



CHEESE BITS

W3CCX
CLUB MEMORIAL CALL

ARRL
Affiliated
Club



Volume LXIII

March 2020

Number 3

PREZ

SEZ:

Winter is on the wane – hopefully. The Delaware Valley escaped a lot of bad weather this year compared to the rest of the country.

We've already set the clocks ahead for Daylight Savings time. I've also notices migrating flocks of birds at the feeders lately. The little buggers are taking me broke. My wife is buying seed in 50 pound bags!

The March meeting is right around the corner. It will host our annual "Home Brew Night". It's time to look on your operating desk or project shelf and decide what to bring to the meeting. We will have a projector and screen available so you can bring more detailed information and pictures on a USB drive too! As always judges are selected to choose winners in various categories. We will not have a test equipment bench this year. Instead we'll have your presentations on you favorite vintage piece of Ham equipment. If your favorite happens to be a very heavy "Boat Anchor" like a DX 100, bring pictures and specifications instead. A short story on your most interesting contact with that equipment might also be of interest. Hmm, where did I put my old Knight Kit SpanMaster superregen receiver? It's got to be in my closet somewhere.

Planning for Camelback has been ongoing with 3 conference call meetings so far. We made an effort to color code rotors/towers, pre measure cable and coax runs on a plot plan to speed and ease setup. There was a work party at the Dover

Delaware Race track on Saturday, March 7th to get some things organized for June.

We've had a good number of volunteers for June but we can always use more at Camelback. Come for even a few hours on Saturday and Sunday to sit down and operate what is shaping up to be a great set of stations from a great location. And - we can always use more help at setup Friday and tear down Monday morning. Bob W2SJ is heading up a team to **rebuild and simplify our 902 thru 10 GHz stations**. Come join Bob and the group. We will try to make sure that everyone who comes up has the opportunity to operate on at least one of our 10 bands. By the way, both our operating vehicles are air conditioned!

Don't forget the Sprints are right around the corner. April 6th is the first one. It's on 2 meters. 222 and 432 are also in April. They run from 7 to 11 in the evening. As I remember it, most of the activity is during the first 2 hours. Get on and have some fun. Lenny should have more details at the end of Cheese Bits.

April's General meeting is also ARRL and Awards night. It's always interesting to hear the presentation and to ask questions of the ARRL. This year shouldn't be different.

Also in April The N.E.W.S. Group is holding the 46th Eastern VHF/UHF/Microwave Conference April 17-19, 2020 at the Manchester Inn & Suites in Manchester, CT 06042. Check out their web site.

Pack Rats **CHEESE BITS** is a monthly publication of the
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PACKRAT 222 MHz REPEATER - W3CCX/R

222.98/224.58 MHz (PL 136.5) Hilltown, PA

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PACKRAT BEACONS - W3CCX/B

Located at FN21be except 2304 which is at FN20dh
50.080 144.300 222.062 432.290 903.072 903.3 1296.264 2304.3
3456.200 5760.3 10,368.3 MHz (red = temporarily off the air see
<https://www.packratvhf.com/index.php/on-air> for details)

MONDAY / TUESDAY NIGHT NETS

VHF/UHF Monday:

<u>TIME</u>	<u>FREQUENCY</u>	<u>NET CONTROL</u>
7:00 PM	224.58R MHz	WR3P FN20kb Ralph
7:30 PM	50.150 MHz	N3RG FM29ki Ray
8:00 PM	144.150 MHz	K3GNC FN20ja Jerome
8:30 PM	222.125 MHz	KB1JEY FN20je Michael
9:00 PM	432.110 MHz	WB2RVX FM29mt Mike

Microwave Tuesday:

7:30 Coordinate QSO's on 144.260 for all Microwave bands you'd like to work. Also setup Q's at w4dex.com/uhfqso or **Packrat Chat Page W3SZ.COM**
Visit the Mt Airy VHF Radio Club at: www.packratvhf.com or www.w3ccx.com

The WARC is holding its annual Hamfest and hosting the ARRL EPA Convention Sunday, May 3rd, 2020 at the Lower Bucks County Community College – Lower Bucks Campus Bristol, PA. This is usually a good Hamfest. Stop in and check it out! It opens at 7:00 am.



May is the Dayton Hamvention which is always good. I always find something I absolutely need. But that said, I think I enjoy going out with a few friends and also meeting other Hams and having a good time. You just can not get that on Ebay or Aliexpress no matter how hard you try.

So what's on your bench?

Have some fun, learn more, build something.

