



# ARES COMMUNICATOR

Information for Scott County Amateurs



August, 2009

Accurate, Reliable Emergency Communications

Volume 9, Number 8

## New MN Section Emergency Coordinator

Minnesota has a new Section Emergency Coordinator effective in mid-July.

Mr. Dan Anderson, KDØASX has been appointed to the position of Section Emergency Coordinator to replace Frank Karnauskas, N1UW.

Frank Karnauskas asked Section Manager, Skip Jackson, to find a replacement for him over a year ago as Frank has had some family issues that prevent him from spending as much time as he would like in this job.

Skip was looking for a suitable replacement, and did not find a person with the necessary skills until very recently. Dan Anderson came forward to discuss the responsibilities of the position. Skip and Frank agree that Dan would do a great job. He has a suitable background and is a strong amateur radio advocate.



Dan Anderson, KDØASX  
Minn. SEC

Dan Anderson, KDØASX, formerly ARRL Minnesota District 5 DEC, is also the Nobles County Emergency Management Director. Having won 2007 Region 5 Outstanding Emergency Manager of the Year by the AMEM (Association of Minnesota Emergency Managers), he has successfully placed more than \$60,000 worth of repeaters in District 5 using Homeland Security grant dollars on behalf of Region 5 AMEM.

Dan has been working on behalf of the region's hospitals, health clinics, long-term care facilities and public health agencies to create an amateur radio emergency communications system between these entities. He is also active in

New SEC cont'd on page 2

The ARES COMMUNICATOR is published for the benefit of Amateur Radio Operators in Scott County and other interested individuals.  
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 Reader submissions encouraged!

## Lighthouse Activity on-the-air

This a reminder that "two" lighthouse activities will be taking place during August. Lighthouse activities have become very popular over the last several years, especially in August. Be prepared to have all kinds of reference numbers tossed at you when working these stations (ARLHS, ILLW, Member#...etc.).

Some may think this is not DX, but you are wrong. It is fun and a challenge to work as many lighthouses as it is working many DXCC entities. Remember, there are awards and prizes (see the following societies' Web pages for details). Enjoy the next few weeks in working the many LH stations (between the two ILLW events - over 600 participants are listed). The scheduled events in August are as follows:

August 1-9th: The International Lighthouse-Lightship Week and QSO Party Contest.

Lighthouse Activity cont'd on page 2

## ARES Activities

Weekly Net Monday 7 PM 146.535 mhz (s)

Breakfast Saturday, August 8th

Digital Monday August



## SELECTED TRAFFIC NETS

Designator	Freq.	Local Times	
MN Phone	3.860Mhz	Noon, 5:30pm	Daily
MN CW	3.605Mhz	6:30pm, 9:50pm	Daily
<b>ARES</b>			
Scott ARES	146.535 S	7:00pm	Monday
Carver ARES	147.165+	8:30pm	Sunday
Bloomington	147.090+	9:00pm	Sunday
<b>Neighboring Nets</b>			
North Dakota	3.937Mhz	6:30pm	Daily
South Dakota	3.870Mhz	6:00pm	Daily
Wisconsin	3.985Mhz	5:30pm	Daily

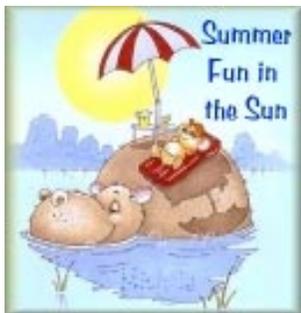
### New SEC - cont'd from page 1

regional and statewide public safety interoperable communications planning, serving as a subcommittee chair charged with developing and funding a strategic technology reserve of equipment in case of catastrophic failure of public safety interoperable communications within the state.

Arl N. Weinrebe, KDØBJW, will replace Dan as District Five DEC where he was currently serving as Assistant DEC.

Dan will be actively recruiting volunteers to fill out vacancies in the emergency communications field organization and you may submit your information to him at danderson1@iw.net.

Everyone in the Minnesota Section is very grateful for Frank's many contributions and his years of service and we all wish him well. Frank will continue to work as an Assistant Section Emergency Coordinator.



