



INDIAN RIVER ARC

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

VOLUME XLVI, NUMBER 6

SPURIOUS EMISSIONS

JUNE, 2024

CLUB MINUTES

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N4UTQ

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KJ4VGR

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KN4JN

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KU0R

DIRECTOR

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WOAGE

NEWSLETTER EDITOR

ARMANDO DELGADO
KN4JN

President Steve Luchuck, N4UTQ called the meeting to order at 7:15 PM. Following the Pledge of Allegiance, Steve called for visitors, but there were none.

President's Report: Steve announced that the premiums for the club's liability insurance had increased from \$326.56 last year to \$865.57 this year with the company recommended by the ARRL. Steve checked with his insurance agent and found another company that provided equivalent insurance for \$710.65. Unfortunately, the club needs the liability insurance to be able to use the current facilities at the church and the current insurance expires in one week. A motion was made and seconded to take the \$710.65 insurance plan. The motion was approved unanimously.

Treasurer's Report: The checking account is unchanged from last month at \$1982.25. The Equipment Fund also remains at \$2013.65. The Treasurer's Report was approved for audit.

Next, the minutes of the May, 2024 meeting were approved.

Past President Report: Viron, N4VEP mentioned that Don Coy, WB4ATV became a silent key last week. Don was president of LISATS. He also noted that the last QRP event was held at Rotary Park. There were four active stations with eight people participating. It was a successful activity with many DX contacts achieved.

New Business: Field Day will be held this coming Saturday, June 22. Dave, KU0R will begin setting logging systems and some of the operating equipment on Friday evening, but the main set up will

begin on Saturday after 9:00 AM. The plan is to operate three stations using high power. Steve plans to bring two amplifiers. Steve also, as always, will bring the bacon.

On the following Saturday, June 29, there will be a Simplex Net starting at the usual time of 9:00 AM on the simplex frequency of 147.42 MHz. Steve will send an email with details of this event.

Following the business meeting, Steve gave a presentation about the "WOW" Signal and also about UAPs, previously known as UFOs.

Historically, in 1959 two physicists, Morrison and Cocconi published a paper suggesting that the hydrogen emission frequency of 1420 MHz was a logical frequency for extra-terrestrial civilizations to use to communicate, since hydrogen is the most common element in the universe. Thus, SETI in the 1970's began programs using radio telescopes to scan the universe for radio signals on this frequency that would show patterns not typical of natural signals.

One of the radio telescopes involved in this research was the Ohio State University Observatory, known as "Big Ear". On a recording from August 15, 1977 astronomer Jerry Ehman noted a narrow band signal of 10 KHz that did not seem natural and met all the criteria for a suspect intelligent signal. In his excitement he wrote "WOW" on the margin of the recording and thus named the strange signal for posterity. The signal did not recur and could not be confirmed. Also, the precise location of the signal could not be determined due to

the nature of the telescope, but it was placed in the area of the Sagittarius Constellation. More recent speculation suggests that the signal was caused by some comets with high hydrogen content in their comas.

On December 18, 2020 another unexplained radio signal was detected by a radio telescope in Australia. This signal, in a frequency of 982 MHz, seemed to originate from the area of the Proxima Centauri star system. Like the 1977 signal, this one has not recurred and there is no confirmation.

Next, Steve proceeded to talk about Unidentified Aerial Phenomena, or USP, previously known as UFO. First, Steve showed a number of photographs taken by military pilots showing unexplained aerial phenomena. Then he showed multiple statistical reports relating to UFO sightings around the world as to years, frequency, and locations. Then he followed with pictures of UFO sightings considered to be authentic, followed by a series of photos considered as possibly fake. He also discussed some reports of purported UFO crashes such as the Shag Harbour incident in Nova Scotia in 1967 and the Aurora, Texas incident of 1897.

Following some comments and discussion on the presentation the meeting adjourned at 8:18PM.

Respectfully submitted,

Armando Delgado, KN4JN

Secretary

HAPPENINGS

FCC Opens Comments About CME Communications Impacts

To better understand the impacts of the geomagnetic storm on the U.S. communications sector, the Bureau is requesting information from communications service providers and the public regarding disruptions in communications between May 7 and 11, 2024 that it believes to be a result of the storm. The Bureau is

encouraging commenters to provide any available evidence, particularly electromagnetic spectrum analyses, imagery, or chronological logs relating the storm's impacts. Where possible, the Bureau asks that commenters include the description of the impacts; make and model of affected communications equipment, which could include transmitters, receivers, transceivers, switches, routers, ampli-

fiers etc.; make, model, and type of affected antennae and their composition; frequencies affected; type and composition of cable adjoining communications equipment and the antennae, if applicable; duration of the impact; and any residual effects observed in the hours following restoration.

