



Official Publication of the
West Allis Radio Amateur Club

Hamtrix

Volume 72, Issue 6 June , 2023

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JUNE CLUB HAPPENINGS



NUT NET
3.985mhz
Monday-Saturday
8:15am CT
NUT NET
Breakfast
8:30am fourth
Tuesday
of the month

Milwaukee-Florida Net
Every Day on 14.290 Mhz
7:00AM - 9:15AM ET
6:00AM - 8:00AM CT

Meeting
June 13, 2023 6pm
New Berlin Community Center
14750 W. Cleveland Ave.
New Berlin, WI
Between Moorland and Sunnyslope

Presentation
Field Day David Garnier
WB9OWN

Premeeting dinner
New Berlin Ale House 5:15pm
16000 W. Cleveland Ave
West of Moorland Rd.



W9FK
West Allis Amatuer Radio Club
S57 W35510 Co Road ZZ, Dousman, Wi.
Dousman, WI
GOTA: YES
Contact: David Garnier
414-524-9902

Sendik's Grill Fundraiser
Will be on **July 15, 2023** and **September 9, 2023**
Save the dates and join us.

Index	From Editor.....13
Meeting Minutes	3
Balloon.....	4
DX/contest update.....	5
Digital Digest.....	6
Board minutes.....	7
Heyphone.....	9
	Wed Park Ops.....14
	Slow Speed CW net....15



WARAC Find Us On The Air

VHF Simplex 146.55 Mhz



Looking for a Club Member to chat with? Fire up the VHF rig and give a shout out on the VHF Simplex Frequency 146.55. You'll be surprised how often someone is listening. Hit the PTT and say "Hello"

DMR - BM TG 3155 WI State



The WI State 3155 TG is available on all the local DMR Repeaters AND via your HotSpot. Put yourself monitoring and come find a Club Member

Nut Net - Mon to Sat on 3.985 Mhz @ 8:15 AM



Join The Nut Net on 80 Mtr SSB from 8:15 to 9:00 AM Mondays thru Saturdays. Check-ins are from all over WI. You'll be a Nut Netter regular in no time. This is a general discussion net that gets your day started out right.

Milw - Florida Net - Mon to Sat 14.290 Mhz 7:00 AM



Join Tom, K9BTQ, for this early morning Check In Net, Mon thru Sat on 20M from 7:00 AM to 8:00 AM. Get the news to get your day started out just right.

6 Meter Chat - Wed, Fri 50.160 Mhz @ 9:30 AM



Paul, W9PCS, hosts this informal 6m online get together on Wed and Fri starting at 9:30 AM. This is a round table discussion and everyone is welcome to drop by and join in.

WARAC General Meeting Minutes – May 9, 2023

Club Meeting called to order by Feroz WU9N @ 7:05 pm.

Attendance: 20 – Members, 3 Visitors.

April Meeting Minutes: Approved.

Treasury Report summary:

Checking \$5,744 (includes \$400 scholarship, Dick Woods memorial donations), CD \$5k, Scholarship - CD \$12,184.20. Income: Dues \$15. Expenses: \$49.13 - 3yr. internet domain.

The Board will address the Scholarship issues with a meeting. To come up with a plan to be prepared for the next Scholarship cycle. Meeting TBA.

Wisconsin QSO Party Analysis. Chuck W9WLX, Howard WA9AXQ, Tom K9BTQ.

Results are finalized and published on website. Awards: 7 Plaques - 6 WI State shaped, 1 #1 shaped, all with club logo and plaque sponsor. Plus -196 certificates.

<u>Plaque Winners</u>	<u>Winner</u>	<u>Score</u>	<u>Plaque Sponsor</u>
Top WI Single Op Fixed	K9MU Justin Glasener	175240.0	Society of Midwest Contesters
Top WI Mobile	N9SD Scott Dawley	186900.0	Anne Dirkman, KC9YL
Top WI QRP	NK9G Rick McGaver	103292.0	QRP Cheeseheads ARC
Top QRP-Non WI	N0UR Jim Lageson 1	7192.0	Todd Fonstad, N9NE
Top VHF	KD9TQP Zachariah Monasmit	4968.5	Badger Contesters
Top Non-WI Single Op	W9QL David Pritchard	30644.0	Chuck Dellis, W9WLX
Top WI Club Aggregate	W9ZL Fox Cities Amateur Radio Club	385923.5	West Allis RAC

Plaques sill need to be ordered and sent, along with certificates. Looking at software enhancements and upgrades. If anyone is interested in the behind the scene of the operations - contact one of the WI QSO committee members.

Dave WB9OWN: Field day.

