ARES COMMUNICATOR

Information for Scott County Amateurs

September, 2013 **Accurate, Reliable Emergency Communications for our Community** *Volume 13, Number 9*

Cycle for Life Event

Saturday, September 21, 2013

Scott ARES has again been asked to provide communications support for a fundraising event benefiting the Cystic Fibrosis Foundation of Minnesota. Recent changes by the event organizers will require additional radio operators. If you are available, the CFF and your community could use your communications skills.

The cycling event will take place over two routes across southern Scott County. There event will include a long course of 65 miles and a shorter lap of 32 miles. There are already approximately 50 riders registered. The riders will begin the course at 8:00 am with expected finish time around noon.

Scott ARES is planning a directed net linking some on-course rest stops and two SAG wagons with the start/stop area. Additional communications points may be added depending on the number of communications volunteers.

This event will provide an opportunity for ARES member to put their emergency communications skills to good use supporting a worthwhile event in our community. ARES members, and other amateurs, who would like to participate should contact Bob, N0BHC, via email: n0bhc@arrl.net, or check in on the regular Monday evening training net at 7:00 pm on 146.535 mHz (simplex).

This should prove to be a fun event and the organizers hinted that there might be a tasty lunch for volunteers at the conclusion of the event. It is important you confirm your participation ASAP so event organizers can prepare for enough food!!

BREAK - OVER

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

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FEMA Training Courses

Back To School Time!

ARES members need to part of the solution during an emergency. That is why ARES members need to have a solid knowledge of the structure and responsibilities of the various parts of any emergency response. FEMA has done a great deal of standardization in the nation's emergency response action as a result of lessons learned from the 9/11 terrorist attacks.

FEMA has developed learning modules covering the various response activities and placed the material on-line at the FEMA Emergency Management Institute, http://training.fema.gov/IS/.

ARES members are required to complete four of the on-line courses to be eligible to participate in emergency communications activity in support of any local, state or national government agency.

FEMA Training *cont'd on page 2*

ARES Activities

Weekly Net Monday 7 PM 146.535 mhz (s)
Breakfast Saturday, Septembert 14th
Digital Monday, September 16th

ARES Nets

MN ARES Phone Net
6:00PM Sunday Freq: 3.860 mhz
ARRL MN Phone Net
12:00p, 5:30p CST Daily Freq: 3.860 mhz
ARRL MN CW Net
6:30p, 9:50p CST Daily Freq: 3.568 mhz

NETS WITH OUR NEIGHBORS

North Dakota:	Daily 3.937 mhz	6:30pm
South Dakota:	Daily 3.860 mhz	6:00pm
Wisconsin:	Daily 3.985 mhz	5:30pm
Iowa:	Daily 3.970 mhz	12:30/5:30pm

Test Your NIMS Knowledge

This month we will continue our review of ICS-700a: National Incident Management System (NIMS) An Introduction. Check your recall of the course material with this question.

1. Who is the individual responsible for all incident activities, including the development of strategies and tactics and the ordering and release of resources?

A. Incident Commander
B. Operations Section Chief
C. Emergency Operations Center Manager
D. Agency Executive or Senior Official

Check next month's ARES Communicator for the solution

August NIMS Knowledge Solution

1. The act of directing, ordering, or controlling by virtue of explicit statutory, regulatory, or delegated authority at the field level is referred to as:

B. Command

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FEMA Training - *cont'd from page 1*

The courses are all available as self-paced on-line courses. The specific courses are:
IS-100.B: Introduction to Incident Command System, ICS-100
IS-200.B: ICS for Single Resources and Initial Action Incidents
IS-700.A: National Incident Management System (NIMS) An Introduction
IS-800.B: National Response Framework, An Introduction
You will find the complete list of NIMS courses listed here: http://training.fema.gov/IS/NIMS.aspx You can download the Student Manual for most courses, look under the 'Additional Resources' or 'Classroom Materials' for the Student Handbook download.

Once you complete a course, email a copy of your completion information to N0BHC@scottares.org. We need to document the training achievements of ARES volunteers for various served agencies.

If you have already completed the four courses it might be time for a review of the material to help keep our training current. Why not look up the answer to the monthly NIMS knowledge question in you IS-700A student manual?

