

July 2024



THE BIG ISLAND HAMGRAM

The newsletter of the Big Island Amateur Radio Club

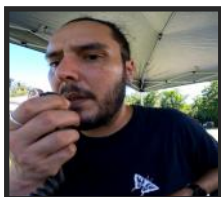


WH6FSA photo

Hamming it up at the annual BIARC Field Day June 22 at Kuhio Kalaniana'ole Park in Hilo! From left, foreground: KH6DLK, WH6GXZ and WH6JOE; in back: AH6EI, KH6CZ, WH6EPS, and WH6GWL.

Continued on next page

THE PRESIDENT'S CORNER



Thomas Avila, WH6GWL

... From the field

Hello fellow Hams!

We had a great turnout for our summer Field Day. Even though the bands weren't working in our favor, I have a list of concerns from everyone to help out our next outing.

I will be making a sun shroud for the club FT-991 so folks that have a hard time in direct sunlight

Continued on next page

Club benefit auction winners to be announced

At our July 14 membership gathering, at 2 p.m. at Kamana Senior Center, information will be available on what's currently in the BIARC Lending Library. And get the latest on how to order personalized BIARC shirts.

Winners of equipment in the ongoing benefit silent auction will be announced. The highest bidder for each item may take it at that time after paying Treasurer Tony Kitchen, WH6DVI.

"The Honokaa radio is coming along and we expect all three hospitals (Honokaa, Hilo and Ka'u) to be on the air this month via HF. thanks to a concerted effort by a lot of people at each facility and other volunteers like Shawn,

Thomas, Gary, Kim and myself," said Jim Tatar, WH6EMN.

Stay tuned to future Hamgrams for photo coverage of the completed projects, each an investment of many miles, days, months and hours and hours of hard work.

July membership gathering

Our monthly club activity will be July 14 at 2 p.m. at Kamana Senior Center at 127 Kamana St. in Hilo.

You may participate online via the following Video Link on Google Meet at <https://meet.google.com/mbr-voov-unx>

(Click the link. The meeting will appear as a new tab in your browser. Click the 'Join Now' button. Allow it to use your Mic and Camera if asked.)



Interference: The waterfall tells it all.

THE PRESIDENT'S CORNER

From previous page

will have an easier time making out what's on screen.

It would be great if we could stay after the next meeting and get a rundown on the radio functions, even if it's only for a little bit, and I would love to have a "bring your own antenna day". Not only to show off your skills but to help show the rest of the group what works best for you. Pictures of your antenna would be great, I don't expect anyone to bring in their 160M antenna to a meeting.

I know we didn't have a lot of contacts, but I'm happy we were able to converse and bring up topics that you would like to see at our next Field Day. I did get to see the array of antennas people brought with them, just in case.

It was nice to be able to get pictures of interference we picked up on the club radio. It seems a dirty power supply that we were using to test AREDn infrastructure was showing up on the radio's waterfall. (See photo, above.)

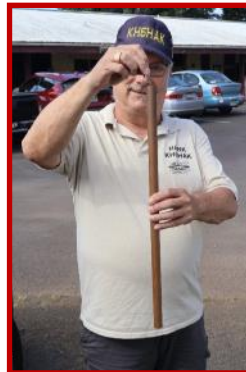
I look forward to seeing you all and hearing from you folks at the next meeting. We've had a major boost in HAM interest from teachers and students all wanting to get their tickets and it's a beautiful thing to see in this day and age.

Thank you, again, all who attended and helped out with this event and thank you for being a part of this wonderful club!

WH6GWL
73

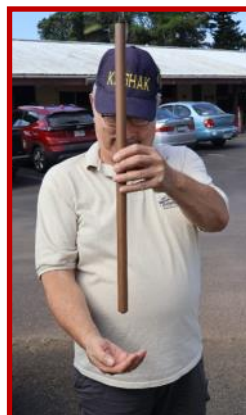


WH6FSA photo
BIARC Field Day June 22 at Kuhi'o Kalaniana'ole Park in Hilo.



WH6GWL photos

'The Great Hankdini'



At the June membership gathering, members were treated to a special presentation by Hank Kaul, KH6HAK, aka "The Great Hankdini and his mystically amusing demonstration of how electricity is made, without even knowing it".

