



## INDIAN RIVER ARC

P.O. BOX 237285, COCOA  
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VOLUME XLIII, NUMBER 1

# SPURIOUS EMISSIONS

JANUARY, 2017

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## CLUB MINUTES

IRARC January 5th General Meeting

The meeting began at 7:30 PM and following the Pledge of Allegiance Vice President Viron N4VEP conducted the meeting because President Dave KU0R was out of town. Viron reported that all the repeaters are up and running and performing well, but that the storm Matthew rotated the 145.37 repeater antenna around. Now it is fixed to its original position.

Visitors recognized: John KDOUBN who has just moved here from Arizona, K5EWA, visiting, as well as Sandy AK4BZ and Robert N1LOD. Guests: None.

Viron called for an approval of the November meeting minutes published in the newsletter. A motion to approve the minutes was heard, a second, and the November meeting minutes were approved by acclamation.

Treasurer Larry KK4WDD reported \$1283.34 in checking and \$1276.99 in the equipment fund. A motion was made to accept the treasurer's report for audit; it was seconded and the Treasurer's report was accepted by acclamation.

Greg reported for the Red Cross and indicated the need for a work session to assess the club radio station and check the antennas. A tentative date of January 28th was agreed to for the work party. We will start at Malibu's at noon, and 1pm to start work. Greg commented that he felt that things were going well with the Red Cross activities.

Old Business: None  
New Business: Larry, KK4WDD, stated that we need a coffee volunteer to set up and make coffee for the club meetings. Viron volunteered to make the coffee, but someone else will have to clean up.

Dave K4UZM announced that the January QRP on Saturday 21 will be at Manatee Cove instead of the initially planned location.

Dwaine KM4HCN announced that BEARS needs a new location to park the BEARS1 vehicle. Following Dwaine's announcement, we held the 50:50 drawing and the winning ticket belonged to Brad KW1P.

For the evening entertainment we enjoyed a vintage video showing wave mechanics using mechanical wave machines that illustrate traveling waves, standing waves, impedance mismatches and impedance transformers.

After the video a motion to adjourn occurred at 20:19 and was moved and approved.

Respectfully Submitted  
Steve N4UTQ  
Secretary

## HAPPENINGS

"Stealth Antennas" is the topic of the November 17 episode of the "ARRL The Doctor is In" podcast. "Yagi Antennas" is the topic of the December 1 episode., and Antenna System Troubleshooting." is the topic of the subsequent episode.

<http://www.arrl.org/doctor>.

February 10-12 -- [Southeastern Division Convention](#) (HamCation), Orlando, Florida.

A new version of the IARU Emergency Telecommunications Guide (September 1, 2016) is available [here](#).

**WSJT Development Group Releases WSJT-X Version 1.7.0:** The WSJT Development Group has released [WSJT-X version 1.7.0](#). The WSJT-X software suite is designed to facilitate basic Amateur Radio communication using very weak signals (WSJT stands for Weak Signal communication by K1JT). Joe Taylor, K1JT, recommends reading the extensively updated WSJT-X version 1.7 [User Guide](#), which

describes [new features and capabilities](#) (relative to version 1.6). WSJT-X version 1.7.0 includes new modes ISCAT, MSK144, and QRA64; newly implemented submodes JT65B-C and JT9B-H; a new Franke-Taylor decoder to replace the Koetter-Vardy decoder previously used for JT65; improvements to the JT4, JT9, and JT65 decoders; multi-pass decoding for JT65 and WSPR, and im-

## HAPPENINGS

proved convenience features for EME Doppler tracking.

**January VHF Contest:** Begins 1900 UTC Saturday, ends 0359 UTC Monday (January 21-23, 2017). Details at [www.arrl.org/january-vhf](http://www.arrl.org/january-vhf)

From the ARRL:

Radio Amateurs of Canada (RAC) has secured permission for all Canadian radio amateurs to use special call sign prefixes to celebrate the 150th anniversary of Canada's Confederation during 2017.

Starting on January 1, radio amateurs and clubs with VA-prefix call signs may use CF instead, and those with VE-prefix call signs may use CG instead. Amateurs and clubs with VO-prefix call signs may substitute CH instead, while those holding VY-prefix call signs may substitute CI. Use of the special prefixes is optional, and Canadian radio amateurs may choose if and when to use the special prefix at any time during the year.

