



**INDIAN  
RIVER ARC**

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

VOLUME XLIII, NUMBER 10

# SPURIOUS EMISSIONS

OCTOBER, 2022

## CLUB MINUTES

### OFFICERS

#### PRESIDENT

**STEVEN LUCHUK**

**N4UTQ**

#### VICE-PRESIDENT

**SAM THORPE**

**KJ4VGR**

#### SECRETARY

**ARMANDO DELGADO**

**KN4JN**

#### TREASURER

**DAVID LERRET**

**KUOR**

#### DIRECTOR

**ROBERT SCORAH**

**WOAGE**

#### NEWSLETTER EDITOR

**ARMANDO DELGADO**

**KN4JN**

### HAPPENINGS

The [ITU's amateur radio page](#) is worth reviewing. The [International Amateur Radio Union \(IARU\)](#) is the worldwide federation of national amateur radio organizations. Here, in ITU Region 2 (the Americas), there is a vital [Region 2 amateur radio emergency communications](#) program, which has published the [IARU Emergency Telecommunications Guide](#), and is recommended reading.

President Steve Luchuk, N4UTQ called the meeting to order at 7:19 PM.

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

He then followed with the President's Report:

The SET planned for October was cancelled due to hurricane Ian. The club will have its own SET in November, the date to be determined yet.

The club's emcomm site continues to develop capabilities. The next step is to utilize Winlink. Dave KUOR expanded on the efforts to get the system operating properly. The plan is to have internet access capability as well as HF and VHF. Each one of these modes requires links that present difficulties with matching to respective radios and software. Dave is using a Signalink unit that required some testing to get it working properly.

He then explained about Winlink being free software available in the internet at Winlink.org; however, Winlink requires a modem to connect the radio and the computer. Users must register with the website and they must use the software in an RF contact within a year or the license will be invalidated and the user must reregister (all at no cost).

The state of Florida is starting the long-awaited state-sponsored AUXCOMM courses, with the first class coming up in November. The State of Florida Division of Emergency Management in conjunction with the Department of Homeland Security is offering the AUXCOMM Auxiliary Communications Course in Fort Pierce November 4-6. The course is free of charge. Applicants need to have completed the FEMA ICS100,

The advantage of Winlink is that it allows the sending of emails via internet connections or via RF, either in VHF or HF; also, it is the preferred mode of messaging of the official agencies operating during emergencies.

In the near future, Dave hopes to perform an exercise to copy Winlink messages via VHF and later via HF, as well. In time the club should have full messaging capability in all modes via Winlink.

Dave is also experimenting with another mode called VERA FM that has more capability than Winlink.

The club's Christmas Party will be on December 13 at Red Lobster on Merritt Island. Happy Hour will begin at 5:00 PM, dinner at 6:00 PM and afterward the raffle of poinsettias, a club tradition.

Treasurer's Report: No change in the accounts. The General Fund remains at \$1081.62 and the Equipment Fund at \$1884.11. The Treasurer's Report was accepted for audit.

The September minutes were next approved.

Old Business: None.

New Business: Dave, KUOR suggested the club hold an antenna building project to make copper

pipe antennas for GMRS. These could be durable antennas that the club could use and develop a building kit to make the antennas available to GMRS users.

Following the business meeting, Steve, N4UTQ gave a presentation on Export Radios. These are essentially CB radios built to specifications not approved by the FCC but available in eBay and some internet markets. They are all channel controlled radios with bands of 40 channels each and encompassing the CB frequencies mostly, although some can transmit in the 10 meter band.

Steve listed many of the brands available, including Magnum, President, Stryker, Galaxy, Ranger, Mirage, and Comex. He then proceeded to show pictures and details of different models in each brand. These ranged in power from 4 watts to 400 watts and more and mode capabilities from single AM to multi-mode availability of AM, SSB, FM, and CW, as well as prices ranging from \$119 to \$880.

After the presentation, the meeting adjourned at 8:06 PM

Sincerely submitted,  
Armando Delgado, KN4JN, Secretary

200, 700, and 800 on-line courses and have an interest in working with public safety agencies. Apply for registration for the AUXCOMM course.