The public notice is [at this link](#) (PDF). Comments may be sub-

The 2024 ARRL National Convention included a track of forums featuring a variety of engaging topics of interest to amateur radio operators. If you didn't make it into the packed house of Forum Room 3 during the three short days of Dayton Hamvention®, or perhaps you did and would like to see the material again, the content is available on the [ARRLHQ YouTube channel](#)

HAPPENINGS

mitted using the FCC's Electronic Comment Filing System (ECFS) at <https://www.fcc.gov/ecfs> and referring to PS Docket No. 24-161. ARRL's guide to filing comments is at this link: <https://www.arrl.org/arrl-guide-to-filing-comments-with-fcc>.

The 2024 ARRL Kids Day event will take place June 15 and June 22 - 23

Kids Day is designed to give on-the-air experience to young people and foster interest in getting a license of their own. It is also intended to give older hams a chance to share their station and love for amateur radio with the children in their lives. Kids Day always runs from 1800 UTC through 2359 UTC, and you operate as much or as little as you like. You can also use your favorite local repeater with permission of the repeater's sponsor. Be sure to observe third-party restrictions when making DX QSOs. [Visit Kids Day \(arrl.org\)](http://www.arrl.org) for more information.

For any General or Advanced licensees wanting to upgrade, Bob Lucken, W3RDL will hold an Extra License class starting on Saturday July 27, 2024, 9:30AM, in-person and online via Zoom. The class is 8 weeks and based on the July 1, 2024 question pool and ends a week before the September Exam session at the Suntree/Viera Public Library. This class finally got listed on the ARRL website. Delayed due to the "Service Disruption". Anyone who's interested or knows someone that is, please contact me for more information.

Bob Luken W3RDL
w3rdl@arrl.net
321-432-0550

THE HIGHEST SUNSPOT NUMBER IN 22 YEARS: The average sunspot number for May 2024 was 172, the highest value in 22 years. So far, June is even higher at 200. If this continues for the rest of the month, June

could log the highest sunspot counts since Dec. 2001, rivaling the peak of potent Solar Cycle 23.

From Spaceweather.com:

A NOVA WILL EXPLODE THIS SUMMER (PROBABLY): The night sky is about to get a new star. Sometime this summer, astronomers believe, a nova will explode in the constellation Corona Borealis (the Northern Crown). The exploding star will be bright enough to see with the naked eye even from light-polluted cities.

"It's a once-in-a-lifetime event," says Rebekah Hounsell of NASA's Goddard Space Flight Center. "I believe it will create a lot of new astronomers out there."

T Coronae Borealis (T CrB) is a binary system 3,000 light-years from Earth. It consists of a white dwarf orbiting an ancient red giant. Hydrogen from the red giant is being pulled down onto the surface of the white dwarf, accumulating toward a critical mass. Eventually, it will trigger a thermo-

nuclear explosion.

The last time T CrB exploded was in 1946. About a year before that blast, the system suddenly dimmed—a pattern astronomers called the "pre-eruption dip." In 2023, T CrB dipped again, heralding a new eruption. If the 1946 pattern repeats itself, the nova should occur between now and September 2024.

The outburst will be brief. Once it erupts, the nova will be visible to the naked eye for a little less than a week – but Hounsell is confident it will be quite a sight to see. The expected magnitude is between +2 and +3, similar to stars in the Big Dipper.

"Typically, nova events are faint and far away," says Elizabeth Hays, chief of the Astroparticle Physics Laboratory at NASA Goddard. "This one will be really close, with a lot of eyes on it. We can't wait to get the full picture of what's going on."

ON THE AIR

The Annual 13 Colonies Special Event this year will be from July 1-7, 2024. During this week, stations operating from each of the original 13 states will use 1x1 callsigns covering K2A through K2M, each call-sign representing a different state. There will also be three bonus callsigns, including one from Great Britain. Details can be found at their [web site](http://www.13colonies.org).

Elvira, IV3FSG will be active as 5U5K from Niger, 8 - 20 June 2024.

She will operate on 160 - 6m, CW, SSB, FT8, RTTY. QSL via IK2DUW direct, LOTW. Direct QSL: ANTONELLO PASSARELLA, VIA M. GIOIA, 6, 20812, LIMBIATE, MB, Italy.

