

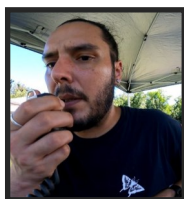
June 2024



# THE BIG ISLAND HAMGRAM

The newsletter of the Big Island Amateur Radio Club

## THE PRESIDENT'S CORNER



Thomas Avila, WH6GWL

### Reaching out at prep fair!

Hello everyone. June 1st marked the beginning of hurricane season in Hawaii. It was also the first Civil Defense Fair in Hilo. They were kind enough to give our club a great table where folks could stop by and learn about our club. I'm happy to have been there and to witness almost 30 people sign up to learn more about us, what we do, and how they too can become involved in HAM radio!

While there I was asked to do a quick interview with the local Na Leo TV station, where I

*Continued on next page*



Photos by Mark Watanabe, WH6FSA (from last summer's event in Hilo)



### Field Day June 22 in Hilo

BIARC will host its annual ARRL Field Day from 8 a.m. to 5 p.m. on Saturday, June 22, at the Kuhio Kalaniana'ole Park in Hilo. Mark Watanabe, WH6FSA, is coordinating, with a committee of volunteers

*Continued on next page*

## NH6ET offers special chance to study electronics, RF

### Electronics and RF classes at Hawaii Community College

As you may know, the electronics program at Hawaii Community College is on hold while the updated curriculum is worked out and put through the accreditation process.

I have received several requests over the past year from amateur operators who want to take an electronics

course, either just to have a better knowledge on the topic, or to advance to Amateur Extra.

I have also received similar requests from people wanting to attend an RF fundamentals course.

If there is enough interest from persons with actual intent to attend, I can seek to teach these courses under the EDvance program, to make them available. These would be evening courses, as the other group who would benefit from them are the

students seeking the AC/DC theory class for a career as an electrician. For those students it would be best to hold the classes outside of normal working hours.

If you have such an interest, and a serious intent to attend, please email me at [wpolhemu@hawaii.edu](mailto:wpolhemu@hawaii.edu). I will use any responses I receive to gauge if there is indeed a demand for the courses.

William - NH6ET



WH6GWL photos



Pictured: Joe WH6JOE and David KH6CZ, by our BIARC outreach banner, and the Na Leo TV booth.

## THE PRESIDENT'S CORNER

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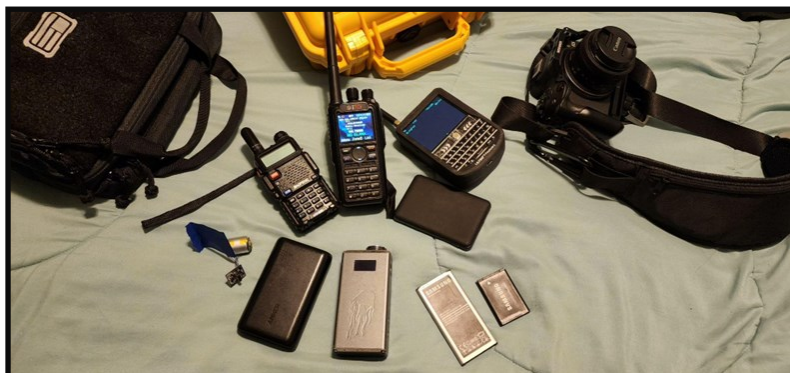
got to preach the word of HAM and let even more people know about our club. They were nice enough to let me know the segment will be on their podcast as well as air on local channel 53 as part of their coverage of the Civil Defense Fair.

Being that it's the beginning of hurricane season I also started to look for all of my batteries and make sure everything is charged and in working order.

Of course I found a few battery packs to have passed on. Instead of throwing them out I decided to start recycling them and using them in my own projects.

I've found that a majority of consumer goods use lithium ion batteries and with a quick amazon search I found a nice affordable battery tab welder, some nickel plated strip, some voltage regulators and buck converters. I know it isn't the easiest of things to do but with our penchant for wanting to save a buck, it could end up helping save older gear and keep lithium batteries out of our local landfills.

I also managed to get my Meshtastic network started and will be using some of the

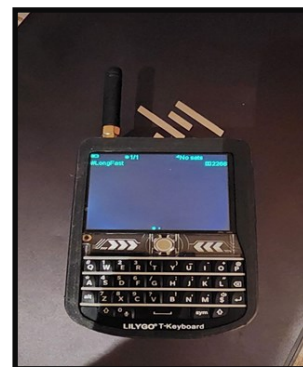


Pictured: lithium ion batteries and some of the projects that are getting new life from old junk.

recycled batteries to power my own mesh. Along with a few parts and my trusty 3d printer.

