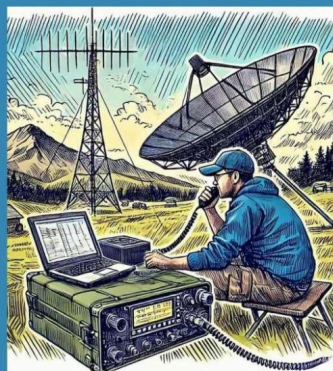


QSA-5

HAM RADIO
OPERATORS
DO IT WITH MORE
FREQUENCY



HAM RADIO
OPERATOR



TECHNICIAN CLASS WRITTEN EXAMINATION

ELEMENT 2

TEST DESIGN NUMBER: 2-1-2022

PLACE YOUR ANSWERS ON THE ANSWER SHEET PROVIDED.

DO NOT WRITE ON OR IN THIS TEST BOOKLET

IF YOU NEED TO MAKE NOTES OR CALCULATIONS, PLEASE
DO SO ON THE BACK OF YOUR ANSWER SHEET. IF YOU
NEED MORE NOTE PAPER, PLEASE ASK THE EXAMINERS.

All About Amateur Radio Testing

Answers and notes will be collected.

Answer ALL 35 questions.

A score of 21 correct answers is a passing grade.

This booklet ends with its Question Pool reference.

Good luck!

Technician exam valid July 1, 2022 – June 30, 2026*
* FCC rule changes, omissions or errors may affect the validity of exams.
Always check to make sure you have current and correct booklets.

Version 2-1-2022

Version 2-1-2022



CANDIDATE
EXAMINATION
ANSWER SHEET

THIS BOX IS FOR VE TEAM USE ONLY

Number _____ VE Initials: _____
Correct: _____ # 1 _____
Passed ☐ # 2 _____
Failed ☐ # 3 _____

CANDIDATE INFORMATION

Print clearly and legibly. Failure to do so may
delay the processing of your application.
Please provide all information requested.

Circle Exam Class: Tech General Extra

Test Design or Serial #
From Test Booklet _____

Name _____ Call Sign (if none, write none) _____

Email Address _____ (mandatory - print clearly)

FCC Registration Number (FRN) _____ (mandatory)

Complete Mailing Address (Street or Post Office Box #) _____

City, State, and ZIP Code _____

Phone: _____

Test Site (City, State): _____

Date of Test: _____

Signature: _____

TO PASS:

Element	Class	Questions	Min. Right	Max. Wrong
2	Technician	35	26	9
3	General	35	26	9
4	Extra	50	37	13

BLACKEN the correct letter

1. A B C D
2. A B C D
3. A B C D
4. A B C D
5. A B C D
6. A B C D
7. A B C D
8. A B C D
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50. A B C D

ARRL VEC - January 2022

Inside the Clubhouse

Board actions, club activities, and
upcoming opportunities to share
and get involved..

Ham Radio in the News

From local to national to
international – stories, inspiration,
and legislation.

Ham Classroom

Every month, we showcase
interesting subjects..

"When all else fails, you can count on Amateur Radio"

From the MARS President

2026 has started out as a very busy year, at least as far as MARS is concerned. I will start with last year's business. For 2025 we awarded Ham of the Year to Gearld McCarthy W6NOV. This award is to recognize significant contributions to the club in the year the award is given for. Gearld working together with our Technical Committee and our W6SG trustee Marc Bruvry KF6VNT engineered an upgrade to the antenna systems at the club house getting us back on the air with an HF station. Gearld then went on to organize and lead a number of work calls to implement the design. Getting club members together to work with their hands and make the hobby more than just staring at a screen is one of the key benefits of being in a club. That and we got a great antenna system into the bargain. Thank you Gearld and I have your \$100 check for the next time I see you.



We also awarded the John Butler "Elmer" Award to Scott Pasternak KN6ZDM which recognizes being an Elmer (mentor) to members. Scott in his capacity as chair of the Public Service committee has shaped the Public Service committee into its current configuration with a broader management structure as Michael Fischer K6MLF and Rob Rowlands NZ6J step back into emeriti positions. From my perspective and those of a number of stalwart Public Service volunteers you have done an excellent job. I also have your \$100 check for the next time I see you. While on the topic of Public Service, Scott's team awarded Sheila Adams-Sapper N6XN and Nancy Wein KO6GGI The Randy Jenkins Public Service Rookie of The Year award. Given to a, or in this case two, rookies for outstanding service in volunteering for Public Service Events.

Over the course of the last several years we have been on a campaign to clean up and repair the clubhouse. We replaced the roof, the sewer lateral, painted the building and now we are in the process of making interior repairs. As I write this we have restricted access to the clubhouse since parts of the structure have been opened and items have been moved to the middle of the room to allow contractors to make needed repairs. Any of you who have redone your kitchen or bathroom know that contractors operate in a different time space continuum than the rest of us so at this point I don't have a solid date when we can reopen. Suffice it to say that Sunday morning babble classes and club meetings are cancelled until further notice.

Last on my agenda is QSA-5 Hugh Patterson KN6KNB and Jay Hamilton-Roth KO6FIR have abandoned the mimeograph machine and redesigned our newsletter. It looks great. I missed welcoming the new look in the first issue since I submit these essays on stone tablets using Babylonian cuneiform and because of that I missed my deadline. The upgrade also required that I update or scrap a lot of outdated info on the club website. I know they have articles and activities planned to engage with you like submitting pictures of your shack.

Curtis Ardourel, WA6UDS
wa6uds@w6sg.net

Resources

[Membership Application](#)

[Membership Renewal](#)

[Club Calendar](#) May 17

[Local Repeaters](#)

[Our Weekly Net](#)

[North Bay 2-Meter Critical Mass](#)

[Get Licensed](#)

[For Newcomers](#)



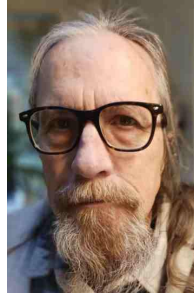
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 P.O. Box 6423
 San Rafael, CA 94903-0423
 A 501(c)3 not for profit corporation

Clubhouse Address
 27 Shell Road
 Mill Valley, CA 94941

[Membership in the Marin Amateur Radio Society](#) is open to any person with an expressed interest in amateur radio. Annual dues are currently \$30/individual or \$35/family.

From the Editor

Greetings and salutations! We're heading away from Winter and steaming towards Spring. The launch of the new and improved QSA-5 was a success! Jay Hamilton-Roth (KO6FIR) created the best iteration of our club's publication since its first issue in 1933. He also came up with the theme we used and many of the themes we'll use in the future. Each issue of the QSA-5 will focus on a specific amateur radio theme of interest to our readers. If you have an idea for a theme, let us know. This is just one of the many brilliant ideas Jay came up with. Other club members also contributed their ideas and writings to our monthly publication, volunteering their time to make our nearly 100-year-old publication what it is today. A huge thank you to everyone who contributed to last month's issue of the QSA-5!



