QNI NEWSLETTER

DECEMBER, 2020

THE WAVEMETER

Before the passage of the Radio Act of 1912 in the United States and similar radio regulation in other countries, wavelength was often determined simply by antenna characteristics and convenience. However, with increased usage of wireless telegraphy, it became necessary to assign wavelengths (frequencies) for specific users.

The earliest tool for this purpose was the absorption wavemeter, which consisted of mostly a simple L-C circuit and indicator or detector. A typical wavemeter of the 1910s or '20s consisted of a set of interchangeable

VOLUME 9, ISSUE 3

Holiday Season Issue

In this 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.

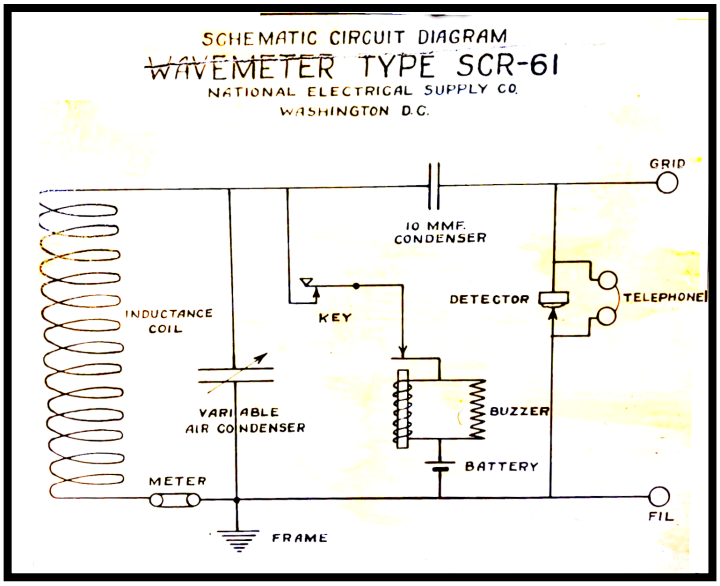
Our mission is to provide a forum for EmComm volunteers throughout North America. We operate on the premise that Amateur Radio public service volunteers should be, first and foremost, communicators and technicians.

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

coils for a specific frequency range, a variable condenser calibrated for each range, and a sensitive RF ammeter or detector and phones.

Some wavemeters, such as the U.S. Army Signal Corps wavemeter pictured could also function as a simple spark transmitter. For example, a simple Century buzzer drives (rings) the L-C circuit, thereby radiating a signal at the selected frequency.

Most radio amateurs during the 1920s used a simple absorption wavemeter consisting of the interchangeable coils, a variable condenser and a neon bulb. One would hold the wavemeter coil near the transmitter tank circuit (but not too close), adjust the variable condenser until the neon bulb glowed at maximum brilliance, noted the setting and, using a simple nomograph or calibration chart, read the operating frequency.



Above: Schematic World War One SCR61 Wavemeter
Below: SCR61 from 1918 showing interchangeable coils and calibrated dial

Initially, the primary concern was to ensure one was below 200 meters, but as the shortwave spectrum was developed and amateur bands assigned, ensuring proper operation within the Amateur Radio bands became essential. The ARRL used a lot of printers ink encouraging radio amateurs to respect the regulations through the use of a wavemeter.

1920s era wavemeters show up regularly at swap meets and on-line auction sites, but interestingly, they get very little respect. Most do not sell, but rather get passed around, or worse, tossed away. Yet, they deserve some respect as an important part of the history of Amateur Radio.

The Mystery of the Disappearing Radiogram

By James Wades (WB8SIW)

Mary Roberts Reinhart is widely recognized as the creator of the classic American mystery novel. She was an interesting woman who made quite a life for herself as an author during the first three decades of the 20th Century. If she was around today, she might just write a novel entitled "The Mystery of the Missing Radiograms" in which there turns out to be not just one culprit, but multiple perpetrators responsible for the brutal and violent murder of the traffic system's reputation.

Recently, we have received complaints of disappearing radiograms from the Alaska section. Alaska ARES is training volunteers in traffic handling and part of that training involves originating messages to relatives in the Continental United States; however, few seem to be delivered. They have been traced via the Alaska CW gateway as far as Region 7 where they enter DTN and the trail grows cold. This mirrors a problem we witnessed back during the 1990s when we would originate telegrams for refile to NTS from steam train excursions in Michigan. It became embarrassing after a couple of years when returning visitors would report that their messages were never delivered.

While it seems reasonable that the occasional radiogram might be misplaced or "lost in transit" due to the number of relays involved, **there can be absolutely no reasonable explanation for large quantities of messages disappearing and it's this problem that must be solved once and for all.**

A Bad Taste in One's Mouth

The author is fond of using the "restaurant analogy" in many areas of business management. If a customer has a bad experience at a restaurant, even if it is preceded by several positive dining experiences, he typically will not return. Worse yet, he will typically "spread the word" about his negative experience. Even occasional negative dining experiences can result in decreased business sufficient to result in business failure. It is therefore necessary for the restaurant owner to quickly identify and terminate problematic employees who fail to perform consistently. A failure to do so will end in disaster.

Of course, the above analogy does not apply only to restaurants. It applies to many products and services, including the *primary* service provided by the traffic system. Therefore, perhaps it is time to say "goodbye" to those volunteers who toss radiograms in the circular file. Perhaps it's time to trace these missing messages and place those with a consistent track-record of non-delivery on a "blacklist," through which they will simply be denied traffic or told they are no longer welcome on traffic nets.

While this may sound harsh on the surface, let's examine the human cost associated with such sabotage of the traffic system and its reputation. Every month, numerous volunteers invest dozens, if not hundreds of hours each as traffic operators, Net Managers, STMs, Digital Traffic Stations, liaison stations and the like. A purposeful failure to deliver a radiogram is simply a rude slap in the face to these many volunteers. It's a way of saying "your life energy and your labor invested in the system are meaningless."

Over the past five years, Radio Relay International volunteers have worked tirelessly to raise the profile of the traffic system. Our steps to modernize networks, implement peer-reviewed training materials, conduct on-line webinar classes, publish newsletters, conduct emergency communications exercises, and collaborate with local and state EmComm organizations and radio clubs have required tens of thousands of hours of effort. For some of us, restoring the traffic system after decades of neglect by the legacy organization has proven to be the equivalent of a second job. **All of this effort are wasted if some traffic operators simply circular-file radiograms.**

Let's face facts. <u>We are ultimately promising a service</u>. Those originating radiograms have a **reasonable expectation** that the radiogram will be delivered. Otherwise, the process of originating a radiogram is futile.

