



The Spirit of '76 and '88



January

Newsletter of the Lake Erie Amateur Radio Association

2018

Ken Kane, KG8DN, Editor

Is now the time for a frank Panel Discussion on Net Neutrality?

LEARA's Meeting Tuesday, January 30

Perhaps you saw the FCC Chairman's announcement in mid-December, captured as **FCC Votes to Repeal Net Neutrality Rules?**

During recent discussion among the LEARA board members, the question of how this issue **might affect licensed amateurs** was raised. And there was debate!

From Margaret Harding McGill's article in December's issue of **Politico** about the current FCC rules, we quote:

"The FCC's order ... **eliminates rules** that require (ISP) companies ... to treat all web traffic equally," and later, "The chairman ... has actively defended his order," and "**The fight is unlikely to end** with the FCC's vote, as both sides are gearing up for a court battle."

Several board members will conduct a Panel Discussion on (Internet) Net Neutrality at the January meeting. You won't want to miss it! (LEARA takes no official position as a club.)

The January 30, 2018 LEARA meeting will be at **Amore Ristorante**
[30610 Lakeshore Blvd.](#)
Willowick, Ohio 44095.
[Link to News-Herald Review](#)

We now have a **new east side venue** as offered by Megan Parsons,, WB8IXZ. As usual, for our meeting on January 30th, dinner will begin at **6:30 pm** and the cost will be **\$20 per person**. **Entrée options** include:

Chicken Picatta: Breaded chicken breast sauteed in a white wine sauce with lemon and capers. Red skin potatoes and the vegetable of the day are included.

Veal Marsala: Lightly breaded veal sauteed in marsala wine sauce with portabella mushrooms. Red skin potatoes and the vegetable of the day are included.

Grilled Salmon, served with red skin potatoes and the vegetable of the day.

Calzone: Create your own three-topping Calzone.

Water, coffee, tea, and soft drinks are included.

Appetizers, desserts, and alcoholic beverages can be purchased separately. Please let us know if you have any special dietary concerns.

Advance reservations, along with your entrée selections, are required. Reservations may be made at the club website at <http://www.leara.org>. **Reservations must be submitted by Sunday, January, 28th.** We hope to see you there!

Getting to Amore Ristorante in Wickliffe

From I-90 or I-271, take the Lakeland Freeway (Rt. 2) to East 305th Street.

Take East 305th northwest to Lakeshore Blvd. and turn right (east).

Watch for 30610 Lakeshore Blvd. on your right (see photo).



OFFICERS and TRUSTEES

Bryan Torok N8OOF
President btorok@sbcglobal.net

Eric Jessen N8AUC
VP, License Trustee 440-734-3146

Jeff Kopcak K8JTK
Vice President k8jtk@arri.net

Ken Kane KG8DN
Secretary 440-473-8078

Jeff Garvas N8YNR
Treasurer 216-496-3928

TRUSTEES

Dave Andrzejewski KD8TWG
Technical 330-353-9754

Marv Grossman W8AZO
Membership 440-248-0031

Andrew Kahn WA8LIV
937-681-1516

Eddie Stevens KD8FTS
Venue 440-668-7409

TRUSTEES EMERITI

Al Amster W8TTY (SK)
Don Raith N8DJG (SK)
Fred Collins W8ADW (SK)
John Radney KC8FOC (SK)
Pat Shreve W8GRG (SK)
Al Severson AB8P (SK)
Dave Foran WB8APD
Bob Winston W2THU

POINTS OF CONTACT

Carl Gedeon KB8VXE
"Sunshine" 440-243-5710

Bryan Torok N8OOF
Radio Officer btorok@sbcglobal.net

Dave Andrzejewski KD8TWG
Radio Officer 330-353-9754

NEWSLETTER

The Spirit of '76 & '88
is published monthly
except in December.

Contributions must be received
by the
2nd Sunday of the month
except on months with
5 Sundays and 5 Tuesdays
when the 3rd Sunday
will be sufficient.

