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# NOARS LOG

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Volume 40, Issue 2

Welcome to *NOARS* Country

February, 2004

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## ***Club FM Repeaters***

UHF: 449.800/444.800 MHz

VHF: 146.100/146.700 MHz

6 meters 51.16/51.66 + 91.5

Joined with M2M parent repeater output

144.550/145.150 MHz

Home of BART the DX ALERT

### **2004 EXECUTIVE OFFICERS**

President: Ted Shook, W8TAS

Vice President: Clark Beckman, N8PZD

Secretary: DeeDee Ohman, KA8VTS

Treasurer: Tom Porter, W8KYZ

License Trustee: Mike Willemin, W8EU

### **NOARS STANDING COMMITTEES:**

A.R.R.L. VE: Tom Porter W8KYZ

DX Member: Tedd Mirgliotta KB8NW

Banquet: Gary Gargus N8DIU

Property Manager: Ned Jones WD8CSP

U.S.S. Cod: Ted Jones KA8WMX, Don  
Winner WD8RZG

K8KRG WEEKLY ON-THE-AIR

REPEATER NETS

*WD8IQJ – KC8YJW – W8ADV*

*W8KYS – K8PJS – looking*

NOARS Net Wednesday 9:00 P.M.

NOARS Tech Net Thursday 8:00 P.M.

146.700 – 444.800

In this issue;

New Members 2004– Contest Corner

Upcoming Hamfests and Events - VE exam locations

Vermont antenna bill – Power supply part 1 of 3

DXCC News - BARF 80 stops

Where's the DX? - Swap –N– Shop

## Messages from the front table - Autumn 2003

### Upcoming hamfests and events

Feb 15th Livonia ARC – Farmington Hills Mich. - Bill W8WSJ – 248-486-6443

March 13th Mammoth Cave ARC – Cave City, KY – Larry KN4IV – 270-651-2363

March 21st Toledo – Maumee, OH – Brian WD8MXR – 419-385-5624

March 28th Lake County– Madison High School – Robert K8BL – 440-951-0283

April 18th – Cuyahoga Falls – Ted Sarah, W8TTS - 330-688-2013

April 25th – 20 over 9 – Don Stoddard, KI8SS – 330-793-7072

May 14-16 – Dayton – Gary Des Combes, N8EMO  
Phone: 937-276-6930 or 937-276-6934

Is NOARS field day as much fun for you as it is for me?  
Let's talk about it at the next meeting.

### VE Exams – basic instructions;

For VE Exams the candidate must bring the original and copy of the current license and CSCE forms (if applicable), identification, and the correct exams fee monies. It is always a good idea to check with the VE examiner in the case of poor weather cancellation or any special needs. The 605 form can be obtained on-line at [arrl.org/arrlvec/nvec605.pdf](http://arrl.org/arrlvec/nvec605.pdf), have this filled out ahead of time and make your test less stress.

Elyria, 3d Sunday each month at American Red Cross, 2929 West River Rd, Elyria OH 44035 – Testing begins at 1 PM, walk-ins allowed, park in rear, use rear door. Contact Charles S. Hall, 216-433-3036

Akron, 2nd Saturday odd months at Summit Co. American Red Cross, 501 W Market St, Akron OH 44303 – testing at 3 PM, walk-ins allowed. Contact Bruce M. Ferry, 330-929-2766

Canton, Stark Co. Sheriff Office EOC, 4500 Atlantic Blvd NE, Canton OH 44705  
Testing at 9 AM walk-ins allowed. Contact Gary L. Kline, 330-837-2927

Wickliffe AES, 1st Saturday even months at 28940 Euclid Avenue, Wickliffe OH 44092 Testing begins at 12 PM – Walk-ins are welcome, contact Scott Farnham, 440-256-0320 – do not call AES direct.

