



# ARES COMMUNICATOR

## Information for Scott County Amateurs



April, 2014

Accurate, Reliable Emergency Communications for our Community

Volume 14, Number 4

## Field Day 2014

Saturday June 28<sup>th</sup>

Tens of thousands of amateur radio groups across the country will take to the airwaves with the goal of contacting as many other hams as possible using portable stations during the last full weekend in June.

The emergency communications group activity called Field Day is coordinated by the American Radio Relay League and is considered the largest nation-wide emergency communication contest of the year.

The Hams of Scott ARES will be operating their Field Day station from Trost City park in Savage for a change of location this year. Trost Park is located at 5455 137th Street West which is on the corner of Vernon Blvd. and 137<sup>th</sup> street. This spot will be more visible and easier for curious observers to find.

The Field Day activity will begin Saturday morning to be prepared for the 1 PM start of on-air activity. The operation will end with the close of the park at 10 pm.

The Field Day event is coordinated by the American Radio Relay League and is considered the largest nation-wide emergency communication contest of the year. Maps and more information is available at the Scott ARES website located at [www.scottares.org](http://www.scottares.org)



## Dakota Division Website

By: Greg K0GW

The Dakota Division now has its own web page at [www.arriidakota.org](http://www.arriidakota.org)

Until now, there hasn't been a single site covering all three Sections in the Division. The new site provides a Division-wide calendar, a Division News section, and e-mail addresses for people in Division- and Section-level elected and appointed positions.

Unlike the ARRL Division e-mail, the site and its News section can be read by anyone, including Division non-members. There is an RSS feed available (on the right-hand side of the news page), so if your feed reader supports it, you will get pinged whenever a new message is posted—no need to check back on the site.

Please let other hams know about this site. Not all members received this announcement via e-mail, so you may be letting someone know who has no other way to find out.

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## ARES Activities

**Weekly Net Monday 7 PM 146.535 mhz (s)**

**Breakfast Saturday, May 10th**

**Digital Monday, May 12th**

### 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

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

EDITOR: Bob Reid, Scott County Emergency Coordinator

Snail Mail: 13600 Princeton Circle  
Savage, MN. 55378

E-Mail: [N0BHC@aol.com](mailto:N0BHC@aol.com)

Phone: Home 952-894-5178 Portable 612-280-9328

## 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. Select the TRUE statement about the Incident Action Plan.
  - A. Covers the entire incident from start to finish.
  - B. Must be a written document that is distributed to all responders.
  - C. Establishes the overall incident objectives, strategies, and tactics.
  - D. Presents detailed cost accounting for all incident resources.

Check next month's ARES Communicator for the solution

## March NIMS Knowledge Solution

Which entity provides a structure for developing and delivering incident-related coordinated messages by developing, recommending, and executing public information plans and strategies?

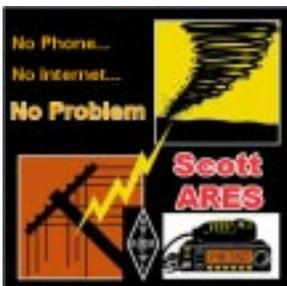
- B. Joint Information System

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### Scott County ARES Contacts

Emergency Coordinator  
Bob Reid N0BHC  
13600 Princeton Circle  
Savage, MN 55378  
952-894-5178  
N0BHC@arrl.net



## Rare 'Magnetic Crochet'

On March 29th at 17:52 UT, the magnetic canopy of sunspot AR2017 erupted, producing a brief but intense X1-class solar flare. NASA's Solar Dynamics Observatory recorded the extreme ultraviolet flash:

Radiation from the flare caused a surge in the ionization of Earth's upper atmosphere—and this led to a rare magnetic crochet, measuring 17 nT at the magnetometer in Boulder, Colorado.

A magnetic crochet is a ripple in Earth's magnetic field caused by electrical currents flowing in air 60 km to 100 km above our heads. Unlike geomagnetic disturbances that arrive with CMEs days after a flare, a magnetic crochet occurs *while the flare is in progress*. They tend to occur during fast impulsive flares like this one.

A magnetic crochet arises from the increased ionisation in the D and E layers of the ionosphere caused by the massive increase in X-ray radiation generated by the solar flare. This ionisation changes the properties (especially the conductivity) of these ionospheric layers allowing electric currents to flow more easily. It is the magnetic effect of these currents which produce the jump in the earth's magnetic field. As the flare declines, the ionospheric layers quickly return to their previous state, the electric currents in the layers return to normal, and the change in the magnetic field ends.

