



# MTARA NEWS



## The President's Message

Hello, MTARA members ~~

I hope everyone had a safe and pleasant holiday season. Mountain winter weather hasn't been too severe, and for the folks heading to Quartzfest later this month, the forecast is for pleasant sunny days.

As you know, MTARA supports the Bouvet Island DXpedition, which gets underway as this newsletter goes to press. Visit their website [www.3y0j.no](http://www.3y0j.no) for updates, and for details on how best to contact "the most remote uninhabited place on Earth."

A shout-out to Stan Howe, former MTARA member and a leading member of Mountain CERT. For the second year, Stan is organizing a recruiting fair for the Association of Mountain Volunteer Organizations. AMVO serves to inform mountain residents of the opportunities to donate their time and talents to local organizations who rely upon the work of dedicated volunteers. MTARA participated at last year's inaugural event, and those of us who attended found it a very fun (and social) event. Visitors to the MTARA booth learned a lot about what we do. This year's AMVO fair will be held on March 25 from 10 a.m. to 2 p.m. at the San Moritz Lodge in Crestline. If you'd like to spend a couple of hours at the MTARA booth, let Tracy know.

I hope to see many of you at our next in-person meeting on Tuesday, Feb. 7, at 7 p.m. at the Lake Arrowhead Community Presbyterian Church. It should be fun hearing about what happened at Quartzfest.

Seven Three, Everyone ~~

Lorna

### Officers

- **President:**  
Lorna Polley, KJ6GFS
- **Vice-President:**  
Chet Olson, AE6CO
- **Treasurer:**  
Nancy Karlson, K6CUB
- **Secretary/Newsletter**  
Debbie Johnson, WB6LVC
- **Ed/Membership:**  
Tracy Lenocker, WM6T
- **Past Presidents:**  
John Snedden, KT7P  
Vic Marquez, KK6WKI

The Rim of the World ARES group is an ARRL affiliated organization and part of the Mountain Top Amateur Radio Association

## Monthly Club Meetings

Club meetings are held on the first Tuesday of each month. The meeting begins at 7:00 p.m. and lasts until approximately 9:00 p.m.

Our meetings are open to everyone; so bring a friend, and keep the hobby growing. There is always a presentation that will pique your interest and add to your knowledge.

All upcoming meetings, beginning with July 5, 2022, will be held at the Lake Arrowhead Community Presbyterian Church, 351 South State Highway 173, Lake Arrowhead, CA 92352

## Membership

Membership in MTARA is open to any individual interested in learning more about Amateur Radio. An FCC issued license is not required, but is encouraged. Membership is on an annual basis, running for the calendar year. There are no prorated membership fees. Club fees are \$20.00 for a single membership and \$30.00 for a family membership. The necessary forms can be found on the club's home page @ [MTARA.club](http://MTARA.club). Current members only need to send in their dues to MTARA, PO Box 2441, Lake Arrowhead, Ca. New members will need to download and send in their forms and payment to the same address.



## TREASURER'S REPORT

Our ending December Balance was

\$13,984

Income:

\$710

Expenses:

\$0

73, Nancy K6CUB

# Local Weekly Nets

	Repeater	Time	Activity	Purpose
<b>Monday</b>	MTARA—2	7:00 p.m.	Weekly Check-In	MTARA News
<b>Monday</b>	144.330 MHz	8:00 p.m.	“Gordo Net”	Simplex Readiness
<b>Tuesday</b>	MTARA—5	7:00 p.m.	“Debbie Net”	Educational Topics
<b>Wednesday</b>	HF	7:30 p.m. First Wednesday	7.223 MHz	Band(s) Status
<b>Friday</b>	MTARA—5	5:00 p.m.	YL Happy Hour	It’s Friday
<b>Daily</b>	CBARC	7:00 a.m.	Tech. Net	Elmer Sessions

## Upcoming Calendar Of Events

- January 21st, 22nd—North American QSO Party—SSB
- January 22nd-28th—Quartzfest, Quartzsite, AZ
- January 27th-29th—CQWW 160 Meter Contest—CW
- February 10th-12th—Orlando Hamcation, Orlando, Florida
- February 13th-17th—School Club Roundup