Independence Town Hall, 6652 Brecksville Rd, Independence OH 44131 – test dates March 9, May 4, July 13, September 14, November 9, 2003 – Doors open at 9 AM, pre-registration is appreciated, walk-ins taken. Contact Gary Dewey, 216-642-8705

### Roll Call - January 19th

Jack Malloy WA8Q  
Larry Shimerka KC8VZZ  
Bill Savage WA8GEO  
Keith Konnenth KC8YJW  
John Pearl K8RWR  
Daniel H. Schlick KB8LKH  
George Sherwood KA8OYE  
John McKenna WD8IQJ  
Dee Dee Ohman KA8VTS  
Pat Sweeney K8PJS  
James Henderson N8MPC  
Douglas Krucinski WD8BJY  
Joni Roberts KC8BXH  
Ken Roberts KC8BQO  
Rosemary Shook KD8SC  
Brian Hellinger N8VUB  
Joe Cebula W8GWD  
Tom Porter W8KYZ  
Ted Shook W8TAS  
Clark Beckman N8PZD  
Glen Thome N8AKS  
Larry McIntyre W8LUM  
Gary Gargus N8DIU

Here is some humorous trivia  
taken from the TV program  
Hollywood Squares;

Q. Do female frogs croak?

A. Paul Lynde: If you hold their little heads under water long enough.

Q. If you're going to make a parachute jump, at least how high should you be?

A. Charley Weaver: Three days of steady drinking should do it.

Q. Back in the old days, when Great Grandpa put horseradish on his head, what was he trying to do?

A. George Gobel: Get it in his mouth.

### January 19, 2004 Meeting Minutes

The meeting began at 7:30 p.m. with 23 members and guests present.

Treasurers Report was read and a motion to approve was made and seconded.

Newsletter - If you are having trouble receiving your newsletter, please contact Clark Beckman, N8PZD. Editors note, please put NOARS in the subject line and your callsign or the spam filter will toss it out.

Nets - The nets are going really well. Editors note, welcome Keith KC8YJW as a net control on Wed nights. We are looking for a net control operator for the Thursday night Tech net.

Contesting - January 23-24 - Everything from 6 meters and up. A note from the editor, check out the list on page 6 and try out one till you get to your favorite, the club would like to submit the combined score in some of these.

USS Cod - It's still floating and the radio is still working.

Sunshine - A plant was sent to Fred Collins who is in the Lutheran Rehabilitation Home and a card was signed by everyone. Chick is doing well at home after his hip replacement surgery. Ted Jones was in the hospital, but is home now.

Banquet - We had 68 people who attended the banquet. Everyone had a good time.

Winterfest - Volunteers were requested to help out with the hamfest. Six people will work the kitchen, 2 people will work the door, and John McKenna, WD8IQJ, will be taking applications and renewals at the club table.

New Business - The "Now You're Talking" books have been delivered to the libraries in the area. Added by the editor; There is interest in using the 145.15 for slow scan television, Sat night.

The winner of the 50/50 drawing was Patrick Sweeney.

The meeting was adjourned at 8:35 p.m.

See you all February 16th, same time, same location.

### AMATEUR RADIO ANTENNA BILL IN PLAY IN VERMONT

Vermont amateurs are hoping their state will be the 21st to adopt Amateur Radio antenna legislation based on the limited federal preemption known as PRB-1 - <http://www.arrl.org/FandES/field/regulations/local/prb-1.html> -. A bill in the Vermont House, H.602, not only would incorporate the essence of PRB-1's stance that local governments must "reasonably accommodate" Amateur Radio communication with "minimal practicable regulation," it would include a schedule of minimum regulatory heights for antenna structures. H.602 has been referred to the House Local Government Committee.

