SEPTEMBER 2017 Volume 6 Issue 9

VE3ERC-LUB

President: Joycee VA3WXU
Vice-President: Brian VA3DXK
Secretary: Tom VE3DXQ
Treasurer: Paul VA3PDC
Trustee: John VE3JXX
QSL Manager: Judd VE3WXU
Repeater Manager & Maintenance: Carl VE3FEF
Website Admin: Ted VE3TRQ
Lighthouse: Bruce VE3QB
Maple Syrup Display: Judd VE3WXU
Joycee VA3WXU
Newsletter: Bob VE3IXX

ERC REPEATERS

UHF 444.700 TONE: 131.8
UHF 444.700 TONE: 123.0
VHF 147.390 + TONE: 123.0
EMERGENCY SIMPLEX: 147.51
UHF– IRLP node 2404
VHF– IRLP node 2403, ECHOLINK node VE3ERC-R

In an emergency, tune
Into our repeaters,
UHF 444.700 or
VHF 147.390 or
HF 3.755 LSB or
Simplex 147.510
For coordination and assignments.

IN THIS ISSUE

Brian's (VE3YBM) mobile antenna in front of the Lighthouse at Point Clarke.

THE PREZ SEZ!

This club is Radio-ACTIVE

President's Update for SEPTEMBER 2017

A New View.....

Welcome Back to a Busy Year

It was nice to see you all at the meeting again at which we laid out several important activities that will happen in the upcoming months. Your participation in those activities will be crucial to the success of the club's goals of this year.

Essentially, as Rich suggested in a recent email, "We are aiming to have an informal means to notify Dayle or Kieran directly via text, email, or telephone of Ham Radio activity and sightings of weather-related danger by using our CANWARN network."

To reach this aim, we will need to choose the repeaters that will be scanned and identify the designated lead net controllers. Equally important to that, we should all hone our abilities to the best possible through education and on-going practice. We are lucky that Rich managed to get Geoff Coulson to come to our November meeting and give us CANWARN training. Furthermore, we will be practicing a SET (Simulated Emergency Test) on Saturday, October 14th. Participating in both of these activities are key towards our goal. We hope to have as many club members to show up as possibly can.

Another goal that is important to me is that our club needs to become a part of the Elmira community. That to me means that they know who we are and what we could do for Elmira. Whenever we have done presentations at Maple Syrup Festival, the CAER and most recently, the BBQ Fun Day, several people always says to us, "I didn't know Elmira had a Radio Club." And they definitely do not know what we can do for them.

To reach this goal we need to show up wherever the "community" goes. For example, I think we should walk or ride in the Elmira Christmas parade this year. I believe that having even just "ocular contacts" with the people, will plant the idea that we too are part of their community.

I will find out how to get in the Christmas Parade this year. Please send me an email and let me know if you would walk or ride in the Christmas parade too. Thanks for coming back. With your participation we will be off to a very good start....

73 Cheers to all

Joycee (VA3WXU)

The photographs were made at the BBQ Fun Day. It was fun to participate in it and we let the people know that Elmira has a Radio Club.

CONTRIBUTIONS TO VE3ERC-CLUB NEWSLETTER

Do you have an article you'd like to submit? Or photos? Do you have any comments you'd like to make?

Perhaps you'd like to share a photo of your shack, a special project you are working on or a special interest!

SEND THEM TO:

Bob bobve3ixx@gmail.com (519-787-2279) or

To Joycee va3wxu@gmail.com (519-741-9032)

Back-of-the-Napkin Eyeball

QSO notes and stuff

by Rich, ve3DCC

October will see our Second Annual Bill Graham dinner.
Bill ve3ETK, now a SK, was a respected member of ve3ERC, the Elmira Radio Club.
He insisted on hosting our October meetings at his home in Kitchener and he never disappointed.
Besides the scrumptious desserts and beverages provided by Maree, his XYL, his presentations were well worth looking forward to. The demonstrations were thought-provoking and practical!
We will gather again at the Cross Roads Restaurant in Elmira just before our October meeting to recall those wonderful meetings.