73, George KA3WXV

February Meeting Pics







Tnx
K3JJZ,
W3GAD &
KOBAK for
the
Pictures



LARCAN PROTECTION BOARD MODS

By Ed Finn WA3DRC

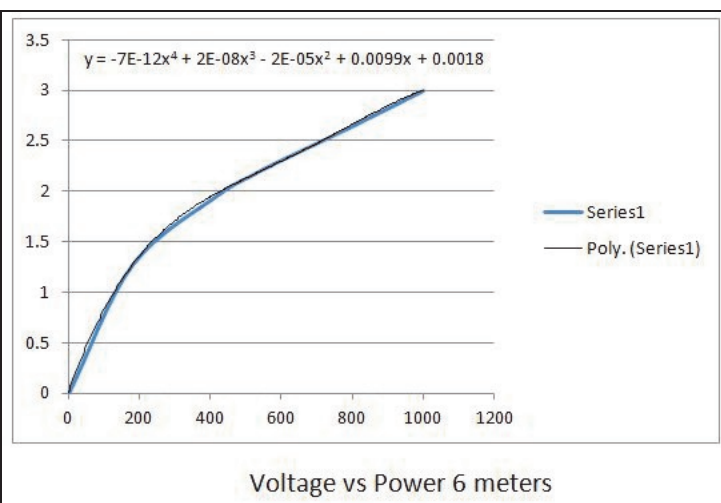
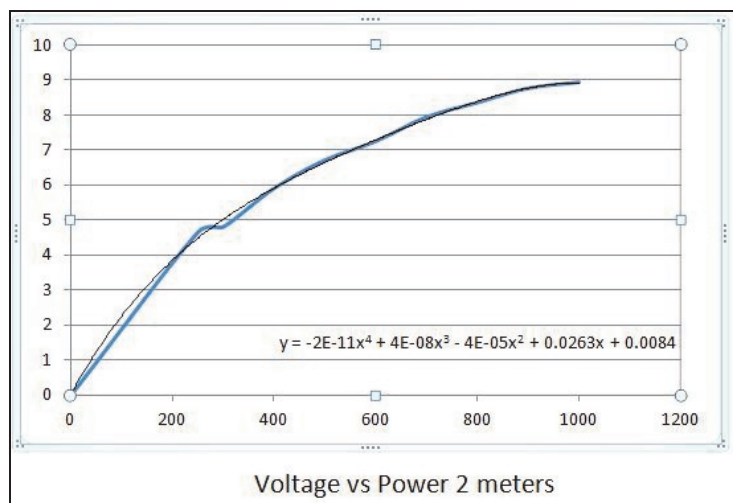
During conversion of two Larcans linear amplifiers to 144 and then 50 MHz, I did not find any information on protection modifications to the existing circuit but I did hear some horror stories about blowing power transistor devices from high SWR. Since I already destroyed devices with overdrive I did not want to fry more with high SWR.

Control circuits: First, there are circuits on the board for hot swap protection. For our service we do not need these. I disabled this function by unsoldering the collectors of Q1 and Q3 and pulling the leads out of the pcb holes. Inspection of the existing circuit shows that it least considered dealing with high reflected power. The reflected SWR is monitored by opamp U2B. The adjustment is made by potentiometer R21. The input to this monitor is from the directional coupler printed near the RF output line. Another opamp U3A is monitoring forward power. R4 is the adjustment for forward power level reading This will turn on the green front panel LED when you are making power at the setpoint determined by R4. While setting up the amplifier, I adjusted R4 to turn the LED on at about 800 watts of output power.

So back to reflected power protection...

The directional coupler monitors both forward and reflected power. It is symmetrical, so I first characterized the voltage output of the detector in the forward direction; first on the 2 meter unit, then later for the 6m version. The detector is less sensitive on 6 meters.

I entered data into excel for both bands, plotted and curve fitted the response.



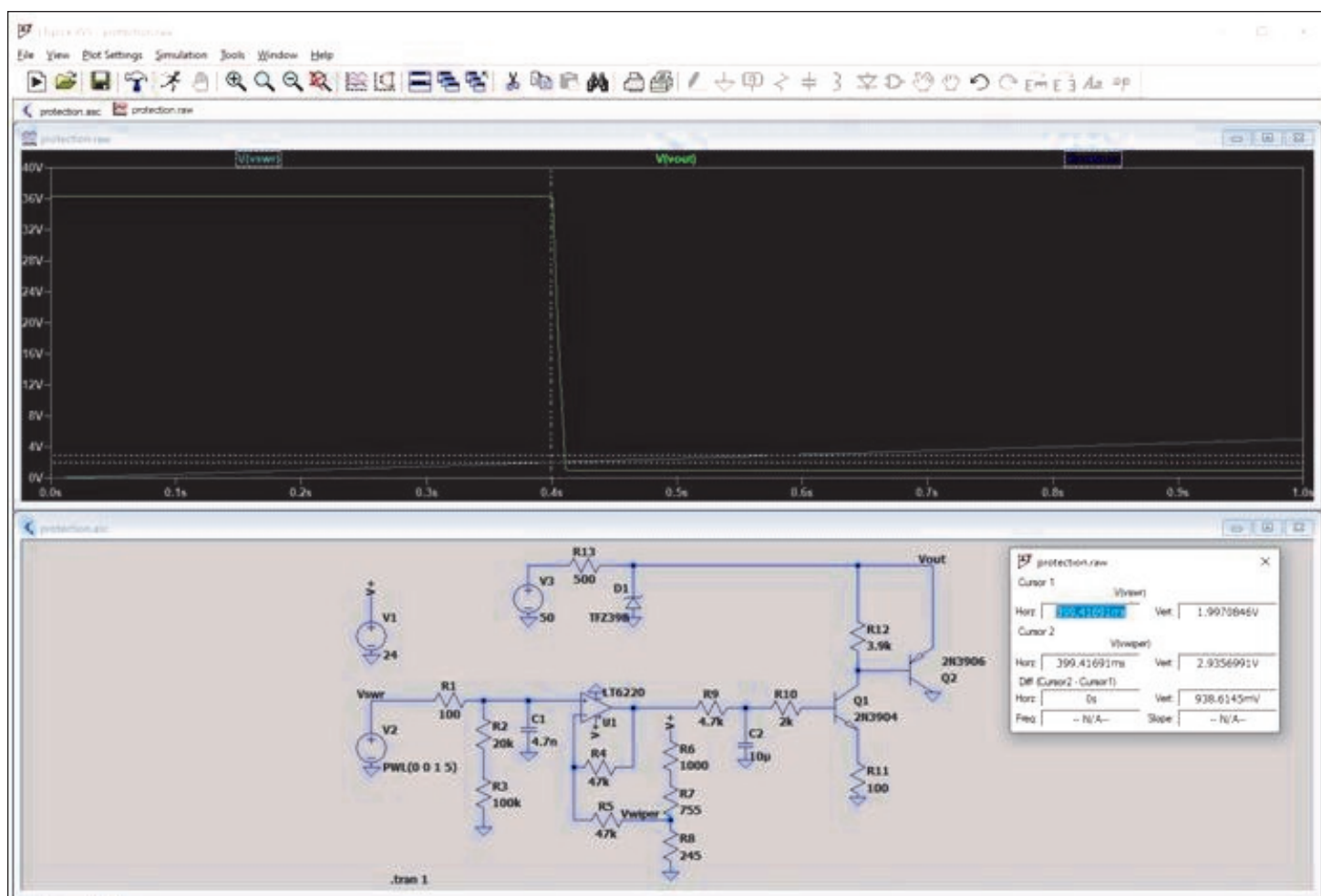
This is where you get to pick how much reflected power you want to tolerate. The circuit will remove the 39 volt gate voltage going to the distribution circuit when it activates. This will cut the power output significantly, but not entirely. The devices still have some output at 0 volts on the gate, and probably need a bit of negative voltage to shut off completely. I did not try this.

