VOLUME XLIII, NUMBER 4

SPURIOUS EMISSIONS

APRIL, 2022

INDIAN RIVER ARC

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

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KN4JN

CLUB MINUTES

The meeting was called to order by President Steve Luchuk, N4UTQ at 7:15 PM. After the Pledge of Allegiance, visitors David Norman, KK4JMZ and his wife Linda, KK4JNB were introduced. Steve then called for the President Report, Vice-President Report, and Director-at-Large and none had anything to report. The Past President did report that a new club web site is in the makings and should soon be operational. It should modernize our current web site and correct some of its deficiencies.
Next, the minutes of the March meeting were approved.
Treasurer's Report: The checking account has $1366.17 and the Equipment Fund $1883.65. The report was approved for audit.
Old Business: none.
New Business: Due to the power limitation of 100 watts for Field Day operations, the club is considering building double bazooka antennas for 40 meters and 20 meters. These antennas have more gain than the regular dipole but are tricky to build. Steve showed a diagram with the measurements of that type of antenna and an antenna party might be held at the next chili-dog social on April 30 after the Simplex exercise (9:00 AM). April 30 is also the Florida QSO Party and the club plans to participate.
Other upcoming activities: The March for Babies this year will be held in Leesburg and the club will not participate. An added reminder, the Wednesday Net is held every Wednesday at 7:15 PM on the 145.37 MHz repeater.
Following the business meeting, Steve presented a series of equipment options to deal with power outages. The average outage only lasts 4-5 days, but occasionally they may last much longer. Cell phone towers generally run on batteries and work as long as those batteries get charged. Likewise, gas fueled generators will perform as long as there is fuel. If the fuel supply dries up, the generator is out. Batteries are an important source of power for communications, but they need to be charged. With smart power management, a battery may last 3-4 days.
Solar power is certainly an important source of energy for emergencies. Solar panels can recharge batteries, but for an efficient operation, they require some special management. Tools for this purpose are a DC power bus and a solar charge controller. A problem with the latter is radio noise caused by the cheaper available controllers; however, some cheap controllers may work without problems.
Another useful piece of equipment is an inverter that can provide AC power for other household items. However, to power sensitive electronic equipment, a pure sine wave inverter would be a good idea. Capacitors are available that can provide power requiring high currents for short periods of time. They have a very low internal resistance, so they generate little heat in operation. There are capacitors available that can function as car batteries.
Finally, Steve showed a number of photos of go-kits that hams can assemble to carry in the field during emergencies. The ideal go-kit should have multiple radios covering HF, VHF, UHF, to monitor multiple bands simultaneously and have a Signalink or other similar device to link the radios to a computer for digital mode operations.
Go-kits will require antennas to get on the air. Practical antennas for this purpose are a screwdriver antenna, a loop antenna with an adequate tuner, for HF a long wire antenna, and for VHF/UHF J-pole antennas perform well, are easy to carry and easy to set up. Other antennas to consider are the discone type antennas. They are small and perform well on single-band designs.
After concluding the presentation, the meeting adjourned at 8:18 PM.

Respectfully submitted by

Armando Delgado, KN4JN
Secretary

HAPPENINGS

The 2022 running of the **Armed Forces Day (AFD) Cross-Band exercise** will be held on May 14, 1300 – 2200 UTC. A complete list of participating stations, modes, frequencies, times, and other details will be announced on April 1. The event is open to all radio amateurs. Armed Forces Day is May 21, but the AFD Cross-band military-amateur radio event traditionally takes place 1 week earlier, in order to avoid conflicting with Dayton Hamvention®. During the exercise, radio amateurs listen for stations on military operating frequencies and transmit on frequencies in adjacent amateur bands.
An AFD message will be transmitted utilizing the Military Standard (MIL-STD) serial PSK waveform (M110), followed by MIL-STD Wide Shift FSK (850 Hz RTTY), as described in MIL-STD 188-110A/B. The AFD message will also be sent in CW and RTTY.

It's official. Starting on April 19, 2022 the FCC will charge a fee of $35.00 for all amateur licenses,: new, renewals, and vanity.

Use of HF by Russian troops in Ukraine Shephard Media carries a story about the use of HF communications by the Russian troops invading Ukraine. The Russian Army relies heavily on HF radio, using transmissions of 3-30MHz. Significant quantities of unencrypted HF military traffic has been observed on Russian Army HF networks since the invasion of Ukraine began on 24 February. The amateur 'radio ham' community has documented military HF traffic on HF frequencies of 4.2-7.8MHz. Read the full story here

HAPPENINGS

WRTC 2022 Special Event Station Award Begins New Cycle World Radiosport Team Championship 2022 (WRTC 2022) special event stations have been on the air to call attention to the international competition, now set to take place in July 2023. Special call signs are active during this event. More than 100 Italian radio amateurs will activate special WRTC call signs, one for each Italian call district, concluding on July 10, 2022. A first-time award promoting WRTC 2022 will be available. Look for these call signs to be active during some contests, concluding with the 2022 IARU HF World Championship.