Club ordered 2 Band-pass filters (they arrived). Very well constructed. Planning 40m, 20m, vhf, GOTA stations. Looking for a Tx on 15m. All on battery. Any computer controlling a radio must only be on battery. No A.C. Main's power. Possibility of people bringing 10m, 6m setups.

MSOE radio club launched 2 balloons on May 9 @ Lake Shore State Park. 1pm. W9HHX-11, max alt. 21K ft. averaged 48mph, and went down in South East Michigan, Sunday night. 1:30pm. KD9GRG-11, max alt. 22k ft. averaged 60mph, and died Monday morning @ 10am. 50 mile East of West Virginia in the ocean.

Meeting Adjourned at 8 pm.

Respectfully Submitted

Bill Dargis KD9BJZ

WARAC Secretary



June 2023 Update

The balloon project has taken a decidedly slower path these past couple of months. As real life entered the fray, something had to give and our high flying endeavor took the brunt of the priority rescheduling. We still made progress, but decidedly of the backroom variety.

Here's what happened:

May Coordination Meeting: Online meeting took place. Due to conflicts in schedule, the June Meeting was canceled. Bill, KD9BJZ, was hoping to go to the MSOE Balloon launch at the lakefront. Due to scheduling, the next meeting was scheduled for early July.

MSOE Balloon Launch: Bill, KD9BJZ attended the event!! They launched two balloons and worked through a bunch of issues. Bill took pictures and brought home some good lessons.

Balloon Launch Meeting, 5/18: Bill, Mike, Paul and Brian held a Zoom meeting to further discuss Bill's MSOE adventure. Some takeaways:

- Do not launch at the lakefront: Difficult winds, crowds. Thinking Bong might be a good choice
- Gas: Hydrogen must be used to get to the planned height of 40K
- Filling Operation: Prefill balloons in a controlled place (garage?) to allow for accurate free lift measurement and windless filling.
 - Confirmed use of WSPR in lieu of APRS.
 - Solar Panel: Incorporate capacitor
 - Summer Launch: Preferred due to extended hours of sunlight vs the winter months.

Will schedule the next meeting after Field Day.

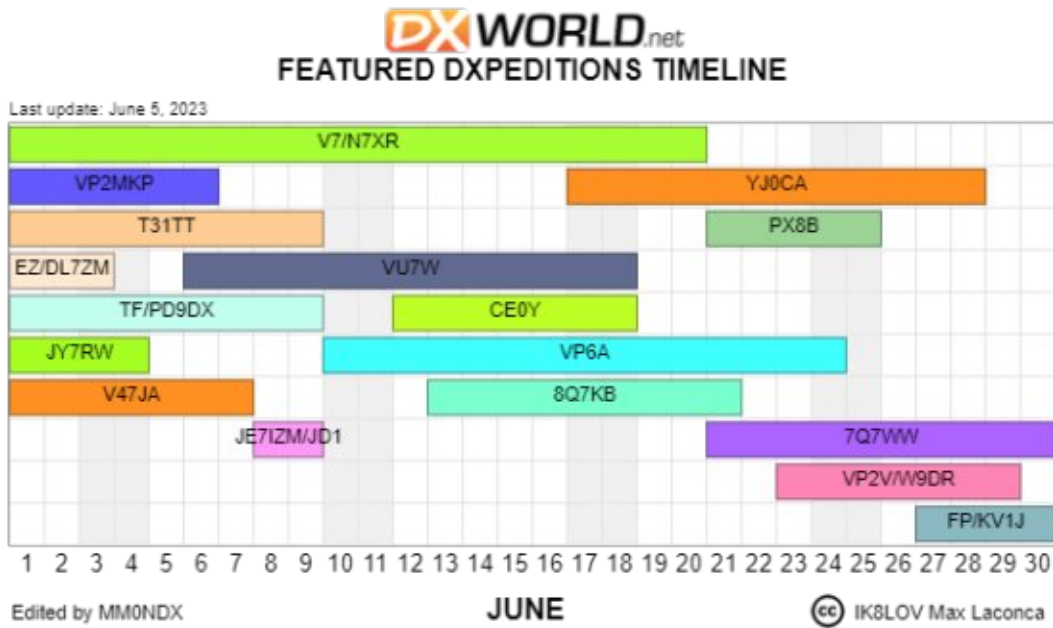
Participation: If you want to participate, send a note to Mike, WO9B mike@palomonet.com



Help: A new person is needed for this page as macular degeneration is taking over my eyes and it is becoming more difficult.

DX Update:

My friend Bob, W9XY will be back in Ethiopia on June 19 to the 28. Look for ET3AA. Usually around 8 our time in the morning. He will even be doing 6M if any of you are feeling lucky.



