

W9JOZ

Volume 1, Issue 4

April 2008

The President's Corner

Well, it's the end of March will winter ever leave? I have been hearing a lot of talk about antennas lately on the repeater. That must mean that spring is getting closer. I even heard some talk of getting some towers up, that's a good thing as Gary says height is might. I wonder how a tower will work with pontoons on it. Some parts of southern Indiana had 12 inches of rain while my son in Michigan got 14 inch of white stuff this week, so we are lucky here in Starke County. DX has been getting better or at least some days it has. Personally I have had a little trouble getting into Africa on 20M for the last few weeks.

Some of our club members have attended the updated Skywarn class and are ready when spring gets here. Hopefully this summer we can do a club event each month besides the meeting. If nothing else we will all look good in our NEW Tees.

Till next month

73

Tony W9AL

April Meeting

The meeting will be held at the Starke County Public Library in Knox. Agenda: field day, find a permanent meeting spot.



Members for 2008

The following are the only paid members for 2008.

WB9L-Mike	KC9HUB-Roy	KC9NFC-Dan
WB9CAO-Levi	N9CPX-Randy	KC9MFC-Joe
W3ML-John	KC9GKZ-Garland	K9CIV-Rich
KC9HUD-Dawn	WC2O-Bill	KC9KPG-Mike
N9LV-Mathew	AA9YQ-Joe	
KB9GPW-Steve	KB9OLZ-Gary	
WA9KRT-Don	W9AL-Tony	
KC9ISJ-Randy	KC9HUG-Janet	
KC9ISI-Bob	N9QYK-Paul	
WA9NGO-Tom	WO0P-Hugh	
N9JU-Russell	N9LU-Lisa	
KC9MRS-David	KC9NFD-Joe	

Remember to vote on Club plans you must be a paid member.

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Dan KB6NU

Build Something!

A couple of years ago, a group of us were talking on the club repeater, and the talk got around to building stuff. One of the guys said, "You can't really build anything anymore." I almost fell out of my chair. That's simply not true. Heathkit may be just a fond memory, but there are still many companies out there selling kits that are not only fun to build, but are useful additions to the ham shack.

Here are a couple of sources:

* Elecraft (www.elecraft.com). In my mind, Elecraft has become the premiere ham radio kit company, if not the premiere ham radio company, period. The new K3, for example, outperforms just about anything on the market by many accounts. Personally, I have built the KX-1, which is a real blast to operate from a park bench or to take on vacation. I also have and use the W1 wattmeter.

* TenTec (radio.tentec.com/kits). While perhaps known more for their ready-made rigs, they also sell a line of single-band transceivers and receiver kits.

* QRP Kits (www.qrpkits.com). QRPKits.Com sells kits that were originally projects of the Northern California QRP Club. My current General Class students are going to build the DC40A kit (\$40) as an exercise in building and as a way to learn about how radios work.

Below are some other companies whose kits have good reputations, but with which I have no personal experience:

* Small Wonder Labs (www.smallwonderlabs.com)

* Wilderness Radio (www.fix.net/~jparker/wild.html)

* Milestone Technologies (www.mtechnologies.com)

* Almost All Digital Electronics

(www.aade.com/index.html)

* FAR Circuits (www.farcircuits.net)

* Jackson Harbor

(home.att.net/~jacksonharbor/ham.htm)

* QRPme (www.qrpme.com/)

* Linear Amp UK (www.linamp.co.uk)

QRP clubs are also a good source of cool kits. The problem with QRP clubs is that they order parts only for a very short run of kits. Once they sell out, the kits

are no longer available. Even so, here are some clubs that are worth checking out:

* American QRP Club (www.amqrp.org)

* Four State QRP Club (4sqr.com/kits/kits.htm)

* NORTEX (www.kk5na.com/nortex.htm)

Ready to rock and roll? Here are a couple websites that you might want to check out before you dive in:

* Electronic Construction from A to Z

(www.mtechnologies.com/building/atoz.htm). This site includes a page that lists all the tools you'll need to become a successful kit builder.

* Crystal Sets to Sideband: A Guide to Building an Amateur Radio Station (www.qsl.net/k3pd/book.html). This site not only discusses kit building, but also radio theory.

* The Art of Kit Building

(ww2.netnitco.net/users/wt9w/kit%20building.html)

I hope that I've whetted your appetite for building a kit or two.