"We need you to contact your local state representative and state senator and ask them to support and/or co-sponsor House Bill H.602," Vermont ARRL Section Manager Paul Gayet, AA1SU, said in a letter to all Vermont hams. "We need to get it out of committee and onto the House floor." Gayet says the bill's sponsor, Rep Ira Trombley of Grand Isle, already has testified on behalf of the measure in committee, and the legislative pace is picking up. "Time is of the essence," Gayet said. As drafted, H.602 would, in general, prohibit localities from restricting the overall height of an Amateur Radio antenna and associated support structure to less than 75 feet above ground level on lots smaller than one acre. On larger tracts, the measure would keep municipalities from restricting the height of an Amateur Radio antenna system to "less than that specified in 47 C.F.R. §97.15(a)" of the FCC's Amateur Service rules. While that provision does not actually specify a maxi-

*(Continued on page 4)*

## Membership committee report for January 2004 – **Thanks to all who attended the 2004 winterfest!**

A special thanks to the faithful 15 who renewed their membership at that event!

Further more lets all welcome the 6 new members: KA8RHH WAYNE – KC8YJF GARY – KB8SPW MARC  
KD4VFG MICHEAL – KC8UZZ LARRY - N8HJI JAMES

WELCOME BACK TO: KA8BWI JERRY – KB8TK TONY – WD8OTY JOHN – W8YHT ED  
WE MISSED YOU and SPEAKING OF THAT!

### **2004 Dues are due! — And we don't want to miss YOU this year!**

If you've noticed your call sign is highlighted on the label of your paper newsletter this means that your dues have not been received by the publishing date of this newsletter! And this will be the last newsletter sent on your 2003 membership! If you are an email subscriber you will be sent a note to remind you. And then no more e-newsletters. If you've sent in your membership since 2/5/04 then disregard this notice. And welcome back!

YOUR participation in this club is very valued and much appreciated and allows us to continue providing the services and activity's that has made NOARS one of the leaders in the Northern Ohio amateur radio community. We know that with your support we will go on adding to the value of your ham radio experience

Please use the handy application/renewal form at the back of this newsletter to update us.

Thank you, John K McKenna WD8IQJ - NOARS membership chairman

PS the March 2004 roster update will include any membership data that I have up to 3/1/04 – It will be distributed via and extra page attachment on your regular news letter mailing! If you have any changes or corrections to the roster get them to me via the PO box or email (DEWD8IQJ@aol.com) no later than 2/27/04. Otherwise it will have to wait till the August update!

Thanks, John

*(Continued from page 3)*

mum height, it does require owners of antenna structures more than 200 feet above ground level and located at or near a public airport to notify the Federal Aviation Administration and register them with the FCC.

Under the proposed legislation, municipalities could not restrict the number of antenna structures for any lot size. Special provisions would prevail in "duly designated design control or historic districts."

There municipalities would be permitted to restrict antennas and associated support structures to overall heights of less than 75 feet, but they could not altogether prohibit ham radio antennas and support structures.

In such circumstances, an Amateur Radio antenna and support structure could be at least as tall as "the highest permissible construction in any other location" within the district. The Vermont bill would essentially grandfather all Amateur Radio antennas and support structures constructed prior to the effective date of the proposed law and would permit their repair or replacement without further permitting or municipal review.

Gayet credits ARRL Vermont Volunteer Counsel Trevor Lewis, KD1YT, for drafting the legislation. A copy of the bill is on the Vermont legislative Web site <<http://www.leg.state.vt.us/database/status/status.cfm>>.

Vermont amateurs may find their local House of Representatives and Senate members by visiting the Vermont Legislature Legislative Directory Web site <<http://www.leg.state.vt.us/legdir/legdir2.htm>>.

Taken from ARRL News 02/06/04

BARF 80 has been retired, one of the original ham radio message servers has gone silent. There will be many of you reading this that contributed to the upkeep of both the files and the actual equipment that began in the Tandy family and progressed to keep abreast of the technology. There were many long distance contacts made to gain the wisdom from the files about dx activities as well as basic theory on repairing station equipment, the internet has made this easy for many of us and in the year 2003 the calls were less than a dozen. Thanks to the KB8NW Tedd for his patience with the equipment and us who used it.

