VOLUME XLV, NUMBER 7

SPURIOUS EMISSIONS

JULY, 2023

INDIAN RIVER ARC

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

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NEWSLETTER EDITOR
ARMANDO DELGADO
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CLUB MINUTES

President Steve Luchuck, N4UTQ called the meeting to order at 7:15 PM.
Following the Pledge of Allegiance Steve called for visitors; there were none.
Next, he summarized some of the club's recent activities. On April 22, 2023, the club participated in the SET with numerous members passing traffic. IRARC was the only radio club to participate in the SET in Florida. All other participants were EOC's.
Steve also reminded members of the D-Star practice net on Tuesdays at 7:00 PM and the digital net on Sundays at 1:00 PM.
Treasurer's Report: The General Fund presently has $1472.09 after a gain of $80.00 from dues and the expense of $326.56 for insurance. The Equipment Fund remains stable at $1903.65.
The April Minutes were approved next.
Past President Report: Viron, N4VEP mentioned that Bob Luken, W3RDL is planning an Amateur Extra licensing class to start in September. Viron also mentioned that during the last Saturday QRP at the park they failed to make any contacts, due to poor propagation caused by a solar flare.
Technical Committee Report: Dave, KU0R said that the repeaters are working, but he needs to adjust the clock in the 146.88 MHz machine which is announcing the wrong time. He also said that the club now has a conference number from Hamshakhotline. It is listed under IRARC W4NLX #369 and will allow club members to participate in conference calls. There are still details to figure out the system's protocols.
On Field Day we operated 2A using commercial power. The two radios used were ICOM 746 Pro and we operated on 15m, 20m, and 40m. Next year Dave hopes to operate 3A and perhaps use high power. He also would like to try a hand at satellite contacts during the event.

Next, Steve discussed the issue of the D-Star repeater. He analyzed the potential problems obtaining and installing that repeater. The cost of the UHF repeater itself would be $1300.00 and a duplexer $100.00. However, the bigger potential problems are the location for the repeater, the cost of the hardline coax required, and the repeater frequency coordination. All these issues need to be addressed and resolved.

Following the business meeting, Steve presented a list of famous people who are or were licensed hams. These included Walter Cronkite, KB2GSD, Joe Walsh, WB6ACU, Tim Allen, KK6OTD, Priscilla Presley, NY6YOS, and many others from the music, television, and government.
Following the presentation there was a brief discussion of VarAC, Vara FM and Winlink, systems that are gaining popularity with the digital emergency communications groups.

The meeting adjourned at 7:48 PM

Respectfully submitted
Armando Delgado, KN4JN
Secretary

HAPPENINGS

Request for presentations at the Melbourne Hamfest I'm the forums chair for the upcoming Melbourne Hamfest, Oct. 14. I'm seeking presenters for our forum presentations. Any ham related topic is fair game, and we provide the computer and projector. A presentation usually lasts about 45-50 minutes with 10 minutes for questions and answers. If you have a presentation, or know someone that does, please contact me. If you publish a newsletter, can you include my request for presenters? Thanks and see you at the hamfest! Contact Gary Bishop at nq0v@hotmail.com

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The Harbin Institute of Technology (HIT) in China is developing a new lunar amateur radio satellite. Lunar OSCAR II is a lunar amateur radio payload being developed by a team that consists of students from HIT and international amateur radio enthusiasts. Its baseline functions include telemetry, digital image downlink from an infrared camera, and a digipeater with JT4G uplink/downlink. It will utilize downlinks on UHF for telemetry and images by using 250/500 baud GMSK with turbo codes, as well as a digipeater that uses 4.375 baud FSK with convolutional coding (JT4G). More information is available at https://by2hit.github.io/. The satellite is planned to launch from Wenchang, China, in 2024. A downlink on 437.750 MHz has been coordinated

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There will be a class for Amateur Radio Technician Class licensees who want to upgrade to General Class. It will start on July 22, 2023 at 9:30AM. It will be held at Hobbs Pharmacy

HAPPENINGS

Community Room, 133 N Banana River Drive, Merritt Island, Florida. The class will be both in person and online with Zoom. Sessions will be recorded and uploaded to YouTube for people who missed a class or just want a review. Class will consist of 5 Saturday sessions, approximately 3 hours each. Interested parties should contact Robert Luken at w3rdl@arrl.net or 321-432-0450 cell or 6100001668 on HamShackHotline.

