



The Spirit of '76 and '88

Number ONE in Ohio!



Newsletter of the Lake Erie Amateur Radio Association

Editor: Alex Manuk, WD8JMM

Publisher: Jeannie St. Marie, KC8MNV

February Meeting – Tuesday February 22, 2005

OUR "CRYSTAL BALL" SECTION MANAGER WILL PREDICT AGAIN AT NEXT LEARA MEETING

Joe Phillips, K8QOE, who, the last time he spoke to LEARA, predicted Zydrunas Ilgauskas would never amount to much for the Cavs, will speak again at our February 22 meeting. Presumably he will be able to predict ham radio matters better since he has been Ohio Section Manager since 1998.



For our meeting, the Section Manager will cover highlights of ham radio's last 100 years, giving a clue to the future. He'll discuss what the early 20s engineers, the returning W.W.II signal corps of the 40s and the 70s influx of former CBers have in common. We'll reminisce about how Y2K was a bust to most but a boon to ham radio, as well as how Osama bin Laden factors into our future.

Dinner is served at approximately 6:30 PM, with the meeting and program beginning at 7:30. Dinner choices (Chicken Parmigiana, Steak, or Broiled Scrod) are 15.00 per person, and reservations are required if you wish to eat. Those wishing to make dinner reservations may call Marv Grossman at 440-248-0031, or make your reservations online at <http://www.leara.org>.

February, 2005

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January Meeting Recap



The January Program was presented by Jeff Covelli, WA8SAJ, who has a long history in electronics. His presentation was about how Dominion (East Ohio Gas Co.), his current employer, was able to effectively streamline operations and drastically improve the bottom line by instituting a sophisticated Telecommunications network.

He started off by showing us an old map of the spider web of gas lines across N.E. Ohio, explaining that it has expanded a lot since then, and since the merger with Dominion, the company now stretches all the way out across parts of the east coast. All of these gas lines have valves and pressure gauges at regular intervals and they all have to be monitored on a regular basis. Before the advent of radio relays, linemen were sent out to do that job. Then, they set up point-to-point relays and regional monitoring stations, with radios doing the work of monitoring. The

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POINTS OF CONTACT

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Radio Officer Bryan Torok, N8OOF	146.88/R

The *Spirit of '76 & '88* is published monthly except in December. Contributions must be received by the 1st of the month.

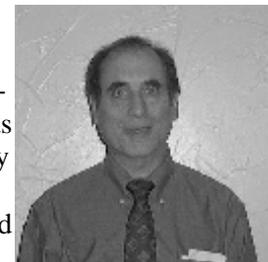
Editor:

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de W2THU...

Kudos to LEARA member Jeff Covelli, W8SAJ, for a very interesting January program concerning the history of the communication system of the Dominion East Ohio Gas Company. Not only did we learn about 2 way radio for northeast Ohio's largest gas utility, we also learned how gas flow was maintained manually in the old days and automatically today. Jeff's charts, maps and historical photographs added to his outstanding lecture.



This time of year marks the beginning of the hamfest season. Locally, we had the NOARS Winterfest in early February, followed by Mansfield a week later, then Toledo with the Great Lakes Division Convention in mid March and Madison (Lake County ARA) in early April. This all leads up to the great Dayton Hamvention® and ARRL Expo 2005 in May. I heartily recommend that you attend at least one of these fine gatherings to enhance your amateur radio experience. Even if you are not looking to buy any equipment right now, there are seminars, ARRL events, auctions, and opportunities to share your hobby with fellow enthusiasts.

Speaking of buying ham gear, have you been out to AES lately? Some of you may recall that the building used to be an A&P grocery store which explains why it is so big. Well, it turns out that the candy store has been cut in half. However, none of the retail space

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LEARA is a not-for-profit organization dedicated to Amateur Radio and to Public Service. Club information packets and applications for membership are available from **Marv Grossman, W8AZO, 440-248-0031** or may be downloaded from our web site at www.leara.org. Annual membership is \$18.00. **LEARA's** address is: LEARA, PO Box 22823, Beachwood, OH 44122-0823.

LEARA is an **ARRL**-affiliated club. When you join **ARRL** or renew your membership, **LEARA** benefits monetarily if you do so through the Club. Send **ARRL** applications/renewals to the club treasurer (Dave Foran/WB8APD, 5439 Nan Linn Dr, Willoughby OH 44094-4365). Payment (check or money order) must be made out to **LEARA (NOT ARRL)**

Membership Meetings are held the last Tuesday of each month except December at Dimitri's Restaurant, 1830 Snow Rd., Parma, OH (in the Mid-Town Shopping Center, just west of Broadview Road). Dinner is served at 6:30 PM. The regular meeting begins at 7:30 PM. Meetings are open to all interested persons. You may attend without eating, but **reservations are required** if you do wish to eat. Call **Marv Grossman, W8AZO at 440-248-0031** or make your reservation online at www.leara.org.