BREAK - OVER

### Lighthouse Activity - cont'd from page 1

This highly popular annual event, now in its 15th year, has been extended to a full week! This activity also takes place during the "National Lighthouse Day", as proclaimed by the U.S. Congress (see [www.lighthousefoundation.org/museum/natlighthouseday\\_info.htm](http://www.lighthousefoundation.org/museum/natlighthouseday_info.htm)). Complete details on the "ILLW Special Event" and the "ILLW QSO Party Contest" can be found on the following Web pages: <http://ialhp.org> and <http://www.illw.org> For a list of ILLW participants: <http://illw.org/9-list.html>

August 15-16th: The International Lighthouse/Lightship Weekend

This event is held every third full weekend in August starting at 0001z on Saturday and finishing at 2359z on Sunday. It also now coincides on the

Sunday with the "International Lighthouse Day" which is an event organized by the International Association of Lighthouse Keepers whereby as many world lighthouses will be open to the public for the day.

The ILLW event is organized and controlled solely by the "Ayr Amateur Radio Group" of Scotland. The basic objective of the event is to promote public awareness of lighthouses and lightships and their need for preservation and restoration, to promote amateur radio and to foster international goodwill. The event is NOT a contest. There are no prizes, certificates or other enticements to participate and therefore, participation is free. Each station's operators decide how they will operate their station regards modes and bands. For complete details on the "ILLW Event", go to: <http://illw.net> For a list of ILLW participants: [http://illw.net/2009\\_list.htm](http://illw.net/2009_list.htm)



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### Scott County ARES Contacts

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### Perseids Meteor Shower

Aug. 11 - 13

## Shuttle Launches Two Student Built Satellites

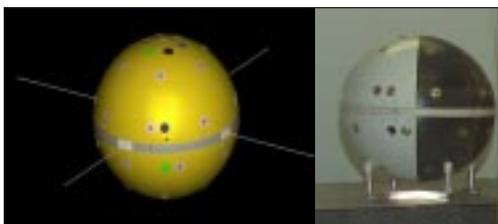
ARRL Letter vol.28 no.30

The space shuttle Endeavour returned to Earth on Friday, July 31, but before it left orbit, it deployed four student-built satellites, all with telemetry downlinks in the 2 meter (70 cm) amateur bands.

The twin spherical satellites — named Castor and Pollux — were designed by students in cooperation with the Naval Research Laboratory as part of the Atmospheric Neutral Density Experiment (ANDE) <[www.nasa.gov/mission\\_pages/station/science/experiments/STP-H2-ANDE.html](http://www.nasa.gov/mission_pages/station/science/experiments/STP-H2-ANDE.html)>. Both satellites will transmit 1200-baud packet radio telemetry on 145.825 MHz. Hams are encouraged to submit telemetry reports with special QSLs and mission patches planned (check the ANDE Web site for updates).

Castor and Pollux carry an FX.25 experiment that adds Forward Error Correction to standard AX.25 packets. The hope is that FX.25 will improve communication efficiency while still being compatible with existing packet equipment. The satellites also occasionally run GMSK/FX.25 modulation experiments at 9600 baud.

In addition to Castor and Pollux, Endeavour also deployed student satellites from the University of Texas and



Castor and Pollux, the two satellites of the ANDE mission.

Texas A&M. The tiny picosatellites, christened BEVO-1 and AggieSat2, respectively, are part of an ambitious experiment that will ultimately culminate in autonomous docking of picosats in orbit. For this mission, however, BEVO-1 and AggieSat2 launched as one unit and then separated to collect position data and test a new NASA Global Positioning System receiver known as DRAGON.

BEVO-1 transmits Morse code beacons (20 WPM) or packet radio data telemetry at 437.325 MHz. AggieSat2 beacons at 436.250 MHz. The satellites primarily transmit 9600-baud packet telemetry when over the United States. As with Castor and Pollux, reception reports are welcome <<http://paradigm.ae.utexas.edu/ops/>>.

Orbiting at a relatively low altitude of 185 miles, these satellites should be easy to receive with standard FM transceivers and omnidirectional antennas. They should enjoy an operational life of 3-6 months and will likely re-enter the Earth's atmosphere within a year.

