



INDIAN RIVER ARC

P.O. BOX 237285, COCOA FLORIDA 32923-7285

VOLUME XLIV, NUMBER 3

SPURIOUS EMISSIONS

MARCH, 2018

CLUB MINUTES

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ARMANDO DELGADO
KN4JN

President Dave KUOR began the meeting at 1931 with the pledge of allegiance.

Following the pledge, new member Bill Jacoby KD2WKJ was introduced.

No ailing members were identified.

The minutes for the February meeting were published in the newsletter. A motion was heard to approve the meeting minutes, a second was heard and the February minutes were approved by acclamation.

Larry KK4WDD, our Treasurer, reported we have \$1682.09 in checking and \$1277.39 in the equipment fund.

A motion was heard to accept the meeting minutes for audit, a second was heard and the Treasurer's report was approved by acclamation.

Vice President Viron N4VEP donated \$100 toward central net funding.

Dave KUOR reported for the Technical committee that none of the repeaters have de-

graded.

Upcoming events: MS Walk March 10 and QRP on the 17th.

EC Coordinator Les W9BCH reported the parking lot exercise went well and that there was good attendance.

Stephanie K4MVO, fund raiser for BEARS, requested that any video, audio or still pictures about ham radio activities members may have should be sent to her so that she can put together a video for a grant for BEARS1. Also in June, she and Bill Young KA4VHY are providing a ham radio class for the 4H Club to help bring new hams into the hobby. They need volunteers to share their passion for our hobby with the young folks. This afternoon's launch was light on IRARC attendance.

New Business: Dave KUOR showed his go-box that contains a dual band VHF/UHF radio, a switching power supply, a Heil headphone set, and other assorted items to facilitate connections, but it is a work in progress and may need more changes. This box will debut at the MS Walk to find

any bugs. Please, send comments and suggestions to Dave.

Next Dave talked about the MS walk starting at 8:00 AM on March 10 at the church at Viera. Bring a chair, water and sunscreen.

The 50-50 drawing found door prizes of emergency kits awarded to Bill KD2WKJ, who drew the first ticket, and Shannon KG4LHG. The cash prize went to Viron N4VEP, who donated it to the Central Net Fund.

Following the drawing, a YouTube video of Dwaine KM4HCN being interviewed giving a tour of BEARS1 was viewed and it grandly showcased the capabilities of this asset. Following Dwaine's video, an interesting video of the Navy's Arctic research program featured men sawing through ice to open the hatch of a submarine.

A motion to adjourn occurred at 2026 and was moved and approved.

Respectfully Submitted
Steve Luchuk Secretary

HAPPENINGS

Speaking on behalf of the WSJT-X Development Team, Joe Taylor, K1JT, has issued a progress report on the team's efforts to develop FT8 DXpedition Mode. The new digital mode will include new and innovative features, which are detailed in a draft [FT8 DXpedition Mode User Guide](#), released on February 2. Taylor said the basic goal of FT8

DXpedition Mode is to enable DXpeditions to make FT8 QSOs at the highest possible rates, and the WSJT-X Development Team has been working with members of the Baker Island KH1/KH7Z DXpedition team, ahead of its mid-summer operation, to work out the wrinkles. More information [at http://www.arrl.org/news/foxes-and-hounds-ft8-dxpedition-mode-is-in-the-works-for-wsjt-x](http://www.arrl.org/news/foxes-and-hounds-ft8-dxpedition-mode-is-in-the-works-for-wsjt-x)

The "[XXY Oscilloscope](#)" is a web page that provides basic cathode ray tube oscilloscope functionality, including phosphor persistence. You can choose input sources from among microphone, signal file, or mathematical equation inputs. It's fun to play with, and might even be useful as a tool in a pinch.

"Automatic Gain Control" is the topic of the February 1 episode of the "[ARRL The Doctor is In](#)" pod-

cast and "Vacuum Tubes" is the topic of the new (February 15) episode

ARRL announced a [Mobile DXCC Operating Award](#), available to radio amateurs who have contacted at least 100 DXCC entities from a working vehicle, with antennas and power source capable of operating while in motion. The Mobile DXCC is a one-time award

HAPPENINGS

and is non-endorsable. Contacts made any time in the past do count toward the award. QSLs are required but you do not need to submit them. Mobile stations may use any legal power for the entity from which they are operating. This award specifically **excludes** contacts made by aeronautical or maritime mobile stations. You do not have to be an ARRL member to qualify for this award.

