



P.O. Box 6421 Auburn, CA 95604

April 2023

<http://w6ek.org> info@w6ek.org

At The Key of SFARC:

PRESIDENT

Jeff Morgan, KM6RGO
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Rob Newburn, KM6YKX
RobNewburn@att.net

DIRECTORS

Jon Kim, KI6RT*
Mike (Smitty) Smith, WB1G
Joe Steinmetz, K6SAT*

FIELD DAY CHAIRMAN

OPEN - TBD

REPORTERS

Satellites: Greg, KO6TH
Sunshine: Pam, KN6GTK

GROUPS io

Dennis Gregory, WU6X

PIO/Social Media Officer

Mike (Smitty) Smith, WB1G

REPEATERS

145.430 (-0.6 MHz/PL 162.2)
Wires-X, Allstar, Echolink
440.575 (+5.0 MHz/FUSION)
223.860 (-1.6 MHz/PL 110.9) Allstar

CLUB NET

Thursdays, 7:30PM, W6EK/R 145.430

CLUB MEETINGS

Second Friday of the month,
Crossroads Church @7:30pm
1101 Auburn Ravine Rd, Auburn

CLUB BREAKFAST

Last Sat of the month at Mel's Diner
1730 Grass Valley Hwy, Auburn 7:30AM

NET CONTROL OPS

Dave Jenkins, WB6RBE
Orion Endres, AI6JB
Chip Bautista, KM6MDF
Mike (Smitty) Smith - WB1G

NEWSLETTER EDITOR

Jim Marchetti, KD7G
kd7g@arrl.net

WEBMASTER(S)

Smitty (WB1G) / Greg (KO6TH)

STATION TRUSTEE

Clyde Campbell, AB4CC

VOLUNTEER EXAMINER

Brian Gohl AI6US
ai6us@arrl.net



Calendar of Events

<https://www.w6ek.org/calendar>

General Club Meeting

April 14th @ 7:30pm

Hams In The Hills

April 15th

Mar Val's Market in Georgetown

Meetup Time: 0800

Club Breakfast

April 29th @ 7:30am
@ Mel's Diner

RDF/Fox Hunt

April 29th @ 9:00am

Clearnode Net

Mondays @ 7pm, W6EK 2m
repeater

~ ~ ~

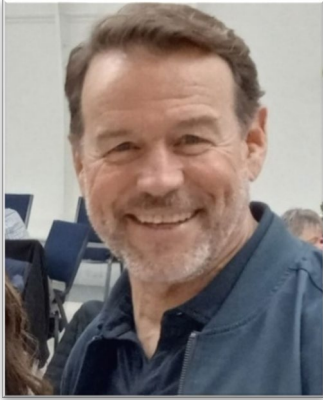
*Join us every morning @ 7:30am
for the Coffee Break Net on the
W6EK repeater 145.43, PL 162.2*

Inside this issue

- **President's Message**
- **New Members!!**
- **Board and General Meeting Minutes**
- **Trivia Questions / Did Ya Know?**
- **From the Newsletter Editor's Desk**

We encourage members to receive Sierra Signals via email to save the Club the cost of reproduction and mailing

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President's Message

By Jeff Morgan – KM6RGO

President

Welcome April!

Spring time is officially here! I have been looking forward to this spring with the outdoors finally opening up for fun in our beautiful area. There is still quite a bit of snow up in them hills, which will make for snow show **SOTAs** for those robust enough to try. I am guessing the wild flowers will be astonishing this year through July on the **SOTA** trails. I look forward to it. Time to make plans!

Hamfest

We had an amazing **Hamfest** this year! The weather committee did a fantastic job negotiating with Mother Nature. You all know how fickle she can be. She must have felt sorry for us these last few years. Either that, or she was charmed by the committee person who was able to convince her to give us a break. Whoever that was, Thank you! Once again, **Orion - AI6JB** and team pulled off the best **Hamfest** in my **Sierra Foothills ARC** experience. A big thank you to the **Hamfest Committee**:

AI6JB	Orion Chair
W1ATB	Aaron Drawing/Prizes
AI6US	Brian Coffee Break Net
KM6MDF	Chip Setup/Tear-down
WU6X	Dennis Vendor Relation
N6UWQ	Gary L Martinez Security
KC6SLE	Greydon H Hicks Elmer Tours
WA8MPA	Jim Jupin Club Table
K6SAT	Joe Presentations
KI6RT	Jon Test Bench/Talk-In
K6ZUG	Mike Concessions
KK6AM	Ray Test Bench/Talk-In
KM6YKX	Rob Newburn Treasurer
KI6LOP	Russ Parking
WB1G	Smitty Marketing & Promotion
NN6H	Tom Content Creator
W6TJR	Tyghe PA System