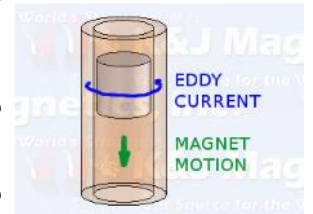
In the first pic, Hank drops a magnet through a copper tube.

In the second photo, Hank is still waiting for the magnet to fall out of the end. It took almost five seconds for the magnet to make its way

through the tube. And each time through the tube, the magnet would get slightly warmer.

While it makes electricity, it creates heat in the magnet and tubing.

-- WH6GWL



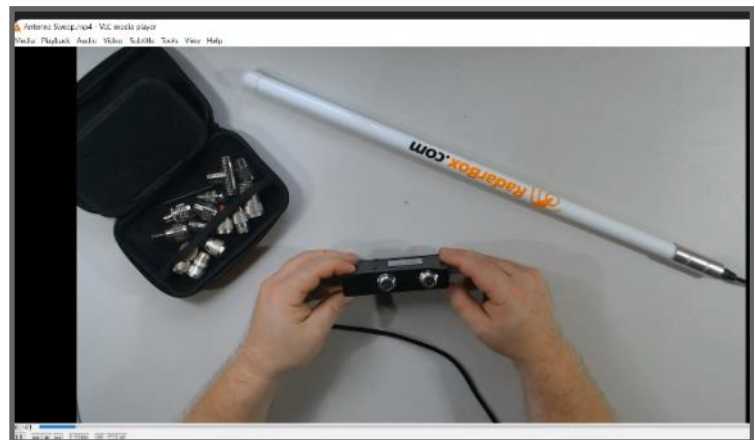
The concept shows Lenz's Law in motion. (Understanding Lenz's Law allows us to appreciate the science behind numerous everyday applications, such as electric generators, motors, inductors, and transformers. By delving into the principles of Lenz's Law, we gain insight into the inner workings of the electromagnetic world surrounding us. -- The Electricity Forum)



NH6ET demos ins and outs of VNA

At the June membership gathering, William Polhemus, NH6ET, demonstrated how to use a vector network analyzer, or VNA. *(FYI: He is working on creating an educational video on the VNA. In the future, it will be made available on YouTube. Stay tuned.)*

A vector network analyzer (VNA) is an instrument that can be used to measure antenna or coax parameters such as SWR, impedance and loss. It can also be used to characterize and tune filters. It is a very useful tool to have if you are building and tuning home made antennas, filters or other RF circuits.



[HawaiiARES] Biweekly Winlink Practice

Van NH7IT ASM-Pac offers regular reports on the Biweekly Winlink Practice for Hawaii ARES members. There is also HF and VHF peer-to-peer practice available on Saturday, which has become a regular thing.

If you are not a member of this net and are interested in joining the Biweekly Winlink Practice, please send Van a Winlink message (NH7IT).

Those who are new and want to learn more about Winlink, check out:

<https://wavetalkers.com/resources/digital/winlink.php>
https://winlink.org/content/user_support_and_help

[BIARC] ATAS antenna and other ham radio things :)

<https://m.youtube.com/watch?v=d6qVORR6XSq>



— KH6CZ PHOTOS

The dedicated volunteers of the BIARC Education and Outreach Committee introduce the hobby of ham radio to elementary school keiki at the Hilo YMCA on June 6.

Education & Outreach Committee volunteers are keeping busy

David Miller, KH6CZ, chair of the BIARC Education and Outreach Committee gives Hamgram readers an update on recent community outreach activities.

“We continue to tailor our outreach to the requirements of various schools and groups. The school program is oriented toward the elementary school community in conjunction with the Hawaii Technology and Science Museum,” said David. “Over the summer, we have also engaged with the YMCA in its Summer Activity program.

“Our usual BIARC cadre is in action at any given time:

- Jim WH6EMS
- Mark WH6FSA
- Joe WH6JOE
- Les K0BAD
- John KH6DLK
- Fred WH6HAA

The Hawaii Science and Technology Museum is an educational non-profit, federally recognized 501(c)(3) public charity dedicated to Science, Technology, Engineering and Math education on the Island of Hawaii.

