



**INDIAN  
RIVER ARC**

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

VOLUME XLII, NUMBER 5

# SPURIOUS EMISSIONS

MAY, 2021

## CLUB MINUTES

### OFFICERS

#### PRESIDENT

**VIRON PAYNE**  
N4VEP

#### VICE-PRESIDENT

**DAVID LERRET**  
KU0R

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K1CPO

#### TREASURER

**STEVEN LUCHUK**  
N4UTQ

#### DIRECTOR

**DAVID SLAWSON**  
K4UZM

#### NEWSLETTER EDITOR

**ARMANDO DELGADO**  
KN4JN

The meeting was called to order by President Viron, N4VEP at 7:15 PM.

There were 10 members present at the club house and others participated via Zoom. Following the Pledge of Allegiance, Viron called for gests, but there were none.

Viron then called for approval of the minutes of the April meeting. A motion was made, seconded and the minutes were approved.

The Treasurer's Report showed \$1254.98 in the checking account, a drop from last month after the club's insurance was paid. The Equipment Fund showed \$1796.62.

Technical Committee Report: the Henry PA in the 146.88 MHz repeater failed and the repeater has been operating on low power. Normally, it would have 100 watts output, but now it only has 18 watts. Dave, KU0R bypassed the PA and a new Henry PA will be ordered to replace the damaged one. All the other repeaters are working well.

Dave replaced two radios at the two emergency stations in the ECOM center at the church with Yaesu FTM 300's to facilitate exchanging headphones and ascertained that the two stations did not suffer from desensitization during operations. The facility will also have two emergency generators to power a refrigerator and a portable air conditioner.

New Business:

There will be a simplex exercise on May 29, the last Saturday of the month, starting at 9:00 AM. The plan is to again use QRP power, HT's and indoor antennas, if available, to test emergency situations.

The antenna party at the club is planned for May 22 starting at 8:00 AM. However, if Viron can get an acquaintance to bring a pole truck the party may be postponed for the following Saturday. The plan is to place halyards on the four wooden poles at the facility and on the two concrete poles as well. On Sundays at 7:00 PM there will be a digital message train-

ing net using NBEMS and possibly JS8CALL.

The ARES MOU has been revised. ARES presented a new MOU to the club. Del, AK4EY raised some questions about the wording in some sections of the MOU. The revisions will be presented to ARES and a revised MOU will again be circulated to the club.

Following the business meeting, Viron presented the planned arrangement of the antenna farm at the church. He showed photographs with diagrams of the antennas locations. The club has many options for antennas: fan dipoles, end-fed dipoles, off-center fed dipoles, mono band dipoles, doublets like the G5RV, horizontal loop, delta loop, double bazookas, and slope antennas. In time the club will have to decide which to use.

Following the presentation, the meeting was adjourned at 8:22 PM.

Respectfully submitted for the Secretary by Armando Delgado, KN4JN

## HAPPENINGS

The 2021 Contest University (CTU), held in conjunction with the Dayton Hamvention® starting at 1300 UTC on May 20, has announced its roster of speakers. The live Zoom webinar event is free. Registration opens on April 21. Talks will run for 45 minutes followed by a question-and-answer session. More information is on the [CTU website](#). The 2021 virtual Contest University will be

recorded and available on YouTube following the event.

The WX4NHC Annual Station On-the-air Test will be held on Saturday, May 29, from 9 AM to 5 PM EST (1300Z-2100Z).

**Hurricane Season 2021: Nets to Know**  
**Caribbean Emergency Weather Net** - Meets daily at 1030Z and 2230Z on 3815 kHz.

**Hurricane Watch Net** -- 14.325 MHz, 7.268 MHz -- Activated whenever a hurricane is within 300 nautical miles of expected landfall. Disseminates storm information and relays meteorological data to National Hurricane Center via embedded NHC station WX4NHC. Also relays post-storm damage reports and other relevant information.  
**Intercontinental Net** operates from 7 AM to noon US Eastern

Time on 14.300 MHz, providing a means of emergency communications to any location where normal communications are disrupted.