Central Kiribati, **T31TT**, will be QRV until June 14.

Marshall islands, **V7/N7XR** until the end of June.

If you missed Lakshadweep Is., VU7 last time you have another chance for **VU7W** June 6-18.

South Sudan, **Z81D** is QRV,

Contesting:

Of course the BIG event this month is Field Day, which is covered in other areas of Hamtrix.

QSO Parties this month:

The only one left this month, it is West Virginia, June 17-18.

Checkout the Contest Corral on page 69 in the June, 2023 QST for MANY MORE contests.

There are more contests worldwide, check out: <https://www.contestcalendar.com/contestcal.html>

Special Event Stations:

For special event station listings (there are many) check out:

<https://www.425dxn.org/index.php?op=wcal>

If you have further ideas or suggestions for this page please let WA9BZW (Al) know. wa9bzw@arrl.net

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June 2023

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Hamtrix

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By Michael Johnson, WO9B

SOTAmat

I remember the first time I used a Packet DX Cluster way back when. My thought was “It’s like shooting fish in a barrel”. Packet clusters relied on hams uploading “spots” to the cluster. A most communal system. From such humble beginnings the spotting systems have evolved to highly automated, multi report systems that many of us rely on. And it works great utilizing the internet backbone to report and disseminate the spots.

But not all is equal in the spotting world. CW and Digital modes have automated spotting schemes that troll the bands and fill the clusters. But alas the lonely SSB ops have no such convenience. Especially if you are a low power POTA or SOTA op, getting spotted is a big deal, at times making the difference between boom and bust. My snarky, unwelcomed advice has always been to adopt CW and the problem goes away. Fortunately others have taken the problem to heart and have actually created helpful solutions for the beleaguered SSB op.

My friend, Paul, VA6MPM, is a long suffering SSB SOTA op. In the last month or so his spots have been popping up on HAM Alert with the tag “via FT8”. Being a legitimate mountain climbing SOTA guy, this caught my attention. Paul literally makes pack decisions based on ounces and the thought of him packing a computer was shocking. A phone call later, he solved the mystery for me by pointing me to the SOTAmat website (<https://sotamat.com/>).

SOTAmat is the brainchild of Brian, AB6D. His spotting solution relies only on communications originated via ham radio. I urge you to take a deeper, more detailed look at his system via his webpage. In short, the way it works is the SOTA/POTA op sends an FT8 transmission which is picked up by PSK Reporter. Turns out that PSKSOTAmat Report interprets callsign trailing info (i.e. wo9b53) as actionable information. In this case, the op preloads the SOTA/POTA spot on SOTAmat (the 53 part of the callsign) and SOTAmat watches PSK Reporter for the callsign signal. When received, it posts the previously uploaded spot to the clusters. Viola. Happy SOTA/POTA activators and hunters.

But wait, where did that FT8 signal come from? Well the FT8 signal is generated by the ops cell phone, IOS or Android, with the SOTAmat App. The phone can either be hardwired to the radio or just hold the microphone up to the phone. So I guess Paul was packing a computer, but since he always brings his cell phone along, this solution meant no additional gear.

This is a wonderfully creative way to leverage existing ham gear and support networks. It is actually a bit complicated to set up, but I suspect once or twice through the drill and it becomes second nature. For those who don’t do CW, here is a great option for checking off your activation goals.

WARAC Board Meeting Minutes – May 30, 2023

Board meeting was called to order by Feroz Ghose WU9N @ 7:03PM.

Present: Feroz Ghose WU9N, Mike Johnson WO9B, Bill Dargis KD9BJZ, Bill Reed N9KPH, Tom Macon K9BTQ, Frank Humpal KA9FZR, Howard Smith WA9AXQ, Erwin von der EheWI9EV, Dave Garnier WB9OWN.

March Board Meeting minutes: Approved.

Treasures Report - Bill N9KPH: Checking \$5,487.65 (includes \$450.00 Dick Wood set aside for scholarship CD), CD \$5k, scholarship CD \$12,181.02

Field Day - Dave WB9OWN: Planning another meeting before Field Day, to finalize the details. Looking at 2-3 transmitters, Bands(propagation?), 6m is opening up. Possible solar station. Paul plans to bring his K3. Michael and Max – GOTA station. Tom - 20m, cw/phone 40m?. Will need a head count for food, beverages.