Next November the ARRL will conduct their biannual Frequency Measuring Test. This exercise is designed to allow amateurs to determine the accuracy of their receivers by detecting the precise frequency of an unknown transmission.
All radios, including modern transceivers, have built-in inaccuracies in their circuits due to variations in their oscillators. Granted, in modern radios that variation may be minimal, only a Hertz or two, but when trying to be accurate in determining the actual frequency of a received signal, it is important to know one's own radio's limitations.
In order to determine a radio's receiving error, an accurate frequency reference signal is required. For hams, the easiest source of reference signals is WWV. This station provides not only accurate time measurements, but also very accurate frequency transmissions.
There are several methods of gauging receiver error using WWV transmissions. The easiest, oldest and less accurate is to tune to WWV in the USB and the LSB portions of the transmission. WWV transmit in AM and so it has a central carrier with both upper and lower side bands. By alternately tuning the USB and LSB of the signal until both have the same pitch, the central carrier frequency can be determined. The frequency reading on the radio will show the variation from the accurate frequency of WWV, and that will be the error correction to be used. Unfortunately, this method introduces some inaccuracies based on the human's ability to discern tone differences in the signals.
There are other, more accurate, methods of detecting frequency errors. Those are based on digital signal analysis. One, described in an article in the April 2015 issue of QST by Dave McCarter, VE3GSO and titled "Measuring Frequencies at VE3GSO" uses a free software from Spectrum Lab to determine the error factor. The article describes the web page link to the software and the method.
Another process uses WSJT-X to determine frequency stability, as described in the August 2021 issue of QST by Michael Foerster, W0IH in his article, "Using WSJT-X to Graph Radio Frequency Stability." Either method will determine the frequency error of the receiver and the correction factor to apply to an unknown signal.
The Frequency Measuring Test is a challenge, but a very rewarding and educational endeavor.

The club again had a successful Field Day this year. We operated using callsign AJ4IR and made a total of 255 contacts, 211 in CW and 44 on phone. Operators worked on Saturday until early evening and Dave KU0R remained until later that evening working 40 meters CW. Sunday morning we resumed operations. In all we operated 40m, 20m, and 15m, making 40 CW contacts on 40m, 111 CW contacts on 20m, and 60 CW contacts on 15m. The phone contacts were limited to 20m and 15m with 27 and 17 contacts respectively. The final score was 1182 points, after adding bonus points.

ON THE AIR

Red River Bridge War Special Event Jul 15-Jul 23, 0000Z-2359Z, W5R, Sherman, TX. Grayson County Amateur Radio Club. 14.250. QSL. Grayson County ARC, PO Box 642, Sherman, TX 75091. Questions? email lee.n5sly@gmail.com graysoncountyarc.org

EAA Airventure 2023 - W9ZL Special Event Station Jul 24-Jul 30, 1300Z-1700Z, W9ZL, Appleton, WI. Fox Cities Amateur Radio Club. 14.250 7.225 50,150. Certificate. W9ZL Special Event , P.O. Box 2346, Appleton, WI 54912. www.fcarc.club.

US Coast Guard 233 Birthday Aug 4-Aug 5, 1400Z-0400Z, K1CG, Port Angeles, WA. USCG CW Operators Association. 3.552 7.052 14.052 21.052. QSL. Send, QSL information to, station worked. www.qrz.com/db/k1cg

Horton Point Lighthouse "National Lighthouse Day" Aug 7-Aug 8, 1400Z-0200Z, W2AMC, Southold, NY. Peconic Amateur Radio Club. 29.475 14.275 7.275. QSL. Richard Trowbridge, N2YIB, 510 The Cross Way, East Marion, NY 11939-1008. Lat. 41.08515 - Long. 72.44558. General class portion of 40M – 10M, SSB, FT8, CW. n2yib@outlook.com

CROATIA, 9A. Special event station 9A150TESLA is QRV during July to celebrate the 150th anniversary of Nikola Tesla's high school education. QSL direct to 9A7R.

FEDERAL REPUBLIC OF GERMANY, DA. Special event station DL0SOP will be QRV from July 1 to 31 to mark the 65 years of the Sea of Peace Award. QSL via LoTW.

ITALY, I. Special event station IL3P will be QRV from July 1 to September 30 from various locations in the Italian region of Veneto. QSL via IU3EDK

LUXEMBOURG, LX. Special event station LX90RTL is QRV until the end of 2023 to mark the first longwave transmissions of Radio Luxembourg 90 years ago. Activity is on the HF bands using CW, SSB, and various digital modes, and Satellite QO-100. QSL via LoTW.

CZECH REPUBLIC, OK. Radioklub OK1KVK is QRV with special call sign OL70KVK until December 31 to mark the club's 70th anniversary. QSL via OK6RP.

