

AMATEUR RADIO FACT SHEET / DISCUSSION POINTS

TOPIC: FEMA / AMATEUR RADIO COORDINATION IN CASCADIA RISING 2016

Good example of recent FEMA / Amateur Radio Coordination in 2016 Full Scale Exercise

- ◆ Multi-state exercise planned over 2 years
- ◆ Involved over 20,000 people
- ◆ Lasted 4 days
- ◆ Modeled the aftermath of an 800 mile long catastrophic earthquake in the Cascadia Subduction Zone
- ◆ World wide activation expected to be necessary for rescue effort
- ◆ Pulitzer price winning 2015 essay about this eventual catastrophe

FEMA After-action Report almost gushes about how well the amateur radio component worked

Observation 1.2: Strength: Amateur radio was a critical mechanism for backup communications. Analysis: Numerous jurisdictions utilized amateur radio effectively to coordinate in a communications-degraded environment. For some jurisdictions, this exercise marked the first time public messaging was issued via amateur radio. This exercise served as an excellent opportunity to train novice amateur radio operators and provided experience to all operators in federal, state, and local amateur radio integration....

https://www.fema.gov/media-library-data/1484078710188-2e6b753f3f9c6037dd22922cde32e3dd/CR16_AAR_508.pdf

Extensive use of both HF (primarily) and VHF Amateur Radio Capabilities

- 80 meter / 60 meter operations lauded
- EXTENSIVE use of WINLINK systems – so much so that over-reliance over them was concerning
- Idaho ARES members with HF go-box & Chameleon antenna were considered more effective than Idaho national guard comms
- WINLINK messages flowing into Oregon centers, and to ARRL Headquarters in Conn.
- WINLINK gateways in Nevada and California were leveraged (the HF Advantage)
- Majority of traffic over WINLINK (would primarily be HF)
- Tsunami warnings, earthquake warnings, etc. were the first messages
- 20 meter SSB nets also utilized (HF)
- Pointed out how much more efficient WINLINK digital was compared to voice.

- Biggest concerns: not enough amateurs are trained and available to provide effective response. Estimates in one state: 2-3% of licensed amateurs.
- ARRL after-action report almost reads like advertising copy for WINLINK system....

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FULL TEXT:

To see how modern amateur radio is fitting into major FEMA / DHS planning, you can read the ARRL and FEMA After Action Reports on the Cascadia Rising 2016 Full Scale Exercise --- which covered multiple STATES not just one city. This can better explain the roles that both shortwave (HF) and VHF digital play in a truly large disaster response, and these published reports give up to date information on the critical skills and issues involved.

Cascadia Rising was an attempt to model and simulate the outcome of an 800 mile long full rip earthquake in the extremely dangerous Cascadia Subduction Zone. Such a catastrophic event has been written about extensively, gaining notoriety after a Pulitzer prize winning 2015 essay about its astonishing destructive potential. It is expected that a WORLD WIDE response would be needed in the recovery effort. Tsunami generation would be enormous. I get the general idea that hundreds of thousands to millions might die. This was the first huge scale effort to prepare for this event.

TWENTY THOUSAND people participated in this full scale exercise carried out June 7-10, 2016.

The FEMA after action report is here:

https://www.fema.gov/media-library-data/14840787101882e6b753f3f9c6037dd22922cde32e3dd/CR16_AAR_508.pdf

It is in the same general format that we ourselves published our own after-action report. Ham radio -- and WINLINK -- got a glowing report.

The ARRL after action report is much juicier reading if you want to really see what worked, didn't and needed improvement on our end (communications). You can read that here:

<http://www.arrl.org/files/file/Public%20Service/ARES/Cascadia%20Rising%202016%20-%20Final%20Report.pdf>

I'll call attention to some really important statements in each report. I cannot hope to give you a full flavored and balanced view of all the amateur participation in just a few paragraphs. Both HF and VHF communications were vital, in different ways. What comes through loud and clear however, in these reports is that HIGH FREQUENCY COMMUNICATIONS WERE CRUCIAL. They are mentioned FAR FAR more often than anything else. When you are dealing with a REAL catastrophe, your problem isn't to communicate 10 miles --- it is to reach people hundreds or thousands of miles away who still have intact capabilities to help.

