



ARES COMMUNICATOR

Information for Scott County Amateurs



January, 2013

Accurate, Reliable Emergency Communications for our Community

Volume 13, Number 1

The Minnesota QSO Party

Saturday Feb 2nd 8AM – 6PM

The time has come! The first weekend in February bring the Minnesota QSO Party to the airwaves. This one time of the year when everyone is looking to make contact with a Minnesota station.

The contest runs from 8:00AM to 6:00PM (CST) on Saturday, February 2nd. You will find activity on the usual five HF bands plus 6M and above. You will find 80M, 40M, and 20M good pretty much all day long. Check the chart for specific frequencies.

Don't hesitate to put out a call of "CQ MN QSO Party". There are stations out there looking for a Minnesota contact. The information exchange for the contest consists of your first name and your three character county designator, i.e. "Sylvester, SCO". ARES members should include the identifier 'ARES' in their exchange. For example Scott ARES members would identify their county as 'Scott ARES' or phonetically as Sierra Charlie Alpha Romeo Echo Sierra.



A certificate will be awarded to the highest scoring ARES station in the QSO Party. Go get 'em!

Be sure to visit the MN Wireless Assn. website for more information on the 2011 MN QSO Party. You will find links to logging software and rover maps and schedules. You will find information here: www.w0aa.org/ The MN QSO Party County Activity Map on the website is color-coded to show expected county activations and clicking on a county shows call signs

NM QSO Party *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!

AERO Classes Planned

By: Dan Peitso, AERO instructor

(Ed Note: Scott County ARES emergency communications are conducted in a directed net format. The procedures may be found on www.scottares.org website. Scott ARES procedure differs from the AERO informal net procedure.)

AERO – Association of Emergency Radio Organizations and the Maple Grove Radio Club wish to announce it is holding its *Basic Emergency Operator Communication* (AERO 1) class on February 9th and 16th, 2013.

On February 9th we will be having our class room session from 9:00 AM to 12:00 Noon. The doors of Maple Grove fire station #2 will open at 8:30 AM. We will be holding our practical exercise and class evaluation on February 16th from 1:00 PM to 4:00 PM.

Prerequisite for the course is ISC-100b that is free at <http://training.fema.gov/emiweb/is/is100b.asp>. The cost of this course is \$0.00 (Free!).

You will need a notebook, an HT, and writing instrument. Please register with Dan Peitso, N0PIY at N0PIY@arrl.net or phone 763-755-3262. Internet registration is preferred. Please



AERO Course *cont'd on page 3*

ARES Activities

Weekly Net Monday 7 PM 146.535 mhz (s)
Breakfast Saturday, February 9th
Digital Monday, February 11th

ARES Nets

MN ARES Phone Net	6:00PM Sunday	Freq: 3.568 mhz
ARRL MN Phone Net	12:00p, 4:30p CST Daily	Freq: 3.568 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 3.870 mhz	6:00pm
Wisconsin:	Daily 3.985 mhz	5:30pm
Iowa:	Daily 3.970 mhz	12:30/

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. The National Response Framework (NRF) presents the guiding principles that:

- A. Are singly focused on improving Federal homeland security agencies' response to catastrophic natural hazards and terrorist-related incidents.
- B. Supersede the National Incident Management System's framework when Federal agency and departments are assisting in a response.
- C. Provide the structure and mechanisms to ensure effective Federal support of State, tribal, and local related activities.
- D. Mandate specific operational plans for local responders to use when managing a wide range of incidents.

Check next month's ARES Communicator for the solution

Dec. NIMS Knowledge Solution

1. A basic premise of the NIMS and National Response Framework (NRF) is that:

- A. Incidents should be managed at the lowest jurisdictional level possible.
- basic premise of the NIMS

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MN QSO Party - cont'd from page 1

“signed up” to activate it. The web site will also track the rovers in real-time via APRS as the contest progresses.

This is a fun operating event with opportunities for everyone to participate. You can operate voice, sideband and FM, or digital, CW, PSK, RTTY, etc. Let's put Minnesota on the air on Feb 2nd.

