The ORC News -

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.

ORC Repeaters on 146.97, 224.18 and 443.750 MHz - Callsign W9CQO Web site: http://www.qsl.net/orc/

Volume XXII | January 2003 | Number 1

The Prez Sez

By Leon Rediske K9GCF

At this cold time of the year, ORC hams have many hot items to keep them busy.

First, there is the RTTY Round Up Contest January 5, 2003. We need all the club entrants we can find. So join us. Next Contest is the Jan 18-20 VHF Sweepstakes, and next is the DX contest Feb 15-16.

Next there is the WARAC Hamfest at the Waukesha Expo Center January 4, 2003. This is a good hamfest, and one can get the components for the interface you'll need for the RTTY contest.

This time of year one needs to think of ORC officer material for next year. We have a broad contingent of officer candidates this year, so the choice is yours.

For the longevity of the club, I believe we need younger members and officers in training. I've seen this club, and also the Ft. Myers Radio Club, of which I am a member, gets older in its membership. Many of us seniors have health issues, and may not be around to help with things physical and not so physical in a few years. As the seniors drop away from club participation, we need young folks to replace us for the good of the club. We need to train younger members to take our place for the future of our club. This aging of the ham community is no secret. We see it at hamfests, clubs, and all ham gatherings.

In the same vein, how can we recruit new members as younger hams? I'd guess our best bet is to hold more ham license courses and become more visible in our community. Perhaps many members have ideas how we may improve this trend.

Next is the upcoming ORC's PEP (Post Everything Party) party Feb. 15, 2003. Send in your ticket money as soon as possible. Now the tradition of the PEP is that it is Post Everything.....after Christmas, New Years, Valentines Day, post Everything.....time for a party! Remember it is for our spouses as well, so bring him/her along to enjoy the wonderful dining put on by the ladies of the local VFW.

I've enjoyed my tenure as President at the helm of the good ship ORC. Now it is time for the next generation to step up to lead the ORC. May we enjoy light winds and smooth sailing.....

73's for now, and see you all at the second Wednesday, January 8, 2003, ORC meeting, 7:30 PM, Grafton Senior Center Building, 1665 7th Ave., Grafton WI.

Upcoming Events

01/04/03 – WARAC Swapfest–Waukesha Expo
02/15/03 - Post Everything Party @ the Cedarburg American Legion Post

Jan. 8th Meeting Program

PROGRAM: AA9W's Homebrew Antenna that mates with the FT-817.....which is that little low power, portable all band radio by Yaesu. Ed has invented & constructed this unique antenna for HF operating. Also, hear results regaling how well it works! Anyone interested in duplicating this antenna should see Ed.

Dues are Due

New members at our December meeting included N9FH (Fred Helmstetter), W9XT (Gary Sutcliffe), KC9BTF (Angie Skrentny), KB9WCC (Paul Wiegert) and KA4UPW (Jim Hilins)

Dues for the 2003 year are now due. There is an application form on the website at **http://www.qsl.net/orc/** that you can mail in or just fill one out at the January meeting.

Contesting

De Bob Truscott, W9LO

We have a real dandy coming up this month for the VHF people in the club. It's the ARRL January VHF Sweepstakes, on Jan 19-20. Operate on the bands of your choice, 50 MHz to light. High power, low power, "rover ", single op, multi-op—you name it. The rules are in Dec. QST, page 95. This is a great opportunity for you phone ops – Get together with your buddies and work as a multi-op station, and hone your contesting skills in preparation for next Field Day.

My choice for contest of the month is The North American QSO party, better known as "NA". CW on Jan. 11-12, and phone on Jan 18-19. Rules in Jan. QST page 97. 160- 10 meters, 100 watt power limit, work stations once on each band. Maximum of 10 hours operating time. This one is a ton of fun, but does not take a ton of time. Try it--you'll like it.

For you "top band" people, there is the CQ WW 160 Meter Contest. CW Jan 25-26, and phone Feb 22-23. Here is a chance to try out your new vertical array, or as some of us do, just load up the 80-meter dipole.

