



# 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.



AMATEUR RADIO

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

Volume XXIII

January 2004

Number 1

## The Prez Sez

de Vic Shier (KB9UKE)

Happy New Year! There are many ways to celebrate the New Year. Some ham radio operators celebrate by getting out their old fashioned Morse Code keys and enjoying some slow speed contacts, it is called Straight Key Night. Sponsored by the ARRL, it runs for 24 hours starting on New Years Eve. I would have forgotten about it this year if it weren't for Ed AA9W.

Using a straight key is a challenge for both the sender and the receiver. The line between being diplomatic and just plain fibbing becomes fuzzy on Straight Key Night as we tell each other how good we are doing. The dits and dahs tend to run together and instead of sending "my name is Vic" it comes out as "my nag is Uic" but it's still a lot of fun as is HF work in general.

Why am I telling you this? I want to encourage those of you who have the Technician class license to consider setting a goal of upgrading to General for 2004. Start now and you will be ready to take the exam at our swapfest in May. There are Elmer's in the club who will help you with theory and the 5 word per minute Morse Code. Nothing adds excitement to the hobby like upgrading your ticket.

Elections will be held at this next meeting which is January 14, the second Wednesday of the month. All of the meetings this year will be on the second Wednesday so mark your calendars and see you there.

73's and remember...It's a hobby!

## Just Another Shack

De Todd Sprinkmann (KC9BQA)

This month's Shack visit is with Gregg Lengling - W9DHI.

Gregg has been a ham for 40 years now. His interest in radio was sparked by the Boy Scouts. He fondly recalls the W9BSO station his troop operated. Affiliated with Mother of Good Counsel parish on the northwest side of Milwaukee, this station was a very well equipped one. They had Collins S-Line equipment, courtesy of several generous scoutmasters. Gregg is proud to give back to the Boy Scouts; he serves on the board of the Milwaukee County BSA.

Gregg got his first rig in 1974, a Yaesu FT-101E. He became an ORC member 20 years ago. Nowadays, W9DHI operates both HF and VHF, with a variety of equipment. On HF, he has assembled an Elecraft K-2. The K-2 has a great DSP and a fast autotuner. He dazzled me with how well this rig works. Using his computer to control filters and such, he easily took noisy, crowded CW signals and made them crisp and clear. Gregg says the K-2 is the best radio he's ever had.



**Gregg, W9DHI, in his heated garage "shack"**

Gregg also has put together an Elecraft KX-1. This unit is about the size of a deck of cards and puts out 3 watts on 20, 30 and 40M CW. Gregg is an avid CW ragchewer. While he doesn't pursue DX, he enjoys CW with hams all across the globe.

Gregg's antennas on HF are a KT-34 beam for 10, 15 and 20M. For 30 through 160M, he uses a sloper that uses the tower as a counterpoise.

When mobile, Gregg works SSB with a Yaesu FT-857. The FT-857 puts out 100W on 160 thru 6M, 50W on 2M and 20W on 440Mhz. This compact unit has a low-key faceplate that mounts in the car and is connected to a rig in the trunk. Gregg uses Hamstick antennas, run through an LDG tuner. Gregg went out of his way to say that 17M is a great band for working SSB.

Gregg is recently retired from the 2-way radio business. His VHF radios reflect this. Gregg has modified Kenwood commercial radios for 10, 6, 2 and 440 FM work. While we were listening to CW on the K-2, the VHF rigs would occasionally come to life. Gregg likes to keep tabs on repeaters that he's been involved with through his business.

Gregg is also involved with the WERA. That stands for Wisconsin Experimental Repeater Association. He's been a member of WERA for over 25 years. This group experiments with repeaters and linking same. Gregg mentioned something about beverages, as well. I don't think he was talking about very long wire antennas for 160M.

Gregg has a variety of other interests. He and his wife Deb travel quite a bit. This ties in nicely with their love of gardening and scuba diving. They have visited gardens in England and Ireland and by the time you read this, Gregg will be diving in Mexico.

Gregg also described himself as a computer geek. He has a variety of equipment networked between his house and garage (where the shack is). He is also into digital photography, HDTV and classic cars.

In the garage is a mint, aquamarine Ford pickup. I'm no classic truck expert, but this was a beauty. It appeared to be about a late 50's, early 60's model. The license plate read

DEBSBED. This must mean it's a gardening vehicle for Mrs. Lengling.