Suggested frequencies: Voice

Band	Freq.	CST	GMT
10 SSB	28450	2:00 PM	2000
15 SSB	21350	1:00 PM	1900
20 SSB	14270	All Day!	All Day!
40 SSB	7250	All Day!	All Day!
80 SSB	3850	All Day!	All Day!
160 SSB	1870	5:30 PM	2330

Suggested frequencies: CW

Band	Freq.	CST	GMT
10 CW	28050	Noon	1800
15 CW	21050	11:00 AM	1700
20 CW	14050	All Day!	All Day!
40 CW	7050	All Day!	All Day!
80 CW	3550	All Day!	All Day!
160 CW	1850	5:30 PM	2330

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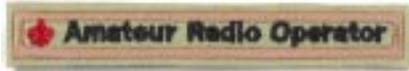
Great Lakes Recruit Training Command



GREAT LAKES, Ill. Command Master Chief Christopher R. Angstead, command master chief of Recruit Training Command (RTC), records a video asking fleet Sailors to look for orders to return to the Navy's only boot camp as recruit division commanders. At present RTC is 76 percent manned with 442 recruit division commanders training between 5,000-to-6,000 recruits. The eight-week training at RTC turns more than 37,000 civilians into basically trained Sailors annually.

Operator Rating

The National Radio Scouting Committee is pleased to announce that the BSA Awards and Insignia Committee has approved the Amateur Radio Operator Rating Strip for wear on youth and adult leader uniforms. This rating strip recognizes the member's availability as an amateur radio operator for communication services for events and activities as well as emergencies.



All registered youth members and adult leaders who also hold a valid amateur radio license, of any class, issued by the Federal Communications Commission are eligible to wear the rating strip. The Supply order number for the rating strip is #617431. Retail price is \$1.59

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*"Waddya mean, 'I burnt the oatmeal?' . . .
that's your coffee!"*

Mrs. Herman

AERO Course Offered - cont'd from page 1

register by Thursday February 7th, 2013.

AERO 1 focuses on proper radio procedures, presentation in person and on the radio, and how to prepare for deployment in time of need. Registration for AERO 1 must include the following information: Name:, Call Sign, Address, Phone #, Radio Club / ARES Group (if you belong to one), Type of HT (Single band, Dual Band, Tri-band).

AERO 2, focusing on net control operating procedures, will be held on Saturday February 16th, 2013. The class session will be from 9:00 AM to 12:00 Noon. The doors of Maple Grove fire station #2 will open at 8:30 AM. We will then have a practical net exercise from 1:00 PM to 4:00 PM. Prerequisite for this course will be AERO 1. You CANNOT register for both classes at the same time. AERO 1 MUST be completed before taking AERO 2. The cost of this course is \$0.00. You will need the following equipment: a notebook, HT, and writing instrument. Please register with Dan Peitso, N0PIY at N0PIY@arrl.net or phone 763-755-3262. Internet registration is preferred. Please register by Thursday February 14, 2013.

AERO 2 focuses on Nets with emphasis on Net Controllers, Net Creation, and establishment of Net protocols. Registration for AERO 2 must include the following information: Name:, Call Sign, Address, Phone #, Radio Club / ARES Group (if you belong to one), Type of HT (Single band, Dual Band, Tri-band).

BREAK - OVER

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 should you do if a CW station sends "QRS"?
 - A. Send slower
 - B. Change frequency
 - C. Increase your power
 - D. Repeat everything twice
2. What is the best speed to use answering a CQ in Morse Code?
 - A. The fastest speed at which you are comfortable copying
 - B. The speed at which the CQ was sent
 - C. A slow speed until contact is established
 - D. 5 wpm, as all operators licensed to operate CW can copy this speed
3. What does the term "zero beat" mean in CW operation?
 - A. Matching the speed of the transmitting station
 - B. Operating split to avoid interference on frequency
 - C. Sending without error
 - D. Matching your transmit frequency to the frequency of a received signal.