## Outdoors, Fresh Air, R&R and a Little HF by WM6T

Jodi (WA6JL) and I (WM6T) and Tess had planned a 2 week trip beginning with an RV Rally at Launch Point RV park at Lake Elsinore, then up Highway 395 to Bishop for five days to R and R. Well we then decided to spend a night in Ridgecrest before Bishop; then we added two nights further up the highway from Bishop in Coleville; and why not just head up to Reno and Sparks and visit relatives and some longtime friends. So, in mid-October we headed out in our RV for a 3-plus week trip. As you probably know the weather on the Eastern Sierra's can be quite a bit different from the south to the north ends – and it certainly was.

The Eastern Sierra's are quite beautiful and the fall colors were amazing when we took our trips up into the Sierras foothills and canyons. In Bishop I tested the radio equipment. From our RV campsite in Bishop we took the Jeep up to one of our favorite places which was Lake Sabrina. There was water in the lake but it was certainly well below full. The water from the lake powers an Edison generating plant part way down the canyon.

So there we are – a lake, a creek, gorgeous trees changing colors, picnic tables, a hiking trail and lots of ham radio gear. So what were we supposed to do? Of course we took out the ham gear set up an wire antenna and tried to make a few contacts. Jodi and Tess tried the hiking trail. I tried the air waves which did not take as much physical effort.

That night I checked into the local VHF radio net in Bishop. They suggested that we try the road from Tom's Cabin area up to Rock Creek. Well it was a beautiful and relaxing drive. We drove to the end of the road and there was a large staging area at the 9300 foot level for the Sierra hikers to park their cars and take off into the wilderness to spend nights in a cold tent with lots of wind blowing. We noticed that none of the hiker/campers were in our age group. They had heavy packs and seemed to forget the most important items which was an HF radio, a wire antenna and heated sleeping blankets. Oh, to be young and adventurous again.

We found a private area to park down the road a bit, crossed over a small bridge and hiked on a short trail and sat on some large boulders. And then what should appear around the corner but a picnic table with a sign that said “Set up your radio here and give it a try”. Well it might have been an imaginary sign but never the less we had to give it a try and sample our lunch at the same time. We were up at about 9000 feet in a narrow canyon. I told the group on the net that night that I made contacts in Washington and Totonto and numerous other places north and east. They were amazed that I could even get a signal out of that location. Remember our training – good antennas and just 10 watts and patience is all it takes (a warm jacket, hat and hot chocolate also helps).

Several days later in Coleville at the KOA campground (which was an amazing campground and location – highly recommended) we camped and rested. Well I need to try a special setup off the back of my Jeep and get on the radio again. The sky looked a bit ominous and as I was putting up the antenna these little white balls of ice came out of the sky – and they got larger and larger. I remembered all of my training and said what the heck and jumped in the Jeep, turned on the heater and then finished connecting the radio.

All in all it was a great trip, lots of outdoor experiences, lakes and streams, beautiful colors in the trees, plenty of rest, visiting friends and relatives, seeing historic places, small towns, and filling the air waves.

Note: On this trip I learned why they sell electrically heated water hoses to connect the water to your RV.

And yes, before you ask we visited Shat’s Bakery in Bishop.

## FIELD SETUPS, EQUIPMENT USED AND SOME RESULTS

### Setup #1

KX2 at 10 watts  
External Bioenno battery  
Microphone  
CW Key  
Alex Loop Antenna

This is a quick setup to get on the air. The Alex Loop can be setup on a tripod or in this case clamped to the side of the table. You do have to be close to the antenna as it requires manual tuning if you change bands or even most a few kilohertz on the same band. It is directional so you will need an Armstrong rotator (turn by hand)

### Setup #2

KX2 at 12 watts  
External Bioenno battery  
Microphone  
CW Key  
RG-316 Coax 15 ft  
Packtenna 20/40 meter linked dipole (ran 20m only)  
Carbon fiber extendable mast  
Ground stakes

This setup requires either several trees or a center mast. I used a center mast and extended the wire ends of the dipole in an east/west direction. The ends of the wire need to be up in the air about 5 feet or more so a length of rope tied to the end of the wire is what was needed. I used a 15 foot RG-316 coax cable. A dipole is directional with the best signal broadside to the wires. Although somewhat height dependent this is one of the best solutions for the field.