**Marine Maritime Services Net** -- 14.300 MHz -- The network acts as a weather beacon for ships during periods of severe weather and regularly repeats high seas and tropical weather warnings and bulletins from the National Weather Service and

## HAPPENINGS

the National Hurricane Center. **Salvation Army Team Emergency Radio Network (SATERN)** – 14.260 MHz – The purpose of the SATERN net is to support the Salvation Army operations in local, regional and international disaster situations. - ARRL US Virgin Islands Section News

[Here](#) is an interesting article from the National Contest Journal describing [software](#), named Linrad that allows certain radios to operate like an SDR.

[Ham Census](#) is inviting all radio amateurs to take part in a unique survey. The project's organizers are hoping to hear from hams in the US, Canada, and around the world. Survey questions deal with operating preferences, gear, your shack, views on regulations, clubs and associations, and the future of amateur radio.

## ON THE AIR

Ali, EP3CQ will be active as 60100 from **Somalia**, 25 April 2021 - 25 June 2021. He will operate on 160, 80, 60, 40, 30, 20, 17, 15, 10, 6m, SSB, CW, FT8.

Ali works for United Nations in African Union Mission to Somalia (AMISOM).

QSL direct to: Ali Solhjo, Weimar Str. 29, Berlin, 10625, Germany.

**KOS Strange Antenna Challenge** May 28-May 31, 1800Z-2359Z, KOS, Springfield, MO. NOEW. 28.500 14.300 7.200 3.900. QSL. Erik Weaver, 4857 E. Farm Rd. 136, Springfield, MO 65809. Anyone may operate as a "satellite" KOS station, simply add /KOS to your call sign; each satellite KOS station is responsible for their own QSL. The purpose of the Strange Antenna Challenge is to utilize antennas \*not\* made of normal antenna materials. In

As solar cycle 25 continues to debut, radio propagation will continue to improve. For those wanting to resume DX activity, especially in the higher bands, there is an excellent web site that plots propagation to any part of the world, on any band, at any time at <https://www.voacap.com/hf/rsm.html>

Beginning May 20, 2021, all amateur examination applicants will be required to provide an FCC Registration Number (FRN) to the Volunteer Examiners (VEs) before taking an amateur exam. This is necessary due to changes the FCC has made to its licensing system.

Amateur candidates who already have an FCC license, whether for amateur radio or in another service, already have an FRN and can use the same number. All prospective new FCC licensees, however, will be required to

the past, fences, statues, vehicles, and bridges, have all been pressed into service as Strange Antennas. This also simulates emergency operations following a natural disaster, and is a fun and interesting way to promote your club. erikweaver@gmail.com

**D-Day Commemoration** Jun 3-Jun 16, 1300Z-2200Z, W2W, Baltimore, MD. Amateur Radio Club of the National Electronics Museum. 14.244 14.044 7.244 7.044. Certificate & QSL. W2W D-Day, P.O. Box 1693, MS 4015, Baltimore, MD 21203. Amateur Radio Club of the National Electronics Museum (ARCNEEM) will operate W2W in commemoration of the anniversary of D-Day and the role of electronics in WWII. Primary operation will be June 5-June 7 with additional operation possible during the June 3-4 and 8-16 periods as operator availability permits. Operation on 80M (3.544, 3.844), additional bands

obtain an FRN before the examination and provide that number to the volunteer examiners on the Form 605 license application. An FCC instructional video provides step-by-step instructions on how to obtain an FRN through the FCC's Commission Registration System (CORES). The video is available at, <https://www.fcc.gov/rofrn>.