Scholarship for the future – Howard WA9AXQ: The endowment normally supports a \$2k scholarship, the club added \$1k to make it \$3k. The Terms Of Reference (TOR) states we will supply the additional \$1k. Howard recommends we reduce the scholarship to \$2k, change the TOR, which the board would need to work on and present to the membership. (Scholarship CD funds could be used.) The ARRL looks at the endowment in the last week of Dec. to the first week of Jan., to see if the endowment's returns supports awarding in June, contact the club in January with the results. Can we ask the ARRL in Oct./Nov. - how the funds are doing, to be better prepared to make decisions.

July Program: Field Day rehash, ? Move meeting to city of St. Francis Milton Vretener Memorial Park for a talk on technology use in police and fire department vehicles. Feroz needs to arrange.

October – Election of officers: There is a need to try to prepare a list of candidates before Oct. meeting.

Sendik's What happened?: Moved from June 27 to July 15, Sept. 9, 2023. Sendik's had their own food event during Memorial weekend. We need more Volunteer's.

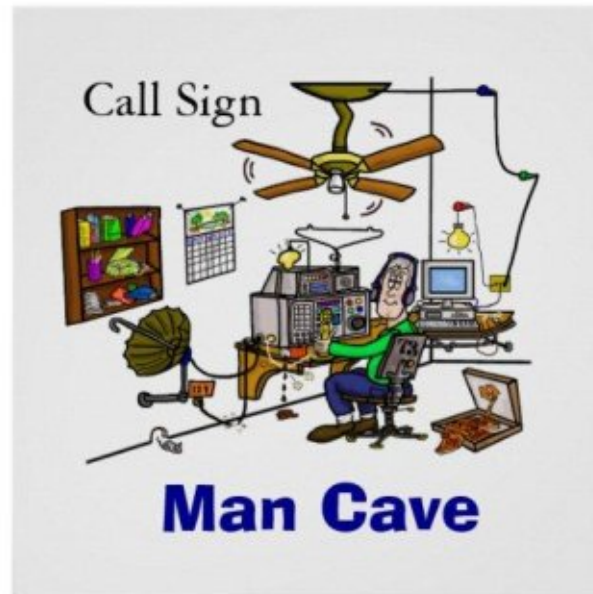
Website rebuild - Mike WO9B: In testing. Plan to go live Sept. 1, 2023.

Amendment to the rules on Club sponsored activities – Feroz: Language will be circulated with the board, for comment, and vote @ the next Board meeting, to be taken to the membership for adoption.

Next Board Meeting – Tuesday July 25, 2023.

Meeting Adjourned at 7:51PM.

Respectfully Submitted
 Bill Dargis KD9BJZ
 WARAC Secretary, May 30, 2023



2022 Challenge for our membership. Have someone you meet, Ham or Ham wannabe come to a meeting this year!



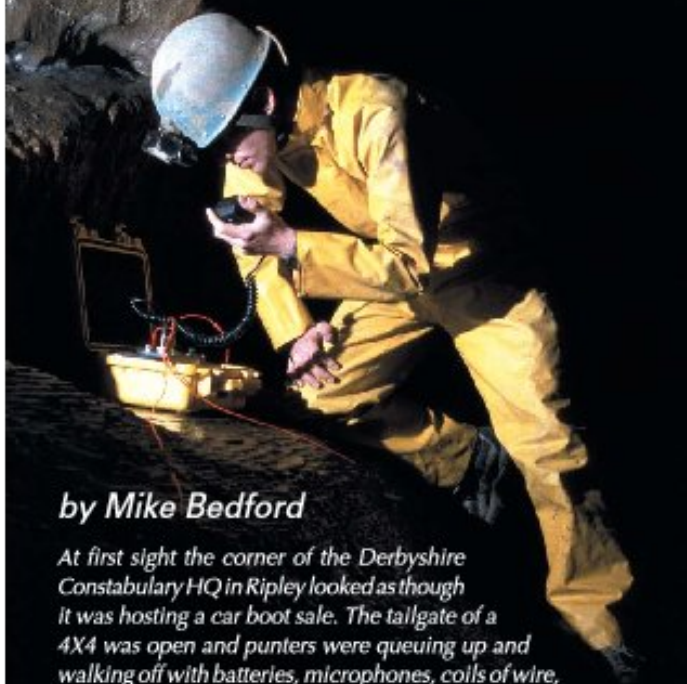
Nut Net Breakfast

Several years ago there was talk among Nut Net members that we should get to meet each other. A breakfast get together idea was started. It was open to all hams, XYL/partners and anyone who wanted to learn about amateur radio. Even visiting OM/XYL couples joined us.

So, on the fourth Tuesday each month at 8:30 am we meet at Gensis Restaurant, corner of HWY 100 and Beloit Road, Greenfield, WI. Looking forward to seeing you, mark your calendar.