This publication belongs to everyone in the club and we welcome your contributions. As a club, we work together on projects, be it providing communications for marathon runs or license testing those entering the world of amateur radio for the first time. My role as Editor is to bring together the talent, steer the ship occasionally to keep its course true, and sit behind the virtual editor's desk with a virtual cigar in hand yelling "deadline, deadline, deadline." (think of Peter Parker's editor in the Spiderman comics). The QSA-5 has come a long way, thanks to the tireless efforts of the club members who contributed: Curtiss Kim, Gerald McCarthy, Jim Saltzgaber, Curtis Ardourel, Milt Hyams, and anyone I might have missed.

I want to thank everyone who emailed me regarding the new format and look of the QSA-5. When we volunteer to take on a club project, we do it for the love of our club. We don't do it for the accolades. We don't expect praise for what we do. However, when we get some praise or a simple thank you, it goes a long way towards recharging our batteries and helping us move forward. Thank you to all who wrote. With that said, may the band conditions be brilliant and your antenna be resonant.

Hugh Patterson, KN6KNB
QSA-5Editor@w6sg.net

Committees

Communications Truck

Education

Facilities

[Field Day](#)

[Marin Radio Communication
Volunteers \(RCV\)](#)

Membership

[North Bay Area Mesh \(NBAM\)](#)

[Public Service](#)

Recreation

Technical

[Volunteer Examiner \(VE\) Testing](#)



QSA-5 is published monthly by the Marin Amateur Radio Society (MARS) and sent electronically to its members.

"QSA-5" is a [ham radio Q-code](#) which means "The strength of your signal is very strong."

Have an article or fun ham-related photos you want to share?

Please send by the 24th of the month to QSA5@w6sg.net for publication consideration.





Inside the Clubhouse

Board actions, club activities, and upcoming opportunities to share and learn.

Board of Directors

[2/12/2026 Meeting Notes](#) and [2/19/2026 Special Meeting Notes](#)

Next Board Meeting: Thursday, March 12, 2026

[Financials](#)

Next Club Meeting: Friday, March 6, 2026

Welcoming New Members: Wei Chiu (KN6FCN), San Rafael & Michael Jarvis (KO6LVO), Novato

News

- [Public Service Season Kicked Off!](#)
- [Marin Ultra Challenge & Ridge to Bridge](#)
- [Heartfelt Thanks](#)
- [Can You Hear Me? Can You Hear Me Now?](#)
- [Feature: All About Amateur Radio Testing](#)
- [North Bay 2m Critical Mass \(NB2mCM\): Radio Room Orientation](#)
- [March 2026 Calendar](#)

Inside the Clubhouse: Public Service Season Kicked Off!

On February 8th, MARS had the Randy Jenkins Public Service Season Kickoff Lunch. The event was held at a new location this year and attendees reported they had a great time.

At the event we reviewed important information about our Public Service program, including what to do in an emergency, equipment typically used, keys for success. Brian Cooley (K6EZX) and Doug Kaye K6DRK did terrific presentations on quality communications and APRS respectively. Guest Speaker Paul Smith spoke on behalf of the Marin Century, and the appreciation for our collaborative efforts on that event.

This year I was surprised to be presented with the John Butler 'Elmer' Award. This award is made to members who have been exceptional mentors to other club members, especially as it relates to the art and science of radio and technical matters. The award was created in 2015, and is named in memory of John Butler (KF6GNI).

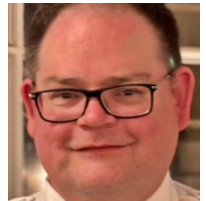
We also had two recipients of our 2nd annual Randy Jenkins Public Service Rookie of the Year award: Nancy Wein (KO6GII) and Sheila Adams-Sapper (N6XN). This award recognizes significant personal dedication to the Public Service program and is made possible by a generous donation of Randy Jenkins and his family.

Esther Lee provided lunch as usual, and everyone commented on how great the food was.

If you missed the Kickoff Lunch, do not let that keep you from getting involved in public service! We have 12 events coming up, and I know that there will be a place at those events for everyone. Newcomers are always welcome and you will be paired with an experienced operator.

Public Service is a great way to get started talking on the radio, learn new things, and advance your skills in the communication and technical phases of the radio art.

Please [sign up for more Public Service events at the MARS website](#).



Scott Pasternak, KN6ZDM

Inside the Clubhouse: Public Service Season Kicked Off (cont'd)



John Butler 'Elmer' Award: Scott Pasternak



Rookies of the Year: Sheila Adams-Sapper & Nancy Wein



Inside the Clubhouse: Marin Ultra Challenge & Ridge to Bridge

After another successful kickoff luncheon, we are getting ready for our first events of the Public Service season. MARS supports events by providing communications support between Start/Finish, aid stations, and along the routes.



The first, the [Marin Ultra Challenge](#) ultra-marathon, will be held on Saturday March 14th, 2026. The "MUC" as it's affectionately called, offers runners a choice of 50k or 50mi routes and runs various loops from Rodeo Beach, GG bridge, Stinson Beach, Cardiac and return. The challenge for runners is rarely the mileage, rather the weather, hence the "MUC". Last year's edition, our first supporting the event, offered the finest weather in the 13 year history of the event. No incidents, no rescues, and a great time had by all. MARS communications were augmented by seven teams of 'trail hams', radio operators equipped with APRS/GPS trackers who patrol defined segments of the race, looking for runners in distress and summoning support as needed. [MUC 2026 Signups](#)

The second, the [Ridge to Bridge](#) held on Saturday April 18th, is a long standing event sponsored by the Ridge Council. Participants hike or bike various routes along the Bay Area Ridge trail, with MARS support at rest stations and along the route embedded with participants. It's a favorite event amongst participants and MARS volunteers

[Ridge2Bridge 2026 Signups](#)



Our on-trail support capabilities have really expanded in the past couple of years, especially through the efforts of Doug Kaye (K6DRK) and Rob Rowlands (NZ6J), who have been building, testing, and seeding [iGates](#) in various fixed and temporary locations throughout Marin. The devices, coupled with the existing iGates mounted in various fixed locations throughout Marin, receive [APRS](#) pings from GPS-equipped radios and upload their coordinates to the internet, allowing for real-time tracking. These tracking capabilities are especially useful for the longer bike events and ultramarathons that we support. [MUC 2026 Caltopo](#)

We hope you can join us for these events, as they are both fun and rewarding. Duty spots are available at rest stops and along the course as "trail hams". The signup links for each event are available, or you can go ahead and access the link to all of our events this year. [MARS Public Service Signups](#)



Oliver Lu, KM6BON

Inside the Clubhouse: Heartfelt Thanks

Dear Andy (K6CE), Michael (WA6LCN), Jim (KM6WWY), Jerry (WA6BXV), Dan (KN6PNA), Big Dan (N6HLZ), Marc (KF6VNT), Annie (KM6QIW), Rich (AG6QR), Milt (KM6ASI), and Scott (KN6ZDM),

I wanted to take a moment to express my deepest and most sincere appreciation for the incredible dedication and hard work each of you put into upgrading the clubhouse communications systems. Your collective efforts — volunteering your time, expertise, and energy — brought this important project to successful completion, and it has made a real difference for our entire group.