Reported scores:
10 Meter Contest:
W9XT–CW --1021 QSO's, 128 multipliers
Phone 1070 QSO's, 137 multipliers
N9FH-CW only–1449 QSO's, 136 multipliers
W9LO-CW only–407 QSO's, 99 multipliers
160 Meter Contest:
W9LO 310 QSO's, 50 multipliers
W9KHH 137 QSO's, (?) Multipliers
W9XT 70 QSO's, 24 multipliers
Nov. SS-Phone:
W9XT 781 QSO's, 80 sections
CQ WW DX Contest CW:
W9XT 580 QSO's, 88 zones, 268 countries
All this with 5 watts—amazing. Does this suggest that the legal power limit should perhaps be reduced?

Please report scores to 262-629-9685 or tbsi@hnet.net. Have fun contesting.

MRAC FM Simplex Contest – February 9th

This Contest is sponsored by MRAC to encourage amateurs to learn the basics of contesting and to expand the scope of their V-UHF operating techniques.

1. This event is a sprint, lasting 2 hours and limited to FM simplex on the 2 meter, 70 centimeter, 6 meter and 1.25 meter amateur bands.

2. In order to generate maximum activity, all stations would be on the same band at the same specific time. Each band is assigned a 30-minute segment during which contacts can be made on the listed frequencies. For more information see the MRAC web page at: http://www.qsl.net/mrac/FMContest.html

Or you can contact Sherm at KB9Q@arrl.net

Tom AB9EK, MRAC Secretary

Just Another Shack

De Todd Sprinkelman, KC9BQA

This month's Just Another Shack features Terry Koller - KA9RFM.

Terry's interest in ham radio can be traced back to his early teenage years. While at his grandmother's hardware store in Waubeka, Terry got to know a ham across the street. Terry vividly remembers one day in the 1950's where he went for a ride in this ham's mobile set-up. The mobile ham actually made a contact all the way up to Adell! (All of 10 miles away) For Terry, this was a big deal and he started listening to ham transmissions on whatever SWL and/or ham rigs he could get his hands on.

Terry is shown here operating SSTV. Note the rig-PC interface consists of the PC audio mic in front of the transceiver speaker and to transmit, he holds the transceiver mic in front of the PC speaker.

After a long break for the marriage and family years, Terry got his novice ticket in 1980, followed by an upgrade to general in '81 and advanced in '82. He further upgraded to extra in 1999 when they changed the code requirements. In 1981, Terry was able to snag a Mosley TR-33 beam (for HF) with all the trimmings for $60. This meant it was time for a tower. With his engineering background, Terry was able to build his own 35' crank-up tower. It is built from 6" diameter 1/16" wall galvanized steel tubing. On it is the original TR-33, as well as a Cushcraft 11-element 2-meter beam that he uses for repeater/simplex work. Terry also has a Butternut vertical for HF, and a 130' longwire hooked up to a tuner.

Terry's radios consist of a FT-767GX for HF, which also has the 2-meter module. He has a mobile 2-meter rig and a FT-530 for his HT. He has written a computer program to control his FT-767.

Terry has dabbled in many facets of ham radio. Overall, he is more of a ragchewer and listener. He has been active in packet, and currently enjoys SSTV, along with a little PSK 31. He also enjoys the company of a lunch group that gets together both in person and on 2 meters.

Terry has been an ORC member since the mid-80's. His interesting hobbies have been the focus of many a show-and-tell presentation at ORC meetings. Terry enjoys R/C aircraft and helicopters. He builds 1/4 scale, miniature model gasoline engines. Terry also has a website. Visit www.terrykoller.com to see more about his engines and ham radio.

One of Terry's important contributions to ORC has been supplying the power distribution to run Field Day for the past dozen or so years. I attended Field Day this year (as a visitor) and I heard over and over from folks how impressed they were with the new and improved power distribution setup. Here's a tip of the cap to Terry Koller and all he does to help our club.

