

INDIAN RIVER ARC

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

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WOAGE

NEWSLETTER EDITOR

ARMANDO DELGADO KN4JN

General Amateur License Instruction. Starting on March 25,

9:30AM-1:30PM at Hobbs Pharmacy's Community Room, 133 N Banana River Dr, Merritt Island there will be five Saturday morning sessions, covering two subelements each week. Course is based on Dan Romanchik's "No Nonsense General Class License Study Guide". Copies are available for \$10. Class is open to all, No fee. Contact Bob Luken

321-452-0450

HAPPENINGS

or <u>w3rdl@arrl.net</u> to preregister. As an incentive there may be a donated system available to a lucky new "General".

The International Amateur Radio Union (IARU) announced that Human Security for All (HS4A) will be this year's theme of World Amateur Radio Day on April 18, 2023.

The day is being celebrated with a

ment Fund is stable at \$1903.65. Next, the February meeting minutes were approved.

Technical Report: Dave, KUOR gave a status report on the repeaters. The 145.37 MHz repeater clock was off by 45 minutes during the last Wednesday net. This caused the 220 MHz repeater link to drop early during the net. Dave thinks it is a hardware problem but needs to run more testing to be sure. Also, the 220 MHz repeater recently developed a noise that Dave tracked to a new set of LED lights installed at the repeater site. The solution to this problem may not be easy.

Dave next discussed the hamshackhotline.com system that uses an IP telephone to access an exclusive amateur telephone chain through the internet to reach amateurs registered with the system. This connection can be invaluable in preparing for emergencies, while the internet is active. If the internet fails, this system will become inoperative; yet, it offers many advantages for off-the-air connections between hams. The system includes a voice mail that will record a message, if the person being called does not answer. That voice mail system will also forward an email to the individual. Some phone units offer a Bluetooth connection that allows a regular cell phone to link to the system, so that calls can be activated from a cell phone. There is also a DMR reflector connection that can be reached through the phone, and the possibility of conference calls that can be set up for individual groups. Dave recommends the Cisco 525G model that costs about \$60 but needs a separate power adapter that runs another \$10-\$15. There are cheaper units that cost around \$30.

Following the phone presentation, Steve showed slides of the largest antenna in the world: the antenna for the decommissioned Duga radar located in Ukraine, near Chernobyl. This radar system was part of the USSR early warning over-thehorizon radar system. Active between 1976 and 1989, it became notorious for its interference in the amateur bands, particularly 15 meters, and was given the nickname Russian Woodpecker, due to its characteristic sound. The radar's phased array of cage dipole antennas is about 500 feet tall and 2300 feet long. Today, it just sits rusting in a field.

Following the presentation, the meeting adjourned at 8:08 PM.

Respectfully submitted, Armando Delgado, KN4JN Secretary

2-week operating event occurring **April 11 - 25.** Special event stations will be operating from around the world, making twoway radio contacts to call attention to the HS4A campaign. IARU, a federation of the national amateur radio societies of over 150 countries worldwide, is the global advocate for amateur radio through its Sector Membership in the International Telecommunication Union, an agency of the U.N. ARRL participates in World Amateur Radio Day each year. It was on this day in 1925 that the IARU was formed in Paris. ARRL co-founder Hiram Percy Maxim was its first president. For additional World Amateur Radio Day resources, visit http://www.arrl.org/worldamateur-radio-day.

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SPURIOUS EMISSIONS

MARCH, 2023

CLUB MINUTES

The meeting was called to order by President Steve Luchuk, N4UTQ at 7:15 PM.

Following the Pledge of Allegiance, Steve introduced visitor Rick Marcarelli ex-W1VVR whose license expired years ago and now wants to get back into the hobby. Also introduced were new members Lou a Technician and Rick who recently upgraded to Amateur Extra class license.