It's time to fix this problem once and for all, and here are a few of the author's suggestions for suitable policies designed to address these problems:

- Request that all originators incorporate a time of origin in UTC, even for routine traffic.
- Implement a policy requiring either *delivery* or *servicing* of routine radiograms by no later than 72-hours after time of origination, *regardless of where the radiogram is located within the system*.
- Encourage the incorporation of an e-mail in each radiogram address to provide an alternate delivery option. RRI publishes some excellent "fillable" radiogram PDF forms perfect for delivery via email.
- Continue presenting the standardized RRI training classes to better ensure that traffic operators understand the importance of recording the "sent to" and "received from" data associated with each radiogram, thereby facilitating the tracing of missing messages and in doing so, facilitating the identification of those culprits who repeatedly fail to exercise their **DUTY** to deliver the messages.
- Make the use of the RRI "bulk traffic coordination" email reflector mandatory for any operator originating bulk traffic. Radiograms from any bulk-traffic originator who refuses to participate in the "bulk traffic coordination" email forum to coordinate his activity and meet reasonable standards should be blocked (i.e. his radiograms refused). This would ensure a certain quality control for bulk messages.
- Implement a process through which originators can report any routine radiogram that does not arrive or is not serviced within four days. Investigate missing radiograms occurrences.
- Develop a "blacklist" through which operators who repeatedly refuse to deliver radiograms are identified and banned from handling traffic.

Let's face it. Your local volunteer fire company wouldn't retain a volunteer who repeatedly failed to show up for training or meetings. Why should a public service organization of any type retain a volunteer who refuses to perform one of his primary duties?

Quality organizations must implement standards. Whether it's a primary school, a factory, or NASA, standards are essential to success. Certain expectations must be defined, such as a school boy turning in assignments on time or a man showing up for work at the appointed hour. Volunteer organizations are no different. If one wants a quality organization, there must be both consensus AND mutual respect when it comes to meeting expectations.

Let's do something about these collective acts of disrespect. There can be no excuse for the systematic failure deliver radiograms.

This article reflects the opinion of the author and is not necessarily reflective of current or proposed policies promulgated by the RRI Board of Directors.

The Maine Relay Exercise

By Steve Hansen (KB1TCE)

Emergency exercises regularly prove that most EmComm volunteers without traffic handling experience are simply unqualified to handle important served agency traffic. It is not enough for an EmComm volunteer to simply say "I don't need the training nor do I want to participate in nets or ARES meetings, but I will be there if needed." The results of a relay exercise conducted in Maine are typical of this widespread problem……Editor

SET Radiogram Messages: Original and Last Point

Note, the transcriptions are, for the most part, based on the relay operators using either an ARRL or RRI radiogram form for copying. In some cases the handwritten copy was mixed font, and there were some non-standard entries such as the use of @ for ATSIGN, dashes in telephone numbers, etc. These minor errors were not included in the results below. Included were any significant errors that affected the meaning or completeness of the message and all errors in the message text.

Message 1: York EOC to Washington EOC

Original as Provided to the EMA Director

1 TEST P xxxxx 23 ALFRED ME 0800L OCT 24
LYNN DWELLEY WASHINGTON COUNTY EMA
28 CENTER ST
PO BOX 297
MACHIAS ME 04654
207 255 3931
WNEMA ATSIGN WASHINGTONCOUNTYMAINE DOT COM
BT
EXERCISE MESSAGE X WE HAVE FOUR 20 PART GIRDLESPRING ASSEMBLIES
WHICH IS 2 TOO MANY TO STORE X WOULD YOU
LIKE 2 QUERY
BT
ARTHUR W CLEAVES YORK COUNTY EMA
AR

As recorded at the Machias EOC

1 P TEST K1MGR 23 ALFRED MAINE (no time) 24 OCT
LYNN DWELLEY
WASHINGTON COUNTY EMA
28 CENTER ST
POF 297
MACHIAS ME 04654
(Phone Missing)
WNEMA AT WASHINGTONCOUNTYMAINE DOT COM
BT
EXERCISE MESSAGE (X missing) WE HAVE FOR 20 PARTS GIRDLE SPRING
ASSEMBLY WHICH IS 2 TOO MANY TO STORE X WOULD
YOU LIKE 2 ?
BT
(No Signature)
AR

Message 2: Lincoln EOC to Penobscot EOC

Original as Provided to the EMA Director

2 TEST P xxxxx 26 WISCASSET ME 0800L OCT 24
MICHELLE LABREE PENOBSCOT COUNTY EMA
97 HAMMOND ST
BANGOR ME 04401
207 945 4750
MLABREE ATSIGN PENOBSCOT DASH COUNTY DOT NET
BT
EXERCISE MESSAGE X SENDING 100 MILLILITERS 1 8 CINEOLE ESSENTIAL
OIL TO YOU X HOPING YOUR EOC WILL HAVE A
DELIGHTFUL EUCALYPTUS AROMA DURING THIS EMERGENCY
BT
CASEY STEVENS LINCOLN COUNTY EMA
AR

As Recorded at Waldo County

Notes: 1 8 CINEOLE is 3 groups, not 2.

This message could not be passed to the destination.

2 TEST PRIORITY N1VVH 23 WISCASSET ME 0800L OCT 24
MICHELLE LABREE
97 HAMMOND ST
BANGOR ME 04401
207 945 4750
MLABREE ATSIGN PENOBSCOT DASH COUNTY DOT NET
BT
X SENDING 100 MILLILITERS 18 CINEOLE ESSENTIAL OIL TO YOU
X HOPING YOURE EOC WILL HAVE A DELIGHTFUL EUCALYPTUS AROMA
DURING THIS EMERGENCY
BT
CASEY STEVENS LINCOLN COUNTY EMA
AR

Message 3: Oxford EOC to Aroostook EOC

Original as Provided to the EMA Director

3 TEST P xxxxx 25 SO PARIS ME 0800L OCT 24
DARREN WOODS
AROOSTOOK COUNTY EMA
158 SWEDEN ST
CARIBOU ME 04736
207 493 4328
DARREN ATSIGN AROOSTOOKEMA DOT COM
BT
EXERCISE MESSAGE X PER YOUR REQUEST WE HAVE 200 UNITS
OF RAPIVAB 600 MILLIGRAMS IN IV VIALS X THIS SHOULD
GET YOU THREW THE EMERGENCY
BT
ALLYSON HILL OXFORD COUNTY EMA
AR

As recorded at Somerset County

Note: This message was not relayed further.