In order to make this work, I chose to use the detector voltage for each of the 2 bands that corresponded to what would be the circuit input at a 2 to 1 SWR at full power output of 1.5kw. This is roughly 120 watts. By curve fitting and plugging this power into excel for each band I derived the detector voltage.

At this point I modeled the Larcan protection circuit in free LTSpice. As input, I have a voltage ramp to simulate increasing reflected power. The circuit is NOT a true comparator circuit but combined with transistors Q2 and Q4 acts like one. Once a certain input voltage is reached the circuit starts to lower the gate voltage thus cutting back the power.

Since this circuit is not a true comparator and is acting as an amplifier, there is current flowing in the negative feedback circuit. This means that the voltage at the wiper of the pot is not the same as the detector voltage you are using to start folding back power. By using the cursors in LTSpice you can drop cursor at the detector voltage you select and then add another on the wiper voltage. I then adjusted the values of the potentiometer resistors (remembering they sum to 1000 ohms) until the circuit starts dropping the gate voltage. Now drop another cursor onto the wiper node and it will tell you the voltage to set your wiper. It is a bit iterative but easy.

I will make the LTSpice schematic and Excel spreadsheet available for download. With these you get the detector voltage of your choice and can adjust your wiper.



Larcan Reflected Power Circuit

September 1984: The best VHF Contest Ever ?

By Russ K2TXB

On September 6, 1984, Hurricane Diana was forming in a tropical depression between the Bahamas and Florida. Steered by a cold front out of Canada, the storm drifted along the coast of Florida and the Carolinas for several days.

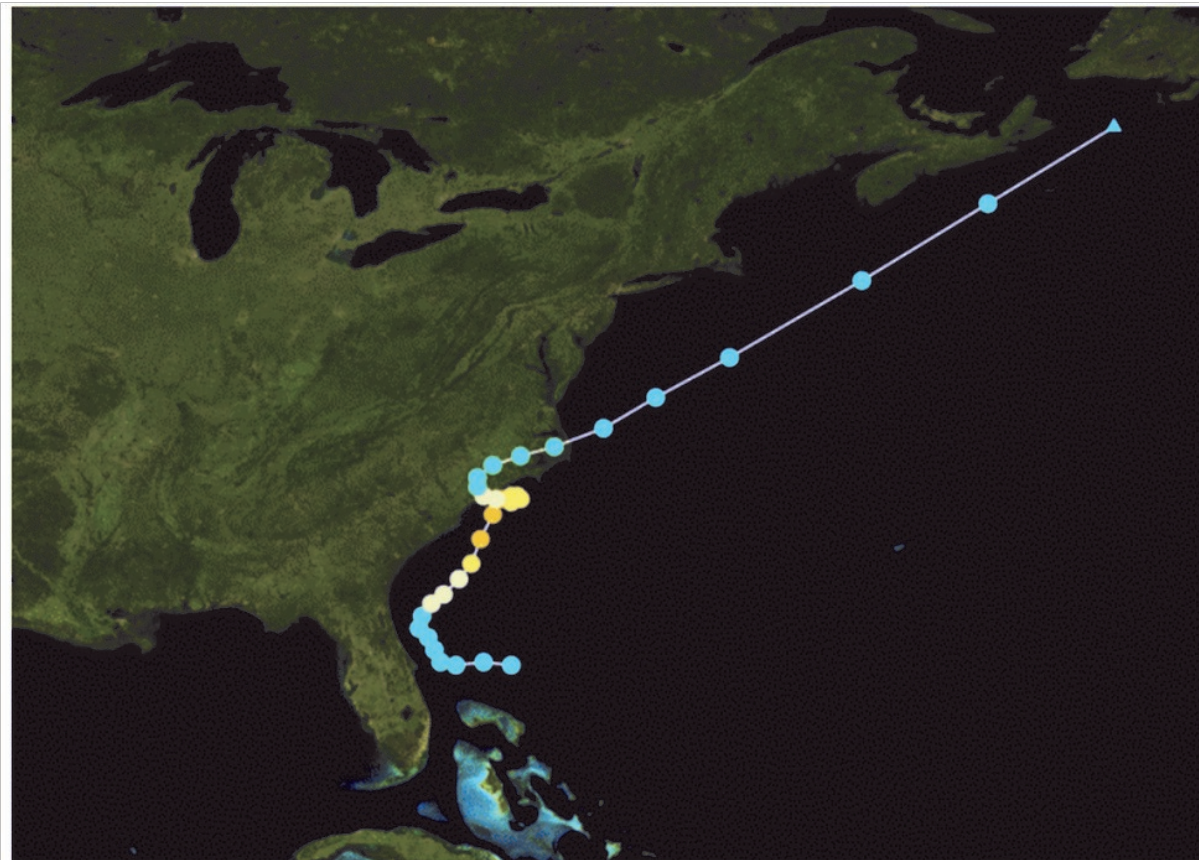


Figure 2. Full track of Hurricane Diana, September 8-16, 1984.