President's Report: Steve mentioned that last week he filed the club's annual report to the State of Florida. He also mentioned the SET scheduled for Saturday April 22. The test will start at 9:00 AM and is planned to last 2.5 hours. The club received instructions for the test to be opened on the day of the event. On that day, Steve will email each club member a message that the member should relay to the club's control center via the 145.37 MHz repeater so that they can forward it to the central EOC in Tallahassee via Winlink. Possibly, as part of the exercise, the local relay may use the simplex frequency of 147.42 MHz at some point in the simulation to mimic an actual emergency with loss of the repeaters. Treasurer's Report: The club gained \$120 last month in the General Fund, which increased from \$1598.65 to \$1718.65. The Equip-

cludes a voice mail that will record a message, if the person being called does not answer. That voice mail system will also forward an email to the individual. Some phone units offer a Bluetooth connection

SPURIOUS EMISSIONS

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HAPPENINGS

AMSAT is looking for an electri- The Radio Club de Haiti will celecal engineer with RF experience to join its FOX-PLUS team. The team will be a collaboration of up to 10 electrical, mechanical, software, and systems engineer volunteers. Mechanical engineers are also needed to join AMSAT's FOX and GOLF CubeSat teams. There will be collaboration with an all-volunteer team of up to 12 electrical, mechanical, software, and systems engineers. nity to use structural design and analysis skills to develop a series of low-Earth orbit and highly elliptical orbit 1U - 3U CubeSats.

Interested persons should send an email with their resume/ curriculum vitae to volunteer@amsat.org.

ON THE AIR

FMCA-ARC Spring Rally/POTA Mar 20-Mar 23, 0000Z-2300Z, W4B. Americus. GA. Family Motor Coach Association. 7.280 7.240 14.260 14.290. QSL. Dennis Tuchalski, N9WDQ, 5854 Moro Rd, Moro, IL 62067. Celebrating motor coach camping / President Jimmy Carter home / POTA

activations www.fmcaarc.com

Vietnam Veterans Day Mar 29, 1500Z-2030Z, W5KID, Baton Rouge, LA. Baton Rouge Amateur Radio Club. 7.040 7.250 14.040 14.250. OSL. USS Kidd Amateur Radio Club. 305 S. River Rd., Baton Rouge, LA 70802. CW, SSB, FT8 Operation aboard the USS Kidd (DD-661), a World War II Fletcher-class destroyer. www.qrz.com/db/ w5kid

WE7GV Vintage Radio Special Event

Apr 4, 1700Z-2200Z, WE7GV,

brate its 75th anniversary on March 2023 and has been granted permission to use the special callsign HH75RCH for the period from January 1 to May 1, 2023.

Rules Changes Announced for

2023 ARRL Field Day A new 500 W peak envelope power (PEP) transmitter output category has been introduced for Class A, B, and C stations only. Changes to the Get The positions entail an opportu- on the Air (GOTA) station scoring have also been made this year. Contacts made from the GOTA station are worth 5 points, regardless of mode, with no limit to the number of contacts that can be made. Stations can earn a GOTA Coach bonus of 100 points for having a coach supervise at least 10 of the contacts made and logged at the GOTA station. ARRL Field Day will be held on June 24 -

25, 2023. For more information and complete rules, visit https:// www.arrl.org/field-day.

CQ WPX Contest

SSB: March 25 - 26, 2023 Starts: 0000 UTC Saturday Ends: 2359 UTC Sunday The WPX Contest is based on an award offered by CO Magazine for working all prefixes. Held on the last weekend of March (SSB) and May (CW), the contest draws thousands of entries from around the world. For full details and rules go here.

Throughout this year W1AW will be operating as a portable station from around the entire country. There will be week-long activations of portable W1AW/# stations in all 50 states, and in several US possessions/

territories. For a schedule of W1AW/# portable operations, see the W1AW Portable Activations Schedule.

Here is an interesting bit of information from The ARRL Contest Update of March 15, 2023. An article written by software engineer Robert Heaton describes how forensic scientists can use the hum generated by the local electric grid to successfully date an audio recording. The technique, called Electrical Network Frequency (ENF) Matching, exploits patterns in the frequency of the "mains hum," which is the faint background noise emitted by an electrical grid as it pipes electricity around in order to power our homes and workplaces.