3 2 W2GPJ 25 SO PARIS (no state) 0800 (Corrected based on OP NOTE) (No date)
DARREN WOODS
AROOSTOOK COUNTY (EMA missing) 158 SWEDEN (no ST)
CARIBOU (State missing) 04736
207 493 4328
DARREN ATSIGN AROOSTOOKEMA DOT COM
OP NOTE ORIGINATED IN OXFORD COUNTY
BT
EXERCISE MESSAGE X PER YOUR REQUEST WE HAVE 200 UNITS
OF RAPIDVAB 600 MG IN IV FILES X THIS SHOULD
GET YOU THROUGH THE EMERGENCY
BT
ALLYSON HILL OXFORD COUNTY EMA
AR

Message 4: Kennebec EOC to Waldo EOC

Original as Provided to the EMA Director

4 TEST P xxxxxx 19 AUGUSTA ME 0800L OCT 24
DALE D ROWLEY
WALDO COUNTY EMA
4 PUBLIC SAFETY WAY
BELFAST ME 04915
207 338 3870
EMADIRECTOR ATSIGN WALDOCOUNTYME DOT GOV
BT
EXERCISE MESSAGE WITH RANDOM CHARACTER
GROUPS X AB0OT 3RSI5 TIS5R
5/2NRT X BEST WISHES TO
YOURE TEAM X 73
BT
SEAN GOODWIN KENNEBEC COUNTY EMA
AR

As recorded at Waldo County (Destination)

Note: Several errors in the preamble including no origination station call sign. Phone and email missing from address section. Figure 1 substituted for initial I. Spelling error corrected. Kennebec misspelled.

4 P HXD AUGUSTA ME 19 KEN CTY EMA 0800L OCT 24
DALE ROWLEY
WALDO COUNTY EMA 4 PUBLIC SAFETY WAY
BELFAST ME 04915
(Phone missing)
(Email missing)
BT
EXERCISE MESSAGE WITH RANDOM CHARACTER
GROUP X AB0OT 3RS15 T1S5R
5/2NRT X BEST WISHES TO
YOUR TEAM X 73
BT
SEAN GOODWIN KENNABEC COUNTY EMA
AR

Message 5: Hancock EOC to Aroostook EOC

Original as Provided to the EMA Director

5 TEST P xxxxx 24 ELLSWORTH ME 0800L OCT 24
DARREN WOODS
AROOSTOOK COUNTY EMA
158 SWEDEN ST
CARIBOU ME 04736
207 493 4328
DARREN ATSIGN AROOSTOOKEMA DOT COM
BT
EXERCISE MESSAGE X CAN YOU PROVIDE 500 UNITS TAMIFLU 75
MILLIGRAM AND 1000 UNITS AMANTADINE 750 MILLIGRAM QUERY X REQUIRE
BY MONDAY X THANKS
BT
ANDREW S SANKEY HANCOCK COUNTY EMA
AR

As recorded by W1LH

Alexander. Received from KC1FXF. Could not forward further.

5 TEST P AB1PZ 24 ELLSWORTH ME 0800L OCT 24
DARREN WOOD
AROOSTOOK COUNTY EMA
158 SWEDEN ST
CARIBOU ME 04736
207 493 4328
DARREN ATSIGN AROOSTOOKEMA DOT COM
BT
EXERCISE MESSAGE X CAN YOU PROVIDE 500 UNITS TAMIFLU 75
MG AND 1000 UNITS AMANTADINE 750 MG QUERY X REQUIRE
BY MONDAY X THANKS
BT
ANDREW S SANKEY HANCOCK COUNTY EMA
AR

Message 6: Lincoln EOC to Washington EOC

Original

6 TEST P xxxxx 20 WISCASSET ME 0800L OCT 24
LYNN DWELLEY WASHINGTON COUNTY EMA
28 CENTER ST
PO BOX 297
MACHIAS ME 04654
207 255 3931
WNEMA ATSIGN WASHINGTONCOUNTYMAINE DOT COM
BT
LITERARY EXERCISE MESSAGE X TWAS BRYLLYG AND YE SLYTHY TOVES
/ DID GYRE AND GYMBLE IN YE WABE X REGARDS
BT
CASEY STEVENS LINCOLN COUNTY EMA
AR

As Recorded at Waldo County

6 TEST PRIORITY N1VVH 20 WISCASSET ME 0800L OCT 24
LYNN DWELLEY
WASHINGTON COUNTY EMA
28 CENTER ST
POST OFFICE BOX 297
MACHIAS ME 04654
207 255 3931
WNEMA ATSIGN WASHINGTONCOUNTYMAINE DOT COM
BT
LITERARY EXERCISE MESSAGE X TWAS BRYLLYG AND YE SLYTHY TOVES
/ DID GYRE AND GYMBLE IN YE WABE X REGARDS
BT
CASEY STEVENS LINCOLN COUNTY EMA
AR

Maine ARES Improvement Plan Mile Posts:

1. Further training on ITU Phonetic Alphabet so that all radio operators become familiar with its use. Information sheets and training encouraging radio operators to practice brevity in voice communications. Mile Post: July 30, 2021
2. Further training and exercising of the Radiogram traffic handling process should be accomplished. Mile Post: October 1, 2021

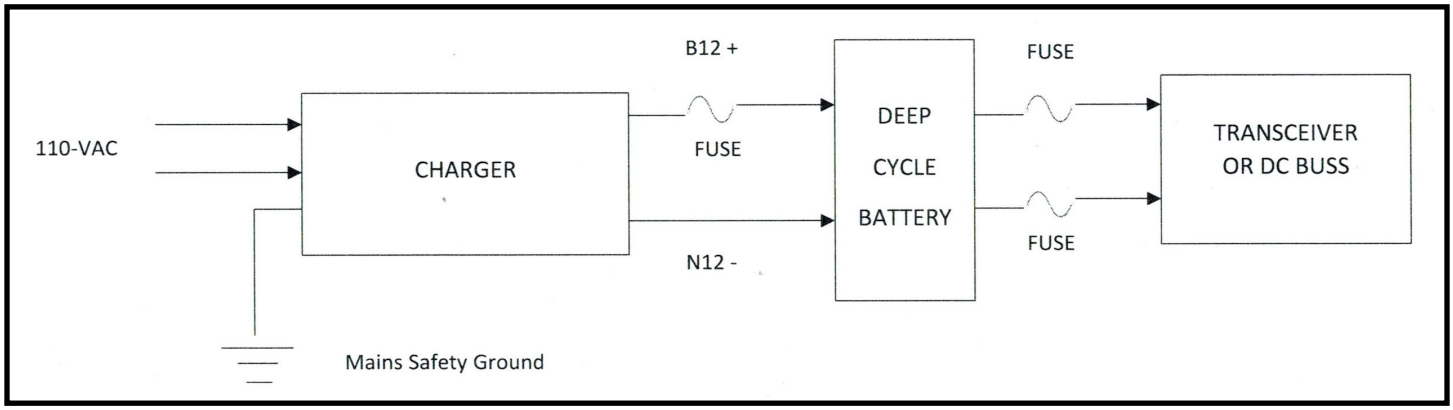
Note: At least one county has started the process and is using the RRI net training materials on their weekly net Others will follow.