Trustees' Meetings are held on the second Saturday of odd numbered months at 9:00 AM at the Parma-Snow Branch of the Cuyahoga County Public Library, 2121 Snow Rd., Parma, OH (opposite the Mid-Town Shopping Center). Meetings are open to all current members of LEARA.

January Meeting Recap

(Continued from page 1)

only time someone has to go out on the line now is when trouble is detected.

The next step in the process of streamlining was to get information back and forth between the monitoring stations more efficiently. For that, they set up towers and microwave telephony, replacing miles of telephone line and equipment leased from the phone company. This measure was brought about as an alternative to land lines because much of Dominion's gas lines run across easements which do not allow anything other than gas lines as part of the terms. It has saved hundreds of dollars every day in phone company fees.

Jeff has been there for most of this process, helping to keep the ever-expanding telecommunications infrastructure running smoothly. During the question and answer session, he explained a little bit about how the radio equipment is maintained and even gave some tips on what to do if you suspect a gas leak (just walk out the door—don't try to shut anything on or off, just leave—the smallest spark or sometimes even just static can cause a big boom!).



One of many switch and equipment cabinets at Dominion

Welcome to the Club

LEARA proudly welcomes the following ham who recently joined (or rejoined) LEARA and who has been formally approved by the LEARA Trustees.

New Member

Richard Livellara, KD7NTA

Please make Richard welcome when you hear him on the air.



Jeff, WA8SAJ, at home in 'the shack'

Public Service Volunteer Opportunities

de TJ Powell, N8UIR

The Northeast Ohio Medical Reserve Corps has events coming up this spring/summer which require volunteers for communications as well as medical support. We would like to obtain as many volunteers as possible for these events. The following is a listing of Public Service Volunteer Opportunities:

March of Dimes WalkAmerica --- Gund Arena
04/17/2005 Sun 0700-1300
Ham Radio & Medical Support Required

MS WALK Downtown Cleveland
04/23/2005 Sat 0800-1400
Medical Support Required

MS WALK Akron (CVNRA --- Boston Mills Ski Resort)
04/23/2005 Sat 0800-1400
Medical Support Required

March of Dimes WalkAmerica --- Wade Oval
05/01/2005 Sun 0745-1300
Ham Radio & Medical Support Required

Nat'l MS Society Pedal to the Point
08/20/2005 Sat 0600-1800
08/21/2005 Sun 0600-1800
Ham Radio & Medical Support Required

We will be adding more events in the near future, please check our website at <http://www.neomrc.org> for them.

To volunteer for any of these contact T.J. Powell @ tpowell@neomrc.org or leave a message at 330-468-1984.

Space and Ham Radio—Part Deux

de Joe Prokop, KC8RAN

In the first article, I touched on the basics of satellite operation. In this article, we will get specific about the “Easy Sats” AO-27, SO-50 and AO-51. These satellites are currently in orbit and in operation using FM as the mode of communication. The uplinks (ground station transmit frequencies) are on the 2M band and the downlinks (receive frequencies) are in the 70cm band.

The QSO is not what you find on the repeaters or normal contacts on HF. It's closer to a contest exchange; short and to the point. Remember you have a short time window to work with, as the satellite is in motion overhead. The typical exchange is your call and the 4 digit grid square, said phonetically. For example, most of us in the Cleveland area are found in grid square EN91. So if I were to establish a contact with Allen, N5AFV in Texas it would be like this:

KC8RAN Echo Norway 91...KC8RAN N5AFV Echo Lima 29...N5AFV KC8RAN QSL, 73

In reality, with many hams working the satellite, you may have some gaps. Just be patient. The real exchanges may be more like this:

KC8RAN Echo Norway 91...KO4MA AJ9K Echo Norway 53...W7JPI Delta Mike 41... KC8RAN N5AFV Echo Lima 29...W7JPI KO4MA Echo Lima 88...N5AFV KC8RAN QSL Echo Lima 29, 73...

A couple important points to make note of on satellite operation. First, understand that QRM is inevitable, but some QRM is avoidable. With FM, the best signal gets captured by the satellite. Listen first before you transmit so you don't inadvertently step on someone else. The recommended station to use is one that allows you to hear the downlink while transmitting. You can monitor your signal while transmitting so you know you made it through and avoid jumping on someone else.

