

# THE NUGGET



Mother Lode DX/Contest Club

## The Newsletter of the Mother Lode DX/Contest Club

April 2023

Volume 29 Number 4

### Treasurer's Report

MLDXCC Treasurer's Report - March 2024

3/1/2024 Opening Balance \$2,329.07

Income \$130.00

2024 Dues - Paypal \$0.00

2024 Dues - Checking \$130.00

Expenses \$0.00

none

3/31/2024 Ending Balance \$2,459.07

Things are a bit short this month with no meeting and the Visalia convention. Visalia wasn't as large as in previous years. I think the average age was 80. Discussions were an even split between DX and comparing our meds. This was a good chance to see who was still living.



Sue Allred, K6SZQ



I need antenna help so I hired an "inverted squirrel".

N6JV

## DELETED COUNTRIES – SOUTH SUDAN

Before the southern portion of The Sudan became an the independent nation, The Republic of South Sudan, it was an autonomous region. The conflict that produced this region started in 1959. It lasted until 1972 but the violence and bloodshed did not cease. The Addis Ababa Agreement ended the first Sudanese Civil War. It was abolished in 1983 by the president at the time who was the General that led the armies of the North against their adversaries in the south, General, who became president, Gaafar Nimeiry. This precipitated the Second Sudanese Civil War. The strife and bloodshed lasted until 2005 when autonomy was again restored. The autonomous region consisted of the three provinces of Equatoria, Bahr al-Ghazal, and Greater Upper Nile. Juba was the regional capital. The area is comparable in size to England..

The region is mostly populated by the Nilotic peoples, the people of the Nile. Most of the population are Christian, in the millions. This was mainly due to the British influence and the lack of access by the traditional Islamic nomads. This too was motivation for the 30 year conflict with the predominantly Arab Muslim north.

Half their population is under 18 years of age. The region is destitute with the majority living in starvation. It is the most underdeveloped areas not only in Africa, but the world. The



Thanks to the Southern California DX Club Newsletter

## Tube of the Month

### 4CX300A

In the 1950's, EIMAC developed their first ceramic tube the [4CX1000A](#). Different construction techniques were tried which resulted in a very strong and reliable tube. With this success, the Air Force wanted them to develop a smaller ruggedized tetrode for use in the new high performance jet aircraft where it would be subjected to much higher vibration and g load. EIMAC downsized the 1000A into a 300-watt tube with a breechblock socket system. After testing over 100 experimental tubes, they tried to determine how close they were to the special contract specifications. Eventually the tube was perfected to pass testing, but there were several failures. At an electronics show in August, 1956, EIMAC presented a paper titled *A New 300 Watt Stacked Ceramic Tetrode of High Reliability* to introduce the new tube. From this paper we can learn of the problems they had and the solutions they found.

The design parameters for the 300A were very challenging.

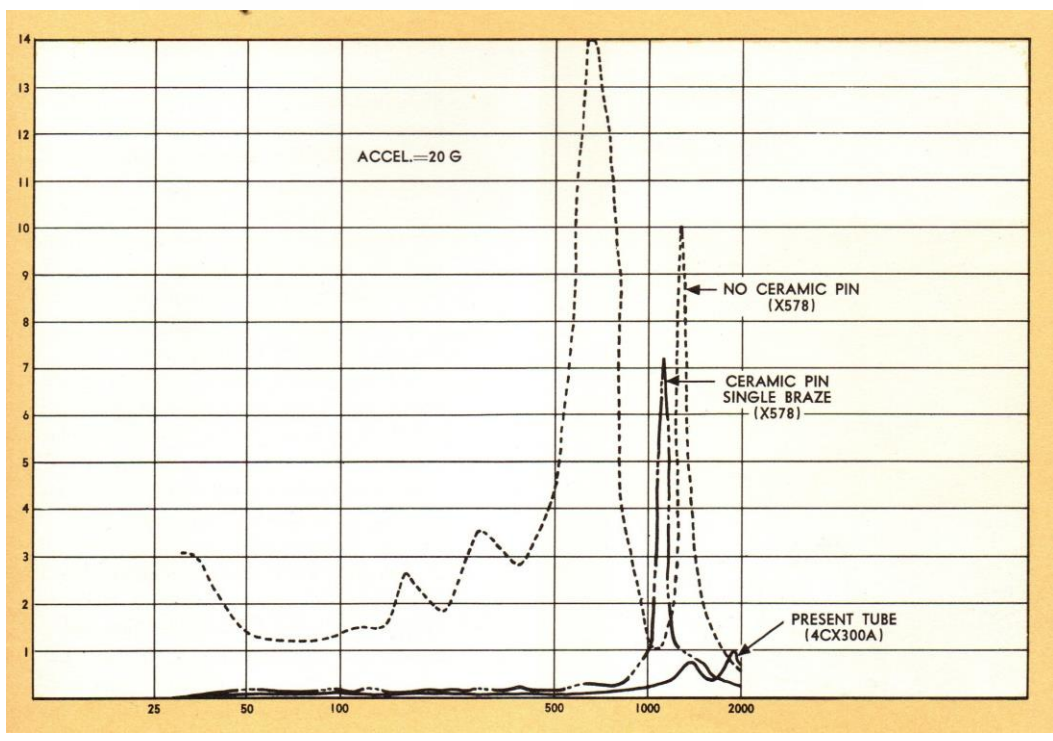
1. Survive a 50g shock for 11 ms.
2. Survive vibration at 20g over 30 to 2000 cps at low noise.
3. Continuous operation at 250 degrees C.
4. Full rating to 500 MHz.
5. Simplified construction for "unskilled" labor.