MFJ 890 DX Beacon Monitor Review:

De Nels Harvey, WA9JOB,

I guess you all know that I've proclaimed myself as the World's first Nocode Extra! I don't have any desire to chase DX, work contests, or participate in the various net activities on the low bands. I don't know why, but I went out and bought one of those MFJ Beacon Monitors!

The beacon system gives hams the worldwide an opportunity to tell what bands, from Twenty Meters to Ten Meters, are open, and to where. It is necessary to copy the CW, then listen for reception of a series of four tones, from 1000 Watts to 1 Watt.

I guess it was a fascination with the red and green blinking LED's that caused me to purchase the Beacon Monitor. The mystique of just how it worked was another reason. There are no connections to your radio, or antenna system. So, just how does it work?

The unit is designed to sync' with WWVB. Once it is sync'd, it's internal programming determines which radio is supposed to be transmitting, based on the time, and lights the appropriate LED. A switch enables the operator to select the band to listen to, then using the display and the operator's own transceiver, determine which beacon transmitter is producing the tones.

This really is a good way to determine if a band is open, and to where. It is a good way to determine how good the antenna in use is working, and where to point it if it is rotatable. All this is available without the MFJ unit, of course! It is a neat conversation piece, and a real boost to those of us who aren't as proficient with the CW as some others are. This is something you might be interested in if you share a fascination with blinking lights, as I do!

"Ham", Patriot or Both?

De Jim Hilins, KA4UPW

Moving to Wisconsin I had several requirements for choosing a house, and to my wife's dismay some of the CTQ's (Critical to Quality) requirements included high ground terrain and NO ANTENNA RESTRICTIONS. So I bought a place meeting only half of my requirements. So my new antenna needed to be stealth to meet the community covenants. To make matters worse, I like to work the low bands 40M-80M.

Hiding an 80M antenna in a restricted area, of new construction, where there isn't a tree or shrub to be found, was going to be a challenge! I decided to hide my antenna in plain site. That is to say everyone would see it every day, but no one would ever know that they are looking at a multiband vertical capable of loading up on 160, 80, 40, 30, 20, 17, 15, 12, 10, and 6 meters.

The basic and most popular type of vertical is one that is a quarter wavelength long and is operated against ground or in a ground-plane configuration.

The antenna is usually made from tubing and the radials are wires. This project consists of two 20-foot aluminum flagpole kits, commercially available at Sams Club and about 5000' of #12 wire used in the ground radial system.

Jim Hilins (KA4UPW) flag pole vertical

An ideal ground plane (simulated earth ground) would be a sheet of metal with a radius of one-quarter wavelength or more. However, this is only practical at VHF so the customary method is to use wires as the radials. Probably the number one question asked about ground-plane antennas is, “how many radials are required?” The answer is simply, the more radials used, the better the antenna will perform, at least up to a certain point. This should not be construed to mean that an antenna with only two or three radials wouldn’t work. Such an antenna will work, but for *maximum* performance one should consider 40 or more radials. For this project I exceeded 120 wires ranging from 35 to 50 foot long limited by the edge of the propriety.

There are two resistances’ that exist when the antenna is non-resonant. When the antenna is not resonant, as is the case with my flag pole vertical, reactance is present in the feed point. Reactance is also expressed in ohms and as complex impedance made up of real and imaginary “j” values, but it isn’t a real resistance in the sense that power can be dissipated therein. Simply, reactance can be likened to a gate or door that stops or hinders the flow of current into a circuit. When an antenna is operated at some frequency other than the resonant frequency there will always be reactance present. Keep in mind that with any antenna, multiband or otherwise, we always have a condition on some band or frequency where the antenna is not resonant. Therefore, there will be reactance at the feed point and a matching network will be needed

For the first phase of this project I choose to use a commercially available automatic antenna tuning circuit (shown below).

Mounted ICOM Automatic ATU

When time permits I will exchange this for a home brew fixed match circuit (shown below) but capable of handling full legal limit, and band switchable.