### Setup #3

KX2 at 12 watts

External Bioenno battery

Microphone

CW Key

17 foot extendable whip antenna

A supporting mount with a 3/8x20 connector

5 ft of RG-316 coax

4 radial wires

This was the setup when working from inside the Jeep. The radio was mounted on a RAM mount and everything else sitting wherever I could find a spot. I used a special clipboard on my lap where I mounted the radio and to support a key and tablet for logging. A 17 ft whip is the exact length for a 20 meter vertical antenna. No adjustable coils were necessary but I did carry Super Antenna and Wolf River coils in case I wanted to do 30 through 80 meters. At the bottom of the whip I connected four radials. Two were 17.5 feet and two were 35 feet long spread out as close as possible in different directions on the ground. The weather inside the Jeep was very nice. However, when it was getting dark rolling up the radials and collapsing the whip were not much fun with ice around the connectors and flakes of soft cold stuff landing in my face. Tess and Jodi watched from inside the RV.

I made contacts at each location. They were mostly CW contacts around the US but also a few SSB (phone) contacts. One contact was a POTA (Parks on the Air) in Canada which really did amaze me. I looked up the park number and the call sign and the person and park were in Canada just a little NE of Toronto. I did not try FT8 as I did not want to bring out the laptop. However, the noise level (S-Level) was wonderfully low around 1 to 2 S units. With Setup #2 I thought the radio was not working because the 20 meter band noise was at 1 S unit or below.



In Bishop Testing the Radio and Alex Loop



Lake Sabrina



Rock Creek – A Weird Antenna Someone Left



I Told Her Altitude Helps Your Signal



Tess- Did You Put the Knot in the Coax?



Really? You Had to Take a Picture of This?





Ready for Lunch



There was Plenty of Fall Colors



I Made Breakfasts for my Co-Pilot



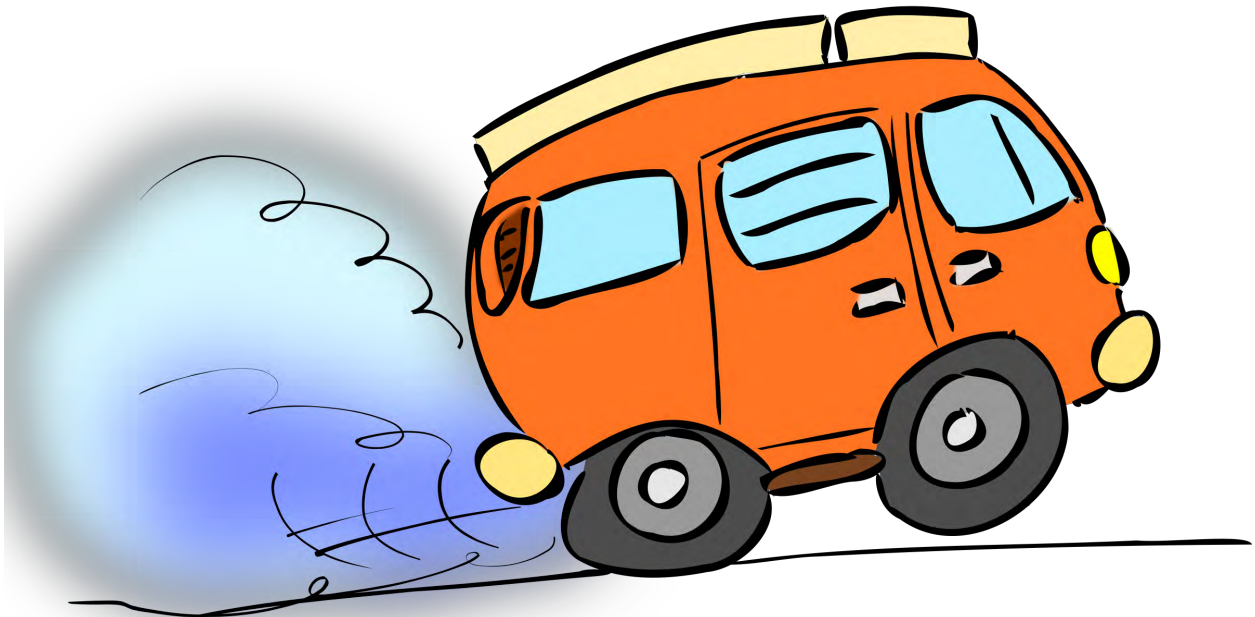
Lesson #1 – Do not Stand Under the End of the Awning When Rolling it in After the Rain



