



**INDIAN
RIVER ARC**

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

VOLUME XLVI, NUMBER 11

SPURIOUS EMISSIONS

NOVEMBER, 2024

CLUB MINUTES

OFFICERS

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N4UTQ

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KJ4VGR

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ARMANDO DELGADO
KN4JN

TREASURER

DAVID LERRET
KU0R

DIRECTOR

ROBERT SCORAH
WOAGE

NEWSLETTER EDITOR

ARMANDO DELGADO
KN4JN

The meeting was called to order at 7:15 PM by Steve Luchuk, N4UTQ, club president. Following the Pledge of Allegiance, Steve called for visitors; there were none.

President's Report: The club's Christmas party will be on December 5 at the Red Lobster restaurant on Merritt Island, starting at 6:00 PM.

There will be a Simplex Exercise on Saturday, November 23 starting at 9:00 AM on 147.42 MHz. The 146.88 MHz repeater will serve as backup.

Steve mentioned that Curtis Taylor, KK4PYP is seriously ill suffering from leukemia and wants to donate his radio equipment to the club. Steve asked for prayers for Curtis,

Treasurer's Report: The checking account is \$1138.09 and the Equipment Fund stands unchanged at \$2013.65. The report was accepted for audit.

Next, the minutes of the October meeting were approved.

Technical Committee Report: Dave, KU0R discussed the monitor failure at the meeting place at the church that has caused difficulties with the presentations, a replacement monitor is available and the problem should be fixed.

Dave then addressed the issues with the 145.37 MHz repeater that recently has exhibited some spurious sounds rendering it unusable on certain days. So far Dave's evaluation suggests a non-linear, broad band intermodulation problem most likely caused by rust formations on the tower close to the repeater antenna. The fact that the problem appears on moist days reinforces that suspicion. A tower climb is being planned to inspect the antenna site and clean any suspect rust deposits.

All the other repeaters are in good working order.

Steve next introduced the budget for 2025. With 49 members, dues income stands at \$980. The club's liabilities are mostly insurance related with liability insurance topping the list this year at \$710.65. Equipment insurance is \$168.51 and Florida corporate fees being \$100.84. All for a balanced budget.

Following the budget presentation, there was a discussion regarding the high liability insurance cost. The end result of the discussion was that insurance costs have tripled over the past year and in order to have our meeting place the club has to have its own liability insurance. This is a cost the club cannot avoid. Possible solutions are to try to raise money through means

other than club fees, in order to cover these expenses, but there are no easy solutions.

After the discussions, the budget was accepted.

Following the business meeting, Randy Hunter, W4MIF gave a fine presentation on a digital system he implemented in his home using the Yaesu Fusion system's mode WIRE-X. His place is a node that allows digital radios to connect around the world using the Yaesu Fusion system that also allows for other modes, like the Icom D-STAR, C4FM and even analog FM radios to interconnect. At his location, Randy has an internet connection that lets stations reach the entire world through the system. The Yaesu web site has a list of all the active nets and repeaters that participate in this enterprise. He also mentioned that there are hotspot devices available that allow cell phones to connect to the internet using digital radio modes.

The national Yaesu Fusion system frequency is 145.5625 MHz. This is also Randy's system access frequency.

Following the presentation, the meeting adjourned at 8:23 PM.

Respectfully submitted,

Armando Delgado, KN4JN

HAPPENINGS

FEMA is providing cybersecurity training courses. The courses are self-paced and publicly available at no cost from the Federal Virtual Training Environment and the National Cybersecurity Preparedness Consortium (NCPC). Course topics range from cyber essentials and fundamentals of cyber risk management to cyber ethics and mobile device security. To access these courses, visit the Cybersecurity Awareness Training

website at https://community.fema.gov/PreparednessCommunity/s/cert-trainings?language=en_US&tabset=82942=19a04

Fall is the best time of the year for amateur contesting. Among the best contests are the ARRL November Sweepstakes of which

the phone portion was on November 16-18. This is a challenging contest, due to its complex exchange.

