



## INDIAN RIVER ARC

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

VOLUME XLVIII, NUMBER 2

# SPURIOUS EMISSIONS

FEBRUARY, 2026

## OFFICERS

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N4UTQ

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KJ4VGR

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KN4JN

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KUOR

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ROBERT SCORAH

WOAGE

### PAST PRESIDENT

VIRON PAYNE

N4VEP

## CLUB MINUTES

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

Following the Pledge of Allegiance, Steve called for visitors. There were none.

President's Report: Steve mentioned that he sent the required club's annual report to the state. He also mentioned that for the Saturday radio tests participants used multiple modes so far, some being less complicated than others.

Winlink is the mode preferred by the EMCOM groups since it can send email reports using the internet or HF. This past weekend he looked into it but was unable to make a radio contact in the frequencies provided for 15 meters. There followed a brief discussion on how Winlink relays messages, but no one had a clear answer as to the process. We need more study to learn the different modes it uses and how to effectively send messages, especially in emergency situations. Vice-President Report: Sam, KJ4VGR reported that he re-

mounted his HF antenna using a tilt mount with a winch and now he can easily crank his antenna up without difficulty and take it down during bad weather.

Treasurer's Report: The General account received \$460.00 and went from \$1316.38 to \$1776.38. The Equipment Fund went up to \$2037.65. The report was accepted for audit. Next, the minutes of the January meeting were approved. Technical Committee Report: Dave, KUOR said that while visiting the 145.37 MHz repeater site with Chris they noticed that the Amstron power supply meter read 4 watts output. The next day Dave returned with measuring equipment and tested all the power sources and found that everything is in order. It appears that the meter in the power supply is defective. Dave then went on to discuss his visit to the Orlando Hamcation and some of the purchases he made, including a FlexRadio Aurora capable of 500 watts output with a high efficiency

amplifier. The transceiver, power supply, amplifier and tuner are all in an 18 lbs unit that can be remote controlled. He also mentioned that his antenna tower project is progressing slowly as he is working on the ground mounting plate that needs new holes drilled. When all is ready he hopes to have an antenna party to raise the tower.

Past President Report: Viron, N4VEP advised the group that this next Saturday, February 21, there will be a QRP event at Tom Statham Park, starting at the usual time.

Following the business meeting, Steve showed a series of pictures illustrating the mass illegal immigration during the Biden era and the limited detention and deportation by contrast occurring now. The meeting adjourned at 8:18 PM.

Respectfully submitted,  
Armando Delgado, KN4JN  
Secretary

## HAPPENINGS

One of the best amateur radio contests of the year, the ARRL International DX Contest, will occur in February and March. This contest is divided into two separate sessions: a CW component and a phone portion. They both share the same rules and identical exchanges. They are also extremely popular around the world and guarantee plenty of DX contacts.

The CW portion is on the third full weekend of February. This year it is the weekend of February 21-22 starting at 00:00 UTC, which for the USA is the Friday February 20 at 7:00 PM and goes for 48 hours until Sunday February 22 at 7:00 PM EST.

The exchange is very simple. North American stations send a signal report and their state (or province, for Canadian stations).

Dx stations send a signal report and their transmit power.

A typical exchange, after exchanging callsigns would be 5NN FL with a DX reply of 5NN K (if using 1 KW, the most common DX power used). 500 W is also common and is sent as 5TT, the T being shorthand for O.

The usual CW speeds are between 25 wpm and 40 wpm, but

CQing stations will repeat their callsigns, making it possible to copy them piece meal.

For those wanting to improve their CW skills this is a great opportunity. Moreover, most modern transceivers have a memory function that allows the operator to send a recorded message. Thus, the exchange of 5NN FL could be sent with the push of a button

## HAPPENINGS

at any desired speed.

The phone portion of the contest will be on the first full weekend of March. This year is the weekend of March 7-8 and just like the CW portion, it starts at 00:00 UTC on the 7th which makes it 7:00 EST on Friday the 6th for us.

The exchange is the same as for the CW portion for both the North American and DX stations.

The past few months have seen great propagation and barring any surprise solar explosion there should be the best propagation we will see in many years.

ARRL has already launched the America250 Worked All States (WAS) year-long event, calling on amateur radio operators worldwide to make contact with all 50 US states in honor of America's 250th anniversary. W1AW/Region number will operate from all 50 states twice during the year. [\[More information.\]](#)

Edge of Space Sciences, an ARRL Affiliated Club in Englewood, Colorado, has been monitoring three amateur radio pico balloons as they continue to circumnavigate the globe. You can track the balloons on [aprs.fi](http://aprs.fi) with this [LINK](#). Flight logs of both WSPR and APRS trackers, as well as various balloon configurations, are available. More information can be found on the club's website, [www.eoss.org](http://www.eoss.org).