I want to personally thank each and every one you for the significant contributions to Hamfest 2023. As you know, it takes a village! There were countless others contributing to the success of **Hamfest**. We had two talks during the day, "**VaraAC**" by **Jim - KN6OON** and "**Intro to 3D Printing**" by **David - KD6MXD**. Along with **Prizes, Prizes, and more Prizes!** I think we had the largest prize package of any Hamfest! I want to also thank the many volunteers that assisted on that day. Without your support, Hamfest would not have gone as well as it did. Receipts are still coming in, but, by all measures, it was quite possibly our best event ever! We were a big part of the Ham community, as well as a resource for the local non-Ham community. Thank you!

I would be remiss if I did not recognize **Orion - AI6JB's** outstanding contribution to Hamfest these last several years. Orion has chaired 6 events over the year over Hamfest's history. This was his last year as chair. Orion leaves behind a wealth of easy to follow knowledge on groups.io's Hamfest section for next year's committee to follow. Orion your leadership and organizational skills will be missed, and we thank you for your tireless efforts for the club.

President's Message (continued)

Project Build

We had a **project build** this month. **A Tape measure Yagi Build** put on by the “**In the Shack**” team. This classic antenna build is an ongoing part of the radio direction finding program developing a deeper understanding of how antennas work and well as ongoing learning about **radio electronics**. Starting simple and developing into more advanced projects as we build out skill sets. Most of us know how to use our radios, but how well do we understand them? Future projects are being developed so look for information going forward. I look forward to these events and also the happy faces getting together to teach and learn these topics. Oh, and you get to take home pretty cool devices!

The 5th Wednesday

On **March 29th, the 5th Wednesday** of the month, we had a free evening for a special presentation featuring **Dr Ed Fong** and his talk “**Demystifying J-Pole Antennas**”. This talk was entirely on **Zoom** on a free evening with **75 attendees**. **Dr Fong** gave us a much better understanding of how these antennas work, many of the compromises in design, and how to properly tune them. Thank you **Dr Fong** for your time and knowledge. We look forward to learning more in the future! This event was special in many ways. It was entirely on Zoom, and not at an official club meeting where business needs to be conducted. If you liked this format and want to see more, please us know your thoughts about it. There are many fascinating people we may not be able to bring into the club meeting. Perhaps this could be something we could explore further.

I look forward to our next meeting in April!

73!

Jeff - KM6RGO

Editor's note: this crew is who brought you a safe and fun HamFest 2023!!



Here we GROW again!!

We have 5 more applicants in the pipeline for membership which will be voted on April 14th at the general club meeting.

Board of Directors Meeting Minutes

2023-03-09 SFARC Board Meeting on ZOOM

Called to order at 1800PST

Present: President- Jeff Morgan, KM6RGO

Vice-President- Greydon Hicks, KC6SLE

Secretary- Dave McBrayer, N6OJJ

Treasurer- Rob Newburn, KM6YKX

Director- Joe, K6SAT

also present: Clyde, AB4CC; Brian, AI6US; Greg, KO6TH; Jim, WA8MPA; John Clark, KK6IYW; Dennis, WU6X.

introductions around

quorum: minimum 1 Director + 4 Officers **MET**

COMMITTEE CHAIR REPORTS

Repeater (Station Trustee) - Clyde, AB4CC

Greeter/Sunshine – Pam, KN6GTK - not present

Newsletter - Jim, KD7G - not present

Webmaster - Smitty, WB1G - not present

Social Media Officer (SMO) – Smitty, WB1G - not present

Public Information Officer (PIO) - Smitty, WB1G - not present

Groups. io - Dennis, WU6X

Membership - John, KK6IYW

VE Exam Brian - AI6US

Volunteer Events Coordinator – Chip, KM6MDF - not present

Contest Chair - Dennis, WU6X

Drawing Chair - **Need new Chair**

Refreshments – Mark Koehler, W2MWK - not present

Nomination Committee – to be determined (September/October??)