It seems that Bill, as a technician in the fledgling television industry, ran afoul of the CRTC. At that time, the federal agency ruled that NO stations would be allowed to transmit colour video over the air.
Bill found a way using only black and white. How, you say?

According to Alan Macdonald, va3TET:
'The "on air test" was done with modification to a popular beer commercial. The Red and blue components of the logo were sent out . The reaction was instantaneous. The CTV switchboard lit up and was overwhelmed with callers stating that their B&W TV was producing color!! The CRTC sent investigators to CTV to investigate this flagrant violation of NO Color Transmission in Canada. The joke was on the CRTC as they could not find any evidence of color equipment. Their response was Don't do it again !!!'
Bill was able to oscillate the white and black at a frequency that created colour frequencies to the eye. The black and white patches and stripes alternated in such a way that the colours appeared magically. He did a demonstration using a spinning disk with cleverly drawn black and white spokes. Seeing is believing.

The effect was first proposed by an English newspaper-man and toymaker Charles Benham in 1895. He built and marketed a toy top decorated with specific black and white patterns.

Of course, a quick search for Benham Disk, will yield a Wikipedia explanation, but, even better, there are templates (exploratorium.edu) so you can cut out and rotate (using a hand drill or on a pencil, yet) the disk. There is no sleight of hand involved.

The explanation centres around the types of cones (colour vision cells) in the human eye (sensitive to red, green and blue) and the latency or time it takes to respond to the colour. Different people can see different shades, intensity and pulsations depending on the speed of rotation and arrangement of bands.

Of course, an intriguing question might be, since light is a product of vibrating particles, at radio frequencies, can a similar rf effect be observed. If so, can ghosting of frequencies occur.

As usual, our old colleague, Bill had a way of leaving something for us to think about.

De Rich, ve3DCC

THE TRADITION CONTINUES

We will again hold our Bill Graham Tribute Dinner
On Wednesday, Oct. 25th at 5:00 pm
At the Crossroads Restaurant in Elmira.
You can order off the menu or enjoy a full buffet.
Spouses are welcome.
After dinner we will reconvene at the Fire Hall
For our Regular Meeting.
Please contact Rich at

raclausi@kw.igs.net
By October 11
So seating can be booked.

Emergency Preparedness

Simulated Emergency Test: October 2017

*Please note that the Elmira Radio Club **S**imulated **E**mergency **T**est will only consist of a VHF net, following the regular morning net, with some members possibly mobile and/or on battery power.*

Date: Saturday, October 14

Note: In Ontario the Simulated Emergency Test will be held on Saturday, October 14.

The Simulated Emergency Test is a North America-wide exercise in emergency communications, administered by the ARRL and the RAC Emergency Coordinators and Net Managers. Both the Amateur Radio Emergency Services (ARES) and the National Traffic System (NTS) are involved. The SET weekend gives communicators the opportunity to focus on the emergency communications capability within your community, while interacting with NTS nets.

RAC administers our Canadian SETs. Among other objectives we aim to strengthen the relationship between ARES and served municipalities and relief agencies. It is vitally important that this be done at the local EC level.
The deadline for receipt of all reports is January 31, 2018.
Note: Please use the SET Report Form. No other format is acceptable for reporting SET activities.

After their chosen SET weekend, participating ECs, Net Managers or others must send their completed forms online.

Please send a copy to your Section Manager (SM) and to your Section Emergency Coordinator (SEC) or Section Traffic Manager (STM) as applicable. See form to submit an email copy for your own records.

Purpose of SET

1. To find out the strengths and weaknesses of the ARES, NTS and other groups providing emergency communications.
2. To provide a public demonstration – to served agencies such as Red Cross, Emergency Preparedness and, through the news media, of the value to the public that Amateur Radio provides, particularly in time of need.
3. To help Radio Amateurs gain experience in communications using standard procedures and a variety of modes under simulated-emergency conditions.