Yesterday, I was honored by Curtis to be named the MARS Amateur Radio Operator of the Year. While I am truly grateful for this recognition, I want to be clear: this award is not just about me. It is a collective recognition that reflects the outstanding contributions and spirit of teamwork demonstrated by all of you. Without your willingness to step up and collaborate on this project (and so many others), none of this would have been possible.

I would like to offer special recognition to a few individuals who went above and beyond:

- Milt (KM6ASI), thank you for your outstanding leadership throughout the project. Your vision, organization, and ability to keep everyone motivated and on track were instrumental in turning our ideas into reality.
- Jim (KM6WWY), thank you for your invaluable support and guidance. Your technical insight, patience, and willingness to mentor others helped overcome challenges and ensured the highest quality outcome.
- Dan (KN6PNA), a huge thank you for taking on the critical task of assembling, positioning, and bonding the antenna roof mounts. Your careful attention to detail and hands-on work up on the roof made a solid foundation possible for everything else that followed.

There is something truly special about a group of dedicated individuals coming together toward a common goal. When we combine our skills, share our knowledge, and support one another, we achieve far more than any one person could alone. Your commitment inspires me and strengthens our community, reminding us why amateur radio is such a rewarding pursuit—it's built on cooperation, innovation, and mutual respect. Let's keep that momentum going as we continue to build and improve together!

As part of the award, there is a \$100 cash prize. In honor of all your efforts, I will be donating it back to the club in your names, as a small token of thanks for everything you've done.

Thank you again—from the bottom of my heart—for your friendship, your volunteerism, and your passion for our hobby.

73 and best regards,



Gerald McCarthy, W6NOV

Inside the Clubhouse: Can You Hear Me? Can You Hear Me Now?

Members of the [Radio Communication Volunteers](#) (RCV) renewed their efforts to stay in communication contact should a major disaster cripple Marin by testing [simplex operations](#).

The exercise had an earthquake take out [repeater](#) use leaving members to rely on simplex operations countywide. RCV operators were divided into various geographic locations depending on where they lived. North, South, East and West boundaries were established.

Each member took turns transmitting from their home [QTH](#) with the other operators noting signal strength and clarity. This was done both on a VHF simplex frequency and a UHF counterpart. Each participant was asked to use the highest power setting for their radios.

Seventeen RCV members and six non-RCV operators participated. The results helped determine simplex net control locations. The main objective was to identify a number of direct station-to-station paths suitable for relaying messages from one area of the county to another. A cross reference chart was developed showing which stations had contact with each other and how a relay system can be established to connect one RCV member in one location to reach another member no matter where in the county.

It was noted, operators in the northern part of the county (Novato) have surprisingly good communications with central (San Rafael and Corte Madera) and west members (San Anselmo). Areas in southern Marin and the Tiburon area had less direct contact. Generally the test results slightly favored UHF over VHF but this varied with location. One problem did plague the drill and it caused some operators not to be heard. When a simplex frequency lies within the frequency range usually reserved for repeaters some radios automatically insert an "offset". (+ or -) Simplex operations avoid the use of offsets and the continuous tone-coded squelch system. (CTCSS) According to Lead RCV Operator, Skip Ferdanzo, "once it is known which operators are safe and able to deploy, RCV will be prepared to accept assignments and deploy as needed." (continued on page 9)



Send us your ham shack photos! Whether you have only a handheld radio or a museum of gear, we want to see where you transmit and receive from. Photos will be featured in an upcoming QSA-5. Email to: QSA5@w6sg.net



Inside the Clubhouse: Can You Hear Me? Can You Hear Me Now? (cont'd)

Rows are sorted by how many other stations are available to the caller (row entry)

		UHF Results																		
		Rows transmit, Columns show row's CM (1-5: 1=Bad, 5=Good)																		
Heard By																				
			AI6EE	KM6AOW	K6EZK	K6SHO	K6WRL	KJ6UOC	KJ6ARL	KM6GUY	AI6TT	KM6VKQ	KN6PNA	KO6GI	KO6HGK	N6VLB	N6XN	WA6BXV	WA6LCN	Total
1	West	KM6GUY	1	3	5	5	5	5	5	5	3	1		5	5	1	5			12
2	North	KM6AOW	5		5	4		5			4	5	5		5	5	5			10
3	Central	KM6VKQ		5	3	5	4	5	5			4		3						9
4	North	WA6BXV	5	5	5	2		5	5			5	5		5					9
5	North	KO6GI	5	5	4	2						4			5	5	5			8
6	Central	KJ6ARL		5		5	5	5			5				5	5				7
7	North	N6XN	5	5	5							5	5							7
8	North	N6VLB	5		5			5			4	5				5	5			7
9	North	K6EZK	5	5					4		5			5	5	5				7
10	North	AI6EE		5	5				1		5			5	5	5				7
11	North	KN6PNA	5	5											5	5	5			5
12	Central	K6SHO						5		5		3			4		4			5
13	Central	KJ6UOC				5	1		5											4
14	South	AI6TT						5				5								3
15	South	K6WRL							5	5	1									3
16	West	KO6HGK							1			1								2
17	Central	WA6LCN																		0
1	Central	K6RGI		4	1	5	3		5		5	1			4		3			9
2	South	KJ6RGP			2		4	5	5		4									5
3	South	KJ6UIM					5		2		5									3
4	South	KN6KQR						5	5											2
5	South	KO6FIR						5												1
6	SF	WA1NMT			4				4		4	2					2	5		6

The foregoing illustrates a South-to-North one hop relay. More relay "hops" are possible using this same process.

For example, if K6WRL (Warren) wanted to reach Jerry (WA6BXV) on UHF, how might he do that? Here's one way:

1. K6WRL finds his row and reads across the row. K6WRL notices he can only reach KJ6ARL and KM6GUY with CM 5.
2. K6WRL searches the columns for both KJ6ARL and KM6GUY and discovers that of those two, only KJ6ARL can reach WA6BXV with an acceptable CM signal.
3. K6WRL messages KJ6ARL and asks him to relay the message to WA6BXV.
4. KJ6ARL contacts WA6BXV and sends him K6WRL's message.
5. KJ6ARL tells K6WRL when the message is delivered successfully.

