



## INDIAN RIVER ARC

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

VOLUME XLIII, NUMBER 5

# SPURIOUS EMISSIONS

MAY, 2022

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ARMANDO DELGADO  
KN4JN

## CLUB MINUTES

President Steve Luchuk, N4UTQ called the meeting to order at 7:15 PM. After the Pledge of Allegiance, Steve called for new members and visitors. AA4GM, John, was welcomed as a new member.

President's Report: Steve announced that the club's liability insurance was paid and that the club's data at the ARRL was updated. He also reminded members of the SMAH meetings each Friday at around 9:00 AM at Umpa's Diner on Merritt Island.

Treasurer's Report: The new checking account balance after paying the liability insurance is \$1061.15. The Equipment Fund is unchanged at \$1883.65.

Past-President Report: Viron, N4VEP reminded the members that this Saturday, May 21, there will be a QRP operation in Manatee Cove Park starting at the usual time. The Simplex Exercise and chili dog gathering will be on May 28. The exercise

starts at 9:00 AM and the gathering at the club house later in the morning.

New Business: On Field Day we will use dipole antennas for 40 and 20 meters and operate using 100 watts; logs will be submitted to the ARRL. Also, the first weekend of June will be the ARRL International Digital Contest starting at 2:00 PM on June 4 and running through 8:00 PM June 5. All non-RTTY digital modes are permitted. Unfortunately, the club house will not be available on that weekend and we will be unable to participate as a club. Following the business meeting Steve gave a presentation on antenna traps. The purpose of the traps is to allow operating in multiple bands with a single wire antenna, without the use of an antenna tuner. The traps consist of a parallel L/C circuit that presents high impedance to the higher bands, permitting signals for the lower bands to pass through. They also make

the total antenna length shorter than a single dipole. For an 80 meter antenna as the lower frequency, that could represent 4-5 feet on each side. The drawbacks of the traps are some signal loss and structural complexity. For those interested in building their own traps, the internet offers multiple sites with tables showing trap and antenna measurements. Coaxial cable can be used to build traps and it adds the benefit that the coax has an internal capacitance that eliminates the need for an external capacitor in the circuit. For RG-8 cable that capacitance is about 30pF/ft. The club website has a link to a program to design coax traps. After the presentation ended, the meeting adjourned at 8:00 PM. Respectfully submitted by Armando Delgado, KN4JN, Secretary.

## HAPPENINGS

In honor of Queen Elizabeth II's 70 years on the throne (her Platinum Jubilee), Innovation, Science and Economic Development Canada (ISED) has approved the use of special call signs for Canadian hams from May 15 to July 14, 2022. Some Canadian radio amateurs will be using the prefixes XK, XJ, VG, and VX in place of the prefix normally assigned to their province or territory. For more

information, visit the Radio Amateurs of Canada (RAC) [website](#).

### ARRL Digital Contest

First full weekend of June (June 4-5, 2022). Begins 1800 UTC Saturday, ends 2359 UTC Sunday, Amateurs worldwide contact and exchange QSO information with other amateurs using any digital mode (excluding RTTY) that sup-

ports the 4-digit Grid Square exchange — attended operation only — on the 160, 80, 40, 20, 15, 10 and 6 meter bands (Technicians are limited per FCC Rules to the 10 and 6 meter bands). Full rules details [here](#).

**2022 ARRL Field Day** is June 25-26. Field Day is always the fourth full weekend of June, beginning at 1800 UTC Saturday and running through 2059 UTC

Sunday. Starting this year, the maximum PEP output for a transmitter used by anyone submitting a Field Day log will be 100 W. Class D (Home) stations will continue to be able to earn points for contacts with other Class D stations. The club aggregate scoring change initiated in 2020 as a temporary measure will become part of the permanent rules. In the aggregate scoring plan, the

scores of individual stations are combined under the score of a single club.

View full rules listing [here](#).