Format

The scoring format reflects broad objectives and encourages use of digital modes for handling high volume traffic and point-to-point welfare reports out of the affected simulated-disaster area. Participants will find SET an opportunity to strengthen the VHF-HF link at the local level, thereby ensuring that ARES and NTS are working in concert. The SET will give all levels of NTS the chance to handle exercise related traffic.

Test messages should carry the word "TEST" before the precedence; that is, "Test Priority" on phone and "TEST P" on CW. The text of such messages should also begin with the words "TEST MESSAGE."

Preparing for SET

Emergency Coordinators

1. Sign up all available Radio Amateurs in the area under your jurisdiction and work them into your SET plans. Make special efforts to attract newly licensed Amateurs.
2. Call a meeting of all ARES members and prospective members to briefly outline (no details) SET activities and to give general instructions. Do not divulge the exact time or nature of the test to them at this time. This should come as a surprise. Take this opportunity to register new ARES members and get up-to-date information on others. Hold an on-the-air meeting if it's not possible to meet in person.
3. Contact served agencies and explain the intent and overall purpose of the SET. Offer to send test messages to other branches of their agencies and invite officials to your ARES meetings and SET operating sites.
4. Contact officials of any adjacent communities having no active Amateurs and offer to provide representation in Amateur networks for them as well.
5. Arrange publicity in local newspapers and radio/TV stations by preparing an announcement and/or inviting the press to observe your group's SET operation.
6. Set up liaison with one or more NTS local/section nets (if you don't already have liaison) so you will have an outlet for all messages out of the local area.
7. Formulate your plans around a simulated disaster. Possible "plots" include: a flood, a serious fire, an ice storm, a missing person, a serious accident (automobile, bus, aircraft, for examples), a broken gas line, a tornado and so forth. Elaborate on the situation by developing a scenario but please be realistic.

During the SET

1. Announce the emergency situation. Activate the emergency net. Dispatch mobiles to served agencies.
2. Have designated stations originate messages on behalf of served agencies. Test messages may be sent simulating requests for supplies. Simulated emergency messages (just like real emergency messages) should be signed by an authorized official.
3. Emphasize tactical communications for served agencies.
4. As warranted by traffic loads, have liaison stations on hand to receive traffic on the local net and relay to your section net. You should also be sure that there is a representative on each session of the section net to receive traffic going to the local area.
5. Operate at least one session (or substantial segment of a session) of the local net on an emergency-only basis. Or, if a repeater is on emergency power, allow only emergency- powered stations to operate through the repeater for a certain time period.

After the SET

An important post-SET activity is a critique session to discuss the test results. All ARES members should be invited to the meeting to review good points and weaknesses apparent in the drill. Emphasize ways to improve procedures, techniques and coordination with all groups involved. Report your group's effort to RAC and TCA and include any photos, clippings and other items of interest.

National Traffic System

The main function of NTS in an emergency situation is to tie together all of the various local activities and to provide a means by which all traffic destined outside of a local area, section or region can be systematically relayed to the addressee.

NTS routing should be followed. A valid exception is the handling of emergency traffic which should be routed as rapidly and efficiently as possible, bypassing various levels of nets when delivery can be expedited. Another exception is when one station is loaded down with traffic for one region or section. At the discretion of the Net Control Station (NCS), the station may be directed to bypass a normal channel and go directly to a lower (or higher) echelon net.

The interface between NTS and ARES lies in the liaison function between local nets and other NTS nets, particularly at the section level. Responsibility for representation of the local network on the section net lies with the local net manager who may or may not be the EC. Although we usually think of ARES members being the representatives in section nets, it is equally valid to expect NTS personnel to act as liaison to local nets.

At least one net session or substantial segment of a session should be conducted on emergency power. Plan a surprise session or two. Advise the NCS just before net time. If the NCS is unable to operate on emergency power, then someone else must be net control. Only stations operating on emergency power may report in during this time.