Read the full article, "How to date a recording using background electrical noise" at https:// robertheaton.com/enf/.

Sahuarita, AZ. Green Valley Amateur Radio Club. 14.242 14.245 14.248. Certificate & OSL. Tom Lang, 1085 W. El Toro Rd, Sahuarita, AZ 85629. WE7GV will be using the 1963 Discone antenna at the Titan Missile Museum along with vintage Hallicrafter, Heathkit, and Kenwood radios. we7gv1@gmail.com

Whiskey 4 Moonshine Apr 14-Apr 29, 0000Z-2359Z,

W4M, Boones Mill, VA. AA4SS. 7 Mhz 14 Mhz 15 Mhz. QSL. Timothy Boyd, 2201 Green Level Rd, Boones Mill, VA 24065. W4M ("Whiskey 4 MOONSHINE") will operate from April 14 through April 29 2023 on ALL HF bands (depending upon volunteers preferences and equipment) using phone, digital, cw and Satellite modes. Operations will take place in Franklin and surrounding counties with one remote operation planned in conjunction with a local Moonshine Heritage Car Show at Ferrum College and a few POTA activations. QSL info on QRZ.com https:// whiskev4moonshine.wordpress.com

Battle of Horseshoe Bend

209th Anniversary Commemoration Mar 25, 1600Z-2200Z, N4H, Alexander City, AL. Lake Martin Amateur Radio Club K4YWE. 14.320 29.000. Certificate & QSL. Michael Courtney, 96 Alabama Drive, Alexander City, AL 35010. www.facebook.com/k4ywe

T30TTT Team will be active from Tarawa Island, IOTA OC -017, Kiribati in March 2023.

JI3DST/5 and JS6RRR/5 will be active from Shodo Island. IOTA AS - 200, Japan, 25 March - 5 April 2023. They will operate on 80 - 6m, CW, SSB, Digital modes.

Bud, AA3B will be active as V26K from Antigua Island, IOTA NA -100, 21 - 27 March 2023. He will operate on HF Bands, including activity in CO WW WPX SSB Contest, in SOAB HP Category. QSL via AA3B, LOTW, ClubLog

OORS. For direct OSL: JOSEPH TRENCH, 10 SENIA LN. BOYERTOWN, PA. 19512, USA.

9X5RU Team will be active from Rwanda, 22 March - 7 April 2023. Team - R7AL, RW9JZ, RW8A, R5EC, R5AF, UA3QLC, RU3UR. They will operate on 160 - 10m, CW, SSB, Digital modes. QSL via R7AL, ClubLog OQRS, LOTW.

9G4X Team will be active from Ghana. 22 - 30 March 2023. They will operate on 160 - 6m, 00 - 100 Satellite, including activity in CQ WW WPX SSB Contest, 25 26 March 2023.QSL via K4NHW, LOTW, ClubLog OQRS

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NVIS Revisited by Armando Delgado, KN4JN

The March 2018 issue of Spurious Emissions carried an article on Near Vertical Incidence Skywave (NVIS) communications. The article described the nature of that mode of transmission and its advantages and disadvantages. Since that time, NVIS continued to gain in popularity, particularly among hams interested in emergency communications, because of its potential to maintain contacts during disasters that would disrupt the normal forms of communications, and the versatility and simplicity of the technical set up of the system.

Although the principles and concept of NVIS have not changed, it is important for all hams, particularly those interested in emergency communications, to understand and be capable of establishing NVIS contacts.

To recap on the concepts of NVIS, all horizontal antennas' radiation patterns depend on the height of the antenna above ground. A horizontal dipole at $1/2\lambda$ elevation will theoretically produce a bi-lobar radiation pattern perpendicular to the line of the antenna, with an elevation of 30° from the horizontal. As the antenna height gets below $1/2\lambda$, the signal radiation angle increases, until it reaches a near-vertical incidence. This pattern attains maximum at heights below $1/4\lambda$ above ground. These high radiation angles make signals reflect back to earth from the ionosphere at distances within the skip zone; that is, within ranges of a few miles to several hundred miles from the source, depending on the frequency and the time of day, and these signals will not propagate further because they are inside the skip zone. Likewise, because of the reciprocity rule of antennas, these antennas will not receive signals coming from beyond the skip zone, creating an automatic interference filter.

