



Hamgram

Newsletter of the Winona Amateur Radio Club, Inc.

-- When All Else Fails...AMATEUR RADIO --

August 2015

www.w0ne.org

WARC August Program- Aug. 20

WHAT: August Club Program: Another dynamic “odds and ends” program is planned this month with lots of updates on club activities of interest: New 440 Yaesu System Fusion analog/digital repeater; Field Day 2015 results; N2B station highlights; CTCSS tones on club repeaters; Dire Wolf software for a cross-band digipeater; Witoka tower updates, and other activities.

There will also be a social period after the program.

DATE & Time: Thursday, August 20, 2015 – 7:00 PM

WHO: All amateur radio operators and other interested persons are encouraged to attend.

WHERE: Conference Room B, Winona County Office Building, 202 West 2nd Street, Winona, MN. Doors will be unlocked from 6:45 to 7:15 PM. If you are late, please try the 146.835 repeater to have someone let you in.

REMINDER: CTCSS tones are now required to key up the WARC analog repeaters --100.0 Hz for the 146.640 and 444.225 repeaters and 131.8 Hz for the 146.835 repeater.

Matt Cummings, KD0YSY – SILENT KEY



We are saddened to report that Matt Cummings, KD0YSY, died suddenly at home on Thursday, August 6. Matt was an active member of the Winona Amateur Radio Club, joining the club shortly after he was first licensed in January 2014. He brought an enthusiasm and sense of accomplishment to his association with the club, and he was a joy to be around.

Matt participated in many of the club special event activities including Field Day, club contest stations and the W1AW centennial celebration. Matt also was very helpful in assisting the club improve its relationship with the Boy Scouts of America where he helped promote the club's Jamboree On The Air offering and also the club's involvement in sponsoring the Radio merit badge at the Gamehaven Merit Badge Fair. Matt will be sorely missed.

Our thoughts and prayers are with Matt's wife, Laura, and their two sons, Bryce and Ethan.

Fusion Digital + Analog FM 440 Repeater Now Up and Running

By Erik Brom, WB0NIU, Photos by Dan Goltz, WK0W

The Yaesu System Fusion repeater the club ordered back in December 2014 finally arrived in July, and was installed on 444.225/449.225 on August 6. It now requires a 100Hz CTCSS tone to access.



Yaesu is a latecomer to the digital audio game, and their strategy is to sell the repeaters at a low price, which will encourage activity and help them sell radios! The other part of their strategy is to set it up so it can be installed

on a standard analog FM channel so a gradual transition to digital can be made. The repeater can be configured to accept FM, digital (C4FM), or automatically switch between them. It can also be set up to transmit one or the other, or automatically repeat in the same mode as the input. The modes are NOT compatible with each other. That means that someone listening to the channel with an FM receiver will hear the digital signal as noise, and a C4FM receiver will not receive FM. Some digital radios include FM receivers, though, so they may automatically switch.

Les, K0BAD, provided this description of C4FM, based on this website: <http://www.radio-electronics.com/info/pmr-business-land-mobile-radio/apco-project-p25/basics-tutorial.php>

C4FM is form of frequency modulation where the carrier is shifted to one of four frequencies around the center (carrier) frequency. Each of these 4 frequencies (called a state) is a symbol for one of the four possible two-digit binary numbers. Thus each frequency represents a symbol that contains two bits of information.

In actuality, C4FM modulation is a type of Differential Quadrature Phase Shift Keying, DQPSK where each symbol is shifted in phase by 45° from the previous symbol. Because it is the phase (frequency) that is modulated in C4FM the amplitude of the carrier is constant. This preserves battery power in that frequency modulated transmitters are able to use highly efficient non-linear power amplifiers.

