



**INDIAN
RIVER ARC**

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

VOLUME XLIII, NUMBER 7

SPURIOUS EMISSIONS

JULY, 2022

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CLUB MINUTES

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

After the Pledge of Allegiance, Steve called for visitors and there were two: Matt and Scott.

Vice President Report: Nothing to report this month.

Treasurer's Report: The General Fund is unchanged at \$1061.16. The Equipment Fund is also unchanged at \$1883.65.

Past President Report: Viron, N4VEP reported that he is experimenting with NVIS transmissions.

The minutes of the June meeting were accepted.

Field Day Report: The club operated 2A this year using 5 watts only and exclusively

batteries for radio power. We had a 170 CW contacts and 65 phone contacts. The main bands of operation were 20 meters and 40 meters with some contacts on 15 meters and 80 meters as well. Our entries were sent and received by the ARRL and await posting of final results and score.

We had a visit from the ARRL SFL Assistant Section Manager, Jeff Beals, WA4AW just prior to beginning operations.

As always, Steve, N4UTQ provided the food for the event giving us awesome hamburgers and other excellent food.

All in all, Field Day this year was a great experience, a great time, and lots of fun.

Upcoming Events: The Simplex Exercise this month will

be on Saturday, July 23 starting at 9:00 AM. This time we may try using HF for contacts after the initial check in on 147.42 MHz.

Following the business meeting, Steve gave an interesting presentation on QSL cards from CB radio. American CB call signs used to include generally 3 letters followed by 4 numbers, in contrast to Canadian CB call signs that included 4 letters and 4 numbers. Steve went on to show many very original and imaginative CB QSL cards from years past.

Following the presentation, the meeting adjourned at 8:10 PM.

Respectfully submitted
Armando Delgado, KN4JN,
Secretary

HAPPENINGS

The FCC will retire the previous Commission REgistration System (CORES) on July 15, 2022. CORES is the FCC's public-facing database that enables and tracks certain types of FCC and FCC applicant actions, including amateur radio applications and licenses. The National Association for Amateur Radio® advises the amateur radio community to transition to the updated version of CORES as soon as possible.

Licensees that do not already have an FCC CORES Username Account must create one with a unique username (a valid email address) and password. After creating the account, when logged in, users should associate their existing FRN or FRNs with this account. Instructions for doing so are on the [FCC Registration Help page](#). One's FRN is printed on all current amateur applications and licenses, and will not

change. Additional information is available on the FCC website or by calling the FCC Licensing Support Center at (877) 480-3201, Option 4, and on the FCC's e-support page.

The ARRL granted **David Schnoor, K04SFZ**, of Davie, Florida the IRARC Joseph P. Rubino, WA4MMD, Scholarship for 2022 in the amount of

\$750. The Indian River Amateur Radio Club instituted this scholarship many years ago in honor of a founding member of the club, Joe Rubino, WA4MMD, who contributed greatly to the club. Initially, the club managed the scholarship program, but some years ago, the club transferred the management to the ARRL with the proviso that only Florida amateur applicants would

be considered for this scholarship.

The 41st ARRL and TAPR Digital Communications Conference (DCC) will be held September 16 - 18, 2022, in Charlotte, North Carolina. This year's 3-day event will be held at the Hilton Charlotte Airport Hotel.

The DCC is for everyone, beginners and experts alike, with an interest in all forms of digital communication.

The general topic areas include, but are not limited to: software-defined radio (SDR); digital voice; digital satellite communications; digital signal processing (DSP); HF digital modes; adapting IEEE802.11 systems for amateur radio; global positioning system (GPS); automatic position reporting system (APRS); Linux in amateur radio; AX.25 updates; internet operability with amateur radio networks; TCP/IP networking over

amateur radio; MESH and peer-to-peer wireless networking, and emergency and homeland defense digital communications in amateur radio.

More information about TAPR – Tomorrow's Ham Radio Technology Today can be found at their website.

The EAA Warbirds of America Board of Directors will be sponsoring a special event station, W9W, which will be on the air all week during daylight hours on July 25 - 31 from AirVenture in Oshkosh, Wisconsin. Look for W9W on 40 - 10 meters near 7.225, 14.250, 21.235, and 28.425 MHz. A special event QSL card will be issued for contacts with W9W.

Also, members of the Fox Cities Amateur Radio Club (FCARC) will be operating station W9ZL from Pioneer Airport at KidVenture

throughout EAA AirVenture in Oshkosh, Wisconsin. Club members and other volunteers will operate HF stations on 20 and 40 meters, 6-meter SSB (on, or near, 7.250, 14.270, and 50.150 MHz). A special event certificate will be available. See the ARRL Special Events database for further details.