I look forward to sharing whatever projects and fun we have next month. I will be refreshing the fox hunt transmitter so our next field day might just have another working fox hunt and a much larger one in the future.

WH6GWL  
"El Presidente" Thomas  
73



Pictured: the LILYGO T-DECK.

## Get involved with BIARC's June 22 Field Day at Hilo beachside park

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helping to plan for the fun event. There are still many ways to get involved, and it's open to all.

There'll be lots more discussion about Field Day at the club's monthly get-together at 2 p.m. Sunday, June 9, at Kamana Senior Center in Hilo. Attend in person, or participate via the online link.

To kokua, just contact Mark at

[mtwatanabe@gmail.com](mailto:mtwatanabe@gmail.com) or BIARC Operating Activities Committee Chair Joe Rosenbaum at [jo-seph.rosenbaum@gmail.com](mailto:jo-seph.rosenbaum@gmail.com).

Field Day also is open to members of the public of all ages. Stop by the Hilo park and learn more about amateur radio -- this many-faceted avocation that is part hobby and part community service.

There will be a midday potluck

meal and lots of opportunities to connect with our fellow hams and see who's doing what, and why, and how. And to try our hand at operating in new areas of the spectrum.

The object of Field Day is to work as many stations as possible on the 160, 80, 40, 20, 15

Continued on next page

# BIARC Education & Outreach Committee 2024 March 8 through June 1, 2024 & Future Agenda



## 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 in with the HSTM - Fred, Jim, David

### **June 1**

County of Hawaii Civil Defense Prep Fair at Afook- Chinen Auditorium. Many BIARC Representatives including Tony, Joe, Thomas, Roy, Bob, David

### **June 3**

Warning Siren Test Net

### **June 6**

YMCA Summer Program event Hilo



## Future Events Planned for 2024

### **June 25**

Hawaii Island VOAD-General Membership Meeting at American Red Cross.

### **August 20**

Keaau Elementary School Science Fair with the Hawaii Science and Technology Museum. Additional participation through the summer with the YMCA and a renewed program with the Hawaii Science and Technology Museum through the balance of the year.

*David Miller  
Chair, BIARC E&OC*

## **Get involved with BIARC's June 22 Field Day at Hilo beachside park**

*From previous page*

and 10 Meter HF bands, as well as all bands 50 MHz and above, "and in doing so, to learn to operate in abnormal situations in less than optimal conditions" according to the ARRL. "A premium is placed on developing skills to meet the challenges of

emergency preparedness as well as to acquaint the general public with the capabilities of Amateur Radio."

"ARRL Field Day is the most popular on-the-air event held annually in the U.S. and Canada. On the fourth full weekend of

June, more than 40,000 radio amateurs gather with their clubs, groups or simply with friends to operate from remote locations."

Field Day is ham radio's open house. It combines public service, emergency preparedness, community outreach, and technical skills all in a single event. Field Day has been an annual event since 1933.

# Ham Radio collaboration: Bridging amateur operators & Emergency Management

By Tony Kitchen, WH6DVI

Amateur radio operators have long balanced their volunteer efforts in disaster communications with fostering collaborations with County and State Emergency Management agencies.

This article delves into this complex relationship, highlighting both national perspectives and unique challenges faced in Hawaii.

## Current landscape and opportunities:

The landscape of amateur radio has evolved, marked by fluctuating partnerships with government bodies and agreements over frequency use and infrastructure sharing.

These discussions often raise contentious issues such as the potential governmental use of FCC Part 97 frequencies and the authorization for amateur operators on agency frequencies.

It's crucial now to bridge our differences and aim for a consensus that respects both parties' needs and capabilities.

The County possesses resources and is poised to develop a linked repeater system which could greatly enhance communication efficacy. Parallel efforts by non-governmental groups, leveraging their existing infrastructure and expertise, propose a cost-effective strategy to rapidly expand Hawaii's communication network.

Working in parallel to each other, or collaboratively, these efforts can provide robust communications, and enhance our disaster response capabilities.

These capabilities complement other ways of communication, such as HF SSB and Winlink, as well as satellite and other communication capabilities outside of Ham Radio.

## Challenges and strategic coordination:

The finite nature of high elevation sites necessitates effective site and frequency coordination. This can be achieved through strategic partnerships forming win-win scenarios for all stakeholders. Governmental agencies face significant technical, administrative, and legal challenges, which could complicate the development of an extensive linked repeater system. Despite these hurdles, our collective goal remains clear and attainable.



