



**INDIAN
RIVER ARC**

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

VOLUME XLV, NUMBER 4

SPURIOUS EMISSIONS

APRIL, 2023

CLUB MINUTES

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HAPPENINGS

The peak tornado season in the United States is between March and May. As radio amateurs, we enjoy a unique skill useful for all kinds of emergency communications, but particularly useful in the most common sort of emergencies or potential emergencies: weather related emergencies.

The amateur radio community has long shared a relationship with the National Weather Service

President Steve Luchuk, N4UTQ called the meeting to order at a 7:15 PM.

Following the Pledge of Allegiance, Steve called for visitors. Present were Mike Huizenga, W9MIC, Rick Marcarelli, who passed his amateur general exam tonight, and John who was interested in getting his daughter into amateur radio. Next, Steve announced the club's participation in the ARRL SET next Saturday, April 22. Steve plans for a more realistic test. He will send emails with a pre-written brief message simulating some real life circumstances to all club members, and those willing to participate can relay the message back to the emmcom center by voice at the church for relay to Tallahassee. Dave K4UZM will make his GMRS repeater available for messaging for those who have GMRS capabilities.

Treasurer Report: The General Fund is unchanged at \$1718.65 and the Equipment Fund is unchanged, as well at \$1903.65. The Treasurer Report was approved for audit. The club's minutes for the month of March were also approved.

Past President Report: The QRP operation last Saturday from

in providing reports and early warnings in developing storms. This connection is through the SKYWARN system. All hams should be part of SKYWARN and be ready to provide reports during severe weather. Florida ranked fourth in the country for the average incidence of tornadoes between 1989 and 2019. For more information go to the [SKYWARN](#) web page.

King Park on Merritt Island achieved only 2 contacts because of bad propagation due to a solar storm. Next QRP event will be at Kelly Park East. Technical Committee Report: Dave, KUOR, reported that the 220 MHz repeater link still has a problem dropping out during the Wednesday net, due to a port connection issue. The problem is caused by the repeater clock drifting 4 minutes/week. Dave spoke with the manufacturer, RCOM, and the problem is known to them. Dave requested a replacement clock from the company. Dave also reminded the club of the hamshackhotline.com. He has set up a unit at the emmcom at the church. This telephone unit is very promising for coordination and has lots of features.

The club is prepared for the SET this next Saturday with two HF/VHF radios. During the SET the internet cannot be used for communications due to the nature of the simulated emergency and the Winlink contacts will have to be radio to radio via HF.

Following the Technical Committee Report, Viron, N4VEP gave a presentation on NVIS. Viron showed that high power is

not necessary for a successful NVIS contact. He reviewed the history of NVIS dating back to 1935 when the Germans used it with only 30-40 watt radios. Viron explained that propagation patterns are critical to NVIS contacts and he reviewed VOACAP and showed slides demonstrating different propagation potentials at different frequencies between Cocoa and Tallahassee using different antennas. He also showed slides showing propagation potentials to Ormond Beach, where the Florida Phone Traffic Net (FTPN) is held each morning at 7:00 AM on 3940 KHz. NVIS contact is possible at that time from central Brevard. Next, Viron showed a video from Col. Stephen Hamilton, KJ5HY from the US Army Cyber Institute who is a professor at West Point. The video titled "The HF Renaissance in the US Army" can be viewed at <https://youtu.be/9QleG4LiFMg>. Viron further quoted NVIS expert Ben Witvliet, PhD on the best antenna heights for NVIS. There being no questions, the meeting adjourned at 8:23 PM. Respectfully submitted, Armando Delgado, KN4JN Secretary

Parks on the Air® (POTA) sites that honor African American heritage are the focus of a casual operating event organized by the OMIK Amateur Radio Association, Inc (OMIK). The OMIK POTA Challenge 2023 will run from April 1 to December 31. The group hopes to attract at least 750 radio contacts for the program by the end of the year. All modes permitted by the POTA program are eligible. OMIK

members are encouraged to activate sites using the OMIK club call sign, KOMIK.

Amateur radio and the work of ARRL Amateur Radio Emergency Service® (ARES®) will again be represented at the 2023 National Hurricane Conference, which will be held this year in New Orleans, Louisiana on April 3-6. This year, the

HAPPENINGS

workshop will be held in-person and over Zoom. The conference theme is to improve hurricane preparedness as it has been in past years. After the workshop is completed, the Amateur Radio Workshop will be uploaded to YouTube for those that can't attend the sessions live. Amateur radio presentations will be recorded and posted to YouTube after the workshop within the month of April. The Amateur radio presentations will also be livestreamed via YouTube at <https://www.youtube.com/watch?v=ucHdnXloY3U>

Here we go again. Two years ago the FCC modified the rules for environmental exposure to radio emissions. At that time they gave a 2 year waiting period for stations to comply. That grace period will be over May 3, 2023. As of that date all transmitting stations must have completed an assessment of the radiation emissions and potential exposure for all the antennas and

powers used at the transmitting site. The ARRL has a calculator online that can be used to obtain the values. <http://arri.org/rf-exposure-calculator>

Although the FCC will not ask for these figures, it would be wise to have them at the station just in case someone files a complaint.