Hamfest 2023 – Orion, AI6JB/Rob, KM6YKX

Field Day Chair – 2023 (**need chair**)

Picnic Chair – 2023 (**need chair**)

Hot RF Nights - 2023 (**need chair**)

Board of Directors Meeting Minutes (continued)

OLD BUSINESS

VE Accounting - Club Account (Talk to Bank Manager)

Repeater - Letter Sent to Chairman of the School Board

Elmer/Mentoring - Pamphlet for VE and Club Meetings

Flag & Pole - Flag is 4.5ft x 9.5ft) can be shortened Flag pole should be 10ft min.

NEW BUSINESS

Coffee & Doughnuts in the park Date?

V-Card + "How to become a Ham" Card + Business Card Club Frequencies Clarity

EVENTS UPCOMING

Hamfest - 3/18

Club Breakfast - 3/25

Project Build - 3/25

Special Presentation: Ed Fong - "Demystifying J-Poles" - 3/29

Canyon's - 4/28-4/29

CERA - May 6 & 7

Adjourned: 1903PST

General Meeting Minutes

2023-03-10 SFARC General Meeting

President Jeff KM6RGO welcomed individuals to the meeting in person and via ZOOM. The meeting was called to order at 7:30pm by President Jeff KM6RGO who opened the meeting by leading the Pledge of Allegiance.

Board members present: President- Jeff KM6RGO, Vice-President- Greydon KC6SLE, Treasurer- Rob KM6YKX, secretary- Dave N6OJJ, Director- Joe K6SAT.

February General meeting minutes were accepted as amended.

Club Business

2 Board members confirm Quorum for Business session: Rob KM6YKX and Dave N6OJJ confirmed member quorum present in person (35) + ZOOM (13) = 48 vs. 56 required. Quorum was not met at the meeting. Electronic voting continued until quorum was achieved with 56 votes in the affirmative 0 opposed.

New Members (5) applications to be voted in: Patrick S Lyons, KJ6LVB; Robert S Kehr, KA9MDP; Peter S Robbins, KN6PQW; Gary Gagliano, KN6SKY; Alastair Westgarth, KN6YmQG.

Program 1: Hamfest Planning by Orion, AI6JB.

Break

Program 2: 3D Print Modeling, Live Demonstration by Greg, KO6TH.

Committee Chair Reports:

Repeater - Clyde, AB4CC

Greeter - Pam, KN6GTK

VE Exam - Brian, AI6US exam last Monday, 1 new Tech, 1 new General.

Volunteer Events - Chip, KM6MDF- CERA needs more volunteers.

Joe, K6SAT- Canyons needs more Net Control ops; Western States needs more Net Control ops.

Exam classes - Orion, AI6JB

Newsletter - Jim, ND7G

Satellite - Greg, KO6TH- update your satellite elements frequently.

~~PIO - Smitty, WB1G~~

~~Website - Smitty, WB1G~~

~~Social Media - Smitty, WB1G~~

[Groups.io](#) site - Dennis, WU6X

Contests - Dennis, WU6X

Membership - John Clark, KK6IYW

ARES - Scott, KM6RFB- 13 checked in last week. No activations planned.

Refreshments - Mark Koehler, W2MWK

Drawing - need new chair

Equipment Donations / Library - Jim, WA8MPA- W6SOM donated a collection of ARRL books, \$1/book.

Calendar of club events:

March 18 - Hamfest

March 25 - Club Breakfast at Mel's, followed by Project Build

March 29 - Special ZOOM presentation by Ed Fong, "Demystifying J-Poles", [7:00pm](#).

April 28/29 - Canyons run

May 6/7 - CERA

Nets:

QST's from members. NONE

Drawing:

BIG PRIZE is NanoVNA.

\$10 Taylor's restaurant: Jim, KN6OON

Field Kit: Rob, KM6YKX

taylor's gift card: Mike, K6YMM

Field kit: Paul, KN6JNN

NanoVNA: Jim, KN6OON

All The SFARC Social Links in ONE SPOT!

- <https://www.facebook.com/groups/sfarcw6ek/>
- <https://www.instagram.com/sfarcw6ek/>
- <https://www.twitter.com/sfarcw6ek/>
- <https://www.linkedin.com/company/sfarcw6ek/>
- <https://www.youtube.com/user/w6ek>
- And, Groups.IO - <https://w6ek.groups.io/g/sfarc>

Club Radiosport (contests)

Click [here](#) to download ARRL & Non-ARRL contests for the month of APRIL 2023.