## From the repair bench; Power supply basics – part 1 of 3

I get my best ideas for articles from on the air conversations. One night I was listening to a group discussing 13.8 volt DC power supplies. This is one piece of ham gear that all of us own and use every day. Most of us either use the ultra common Astron power supplies or something of the same design.

**THE GUTS** - Look inside any of the popular 13.8 VDC power supplies and you'll find the same stuff in about all of them. There will be a large transformer, a 2 serving soup can sized filter capacitor a small PC board and several large transistors on a big heat sink. Regardless of size (amperage) the basic design is the same. If you understand one, you understand them all and better, can home brew them. Clark and I were both working on power supplies that day. Mine was a real classic hamfest bargain. I found it hiding under a table for \$2.00, yup a 20 amp 13.8 volt power supply with burnt out stuff on each side and a big black hole burned through the regulator board. I know many of you are laughing, but that isn't bad for two bucks!

The important thing is that the hard to find expensive parts were all in good shape. That is the power transformer, rectifiers, heat sinks and a nice big steel chassis. Oh yes, I forgot to mention that the power switch was welded shut. It must have been one hearty lightning bolt that hit it!

**POOR DESIGN** - The first thing I did was remove the smoked parts and check out the rest after tracing out the circuit. After examining the design, I rapidly came to the conclusion that whoever repaired this last had to have been on street drugs. Deciding that, I ripped out the burned remains of the original goofy regulator board and built my own using our friend LM723. The LM723 is a twenty some year old IC designed to be a universal voltage regulator. Being cheap and well understood it found in most of our bench supplies and is the core of the popular Astron series. The schematic shows the design that have been used several times in homebrew supplies. There are many variations to this basic design and none of the parts values are critical.

**HOW IT WORKS** - Any bench supply consists of a transformer with a secondary of about 18 volts AC, a rectifier block and a filter capacitor. With no load, the DC voltage across the terminals of the filter are going to be 18 to 30 volts. Under load the voltage will sag due to the impedance of the secondary of the power transformer. If it sags too far, the supply will loose regulation and it will pass 400 Hertz ripple (hum) to whatever you are powering with it. Since the voltage across the filter capacitor can vary wildly as the load changes we need a method of regulating the voltage. The work of regulation is done by the pass transistors, they in turn are controlled by the 723 regulator. Lets look at the 723 in a little more detail now, note that it has its own filter power supply made up from diodes and a filter capacitor. The 723 has its own internal highly regulated voltage reference supply (pin 6). Internally the 723 compares this reference voltage to the output of the power supply. Voltage adjustment pot RV1 sets the ratio of the reference voltage to the output of the supply. This sets the output voltage. The output of the 723 is pin 10. This voltage drives the base of Q1. Q1 acts as a simple amplifier to increase the current available to drive the current hungry bases of the pass transistors. As the load increases on our power supply, the voltage from the wiper of RV1 drops as well. When this occurs the 723 increases the voltage from pin 10 driving the pass transistors harder through Q1. The more base current through the pass transistors, the higher the output voltage. Thus we have regulation, the 723 continuously changing its output voltage to meet the minute changes in load on the supply. Remember, the 723 does the thinking, the pass transistors do the work!

Stay tuned until next month, we will cover the pass transistors and our enemy even in the wintertime – heat.

**DXCC Honor Roll deadline looms:** The deadline to appear in the next DXCC Honor Roll listing is March 31. Submissions must be postmarked by that date for submissions to be included. The DXCC Honor Roll list will appear in August 2004 QST. At present there are 335 entities on the DXCC List, and you must be within the numerical top 10 DXCC entities to qualify. The minimum requirement for Honor Roll now is 326 current entities.