The Florida QSO Party Starts the last Saturday of April. For 2023, the Florida QSO Party dates will be April 29th- 30th. There are two 10-hour operating periods separated by a 10-hour break period. All operators may operate the full 20 hours.
Saturday 16:00:00Z (Noon EDT) - Sunday 01:59:59Z (9:59:59 PM EDT)
Sunday 12:00:00Z (8 AM EDT) - 21:59:59Z (5:59:59 PM EDT)

Florida SET (Simulated Emergency Test) for 2023. The exer-

cise is planned for the morning of April 22, 2023 beginning at 0900 EDT/0800 CDT and will last around 2.5-~ hours.

This communications exercise is designed to assess the skills and preparedness of volunteers as well as those affiliated with other organizations involved in emergency and disaster response. Exercises give us the opportunity to test our skills and equipment in a "real world" type scenario.

Service DENIED

This year's SET in Florida is titled "Service DENIED" and will be based around the concept of a statewide cyber-attack that impacts our communications infrastructure. While communications teams based in Florida are accustomed to activations from a hurricane, a cyber-attack has just as much chance of occurring in today's times with even

less notice (if any) than a hurricane. The slogan we all see, "When all else fails, ham radio", would truly pickup its real meaning with a full communications infrastructure outage. For more information go [here](#).

World Amateur Radio Day (WARD) is April 18, 2023, and will celebrate the IARU's 98th anniversary. On this day in 1925, the IARU was formed in Paris, France. American Radio Relay League® (ARRL) Co-Founder Hiram Percy Maxim was its first president. This year's theme is Human Security for All (HS4A). The day is being celebrated with a 2-week operating event occurring April 11 - 25. a special website, hs4a.iaru.org, has been established to manage the operating event. If you are planning to operate one or more special event stations for WARD/HS4A, please register at the website.

ON THE AIR

INDIA, VU. A large group of operators are QRV with special contest call AT3K until May 31. Activity is on 80 to 10 meters. This includes being active in the CQ World Wide WPX SSB contest. QSL via VU2XE.

Anniversary of the Birth of Radio Astronomy Apr 29-Apr 30, 1400Z-2359Z, W9GFZ, Virginia and New Mexico. National Radio Astronomy Observatory. 3.800-4.000; 7.175-7.300; 14.225-14.350; 21.275-21.450; 28.300-29.700. Certificate & QSL. Kevin Shoemaker, 1180 Boxwood Estate Rd., Charlottesville, VA 22903. kshoemak@nrao.edu

Hams for PanCAN Apr 29, 1400Z-1900Z, N4P, Altamonte Springs, FL. Lake Monroe Amateur Radio Society. 40 20 15

10 meters. Certificate & QSL. Lake Monroe ARS, 7747 Danu Dr., Orlando, FL 32822. SASE please. From Cranes Roost Park. Multiple N#P Stations across the country will be located in each of the ten ARRL sections -All stations will be on SSB. This nationwide Special Event's aim is raising awareness of pancreatic cancer research and support by the PanCAN (Pancreatic Cancer Network) during its national Purple Stride event. <https://www.lmars.org>

Dickson County Old Timers Day May 1-May 14, 0001Z-2359Z, WOT, Dickson, TN. Dickson County ARC. 7.235 14.280 21.400 28.450. Certificate. Suzanne Bennett, 1203 Old Highway 48 N, Cumberland Furnace, TN 37051. To celebrate Old Timers in Dickson County and entire US. QSL on request. wc4dc.org

The INDYCAR Grand Prix - Race One May 7-May 13, 0000Z-2359Z, W9IMS, Indianapolis, IN. The Indianapolis Motor Speedway ARC. 3.840 7.245 14.245 18.140. Certificate & QSL. Indianapolis Motor Speedway Amateur Radio Club, P.O. Box 30954, Indianapolis, IN 46230. See the website for ALL information! w9ims.org

4F2KWT will be active as DXONE from **Spraty Islands**, IOTA AS - 051, 30 April - 9 May 2023. He will operate on 160 - 6m, using 100 watts.

SP6CIK and SP9FIH will be active as E51CIK and E51WEG from **Rarotonga Island**, IOTA OC - 013, 13 - 28 April 2023. They will operate on 40 - 10m, QSL via ClubLog OQRS. DXC C Country - South Cook Island, E5. QTH Locator - BGO8dt.

H44MI Malaita Island Solomon Islands Michael, DL2GMI will be active as H44MI from Malaita Island, IOTA OC - 047, Solomon Islands, starting 2 April 2023. He will operate on 80, 40, 20, 17, 15, 12, 10, 6m, SSB, FT8. QSL via home call, LOTW, ClubLog OQRS. Direct QSL: Michael Buser, Primelweg 20, Ueberlingen, 88662, Germany.