WH6DVI

## Regulatory compliance and operational standards:

In emergencies, it's a common misconception that normal rules can be disregarded. However, strict adherence to established procedures is crucial.

Any governmental Emergency Management Agency must follow stringent processes, including Memorandums of Understanding, formal training, and issuing credentials to effectively incorporate volunteer ham radio operators.

Such formalities ensure legal compliance and a framework that protects everyone involved. It fosters operational efficiency. This goes a long way towards the goal of avoiding chaos and conflict during crises.

## Building effective programs and volunteer engagement:

Programs like ACS, RACES, or AUXCOMM standardize the use of interoperability frequencies and allow volunteers to operate outside Part 97, with proper authorization.

The creation of these programs requires significant commitment but provides standardized operational frameworks that safeguard volunteers and ensure effective mission accomplishment. These structures provide the key to enabling an effective partnership between HAM radio operators and agencies.

ARES plays an important role. It is a key training organization that provides the foundation for learning to participate in emergency communications, develop skills in relaying messages, and learning to

use equipment and technologies.

ARES can also help us by providing practical experience in working within the structure of the Incident Command System. (ICS) Individual volunteers, both within and outside ARES, are often in a position to quickly bring situational awareness to our community.

This is critically important in any unfolding incident.

## Future directions and community impact:

Looking forward, establishing clear and formal relationships between amateur radio operators and governmental agencies is vital.

This includes potential adjustments in the management of repeater networks to accommodate broader participation and experience among operators.

At the same time, it is important not to neglect our cooperation with non-governmental agencies, and interoperability with communications systems outside of FCC Part 97.

While the integration of amateur radio into emergency management presents challenges, the benefits of a collaborative approach are profound.

By fostering cooperation, coordination, communication, and collaboration, we can enhance our collective ability to respond to disasters.

As we continue to navigate these partnerships, our focus must remain on building both a resilient communication infrastructure, and personal relationships.

It is up to each of us to choose whether to participate or not, and what role each individual is willing to take.

From my perspective, choosing not to participate simply isn't an option. The potential for disasters, both natural and man-made is far too great to ignore.

73,  
Tony Kitchen  
Assistant Section Emergency  
Coordinator  
Pacific Section, ARRL/ARES

## ~ 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 monthly meeting info

### Jim Tatar, WH6EMN, offers a few updates for the June 9 meeting:

**The silent auction:** "I will be bringing auction items with me for viewing. The items will be auctioned at the July meeting. Proceeds will be going to the BIARC General Fund."

As announced earlier, Jim has donated a tuner, and he is accepting written bids.

"I'm going to add a used MFJ-1984/LP/MP/HP end fed antenna. It's about 4 years old and cost about \$80 new," he said.

**On the Health Net:** The administration at Pahala Hospital bought a Yaesu 991A and some accessories. Still in process of getting them a laptop to use. Shawn, WH6GXZ, should be set up by the end of June.

"At Hilo Medical we got the go-ahead to put some of the antennas back up. I should have the antennas up by the end of June.

"At Honokaa we are putting a solar system in to power the container, since getting emergency power to it is rather involved. The radio installation will be done by the end of June. Almost there!"

As he does each month, Jim will bring the inventory list for the BIARC Lending Library. Interested hams can arrange to borrow available materials. Also, Jim will have info about ordering personalized club shirts.

### Here's how to join the June sessions, in person or online:

The BIARC CLUB ACTIVITY will be held Sunday, June 9th, at the Kamana Senior Center, 127 Kamana Street, Hilo, HI. Please join us in person or online.

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BIARC Club Activity  
Sunday, June 9 · 2:00 – 4:00pm  
Time zone: Pacific/Honolulu  
Google Meet joining info  
Video call link: <https://meet.google.com/mbr-voov-unx>  
Or dial: (US) +1 405-825-1071 PIN: 995 424 966#  
More phone numbers: <https://tel.meet/mbr-voov-unx?pin=1252053231145>  
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Club Members are welcome to join us at our EXECUTIVE BOARD meeting at Noon.