This unusual weather combination produced one of the greatest tropospheric VHF openings in memory. The ARRL VHF QSO Party started on September 8, and what a party it was. Over the course of the contest the band was open from Florida to Nova Scotia, and as far west as the Florida Panhandle. The two meter ham band seemed ALIVE!

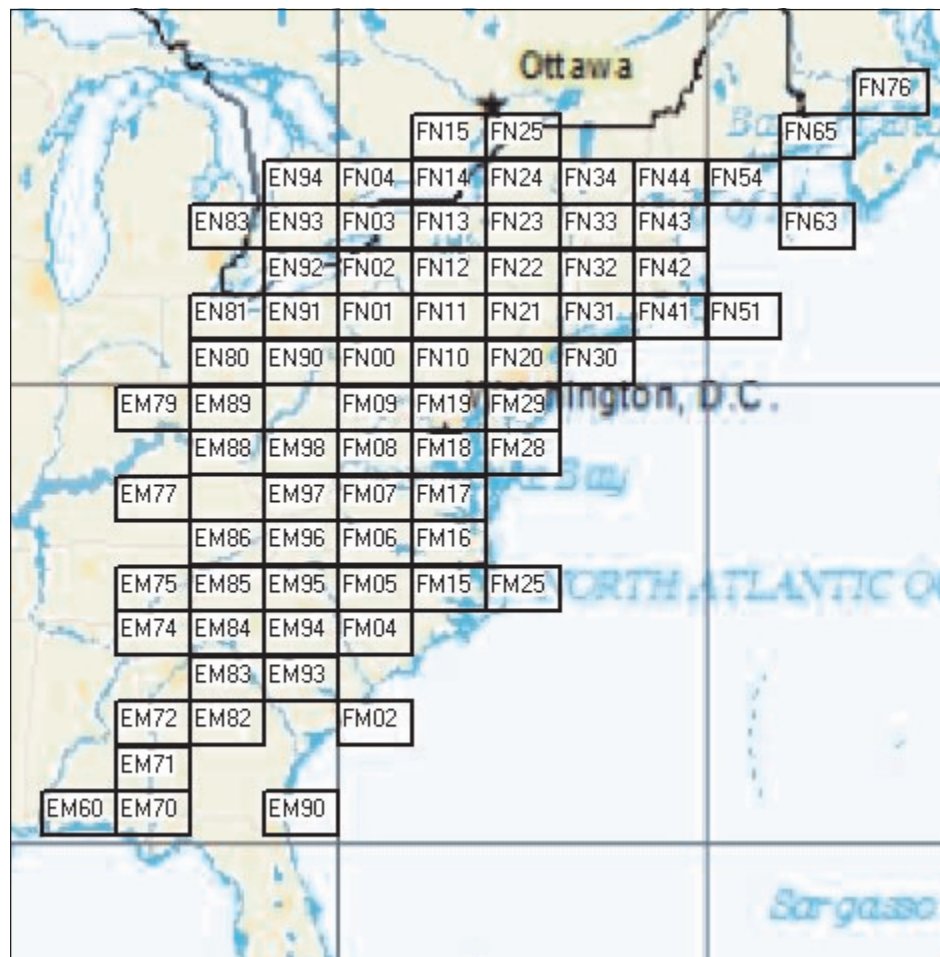
This was the first contest to use grid squares as multipliers, and it was only the second contest I had operated in, since moving to New Jersey (in FM29) in 1983. I did operate in June, the last contest to use ARRL sections as multipliers and thought it was a great contest, but nothing had prepared me for the happenings of September. I first got on the air on May 8, 1984 running a brand new Yaesu FT-726R; 10 watts to a 7 element beam perched in a pine tree in my side yard. I was an experienced VHF operator, hailing from western New York state in what is now called FN02 (Jamestown NY). When I moved to NJ, I brought along a lot of ham gear, including my 60 foot tower and an aging two meter amplifier that I had built in 1970, using a pair of 4CX250B tubes, but with a defunct power supply.

This was also the year that KLM introduced their 16LBX antenna for two meters. It was one of the first Yagi antennas that was designed by computer. I knew I wanted it, so I got a friend who was going to the Dayton hamfest to bring home a pair for me. At the same time, I put up my tower and set the 7

element antenna at the top, temporarily. Then I started building up a new high voltage power supply. By May 21st I had a solid 2200 volts under load on the 4CX250's and they were producing over 1000 watts, class C on CW. I ran them at 800 watts output on SSB (class AB1) to keep them more linear. With the pair of 28 foot long antennas at 70 feet, and a GaAsFet preamp at the top of the tower, I had a top two meter station once again.

So, at 1800Z, when the contest started, I was primed. The band was very active and I was working 2 and sometimes 3 stations per minute during the first two hours! Most of them were the somewhat local stations I was used to working on a daily basis, from Virginia to the lower New England states, but at 1854 my CQ was answered by ND4T in EM86, NC. That seemed like a good catch, but things went back to normal until 1954Z when I worked WB4NMA, EM84 in Georgia! The band continued to be active and teasing us with a few contacts into North and South Carolina throughout Saturday evening, but at 0255 (11 PM local) I worked W5HUQ in EM90. The band was open to Florida! From then on, things got better and better, continuing throughout the contest. At 0646 the opening had spread to the north, working VE1UT in FN63, followed by FN65 and FN76. The activity never stopped for the night; I continued operating until 12 noon on Sunday, when I had to quit due to exhaustion! I was back up and at it by 4 PM local time, working W4GJO in EM74 immediately – the band was still open! The activity continued strong to the end; I worked a new grid just six minutes before the closing bell.