WSPR Beacon on the Air from Antarctica AMSAT Argentina has assembled and delivered a permanent WSPR (Weak-Signal Propagation Reporter) beacon system to the Argentine research station at Esperanza Base on the Antarctic Peninsula. Using the call sign LU1ZV, the 200 mW beacon is presently active on 40, 20, 15, and 10 meters at 7.0386, 14.0956, 21.0946, and 28.1246 MHz, respectively, and reception has been reported by stations throughout the world.

Many of the Advisory Notices sent out each month by the ARRL Volunteer Monitor Program go to stations heard operating outside the operator's license privileges. While some may be doing so deliberately, it seems that many of these instances reflect a lack of clarity regarding the Part 97 — Amateur Radio Service rules.

Typical cases often involve operators holding Technician- or General-class amateur licenses being heard on a frequency or band not permitted by their license privileges. Most recent incidents have frequently entailed FT8 digital mode operation by Technician licensees on 20 and 40 meters. Technician licensees do not have any operating privileges on 20 meters, let alone digital privileges, and FT8 is a digital protocol.

Technicians (and Novices) may operate CW between 21.025 and 21.200 MHz on 15 meters, from 7.025 and 7.125 MHz on 40 meters, and from 3.525 to 3.600 MHz on 80 meters, but they do not have any digital (data) mode privileges on these bands.

ON THE AIR

50th Anniversary of Apollo 16 Apr 23-Apr 27, 1400Z-2359Z, W5RRR,NN4SA,+, Various. NASA On the Air (NOTA). 14.045 14.271. QSL. see each club QRZ page, na, na. NASA On The Air (NOTA) is back for 2022. We'll be operating from various NASA centers in commemoration of Apollo 16's 50th Anniversary, and later other milestones throughout the year. Info/updates as well as tracking and scoring will be available at nasaontheair.wordpress.com. Individual clubs will provide QSL information at their QRZ.com pages. nasaontheair.wordpress.com

Remembering the 80th Anniversary of the Doolittle Raid Apr 23, 1500Z-1900Z, NE1PL, Fall River, MA. USNR. 14.259; 40 meters. QSL. Rick Emord, KB1TEE, 135 Wareham St., Middleboro, MA 02344. We will be on 20 and 40 meters and other bands as equipment and people allow, phone, and digital. www.ne1pl.org

Handiham 55th Anniversary Special Event Apr 29-May 1, 1900Z-1900Z, W0ZSW, Minneapolis, MN. Handiham Radio Club. 14,265.000 7,040.000. QSL. Handiham Program, 3915 Golden Valley Road, Mail Route 78446, Minneapolis, MN 55422. On Saturday, April 30th, the Handiham Program will celebrate its 55th anniversary of helping people with disabilities get involved in the amateur radio hobby. This is a pretty special accomplishment for any organization! Listen out for CQ Handiham 55 on phone and CW! handiham.net

Golden Spike Special Event Station - W7G May 7-May 10, 1500Z-2300Z, W7G, Corinne, UT. Ogden Amateur Radio Club - OARC. 14.255 7.235 14.040 7.040. QSL. Ogden Amateur Radio Club - OARC, PO Box 3353, Ogden, UT 84409. Commemorating the Anniversary of the 1869 Driving of the Golden Spike, Completing the Transcontinental Railroad at Promontory Summit, Utah. Golden Spike National Historical Park, 6200 North 22300 West, Promontory Summit, UT 84307. w7g.org

VK9NT Team will be active from **Norfolk Island**, IOTA OC - 005, 14 - 25 April 2022. Team - VK3QB, VK3HJ, VK6CQ. They will operate on 160 - 10m CW, SSB, FT8. QSL via M0OXO OQRS.

The Frequency Measuring Test by Armando Delgado, KN4JN

Many amateur radio operators today take their operating privileges for granted, yet there was a time when those privileges almost did not happen. When Marconi introduced radio to the world, people immediately became fascinated by the new technology. Those early radios, both transmitters and receivers, were technically very simple and many enterprising individuals built their own equipment. In a few years, the number of operators bloomed and, considering the broad frequency characteristics of early transmitters, interference between stations soon became problematic.