BREAK - OVER

NBEMS Current Versions

The current version of the Fldigi manual is availale at NBEMS Info page at www.scottares.org. Look under the 'Help Sheets' heading.

Be sure to check to make sure you have the current software on your thumb drive.

Now is a good time to check to your digital software to make sure you are running the newest versions. You can find the most recent versions posted at both:
www.w1hkj.com/download.html
and http://www.scottares.org/NBEMS.htm

Here are the most recent releases as of September 2, 2013.

Software	Version
Fldigi	3.21.75
Flwrap	1.3.4
Flmsg	1.1.32

The Monday evening training net is a great place to have your digi questions answered and problems solved! Join the Scott ARES group on 146.535 mHz simplex at 7:00pm on Monday evenings.

BREAK - OVER

United States Citizenship!

Have you ever thought about your United States citizenship? Probably not since that Civics course a long time ago! Foreigners who want to become a United States Citizen must pass a short exam that covers some key concepts important to America. Test your knowledge on the citizenship test.

Check next month for the answer to this month's question.

3. Who has the power to veto a bill?
   A the Secretary of State
   B the Chief Justice of the Supreme Court
   C the Vice President
   D the President
   E the Speaker of the House

August Citizenship Exam Answer

2. Where is the Statue of Liberty?
   B New York Harbor

BREAK - OVER

DX Activity

XZ1Z in Naypyidaw, Myanmar, the capital city, will be September 18- 23. Op Zorro has found a better QTH, on a hill 1,557 feet above sea level. He will put up a tribander for 20, 15 and 10, added to the groundplanes used last month. He will focus on CW to North and South America on this visit. QSL via Club Log OQRS – that is "preferred" — or via JH1AJT. A multinational team from the "Foundation for Global Children," FGC, will follow up in mid-November with a 24-hour-a-day, 10-day, operation that will be on CW, SSB and digital.

8Q7CF, Maldives, is a September 15-27 operation by DO3HDA and DL2MDU on 80-10 CW, SSB and digital. They are equipped with a dipole and long wire for antennas. QSL on LoTW or via DL2MDU.

The Daily DX provides up to date info on DX activity along with QSL routes / managers and IOTA events and contests. Check the Daily DX homepage for info: http://www.dailydx.com/

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Take a Dip in the General Pool

Time to test your knowledge of the information covered by the General Class license exam. Each month we'll take a look at a selection from the question pool. Here is this month's sample:

1. What part of a data packet contains the routing and handling information?
   A. Directory
   B. Preamble
   C. Header
   D. Footer

2. What effect does a Sudden Ionospheric Disturbance have on the daytime ionospheric propagation of HF radio waves?
   A. It enhances propagation on all HF frequencies
   B. It disrupts signals on lower frequencies more than those on higher frequencies
   C. It disrupts communications via satellite more than direct communications
   D. None, because only areas on the night side of the Earth are affected

What segment of the 20 meter band is most often used for data transmissions?
   A. 14.000 - 14.050 MHz
   B. 14.070 - 14.100 MHz
   C. 14.150 - 14.225 MHz
   D. 14.275 - 14.350 MHz

(Check next month's issue of the ARES Communicator for the answer.)

August General Pool Answers

1. Which HF antenna would be the best to use for minimizing interference?
   C. A unidirectional antenna

2. How many data bits are sent in a single PSK31 character?
   A. The number varies

3. What is the sunspot number?
   A. A measure of solar activity based on counting sunspots and sunspot groups

Hamfest Season

TNX: Doug, N0NAS

Sep 7th

Rush City, MN
ECMARC Hamfest, Rush City, MN High School
9AM to 1PM http://ecmarc.org

Worthington, MN
NPRRC Hamfest at Hickory Lodge
9AM to 1PM www.nprrc.org/1.html

Sep 14th

Lake Elmo, MN
K0IKV Tailgate Swapfest, 8247 27th St N, Lake Elmo
8AM to Noon, www.magicrepeater.net/marty.htm