Lesson #2 – Get Inside When the Ice Balls Fall



Lesson #3 – Some Pictures are Meant to Be Deleted



*Keep On Rving.....*

## PONDER THE POOL by AA6GJ

Ponder the Pool is a way for us as Amateur Radio Enthusiasts to dive into selected questions more deeply from each of the current FCC pool of questions used to create the randomly generated Examinations for the Technician, General, and Amateur Extra License. Ponder the Pool is helpful to individuals who are studying for an exam or simply to review concepts that we have already learned.

**Because, as we know, if we don't use it, we lose it.**

The question we will ponder today comes from the new Technician Class pool.

Question: *T4A09 – How can you determine the length of time that equipment can be powered from a battery?*

This a new question in the pool, and it's a particularly good one to learn about and know because all of us, at times, are, or will be involved in emergency comms. or event comms. We will have deployed 50-Watt radios or more that will have to be powered by battery. This question is useful in determining the capacity of the battery to be deployed and most importantly, how long it will last.

There are many types of 12-volt rechargeable batteries. Here are some descriptions I found on the internet for example:

### **Flooded Batteries**

This is the traditional engine start, tractor, and deep cycle-style battery. The liquid electrolyte is free to move in the cell compartment. The user has access to the individual cells and can add distilled water as the battery dries out. Popular uses are engine starting and deep cycle designs.

### **Sealed Batteries**

This term can refer to several different constructions, including only a slight modification to the flooded style. In that case, even though the user does not have access to the cell compartments, the internal structure is still basically the same as a flooded battery. The only difference is that the manufacturer has ensured that enough acid is in the battery to sustain the chemical reaction under normal use throughout the battery warranty period. Very popular uses are engine starting and limited starting/ deep cycle applications.

### **AGM Batteries**

The [Absorbed Glass Mat](#) construction allows the electrolyte to be suspended in proximity with the plate's active material. In theory, this enhances both the discharge and recharge efficiency. The AGM batteries are a variant of Sealed VRLA batteries, just a more advanced design. Popular usage includes high performance engine starting, power sports, deep cycle, solar and storage batteries.

AGM batteries are common and found in many applications such as [RV batteries](#), [boat batteries](#), motorcycle batteries, ATV batteries, and [UPS & Telecom batteries for generators](#).

## **GEL Batteries**

The Gel Cell Battery is similar to the AGM battery style because the electrolyte is suspended, but different because technically the AGM battery is still considered to be a wet cell. The electrolyte in a gel cell battery has a silica additive that causes it to set up or stiffen. The recharge voltages on this type of cell are lower than the other styles of lead acid battery. This is probably the most sensitive cell in terms of adverse reactions to over-voltage charging. Gel batteries are best used in VERY DEEP cycle application and may last a bit longer in hot weather applications. If the incorrect battery charger is used on a Gel Cell battery, poor performance and premature failure is certain. Battery chargers with gel profile will have information either on the unit, or in the manual, about gel compatibility.