VY1AAA, the Yukon Canam Contest Club, will mark the sesquicentennial with special call sign

XK150YUKON from January 1 until March 1. The rest of 2017, VY1AAA will operate using either CI1AAA or VY1AAA.

The next meeting of the QRP Group will be on Saturday, January 21 at 10 AM in Manatee Park, Merritt Island.

A new Chinese FM satellite, the BY70-1 CubeSat was launched on December 28 but in a lower orbit than intended. The satellite carries an Amateur Radio FM transponder. It will have an orbital lifetime of just a month or

two.

BY70-1 is a 2U CubeSat project for education and Amateur Radio. It features 3-axis stabilization and deployable solar panels. In addition to the FM transponder, BY70-1 has a camera, and plans call for downloading images and telemetry via a 9600 bps BPSK downlink. The IARU Amateur Satellite Frequency Coordination pages list an uplink of 145.920 MHz, and a downlink of 436.200 MHz.

AMSAT-UK has [more information](#).

## ON THE AIR

ANTARCTICA. Francois, F4HLT is QRV as FT3YL from the Dumont d'Urville Station on the Adelle Land group, IOTA AN-017. Activity is on 80 to 10 meters using mostly SSB. His length of stay is unknown. QSL via F6KPQ.

ANTARCTICA. Oleg, ZS10IN plans to be QRV as RI1ANA from the Molodyozhnaya research station until April 2017. Activity is on 160 to 10 meters. QSL to home call.

PRINCE EDWARD AND MARION ISLANDS, ZS8. David, ZS1BCE is QRV as ZS8Z from Marion Island, IOTA AF-021, until May 2018 while

working as a communications technician. Activity is on the HF bands using SSB and various digital modes when time permits. QSL direct to ZS1LS.

ANTARCTICA, CE9/KC4. 8J1RL and 8J60JARE (op Yath, JG2MLI), will be QRV until January 20, 2018. He will be on CW, SSB and digital modes on 40 to 10 meters. QSL direct to JG2MLI or through Japan's JARL

ANTARCTICA. Alex, RD1AV is QRV as RI1ANC from Base Vostok, IOTA AN-016, until February 15, 2017. Activity is in his spare time

on the HF bands using CW, SSB and various digital modes. QSL via RN1ON.

PHILIPPINES, DU. Robert, DU7ET is QRV as 4F70C from Negros Island, IOTA OC-129, until January 15, 2017. QSL direct to home call.

MINAMI TORISHIMA, JD1. Take, JG8NQJ will be QRV as JG8NQJ/JD1 from Marcus Island, IOTA OC-073, from December 19 to March 15, 2017 while on work assignment. Activity will be in his spare time on 20 to 6 meters using CW

and RTTY. QSL to home call.

INDIA, VU. Special event station 8T1VWN is QRV until the end of 2017 to honor the memory of K. R. Vasantha Kumar, VU2VWN. QSL via VU2ACC.

NORWAY, LA. Special event stations LM80Q and LM80REX are QRV during all of 2017 to celebrate the birthdays of the Norwegian royal couple. Queen Sonja and King Harald V both turn 80 years old in 2017. QSL both calls via LA9VDA.

## EME by Armando Delgado, KN4JN

Earth moon earth, or moon bounce, is a method of amateur communications that utilizes the moon as a reflector for radio signals to attain long distance contacts. EME had its inception in the radio amateur community in the 1960's when the space program began. At that time, there was much research on space communications and the frequencies best utilized for that purpose. At

the same time, the price and availability of amateur radio equipment, particularly in the VHF and UHF frequencies, became more affordable.

The preferred frequencies for EME are in the VHF and UHF range because the ionosphere is transparent to these frequencies. Whereas lower frequencies in the HF range get refracted and reflected back

to earth by the ionosphere, the higher frequencies sail through unimpeded. In normal use, VHF and UHF frequencies provide line-of-sight contacts only, except for unpredictable tropospheric ducting that may allow VHF signals in the lower range (2m and 6m) to travel hundreds of miles. Moon bounce, on the other hand, will allow contacts over thousands of

miles in the same frequencies, with more predictability. Actually, any two stations in any part of the world that have the moon in sight at the same time may be able to achieve a contact.