Magnetic crochets are quite rare because they are only observed during large flares which rise to a peak very quickly. Also, they are mostly observed in locations close to the sub-solar point (i.e. the point on earth when the sun is overhead). In the case of the November 04 event, the sun at Canberra was well to the west. Similar magnetic effects were observed from many stations in the sunlit hemisphere at the time.

The explosion also hurled a CME into space. The bulk of the CME is sailing north of the sun-Earth line, but there appears to be a faint Earth-directed component that could deliver a glancing blow to our planet's magnetic field on April 1-2.

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## DX Info

### HG0 Hungary

The HAFF DX operation operators Laci/HA0HW, Sanyi/HG8LW/P, Geza/HA8DD/Pand Zsolt/HA8FY/P will be active as HG0WFF from Hajdusagi TK (HAFF-019) located on East Hungary on Saturday, April 19th. Activity will start at 6:00 UTC until they use up all their batteries and gasoline for the generator. Operations will be on 40-10 meters using CW, SSB and the Digital modes. QSL via HA0HW.

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## 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.

1. What does the judicial branch do?
  - A. resolves disputes
  - B. decides if a law goes against the Constitution
  - C. reviews laws
  - D. all of these answers
  - E. interprets laws passed by the Congress

## March Citizenship Exam Answer

1. After the Vice President who is next in line of succession for the presidency?
  - A. Speaker of the House

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## Chocolate Dipped Bacon



Chocolate dipped bacon is an instant dynamic duo. It's incredibly easy to make and a crowd pleaser every time with its union of salty, crunchy, cured bacon and smooth, creamy, sugary chocolate.

You'll find it won't stay on the plate too long. Whip it up for your next party, decadent morning brunch, or just for fun.

Check out the chocolating of bacon process at the Instructables site: <http://www.instructables.com/id/Chocolate-Dipped-Bacon/>

## 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 is a geomagnetic storm?
  - A. A sudden drop in the solar-flux index
  - B. A thunderstorm which affects radio propagation
  - C. Ripples in the ionosphere
  - D. A temporary disturbance in the Earth's magnetosphere
2. Which of the following is a good indicator of the possibility of sky-wave propagation on the 6 meter band?
  - A. Short skip sky-wave propagation on the 10 meter band
  - B. Long skip sky-wave propagation on the 10 meter band
  - C. Severe attenuation of signals on the 10 meter band
  - D. Long delayed echoes on the 10 meter band
3. What does LUF stand for?
  - A. The Lowest Usable Frequency for communications between two points
  - B. The Longest Universal Function for communications between two points
  - C. The Lowest Usable Frequency during a 24 hour period
  - D. The Longest Universal Function during a 24 hour period

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



## March General Pool Answers

1. In the PACTOR protocol, what is meant by an NAK response to a transmitted packet?
  - A. The receiver is requesting the packet be re-transmitted
2. What is the solar-flux index?
  - D. A measure of solar radiation at 10.7 cm
3. How might a sky-wave signal sound if it arrives at your receiver by both short path and long path propagation?
  - D. A well-defined echo might be heard

## Case of : The Offending Furnace



One Ham explains how he tamed a wild RFI generator in the basement. His new furnace was the culprit. He provided the reflector with information on his solution.

I found recently that my furnace was creating terrible RFI on 40m (and 20m too). I could only hear the strongest stations and could barely see them on my panadapter.

After much reading I started investigating to see ways to mitigate it. I tried ferrites at first on the likeliest culprits and even tried a line filter on the incoming line. Some more investigating and emails to the various component manufacturers led me to discover the culprit.

It turns out that my Rheem contour high efficiency furnace has a 3-phase draft inducer motor. Rheem has a control board that creates a pseudo 3-phase signal from the 110VAC single phase feed.

Now how to fix it? Well it turns out the simplest solution was the best. I

Replaced the four wires that went from the controller board to the motor with a single 4-conductor shielded wire. The shield was connected to ground on both ends (this worked best) I'm happy to say my RFI is completely gone. I do have a 3-phase line filter just in case.

Good engineering practices were followed.

I left the factory wires abandoned in place, should I need to plug them back in for some reason. I also ensured that the wire I used met the same rating as the original with regards to voltage, AWG, temperature, etc. I also made sure to use a cable gland so as to both prevent cable strain and to maintain the integrity of the isolation between the combustion and blower.