Phil, W9NAW

INTRODUCING THE HEYPHONE



by Mike Bedford

At first sight the corner of the Derbyshire Constabulary HQ in Ripley looked as though it was hosting a car boot sale. The tailgate of a 4X4 was open and punters were queuing up and walking off with batteries, microphones, coils of wire, PeliCases and mysterious looking grey boxes – complete with switches, sockets & lights. But although this was the first day of April, it was no joke. The vehicle in question was owned by the British Cave Rescue Council's Equipment Officer 'Jopo' (Brian Jopling); the event was the BCRC's AGM; and those strange grey boxes were 'HeyPhones'. So what is a HeyPhone and why has it produced so much interest among the rescue community? Here we take a look at an important new piece of equipment in the arsenal of the UK's cave rescue teams.



The Molefone

The word 'Molefone' is a familiar one to cavers both in the UK and abroad. Developed by Bob Mackin at Lancaster University, this of course was the first practical cave radio. Ordinary radio waves are blocked by rock. The Molefone, though, uses low frequency induction, which allows it to provide through-rock communication to a depth of a few hundred metres. Rescue teams no longer remained out of touch with the surface controller for hours on end and as a result cave rescue was revolutionised. But ... all good things come to an end!

In an era of built-in obsolescence, of PCs which are hopelessly inadequate after just a few years, it is really quite amazing that the Molefone has served the rescue community so well and for so long. But it is asking a lot of any electronic equipment to survive a single trip into a cave, let alone fifteen years' worth of rescues. It is a tribute to Bob's engineering that the Molefone had such a good innings, but as of a few years ago the UK's cave rescue teams eventually started to report failures. To make matters worse, for various reasons, including the obsolescence of some of the components, repairing Molefones turned out not to be a viable option. Worse still, you cannot go out and 'buy' a cave radio – this is one piece of electronic equipment that is just not produced commercially. The BCRC and its member rescue teams had two options – either return to the dark ages with no cave communication or find someone capable of designing and building a new cave radio system.

Wanted – A New Radio

In March 1999 the BCRA Special Interest Group CREG – Cave Radio & Electronics Group – held one of its regular field meetings in Derbyshire. The theme of the meeting was rescue communications and as a result, along with the BCRC, many of the UK's rescue teams were represented. On the Saturday two new cave radios were demonstrated in Peak Cavern. One was the Nicola System, which has been developed for rescue communication in France, and the other was an experimental system designed by John Hey. Both performed very well. Communication over a distance of almost 500 metres was achieved and clear communication was established between the surface and Far Sump, a location that had previously been a commu-



nication 'black spot'.

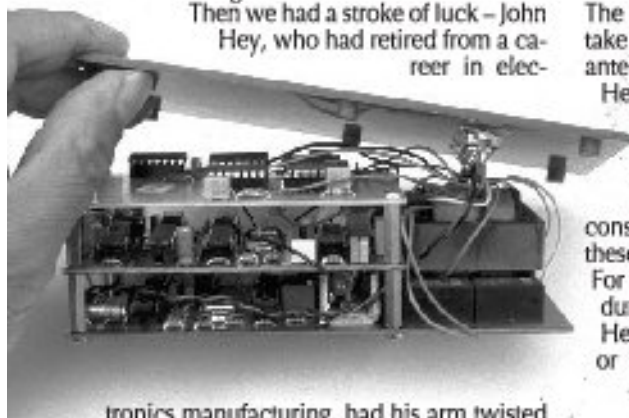
Further tests had been planned for the Sunday, but BCRC Chairman Bill Whitehouse had other ideas. With cave radio experts from France, Belgium, the Netherlands and the UK at hand, this was too good an opportunity to miss. A meeting was called to discuss the BCRC's communication requirements and a project team was set up to develop a new radio system. Eventually it was decided to base the new radio on John Hey's design and the real work started.

Not many people will be interested in a blow-by-blow report of the development but a few facts and figures need to be presented to give a feel for the size



▷ of the project. Designing a rescue radio is one thing; turning the design into 66 working units is another! The concept of a self-build weekend had been discussed. The idea was simple – the components and circuit boards would be purchased centrally, then each of the rescue teams would send members to sit on a production line with soldering iron in hand to knock out the radios. But doubts were raised about the quality of amateur-built radios – reliability was paramount. Next, commercial manufacture was investigated, but this was discounted on grounds of cost...

