



# SPURIOUS EMISSIONS

**INDIAN RIVER ARC**

SEPTEMBER, 2023

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

## OFFICERS

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N4UTQ

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KJ4VGR

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**ARMANDO DELGADO**  
KN4JN

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KU0R

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W0AGE

### NEWSLETTER EDITOR

**ARMANDO DELGADO**  
KN4JN

## CLUB MINUTES

The meeting was called to order by President Steve Luchuk, N4UTQ at 7:54 PM.

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

President's Report: Steve mentioned that in August there were two Simplex exercises, one on August 5 and the other on August 26. Both activities had 9 participants. The next Simplex exercise will be on September 30. He also reminded the club that the ARRL national Simulated Emergency Test will be on October 7-8, 2023 and the club hopes to participate.

This year is election year for the club. We elect officers every two years. Nominations will be presented in October and the election will

will take place at the November meeting. Steve will do a search for candidates.

Treasurer Report: The club paid its equipment insurance in September which brought the checking to \$1353.08 after a disbursement of \$168.51. The Equipment Fund remains stable at \$1903.65. The Treasurer Report was accepted for audit.

The August meeting minutes were next approved.

Technical Committee: Dave, KU0R, mentioned that the 146.88 MHz repeater timer is still off. The timer in the 145.37 MHz repeater was repaired and Dave plans to take care of the 146.88 MHz one in the near future. Dave also mentioned that the Winter Field Day event

will be in January and that we should plan for it; perhaps consider operating high power, if it is permissible.

Following the business meeting Steve planned to give a presentation on HF maritime radios, but a problem with the video display prevented the presentation and he will do it at a future meeting.

The meeting adjourned at 8:17 PM.

Respectfully submitted,  
Armando Delgado, KN4JN,  
Secretary

## HAPPENINGS

Mackenzie Fravel, K04JFZ of Tallahassee, FL is the recipient of the IRARC Memorial, Joseph P. Rubino, WA4MMD Scholarship for 2023.

Joe Rubino, W4MMD (SK) was an influential early club member who initiated the IRARC scholarship program. Initially, the club managed the scholarship and awarded it to mostly local hams, but those were scarce so the club

arranged for the ARRL to manage the scholarship, since they have a broader pool of applicants. One of the club's requirements in the transfer was that the recipients be exclusively from Florida,

Melbourne Hamfest - ARRL Florida State Convention  
Start Date: 10/13/2023  
End Date: 10/14/2023  
Location: Melbourne Auditorium  
625 E. Hibiscus Blvd

Melbourne, FL 32901  
Website: <http://www.pcars.org/>  
Talk-In: 146.85 / no tone

We are in peak hurricane season and these official channels are important for amateur assistance: The [Florida Statewide Amateur Radio Network \(SARnet\)](#) is the primary emergency communications system used during storms. The system

is a series of linked UHF repeaters that cover the entire state. There are also HF nets linking counties to the state EOC.

Hurricane Watch Net frequency 14.325 MHz  
EchoLink Hurricane Net:  
WX\_TALK Conference  
Also the [Hurricane VoIP Net](#).

## HAPPENINGS

The International Amateur Radio Union (IARU) has coordinated two European digipeating satellites that are scheduled to launch in fall 2023. At the Technical University of Košice in Slovakia, satellite Veronika, a 1U CubeSat, is scheduled for launch on the Falcon 9 launcher on the Transporter 9 mission in October 2023. The satellite will be equipped with a 24/7 digipeater on two different bands, as well as experimental slow-scan digital video (SSDV) transmissions. Altogether, Veronika will provide: AX.25 telemetry, a CW beacon, a digipeater, AX.25 and CW messages on special occasions for community engagement, experimental SSDV transmissions, SatNOGS integration, a decoder, and a dashboard. A downlink on 436.680 MHz has been coordinated, and it will

use 9k6 G3RUH AX.25 and a CW beacon. A SpaceX launch on the Transporter 9 mission will send the satellite to a 500/600-kilometer polar orbit.

The Romanian Federation of Amateur Radio (FRR) is preparing the ROM-3 for launch in October or November 2023. ROM-3 is a 50 x 50 x 100-millimeter picoSAT with three missions and objectives. Its primary mission is to act as a digital amateur radio repeater. Its secondary mission is to transmit low-resolution SSDV images in a Gaussian frequency shift keying (GFSK) mode. The tertiary mission is to transmit a CW beacon that will help amateur radio operators detect the presence of the satellite and measure basic properties of the signals, such as its strength, fading due to spinning, and Doppler to measure speed. A downlink on 436.235 MHz has been coordinated for 20 WPM on CW, 500 (bps) GFSK telemetry, and 5 (kBps)

GFSK SSDV. A SpaceX launch will send ROM-3 into a 500-kilometer polar orbit.