		VHF Results																		
		Rows transmit, Columns show row's CM (1-5: 1=Bad, 5=Good)																		
Heard By			AI6EE	KM6GUY	K6EZK	K6SHO	K6WRL	KJ6UOC	KJ6ARL	KM6AOW	AI6TT	KM6VKQ	KN6PNA	KO6GI	KO6HGK	N6VLB	N6XN	WA6BXV	WA6LCN	Total
1	Central	KJ6ARL		4	5	5	5		4		5	5	5	5	5	4	5	5	13	
2	West	KM6GUY	2		5	5		5	5	3	1	5	3		1	5	5	5	13	
3	North	K6EZK	5	4		3		3	4	5		5	5	4		5	5	5	12	
4	North	N6VLB		5	5	4		1	5	5		3		5			5	4	11	
5	Central	KM6VKQ			5	5	4		5	5	5			4		3	4	5	10	
6	Central	KJ6UOC		5	5	5	4			5	4	3		5		1		5	10	
7	North	KN6PNA	5			3		3	4	5		5				4	5	5	9	
8	North	WA6BXV	5		5	5	3			5		4	5	5		5	5	5	9	
9	North	AI6EE		5	5					5			5	5		5	5	5	8	
10	North	N6XN	5		5				4			4	5	5				5	7	
11	Central	K6SHO			4							5				5	5	1	3	6
12	North	KM6AOW	5		5							1		5		5		5	6	
13	North	KO6GI			5								4				5	4	5	5
14	South	K6WRL							4	5		5	5						4	
15	West	KO6HGK		3					1			3							3	
16	South	AI6TT					5		5										2	
17	Central	WA6LCN																		0
1	Central	K6RGI		1	4	5	4	5		3		5	1	1	1	3		2		12
2	South	KJ6RGP		5		4	5	5	5			5								6
3	South	KJ6UIM				5	2	2				4								4
4	South	KN6KQR		5	5	4	5	5		4		5	2	3		4		3		11
5	South	KO6FIR							5											1
6	SF	WA1NMT			4							4								2

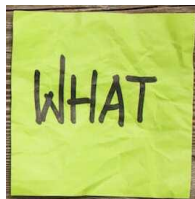
For example, if KOGGK (Reede) wanted to reach K6WRL (Warren) of VHF, how might he do that? Here's one way:

1. KO6HGK finds his row and reads across the row.
2. KO6HGK notices he can only reach KM6GUY and KM6VKQ with CM 3.
3. KO6HGK searches the columns for both KM6GUY and KM6VKQ and discovers that of those two, only KM6VKQ can reach K6WRL with an acceptable CM signal quality of CM 3.
4. KO6HGK messages KM6VKQ and asks him to relay the message to K6WRL.
5. KM6VKQ contacts K6WRL and sends him KO6HGK's message.
6. KM6VKQ tells KO6HGK when the message is delivered successfully



Curtiss Kim, KM6GUY

Inside the Clubhouse: All About Amateur Radio Testing



What is an Amateur Radio FCC Exam?

While anyone with a radio can listen to transmissions, only people who have an Federal Communications Commission (FCC) license can “push to talk” and transmit on the airwaves.

Obtaining an amateur radio license isn't simply submitting a form and sending in money. You need to take a test to prove you understand the rules and safety regulations. It's like taking your written driver's license test – you can't practice driving a car until you've shown you understand the “rules of the road.”

The reasons people choose to become ham radio operators are diverse: curiosity, community, challenge, communication, and safety.

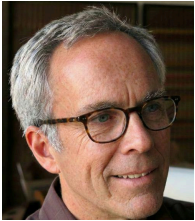
There are 3 amateur radio license classes: Technician, General, and Amateur Extra (“Extra”). As a Technician, you'll have operating privileges on all [VHF and UHF amateur bands](#) and some limited privileges on High Frequency (HF) bands.

If you're considering becoming a ham radio operator or upgrading your license (to have more transmitting privileges/abilities), read on!



Why I took my Ham Exam

Three Recent Test Takers Share Their Stories



Technician: David Rogers, K6DTR: A couple of months ago, I bought a cheap software defined radio (SDR) kit to see if it could help me find the best position for a television antenna. Just out of curiosity, I decided to suction cup the cheap antenna that came with the kit to my window to see what all was out there, and was surprised to discover airplane pilots talking, someone directing container ships in the Bay, and a group of people who appeared to be helping out with a local marathon.

One morning I stumbled upon a group of people chatting and learned that the local ham radio club meets on Thursdays for lunch at a nearby restaurant. I decided to check it out, and perhaps not surprisingly everyone really talked up the benefits of getting my license. Someone was kind enough to give me a book to help study that had all the questions and answers, with explanations as well. While there was a lot of material about FCC rules and regulations that to be honest wasn't super interesting, I really enjoyed the parts that talked about how radios and radio waves actually worked. Four weeks later, I sat for my test, and passed!



General: Rich Slusher, KI6UIM: Originally, my main reason for upgrading to the General License was to give myself an intellectual challenge in an area outside of my comfort zone. I am a retired CPA and the little I have learned about radio electronics has been mostly by osmosis from hanging around other Hams. Studying for the Tech exam in 2008 added a lot to that knowledge. I thought that a good way to learn more was to study for the General exam, even if I didn't pass it (obviously, I passed). As I don't have the physical layout where I live to set up HF radio equipment and an antenna, I hadn't really planned on getting on the HF bands. After giving it some more thought, my next challenge will be to gradually learn how to operate the MARS radios at the clubhouse and perhaps participate in some HF nets, Field Day and other contests. I look forward to that challenge.



Amateur Extra: Nancy Wein, KO6GI: In May last year I passed the General Exam using a combination of the [ARRL book](#) and online class taught by Gary Wise (W4EEY) on YouTube – and I took the Amateur Extra (AE) exam in the Fall (of 2025) because I had momentum after studying for the Technician and General and just wanted to get it all done.

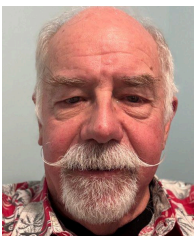
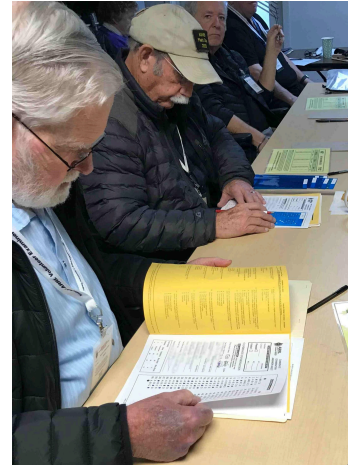
I wanted to be an AE so I could use all the HF bands. One activity that I have developed a love for is [POTA](#) (Parks On The Air). What better than to be outside, using a portable setup to make contacts? You don't need to be an AE to do POTA, and I encourage anyone who is interested to try it with whatever license you have. I enjoy both hunting and activating parks. Although I am new at POTA, I found I wanted access to all the bands to be able to hunt everyone out there at a park, and to also be able to use a less crowded frequency when activating a park. Another interest I have found is contesting. I am just tiptoeing into this world and find it scary, fun and addicting all at the same time. Being very new, I am only participating in contests not to win but to make contacts. Having the additional band privileges as an AE has helped me to make a wider range of contacts, including [DX contacts](#).

The last 12 months have been crazy with all the new things I have learned after being inspired by MARS members and activities. And becoming an AE was one of those things.



Who Does The Testing?

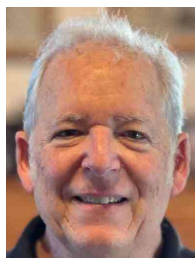
Volunteer Examiners (VEs) Share Their Stories



Jim Saltzgaber, KM6WWY: I became a Volunteer Examiner (VE) while assisting with outdoors VE testing necessitated by COVID. I was still a General and had limited privileges (can only grade and approve Technician exams) as a VE. I soon became an Extra and gained all privileges. I became a member of the MARS VE team in Jan 2022 and I have been the Lead/Liaison VE for MARS' ARRL VE program since Jan 2024.