Then we had a stroke of luck – John Hey, who had retired from a career in elec-



tronics manufacturing, had his arm twisted (er sorry... volunteered) into building the radios himself. With John's experience in the electronics industry a quality product was assured. But this was a mammoth task. Almost 200 circuit boards were built up: £7,000 worth of components were used and over 50,000 solder joints were made – all by hand. Not that electronic construction was the only element of the manufacturing process: the radios had to be housed in boxes. But off-the-shelf boxes were not suitable and custom-made boxes would have cost an arm-and-a-leg. This time it was Jopo who came forward to offer his services. Jopo set to work churning out boxes and as John completed the circuit boards they were passed on to Jopo, who completed the manufacture by combining the electronics with the cases.

ing up-to-date components. The most obvious difference is in the antennas. The Molefone is intended for use with the familiar one metre square 'loop antennas'. These are quick and easy to set up, but they do limit the range. The HeyPhone uses something different called an 'earth antenna'. Two lengths of wire are run in

opposite directions away from the radio. In the case of the surface station, tent pegs driven into the ground are attached to the ends of the wires using crocodile clips. Underground, lengths of electric fence tape are used in place of the tent pegs and these are either trodden into the mud or immersed in water and weighed down with rocks. Compared to a loop antenna, a very much stronger signal results so the range is correspondingly greater.

Cave radio experimenters in France have achieved communication through more than a kilometre of rock using earth antennas. The downside of earth antennas is that they take longer to set up. So although loop antennas are not supplied as standard with HeyPhones, the radios are designed to work with loops as an option. It is expected that this will be the popular option for shallower caves.

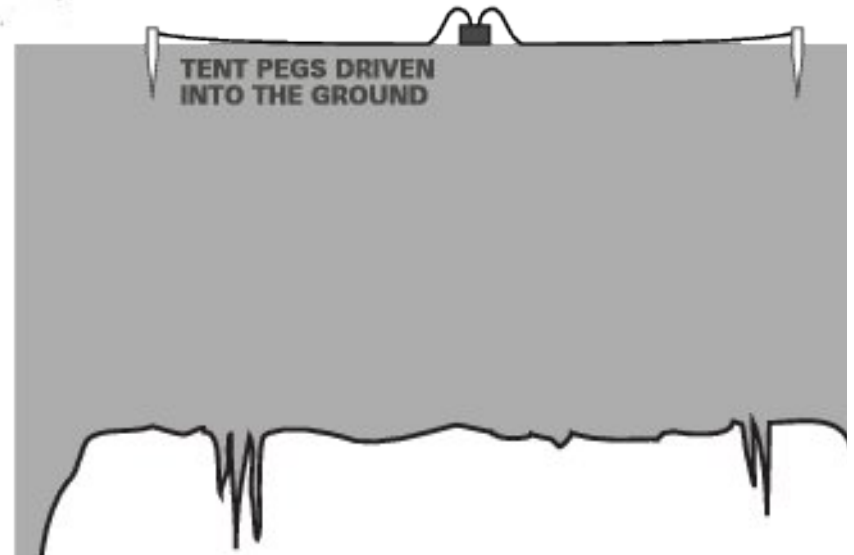
Many of the other changes can be considered as 'bells & whistles' but even so these make life easier for cave rescue teams. For example, there was much discussion during the design phase of whether the HeyPhone should have a built-in speaker or (like the Molefone) it should use the

microphone as an earpiece. Those with the Molefone recognised that approach allows sensitive information passed – eg. details of the casualty – onlookers or the press overhear. The downside, however, is that on rescue team has to have an ear to the phone at all times, just in case the party wants to contact the underground.

Use of a speaker, on the other hand, allows the radio operator to help with other aspects of the rescue, yet to call on the radio. The design of the HeyPhone overcomes this quandary by using a speaker, but also providing a mode in which the speaker is disabled in favour of using the microphone as an earpiece. Another new feature offered by the HeyPhone is a 'confidence bleep' which is switched on the radio transmitter and bleeps every thirty seconds. The purpose of this feature is to give the distant party confidence in the link. In other words, as long as the surface controller hears the bleep, he knows that the underground station is within range and is working. Even though no messages are being sent, the bleep is still present.

Another unique aspect of the design is the use of a totally sealed case. This is a totally sealed case which contains the component parts potted in epoxy resin and is arguably the ultimate in cave radio design. However, if something does go wrong, this approach makes any repairs extremely difficult to effect. Whereas we might expect that a well-designed and built circuit board will be reasonably immune from failure, the same is not true of switches, indicators, sockets, and the speaker. Since these items are present on the front panel they are prone to being replaced. Thus ideally the design should allow for easy replacement.

