



INDIAN RIVER ARC

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

VOLUME XLVI, NUMBER 9

SPURIOUS EMISSIONS

SEPTEMBER, 2024

OFFICERS

PRESIDENT

STEVEN LUCHUK

N4UTQ

VICE-PRESIDENT

SAM THORPE

KJ4VGR

SECRETARY

ARMANDO DELGADO

KN4JN

TREASURER

DAVID LERRET

KU0R

DIRECTOR

ROBERT SCORAH

WOAGE

NEWSLETTER EDITOR

ARMANDO DELGADO

KN4JN

CLUB MINUTES

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

Following the Pledge of Allegiance, Steve gave the President's Report. He mentioned that the ARRL annual Simulated Emergency Test (SET) will be on the weekend of October 5-6. This year, the club will do an HF digital event. The event will start at 9:00 AM with an announcement on the 145.37 MHz repeater where instructions will be provided for the frequencies and modes to be used for the test.

Steve also reminded the members that the Simplex Exercise this month will be on Saturday, September 28 starting at the usual time of 9:00 AM on the simplex frequency of 147.42 MHz, although he will monitor the 145.37 MHz repeater, just in case someone cannot communicate simplex.

Treasurer's Report: The club paid the equipment insurance fee of \$168.51 last month bringing the Equipment Fund from \$1306.60 to the current \$1138.09. The General Checking remains at \$2013.65. The Treasurer's Report was approved for audit.

Next, the August club meeting min-

utes were approved.

Director-at-Large Report: Bob, WOAGE suggested that the club hold a tailgate event to raise money to cover the club's increasing insurance expenses, with liability insurance increasing this year from \$326.56 to \$710.65. Steve mentioned that advertizing such an event in order to attract participants may not be easy,

Past President Report: Viron N4VEP reminded the group that next Saturday, September 21, will be the next monthly QRP gathering. This time, it will be at Tom Statham Park on the Indian River, across from the Space Coast Regional Airport. Viron stressed that this is a nice location with plenty of gazebos and trees for antennas.

Following the business portion of the meeting, Steve, N4UTQ gave a presentation on the NASA Vehicle Assembly Building, covering its construction, early operations and recent activities. He included many slides showing different stages of construction, early rocket assembly photos, and more recent images of the interior of the building, its cranes that lift rocket sections in place and design details of the

structure.

The initial design of the building was intended for the moon program, where the Saturn rockets would be assembled. That initial design was in 1961. Construction of the building began in 1963 and was completed in 1966. The building covers 8 acres; it is 525 ft. tall, 518 ft. wide and has 50 ft. wide doors. To support this structure, construction required sinking steel pylons 164 ft. into the bedrock to support its weight. Its roof could hold Yankee Stadium on its surface. The initial design called for 6 bays, but later was scaled down to only 4. The functional design of the building required 6 interconnected towers with space in-between to allow for the free movement of the huge rockets and components to be assembled.

At the end of construction, a steel beam with the signatures of all the participants in its building was placed somewhere on the roof of the VAB.

At the end of the presentation, and after a brief question-and-answer period, the meeting was adjourned at 8:33 PM.

Respectfully submitted,

Armando Delgado, KN4JN

HAPPENINGS

Record high Solar Cycle 25 maximum sunspot numbers have improved HF propagation since mid-July and possibly bringing worldwide 6 meter F2 propagation this Fall. According to the NOAA Space Weather Prediction Center (SWPC), Solar Cycle 25 likely reached its highest sunspot number yet of at least 299 on August 8th. Worldwide 6-meter F2 propagation may again occur – perhaps very frequently – starting in late

October 2024 if daily EISN reports consistently remain well above 200. See www.sidc.be/SILSO/eisnplot

The ARRL Simulated Emergency Test (SET) is coming this fall. This nationwide exercise is the chance to test your personal emergency-operating skills and the readiness of your communications equip-

ment and accessories in a simulated emergency-like deployment. The event this year is planned for the weekend of October 5-6. More information can be found at the ARRL [website](http://www.arrl.org).

Interesting information from the ARRL Propagation Report of August 19, 2024. Coast-to-coast F2 propagation and propagation crossing the

Atlantic to Europe and Africa may begin sporadically during September and October and become frequent and long lasting by early November. It's increasingly likely that we'll have widespread coast-to-coast and worldwide 6 meter F2 propagation during about half of the days between late October and at least early February. Widespread F2 openings are likely to bring 6 meter CW and

SSB to life like we haven't experienced in more than 20 years. The first sign of enhanced 6 meter F2 will be increasingly frequent TEP from Europe and North America to South America and the South Atlantic islands. TEP may begin very sporadically by late August and become increasingly frequent later in September and especially during October.

If you are interested in propagation information and data, this website has some data that can be factored in for use. It is not very user friendly, but the data seems accurate.