As the VE Team Lead/ARRL Liaison, there is quite a bit more work than just a VE. We do 4 quarterly VE exam sessions each year. I am responsible for processing applications for testing, preparing the exam session files (we still do only in person paper/pencil exams), scheduling VE examiners to do the exams (usually anywhere between 5 to 9 VE's), proctoring the exam sessions, uploading the results of all exams to the ARRL VEC (Volunteer Examiner Co-Ordinator), and maintaining records of each session.

I really enjoy meeting and helping new hams get their first licenses. I also enjoy helping existing hams upgrade. It is an excellent opportunity to make hams aware of the Marin Amateur Radio Society and to recruit new members, as well as getting to know most of the new members.



Mark Klein, KM6AOW: When I took my Technician's test, it was with a club in Benicia. I was pretty impressed by the whole team involved and the camaraderie that happened between them. I figured that it would be nice to be part of the process of bringing new hams into the fold in Marin, so I became a VE for that.

There is not a whole lot to be done by most of us. Jim as the coordinator for MARS has the bulk of the work. I try to participate in the 4 exams per year that MARS holds, and that's just a few hours on a Saturday once per quarter. And, I get some eyeball [QSOs](#) with others. I get the camaraderie I was looking for. I enjoy the interaction with the other VEs, and enjoy bringing new hams into the hobby.



Michael Ham, WA6LCN: I was first a VE for a small Novato group in the year 2000. My children were interested in getting a license and I was asked to help out. While I was precluded from their testing others in the club also had children interested and I wanted to further the hobby. I spend about eight hours during four sessions each year. Very light level of effort. I like gathering with other hams and supporting the hobby.



Who Does The Testing? (cont'd)



Gerald McCarthy, W6NOV: I chose to become a certified Volunteer Examiner (VE) shortly after upgrading to Extra, in June 2024. The primary motivation was to contribute to the amateur radio community. Amateur radio has been a fulfilling hobby, providing opportunities to connect with friends across the state, tackle technical challenges, and engage in the pursuit of DX. The Volunteer Examiner (VE) program, overseen by Volunteer Exam Coordinators (VEC) such as the American Radio Relay League (ARRL), enables us to preserve this tradition by making licensing accessible. This program is entirely volunteer-driven, which minimizes costs for candidates and preserves the self-regulating, community-oriented spirit that distinguishes amateur radio.

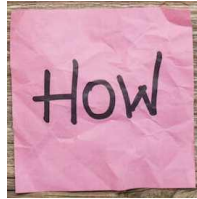
The work as a VE is highly flexible and requires minimal time commitment. Sessions are scheduled four times a year with the Marin Amateur Radio Society. A typical in-person session may last 2-4 hours (including setup, proctoring, grading, and paperwork), and I participate when my schedule permits. There is no mandatory quota, and the ARRL and Jim KM6WWY handle most of the administrative tasks. Once accredited, preparation is minimal, requiring only that VE's stay current with the rules. Overall, it is a low-pressure volunteering opportunity that accommodates life's demands.

What I find most rewarding is witnessing the excitement when a candidate successfully passes the exam, particularly new Techs who are just beginning their journey. It is fulfilling to provide guidance, alleviate nerves, and offer encouragement before the session. I cherish the "full circle" feeling when I recognize a candidate from a previous class or forum. This strengthens the community and contributes to the continued growth of amateur radio.

In conclusion, becoming a VE is one of the most genuine ways to volunteer in amateur radio—unpaid but highly fulfilling. I extend my sincere gratitude to my Volunteer Examiners, Jerry WA6BXV, Ken AB6JR, and Jim KM6WWY who played a pivotal role in my journey to becoming an amateur radio operator.



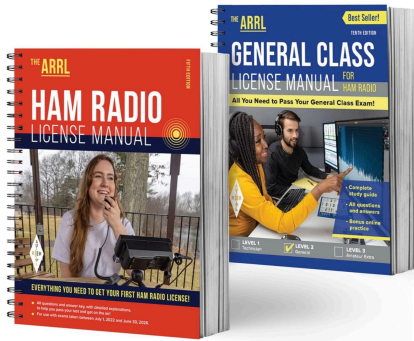
Curtiss Kim, KM6GUY: There is only one thing that keeps amateur radio going, growing and thriving and that is licensed Volunteer Examiner (VE) operators. How does that happen? VEs are licensed hams who take a written test to gain certification and recognition by the National Association for Amateur Radio. (ARRL). Once approved, they administer the multiple choice tests to amateur radio hopefuls. It's not a hard job but does take up an afternoon of time. VEs administer, grade and report the results that eventually end up at the Federal Communications Commission. It is a way of giving back and helps to keep the hobby going strong. There is the satisfaction of knowing you're helping others interested in radio communication, and it gives you the opportunity to socialize with fellow amateurs.



How to Study for Your Ham Exam

While the exam isn't open-book, all the questions (and answers!) that will be on your exam are pre-published ("[question pools](#)").

If you prefer to learn by reading, start with:



The [ARRL License Manuals](#) contain all the Q&A and some basic background to understand the material. Since the question pools are updated every few years, make sure you get the most recent manual for the test you're considering taking. Most classes use these manuals as well.

[No-Nonsense Study Guides](#) (by Dan Romanchik, NB6NU).

[HamStudy.org](#) and [The National Association for Amateur Radio \(ARRL\)](#) offer free online flashcards and practice tests.

If you like having a teacher to answer your questions and engaging with your fellow students, a class may be a better option. Classes may be offered online or face-to-face. One day Technician classes ("ham cram") fill your short-term memory with the information needed to pass your test (which is given at the end of the class). If you prefer to learn in depth about ham radio, consider taking a multiple day class to better understand the concepts.

- Technician
 - [Bay Area Educational Amateur Radio Society](#) ("ham cram")
 - [Benicia Amateur Radio Club](#) ("ham cram")
 - [HamCram](#) ("ham cram")
 - [Amateur Radio Club of the National Electronics Museum](#) (7+ week free online class)
 - [Gary Wise \(W4EEY\) and Dave Ivey \(KE4EA\) YouTube classes \(free\)](#)
- General & Amateur Extra
 - [Amateur Radio Club of the National Electronics Museum](#) (7+ week free online class)
 - [Gary Wise \(W4EEY\) and Dave Ivey \(KE4EA\) YouTube classes \(free\)](#)



Where & When to Take Your Ham Exam

Until recently, you needed to travel to a testing site to take your exam. In-person testing has the benefit of great "customer service" – fellow ham operators wanting to support your test-taking. They'll guide you through the sometimes-confusing FCC application process.

Our club (Marin Amateur Radio Society) offers [in-person testing four times a year](#). As a bonus, when you pass your exam, MARS offers a complimentary one-year membership. Here are the upcoming test dates ([details here](#)):

- Saturday, April 11, 2026 1-2:30 pm
- Saturday, July 11, 2026 1-2:30 pm
- Saturday, October 10, 2026 1-2:30 pm

Online test sessions can be found on [The National Association for Amateur Radio's \(ARRL\) website](#).