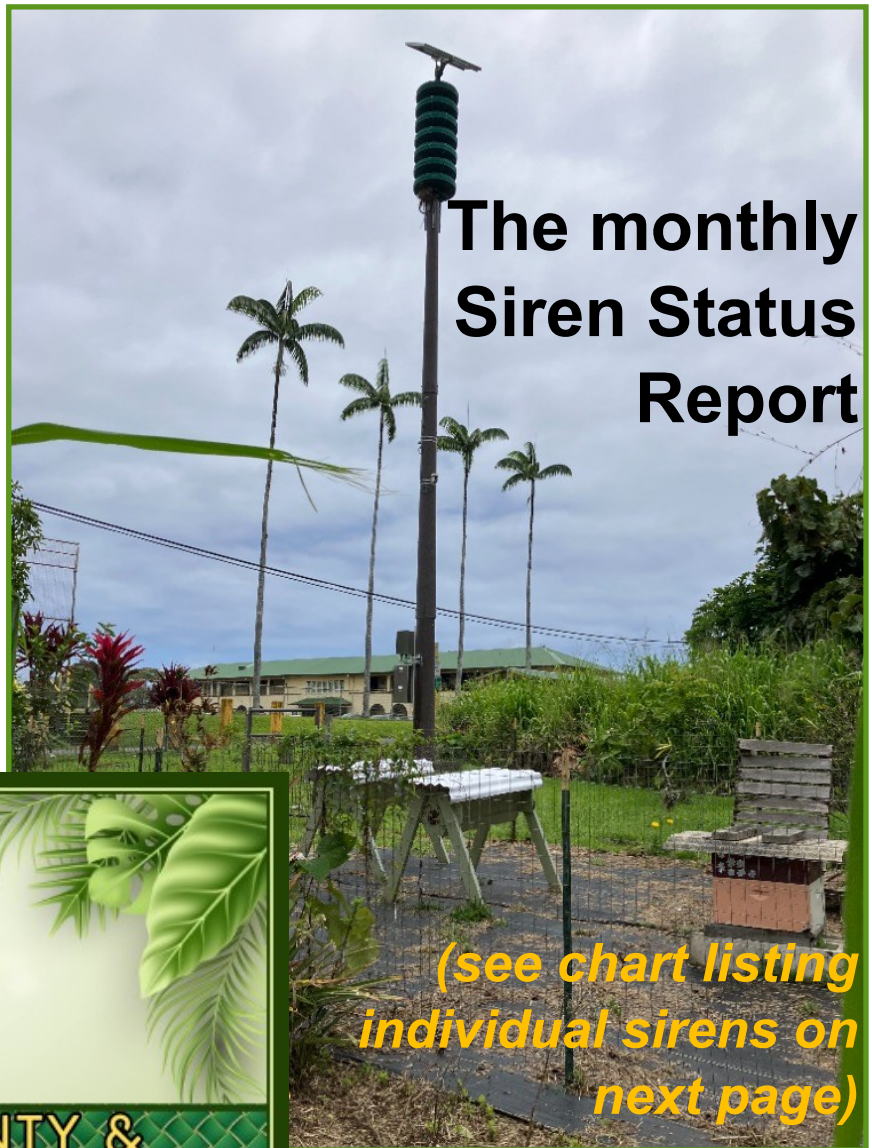
(NOTE: This meeting uses a different video link.)

BIARC Executive Board Meeting  
Sunday, June 9 · 12:00 – 1:00pm  
Time zone: Pacific/Honolulu  
Google Meet joining info  
Video call link: <https://meet.google.com/fwg-ofvx-agy>  
Or dial: (US) +1 314-649-4962 PIN: 393 778 433#  
More phone numbers: <https://tel.meet/fwg-ofvx-agy?pin=680892295485773>,  
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Tony Kitchen, WH6DVI  
BIARC Treasurer

# On duty in Pepeekeo

Jim, WH6FDE, drives a route every “siren day” to pass by several of the county’s emergency warning units to verify their working status. He checks with local residents to learn if they had heard a particular siren go off during the monthly test, then he submits his reports via email by the deadline. At right, is his photo of the Pepeekeo siren.



Aloha, Hawaii County Civil  
Defense Agency:

I have attached a copy of  
the Siren Status Report & a  
live link to the chart below in  
case we receive late reports  
or corrections after we had  
already sent it out for refer-  
ence or Siren Map updates.