## The Perseids Are Coming

### Meteor Showers May Change Propagation

Earth is entering a stream of dusty debris from Comet Swift-Tuttle, the source of the annual Perseid meteor shower. Although the shower won't peak until August 11th and 12th, the show is already getting underway.

Don't get too excited, cautions Bill Cooke of NASA's Meteoroid Environment Office. "We're just in the outskirts of the debris stream now. If you go out at night and stare at the sky, you'll probably only see a few Perseids per hour."

This will change, however, as August unfolds.

"Earth passes through the densest part of the debris stream sometime on August 12th. Then, you could see dozens of meteors per hour."

For sky watchers in North America, the watch begins after nightfall on August 11th and continues until sunrise on the 12th. Veteran observers suggest the following strategy: Unfold a blanket on a flat patch of ground. (Note: The middle of your street is not a good choice.) Lie down and look up. Perseids can appear in any part of the sky, their tails all pointing back to the shower's radiant in the constellation Perseus. Get away from city lights if you can.

There is one light you cannot escape on August 12th. The 55% gibbous Moon will glare down from the constellation Aries just next door to the shower's radiant in Perseus. The Moon is beautiful, but don't stare at it. Bright moonlight ruins night vision and it will wipe out any faint Perseids in that part of the sky.

The Moon is least troublesome during the early evening hours of August 11th. Around 9 to 11 p.m. local time (your local time), both Perseus and the Moon will be hanging low in the north. This low profile reduces lunar glare while positioning the shower's radiant for a nice display of Earthgrazers.

"Earthgrazers are meteors that approach from the horizon and skim the atmosphere overhead like a stone skipping across the surface of a pond," explains Cooke. "They are long, slow and colorful—among the most beautiful of meteors." He notes that an hour of watching may net only a few of these at most, but seeing even one can make the whole night worthwhile.

The increasing activity through the early part of the month usually brings some increased propagation for 6M, VHF and UHF sleuths looking for distant contacts from new grid squares. Monitor the radio while you monitor the heavens. The Perseids are coming. Enjoy the show. (<http://science.nasa.gov>)

Formal Message Elements – 7th in a Series

## Delivering the Message

Now that we have successfully copied the message the most important step remains – delivering the information.

Before you grab the phone or trot down the hall, you have a little more work to do.

You need to read the message and make sure the information you are going to deliver is in plain English. The easiest way to do this is pretend you are delivering the message to someone who has absolutely NO knowledge of amateur radio.

Let's assume you have just rogered the following message:

If the message includes handling instructions, such as reply requested, make sure you follow up with Grandma while you have her on the phone.

Grandma may have some questions, such as Where were the kids? When did they send the message? How did you get the message? When are they coming home?

You have the answers to most of the questions in the message preamble: Origin, Date, and Time. You don't have answers to some of Grandma's questions but supply the information you have.

You are not quite finished with delivering this message

when you hang up the phone with Grandma. You should note on the message the date and time the message was delivered and the name (or callsign) of the delivering operator. Then place the message in the station's message file.

The procedure is similar within an EOC or served agency site. First, and most important, make sure you have an accurate message before you roger the traffic.

Next, if you didn't print, or type, a hardcopy of the message as you copied the traffic, write the information now on the forms used by the served agency. Make sure your

printing is legible. There is zero room for error in transcription. Proofread your hardcopy of the message. Better yet, have your logger proof the message.

Once you have an accurate hardcopy of the message, use the delivery system specified by the served agency. If the message carries an EMERGENCY priority you will want to make delivery as rapidly as possible. You might hand-carry EMERGENCY traffic to the addree.

That covers the high points of message delivery. Remember our goal as emergency communicators is accurate, rapid information handling for our served agency.