They're a lot of fun to build, and you really do get a rush from operating a radio or using a piece of test equipment that you built yourself. ☺



SIDEBAR ARTICLES

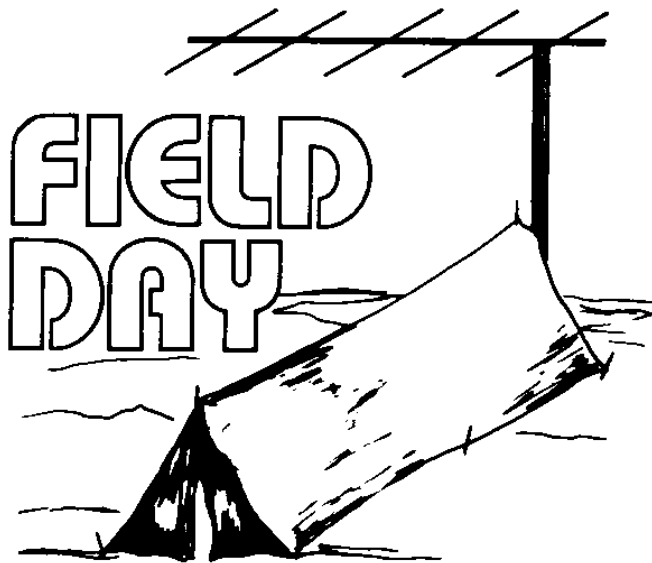
NORTH CENTRAL INDIANA HAMFEST

20 APR 2008

GRANT COUNTY, MIAMI COUNTY,
BLACKFORD COUNTY, & KOKOMO
ARCS

[HTTP://WWW.NCIHAMFEST.COM](http://www.ncihamfest.com)

OUR OWN FOR SALE PAGE IS AT
[WWW.W9JOZ.ORG](http://www.w9joz.org)



Randy, N9CPX is in charge this year.

HAM RADIO FAN^{DR}

Yup, it was a little chilly out that day. Wind made it cold. I call this my "Popsicle Satellite Station!" The station is an Icom IC-T7H dual band handheld. This is run into a MFJ diplexer to the home brew 'plumbers delight' 2 meter and 70 cm antennas. These antennas are designed to rotate in azimuth, elevation and also 45 degree tilt, all by hand. Sometimes the tilt comes in handy on AO-27.

When I first put these antennas together, I was a little skeptical. More likely, a lot skeptical. It being winter out, I couldn't field tune them. I deviated from the norm and built them exactly to specifications. (almost...). The 2 m beam tuned up on the analyzer and SWR meter combination to an almost exact 50 ohm impedance, and a 1:1 SWR. Floored me!

Anyway I have no way to check the impedance on the 70 cm, but the SWR matched a 1:1 also. Testing on the repeaters locally did very well. From ground level, I've gotten as far as Michigan City on the 2 m (5 watts).

The antennas seem to do a better job pointing up in the air! After getting the operating procedures down, I started getting contacts. There was a time when I jumped in with my "WB9L Handheld" and I couldn't copy the returns fast enough. What a rush! Field day in my own back yard! On a satellite even!

I'm sure the thrill will pass, but right now I'm having a ball with a cheap hamfest handheld and a junkpile antenna!

73

Mike WB9L

ISS Repeater Tips

How to use the ISS Cross Band Repeater

By Miles Mann WF1F

MAREX-MG (Manned Amateur Radio Experiment, North American Division)

What is a Cross Band Repeater:

The Kenwood D700 on ISS supports several modes, including a mode called Cross Band Repeating. It allows signals on one band (70cm 437.800) to be received and simultaneously transmitted on another band (145.800 in this example). This combination is called Mode B in the satellite world.

When the radio is in this mode, Terrestrial stations can talk to other ham using most standard dual band FM transceivers, just like using a Mono-Band FM Repeater.

Since the Repeater is 220 miles altitude, it will have much greater range than a typical terrestrial repeater, up to 1400 miles in distance.

When is the Cross band Repeater turned on:

There is no set schedule. Most of it depends on access to the ISS crews. If there a slight gap in the crew schedule we can sometimes get the Repeater Mode turned on. It should be noted that the radio has not been modified for operations in Zero Gravity. All electronics run hotter inside the Space Station. The Cross Band repeater modes does put more thermal stress on the radio than other modes.

What Frequencies do I use:

The Cross Band repeater mode listens on 437.800 MHz FM, and will Transmit on 145.800 MHz FM. You will need to compensate for Doppler, especially on the Uplink side 437.800. On the 2-meter band 145.800, if you can not compensate for Doppler, do not worry about it. Most of the time you will be able to hear the down link signal fine. The Doppler on 145.800 is only 3.6 kHz maximum. Your stock FM receiver will still be able to hear ISS when it is 3khz off frequency.