REPUBLIC OF KOREA, HL. Wouter, PB1WL plans to be QRV as HL4/PB1WL from July 17 to August 16. QSL to home call.

AUSTRIA, OE. Special event stations OE2XXM and OE5XXM are QRVduring July, and September around the international Autumn field day in Gosau. QSL via operators' instructions.

International Lighthouse Lightship Weekend – ILLW Normally held on the 3rd full weekend in August This year 00.01UTC 19th August to 24.00UTC 20th August 2023 (48 hours). The ILLW website has more information on the event and on activated lighthouses .

The FCC Emission Control Rules: Their Origins by Armando Delgado, KN4JN

Starting on May 3, 2023, the FCC mandated that all transmitting stations in the United States conduct a radio emissions evaluation for all the antennas, frequencies and power settings that the stations operate. This final regulation was a last step in an ongoing regulatory process spanning many years.

It all began in 1969, when Congress passed the National Environmental Policy Act of 1969. This law, signed by President Nixon, went into effect on January 1, 1970. It mandated all government regulatory agencies to require all entities that they regulated to show the environmental impact of their activities. The FCC had to show and regulate the environmental impact of radio emissions.

To achieve its mandate, the FCC consulted a panel of experts in ANSI/IEEE and the National Council on Radiation Protection (NCRP) to determine the scientific issues at hand and to offer recommendations. The FCC also consulted other government agencies involved in health issues, such as the Federal Drug Administration, the Environmental Protection Agency, and others.

After evaluating all the different opinions and data, the FCC's Office of Engineering and Technology published OET 65 in 1985 detailing the requirements for assessing human exposure to radiofrequency radiation titled, "Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields". This report was revised in 1997 and is again currently under revision.

In its guidelines the FCC used the metrics determined by both the ANSI/IEEE and the NCRP for the threshold for the biologic effects of electromagnetic radiation. Both agencie's studies agreed that 4 Watts/Kg was the radiation intensity, or specific absorption rate (SAR), where biological effects could occur.

Of interest is that FCC's unspoken concern was the pathological, or adverse effect of the radiation. Yet, all the reference studies evaluated biological effects instead of adverse effects.

Perhaps, the reasoning was that if there was no biological effect noted there could be no pathological effect either. That reasoning is logical but scientifically unsound, because it ignores the potential long term effects of low intensity radiation, a factor that was not part of the studies.

Likewise, the studies by the consulted agencies focused on frequencies above 30 MHz,, because at those higher wavelengths the radio signals approach the size of the average adult human and therefore concentrate more energy into the tissues, what is called whole body radiation

To accommodate for the lower frequencies, the FCC used the same SAR calculated for the higher frequencies but introduced a correction factor for what they called partial body irradiation. Mathematically and logically, the correction factors make sense, but they are not scientifically valid.

The data the FCC provides for the lower frequencies SAR is based on pure speculation. Without the studies, it is impossible to precisely know what the SAR is for those frequencies. The ionospheric propagation of frequencies at 30 MHz and 3.5 MHz are completely different; likewise, the SAR for those two frequencies may also be completely different. Without the studies, we just do not know.

The FCC had a mandate from Congress and they satisfied their obligation. They provided rules and numbers; however, in what respect to the amateur service that operates mostly in the HF frequencies below 30 MHz,, the rules and the numbers are arbitrary and speculative.

We realy have no idea what adverse effects radio emissions in the HF frequencies could have on living tissues in the long term exposure. However, over the past 50-60 years many studies around the world attempted to answer this question.

A number of studies suggested a correlation between radiofrequency radiation and certain cancers. Yet, on closer evaluation, those studies were found to have faulty data or inconclusive results that could not be corroborated. So to this date we do not know if radiofrequency exposure, particularly in the HF frequencies and power densities in which amateur radio operates, can have adverse health effects on humans. However, the lack of conclusive studies suggests that adverse effects are unlikely, especially if there are no biological tissue effects that the new rules hope to guarantee.

The FCC regulates our operations and we must comply with their rules; however, like many other government mandates that are based on science, the distinction between factual scientific reality and political expedience can be very distant

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, Fl 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 Fl
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	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.	K4UZM	
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 a

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
CHICAGO MINIATURE
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GC ELECTRONIC
GALAXY
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HAM RADIO
HARADA
HITACHI
HYGAIN

ICOM RADIO

JSC WIRE
JW DAVIS SOUND
JVC PARTS

KENWOOD RADIO
KOSS
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LOWELL

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MALLORY
MACOM
MAXON
MIDLAND
MOTOROLA

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