East Grand Forks, MN
FORX Hamfest
8AM to Noon, www.wa0jxt.org/Hamfest%202013.pdf

Austin, MN
Amateur Radio Club, Veteran's Pavilion, Main St So & 9th
Open at 9 AM. Talk-in is on 145.470, 100 hz tone.
http://austinarc.org/aarc/

Sep 21st

Henderson, MN
SMARTFEST 2013, Henderson, MN (SW of Belle Plaine)
www.arrl.org/hamfests/smartfest-2013

Sep 28th

Fargo, ND
North Dakota State Convention, Fargo, ND
www.rrra.org/hamfest

Carlton, MN
Carlton Co RACES Fallfest, Carlton, MN (south of Duluth)
www.magicrepeater.net/Fallfest2013.pdf

BREAK - OVER

"The best thing about the future is that it comes one day at a time."
Ella Quince

Being an ARES Operator is a Privilege!

Quiet assets for our Served Agency

By: Rick Palm, K1CE Editor ARRL ARES E-letter

I was reminded once again of the old adage "It only takes one to screw things up for everybody else," when I had a sad conversation with an EC who had had his ARES program and volunteers removed from their EOC.

One member had undermined the entire organization's relationship by continuing a campaign of complaints and demands to the emergency manager about how Amateur Radio must be positioned and incorporated in the EOC. Incredibly, the individual's campaign ratcheted up to include complaints to the county commissioners.

Although relatively rare occurrences, these things do happen. And that is why we need to reevaluate and renew our understanding of our role in the emergency management structure and EOC from time to time, which is the following: It is a privilege, not a right, that we are in the EOC. We are there to provide a transparent service to the emergency manager, who is the professional. We take orders from, and provide communications for messages only authorized by, the professional emergency management team. We are not there to tell them how to run the emergency management function; nor are we there to make demands for things like, believe it or not, sirens and flashing lights for our vehicles. Nor, complain. We need to be quiet assets, heard only when requested by the professionals, and not liabilities.

Most understand these principles. But, often it is just one idiot who can destroy all of the long and hard work of ARES members and leaders to gain the trust and consequent invitation — and privilege — to serve in the EOC.

The daunting challenge to the ARES EC is to identify these individuals and contain them before they can embark on their path to destruction of arguably the most critical relationship in all of Amateur Radio: the solemn relationship between ARES and the EOC. And that is not an easy challenge to meet.

BREAK - OVER

Arrr!
Avast ye Lubber!
It's talk like a Pirate Day
September 19th

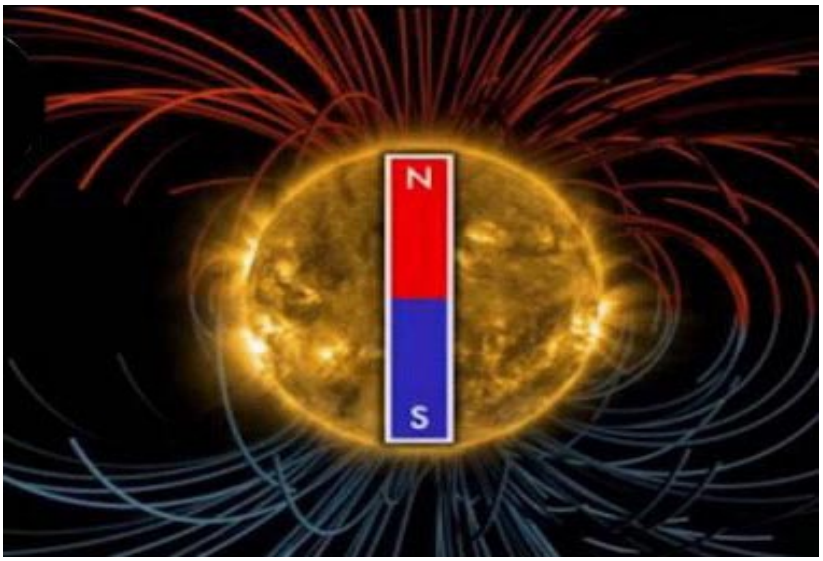
The Sun Flips It's Field

The Sun's Magnetic Field is about to Flip

Something big is about to happen on the sun. According to measurements from NASA-supported observatories, the sun's vast magnetic field is about to flip.