Bill Moore, NC1L - ARRL DXCC Manager, also states that the following are approved for DXCC credit:

Juan de Nova/Europa - TO4E and TO4WW (from November 25, 2003 to December 21, 2003)

Iraq - YI/N2OBM - Starting January 2004, YI9ABL - Starting December 2003, YI3Q - Starting January 2004, YI9YMA - Starting January 2004, YI9ZF - Starting January 2004

Where's the DX? - Taken from Tedd KB8NW OPDX bulletin – [www.papays.com/](http://www.papays.com/)

Antarctic Activity - Gianni, I1HYW, announced this past week that several special Italian callsigns have already been issued for the Antarctic Activity Week which will be held from February 22-28th. The callsigns issued so far are: TMOANT by F5NOD, IR1ANT by I1HYW, I16ANT by I6DHY, IR6ANT by I6YOT, I17ANT by IZ7AUH, IR8ANT by I8ACB and IR0ANT by IZ0EGC. Gianni also states that as soon as other callsigns are received from the Ministry of Communication, he will up date the list. They have arranged to use a unique QSL card (printed by IT9EJW) and a QSL Manager in Germany (Manfred, DE0MST) during this event. Manfred will do the Bureau service for all the callsigns used during the Antarctic Activity Week. Readers may have noticed that the Italian stations in Antarctica are already using a special prefix callsign, IR0PS. This station will join the activity only for few days starting February 24th. The actual crew has to leave the Base, but they have promised to try to be active from the Ship, as /MM.

AT0, INDIA – Did you work AT0D this past weekend? This was Ram, VU3DJQ. He informed OPDX that he has permission to operate as AT0D (or possible AT0DJQ) during contests. Look out for him between now and the end of March. Operations will be on 20 meters only. QSLs go to EA7FTR.

8P, Barbados – Look for Peter, W0SA, to be here for a month, February 11th to March 11th. His callsign will be 8P9NX. Peter told OPDX that he would be active on 80-10 meters including the three WARC bands, mostly on CW but some RTTY as well. QSL all contacts DIRECT + SASE to his QRZ.com address.

C5, THE GAMBIA – Jan, PA9JJ, will be active as C56JJ from March 29th until April 5th from a QTH in Kololi (Senegambia Beach Hotel). Jan states he will try to put up an antenna for 160 meters but is not sure if he can work 160 due to the very high QRN and QRM levels. Jan tells OPDX that he will also be using RTTY and/or PSK31 and focus on the Warc bands if 80 and 160 meters are no good. There will be no activity on 6 meters for he has no antenna for this band. This will be a one man DXpedition and he will use a FT-100 and a G5RV. QSL via the address on QRZ.com. Jan states, "NO E-QSL request for I do not use e-qsL."

CE9, SOUTH SHETLAND ISLANDS – Ricardo, CE3HDI, is expected to be on the air as CE9R from King George Island (IOTA **AN-010** and DICE ICE-901) "Presidente Eduardo Frei Montalva Base" (WABA CE-03) from now until February 24th. Activity will be on all bands CW/SSB. QSL via CE3HDI.

KP2 US Virgin islands – Harry, W6DXO, will be active as KP2/W6DXO from the island of St. John (NA-106) from March 14-19th. His activity will be focused on 17, 12 and 10 meters on SSB and PSK. QSL via his home callsign W6DXO.

The DX Magazine has announced the results of its annual "Most Wanted Survey" which was taken between late September and ended during mid-October of 2003. Here are the top 10 Most Wanted:

1) Scarborough Reef (BS7) ; 2) Andaman & Nicobar Islands (VU4) ; 3) North Korea (P5); 4) Lakshadweep Islands (VU7) ; 5) Peter I Island (3Y) ; 6) Yemen (7O) ; 7) Juan de Nova & Europa (FR/J & FR/E) ; 8) Navassa Island (KP1); 9) Desecheo Island (KP5) ; 10) Aves Island (YV0) - This survey was taken by Carl Smith, Editor of QRZ DX and The DX Magazine. For more information on these publications, please visit the Web page at: <http://www.dxpub.com>

<http://www.hornucopia.com/contestcal/contestcal.html> - Who said they wanted to sharpen their skills??