In all, the totals for me were 447 contacts in 76 grids, and 26 states. This allowed me to complete the VUCC award for 2 meters in just 4 months from getting on the air. I have VUCC certificate #35. Here is the grid map for that contest. :



It is interesting to note some of the activity levels, compared to today. Here are a few of the notable examples

Grid	Contacts	Grid Contacts	Grid Contacts	Grid	Contacts
EM74	6	EM84	5	EM95	4
EM96	4	EN90	7	FN00	8
FN10	12	FN12	5	FN13	8
FN21	12	FN30	26	FN41	13
FN43	7	FN65	3	FN20	66

Is September 1984 really the best contest ever? For me it was. I have never topped my score of 33,972 points on two meters alone. I did work more 2 meter contacts in one January contest (over 600) but never had as much DX or as many new grids as then. I also recall a contest I worked from the mountain in WNY, when there was 2 meter E-Skip to the whole southwest for much of the contest. That could have been a better contest but the band was so full, and signals so strong, that it was hard to make contacts.

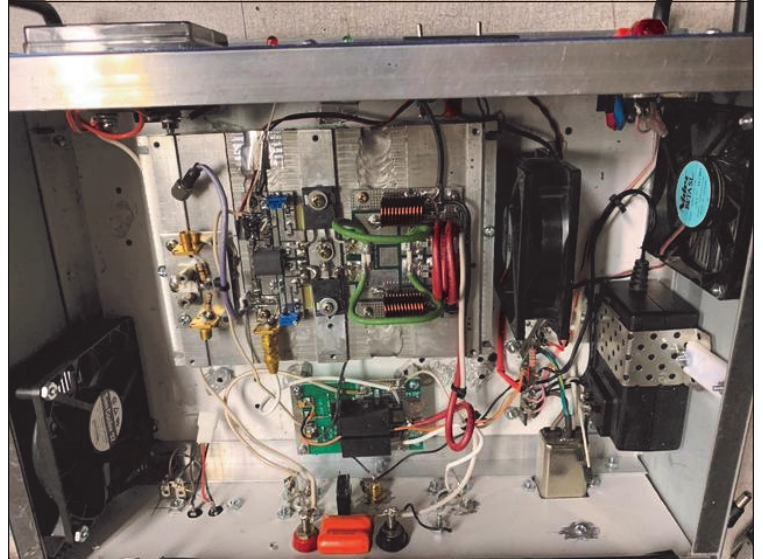
So, at least for me, the answer is a resounding YES – Best contest ever. **73, Russ K2TXB**



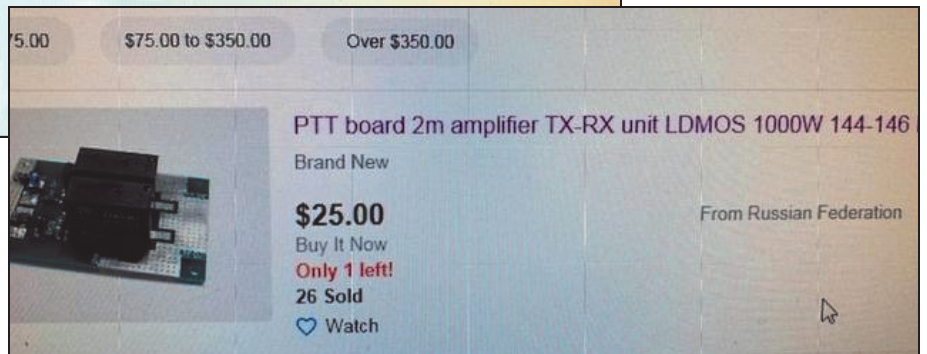
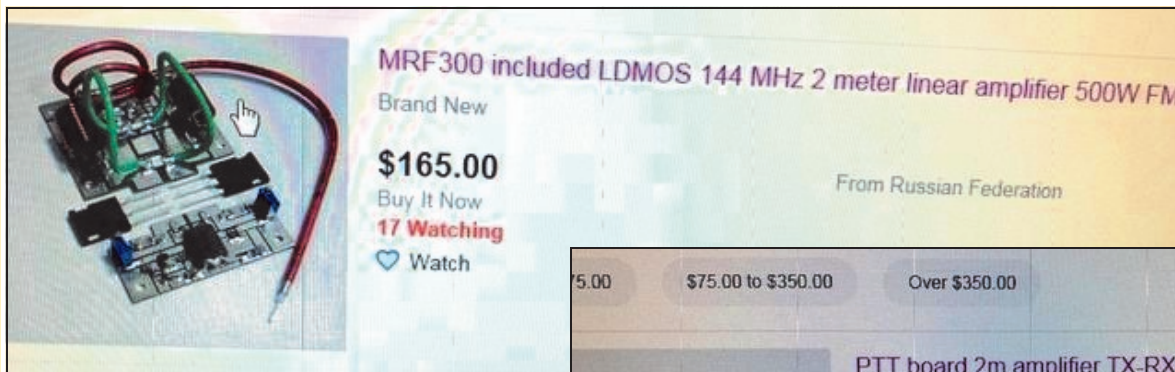
New 2M Amplifier Built By KC3ACQ

Jim, KC3BVL sent some pictures of a new 2 Meter power amplifier built by Vitaly KC3ACQ.

He built this amp:



Using these EBay parts:



This amp has internal 12v for bias, fans, relays. The external 48V PS can supply 18A. Bill AA2UK and Vitaly agree the transistor will work on 222MHz.