The Amateur Radio Emergency Service (ARES) will phase out the traditional ARES report forms later this year in favor of an

online system called *ARES Connect*, a volunteer management, communications, and reporting system. The new system will allow information to be logged by ARES members and managed through the Field Organization. The advent of *ARES Connect* was among other highlights in "[The Amateur Radio Emergency Service \(ARES\) 2017 Annual Report](#)," released this week. More details at [http://www.arri.org/news/amateur-radio-emergency-service-](http://www.arri.org/news/amateur-radio-emergency-service-transitioning-to-new-online-reporting-system)

[transitioning-to-new-online-reporting-system](#)

The annual [National Hurricane Conference](#) is set for March 26 – 29, in Orlando, Florida. The theme this year is "Improving Hurricane Preparedness." Some 1,500 attendees are expected. The Amateur Radio session will take place on Tuesday, March 27, at 1:30 PM. Presenters will address various aspects of the Amateur Radio response to hurricanes Harvey, Irma, and Maria.

A second beta version of WSJT-X version 1.9.0 has been re-

leased, the WSJT development group announced. The "release candidate," as it's called, is designated as version 1.9.0-rc2 to allow further field testing of the new [FT8 "DXpedition Mode."](#)

The Amateur Radio community is invited to participate in a public test run of FT8 DXpedition Mode on the evening of March 6 (North American time).

All test participants must use WSJT-X version 1.9.0-rc2. Test times and frequencies are March 6, 2300 UTC on 14.080 MHz; March 7, 0000 UTC on 10.141 MHz; March 7, 0100 UTC on 7.080 MHz, and March 7, 0200 UTC on 3.585 MHz. More information at <http://www.arri.org/news/on-the-air-test-of-new-ft8-dxpedition-mode-set-for-early-march>

ON THE AIR

International DX Contest: First full weekend in March (**March 3-4, 2018**).

04/01/2018 | Special Event Station EI100MCV - Marine Radio Day; Anzac Day; International Marconi Day
Apr 1-Dec 31, 0800Z-2359Z, EI100MCV, Dublin, IRELAND. National Maritime Museum of Ireland Radio Club. All bands, all modes; operating on or close to frequencies ending in 18. QSL. Via bureau, Clublog, or direct to Dave O'Conner, EI6AL, Silver Howe, Sydenham Mews, Corrig Avenue, Dun Laoghaire, Co. Dublin A96 RF99, IRELAND. This is part of a year-long event commemorating the sinking of Royal Mail Ship (RMS) *Leinster*. April events include Marine Radio Day on Apr. 14 and 15; Anzac Day on

April 28, and International Marconi Day on Apr. 28. Full details on website. www.qrz.com/db/ei100mcv

04/07/2018 | Activation of State Parks in the State of Texas
Apr 7-Apr 8, 1500Z-2100Z, K5LRK, The Colony, TX. Lake Area Amateur Radio Klub. CW - Bottom of band +40 kHz; Phone - General Segment +25 kHz and 28.350; VHF - 50.200 and 144.200 MHz. QSL. Ken Rainy, AC5EZ, 529 Kenilworth Ave, Oak Point, TX 75068. Apr 7 - Apr 8, 1500 - 0300 and Apr 8 1500 - 2100 <https://www.k5lrk.com>

8P6DR Barbados
 Dick, G3RWL will be again active from Barbados, IOTA NA-

021, 20 March - 29 April 2018, as 8P6DR. He will operate on 80 - 10m, CW, RTTY.

H44MS Solomon Islands
 Bernhard, DL2GAC will be again active as H44MS, from Malaita Island, IOTA OC - 047, Solomon Islands, until 2 May 2018. He will be operate on 160 - 6m SSB.

SARDINIA, ISO. Simone, ISOAFM is QRV with special call sign IROFOC from Cagliari until December 31 to celebrate the 80th anniversary of the First Class CW Operators' Club, or FOC. QSL direct to home call.

NETHERLANDS, PA. A group of operators are QRV as PA2018BP until March 9 to commemorate

Robert Baden Powell, founder of the Scout Movement. QSL via PA3EFR.

Postponed DXpedition to disputed **Spratlys** reset for March:

An international Amateur Radio team that postponed a December 2017 DXpedition to the disputed Spratly Islands now plans to be on the air in early March from Layang Layang Island — also known as Swallow Reef — under Malaysian call sign [9MOW](#), with CW, SSB, and digital operation on 160 through 6 meters.

Hartwig, DL7BC will be active from **French Guiana**, 12 - 26 March 2018, as FY/DL7BC and FY/DL7BC/P.

NVIS by Armando Delgado, KN4JN

As we first learn about amateur radio and antennas, we discover that horizontal dipole antennas radiate their best at heights of $\frac{1}{2} \lambda$ where they produce a bi-lobar pattern with a low angle of radiation of 30° . These heights are easily achievable at the higher frequen-

cies for the average amateur, but as the frequency drops, it becomes less practicable for amateurs to erect antennas that meet that height requirement. At the lower frequencies, that pattern of radiation gradually rises as the height of the antenna

drops below the $\frac{1}{2} \lambda$. In amateur parlance these antennas are often referred to as "cloud warmers" due to their near vertical radiation pattern.