The data rate for the modulated C4FM carrier is 4800 symbols per sec, and each symbol conveys two bits of information and it is encoded on the carrier as shown in the table below:

Information (Binary data)	Symbol	C4FM Deviation
01	+3	+1800 Hz
00	+1	+600Hz
10	-1	-600Hz
11	-3	-1800Hz

Note that the symbol assignment (represented by a stepped voltage information signal) designates the harmonic of 600 Hz to set the frequency steps.

The lower level encoding of the binary data itself is not defined in C4FM and any number of schemes can be used. Thus, C4FM is well-suited for many forms of data and voice transmissions. This mode has a lot of potential for transferring data. At the moment, it can transfer pictures between radios that are capable, and do APRS-

like position reporting between people on the same repeater.

The repeater itself is completely programmable from its front panel touch screen LCD display. This includes the frequency, which can be on either the 2 meter or 70cm bands. It can be programmed for 5, 20, or 50 watts output. The built-in controller is fairly simple,

but it also supports use of an external controller. Ports on the back include AC power, DC power, remote controller, and data port. The data port, I think, is used for digital input and output, as well as a serial connection to a PC. We haven't explored this at all. It came with power cords and USB serial adapter to the data port. The front panel supports an optional microphone.



Since our current UHF repeater was failing, we have initially installed the Fusion repeater in its place at the KAGE FM site. This was simply a matter of swapping out the repeater and controller. The duplexer and the antenna system are unchanged. Like the other repeater, it is connected to our 12V backup battery, so it will continue to operate during an AC outage (although there is a generator at the site, which should come up fairly quickly).



As we develop the Witoka tower facility, we will most likely move this repeater there. It also depends on that location being acceptable to the Minnesota Repeater Council, which coordinates all repeaters in the state. I'm working with them now.

Operationally, there are some differences from the old repeater: Of most importance, it now requires a 100Hz CTCSS tone for access. There is only a very short tail message, no K or other courtesy tone. The autopatch is not functional at this time. We have set the repeater to AUTO mode, which means that when it receives an FM signal, it will transmit FM, but when it receives C4FM digital, it will also transmit in that mode. I encourage everyone to make use of this repeater with their current FM equipment, and to also try out the digital mode, when equipment allows. We could potentially interface the



old controller to the new repeater, which would make it sound like it used to, but this is not immediately planned. Thanks to Les, K0BAD, Dan, WK0W, and Krishna, KE0DXL, Syed, AC0VA, and Paul, K0ZXZYV for assisting in this project.

Island of Despair

By Bob Seaquist, W9LSE

There's SOTA, IOTA, POTA and more, the acronyms for outdoor adventure in Amateur Radio. SOTA, probably the best known, is "Summits On The Air," and it has Hams operating portable in mountainous areas. There are awards for activators (those who ascend to the summits) and chasers (who either operate from home, a local hilltop or are even Activators on other summits).

The latest such organization is US Islands On The Air Awards Program which promotes a system of island collecting for activators and chasers. Our club has plans to participate in the Island QSO Party noon Sat, Aug. 29, – 3 a.m. Sun, Aug. 30 possibly from Latsch Island.

ARRL's media and public relations manager, Sean Kutzko, KX9X, has participated in the islands program recently documenting his activation in the Florida Keys on YouTube. He made many contacts using his 5w Yaesu FT 817 so, to me, the May 9 US Island One-Day Getaway looked like a great idea.

A little research showed previous activations in the La Crosse area but none in Pettibone Park which is formally Barron Island so that was my choice. It was close and it has toilets.

I tried to keep the operation simple but stuff kind of added up to a fair bit of gear in the truck. My rig was an Elecraft KX3 along with the assorted support such as a microphone, headphones, connectors, a couple small lengths of coax and a couple wire antennas that fits in a small camera bag. Though the radio has batteries I brought a 7 Ah gel cell for power.



The easiest antenna to erect was the LNR Precision 10-20-40m Endfedz which hangs from a 33' fiberglass kite pole so it went up first. Lots of static and few signals.

Dang!