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

Q: Why did the pony have a sore throat?



A: Because he was a little horse.

December General Pool Answer

1. When is an amateur station allowed to use any means at its disposal to assist another station in distress?
 - A. At any time during an actual emergency
2. Which of the following describes full break-in telegraphy (QSK)?
 - A. Transmitting stations can receive between code characters and elements
3. What does it mean when a CW operator sends "KN" at the end of a transmission?
 - A. Listening only for a specific station or stations

ICS Message Traffic

By: Hal, KD5HW

Early in the ICS implementation, hams wanted to know how to prepare to serve in such incidents. At the time, neither us hams nor our OEM folks had had any training, and near zero field experience in an ICP. We could not find any guidance in the FEMA/DHS instructions, but we did find a 'General Message Form' and latched on to that as an *example* of what we might be asked to transmit.

Unfortunately, many hams took that information far too literally and presumed the IC-213 was the only form to expect. Worse, many decided that the IC-213 was silly and come up with 'better' ways to move a message and even manage an incident/event. Many went on to develop communications preparedness plans and even software based on that misconception.

Small wonder why Amateurs are not well received in many areas.

Those of us that have completed command staff training and have actually served in ICP's now have a little better understanding of what to expect.

Here is a simple overview of the process (capitalized words have specific meanings): near the end of each Operation Period, the Command Staff sits down and prepares the Incident Action Plan (IAP) for the Next Operational Period. At shift turnover, the incoming and outgoing Operations Chief go over the new IAP, and the incoming Operations Chief then executes the IAP.

The IAP consists of several forms. For a medium sized Event (10-20 thousand folks, 50 responders), my IAP contained the IC 201, 202, 203, 204, 206, 207, 209, 211, 214, 215AR, 215-A, 218, 220, and 221.

If you were assigned to the ICP, the IC might ask you to transmit the whole package. More likely, you might be asked to transmit the 201, 202, 203, and 205. Then you would prepare to receive the IC 211, IC 214, and 221. If you were working a staging area or camp, then you would expect just the reverse: receive the 201, 202, 203, 205, and send the 211, 214, and 221.

The IC-213 might be used to order supplies, and, depending on the jurisdiction, may have to be signed. All of the forms would be signed, however, it may not be required to transmit actual signatures. The exception might be the IC211 which is mostly signatures.

All of these forms are subject to change, and many do change on a regular basis. Some even change while the event/incident is in progress.

When you receive these forms, then you would want to complete the traffic within an hour at the most.

OK folks, that's an overview of the mission. You may accept the mission/challenge or you may decline. If you want to know what these forms are and what they might contain, then I suggest

cont'd col. 2

Analysis of Antenna Mast Strength

Common antenna tower and mast configurations consist of a round tubular mast protruding from the top section of a fixed tower. This analysis deals with the portion of the mast that protrudes above the top of the tower.

The bending stress on an antenna mast is dependant on the following items:

- The wind load area of the antennas mounted on the mast;
- The position of the antennas mounted on the mast;
- The cross sectional area of the mast;
- The velocity of the wind.

The strength of the mast is determined by the following mast properties:

- The yield strength of the mast material;
- The wind force on the mast which is determined by the cross-sectional dimensions of the mast.

Common antenna tower and mast configurations consist of a round tubular mast protruding from the top section of a fixed tower. This analysis deals with the portion of the mast that protrudes above the top of the tower.

So what? Calculate the solution to the problem with the spreadsheet located (for download) here: <http://www.dxzone.com/cgi-bin/dir/jump2.cgi?ID=17127> Now, that wasn't so hard. Was it!

BREAK - OVER

Frozen Gizzard Exercise



Weekly Net
Monday 7:00 PM 146.535 MHz

cont'd from col. 1

that you attend the training, I can tell you that, in my training, the 211 (sign in sheets), 214 (unit logs), and the 221 (Demobilization Check Out) were stressed as to importance. The 221 was also stressed as one that would be prepared by people very tired and just want to go home.