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*Happy*   
*Easter!*

## DX Info

### France Special Event

To commemorate the First World War (1914/1918) the following French special event stations will be active during 2014.

TM02REF will be active on April 13 0600 to 1600Z and

TM62PGM will be active on April 14 and 15 from 0600 to 1600Z.

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## Spring Skirmish

Saturday April 19<sup>th</sup>

It's Spring Skirmish time! TARA, Troy Amateur Radio Assn, turns mayhem loose on the ham bands! The Spring Skirmish contest requires that prefix chasers use any one, or more, of the digital modes (PSK, RTTY, Hell, MFSK, MT63, Throb, ASCII, SSTV, Domino EX, ALE400, JT65 and Packet) to make their contacts.

The contest exchange consists of the operator's name and their prefix. Sounds simple enough. The operation runs from from 0000Z through 2359Z.

Dust off those rig interfaces. Adjust your sound cards. Sort out the cables. Fire up the software. Review the Macros and check out the rules at: [www.n2ty.org/seasons/tara\\_dpx\\_rules.html](http://www.n2ty.org/seasons/tara_dpx_rules.html)

GL in TEST! 73

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## NBEMS Current Versions

The current version of the Fldigi manual is available at NBEMS Info page at [www.scottares.org](http://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.w1hjk.com/download.html](http://www.w1hjk.com/download.html) and <http://www.scottares.org/NBEMS.htm>

Here are the most recent releases as of April 18, 2014.

Software	Version
Fldigi	3.21.81
Flwrap	1.3.4
Flmsg	2.0.3
Flamp	2.1.02

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.



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# Severe Weather Alerts

## Be “Alert Savvy” to Stay Safe in Severe Weather

Understanding severe weather watches and warnings will help to keep you and your family safe during a disaster. FEMA and the National Weather Service (NWS) encourage everyone to learn this life-saving information and act if extreme weather threatens their area.

NWS alerts that are used to warn of severe weather, flood and tornado hazards include:

- **Severe Thunderstorm Watch** - Tells you when and where severe thunderstorms are likely to occur. Watch the sky and stay tuned to NOAA Weather Radio, commercial radio or television for information.
- **Severe Thunderstorm Warning** - Issued when severe weather has been reported by spotters or indicated by radar. Warnings indicate imminent danger to life and property to those in the path of the storm. Gather family members and pets and take shelter immediately. Have your emergency supply kit ready and continue to monitor your NOAA Weather Radio, commercial radio or television for more information.
- **Tornado Watch** - Tornadoes are possible. Remain alert for approaching storms. Watch the sky and stay tuned to NOAA Weather Radio, commercial radio or television for information.
- **Tornado Warning** - A tornado has been sighted or indicated by weather radar. Take shelter immediately.
- **Flood Watch** - Flooding is possible. Tune in to NOAA Weather Radio, commercial radio or television for information.
- **Flash Flood Watch** - Flash flooding is possible. Be prepared to move to higher ground; listen to NOAA Weather Radio, commercial radio or television for information.
- **Flood Warning** - Flooding is occurring or will occur soon; if advised to evacuate, do so immediately.
- **Flash Flood Warning** - A flash flood is occurring; seek higher ground on foot immediately. Do not attempt to drive into flooded areas or walk through moving water.

Be aware that sirens are designed as an outdoor warning system only to alert those who are outside that something dangerous is approaching. A NOAA Weather Radio can be critical to ensure you're alerted to dangerous weather when indoors.

“The National Weather Service provides accurate and timely warnings and advisories, but they are only effective if people receive them, understand their risk, and take the correct action to protect themselves,” said Teri Schwein, Acting Central Region Director, National Weather Service. “Everyone should make time to prepare themselves before severe weather strikes by signing up for local weather emergency alerts, understanding NWS warnings and developing an emergency action plan.”

“Wireless Emergency Alerts (WEAs) sent to a mobile device are also used to notify individuals of potentially dangerous weather conditions,” said Andrew Velasquez, regional administrator, FEMA Region V. “If you have a WEA-capable phone and your wireless carrier participates in the program, this will enable you to be immediately aware of potentially life-threatening emergencies.”

You can find more information about WEA at [www.fema.gov/wireless-emergency-alerts](http://www.fema.gov/wireless-emergency-alerts), and for valuable tips to help you prepare for severe weather visit [www.ready.gov/severe-weather](http://www.ready.gov/severe-weather) or download the free FEMA app, available for your Android, Apple or Blackberry device.