ARTICLE:

New Law of Physics Discovered

Author: Greg Dolkas, KO6TH

Originally appeared in World Radio magazine (no longer published)
April 2004 issue

Growing up, I remember taking science classes where we rolled billiard balls down ramps, and bounced them, one off the other, to demonstrate the laws of physics. Conservation of energy, conservation of momentum, conservation of mass; Mother Nature, it seems, never likes to throw anything away. Neither do Amateur Radio operators, but that's a topic for a different discussion.

The conservation laws of nature are fundamental and wide ranging. They underscore the sciences of physics, chemistry, electricity, and even economics. Pulling a skier up a hill creates the potential energy that is released as kinetic energy as the skier careens down the hill. Go higher up the hill and you end up going faster when you hit the snow bank at the bottom. Conservation of energy; we know this instinctively. Pulling the string on a toy top will make it spin, changing the work energy of the pull into an equal angular momentum of the spin. As the top slows down, the bearings and air around it get warm from friction. By the time it stops, the rise in temperature is exactly equal to the work put into the toy; conservation again. The universe is one big Teeter-Totter. In economic terms, it's all a "zero sum game". If I take something from one place, it shows up somewhere else. Debits and credits. Matter and anti-matter. Yin and Yang. The only exception I know of is that the work put into chopping and stacking firewood seems to heat you more than when you burn it, but I must be missing something there.

I was totally astonished, therefore, to discover that one law had been overlooked. In all the science books, in all the teachings that we read and understand, there is no mention of the law of Conservation of Wire. Not even in the ARRL Handbook is this important law described.

Simply put, the law of Conservation of Wire states that it takes a fixed amount of wire to support communication from one point to another. Taking wire out of the middle, such as through so-called “wireless” communication, does not eliminate the wire. Rather, it moves the wire to another place or form, for example, in antennas, coax cables, tuning coils, and all the tiny bits of wire that make up an electronic circuit. I realized that the amount of wire in my shack, properly deployed, could have supported my communication activities directly. Instead of the circuitry of transmitters, receivers, and antennas, all the wire used could be strung directly between my shack and the shack at the other end of the QSO, and we could have carried on our conversation just the same.

Amateur Radio is, fundamentally, the application of this law of nature. We benefit greatly from this law, for to otherwise accomplish each QSO we would be forever stringing and restringing wires everywhere. The law of Conservation of Wire allows us to concentrate the wire in our shacks, and make contact with anyone else who has done the same.

We see the effect of this law in the cabling used to connect our equipment. The shield of coax cables consists of many fine strands of wire. “Low loss” coax is larger in diameter, requiring more wire, so it can reach stations farther away. With “hardline” coax the shield wires have become so numerous that they fuse into a solid cylinder, but it’s the higher wire content that improves our ability to talk.

We often shorten an antenna, only to add the wire back in as a loading coil at its base. Without the loading coil we say the antenna is non-resonant; in reality, there is simply not enough wire in the system to reach our destination. Antenna tuners are devices which add and subtract wire, in order to exactly reach the other station. This is easily seen in the operation of a roller inductor.

The law also guides us in making improvements to our stations. We find that as we tweak and improve our stations, the amount of wire in our station grows as does our ability to communicate. Adding wire to our antennas, for example by putting more elements on a beam antenna, will increase the distance over which we can communicate. Taking things further, more wire still can be added to an antenna until it is completely filled in, and looks like a large parabolic dish. That amount of wire is sufficient to reach distant stations, as has been demonstrated by our microwave communications between mountain tops, and with high flying satellites such as AO-40. NASA has taken things to the extreme, filling in an entire mountain valley in Puerto Rico with the wire needed to reach deep space, thus creating the Arecibo radio telescope.

The law also states that different forms of communication require different amounts of wire, to cover the same distance. There is a relationship between the bandwidth of the communication signal and the amount of wire that is required. A CW signal, for example, is widely known for being able to span great distances with simple equipment. This equipment is simple not because of its design, but rather its design is dictated by the lower amount of wire needed to reach the other party. The wider bandwidth of an SSB phone conversation dictates that more wire be consumed. That wire is forced into the design of the transmitter and receiver, making them more complicated, and also makes its way into the larger antennas that are often used.

