

# HAM RAG



Visit our website for more club and area ham information  
In the Rockford area at <http://www.w9axd.org>

## RARA Mission Statement

A member association with common interest of public service to the community through the use of amateur radio.

## President's Log

Dear Members,

April showers bring ...

I think we are all happy with the addition of a radio related topic to our Monday night net.

We are having some noise on the input side of the 146.610 repeater. The Board of Directors agreed that if this causes any difficulties that we will immediately switch the Monday night net to the 147.000 repeater. (this has a "+" offset and a 114.8 pl) If you don't have equipment to join in on the net, get some, as it's a lot of fun.

This months general meeting presentation will be "Basic 10 Meter Dipole Antenna Design" by Dennis Johanson, K9VMY.

Hope to see you at the meeting!  
Robert Larson - KC9ICH



## April 2015

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### NEXT MEETING

**FRIDAY**

**April 10, 2010**

**7:00 pm**

**Presentation:  
"Making 10 Meter  
Dipoles"**

**By:  
Dennis Johanson  
K9VMY**

**Location:  
St. Anthony  
Medical Center  
Foundation Room  
5666 E. State Street**

## UPCOMING RARA EVENTS

**April 10th** - General RARA Meeting 7:00 pm at OSF

**April 28th** - RARA Board Meeting 7:00 pm at OSF

**May 8th** - General RARA Meeting 7:00 at OSF

**May 26th** - RARA Board Meeting 7:00 pm at OSF

Latest news and events on our web page: <http://www.w9axd.org>



## DX MUTTERINGS



March was a busy month for DX with several operations from remote African locations, a couple groups hamming it up from far flung Pacific and Indian Ocean islands, and ending the month with the annual CQ-WPX (world prefix) contest. Gene, W9GD, reports having worked 40 stations in the contest. Judging by the crowded bands, a good time was had by all.

The African DX-peditions included People's Democratic Republic of the Congo, Togo, and Botswana. 7QAA was also active from Malawi. Not your ordinary DX as the saying goes.

The Maldives Islands were active from the Indian Ocean, as well as Reunion Island, Rodrigues Island and Diego Garcia. The U.S. Navy operates a large base on DG. The last week of March C21EU was QRV from the island of Nauru in the Pacific. This was the site of a bitter WWII battle. Other Pacific islands heard were Norfolk, Saipan, Juan Fernandez, the Philippines, and Ogasawara.

Operator Dom, 3Z9DX, has received written permission from the government in Pyongyang to run a one-man DX-pedition from North Korea for five days in January/February 2016. He will be limited to 100 watts and a vertical antenna. This will truly be a tough one to work. He will have two government "assistants" with him when he's on the air. They will be the ones with the AK47s.

73,  
Scott - KG9SF

## Two More Radio Amateurs Join International Space Station Crew

The ISS ham radio population expanded to three, following the arrival of NASA astronaut Scott Kelly and Russian cosmonauts Mikhail Kornienko, RN3BF, and Gennady Padalka, RN3DT, on March 28 (UTC). Kelly, 51, and Kornienko, 54, will remain aboard the ISS for 1 year -- the longest space mission ever assigned to a NASA astronaut.

European Space Agency Astronaut Samantha Cristoforetti, IZ0UDF, will head back to Earth in May, after Kjell Lindgren, KO5MOS; Oleg Kononenko, RN3DX, and Kimiya Yui arrive at the ISS as part of a scheduled crew rotation. Cristoforetti has conducted several Amateur Radio on the International Space Station school contacts during her ISS duty tour.



## Amateur Radio Television Pioneer Don Miller, W9NTP, SK

Amateur Radio television pioneer and past ARRL Central Division Director Don C. Miller, W9NTP, of Waldron, Indiana, died March 22. He was 91. An ARRL Life Member, he was licensed in 1943. In the 1960s, Miller was instrumental in developing slow-scan TV (SSTV) for ham radio, working with Cop MacDonald, VY2CM, and others. Miller wrote several articles on SSTV for *QST*. In 1972, Dayton Hamvention® honored Miller as Amateur of the Year. Miller served as the Central Division Director from 1977 until 1980.