"It looks like we're no more than 3 to 4 months away from a complete field reversal," says solar physicist Todd Hoeksema of Stanford University. "This change will have ripple effects throughout the solar system."

The sun's magnetic field changes polarity approximately every 11 years. It happens at the peak of each solar cycle as the sun's inner magnetic dynamo re-organizes itself. The coming reversal will mark the midpoint of Solar Cycle 24. Half of 'Solar Max' will be behind us, with half yet to come.



Check out the video explanation of the flip at: www.youtube.com/watch?v=34gNgaME86Y

Hoeksema is the director of Stanford's Wilcox Solar Observatory, one of the few observatories in the world that monitor the sun's polar magnetic fields. The poles are a herald of change. Just as Earth scientists watch our planet's polar regions for signs of climate change, solar physicists do the same thing for the sun. Magnetograms at Wilcox have been tracking the sun's polar magnetism since 1976, and they have recorded three grand reversals—with a fourth in the offing.

Solar physicist Phil Scherrer, also at Stanford, describes what happens: "The sun's polar magnetic fields weaken, go to zero, and then emerge again with the opposite polarity. This is a regular part of the solar cycle."

A reversal of the sun's magnetic field is, literally, a big event. The domain of the sun's magnetic influence (also known as the "heliosphere") extends billions of kilometers beyond Pluto. Changes to the field's polarity ripple all the way out to the Voyager probes, on the doorstep of interstellar space.

When solar physicists talk about solar field reversals, their conversation often centers on the "current sheet." The current sheet is a sprawling surface jutting outward from the sun's equator where the sun's slowly-rotating magnetic field induces an electrical current. The current itself is small, only one ten-billionth of an amp per square meter (0.0000000001 amps/m^2), but there's a lot of it: the amperage flows through a region 10,000 km thick and billions of kilometers wide. Electrically speaking, the entire heliosphere is organized around this enormous sheet.

During field reversals, the current sheet becomes very wavy. Scherrer likens the undulations to the seams on a baseball. As Earth orbits the sun, we dip in and out of the current sheet. Transitions from one side to another can stir up stormy space weather around our planet.

Cosmic rays are also affected. These are high-energy particles accelerated to nearly light speed by supernova explosions and other violent events in the galaxy. Cosmic rays are a danger to astronauts and space probes, and some researchers say they might affect the cloudiness and climate of Earth. The current sheet acts as a barrier to cosmic rays, deflecting them as they attempt to penetrate the inner solar system. A wavy, crinkly sheet acts as a better shield against these energetic particles from deep space.

As the field reversal approaches, data from Wilcox show that the sun's two hemispheres are out of synch. "The sun's north pole has already changed sign, while the south pole is racing to catch up," says Scherrer. "Soon, however, both poles will be reversed, and the second half of Solar Max will be underway."

When that happens, Hoeksema and Scherrer will share the news with their colleagues and the public.

BREAK - OVER

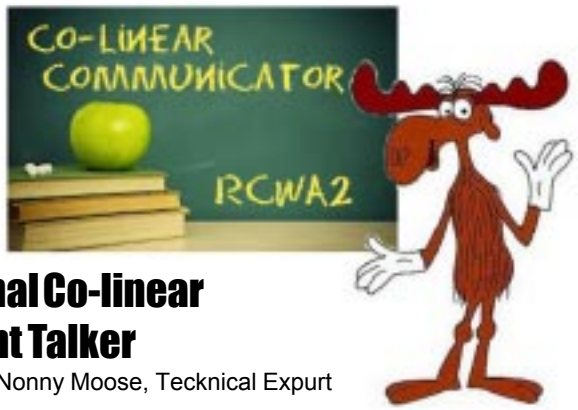
Autumnal Equinox

September 22, 2013

The Autumn equinox signals the beginning of Fall. It is the point where there is exactly 12 hours of daylight and 12 hours of darkness at the equator. If you live anywhere else, however, you will see a little bit more or a little bit less than 12 hours of daylight. The daylight hours are dwindling and will continue to do so until we reach the Winter Solstice, the shortest day of the year and the start of winter.

In ancient times, the Autumn Equinox was cause for a variety of pagan festivals, among them the celebration of the birth of Mabon, the son of Mordon, the Goddess of the earth.