The second point is that the satellite is moving toward you, passes over, then moves away at a high rate of speed. Doppler shifts are present and some skill tuning on the fly, or equipment capability are needed to compensate. This means you need to start listening at a higher frequency than the satellite transmits and move downward as the pass progresses. If you have a dual band rig with AFC capability, like the IC-910H in my shack, you can set the downlink frequency to about 7-10 khz high and enable the AFC. When the satellite rises high enough above the horizon to be received, the AFC tuning takes over and tracks through

the pass. If not, set your frequency to 5 khz up and listen. As the pass progresses, adjust downward as the signal changes and manually track. The good news is, in general, you don't need to adjust for doppler on your transmit frequency.

As with all radio communication modes, the best antenna you can set up is recommended. Vertical base station antennas, even those with a gain above a dipole, generally don't work for satellite. With my financial situation, I had to start with something simple. A few years ago I used an Arrow antenna I bought at Dayton mounted on a camera tripod. I used a 70cm preamp kept close to the antenna to add some db's to the received signal. With this setup I had my own mini-Field Day in the back yard one June 2002 afternoon and made my first contacts. I later moved to M2 Eggbeaters on a 15 foot high “sawhorse” platform. It's not pretty, but it's workable on favorable passes.

If you want to start listening, the web has some resources to get you pass times and frequencies. The one that has the best one-stop information is the AMSAT website www.amsat.org. Click on the “SAT STATUS” button at the top of the page and you will get info on what's in operation, frequencies, PL tones (prevents QRM from unlicensed operators abroad), and modes. Scrolling down the Navigator page, there is a button titled “TOOLS”. From there, you can get pass predictions, grid square information and other tools for using the satellites. Also, feel free to browse through the website for articles and information on satellites.

You can email me at kc8ran@cox.net if you have any questions. I also make it a point to try to check in to the LEARA net as often as I can, so you can catch me afterwards on the '76 repeater. Listen for me on AO-27 and SO-50 as well, as that's where I usually am for the FM satellites. In the next installment I'll cover ISS operation topics.



Repeater ABC's—part 4 of a series

de Eric Jessen, N8AUC

How far can I talk using a repeater?

Although FM repeaters have been instrumental in improving the usability of our VHF and UHF bands, they do have some limitations. As we have discussed previously, repeaters are used to improve the range of handheld and mobile stations. But just how far can you reasonably expect to reach using a repeater? And how come you can't talk on our 88 repeater all the way to Toledo?

At VHF and UHF frequencies, there is one factor, and one factor alone that determines how far you can communicate. That factor is antenna height above the surrounding terrain. Transmitter output power does not determine range. Transmitter output power helps to saturate the coverage area, but it does not determine that coverage area, antenna height does. If transmitter power was so important, then why can a little 5 watt transmitter cover half the world? Simple, if it's on a satellite 22,000 miles up! Like I said, it's all about altitude.

Cleveland is a mixed terrain area. To our south and east we have hilly terrain, and to our west and southwest we have very flat terrain. To the north, well, we have Lake Erie. Since not too many walleye or perch have their ham licenses, we don't have to worry too much about the north. But over the horizon to the north are our friends in VE-land, or Canada. Ever wonder why all the really high profile repeaters are out east? Because that is where the hills are! And a hill is a very inexpensive way to get altitude! A tower on top of a hill is even better! If you can get a tower on top of a building, on top of a hill... well... you've found ham heaven! Most of the U.S. Midwest is very much like the terrain to our west and southwest, so a lot of what you read here will apply over just about all of our nations midsection.

We have 2 repeater sites. The east side site is where the 76 repeater is. That repeater is on top of a building, on top of a hill. Old timers refer to that site as "the hill" for just that reason. It enjoys a significant advantage in height over our west side site. This is why the 76 repeater covers farther than the 88 repeater. The west side site is on top of a very tall (16 stories) office building near Lakewood hospital. The advantage that 88 has is that there isn't anything as high as it is for a very long distance to the west and southwest.

How high is high? Well, when you coordinate a repeater, you have to calculate the HAAT. HAAT stands for

"Height Above Average Terrain". Back in the old days, you used to have to use a topographical map. Now, we just use GPS. But basically what you do, is from the antenna site, you measure or lookup the ground elevation at 8 compass points, at distances of 2, 4, 6, 8, 10, and 12 miles distance. Take the mathematical average of all those elevations, and that gives you the elevation of the average terrain. Next you take the altitude of the antenna itself, and subtract out the elevation of the average terrain, and you have it! At the 88 site, the antenna elevation is only 680 feet. But due to the flat terrain on the west side, the height above average terrain is 200 feet. This is why 88 covers so well.