The new tube worked great at 500 MHz and could tolerate operation at 350 degrees C. The construction allowed the ceramic sections to fit like "Legos" so production was simplified. The problems started when the 50g shock caused the seals with the anode to fail. That shock is like being hit with a hammer and the tube would become bent in the middle. Making a stronger seal fixed this problem and it required no extra anode support. The vibration test was another issue. The tops of the screen and control grids weren't supported and rang like tuning forks at 700 and 1200 cps as shown in the graph that EIMAC supplied in their paper. A brazed ceramic pin was introduced to stabilize the grids and this was partially successful. Brazing both ends solved the problem and the result is seen as the small peak on the graph.

The new [4CX300A](#) or 8167, operated with up to 2500 volts at .25 amps for 300 watts dissipation. The heater ran on 6 volts at 3 amps. EIMAC made a similar tube, the [4CX300Y](#) or 8561, that was a 400-watt tube but had a lower frequency limit.

Norm N6JV

[Tube museum](#)

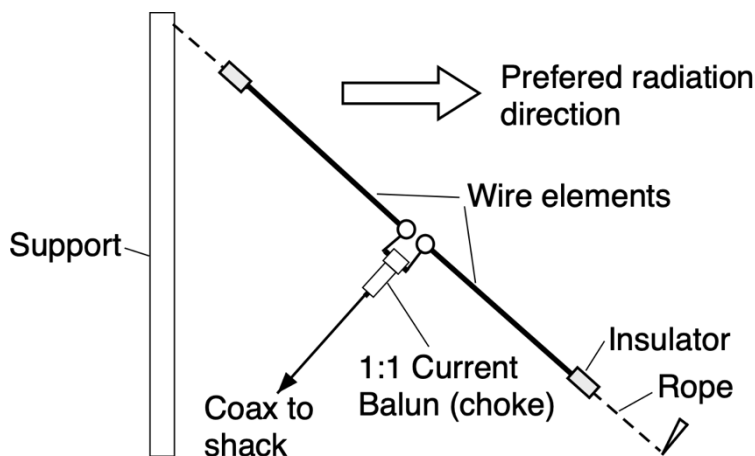


## Antenna of the Month

Gary, NA6O

### The Sloper

Another modification to a simple half-wavelength dipole is the *sloper* where the dipole is erected at a steep angle, often 45 degrees. This only requires one relatively tall support, making it somewhat more convenient. Most often slopers are used on the low bands, 160 through 40 meters. They don't make much sense on the higher bands where a regular dipole or more complex antenna is probably just as easy to erect.



**Figure 1. Typical sloper construction.**

What are the properties of sloper, compared to a flat dipole? What you'll add is some vertically-polarized radiation and perhaps a somewhat directional pattern in the direction of the downhill slope. What you'll lose is gain since the pattern of the dipole has diminished and because you have lost some of the horizontal radiation, which would otherwise be reflected by the Earth. Exact results will depend upon the height above ground and the slope angle.

I did some simulation in EZNEC to compare a 40 m dipole to a sloper. I placed the dipole at a height of 30 ft (about a quarter wavelength, which is really too low for optimum performance), and the sloper was hung from 65 ft and at a 45 degree angle. The SWR chart in Fig. 2 shows some differences but either of these are completely acceptable to any radio with an antenna tuner. Height is the biggest driver of absolute impedance and low antennas often end up closer to 50 ohms. Both of these antennas are actually a better match to 75 rather than 50 ohms which is not unusual.