Editor:

Ken Kane, KG8DN

E-mail: editor@leara.org

Proofreading: TNX to
W8AZO & N8YNR

Meetings

The November Holiday Meeting was held at the **100th Bomb Group**. We had entertainment provided by Bingo Bryan (yep, that's me) giving away LEARA bucks and other donated door prizes. Our grand door prize was a **Yaesu FT-70** Dual Band Handheld Radio with System Fusion capability. This digital/analog radio was won by **Colleen Crawford, KD8FTT**.

Most attendees were impressed with the location and the spacious, well-appointed and elegant room. Unfortunately, that faded when the food was served. Four people who ordered the veggie-pasta dish got cold food with vegetables that had been diced beyond recognition. Upon complaining, the dishes were promptly replaced with hot and more appealing plates. Many found the portion sizes to be inconsistent. Mine was rather small. Several folks reported stopping for fast food on the way home.

I very much wanted this location to work out. **Eddie Stevens, KD8FTS**, put a lot of time into making the arrangements and negotiating this meal. At this price point, we should not have had the problems that some experienced. These, plus the fact that the restaurant has already posted a \$5 price increase for 2018, make it unlikely that we will return. I must say that I'm disappointed.

The January Meeting will be held at **Amore Ristorante and Pizzeria, 30610 Lakeshore Blvd., Willowick, Ohio 44095**. As requested by several members, we are balancing the run of west-side restaurants with one on the east-side. Based on the News-Herald review (link on the front page), Amore sounds like a great place to eat. Reservation & program details are on the front cover.

Net Neutrality

This month's program features a panel discussion on Net Neutrality. This is such a hot-button issue that the LEARA Trustees felt the members might benefit from several viewpoints rather than just one.

What is Net Neutrality? For decades, the Internet has operated under informal and formal principles that Internet service providers (ISPs) must treat all data on the Internet equally and not block, throttle, or charge extra for ac-

(Continued on page 3)

The Lake Erie Amateur Radio Assn., Inc., **LEARA**, is a not-for-profit [501(c)(3)] organization dedicated to Amateur Radio and 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 \$25.00. **LEARA's address** is: LEARA, P.O. Box 22823, Beachwood, OH 44122-0823.

LEARA is an **ARRL**-affiliated club. When you join or renew the **ARRL**, **LEARA** benefits monetarily if you do so through the club. Send **ARRL** Applications/renewals to LEARA, P.O. Box 22823, Beachwood, OH 44122-0823. Make the check payable to **LEARA**, not the **ARRL**.

Membership Meetings are held the last Tuesday of each month (except December and June) at a Cleveland-area restaurant to be announced each month in the newsletter. The LEARA newsletter usually arrives near the middle of the month. Locations for dinner may vary and often require a reservation. Those interested in dinner should arrive around 6 p.m. The meeting begins at 7:30 p.m. Meetings are open to all interested persons. You may attend without eating.

Trustees' Meetings are on the second Saturday of odd numbered months. Meetings are open to all current members of LEARA. **Locations are subject to change**. In the next few coming months, meetings are planned at the Maple Heights branch of the Cuyahoga County Public Library, 5225 Library Lane. Contact a trustee or check the website at www.leara.org for details.

The Prez Says by Bryan Torok, N8OOF



(Continued from page 2)

**Prez
cont.**

cess to it. Those principles helped to keep the Internet open and free. During the Obama administration, the FCC codified those principles into law.

Last week, the FCC published an order which reverses Net Neutrality. Now, many people believe that this will result in ISPs making deals to carry one content provider's material over another such as Netflix over Hulu, or charging more to access high-bandwidth content such as YouTube. They feel that this will hurt small businesses and websites. Others feel that removing regulations will spur competition, investment, and growth in services that will ultimately benefit the consumer. These people also believe that free market forces will tend to discourage abuses by big companies.