By the way, for all you new folks out there, if you want to really educate yourself about how all this stuff works, there are two books that need to be on your bookshelf, for reference if nothing else. Those are the ARRL Radio Amateurs Handbook, and the ARRL Antenna Book. Those two books will be the best investment you ever made in your new ham radio avocation. Even more important than your rig and antenna. How can I say that? Get a copy of each, read and learn what's in there, and then come back and ask me that same question. Now that you've earned your first license, memorizing questions and answers are over. In case no one has told you yet, you've outgrown that license manual. Now it's time to really learn. And to do that, you're going to need real radio books. They aren't cheap. In fact, they're kind of expensive. Believe me when I tell you, those books ARE the "good stuff", and are worth every penny. Get a copy of each for your very own. You won't be sorry. OK - The commercial is over. Back to your coverage issues.

Great - but how can I tell what my range will be from that, you ask? Well, the height of the repeater antenna is only half of the story. The height of YOUR antenna is the other half. If there is dirt between you and the repeater, you won't be able to get in. Sometimes, that dirt is in the form of a hill that is between you and the repeater (think Euclid Shelf). But over flat terrain, the earth itself becomes that dirt that blocks your signal from reaching the repeater. How far away does the curvature of the earth block you? That distance is called your "radio horizon". It is slightly farther than the visual horizon, due to the refractive nature of the atmosphere. According to the ARRL Antenna Book, the distance to the radio horizon from an antenna is given by the formula $d(\text{miles}) = 1.415 \cdot \sqrt{h(\text{feet})}$.

If your antenna is 10 feet above ground, the distance to

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de W2THU (cont'd)*(Continued from page 2)*

has been diminished. They simply figured out a way to cram all of their inventory into the remaining space. Now Ben, AA8AH, has a brand new office in the back of the store, while the other half of the building is occupied by an ethnic social club. Check it out.

I still find that most of my hamming takes place while mobile, and mostly while commuting to and from work. With the Icom 706 in my car, I split my operating time equally between HF and VHF. But either way, I spend a lot of time listening, but for different reasons. I listen a lot on HF because there are few strong signals in the mobile environment and I'm not getting out very well. I listen a lot on VHF because people aren't coming back to me when I throw out my call on our repeaters. I'm not sure what this means, but after a while I end up scanning the public service bands. There's always something interesting going on and I figure that I might as well enjoy it while we can because eventually it will all go into the dark hole of digital trunking. What do you think?

The latest on the RainForest station, K8ZOO/K8CRF is that six of us attended a meeting in late January when Ron Borkey, K8VJG, taught us the intricacies of the radio equipment (mainly how not to blow up the linear amplifier). Now that we are all skilled on how to work DX from that hole in the ground, we are scheduling regular assignments for the volunteers. Ron has worked over 100 countries from the Cleveland Zoo, practically all by himself. He will continue his Thursday operation for the time being. If you would like to join in the fun, please contact me via email or telephone at w2thu@arrl.net or 216.771.3314.

We are having a very special guest speaker this month at Dimitri's. He is my boss. That's right, Joe Phillips, K8QOE, is the guy I have to answer to when I screw up my job as assistant section manager for northeast Ohio. But, as Joe always says, that's why he gets the big bucks. So, please join us at our February club meeting to meet the Head Gadinza.

73, de Bob Winston W2THU

Repeater ABC's—cont'd*(Continued from page 5)*

your radio horizon is 4.47 miles assuming flat terrain. If your antenna height is 90 feet, then the distance to your radio horizon is 13.4 miles, again over flat terrain. If your antenna height is 200 feet then the distance to your radio horizon is 20 miles, again over flat terrain. Your exact range will differ, depending on how high your antenna is, and where you happen to be. But a good rule of thumb is that you should be able to get into the repeater reliably from about 20-25 miles away if you are in a car over flat terrain. From a fixed station with an antenna at 30-40 feet, you should be able to get into the repeater reliably from 35-40 miles away, over flat terrain. So, how come you can't talk all the way to Toledo? Probably because Toledo is about 100 miles away, and there is dirt between Toledo and our repeaters which blocks your path. Simply, Toledo is beyond the radio horizon from our repeater sites.