I will discuss the design and manufacturing of this circuit at a later date. Another consideration, which should be mentioned, is that harmonics generated in the transmitter that reach the antenna can be radiated. It is true that a single-band antenna will reject harmonic energy, but *not* completely. In the case of a multiband non resonant antenna some harmonics are not rejected, simply because the antenna is designed to be resonant on all HF amateur bands

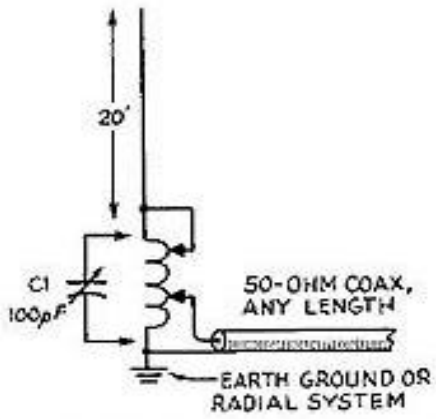


Fig. 1 – This is a typical multiband vertical antenna. A description of the system is given in the text.

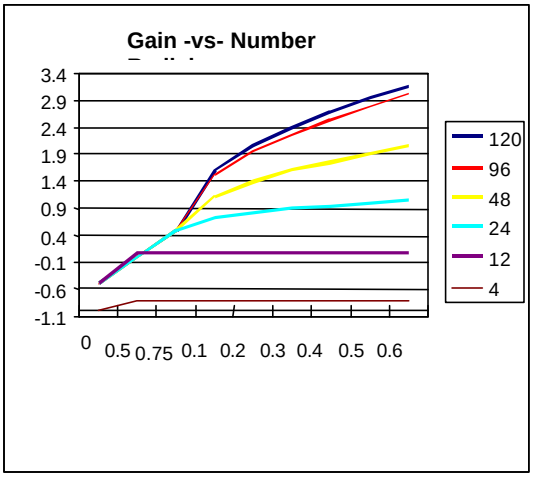
. The solution to this problem is the use of a selective circuit installed in the feed line. The antenna-matching network mentioned above is such a circuit and should provide adequate harmonic rejection.

Final construction consisted of assembling and wielding the 36' of the mast sections. I welded them to lower the radiation resistance and improve the antenna efficiency. The antenna needed to be electrically (RF) insulated from ground and this was done by inserting the lower 2 feet of the antenna into a 4 inch diameter piece of PVC pipe and filling the cavity with fiberglass and resin. I used a black rubber coupling and hose clamp to seal this from the elements (See photos above). As a final added measure the electrical connection between the antenna matching unit and the antenna was reinforced using conductive epoxy.

The performance of a vertical antenna on the ground is highly dependent upon a good ground system. Properly installed, the antenna can be a very good performer for DX and local communication. This is particularly true at higher frequencies where the dielectric property of the earth plays a major role. 120 radials of #12 wire a quarter wavelength long will increase the total radiated power by 3dB.

From my on the air checks and experimenting with different antenna lengths, surprisingly the ¼ wavelength seemed to perform just as well as the much taller 5/8 wave against the same ground.

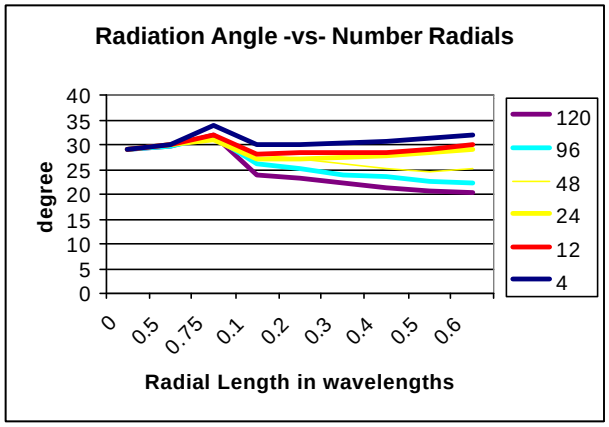
PVC Pipe Mount for Flag Pole Vertical Showing Termination of 120 radials at common ground rod



I decided to settle on a 40M ¼wavelength 34' vertical with 120 radials. I made several on the air tests with local amateurs before deciding to construct an inverted V as a test antenna. With prac-

tically all DX contacts, the vertical had a 6dB to 8dB improvement over the inverted V. The only exceptions were at about 500 to 600 miles where the V had an advantage because of its higher radiation angle. The big surprise came close in; locally the vertical gave far superior performance improvements as much as 10dB and 15dB.