Why should we care? As Hams, we pride ourselves on being the communication system which works when all else fails. However, when we are not at our radios, many, perhaps most, of us spend significant amounts of time in front of a computer attached to the internet. We communicate, use social media, research topics of interest, educate ourselves, and view entertainment from many sources. Some of us rely on the Internet for our income. And, LEARA uses the Internet to keep our members informed via our website, email, and this newsletter. At one time, LEARA's largest single expense was postage for mailing the newsletter and the annual ballots. Now we do that on the Internet. That is why anything which has the potential to affect free and open access to the Internet is of great concern to us.

Those of you who know me, know that with few exceptions I tend to be a strong conservative and believer in the free market. However, on this issue my personal opinion was to support Net Neutrality. I was prepared to write a strong editorial supporting Net Neutrality and urging you to contact your Congressman to overrule the FCC. However, after hearing other positions, I'm not as sure. I urge you to do your own research, come to the meeting and hear our thoughts, and make up your own mind. **Until next month**, talk on the radio, and use the repeaters. Come out and see us at a meeting. We look forward to seeing you.

Bryan, N8OOF

Sun	Mon	Tue	Wed	Thu	Fri	Sat
21	22	23 ARES® 80m 7:15 pm OSSB 8 pm OHDN	24	25 8pm LEARA VOICE '76 9 pm LEARA DIGITAL '88 Learn CW Net	26	27
28 <i>Dinner Meeting Jan. Reservation Deadline</i>	29	30 LEARA Dinner Meeting 6:30 PM at Amore Ristorante in Willowick	31	1 8 pm LEARA VOICE '76 9 pm LEARA DIGITAL '88 Learn CW Net	2	3
4	5	6 ARES® 80m 7:15 pm OSSB 8 pm OHDN	7	8 8 pm LEARA VOICE '76 9 pm LEARA DIGITAL '88 Learn CW Net	9	10
11 ARES® Cuy. County 2 pm CCPL Independence	12	13 ARES® 80m 7:15 pm OSSB 8 pm OHDN	14	15 8 pm LEARA VOICE '76 9 pm LEARA DIGITAL '88 Learn CW Net	16	17
18	19	20 ARES® 80m 7:15 pm OSSB 8 pm OHDN	21	22 8 pm LEARA VOICE '76 9 pm LEARA DIGITAL '88 Learn CW Net	23	24
25	26	27 LEARA Dinner Meeting 6:30 PM	28			



LEARA "On The Air"
Club Net Information
by Carl Gedeon, KB8VXE

January 2017 Newsletter
Net Report

The Thursday Club Net is held 8PM on our 146.760 (or 146.880 backup) MHz (- 600 kHz offset, PL 110.9) repeater.

Checkins for the month of November & December

Checkins for November 2017

AC8CO	Bill	KC8FQV	Mark	N8AHS	Fred
K2WJS	Bill	KD8ACO	David	N8UPZ	Bill
K8ARP	Arp	KD8FTS	Eddie	W8AMQ	Bob
K8EHP	Mike	KD8TWG	Dave	W8IE	Ed
K8JTK	Jeff	KE8GKO	Jodi	W8RWK	Dick
K8SAS	Steve	KE8HXX	Duane	W8LIV	Andrew
K8WDS	BILL	KG8DN	Ken	W8REN	Jeff
KB8VXE	Carl	N8AGM	Tom	W88ROK	Ed

Checkins for December 2017

AC8CO	Bill	KD8ACO	David	KG8DN	Ken
K8ARP	Arp	KD8FTS	Eddie	N8AGM	Tom
K8EHP	Mike	KD8TWG	Dave	N8AUC	Eric
K8JTK	Jeff	KE8BSF	Joe	N800F	Bryan
K8SAS	Steve	KE8ILQ	Kevin	N8UPZ	Bill
K8WDS	BILL	KE8ILR	Doug	W8AMQ	Bob
KB8VXE	Carl	KE8IDA	Eric	W8IE	Ed
KC8FQV	Mark	KE8ZZ	Ed	W88ROK	Ed

Remember if you missed a net, check out the web page for a recap of the trivia and discussion questions.