Summary

One of the first steps on the way to a successful SET is to try to get as many people involved as possible, especially new Amateurs. In a real emergency, we find Amateurs with all sorts of varied interests coming out of the woodwork. Let's get them involved in SET so they will know more about how emergency communications should be handled. Promote SET on nets and repeaters. Sign up new, enthusiastic Amateurs. Many of those offering to help will be inexperienced in public-service activities. It's up to you to explain to them what's going on and provide them with useful roles. They may like it so much that they will become a permanent fixture in your ARES or NTS group.

SPECIAL RAC BULLETIN

RAC Stations Schedule (as of August 20, 2017)

http://wp.rac.ca/rac150/ operations/

VE1RAC – Scott Nichols, VE1OP, of North Sydney, Cape Breton, will operate from **August 7 to 31**. Scott is a RAC Maple Leaf Member and a very active, accomplished DXer and Contester. Kevin Morgan, VE9MY, Russ Hemphill, VE9FI, Linda Friars, VE9GLF and Patricia, VE9DZ, will use VE1RAC from **October 6-14** from Cape Breton Island, Nova Scotia.

VA2RAC – Gilles Renucci, VE2TZT, will activate VA2RAC **until the end of August**.

VA3RAC – Steve Edwards, VA3TPS, will operate from **August 21 to 25**.

VE7RAC – Fred Orsetti, VE7IO, has organized the following volunteers to operate the VE7RAC call sign for the **rest of the year**: Doug Pichette, VA7DP, Gabor Horvath, VE7JH, Al McNeil, VA7QQ, John Mackay, VE7RB, Al Ross, VE7WJ, Jim Smith, VE7FO, Rebecca Kimoto, VA7BEC, Koji Kimoto, VA7KO, Brian Summers, VE7JKZ, John White, VA7JW, John Schouten, VE7TI and Fred Orsetti, VE7IO. A schedule is available in PDF format (82.9 kb) at **http://wp.rac.ca/ rac150/ operations/**.

VE9RAC – Jean-Paul Leblanc, VE9BK and Marcel Leblanc, VE9ML will be activating VE9RAC for the **rest of the year**.

VO1RAC – Boyd Snow, VO1DI, RAC NL Section Manager, has organized several RAC members across Newfoundland to activate VO1RAC for the **remainder of the year**. The operators are: Boyd Snow, VO1DI, Doug Mercer, VO1DM, Frank Davis, VO1HP, Ken Tucker, VO1KVT, Loren Butler, VO1PWF, Ross Trickett, VO1ROS, Carl Milley, VO1UL and Max Powell, VO1VR.

VY1RAC – The VY1AAA Yukon CanAm Contest Club, operating at the station of VY1JA, will be activating VY1RAC for the **rest of the year** on CW and Digital modes, as time permits. Operations started on August 15 on 20m and many QSOs were made. They "look forward to providing the Yukon for those chasing the RAC Canada 150 award".

The best way to keep tabs on the activations will probably be by watching the DX Cluster (e.g., dxsummit.fi).

We are hoping to get all of RAC stations on the air for the RAC Canada Winter Contest on December 30.

For more information on the **RAC Canada 150 Award** and how to volunteer to activate a RAC station please visit http://wp.rac.ca/rac150/ and http://wp.rac.ca/volunteers-needed-to-activate-for-rac-canada-150-award/

Completed Operations:

Thank you for volunteering and for participating in the RAC Canada 150 Award:

VA3RAC – John Leonardelli, VE3IPS, operated on July 29-30; Dennis Rule, VE3BF, operated on August 6-11; Rob Noakes, VE3PCP and Carson Morton, VA3OSO, on Saturday, August 12 for International Youth Day; and Steve Edwards, VA3TPS, operated from August 15 to 18.

VE5RAC – Saskatchewan Section Manager, Summer Hartzfelk, VE5SDH, activated the VE5RAC call sign on Saturday, August 5 for the North American QSO Party contest from Saturday at noon to midnight. It was a CW operation.