World Amateur Radio Day, held on April 18 each year, is celebrated worldwide by radio amateurs and their national associations, which are organized as member-societies of the International Amateur Radio Union (IARU). It was on this day in 1925 that the IARU was formed in Paris. American Radio Relay League (ARRL) Co-Founder Hiram Percy Maxim was its first president. The first Ham Radio Open House event last year was tied to IARU's centennial celebrations. This year's activity is part of ARRL's "Year of the Club" theme.

A Spanish special event station, EG1912T, will be on the air from 0000 UTC on April 10, the date on which the Titanic set sail from Southampton, England, until 2359 on April 15, the date on which it sank after hitting an iceberg. The call sign is unique for this event. EG identifies Spain, 1912 signifies the year the ship sank, and T stands for Titanic. All modes will be available with special emphasis on telegraphy. All stations that contact EG1912T using CW will receive a special QSL card. All other stations making contact on any frequency or mode can receive a confirmation via eQSL and LoTW.

From the ARRL Board meeting: a summary of the financial status of the organization. Maybe they might consider lowering their membership fees.

### *Receipt and Consideration of Financial Reports*

18. Mr. Sager reviewed the investment results for the fourth quarter and 2025 overall as detailed in his written report.

*The fourth quarter 2025 return on investments was \$948,836, or 2.3%. The return on investments for the 2025 year was \$6,149,113, or 15.9%. 2025 was the third consecutive year of double-digit investment returns—a rare event. Mr. Sager compared market index returns with the ARRL portfolio returns for the fourth quarter and 2025 year and indicated that portfolio performance is ahead of index returns, largely due to the ARRL portfolio's overweighting in international equities and underweighting in small capitalization equities. The value of the ARRL investment portfolio as of December 31, 2025, was \$43,004,941. The amount of undesignated and board designated portfolio assets as of December 31, 2024 (the date of the last published audit) was \$19,533,728*

## ON THE AIR

### **War Shipping Administration created 1942**

Feb 21, 1300Z-2100Z, K3S, Odenton, MD. Nuclear Ship Savannah ARC. 7 14 21 28. QSL. ULIS R FLEMING K3LU, 980 Patuxent Road, Odenton, MD 21113. [qrz.com/db/k3s](http://qrz.com/db/k3s)

### **Republic of Texas SES**

Feb 23-Apr 21, 0000Z-2359Z, WA5DTK, Montgomery, TX. TX History Operators Club. 7.030 7.230 14.040 ~ 4.260. QSL. Barry Brewer, 10519 Bilsing Ct, Montgomery, TX 77356.

### **Freeze Your Keys - 22nd Winter Operating Event**

Feb 28, 1400Z-2200Z, WOEBB, Leavenworth, KS. Kickapoo QRP ARC. 7.035 CW 7.240 SSB 14.058 CW 14.325

SSB. QSL. Gary Auchard - WOEBB, 34058 167th Street, Leavenworth, KS 66048. Please send a SASE with your QSL card. Other bands will be used also if open. [w0mna74@gmail.com](mailto:w0mna74@gmail.com)

### **Pelican Island National Wildlife Refuge**

Mar 7, 1400Z-2100Z, W40T, Vero Beach, FL. Vero Beach Amateur Radio Club. 14.250 14.035 28.350 21.290. QSL. Vero Beach Amateur Radio Club c/o:IRC EOC, 4225 43rd Ave., Vero Beach, FL 32967. W40T.com

### **YL POTA Party - Erie Canalway**

Mar 7, 1300Z-2359Z, N3ARB, Spencerport, NY. Upstate New York POTA (Parks On The Air). 14.320 7.230. QSL. Angela Brown, 123 North Dr, Buffalo, NY

14226. <https://www.facebook.com/events/2353219948458429>

### **Celebrating Florida's Statehood**

Mar 14, 1300Z-2200Z, W4F, Winter Springs, FL. Lake Monroe Amateur Radio Society and Ham Radio Outlet Winter Springs. 14255 21335 28360. Certificate. Wojciech Kossowski, 1392 La Paloma Circle, Winter Springs, FL 32708.

CY0S Team will be active from **Sable Island**, IOTA NA - 063, 20 - 29 March 2023. Team - WA4DAN, WOGJ, N2TU, K4ZLE, W4DKS, WW2DX, W2GD.

They will operate on All Bands,

CW, SSB, FT8, EME, Sat. QSL via WA4DAN, ClubLog OQRS, LOTW.

8R1WA Team will be active from **Guyana**, 19 - 27 February 2026. Team - Alex IZØEGA, Paolo IZØEVI, Diego IZØEWJ, Luca IZ6DSQ. They will operate on HF Bands plus 6m, SSB, Digital modes. QSL via IZØEGA, LOTW, ClubLog OQRS

TX5EU Team will be active from **Raivavae Island**, IOTA OC - 114, Austral Islands, French Polynesia, 12 - 25 March 2026. Team - PG5M, Gerben; PA3EWP, Ron; DL2AMD, Rainer; PA2KW, Evert; DK2AMM, Ernö and DL2AWG, Guenter (leader). They will operate on HF Bands. QSL via DL2AWG.