Gregg and Deb have a daughter, Danee. Danee has been in Baghdad since April. She is a supply clerk with the 724th engineering battalion.



**Need an acceptable reason to erect a tower? How about to display a Christmas star? It worked for Gregg (W9DHI).**

## Upcoming Events

**Jan. 14 – Meeting and Elections** – Contact WI9M (Gary) or WB9RQR (Stan) if you are interested in running for office of nominating another.

### March 6 – Post Everything Party

American Legion Clubhouse – [C@6](#) & [D@7](#)  
\$20 per person – Reserve by Feb. 20 with Julia Nawrot (KB9WBQ) – 10335 N. Grasslyn Road, Mequon WI 53092

### May - ORC Swapfest

## Contesting

De Bob Truscott (W9LO)

My 3<sup>rd</sup> favorite contest (right behind Field Day & Nov. Sweepstakes) is coming up this weekend, and I should have mentioned it last month, but

goofed up & didn't. Those of you who get the newsletter via the Internet may get it in time to join in the fun , and to the rest of you I apologize. It's the CW NAQP, (North American QSO Party). It starts at noon on Sat, Jan.10, & runs for 12 hours, of which you may operate only 10 hours. The message is simple—your name & section. And, unlike most contests, you may work a given station on each of the bands from 160 M thru 10 M, which means that you can have 5 virgin bands to work with instead of the usual 1. This translates to more contacts and more fun. The SSB version runs later in the month—I promise to work it if some of you phone ops will try CW on Saturday.

The other highlight of the month is the CQ WW 160-Meter Contest on Jan 24-25. Conditions have been good on that band lately, and the Qs should be easy to come by. And don't be turned off because you don't happen to have a 160-M antenna. I just tie the inner & outer conductors of the 80-meter dipole feedline together at the output of the tuner, and load it up as a random wire. It works pretty well, although it will never be a contest winner. (Little I care, since I'm not in the habit of winning contests anyway.)

In the area of "Can You Top This?", W9IPR showed up in the ARRL CW only 160-Meter Contest last month on SSB. He thought nobody answered his CQs because of all those CW stations who kept interfering with him.

Reported Scores:

### **CQWW CW**

**W9XT**-- 812 Qs, 36 Zones, 116 Countries

#### **ARRL 160 Meter Contest:**

**W9XT**--369 Qs, 64 Sections

**N9FH**--349 Qs, 55 Sections

**W9LO**--340 Qs, 57 Sections

**KA9RPR**--82Qs, 33 Sections

**W9KHH**--80Qs, 31 Sections

**WI9M**----35 Qs, 17 Sections

#### **ARRL 10 Meter Contest:**

**W9XT**--CW-707 Qs, 55 Sec.

PH-631 Qs, 48 Sec.  
**W9LO**-CW-188 Qs, 43 Sec.

Coming up in January:

**Jan. 10-11**--North American QSO Party-CW Rules in Jan. QST, page 98.

**Jan. 17-18**--North American QSO Party-Phone Rules in Jan. QST, page 98.

**Jan. 25-25**--CQ WW 160 Meter Contest-CW Rules in Jan. QST, page 98.

**Feb. 7-8**-----CQ World-Wide RTTY WPX Contest Rules in Jan. CQ, page 56

Have fun contesting.

Bob, W9LO

## **QRP THE OLD FASHIONED WAY - BUILD IT**

De Gregg Lengling – W9DHI

As many of you know I spent over 25 years in the 2-way radio business and have been a ham for over 40 years. I've built my share of doodads and radios and stuff and then for Christmas of 2002 my wife bought me the Elecraft K2 HF Radio Kit and boy did I have a blast. This is now my main HF rig at home and I couldn't be happier. Even though I did build the QRO version with the 100-watt output the basic radio is actually a QRP radio but it's rather large to take hiking or camping. So guess what Elecraft came out with a "Pack-Backer's Dream Machine". Enter the Elecraft KX1.

The KX1 is a 2 band (20 meters and 40 meters) CW transceiver. There are also options for a 30 meter module (KXB30) , a built-in auto antenna tuner (KXAT1) and a Keyer Paddle (KXPD1) (of course I had to have all of them). It also receives USB and LSB so makes for a great SWL radio also. The receiver is as sensitive as anything on the market and due to DDS (direct digital synthesis) it is a general coverage receiver from 5.0 to 9.5Mhz and 12.0 to 16.5 MHz (with the KXB30, 5.0 to 14.35 complete). Transmit coverage is: 7.0 to 7.3 MHz, 10.1 to 10.150 MHz and 14.0 to 14.350 MHz. Now this

is a true QRP rig, it operates at approximately 4 watts out at 13.8 volts and 1.5 to 2.0 watts at 8 volts.

