

# ***BOSQUE BEACON***

***Newsletter of the Bosque Amateur Radio  
Club of New Mexico***  
***bosquearc.com***



**JUNE 2024**

EDITOR, JERRY ACETO K6LIE **CLUB MEETING JUNE 1, 10 AM**

Email: [jaaceto@gmail.com](mailto:jaaceto@gmail.com)

## **President's Corner - Brian Listvan KJ5CNC**

Greetings BARC members.

First of all, I want to recognize the members who helped out with two activities last month. For our Explora exhibit on May 17th. We had Sean O'Mara, AI5IZ, Jerry Aceto, K6LIE, Gerry Jurrens, N2GJ, Terry Zipes, W4RCN, Jeff Goldstein, N0IDA and myself, KJ5CNC. We had a very good public turnout of interested folks who stopped by to visit and ask questions about amateur radio. Jerry, K6LIE, had his portable qrp station operating FT 8 with 10 watts to his multiband vertical. The FT8 mode, displayed on the big screen in the community room, always catches the attention of the public and gets the questions coming from the public. Jerry worked several stations all over the country and a couple Canadian stations. It was a positive experience for our members and the public!

On the 25th of last month, we completed our sponsorship of the New Mexico QSO party by meeting with Brian Milesosky, N5ZGT and finalized the paper logs as to score accuracy. There were only about 7 paper logs that had to be check. The vast majority of submitted logs were electronic and are automatically compiled. Those working with Brian to finalize the results were Jerry Aceto, K6LIE, Gerry Jurrens, N2GJ, Terry Zipes, W4RCN, Sean O'Mara, AI5IZ, Jeff Goldstein, N0IDA and yours truly, Brian, KJ5CNC.

It is great to have this participation with our club members. We hope in the future, we can have more members participating in our activities.

Please remember that in times of emergency, we are one of the assets that our community relies on!

Please stay safe and best 73. Brian KJ5CNC

## Bosque Amateur Radio Club



**N5BRC**  
bosquearc.com



### Club Net

**The Bosque ARC** hosts a **Club Net** *Every Saturday Morning at 10:00 am local time except for the first Saturday of the month* when we meet in person for our club meeting.

146.900 (- 600 kHz) pl 67.0

442.450 (+ 5000 kHz) pl 67

449.550 (- 5000 kHz) pl 71.9

### Club Meetings

- \*1st Saturday of the Month, 10 AM
- \*Always a program that deals with Ham Radio
- \*APD NW Area Command on Ellison, across from Cibola HS

### Activities

- \* School Visitations to Promote S.T.E.M.
- \* Field Day Activations
- \* Gatherings for Breakfast,
  - \* Thursday mornings at 7 AM,
  - \* Flying Star, 10700 Corrales Rd

**WELCOME NEW MEMBERS!**

Whether you are a new ham, a seasoned old timer, or just thinking about becoming a ham, I would like to invite you to our meetings to take in our presentations, join us for breakfast on Thursday mornings, or participate in any of our activities. If you like what you see and hear, we would love to have you join our club. If you have any questions regarding ham radio, we can answer them.

Hope to see you at our meetings!  
73.

Jerry Aceto K6LIE  
President, Bosque ARC

**VE TESTING**

If you would like to upgrade your license, or take your first amateur radio test, Mathias Gibbens, K0WBG, holds licensing exams after our regular club meeting on the first Saturday of the month. Testing starts around 12:30. If you would like to test or know anyone else that would like to test, contact Mathias at AbqRRVET@gmail.com to sign up.

**CLUB MEETING ADDRESS**

APD NW Command Center, 10401  
Cibola Loop NW, Albuquerque,  
NM 87114 (across the street from  
Cibola High school)

**CLUB ADDRESS**

Bosque ARC  
2524 Baldy Loop NE  
Rio Rancho, NM 87144

**CLUB REPEATER — 444.200 (+) 67 Hz PL**

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**DAVID W HAMMACK KC5KCL (Silent Key)**

With sadness, we learned that BARC member, David KC5KCL, the father of member, Debra Hammack KC5GPX, and father-in-law of her husband, Bill Kent N5UJC (our board chairman) has passed away, just weeks after Debra's mother passed away.

Bill shared the following about his father-in-law:

David was a pioneer rock climber in Yosemite Valley and brought his love of climbing to the Sandia Mountains where he did many first ascents. He became an accomplished mountain runner and won the La Luz trail race in his age group several times in his later years. He travelled the world in retirement, climbing in the Himalayas, East Africa and Peru. He was known and loved by the climbing and hiking community in the Sandias where he knew the trails and crags intimately, especially the La Luz Trail. When he could no longer hike the La Luz he was known and loved by many on the ditch banks of Corrales.

