

THE KEY

Official Journal of The Riverland Amateur Radio Club WR9ARC



The Riverland Amateur Radio Club is a Special Service Club affiliated with the American Radio Relay League. The club is active in community service as well as actively promoting Amateur Radio in the Coulee Region. The Club is open to all who are interested in Amateur Radio and will help unlicensed persons become licenses thru the FCC.

What a Day! By Carl Thurston, KC9HDS

Where do I start? At the beginning I guess, but where was that? So many things happened almost simultaneously that it is difficult to chronologically organize it. Maybe I shouldn't even try, but I feel that I must.

It all began I guess, with an Executive Board Meeting some time ago when our President Dan AB9TS established a calendar of events for the year. It seemed so straight forward and logical at the time, and none of the Board Members took a lot of notice of the details or the potential conflicts.

We had other things on our minds at the time, like determining how we could improve the usefulness of our Emergency Communications trailer. As it stood, it was an example of a self designed unit with lots of unhandy things in it and on it. Greg K9LEC had pondered this situation for some time and tried repeatedly to come up with a solution of what to do and how to get people involved in the process.

Things started to come together when the Board decided to have solar panels installed on the trailer. Research was done to determine exactly which solar panels would be most suitable for our needs. What we felt was needed was a system that would make it totally independent from out side power sources, be easily set up in a hurry, and run on and on for long periods of time. This all seemed like a daunting task but several Hams got directly involved and things started to happen.

First of all it was doubted by some that this idea was even feasible. After all would solar panels even generate enough power to enable several HF rigs to operate simultaneously or would we be restricted to using one rig at a time and how would all of this be coordinated efficiently in our trailer? After much careful study, it was determined that the most usable system was the "Thunder Bolt Solar Panel System" complete with a deep cycle sealed battery from Harbor Freight. It combined a low cost high quality option that looked like it would work. So the Executive Board voted to go for it. With the combined know how and efforts of several Hams, the panels were installed and the trailer was set for testing. It all worked out beautifully. Then all that was needed was an extended test of the system.



**Riverland
Amateur Radio
Club**
P.O. Box 621
Onalaska, WI.
54636

Repeater
146.970 PL 131.8

RARC Net
8:00 PM Sunday on
the 146.970
Repeater

Club Meetings:

Trustee Meeting
3rd Tuesday of the
month at Perkins
Restaurant, 9428
State Road 16,
Onalaska, WI
54650 at 5:30 PM,
all club members
are welcome.

Program evening is
1st Tuesday of the
month at 7:00 PM,
Gunderson Clinic
conference room 1
in the lower level.

**Riverland Amateur Radio Club
PO Box 621
Onalaska, WI 54650**

The Key is published monthly and e-mailed to members and friends of the Riverland Amateur Radio Club by the 28th of each month.

The newsletter focuses on news, announcements and activities of the Riverland Amateur Radio Club. It may also consists of news and information of interest to the Amateur Radio community as a whole. Guest editorials and articles related to Amateur Radio are welcome.

Address any correspondence or anything that should be included in the newsletter to: Greg Miller at KA9FOZ@gmail.com.

The Riverland Amateur Radio Club maintains a website at rarc.qth.com. More information about the club can be found there as well as past copies of The Key.

RARC also maintains a Facebook page where members add information and share there Amateur Radio adventures. Please friend us at Riverland Amateur Radio Club—RARC.

RARC maintains a repeater that is located on the WXOW television tower above LaCresent, MN. 146.970 pl 131.8.

Below are listed your RARC 2019 Board of Trustees and contact information.

- President.....Dan Abts, AB9TS Email...ab9ts@yahoo.com
- Vice-President.....David Peters, KB9EWG Email...kb9ewg@gmail.com
- Secretary.....Rick Kolter, KD9GVS Email...rckolter@gmail.com
- Treasurer.....Drew Neve, AB9NE Email...ab9ne@yahoo.com
- Trustee.....Carl Thurston, KC9HDS Email...kc9hds@gmail.com
- Trustee.....Bill Wood, KE9XQ Email...ke9xq@charter.net
- Repeater Trustee...Shawn Hicks, KD9KGQ Email...eistim68@gmail.com
- Newsletter Editor.....Greg Miller, K9LEC Email...ka9foz@gmail.com

RARC CLUB PATCH ORDER FORM

Please send me _____ club patches to the address below. I have enclosed \$3.50 for each patch ordered.