The following is a series of links to the Homeland Security website that provide information on how to deal with different potential or actual disasters:  
[All Hazards](#)  
[Emergency Alerts](#)

[Attacks in Public Places](#)  
[Bioterrorism](#)  
[Chemical Emergencies](#)  
[Cybersecurity](#)  
[Explosions](#)  
[Extreme Heat](#)  
[Floods](#)  
[Hazardous Materials Incidents](#)  
[Home Fires](#)  
[Hurricanes](#)  
[Nuclear Explosion](#)  
[Nuclear Power Plants](#)  
[Power Outages](#)

## HAPPENINGS

[Radiological Dispersion Device](#)  
[Severe Weather](#)  
[Space Weather](#)  
[Thunderstorms & Lightning](#)  
[Tornadoes](#)  
[Tsunamis](#)  
[Wildfires](#)  
[Recovering from Disaster](#)

The Mid-Cornwall Beacon and Repeater Group brought into service three new CW and FT8 beacons. These can be found on 28.215MHz, 40.050MHz and 60.300MHz, each using the call sign GB3MCB. The beacons are located at IO700J in mid-Cornwall. They are ideally situated for identifying transatlantic and equatorial sporadic E as well as F2 propagation.

The AMSAT News Service bulletins are a free, weekly news and information service of AMSAT, the Ra-

dio Amateur Satellite Corporation. ANS publishes news related to Amateur Radio in Space including reports on the activities of a worldwide group of Amateur Radio operators who share an active interest in designing, building, launching and communicating through analog and digital Amateur Radio satellites. The news feed on <http://www.amsat.org> publishes news of Amateur Radio in Space as soon as their volunteers can post it. You can sign up for free e-mail delivery of the AMSAT News Service Bulletins via the ANS List; to join this list see: <https://mailman.amsat.org/postorius/lists/ans.amsat.org/>

In 2022, the British Broadcasting Corporation is marking 100 years of broadcasting. The BBC staff amateur radio club, The

Ariel Radio Group, was established in 1945 and there has been some form of ham radio club at the BBC ever since. The current team, the London BBC Radio Group, have secured the call sign GB100BBC to help in the celebrations. GB100BBC will be on air from the main shack at BBC Broadcasting House in central London, from other BBC premises and members' home QTHs around the UK. The call sign will be used for the entirety of 2022. The team at the BBC Amateur Radio Group looks forward to working you. We are not able to issue a schedule of operations, but we hope you will find us using all bands and modes throughout 2022. A special commemorative QSL card will be available via the traditional bureau. We will

send out a card upon receipt of your incoming card. You can also QSL via Logbook Of The World and eQSL. Please carefully note that WE ARE UNABLE TO QSL DIRECTLY UNDER ANY CIRCUMSTANCES. Please do not send any cards to BBC Broadcasting House or to the participating individual club members, you will unfortunately not receive a response. More details [here](#).

An interesting article from the Printmag.com Daily Heller website covering the history and samples of QSL cards based on the book QSL? by Steven Heller can be found at the following link. <https://www.printmag.com/daily-heller/the-daily-heller-the-art-and-design-of-ham-radio/>

## ON THE AIR

### Spruce Goose 75th Anniversary of Flight

Oct 29-Nov 6, 1700Z-2359Z, W6HA/W6HA/7, Torrance, CA. Hughes and McMinnville Amateur Radio Clubs. SSB: 3.833 7.233 14.233 21.333 28.333; CW: 3.533 7.033 14.033 21.033 28.033; 445.620 PL 127.3; 146.52 on 146.550. QSL. Brian Johnson, AB6UI, 5207 Lillian St, Torrance, CA 90503. Wednesday, November 2, 2022 is the 75th Anniversary of the Flight of the Hughes Aircraft Company's Hercules H-4 Flying Boat aka The Spruce Goose. W6HA stations will be near Culver City and/or Long Beach Harbor where the craft was built, assembled and flown. W6HA/7 stations will be near McMinnville, Oregon where the aircraft is now displayed in the Evergreen Aviation and Aerospace Museum. W6HA near Culver City/Long Beach, CA; W6HA/7 near McMinnville, OR. [www.w6ha.org](http://www.w6ha.org)

### 84th Anniversary of the War of the World Broadcast

Oct 30, 1600Z-2100Z, W0W, Princeton Junction, NJ. Delaware Valley Radio Association. 14.255 MHz 7.225 MHz. QSL. Delaware Valley Radio Association, P.O. Box 7024, Trenton, NJ 08628. webmaster@w2zq.com