5U5K Band Plan:
BAND PLAN 5U5K

CW	3.510	
	5.353	7.020
	10.120	14.010
	18.085	21.010
	24.901	28.010
	50.105	

SSB	7.150	
	14.240	18.150
	21.265	24.975
	28.520	50.115

RTTY	14.084	
	21.084	
	28.084	

FT8	1.843	3.570
	5.357	7.077
	10.145	14.084
	18.090	21.084
	24.911	28.084

50.313	
FT4	3.570
	5.357 7.077
	10.145 14.084
	18.090 21.084
	24.911 28.084
	50.333

CW RX UP 1-3
SSB RX UP 5-10
RTTY RX UP 1-2
FT8 MSHV RX 200-3000 Khz

CAPE VERDE, D4. Harald, DF2WO and Adolf, DG9KAN are QRV as D44TWO and D44KAN, respectively, from Sao Tiago, IOTA AF-005, until June 22. Activity is on all HF bands, and 6 meters, using all bands and modes. This includes being active on Satellite QO-100. QSL D44TWO via M00XO, and D44KAN direct to DG9KAN.

POLAND, SP. Special call signs SP900CPZ, 3Z10TTON, HF10TTON, SN10TTON, S010TTON, SP10TTON and SQ10TTON are QRV until July 2 to commemorate the 900th anniversary of the first mission to Pomerania undertaken by Otto, the bishop of Bamberg. QSL via bureau.

FRANCE, F. A group of operators will be QRV as TM63JO from June 16 to 23 to celebrate the Olympic Games Paris 2024. QSL via operators' instructions.

LORD HOWE ISLAND, VK9L. Yuris, YL2GM is QRV as VK9LA until June 24. Activity is on 160 to 10 meters using CW, SSB, and FT8. QSL to home call.

BRITISH VIRGIN ISLANDS, VP2V. Dave, W9DR will be QRV as VP2V/W9DR from Anegada, IOTA NA-023, from June 19 to 25. Activity is on 6 meters only..

Transmission Line Impedance Matching by Armando Delgado, KN4JN

The input impedance of a horizontal dipole at resonance is about 72Ω . Most hams feed their antennas with 50Ω coax so that there is an impedance mismatch at the feed line connection to the antenna. This mismatch is slight and at the usual transmission power of 100 watts used by most hams the signal losses are not sufficient to interfere with operations; they are acceptable to most hams. When operating QRP, however, a type of transmission that requires every milliwatt of signal to get to the antenna, those losses become proportionally more significant.

When the transmission frequency moves away from resonance, the impedance mismatch increases, a fact reflected by an increasing SWR. A tuner at the transmitter end of the feed line can make the transmitter happy and allow most power to travel to the antenna, yet the mismatch at the antenna input will not change and the transmission losses will continue.

One way to correct this mismatch is by inserting a tuner between the feed line and the antenna. These tuners are relatively expensive and will add a weight to the center of the antenna, requiring extra mechanical support to maintain antenna structural stability. This solution may be practicable for a perma-

nent base station, but for a portable operation, when QRP transmissions are most common, it may not be practical.

One other solution to this antenna impedance mismatch problem is to use a $1/4\lambda$ transmission line impedance matching stub, a solution that will not add extra weight to the antenna feed point. This solution is based on the fact that when a $1/4\lambda$ length segment of coax of different impedance from the feed line coax is added to the line, the final impedance of the combination is equal to the square root of the product of the two impedances. Expressed mathe-

matically, $Z_F = \sqrt{Z_1 Z_2}$. So, if a 75Ω coax stub is attached to a 50Ω feed line coax, the resulting impedance of the arrangement will be 61.2Ω , not a perfect match, but better than before. The biggest drawback of this solution is that it is frequency dependent and will work only in single band antennas. But then, most amateur portable antennas are single band antennas.

The speed of a radio signal in free space is used when calculating the $1/4\lambda$ of a frequency. However, traveling through a coax, the speed of the

radio signal slows down and to calculate the electrical length of the coax stub it is essential to use a correction factor. This correction factor is the velocity factor of the coax.

An example will illustrate the process. Let's say we want to make a 75Ω matching stub for a 20 meter antenna cut for the center frequency of 14.2 MHz and fed with a 50Ω line. The $1/4\lambda$ of this frequency would be 5.28 meters. To find the actual physical length of the coax stub, this length will need to be adjusted by the velocity factor of the coax. Coax velocity factors range from 66% to 84% with 66% being the most common. Using a 66% velocity factor 75Ω coax stub would make the actual final length of the cable segment 3.48 meters, or 11.4 feet.

The matching stub is not a perfect solution to the antenna impedance mismatch problem, but it will improve the situation and allow more signal to be radiated, particularly in the more critical QRP operations.



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



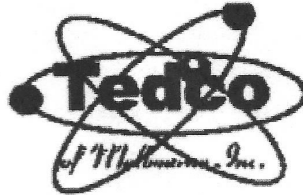
Editor's Note:

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	SCOTSMOOR 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 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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