## **Lithium-Ion Batteries**

A **lithium-ion** or **Li-ion battery** is a type of rechargeable battery which uses the reversible reduction of lithium ions to store energy. It is the predominant battery type used in portable consumer electronics and electric vehicles. It also sees significant use for grid-scale energy storage and military and aerospace applications. Compared to other rechargeable battery technologies, Li-ion batteries have high energy densities, low self-discharge, and no memory effect (although a small memory effect reported in LFP cells has been traced to poorly made cells).

## **Lithium Iron Phosphate Batteries**

The **lithium iron phosphate battery (LFP)** (lithium ferro-phosphate), or Li-IP) is a type of lithium-ion battery using lithium iron phosphate ( $\text{LiFePO}_4$ ) as the cathode material, and a graphitic carbon electrode with a metallic backing as the anode. Because of their lower cost, high safety, low toxicity, long cycle life and other factors, LFP batteries are finding several roles in vehicle use, utility-scale stationary applications, and backup power. LFP batteries are cobalt-free.

The Bioenno Battery is a lithium iron phosphate ( $\text{LiFePO}_4$ ) battery. They are a little pricey, but they are considerably lighter than some of the above batteries, hold a longer, more stable charge, and can be recharged thousands of times. This battery also has a protection circuit built into the battery to protect it from being overcharged or shorted out. There are many other attributes of the Bioenno battery but that must wait for another time.

More importantly, I mention this type of battery because I own four of them, and I will use this type of battery to explain the answer to this question.

The table below shows an excerpt from a Bioenno Battery Specifications Sheet:

TX W	RX W	TOTAL W	Battery Model #	VOLTAGE	AH	WH	HOURS
			50	5	27.5 W	BLF-1215A/AS	12
50-50 TX and RX			BLF-1220A/AS	12	20	240	8.7
			BLF-1230A/AS/LB	12	30	360	13
			BLF-1240A/AS	12	40	480	17.4

The question asks us to determine the length of time that equipment can be powered from a battery. To do this, we must do a little math, sorry, there's that four-letter word again, but this math isn't too difficult.

We know that our battery has voltage and must be able to supply a certain amount of current flow. From the above Spec. Sheet, I will be referring to the BLF-1230A/AS/LB. Our battery puts out a minimum of 12 volts which is what we use to power our radios in the field. To deal with how long we can use the battery, we use the information in the column next to battery voltage.

That is Ampere Hours (AH) in our case  $(30 \times 1 \text{ hr} = 30 \text{ Ah})$ . This means that if I had a device that draws 30 Amperes, the battery would last for one hour.

$$\frac{30 \text{ Ah}}{30 \text{ A}} = 1 \text{ hour.}$$

Here's another way to look at it: Well, no device that we will use will constantly draw 30 Amps. By the way, we just answered the question because

$$\frac{\text{Ampere-hour Rating (Ah)}}{\text{Average Current draw of the equipment in Amperes (A)}} = \text{Time}$$

So, if you wanted to stop there, we could, but there's something missing, right? I can see from the table where (AH) is, that's easy, it's 30 AH, but where's this "average current draw"? Sorry, but that takes a little more math.

We must make an intelligent judgement about average current draw. Here's how we do it:

We must decide how much transmitting (TX) time and how much receiving (RX) time we will be doing. We must get an average. Bioenno has determined a couple of ratios. We could have a 20-80 ratio where we would be transmitting 20% of the time and listening 80% of the time which would be the case if we were doing a bike race or parade event.

Or we might have a 50-50 ratio where we would be transmitting 50% and receiving 50% which would be the case for Field Day.

Here's the math for 20-80 for 50 Watts TX and 5 Watts RX:

$$.2 \times 50 = 10 \text{ W} \text{ for 20\% TX and } .8 \times 5 = 4 \text{ W} \text{ for 80\% RX.}$$

Next, we add the two Wattages  $10\text{W} + 4\text{W} = 14\text{W}$  of average power.

Yes, power, but we need **average current**. Never fear Power Law comes to the rescue.