VY2RAC: RAC Director Phil McBride operated on Sunday, August 13 from PEI National Park in Cavendish, Prince Edward on 40m, 60m and 80m SSB.

Alan Griffin
RAC MarCom Director

Radio Amateurs of Canada

wp.rac.ca
720 Belfast Road, #217
Ottawa, ON K1G 0Z5
613-244-4367, 1- 877-273-8304

The 2017 Point Clark Lighthouse Weekend

Elmira Radio Club has a long history of participating at the Lighthouse weekend. The first time our members came was some time around 2009 and they continued to go there up to 2011. The club stopped participating in 2012 because the Point Clark Lighthouse went under restoration. The Spring of 2015 was the reopening to the public of the Lighthouse and we came back to the lighthouse three more times since. In these three past years there has been a radical evolution of the numbers of our members' participation and the variety of the radios and antennas they use. This year several different modes were being used on several bands, including the 6 metre, "magic" band.

It was very impressive to see the stations that were up and running, especially since we were working in an array of changing weather throughout the weekend. Dan (VA3SQD) brought his iCom7300. Paul (VE3PDC) used his Elecraft K2 in his go box. Brian (VA3DXK) worked his FTDX 1200 rig and Frank (VA3FJM) used his TS440 Kenwood. Andy (VE3CDF) lent his radio to the club so that ONTARS could be run. I don't know exactly what kind of radio it is... I just call it the "Big Rig". The owners of the stations kindly shared and allowed other members to use their equipment.

These operators also brought an array of antennas with them. There was a G5RV, an END-Fed, a 20 metre band Loop, a home brew vertical, and a home brew 6 mtr hex. The outcome from that was several contacts being made throughout the weekend.

This year was particularly unrivaled for me. I finally did what I wanted to do for two years. I had wanted to climb up to the top of the lighthouse and I finally did it! While I was savoring the glory of having made it up to the top, I watched the people down below. It was a panorama of our members laughing, enjoying the day, and making great memories.

The day after we were back at home, Judd registered the club for lighthouse activation for next year again. I am sure, we will see you in Point Clark again next year.

Cheers

Joycee VA3WX

All the photographs submitted by Joycee VA3WXU were a nostalgic throwback to 2009.

VE3ERC Elmira Radio Club Inc.

Minutes from September 27, 2017

1. Open and roll call.

The meeting was open by our President VA3WXU Joycee at 7:30 pm.

Roll Call: VA3TET Al, VE3DXQ Tom, VE3WXU Jud, VA3WXU Joyce, VA3DXK Brian, VE3TRQ Ted, VE3EIX Harry, VA3GWM Gord, VE3CXU Doug, VE3JMU Jim, VE3PDC Paul, VE3JVG Jason, VE3RVH Reg, VE3IXX Bob, VA3TGY Tracy,VE3YBM Brian, VE3RVH Reg, VE3DCC Rich, VA3QB Bill, VA3AUS Al, VE3KCY Ken, Arron Guest from Listowel, VE3DWI Tony, Steve Guest, Doug Guest from Listowel.

New Executives for this coming year: President Joycee Hodge VA3WXU, Vice President Brian Filbey VA3DXK, Treasurer Paul Curtin VA3PDC, Trustee John Sheeringa VE3JXX, Secretary Tom Mahony VE3DXQ.

Joycee addressed the club regarding Reg VE3RVH: Joycee VA3WXU advised that Reg has been a member of the club for 30 years and Treasurer for 19 years. Joycee told of the many skills Reg has. They are Gardner, Antenna Raiser, Caretaker of his family, treasurer, and a lot of work with his hands like the Christmas reef he made, and also plays the guitar. Joycee VA3WXU presented Reg VE3RVH with a picture of him holding three ropes and Joycee said that Reg holds on to things and makes them right.

Reg VE3RVH thanked Joycee VA3WXU and went on to explain how the club grew from the original 10 members to the 44 we have today. He also expresses he was impressed with the variety and caliber of talent in the club. Reg VE3RVH explained that due to our recent incorporation the bank requires the information regarding co-signers for bank transactions. So at this point we need a motion to elect two signees for banking transactions.