During active hurricanes the Hurricane Watch Net seeks reports from the areas affected by the storms. They provide an online form that can be filled and sent directly to them. This form can be found at <https://w4ehw.fiu.edu/WX-form1.php>. They also provide a printable version of the form: <https://w4ehw.fiu.edu/WX-form2.pdf>

In another link, the NHC lists amateur frequencies and internet access sites at <https://w4ehw.fiu.edu/wx4nhc-contact.html>

The ARRL Simulated Emergency Test (SET) is scheduled for **October 7 - 8, 2023**. The SET is ARRL's annual national emergency exercise designed to assess the skills and preparedness of Amateur Radio Emergency

Service® (ARES®) volunteers, as well as those affiliated with other organizations involved in emergency and disaster responses. The SET is open to all radio amateurs and partner organizations, in addition to national, state, and local officials. During the exercise, volunteers can assess equipment, modes, and skills under simulated emergency conditions and scenarios. Individuals can use the time to update a go-kit for use during deployments and to ensure their home station's operational capability during an emergency or disaster. In addition to the ARRL SET exercise, as part of their communications interoperability outreach to the amateur radio community, the US Department of Defense (DOD) will be conducting a DOD COMEX 23-4 exercise. During the week of October 16, they'll conduct a series of high-power HF information transmissions on **60 meters and channel 1 (5330.5 kHz)**. This event will coincide with the ARRL SET also.

## ON THE AIR

**Cherokee Strip Land Run and POTA** Sep 10-Sep 24, 1200Z-2300Z, W5R, Ponca City, OK. Kay County Amateur Radio Club. 14.275. QSL. John Summers, WODY, 2516 Windsor Road, Ponca City, OK 74601.

**W7Y Come and Get Wyoming** Sep 22-Oct 2, 0000Z-2359Z, W7Y, Cheyenne, WY. Shy-Wy Amateur Radio Club. All Bands All Modes. Certificate & QSL. Shy-Wy ARC, P.O. Box 22483, Cheyenne, WY 82003. Need Wyoming for WAS on a new band or mode? We hope to help you out. Stations all across Wyoming will be working as many bands and modes as possible to assist. Please see the website for the scheduler showing what stations are on the air. Logs uploaded to LOTW and QRZ at the conclusion. See the website for QSL and Certificate details. <https://shywyarc.net/wp/>

[comeandgetwyoming](#)

**WWV 104th Anniversary** Sep 29-Oct 1, 1200Z-2359Z, WWVWWV, Fort Collins, CO. WWV Amateur Radio Club. 14.238 14.038 7.238 7.038. QSL. WWV Amateur Radio Club, PO Box 273226, Fort Collins, CO 80527. The WWV Amateur Radio Club will be on-the-air as WWVWWV once again this fall. We'll be around the .x38s on CW and SSB on as many bands as possible, including WARC; various digital modes as well as any satellite schedules will be listed on our website spreadsheet on our homepage. We look forward to a QSO! [wwvarc.org](http://wwvarc.org)

**Wyatt Earp Fall Festival** Oct 4-Oct 8, 1300Z-0100Z, WOE, Lamar, MO. Kilowatt Amateur Radio Club - KOKWC. 3.900 7.250 14.250 28.400. QSL. Tim Ryder, 700 Hagny Street, Lamar, MO 64759. Wyatt was Lamar's constable following his father's resignation

in 1869. After the death of his wife and unborn child. Wyatt left Lamar heading west, starting the journey of what would become one of America's frontier legends. Be sure to contact Bonus Station N6C in California, Wyatt's final resting place. All QSL cards will be mailed from Lamar, Missouri. [www.kilowattarc.org](http://www.kilowattarc.org)

Ulli, DL2AH will be active as V73AH from **Majuro Atoll, Marshall Islands**, IOTA OC - 029, 4 - 30 October 2023. He will operate on HF Bands. QSL via home call direct.

W8S Team planning be active from **Swains Island**, IOTA OC - 200, 4 - 17 October 2023. Team - DJ9RR, DL2AMD, DL6JGN, K08SCA, NG7M, PA2KW, PA3EWP, PA4WM, PA5X, PG5M. They will operate on All HF Bands, CW, SSB, FT8, RTTY.

QSL via MOOXO, LOTW, ClubLog OQRS.

T22T Team will be active from **Tuvalu Islands**, IOTA OC - 015, 21 September - 9 October 2023. They will operate on 160 - 6m, CW, SSB, FT4, FT8. QSL via ClubLog OQRS.

T08FH Team will be active from **Mayotte**, IOTA AF - 027, 10 - 22 October 2023. Team - Members of the F6KOP Radio Club: F4AJQ, F5PBM, F6GCT, F4JCT, F5GSJ, F4WCU, F4LAF, IU0BMX, F6FJE, F1FUJ, F4JTL. They will operate on HF Bands. QSL via F5GSJ, ClubLog OQRS, LOTW.