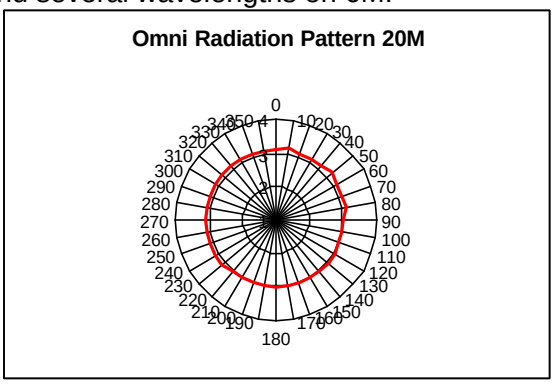
Theoretically a yagi has the advantage of gain and directivity which at first thought would be the natural choice for working DX. However DX capability of an antenna is determined by its low angle radiation. A large portion of the energy radiated should be between 5 and 25 degrees from the horizon. In order for a horizontal antenna to get a lobe below 15 degrees, the antenna must be greater than 60 feet off the ground on 20M and forget 40M and 80M unless you have a 250-foot tower!



A vertical however, possesses an image which is in phase with the ground to produce a lobe tangential to the earth's surface, making it an ideal DX antenna as seen in my on the air measurements.

Another measurement worthy of note is the antenna directivity. With all the ground elements connected the antenna lobe is nearly a perfect classical omni. When I remove some I can warp the lobe to favor one direction. In practice, this dose not focus energy in the direction of the lobe, the energy in the non-radiated directions is lost in ground losses, however, this situation offers some advantage in listening or nulling out unwanted signals, and warrants further investigation.

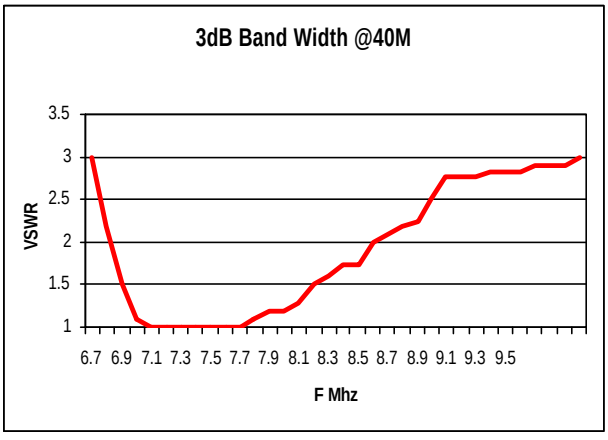
The antenna acted as a 1/6 wavelength on 160M and several wavelengths on 6M.



Using the calculations for electrically long/short antennas from the ARRL HANDBOOK. And the antenna gain factor from the number and length of the ground radials as well as measurements made at 20M. I was able to extrapolate a best guess gain of the antenna on 40M-10M I believe these to be accurate, however my guess is the ground losses are much higher on 160M and the antenna probably tends to end fire on 6M.

Freq.	dBi	dBd	l
54	4.6	3.4	2
28.4	3.1	1.9	1
24.9	2.9	1.7	
21.1	2.7	1.5	
18.1	2.5	1.3	
14.1	2.3	1.1	0.5
10.1	2.1	0.9	
7.1	1.7	0.5	0.25
3.6	-0.1	-1.3	0.125
1.8	-2.2	-3.4	0.0625

And of course, the antenna is self resonant on 40M so the construction of 2 ½inch tubing really shows when measuring the 3dB bandwidth of the antenna.