According to Jim, Vitaly says "Anyone can come to my house and I will show them how to build it"

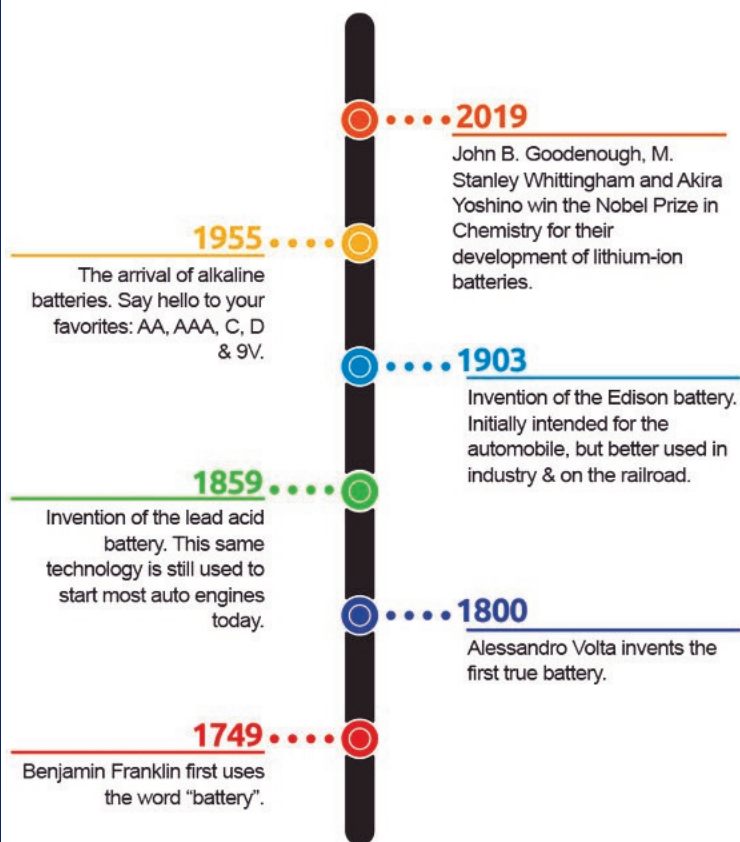
Michael KB1JEY as shown on p.66 of the February CQ.
(Tnx KC2TN for the reference and K0BAK for the picture)



Most hamfests feature a flea market — usually outdoors — where hams sell their no-longer-needed treasures from the backs of their cars. This is Michael Davis, KB1JEY, at last year's Dayton Hamvention® flea market.

250 Years Of Battery Development

(Courtesy of W3GAD)



The 2020 Eastern VHF-UHF-Microwave Conference

The 2020 Eastern VHF-UHF-Microwave Conference sponsored by the North East Weak Signal Group (NEWS) will be held April 17-18-19 at:

Manchester Inn & Suites (was Baymont Inn & Suites, same site as in 2018) 20 Taylor St.,
Manchester, CT 06042

Reservations available Now: ****\$99 per room
EXPIRES March 15****

Call the Manchester Inn & Suites:
860-783-5600

ask for the "North East Weak Signal Group" or
"Eastern VHF Conference" \$99 rate

Registration \$20 (\$25 after April 10)
includes proceedings CD & Saturday Lunch
Banquet \$35 Must order before April 10

REGISTRATION & Banquet Purchase is ON-LINE
NOW at newsvhf.com

SCHEDULE

Friday, April 17

Afternoon Program & Evening Hospitality

Sat. April 18

Full Day Program, Vendors, All Day Beverages,
Pizza+Grinder Lunch included with Registration!
Evening Banquet with Prize Table

Sun. April 19

Morning tailgate in parking lot, 8am-Noon

Call for Papers & Presentations
Please Contact Paul Wade, W1GHZ
w1ghz@arrl.net

Please consider making a presentation
and/or writing a paper to be included
in the Proceedings CD

For general conference information:

Mark Casey, K1MAP

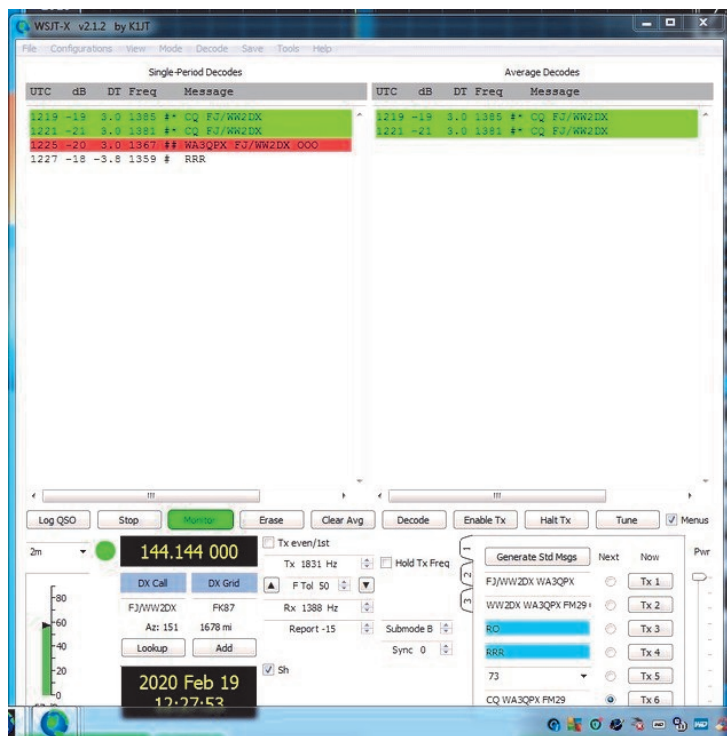
map1@mapinternet.com

413-777-9828 call or text

2M WA3QPX / FJ/WW2DX QSO

WW2DX was running two antennas vertically polarized and amp using his 7900 /jt65b. This is something that can be done in deed restricted communities. Just put antennas up when you decide to get on the air. Antennas were mounted on tripod set on the balcony of the hotel. Pics of his end are on his website.

Need help getting started? Email me with your phone number. GL!, Paul,WA3QPX



Dave (W3KM),

A short while ago I decoded your FT8 CQ on 20M. I gave you several calls but you went back to PY2VOX. I thought you might like to see the modest antenna that was used to decode your CQ, from my portable location on the East coast of Florida.

Details:

- VSWR is just under 3 to 1. Thank goodness for the tuner in the FT-991A.
- 4 radials. Two were wound around the railing.
- Not shown - a concrete wall is 10 feet to the left of the antenna.