For February and March, the tentatively scheduled NCOs are:

Net Control Schedule		
01/25/18	Steve	K8SAS
02/01/18	Ken	KG8DN
02/08/18	Andrew	W8LIV
02/15/18	Carl	KB8VXE
02/22/18	Eric	N8AUC
03/01/18	Tom	N8AGM
03/08/18	Ken	KG8DN
03/15/18	Steve	K8SAS
03/22/18	David	KD8ACO
03/29/18	Andrew	W8LIV

The Digital Communications Net is held every Thursday on LEARA's 146.880 (-600 kHz offset, PL 110.9) repeater at 9PM.

The Wednesday Skywarn Practice Net

Skywarn season runs from March through September. The Skywarn practice nets are on hiatus until March. Skywarn nets are held on LEARA's 146.760 repeater. Should the National Weather Service issue a severe weather alert, a Skywarn net will be started 146.760 repeater.

Be sure to visit the web page at

www.ccskywarn.org

for more information and training sessions.

Thursday Net NCOs

K8SAS	STEVE	N8AGM	TOM
KB8VXE	CARL	N8AUC	ERIC
KD8ACO	DAVID	W8LIV	ANDREW
KG8DN	KEN		

We can always use more LEARA Members to become Net Control Operators (NCOs).

It's not that difficult to do. It's a GREAT way to learn the voices and call signs of the members of the club as well as the visitors of the ham community.

Why not give the NCO slot a try?

It's an easy to learn job that is very important in emergencies. Your help is really needed!

We look forward to your participation!

Carl, KB8VXE

—

The next ARES meeting is
2PM Sunday, February 11, 2018
at the Independence branch of the
Cuyahoga County Library system.
You do not have to be a member to attend.

For more information go to www.ccares.us.

—

Sunshine report

In October last year Bill Downie, N8UPZ, lost his beloved Betty. We will miss her at our meetings.

We received word of the passing of (KC8NZJ) Mat Nickoson's mother. Our condolences.

Upcoming Hamfests and Conventions from www.arrl.org

01/28/2018 | [HPARC Swap](#)**Location:** Madison Heights, MI**Type:** ARRL Hamfest**Sponsor:** Hazel Park Amateur Radio Club**Website:** <http://hparc.org>**Learn More****01/28/2018 | [Tusco ARC Hamfest, Electronics & Computer Show](#)****Location:** Strasburg, OH**Type:** ARRL Hamfest**Sponsor:** Tusco Amateur Radio Club**Website:** <http://tuscoarc.org>**Learn More****02/18/2018 | [InterCity ARC Hamfest](#)****Location:** Mansfield, OH**Type:** ARRL Hamfest**Sponsor:** InterCity Amateur Radio Club**Website:** <http://www.w8we.org>**Learn More****02/18/2018 | [Livonia ARC's 47th Annual Swap & Shop](#)****Location:** Livonia, MI**Type:** ARRL Hamfest**Sponsor:** Livonia Amateur Radio Club**Website:** <http://www.livoniaarc.com/index.php?page=swapshop>**Learn More****02/25/2018 | [Washfest 2018](#)****Location:** South Park Township, PA**Type:** ARRL Hamfest**Sponsor:** Wireless Association of South Hills ARC**Website:** <http://n3sh.org>**Learn More****03/04/2018 | [Winter Ham Fest](#)****Location:** Elyria, OH**Type:** ARRL Hamfest**Sponsor:** Northern Ohio Amateur Radio Society**Website:** <http://noars.net>**Learn More****03/18/2018 | [Toledo Mobile Radio Association Hamfest & Computer Fair](#)****Location:** Perrysburg, OH**Type:** ARRL Hamfest**Sponsor:** Toledo Mobile Radio Association**Website:** <http://www.tmrhamradio.org>**Learn More**