Float Cells in Amateur Service

By James Wades (WB8SIW)

After a good number of years of reliable service, my old Astron power supply finally developed some reliability problems. I suspect that the longer duty cycles associated with transmitting the RRI CW training broadcasts were the straw that broke the proverbial camel's back.

Not wanting to spend a 200 to 350 dollars for a somewhat more robust 35-amp power supply and with a CW training broadcasts already deferred a month, an alternative was needed in a hurry. Fortunately, I had two useful items already at hand, one of which was a new deep cycle marine battery and the other of which was a used railroad signal system battery charger in excellent condition. With the addition of a fuse holder and



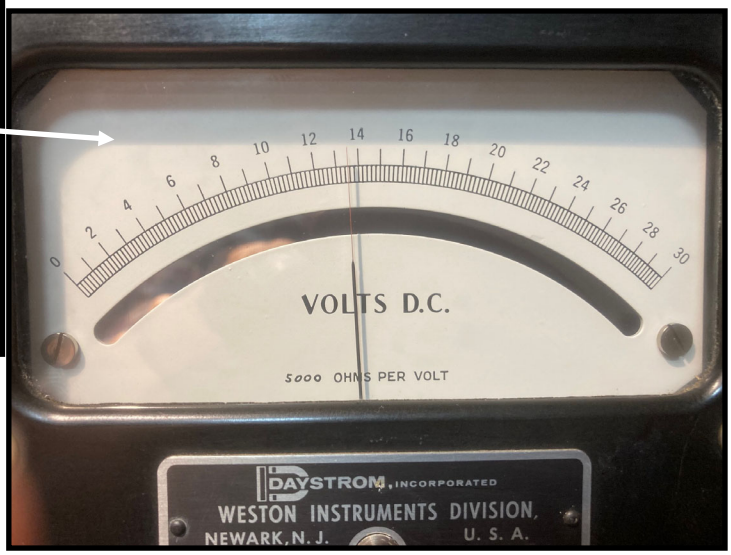
The very simple charging circuit at WB8SIW. Be sure to use the proper size (gauge) wire for the maximum current draw. Likewise, be sure to fuse everything. On an additional note; most modern HF transceivers are fused in both the positive and negative line and this is represented on the diagram. However, it is not absolutely necessary under all circumstances.

some hardware, I converted my primary HF transceiver DC supply to a float-cell arrangement. In addition to providing more than adequate capacity for operating a typical 100-watt transceiver, it offers the added benefit that emergency power capability is always immediately at hand, permitting instant, continued operation at 100-watts in the event of a power outage.

A surplus Cragg Railcharger

Deep-cycle marine batteries are readily available at sporting goods stores, auto supply stores and the like. If properly maintained, they can provide on-going charge-discharge cycles for several years. In many respects, they function similar to the high-grade float cells used in railroad signal and communications applications or in UPS service for PBX and similar telephony applications.

The charger used at WB8SIW is an older Cragg "Railcharger." It is a fairly simple, heavy duty device that maintains DC float cells at approximately 13.6 volts. It's probably a bit of overkill for the ham shack in that it is designed to isolate the DC supply entirely from ground and it provides a minimum 2.5 kV isolation as required by Federal Railroad Administration regulations. Mine was readily available in storage and if there's one big advantage, it is incredibly robust! A quick look at auction sites shows used versions are surprisingly available. New versions are also available from companies such as "National Railway Supply" or "Railroad Equipment Company" if one would like to purchase a new version. Because such a float cell arrangement in Amateur Service does not need to meet the same rigid standards applicable to a life-critical system, one could easily build up a similar charger from scratch or use a simple charge controller available on the consumer market.



An older lab DC voltmeter used to monitor battery voltage.

The charger in use at WB8SIW incorporates an analog ammeter for monitoring the charge rate, which is automatically managed by the charger. An older Weston 5000 ohm/volt precision voltmeter was also pressed into service to allow easy monitoring of the voltage across the battery. While not particularly

important when the charger is running, in the event of a power outage, one can use the voltage across the storage battery to determine its status (available capacity).

In the event of a long-term power outage, one can use the voltmeter much like one uses the fuel gauge in an automobile. Some nominal voltages and percentage of remaining battery capacity are provided as follows:

12.7 VDC = 100 %

12.4 VDC = 75 %

12.2 VDC = 50 %

12.0 VDC = 25 %

11.9 VDC = Discharged

Note that capacity varies depending on temperature. If the battery is stored out-of-doors or behind the shack in a garage, capacity will be reduced in colder weather. The author has operated throughout Field Day using a 100-watt transceiver and a deep-cycle marine battery in good condition. One could likely expect a couple of days of use in an emergency situation depending upon duty cycle and desired RF output level. Longer use can be ensured by using the minimum power required to maintain communications. With narrow -band digital modes or CW, one could dial the transceiver back to perhaps 10 to 20 watts to lengthen usage.

As with any battery/charger arrangement, be sure that adequate ventilation is available around the battery, particularly when it draws a heavy charge rate. This will ensure that any hydrogen gas dissipates. Also, all circuits should be fused. A storage battery can provide extremely high levels of current and any short or major component failure on an unfused circuit can result in disaster. Simple automotive fuses (ATC or similar) are more than adequate for protection purposes.

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Welcome Radiogram Response

By James Wades (WB8SIW)

Some hams dismiss “welcome” messages originated to new radio amateurs as useless “spam.” Well, here is a recent response to one such radiogram message originated by VE3GNA, which may change a few minds:

Mr. Killam,

I received your radiogram welcoming me to the hobby on Nov 22nd. As near as I can understand it, the message was originated by you on Nov 17th and passed through at least 4 different ham networks to reach me.

I had never heard of anything like this before so I wanted to let you know personally that I have received the message and I hold it in higher regard than my first QSO.

Thank you for the inspiration you have provided me, as well as the positive influence your efforts have made on the hobby.

73, Nate [CALLSIGN WITHELD—Editor]

RRI Training Classes—A Big Success

By James Wades (WB8SIW)

One of hundreds of RRI Registered Radio Operator "welcome packages" and training certificates issued during the month of November alone. RRI is becoming well known at the local post office for the hundreds of mailings going out monthly!

The latest round of RRI Webinar-based training classes has proven extremely successful. Interest has been overwhelming … as has the administrative burden associated with issuing hundreds of high-quality RRI training certificates. The classes have also resulted in a significant increase in the number of RRI Registered Radio Operators.

When RRI was formed in 2016 to restore the long-neglected traffic system, one of the first goals defined by the Board of Directors was the development of quality, peer-reviewed documentation and training classes. If one searches the Internet, one will find a tremendous amount of information about emergency communications and traffic handling. Unfortunately, much of this information contains bias or even outright misinformation, not due to bad intent, but due to a lack of peer review by experienced personnel.