Send patches to:

Name _____ Call _____

Address _____

City _____ State _____ Zip _____

Send form and check to: RARC Box 621 Onalaska, WI. 54650



A preliminary test was held some time ago where the trailer was set up in a remote location and run for about 3 hours. At the start, the battery showed 13.2 volts of charge. 2 HF rigs were powered up and after a bit of getting things sorted, everything went as hoped. At the end of the test, the battery was down to 12.7 volts, and when the rigs were turned off at the end, the battery was recharged fairly quickly to 13.1 volts by the solar panels.



Now we were ready for and even more rigorous test. We had planned to set the trailer up for our annual picnic and run things there as a prelude to the big test at Field Day, but as we were planning that event, along came an invitation to participate in Onalaska Community Days. We were delighted, but there was a problem. Our picnic and the Onalaska Community Days event were set for the same day. It was determined that if we were careful with our planning, we could do both events nearly simultaneously as they were only a few blocks apart.



It took a lot of coordination by many people to make this seemingly conflicting schedule work. This was a double test: to see how flexible we could be at setting up and taking down and moving to another site and doing it all over again, as would be needed in an emergency situation.

The RARC members were up to the task. Both events were a success and in spite of the cramped schedule of these events a good showing happened and a good time was had by all. We are ready!



ACTIVITIES FOR JULY 2019

- June 30...Sunday Night net on the 146.97 repeater at 8:00 PM. Net control is Carl, KC9HDS.
- July 2...Pontoon boat ride, this will be in place of the regular program night at Gunderson Clinic.
- July 7...Sunday Night net on the 146.97 repeater at 8:00 PM. Net control is Rick, KKD9GVS.
- July 14...Sunday Night net on the 146.97 repeater at 8:00 PM. Net control is Kevin, KC9ZGD.
- July 21...Sunday Night net on the 146.97 repeater at 8:00 PM. Net control is Mark, KB9OFK.
- July 28...Sunday Night net on the 146.97 repeater at 8:00 PM. Net control is David, KD9EPN.
- August 4...Sunday Night net on the 146.97 repeater at 8:00 PM. Net control is Greg, K9LEC.
- August 10...RARC Swapfest held at the Onalaska American Legion.

Bill's Corner

Greetings once again Earthlings

Did you know you could watch the sunset twice tonight?

While writing my second article in this series I painted myself in a corner and am not sure how I did that, but put it aside for another day. Maybe :) Let's continue with last months subject.

"MEASURING THE EARTH In about 200 B.C. Eratosthenes, director of the great library of Alexandria, came up with a simple method of determining the circumference of the Earth. He read that in Syene (Aswan), Egypt, at noon on June 21, obelisks cast no shadows and sunlight fell directly down a well. He observed that in Alexandria (located directly north of Syene) at noon on the same date the sun was about 7 degrees south of the zenith. He next had the distance between Syene and Alexandria determined, probably by a bemetatistes, a surveyor trained to walk in equal paces. The distance came to 5,000 stadia. Using this figure he calculated the Earth's circumference to be (360 degrees/7 degrees) x 5000, or roughly 250,000 stadia, equivalent to 42,000 to 46,000 kilometers, about 5 percent too large.

Although the method is simple, it is laborious. Today anyone can determine the size of the Earth to within 10 percent by simply watching a sunset. Can you explain how?" Mad About Physics by Christopher P. Jargodzki and Franklin Potter page 141

Another question or two: Sunlight "fell", how does sunlight 'fall', and when it hits the bottom, does it accumulate??? There will be a test on this in the morning. :)

Here is an important chart for the Amateur.

Now for the answers to some of our questions:

"The method requires a clear view of the sunset from a beach overlooking an ocean or a large lake. (Note for eye safety reasons, it is best to avoid gazing at the sun's disk until it is mostly below the horizon.) Lie down so your eye is virtually at the water's level. Wait for (and note on your watch) the very instant at which the last ray of the sun suddenly shrinks (horizontally) and disappears. Stand up right away, and again note the time of the final ray from the second sunset. By subtraction, find the time elapsed between the two events (typically 10 to 20 seconds). Now (a) divide the eye height h (in meters) by the square of the elapsed time t and then (b) multiply the result by 378. The result is your own estimate of the Earth's radius, expressed in thousands of kilometers." ... (From the same book page 282)

73 fer now Folks

Bill KE9XQ

Resistor Color Code

1st Band (F)	2nd Band (S)	Multiplier (M)	Color	Value	Band 3	Divide by
			Black	0	Gold	10
			Brown	1	Silver	100
			Red	2		
			Orange	3		
			Yellow	4		
			Green	5		
			Blue	6		
			Violet	7		
			Gray	8		
			White	9		