FEMA: Observation 1.2: Strength: Amateur radio was a critical mechanism for backup communications. Analysis: Numerous jurisdictions utilized amateur radio effectively to coordinate in a communications-degraded environment. For some jurisdictions, this exercise marked the first time public messaging was issued via amateur radio. This exercise served as an excellent opportunity to

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ARRL: [Note: the "Chameleon" is an end-fed HF antenna]

For this specific scenario, it turns out a radio amateur with a "Go Box" was more useful than the Joint Incident Site Communications Capability (JISCC). We are more mobile, have better frequency coverage, and have better situational awareness. That said, the JISCC has capabilities to communicate with other government agencies that Amateur Radio doesn't have. This deployment caught the Idaho National Guard (IDNG) between major personnel changes, and it was great training for them. The exercise also gave them a basis on which to train and grow. They had issues with a loss of satellite communications, were unable to communicate with the aircraft, and had very poor HF reception due to a poor antenna. Our ARES member with a Go Box using a Chameleon sloper had much greater capability. The IDNG was impressed.

Note: the ARRL report mentions WINLINK so many times you would have thought it was ADVERTISING COPY for winlink.....and in general, they are talking HF, but there is also VHF winlink, just as we have developed locally. Locally, we have not yet seen everything that can be done with VHF WINLINK just because we are still working on the basics and we just can't yet get to really cool things while folks struggle with simple stuff....

ARRL:

Protocols were not always followed (e.g. use of 146.540 simplex for emergency voice traffic). There were too many voice requests to send traffic that could have been sent by Winlink.

ARRL:

Puget Sound Energy's largest concern is the heavy reliance on Winlink. If Winlink is available, it obviously should be utilized as much as possible. However, we believe the availability will be severely limited in an event of this magnitude. Our concerns are: o Most if not all Radio Mail Server (RMS) stations are not located in hardened sites. Many, if not all, would be out of service due to damage or lack of power, especially for prolonged time, as would be in a disaster like this. We realize that, for the sake of the exercise, the assumptions made concerning power supply were not realistic. It should be stressed that conclusions made in this regard should be viewed realistically, in order not to skew expectations in a real event, and not to get a false sense of security.

ARRL:

In an effort to take advantage of preformatted messages, Winlink should be the standard messaging system. However, some jurisdictions have been using Fldigi and others across the

AMATEUR RADIO FACT SHEET / DISCUSSION POINTS

state may not have data-handling capabilities. In order to lessen the potential for confusion, Winlink should be adopted as the standard for sharing messages intra- and interstate.

ARRL:

At the National level, Oregon ARRL Liaison Station KX7YT began transmitting Winlink traffic by HF Winmor to ARRL Headquarters station W1AW in Connecticut, using gateways in Nevada and California. The first messages were the exercise NOAA National Tsunami Warning Station earthquake notification and tsunami warnings. Over the course of the morning, 17 messages were sent/received by W1AW. ARRL HQ was contacted on 20-meter SSB and check-ins with the ARRL 20-meter Cascadia Net were made.

ARRL:

About 100 Winlink messages were received at Oregon OEM from participating agencies that chose to be active on Wednesday. Again, at 0800 local time on Thursday morning, unit activity Winlink traffic started coming into Oregon OEM, and County units began checking into the 80-meter net. Oregon ARES operators took traffic on 60 meters, SHARES and FNARS, but the majority of the activity was again on HF Winlink

ARRL:

Oregon ARES/RACES has far too few active, trained operators. This is a system-wide problem. Of the 17,500 licensed Amateurs in Oregon, only 2 – 3% are actively involved in ARES. Should a real disaster occur, ARES would be stretched beyond its capacity. This is as much a problem for all of the Emergency Managers we serve as it is for Oregon ARES/RACES. Joint action from all stakeholders is needed to address this issue. Once recruited, actually training the numbers of people needed is another problem to address. • More HF NCS stations must be recruited and on the air during exercises. As noise levels are very high at OOEM, the ARU operators (especially on 80 meters) have a very difficult time hearing others. • Equipment: While HF Pactor 3 works well, we would benefit from Pactor 4 capabilities to deal with the volume of traffic coming into our County and State EOCs. Further, the existing Oregon ARES Digital Network was funded in 2008 and is now 8 years old. At some point, funding to begin replacing the existing equipment will be needed.

In another place in the ARRL report a writer said what was optimal seemed to be 2 voice operators and 2 digital operators at each emplacement. In another report, there was ONE heavy airplane-capable airport expected to be remaining in the damaged states --- and WINLINK HF turned out to be the way to get comms in and out of that area and one ham was the key to success at that airfield.

If you're going to be maximally effective you can't just be a "voice guy" or a "digital guy" or a "VHF guy" or a "HF guy".....if you want to be maximally effective you need to be a HAM who knows how to do ALL KINDS OF THINGS. Then you can pick and choose how to get the job done when things around you are falling apart. A one-trick pony will not cut it many times. And when you are dealing with

AMATEUR RADIO FACT SHEET / DISCUSSION POINTS

really BIG problems, I'm trying so very very hard to convince you: you absolutely MUST have high frequency communications and you really better have digital ones also.