RADIO RELAY INTERNATIONAL

ESTABLISHED 2016 IN THE UNITED STATES OF AMERICA

TRAINING CERTIFICATE

This certificate is presented to

Jan Sobieski III

in recognition of his support of the mission of Radio Relay International.

The above named individual has successfully completed Radio Relay International training class TR-006, "Emergency Communications Planning" consisting of four hours of instruction.

August 17, 2020

Date Issued

Kate Hutton

National Training Manager

A sample RRI training certificate issued upon successful completion of a training class.

RRI has now developed a standard training curriculum, which consists of a variety of integrated classes on the subjects of emergency communications planning, net procedures, and related subjects.

While the RRI training classes are currently being conducted as both Webinars and on-line meetings, the long term plan is to develop a training team in each state. These RRI approved instructors will be available to local radio clubs, ARES and other EmComm groups to present the material in a meeting/classroom environment (once COVID-19 is brought under control) as an addition to the on-line sessions. We have already appointed our first official instructor serving the State of Ohio and this is just the start of the expansion of our already successful training system.

Those wishing to attend RRI training classes may want to consider becoming an RRI Registered Radio Operator. This will place you on the mailing list for upcoming training classes. We also announce planned training classes on our web page and Facebook pages. Why not register for a class to improve your knowledge of traffic handling and emergency communications?

Radio Relay International			
Guide to Training Classes			
Class/Publication ID	**Class Title**	**Recommended Prerequisites**	**Associated Training**
TR-001	RRI Public Service Communications Handbook	None	
TR-002	Introduction to the RRI Traffic System	None	TR-001, FM-001, MPG
TR-003	Introduction to the National SOS Radio Network & Neighborhood Hamwatch Programs.	TR-006	Investigate prototype programs in Knox County, Maine & El Dorado, Calif.
TR-004	Portable Emergency Communications Training and Field Operations Workshop	TR-006	Participation in RRI field deployment exercises.
TR-005	Phonetic Alphabet Training	None	For use on local EmComm networks and classroom drills.
TR-006	Emergency Communications Planning	None	TR-001, FM-001
TR-007	Radiogram training texts	None	For use in mentoring and for use on training nets.
TR-008	Basic Radio Telephone Net Procedures.	TR-002	TR-001, FM-001, MPG
TR-009	Designing an Emergency Communications Exercise.	TR-006	TR-001
TR-010	Radiotelegraph Net Procedures	TR-002	TR-001, FM-001, MPG
TR-011	RRI Digital Traffic Network Training	TR-002	TR-001, FM-001, MPG
FM-001	RRI Field Manual -	TR-001	MPG
MPG	RRI Methods and Practices Guidelines (Reference Manual)	TR-001	FM-001, TR-002
Notes:	*1. Instructor-presented training required for training certificate.*		
	2. Training publications are highlighted in yellow		

Radio Relay International training curriculum showing class subjects, prerequisites and associated reference materials. Please visit the RRI Web Page "Publications" section for access to various documents.

RRI VOLUNTEERS NEEDED

We have all heard of the three-deep rule. This applies to important RRI field appointments as well. We need some help to ensure operational readiness and improve system efficiency. Please step forward to help fill these positions:

Region Winlink/RRI Gateways: Minimum three volunteers per RRI/NTS Region:

Duties:

1. Connect to Winlink minimum once per day to receive incoming routine message traffic and distribute to region/section nets to ensure timely routing and delivery.
2. Coordinate with your fellow region gateway operators to share duties and assign days as agreed.
3. In time of emergency, work with your fellow region gateway operators to increase connect/download frequency on schedule as requested by the RRI National Emergency Manager.

To volunteer, contact Steve Hansen (KB1TCE), RRI Winlink Liaison Coordinator at" steve.hansen@radio-relay.org

RRI Digital Traffic Stations:

Prerequisites:

- Traffic handling experience.
- HF coverage with minimum PACTOR-1 capabilities (modems available on loan from the RRI DTN equipment bank).

Duties:

1. Each state/section should have a minimum of three Digital Traffic Stations. DTS operators connect to the RRI Digital Traffic Network at least once per day to both originate outgoing routine traffic and accept incoming traffic for their section.
2. Coordinate with your fellow section-level DTS operators to share duties and assign days as agreed.
3. In time of emergency, work with your fellow region gateway operators to increase connect/download frequency on schedule as requested by the RRI National Emergency Manager.

Contact your RRI Area Digital Coordinator to volunteer. Contact information at: www.radio-relay.org

Training Volunteers:

Prerequisites:

- Excellent verbal and written communications skills.
- Comfortable with public speaking.
- Business attire or neat, casual attire when presenting to live audience.
- Comfortable with the use of on-line meeting and webinar platform(s).
- Diverse traffic handling experience.

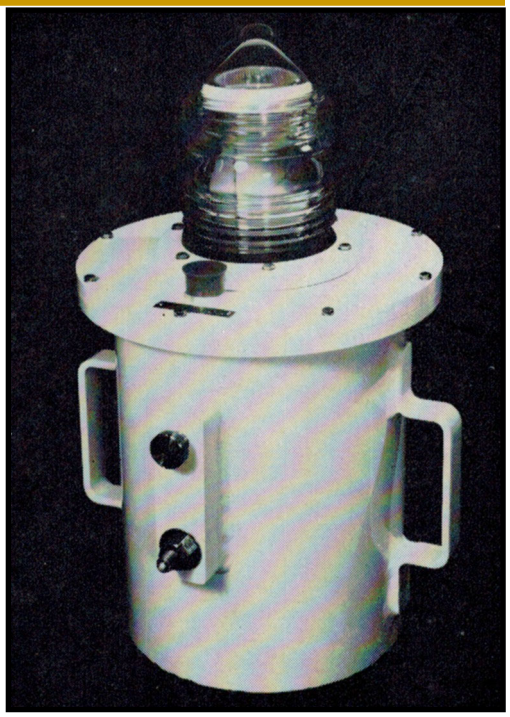
Duties:

1. Attend RRI Training Classes as student.
2. Submit request to RRI for appointment as a training volunteer.
3. Present training to radio clubs, EmComm groups and others. Maintain a list of those completing training and submit to RRI Corporate Secretary for issuance of training certificates.