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## All Fools Day!

The term “All Fools” was probably meant as a deliberate stab at All Saints’ (November 1) and All Souls’ (November 2) days.

Although the origin of playing practical jokes and pranks on this day is hazy, many folklorists believe that it may go back to 16th-century France. At that time, New Year’s Day was considered to be March 25, which was followed by a full week of partying and exchanging gifts until April 1.

In 1582, the Gregorian calendar moved New Year’s Day to January 1. Those who forgot or refused to honor the new calendar were the butts of jokes and ridicule.



# At The Sound Of The Tone . . . .

## NIST atomic clock

If you're someone who is happy to spend an hour setting the clock on the microwave because it has to be just right, then the news out of the US Department of Commerce's National Institute of Standards and Technology (NIST) is right up your alley. NIST has announced the launch of a new atomic clock as the official standard for civilian time. Called NIST-F2, it is so accurate that it will lose only one second in 300 million years.

The announcement follows on the recent official release of performance data for the NIST-F2 to the International Bureau of Weights and Measures (BIPM), outside Paris, which uses the data from atomic clocks to generate the international time standard Coordinated Universal Time (UTC). Under development for over ten years, the NIST-F2 is three times as accurate and the NIST-F1 it replaces, which has defined the standard of timekeeping since 1999.

The F2, like the F1, is a "fountain clock" and the latest development of the cesium atomic clocks first used by the NIST in the 1950s. NIST has made a number of modifications to the F2, but the main way in which it differs from the F1 is in terms of temperature. The F1 works at 27 °C (80 °F), while the F2 operates at a much colder one, minus 193 °C (minus 316 °F). This lowers the background radiation that the machine has to contend with and because colder atoms move much slower, longer measurements can be taken.

The clock consists of a tubular vacuum chamber at the bottom of which are six infrared lasers and a ring-shaped chamber filled with microwaves produced by a maser. Cesium atoms are injected into the chamber and the lasers corral about 10 million of them into a ball and chill them to nearly absolute zero. Then two vertical lasers push the ball of cesium atoms up the tube before allowing it to drop down again, thousands of time each hour. This up and down motion is the basis for the name of the system.

As the ball bounces up and down, it passes through the microwaves and some of the cesium atoms become excited. When another laser hits them, they give off light, which can be measured as the frequency is adjusted. The frequency at which most of the atoms become excited and thus give off the most light is the natural resonance frequency of the cesium atom, or 9,192,631,770 Hz. So, the scientist measure the light coming off the ball of atoms, and when it reaches a peak, that's when the natural resonance frequency is struck.

What this has to do with time is that 9,192,631,770 Hz is the international definition of a second. In other words, all the scientists have to do is get the cesium atoms to vibrate 9,192,631,770 times, and you've got your second.

This means that the F2 isn't a clock in the sense that it marks

time; it defines what time is by defining how long a second is. Because of this, though it is possible to make more precise clocks, by definition they can't be more accurate until a new standard is set.

All this may seem esoteric, but modern technological society is dependent on atomic clocks. Clocks that can operate with extreme accuracy and precision are used to keep mobile phones, GPS, power grids, digital television, and the internet working. It's also used for radio astronomy, timestamps for financial transactions, and sets the standard for systems that automatically set the time for billions of clocks and computers each day, either directly or indirectly by radio broadcasts and the internet.

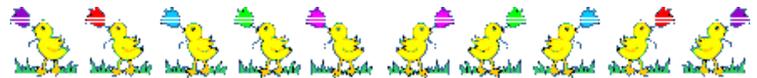
However, the F2 doesn't run these itself – in fact it only runs a few weeks a year. Its job is to act as the standard against which to set less accurate, but more durable atomic clocks to make sure they remain in synch with universal time.

The NIST point out that the commercial clocks that the NIST-F2 sets the standards for are as accurate as the best NIST clocks of 20 years ago, and the the technology inspires new technology as the clock improves. "If we've learned anything in the last 60 years of building atomic clocks, we've learned that every time we build a better clock, somebody comes up with a use for it that you couldn't have foreseen," says NIST physicist Steven Jefferts, lead designer of NIST-F2.

NIST plans to simultaneously operate both NIST-F1 and NIST-F2. Meanwhile, the US Naval observatory will continue to provide the time standard for the military. NIST also foresees the day when the limitations of the cesium clock will be reached and replaced by more advanced optical atomic clocks operating on higher frequencies that could be 100 times more accurate than the F2 as a new standard second is defined to match them.