## Biologic vs Pathologic by Armando Delgado, KN4JN

In the February, 2026 edition of QST there is an article discussing the FCC radio emissions regulations for handheld amateur radios. The author, Gregory Lapin, PhD, PE, N9GL, goes on to talk about the fact that the FCC does not regulate amateur radio equipment manufacturers for radio emissions, as they require for commercial radios, but expects amateurs to follow the emissions control guidelines that the FCC mandates for all transmissions between 5 KHz and 6 GHz. He also briefly covers the method the FCC uses to establish the specific abortion rate (SAR), the standard unit used to gauge radio emissions effects on tissues.

This article and many others previously written to discuss radio emissions regulations fail to clarify an important point on the issue of radio emissions' effect on living tissues. The reason for radio emissions regulations arose some years ago after popular concerns about harmful effects of radio transmissions on humans. To this date, no conclusive study has shown any pathological effects in humans resulting from exposure to radio waves at the powers and frequencies used in amateur radio. Likewise, there is no evidence of biological effects on living tissues exposed to radio waves of those same powers and frequencies.

There is a big distinction between biological and pathological effect. Biological effect in living tissues is a temporary change in the tissues resulting from exposure to external factors. When those factors are removed, the tissues return to their previous state without any structural or functional changes. On the other hand, a pathological effect causes a permanent change in the living tissues manifested by tissue destruction or permanent alteration in function.

To illustrate the difference, if a person walks out into sunlight they will feel warmth. This is a biological effect caused by the infrared component of solar radiation. The visible light portion of the solar spectrum, the ROY G BIV range, will cause a biological effect in the retina of the eye allowing us to see the world in all its glory. If the person stays in the sun with exposed skin very long, he or she will suffer sunburn, a pathological effect caused by the ultraviolet component of solar radiation, a form of ionizing radiation.

The wavelength of visible light is in the nanometer range, which is orders of magnitude more energetic than the common radio frequency emissions in the meters and centimeters range. In contrast to the radio waves, the visible light rays have a definite biological effect on humans. Besides, on a sunny day, at noon, sun radiation generates 1000 watts per meter square of energy on the surface of the Earth, a significant greater amount of energy than regular radio transmissions; yet, no one seems concerned about harmful effects of visible light on human beings, even though most humans are exposed to this radiation almost daily for their entire life.

The concern over radio emissions stems from two factors. First, the natural human fear of things that our senses cannot detect. The other is the result of nomenclature. Radio frequency emissions are referred to as radiation; likewise, ionizing radiation emissions also use the same term. Yet, there is a big difference between the two. Ionizing radiation is always pathologic, while radio frequency emissions have not been shown to cause any human tissue damage at the powers and frequencies commonly used.

Following the drop of the atomic bombs in Hiroshima and Nagasaki during WW2, the US government conducted extensive and detailed longitudinal studies on the effects of ionizing radiation on the dead and the survivors of the blasts. These studies looked not only at the immediate effects of the blasts but they followed survivors for their entire lives to determine diseases and causes of death of those individuals, shortly after the bombing and years later. These studies, along with subsequent studies of accidental exposures to ionizing radiation, led scientists to develop a fairly accurate scale of harmful effects of ionizing radiation in humans. The term for this scale is roentgen equivalent man (REM). In effect, it is well determined that most humans exposed to 600 REM will die.

As the FCC tried to figure a scientific method to analyze human

effects of radio emissions, they decided to follow the system used by the ionizing radiation studies. Since they could not show pathological effect on living tissues, or for that matter biological effect, they opted for a proxy method of showing biological effect on non-living tissues. They exposed a measured mass of dead tissue set in a controlled temperature environment and with temperature reading probes inserted to radio frequency emissions of varying power levels and frequencies. A temperature change in the probes indicated a positive result. The rest was simple math: divide the energy of the radiation at that point by the mass of the tissue and the result was Watts/Kg, or specific absorption rate.

So far, so good in the analogy. The only problem is that REM looks at pathological effects in humans, while SAR looks at biological effects in dead tissues. Apple and oranges. Yet, the FCC argument is well taken. They argue that if one cannot demonstrate a biological effect in tissues, then there could be no possibility of a pathological effect. Their guidelines on radio emissions aim to establish ranges where radio emissions from transmitters do not exceed the theoretical distances determined by the SARs for a potential biologic effect of those emissions.

The masses demanded the government show them that they were safe from radio frequency emissions and the government gave them proof. So, as good citizens, we want to follow the rules. We want to do our station evaluations for potential emissions and keep a register, in case a visitor or neighbor raises any concerns and we can show them that they are absolutely safe.



### 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](mailto: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
<b>WBFM</b>							
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	
<b>DMR</b>							
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
<b>ATV</b>							
427.250	250CO4			K4ATV	COCOA BROADCAST CT.	LISATS	NTSC INPUT 439.25 See www.lisats.org
<b>PACKET STATIONS:</b>							
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
<b>BREVARD RACES/ARES SIMPLEX</b>							
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
<b>SIMPLEX</b>							
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							