To volunteer, contact James Wades (WB8SIW) at: james.wades@radio-relay.org

Nuclear Attack Warnings by Telegraph

By James Wades (WB8SIW)



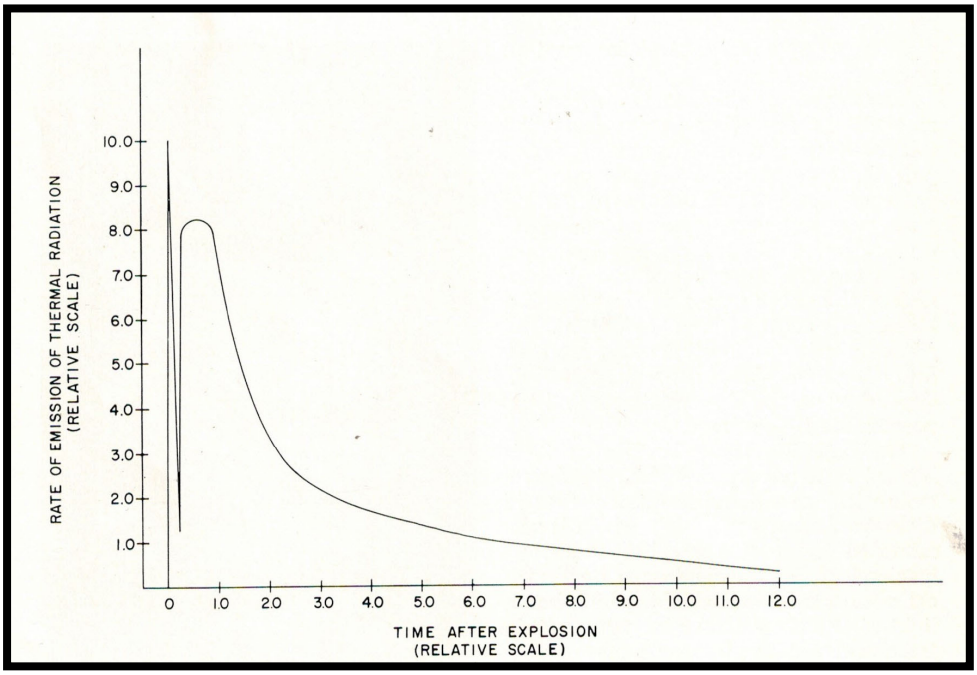
The bomb detector unit.

During May, 1959, the United States Air Force asked the Western Union Telegraph Company to submit a proposal for the development of a nationwide nuclear bomb detection system. The Air Force required that the alarm system would serve 100 anticipated target areas, typically larger cities and certain strategic military targets.

Western Union issued a proposal in June of 1959 and was given the order to proceed in August of that year. An accelerated R & D process was implemented at the Walter Mill Engineering Facility under the direction of Clarence Diebert, who had previously supervised the development of high-speed facsimile systems and the AN/FGC-29 telegraph terminal. A prototype system was in operation by March 1, 1960 serving 14 locations, and was accepted by the Air Force on February 10, 1961. From that date until February 6, 1962 when the prototype system was integrated into a final nationwide system, performance was satisfactory with no false alarms and with a 98.1 percent normal response out of a total of 18,6000,000 responses. The system was ultimately assigned the nomenclature *Western Union Bomb Alarm-Display System 210A*

The nuclear bomb alarm system required extreme reliability. Not only did a sensor have to fail safe, but it had to meet the additional requirement that it would never send a false alarm. Western Union engineers examined the nature of thermonuclear explosions and determined that by designing a sensor that responded primarily to the both visible and IR light spectrum associated with the explosion, the telegraph engineers could leverage two benefits. First, the pattern of the two impulses that occur at the time of detonation were unique and unlike any similar event occurring in the natural environment. Second, according to models based on a one megaton explosion and proposed sensor locations, the two impulses could precede the blast wave by up to four seconds, thereby allowing an alarm to be communicated before damage to the telecommunications infrastructure might occur.

The detector itself utilized what, at the time, was the latest transistorized technology. The electronics were enclosed in an air-tight, aluminum cylindrical container about 9 inches in diameter and 12-inches high. Atop the container, a Fresnel type marine lens enclosed a perforated metal shield with a light attenuating factor of 100. Within this shield were photocells mounted at the focal point of the Fresnel lens. These photo cells responded to both the IR and visible light spectrum and were capable of a response time in the range of 3 microseconds in order to respond to the short duration initial, phase one impulse. This was also more than adequate for the second, following impulse.



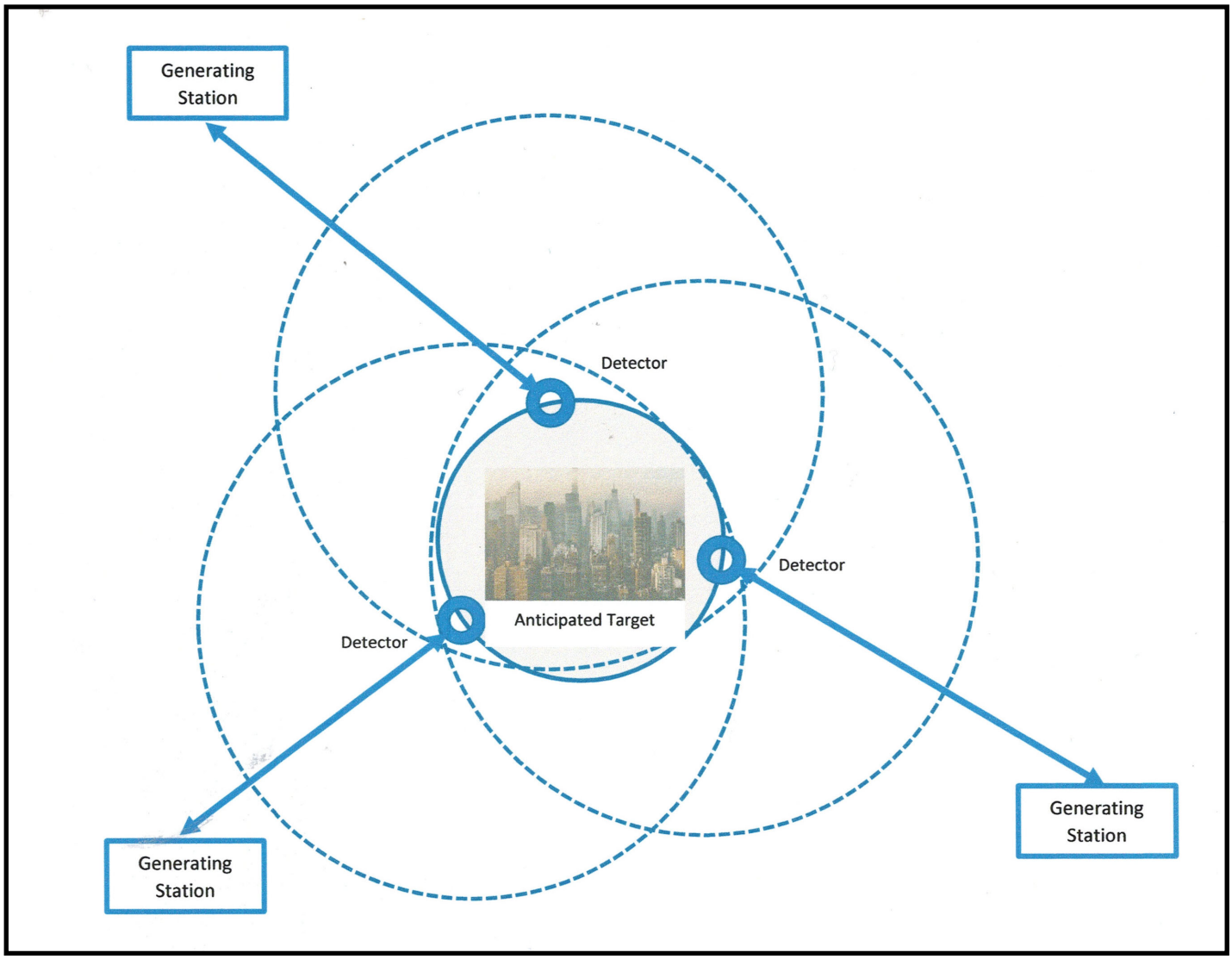
Thermal impulse of a nuclear detonation detected as both visible and IR light frequencies.