- as well as all those who jump in on the Kulani repeater to handle voice traffic.

“We have signed up to continue the program into the following year. A tentative schedule for the balance of 2024 into 2025 is included in our update.”

June 2024 Education & Outreach Committee

June 1: The E&O Committee participated at the BIARC table for the day at the County of Hawaii Civil Defense Prep Fair at Afook-Chinen Auditorium. It was well-staffed. Attendees signed up in large numbers for further ham radio and training information. Much of this was transmitted to Doug Wilson for inclusion in his continuing ham radio training program. Tony, Joe, Mark, David, and others were on hand.

June 3: Warning Siren Test Net N/C on the newly instituted Maunakea repeater. Continued monthly participation is planned.

June 6: YMCA Summer Program event held at the Hilo YMCA. Mark, Jim and David on site.

June 25: BIARC HVOAD rep attended Hawaii Island VOAD-General Membership Meeting at the American Red Cross HQ in Hilo.

Planned E&OC 2024 Activity

July 16: YMCA Summer Program event, Hilo YMCA.

August 20: Keaau Elementary School Science Fair with the Hawaii Science and Technology Museum.

2024 Future E&OC Considerations

Additional BIARC event participation through the summer and balance of 2024 is being planned with the YMCA and a renewed program with the Hawaii Science and Technology Museum.

Keaau Elementary - Tuesday, August 20th 4:00-6:00pm

EB deSilva Elementary - Wednesday, September 11th 5:30-7:00pm

Waiakeawaena Elementary - Friday, November 15th 5:00-7:00pm

Waiakea Elementary - Wednesday, December 11th 5:00-7:00pm

Kaumana Elementary - Wednesday, February 5th 5:00-6:30pm

Hilo Union Elementary - Friday, March 7th 9:30-11:30am

BIARC Executive Board Regular Meeting

June 9, 2024
Kamana Senior Center

Draft minutes

The meeting was called to order at 12:03 pm by Board President Thomas Avila. A quorum of six board members were present.

Attendance:

Board members: Thomas Avila, Tony Kitchen, William Polhemus, David Miller, Mark Watanabe and Joseph Rosenbaum.

Secretary's Report and Minutes:

William moved and Tony seconded to approve the May 2024 Secretary's report. Motion passed.

Treasurer's report:

William moved and David seconded to accept the treasurer's report, subject to audit. Motion passed.

Committee Reports:

Digital Systems:

Discussion was held about the GMRS(General Mobile Radio Service) and linked connections.

BIARC will support this initiative by allowing the Digital Systems committee to use BIARC equipment as a test bed to develop a GMRS linked network. William will monitor and ensure equipment is in compliance with Part 95 of FCC rules.

Education and Outreach:

No report.

Operating Activities:

Mark(WH6FSA) reported that our permit application for Field Day at Kuhio Kalaniana'ole Park in Hilo was approved. Cost to the club was \$100 for the permit and \$200 for a refundable deposit.

Programs:

There are two presentations today. The first is on Field Day and the second is on using a VNA (Vector Network Analyzer.)

Public Service Communications:

No report

Voice Repeaters:

No further activity on the linking project.

Old Business:

Permanent storage: Tony has offered the club a 12x10x12 space in his property for club storage. This offer is on an annual basis and can be renewed every year. William moved and Thomas seconded to accept the offer. Motion passed.

Mark motioned and Tony seconded to approve the disbursement of \$100 for the park permit and \$200 for the deposit. Motion passed.

Club Discord currently in use for board members.

New Business:

Discussion was held on the possibility of obtaining I.D. cards for members who participate in the school science nights, YMCA events, etc. A background check will be required in order to be assigned an I.D. card.

Jim Huntley asked to stay on the Digital Systems Committee by participating remotely, as an associate member. Tony moved and William seconded to ask Jim if he would be the committee chair.

William moved and David seconded to adjourn the meeting at 1:03 pm. Motion passed.

*Respectfully submitted,
Joseph Rosenbaum
Secretary*

The serious sport of siren spotting

Making sure they're working for times of emergency



Just a friendly reminder to all our siren spotters:

Please ensure you are near a siren to report its operational status and provide a brief description of any observed malfunctions. There is no need to specify the duration of the siren sound unless it is unusually short, long, intermittent, has low audio, or exhibits similar irregularities.