BREAK - OVER

THE AMERICAN RADIO RELAY LEAGUE							
RADIOGRAM							
VIA AMATEUR RADIO							
NUMBER	PRECEDENCE	HX	STATION OF ORIGIN	CHECK	PLACE OF ORIGIN	TIME FILED	DATE
0146	WELFARE		KD0SFE	ARL4	TWISTER, MN.	1632 CDT	22JUL09
TO Grandma Reisen 638 Shady Ave Henfruit MN 52846				THIS RADIO MESSAGE WAS RECEIVED AT			
TELEPHONE NUMBER 312-729-3874				AMATEUR STATION _____ PHONE _____			
ARL				ONE			
ARL				TWO			
Mary and Chet							
REC'D	FROM	DATE	TIME	SENT	TO	DATE	TIME
<small>THIS MESSAGE WAS RECEIVED BY THE AMERICAN RADIO RELAY LEAGUE, INC. FROM THE AMERICAN SOCIETY OF EMERGENCY COMMUNICATORS. THE AMERICAN SOCIETY OF EMERGENCY COMMUNICATORS IS A 501(C)(3) NON-PROFIT ORGANIZATION. THE AMERICAN SOCIETY OF EMERGENCY COMMUNICATORS IS A 501(C)(3) NON-PROFIT ORGANIZATION. THE AMERICAN SOCIETY OF EMERGENCY COMMUNICATORS IS A 501(C)(3) NON-PROFIT ORGANIZATION.</small>				<small>THE AMERICAN RADIO RELAY LEAGUE, INC. IS THE NATIONAL ORGANIZATION OF AMATEUR RADIO OPERATORS. THE AMERICAN RADIO RELAY LEAGUE, INC. IS A 501(C)(3) NON-PROFIT ORGANIZATION. THE AMERICAN RADIO RELAY LEAGUE, INC. IS A 501(C)(3) NON-PROFIT ORGANIZATION.</small>			

Form: Copyright 1995, American Radio Relay League. Used with permission

Grandma is worried about her grandkids, Mary and Chet, who are camping in a part of the state hit by a recent storm. She could care less if you called on the phone and told her that there is a message from Mary and Chet. The message is "ARL ONE and ARL TWO"! If you are lucky all Grandma would do is slam the phone in your ear!

Now, let's deliver the message professionally and quickly. Pick up the phone and call Grandma Reisen. When someone answers, tell them who you are and ask for the addree, "My name is Bob. I am an amateur radio operator. I have a message for Grandma Reisen. Is she available?"

Once you are sure you have the addree on the phone, deliver the text of the message: Mary and Chet say, "Everyone is safe here, please don't worry. Coming home soon."

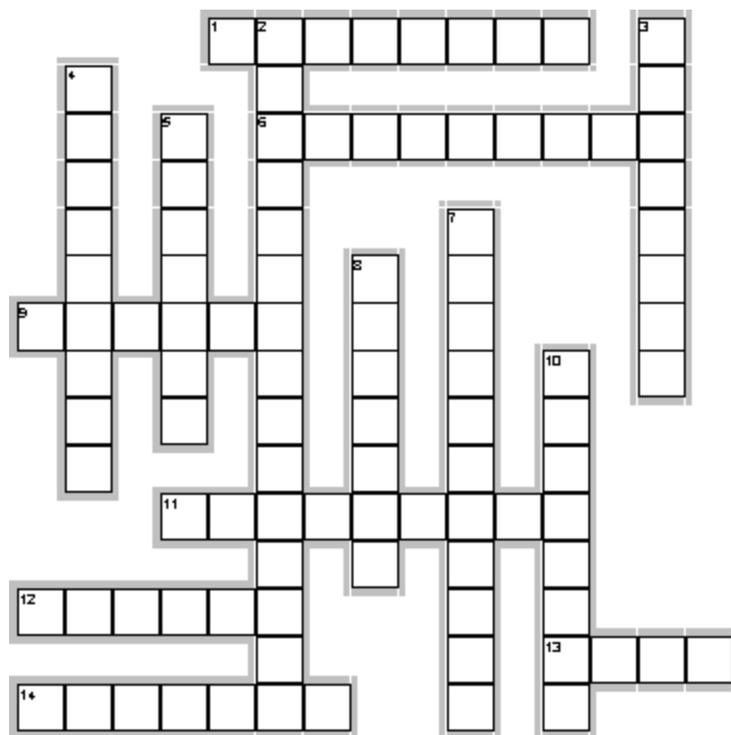
# Basic Terms

## Across

1. A type of call sign used to identify a location or function during local emergency operations.
6. A modulation method where the voice information can vary the amplitude of the RF carrier.
9. A circuit that allows some signals to pass through it but greatly reduces the strength of others.
11. Signals from a transmitter or oscillator occurring on whole-number multiples of the desired frequency.
12. A common name for an Amateur Radio license.
13. A type of repeater used by all hams who have a license that authorizes operation on the repeater frequency.
14. A device that converts chemical energy into electrical energy.