TIMOR-LESTE, 4W. A group of operators are QRV as 4W1A until April 22. Activity is on 40 to 6 meters using CW, SSB, RTTY, and FT8. QSL via DJ4MX.

CROATIA, 9A. Special event call-sign 9A23WARD is QRV until April 30 to bring attention to World Amateur Radio Day. QSL via 9A3JB.

The Rhombic Antenna by Armando Delgado, KN4JN

Prior to World War 2 one of the most popular antennas for HF communications was the rhombic antenna, so named due to its characteristic shape resembling the well known geometric form of a diamond (Figure 1). Their popularity resulted from the fact that rhombics provide greater gain and directivity than other wire antennas and generate a low angle of radiation that makes them good for DX contacts; also, they are broadband antennas with little SWR shift over a long range of frequencies. After the war, however, other antenna designs appeared with characteristics similar to the rhombic but without the disadvantage of the rhombic antenna. That disadvantage being primarily the large size required for an efficient rhombic radiator that demands lots of real estate in the HF frequencies. Thus, the rhombic antenna fell out of favor.

Rhombic antennas, interestingly, belong to the family of traveling wave antennas. In these type of antennas the radio signal travels from the feed line end of the antenna to the other end and is radiated, in contrast to resonant antennas, like the dipole, where the radio signal resonates along the antenna wire as it radiates. The traveling wave characteristic is what gives this antenna its increased gain and directivity.

Rhombic antennas use two similar designs: the terminated rhombic, and the unterminated, also called the resonant rhombic. In the unterminated design the two parallel wires of the antenna are fed at one end but the other extremity is left open. An unterminated rhombic produces radiation from both long ends of the antenna. On the other hand, the terminated rhombic is built just like its counterpart, but it is terminated in a resistor with a value equal to the characteristic impedance of the antenna; this impedance generally is in the range of 600 ohms. This adjustment causes this design to radiate exclusively from the terminated end, thus having more directivity and gain in the direction of radi-

tion.

All rhombic, like all horizontal antennas, depend on the height of the antenna above ground to define its radiation pattern. So, a rhombic at $1/2\lambda$ elevation will have its maximum gain. However, unlike the dipole whose angle of radiation increases as the height gets lower, the rhombic will not lose its low angle of radiation, except for some minor lobes at lower heights; yet, at lower heights, although it maintains its low radiation angle, the rhombic loses gain due to ground absorption of the signals.

For best performance, the length of rhombic antennas need to be at least one wavelength long, and the performance improves as the length of the antenna increases, up to six wavelengths, at which point the gain of the antenna decreases with increasing length. This feature explains why rhombic antennas need so much real estate. A rhombic for 80 meters, only one wavelength long, would require two wire segments each 240 feet long with a significant separation at the center of the antenna, the separation being dependent on the angle at the sides of the rhombus. This angle, referred to as the tilt angle, is critical for the gain and directivity of the antenna, depending on the frequency of operation. In our example, to provide a 0° wave angle, that is, radiation along the line of the antenna, the tilt angle would have to be about 34° . This would produce a separation of about 200 feet between the wires at the center of the antenna, lots of real estate, indeed.

In today's world, HF rhombic antennas would be impractical for most hams that live in urban or suburban locations; however, VHF and UHF rhombic may not only be practical, but may provide a simple, high gain antenna option that could fit in

an attic, or have a low profile in a backyard. A rhombic for 2 meters would be about 6 feet long and, depending on the tilt angle, no more than 5-8 feet wide. Considering its gain is several dB greater than a dipole or a vertical, this antenna design offers another option for hams with restricted antenna locations.

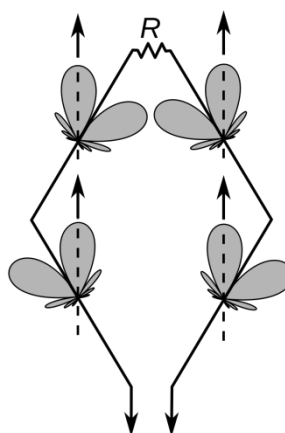


Figure 1. A terminated rhombic showing radiation pattern. The radiation lobes merge to give one main lobe.



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



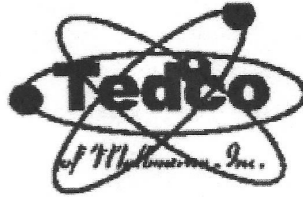
Editor's Note:

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

olardelga@aol.com.

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
WBFM							
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	W4NLX	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		195 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	W4NLX	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	
DMR							
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
ATV							
427.250	250CO4			K4ATV	COCOA BROADCAST CT.	LISATS	NTSC INPUT 439.25 See www.lisats.org
PACKET STATIONS:							
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
BREVARD RACES/ARES SIMPLEX							
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
SIMPLEX							
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 user 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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CELLPHONE AMPS
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