A motion was made by Judd VE3WXU to transfer co-signers from Reginald Horney and Richard Clausi to Vice president Brian Filbey, and Treasurer Paul Curtin. This was seconded by Bob VE3IXX motion was accepted by the members.

Minutes from previous meeting: Tom VE3DXQ asked if there were any errors or omissions from the ERC June minutes. None were mentioned by those present. Tom made a motion to have the June minutes accepted, seconded by Judd VE3WXU. Minutes were accepted.

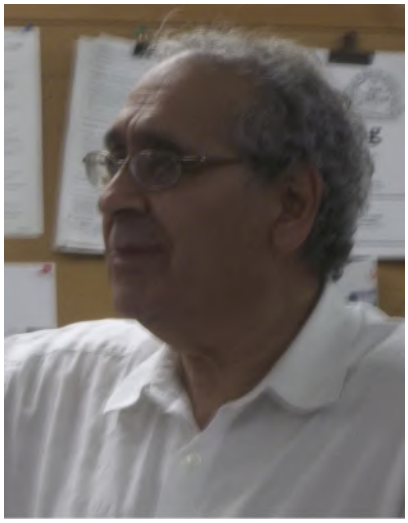
Treasurer's Report: Paul VA3PDC gave the balance as of June 21, 2017.

Safety Officer: Tom VE3DXQ advised that we have 6 small road cones, 7 safety vests and 9 Safety goggles. All are in Tom's Garage.

QSL Manager: Judd VE3WXU said he has 2 cards to still send out and figures about 9 went out via EQSL. Judd advised that with EQSL if you do not send within a certain

length of time you have to change the card.

Reports of Summer Events: Joycee VA3WXU reported on 3 events The Canadian BBQ at Al's VA3TET, Point Clark Lighthouse, and the BBQ Fun Day at the Elmira Legion. She said that it was special because wives were also in attendance. The Lighthouse was very well attended and Joycee said the view from the top of the lighthouse was amazing. The BBQ Fun Day was more an event for children. However it made the community more aware of our presence in the community. John VE3JXX was instrumental in getting us involved with the BBQ FUN Day as he is a member of the Legion.



Speakers/Program/Discussions

Rich VE3DCC – How to set up Emergency Nets

Rich said how lucky we are to have a warm relationship with the Woolwich Fire Department, and no rent at the fire hall. He also talked about situations that came up this summer like the flood in West Montrose, and the Tornado in Hawksville.

We do not get involved with directing traffic and the like, but we pass messages at the emergency centers. We have trouble in the Arena and the township hall because we do not have antennas on the roof and interior antennas do not get out very well due to these buildings' composition.

The township is aware of us and that we need antennas. John Scheeringa VE3JXX has put together a proposal of what antennas and equipment we need. We have hams monitoring the radio waves as well as radar and Rich suggested to the township that we could email them in the event that we see something coming. Their response was fairly positive.

Rich VE3DCC said that when we have our SET (Simulated Emergency Test) on October 14, 2017 that we could send an email to the Fire Chief saying everything is fine. Also at the November meeting Rich has arranged for Geoff Coulson to come to our club and give CANWARN Training. Those present will receive a CANWARN card. Link to Emergency Preparedness per Ted VE3TRQ

http://www.ve3erc.ca/emergency-preparedness/

Judd VE3WXU mentioned that Hams are being sent to Porto Rico at the Red Cross's expense to help with the disaster there. VE3TRQ said the AREDN group from California will be setting up a mesh network there on the fly as well. See https://www.aredn.org/ this will provide them with data networks, which you can also use for VOIP.