Sirens being monitored are listed on the Adopt-A-Siren page: [Adopt-A-Siren List](#).

For siren statuses and locations, refer to the HCCDA Siren Map: [HCCDA Siren Map](#).

Mahalo to all those who have participated & Darrell (KH6RDO) DEC for doing the Siren Status Report!

73 and aloha, Bev (KH7LM)

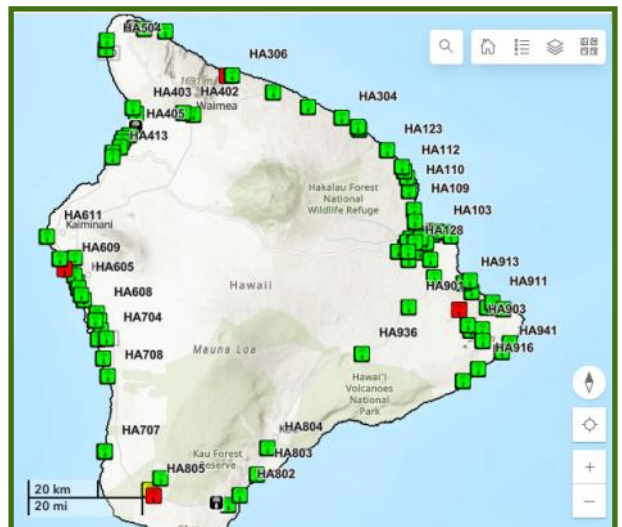


Monthly Siren Status Report for July 2024

Location	Observer	Mode	Status	Notes
NOT WORKING				
Ainaloa	WH6DVI	Mauna Kea	Not Working	
Kehana Beach	KH6AQ	Text	Not Working	
Laupahoehoe Lookout	WH6FSE	Allstar	Not Working	

PARTIALLY WORKING				
Kamehameha Park Kohala	WH7WZ	Text	Partially Working	sounded for 30 sec

WORKING				
Ainako Park	WH6FSA	Mauna Kea	Working	
Banyan / Kam	KH6ATU	Allstar	Working	
Captain Cook	WH6WF	Text	Working	
Cooper Center Volcano	KH7DQ	Mauna Kea	Working	
Downtown Federal Bldg	WH6FDE	Email	Working	
Hakalau	KH6RDO	Allstar	Working	
Hawaiian Beaches Park	KH7LM	Mauna Kea	Working	
Hawaiian Beaches Wela St	KH7LM	Mauna Kea	Working	
Honoapu	WH6HC	Allstar	Working	
HPP 4th & Awapuhi	WH6HAA	Mauna Kea	Working	
HPP 6th & Makuu	NH6OV	Mauna Kea	Working	
HPP Paradise / Ala Kai HPP	KH6CZ	Mauna Kea	Working	
Kawaihae Harbor	WH6EHJ	Mauna Kea	Working	
Kolekole	KH6RDO	Allstar	Working	
Laupahoehoe Point	WH6FSI	Allstar	Working	
Lelewi	KI6HBZ	Allstar	Working	
Naalehu	WH6HC	Allstar	Working	
NELHA Kona	WH6GTD	Allstar	Working	
Ookala	WH6GDC	Text	Working	
Paauiilo	AH6JA	Email	Working	
Palani / Kuakini Kona	NH6SP	Allstar	Working	
Puako General Store #1	WH6EHJ	Mauna Kea	Working	
State Building	WH6FDE	Email	Working	
Waiaka Bridge Kamuela	WH6EHJ	Mauna Kea	Working	
Waikamalo Park Ninole	KH6GM	Allstar	Working	
Waimea Park Kamuela	WH6EHJ	Mauna Kea	Working	



An example of a County of Hawaii Siren Status Map from May 31, 2024.