You can check out a video that describes the NIST-F2 here: <http://www.youtube.com/watch?v=9ikbD7UGzoI>

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## DX Info

### Panama Canal Birthday

In celebration of the 100th anniversary of the completion and opening of the Panama Canal special event station HO100CANAL (Hotel Oscar One Zero Zero CANAL) will be QRT starting April 19th through August 15th.

Activity will be on 1.8 through 28 MHz on SSB, PSK, RTTY and CW. Some of the operators include HP1AVS, HP1COO, HP1CPE, and HP1DBK along with more stations from the Radio Club de Panama. More details about the 100th anniversary of the Panama Canal can be found at <http://micanaldepanama.com/centennial/> and more details about the operation can be found at <http://www.qrz.com/db/HO100CANAL>. QSL via HP1AVS.

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# Grow Light Problems

ARRL Letter 03/14/2014

The ARRL has formally complained to the FCC, contending that a “grow light” ballast being widely marketed and sold is responsible for severe interference to the MF and HF bands. The League urged Commission action to halt sales of the Lumatek LK-1000 electronic ballast and to recall devices already on store shelves or in the hands of consumers. In a March 12 letter to the Commission’s Enforcement Bureau and its Office of Engineering and Technology, ARRL General Counsel Chris Imlay, W3KD, said the ARRL’s own laboratory testing revealed that the Lumatek device exhibited excessive conducted emissions, in violation of the FCC’s rules.

“ARRL has received numerous complaints from Amateur Radio operators of significant noise in the medium and high frequency bands between 1.8 MHz and 30 MHz from ‘grow lights’ and other RF lighting devices generally,” Imlay told the Commission. “The level of conducted emissions from this device is so high that, as a practical matter, one RF ballast operated in a residential environment would create preclusive interference to Amateur Radio HF communications throughout entire neighborhoods.” An extensive Conducted Emissions Test Report detailing the ARRL Lab’s test results was attached to the League’s correspondence.



Grow lights are used by many indoor growers.

“[T]he Report concludes from the conducted emissions tests that the six highest emissions from the device in the HF band vastly exceed the quasi-peak limit specified in Section 18.307(c) of the Rules,” Imlay related. The ARRL further pointed out that, while a FCC sticker has been affixed to the device, it lacked FCC compliance information. FCC Part 18 rules require RF lighting devices to provide an advisory statement with the device, notifying users that it could interfere with radio equipment operating between 0.45 MHz and 30 MHz.

The League noted that the device is imported into the US and marketed and sold by Sears, where ARRL purchased its test sample, as well as by Amazon.com and other retail outlets. The

cont'd col. 2

ARRL also called on the FCC to consider enforcement proceedings against the importer, Hydrofarm Horticultural Products of Petaluma, California.

“ARRL respectfully requests that your office take the appropriate action with respect to this device without delay,” Imlay’s letter concluded. Copies of the correspondence were sent to the importer.

In separate correspondence to FCC Commissioner Ajit Pai, seeking his review of the complaint, Imlay said the Lumatek unit was “typical in terms of its performance, and many other types of ‘grow lights’ are being imported, marketed, sold and deployed now.” One of Pai’s main interests is the revitalization of the AM Broadcast Band, where noise can be an impediment to reception. “It is not at all an exaggeration that even one of these electronic ballasts operated in a residential neighborhood makes any AM Broadcast reception impossible,” Imlay asserted. The League included a copy of its test report with the letter to Commissioner Pai.

“Marked increases in the noise floor at MF and HF, year-over-year, are well-known to active Amateur Radio licensees, and it is devices such as the Lumatek LK-1000 and its progeny that are major contributors to this noise pollution,” Imlay added.

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## ARES Breakfast

Saturday May 10th  
7:30AM  
Perkins Restaurant  
Savage, MN

## NECOS Schedule April 2014

The first Monday or the month the net is held on the WB0RMK repeater, Carver. You will find WB0RMK here: 147.165/765 PL 107.2

- 7 Apr N0BHC Bob
- 14 Apr KD0UWZ Chad
- 21 Apr KC0YHH Tony
- 28 Apr N0BHC Bob
- 5 May KD0UWZ Chad
- 12 May KC0YHH Tony
- 19 May N0BHC Bob
- 26 May KD0UWZ Chad