Yuris, YL2GM will be active as ZD9W from **Tristan da Cunha Island**, IOTA AF - 029, 24 September - 22 October 2023. He will operate on 160 - 6m, CW, SSB, FT8. QSL via YL2GN. Direct QSL: Ziedonois Knope, P.O. Box 55, Balvi, LV-4501, Latvia.

## The Balanced Line by Armando Delgado, KN4JN

In the beginning there was the balanced line, also known as parallel line, open wire line, twin lead and ladder line. The latter so named because it consisted of parallel conductors separated by spacers creating the resemblance of a rope ladder. For the first mid-century of amateur radio, balanced lines were the primary amateur radio feed line in use; they were cheap, easy to obtain, and most hams homebrewed their feed lines.

Coaxial lines did not come into amateur radio use until after the end of WW2 when affordable military surplus coax became available. Actually, coaxial cable predates radio. Coax cable was first used in the initial transatlantic cable in 1858. In 1880, Oliver Heaviside, the English physicist who gained later radio fame by theorizing the existence of an atmospheric layer that reflected radio waves, described the physical and electronic characteristics of coaxial cable and obtained a patent for a coaxial cable design that became the model for modern coax cables.

Unfortunately, early coax was very expensive and its use became limited to telegraph companies, telephone companies and the military, not being affordable to the amateur community until many years later.

Once amateurs gained access to coax, it gradually replaced the balanced lines in use by hams, primarily because of its advantages as a practical conductor compared to balanced feed lines.

Balanced lines, especially the open wire lines that were favored by hams for many years, derive their impedance in direct proportion to the spacing of the conductors. Any changes in the spacing can affect the impedance of the line. Those lines had to be routed carefully and kept immobile to prevent kinks or sharp bends.

Balanced lines can also be affected by the proximity of conduct-

ing materials. Conductors near the line may couple with it and alter the impedance, so the feed line must be kept away from gutters, metal towers and electrical wiring.

Also, in the open wire lines the conductors behave like capacitive plates with an air dielectric; if the line gets wet, the dielectric changes, affecting the impedance of the line. Due to this fact, open wire lines cannot be buried.

Coax cable has none of these limitations.

On the other hand, balanced lines enjoy functional advantages over coax cable. At frequencies below 30 MHz balanced lines have almost no losses. At 30MHz the line loss for balanced lines is around 0.1 dB/100 ft. while the losses for RG-58 cable, a popular amateur coax, is about 2.5 dB/100 ft at that frequency. At 150 MHz the difference is more significant. Balanced lines have a 0.25 dB/100 ft loss at that frequency while RG-58 has a loss of about 6 dB/100 ft.

Likewise, the velocity factor for balanced lines is around 98% while most coax only have a 66% velocity factor.

Hams rarely use open wire feed lines any more. The newer twin lead lines available do not have as many limitations as the open lines and are used in some amateur antenna designs. Interestingly, twin lead lines came into use in the early days of television as the preferred feed line for tv receiver sets primarily because of their low line losses at the higher frequencies used in television transmissions. Yet, today hams do not use twin lead lines in the VHF realm preferring more expensive low loss coax, which still has significantly more line losses than twin lead line at those frequencies, specially

with long feed line runs.

The characteristic impedance of all balanced lines is much higher than that of coax cable. In the days of tube radios this presented no problem because those radios used a PI network in the final amplifier that permitted a match between the input and output impedance of the final tube thus neutralizing the reactive component and allowing the final amplifier to see only a pure resistance in the line. Transistorized radios can not do that, so they are vulnerable to reflected voltages in the final and must use a feedback circuit to drop the radio output in proportion to the reflected voltage to protect the final amplifier.

In modern radios the high impedance of the balanced line needs to be matched to prevent high reflected voltages. Likewise, modern antenna inputs are designed for coax cable and 50 ohms impedance and that also requires matching. However, with the proper balun that matching is simple.

Balanced feed lines will probably never regain popularity among amateur radio operators due to its technical disadvantages, but they should always be considered as an option in designing a station because of their given advantages.



### 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



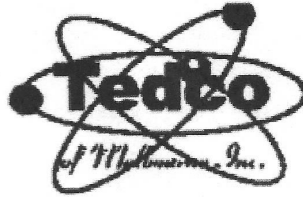
### Editor's Note:

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       | 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   | W12KPB    | 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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NTE ELECTRONICS  
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POMONA  
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PRB  
PROAM ANTENNAS

QUAM  
QUEST

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RUSSELL IND.

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TV ANTENNA'S

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VARCO  
VALOR  
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VIDEO EQUIPMENT

W2AU BALUNS  
WALDOM - MOLEX  
WAHL-CLIPPER  
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