In those days, the foremost use of radio was in maritime communications. The United States Navy believed that radio was critical to naval operations and critical for national security. After a number of incidents involving interference from outside operators, the Navy petitioned the US Congress to grant it control of radio transmissions in the United States and to ban all other operators, except for the commercial maritime operators. Likewise, commercial maritime operators, at the time dominated by the Marconi Company, wanted complete control of radio transmissions in civilian shipping and opposed operations by any other sources. The conflict came to a head in 1912 when the United States Congress debated the issue. Fortunately for amateur radio, a number of influential individuals came to the defense of the freelance operators. Among them was Hiram Percy Maxim, the son of Hiram Maxim, the inventor of the first machine gun, and a very politically influential person. He among others argued convincingly to Congress that amateurs were a national resource that should be preserved, that in times of emergency amateurs could provide critical communications when regular services were unavailable. Congress listened and

reached a compromise, passing the Radio Act of 1912. This law gave control of radio communications to the Commerce Department, required licensing of all radio operators, allowed amateur radio, and limited amateur operations to wavelengths shorter than 200 meters.

In 1914, Hiram Percy Maxim and Clarence Tuska founded the American Radio Relay League based on the idea that radio amateurs could provide a service to the country by relaying radio messages across the nation, a service that would be more critical in times of emergency. They also faced the challenge of freelance operators causing interference to other radio services, a problem that led to the passing of the 1912 Radio Act. By creating the ARRL, Maxim hoped to provide an organization that would consolidate amateur radio across the nation and at the same time give hams a voice in the political arena.

In 1927, the International Telegraph Union (ITU) held a conference in Washington, DC during which frequency segments were allocated internationally for the first time to all the radio services, including amateur radio. Many of the amateur bands we now enjoy were part of that initial assignment. With specific frequency assignments, hams had the responsibility of staying within their boundaries. The ARRL tasked itself with proving to the government that amateurs were responsible citizens wanting and willing to obey the rules, not the reckless individuals that other services accused them of being. To this end, in 1934 the Official Observer Corps of the ARRL became active, their function being to listen on the amateur bands for any infringement of radio operations, including out-of-band transmissions. The OO's worked in an advisory capacity with the amateur community and had no regulatory or enforcement powers. Noticing an infringement, they would send a postcard in the mail to the offending ham letting him know of the problem, and offering possible solutions.

The Official Observers were carefully selected from ham volunteers meticulously screened as to character, technical knowledge, and understanding of radio regulations. They also had to have good radio equipment and pass a frequency measuring test, during which they had to detect the frequency of a signal within a narrow margin of error. Passing this test was critical to prove that any challenge to an offending station was correct. The ARRL ran these Frequency Measuring Tests from W1AW several times a year and it became a popular activity with the amateur population in general, not just the Official Observers. Hams could send their measurement results to the ARRL, much like with radio contests. The FMT's were mandatory for the OO's until the 1980's when the ARRL changed some of their requirements, due to the quality of modern transceivers. After that time, the FMT became a voluntary activity that hams could partake in to challenge their operating skills. Until 2014, the FMT was sent primarily by W1AW twice a year, in April and November. Starting in 2015, W1AW discontinued the transmissions of the FMT and a group of volunteers coordinated by Connie Marshall, K5CM, of Oklahoma took over the transmissions. They still occur twice a year in April and November and the results are still managed by the ARRL.

Today, the FMT is still a very popular radio test and has a large amateur participation. Today's standards are very strict. The qualification ranges are 1Hz or less, 5Hz or less, and 10 Hz or less from the transmitted frequency. All readings higher than 10 Hz off the transmitted frequency do not qualify for recognition. With modern digital receivers and spectral displays, amateurs can detect signals very precisely, thus making the readings of an unknown signal's frequency relatively easy. For those without fancy equipment, the old fashioned way of frequency measuring can still work. A number of ARRL articles detail how to do it.

In getting correct frequency measurements, there are two important common errors that can occur. One is due to a Doppler frequency shift that may happen due to effects from the ionospheric refraction of the radio signals. This error is tiny but difficult to measure without complex equipment. Another error is due to frequency shifts within the receiver itself due to the way the signal is processed internally. This error is common to most radios, but can be measured.

For those without complex signal generators, the easiest way to measure the receiver error is by tuning WWV, since its signal is very precise. WWV transmits its time signal in AM, which has both upper and lower side bands. By tuning the time signal with a receiver and then switching modes from SSB upper side band to SSB lower side band and tuning until the two tones are identical, the center frequency of the signal can be found. The receiver display at that point will indicate the receiver error. When recording the unknown frequency, this receiver error must be factored in to get an accurate measurement.

The next FMT will be held in November, 2022. The date, time and frequencies of transmission will be published in QST on that month.

References :

https://fmt.arrl.org/FMTOct2002QST.pdf

https://fmt.arrl.org/FMTNov2006QST.pdf

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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GC ELECTRONIC
GALAXY
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HARADA
HITACHI
HYGAIN

ICOM RADIO

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JW DAVIS SOUND
JVC PARTS

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