## Down

2. A person holding a written authorization to be the control operator of an amateur station.
3. The wire or cable used to connect a transmitter, receiver, or transceiver to an antenna.
4. Payment of any type, whether money or other goods. Amateurs may not operate their stations for any \_\_\_\_\_.



5. A stage of an FM receiver that makes the receiver less sensitive to amplitude variations and pulse noise.
7. The ability of a receiver to separate two closely spaced signals.
8. The lowest region of the ionosphere.
10. The transmitted signal from an amateur station.

## July Crossword Solution

### HF Lingo

#### Across

4. WARC—World Administrative Radio Conference at which frequency allocations are determined.
6. QRP—Very low-power operating (less than 5 watts on CW and 10 watts (peak) on phone).
8. WHIP—Antenna made from a long, thin metal rod.
9. ATTENUATE—Reduce in strength
14. OVERLOAD—A signal so strong that circuits begin to operate improperly.
15. FEEDLINE—Cable used to transfer radio-frequency energy (between Xcvr and antenna).
17. DATAINTERFACE—A device for connecting a computer to a radio.
18. SENSITIVITY—The receiver's ability to detect weak signals.

#### Down

1. SCANNING—Monitor a range of frequencies or a set of memory channels for activity.

2. DIGITALMODE—Communication method that exchanges characters instead of voice or Morse Code.
3. SELECTIVITY—A receiver's ability to receive only the desired signal and reject all others.
5. BALUN—Stands for "balanced-to-unbalanced", provides a transition from parallel wire feed lines or antennas to coaxial feed lines.
7. POWERSUPPLY—A device that changes ac power into dc power.
10. ALLMODE—A radio that can operate on AM, SSB, CW, Digital, and FM.
11. DIPOLE—A simple wire antenna 1/2-wavelength long with feed line attached in the middle.
12. IMPEDANCE—A measure of how easily power can be transferred into a load or through a feed line.
13. GAIN—Antenna's ability to receive or transmit energy in a preferred direction.
16. KEYSER—Electronic device that generates Morse code elements.

## Pneumatic Antenna Launchers

The usual disclaimers:

Do Not Try This at Home Without Adult Supervision,  
These are Professionals on a Closed Course,  
Your Mileage May Vary.

This looks like it would be a fun method to launch a j-pole high in the nearest tree or the ends of a dipole over some parking lot light standards!

Sorry to the pyromaniacs, there are no explosives involved. These run on compressed air. Gather some PVC pipe and fittings, some lawn sprinkler valves, a fishing reel, and some tennis balls and get in the game!

Check out this link for details and a good description of the launchers: <http://www.antennalaunchers.com/antlaunching.html>

This obviously will take a lot of practice to perfect your technique. Who says practice cannot be a lot of fun! Hey, you can always claim you are just warming up the little league outfielders.



Happy antenna launcher users! See website above for details.



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**“I think of a hero as someone who understands the degree of responsibility that comes with his freedom.”**

Bob Dylan

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## Wireless Power Harvesting for Cell Phones

A cell phone that never needs recharging might sound too good to be true, but Nokia says it's developing technology that could draw enough power from ambient radio waves to keep a cell-phone handset topped up.

Ambient electromagnetic radiation—emitted from Wi-Fi transmitters, cell-phone antennas, TV masts, and other sources—could be converted into enough electrical current to keep a battery topped up, says Markku Rouvala, a researcher from the Nokia Research Centre, in Cambridge, U.K.

Rouvala says that his group is working towards a prototype that could harvest up to 50 milliwatts of power—enough to slowly recharge a phone that is switched off. He says current prototypes can harvest 3 to 5 milliwatts.