Next, will be the ARRL 160m contest on December 6-8 and following that the ARRL 10m contest on December 14-15 that this year hopefully will offer great contacts, considering the latest solar flux readings.

The ARRL published the results for Field Day 2024. Nearly 1.3 million contacts were reported during the 24-hour event. Entries were received from all 85 ARRL and Radio Amateurs of Canada sections, as well as from 27 different countries from outside the US. Results are available now on the ARRL Field Day website at <https://field-day.arrl.org/fdresults.php> and in the De-

HAPPENINGS

ember issue of QST. Our club scored 1095 total points running as a 2AC class, which is a club using commercial power.

Throughout the month of November, AMSAT will celebrate the 50th anniversary of amateur satellite AMSAT OSCAR 7 (AO-7), a SmallSat launched on November 15, 1974. AO-7 is still working and has been nicknamed the “sleeping beauty” of satellites because it came back to life after years of “sleeping.” After operating well for 6.5 years, in 1980, AO-7 went offline. It stayed asleep for 21 years, but then one day in June 2002, the satellite woke up again. The AMSAT website at <https://www.amsat.org/amsat-ao-7-a-fifty-year-anniversary/> has more information and details.

The National Traffic System has a series of training videos showing the nature and purpose of the NTS as well as explanations of the operational details of traffic handling, radiograms and their format. The

videos can be found on the NTS2 website at <https://nts2.arrrl.org/promo/>, and can be downloaded.

The 2025 ARRL Foundation Scholarship Program will begin accepting applications on October 30, 2024. Applications will be accepted through January 6, 2025. More than 100 scholarships ranging from \$500 to \$25,000 will be awarded. All applicants must be active FCC-licensed amateur radio operators. Information, along with the link to the online application, can be found on ARRL’s website: www.arrrl.org/scholarship-program.

Propagation predictions for the end of November and early December promise a good chance for excellent DX openings in the higher HF bands, namely 15m, 12m, 10m, and possibly 6m. The solar flux numbers are as follows: November 19 - 25; 270 on November 26 - 27; 255 and 250 on November 28 - 29; 240

on November 30 and December 1; 230 on December 2 - 3; and 225 and 220 on December 4 - 5. Likewise, the geomagnetic indices are predicted to be relatively low on most days. Estimated planetary A index is 8 on November 18 - 19; 5 on November 20 - 24; 10 on November 25 - 26; 8, 5, 5 and 10 on November 27 - 30; then 12, 9, 8 and 7 on December 1 - 4. Of course, these are baseline readings. Intervening solar flares or CMEs may change results on any given day.

On December 1, 2024, the Grimenton Radio Station in Sweden, callsign SAQ, will transmit using the original Alexanderson alternator on VLF 17.2 kHz CW to commemorate 100 years since the original transatlantic transmission on December 1, 1924. The operation will begin at 10:00 UTC (5:00 AM EST). The transmission event can be seen live on the Grimenton YouTube channel.

December is **Youth on the Air** (YOTA) month. Beginning on December 1, 2024 at 00:00 UTC through December 31, 2024 at 23:59 UTC amateur operators younger than age 25 will be on the air worldwide to commemorate the occasion. The USA assigned the special call signs K8Y, K8O, K8T, and W8A for this activity. In other countries call signs will use the prefix “YOTA”. This event is a great opportunity to encourage young hams to be active in the hobby.

The first **FT Challenge** will take place on December 7 - 8, 2024. This new contest uses the standard FT* exchange of grid square and signal report. The scoring is distance-based where one base QSO point is earned for each contact, and distance points are added for each 3,000 kilometers. Multipliers are 2-character grid fields, which count once per band. Stations can be contacted once per band, regardless of whether FT4 or FT8 is used. Complete rules are posted at the FT Challenge website at www.rttycontesting.com/ft-challenge.