C6ADX C6AYL Exuma Islands

Bahamas Joe, W8GEX and Janet, W8CAA will be active from Exuma Islands, IOTA NA-001, Bahamas, 16 - 26 July 2022, as C6ADX and C6AYL. They will operate on 60 - 6 m SSB, Digital modes. QSL via W8GEX. Joe Pater, 2419 Pierson Rd., Oxford, Oh 45056, USA.

D4Z Sao Vicente Island, Cabo Verde

D4Z Team

will be active from Sao Vicente Island, IOTA AF - 086, Cape Verde, Cabo Verde in RSGB IOTA Contest, 30 - 31 July 2022.

Team - G4BVY, G4CLA, GD4XUM, G4PVM.

WAZ Zone - CQ 35.

ITU Zone - 46.

QTH Locator - HK76mu.

QSL via HB9DUR direct or IK2NCJ buro. MONTEVERDE CONTEST CLUB, Pregassona 6963, Switzerland.

OJODX Market Reef OJODX Team will be active from Market Reef, IOTA EU - 053, 25 July - 1 August 2022. Team - DG5CST, DL3DXX, DL6FBL and SM0W.

They will operate on 80 - 6m Bands. QSL via DL3DXX, ClubLog OQRS, Kasper, DL3DXX, Birkenweg 3, Pirna-Jessen, D 01796, Germany.

ON THE AIR

XACOBEO - From Galicia to the World Jul 18-Jul 25, 0000Z-2359Z, AO2022XAC +, Galicia, SPAIN. URE Territorial Council of Galicia. 6, 10, 12, 15, 17, 20, 30, 40, 80, and 160 meters on SSB, CW and MGM. Certificate. Email, galiciaxacobeo2022@ure.es, for rules, SPAIN. Look for these call signs: AO1XCF, AO1XFM, AO1XVP, AO1XCI, AO1XCP, AO1XCN, AO1XAU, AO1XCV, AO1XCU, and AO1XPC.

Apollo 11 Moon Landing Commemoration Jul 20, 1330Z-2000Z, K2CAM, Garden City, NY. Long Island Mobile Amateur Radio Club. 14.240 7240. QSL. LIMARC, P.O. Box 392, Levittown, NY 11756. Remembering the 1969 Moon Landing of Apollo 11. It recognizes the contributions of the aerospace industry on Long Island. Located at the Cradle of Aviation Museum. K2CAM will be oper-

ated by the Long Island Mobile Amateur Radio Club. Will be operating SSB, PSK31, and FT8. www.qrz.com/db/K2CAM or www.limarc.org

RRC Kiska Island Expedition - 80th Anniversary of the Japanese Invasion of the Aleutian Islands **Jul 23-Aug 3, 0000Z-0000Z, K7K**, Homer, AK. Russian Robinson Club. 7242 14242 18142 21342. QSL. Richrd J. Moen, 2935 Plymouth Dr., Bellingham, WA 98225.

EAA Airventure 2022, World's largest Airshow. Jul 25-Jul 31, 1330Z-2030Z, W9ZL, Appleton, WI. Fox Cities Amateur Radio Club. 7.250 14.270 50.150. Certificate. W9ZL Special Event Station, PO Box 2346, Appleton, WI 54912. www.fcarc.club

US COAST GUARD 232 BIRTHDAY Aug 4, 1400Z-2300Z, K1CG, Port

Angeles, WA. CG CW Operators Association. 3.552 7.052 14.052 21.052. QSL. Fred Goodwin see QRZ/K1CG, 424 N. Bagley Ck, Port Angeles, WA 98362. www.qrz.com/db/k1cg

WW2FLY, Attica, NY. WWII Flying Fortress Amateur Radio Club . 1.900 3.850 7.180 14.250. Certificate. Nathan Fix, 3339 Stroh Rd, Attica, NY 14011. <https://www.qrz.com/db/WW2FLY>

W5JON will be active again as V47JA from **Saint Kitts Island**, IOTA NA-104, 12 - 28 July 2022. He will operate on 160 - 6 m (Including 60m), SSB, FT8. QSL via home call direct, LOTW JOHN V ABBRUSCATO, 22199 PINE TREE LN, HOCKLEY, TX 77447, USA.

Giovanni, IZ2DPX will be active as 8Q7AG from **Maldives Islands**, IOTA AS - 013, 8 - 20 August 2022.

He will operate on HF Bands plus 6m Band. QSL via IK2DUW via HE9ERA, IZ2DPX direct, LOTW, ClubLog.