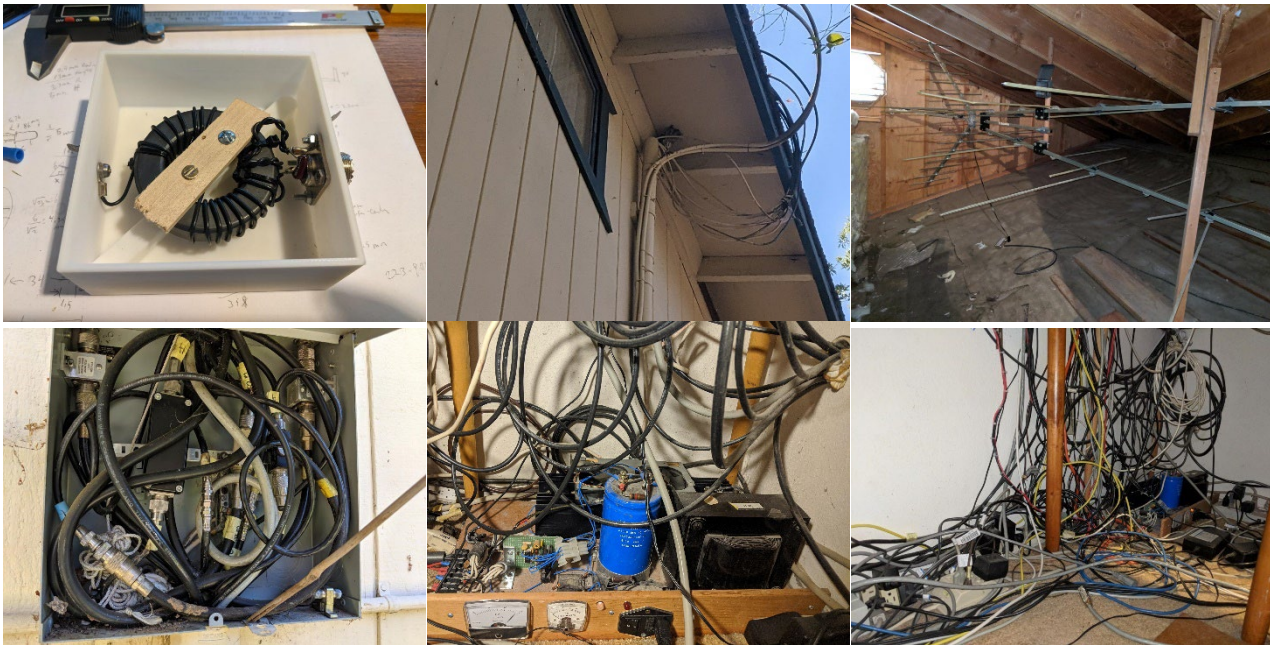
If we compute the wire necessary to support wideband communications such as ATV, we find that so much wire is required that such a system cannot be built to extend beyond a few hundred miles. This is why TV signals cannot be received beyond the “line of sight”. We are taught that this limit is due to

propagation. This is true; but “propagation” is in fact a result of the more fundamental law of Conservation of Wire.

Not all wire is the same, of course. Gold, silver, and copper make better wires than carbon or steel, as they have more wire equivalent content. An antenna made from steel wire will not reach stations as far away as one made with copper wire, or steel with a copper coating. We have always been careful to buy connectors with gold or silver plating, and now understand how the higher wire equivalence of these metals adds to our station’s ability to communicate. Carbon, the primary component of resistors, is so bad at being a wire that it has a negative wire equivalence.

As of this writing, the law of Conservation of Wire is still being researched, but it is clear that the ramifications are enormous. No longer do we need to talk about our stations in terms of watts, cable loss in dB/ft, or antenna gains in dBi. Rather, we only need to relate the overall Effective Wire Content (EWC) of our stations, measured in units of Effective Meters, M_{eff} . Just as Universal Coordinated Time is written UTC, M_{eff} is often written as EMF. This is the single fundamental measure of our ability to communicate.

Footnote: Greg asks -- have you ever thought about *how much wire is needed to operate ‘wireless’?* Take a look... (pictures compliments of Greg, KO6TH)



How About **ANOTHER** Trivia TWO-FER?

At one time, the FCC limited the number of HF amplifiers an amateur operator could build in one year. What was that number?

A: Three

B: None

C: One

D: There were no limits as long as the power was at or below "legal limit"

What is the lowest WPM (words per minute) CP (Code Proficiency) award ARRL offers on a W1AW qualifying run?