ON THE AIR

RODRIGUES ISLAND, 3B9. Kazu, MOCFW is QRV as 3B9/MOCFW until November 27. Activity is on the HF bands. He will be active as 3B9KW in the upcoming CQ World Wide DX SSB and CW contests. QSL via LoTW.

GUYANA, 8R. Aldir, PY1SAD is QRV as 8R1TM from Georgetown until November 24. Activity is on the HF bands, and 6 meters from Grid Square GJ06vs, using CW, SSB, various digital modes, and on various Satellites. QSL to home call.

Throughout November, members of Radio Club Limburg (RCLB) in the North Limburg region of the **Netherlands**,

will activate special event station PF16F. The event marks the retirement from the Royal Netherlands Air Force of the F-16, or Fighting Falcon, aircraft after 45 years of service, from 1979 to 2024. RCLB members hope to contact amateur radio operators around the world in November. QSL information is available from QSL Manager PD8RW. For additional information, visit the club’s website.

Autumnal Olivia Digital Mode QSO Party

Nov 27-Dec 1, 0000Z-2359Z, NW7US, Fayetteville, OH. Olivia Digital DXers Club. 14.071 7.071 21.071 28.121. Certificate. Tomas, NW7US, PO Box 110, Fayetteville, OH 45118. 1st An-

nual Olivia Digital Mode Autumnal QSO Party, fourth QSO party so far since 2023 (We have Winter, Spring, Summer, and Autumn QSO parties). <https://oliviadigitalmode.org>

83rd Anniversary of Civil Air Patrol

Nov 30-Dec 1, 1500Z-2300Z, W9CAP, St. Charles, IL. Illinois Wing Civil Air Patrol. 7.255 14.250 18.125 28.450. Certificate. Attn: Lt Col Robert Becker, P.O. Box 4027, St. Charles, IL 60174. www.qrz.com/db/w9cap
QCWA Annual Special Event - W2MM 77th Anniversary
Dec 1-Dec 7, 0000Z-2359Z,

W2MM, Sandpoint, ID. Quarter Century Wireless Association, Inc.. CW: 3.540 7.035 14.040 21.050 28.050 SSB: 3.810 7.244 14.262 21.365 28.325 FT8/FT4. Certificate. QCWA Activities Manager, 1613 Poplar Street, Sandpoint, ID 83864. Stations will be active from around the country with this call sign

www.qcwa.org
Flight 19, The Lost Avengers Dec 7, 1300Z-2100Z, K4P, Fort Lauderdale, FL. Parrot Amateur Radio Club Inc. 14.240 7.210 18.150 21.315. QSL. Gerald Deitch, 2621 nw 105 lane, Fort Lauderdale, FL 33322. fogdaddy1@gmail.com

The Solar Indices by Armando Delgado, KN4JN

Last month, NASA declared that solar cycle 25, the current solar cycle, reached its maximum. This maximum stage is expected to last for at least another year.

During the past year, the solar flux has remained on a daily basis in the range between 150 and 200, with that top number being significantly exceeded several days. Unfortunately, during this same period of time HF radio propagation failed to reach the expectations that these high solar flux numbers normally promise. The explanation for this discrepancy is not simple, but understandable.

To understand HF radio propagation one must first know the ionosphere, that layer in the upper atmosphere that bends HF radio signals back to Earth. Firstly, the ionosphere is not that homogeneous dome seen in diagrams pictured in texts explaining the ionosphere. The ionosphere is created by solar radiation that flows in irregular waves from the sun in what is called the solar wind. This plasma flow from the sun behaves just like the wind on the surface of the Earth: it shifts direction and intensity continuously. The result is a patchy response in the atmosphere that creates areas of high ionization interspersed with regions of lesser ionization, much like the clouds in the sky. Areas with dense clouds will bend radio signals readily, while areas with less ionization may have a lesser effect on the radio waves.