June and July bring frequent 6-meter DX openings via long-distance sporadic-E propagation and persistent quiet geomagnetic conditions. These two months are well known to North American 6-meter DXers as the most productive time of year for DX up to 8,700 miles.

and digital modes possible during event. Frequencies +/- according to QRM. QSL and Certificate available via SASE; details at [www.ww-2.us](http://www.ww-2.us)

**Museum Ships Weekend** Jun 5-Jun 6, 1421Z-1621Z, K8E, Toledo, OH. Toledo Mobile Radio Association. 14.260 14.039 7.260 7.039. QSL. K8E Col James M. Schoonmaker Team, P.O. Box 9673, Toledo, OH 43697. [www.tmrahmradio.org](http://www.tmrahmradio.org)

**NAUTILUS - First Nuclear Submarine** Jun 5-Jun 6, 0000Z-2359Z, N1S, Groton, CT. Generations Amateur Radio Club. 50.5 14.275 7.225 3.850. QSL. Via bureau to K3LBD; direct with SASE to N1S Generations ARC, 110 Vinegar Hill Rd., Gales Ferry, CT 06335. NAUTILUS information <http://www.usnautilus.org>. Event information [www.qrz.com/db/k3lbd](http://www.qrz.com/db/k3lbd) or [www.qrz.com/db/n1s](http://www.qrz.com/db/n1s)

The first round of the Youngsters on the Air contest will be taking place next weekend on 22nd of May, from 0800 to 1959 UTC, on bands 80m, 40m, 20m, 15m, 10m, CW and SSB. Ireland's youngest amateur, Ryan EI8KW will be operating the EIOYOTA callsign from his home station. IRTS Youth Officer Niall EI6HIB will also be active but under his own callsign and Marty EI2IAB will be operating EI2SBC for the event. The scoring of the contest is based on age, with younger operators being worth more points. The full details can be found on [www.ham-yota.com/contest/](http://www.ham-yota.com/contest/).

The Neutron-1 CubeSat team seeks radio amateurs to help troubleshoot its satellite. The team theorizes that the satellite goes into safe mode intermittently, making communication difficult. The satellite has had an operational beacon since deployment, but its operation is irregular. Details are on the AMSAT-South Africa website.

**Dog Island DXpedition** Jun 7-Jun 18, 0001Z-2359Z, K4D, Dog Island, FL. K5TEN. 40 through 6 meters, SSB CW digital; 50.130 28.310 21.285 14.260 10.110 7.188. QSL. K5TEN, Dog Island DXpedition, 208 Mount Tabor Rd., Hot Springs National Park, AR 71913. IOTA Island NA-085, FL005S [www.qrz.com/db/k4d](http://www.qrz.com/db/k4d)

**King Kamehameha Celebration** Jun 11, 0000Z-2359Z, K6K, Kaneohe, HI. KH6ML. 14.268 7.188 146.505. Certificate. Michael, 44-096 Keaalau Pl, Kaneohe, HI 967442531. <https://sites.google.com/view/k6khawaii>

**NETHERLANDS, PA.** Special event station PD21EUROSONG will be QRV from May 8 to 22 to bring attention to the 2021 Eurovision Song Contest taking place in Rotterdam. QSL via bureau.

## Radio Propagation by Armando Delgado, KN4JN

Over the past century humanity gained tremendous amounts of knowledge, particularly in the natural sciences. The population at large shared in some of this knowledge through education, books, and other means of information. Newer generations incorporated much of this knowledge into their basic concepts so that many could not imagine a world lacking that information. The same is true for radio propagation.

When Marconi made his historic transatlantic radio contact in 1901 no one knew how radio waves propagated. At the time, scientists believed that electromagnetic waves traveled through space in a medium called the ether, but no one understood how they traveled through our atmosphere. When Marconi conducted his first radio experiments, he carried them out across a distance of a few miles, and observers assumed straight line propagation. However, the transatlantic contact occurred over a greater distance, encompassing a significant portion of the Earth curvature. For radio waves to get from England to America required that they bend to follow the curve of the Earth surface.