The quiet calm winter band conditions will soon be here!



Artisanal Co-linear Straight Talker

A. Nonny Moose, Tecknical Expurt

Most of the Artisanal Antenna crafters will want to improve the performance of their ¼ wave vertical antenna. Those who remember the show Home Improvement know Tim Taylor's mantra "More Power!" A. Nonny Moose is all in favor of a stronger signal but not a fan of spending a lot of money! So, he figures he can get a stronger signal by changing the antenna to concentrate his signal.

A. Nonny believes that most of the stations he wants to talk with are located on the ground and any signal that heads straight up is more or less wasted. In his penny-pinching quest to improve his signal he came upon the co-linear antenna that will squash his signal so more signal is directed horizontally and less is sent straight up to warm the clouds.

The co-linear basically consists of three half-wave sections connected end-to-end. The goal is to stack two half-wave sections that are in phase separated by the non-radiating phase in the center.

The non-radiating half-wave is occupied in a coil in the center of the vertical antenna.

We need to match the impedance of the antenna to the feedline to get the best transfer of our signal to the radiating portion of the antenna. This uses a one qtr-wave transformer made from 300 ohm twinlead. The coax is attached to the twinlead 1 1/8 inches from the shorted bottom of the twinlead.

The materials needed for the co-linear are: 10 ft of 20ga insulated hook-up wire, a 2 inch piece of ½ in wooden dowel, 18 inches of 300 ohm twinlead and 10 ft of weed-trimmer line or nylon mason line string. A. Nonny did his nickel-squeezing best to keep the cost a low as possible!

Starting with the coil, make a slot the length of the dowel to fit the trimmer line or string. Center thirteen turns on the dowel and drill 1/8 inch holes through the dowel for the start and end of the windings. Now that we have the coil for the non-radiating half wave we need to connect a half wave section to each end.

The length of a half wave is calculated using the old standby formula:

$$\text{1/2 wave length (ft)} = \frac{468}{\text{f (mHz)}}$$

Designing our antenna for 146 mHz we come up with 38 ½ inches. Trim the wire on each end of the coil to this length.

Okay now let's tackle the matching section. We need a quarter-wave section of 300 ohm twinlead for this part of the antenna. Using the familiar formula:

$$\text{1/4 wave length (ft)} = \frac{234}{\text{f (mHz}}$$

We calculate a length of 19 ¼ inches. This will give us a piece of twinlead that is too long! The signal moves through the twinlead at about 80% as fast as it travels in space. (Remember the Velocity Factor?)

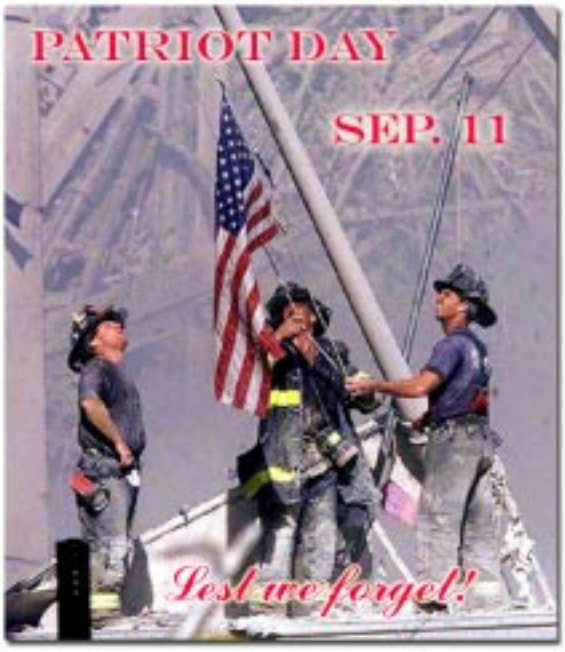
To get started, strip ½ inches of the twinlead wires on one end of the cable. Solder these two wires together to short the end on the twinlead. This will be the 'bottom' of the antenna. Let's start with a piece of twinlead about 15 7/8 inches long which will include a ½ inch to connect to a half-wave section. Clip ½ inch from the other side of the twinlead to leave about 15 ¼ inches from the shorted end. The velocity factor of the particular piece of twinlead you have will determine the actual electrical 1/4 wave length.