File Number	Print Date	Effective Date
0001234567	02-14-2026	02-14-2026
THIS LICENSE IS NOT TRANSFERABLE		
Special Conditions / Endorsements: NONE		
(Licensee's Signature)		
FEDERAL COMMUNICATIONS COMMISSION		



Upcoming Changes

New Technician Questions (effective July 1, 2026). The pool of test questions are updated on a 4 years cycle, in alternating years. [More information can be found here](#).

New MARS Testing Procedures (effective with our July 11, 2026 exam session). The ARRL Volunteer Examiner (VE) Coordinator transitioned to a new system, which will be used by all VE teams to print out tests as needed. MARS VE tests will continue to be conducted in person using paper and pencil exam format.

Inside the Clubhouse: North Bay 2m Critical Mass (NB2mCM) MARS Radio Room Orientation

The February North Bay 2m Critical Mass training session was devoted to an orientation to the recently upgraded MARS Radio Room located at the MARS Clubhouse in Mill Valley. The purpose of the training was to acquaint members with the new capabilities of the radio room, introduction to some of the key new equipment installed there and basics on how to operate three key radios and the new antenna system.



Northbay 2m Critical Mass Team

Gerald McCarthy (W6NOV), one of the leaders of the upgrade project, and Marc Bruvry (KF6VNT) gave an overview of the layout of the reconfigured and newly equipped room and explained the new antenna interface system. Detailed presentation was made on the use of the HF radios with the antenna switching system which makes the newly installed off center fed dipole and the multi-band vertical antenna available to both HF radios. It was pointed out that instructions were on top of each radio and users were encouraged to consult them before attempting to use the equipment.



As a part of the Radio Room remodel two recently donated top of the line HF radios were installed. The radios are the [Kenwood TS 990S](#) and an [ICOM IC 775DSP](#). The TS990S is Kenwood's HF/6m Flagship base station. While recently discontinued as part of Kenwood's reorganization of their amateur radio line, it can still be found at [Ham Radio Outlet](#) and [DX Engineering](#) in the \$9000 range. The ICOM IC 775DSP is an older flagship all mode HF radio and a forerunner of the current ICOM top of the line [IC 7760](#). Both have a maximum output of 200 watts throughout the amateur HF band. Dan Healy (K6NQZ) gave an excellent orientation to basic HF radio principles and with Marc gave basic instruction on how to get the two new HF radios on the air with the new antenna system.

Dan Greely (KN6PNA) gave an operational orientation on the room's newest dual band VHF/UHF radio, the [ICOM ID 5100](#). The ID 5100 is one of ICOM's top of the line mobile dual band radios with both analog and digital capability. Dan, an ID 5100 owner himself, demonstrated the basic operation of the radio as well as some of its special capabilities.

Inside the Clubhouse: North Bay 2m Critical Mass (cont'd)



Gerald also took all attendees on a tour of the new antenna farm at the club which includes the HF antennas described above plus several multi-band VHF/UHF antennas covering all bands from 2m to 1.2ghz, including a GMRS antenna. He explained how these interfaces with the radio systems in the Clubhouse.

In the future more detailed training will be conducted on use of all of the equipment in the radio room. You are encouraged to contact these members if you are interested in getting on the air with any of the radios located there.

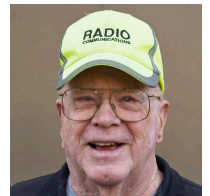


NEW! Radio Room Orientation Videos

Kenwood TS-900S: <https://youtu.be/EI2vPus9cHk>

Icom ID-5100: <https://youtu.be/5Cfj6PODWEU>

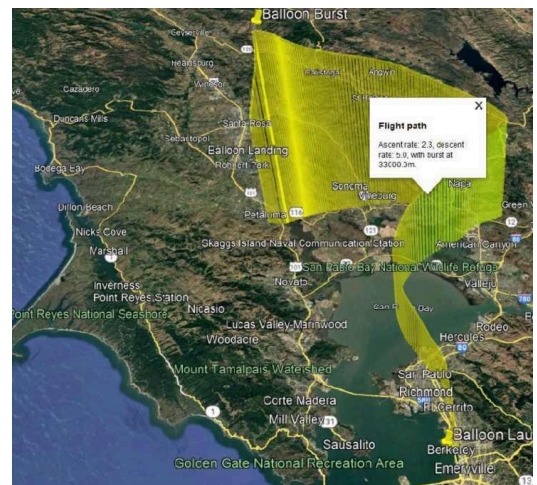
Our Antenna System: <https://youtu.be/ivV8fa3re0k>



Milt Hyams, KM6ASI



Our next North Bay 2m Critical Mass will be on Sunday, March 15 @ 10a-Noon @ the Marin Civic Center. Martin Rothfield ([W6MRR](https://www.facebook.com/W6MRR)) will discuss Amateur Radio Ballooning in the Bay Area with [SF-HAB](https://www.facebook.com/SF-HAB). Learn about the different types of balloons they launch, their payloads (which have included: radios, cameras, crossband repeaters, and geiger counters), where the balloons travel, and how you can join in on the fun! (Bonus: [SF-HAB 12/25 launch report](https://www.facebook.com/SF-HAB)).



Inside the Clubhouse: March 2026 Calendar

Curious what's coming up? You'll find details on all of our weekly nets, upcoming meetings, public service events, and other local activities on our [online calendar](#). You can even [subscribe to the calendar](#). Please submit corrections or suggestions to: QSA5@w6sg.net.

upcoming SPECIAL EVENTS

(thanks to Dan Sobel, N6HLZ for the "Upcoming Special Events" calendar feature suggestion)

MARCH

Friday, 6 [MARS Club Meeting](#)

Saturday, 14 [Marin Ultra Challenge](#) 🏃

Saturday, 14 [SF 2 Meter Critical Mass](#) 📶

Sunday, 15 [North Bay 2 Meter Critical Mass](#) 📶

Saturday, 21 [Beacon Exercise: Regional Equipment Test Day](#) 🚒

Saturday, 28 [Loomis Hamfest](#) 📶

Friday, 3 [MARS Club Meeting](#)

Saturday, 11 [SF 2 Meter Critical Mass](#) 📶

Saturday, 11 [Amateur Radio Exams](#) 📶

Saturday, 18 [Ridge to Bridge](#) 🚲

Saturday, 18 [VOMARC Hamfest](#) 📶

Sunday, 19 [North Bay 2 Meter Critical Mass](#) 📶

Sunday, 26 [Big Sur International Marathon](#) 🏃

Sunday, 26 [Sonoma County Wildfire and Earthquake Expo](#) 🔥

Thursday, 30 [2026 BEACON Exercise](#) 🚒

APRIL



Ham Radio in the News

From local to national to international – stories, inspiration, and legislation.