070 Club PSKFest 0000Z - 2400Z, Jan 17  
LZ Open Contest, CW 1200Z - 2000Z, Jan 17  
MI QRP January CW Contest 1200Z, Jan 17 - 2359Z, Jan 18  
Hungarian DX Contest 1200Z, Jan 17 - 1200Z, Jan 18  
North American QSO Party, SSB 1800Z, Jan 17 - 0600Z, Jan 18  
CQ 160-Meter Contest, CW 0000Z, Jan 24 - 2359Z, Jan 25  
REF Contest, CW 0600Z, Jan 24 - 1800Z, Jan 25  
BARTG RTTY Sprint 1200Z, Jan 24 - 1200Z, Jan 25  
ARRL January VHF Sweepstakes 1900Z, Jan 24 - 0400Z, Jan 26  
UBA DX Contest, SSB 1300Z, Jan 31 - 1300Z, Feb 1  
North American Sprint, CW 0000Z - 0400Z, Feb 1  
Vermont QSO Party 0000Z, Feb 7 - 2400Z, Feb 8

(Continued on page 7)

## Swap n Shop

*For Sale;* Ted W8TAS 440-365-8041

I have used tower 4 sale: two at 40 foot (down) & 1 at 30 foot standing.

Also: 60 ft of Riverview tower (Down\_ TH7DXX beam & 40 meter beam (short) see Tom K8PV or call Wellington, Oh

*For Sale;* Jim Henderson 440-774-1275

BK Model 2160 60 MHz Oscilloscope includes Dual Trace and time base, 2 new probes, manuals and schematics – asking \$350.00

Brand new Bird model 43 wattmeter and 2-30 MHz 250 watt slug, never used – asking \$300.00

*For Sale:* Jack Hubbard NI8N 419-499-1308

Mosley TA-33, rebuilt last year, \$ 150, located in Milan, on ground, elements are assembled.

70' Rohn 25t foldover tower, stacked on ground ready for pickup. Location Dayton

6 element 10 mtr yagi assembled on ground, location Dayton. – Jack, ni8n@accnorwalk.com.

*For Sale;* Pat Willemin KB8AK PH 440-324-4575

40 meter beam by Cushcraft 402-CD Down \$250.00

Listings e-mailed to electro7@apk.net must include your call sign in the message. NOARS Log editor, Virden “Clark” Beckman N8PZD

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New Hampshire QSO Party 0000Z, Feb 7 - 2400Z, Feb 8