A: 20

B: 5

C: 13

D: 10

Answers can be found in "From the Newsletter Editor's Desk" – look for the **orange** text

Jim asks 'Didya Know that ...

SFARC has a feature-rich web site that is constantly being updated with fresh information and club activities, so by all means, check the site regularly for updates and information!! Calendar, photos, repeater information, classes and training opportunities, testing, VE opportunities, Elmers Corner, volunteering opportunities, membership renewal, Net information, AND MORE!

I enjoy writing this monthly newsletter, but the truth is that once it is written it is a static document, so I encourage you to check the website a few times during the month to see if there are any changes, updates or new stuff that may not appear in the newsletter until the following month.

Also, Smitty (WB1G) sends out a weekly "WATTS UP" email with various updates and tidbits of info!

Here's the link, just in case you have never seen it before (wink, wink)... <https://www.w6ek.org/>

~Jim



From the Newsletter Editor's Desk:

Well, unfortunately, I fell sick just before the Loomis HamFast and I was unable to attend. For those who made it I hope it brought you plenty of social interaction, fun and maybe a good deal or two along the way!

My ventures took me to Anaheim recently, to you-know-where, and if you-don't-know-where, that would be Disneyland. 🌐 I even brought not **one**, but two HTs with me, fully charged, and their associated chargers, just in case I ended up finding new friends and rag-chewing for an hour or two. Not only did I do that, but I programmed them both with a batch of repeaters in the Anaheim, CA area. Shoot, I even brought my mag-mount antenna for the drive. Awesome planning Jim, right? Yep – and of course, since I was totally out of my normal cadence/pace, I completely spaced out on all of that and didn't touch the gear the whole time we were down there, not even for a meager **ten** minutes. BUT... even so, I am glad that I had them, just in case.

In other news, I am so happy to hear the snow-pack reports, reservoir reports, etc. and that effectively, the drought is over. While it would be wonderful if we got regular rainfall/snowfall year in and year out, we know that is not the norm here. We live in a Mediterranean climate which translates to short, mild Winter weather and long, dry Summer weather. And, how do I know that? Well, drum-roll please, I am now a UC Master Gardener volunteer in Contra Costa County! WHOA – hold on though, I know more than I ever thought I would know after 18 weeks of training, but *I don't know everything*, not even close.

I am enjoying the sunshine recently, and I hope that you all get a little break from the impact of such an onslaught of water. Each weekday morning I turn on my radio a little before 05:42 to attend the '5:42 Morning Muster' on the W6CX Mount Diablo ARC's 2m repeater. When folks that live up in the higher Sierra foothills would check in and give a report of the conditions, WOW!, it was crazy hearing about the snow and reports of roof damage, or even total collapse and many other problems that comes with such weather. It reminds me that some [or maybe many] of you were also impacted. I hope that those who were, did not have any catastrophic impacts to your homes and property and that your radios were at the ready.

Enjoy Spring and I look forward to sharing a little more with you next month!

Jim, KD7G

Oh & **be radio active!**



If you have any information for the newsletters, ideas, recommendations, events you've heard about, etc., please don't hesitate to send it to me. Even if you 'think' someone else has probably sent it to me, send it anyway – assume they haven't. 😊 Email: kd7g@arrl.net or james@jamesmarchetti.com – either way, I will get your email.

You may notice that the membership form is no longer appearing in the newsletter. The club has moved to an online system now and it is available at the link below.

<https://www.w6ek.org/membership> - the page will look like this, and you simply click one of the two buttons shown here.

The screenshot shows the website for Sierra Foothills ARC (W6EK). The header includes navigation links for ABOUT US, ACTIVITIES, MEMBERSHIP, and CALENDAR. The main content area is titled "MEMBERSHIP" and states "SFARC NOW USES HAM CLUB ONLINE (HCOL) TO CREATE AND MANAGE CLUB MEMBERSHIP." Below this is the "HamClubOnline" logo, which includes a red satellite dish icon and the text "Amateur Radio Club Management System". A paragraph explains that HCOL is an easy and powerful online tool with features like online club management, membership renewal, and access to the club roster. It also provides instructions on how to use the system, including a link for help. At the bottom, there are two prominent red buttons: "Apply To Become A New Member" and "Renew My Membership". On the left side of the page, there is a sidebar with the club's logo, a search bar, a Zoom link for the SFARC Zoom Room, and a list of repeaters with their frequencies and offsets.

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