After trying to contact the few stations I heard I decided to switch to my old, reliable LNR Precision 20m Endfedz. It is similar to the 10-20-40 but it works well (most of the time). Lots of static and just a few more signals.

Dang!

Out came the Buddipole. Again the result was to hear lots of static and about the same number of signals I heard on the 20m Endfedz.

Double Dang!

Pettibone Park has a fine Frisbee golf course that came right by my location. Several frisbeers (?) stopped to ask what I was doing and if it was Ham radio. I told them I was operating Ham radio despite the fact I really was not getting any contacts. They seemed pleased to confirm it was, indeed, Ham Radio and I was very pleased to have visitors.

Finally after a lot of dialing around and an awful lot of calling CQ I landed a special event station operating from an airport in South Carolina. The operator was very generous with a good signal report and even chatted some.

That was it.

The United States Islands Awards Program requires 20 contacts in order to “qualify” an island so I’ll have to go back and pick up another 19 on another pretty day.... 73, Bob

Minutes of the July WARC Board Meeting are below. Minutes of the August meeting were not available at the time the Hamgram was released. They will be included in next month's issue.

Minutes of WARC Board Meeting held on July 6, 2015 at Watkins Hall, Winona State University.

Present: Lance (KB0YJU), Syed (AC0VA), Dan (WK0W), Les (K0BAD), Harro(KG6RLM), Ken (N0JP), Mike Forrester (W0IH), John(K2OPT), Les (K0BAD), Paul (K0ZYV)

Call to order by Paul at around 7 PM.

Minutes
Minutes Treasurer Report Committee Reports Other
Minutes
Minutes were approved. Board members took a bit time to read through the Minutes. No correction was necessary.
Treasurer Reports
Treasurer Report was on hand to discuss. Treasurer report was approved and subsequently discussions were held on Treasurer Report. Harro was not there initially. Lance mentioned we do have few more expenses that need to be paid. Paul mentioned our funding getting thin now with all the expenses. Lance mentioned he has not heard anything yet from Trinona organization about monetary donations. Lance mentioned our Tax Exempt numbers has been sent to Trinona as per request. Board also discussed sending money to farmers of APRS site near 835 Tower. Lance inquired when did we last send Money to them. Lance mentioned treasurer might have some records. Lance guessed it might have been at least six years since we sent them anything. Lance proposed sending \$ 600.00 with an apology note to Ron (Farmer). At his point Harro showed up for the meeting . Harro did not have check book with him and Paul suggested Harro to bring one to Board Meeting. Harro mentioned he tried to find record of sending money to Ron the farmer. Paul suggested we send \$ 600.00 (\$100.00 a year for last six years) to him. In addition we need to send \$ 200.00 for the crop damage that incurred during the last visit to 835

site when team (Syed, Erik, Dale) got blindsided by rain storm. Lance motioned for cutting two check, one for \$600.00 for the use of APRS and \$ 200.00 for the crop damage. Motion was approved unanimous. Syed expressed his gratitude to the Farmer Ron for help during the Rain Storm and subsequent issue when car went to crop field. Board also approved to pay Les \$ 500.00 for the Yaesu Repeater which was received lately. Paul has possession of the new Repeater. Lance and Paul plan to get together to program the new Repeater. Lance stated after an inquiry that it was always plan to use Yaesu Repeater as 440 Repeater. Board next discussed use of Yaesu Repeater. Les provided some expert opinion.