☼ [Communication is key when UP200 mushers race along a 228-mile track through the Upper Peninsula's winter wilderness.](#)

☼ [The Belarusian government is threatening three ham radio operators with the death penalty](#)

☼ [The Amateur Radio Emergency Preparedness Act will ensure that amateur radio operators can continue to play a vital role in ensuring public safety during emergencies by providing critical communication when other systems fail.](#)

☼ The National Association for Amateur Radio® reports that the Federal Communications Commission (FCC) adopted changes to its rules to require that every holder of an FCC Registration Number (FRN) update their contact information in the [CORES](#) system (email and postal addresses) within ten business days of a change.

Trusted Radio News Sources

[ARRL News Page](#) for national news regarding ham radio.

[QRZ Now](#) for ham radio news from around the globe.

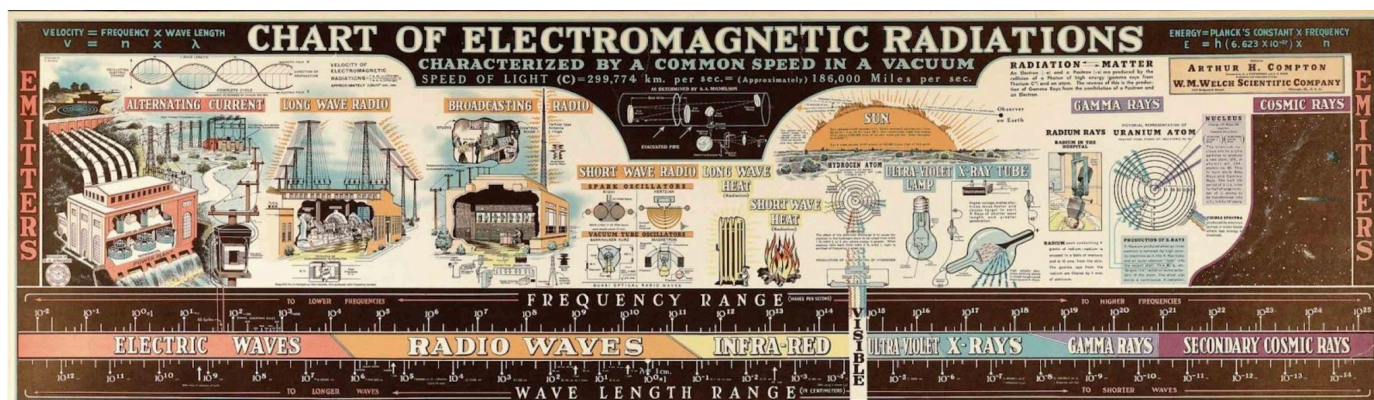
[Amateur Radio Newsline](#) weekly amateur radio story highlights.



If you have an unexpired Amateur Radio Station license issued by the Federal Communications Commission, the California Department of Motor Vehicles (DMV) can issue you a set of Amateur Radio License Plates for your passenger motor vehicle, commercial vehicle, or motorcycle.

[Download CA DMV "Special Recognition License Plate Application" here.](#)





Ham Classroom

Every month, we showcase interesting subjects.

[HF for the Newly Licensed Technician](#)

[New 60-Meter Rules: A New Era for 5 MHz Access](#)

[Amateur Radio's Evolution from Tubes to Terabytes](#)

[Do it Yourself \(DIY\) Radio References](#)

Ham Classroom: HF for the Newly Licensed Technician

When I first got my Technician license, I was inundated with information on the 2-meter and 70-cm bands, to the point of thinking "this is the only place a Tech gets to play radio." I vaguely remembered something about privileges on some HF (High Frequency band slice of the SW – Short Wave – bands that are used by amateur radio operators around the world) bands, but it seemed, at the time, that it was CW (Continuous Wave or Morse Code) only. I completely forgot about Phone or voice privileges in the 10-meter band between 28.300 and 28.500 MHz. If I had even considered the 10-meter band back then, I probably thought that was a slice of the HF band too small to do anything meaningful with. The HF bands were where I longed to be, making exciting contacts with people from all points of the globe. I just didn't go there because I didn't think I'd find anyone but a bunch of Techs keying up their radios and rag chewing locally. I didn't consider HF until I got my Extra Class license. My thinking was simple, foolish but simple: I wanted access to all the amateur bands, every single Hertz worth! That would be the only way I could make exotic contacts from the far corners of the world.

I was going through my DX (long distance) logs and discovered something startling that led to writing this article: Most of my contacts were on the 10-meter band between 28.300 and 28.500 MHz! That's right! The phone or voice frequency available to newly licensed Techs. All that time, I could have been on the 10-meter band racking up DX contacts. Well, there was one other myth that prevented me from working the DX bands: The guys who did DXing had big, expensive stations. I would have to make a big financial investment to work the HF bands. I was so wrong!

While most long-time DXers have expensive transceivers and equally expensive antenna systems, you can work the 10-meter band with an inexpensive 10-meter export radio (often sold as CB/10-meter radios) and a simple dipole, an end fed wire antenna or 10-meter vertical ham stick. You could put together an HF system with radio, end fed antenna and coax cable for about \$400. You can purchase everything you need on Amazon which has great return policies. I did this as an Extra Class operator and still use this system for the 10-meter band.

Starting bare bones is a great way to learn the mechanics of DXing, how to get the most out of your radio and antenna. I started with 20 watts and had to make every watt count to compete with higher powered stations. Here are some tips for the newly licensed Technician wishing to give DXing a try.

As a newly licensed Technician, you have immediate (though limited) access to the HF bands. While most of your privileges are in the VHF/UHF range (above 30 MHz), you can start operating on HF today using specific modes and frequency segments.

HF Privileges for Technicians: Technicians are restricted to **200 Watts PEP** on all available HF frequencies.

Band	Frequencies (MHz)	Permitted Modes
80 Meters	3.525 – 3.600	CW (Morse Code) only
40 Meters	7.025 – 7.125	CW (Morse Code) only
15 Meters	21.025 – 21.200	CW (Morse Code) only
10 Meters	28.000 – 28.300	CW, RTTY, and Data (e.g., FT8)
10 Meters	28.300 – 28.500	SSB Phone (Voice)

Ham Classroom: HF for the Newly Licensed Technician (cont'd)

How to Get Started

1. **Operate on 10 Meters:** This is the only band where you can use voice (SSB) and digital modes. During periods of high solar activity, 10 meters can provide worldwide communication even with modest power. While this portion of the 10 meter band may seem small, the majority of long distance contacts happen here.
2. **Learn CW or Use Digital Tools:** While CW (Morse Code) is the primary mode for Technicians on 80, 40, and 15 meters, you aren't required to decode it by ear. Software like Fldigi can help your computer decode and send Morse code for you. However, learning how to do morse code with a keyer or paddle will earn you great respect from the old timers. CW can also be transmitted when band conditions make voice communication impossible.
3. **Upgrade to General:** To unlock the full potential of HF—including voice privileges on all bands (like the 20 and 40 meter bands)—you must pass the **General Class** exam. Many operators study for this immediately after their Technician's exam because of the overlap in material.