Of course, there are likely many other forms. But these are all the ones I have been trained on and have actually used in the field.

BREAK - OVER

RFI Problem Solved

How to Get Rid of RFI-Prone Devices

(This story appeared on the RFI group at rfi@contesting.com.)

I may have posted this here once before, but just in case... In another recent post, someone bemoaned how it seems impossible to do anything to encourage people to get rid of their problematic (from an RFI standpoint) equipment. I have, exactly *once,* been able to pull off such a feat off without the owner's knowledge. Here's the story:

About 20 years ago, when I lived in Colorado, I had a ne'er-do-well neighbor behind me by the name of Bobby. This was a bit of a jerk and had complained about my radio activities in many different ways having nothing to do with radio. But, once he came over to my place with some "muscle" in tow (his brother-in-law, who was actually named Bubba) to tell me how much RFI trouble I was causing. I happily showed him and Bubba the station, demonstrated that I didn't bother any of my stuff, handed 'em an FCC RFI booklet, and sent 'em away somewhat confused. Bubba was pretty reasonable and told my neighbor, Bobby, that everything seemed OK at my house, so...? I never heard much more from Bobby, though I did get a phone call or two, always when I *wasn't* on the air.

Then Bobby got a touch lamp in his second-floor living room, which was easily visible from my operating position.

That touch lamp was a pretty sensitive receiver and even at 100W, it went completely nuts on 20 m. I use CW almost exclusively, but SSB did it in, too. For a long time, he couldn't figure it out, but one day while I was finishing up catching some DXpedition, I saw him out on his balcony looking carefully over at my house. I ducked down out of sight and programmed my keyer to send "RFI TEST DE N5OP" continuously at 20 s intervals. I then went out and mowed my lawn. He watched me mowing my lawn while his touch lamp went nuts and finally went back inside and unplugged it. He certainly couldn't accuse me of the problem because I was outside, mowing the lawn!

But that's not the end: I had a good friend over one night who had just passed his Tech. I saw my antagonist in his living room, watching his TV, with his beloved touch-lamp on.

We grabbed some binoculars and I said "Watch this."

Keeping all lights off, I programmed my keyer with "RFI TEST DE N5OP" and fired up my TS-930S. As if by magic, his touch lamp began its routine. He got out of his chair and looked at my house. Dark as a tomb. He readjusted the lamp and just as he sat down, it started again. He did this trick several times and every time, as if on cue, it went nuts again right about when he sat down. By this time my friend was almost unable to breathe due to his laughter. But then came the "piece de resistance:" the lamp started its routine again and this time the guy leaped out of his chair, grabbed the lamp and, shaking it as if he were choking

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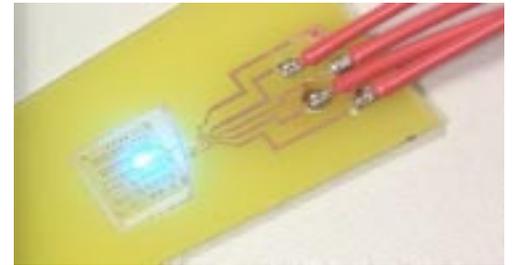
Fireflies Bring Us Brighter LEDs

Fireflies ... they've allowed us to image the bloodstream and they've inspired the creation of a light that could run on waste. Now, they've helped an international team of scientists get over 50 percent more light out of existing LED bulbs. The secret lies in the insects' scales.

More specifically, the secret lies in the scales of the *Photuris* firefly. In all types of fireflies, their bioluminescence is emitted through the cuticle of their exoskeleton. In most cases, the cuticle reflects some of that light back inwards, diminishing the total amount of light given off – a similar problem occurs with the outer coatings of LED bulbs.

It was discovered that in the *Photuris* genus, however, scales in the cuticle

possessed optical qualities that boosted the amount of light that could get through. These qualities were concentrated along the jagged edges of the roof-shingle-like scales.