The Nokia device will work on the same principles as a crystal radio set or radio frequency identification (RFID) tag: by converting electromagnetic waves into an electrical signal. This requires two passive circuits. “Even if you are only getting microwatts, you can still harvest energy, provided your circuit is not using more power than it's receiving,” Rouvala says.

To increase the amount of power that can be harvested and the range at which it works, Nokia is focusing on harvesting many different frequencies. “It needs a wideband receiver,” says Rouvala, to capture signals from between 500 megahertz and 10 gigahertz—a range that encompasses many different radio communication signals.

Historically, energy-harvesting technologies have only been found in niche markets, powering wireless sensors and RFID tags in particular. If Nokia's claims stand up, then it could push energy harvesting into mainstream consumer devices.

Earlier this year, Joshua Smith at Intel and Alanson Sample at the University of Washington, in Seattle, developed a temperature-and-humidity sensor that draws its power from the signal emitted by a 1.0-megawatt TV antenna 4.1 kilometers away. This only involved generating 60 microwatts, however.

Smith says that 50 milliwatts could require around 1,000 strong signals and that an antenna capable of picking up such a wide range of frequencies would cause efficiency losses along the way.

“To get 50 milliwatts seems like a lot,” adds Harry Ostaffe, head of marketing for Pittsburgh-based company Powercast, which sells a system for recharging sensors from about 15 meters away with a dedicated radio signal.

## Wireless Power - cont'd from page 6

Steve Beeby, an engineer and physicist at the University of Southampton, U.K., who has researched harvesting vibrational energy, adds, "If they can get 50 milliwatts out of ambient RF, that would put me out of business." He says that the potential could be huge because MP3 players typically use only about 100 milliwatts of power and spend most of their time in lower-power mode.

Nokia is being cagey with the details of the project, but Rouvala is confident about its future: "I would say it is possible to put this into a product within three to four years." Ultimately, though, he says that Nokia plans to use the technology in conjunction with other energy-harvesting approaches, such as solar cells embedded into the outer casing of the handset.

From Technology Review

BREAK - OVER

## First Navy Jack Flag

The U.S. Navy is relying on a historic icon to remind the world of America's strength and courage. The rattlesnake has been a favorite symbol of independence throughout America's history.

Adopted as a uniquely American icon by early patriots, such as Benjamin Franklin, the rattlesnake represents American unity. Individually, its rattles have no sound, but united they can be heard by all. And while it does not strike unless threatened, once provoked, the deadly rattlesnake never surrenders.

The rattlesnake was used as a symbol of resistance to British repressive acts in Colonial America. Flags bearing rattlesnakes and bearing the simple warning "Don't Tread on Me" were flown on the first ships of the Continental Navy in the Delaware River in 1775.

Today, as America faces unprecedented threats, this historic symbol of our founding has emerged as a powerful reminder of our origin and true courage. Since May 2002, all U.S. Navy ships have flown the First Navy Jack from 8 a.m. to sunset daily while in port. The temporary substitution for the Union Jack represents a historic reminder of the nation's and Navy's origin and will to persevere and triumph during the global war on terrorism.



BREAK - OVER

## NBEMS Major Upgrade

This is a major update to the NBEMS software suite. Previous versions used a combination of flarq and vbdigi. This version uses flarq (with major revisions) and a newly released version of fldigi for windows. This version is identical for ALL Microsoft OS version. NBEMS runs on all OS versions after W98.

Download the newest version of NBEMS here: <http://www.w1hkj.com/NBEMS/>.

If you previously downloaded previous versions of NBEMS you should uninstall the previous version using the Control Panel. Then download and unzip the new NBEMS suite. This zip file contains the required executables and support dynamic link libraries. The target directory is the default unzip directory. You can also install flarq and fldigi as separate applications. The system uses the computer soundcard as the modem and, other than a simple interface connection between the computer and transceiver, no additional hardware is needed.

It consists of the following applications comprise the NBEMS program suite for MS Windows:  
This program WILL NOT WORK UNDER WINDOWS 98.

The setup program is a standard installer for windows. It will create desktop icons, and desktop menu entries including an "uninstaller."

- fldigi-3.12.3\_setup.exe - fldigi and flarq for all versions of Windows
- wrap-1.0.zip - \_wrap for all versions of Windows

The applications are available for separate download for Linux and Puppy (see the respective web pages for fldigi and/or flarq).