[https://nh6tu.org/forms/  
BIMSN2024JUN.pdf](https://nh6tu.org/forms/BIMSN2024JUN.pdf)

Mahalo es 73,  
Bev  
KH7LM

# HAWAII COUNTY (MAUNA KEA) & BIG ISLAND (ALLSTAR) MONTHLY SIREN REPORT

06/03/2024 Start 11:30 am - End 12:30 pm  
 NCS Tony WH6DVI Mauna Kea } NCS Joe WH6Joe AllStar  
 (xx Check-Ins & 35 Reports)

[Adopt-A-Siren](#) | [BI AllStar](#) | [Mauna Kea 146.820 \(-\) PL 123](#) | [HCCDA Siren Map](#)

6 Siren Not Working		
Location	Notes	Callsign
Ainaloa (Pahoa)	Phone	WH6DVI (NCS)
HOVE #1 (Leilani Circle)	Text	KH6FA
HOVE #2 (Shopping Cntr)	Text	KH6FA
Kehena	AllStar	KH6AQ
Laupahoehoe Lookout	AllStar	WH6FSE
Paauilo (Hauola Rd)	Text	AH6JA
1 Siren Partial Operation		
Location	Notes	Callsign
Kamehameha Park	Text 30 sec low tone	WH7WZ
Siren Location(s) Not Heard		
Location	Notes	Callsign
27 Siren Location(s) Heard		
Location	Notes	Callsign
Ainako Park (Hilo)	Mauna Kea	WH6FSA
Baker Ave (Hilo)	Text	WH6FDE
Banyan Dr	Text	KH6ATU
Cooper Center (Volcano)	Mauna Kea	KH7DQ
Hakalau	AllStar	KH6RDO
Hawaiian Beaches #1 (Park)	Mauna Kea	KH7LM
Hawaiian Beaches #2 (Welea St)	Text	KH7LM
Hilo State Office Building	Text	WH6FDE
HOVE #3 (Reef)	Text	WH6FC
HPP #1 (Paradise Ala Kai)	Text	KH6CZ
HPP #1 (Paradise Ala Kai)	AllStar	WG6GUZ
HPP #3 (Awapuhi Ave)	Mauna Kea	WH6HAA
HPP #3 (Awapuhi Ave)	Email	KH6TD
Honuapo (Naalehu)	AllStar	WH6HC
Kahakai Blvd (Pahoa)	AllStar	NH6ET
Kailua-Kona (Palani)	Winlink AllStar	NH6SP
Kawaihae Harbor	Mauna Kea	WH6EHJ
Kolekole Park (Hakalau)	AllStar	KH6RDO
Laupahoehoe Point	AllStar	WH6FSI
Naalehu, Kau (Ohai Rd)	AllStar	WH6HC
NELHA (Natural Energy Lab)	AllStar	WH6GTD
Onakahakaha (Hilo)	Text	WH6FDE
Ookala	AllStar	WH6GDC
Waiaka, HPA (Waimea)	Mauna Kea	WH6EHJ
Waiaka, HPA (Waimea)	Mauna Kea	KH6DQ
Waikaumalo Park (Ninole)	AllStar	WH6FIQ
Waimea Park	Mauna Kea	WH6EHJ
#44 <a href="#">BIMSN</a> (KH6RDO)		



## 2024 Technician License Preparation Classes

The next Technician License Preparation classes have been scheduled for August and September, says Doug Wilson (KH7DQ). Two classes will be offered. One will be held over a six-week period via Zoom and the other will be an accelerated in-person version. Both classes are free except for the \$15 exam fee at the end of each class.

### **Technician License Preparation Class via Zoom – August 21, 2024 to September 25, 2024 (6 weeks)**

This class will be conducted twice-a-week for an hour each, over a six-week period via Zoom. Instructors will cover all of the questions in the Technician License question pool, explain each question-and-answer, and answer student questions. All materials will be provided, including all of the questions in the question pool and additional study materials and related references.

### **Accelerated Technician License preparation – September 28 & 29, 2024 (2 days)**

This 2-day course is not for the faint of heart. It requires students to do considerable self-preparation work prior to the 2-day in-person class. This includes taking multiple on-line practice exams, prior to the 2-day concentrated class sessions. During the in-person class sessions, the instructors will review all of the questions in the Technician License question pool, explain each question-and-answer, and answer student questions. This will be followed by a review of the presented materials prior to taking the exam on the second day.

Please contact Doug Wilson at [douscelle@aol.com](mailto:douscelle@aol.com) to sign-up for either or both classes.

The BIARC channel on  
Youtube is: [https://  
www.youtube.com/  
@BigIslandAmateurRadio-  
Club](https://www.youtube.com/@BigIslandAmateurRadio-Club)



# BIARC Executive Board Regular Meeting

May 12, 2024

Kamana Senior Center

**Draft  
minutes**

The meeting was called to order at 12:17 pm by Board President Thomas Avila. A quorum of 4 board members were present.

## Attendance:

- Board members: Thomas Avila, Tony Kitchen, Mark Watanabe and Joseph Rosenbaum.

## Secretary's Report and Minutes:

- Tony moved and Mark seconded to approve the April 2024 Secretary's report. Motion passed.