### WØO Halloween FunXpedition

Oct 31-Nov 1, 1900Z-0300Z, W0O, Frankenstein, MO. Mid-MO Amateur Radio Club. 3.538 3.980 14.038 14.340. QSL. See QRZ, for QSL, information. Operating from Frankenstein, MO, the only known Frankenstein in the USA. QSL information via QRZ.COM. [www.qrz.com/db/w0o](http://www.qrz.com/db/w0o)

### Veterans Day (11/11/19) and USMC Birthday (11/10/1775) Commemoration

Nov 12, 1700Z-2359Z, NI6IW, San Diego, CA. USS Midway (CV-41) Museum Ship. 14.320 7.250

14.070 PSK31 DSTAR on PAPA repeaters. QSL. USS Midway Museum COMEDTRA, 910 N Harbor Drive, San Diego, CA 92101. [www.qrz.com/db/ni6iw](http://www.qrz.com/db/ni6iw)

**San Max Special Event** Jun 1-Oct 31, 0000Z-2359Z, 4A2MAX, Diamond, MEXICO. San Max Contest Team. 7.160 14.180 21.285 28.450. Certificate & QSL. Jose de Jesus Lopez, 5914 San Bernardo Ave, Suite 4-135, Laredo, TX 78041-2506. Welcome to our celebration of the patron saint of radio amateurs Saint Maximilian Mary Kolbe, it will be a pleasure to do QSO with you and be part of this festivity. [www.qrz.com/db/4A2MAX](http://www.qrz.com/db/4A2MAX)

**Elmer Tribute Special Event** Oct 21-Oct 24, 0000Z-0000Z, KB1FGC, Prospect, CT. KB1FGC. 3.540 7.040 14.040 21.040. Certificate. Richard Guerrero, 19 Terry Rd, Prospect, CT 06712. Total Operators: KB1FGC WG3F

KC1KUG W0FJ W1FMX K1ARR KEOLUA AB10 N1AOB <https://www.qsl.net/kb1fgc>

**Togo** 5V7RU Team will be active from Togo, 28 October - 6 November 2022. Team - RA1ZZ. R7AL, RW9JZ, RW8A, R9LR, R5EC. They will operate on 160 - 6m and QO - 100, CW, SSB, FT8. QSL via R7AL, LOTW, ClubLog OQRS.

### Novolazarevskaya Station Antarctica

Oleg, ZS10IN will be active as RI1ANU from Novolazarevskaya Station, Antarctica, starting 24 October 2022. He will operate on HF Bands using Icom IC7300 with PA 1 kW and antennas A4S and V-Beam. QSL via home call. Oleg Neruchev, P.O.Box 808, West Beach Vill, 7433, Cape Town, South Africa.

## The Water Hole by Armando Delgado, KN4JN

Water is the most essential element for life on earth. The human body is 60% water; most animals and plant life are also mostly composed of water. Water fills the oceans and makes up all the ice in the poles of the earth. It could be said the earth is a water planet.

The chemical formula for water is H<sub>2</sub>O, which denotes a very simple molecule: two atoms of hydrogen attached to one atom of oxygen. The bonding attachment between these atoms is called a polar covalent bond, which is not static. The two hydrogen atoms form an angle of 104.45° with each other, allowing the water molecules to snuggle closely when in the liquid form. This close proximity of water molecules causes them to dissociate into hydrogen (H<sup>+</sup>) and hydroxyl (OH<sup>-</sup>) ions, a dissociation that gives water its extraordinary dissolving qualities. Water will dissolve almost anything.

Hydrogen is the most abundant element in the universe and hydroxyl is the second most abundant molecule. These two are pervasive in the cosmos and a gaseous cloud of these elements surrounds our galaxy. Occasionally, an electron in a hydrogen atom's outer shell becomes temporarily energized. When these electrons drop to a lower energy level, they release a photon with a frequency of 1420 MHz. Hydroxyl molecules perform a similar electron phenomenon and release a photon at 1666 MHz. Considering the abundance of these elements in the galaxy, the radio spectrum shows two noise peaks at these respective frequencies, with a relatively quiet gap in the spectrum between them.

In 1959 some scientists suggested that any alien civilization that had discovered radio and radio astronomy would be aware of this quiet area in the radio spectrum and might use it to send radio signals into space in an effort to communicate with other intelligent worlds.

In 1971, scientist Bernard Oliver called this radio gap the "water hole", in reference to the fact that it is between the signals of the two elements that make up water, but also as a reference to the proverbial water hole that throughout history served as a gathering place for humans to exchange information and trade.