Successful NVIS communications depend on a number of factors, including the height above ground of both the receiving and transmitting antennas, the distance between the transmitting and receiving stations, the time of day, ionospheric propagation, and of course the frequency of operation.

Antenna height is critical for successful NVIS transmission, the best heights being between 0.25λ and 0.1λ above ground. Below 0.1 λ height, the pattern retains a high radiation angle but ground absorption of the signal increases rapidly causing severe attenuation and loss of antenna gain and efficiency. To help increase antenna gain, a counterpoise 5% longer than the antenna can be placed no less than 0.1λ below the radiator.

Since NVIS communications depend on near reflections of signals from the ionosphere, the distance between stations is limited by that cone of radiation. As a rule, the successful distances are from several miles to a few hundred miles separation between the stations, a factor affected by antenna height of both transmitting and receiving stations, as well.

The best frequencies for NVIS communications are the longer wavelength bands. In the amateur spectrum, these are 40 meters and 80 meters, as a rule. 160 meters will also work at night, but the size of the antenna could be problematic for portable operations. Generally, 40 meters is preferred during the day because it suffers less from D-layer absorption than 80 meters, a factor that greatly limits the usefulness of 80 meters during the day. However, once the D-layer dissipates after sunset, 80 meters has great potential for NVIS activity. lonospheric propagation is of course a big factor in successful NVIS contacts. The maximum usable frequency (MUF) needs to be above the highest frequency used. During high solar activity periods, like we

are seeing at present, the MUF

will generally stay above 7 MHz, so it is unlikely that this band will not perform. Still, using a propagation prediction program, like VOACAP, may help ascertain that the chosen frequency will work for the transmitter and receiver for the time of day of operation.

Establishing a planned NVIS contact between two stations is relatively simple once all the parameters are ironed out, such as the best frequency for the time of day and the propagation predictions for both sites. However, when more than two stations are involved. the situation becomes more complex, particularly if it is an emergency net operating on a fixed, prearranged frequency. Some of the stations may be off the cone of radiation of one or more stations and may not be able to establish contact. Others may be in an area where ionospheric propagation is not adequate for the frequency used at a particular time of day. Relay between stations may be necessary to maintain viable contacts.

Hams interested in NVIS emergency operations should become familiar with the performance of their 40m dipole, both at home and as a portable station. Particularly, the antenna configuration that would give the best performance, be it a horizontal dipole, inverted V, or a sloping antenna.

The Florida ARES net has an NVIS net that runs every Wednesday after the SAR UHF net. This HF net at 7247 MHz, time approximate 1:30 PM, will provide an opportunity to test any given station's NVIS capabilities. Listening and checking into this net should give an indication of receiving and transmitting qualities of the station.