Composing and sending emergency messages on NBEMS utilizes the same Outlook Express, Outlook, Windows Mail or Thunderbird email program used for Internet email, and is no more difficult than sending an email over the Internet. Messages just go over the radio instead, when the Internet or phone service is not reachable in an emergency.

You should be able to run the desired program by simply double clicking on the shortcut icon. Both fldigi and flarq require configuration parameters to be set before they will run correctly. fldigi allows you to fine tune your hardware to the software. If it seems overwhelming the first time you look at all of the configuration parameters, read and re-read the on-line help for guidance in setting the parameters. However, the defaults are usually sufficient for almost all situations.

This version of flarq IS NOT compatible with previous versions earlier than 3.11.6. Please read through the two on-line help manuals before starting to use these applications.

BREAK - OVER

## An ARES Member is . . . .

### A Reminder of the ARES Mission

The ARRL ARES E-letter of July 15, 2009 includes some observations by Rick Palm, K1CE, regarding the qualities that make a good ARES Emergency Coordinator (EC). While Rick is targeting the ARES leader in his comments, many of the qualities he identifies are vital requirements for all ARES emergency communicators. Let's substitute "ARES member" for EC and see if you agree.

"The official ARRL qualifications and job description do not go far enough in determining who will be an effective ARES member. Granted, all of the elements of the list are important, but more critical is the character of the individual and his or her true understanding of what motivates people and how they can be led by example and good people skills. With a grasp of what the ARES member's role is, and indeed what the ARES role is in supporting agencies like the EOC and Red Cross, it's the intangibles that make or break an ARES member, not the tangibles.

"And, paramount to all of this is the single, most-important tenet: We serve the agencies. They do not serve us. That's why we call them "served agencies." We are there to be an asset to them, not a liability. We are there to make their jobs of providing professional emergency and disaster management to the public easier if we can. We are there to try to provide a seamless, almost transparent communications service. We do not force ourselves on them. Agency officials must know our limitations and capabilities, and we most know our own limitations and their expectations. The ARES member has a realistic self-appraisal.

"We are not in the EOC to tell emergency managers how to do their jobs. Nor are we there to demand things like - and this is no joke - flashing emergency lights and sirens for the roofs of our vehicles. We are not there to demand that we be deployed as we see fit. We are not there to bring our internal disputes and petty one-upsmanship to them to deal with or sort out. A good ARES member understands this."

Rick Palm cuts to the chase in ARES communications. ARES assistance is about the served agency, not the ARES group. We all benefit from the reminder that the served agency is the reason for our group exists.

BREAK - OVER

## W1AW Goes Digital

### W1AW To Update Digital Modes To Its Transmitting Schedule

After a survey of W1AW-listeners, W1AW will begin using two different modes on August 17, 2009.

On August 17, 2009, W1AW will replace its AMTOR and ASCII transmissions with PSK31 and MFSK16, respectively. RTTY (Baudot) will continue to be the first digital mode used in the transmission schedule.

The frequencies used by W1AW for all its digital transmissions will remain the same. All regular 6 PM and 9 PM eastern time digital transmissions will begin with RTTY. PSK31 and MFSK16 will be sent as time allows.

The Tuesday and Friday Keplerian data bulletins will be sent using RTTY and PSK31.

The W1AW operating schedule — complete with times and frequencies — can be found on the ARRLWeb page at, <http://www.arrl.org/w1aw.html#w1awsked>.

This is a great signal to use for practice with Narrow Band Emergency Messaging Software (NBEMS).

BREAK - OVER

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**"If it weren't for Philo T. Farnsworth,  
inventor of television, we'd still be eating  
frozen radio dinners."**

Johnny Carson



### ARES Breakfast

Saturday August 8th  
7:30AM  
Perkins Restaurant  
Savage, MN

### NECOS Schedule August 2009

3 Aug KC0YHH Tony  
10 Aug N0PI Dan  
17 Aug W0NFE  
24 Aug KB0FH Bob  
31 Aug KC0YHH Tony  
7 Sep N0PI Dan