The 437.800 uplink is a completely different story. You will need to compensate for Doppler, every minute of the pass. If your radio has only a 5khz you will need to time your transmissions for when your Doppler error is less than 3khz different from you calculated uplink frequency. The closer your uplink frequency matches the receiver's frequency on the repeater, the stronger your signal will be into the repeater.

For All mode Users. If you can pre save these split frequencies in to memory channels that will make life much easier during the short 10 minute ISS pass window.

For VFO users, this chart will help you sweep across the 70cm band and will help you stay on the correct uplink frequency.

Down RX Up TX
1 145.803 437.790
2 145.803 437.793
3 145.802 437.795
4 145.801 437.798
5 145.800 437.800
6 145.799 437.803
7 145.798 437.805
8 145.797 437.807
9 145.797 437.810

For users with Radio designed for 5 kHz channels steps, program in the following channel splits.

Down RX Up TX
1 145.800 437.790
2 145.800 437.795
3 145.800 437.800
4 145.800 437.805
5 145.800 437.810

How to I calculate Doppler:

Most satellite tracking programs will calculate the Doppler frequency error for a satellite. Here is an example from InstaTrack. I assigned the satellite ISS, the radio frequency of 437.800. The display reports will now show me the approximate Doppler error for a given time. In this example, at 22:06 UTC time, the ISS will be in range of my location and the Doppler on 437.800 will be +10,240 Hz. In order for my signal to line up with the receiver, I need to transmit 10,240 Hz LOWER in frequency to compensate for Doppler + Positive shift in my frequency (Due to the 17,500 mile per hour speed of the Space Station).

So instead of transmitting on 437.800, I will transmit on 437.790.

Here is an example of a typical 3. ISS (ZARYA)

UTC Date Time Azim/Elev Range Doppler
03Feb2008 2206 237/ 4 1748 +10,240
03Feb2008 2207 238/ 9 1372 +10,182
03Feb2008 2208 238/ 16 1002 +10,002
03Feb2008 2209 240/ 30 652 +9,448
03Feb2008 2210 250/ 64 387 +7,184
03Feb2008 2211 47/ 55 420 -897
03Feb2008 2212 53/ 27 711 -7,876
03Feb2008 2213 55/ 15 1066 -9,600
03Feb2008 2214 55/ 8 1438 -10,046
03Feb2008 2214 56/ 3 1815 -10,195

-----end of pass-----

What do I need for Hardware:

Repeaters contacts can be made with a true dual band FM transceiver and Zero Gain antennas or better. Always keep your transmitter power to a minimum. An All mode system with true full-Duplex works the best. Just make sure you have your headphones on, to reduce the Feed back loop.

Azimuth and elevation beam antennas, will of course work the best.

The D700 will typically be running 10 watts while in cross band mode.

You do not need any CTCSS tones to access the ISS Repeater. The repeater is very sensitive to Audio levels. Keep your microphone audio levels turned down Low. If you do not have a Level adjustment, make sure you speak softly. Loud audio will just turn into pure distortion.

When will ISS be in range of my house:

You will need to do some more research here too.

Either use some web tracking programs such as are on the NASA web page or buy your own tracking program. If you are using your own tracking program, keep the data (KEPS) current. For ISS the data must be less than 2 weeks old.

The Space Stations orbit changes daily, you will need to learn about these predictable changes. Each day the first pass of the day will have shifted by approximately 40 minutes earlier in the day. In a few weeks, the first orbit of the day will be around Midnight local time. The whole orbit cycle of ISS repeats approximately every 8 weeks. You will need to learn how to take advantage of when ISS is in a good position. It may mean that you may have to get out of bed at a strange time for a short Repeater contact.

It is possible to see the Space Station with just your eyes on a good pass. The NASA web pages are a good source of information. From this web page below you can select your city and find out when the Space Station will be visible near your home.

City visibility page: <http://spaceflight.nasa.gov/realdata/sightings/>

General Tracking information:

<http://spaceflight.nasa.gov/realdata...ing/index.html>

ISS QSL:

The ARISS Europe team has posted a QSL address for ISS.

<http://www.rac.ca/ariss/oindex.htm#QSL>

So spread the world.

73 Miles WF1F

MAREX-MG

New MAREX Web pages:

Check out our future ISS Projects and tips on how to use the Chat room on ISS.

<http://www.marexmg.org/>

☺

March/April Birthdays

March 17th Russell, N9JU

March 21st Dawn, KC9HUD

April 5th Paul, N9QYK

April 7 Levi, WB9CAO

April 9th Joe, KC9NFD



Build a PSK 31 Station

Simple 14 MHz QRP PSK-31 Transceiver

Steven KD1JV has published on his website an easy to build design for a 20 metre PSK-31 transceiver.