There are certain weather features that can extend your range. Not like on the HF bands where the ionosphere will literally bounce your signals back to earth thousands of miles away. Oh no, we are much too high in frequency for that to happen. But a passing cold front can cause tropospheric ducting, which can carry your signals hundreds of miles away. A temperature inversion over Lake Erie, which is quite common in the spring and fall months, can let you talk to Detroit or even Canada with just an HT. Those kinds of phenomena can offer some very exciting DX. You'll know when that is happening because you will begin to hear repeaters with strange sounding identifiers, and call signs you may have never heard before. But those kinds of event are the exception, rather than the rule.

Now that you know how far you can communicate using a repeater, next month we'll go into how far away you SHOULD communicate using a repeater.

Until then, see YOU on the air!

Remember... Check your expiration date on the mailing label. If it shows your membership as expired, send in your renewal...

Today!! (and check your ARRL status while you are at it.)

Hamfest Listing

March

**19 Great Lakes Division Convention
Toledo Mobile Radio Association**
Toledo, Ohio
Contact: Brenda Krukowski, KB8IUP
9408 Salisbury Road
Monclova, OH 43542-9700
Phone: 419-260-4310
Email: kb8iup@arrrl.net

**20 TMRA Hamfest
Toledo Mobile Radio Association**
<http://tmrahamradio.org>
Contact: Brian Harrington, WD8MXR
4463 Holly Hill Drive
Toledo, OH 43614
Phone: 419-385-5624
Email: bharrington@mco.edu

April

3 Lake County ARA
<http://www.lcara.org>
Contact: Rocky, KB8WFD
7480 Fern Drive
Mentor-on-the-Lake, OH 44060
Phone: 440-209-8953
Email: kb8wfd@adelphia.net

17 Cuyahoga Falls ARC
<http://www.cfarc.org>
Contact: Ted Sarah, W8TTS
239 Bermont Ave.
Munroe Falls, OH 44262
Phone: 330-688-2013
Email: w8tts@w8tts.com

May

20-22 DAYTON Hamvention & ARRL Convention
<http://www.hamvention.org>
Contact: Hamvention
PO Box 964
Dayton, OH 45401
Phone: 937-276-6930
Email: info@hamvention.org

Volunteer Exam Dates and Locations

<u>Date</u>	<u>Location</u>	<u>Date</u>	<u>Location</u>
2/20	Elyria	4/9	Akron ARC
		4/17	Elyria
3/1	Cuyahoga Falls	4/30	Bentleyville
3/13	Independence		
3/20	Elyria	5/1	Independence
		5/3	Akron, Pioneer

Akron, Pioneer AR Fellowship - 2324 Manchester Rd., Akron, OH, 44314. Pre-registration preferred, check-in 6:30 PM, test at 7:00 PM, walk-ins allowed. **Contact:** Ronald D. Lieving, 330-724-5981.

Akron, Summit Co. American Red Cross - 501 W. Market St., Akron, OH, 44303. Testing at 3:00 PM, walk-ins allowed. **Contact:** Bruce M. Ferry, 330-929-2766, ak8b@arrrl.net

Bentleyville - Bentleyville Town Hall, 6253 Chagrin River Rd., (corner of Solon Rd & River Rd) Bentleyville, OH 44022. Testing begins at 9:00 AM, walk-ins allowed. **Contact:** Robert Gauss, N8ZB, 330-563-3328, n8zb@yahoo.com

Cuyahoga Falls - 3512 Darrow Rd., Stow, OH 44224. Test at 7:00 PM, walk-ins allowed. **Contact:** Bruce M. Ferry, 330-929-2766.

Elyria - American Red Cross, 2929 West River Rd., Elyria, OH, 44035. Testing at 1:00 PM, park in rear and enter through back door, walk-ins allowed. **Contact:** Charles S. Hall, 216-433-3036, ve@w8hf.com, www.w8hf.com

Independence - Independence Town Hall, 6652 Brecks-ville Rd., Independence OH, 44131. Doors open 9:00 AM. Pre-registration is appreciated, walk-ins are welcome. **Contact:** Gary S. Dewey, 216-642-9705, gdewey@en.com

Kirtland - Kirtland Library, 9267 Chillicothe Road, Kirtland, OH 44094. Testing at 12:00 PM, Walk-ins are welcome. **Contact:** Scott Farnham, 440-256-0320.

**** HAMFESTS - Many hamfests provide VE testing. ****

INSTRUCTIONS FOR TEST CANDIDATES

For VE testing one must bring the original and copies of the current license and CSCE forms (if applicable), identification, and the exam fee. ARRL VEC's exam fees are \$12.00. Check with the contact person in advance for specific testing site requirements and any special test accommodations needed.