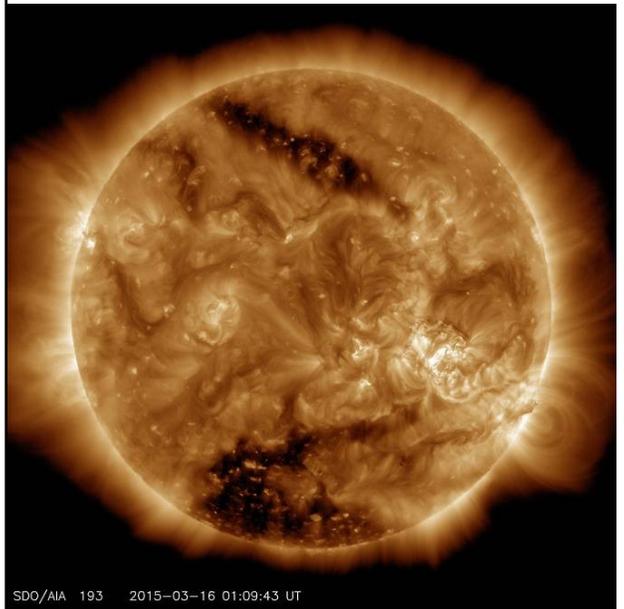
## THE ACTIVE SUN

NASA's Solar Dynamics Observatory, or SDO, captured this solar image on March 16, 2015, which clearly shows two dark patches, known as coronal holes. The larger coronal hole of the two, near the southern pole, covers an estimated 6- to 8-percent of the total solar surface. While that may not sound significant, it is one of the largest polar holes scientists have observed in decades. The smaller coronal hole, towards the opposite pole, is long and narrow. It covers about 3.8 billion square miles on the sun - only about 0.16-percent of the solar surface.

Coronal holes are lower density and temperature regions of the sun's outer atmosphere, known as the corona. Coronal holes can be a source of fast solar wind of solar particles that envelop the Earth.

The magnetic field in these regions extends far out into space rather than quickly looping back into the sun's surface. Magnetic fields that loop up and back down to the surface can be seen as arcs in non-coronal hole regions of the image, including over the lower right horizon.

The bright active region on the lower right quadrant is the same region that produced solar flares last week.



This image from NASA's Solar Dynamics Observatory on March 16, 2015, shows two dark spots, called coronal holes. The lower coronal hole was one of the biggest observed in decades.

## RARA Information Net

The purpose of the net is to disseminate RARA related information as well as other Amateur Radio related information. As a club sponsored activity, please check in with Net Control and help make this net a success. The Net Control is rotated between the club members, with all amateur radio operators encouraged to check in. (RARA members as well as non-members)

Let any of the officers and board know your thoughts and ideas. If you wish to be a net control operator, let any of the officers know. All are encouraged and welcome to participate.

**146.610 (pl 114.8) repeater at 8:00 pm, every Monday, except on holidays.**

## RESONATE FIRST, MATCH SECOND (OR NOT AT ALL)

By Eric Nichols, KL7AJ, WD2XSH/27 (Edited by Kurt, KE9N)

Whenever a newcomer comes to me with an antenna problem, the first thing I ask is "Where is it resonant?" More often than not, it's also the LAST question I need to ask. As we will demonstrate, not only is the reactance of any antenna FAR more dependent on frequency than is the radiation resistance, but that the SWR on a transmission line is FAR more dependent on reactance than it is on resistive mismatching. Although it's nice that affordable antenna analyzers abound nowadays, in the wrong hands they can lead to more confusion than enlightenment. A far more useful instrument for ANY new ham...at least until he has some transmission line theory under his belt...is a grid dip oscillator (GDO). Now, if you happen to have all three instruments: a GDO, an Antenna Analyzer, and an SWR meter, you can have even more confirmation of some important principles I'll describe. The input terminals of an antenna present an impedance in two parts, a reactance (preferably zero), and a real part, which ideally consists of mostly RADIATION RESISTANCE. For nearly any practical antenna, the CHANGE in feedpoint resistance from one end of a ham band to the other, is insignificant. Reactance is a whole `nother story, though. In fact, for all practical purposes, it is the change in REACTANCE alone which accounts for the change in SWR as you move from one end of a ham band to another. We actually have a "double whammy" working against us in this. REACTANCE changes quickly with frequency for most antennas, and SWR changes rapidly with REACTANCE. The latter factor is easily demonstrated with the Smith Chart, but if that is too daunting for you, any transmission line analysis program like TLA and others, confirms this as well. But, just in case you have a healthy suspicion of computer programs, you might want to test this out for yourself. GREAT! Let's go! String up a 40 meter dipole at a height where you can reach the feedpoint with a stepladder. Create a SMALL coupling loop at the feedpoint of the antenna. Just a couple of turns of wire, an inch or so in diameter, clipped across the input gap, should do the job. Now insert your GDO pickup coil into the coupling loop you just made, and sweep the oscillator for a dip. It should be very well defined. Note this frequency. (A GDO won't tell you anything about the RESISTIVE part of the impedance, but with some experience, you can get a crude estimate). Now log this resonant frequency. If you have an antenna analyzer, use it to confirm this resonant frequency. You should get  $x=0$  very close to the frequency you measured with the GDO. If your antenna analyzer has a built-in SWR function, great...let's do another check. First, look at the RESISTIVE part of the impedance. An antenna at about 1/10 wavelength altitude, over average ground, will have a radiation resistance of about 70 ohms...pretty close to that of free space, oddly enough. Let's call it 70 ohms. The SWR indicated by your analyzer should be 1.4:1. The SWR should always read the ratio of measured resistance to 50 ohms, whichever is larger. Note! This ONLY works at the precise resonant frequency!