Bill Graham October dinner: This dinner in honor of Bill Graham VE3ETK who use to have a technical display and snacks at his place every October meeting. Rich VE3DCC Rich advised that the dinner will be at the Cross Roads family restaurant once again. He will book this once he knows the number of people coming. This dinner will be on October 25, 2017 at 5:00 pm and cost is $22.00 per person if you get the buffet. Menu items may be more or less. Link to restaurant http://www.crossroadsrestaurant.ca/

Christmas Party Relocation: Joycee VA3WXU and Judd VE3WXU brought up the possibility of having the Christmas party at the Elmira Legion. John VE3JXX will help arrange this. The room is upstairs but is wheelchair accessible. Judd VE3WXU made a motion that we move the Christmas party to the Legion Hall. This was seconded by Ted VE3TRQ. The majority in favor. Motion passed. Joycee VA3WXU will confirm the date very soon.

Fund Raising Ideas:

Joycee said keep think about ways to raise funds. The 50/50 draw is a good start.

Meeting ended at 8:45 pm.

Special thanks to Tracy VA3TGY (and Wes VE3ML) for sharing with us this article that she published in "The Driven Element" (Guelph Club newsletter). The source was:

https://www.reuters.com/article/us-shipping-gps-cyber-idUSKBN1AN0HT

Cyber threats prompt return of radio for ship navigation

Jonathan Saul

LONDON (Reuters) - The risk of cyber attacks targeting ships' satellite navigation is pushing nations to delve back through history and develop back-up systems with roots in World War Two radio technology.

Ships use GPS (Global Positioning System) and other similar devices that rely on sending and receiving satellite signals, which many experts say are vulnerable to jamming by hackers.

About 90 percent of world trade is transported by sea and the stakes are high in increasingly crowded shipping lanes. Unlike aircraft, ships lack a back-up navigation system and if their GPS ceases to function, they risk running aground or colliding with other vessels.

South Korea is developing an alternative system using an earth-based navigation technology known as eLoran, while the United States is planning to follow suit. Britain and Russia have also explored adopting versions of the technology, which works on radio signals.

The drive follows a series of disruptions to shipping navigation systems in recent months and years. It was not clear if they involved deliberate attacks; navigation specialists say solar weather effects can also lead to satellite signal loss.

Last year, South Korea said hundreds of fishing vessels had returned early to port after their GPS signals were jammed by hackers from North Korea, which denied responsibility.

In June this year, a ship in the Black Sea reported to the U.S. Coast Guard Navigation Center that its GPS system had been disrupted and that over 20 ships in the same area had been similarly affected.

U.S. Coast Guard officials also said interference with ships' GPS disrupted operations at a port for several hours in 2014 and at another terminal in 2015. It did not name the ports.

A cyber attack that hit A.P. Moller-Maersk's IT systems in June 2017 and made global headlines did not involve navigation but underscored the threat hackers pose to the technology dependent and inter-connected shipping industry. It disrupted port operations across the world.

The eLoran push is being led by governments who see it as a means of protecting their national security. Significant investments would be needed to build a network of transmitter stations to give signal coverage, or to upgrade existing ones dating back decades when radio navigation was standard.

U.S. engineer Brad Parkinson, known as the "father of GPS" and its chief developer, is among those who have supported the deployment of eLoran as a back-up.

"ELoran is only two-dimensional, regional, and not as accurate, but it offers a powerful signal at an entirely different frequency," Parkinson told Reuters. "It is a deterrent to deliberate jamming or spoofing (giving wrong positions), since such hostile activities can be rendered ineffective," said Parkinson, a retired U.S. airforce colonel.

KOREAN STATIONS

Cyber specialists say the problem with GPS and other Global Navigation Satellite Systems (GNSS) is their weak signals, which are transmitted from 12,500 miles above the Earth and can be disrupted with cheap jamming devices that are widely available.

Developers of eLoran - the descendant of the loran (long-range navigation) system created during World War II - say it is difficult to jam as the average signal is an estimated 1.3 million times stronger than a GPS signal.

To do so would require a powerful transmitter, large antenna and lots of power, which would be easy to detect, they add.

Shipping and security officials say the cyber threat has grown steadily over the past decade as

vessels have switched increasingly to satellite systems and paper charts have largely disappeared due to a loss of traditional skills among seafarers.