Volunteer Exam Dates and Locations from www.arrl.org

01/21/2018 | [Elyria OH 44035-1343](#)**Sponsor:** American Red Cross**Location:** American Red Cross**Time:** 12:50 PM (Walk-ins allowed)**Learn More****02/03/2018 | [Kirtland OH 44094-8500](#)****Sponsor:** Lake County ARA**Location:** Kirtland Library**Time:** 12:00 PM (Walk-ins allowed)**Learn More****02/03/2018 | [Ravenna OH 44266-2191](#)****Sponsor:** Portage County ARS Inc.**Location:** PCARS Club Site (Rear of complex, under BIG tower)**Time:** 10:00 AM (Walk-ins allowed)**Learn More****02/08/2018 | [Cuyahoga Falls OH 44221-3205](#)****Sponsor:** Cuyahoga Falls ARC**Location:** Cuyahoga Falls Library**Time:** 7:00 PM (Walk-ins allowed)**Learn More****02/18/2018 | [Elyria OH 44035-1343](#)****Sponsor:** American Red Cross**Location:** American Red Cross**Time:** 12:50 PM (Walk-ins allowed)**Learn More****03/03/2018 | [Rittman OH 44270-1431](#)****Sponsor:** Silvercreek ARA**Location:** Rittman Public Library**Time:** 9:45 AM (Walk-ins allowed)**Learn More****03/15/2018 | [Stow OH 44224-4097](#)****Location:** Stow-Munroe Falls Public Library**Time:** 7:00 PM (Walk-ins allowed)**Learn More****03/18/2018 | [Elyria OH 44035-1343](#)****Sponsor:** American Red Cross**Location:** American Red Cross**Time:** 12:50 PM (Walk-ins allowed)**Learn More**

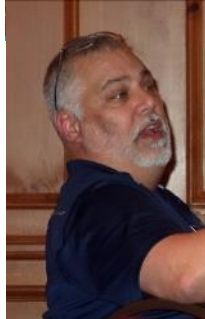


**Tuesday, November 28, 2017
LEARA HOLIDAY PARTY
at 100th Bomb Group
Restaurant**





**Tuesday, November 28, 2017
LEARA HOLIDAY PARTY
at 100th Bomb Group
Restaurant**



LAKE ERIE AMATEUR RADIO ASSOCIATION TRUSTEES' MEETING MINUTES OF THE MEETING

13 January 2018, at the Parma-Snow Branch of the Cuyahoga County Public Library
(Subject to Revision)

Present: WA8LIV, KG8DN, W8AZO, N8OOF, KD8TWG. Via phone bridge: N8YNR, KD8FTS, N8AUC. Guest: KB8VXE (On the Air)
Excused: K8JTK

Call to Order: Brian N8OOF called the meeting to order near 9:35 AM.

Treasurer's Report: Jeff N8YNR reported that our funds are adequate with some outstanding obligations.

Membership Report: Marv W8AZO submitted his report. We have 164 members in the club, 65 of whom have not yet renewed for 2018.

November Minutes: W8AZO moved and Andrew WA8LIV seconded that we accept the November 2017 board minutes as published. Passed.

Venue Chair Report: Eddie KD8FTS announced that, for the coming calendar year, we have enough venues on our "list" so that we can go through the entire year without repeating locations, except for one "opening," having dropped Massimo da Milano (closed) and 100th Bomb Group (expensive). He wondered which month would be the Skywarn meeting, but David KD8TWG then announced that LEARA would not be hosting a Skywarn meeting this year. Eddie is hoping to establish that we announce "the next meeting venue" at the "previous month's dinner meeting," and have the upcoming location posted sooner on the club website. WA8LIV reminded us that, with the new PayPal reservation plan, we may need to have a club credit card available at each meeting or an officer willing to front the funds needed. Eddie also recommended that we consider discontinuing the practice of obtaining location feedback at that venue on that night, and consider getting our feedback through an online survey. He is willing to do the sur-

vey himself, and the consensus was that we go ahead with this plan.

Programs for 2018: As Eric N8AUC joined by teleconference, he had indicated a couple of possibilities, but final programs are still pending. See "(Internet) Net Neutrality" below for a January update.