*(continued on next page)*

Now, hopefully your resonant frequency is somewhere in the 40 meter band. Now, scoot the frequency up by 100 KHz and take another reading. Your radiation resistance probably went up a couple of ohms. But what about the reactance? You probably have about 20 ohms of reactance now, right? It's changed at least TEN TIMES as fast as the resistance. Now, let's move up 500 kc from the resonant frequency. Take another reading. Well, now the radiation resistance has gone up by 12 ohms or so. But look at that reactance. It's about 105 ohms, plus or minus some spare change! Your SWR is up to around 4.65:1. Let's insert a small series capacitor at the feedpoint, just enough to get rid of the reactance. We still have a radiation resistance of 82 ohms, but the reactance is now zero. But our SWR is now down to 1.64:1, which is good in just about anyone's book! How good is "good" when it comes to SWR? Let's use our 40 meter dipole on 80 meters! Scoot your antenna analyzer down to 3.5 MHZ. Take another reading. The R is 27.9 ohms...not great, but not too horrendous. But look at that reactance! -931 ohms! This gives us a whopping SWR of 627:1! Just how bad is an SWR of 627:1? Let's say you're using 100 feet of garden variety RG-8 coax. Calculation with TLA shows us that we have 13.898 dB line loss, or 95.9% line loss! So, if you're pumping 100 watts into your coax, about 4.1 watts actually reaches the antenna. (These figures can be confirmed by using your trusty SWR/POWER meter to measure the power at the INPUT of the line and then at the OUTPUT of the line.) But here's the good news. Let's add a pair of decent loading coils right at the feedpoint, changing nothing else. This isn't even the best place to put them; we can get even better improvement by placing them farther out. Guess what? By the mere addition of the loading coils (assuming they're the proper value to precisely achieve resonance, our SWR goes down to 1.79:1! The line loss is down to 9.2%! Just by the mere addition of a proper loading coil! Even better news yet...you don't need an expensive antenna analyzer to determine this proper value...all you need is your trusty old GDO to get a 90% improvement in antenna performance! Are we saying that resistance has no role in antenna performance? Certainly not. But amateur radio performance is about majoring on the majors and minoring on the minors. That means fixing what you can fix, and not wringing your hands over what you can't! You can't do much to improve the radiation resistance of an antenna...other than making it bigger. Sometimes making an antenna bigger is not an option, and even if it is, the improvements are usually incremental. But you can make VAST improvements by fixing the reactance...and it's a lot cheaper, too!

I would like to conclude by reiterating that there is ABSOLUTELY NOTHING SACRED ABOUT A SELF-RESONANT ANTENNA. This statement in no way contradicts any of the above discussion. Any method of resonating an antenna will make it resonant (duh!)...either by linear (cutting to length) or lumped elements (coils and capacitors). Remember a 5/8 wave antenna is NOT self-resonant...but it's a better antenna than a wave dipole...with the proper loading. However, if you're using a lossy transmission line, it's crucial that you obtain resonance at the LOAD end of the transmission line.

The Illinois Stateline Community Emergency Response Team (CERT) will be having our first organizational meeting on April 16, 7pm at the Harlem-Roscoe Fire Department Station #1. Our team currently has representatives from the Harlem-Roscoe and Rockton Fire districts. Others are welcome.

For more information about CERT, please check us out on facebook at:

<https://www.facebook.com/islcert>

or our website: <https://sites.google.com/site/statelinecert/>

Thank you,

Eric Wilkins

[hfdewilkins@gmail.com](mailto:hfdewilkins@gmail.com)

### AMATEUR RADIO EXAM NOTICE

On March 21, 2015 there were (4) successful candidates. (2) Technician Class and (1) General Class and (1) Extra Class Upgrade. Congratulations to:

Ronald M. Beck	Tech
Donald P. Clayton	Tech
Jamison T. Cook	General N9ZQZ
Jeffery J. Makeever	Extra KD9DBB

Thanks to Shari Harlan W9SH, Joseph Moore KA9LMK, and Rusty Cordell WB9QVV for volunteering their time.

Amateur Radio exams are held the 3<sup>rd</sup> Saturday of every month in Rockford IL. The next session is 9AM April 18, 2015. Walk-ins welcome. Check-in is from 9AM-10AM, no exams started after 10:30. We require two signature ID's and one photo. If you are a licensed Amateur Radio operator bring your current license and a copy. If you are using a CSCE for exam credit, bring the original and a copy (We need to see the originals & keep a photocopy of each). No copier on site. The test fee is \$14.00. Bring a non-programmable calculator.

