



# The *ORC* Newsletter

Official publication of the Ozaukee Radio Club, Inc. Mail all contributions to the editor, Tom Ruhlmann, W9IPR, 465 Beechwood Dr., Cedarburg WI 53012 (phone 262 377-6945). Permission to reprint articles published in any issue is granted provided the author and the Ozaukee Radio Club Newsletter are credited.



AMATEUR RADIO

ORC Repeaters on 146.97, 224.18 and 443.750 MHz -  
Callsign W9CQO Web site: [www.ozaukeeradioclub.org](http://www.ozaukeeradioclub.org)

Volume XXVII

May 2008

Number 5

## From the President

De Mike Yuhas (AB9ON)

Are you ready?

I had a lengthy discussion on the repeater the other morning with an ORC member about emergency power generation. This individual was beginning a big project to install an emergency generator at his home QTH. I asked him how often he lost power; he said his commercial supply was generally reliable but he wanted to be ready for any circumstance. I was impressed.

That's when I started thinking. Power has gone out a few times in the 12 years we've lived in our home, but only once for more than a few minutes. Would the flashlights and candles placed strategically around the house be enough to see us through an extended outage? And, perhaps more important, how would I be able to use my ham station?

I haven't fully answered these questions, but I am thinking about them more than before. I'm interested in knowing about your emergency radio capabilities.

See you on the air!

## 40 Mtr. Moon Bounce?

By Gary Sutcliffe, W9XT

Moon bounce or EME (Earth-Moon-Earth) communications is a technique where signals are bounced off the moon, and received at another location back on earth. They normally take place at VHF or UHF frequencies. The path losses on the half-million mile round trip are so great that it is impractical to build antennas with high enough gain at lower frequencies. In addition,

the signals need to pass through the ionosphere with little attenuation, again something more efficient at higher frequencies.

Because of this most amateur EME communications happen on the 144 and 432 MHz. A few ambitious hams have systems for 6 meters (50 MHz). There have been a few reports of hams with huge arrays hearing their own echoes off the moon on 10 meters (28 MHz) and even 15 Meters (21 MHz). Surely that had to be the low frequency limit.

The High Frequency Active Auroral Research Program (HAARP), an experimental station in Alaska, has high power transmitters and an antenna system for sending signals straight up to create artificial auroras and for other research. They announced that they would be running some moon bounce tests during the weekend of January 19-20, 2008. Because of my interest in EME I had to check this out.

The plan was to transmit for one hour on 6.7925 MHz. A second hour would be on 7.4075 MHz. The test would be repeated the next evening. These frequencies are below and above the 7 MHz 40-meter band. They would transmit for 2 seconds, and then stop for 3 seconds. There was no modulation, just a carrier.

Using this scheme it would be possible to tell if the signal you were hearing was through normal HF sky wave radio propagation or off the moon. If you heard a signal in the seconds of the minute ending in 0-2 or 5-7, you were hearing it direct. If you heard a signal in the seconds ending in 3-4 or 8-9 you were hearing echoes.

Direct signals from Alaska take 10's of milliseconds to reach Wisconsin. The round trip off the moon is about 2.5 seconds. All you needed was a receiver, an antenna and an accurate clock.

Signals the first hour of the first night were very strong. With my 2-element 40-meter beam the direct signal was about S7 and the moon signal was about S3, although it was hard to measure with static sometimes reaching S9. I listened for the first 45 minutes and recorded some of it.

I came back about 15 minutes into the second hour. Signals were down quite a bit. There was also a lot of interference from terrestrial sources. I didn't listen very long.

On the second night signals were also down. At times I could not hear anything. Most of the time, I could only hear the signals off the moon weakly. At that point I decided to use some software useful for detecting weak amateur signals off the moon.

The WJST software package by K1JT includes a digital signal processing (DSP) program for digging out weak signals. You take the audio output of the radio and feed it into the PC's sound card inputs. Complex mathematical processing in the program does the rest.

During the second hour signals improved. At times I could hear both the direct and reflected signals. The screen capture shows the program output at one of the better moments.