10-10 Inter. Winter Contest, SSB 0001Z, Feb 7 - 2400Z, Feb 8

Minnesota QSO Party 1400Z - 2359Z, Feb 7

Delaware QSO Party 1700Z, Feb 7 - 0500Z, Feb 8 and 1300Z, Feb 8 - 0100Z, Feb 9

Mexico RTTY International Contest 1800Z, Feb 7 - 2400Z, Feb 8

North American Sprint, Phone 0000Z - 0400Z, Feb 8

FYBO Winter QRP Field Day 1600Z - 2400Z, Feb 8

ARRL School Club Roundup 1300Z, Feb 9 - 0100Z, Feb 14

CQ/RJ WW RTTY WPX Contest 0000Z, Feb 14 - 2400Z, Feb 15

SARL Field Day Contest 1000Z, Feb 14 - 1000Z, Feb 15

Asia-Pacific Sprint, CW 1100Z - 1300Z, Feb 14

Dutch PACC Contest 1200Z, Feb 14 - 1200Z, Feb 15

YL-OM Contest, CW 1400Z, Feb 14 - 0200Z, Feb 16

FISTS Winter Sprint 1700Z - 2100Z, Feb 14 0Z - 2400Z

RSGB 1st 1.8 MHz Contest, CW 2100Z, Feb 14 to 0100Z, Feb 15

AGCW Semi-Automatic Key Evening 1900Z-2030Z, Feb 18

ARRL Inter. DX Contest, CW 0000Z, Feb 21 to 2400Z, Feb 22

YL-ISSB QSO Party, CW 0000Z, Feb 21 to 2400Z, Feb 22

CQC Winter QSO Party 2200Z, Feb 22 to 0359Z, Feb 23

CQ 160-Meter Contest, SSB 0000Z, Feb 28 to 2359Z, Feb 29

REF Contest, SSB 0600Z, Feb 28 to 1800Z, Feb 29

Mississippi QSO Party 1500Z, Feb 28 to 0300Z, Feb 29

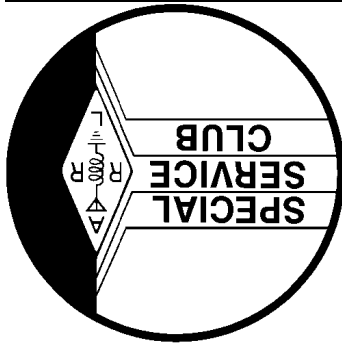
North American QSO Party, RTTY 1800Z, Feb 28 to 0600Z, Feb 29

High Speed Club CW Contest 0900Z-1100Z, Feb 29 and 1500Z-1700Z, Feb 29

ARRL Inter. DX Contest, SSB 0000Z, Mar 6 to 2400Z, Mar 7

North American Sprint, RTTY 0000Z-0400Z, Mar 14

So let us know how you are doing at these contests, NOARS would like to get some club entries in these contests. You do not all have to operate from the same location for a club entry, you can stay home with your favorite snacks and nobody will care, just keep track of the contacts and score – the logging program is on NOARS field day page of the web site as shareware.



Amateur Radio Home of the U.S.S. Cod

Northern Ohio Amateur Radio Society  
P. O. Box 432  
Elyria, OH 44036-0432



The **NORTHERN OHIO AMATEUR RADIO SOCIETY** is a Public Service Organization, with the purpose of education and the furtherance of the art.

Meetings are held on the Third Monday of each Month except December at **Gargus Catering Hall, 1969 N. Ridge Rd., Lorain, Ohio** at 7:30 P.M. The **NOARS 2 METER NET** is held each **Wednesday at 9:00 P.M.** on the **146.700/444.800** repeaters in Elyria, Ohio, located atop the E.S.T. Bank Building. The **NOARS TECHNICAL NET** is held each **Thursday at 8:00 P.M.** on **146.700/444.800**. Visit **NOARS** on the Internet at <http://www.apk.net/noars/>

The **NOARS** club station donated by manufacturers aboard the **WW II** submarine **U.S.S. Cod** in the port of Cleveland is open from Memorial Day to Labor day. The station is open to all **NOARS** members and their guests daily from 11 AM until 5 PM.

If this is your first copy of the **NOARS LOG** why not become a member and receive it monthly? Membership is open to anyone interested in communications, whether a licensed amateur or not. Dues are \$10.00 US per year for a licensed amateur, \$5.00 for an associate member, and \$2.00 for family members. Checks are to be made payable to **NOARS** and mailed to **NOARS MEMBERSHIP, PO Box 432, Elyria, OH 44036-0432**, please include your call sign. Please fill in the email location to improve contact with our members.

Please Indicate \_ NEW\_ RENEWAL \_INTEREST IN HOBBY \_ CHANGES \* PHONE (\_\_\_\_)\_\_\_\_\_  
Name \_\_\_\_\_ CALLSIGN \_\_\_\_\_ CLASS \_\_\_\_\_ ARRL \_\_\_ Y/N  
Address \_\_\_\_\_ City \_\_\_\_\_ ST \_\_\_ ZIP \_\_\_\_\_  
E-mail address \_\_\_\_\_ May we send you the PDF newsletter? \_\_\_ Yes