During Memorial Day weekend a group of hams who give presentations in YouTube will hold a YouTube Hamfest showing many presentations. Details [here](#).

With the end of the Covid-19 pandemic, many exotic places are opening their doors to visitors. Presently, there are numerous expeditions becoming active:

Perti, OG2M will be active as OJOMR from **Market Reef**, IOTA EU - 053, 26 June - 6 July 2022. He will focus on 6m activity, CW, SSB, FT8. QSL via OG2M direct or LOTW preferable. For direct QSL: PERTTI TURUNEN, KOLUNKULMA 157, 17130, VESIVEHMAA, Finland.

3D2RRR Team will be active from **Rotuma Island**, IOTA OC - 060. Team - 3D2SP, 3D2EZ, 3D2USU. They will operate on HF Bands, CW, SSB, Digital modes. QSL via ClubLog OQRS, LOTW.

OA4DX will be active again from **Peru** in CQ WW WPX CW Contest, 28 - 29 May 2022 as 4T4T. QSL via OA4DX. For direct QSL: Tony Vieira, Calle Intisuyo, 291 - Dep 301, San Miguel - Lima-32, Peru.

Jean-Philippe Paulino, F1TMY is currently active as 3X1A from **Conakry, Guinea**. He is working on 160 - 6m and QO-100 satellite. He is also planning to operate as 3X1A/P from Los Islands, IOTA AF - 051. QSL only via ClubLog, no direct QSL.

D4Z Team will be active from **Sao Vicente Island**, IOTA AF - 086, Cape Verde, Cabo Verde in CQ WW WPX CW Contest, 28 -

29 May 2022. Team - HB9AMO, HB9ARF, HB9CAT. WAZ Zone - CQ 35. ITU Zone - 46. QTH Locator - HK76mu. QSL via HB9DUR direct or IK2NCJ buro. For direct QSL: MONTEVERDE CONTEST CLUB, Pregassona 6963, Switzerland. Via buro to IK2NCJ. Before the contest he will be active as D41CV.

C5C Team will be active again from **Gambia**, 22 May - 7 June 2022. Team - F5RAV, F5NVF, MONPT. They will operate on HF Bands and possibly also via QO - 100 satellite. QSL via F5RAV direct. For direct QSL: LUC THIBAUDAT, 15 rue de Moiscourt, 27140, GISORS, Normandie, France. QTH Locator - IK13pk.

Harold, DF2WO will be active again as 9X2AW from **Rwanda**, 1 - 22 June 2022.

He will operate on 160 - 10m, CW, SSB, Digital modes and QO-100 satellite. QSL via MOOXO, OQRS. For direct QSL:

Charles Wilmott, 60 Church Hill, Royston, Barnsley, South Yorkshire. S71 4NG, England.

As of April, 2022, Club Log updated their list of Most Wanted DX. These are their top ten:

1. P5 DPRK (NORTH KOREA)
2. 3Y/B BOUVET ISLAND
3. FT5/W CROZET ISLAND
4. BS7H SCARBOROUGH REEF
5. CEOX SAN FELIX ISLANDS
6. BV9P PRATAS ISLAND
7. KH7K KURE ISLAND
8. KH3 JOHNSTON ISLAND
9. 3Y/P PETER 1 ISLAND
10. FT5/X KERGUENEN ISLAND

## ON THE AIR

### Dog Island IOTA Dxpediton

May 15-May 27, 0001Z-2359Z, K4D, Carrielle, FL. K5TEN. SSB: 7.185 14.260 21.285 28.310; CW: 7.027.5 7.110 10.110 14.027.5 21.027.5 28.010; Also 6m operation for Sporadic-E. QSL. Bruce Brady, 208 Mount Tabor Rd., Hot Springs National Park, AR 71913. Rare NA-085 IOTA island and VHF/UHF Grid Square EL79. QSL SASE and DX \$1 plus SAE. k5ten@aol.com