~ 2024 BIARC Roster ~

Executive Board officers and committee chairs

President

Thomas Avila, WH6GWL

Vice President

Les Hittner, K0BAD

Secretary

Joseph Rosenbaum, WH6JOE

Treasurer

Tony Kitchen, WH6DVI

At-Large directors

Mark Watanabe, WH6FSA, and

David Miller, KH6CZ

KH6EJ station custodian

William Polhemus, NH6ET

Public Service/ Communications Committee

Chair Les Hittner, K0BAD

Operating Activities Committee

Chair Joseph Rosenbaum, WH6JOE

Education and

Outreach Committee

Chair David Miller, KH6CZ

Programs Committee

Chair Les Hittner, K0BAD

Digital Systems Committee

Chair Shawn Farley, WH6GXZ

Voice Repeaters Committee

Chair William Polhemus, NH6ET

Meeting Refreshments Committee

Chair Robert Schneider, AH6J

BIARC Hamgram

Editor Leigh Critchlow, WH6LC

Club website: <https://biarc.net>

BIARC Donation Funds Summary

Fund Summary:

As of: 6/08/2024

<u>Year</u>	<u>BIARC Equipment Budget</u>	<u>Donations (Credit)</u>	<u>Equipment Purchases & Maintenance Costs</u>	<u>\$ Covered By Repeater Fund</u>	<u>Repeater Fund Balance</u>
2017	\$600.00	\$273.00	\$932.75	\$332.75	-\$59.75
2018	\$1,000.00	\$235.00	\$266.98	\$0.00	\$175.25
2019	\$500.00	\$255.00	None	\$0.00	\$430.25
2020	\$500.00	\$501.72	\$436.78	\$0.00	\$931.97
2021	\$600.00	\$1,595.00	\$1,548.28	\$948.28	\$1,578.69
2022	\$950.00	\$729.00	\$0.00		\$2,307.69
2023	\$950.00	\$455.75	\$2,626.92	\$586.84	\$2,176.60
2024		\$601.75	\$0.00		\$2,778.35

Notes: This fund holds amounts donated to be used for repeater maintenance & upgrades.

Humanitarian Fund:

<u>Year</u>	<u>\$ Donated</u>	<u>Amount Spent</u>	<u>Balance</u>
2022	\$395.00	\$140.00	\$255.00
2023	\$158.75	\$0.00	\$413.75
2024	\$26.25	\$0.00	\$440.00

— Tony Kitchen, WH6DVI,
BIARC treasurer

BIARC Operating Statement

	<u>2024 Budget</u> <u>(Proposed)</u>	<u>Actual*– As of</u> <u>06/08/24</u>
Income:		
Dues	\$1,300.00	\$1,403.75
Repeater and general Donations	\$400.00	\$601.75
Humanitarian Donations	\$100.00	\$26.25
PayPal Convenience Fees	\$26.00	\$21.25
Total Income	<u>\$1,826.00</u>	<u>\$2,053.00</u>
 Disbursements:		
Club Liability Insurance	\$220.00	\$200.00
Club Equipment Insurance***	\$220.00	\$0.00
Equipment	\$400.00	\$0.00
Club Activities	\$400.00	\$74.47
P. O. Box Fee	\$280.00	\$0.00
Humanitarian Awards	\$100.00	\$0.00
VOAD Dues	\$25.00	\$25.00
Printing/Publicity	\$170.00	\$157.82
Office Supplies/Bank Fee/Misc.	\$40.00	\$0.00
Website Costs	\$48.00	\$83.88
Paypal Transaction Fees**	\$13.00	\$16.87
Total Expenses	<u>\$1,916.00</u>	<u>\$558.04</u>
Net (Income - Expenses)		\$1,494.96
 Account Balances: as of: 6/08/2024		
BOH checking Account		\$4,001.06
BOH Deposit Pending		\$101.25
Namecheap Balance (Website)		\$1.00
Paypal Account Balance		\$1,147.89
Total		<u>\$5,251.20</u>
 Fund Balances: (6/08/2024)		
Infrastructure fund	\$2,778.35	
Humanitarian Fund	\$440.00	
Emergency Reserves	\$1,000.00	
General Fund	\$1,032.85	
Total Funds	<u>\$5,251.20</u>	

* Income figures show dues and donations received for the 2024 dues year.

** Budget estimate based on 20% Transactions via PayPal, with fees averaging 4.65%

***Note:2023 equipment insurance cost was \$186.85.

— Tony Kitchen, WH6DVI,
BIARC treasurer

BIARC Education & Outreach Committee Report

Recent EO&C Activity

March 8

Hilo Union School Science Fair in conjunction with the Hawaii Science and Technology Museum — Mark, Joe, Jim, David BIARC Reps

April 20

Keaau Elementary School Science Fair with the HSTM -- Fred, Jim, David

May 2024 E&OC Activity

May 1

Warning Siren Test Net N/C and Individual Siren participation.