<https://prop.kc2g.com/stations/>

September is National Preparedness Month. ARRL's partners at the Federal Emergency Management Agency (FEMA) are sharing tips to help you be prepared. They are centered around the theme

of "[Start a Conversation](#)".

The August issue of QST carried the article "An All-Bank Em-Comm Go-Kit" authored by Randy Richmond, W7HMT, Assistant EC with the North Bend, Washington ARES team. The article details the construction of an easily deployable, Winlink-capable, transceiver/battery combination designed to be EMP resistant. In the August 21 ARRL "ARES Letter" newsletter Randy discusses further details of his EMP-proof box.

About Electromagnetic Pulse (EMP), an EMP can induce high currents in exposed wire, even as short as PCB traces, but especially in long wires such as antennas and antenna coax, and the national electrical grid. This high current results in voltages that can easily exceed the maximum rated voltage of the electronics attached to those wires, resulting in degradation,

damage or destruction of the attached electronics. EMPs can occur naturally from a nearby lightning strike or extreme solar flares (such as the 1859 Carrington Event, which disrupted and damaged the early telegraph systems). They can also occur artificially from nuclear explosions, especially explosions in the upper atmosphere of the earth (such as the USA Starfish test of July 1962, which damaged many electrical and electronic systems in Hawaii).

Melbourne Hamfest 2024

The Melbourne Hamfest, sponsored by the Platinum Coast Amateur Radio Club, their 59th Annual Melbourne Hamfest, will be held October 11, 2024-October 12, 2024 in the Melbourne Auditorium, 625 E Hibiscus Blvd Melbourne, FL 32901. This is a Friday & Saturday event. Open to general at-

tendees Friday 13:00 to 19:00, and Saturday 09:00 to 15:00 local.

Vendors and tailgaters can setup starting 2 hours before general opening.

Adult admission is \$10, and covers both days. No charge for children 12 and under.

The Reading Radio Club (RCC) in eastern Pennsylvania will hold a special centennial event involving an iconic name recognized by railroad buffs around the world. The RCC will honor the 100th anniversary of the historic Reading Railroad with two special event stations on Saturday, September 21, 2024. Club call signs W3BN and W3CCH will be on the air in two separate operations 25 miles apart. Activity on all four HF radios will be on 10, 15, 20, 40 and 80 meters. More information about the celebrations can be found at either W3BN or W3CCH on QRZ.com.

ON THE AIR

National POW MIA Recognition Day

Sep 18-Sep 22, 0000Z-2359Z, K4MIA, Loxahatchee, FL. PBSEC. 7.195 14.265 18.150 28.400. QSL. Michael Bald, 6758 Hall Blvd, Loxahatchee, FL 33470. Observances of National POW MIA Recognition Day are held across this country on the third Friday in September each year. This year it will be on September 20.

Again, this year K4MIA/ will be operating from multiple military ships. There will be 15 sister stations K4MIA/1 through K4MIA/8 in operation. Days listed above are primary operational days. Modes used will be, SSB, CW, FM, digital modes, SSTV, Satellite and possible EME again. See QRZ (K4MIA) for a lot more information and a copy of this year's QSL card.

W7Y Come and Get Wyoming

Sep 21-Sep 30, 0000Z-2359Z,

W7Y, Cheyenne, WY. ShyWy Amateur Radio Club. All Bands All Modes. Certificate & QSL. Shy-Wy ARC, P.O. Box 22483, Cheyenne, WY 82003. See website for more information. All logs will be uploaded to LOTW and QRZ at the conclusion of the event. <https://shywyarc.net/wp/comeandgetwyoming>

WWV 105th Anniversary

Sep 27-Oct 1, 0000Z-2359Z, WWVWWV, Fort Collins, CO. WWV Amateur Radio Club. 7.048 7.248 14.048 14.248. QSL. WWV ARC, PO Box 273226, Fort Collins, CO 80527. We will be on during a 96-hour period. Please see the operator's schedule on the WWVARC website (above) and QRZ.com during the event for bands and modes. If you are interested in operating in this event and joining the WWVARC, write to secretary@wwvarc.org. Include \$2 to cover the costs of production and distribution when

requesting QSL cards. 73!