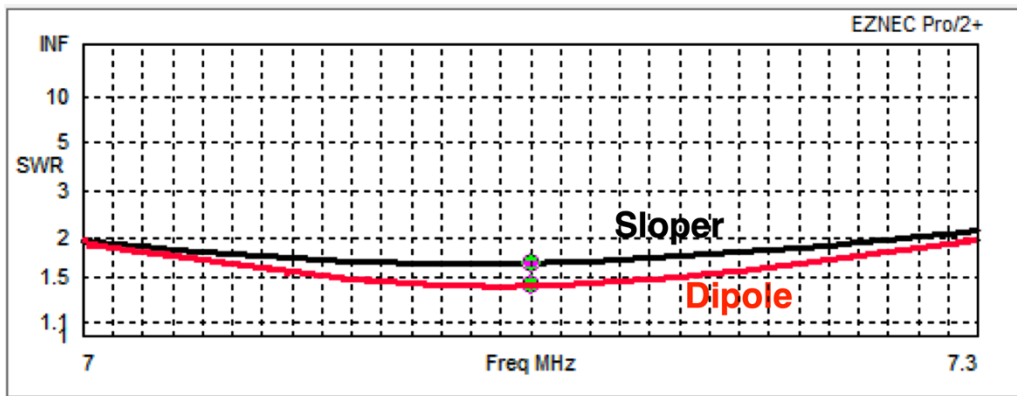


Figure 2. SWR comparison over average ground conditions.

Looking at the pattern in azimuth (Fig. 3), the two are similar in peak gain. However there may be cases where the small (~8 dB) null off the back of the sloper could assist in rejecting QRM. There also is significant gain in the far field—actually *more* gain—off the sides of the sloper! That's because the polarization is primarily horizontal off the sides and vertical along the direction of the slope. See Fig. 4. Again, horizontally-polarized radiation reflects off the Earth and at some angles you get constructive interference that can be worth as much as 5.5 dB. So it's funny that this antenna is normally sold as being directional along the slope.

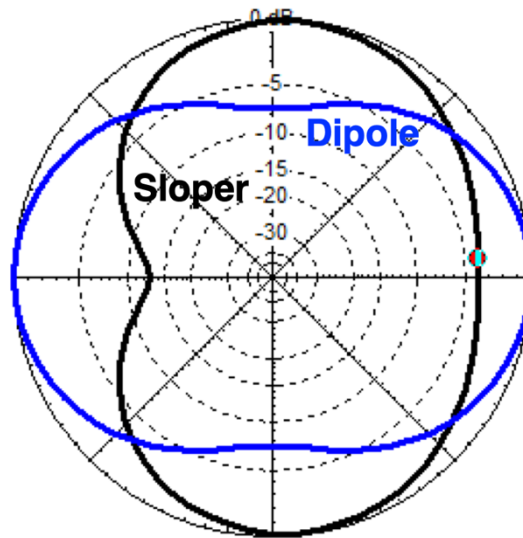
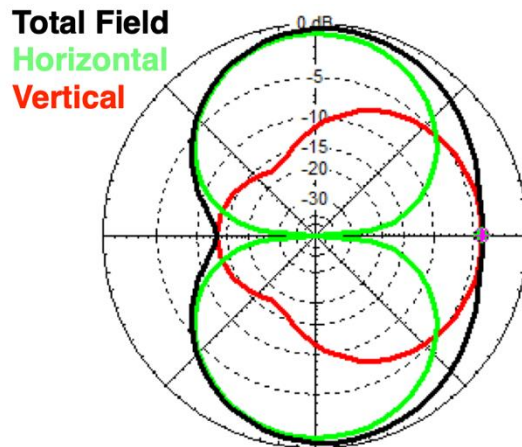
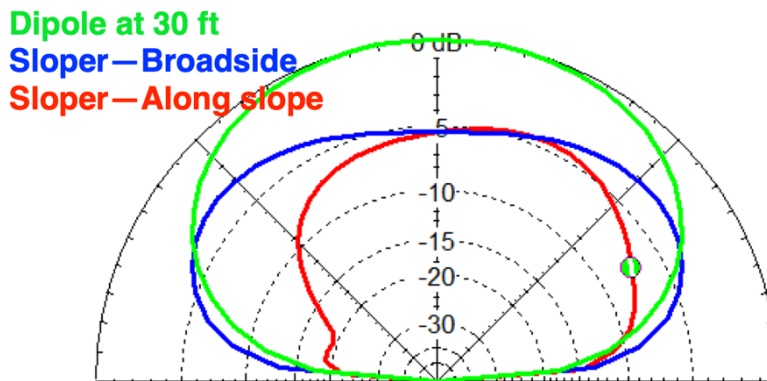


Figure 3. Azimuth pattern comparison. The sloper goes downward toward the right. Elevation angle is 35 degrees. Outer ring is 4 dBi.



**Figure 4. Investigating vertical and horizontal polarization in azimuth. The sloper goes downward toward the right.**

Comparing the elevation patterns in Fig. 5, things are fairly evenly matched at low angles, and with the dipole radiation most strongly straight up since it's so low. The sloper shows its symmetrical broadside pattern (H polarized) and its forward-skewed pattern (V polarized) along the sloping wire. A high dipole would be best of all, but it needs at least two supports way up there instead of the single one needed by the sloper.