However, this pattern of ra-

diation is not all bad, since it can lead to a form of propagation that is very useful in relatively short distances. This **Near vertical incidence skywave**, or **NVIS**, is a **skywave** radio-wave propagation path that provides usable signals in the range be-

tween groundwave and conventional skywave distances—usually 30–400 miles (50–650 km). (See picture in next page)

NVIS has been recognized and used for many years, primarily by the military, which performed most of the research in its practical use. In recent years there is a growing interest in its use in emergency communications, especially in locations where VHF communications are not possible. Among the many advantages of NVIS are:

- NVIS covers the area which is normally in the skip zone, that is, which is normally too far away to receive groundwave signals, but not yet far enough away to receive skywaves reflected from the ionosphere.
- NVIS requires no infrastructure such as repeaters or satellites. Two stations employing NVIS techniques can establish reliable communications without the support of any third party.
- Pure NVIS propagation is relatively free from fading.
- Antennas optimized for NVIS are usually low. Simple dipoles work very well. A good NVIS antenna can be erected easily, in a short amount of time, by a small team (or just one person).
- Low areas and valleys are no problem for NVIS propagation.
- The path to and from the ionosphere is short and direct, resulting in lower path losses due to factors such as absorption by the D layer.
- NVIS techniques can dramatically reduce noise and interference, resulting in an improved signal/noise ratio.

With its improved signal/noise ratio and low path loss, NVIS works well with low power.

Disadvantages of NVIS operation

include:

- For best results, both stations should be optimized for NVIS operation. If one station's antenna emphasizes ground-wave propagation, while another's emphasizes NVIS propagation, the results may be poor. Some stations do have antennas which are good for NVIS (such as relatively low dipoles) but many do not.
- NVIS doesn't work on all HF frequencies. Care must be exercised to pick an appropriate frequency, and the frequencies which are best for NVIS are the frequencies where atmospheric noise is a problem, antenna lengths are long, and bandwidths are relatively small for digital transmissions.

Due to differences between daytime and nighttime propagation, a minimum of two different frequencies must be used to ensure reliable around-the-clock communications.

What kind of antenna works well for NVIS?

Dipole

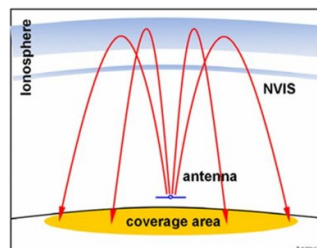
Once again, the dependable dipole antenna proves itself useful. One of the most effective antennas for NVIS is a dipole positioned from .1 to .25 wavelengths (or lower) above ground. When a dipole is brought very close to ground, some interesting things happen. The most interesting thing, from an NVIS perspective, is that the angle of radiation goes up. In the range of .1 to .25 wavelengths above ground, vertical and nearly vertical radiation reaches a maximum, at the expense of lower angle radiation (which we'd like to minimize, anyway, for NVIS). A dipole can be used at even lower heights, resulting in some loss of vertical gain, but often,

a more substantial reduction in noise and interference from distant regions. Heights of 5 to 10 feet above ground are not unusual for NVIS setups, and some people use dipoles as low as two feet high with good results (relatively weak signals, but a very low noise floor).

Another interesting thing that happens with very low dipoles is that their feed point impedance goes down. An acceptable SWR with 50 ohm coax is likely. Plan to bring your tuner along just in case, but you may get by just fine without it. Inverted vee antennas also perform well with NVIS.

One other factor useful in NVIS operations is that the high angle radiation of a dipole (or inverted vee) can be enhanced by adding a counterpoise wire below it, about 5% longer than the main radiating element, to act as a reflector. The optimum height for such a counterpoise is about .15 wavelengths below the main radiating element, but when the antenna is too low to allow for that, a counterpoise laid on the ground below the antenna is still effective.

Image from "Radio Communication via Near Vertical Incidence Skywave Propagation: An Overview," by Ben A. Witvliet, PE5B/5R8DS, and Rosa Ma Alsina-Pagès.



W1AW CW PRACTICE TRANSMISSIONS

7 PM EST Slow CW : 5-15 WPM
Mon, Wed, Fri

7 PM EST Fast CW: 35-10 WPM
Tue, Thu

FREQUENCIES:

1.8025, 3.5815, 7.0475,
14.0475, 18.0975, 21.0675,
28.0675, 50.350, 147.555

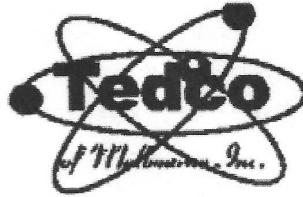


Editor's Note:

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