During the past year, the sun produced a large and frequent number of coronal mass ejections (CME) and solar flares. These events occurred almost daily and sometimes several events in a single day. Solar flares invariably trigger intense ionizing radiation into space. Upon reaching the Earth's atmosphere, these intense impulses create massive ionization that results in radio waves being diminished or absorbed altogether, rather than bent or reflected back to Earth, thus suppressing propagation. The intense portion of this effect is relatively brief, lasting generally less than an hour, but the ionosphere will require several hours to return to baseline and during that time radio propagation will be rather irregular.

CMEs generally are more intense than solar flares, creating a dual effect that will affect the ionosphere and radio propagation differently. During the initial flare, intense ionizing radiation flows into space at the speed of light. When facing Earth, this burst or radiation reaches our atmosphere in a mat-

ter of minutes, 8.3 minutes, to be exact. This blast, like with solar flares, overcharges the ionosphere and causes radio signals to fade or disappear altogether. The peak effect may last up to one hour, but it may take several hours for the ionosphere to settle down, so radio signals may continue to be weak or irregular during that recovery time.

The second part of a CME results from the ejection of a large amount of particles into space. These particles, in the form of protons and electrons, that are more massive than the initial burst of photons and travel at slower speeds, take 2-3 days to reach Earth. Upon striking the upper layers of our planet, these charged particles align themselves with the Earth's magnetic field and generate intense electric currents in the ionosphere. These electric currents create magnetic fields that reach to the surface of the Earth, where at the same time they induce electric currents in conductive materials. These currents can be intense and destructive, as experienced in the Carrington Event of 1859 when telegraph lines and telegraph stations were damaged by the powerful induced currents and more recently, in 1989, when a geomagnetic storm triggered an electric power failure in Canada by overcharging power lines.

There are observatories around the world that continuously monitor the magnetic fluctuations caused by these atmospheric events. Presently, there are 13 places around the globe that monitor these events, 11 on the northern hemisphere and 2 in the southern half of the world. These observatories maintain a continuous track of the magnetic fluctuations caused by changes in the ionosphere. These fluctuations, measured in nanoTeslas, are reported every three hours in a semi-logarithmic scale called the K index. The K index is scaled from 0 to 9. Likewise, all of the reporting stations around the globe will give an average of all the respective K readings in the form of the planetary K index (K_p) every three hours.

Because the K index is a semi-logarithmic scale, it cannot be averaged over time, so to solve that technical problem the A index was developed, based on the K index. The A scale runs from 0 to 400 and

is a linear scale. Every 3 hours each observatory publishes a K index and a corresponding "a" index. At the end of a 24 hour period, all the "a" indices of a particular station are averaged and an A index is published for each station. Also, after 24 hours an A_p index will be added, reflecting the world wide effect.

Radio signals are electromagnetic waves and will interact with the magnetic fields created by the electric currents in the ionosphere. Those magnetic impulses may bend or deflect the radio waves, thus affecting propagation. Invariably, the more intense the fluctuations the worse is the effect on radio propagation.

Generally, the best circumstances for good radio propagation would be, first, a high solar flux number along with at least 24 hours without solar flares or CMEs. That would provide a stable ionosphere. Second, low K and A indices. K index below 3 and an A index below 10 would provide the best conditions, particularly in the higher HF bands.

Yet, one must not forget that propagation is not uniform around the world, particularly when using the long distance bands, like 10m. Propagation in Australia may not be what it is in Florida and so even if we can hear a strong signal from another part of the world, they may not hear us.

The long term good news is that once the peak of cycle 25 passes, the number, frequency, and intensity of solar flares and CMEs should diminish and become less common. During those last years of the cycle, we may have high solar flux numbers without the interference of the intense solar bursts. So the best is yet to come.



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	W4NXL	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		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	W4NXL	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 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							