Okay now you are thinking just how heavy and big is this sucker (especially if it's a kit you have to build). It is small and has a very low current consumption. It is a rugged 1.2" high by 5.3" wide by 3" deep custom metal enclosure. Okay so in such a small box what can you do. Well first off let me tell you that there is even a pair of battery holders internal to it to hold 6 AA cells to provide up to 8volts of power internally. So here's what it does:

1. Rugged and small
2. Weighs 9 ounces (11 ounces with ATU and paddle options)
3. 3-digit high-efficiency LED display with brightness and time-out control
4. 20, 30 and 40 meter ham band plus SWL coverage
5. Operates from 6.5 to 14VDC (internal batteries from 7.2 to 9 volts)
6. DDS VFO for excellent temperature stability
7. Receive current typically 34 ma, display adds 1 to 10 ma
8. Rit with clear control, +/- 10kHz in 20Hz steps
9. Two frequency memories per band
10. Simple menu system for configuration
11. Built-in battery voltage monitoring
12. CW TX, CW/SSB RX (can zero-beat AM stations)
13. White LED logbook lamp with separate on/off switch (7-ma typ.)
14. Programmable audio Morse code feedback on switch press, including frequency announcement.

#### RECEIVER

1. Low-current, single-conversion super-het receiver
2. Variable bandwidth xtal filter (approx. 300 to 2000 Hz) AGC
3. Bar-graph S-meter display mode
4. Multiple VFO tuning rate selections
5. 10 Hz tuning resolution

#### TRANSMITTER

1. 1 to 4 watts out depending on supply voltage - Power can be reduced if desired via internal trim pot
2. Clean, click-free keying waveform
3. Fast, silent break-in with variable QSK delay

#### CW FEATURES

1. 2-memory keyer with iambic A and B modes
2. Reversible dots/dashes 8 to 50 WPM (internal keyer); 70+ WPM (external keying)
3. Programmable message repeat interval
4. Adjustable sidetone volume and pitch

#### OPTIONS

1. KXB30 30-meter adapter: Adds 30-meter band, WWV and more SWL coverage
2. KXAT1 Internal Automatic Antenna Tuner - Allows use of a single random-length wire antenna on all bands
3. KXPD1 Keyer Paddle: Custom designed for the KX1, plugs into the front panel and is retained by a thumbscrew. 45-degree orientation for ease of use. Physically reversible for left or right handed operation.



**The Elecraft KX1 – a two band QRP transceiver with a keyer- receives SSB/CW & transmits CW only**

Okay to the nitty gritty....does it work and how well....how was it to build. Well first off because of the size and complexity this is defi-

nately not a first time kit builders kit. However to make it possible to be built with common tools (Temperature controlled soldering station, needle nose pliers, small/sharp diagonal cutters and screwdrivers, and a VOM) the 3 surface mount components...the DDS chip, 50mHz osc. Chip and 2.7 volt regulator are preinstalled on the board. From there it's a matter of following the well written instructions. This project took me about 8 hours of leisurely assembly. Some of the most demanding building steps are those that require you to wind your own toroids. While most are just single windings there are a couple that are bi-filer transformers which take a little time and patience. But even with all these tasks the kit is astonishingly easy to build.

How does it work? In one word GREAT! I've had a blast with it already and have over 35 countries, yes countries worked on 1-1/2 watts with a 23-foot length of wire.

The variable crystal filter is great when the bands are hot and there is a lot of activity. While watching the Elecraft reflector recently, there were various reports of users in the US, England, Germany and other countries using the KX1 on the CQWW contest. So if they can play with the big-boys so can you.

The best part is now I always have ham radio with me, no matter where I go. This little puppy sits in a prominent position on my shack bench and is always ready to hit the suitcases when I leave town...or even this summer you'll probably find me at a park bench in Cedarburg working the world.