May 18

Disaster Response Exercise HPP with HPP CERT and Emergency Radio Team.

Future 2024 Planned Activity

June 1

County of Hawaii Civil Defense Prep Fair at Afook-Chinen Civic Auditorium in Hilo.
BIARC booth was well staffed and attended.

June 3

Warning Siren Test Net N/C and individual Siren participation.

June 6

YMCA Summer Program event Hilo YMCA. Mark, Jim and David on site.
Follow up event to be arranged to include final group of participants.

June 25

BIARC HVOAD rep to attend Hawaii Island VOAD-General Membership Meeting at American Red Cross, Hilo.

July 16

YMCA Summer Program event, Hilo YMCA.

August 20

Keaau Elementary School Science Fair with the Hawaii Science and Technology Museum.

2024 Future Considerations

Additional BIARC event participation through the summer and balance of 2024 is being planned with the YMCA and a renewed program with the Hawaii Science and Technology Museum.

Technician license preparation classes have been scheduled for 8/21 - 9/25 and 9/28 - 9/28. If you know of anyone that is interested in getting their license, contact Doug Wilson.

*David Miller,
Chair, BIARC E&OC
June 8, 2024*



Announcements

The New Amateur Extra-class Question Pool has been released and will be effective beginning July 1, 2024, through June 30, 2028. The 2024 - 2028 pool is available as a Microsoft Word document and as a PDF. The 10 graphics required for the new Extra-class question pool are available within the documents or separately in PDF and JPG file formats. ARRL Volunteer Examiner Coordinator (VEC) Manager Maria Somma, AB1FM, and member of the National Conference of Volunteer Examiner Coordinator (NCVEC) Question Pool Committee (QPC), said, "The new pool incorporates significant changes compared to the 2020 - 2024 version. We carefully went over the pool for technical accuracy, relevancy to today's amateur radio practices, syntax, grammar, style, format, and clarity and redundancy within and between the pools. With these goals in mind, 82 new questions were created, and 101 questions were eliminated, resulting in a reduction [of] the number of questions from 622 to 603. Over 350 questions were modified. We considered a question modified when the knowledge being tested was not changed but wording was improved, or answers or distractors were replaced." Somma advised that "the newly revised pool must be used for Extra-class license exams starting July 1, 2024. New test designs will be available to ARRL [Volunteer Examiners](#) (VEs) on that date. The ARRL VEC will supply its officially appointed, field-stocked VE teams with new Extra-class [exam booklet designs](#) around mid-June."

In Brief...

Get ready for the 25th anniversary of Route 66 On the Air. The 2024 event will start Saturday, September 7 and run until Sunday, September 15. The event, sponsored by the [Citrus Belt Amateur Radio Club](#), celebrates the "Mother Road," U.S. Highway 66, which was established in 1926 and was the first major roadway improvement to link the West Coast with the nation's heartland. Joining the celebration for the 18th year will be the [Barstow Amateur Radio Club](#) with special event station W6E. There will be 21 (1x1) special event stations along the route from Santa Monica, California, to Chicago, Illinois. In 2023, there were 77 such stations, making a total of 623 contacts during the 9-day event. Email route66ota@yahoo.com with questions or for additional information.



ARRL FOUNDATION

Administering Programs to Support the Amateur Radio Community

The ARRL Foundation is pleased to announce the return of the Club Grant Program for 2024. This is an opportunity for clubs to apply for grants up to \$25,000 to fund projects in their community, with an emphasis given to projects that are of a “transformational” nature. Consider applying TODAY to support a project or activity from which your club and community would benefit.

Can your club create a plan to improve the community through education and training in, recruiting for, and promotion of amateur radio? This is for you! The application period is NOW OPEN and runs through Friday July 26, 2024 at 4:00PM Eastern Time. Clubs across the country are encouraged to apply, even if your club is not an ARRL Affiliated Club or not a 501(c)(3) organization—all are welcome to apply.