## Treasurer's Report:

- See operating statement and donated funds summaries. Tony moved and Thomas seconded to approve the treasurer's report, subject to audit. Motion passed.

## Committee Reports:

### Digital Systems:

- Shawn(WH6GXZ) and Thomas(WH6GWL) cleared brush and other obstructions and cleaned up at the Pepeekeo repeater site. Gary(WH6EPS) has been working on linking at that site. Tony moved and Joe seconded to allow the creation of a club Discord with sub-channels as necessary by Thomas Avila. Motion passed.
- Discussion was held regarding the GMRS(General Mobile Radio Service.) In an effort to attract new members who don't want to take the amateur radio licensing tests we would like to show an alternative where they can become associate members of the club and get access to any infrastructure we build linking GMRS voice for volunteer groups, etc.

### Education and Outreach:

- School science events are ongoing and discussion was held regarding demonstrating GMRS in our school presentations and showing how it can be linked and used through a smartphone. Doug Wilson(KH7DQ) continues with amateur radio classes and licensing tests.
- Discussion was held about the Civil Defense Emergency Preparedness Fair in Hilo on June 1st from 9am to 3pm. More information is on their website at <https://hawaii-county-civil-defense-agency-hawaiicountygis.hub.arcgis.com/pages/events>

### Operating Activities:

- Mark(WH6FSA) has been coordinating the Field Day Event. Tony moved and Thomas seconded to approve a budget of up to \$100 for Field Day. Motion passed.
- This committee has been working on the Civil Defense Emergency Preparedness Fair.
- Upcoming Quarterly workshops, dates to be announced.
- Planning for the CQWW SSB contest on October 26th.
- Possibly a mobile foxhunt encompassing South Hilo, if there is sufficient interest.

*Continued on next page*

## BIARC executive Board May 12 meeting minutes

### Programs:

No report. Today is the semi-annual membership meeting.

### Public Service Communications:

- Involved with the disaster prep fair.
- Stood up the county Auxiliary Communications Service for the storm event on Friday, May 10, 2024 which included VHF, HF and Winlink operations. Discussion was held regarding situational reports requested by Hawaii County Civil Defense Agency and amateur radio involvement.

### Voice Repeaters:

- No report.

### Old business:

- Permanent Storage update: Tony has offered the use of an 8x10x12 space in his apartment, which is not climate-controlled. Thomas moved and Tony seconded to table the motion. Motion passed.

### New Business:

- Tony moved and Thomas seconded to allocate a \$50 budget for printing of any necessary materials for the county disaster prep fair. Motion passed.

Tony moved and Mark seconded to adjourn the meeting at 1:23 pm. Motion passed.

*Respectfully submitted,  
Joseph Rosenbaum, secretary*

# BIARC Operating Statement

	<u>2024 Budget (Proposed)</u>	<u>Actual*– As of 05/11/24</u>
<b>Income:</b>		
Dues	\$1,300.00	\$1,357.50
Repeater and general Donations	\$400.00	\$591.75
Humanitarian Donations	\$100.00	\$26.25
PayPal Convenience Fees	\$26.00	\$21.25
<b>Total Income</b>	<b><u>\$1,826.00</u></b>	<b><u>\$1,996.75</u></b>
 <b>Disbursements:</b>		
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
<b>Total Expenses</b>	<b><u>\$1,916.00</u></b>	<b><u>\$558.04</u></b>
<b>Net (Income - Expenses)</b>		<b>\$1,438.71</b>
 <b>Account Balances:</b> as of: 5/11/2024		
BOH checking Account		\$4,001.06
BOH Deposit Pending		\$45.00
Namecheap Balance (Website)		\$1.00
Paypal Account Balance		\$1,147.89
<b>Total</b>		<b><u>\$5,194.95</u></b>
 <b>Fund Balances: (5/11/2024)</b>		
Infrastructure fund	\$2,768.35	
Humanitarian Fund	\$440.00	
Emergency Reserves	\$1,000.00	
General Fund	\$986.60	
<b>Total Funds</b>	<b><u>\$5,194.95</u></b>	

\* 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.

# BIARC donation funds summary

## Fund Summary:

As of: 5/11/2024

<u>Year</u>	<u>BIARC Equipment Budget</u>	<u>Donations (Credit)</u>	<u>Equipment Purchases &amp; 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	2626.92*	\$586.84	\$2,176.60
2024		\$591.75	\$0.00		<b>\$2,768.35</b>

**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	\$413.75
2024	\$26.25		\$440.00

**Notes:** This fund holds amounts donated.

\* Of the \$2626.92 spent on equipment in 2023, \$586.84 was paid for out of the repeater fund, for equipment purchased for and to be used at the Kulani and Pepeekeo repeater sites.