FSM

.22 ohm

.27 ohm

.33 ohm

.39 ohm

.47 ohm

.56 ohm

.68 ohm

.82 ohm

10 ohm

11 ohm

12 ohm

13 ohm

15 ohm

16 ohm

18 ohm

20 ohm

22 ohm

24 ohm

27 ohm

30 ohm

33 ohm

36 ohm

39 ohm

43 ohm

47 ohm

51 ohm

100 ohm

110 ohm

120 ohm

130 ohm

150 ohm

160 ohm

180 ohm

200 ohm

220 ohm

240 ohm

270 ohm

300 ohm

330 ohm

360 ohm

390 ohm

430 ohm

470 ohm

510 ohm

1.0 k

1.1 k

1.2 k

1.3 k

1.5 k

1.6 k

1.8 k

2.0 k

2.2 k

2.4 k

2.7 k

3.0 k

3.3 k

3.6 k

3.9 k

4.3 k

4.7 k

5.1 k

4- Band Code

123 4

100 Ω ± 5%



Another fine Field Day... By Carl Thurston, KC9HDS

With the added interest of the new Hams, the improved equipment, and the continued support of the Executive Board; everything pointed towards an even bigger and better Field Day this year. There were so many things that contributed to this: With our Emergency Communications trailer's new and tested solar powered system, revamped operating stations in it, and added new antennas, things definitely looked good. Oh yes the weather wasn't the best, with some rain and wind, especially when Field Day was nearing it's end and the wind was fairly brisk most of the time, but that didn't dampen our spirits.

There were over 20 people who participated either actively as operators, or as interested guests. There were a lot of activities happening all weekend long. It didn't start officially until 1300 local time on Saturday June 22nd, but that didn't stop us from getting most everything that could be prepared in advance taken care of late Friday afternoon. The club's Emergency Communications trailer was taken to the site by Greg, K9LEC, and put into place. One of the La Crosse County's Mass Casualty trailers was also put into place and its generators readied for the event. Some of the RARC members gathered to get as much of the preparations done as possible, followed by a trip to "Feature's" in West Salem for Friday night fish and some rousing fellowship.

That was on Friday. On Saturday, some of us gathered at the La Crosse Family Restaurant for our usual Saturday morning breakfast, followed by more loading of needed supplies and equipment. By noon, things were coming together fairly well with a host of helpers already to complete the set up and test out the radios and antennas before the official start of Field Day. In the past, all of the necessary tasks went to a few of the older members of the RARC, as there was so little interest in having a presentable showing at Field Day.

With the influx of new, younger members, eager to help and to learn, there was no shortage of those willing to pitch in and get everything done. By 1300 on Saturday, everything was as ready as it could be. This isn't to say that there weren't some last minute things that needed be gotten from in town. No matter how well things are planned out, there always seems to be one or two things that were overlooked or that were discovered to be necessary in order for all to go well. This was the case as it was discovered that an added table was needed.. So two Hams were sent to get a table and anything else that would be needed.

As the start approached, we were ready to go. This year we even had a Digital station set up. All of the usual stations were set to go, with Dave Peters KB9EWG, (his 30th Field Day), stationed in the old WHA building with the club's Icom, Drew ABNE was working the Digital station on the Club's FT 857, and the club's Kenwood was up and running in the trailer. At supper time, the steaks were grilled in spite of the rain, and we all settled down to some good fellowship.

The QSOs continued even though propagation wasn't the best, and several of us worked on into the night making as many contacts as we could. When morning dawned there were still some working away.. After a sketchy breakfast The day rolled on and towards the end, Channel 8, one of the local TV Stations sent a camera crew out to our site at Jostad's Farm on Jostad's Road to tape and interview us.

After the ending of Field Day, all that was left was to take down the antennas, repack everything, and to clean up the area. All was done by 1600. Another successful Field Day and we were already planning new improvements for next year's Field Day. So it goes. 73, thanks to all who helped.



Learning about batteries...By Dan Romanchik, KB6NU

I often say that getting an amateur radio license is as much getting a license to learn as it is getting a license to operate on the amateur radio bands. Lately, I've been learning about batteries, LiPo batteries to be exact.

It all started when I purchased a Morserino (<http://morserino.info/>). The Morserino is a Morse Code learning aid that has a number of unique features. For example, in addition to helping you learn the characters, it's also supposed to help you learn how to copy in your head. It also has a built-in touch keyer function, and a LoRa interface that lets you send and receive code from other Morserino units.

[[Image at <https://www.kb6nu.com/wp-content/uploads/2019/05/morserino-768x670.jpg> goes here]]
I'll be writing more about the Morserino in a future column, but let's get back to batteries. The kit did not come with a battery. Instead, it was suggested that one purchase a 600 mAh LiPo battery commonly used for powering drones. [I found this battery on Amazon](#) , and purchased a six pack of them, thinking that I'd find uses for the other five in some project or another.
[[Image at <https://www.kb6nu.com/wp-content/uploads/2019/05/tattu-3.7v-600-mah-battery-768x522.png> goes here.]]