**Armed Forces Day** May 21, 1600Z-2130Z, W5KID, Baton Rouge, LA. Baton Rouge Amateur Radio Club. 7.040 7.250 14.040 14.250. QSL. USS KIDD Amateur Radio Club, 305 S. River Road, Baton Rouge, LA 70802. Operation aboard the USS KIDD (DD-661). WW II Fletcher class destroyer. [www.qrz.com/db/w5kid](http://www.qrz.com/db/w5kid)

### Shenandoah Caverns 100th Anniversary

May 21, 1300Z-2100Z, K4S, Quicksburg, VA. Woodstock Amateur Radio Breakfast Group. 7.240 7.040 14.240 14.040. Certificate. Carl M. Dennis, NX3A, 2224 Graveltown Rd., Quicksburg, VA 22847. More information on the caverns available at <https://shenandoahcaverns.com/>. The station will be operated from inside the cave, approximately 90 feet underground. A certificate is available to anyone working the station if you provide a QSL card verifying the contact as well as a large (9' X 12") envelope with sufficient postage.

### Red Skelton Museum Festival

**2022** May 29-Jun 11, 0000Z-2359Z, K9R, Vincennes, IN. K9GX. 80, 40, 20 and higher bands as conditions permit. QSL. Mark Steven Williams, POB 5973,

Elizabeth, IN 47117-5973. Operating schedule and updates on the K9R QRZ page and K9R Red Skelton Museum Special Event FB group page. QRV on 80, 40, 20 and higher bands as conditions permit. K9Rspecialevent@gmail.com or [www.qrz.com/db/k9r](http://www.qrz.com/db/k9r)

C5B Team will be active from **Bijol Islands**, IOTA AF - 060, Gambia, during 22 May - 7 June 2022. Team - F5RAV, F5NVF, MONPT. They will operate on 20, 15, 10m. QSL via LOTW, eQSL.

### Celebrating Charles Lindbergh's Solo Flight Across the Atlantic- 95th Anniversary

May 20, 1400Z-2000Z, K2CAM, Garden City, NY. Cradle of Aviation Museum/ Sponsored by The Long Island Mobile Amateur Radio Club.

14.240 approximate 7.240 FT8 20 and 40. QSL. LIMARC, P.O. Box 392, Levittown, NY 11756. Band conditions will determine our operating frequency so keep looking for us. Any Questions contact education@limarc.org. www.QRZ.com/db/k2cam or <https://limarc.org/special-events/>

**245th Flag Day** Jun 11-Jun 17, 0000Z-2359Z, W4F K4F N4F, Goose Creek, SC 14.316 7.216 14.075777 10.137777. QSL. Carolina SideWinders, 318 Jennie St., Goose Creek, SC 29445. On June 14th, 1777, Second Continental Congress passed a resolution stating that "the flag of the United States be 13 stripes, alternate red and white," and that "the union be 13 stars, white in a blue field, representing a new constellation." KM4SW\_614@yahoo.com

## Moon Bounce by Armando Delgado, KN4JN

Satellite contacts are an increasingly popular form of amateur communications. Presently, there are tenths of satellites orbiting Earth capable of retransmitting amateur radio signals in just about every mode conceivable. At any given moment, in any part of the world, there is a satellite in orbit capable of sustaining a QSO.

Interestingly, the first amateur satellite radio contact occurred many years before the first human-launched satellite, Sputnik-1, went into orbit in 1957, and even many more years before the launch of the first amateur satellite, Oscar-1, in 1961.

In 1953, a group of three hams, Bill Smith, W3GKP, Ross Bateman, W4AO, and Ted Tuckerman, W3LZD managed to bounce a recognizable signal from the moon on 144 MHz. It took them three years of trial and error to refine the required antennas, transmitters and receivers to finally achieve their goal. Their signal was a simple echo that carried no intelligent information, but it was a first for amateur radio, and an introduction to future achievements. However, these hams were not the first to bounce a radio signal from the moon.