To achieve the best of both worlds, the HeyPhone is constructed in a two-part





the only operational use so far (writing in late July), was on a rescue attended jointly by the West Brecon, Gwent and Gloucester rescue teams. West Brecon had received their units earlier than most of the cave rescue groups for a SportsLot audit, following a grant which had been obtained for their purchase. The opportunity to give the equipment the acid test came on Saturday 24th February in Daren Cilau, when a caver dislocated his shoulder some 5 km into the system. Needless to say, the system worked just as expected and allowed the underground team to pass the news that the casualty was (eventually) making his own way out of the cave. With access restrictions now in the process of being lifted, the rescue teams could well have had much more experience with their HeyPhones by the time you read this piece. A new era in cave communication has indeed begun.



➤ The bottom box contains all the sensitive electronics. This is sealed against water (although it can be opened if necessary) and has just a single multi-way connector on its top panel. The top box is bolted to the bottom box and contains all the user controls. It is connected to the bottom box via a multi-way connector. In the event of damage to the user controls, the top box can be removed and repaired without interfering with the main electronics set in the bottom box. What is more, since the top box only contains the panel-mounting components and a few other simple parts, it can be worked on by people with minimal experience of soldering.

The Design

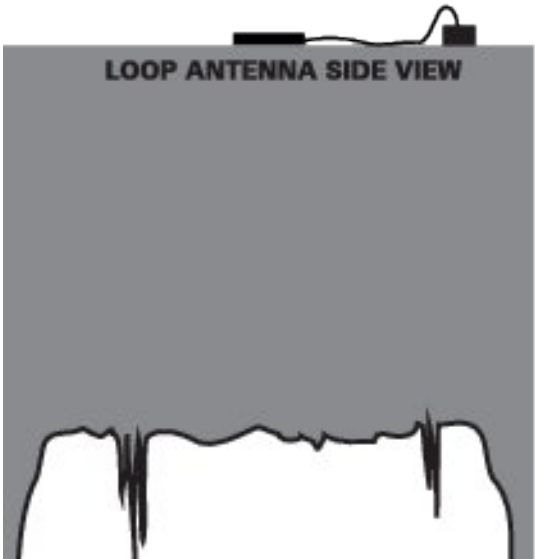
Most people reading this article are unlikely to be interested in exactly how the HeyPhone works or in the specific circuit details. However, BCRC has decided that an important element of the project is to place the design in the *public domain*. This will ensure that the information will be available to enable people to maintain their HeyPhones or to produce add-ons for the kits in future. Although this was not the prime reason for publishing the design, it effectively makes the design accessible to people and organisations other than the UK's cave rescue teams. So, for example, a caving club wanting radios for an expedition could build themselves a pair of HeyPhones. The electronic and mechanical elements of the design have been published in the Journal of the Cave Radio & Electronics Group and back issues are now available. In the fullness of time the design will also be placed on the Internet.

If you would like more details either visit CREG's Web site: www.bcra.org or contact Rob Gill (group coordinator) at creg@bcra.org.uk

In Practice

So how have the HeyPhones worked out in practice since they were handed out at the BCRC AGM?

Not surprisingly, there has been little opportunity for the rescue teams to find out! The foot & mouth epidemic's impact on caving has meant there have been few, if any, rescues and no opportunities to put the HeyPhones to the test. About all that can be reported is that the first use, and probably