I will be looking for a 6M antenna when I visit the Hamcation.

73, AI W9KXI



Ray N3RG and Bob W2SJ putting the final touches on the Microwave stack before raising the tower on High Knob, 2017

The College of New Jersey Hosts
The 45th ANNUAL ORIGINAL PERSONAL COMPUTER FESTIVAL



TCF'20™



Twitter:
@TCFfestival

NJ Makers Day Partner

Saturday, March 21, 2020 at The College of New Jersey, Ewing NJ



Focus on Artificial Intelligence

3:40pm

Keynote Speaker:

Jerry Foster

CTO & a founder of Plex Systems,
on "How I Learned to Stop Worrying
and Love Artificial Intelligence"

There is much talk these days about machine learning and artificial intelligence (AI), and for good reason. AI is the enabler that drives exponential value from all other technologies; for any process that generates data, it is no longer optional, but a requirement. This keynote provides an overview of Artificial Intelligence, from its humble beginnings to disruptive force, with an eye towards the significant positive impact on our world.

Jerry Foster is the CTO and one of the founders of Plex Systems, which today helps more than 600 manufacturers worldwide run their businesses. Jerry continues to set the pace of the innovation in the cloud, leading the company's technology strategy and research initiatives that drive the industry forward.

Admission: \$14.00 (advance)

\$20.00 at Door

Free Parking / Wi-Fi

www.tcf-nj.org

at The College of New Jersey, Ewing, NJ

Saturday, March 21, 2020

9:00am - 5:00pm (vendors close at 3:00pm)

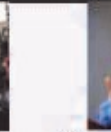
Registration/Vendor Fair open at 9am, Talks start at 10:15am.



Lou Judice
Leads the
WordPress Bootcamp



Mike Redlich & Chuck Knight
Conduct OOP University
Python & Java



Author Barry Burd on New
Insights in Quantum Computing;
Using Flutter in Mobile Devel.



Donn Fishbein on
Stock Market Investing
using Neural Networks



Joe Jesson on
the New 5G Internet
of Things (IoT)



Randall Cole on
Machine Learning
with Azure



Hands-on
Arduino Workshop
for Beginners

Home Automation with IoT & Smart Devices

**Ham Cram Session & Exam:
Get an Amateur Radio License in
one day at TCF! Cram begins at 9am.**

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**50+ Talks, Workshops, Tutorials,
Demos and Special Events!**

Windows 10:

Dave Soll on Win 10 Tips and Tricks

**All-Day Robotics Pavilion
Rooms ED-205 and AR-124**

Maker Demos; Get Started with Drones

Tour the Sarnoff Museum of Technology



**TCF Saturday Banquet with Door Prizes.
Ticket Information is on the TCF website.**

IEEE Integrated STEM Education Conference (ISEC)**

Saturday, March 28, 2020 – 8:00am — 5:00pm
at McDonnell Hall, Princeton University, NJ
Theme: ISTEM: Lead, Engage, Succeed!
Info: <http://ewh.ieee.org/conf/stem/>

IEEE/ACM IT PROFESSIONAL CONFERENCE

The Friday part of ITPC is cancelled for 2020, but is expected to return next year. The Saturday part continues as planned as part of TCF. Those planning to attend ITPC are encouraged to come to TCF.

**For additional TCF'20 info,
directions and advance tickets:
www.tcf-nj.org**

**The IT Pro (Friday) and ISEC Conferences require separate registrations.

The 2020 TCF™ is sponsored by The College of New Jersey, its School of Engineering and supported organizations.

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The Wayback Machine In CHEESE BITS, 50 Years Ago

Nibbles from March 1970. Vol. XIII Nr. 3
de Bert, K3IUV
(*author's comments in italics*)

“Our Prez Sez”. Prez Ernie, W3KKN, highlighted and commented on the coming events. A good time ahead: **432:** a work session to put the recently acquired “car phones” on 432. (A “Car Phone” was a mobile rig used in taxicab service. Built by RCA and Motorola, large numbers became available from NY’s taxicab fleet). To be held at Mario’s QTH (not unlike our recent workshops to utilize TV gear on 220 et. al.); **Ladies Night:** details inside; **VHF QSO Party:** (The June contest). Hilltown site is reserved. Get ready for some real vhf dx (we still say the same thing.); **Antenna Measuring Party:** scheduled for Mario’s QTH.) His conclusion, “Boy, are we gonna have fun.”

ARRL Bulletin NR 256, 1/22/1970. The FCC has taken final action, and moved the CW sub-band from 147.9 through 148, to 144 through 144.1 (So that’s when it happened!).

ARRL Bulletin NR 258, 1/29/1970. The Australis Oscar 5 satellite continues to operate successfully on 144.050 and 29.450 MHz. Amateurs receiving signals are requested to send reports to AMSAT.

Membership. Applied for membership: W3ELX, Mario Deluca, and K3DMA, John Taylor.

Technical Topics. Member W2AXU, Jack Power, provided full construction details

and a schematic for a “50 MHz linear amplifier” and associated power supply. Using a pair of paralleled 6146s, 1 watt drive would provide about 80 watts output. Alignment and tuning instructions included use of a grid dip meter, and how to “neutralize” the finished amplifier. (*Old-timers will remember both of these items!*). The power supply design used a pair of VR-105 voltage regulator tubes (*forerunner of today’s zener diode reference devices*).

Silent Auctions. K3GAS, Doc, bemoaned the lack of support for the silent auctions he had pushed for at the club meetings. The idea was for members to bring useful items (*no longer needed*) to the meeting where they would be placed on a “bid sheet” for offers during the meeting. 10% of the sales would go to the treasury. He encouraged members to “spend a few shekels.” (*I still have the “bid sheets.” Is there support to resume this activity?*)

New Products of Interest to Hams. An aperiodic article, by W3NSI, Lynn. “Dri-Wick,” \$1.50 a roll. For sucking solder out of a connection (*Did you realize it was 50 years old?*). Also, Arrow-Hart toggle switches, with paddle type levers available in several colors. \$2.18 each. Lynn suggested using them to “dress up” your rig, with different colors for different functions!