As early as 1902, two independent scientists presented similar hypotheses of how this could happen. A.E. Kennelly, an American, and Oliver Heaviside, an Englishman, both postulated that an electrical layer in the upper atmosphere caused the radio waves to reflect back to earth. Scientists quickly accepted this hypothesis because of the awareness that Aurora Borealis resulted from electrical charges in the upper atmosphere in the Earth poles, and from earlier Faraday experiments showing that strong magnetic fields could bend light rays. This layer was initially known as the Heaviside layer and later as the Kennelly-Heaviside layer. However, it would take some years for the confirmation of this hypothesis.

Early radio equipment lacked precise transmission frequencies. At

the time, they measured radio transmissions by wavelength and believed that the best wavelengths for long distance communications needed to be longer than 200 meters; they considered anything shorter useless for practical radio communications.

In 1912, the US Congress passed the Radio Act, the first radio regulation in the USA. This legislation resulted from a growing dispute between commercial maritime operators and the US Navy on one side and radio amateurs on the other. The first two considered amateurs to be a nuisance that interfered with their operations, and they wanted amateur radio banned from the airwaves. Wisely, Congress kept amateur radio as a viable activity, but to compromise with their opponents decided to limit amateur transmissions to bands shorter than 200 meters. Amateur radio enemies believed that those wavelength restrictions would doom amateur radio to extinction, since those wavelengths were considered useless.

After World War I, with the advent of vacuum tubes, radios became more precise. Amateurs continued to operate in those "useless" bands and by 1923 hams had established contacts across the United States, Europe, and Japan using the amateur wavelengths. These contacts demonstrated that the shorter wavelengths could reach long distances, contrary to the prevailing concept. At the same time, they intensified the need to understand how radio propagation occurred.

In 1924, the British physicist Edward Victor Appleton performed experiments using interfering radio waves to confirm the presence of the Kennelly-Heaviside layer and estimate its altitude to about 80

miles. Then in 1927, using pulsed radio waves and a time base display in an oscilloscope, he and his colleagues demonstrated a higher layer to the Kennelly-Heaviside layer and a better reflector of radio waves at an altitude of about 150 miles. This layer became known as the Appleton layer that we today refer to as the F<sub>2</sub> layer. For this work Appleton received the Nobel Prize in Physics in 1947. In 1929, Appleton's associate, Robert Watson-Watts, the eventual inventor of modern radar, coined the term *ionosphere* to describe the upper region of the atmosphere where the ionized layers that reflected radio waves were located.

During those years many hams dedicated time to study propagation. In 1924, John L. Reinartz, 1XAM, obtained 5000 reports from Europe and North America on his transmissions between 20 meters and 60 meters and determined that there was an area he called a "dead belt" some distance from the transmitter where radio reception disappeared, only to reappear at longer distances. Today we know this zone as the skip zone. His work also showed that many of the higher frequencies performed better during the day and subsided with sunset, thus confirming the idea that solar irradiation ionizing the upper atmosphere affected radio propagation.

In subsequent years, as radio equipment improved and became more precise in transmitting and receiving, understanding of radio propagation patterns increased, but it was all through empirical evidence. Deeper understanding of radio propagation had to wait a few more years for the Space Age and knowledge of the effect of the solar cycle on radio propagation.



### 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:

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

[olardelga@aol.com](mailto:olardelga@aol.com).