Technical Committee: KD8TWG announced that the club repeaters seem to be working satisfactorily. In the spring, he plans to get to the '76 Case input site prior to the public service season. (We are also still looking for an input site somewhere in the metro far northeast.) The '88 substitute controller is ready and remains to be installed. N8YNR commented that the company we tentatively engaged to provide the '88 antenna encountered an increased freight charge that they want to pass on to us. KD8TWG and W8AZO will investigate alternative sources for this antenna and get back to N8YNR before the final purchase is made. N8AUC wondered (in view of a 2nd upgrade recently announced by Yaesu) if we should move from Fusion to DMR. KD8TWG mentioned that there is an MMDVM (multi-mode digital voice modem) available inexpensively that may enable us to expand our current Fusion repeater's capabilities, and he hopes to look into the matter. WA8LIV mentioned that Yaesu also offers an upgrade from DR1X (which we have now) to a DR2X. Bryan asked Dave to get back to us with a proposal by the March board meeting. For now, no decisions were made regarding the status of our digital voice equipment.

(Internet) Net Neutrality: Bryan N8OOF read an announcement from the "Electronic Frontier Foundation" that encouraged readers to contact their congressional representatives asking that Net Neu-

(Continued from page 8)

trality regulations be “saved” as currently set by the FCC. It was mentioned that some larger internet providers are lobbying with small government entities (towns, villages, townships) to obtain “exclusive” company ISP access from within those local populations. After some discussion, W8AZO moved and KD8FTS seconded that LEARA should NOT take any official position on the Net Neutrality controversy. Passed 7 to 1. As discussion ensued, and with N8AUC’s encouragement, the consensus became that this timely matter would be a good topic for the January club meeting! We determined that a “**Panel Discussion on Net Neutrality**” as led by the board’s Technical Committee and others, will be the program for January 30th at Amore Ristorante in Willowick.

Field Day 2018: N8AUC moved and KD8TWG seconded that the club allocate funds to cover club Field Day 2018 expenses, and that we go ahead to obtain a permit for the use of our usual east Lakefront Metropark site unless something more promising emerges. Passed. WA8LIV volunteered to carry the matter forward.

LEARA Net Report: Carl, KB8VXE, provided a detailed analysis of the Thursday night LEARA Net check-in records over the preceding calendar year. There were 52 weekly nets, a total of 614 check-ins, with the heaviest participation on September 7th (19) and the lightest (5) on Thanksgiving night. The longest net ran for 44 minutes and the shortest for 17 minutes. Accepted.

Old Business: No further old business emerged.

New Business: (none)

Adjournment: N8YNR moved and W8AZO seconded that we adjourn near 1130 Hrs. Passed.

Respectfully submitted,
Ken Kane, KG8DN, Secretary

Extreme Weather Events Tied Conclusively to Humans

From Full Story in **Physics Today**

by David Kramer

<http://physicstoday.scitation.org/doi/10.1063/PT.6.1.20171226a/full/>

26 Dec 2017 item in **Research & Technology**

In a rare and likely unprecedented step, a peer-reviewed scientific study has definitively concluded that certain extreme weather events could not have occurred without human-caused climate change. **The record-high global average temperatures recorded in 2016 couldn't be attributed to natural variability alone**, say the authors of a 13 December report by the American Meteorological Society (AMS).

Meanwhile, NOAA [reported](#) that land surface temperatures in the Arctic this year are the second-highest, behind 2016, since records began in 1900, and the maximum extent of sea ice is the smallest ever. Both announcements were made during the fall meeting of the American Geophysical Union (AGU) in New Orleans.