**International Museums Weekends (IMW) 2024 will take place June 15 - 16 and 22 - 23.** The purpose of this event is to activate an amateur radio special event station in as many museums around the world as possible. Frequencies, bands, and modes are at the discretion of the operators, as is the museum selection. For this event, the definition of museum can be loosely interpreted. It could be a collection of old cars or one of a kind paintings from a neighborhood artist. Through this event, organizers hope to present amateur radio to the public to garner support and understanding of the hobby. The first IMW was held in 2002 with over 80 museums, featuring small, local venues and large prestigious operations. The event was especially popular among amateur radio operators in the United Kingdom. For information about registration and event awards, visit [International Museums Weekends 2024](#).

# What I heard during the Solar Event

## Mark Persons reflects on the latest geomagnetic storm

BY MARK PERSONS, WØMH

PUBLISHED: MAY 13, 2024

Coronal mass ejections from the sun are plasma with magnetic fields. They can collide with Earth's magnetosphere, causing the auroras that fascinate us. This is a well-known phenomenon in the amateur radio community because of the effect on radio propagation.

This month, astronomers told us a geomagnetic storm was coming a few days in advance. It was the biggest since 2005 but was not a remarkable visual display at my location in central Minnesota, some 46 degrees north of the equator. Thanks to Paul Bruegl in Battle Ground, Wash., for providing a dazzling photo from his neighborhood.

### AM Radio

The event had a big effect on AM radio. As most Radio World readers know, AM stations can be heard far away at night because the three-layer ionosphere is 37 to 190 miles above the Earth. These ionized layers reflect medium-frequency radio waves back to Earth at night. The sun changes that so reflections do not occur in the AM band during the day.

KXEL Radio in Waterloo, Iowa sends its 1540 kHz my way with a two-tower 50 kW directional at night. Being about 300 miles away, it is not heard here during the day, but has a strong signal, almost as good as local stations, into my town at night. Its audio was non-existent during the aurora.

WCCO Radio in Minneapolis, Minn., 50 KW on 830 kHz, sounded that night just as they do during the day. They are 125 miles from my location. I normally hear selective fading of their signal at night.

What I am referring to is receiving a ground wave signal from the station, plus a signal that bounces off the ionosphere at night. The signals can combine in phase or can cancel when a time difference of .0006 milliseconds, or multiples of that, between the ground and sky waves are 180 electrical degrees apart. Selective fading creates obnoxious audio distortion for a few seconds and then is repeated again maybe a minute later. Timing of the fading varies because sky reflections vary in altitude.

As mentioned, the WCCO night signal sounded like a day signal during the aurora. Similar interference-free reception happened on semi-local stations, like KKIN(AM) in Aitkin, Minn., which runs 360 watts at night. They are 38 miles from my location. Co-channel beats and adjacent channel chatter were gone. They normally suffer interference at night but were fairly clean because interferers were not reflected down from the sky to compete with their signal.

### Amateur radio

Higher frequencies are less affected by reflections during the day. On the amateur radio side, I normally participate in a 75-meter (3908 kHz) net where operators from a five-state area check in on Saturday mornings to talk about contacts they made that week to foreign countries via ionospheric reflections. The band was absolutely dead during the solar event. No signals were heard. Even the noise level was low because random noise from elsewhere was not reflected down to my location. Things returned to normal a few days later.

Listening in the 120 through 16-meter (2.3 to 17.9 MHz) shortwave broadcast bands was nearly impossible during



Photo by Paul Bruegl

Northern lights in the sky above Battle Ground, Washington.

### MARK PERSONS

*The author, WØMH, is an SBE Certified Professional Broadcast Engineer, now retired after more than 60 years in the business, and a recipient of the John H. Battison Award for Lifetime Achievement from the Society of Broadcast Engineers. His website is [www.mwpersons.com](http://www.mwpersons.com).*

the aurora. Also, there were some reported accuracy problems with GPS signals during the event. I haven't heard a total this time, but some 38 commercial satellites were reported lost in a 2022 storm.

### History

A geomagnetic storm can stress the power grid to the point of failure. A 1989 storm induced unwanted currents in power lines causing a nine-hour blackout for 6 million customers in and around Quebec, Canada.