Location:

OSF St Anthony Medical Center  
5666 E State St (Bus US20)  
Rockford IL

Exams are held in the St Francis Room (Main Entrance then turn right).

Jim Holich AB9SX

[jholich@comcast.net](mailto:jholich@comcast.net)

#### Editors Note

If you would like to have something published, please call me or email me at [kurt.eversole@gmail.com](mailto:kurt.eversole@gmail.com)

**Cut-off for the May 2015 Hamrag will be Thursday, April 30, 2015**

Kurt - KE9N, Editor

## UPCOMING CONTESTS

**The Rookie Roundup returns to SSB on Sunday, April 19, 1800 UTC through 2359 UTC.** This is a great opportunity for new operators to get on the air and learn the skills of contesting.

"Old Timers" should also take note of this event. Consider opening your station up to a rookie (or two) and become an elmer. Remember, the more operators are on the air, the more fun the 'Roundup will be for everyone.

Be sure to read the rules before the event. It is also helpful to be familiar with the logging and submission processes ahead of time. You're in the right place; browse this page for information and tips on operating the Rookie Roundup. We hope to hear you on the air!

### June VHF Contest, June 13-14, 2015

For amateurs in the US and Canada (and their possessions) to work as many amateur stations in as many different 2 degrees x 1 degree Maidenhead grid squares as possible using authorized frequencies above 50 MHz. Stations outside the US & Canada (and their possessions) may only work stations in the US (and its possessions) and Canada.

Stations in KH0-9, KL7 & KP1-KP5, CY9 and CY0 count as W/VE stations and can be worked by DX stations for contest credit.

## IN THE NEWS

**Vibroplex Purchases Bencher Amateur Radio Product Line:** Bencher Inc has announced the sale of its Amateur Radio product line to [Vibroplex LLC](#) of Knoxville, Tennessee, owned by Scott Robbins, W4PA.

"This sale ends Bencher's presence in the Amateur Radio field, thus allowing the principals, Jere Benedict, President, and Bob Locher, W9KNI, to move towards retirement," the announcement said. Product lines included in the sale include the Bencher BY series of iambic paddles as well as the ST series of single-lever paddles, the Bencher Hex Paddle, the N2DAN Mercury Paddle, and the Bencher RJ series hand keys. The sale also includes the HK-1 Universal Hook-up kit and the YA-1 Low Pass Filter. Vibroplex has agreed to honor the manufacturer's warranties and to provide parts and support, and it will continue offering Bencher products through existing marketing channels. Benedict and Locher expressed "gratitude to the Amateur Radio community for its interest and support since the sale of the first Bencher Amateur Radio products in the early 1970s."



**VIBROPLEX®**

I was in Woodman's Grocery the other day and saw this "Morse Code" on some bottles of wine.

I thought it was interesting "Marketing" for those of us who know the code.

Maybe this is a good way to practice our code hi hi!

73,  
Dennis/K9VMY



**RARA BOARD MEETING MEETS ON THE LAST TUESDAY OF THE MONTH AT 7:00 PM**  
**St. Anthony Medical Center 5666 E. State St. Rockford, IL**



P.O. Box 8465, Rockford, IL 61126

Website: [www.w9axd.org](http://www.w9axd.org)

E-mail: [kurt.eversole@gmail.com](mailto:kurt.eversole@gmail.com)

**Local Area Nets**

Monday 8 PM RARA Info. 146.610 - 114.8  
Friday Night Fun Net 8:00 PM 147.255 + 114.8  
Illinois Traffic Net (daily) 6:00 PM 3.905 LSB

place address label here

**April 2015**

**ROCKFORD AMATEUR RADIO ASSOCIATION  
MEMBERSHIP APPLICATION**

website: [w9axd.org](http://w9axd.org)

Membership Type :  New  Renewal  
Annual Fees:  \$10 - Student (up to age 24)  
 \$25 - Adult  \$15 - Senior (age 62+)

Above rate includes the RARA monthly newsletter, Ham Rag, via email  
Ham Rag via USPS: \$12 extra

Name \_\_\_\_\_  
Call Sign : \_\_\_\_\_  
Email Address : \_\_\_\_\_  
Address : \_\_\_\_\_  
Town : \_\_\_\_\_ State : \_\_\_\_\_ Zip : \_\_\_\_\_  
Home Phone # \_\_\_\_\_ Work # \_\_\_\_\_  
Cell # \_\_\_\_\_ Ext : \_\_\_\_\_  
Radio Interests \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
May we make your phone and e-mail available for other RARA members only?  
Yes  No   
Comments \_\_\_\_\_  
\_\_\_\_\_

RETURN THE COMPLETED FORM TO:  
ROCKFORD AMATEUR RADIO ASSOCIATION  
P.O. BOX 8465  
ROCKFORD, ILLINOIS 61126