The gallium nitride LED bulb, with its outer coating modeled after the firefly scales (Photo: Nicolas André)

in order to test if the same principle could work for LEDs, a researcher at Canada's University of Sherbrooke deposited a light-sensitive material on a standard gallium nitride LED bulb. He then used a laser to etch a profile into that coating, similar to that of the edges of the firefly scales. As a result, the bulb was able to emit approximately 55 percent more light.

"The most important aspect of this work is that it shows how much we can learn by carefully observing nature," said Annick Bay, a Ph.D. student at the University of Namur in Belgium, which took part in the study. The European Synchrotron Research Facility in France and Belgium's Université Catholique de Louvain were also involved in the research.

BREAK - OVER



cont'd from col. 1

it, ripped it out of the wall socket and *threw* it down a hallway. Needless to say, that put the poor touch lamp out of its misery and solved my RFI problem.

My friend complained for some days afterward that his sides hurt from so much laughing. Mine did, too.

BREAK - OVER

Pervasive Vulnerability in Drones

Today's drone aircraft have a "pervasive vulnerability" according to the Pentagon. They share a weakness with just about every car, medical device and power plant on the planet.

The control programs for these crucial machines are written in a fundamentally insecure manner, says Dr. Kathleen Fisher, a Tufts University computer scientist and a program manager at the Defense Advanced Research Projects Agency (DARPA). There's simply no systematic way for programmers to check for vulnerabilities as they put together the software that runs our drones, our trucks or our pacemakers.

In a homes or offices, this weakness is only a medium-sized deal: developers can release a patched version of Safari or Microsoft Word whenever they find a hole; anti-virus and intrusion-detection systems can handle many other threats. But

updating the control software on a drone means practically re-certifying the entire aircraft. And those security programs often introduce all sorts of new vulnerabilities. "The traditional approaches to security won't work," in a drone says Fisher.

Fisher is spearheading a far-flung, \$60 million, four-year effort to try to develop a new, secure way of coding and then run that software on a series of drones and ground robots. It's called High-Assurance Cyber Military Systems, or HACMS.

Drones and other important systems were once considered relatively safe from hack attacks. (They weren't directly connected to the internet, after all.) But that was before viruses started infecting drone cockpits; before the robotic planes began leaking their classified video streams; before malware ordered nuclear centrifuges to self-destruct; before hackers figured out how to remotely access pacemakers and insulin pumps; and before academics figured out how to hijack a car without ever touching the vehicle.

"Many of these systems share a common structure: They have an insecure cyber perimeter, constructed from standard software components, surrounding control systems designed for safety but not for security," said Fisher.

It'd be great if someone could simply write some sort of universal software checker that sniffs out any program's potential flaws. One small problem: Such a checker can't exist. As the computer science pioneer Alan Turing showed in 1936, it's impossible to write a program that can tell if another will run forever, given a particular input. That's asking the checker



Armed MQ-9 Reaper drones like this one are used by both the U.S. military and the CIA. Photo: USAF

to make a logical contradiction: Stop if you're supposed to run for eternity.

"There was a project led here at DARPA a few years ago [to write software for] synthetic aperture radar. They had a non-expert specify [what should go into a synthetic aperture] radar program," Fisher adds. "It took the system about 24 hours to produce an implementation...instead of three months, for the traditional version, and it ran twice as fast. So the new program was better, faster and was accomplished with a lower level of expertise. We hope to see things like that."

The goal at the end of HACMS is to have the robotic Arducopter running only fully verified or synthesized software. (The other vehicles will have some, but not all, of their "security-critical code" produced this way, Fisher promises.) And if the project works out as Fisher hopes, it could not only help secure today's largely remote-controlled drones. It could make tomorrow's drones fly on their own — without being hacked.

BREAK - OVER



ARES Breakfast
Saturday February 9th
7:30AM
Perkins Restaurant
Savage, MN

NECOS Schedule January 2013

7 Jan	KB0FH Bob
14 Jan	KC0YHH Tony
21 Jan	N0PI Dan
28 Jan	W0NFE Bob
4 Feb	KB0FH Bob
11 Feb	KC0YHH Tony
18 Feb	N0PI Dan