One final note. This is an ongoing project and experiment. Like most experimenters I'm only happy for a while. My next project will be to build a fixed tune full legal limit-matching network. Then to experiment with a capacitance hat made up of 6ea. 108" inch CB whips to see if I can increase efficiency on 80 and 160 Meters. Remember if the low portion of the band is not important to you, a 20M and up version need only be 16 feet high!

73's see you on the air.

Next Meeting – Elections

Per our by-laws, we must elect our slate of officers at the January business meeting. The nominating committee, comprised of Chairman Jim Albrinck (K9QLP), Jon Gilmore (KB9RHZ), Dave Barrow III (N9UNR) and Tom Ruhlmann (W9IPR) have canvassed the membership and present the following list of members for election at the January 8th, 2003 meeting.

President:	Gary Sharbuno (WI9M)
	Vic Shier (KB9UKE)
Vice President:	Mike Matthies (WJ9O)
Repeater VP:	Nels Harvey (WA9JOB)
Treasurer:	Gabe Chido (WI9GC)
	Tom Nawrot (AA9XK)
Secretary:	Carol Szudrowitz (KC9CBC)

Nominations from the floor are also welcome at the January meeting.

Automatic members of the 2003 Board of Directors are the immediate Past President Leon Rediske (K9GCF) and Repeater Trustee Ed Rate (AA9W)

Upgrade to General?

G9D09 What standing wave ratio will result from the connection of a 50 ohm feed line to a resonate antenna having a 200 ohm feed point impedance?
A. 4:1
B. 1:4
C. 2:1
D. 1:2

A If a load on a feed line is purely resistive, the SWR can be calculated by dividing the line characteristic impedance by the load resistance or vice versa whichever gives a value greater than one. 200/50= 4:1 SWR

G9D04 What is the typical cause of power being reflected back down an antenna feed line?

A. Operating an antenna at its resonate frequency
B. Using more transmitter power than the antenna can handle.
C. A difference between feed line impedance and antenna feed point impedance
D. Feeding the antenna with unbalanced feed line

C Power reflected back from the antenna returns to the transmitter which in turn reflects the power back towards the antenna. This creates a standing wave. The problem with high SWR really isn't the efficiency of the rig (power in / power out). When the transmitter and antenna impedances are not matched less power is transferred to the antenna.

Ref. ARRL Q&A Handbook

Minutes of the December 11, 2002 Ozaukee Radio Club Meeting

By Nels Harvey, WA9JOB, Secretary.

Call to order and introductions:

The meeting was called to order at 7:33 PM at the Grafton Senior Center by President Leon Rediske, K9GCF. Introduction of members and guests was made.

Events and Announcements:

Ted, KB9RLI's daughter is in the hospital. No word on her situation. Ted wasn't able to attend the meeting. Leon reminded everyone for Ted, that the Post Everything Party (P.E.P.), was to be held on February 15, 2003.

Gene, KB9VJP, reminded us about the May 3rd ORC Swapfest, and asked anyone planning to attend a swapfest to remember to take some of the flyers along.

Bob, W9LO, reminded us there was a 10 Meter CW and voice contest the coming weekend, December 14, and 15th.

Program:
Randy Grunewald, KB9KEG, explained how he uses the N1MM logging program, along with Packet Cluster data, to work contests, and DX stations. The logging program is free, supports many popular contests, QSO Parties, and PSK31 and RTTY. The logging program isn't a comprehensive, do-all program, but works very nicely with Packet Cluster data from over the air, or on the Internet.

After the break:

Stan held his usual auction, and the regular business meeting was convened.

Minutes: The minutes of the last meeting were accepted.

Treasurer's report: Dave, N9UNR moved to accept the Treasurer's report subject to audit. It was seconded by Gary, WI9M, and passed by voice vote.

Repeater Report: Nels, WA9JOB, reported that the new voter that was purchased by the Club about 2 years ago was finally installed at the 146.97 MHz. repeater main site. At this time, only the main site, Germantown, and Mee-Quon Park sites were operational. Nels said that the Port Washington site would be hooked up soon, as will the equipment for the Belgium site.
The 224.18 MHz. repeater has a receiver problem, and the power output is also low. The 440 MHz. repeater is working fine, but like the 220 MHz. repeater, sees little use.