Well, sooner than expected, I did find another application for one of the batteries. I'm building a little Arduino project for a client, and I reckon that this, or one with more capacity, will make a great power source for the project.

Now, I have two immediate challenges:

1. Figure out how to charge the battery.

Figure out how to connect it to the Arduino.

On the Morserino, the battery plugs directly into a connector on the bottom of the computer board (the white board with the LED display). I knew that connecting the 5V line from the USB connector directly to the battery was a no-no, but I'd lent out the Morserino to a friend, and I didn't have the schematics for the board. So, how they managed to charge the battery from the USB port was a bit of a mystery.

I emailed Willi, OE1WKL, the designer of the Morserino, and he sent me a wealth of information. There actually is a battery-management IC, the TP4054, on the board:

[[Image from <https://www.kb6nu.com/wp-content/uploads/2019/05/heltec-power-supply-768x327.png> goes here.]]

He also gave me the part number for the battery's mating connector. He said, "The mating connector for the Molex connector on the battery is a Molex 51006. It is sometimes referred to by vendors as 51005 female, but 51005 is the connector on the battery." You can, of course, buy pre-made cable assemblies on Amazon (<https://www.amazon.com/gp/product/B07P54QTR8>).

You can also buy lithium battery charging modules (<https://www.amazon.com/gp/product/B01LZSC7I8>). These modules have a TP4056 on them, which is similar to the TP4054. It's amazing to me that you can purchase ten of these things for less than seven bucks.

So, that's where I'm at right now. Once I get the modules and cables, I'm going to hook it all up and get the Arduino system running from the battery. The next step will be to integrate a small solar panel and run the whole thing from solar power, hopefully.

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Dan Romanchik, KB6NU, is the author of the KB6NU amateur radio blog (KB6NU.Com), the "No Nonsense" amateur radio license study guides (KB6NU.Com/study-guides/), and one of the hosts of the No Nonsense Amateur Radio Podcast (NoNonsenseAmateurRadio.Com). He often wonders if he can learn things fast enough.





RIVERLAND AMATEUR RADIO CLUB

Monday June 17th, 2019 Executive Meeting

MINUTES

Call to order: 5:47PM 2237 UTC

Members Present : Dan Abts AB9TS, David Peters KB9EWG, Carl Thurston KC9HDS, Rick Kolter KD9GVS, Drew Neve AB9NE, Shawn Hicks KD9KGQ, Roger Reader KA9BKK, Greg Miller K9LEC, Kevin Holcomb KC9ZGD, Bill Wood KE9XQ

Approval of Minutes: Monday May 20th minutes approved as written

Treasurer's Report: Available upon request from Drew AB9NE

Committee Reports:

- +WAR – Still no confirmation on paperwork sent in. Shawn will give them a call.
- + Onalaska Community Days event – Went well, got a lot of positive response. We are invited back for next year's event. Club polo shirts would be a better alternative for next year's volunteers.
- +Club picnic – also went very well, good attendance. One suggestion for next year might be better coordination of time when food will be served.
- +Field Day – Dan went over everyone's assignments – we should be all ready to go.

Old Business:

- +Repeater Committee status – Van is back in town, but otherwise no progress. He will meet with us for further discussion. David and Shawn have 220MHZ radios that could be used for repeater control.
- +Trailer updates – The Icom and Kenwood are set up and ready for Field Day. Discussion ensued regarding installing the ATAS-120 antenna along with the Yaesu FT-857 radio. Nothing definite decided on this.
- +Swap Fest updates – we will post announcement on LAX Hams e-mail list. Dan's brother-in-law will distribute flyers in Wisconsin Rapids area. Roger has distributed flyers in several locations locally. We can set up Friday night for swapfest at the Onalaska Legion. Kevin again volunteered to Emcee for the event. Door prizes will be discussed in more detail later.
- +Name badges – Drew gave pricing information and will have a sign-up sheet at next program night. Several are interested so far.

New Business:

- +Dan mentioned the offset antenna attenuator kits he has available. Still need to get together on these for kit assembly, sometime before the Fox Hunt.
- +WIPOTA – Wisconsin Parks on the Air 9-21-19. We will likely be involved in this event.
- +Kevin presented his request for volunteers from the Club on July 13th to assist his group in Copeland Park. Several volunteered to help out.

Motion to Adjourn : 7:32PM 0032 UTC