I have no information about services.

Bill and Debra can be reached at:

**P.O. Box 1445**

**Corrales, NM 87004**

We are deeply saddened that both Debbie's parents passed away.

The Bosque Amateur Radio Club of New Mexico

73,

Gerry N2GJ, Secretary

## JUNE PROGRAM - "WHY QRP?"

Gerry Jurrens N2GJ

### An Update on the Joys of Low Power Ham Radio operation – 5 watts or less!

#### What is "QRP?"

- Based on my published article in "CQ" Magazine – February, 2020, page 26
- My background with QRP
- How QRP works
- Why it works - proof of its efficacy
- The importance of a good antenna
- SOTA and POTA defined

## HOW TO USE A GROUND MAT (INSTEAD OF RADIALS)

Mike McMahon

Submitted by Glen Caine N6HEW

### HOW IS A GROUND MAT USED?

A ground mat provides a ground connection for an antenna. It acts as a large capacitor to ground using the mat as one plate and the ground material below it as the dielectric, ground reference voltage, and second plate. To achieve high enough capacitance to maintain a low impedance at the lowest frequency of operation it must have sufficient area according to the capacitance of the particular ground surface. Tables are provided here to estimate this area, but you can simply use a the common 59" by 43" conductive cloth mat and perform a capacitance check and then add more area if needed. The capacitance check is done by viewing the antenna VSWR plot on an antenna analyzer and verifying that when the mat area is reduced a factor of two by folding the mat over on itself that the frequency shift is under 10%.

### FARADAY FABRIC- THE MAGIC CARPET OF HF WORK

While aluminum window screen can be used for the mat, conductive Faraday fabric is recommended for its 15% higher capacitance and ability to fold up into a lightweight and compact size, especially useful for backpacking and Parks-On-The-Air activities. Available in a 59" by 43" size, verify its resistance before use by using an ohmmeter probing diagonally opposite corners. This should be under

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## HOW TO USE A GROUND MAT (INSTEAD OF RADIALS)

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Submitted by Glen Caine N6HEW

20 ohms for good RF performance, but at .03 ohms per square typically measures well under an ohm.

### HOW THE GROUND MATERIAL MAKES CAPACITANCE

Different ground materials exhibit different capacitances per square foot. Because electric fields are highly absorbed by ground materials, they extend to only a few inches under the plate, greatly thinning the effective capacitor thickness and thus causing high capacitance. As a result, ground mats have capacitances up to 20 times higher than would be expected from the dielectric constant of the ground material alone, a phenomenon I refer to as the Dielectric Thinning Effect. Also the dissipation of the ground material can make the mat impedance quite resistive. I do not know if present electromagnetic modeling programs are able to accommodate these measured real-world phenomena.

### GROUND MATS HAVE A HIGH UPPER FREQUENCY LIMIT

Measurements show that thanks to the high loss of ground materials, mat half wave resonances are well damped and that mats sized for HF work meet requirements up to well beyond the HF range.

### WHAT GROUND MAT PARAMETERS ARE IMPORTANT?

Ground mat series capacitive reactance should be held to under 60 ohms at the lowest frequency to ensure the antenna length need not be readjusted by more than 10%. Series resistance should be held to less than 30 ohms to keep loss to under 3 dB, or half an s-unit. Thus mat areas should have a minimum area as shown in the following table.

### ESTIMATING MINIMUM GROUND MAT AREA

Use the following table to estimate the minimum mat area which accommodates your expected ground material type and lowest band of operation-

Band, meters	160	80	40	20	10
Center Frequency, MHz	1.9	3.75	7.2	14.2	28.9
MINIMUM MAT AREA, SQ. FT.					
High C: Concrete, moist soils	5.3	3.7	1.6	1.0	0.7
Medium C: Asphalt, brick	19.5	9.7	4.8	2.2	1.0
Low C: Flat rock, sand, bone-dry soil	92.8	39.8	20.6	7.0	2.2

= Use the listed area or greater

= Do not use less than 4 sq. ft.

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## HOW TO USE A GROUND MAT (INSTEAD OF RADIALS)

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Do not use mats smaller than 4 square feet (2 ft by 2 ft). Passing the capacitance test does not ensure low resistance for these very small mats. Note that snow and wood are mostly air and so have very low capacitance, making them unusable for HF operations.

### GROUND MATS ARE SMALL COMPARED TO RADIALS!

The toughest mat area challenge is at 160 meters on sand, the lowest capacitance ground material. While this calls for a 10 foot by 10 foot mat, the mat is still quite tiny compared to four resonant quarter-wave radials each 130 feet long. And unlike resonant radials, it is suitable for multi-band operation.