The small lightweight rig is built with common, easy to get and inexpensive parts. Receive current is a modest 30 ma and transmit current averages 450 ma, with a peak output power of about 3.5 watts.

KD1JV shows the transceiver with a PDA running Pocketdigi software.

14 MHz QRP PSK-31 Transceiver

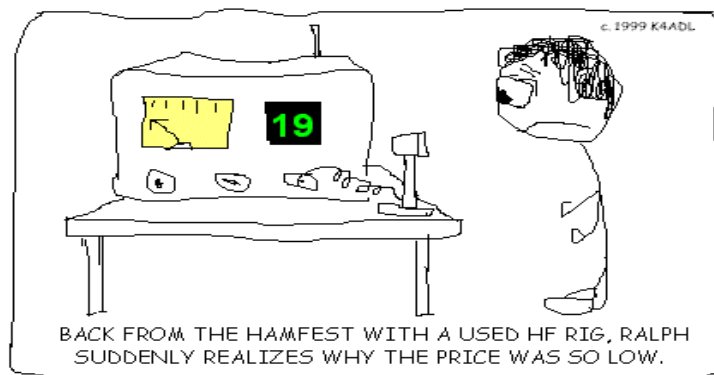
<http://kd1jv.qrpradio.com/PSKTX/SIMPLEPSKTX.HTM>

PocketDigi 1.0.9 - digital modes for the Pocket PC

<http://www.southgatearc.org/news/jun...pocketdigi.htm>

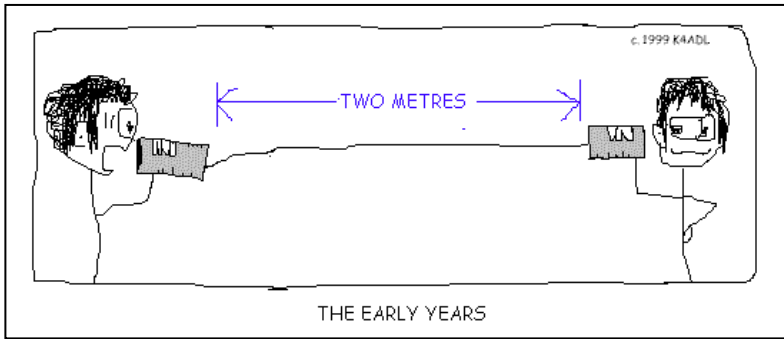
Amateur Radio PSK31 Tutorial Videos on YouTube

<http://www.southgatearc.org/news/sep...roduction.htm>



Was it really Ralph that bought that equipment or Garland?

Only Garland knows for sure.



THE EARLY YEARS



DELIGHTED AT HOW WELL HE GETS OUT WITH A KILOWATT AND AN INDOOR DIPOLE, BOB GIVES LITTLE THOUGHT TO THE EFFECTS OF NEAR-FIELD RF.

Amateur Radio is considered to be about 100 years old this year.

From <http://ham-shack.com/history01.html>

It was into this world that the early amateurs ventured. Actually, if we were to concentrate on the years prior to 1908, it would be more appropriate to say 'experimenters' rather than 'amateurs'. For in the first decade of wireless, there was little or no interest in personal communications with other stations; rather, the concentration was on technical development, either in the interest of pure science, or (more often than not) with an eye towards cashing in on this new medium. Experimenters were unorganized and, with the exception of those immediate stations with whom they ran tests, had no knowledge or interest in other pioneer stations. Any true 'amateurs' prior to 1908 have been lost in pre-historic obscurity. By 1908, however, the face of wireless began to change. Technical developments had reached their first plateau, and a number of major competitors had formed the first 'wireless trust'--United Wireless. With a temporary truce in effect, equipment was now more readily available to the public. Along with this, new magazines, such as 'Modern Electrics', were formed with wireless communication as the primary thrust.

**Happy Birthday
Amateur Radio**

100 years

The circulation of 'Modern Electrics' jumped from 2000 to over 30,000 in just two years. The year 1908 also saw the first 'handbook', 'Wireless Telegraph Construction for Amateurs'. It is difficult to know exactly how many amateur stations were on the air in this completely unregulated, laissez-faire era, but reliable estimates put the number of 'major' stations (i.e. those capable of communicating over 10 miles) at 600, while 'minor' stations with a one or two mile range probably numbered 3000 or more. Thus, if a year had to be arbitrarily chosen as the start of amateur radio, it would probably be 1908.



That's all folks for this month.

Happy Hamming!

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John, W3ML