<https://wwwarc.org>

Re-enactment of the First Trans-Global Two-Way Radio Communication

Sep 29-Oct 26, 0000Z-2359Z, GB2NZ, Many locations, UNITED KINGDOM. Radio Society of Great Britain and New Zealand Association of Radio Transmitters (Otago Branch). All bands and all modes depending on operator availability. QSL. See website, for information, UNITED KINGDOM. www.gb2nz.com

Celebrating Earth Science Week

(ESW) Sponsored by the American Geological Institute Oct 12-Oct 20, 0000Z-2359Z, World Wide, OT. US Affiliate (KFF) of World Wide Flora and Fauna. 7.044 7.184 14.044 14.240. QSL. QSL, to station, worked, OT. www.wvff.us

Rogersville TN Heritage Days

Oct 12-Oct 13, 1400Z-2100Z, N2H, Rogersville, TN. Handcock-Hawkins Amateur Radio Team. 7.120 7.123 7.126 7.130. QSL. David Broome, 360 Rogers Road, Rogersville, TN 37857. Heritage Days in Rogersville, TN, a 3 day celebration that whisks you away to a bygone era, where community, tradition, and good old-fashioned fun reign supreme. It weaves a vibrant tapestry of history, where the aroma of apple cider mingles with the lively tunes of Appalachian fiddles mebtfs@yahoo.com

Miki, JJ2CJB will be active as V63CB from **Weno Island**, IOTA OC - 011, Micronesia, 25 - 29 October 2024. He will operate on HF Bands, including activity in CQ WW DX SSB Contest. QSL via JJ2CJB direct: SEIICHIRO MIKI, 1810 KIRITO OKEHAZAMA, MIDORI NAGOYA AICHI, 4580922, Japan. Also via LOTW.

Radiation Resistance by Armando Delgado, KN4JN

There are many factors and parameters that antennas must meet to radiate effectively. One of the most important in this soup of technical concepts is radiation resistance. Ironically as it pertains to this term, the air surrounding an antenna offers no resistance to the RF emanating from the antenna, which raises questions on this scientific concept.

The term in reality is a proxy for the power radiated from an antenna. The official definition of radiation resistance is the equivalent resistance that would be required to dissipate the radiated power of the antenna. Using resistance instead of power as the measurement unit facilitates the calculations required to understand the performance of the antenna.

There are a number of resistance values that play a role in antenna performance. There is the resistance of the physical antenna components; there is also a potential ground resistance that changes with the height and type of antenna, and there is the radiation resistance factor of the antenna. At resonance, those are the only factors present; however, at frequencies other than resonance reactance plays an important role in the power being radiated. Thus, by using resistance instead of power, the calculations become simpler and more intuitive.

Radiation resistance varies with antenna type but is not a fixed quantity, since it will be affected by many factors, such as the feed point of the antenna and the height above ground of the antenna. The mathematical definition of radiation resistance is radiated power divided by the square of the current in the antenna: $R_r = P_r / I^2$.

In a center-fed, horizontal dipole, the peak current occurs at the feed point, and that is the point of lowest radiation resistance. If the feed point moves from the center, the current diminishes and approaches 0 at the ends, where the voltage peaks. With diminishing

current, the radiation resistance rises, one of the reasons why end-fed antennas have much higher input impedances.

A dipole in free space, that is, away from ground and not affected by surrounding objects, has a radiation resistance of 73 ohms. In real life, dipoles hang over ground, ideally at $\lambda/2$, where they radiate in the typical two lobe pattern. If the antenna gets closer to ground the radiation resistance diminishes, an important point when operating NVIS antennas. Once the antenna gets below 0.2λ the radiation resistance increases again, due to inductance effects from the ground.

Horizontal, elevated antennas, like dipoles, do not have a ground resistance component. In these antennas, the ground acts as a reflector, affecting the radiation pattern of the antenna but not contributing to the resistance of the antenna. A center fed horizontal dipole at resonance has no reactance at the feed point and the resistance of the antenna is the sum of the radiation resistance and the physical, ohmic resistance of the antenna components. Since the latter is generally very low, the feed point resistance is approximately equal to the radiation resistance of the antenna. Also, since at resonance there is no reactance, and impedance equals the sum of resistance and reactance, the feed point impedance of the resonant antenna is equal to the radiation resistance of the dipole.

Antenna efficiency is defined as the radiation resistance of the antenna divided by the total resistance of the system. In the horizontal dipole, as mentioned above, the resistance of the physical antenna components is very low, which makes the efficiency of the dipole about 99%.

Vertical $\lambda/4$ antennas set on the ground have a more significant ground effect than dipoles, since the ground acts as the other half of the antenna and ground resistance becomes an important factor in antenna performance.

One way to express antenna efficiency is the radiation resistance divided by the total resistances of the antenna system, as mentioned previously. With a large ground resistance component, the total resistance of the system increases significantly and the efficiency of the antenna drops drastically, with values as low as 20%.

Adding ground radials to the antenna lowers the ground resistance and raises the efficiency, the magnitude of the effect depending on the number and length of the radials. For example, a vertical $\lambda/4$ antenna with 120 radials of $\lambda/4$ length will have efficiency close to 100%.

Radiation resistance defines the input impedance of a resonant antenna, an important value to know, because it determines the best type of feed line to use and if an impedance matching device is required to maximize antenna performance. It is one of the many bits of knowledge that hams must acquire in order to have stations that provide good results and satisfaction to our hobby..



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, 18.0775, 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	W12KPB	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							