**Figure 5. Elevation pattern comparison. The sloper goes downward toward the right. Outer ring is 4 dBi.**

In conclusion, the sloper is rather a degenerated dipole, giving up some gain in exchange for a more convenient installation. Curiously, I've seen stations use a switched set of slopers as a "directional" array. Based on results shown here, that directionality is no better than crossed dipoles or a rotary dipole, and the gain may be less.

## Club Log Standings 2024

### Overall

1	W6DE	Dave Engle	201
2	NK7I	Rick Bates	200
3	W1SRD	Steve Dyer	196

### CW

1	K6YK	John Lee	159
2	W1SRD	Steve Dyer	132
3	W6DR	Dave Ritchie	112

### Phone

1	W1SRD	Steve Dyer	116
2	K6YK	John Lee	104
3	N6WM	Chris Tate	94

### Data

1	NK7I	Rick Bates	193
2	W6DE	Dave Engle	181
3	NJ6G	Dennis Moore	173



## **Awards Checkers ARRL**

Rick Samoian, W6SR  
(DXCC, WAS, VUCC, 160M)

## **MLDXCC Focus Contests**

\*Proposed and approved at the November 12, 2016 MLDXCC general meeting.

Northern California Contest Club (NCCC) announced their focus contests at their August 2018 meeting. This list can be found in the Aug 2018 NCCC newsletter.

ARRL RTTY RU  
CQ WPX RTTY  
CQ WPX SSB  
CQ WPX CW

## **The NOAA Solar Update**

Click the link below to display the latest NOAA solar predictions.

<http://www.swpc.noaa.gov/products/weekly-highlights-and-27-day-forecas>

## **Upcoming Events**

For the latest contest info. click on the following link:

The following lists all contests in which MLDXCC would appreciate your efforts.

ARRL SS CW/PH  
ARRL DX Phone\*  
ARRL DX CW\*  
ARRL 10M\*  
ARRL 160M\*  
California QSO Party

<http://www.contestcalendar.com/contestcal.html>

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## **Upcoming DX and DXpeditions**

Click the link below to display upcoming DXpeditions.

<http://www.ng3k.com/Misc/adxo.html>

## **MLDXCC Reflector**

The MLDXCC reflector is maintained at groups.io. Visit <https://groups.io/g/mldxcc>

We also maintain a spotting reflector at <https://groups.io/g/MLDXCC-Spots>

We are also on Facebook!  
<https://www.facebook.com>

## Classifieds

*Members are requested to review their classified ads each month for accuracy and to resubmit their ads or confirm their desire to keep it running in the next issue.*

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Need QSL cards, business cards, club banners?  
Contact Vina K6VNA [vina@sign-tek.com](mailto:vina@sign-tek.com)

Kenwood TS-590S with power cord,  
microphone, dust cover. \$700.00

Yaesu FT-897 with power cord and microphone.  
HF output is good, VHF/UHF output does not  
work (separate antenna out). \$350.00

(209)329-2951 [dsmoore63@gmail.com](mailto:dsmoore63@gmail.com)

73, Dennis NJ6G

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Recently I acquired this tuner, site unseen,  
from a friend as part of a trade several  
months ago. My plan was to modify it for  
the remote radio setup. However, after  
received and inspected this unit it's  
condition is way too nice to modify. It's  
(IMHO) collector quality, original in and  
out. It even has the original, working SWR  
meter, relay, relay power supply and  
directional coupler cable. **But not the  
directional coupler.** Couplers are more

available than the KW tuners since they  
were used on the 250W tuners also. I hate  
to see a vintage piece of collector quality  
gear hacked. Anyone interested in one of  
these?

Price, you tell me, best offer takes it.

Ameritron ALS-1306/ 6-160m 1200W  
and companion power supply (Looks and  
works great) for sale. Approximately 40w  
in for 1KW output, 50 in for 1200 out.  
Wired for 230V but 115 by re-strapping.  
Have original shipping boxes. \$2195.  
I will accept a Yaesu FTDX10 or Icom 7300  
as partial payment.

Contact me at [ricksamoian@outlook.com](mailto:ricksamoian@outlook.com)

**Rick, W6SR**





El Dorado Amateur Radio Club -

<http://edcarc.net>

Sierra Foothills Amateur Radio Club -

<http://www.w6ek.org>

Redwood Empire DX Association -

<http://www.redxa.com>

Calaveras Amateur Radio Society

<http://calaverasars.org/>

Tuolumne County Amateur Radio Electronics Society (TCARES)

<https://tcares.net/>

## **ARRL Pacific Division**

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## **Area Clubs**

Northern California Contest Club -

<https://www.nccc.cc>

Lodi Amateur Radio Club -

<http://www.lodiarc.org>

Stockton Delta Amateur Radio Club -

<http://www.w6sf.org>

Pizza Lovers 259 -

<https://www.pl259.org>

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