This is known as a waterfall display. The received signals are shown visually and the current signal shows up at the top and drops down over time. Lower frequencies are to the left, and increase as you go right. Higher signal strengths get brighter. It does have the appearance of a slow motion waterfall.

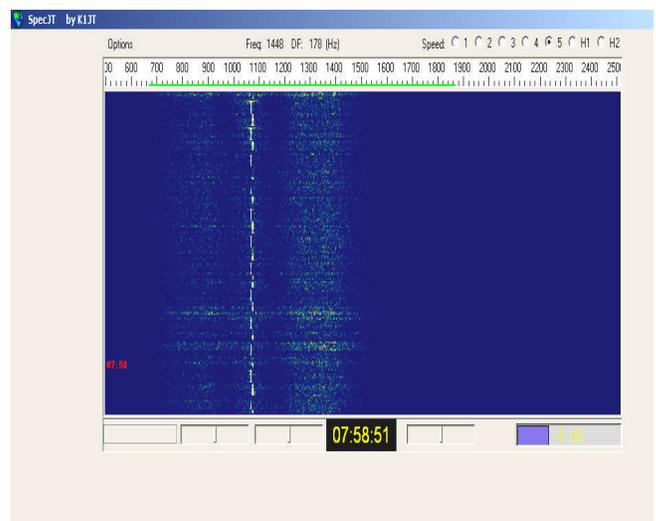
You will notice alternating vertical dashes. These are the signals. You might also see some fuzzy horizontal lines. This is static.

The most interesting thing is that the dashes from the direct and moon reflected signals are offset by about 4 Hz. You can see that the vertical lines shift to the left and right. This is caused by the Doppler shift from the earth's rotation. Because the moon was in the western part of the sky at the time, the frequency of the reflected signal was less than the transmitted

signal. We were essentially moving away from the moon. If the moon had been in the eastern sky, we would be moving toward the moon, and the received frequency would be higher.

More information on HAARP and pictures of their antenna array can be found at their web site, <http://www.haarp.alaska.edu/>. I have not seen a report of the power they were using, but they are capable of 3.5 MW - certainly not QRP! My end of the path was an FT1000MP and a 2 element Yagi beam antenna. On the first night when signals were strong I switched over to dipoles. Signals were still audible.

I consider moon bounce to be of the most challenging aspects in Amateur Radio. I had never considered it would be possible at such a low frequency, even with extremely high power levels. The whole event was quite remarkable. Maybe next year they can try for 80 Meter EME!



## Opportunity Days @ Park-view School

We had a really great time conducting the Park-view Elementary School Opportunity Days Introduction to Amateur Radio. We had a variety of equipment there for the kids to see and utilize. There was the QRP CW station, code training equipment, portable HF station and the OZARES communication van. This year the

program was expanded to six sessions from five and there were 12 to 16 kids per session. The kids got a chance to learn about the challenges and opportunities of HAM radio, including volunteer emergency service and a chance to talk on the HAM radio. Due to band conditions and a lack of operators on the repeater we had them talking to each other via HT's and the OZARES communications van.



**Tom Ruhlmann (W9IPR) provided an introduction to HAM radio, which was followed by the Walter Cronkite video.**



**Tom Murtaugh (W9VBQ) showed the kids that CW was fun and had them spell out their names.**



**Bill Howe (KA9WRL) demonstrated the code and various CW training equipment.**



**Jack Morrison (N9SFG) and Jon Gilmore (KB9RHZ) provided the main attraction with the OZARES communications van and opportunities to talk on the radios and operate the "tower camera".**

Special thanks to Bill Howe (KA9WRL) and Tom Murtaugh (W9VBQ) for the CW programs, Tom Ruhlmann for the mapping and HF program and to Jack Morrison (N9SFG) and Jon Gilmore (KB9RHZ) for bringing the OZARES communications van.

We also gave out written special invitations to be GOTA station operators to all the kids so hopefully we will see some new operators at field day.

## MS Walk & ORC Support

Members of the ORC answered the request for service by providing communications between the MS Walk center at the High School, enroute walkers and the three refreshment sites. While some rain was predicted it turned out to be a really nice day for some exercise and to help out.



The “MS Walkers” crowd was gathering at the starting point of the Cedarburg High School.