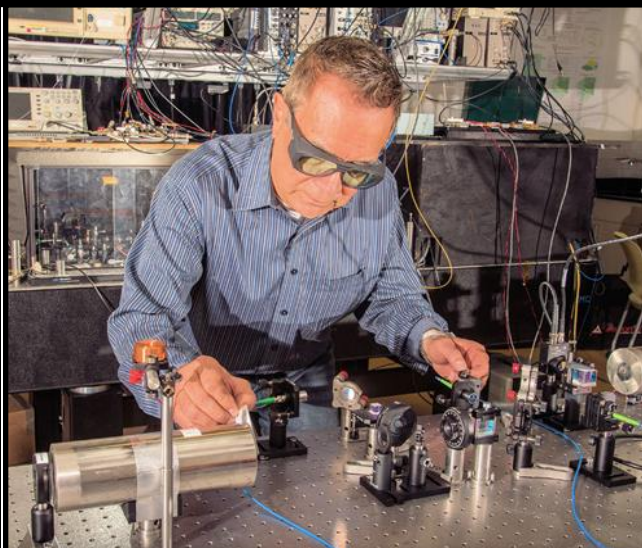
Stephanie Herring was lead editor of the sixth annual AMS [report](#) that examines the impact of climate on extreme weather events of the previous year. She said the record-setting global heat in 2016—the warmest since modern record keeping began and nearly 1 °C above the mid-20th-century average—could not have occurred without a century of human-caused climate change. Climate was also a necessary contributor to the record heat wave that occurred over much of Asia that year and to the anomalously warm surface temperatures of the Bering Sea, part of a larger area of warm water in the eastern Pacific Ocean known as “the blob.”

“From a technical perspective, we have evidence now that **climate change is pushing events beyond the threshold** that could be achieved with natural variability alone,” Herring, a climate scientist at NOAA’s National Centers for Environmental Information, told reporters at the AGU meeting. ...

(For the remainder of this story and links to further source material, see the URL in the title bar above.)

"Quantum Radio" May Offer New Twist on Communicating in Problematic Environments

Full Story from ARRL [Here](#)



NIST Physicist Dave Howe, AD0MR, aligns rubidium atoms at the heart of a digitally-modulated VLF receiver. (NIST Photo)

01/05/2018 Researchers at the **National Institute of Standards and Technology (NIST)** have demonstrated that quantum physics might enable communication and mapping in locations where GPS, cell phones, and radio are not reliable or don't work at all, such as indoors, in urban canyons, underwater, and underground. **NIST announced the technology advance** on January 2. The technology may have marine, military, and surveying applications. The NIST team is experimenting with very low frequency (VLF) digitally modulated magnetic signals, which propagate farther through buildings, water, and soil than conventional electromagnetic signals at higher frequencies.

"The big issues with very low-frequency communications, including magnetic radio, are poor receiver sensitivity and extremely limited bandwidth of existing transmitters and receivers. This means the data rate is zilch," said NIST project leader **Dave Howe, AD0MR**.

"The best magnetic field sensitivity is obtained using quantum sensors. The increased sensitivity leads in principle to better range. The quantum approach also offers the possibility to get high-bandwidth communications like a cellphone has. We need bandwidth to communicate with audio underwater and in other forbidding environments," he said. ...

"Atoms offer very fast response plus very high sensitivity," Howe said. "Classical communications involves a tradeoff between bandwidth and sensitivity. We can now get both with quantum sensors." **Howe speculated on an Amateur Radio application.** "The quantum radio is great fun, far better sensitivity than any other receiver, at room temperature, anyway," Howe told ARRL. "The atoms in the gas cell replace the 'antenna' and detection in the classical sense. It would be nice to try modulation in the 2200-meter band using the quantum receiver for detection." In the future, the NIST team plans to develop improved transmitters. ...

LEARA — The Lake Erie Amateur Radio Association

46 Years of Serving Greater Cleveland Since 1969 -

VOICE REPEATERS:

- | | |
|-----------------------|--|
| 146.76/R- | • Highland Hills (Requires 110.9 Hz tone) |
| 146.88/R- <i>IRLP</i> | • Lakewood (Requires 110.9 Hz tone) IRLP Node 4282 |
| 224.90/R- | • Lakewood (141.3 Hz tone) |
| 444.40/R+ | • Macedonia (Requires 131.8 Hz tone) |
| 444.70/R+ | • Lakewood <i>System Fusion</i> Digital Repeater |

INTERNET:

- www.leara.org
- To subscribe via e-mail, send a message to: spirit76-request@leara.org
Put *subscribe* in the subject area and your *name* and *call sign* in the body.
Those who subscribe via e-mail will not receive a paper copy.