Then of course there is the story from 1859 when telegraph lines became unusable. At least one fire was reported from arcing and sparking at telegraph stations. That one was named the Carrington Event, after British astronomer Richard Carrington for his work in documenting solar flares. You have likely heard that there is an eleven-year sunspot cycle where the sun goes from being quiet to active, then back again. We are near the active peak in cycle 25 of this documented phenomenon.

Geomagnetic storms have happened before and will happen again. Our increasing dependence on all things electrical for our homes, businesses and communications in our society has made us more vulnerable to Mother Nature's whims.

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## ARRL Learning Center Features Two New Emergency Communication Training Courses

ARRL has released [two new courses](#) to train emergency communications (EmComm) operators for volunteering within the [Amateur Radio Emergency Service® \(ARES®\)](#). Both courses are within the ARRL Learning Center.

The Basic EmComm course is designed to get a new volunteer started. It provides basic knowledge and tools for any emergency communications volunteer and contains three modules and 11 topics, including required prerequisites. It's expected to take approximately 10 - 20 hours to complete.



The Intermediate EmComm course builds on the lessons learned in the first course and equips volunteer radio amateurs with the tools needed to thrive in the fast-paced environment of public service communications and to understand the legal rights and responsibilities of working with a served agency, as well as teach them and how ham radio fits into the broader incident command (IC) structure.

The new courses replace the previous EC-001 and EC-016 programs, however, certificates of completion earned for the previous courses are still valid. "Training is not a one-and-done thing. Throughout my firefighting and emergency management career, we were constantly taking new courses to reinforce existing knowledge and introduce new concepts," said ARRL Director of Emergency Management Josh Johnston, KE5MHV. "Engaged volunteers should want to stay up to date on advances in the science of emergency communications. I'd even encourage veteran operators to take the new courses."

In 2023, the Federal Emergency Management Agency (FEMA) [revised the Guide for National Emergency Preparedness](#) to specifically include amateur radio. ARRL and FEMA entered into a new Memoranda of Understanding in May 2023 that outlined the importance of trained radio amateurs within the response ecosystem.

"Amateur radio is as important as ever in emergency management," said Johnston. "The new courses will keep hams trained to serve effectively."

The ARRL Learning Center at [learn.arrl.org](https://learn.arrl.org) is a member benefit and features many ways to get the most out of your amateur radio license. The Basic and Intermediate EmComm courses are available to anyone with a free [www.arrl.org](https://www.arrl.org) account. Users must log in to the ARRL Learning Center with this account, and functionality of the site relies on cookies being enabled.

## Skywarn HAM update

ARRL Pacific Section Section Manager Alan P Maenchen, AD6E [ad6e@arrl.org](mailto:ad6e@arrl.org) encourages all hams to read this Skywarn HAM update from Kevin Bogan.

“Ham radio involvement with the National Weather Service (NWS) has been declining. I’ve asked Kevin Bogan AH6QO to reestablish our relationship with the Skywarn HAM system,” says Alan. “Note that Skywarn is NOT the same as Skywarn HAM.

“Kevin has made good progress and would like to get you involved too,” announces Alan.

From Kevin Bogan, AH6QO via ARRL email:  
If you wish to participate in Skywarn and Skywarn HAM, please read the message below:

- We need Skywarn Spotter volunteers. Please view the 47 minute video, follow the instructions and report your results to [sheana.walsh@noaa.gov](mailto:sheana.walsh@noaa.gov) and [liam.tsamous@noaa.gov](mailto:liam.tsamous@noaa.gov) in order to receive your Skywarn Spotter number or that you have refreshed your standing with them.

- In addition to needing Skywarn Spotters, we need Spotters who have Amateur Radio license to register with me, [kevin.boqan@gmail.com](mailto:kevin.boqan@gmail.com), to participate in the Skywarn HAM effort supporting NWS HFO. Amateur Radio operators who have a Spotter number are asked to send me your name, callsign, Spotter Number and location. Due to privacy issues, NWS HFO cannot provide me with a list of who is a Spotter nor who has just received a Spotter number. Please let me know.

- Here are some useful links:  
<https://www.youtube.com/watch?v=AlttvKlyPFk&t=1s>  
Skywarn Spotter 2019 training video.

<https://www.weather.gov/hfo/skywarn>

The Skywarn page at NWS HFO includes criteria for reporting.

- If you have questions, please ask. Please remember that I am Skywarn HAM and not an NWS meteorologist at Skywarn. NWS activates Skywarn HAM not me. I coordinate Skywarn HAM, its training in reporting and scheduling of HAM staff at NWS HFO.

Thank you for your interest in Skywarn and Skywarn HAM.



*Kevin, AH6QO*