### HOW TO SET UP YOUR FARADAY FABRIC MAT

1. Using the table above and expected ground material, estimate the minimum mat area.
2. Compare to the area of your mat (17.6 sq. ft. for a 59" by 43" mat) and decide the number of mats, usually just one.
3. Lay out your mats. Ensure no more than 4 feet from the connect point to any far edge to avoid high frequency resonances. This favors connecting the midpoint of the longest edge.
4. Weight the mat with local rocks, sticks, and dirt to eliminate air gaps in high winds. I use cheap 4" square floor tiles every 16 inches to do this.
5. For operation to 100 watts, use an alligator clip to connect to the mat. For 1 kW use three clips.
6. For a quarter wave monopole, use  $235/(F \text{ in MHz})$  feet from the ground mat to the top of the wire.
7. Check mat capacitance with a VSWR display. Upward frequency shift should be less than 10% between the full mat and the half mat (mat folded over itself). If not compliant, use more mat area.
8. Put the VSWR resonance on frequency by adjusting the monopole length. You can make it a little short and add short clip leads in series with the bottom of the antenna to tune it.

### THE UPCOMING YOU TUBE VIDEOS

Extensive measurements have been made on ground mats using a network analyzer. Because the ground mat is a single terminal device, impedance measurements were made differentially on identical pairs of ground mats. See upcoming YouTube videos for extensive test method, test fixture, data, and analysis details.

**DAVE JOHNSON, NOLVA, TURNS 80!**

Back in March, Dave's daughter, Erika, sent several folks an invitation to a surprise birthday party she was planning for her dad. Dave's birthday wasn't until May 10th, but Erika made sure she got the email invitation out very early. Her email was titled "Shhh, surprise birthday party for Dave Johnson NOLVA". In fact, it was also a surprise for "my mom. She can't keep a secret". So mum was the word for all invited and no one hinted at all that there was a surprise party on the horizon for Dave. And it worked! Dave and Barb were caught totally off guard when they were escorted into Mario's on 4th on Sunday, May 10!

We all had a great time celebrating, eating great food and socializing with great people!



In comes the  
surprised B-day  
boy



Larry, Dave, Barb and Erika



The Bosque ARC gang  
(Top and Bottom pictures)



Dave likes to tell folks he is  
49...Ah Huh!



## Radio Communications Cabinet

I have a communications cabinet that is about 6 feet tall and about 24 inches wide. It has 3 shelves and accommodates standard 19 inch racks. There is no front door included. This cabinet housed my 220 repeater for many years. The power meter at the top and the 2 cavities and duplexer are not included. Great price....it is **FREE**. Bring your truck and come haul it away. **If there are no takers, it is going to be sold for scrap. LAST CALL. TELL YOUR FRIENDS.**

If interested, call Jerry K6LIE at 505 263-5858



## CLUB NET

Our club net has been doing very well and I want to thank all of you that participate each week. Gerry Jurrens, N2GJ has been net control for most of the time. I have been asking him because he runs several nets in the area and is quite good at it. But we really should give others the opportunity to be net control. So anyone interested, please contact Gerry. His contact info can be found on the last page of this newsletter.

Remember, club net every Saturday morning at 10 am (except the 1st Saturday for our meeting) on the Upper Rio Repeater system.



**CLUB SHIRTS**

These beautiful club shirts come in ladies and men's styles and sizes. We proudly wear our shirts whenever we are doing an activity that involves the public. It is a great way of promoting the club, not to mention that they look great! They are available in polo and button down long sleeve.

Contact Turbo Threads at 505 999-1234 or on line at <https://turbothreads.com> .

BTW...That snazzy club logo on the shirt and on our club banner was designed by Art Nichols, KI5GOL, one of our founding members.



If you wish to use PayPal to pay club dues, simply go to [bosquearc.com](https://bosquearc.com) and click on the Membership and Dues tab. You will find all the info needed. When you fill out the form on line, hit Submit at the bottom of the page. This will take you to a prorated table. Since our dues are paid by the year starting in April, you will only pay a partial amount based on the month you join. Club dues are only \$20 per year.

**Here are email addresses of our officers should you need to contact any of them:**

**President - Brian Listvan KJ5CNC - zzwooffee1949@yahoo.com**

**Vice President - Sean O'Mara AI5IZ - sean.g.omarasr@gmail.com**

**Secretary - Gerry Jurrens N2GJ - n2gj@arri.net**

**Treasurer - Bob Witter W5IV - rwitter@hotmail.com**