"My own view, and it is only my view, is we are too dependent on GNSS/GPS position fixing systems," said Grant Laversuch, head of safety management at P&O Ferries. "Good navigation is about cross-checking navigation systems, and what better way than having two independent electronic systems."

Lee Byeong-gon, an official at South Korea's Ministry of Oceans and Fisheries, said the government was working on establishing three sites for eLoran test operations by 2019 with further ones to follow after that.

But he said South Korea was contending with concerns from local residents at Gangwha Island, off the west coast.

"The government needs to secure a 40,000 pyeong (132,200 square-meter) site for a transmitting station, but the residents on the island are strongly opposed to having the 122 to 137 meter-high antenna," Lee told Reuters.

In July, the United States House of Representatives passed a bill which included provisions for the U.S. Secretary of Transportation to establish an eLoran system.

"This bill will now go over to the Senate and we hope it will be written into law," said Dana Goward, president of the U.S. non-profit Resilient Navigation and Timing Foundation, which supports the deployment of eLoran.

"We don't see any problems with the President (Donald Trump) signing off on this provision."

The previous administrations of Presidents George W. Bush and Barack Obama both pledged to establish eLoran but never followed through. However, this time there is more momentum.

In May, U.S. Director of National Intelligence Daniel Coats told a Senate committee the global threat of electronic warfare attacks against space systems would rise in coming years.

"Development will very likely focus on jamming capabilities against ... Global Navigation Satellite Systems (GNSS), such as the U.S. Global Positioning System (GPS)," he said.

SPOOFING DANGERS

Russia has looked to establish a version of eLoran called eChayka, aimed at the Arctic region as sea lanes open up there, but the project has stalled for now.

"It is obvious that we need such a system," said Vasily Redkozubov, deputy director general of Russia's Internavigation Research and Technical Centre.

"But there are other challenges apart from eChayka, and (Russia has) not so many financial opportunities at the moment."

Cost is a big issue for many countries. Some European officials also say their own satellite system Galileo is more resistant to jamming than other receivers.

But many navigation technology experts say the system is hackable. "Galileo can help, particularly with spoofing, but it is also a very weak signal at similar frequencies," said Parkinson.

The reluctance of many countries to commit to a back-up means there is little chance of unified radio coverage globally for many years at least, and instead disparate areas of cover including across some national territories and shared waterways.

The General Lighthouse Authorities of the UK and Ireland had conducted trials of eLoran but the initiative was pulled after failing to garner interest from European countries whose transmitters were needed to create a signal network.

France, Denmark, Norway and Germany have all decided to turn off or dismantle their old radio transmitter stations.

Britain is maintaining a single eLoran transmitter in northern England.

Taviga, a British-U.S. company, is looking to commercially operate an eLoran network, which would provide positioning, navigation and timing (PNT).

"There would need to be at least one other transmitter probably on the UK mainland for a timing service," said co-founder Charles Curry, adding that the firm would need the British government to commit to using the technology.

Andy Proctor, innovation lead for satellite navigation and PNT with Innovate UK, the government's innovation agency, said: "We would consider supporting a commercially run and operated service, which we may or may not buy into as a customer."

Current government policy was "not to run large operational pieces of infrastructure like an eLoran system", he added.

WEDNESDAY NITE NET CONTROLLERS

AUGUST 16 - TED VE3TRQ
AUGUST 23 - AL VA3TET
AUGUST 30 - REG VE3RVH + DIGITAL GROUP
SEPTEMBER 6 - TOM VE3DXQ
SEPTEMBER 13 - PAUL VE3PVB
SEPTEMBER 20 - TRACY VA3TGY
SEPTEMBER 27 - M E E T I N G
OCTOBER 4 - BRIAN VA3DXK
OCTOBER 11 - BOB VE3IXX
OCTOBER 18 - TED VE3TRQ
OCTOBER 25 - M E E T I N G
NOVEMBER 1 - AL VA3TET