Remember  $P = I \times E$  ? Well, we have P (Power) and E (Voltage), but we need I

(current), so we change the equation like this  $I = \frac{P}{E}$  . Or  $1.17A = \frac{14}{12}$  Now we have our average current. Let's finish this off by using the equation to solve for time:

$$\frac{\text{Ampere - hour Rating (Ah)}}{\text{Average Current draw of the equipment in Amperes (A)}} = \text{Time}$$

$$\frac{30 (Ah)}{1.17 (A)} = 25.6 \text{ Hours}$$

Here's the math for 50-50 for 50 Watts TX and 5 Watts RX (from the table at the beginning of the article):

$.5 \times 50 = 25W$  for 50% TX and  $.5 \times 5 = 2.5 W$  for 50% RX.

Add the two Wattages:  $25W + 2.5W = 27.5 W$  of average power.

Now get current:  $I = \frac{P}{E}$   $2.29 \text{ or } 2.3A = \frac{27.5}{12}$  average current.

Solve for time:

$$\frac{30 (Ah)}{2.3 (A)} = 13 \text{ Hours}$$

So, which is better, 20-80 or 50-50? You decide.

That is why the official answer to this question is:

***T4A09 – Divide the battery ampere-hour rating by the average current draw of the equipment.***

That's *Ponder the Pool* for another month. I hope it was helpful.

Stay tuned, next month we will come up with another question to ponder. 73 – Gary

If you have any questions or comments, drop me an email at [AA6GJ@arri.net](mailto:AA6GJ@arri.net)



# Amateur Radio Exams Now Online or In-Person!

## No Paper! All Electronic! Very Cool!

with K6DDZ & AA6GJ

Now that MTARA is back in-person for meetings, amateur radio testing will be offered before each meeting. Testing will cover all three elements (Technician, General and Amateur Extra). Remote (online) testing is also available by appointment.

For MTARA in-person or remote testing, please go to **K6DDZ.com - Amateur Radio Testing Made Simple.**

### **ONLY ONE CLICK** to:

Order Gordon West's study materials

HamStudy.org Practice Tests (all levels)

Schedule a Test (in-person or remote)

Get Your FCC Registration Number (FRN)

Pay for Your Test

...and even click to Gary's (AA6GJ) video training for more in-depth knowledge

Let's keep it simple! Any questions, email Dede Hermon at [DedeK6DDZ@gmail.com](mailto:DedeK6DDZ@gmail.com)

### **And if you are DTH (Down the Hill)**

You can test all classes of license with the West End Amateur Radio  
Group



That's my team AA6GJ and the Group

If you are interested drop me an email at [AA6GJ@arrl.net](mailto:AA6GJ@arrl.net) to set a time, either online or in-person or to just get information. We can help you with your FRN, too.

73,

Gary

<https://GaryRJohnson.org>

## Mountain Top Amateur Radio Association

### The Amateur's Code by Paul M. Segal, W9EEA (1928)

The Radio Amateur is:

**CONSIDERATE** never knowingly operating in such a way as to lessen the pleasure of others.

**LOYAL** offering loyalty, encouragement and support to other amateurs, local clubs and the American Radio Relay League, through which Amateur Radio in the United States is represented nationally and internationally.

**PROGRESSIVE** with knowledge abreast of science, a well built and efficient station, and operation beyond reproach.

**FRIENDLY** with slow and patient operation when requested, friendly advice and counsel to the beginner, kindly assistance, co-operation and consideration for the interests of others. These are the hallmarks of the amateur spirit.

**BALANCED** Radio is an avocation, never interfering with duties owed to family, job, school or commu-

## MTARA Shirts, Jackets, and More

We have many items available with our club logo.

The information for ordering is as follows:

- Name Tags—Harlan Technologies, Name Tags by Gene (715) 340-1299, [www.hampubs.com](http://www.hampubs.com)
- Mouse Pads—Check with Jodi, WA6JL
- Polo Shirts—Port Authority K420P Dark Green, L420 Dark Green, K100LS Dark Green.
- Jackets—Forest Green or Black. Sizes Small to 6X
- Contact:

Hurt Ink

2651 Coleen Lane

San Bernardino, CA 92407

(909) 815-6852

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[www.hurtink.com](http://www.hurtink.com)