Power for the detector was received via a telegraph loop from a device referred to as a "signal generating station," not to be confused with the dynamo or battery used

for telegraph/teleprinter service. The generating station also processed the detector status return signaling. The return signal from the detector was transmitted as audio tones, not unlike those used in an audio frequency overlay system in railroad signaling. One frequency indicated normal or "green" operating condition, and another two frequencies, transmitted in sequence, indicated an alarm or "red" condition. Therefore, one might see the operating supply voltage transmitted via the telegraph loop as a phantom voltage with return signaling via audio frequency.

Each detector incorporated a test feature, which could be triggered remotely. A combination of a neon lamp and tungsten filament lamp behind the attenuator screen were fired in sequence, simulating the short-duration and long-duration impulses, which were then sensed via the photocells, triggering a return alarm condition.

The coverage grid consisted of three detectors located approximately 120-degrees around the anticipated target city. Each detector was connected via a separate loop to its associated generating station. An alarm was issued only in the event of a correspondence between two of the three detectors. This minimized risk of false alarm while also providing a layer of redundancy should a single detector fail.



Detector configuration surrounding anticipated target area.

Each triad of bomb detectors would communicate with their respective signal generating system, which also served as a regenerative repeater. In this respect, even distorted signals were processed and relayed accurately through the network to a master control data processing system, which then communicated status and any alarms to a display console consisting of an annunciator panel and associated map with indicators located at several key military installations.

The topology of the network was not a "hub and spoke" arrangement. Rather, it was a hybrid in which several signal generation stations operated in a series loop, repeating the signaling between the several detectors and their associated master control system. The regenerative repeaters incorporated signal processing, thereby correcting distorted or flawed signals during the repeating process. An approximate 11 millisecond delay occurred with each repeated code sequence. Each signal generating station/regenerative repeater would append the preceding status report, or packet, to its own status message transmitted to the associated master control system.

During routine operation, the master control center would periodically query the detectors by transmitting a five-letter word via the telegraph network, which would instruct each signal generating station to probe the detector line to determine if the "normal" or "green" signal was present. If so, this would be reported back to the master control processor and status would be displayed on the remote status boards. A failure of a detector to respond would be displayed as a "Yellow" report and a trouble-ticket would be generated.

Alarms were given priority on the system. The master control center would then defer all polling processes, thereby reserving circuit capacity for anticipated forthcoming alarms. This minimized any delays at detectors/signal generating systems reporting alarms.

As ultimately deployed, the nationwide system consisted of six master control centers in two groups of three, serving two regions. These master control centers each communicated with the display systems via separate, redundant communications circuits and associated facilities.

The system was eventually decommissioned in 1967 as both nuclear weapons technology and more advanced detection methods were developed. However, the development of the Western Union bomb alarm network remains a little known aspect of telecommunications history and is worth remembering.

-30-

Donate to Radio Relay International

Did you know that Radio Relay International operates entirely on donations? RRI was structured as an IRS recognized 501(c)(3) nonprofit public benefit corporation in order to remains non-political and more responsive to the needs of those in the traffic operations and public service communities.

During this Holiday Season, please consider making a donation to RRI at:

http://radio-relay.org/charitable-support/

One may also mail a check payable to "Radio Relay International" at this address:

Radio Relay International
C/O Emergency Preparedness Services, LLC
PO Box 43
Niles, MI. 49120

Voice Net "Wrinkles"

By Kate Hutton (K6HTN)

In this "modern" digital age, what is the reason that we still pass ham radio message traffic? As I see it, there are a few reasons, in no particular order.

1. It's a ham tradition and a purposeful connection to those with whom we share the nets.
2. For messages to new hams, a congratulatory radiogram may be their first and ONLY exposure to the traffic handling phase of the hobby.
3. Passing messages is practice for disasters. Occasional disaster exercises are great, but they do not prepare us to the level that passing regular traffic does.
4. Passing messages maintains a "hard corps" of operators who don't have to learn procedures amidst a future disaster and can therefore train latecomers on the spot.
5. Passing traffic is education in formal net operations.
6. Passing traffic can get new hams past the "what do I say?" shyness barrier.
7. More.

That having been said, traffic nets are part of a system, and it makes sense to use only standard procedures, which are in place because they work. This ensures that nets across the US are using the same or similar ones. Most importantly, standard procedures prevent confusion, errors and loss of information, so that "what comes out equals what went in."

For example:

- Call signs … "I can always look it up on QRZ" … but not if the internet is down, or I don't have time between nets.
- "I have Loren's (or another bulk traffic originator) text memorized." He might change it someday. Or you may get the text confused with that of another bulk message originator such as Glenn's, or mine.
- Maybe Glenn has two or three texts in play at once.

So-called standard text messages are a special case and cannot be lumped completely into one basket. Some NEVER change, whereas others change for every book, some change once a month, and so on. Sometimes the "check" does not change despite the change in the text! My point, however, is not about bulk traffic, although some of my points apply to the service messages it generates.

An address like KATE HUTTON K6HTN LAX STM might be a nice touch for a monthly SAR/PSHR report, but is not necessary for a SVC message.

Also:

There are certain abbreviations that seem to be common in the business … RCVD for received, DLVD for delivered, MSG for message, etc. Either way is ok, but if you say "delivered" the other station is expected to write down "delivered" and not DLVD. Don't leave them wondering.

DISCON, DISCONN or even DISCO are coming into use for reporting a disconnected telephone number.

If you are NOT abbreviating, which is fine, you will need to go slowly enough for the receiving op to write it all down, or remember what the unabbreviated form is in order to keep up (not recommended).