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
OUTPUT FREO	STD. NAME	OFFSFT	TONE/CC	CALL		OWNER	NOTES
WBFM	0.2	001.	,	0,111		•••••	
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 FN
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 195	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	LISAIS	
146.970	970 11	-600	107.2	K4KSC	ITTUSVILLE-TVILLE TOWERS	TARC	
147.075	075 SC	+600	107.2/107.2	K4EOC	SCOTISMOOR Near USI-Aurantia Rd	EUC	TSQL as of 5/2018 Relocated 4/2019
147.135	135 RO	+600	107.2/107.2	K4EOC	ROCKLEDGE-EOC	EUC	15q1 as of 5/2018
147.240	240 DE	+600	123.0	KV4EUC	DELAND	VARES	
147.255	200 70	+600	107.2				
147.330	350 11	+600	107.2				DSTAR Gateway in work
442.850	850TI4	+5000	107.2			NBARC	TSal-ELISION/WBEM/WIRES-X
442.000	325MF4	+5000	107.2/107/2	KADCS		PBARC	
444.325	CNIBRE	+5000	107.2	R4DC3	195 EDT Twr 1/2 Mile N of County Line	SARNET	"SARNet Sebastian Reneater"
444 425	425MF4	+5000	107.2	WAMI B	MELBOLIBNE- BIALTO PL	PCARS	s, intersebustian nepeuter
444 525	525RO4	+5000	103 5/103 5	K4FOC	BOCKLEDGE-EOC	FOC	TSal: VOICE/NBEMS
444 650		+5000	107.2	W4NIX	COCOA-EHP SR520	IRARC	"SARNet Cocoa Repeater"
444.750	750TI4	+5000	156.7/156.7	N4TDX	TITUSVILLE- TGO WATERTOER 230 ft	NBARC	TSal
444.875	875MI4	+5000	107.2	KC2UFO	MERRITT IS. COURTNEY SPRS.	K4UZM	
444.925	925KS4	+5000	131.8/131.8	N1KSC	KENNEDY SP. CTRVAB	KSCARC	FM Tsgl : 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 STATIO	NS:						
145.090	WL2KPB	WINLINK		W2PH-10	PALM BAY-W2PH QTH	PBARC	
145.090	090 ME	PCARS		W4MLB-2	MELBOURNE-TRINITY TWRS-EAST	PCARS-K1YON	BBS W4MLB-4 EASTNET
145.770	770 PB	SEDAN		K4EUC-7		N2DB	nttp://www.fia-sedan.com
145.770		SEDAN		KD4IVIWO-4	IIIUSVILLE	NZDB	INACTIVE NODE
	CENTY			NI / A			
140.480		SIMPLEX		N/A		DRAPC	
1/16 520	MIBY			N/A		PCARS	
146 595	NORTHX	SIMPLEX		N/A	NORTH REGION	TARC	
147 540	EOCROX	SIMPLEX		N/A	RACES Bay	EOC	EOC VOICE/NBEMS
147.540		5 LEX		,			
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 Activit	ies	
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	n WBFM repeater	rs use CTCS	SS; if one fre	quency is list	ed it is for uplink (user Tx) , if two are	listed the rep	eater is set for uplink and downlink (user Tx a
Repeater Call S	igns in bold are o	owned by E	Brevard Eme	rgency Mana	gement and are maintained by the co	unty. Repeate	r Trustee: Ron K2RJ
	NOTONAIR	L					
Standard Name	s in Bold are reco	ommended	a tor Emerge	ncy Radio in I	srevard *		
PDARC- Pailling Analeur Radio Club (Replaces DCS for South Brevard) See Ed W2PH for more info							

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DALBANI DECIBEL PRODUCTS DENNISON DURACELL DANTONA IND.

ECG (SEE NTE) ELECTRONIC RESOURCES ELECTROVOICE EVEREADY

FANON-INTERCOMS FLUKE (WAVETEK)

GC ELECTRONIC GALAXY GOLDLINE

HAM RADIO HARADA HITACHI HYGAIN **ICOM RADIO**

JSC WIRE JW DAVIS SOUND JVC PARTS

KENWOOD RADIO KOSS KESTER

LITTELFUSE LOWELL

M & G MALLORY MACOM MAXON MIDLAND MOTOROLA

NTE TRANSISTORS NELLO TOWERS NTE ELECTRONICS NORMAN LAMPS

PANASONIC PANAVISE PHILIPS ECG (SEE NTE) PHILMORE PIONEER POMONA POWERSONIC PRB PROAM ANTENNAS

QUAM QUEST

RANGER RADIO RAYOVAC BATTERIES

RUSSELL IND.

SR COMPONENTS SANYO BATTERIES SHURE BROTHERS SONY PARTS SPECO SWITCHCRAFT

TEI TNR BATTERIES TELEX – HYGAIN TRIPPLITE TUBES – ALL TYPES TV ANTENNA'S

UNIDEN UNIDILLA UNION CARBIDE

VARCO VALOR VECTOR VIDEO EQUIPMENT

W2AU BALUNS WALDOM – MOLEX WAHL-CLIPPER WAVETEK (BECKMAN) WILSON ANTENNAS WILSON ELECTRONICS

YAESU

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