For more information about the KX1 and all the other great Elecraft products go to: <http://www.elecraft.com>

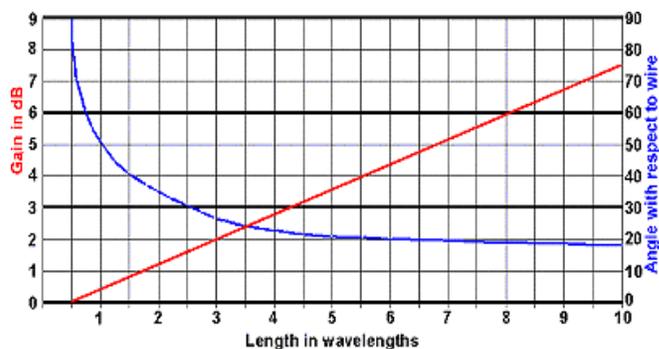
73, Gregg W9DHI

## A High Performance Wire Antenna

De Jim Hilins (WA4UPS)

Figure 1 is a treasure map. Contained within this diagram is one of Mother Nature's important

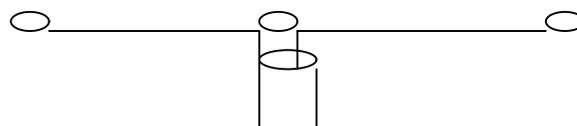
secrets. The mystery of wonderfully loud signals emanating from insignificant looking antennas strung between two cooperative trees is explained in this simple chart. This map to the "Treasure Island" of incredible antenna performance was lifted from the 14th edition of the ARRL Antenna Book, page 7-1.



**Figure 1**  
**Gain versus antenna length**

Popularity doesn't guarantee high antenna performance -

The all time favorite wire antenna is the half-wavelength, center-fed, dipole. It is easy to build and it performs adequately. The dipole is the reference used to measure the performance of the other antennas. It's the base line. The dipole is a suitable reference for amateur radio purposes because you can actually build one.



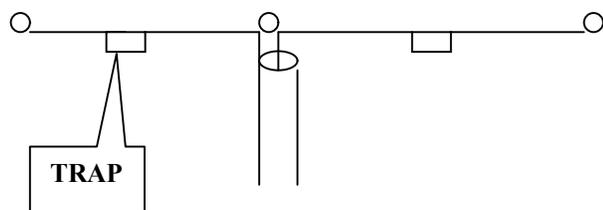
**The venerable center fed (50 or 72 ohm coax) 1/2 wavelength dipole - one per band**

In contrast, all the antenna patterns used in this ARRL antenna manual are referenced against a theoretical 'isotropic antenna.' The results are expressed in dBi.

Isotropic Antenna

An Isotropic Antenna is a hypothetical antenna radiating or receiving equally in all directions. Such antennas do not exist physically, but represent convenient reference antennas for expressing directive properties of actual antennas.

One band just isn't enough; most hams want to be operational on as many bands as possible. This requires a separate dipole for each band. Since we now have eight HF bands, that means that eight different coax fed dipoles are required to adequately cover all the bands from 80 through 10 meters. Eight separate antennas are unacceptable to the average Ham. Most of us want 80 through 10 meters coverage with a single antenna. There are several ways to achieve this goal of a single antenna for 80 - 10 meters. The most popular technique for achieving multi-band operation with a single antenna is to divide the antenna into appropriate lengths with 'traps.'



**A dual band "trap" dipole**

Traps act like electronic switches, which isolate the correct portions of the antenna wire to achieve half-wavelength resonance within each desired band. A five-band trap antenna can use as few as two traps or as many as eight. It all depends the design. In general, the more traps, the better behaved the antenna is in terms of operating bandwidth and acceptable SWR. There is a high price to pay for the convenience of traps.

#### Disadvantages of trap antennas

1. Trap antennas are usually expensive.
2. There is a loss of operating bandwidth if a low SWR is a requirement.
3. There may be a slight loss in efficiency caused by the traps themselves.
4. Hard to troubleshoot
5. Detuning effects of nearby objects
6. They are heavy and often difficult to support

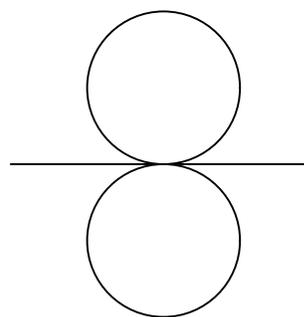
#### Advantages of trap antennas

1. Dipole performance at best

2. No tuner required, if you are willing to operate within narrow portions of the bands.
3. Trap antennas often require trimming
4. Slightly shorter than full size dipoles
5. Traps fail
6. One antenna can cover many bands

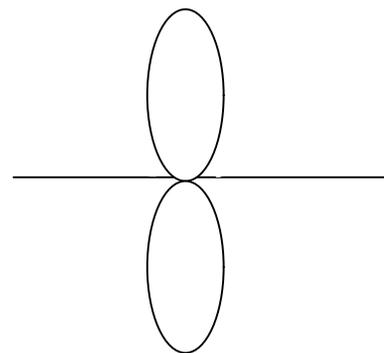
It is my argument that trap antennas are not an efficient use of available antenna space.