In 1946, John H. DeWitt, Jr., W3ERI, director of the Evans Signal Laboratory of the U.S. Army, using modified radar equipment, a 110.5 MHz signal, and 4000 watts input to an antenna of 23 dB gain, bounced a radio signal from the moon on January 10, 1946. Their success and techniques provided the road map for the efforts of the Bill Smith group a few years later transmitting in the amateur bands and limited by amateur power restrictions.

Over the following decades, amateurs continued to achieve Earth-Moon-Earth radio contacts as the number of hams capable of meeting the technical requirements for a successful QSO via the moon increased.

The requirements for a moon

bounce contact are numerous. The primary one is a frequency that can pass unimpeded through the ionosphere. Those as a rule are in the VHF and above range. Contacts in the lower VHF range of 50 MHz are possible but not consistent, since this frequency will be reflected from the ionosphere, particularly during high solar cycles when the Maximum Usable Frequency (MUF) may be high. Interestingly, there are reported EME contacts on 28 MHz, but those are really exceptional.

The other requirements are to compensate for the tremendous losses that radio signals suffer in their trip to the moon and back, due to multiple factors, but most importantly the distance to the moon. At 144 MHz, the losses are estimated to be 252.1 dB, and they increase as the frequency of the signal increases. Thus, to be able to get a readable signal at this frequency, using the regular modes of CW and SSB, the transmit power must be at least 500 watts, and the antenna gain at least 21 dB for transmit and receive.

During the first decades of moon bounce amateur activity, the primary modes used were CW and SSB, with CW being preferred because of its narrower bandwidth and concomitant gain from it. In time, there was a parallel increase in the knowledge acquired to achieve a successful EME contact, along with the quality and reduced cost of radio equipment available to amateurs. Transistor development and refinement to produce low-noise devices such as the GaAs FET preamplifiers allowed hams more successful opportunities for contacts through the moon. They also allowed the use of higher frequencies, although the 2 meter band remained the preferred one for this type of

operation.

In 2003 Joe Taylor, K1JT introduced the digital program JT65 as part of his WSJT digital suite for weak signal communications and specifically for moon bounce contacts.

JT65 revolutionized EME contacts by reducing the technical requirements. Instead of very high power, contacts are possible with 100 watts. Likewise, the antennas used need not be complex arrays to maximize gain, but a simple beam can get the job done. Now the average ham can achieve moon bounce contacts using this digital mode.

Of course, it may not be as simple as just blowing to make glass bottles. For moon bounce successful contacts, hams must do careful research on the moon's location, distance, time of day, cycle of the moon, and depending on whether they want DX or more local contacts on the position of the moon in the sky at the time of transmission.

Although requiring more planning and investment in equipment and antennas, EME contacts now are possible for just about any ham without the need for great expense and large antenna real estate.

References:

An excellent discussion of EME techniques and requirements can be found at [https://physics.princeton.edu/pulsar/K1JT/EME\\_2010\\_Hbk.pdf](https://physics.princeton.edu/pulsar/K1JT/EME_2010_Hbk.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



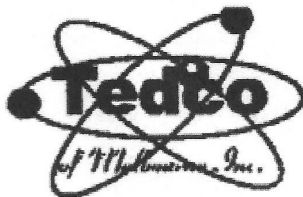
### Editor's Note:

Send comments about the Newsletter or to contribute information or articles to the Editor's email address:

[olardelga@aol.com](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	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		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	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	
<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 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							

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BUSSMAN FUSES  
BUD

C.B.RADIO  
CALRAD  
CORNELL DUBILIER  
CELLPHONE AMPS  
CHICAGO MINIATURE  
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CLOVER  
COBRA  
CUSHCRAFT

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EVEREADY

FANON-INTERCOMS  
FLUKE (WAVETEK)

GC ELECTRONIC  
GALAXY  
GOLDLINE

HAM RADIO  
HARADA  
HITACHI  
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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  
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SATURDAY 9AM-3PM

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