ACTIVE REPEATERS INCLUDING DMR, PACKET & SIMPLEX							RACESBRE0008 REV B
Repeaters & Packet are open for all licensed amateur radio operators to use.							
OUTPUT FREQ.	STD. NAME	OFFSET	TONE/CC	CALL	LOCATION	OWNER	NOTES
<b>WBFM</b>							
145.130	130 VB	-600	107.2	AB4AZ	VERO BEACH, INDIAN RIVER	AB4AZ	
145.350	350 SC	-600	103.5	K4OSC	St. CLOUD, OSCEOLA	K1XC	Radio Science Club, FI Club
145.370	370 CO	-600	156.7	W2SDB	COCOA-BROADCAST CT.	IRARC	Yaesu Repeater replaced with Bridgecom FM
145.470	470 ME	-600	107.2	K4HRS	MELBOURNE- RIALTO PL.	HIRAC	
145.490	490 TI	-600	100.0	WN3DHI	TITUSVILLE SR405 & Fox lk rd.	WN3DHI	
146.610	610 ME	-600	None/107.2	W4MLB	MELBOURNE- HOLMES HOSP	PCARS	Tone Downlink only
146.625	625 MM	-600	100.0	KE4NUZ	NW of MIMS NEAR HARRISON RD.	KE4NUZ	Limited coverage
146.775	775 MM	-600	100.0	K4KSC	NW of MIMS Hog Valley , W of I95	K4KSC	
146.850	850 ME	-600	None/107.2	W4MLB	PALM BAY- Port Malabar Rd.	PCARS	Tone Downlink Only
146.880	880 RO	-600	107.2	W4NXL	ROCKLEDGE- WUESTHOFF HOSP.	IRARC	FUSION Repeater replaced with Bridgecom F
146.895	895 PB	-600	107.2/107.2	K4EOC	PALM BAY- DeGroot Library	EOC	TSQL as of 5/2018
146.910	910 TI	-600	107.2	K4KSC	TITUSVILLE Water Tower on south st.	TARC	
146.940	940 RO	-600	None	K4GCC	ROCKLEDGE Carver Rd.WLRQ Tower	LISATS	
146.970	970 TI	-600	107.2	K4KSC	TITUSVILLE-T'VILLE TOWERS	TARC	
147.075	075 SC	+600	107.2/107.2	K4EOC	SCOTTSMOOR Near US1-Aurantia Rd	EOC	TSQL as of 5/2018 Relocated 4/2019
147.135	135 RO	+600	107.2/107.2	K4EOC	ROCKLEDGE-EOC	EOC	TSql as of 5/2018
147.240	240 DE	+600	123.0	KV4EOC	DELAND	VARES	
147.255	255 PB	+600	107.2	K4DCS	Near Babcock & Palm City S City limi	PBARC	
147.330	330 TI	+600	107.2	K4NBR	TITUSVILLE-PARRISH HOSP.	NBARC	
147.360	360 TI	+600	107.2	N4TDX	TITUSVILLE-PARRISH HOSP.	NBARC	DSTAR Gateway in work
442.850	850TI4	+5000	107.2/107.2	N4TDX	TITUSVILLE-PARRISH HOSP.	NBARC	TSql;FUSION/WBFM/WIRES-X
444.325	325ME4	+5000	107.2	K4DCS	MELBOURNE-TRINITY TWRS-E	PBARC	
444.375	CNLBRE	+5000	107.2		I95 FDT Twr 1/2 Mile N of County Lin	SARNET	"SARNet Sebastian Repeater"
444.425	425ME4	+5000	107.2	W4MLB	MELBOURNE- RIALTO PL.	PCARS	
444.525	525RO4	+5000	103.5/103.5	K4EOC	ROCKLEDGE-EOC	EOC	TSql; VOICE/NBEMS
444.650	CNMBRE	+5000	107.2	W4NXL	COCOA-FHP SR520	IRARC	"SARNet Cocoa Repeater"
444.750	750TI4	+5000	156.7/156.7	N4TDX	TITUSVILLE- TGO WATERTOER 230 ft.	NBARC	TSql
444.875	875MI4	+5000	107.2	KC2UFO	MERRITT IS. COURTNEY SPRS.	K4UJZM	
444.925	925KS4	+5000	131.8/131.8	N1KSC	KENNEDY SP. CTR.-VAB	KSCARC	FM Tsql ; P25 capable
224.120	120CO2	-1600	123.0	AA4CD	COCOA Broadcast Ct.	AA4CD	
<b>DMR</b>							
444.150	150TI4	+5000	CC1	K2JO	TITUSVILLE-PARRISH HOSP.	KC2CWT	DMR FL