During the past 50 years radio astronomers have listened for alien signals in the water hole, but so far unsuccessfully. The criteria for a valid alien signal are that they should have a pattern different from natural radio noise and that they should repeat. There have been some suspect signals, like the "WOW" signal heard in 1977 at the Ohio State University Big Ear radio telescope. This signal was heard at 1420.4556±0.005 MHz, just above the hydrogen line. Unfortunately, it did not recur and thus could not meet the required criteria to qualify as an alien signal. More recently, a suspect signal detected at The Parkes telescope in New South Wales, Australia, originating from the sky region of Proxima Centauri met the same fate, since it did not recur. This latter signal was not heard in the water hole section of the spectrum, but at 980 MHz.

The unsuccessful search for alien signals for 50 years may seem discouraging, but when one considers the tremendous distances in the universe, 50 years is almost no time at all. The closest star to our solar system, Proxima Centauri b, is 4.24 light years away. A signal from that system would take 4.24 years to reach Earth; a reply from us would also take 4.24 years to reach them. That is 8.5 years to complete a cycle. To achieve a common language that permits intelligent communication would require many such cycles; it may take

100 years to reach that goal. Any other star would require much longer time periods. The source of the WOW signal is not well established, but a suspect source is a star in the constellation Sagittarius, 2MASS 19281982-2640123, located 1,800 light years away. Contact with whoever sent the signal, if it is an actual signal, at that distance would be practically impossible. On the other hand, there are 131 stars identified within 20 light years from us, many less than 10 light years away. Although contact with some of those could be feasible, it would take generations to establish a dialog.

For the past 50 years and continuing into the future, humans carry on the search for a radio signal from an alien civilization. Detecting a signal, however, will only confirm what most people already suspect, that we are not alone in the universe.



### 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



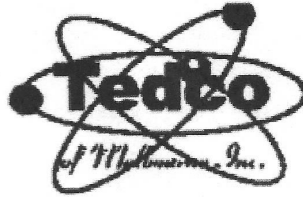
### Editor's Note:

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	SCOTTSMOOR Near US1-Aurantia Rd	EOC	TSQL as of 5/2018 Relocated 4/2019
147.135	135 RO	+600	107.2/107.2	K4EOC	ROCKLEDGE-EOC	EOC	TSql as of 5/2018
147.240	240 DE	+600	123.0	KV4EOC	DELAND	VARES	
147.255	255 PB	+600	107.2	K4DCS	Near Babcock & Palm City S City limi	PBARC	
147.330	330 TI	+600	107.2	K4NBR	TITUSVILLE-PARRISH HOSP.	NBARC	
147.360	360 TI	+600	107.2	N4TDX	TITUSVILLE-PARRISH HOSP.	NBARC	DSTAR Gateway in work
442.850	850TI4	+5000	107.2/107.2	N4TDX	TITUSVILLE-PARRISH HOSP.	NBARC	TSql;FUSION/WBFM/WIRES-X
444.325	325ME4	+5000	107.2	K4DCS	MELBOURNE-TRINITY TWRS-E	PBARC	
444.375	CNLBRE	+5000	107.2		195 FDT Twr 1/2 Mile N of County Lin	SARNET	"SARNet Sebastian Repeater"
444.425	425ME4	+5000	107.2	W4MLB	MELBOURNE- RIALTO PL.	PCARS	
444.525	525RO4	+5000	103.5/103.5	K4EOC	ROCKLEDGE-EOC	EOC	TSql; VOICE/NBEMS
444.650	CNMBRE	+5000	107.2	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	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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POWER SUPPLIES  
TUBE EQUIPMENT

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ALINCO  
ANTENNACRAFT  
ANTENNA SPECIALISTS  
ARRL  
ASTATIC  
ASTI

BEARCAT  
BECKMAN (WAVETEK)  
BUSSMAN FUSES  
BUD

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

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

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SR COMPONENTS  
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SWITCHCRAFT

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

UNIDEN  
UNIDILLA  
UNION CARBIDE

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VECTOR  
VIDEO EQUIPMENT

W2AU BALUNS  
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[tedco@bellsouth.net](mailto:tedco@bellsouth.net)

Hours:  
MON - FRI 9 AM - 5 PM  
SATURDAY 9AM-3PM

TED - W4LR - GENERAL MGR.

DOTTIE - OFFICE MANAGER