If you put up a 120' long 80 - 10-meter trap antenna, why use only 33' of it on 20 meters? There are significant advantages to using the full antenna length on all bands. Let me show you some interesting data.



**Figure 2 – Radiation pattern of a 1/2 wavelength dipole**

Figure 3 is the radiation pattern of an 'Extended Double Zepp' or 'EDZ.' An EDZ' built for 20 meters is about 85' long. Notice the difference in the pattern of this antenna and the curve for the dipole in figure 2.



**Figure 3 – Extended Zepp radiation pattern**

The narrowing of the lobes concentrates the energy radiated by the antenna. Concentrating energy is another way of saying the antenna

develops gain. The Extended Double-Zepp produces between two and three dB gain. A 3-dB gain is the equivalent of doubling your output power. Note the four 'minor lobes.' Operation is not limited to the direction of the major lobes.

The point of comparing these two curves is to show that it is possible to build better antennas than dipoles. This is not the end to the story. In fact, let's go back to the beginning. Figure 1 gives us the most important reason for using the full length of 80 or 40-meter antennas on higher bands where antenna length becomes long. Notice the curve, marked "gain." It rises as the length of the antenna increases beyond  $\frac{1}{2}$  wavelength. These gain figures are not large. For example, on 10 meters, the gain of an 80-meter dipole will be only 3 dB. But, that's three dB you wouldn't have if you were using a dipole. It's the same as doubling your power. Remember, every dB counts. 3 dB here, another 3 dB, they add up to a big signal. Figure 1 proves a very important point. Put up a lot of wire, get a lot of gain. It's that simple. Combine the advantage of a long antenna with techniques that lower the radiation angle and the result is unbeatable. This is the secret of high performance wire antennas. It's not magic, it just taking advantage of physical laws.

Have a great day!

## Next Meeting –

### January 14, 2003 – Elections

Elections are for one-year terms.

Nominating committee members are Gary (WI9M) and Stan (KB9RQR). They will be accepting nominations directly and from the floor. You must be a paid member to vote.

The current officers are:

President – Vic Shier, KB9UKE

Vice Pres. – Leon Rediske, K9GCF

Repeater VP – Nels Harvey, WA9JOB

Treasurer – Tom Nawrot, KG9DP

Secretary – Carol Szudrowitz, KC9CBC

Past Pres. – Leon Radish

## Club Static

Where did the term Gin Pole come from...well here's the answer. It is a contraction of the work "Engine" as noted below in definition and also the link to the online Hyperdictionary.

\Gin\, n. [A contraction of engine.]

1. Contrivance; artifice; a trap; a snare. – There you have it , “ a pole contrivance” we use to snare items up a tower.



**An unusual anti-climb contrivance is used on this tower at W9DHI's**

Gary Bargholz, N9UUR, has agreed to help develop a video of the ORC activities etc. to be used for club promotions etc. on Channel 14. Look around and let me (Tom, W9IPR) know what still photos and video tapes you might have that could be used. This is a great opportunity.

## Dec. 10, 2003 Minutes

De Carol Szudrowitz

### Announcements:

Vic KB9UKE stated there is a typo on the Club membership application. Dues are \$7.00 for

Club and \$8.00 for Repeater membership just as always.

Sus's pictures and a book from YASME on dx'ing and Contesting (from Vic) are available for viewing during break and the program. The pictures are an interesting history of previous Post Everything parties.

**Program:**

Nels WA9JOB and Greg W9DHI did a Radio Workshop, and checked several portable and mobile radios for proper frequency, sensitivity, and deviation. Other members had equipment for show and tell

**Auction:**

By Stan WB9RQR

**Break** for viewing equipment and visiting.

**BUSINESS MEETING**

**Secretary's Report** was accepted as printed in newsletter.

**Treasurer's Report** – Motion made by Mark AB9CD to accept it and seconded by others.

**Board Meeting:**

The board decided to table idea of being on WE Energies Tower after looking at expenses and coverage area. We can look into it again in the future if a need arises. Coverage at that site would be a little less as it is 7 miles east of current site. No changes in club dues as it is too late according to the by-laws to do anything. See note further down.