All that remains is to attach the coax to the antenna. Sorry, no coax connector this time! Measure 1 1/8 inches from the bottom of the antenna and expose the conductors in the twinlead. Solder the coax center conductor to the 'long' side of the twinlead and the coax shield to the shorter side of the twinlead. Use a couple of tie-wraps to secure the coax to the twinlead.

Now it is finally time to light up the antenna and adjust the length or the elements as needed to achieve the best match, lowest SWR. When you do your matching remember to keep the antenna hanging vertically away from any metal objects. You may want to solder a ring terminal to the top of the antenna and use some string to hang it from a skyhook! Remember when you are adjusting element lengths for the best match, you have three elements to consider: two half wave sections and the matching transformer.

How do we keep all this together? That is the purpose of the trimmer line or mason line. Thread your support through the slot in the dowel, continuing down to the bottom of the antenna. Tie off the string to another tie-wrap securing the coax to the twinlead. Lay out the wire and attach the trimmer line / string to the wire with tape or heat-shrink

Co-linear *cont'd on page 7*



- On the morning of September 11, 2001, nineteen Islamic al-Qaeda militants hijacked four planes. The hijackings occurred from Boston, Newark and Washington airports. The planes selected were long distance flights, which would have more fuel in the tanks.
- One plane each hit the north and south towers of the World Trade Center in New York city. The planes and engulfing firestorm, ultimately brought down both towers.
- A number of other buildings were also damaged or destroyed. Most notably was the Marriott hotel, which was also destroyed.
- A third plane hit the Pentagon in Washington, DC.
- The fourth hijacked plane ultimately crashed in a field in Shanksville, PA. Passengers on the plane learned of the fate of the other planes, and unsuccessfully attempted to take back control of the plane from the suicidal the hijackers. Everyone aboard died.
- In total, thousands were killed.

Total Victim: 2977
Victims in the towers: 2606
Pentagon victims: 125
4th plane, crashed in PA: 40
Militants: 19

Jameco Electronics News

Most solder-melters are familiar with the electronic component supplier Jameco Electronics. Jameco publishes a more-or-less monthly e-news sheet that often includes interesting items and applications. Best of all it is free!

You can see the current issue here:
http:links.enews.jameco.com/servlet/MailView?ms=NjU2Nzg1MgS2&r=MzA5NTEyNDkzNzYS1&j=MTY2ODY4MTQzS0&mt=1&rt=0
Don't worry there is no endorsement, sponsorship, scholarship, grant, or no-interest financing involved in this free publicity!

BREAK - OVER

Co-linear - *cont'd from page 6*

tubing.

How do we keep this antenna in the air? One popular method is to use PVC water pipe. A ¾ inch diameter should be large enough to contain the coil. Head to the local big-box store and pick up a ten foot piece of pipe, a cap and a tee fitting. To suspend your antenna inside the pipe you could drill a ¼ inch hole perpendicularly through the pipe, near one end, in a location that will be covered by the cap. A piece of wood dowel through the pipe would serve as a support for a loop in the string supporting the antenna. Now, lay your antenna along the pipe and determine how much pipe is needed to enclose the antenna. Cut the pipe and install the tee to provide an exit for the coax. The remaining pipe can be attached to the tee to provide a stub to mount the antenna.

Not quite done! Remember the velocity factor? Well, the particular type of PVC pipe you use may detune your antenna. Recheck your matching and adjust the antenna if there has been significant change.

Your new squashed signal antenna will also improve reception because the antenna isn't listening for signals coming from the clouds.

BREAK - OVER

ARES Breakfast
Saturday September 14th
7:30AM
Perkins Restaurant
Savage, MN

NECOS Schedule September 2013

2 Sep	KC0YHH Tony
9 Sep	N0PI Dan
16 Sep	W0NFE Bob
23 Sep	KB0FH Bob
30 Sep	KC0YHH Tony
7 Oct	N0PI Dan
14 Oct	W0NFE Bob
21 Oct	KB0FH Bob
28 Oct	KC0YHH Tony