444.575	575CO4	+5000	CC3	K4DJN	COCOA BROADCAST CT.	AA4CD	DMR Brandmeister
444.675	675TI4	+5000	CC3	K4DJN	TITUSVILLE-T'VILLE TOWERS	AA4CD	DMR Brandmeister
<b>ATV</b>							
427.250	250CO4			K4ATV	COCOA BROADCAST CT.	LISATS	NTSC INPUT 439.25 See www.lisats.org
<b>PACKET STATIONS:</b>							
145.090	WL2KPB	WINLINK		W2PH-10	PALM BAY-W2PH QTH	PBARC	WINLINK GATEWAY
145.090	090 ME	PCARS		W4MLB-2	MELBOURNE-TRINITY TWRS-EAST	PCARS-K1YON	BBS W4MLB-4 EASTNET
145.770	770 PB	SEDAN		K4EOC-7	PALM BAY	N2DB	http://www.fla-sedan.com
145.770	770 TI	SEDAN		KD4MWO-4	TITUSVILLE	N2DB	INACTIVE NODE
<b>BREVARD RACES/ARES SIMPLEX</b>							
146.480	CENTX	SIMPLEX		N/A	CENTRAL REG	IRARC	CENTRAL NET SIMPLEX BACKUP
146.550	SOUTHX	SIMPLEX		N/A	SOUTH REGION	PBARC	SOUTH NET SIMPLEX BACKUP
146.580	MLBX	SIMPLEX		N/A	MELBOURNE REGION	PCARS	MELBOURNE REGION NET SIMPLEX BACKUP
146.595	NORTHX	SIMPLEX		N/A	NORTH REGION	TARC	NORTH NET SIMPLEX BACKUP
147.540	EOCROX	SIMPLEX		N/A	RACES Bay	EOC	EOC VOICE/NBEMS
<b>SIMPLEX</b>							
146.520	CALL52	SIMPLEX		N/A	Station to station, anywhere		VHF national simplex calling freq
146.490	TAC A	SIMPLEX		N/A	Station to station, anywhere		Standardized tactical option since 2006
146.560	NBRX	SIMPLEX		N/A	NBARC -Club/Parrish Hosptial Activities		
146.580	TAC B	SIMPLEX		N/A	Station to station, anywhere		Standardized tactical option since 2006
147.420	TAC C	SIMPLEX		N/A	Station to station, anywhere		Standardized tactical option since 2006
147.420	IRARCX	SIMPLEX		N/A	IRARC "FUN NET" and CLUB ACTIVIES		
147.450	TAC D	SIMPLEX		N/A	Station to station, anywhere		Standardized tactical option since 2006
147.570	TAC E	SIMPLEX		N/A	Station to station, anywhere		Standardized tactical option since 2006
446.000	CALL46	SIMPLEX		N/A	Station to station, anywhere		UHF national simplex calling freq
446.500	TAC A4	SIMPLEX		N/A	Station to station, anywhere		Standardized tactical option since 2006
446.600	TAC B4	SIMPLEX		N/A	Station to station, anywhere		Standardized tactical option since 2006
446.700	TAC C4	SIMPLEX		N/A	Station to station, anywhere		Standardized tactical option since 2006
2 Meter & 70 cm WBFM repeaters use CTCSS; if one frequency is listed it is for uplink (user Tx) , if two are listed the repeater is set for uplink and downlink (user Tx and Rx)							
Repeater Call Signs in bold are owned by Brevard Emergency Management and are maintained by the county. Repeater Trustee: Ron K2RJ							
NOT ON AIR							
Standard Names in Bold are recommended for Emergency Radio in Brevard *							
PBARC= Palm Bay Amateur Radio Club (Replaces DCS for South Brevard) See Ed W2PH for more info							

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HITACHI  
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