Mark Tellier (AB9CD) manned the “emergency” vehicle providing mobil communications, immediate water refreshment and moral support.



Following the “Walk” refreshments were provided to the volunteers and walkers. The “subs” and juice really hit the spot. And note those orange “volunteer” T-shirts they all received.

Paul (KC9JJU), Nancy (KC9FZK), Stan (WB9RQR) and Cindy (KA9PZG) provided communications at the rest stops and control center while Mark (AB9CD) and Tom (W9IPR) handled the enroute reporting.

It was a great time. I wish more could have taken the time to enjoy the walk.

## Tour de Cure Bike Ride

I still have some spots open for this year's Tour de Cure bike ride for diabetes. This event is on May 18th and the base of operations is Grafton High School. This is a great event and I encourage new hams to consider working this event. I also would encourage those of you who live in Ozaukee County to volunteer.

If you would like to sign up, please contact OFF list at [n9rx@sbcbglobal.net](mailto:n9rx@sbcbglobal.net).

73's AI (N9RXD)

## Upcoming Events

**Mentoring Session** – Starts at 6:45 before the meeting – ordered kits will be distributed and a soldering demonstration will be presented.

### May

**14<sup>th</sup> Membership Meeting – Home Brew HF Amplifier**

16<sup>th</sup> – 18<sup>th</sup> Dayton Hamvention

28<sup>th</sup> OZARES

24<sup>th</sup> – 25<sup>th</sup> CQ WW CW DX Contest

### June

1<sup>st</sup> - Princeton IL Swapfest

8<sup>th</sup> 6 Meter Club of Chi Swapfest @ DuPage Fairgrounds in Wheaton IL

**11<sup>th</sup> Membership Meeting**

18<sup>th</sup> Tour de Cure

14<sup>th</sup>-15<sup>th</sup> ARRL VHF QSO Party

**27<sup>th</sup> -29<sup>th</sup> Field Day**

**Miller Lite Ride for Life**

**River Cleanup**

### July

5<sup>th</sup> South Milwaukee Swapfest

12<sup>th</sup>-13<sup>th</sup> IARU HF World Championship

**9<sup>th</sup> Membership Meeting**

15<sup>th</sup> Fox River Radio League Swapfest @ Aurora IL

19<sup>th</sup> – 20<sup>th</sup> CQ WW VHF Contest

24<sup>th</sup> OZARES

19<sup>th</sup> Fish Day at Port Washington

19<sup>th</sup>-20<sup>th</sup> NA QSO Party

28<sup>th</sup> – Aug 3 Airventure 2008 at Oshkosh  
VHF Society Conference  
@ Bloomington MN

## Club Static

Tom (AA9XK), Ed (AA9W), Ray (W9BUJ) and Tom (W9IPR) went to the swapfest at Stoughton where they handed out flyers for the ORC May and September swapfests while looking for “good deals”.



**The swapfest at Stoughton was great fun with seemingly more vendors this year.**



**Chris Tarr (W9JOL) explained how digital broadcast radio was transmitted.**

We had a great program at the April meeting when Chris Tarr (W9JOL) shared the latest developments in digital broadcast radio with us.

Marc Denis (N9ZF) has changed jobs and is moving back to his home in Lina WI. We will miss Marc but hope for his return at field day and other ORC events.

Chuck Currin, WA9POU, will be discussing his new home brew amplifier at the membership meeting on May 14<sup>th</sup>.

# OZARES

De Stan Kaplan (WB9RQR)

The



Column

The last OZARES meeting (9Apr) was a dual-purpose meeting. One group went out to the MCT (Mobile Communications Truck) to train on the radios and general operation of the equipment. The second group stayed in the Justice Center and went over the Emergency Management ARES/RACES Message Form. This form is important ... it is a local modification of ICS (Incident Command System) Message Form 213, a government form that is mandated for use throughout the United States. It is the form that we will use to record incoming and outgoing messages during actual emergencies, so our local modifications need to be correct and usable. We tweaked it a bit more at the meeting, and when the final-final is done, it will be posted on the OZARES website. Pads of the form will be made up for storage and use in critical areas, such as the Justice Center's Emergency Communications Center, the MCT, and in the homes or cars of all OZARES members.