Grant recipients will be required to share progress reports and updates with ARRL.

Information about the Club Grant Program can be found at:

www.arrl.org/club-grant-program.

YOTA Camp Ham Shack Renamed for Bob Heil, K9EID, (SK)

The Youth on the Air (YOTA) Camp “ham shack” has been renamed the Bob Heil, K9EID, Memorial YOTA Camp Amateur Radio Shack.

Heil, 83, passed away on February 28, 2024. He was considered the man who defined the sound of live rock ‘n roll music and brought audio engineering principles into mainstream amateur radio use. He founded Heil Sound in 1966, through which he created the template for modern concert sound systems for musicians like the Grateful Dead, The Who, Joe Walsh, and Peter Frampton.

Heil was also known as a mentor and generous donor to amateur radio organizations who enjoyed helping others find success in ham radio and supported Youth on the Air from the very beginning.



ARRL and Momobeam Introduce Dual-band Beam Antenna for 6- and 10-Meters

ARRL The National Association for Amateur Radio® has a new product to help radio amateurs get active and on the air.

As Solar Cycle 25 continues to increase HF radio propagation on the upper bands, ARRL has partnered with the Italian antenna manufacturer Momobeam to design a dualband beam antenna to help take full advantage of the exciting opportunities for distant contacts. The ARRL Dual-band Momobeam 6/10 Antenna is an easy-to-use antenna with a small footprint and a big reach. The beam features a 10 meter Moxon (28 MHz) and 6 meter Yagi (50 MHz).



At just over 10 pounds and with a turning radius of approximately 6.5 feet, the design is compact enough to fit places that otherwise wouldn't have space for a beam antenna. It comes with two sets of hardware for both permanent installation and portable use for temporary deployments such as 2024 ARRL Field Day or park activations.

The ARRL Dual-band Momobeam 6/10 Antenna is ideal for Technician-class operators to be able to work DX. "This is a great 'first' beam antenna for every ham," said ARRL Director of Marketing and Innovation Bob Inderbitzen, NQ1R. "If you've ever been intimidated by the prospect of owning a beam antenna, this one will allay your fears and give you a whole lot of fun. Radio clubs will want to add this beam to their deployment gear, as it's a great fit for field operating and special event stations. College radio clubs that don't have room for a large beam, or another beam, will enjoy adding this antenna for some gain on 6- and 10-meters. It is lightweight and can be turned with a simple TV rotator."



The 10-meter Moxon is an effective design for this dual-band antenna, as it's around 30% smaller than a traditional Yagi and uses no traps or other shortening techniques that reduce performance. A Moxon antenna includes a number of antenna configurations that were referred to by Les Moxon, G6XN (SK), and have received attention over the years in *QST* and editions of *The ARRL Antenna Book*.

The feed system uses an open sleeve feed method, coupling the driven element of the 50 MHz section by proximity and length to the 10-meter driven element with minimal loss. "Just attach a single coaxial cable to

included SO-239 equipped coaxial pigtail, and you're ready to go on two bands!" said Inderbitzen.

The antenna debuted at the 2024 ARRL National Convention hosted at Dayton Hamvention® in May. The first run sold out at the show, but ARRL has taken delivery of more units, available now.

"It's surprising how few amateurs have experience with antennas beyond basic wire designs," said Inderbitzen. "Our interest in introducing this antenna is to increase the depth and breadth of knowledge and experience among our members." Inderbitzen added that members should watch for more content, including video tutorials, coming from ARRL about the antenna.



More information about the antenna can be found at www.arrl.org/beam where future content will also be published.

While this antenna was produced exclusively for ARRL, Momobeam offers many of its popular antenna designs in the US through its partnership with Ham Radio Outlet.

The ARRL Dual-band Momobeam 6/10 Antenna is available from the ARRL Store at www.arrl.org/shop (ARRL Item No. 0084, \$299.95 retail plus shipping, handling, and sales tax where applicable. Available to ship in the US, only. Call 860-594-0355 or, toll-free in the US, 888-277-5289).

ARRL partners with Italian antenna maker Momobeam to design new dual-band beam

As Solar Cycle 25 continues to increase HF radio propagation on the upper bands, this new product can help hams get active and on the air.

— ARRL