**Repeater Report:**

The 7K controller failed again as a result of last Summer's power surge so it is in the Scam Hospital again. The main microprocessor failed and was actually upgraded with a newer version by Bob Schmid, WA9FBO, Scam's owner. The controller will interface with the 220 repeater and 10-meter link. Two meter and 440 repeaters are OK. Question by Gabe WI9GC – Will we be able to check net on 10 meters? Nels WA9JOB said he thinks it could be wired that way, just more expensive.

**OZARES**

Reminder was given by Jon KB9RHZ for a meeting the next day. Training will be the focus for the next few months.

**Scholarship Fund**

Check with Ed AA9W. There are more donations thanks to Bob W9RNA (2 Heath kits).

6146 60-80- receiver that works. Drake 225 tuning unit. Etc.

**Swap Fest**

Remember to call Gene KB9VJP for flyers to take to other swapfests or places of interest.

**Dues:**

Board decided it was too late to change anything according to the by-laws and we are currently pretty healthy financially. Gabe WI9GC commented he thought what was needed was clarification of when you can vote and when you can not vote during an election. Dues should be paid by Jan 1 but one is a member in good standing till February. So Tom W9IPR made a motion that a committee look at the by-laws for an explanation Ted KB9RLI seconded this.

**Reminder:**

Radio kit building will start in Jan with Gregg, W9DHI.

**New Business:**

**Post Everything Party:**

Ted KB9RLI said that due to personal circumstances he could not chair it this year. Julia KB9WBQ volunteered.

**Nominating Committee:**

Gary WI9M and Stan WB9RQR volunteered to chair this.

**Audit Committee**

Kent N9WH has graciously agreed to chair this with Nels WA9JOB and Ed AA9W.

Meeting ended at 9:15. Move to adjourn by Vic and seconded by Gabe.

**Attendance:**

Herb WA9UVK; Ray W9BUJ ;Ron W9BCK; Bernie AA9CI;Bob W9LO;Ray W9KHH;Jim N9WIU;Gene KB9VJP;Roland KB9TMB;Nels WA9JOB;Greg W9DHI;Gabe WI9GC;Ed AA9W;Kent N9WH;Ted KB9RLI;Stan WB9RQR;Gary WI9M;Jon KB9RHZ;Leon K9GCF;James KA4UPW;Julia KB9WBQ;Mark N0OKS;Tom W9IPR;Terry KA9RFM;Mark AB9CD;Gary W9XT;Ron KC9DKQ;Paul KB9WCC;Don AA9WP;Tom AA9XK;Vic KB9UKE;Ben K9UZ;Joseph KB9URC;Dave N9UNR;Ed AA9WW;Jake KB9ZOR

Carol KC9CBC

Post Everything Party

March 6, 2004

**American Legion Clubhouse  
Peter Wollner Post 228  
W57 N481 Hilbert Ave.  
Cedarburg**

**Cocktails 6:00  
Dinner 7:00**

*hors d'oeuvres before complete buffet dinner*

*recognition for spouses*

*entertainment after dinner*

*presentation of annual awards*

(\$20.00 per person)

**Don't forget to bring your usual gag gift  
from your ham radio junque box**

**!!!!!! Reservations needed by February 27<sup>th</sup> !!!!!**

---

**2004 ORC Post Everything Party Reservation Form**

Callsign \_\_\_\_\_ Number attending \_\_\_\_ X \$20.00 = \_\_\_\_\_

Names of those attending \_\_\_\_\_

Make your check out to **Ozaukee Radio Club** . . . . . and send to -  
Julia Nawrot KB9WBQ 10335 N. Grasslyn Road Mequon, WI 53092

## **AGENDA**

*Jan. 14<sup>th</sup>, 2004*

1. Call to order.
2. Introductions.
3. Announcements, Upcoming events, Etc.,
4. Program:
5. Fellowship Break
6. Auction.
7. Acceptance of Minutes as printed.
8. Treasurer's report – Tom (AA9XK).
9. Repeater report – Nels (WA9JOB)
10. OZARES report – Jon (KB9RHZ).
11. Committee reports.
12. OLD BUSINESS
13. NEW BUSINESS.
14. Elections
15. Adjournment to ?

Return undeliverable copies to

### **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, Jan. 14<sup>th</sup>**

**7:30 PM**