There is a cadre of dedicated amateur EME fans around the world who built stations exclusively dedicated to this aspect of the hobby. Yet, the general amateur community failed over the years to engage in this activity, and for multiple reasons.

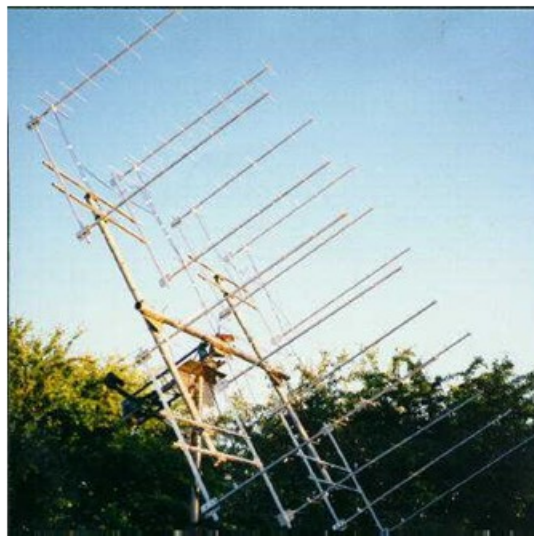
## EME

The biggest failing of EME is that signals degrade significantly in their trip to and back from the moon. The general estimate is that there is a drop of 250 dB in the signal intensity. This requires powerful stations using legal limit amplifiers and high gain antenna arrays that can increase the ERP of the transmitted signal. The antenna arrays also increase the gain of the received signal, which is extremely weak. One other problem that complicates EME communications is a phenomenon known as the Faraday effect which will change signal polarization as it travels through the ionosphere. Thus the receiving antennas must be capable of detecting vertical and horizontal polarization, if one hopes to consistently hear incoming signals.

Although the best chances of DX contacts are when the moon is low on the horizon, since the moon is constantly changing position, an antenna capable of rotation would be required if one hopes to maintain contacts for longer periods of time.

In the last few years, with the advent of weak signal digital modes, hams lacking fancy, complex antenna systems may now be able to achieve EME contacts. Modes like JT65 and WSPR are being used successfully to make contacts, even using small antennas.

One intriguing possibility for EME activity is attaining contacts in 10m during the low activity solar cycle. During these years, the ionosphere is poorly ionized and may become transparent to the higher HF frequencies. It is possible that a station with a regular beam antenna, using a weak signal digital mode, like JT65 or



Typical EME antenna array.

WSPR, may achieve a contact. An interesting experiment in this regard would be to try to copy the echo of one's own signal bounced from the moon. A 10m signal should have a fairly large footprint on its return to Earth making this more feasible than at VHF or UHF frequencies.

Be it as it may, EME is a little-used but fascinating aspect of the amateur radio hobby.

### Rare DX

For those working on DXCC and looking for new prefix entities, the following list includes some of the rarest ones. A number of these will be on the air only when activated by a dxpedition.

#### Club Log's Most Wanted DX

- 1.P5 DPRK (NORTH KOREA)
- 2.3Y/B BOUVET ISLAND
- 3.FT5/W CROZET ISLAND
- 4.KH1 BAKER HOWLAND ISLANDS
- 5.BS7H SCARBOROUGH REEF
- 6.BV9P PRATAS ISLAND
- 7.CEOX SAN FELIX ISLANDS
- 8.KH3 JOHNSTON ISLAND
- 9.KH7K KURE ISLAND
- 10.VKOM MACQUARIE ISLAND



#### **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, 147.555

#### CW Qualifying Runs for January

January 6, 2017, Friday

10 PM Speed: 35 - 10 WPM

January 19, 2017, Thursday

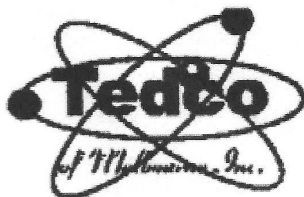
9 AM Speed: 10 - 35 WPM



#### **Editor's Note:**

**Send comments about the Newsletter or to contribute information or articles to the Editor's email address:**

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