As an aside, on 2 May, the OZARES MCT moved to Parkview School in Cedarburg for a general ham radio show-n-tell session. Read about it elsewhere in this newsletter.

OZARES supported a **Public Health Service Exercise** on 19 Apr, held in conjunction with Medicine Collection Day. Kent (N9WH) and Dave (N9UNR) were stationed at MATC, with Cindy (KA9PZG) at the County Highway Department. Jon (KB9RHZ) oversaw the OZARES operation by moving back and forth between both sites. Public Health had an 800 MHz radio fail (no battery!) so OZARES actually provided communications for them, and simplex worked just fine. We impressed them! You know, working with agencies like this is a terrific way to foster good relations between OZARES and public agencies. Nice job, guys!

**NET CONTROL SCHEDULE:** OZARES nets are held each Thursday at 8:00 p.m., except on meeting nights (4<sup>th</sup> Thursdays). Both a net script and check-in list can be obtained on the

OZARES web site, [www.ozares.org](http://www.ozares.org). If you are scheduled for NCO duty and cannot make it, it is your responsibility to find a substitute. Check the complete schedule on the web site for possible hams to trade dates with, and keep the net manager (WB9RQR) informed of confirmed trades. Guests are welcome after the OZARES check-ins are complete, *most especially ORC members!* By the way, if you see a difference between the schedule on the website and this column, this column will always be correct, since it reflects last minute changes and substitutions. Such changes and substitutions to the website version will be in bold print here.

08 May	KB9RLI
15 May	WB9RQR
22 May	Meeting
29 May	W9BTN
05 Jun	N9SQA
12 Jun	KB9UKE
19 Jun	N9UNR
25 Jun	No net or meeting; Field Day
03 Jul	KB9URH
10 Jul	W9VBQ
24 Jul	Meeting
31 Jul	KB9VJP

## Minutes of 4-9-08 Meeting

De Mike Yuhas (AB9ON)

- President Mike Yuhas, AB9ON, called the meeting to order at 7:35 PM. Attendees introduced themselves and indicated their favorite amateur radio band.
- Announcements and bragging rights
  - Marc Denis, N9ZF, announced this was his final ORC meeting, as he has taken a new job in the Neenah area.
  - President Yuhas announced, on behalf of Al Lederman, N9RXD, the Tour de Cure bicycle ride (diabetes benefit) on Sunday, May 18, with base of operations Grafton High School. Al is looking for hams to help with communications. His contact info is [n9rxd@sbcglobal.net](mailto:n9rxd@sbcglobal.net).
  - President Yuhas announced, on behalf of Cindy Douglas, the annual Saukville river cleanup, Saturday May 17, with participants meeting at

Grady Park 8:15 AM, and expected to be finished by 11:15 AM. Cindy is looking for hams to help with communications. Contact Cindy via the ORC 2-meter repeater or via telephone.

- Program: Chris Tarr, director of engineering at Entercom's Milwaukee and Madison broadcast stations, presented a lively and informative program about HD ("hybrid digital") broadcast radio.
- Fellowship break (8:40-8:50 PM)
- Past President Tom Ruhlmann, W9IPR, presented the 2007 President's Award to Ray Brunette, W9BUJ, in recognition of Ray's efforts in establishing the ORC September outdoor swapfest.
- Jon Gilmore, KB9RHZ, noted that unused medicines will be collected on April 19, at the Port Washington DPW site, and at MATC's Mequon campus.
- Stan Kaplan, WB9RQR (assisted by Jon Gilmore) conducted the auction. Highest ticket item was a tube tester, donated by Bob Gorjance, W5CFB.
- Dave Barrow, N9UNR, held the 50/50 raffle. Bill Raymond, AA9OS, won the proceeds.
- Marc Denis moved to approve the minutes of the March meeting as printed in the April ORC newsletter. Seconded by Tom Murtaugh, W9VBQ. Motion carried.
- Treasurer Nels Harvey, WA9JOB, presented the Treasurer's report reflecting a net \$340.15 decrease in the treasury. Dave Barrow moved to accept the report as submitted, subject to audit. Seconded by Bill Howe, KA9WRL. Motion carried.
- Committee reports
  - Budget: President Yuhas reported the board is finalizing the club's two-year budget. He expects a draft to be available within a couple weeks. It will be announced on the ORC email distribution list and posted on the ORC website.
  - Repeater: in the absence of Repeater VP John Schrader, W9NRG, Nels Harvey reported that he's been addressing some voting issues on the 2-meter system. He also stated all repeaters are in good working order, though underutilized.
  - Swapfest: Vice President Tom Nawrot, AA9XK, updated the group on the May 3 Swapfest progress so far: tickets were sold at the AES Superfest; flyers were distributed at many

