadership" status within the Amateur Radio community.

This latter group can sometimes be very problematic. In too many cases, the egotist places his own ego ahead of mission success or the broader, wellbeing of the Amateur Radio Service.

For some egotists, the desire for status is so pathological, they will engage in some very Machiavellian intrigue to ensure a tight grip on their *perceived* power. These are the individuals who are afraid of new ideas that aren't their own. These are the individuals who will whisper defamatory comments in the shadows to achieve their political aims.

We don't need egotists in ham radio. In particular, we don't need those who do harm to others simply to feed their ego or access to perceived power. Rather, we need those with a heathy sense of duty.

FLASH! New RRI-Winlink Welfare Radiogram Template

As this issue goes to press, a new Winlink Express Amateur Radio Welfare Message Text Creator is being released. This is a special purpose adaptation of the general purpose Radiogram and Radiogram-ICS213 Text Creators released some time ago. It is fully compliant with the radiogram format but includes some special features and excludes items that are not necessary.

It was developed as a cooperative effort between the Seattle Emergency Communication Hubs (http://seattleemergencyhubs.org/), Seattle Auxiliary Communication Service (ACS) (https://www.seattleacs.org/), Radio Relay International (radiorelay.org) and the Winlink Development Team (winlink.org). The Northwest Washington American Red Cross provided additional input with regard to the short message texts, which have also been incorporated into the new "RRC Numbered Radiogram Texts," the final version of which will become official on October 1, 2022, thereby ensuring full interoperability between various modes.

Read more on the RRI Web Page Blog at: https://radiorelay.org/f/new-welfare-radiogram-text-creator