In the case of odd or unfamiliar town names, then "I SPELL" them. Either way, leave a pause long enough for someone to write it down.

What to include in the message address depends on the circumstances. "K6HTN" is fine for me, I am likely to get the message on a net myself. If there is a chance the message will get onto DTN (Digital Traffic Net), the town, state and zip code should be included [*the default minimum for radiograms – editor*]. DTN routes by state and zip code, and someone along the line will have to look it up if you don't provide it.

N1IQI, NX9K, VE3GNA, myself and a few other bulk traffic originators probably do not need phone numbers to be included.

The following are a little arbitrary, maybe, but are the custom according to the MPG (Methods and Practices Guidelines):

In the preamble, say the date as December but write DEC. The numerical part of the date is FIGURES.

The MPG says spell out ARL SIXTY SEVEN ("I spell Alpha Romeo Lima …"), but some ops who are far more net wise that I have told me that "ARL I spell A R L …" is ok if the radio connection is good.

"Breaking" or interrupting a message transmission for "fills," is usually OK on CW nets because most operators use "break-in," or "QSK," meaning that they can hear you interrupting between their dits and dahs. On voice nets, however, doubling can be very disruptive and cost significant time in repetition. A traffic net should be as efficient as possible. There should be a "rhythm" of exchange between the participants and with Net Control.

At the beginning of the net, NCS will call for some stations by function, or rarely by callsign. The station may then give their call and list the traffic they have. If NCS does not hear a station that typically has trouble using the repeater, he should wait a few seconds for another net member to provide a relay. This problem rarely comes up on a repeater, but it certainly does on sideband net, especially if it covers a large area with varying propagation.

In a general call for stations with traffic, however, some nets require the station checking with traffic give only their callsign and wait to be called upon by NCS to list the destinations and quantity (and priority if necessary). That way, if there is a double, NCS has a chance of sorting things out without significant loss of time.

Otherwise, if you need to break in, the procedure should be just "Break," or give just your callsign suffix, so that at least Net Control has a chance of hearing one part or maybe two breaking stations and can pick one to call upon first.

After NCS asks for some traffic to be passed, the stations involved will pass the traffic and then they both return control of the frequency to NCS. THEN, after the traffic exchange, would be the time to break in, if you need to. Net Control is called "Net Control" for a reason. Help them retain control of the net for the highest efficiency.

Thanks for listening!

National Training Coordinator Position

Due to an expanding commitment in other training areas, Kate Hutton (K6HTN) has resigned her position as RRI National Training Coordinator. If you would like to fill this volunteer position, your assistance would be greatly appreciated. Duties include:

- **Recruiting mentors to assist new traffic operators as they learn to navigate traffic operations.**
- **Processing RRI student applications and connecting each new student with an appropriate mentor.**
- **Processing requests from radio clubs and EmComm organizations seeking training for personnel.**

The successful candidate for this position should have a basic understanding of Voice, CW and DTN operations or the willingness to develop the appropriate experience needed to answer basic questions.

In the meantime, until this position is filled, please send all training requests to info@radio-relay.org

WABASH RAILROAD COMPANY

FORM 19
B.B.Co. 1800M 4-61
PRINTED IN U.S.A.

TRAIN ORDER No. 2

From Montpelier Nov 25 19 63

To All Eastward and Westward trains
1st 3rd and 4th Dists and Yard Masters
Montpelier

X ____ Opr.; ____ M. At ____

Following from Henry W Large President
Wabash RR Company
All trains and Engines Nov 25 - 1963
will stop 1100 am C.S.T or 12 Noon EST
and remain standing for 1 minute
in Memorial tribute to
John F Kennedy

WHP C. T. D.

CONDUCTOR AND ENGINEER MUST EACH HAVE A COPY OF THIS ORDER

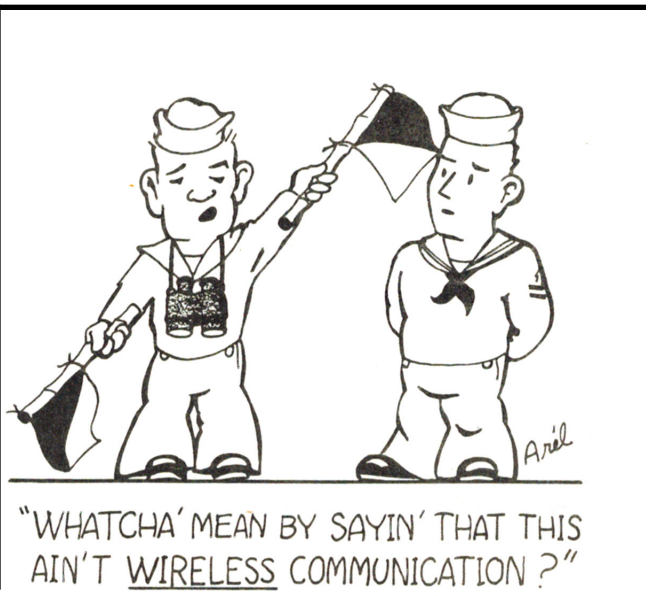
COMPLETE TIME 1254a M. Bowen OPR.

WHEN THIS ORDER IS RECOPIED IT MUST BE REPEATED TO THE TRAIN DISPATCHER IMMEDIATELY.

RECOPIED BY Blank OPR.: Nov 25-1963 DATE

Many of us remember the assassination of President John F. Kennedy. Here is a Form 19 train order copied at Montpelier, Ohio on November 25, 1963

Alfred Ferland, first wireless operator in charge at Astoria, Oregon, 1907
Photo courtesy Oregon Historical Society



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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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Happy Holidays!

Don't forget that Radio Relay International offers a fillable PDF radiogram form designed for the Christmas season. This radiogram form is reminiscent of the old Western Union or Canadian National telegram forms of decades past.

Originate a holiday radiogram today, and if you are delivering one, please consider using our No. 1801 Christmas radiogram form available on our "Publications" Page. A direct link is:

http://radio-relay.org/wp-content/uploads/2018/12/RRI-Radiogram-Form-1801-Christmas.pdf

Are you interested in CW traffic handling? RRI offers a number of useful tools for learning how to navigate CW nets.

One will find a downloadable Power Point presentation entitled "Navigating CW Nets" on our "Publications" page, complete with embedded audio files illustrating basic procedures.

Two downloadable MP3 files are also available illustrating both basic and advanced CW net procedures.

The RRI Training Manual, TR-001 also offers information on CW net procedures.

CW nets offer a wonderful balance between efficiency and simplicity. Those who invest the time to develop the needed skills never regret the effort.

Why not make a New Year's resolution to learn CW traffic handling!

Copying CW Traffic is the ultimate operating challenge.