Ladies Night Announcement. A “flyer” provided details on the upcoming Ladies Night. Buck Hotel, May 2nd, Prime Rib dinner, Music and Dancing. Prizes for all. The price? \$8.00 per person. (*What a bargain. Try to do that today!*) However, the flyer was

adorned with what could be called a "sexist rat." (*It would never be allowed today.*)

Swap Shoppe. By W3ZRR. (*Always nostalgia. Now we use the club reflector.*) For sale: by W3GEW. A Gonset G76 mobile power supply, good condition. First offer over \$30 takes it. Also a home-brew 6-meter amplifier. 2E26 tube with modulator and power supply, make offer. And from WA3BIV, Carl, a 2-meter Gonset linear (with spare tubes) for \$200.

Tidbits. WA8FZW, Len, flew in from Michigan to attend the home-brew night meeting. He stated "If they're all this much fun, I'll come down for the next meeting." K3BBP, Walt, has a passion for building gear in small household containers, like beer cans, coffee cans, sardine cans, etc.. (*Walt, was /is this true?*).

HAM Buerger's Ad. Featured a 6146 tube for \$3.99. (*Get a pair, and build Jack's amplifier.*) RG8 cable, 100-ft for \$11.88. VHF connectors, 5 for \$2 (*Don't you love those prices?*)

Miscellany. *Postage for this copy was still a single 6-cent Roosevelt stamp. (7 double sided, 8-½ x 11" sheets.) As usual, many "folksy" comments about members, their families, and activities were included in this edition of Cheese Bits. If interested, or for more detail on the above items, visit our website (www.W3CCX.COM) and read the full issue scanned by K3IUV (me), and posted on the website by W3SO, our webmaster. Remember, I have also*

cont'd p.17

Events

For inclusion, please direct event notices to the editor.

Cherryville (NJ) Hamfest - Hamfest - March 14, 2020. Sponsored by Cherryville Repeater Assoc. See <http://www.qsl.net/w2cra> for details.

Trenton Computer Festival –Conference - March 21, 2020. At The College of New Jersey, Ewing NJ. Details at <https://tcf-nj.org/>

2M Spring Sprint –Contest - Monday April 6, 2020. See <https://www.sites.google.com/site/springvhfupsprints/home/2020-information> for details.

222 Spring Sprint –Contest - Tuesday April 14, 2020. See <https://www.sites.google.com/site/springvhfupsprints/home/2020-information> for details.

432 Spring Sprint –Contest - Wednesday April 22, 2020. See <https://www.sites.google.com/site/springvhfupsprints/home/2020-information> for details.

RF Hill RC - Auction - April 29, 2020. Sellersville FD Banquet Hall. See <http://rfhillarc.club/auction/> for details.

Microwave Spring Sprint –Contest - Saturday May 2, 2020. See <https://www.sites.google.com/site/springvhfupsprints/home/2020-information> for details.

Warminster ARC Hamfest - Hamfest - May 3, 2020. Bucks County Community College. See <http://www.k3dn.org/hamfest/> for details.

6M Spring Sprint –Contest - Wednesday Saturday May 9, 2020. See <https://www.sites.google.com/site/springvhfupsprints/home/2020-information> for details.

June VHF Contest - Contest - June 13-15, 2020. Details to follow.

Valley Forge Hamfest - Hamfest - July 11, 2020. Kimberton, PA. See <http://www.marc-radio.org/>

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.... Wayback cont'd

posted the club Officers history, club Membership history, and Packrat Inventory on the W3CCX website. I hope you enjoyed reading these bits of nostalgia as much as I did in writing the article. If yes, you might let me know. Thanks to those that did.

thirty, de K3IUU (K3IUU-at-ARRL.net)

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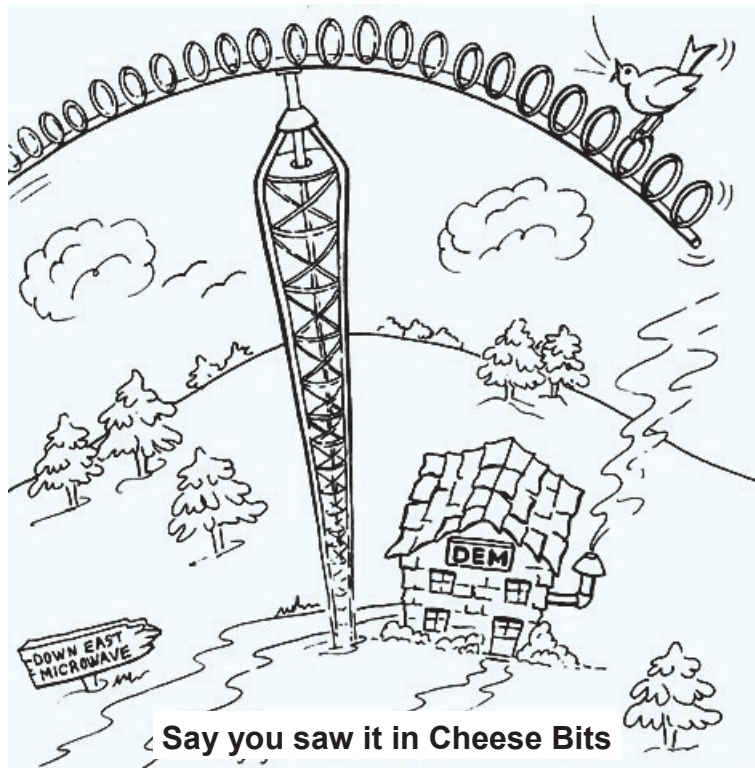
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