OZARES Report: Jon, KB9RHZ, wasn't at the meeting to give a report. There is no regular OZARES meeting scheduled for December because of the holidays.

Old Business: Jim, K9QLP, reported on the Grafton Christmas Parade. All of the usual assignments were staffed, but just barely. Jim thanked helpers, Gene, KB9VJP, Carol, KB9CBC, Ed, AA9W, Gabe, WI9GC, Gary, WI9M, Bernie, AA9CI, Tom, W9IPR, Nels, WA9JOB, and non Club members, Ted, N9LLT, and Kevin, KB9ICU, who all pitched in.

Ed, AA9W, reported that he had a list of vacuum tubes that are donated to the Club. He offered them for a $1.00 donation to the Scholarship Fund, per tube. The tubes may, or may not be new, or even working.

Ed also reported that he had submitted the necessary updates to the Wisconsin Association of Repeaters, for the Club's three repeaters and associated links. There was no request for funding this year, and Ed was waiting for an answer to whether it was inadvertently omitted, or not needed.

New Business: There was no new business.

Vic, KB9UKE, wants someone else to take over the ARRL Audio News responsibility.
Leon read a Christmas card that the Club received from the Mabee's, John, Rosie and Tabitha.

Jim, K9QLP, gave the Nominating Committee report. The Committee members are Jim, K9QLP, Tom, W9IPR, Jon, KB9RHZ, and Dave, N9UNR. The election in January will be a cascading election, with separate ballots. The new President will be chosen first, and any failed presidential candidates will have an opportunity to run for a different office. The same procedure will be used for the other Offices.

So far, the slate includes for President, WI9M, and KB9UKE, VP, WJ9O, Treasurer, WI9GC and AA9XK, Secretary, KC9CBC, and Repeater VP, WA9JOB. Nominations are still open, until the election.

Adjournment: The business meeting was adjourned at 9:09 P.M.

Next Meeting: The next meeting is the official Annual Meeting and elections, and will be held on January 8, 2003, at the Grafton Senior Center.

Attendance: Nels, WA9JOB, Bernie, AA9CI, Gabe, WI9GC, Tom, W9IPR, Gene, KB9VJP, Bob, W9LO, Terry, KA9RFM, Ray, W9KHH, Don, W9VSC, Herb, WA9UVK, Paul, KB9WCC, Ed, AA9WW, Ed, AA9W, Jane, KB9SYI, Stan, WB9RQR, Leon, K9GCF, Carol, KC9CBC, Jake, KB9ZOR, Kent, N9WH, Vic, KB9UKE, Ben, K9UZ, Jim, K9QLP, Gary, W9XT, Gary, WI9M, Cindy, KA9PZG, Dave, N9UNR, Jim, KA4UPW, Fred, N9FH, Joe, AA9HR, Brian, N9LOO, Bob, N9NRK, Joe, KB9URC, Jim, N9WIU, Dean, K3GGN,Gary, N9UUR, Bob, W9RNA, Julie, KC9AGU, Tom, W9LNL, Randy, KB9KEG, and Cody Clark, visiting from Florida.

Agenda – JAN 8, 2003

1. Introduction Members & Visitors
2. Announcements, Upcoming Events, Etc.
3. Program: Ed Rate's QRP HF Antenna for the FT-817
4. Fellowship Break
5. Auction
6. Acceptance of Minutes as printed.
7. Reports: OZARES, Treasurer, Repeater
8. Old Business - Open to floor
9. New Business – Open to floor
   a. Kitchen Staff replacement
10. Nominations for Officers 2003/Election
11. Adjournment
12. Continued Fellowship Gathering..... Everyone's invited.
    John's Pizza: 1401 11th Ave., Grafton

Return undeliverable copies to

The ORC Newsletter
465 Beechwood Drive
Cedarburg WI* 53012

First Class

Next ORC Meeting

Grafton Senior Citizens Center

1665 7th Avenue, Grafton

Wednesday, January 8th, 2003

7:30 PM