Public Service Committee Report

Dan was next with Public Service Committee Report. The committee has not met since last board meeting. Members continue to work on previously assigned projects. The electrical connection between equipment building and the tower proper at the Witoka Tower has been repaired. The tower lights appear to be fully functional. Dan also mentioned to get more power work done on the Witoka Tower to get 220 V and also to get a power conditioner. Dan mentioned we have to hire someone with compensation to work on electrical. Matt was mentioned as option and board members agreed we have to pay Matt for the work. Lance mentioned we should ask Matt if he has the time even to do the job. John was questioning why we have to hire certified electrician to do the job. Many people should be able to do the job. John was turned down by board members because of liability and contract issues. Dan volunteered to contact Matt to ask if he is willing to take on the Witoka job for a fee. Board also discussed state of electrical wires coming to Tower and if Tower is ready for 220 V. Lance mentioned it will need an on-site evaluation to see if 220 V is possibility any more. Paul mentioned we need 220 V for line conditioner. Dan mentioned it will be easy to work on electrical stuff when the building is empty. John mentioned there are solar transformers available. Dan stated again he will contact Matt for possibility of electrical work at Witoka Tower.

Repeater Committee

Lance mentioned it would be good idea to try the Yaesu Repeater (440 MHz) first at 640 site to see if everything works before moving to Witoka Tower. Dan is in agreement with Lance. For Witoka site, Paul and Dan have the keys. Lance mentioned to wait get an estimate on electrical work before Board allocates any fund for the work. Lance asked if we can get Matt's expert opinion first before doing the work. Board then discussed about Power Conditioner and John shared his knowledge of Power Conditioner.

Operating Activity Committee

Lance provided a report from committee. Field Day went well although Lance had to leave early on field day. Except one everybody got their gear back. That gear is still in trailer. Les generated about \$ 400.00 of cash for the club with sale of the stuffs on Field Day. Les will generate a statement and will leave the money with Paul. There are still some stuffs not collected per Les. Les also had stuff he bought with him to board meeting that is free to take and members can follow him to his car and pick them to their choosing. Among other things Les had two laptops. Lance will compile the data for field day and submit. Also coming next Weekend is N2B, GRSF Special Event. Len is organizing the event for the club. John was involved and Antenna was already put up. Site for the event is Winona State Gazebo. John shared his experience with putting up the Antenna. WSU already provided permission to use the Gazebo for the event. It helped because Melanie is involved. John already has ideas on setting up Antennas for next year for GRSF if we are using the WSU Gazebo.

Ken mentioned there was a Radio Club in WSU Campus long time ago and Paul shared some info on that club.

Syed and Ken then shared picnic information. Syed mentioned we are set for the picnic at Lions Shelter. Les re-stated his objection to picnic and his previous vote against the picnic. Ken had nothing to add to picnic prep.

Dan mentioned as we are spending quite bit of money, we have to do some fundraising to replenish.

Mike Forrester mentioned he is willing to setup an HF station at Witoka site and would like to get the Club HF Unit to understand its operation and get ready.

Meeting was then adjourned.

**The Winona Amateur Radio Club, Inc.
P.O. Box 1264, Winona, MN 55987-7264**

Executive Board

President: Paul Schumacher, KØZYV pschumacher@winona.edu	Vice President: Lance Tagliapietra, KBØYJU lancetag@hbc.com
Secretary: Syed Faruque, ACØVA sfaruque@yahoo.com	Treasurer: Harro Hohenner KG6RLM Harro@hohenner.com
Custodian: Erik Brom, WBØNIU ewbrom@hbc.com	Members: Dan Goltz WK0W Leslie Hittner KØBAD

Dues: \$25.00 per calendar year per license holder.
\$30.00 per calendar year for all licensed members of the same family within the same household.
Dues should be sent to: Harro Hohenner, Treasurer, P.O. Box 1264, Winona, MN 55987

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Board meetings are announced in advance (WEPNet).

Monthly club programs are held on the third Thursday. The submission deadline for the **Hamgram** is Wednesday of the week *prior* to that of the club programs.

When All Else Fails...AMATEUR RADIO

Winona ARC Repeaters:

146.640 (100.0 Hz) *

146.835 (131.8 Hz) **

444.225 (100.0 Hz) FM Voice & C4FM Digital

* SKYWARN Net When Activated.

** Sunday Night Net—8:30 PM Local Time.



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