Masa, JAORQV will be active from **Niuafou Island**, IOTA OC - 123, 7 - 20 August 2022, as A35JP/P. He will operate on 80 - 6m CW, SSB. QTH - Esia village. QSL via home call. Masato Tamura, 2086-13 Daitakubo, Minami-ku, Saitama-city, 336-0015, Japan.

The University of **Oregon** amateur radio club will hold a special event the week of July 15-24 to celebrate the World Athletics Championship, for the first time held on American soil. They will be using the call sign **N7DUX** for the activity. Operations will use all bands and all modes.

Frank, K3TRM will be active as ZF2RM from **Cayman Islands**, IOTA NA - 016, 17 - 30 July 2022. He will operate on 40 - 6m, CW, SSB, RTTY, FT8, satellite with focus on 6m Band.

Free-Space Optical Communications by Armando Delgado, KN4JN

Visual communications using signals have been around since early mankind, but it was not until the early 1800's that systems capable of relaying letters, and thus complex messages, were invented. One was the semaphore, invented by the French and quickly adapted worldwide. The semaphore used moving arms to configure patterns representing letters. Another device invented about the same time, the heliograph, was capable of sending Morse code messages by reflecting sun light by means of mirrors. In 1880, Alexander Graham Bell invented and patented a device he called the Photophone capable of transmitting the human voice over free-space by reflecting light with a thin concave mirror that vibrated with the sound and thus modulated the light beam. This was years before the invention of radio.

Unfortunately, optical communication devices suffer from two significant weaknesses that eventually led to the replacement of early devices by more reliable systems, such as the telegraph and the radio. Optical devices require line of sight contact, which cannot always be achieved. More significantly, they fail under certain meteorological circumstances, such as fog, heavy rain, and heavy snow.

After the invention of the laser in the 1960's, many hoped that the high energy, coherent beam of light of the laser could be used for optical communications. Yet, lasers suffer from technical problems besides the old atmospheric ones that plagued the early systems.

Lasers produce their light by activating photons in a medium with external energy triggering a cascading effect of photon generation in the medium. There are today many different kinds of lasers, some more energetic than others. For effective visual communications, the laser must be of a higher energy type. The photon activation is a time-dependent process and this limits the possibility of modu-

lating a laser by turning it on and off, like to produce Morse code. It is technically possible, but the message rate would be so slow as to be impractical. The lifetime of lasers depends on the number of times it is switched on, so the technique of messaging by turning on and off would significantly limit the lifetime of the laser itself.

In spite of the laser's limitations, amateur radio operators, always willing to explore new media, have studied the laser as a mode of communications and even home brewed transceivers capable of relaying messages over several miles (See References).

The main benefit of lasers as a messaging medium is their broadband. A laser beam potentially can carry 100 Gb/s of data. These rates have not been achieved yet, but modern advances in laser communications are getting there. Currently, the main advantage of lasers is in space communications where there are no interfering meteorological changes.

In 1998 the European Union demonstrated with their SILEX (Semi-Conductor Inter Satellite Link Experiment) that lasers could achieve inter-satellite communications. Later, in 2013 NASA, as part of their LLCD (Lunar Laser Communication Demonstration) experiment transmitted a picture of the Mona Lisa to a moon orbiting satellite using lasers. In that particular experiment, the laser beam successfully used an error correction protocol to compensate for atmospheric interference. More recently, the SpaceX Starlink system of satellites uses lasers for inter-satellite communications.

There is extensive, on going research in the use of lasers for communications. As modern lasers become lighter in weight, smaller and require

less power to activate, their potential for communications use increases.

Amateurs, always interested in new and promising media for communications, have the opportunity to learn, participate, explore and benefit from the new technology.



References

[A Laser Communications Primer – Part 1](#)

QST September 1990, pp. 19-24

A tutorial on lasers and how they work.

[A Laser Communications Primer – Part 2](#)

QST October 1990, pp. 22-26

Make a laser communications system from a laser tag game.

[Lasers and Amateur Radio](#)

QEX January 1985, pp. 5-10

An introduction to lasers. Laser Communication Range

QST April 1989, p. 74

Calculating the range of a laser communications system.

[A Laser Transceiver for the ARRL 10-GHz-and-Up Contest QEX November/December 2001, pp.11-19](#)

An optical transceiver you can build to get on the 6500-A band

Bob Gonsett, [W6VR Laser](#)

[QSO](#) Carrying voice over a 'RED POINTER' laser beam by Bob Gonsett, W6VR

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		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.	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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