nearby Hamfest; a conflict regarding Friday evening setup appears to be at least partially resolved; the Swapfest committee will meet April 18 or 25 to discuss last-minute details. Tom made flyers available for members to post on bulletin boards at their favorite stores, barber shops, etc.

- Field Day: VP Nawrot will be organizing ORC's Field Day efforts after the May Swapfest. Nels Harvey expressed concern at the non-availability of the large generator this year. Terry Koller, KA9RFM, offered the use of his generator. Bob Truscott, W9LO, advised alternate arrangements are being made.
- Mentoring: Mark Tellier, AB9CD, reported that five members have signed on to build a TenTec 1056 receiver at the May mentor session (at 6:45 PM May 14, immediately before the May membership meeting). Mark will order the kits on Friday April 11; others interested in building the kit should contact Mark before then.
- President Yuhas reminded the group that the next membership meeting is May 14, with Chuck Curran, WA9POU, presenting a program on a homebrew linear amplifier.
- Jon Gilmore moved to adjourn. Meeting adjourned at 9:28 PM.

A total of 41 members and guests were in attendance: John WA9KNY, Marc N9ZF, Gary W9XT, Ken W9GA, Paul KC9NHD, John KB9BJZ, Dan KC9BKA, Bob W5CFB (and guest Debbie), Stan WB9RQR, Jon KB9RHZ, Ed AA9W, Kent N9WH, Dave N9UNR, Bill AA9OS, Jim K9QLP, Nels WA9JOB, Jeff WB9PZD, Joe KA9DFZ, Roger W9UVV, Jim W9JRX, Jerry W9GGR, Tom W9IPR, Nancy KC9FZK, Kate KB0SIO, Dick AB0VF, Julia KB9WBQ, Miko W9FIN, Keith KY9P, Mark KC9GST, Ray W9BUJ, Bill KA9WRL, Tom W9VBQ, Bob W9LO, Mike N9JIY, Tom AA9XK, Terry KA9RFM, Chuck WA9POU, Ron W9BCK, Chris W9JOL, Mike AB9ON.

Minutes recorded by Ken Boston, W9GA, and Nancy Stecker, KC9FZK.

Respectfully submitted,  
Mike Yuhas, AB9ON

## **AGENDA**

*May 14th, 2008*

1. Call to order – Mike (AB9ON)
2. Introductions.
3. Announcements, Bragging Rights, Show & Tell, Upcoming events, Etc.,
4. Program: Home brew HF amplifier – Chuck Curran (WA9POU)
5. Fellowship Break
6. Auction – Stan Kaplan (WB9RQR)
7. Acceptance of Minutes as printed.
8. Treasurer's report – Nels (WA9JOB).

9. Repeater report – John (W9NRG)
10. Committee reports.  
Membership –  
Youth Program – Bill Howe (KA9WRL)  
- Opportunity Days @ Parkview  
May Swapfest - Tom Nawrot (AA9XK)  
Sept. Swapfest – Gabe Chido (WI9GC)  
Other -
11. OLD BUSINESS
12. NEW BUSINESS
13. Adjournment to ?

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### **The ORC Newsletter**

465 Beechwood Drive  
Cedarburg WI\* 53012

### **First Class**

## **Next ORC Meeting**

**Grafton Senior Citizens Center**

**1665 7<sup>th</sup> Avenue, Grafton**

**Wednesday, May 14<sup>th</sup>**

**7:30 PM**