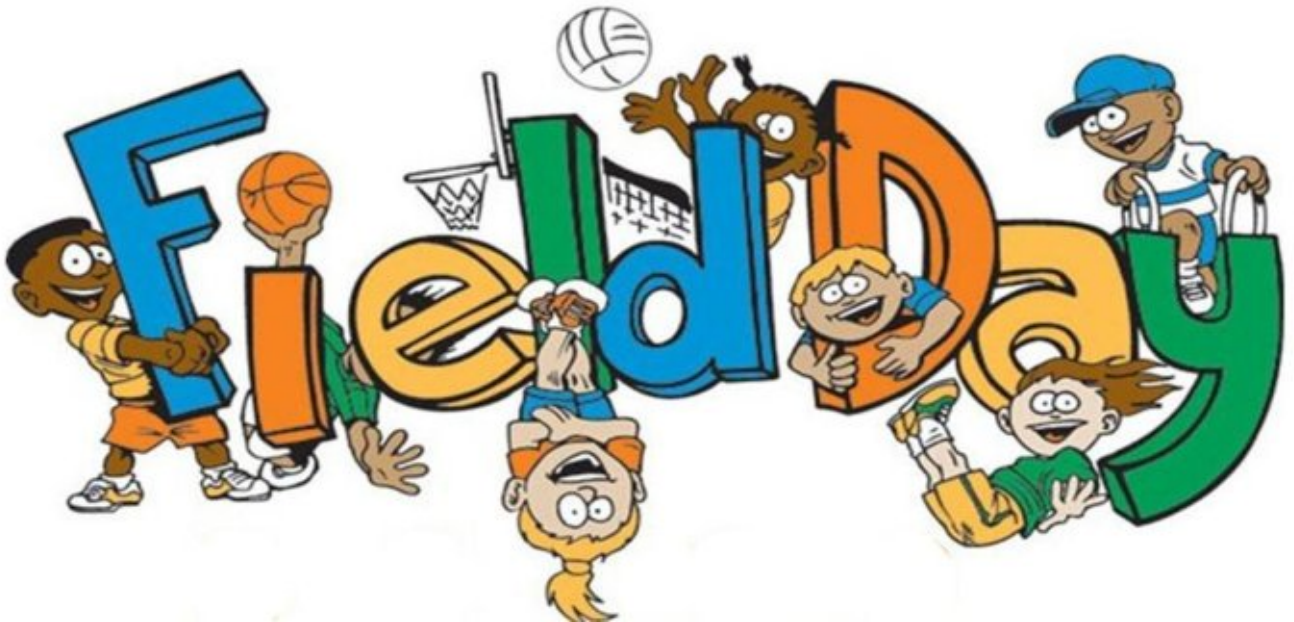




April, 1961

Field Day History

<https://hams.soe.ucsc.edu/sites/default/files/History%20of%20Field%20Day.pdf>



From the Editor

June is here and I am always surprised how fast time seems to fly by. I'm in warm weather mode. Been to the Wednesday park OPS, they have been well attended with multiple types of antennas and rigs. A good place to check your portable rigs out. Even if you forgot something you have someone to talk to so it isn't a wasted trip HI HI.

The other club activity I'm active in is our CW practice net on Mondays. It is not as well attended as we would like but still enjoyable. It has proved to be a good way to knock the rust of old CW skills. That is just practicing by rag chewing with an occasional contest practice primarily the "Spartan sprint". I have found the practice very helpful. Check us out some time! we do not bite. All we ask is to know some of the code. We are not set up to teach code from scratch.

Last weekend for a change I checked out the MUSEUM SHIPS WEEKEND. I contacted 3 submarines and 3 ships including a nuclear powered merchant ship. If I ever knew there had been a nuclear powered merchant ship I totally forgot about it.

So that's my story I'm not going to Field day as much as I would like to I have a commitment that weekend.

73
Frank KA9FZR

ELMER

by Rich Regent, K9GDF





2023 May Notes

Since when doesn't it rain in May anymore? For as long as we have been doing this Wednesday Park OPS, I can not recall a better start to the season. The weather has been ideal and naturally the warm temps and bug free environment means we all had a great time.

We have kind of done a greatest hits tour so far with our park selections: Greenfield Park in West Allis, Valley View Park in New Berlin, Lion's Legends in Franklin and finally two smallish neighborhood parks in New Berlin, Biwer and Gatewood. And the hits continue as school is now letting out and hopefully we can entice some of our summer vacation ops to join in.

For those who have yet to join the action, what are you waiting for? No radio is necessary as someone will have one setup if you want to operate. In addition to the usual CW QRP operations, we've been joined by a couple legit QRO setups. So nice to see, since several of the parks have outlets available in the shelters. Not always.

I can't underscore enough that this is a community wide activity. If you are a member of WARAC, great, but hams from all sorts of other clubs are regulars as well. The Wednesday Park OPS is a big tent and we've got room for everyone.

For upcoming parks, the decision is really made on Monday the week of the event. The focus is in the south western area, but occasionally we venture a bit further. We will be doing a couple of actual POTA activations this year. If you've got a park in mind, drop me a note. There are tons of great spots in the Milwaukee area. I'm sure we've missed some gems.

So clear a spot in your Wednesday agenda. It is always at 2:00 PM and lasts an hour or so.

Questions? Comments? Let me know... Mike, WO9B mike@palomonet.com

DON'T KEY LIKE A PHONE MAN



SLOW SPEED CW QSO NET

Monday's - 8:00 PM - WBOAFB Repeater 147.045 + 127.3 Tone

CW Practice

One of the best and maybe the only way to get better at CW is practice. Having someone else who also wants to practice also helps. Just makes it more fun.

The West Allis Radio Club is going to try to help. We are running a CW practice net on Monday at 8pm The repeater is 147.045+ 127.3 the CW portion is on HF

Mike WO9B has been joining me and setting up some practice but we are open for suggestions on where to go with this. Come join us.

Officers and Board
President
FEROZ GHOUSE WU9N

Vice President
MikeJohnson WO9B

Secretary
William Dargis KD9BJZ

Treasurer
Bill Reed N9KPH

Directors
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