Equipment Requirements

Unlike the handheld radios (HTs) commonly used for local VHF/UHF, getting on HF typically requires:

- **HF Transceiver:** An "all-mode" radio capable of transmitting on the lower HF frequencies.
- **HF Antenna:** A larger antenna, such as a wire dipole or a vertical, tuned for the HF bands.
- **Power Supply:** A dedicated 13.8V DC power supply to run the transceiver.

Introduction

The 10-meter band serves as the premier HF gateway for newly licensed Technicians because it provides rare access to Single Sideband (SSB) voice privileges in the 28.300 to 28.500 MHz segment. Unlike the narrow Morse code segments found on other bands, this portion of 10 meters allows new operators to engage in worldwide DXing using their own voice. According to [ARRL](#), while many Technicians stick to local VHF/UHF handhelds, those who venture into 10 meters can experience the thrill of "real RF DX" by communicating across countries and continents when band conditions are favorable.

One of the most significant advantages of this band is its unique propagation characteristics, which allow for global reach with relatively low power and simple equipment. During the peak of the 11-year solar cycle, the ionosphere becomes highly energized, enabling 10 meter signals to interact with the ionosphere and travel thousands of miles. When the 10-meter band opens up, a station from the other side of the world can sound as clear as if they were just down the street. Even during solar minimums, the band can benefit from "Sporadic E" propagation, particularly in late spring and early summer, which creates sudden, intense openings for long-distance contacts.

The equipment requirements for 10-meter DXing are also notably more accessible and affordable than those for lower HF bands. Because the frequency is higher, the physical size of an efficient antenna is much smaller; for instance, a standard half-wave dipole for 10 meters is only about 16 feet long, making it easy to install in limited spaces.

Ham Classroom: HF for the Newly Licensed Technician (cont'd)

Operating on 10 meters also provides an uncrowded and rewarding environment for developing essential DXing skills. The band is exceptionally wide—1.7 MHz in total—which allows operators to spread out and find clear frequencies even during major contests or DXpeditions (amateur radio operators travel to remote locations and set up temporary stations that broadcast for a limited period of time). This lack of congestion, combined with the 200-watt power limit allowed for Technicians, provides a perfect practice ground for learning how to navigate pileups and understand signal reports. By mastering 10-meter voice communications, new hams can build the confidence and technical knowledge needed to eventually upgrade to a General class license and unlock the rest of the HF spectrum. Honing your skills on the Tech portion of the 10 meter band is a great way to prepare for the other HF bands that open up when you get your General and Extra Class license.

An Inexpensive Transceiver

"Export radios" occupy a unique space in the 10-meter market, often sold as high-power amateur transceivers to bypass strict FCC limitations on Citizens Band (CB) equipment. While these units are frequently marketed to CB users looking for "extra channels," they are perfectly legal for licensed Technicians to use on the 10-meter ham band if the operator stays within their licensed frequency and power limits. Here are two inexpensive models:

[Anytone AT-5555N II](#)



Offers an entry point into HF voice communications at a fraction of the cost of a flagship base station. With a big bright Amber screen, this 60-watt transceiver has everything you need to make long distance contacts.

The primary appeal of these radios for a new Technician is the significant power boost they provide compared to standard mobile gear, with many models outputting between 40 and 60 watts.

The AnyTone AT-5555 Pro (specifically the 5555N II or PLUS models) is highly regarded as a top-tier "export" 10-meter radio, frequently compared to more expensive units due to its feature-rich design and high-power output.

Here is a list of pros for the AnyTone 5555 Pro/Plus 10-meter radio:

Power and Performance

- **High Power Output:** Delivers high power, generally 50-60W PEP on SSB/AM and 50W on FM, providing strong, long-range transmission.
- **Excellent Modulation:** Known for good "talk power" out of the box, with many reports of clear, loud audio.
- **Stable SSB Performance:** Features good frequency stability on single sideband (SSB), making it reliable for DXing.
- **Variable Power Control:** Allows for adjustment of power output, which is useful for operating at lower levels or driving amplifiers.

Ham Classroom: HF for the Newly Licensed Technician (cont'd)

Advanced Features and Functionality

- **Multi-Mode Capability:** Supports all common modes: AM, FM, USB, LSB, PA, and CW.
- **Built-in Noise Reduction (NRC):** The upgraded N II models include RX and TX noise reduction circuits, which help filter out background noise.
- **Programmable via PC:** Full control over settings, including frequency range, channels, and menu options, via a computer interface.
- **Built-in SWR/DC Meter:** Features an onboard SWR meter, which is helpful for checking antenna performance, as well as voltage protection.
- **Comprehensive Menu System:** Includes features such as Echo, Talkback, Roger Beep, Dual Watch, and Scan.

User Interface and Build Quality

- **Large, Clear LCD Display:** The backlit display is easy to read, showing 7-digit frequency readout and 2-digit channel numbers.
- **Compact Design:** The N II version is updated with a shorter case, making it easier to mount in vehicles with limited space.
- **Durable Construction:** Built with a sturdy, high-quality chassis.
- **4-Pin Microphone Connector:** Compatible with common 4-pin microphones, making it easy to upgrade the stock mic.

Versatility

- **Wide Frequency Range:** Covers 28.000–29.700 MHz (10-meter band) in standard mode, with 11-meter/freeband capabilities available, often through easy "export" modifications.
- **CTCSS/DCS:** The newer N II models include CTCSS/DCS tones, which are useful for accessing 10-meter repeaters.
- **Memory Channels:** Allows for saving frequently used frequencies.

Ham Classroom: HF for the Newly Licensed Technician (cont'd)

Retevis Ailunce HS4



The Ailunce HS4 is a 40 watt 10-meter radio that is extremely user friendly. It's easy to read screen and \$200 price tag make it very attractive to new Techs looking to explore the 10-meter band on a budget.

The Ailunce HS4 is a feature-rich, 10-meter amateur radio, often favored for its versatility and value in mobile or base station setups. Based on user reviews and technical specs, here are the main pros:

- **Powerful Transmit Capability:** The HS4 features a high-power output of up to 40 watts (adjustable: 1-40W FM, 1-35W USB/LSB, 1-12W AM/CW), providing excellent, long-range communication, especially during peak band conditions.
- **Versatile Operating Modes:** It supports 6 modes of operation—PA, AM, FM, USB, LSB, and CW—making it suitable for diverse needs, including casual chatting, DXing, and emergency communication.
- **Rugged and Compact Design:** Built for mobile use, the radio is durable, featuring a shock-resistant design that can withstand the vibrations and environmental factors of off-road or in-vehicle use.
- **Clear Audio and Noise Reduction:** It includes advanced noise reduction functions and an adjustable squelch to deliver clear audio, even in noisy environments.
- **User-Friendly Display and Controls:** The large LCD display and dual-digital tube for channel display make it easy to monitor frequency, channel, and SWR at a glance. It also features a VFO knob for convenient frequency adjustments.
- **Excellent Memory and Programming:** The radio features 6 frequency bands (A-F) with 60 programmable channels, allowing for customization. It also supports PC programming, which users find easy to configure.
- **Dual Watch Function:** Enables monitoring two frequencies simultaneously, which is critical for emergency operators or fleet communication.
- **Affordable Price Point:** It is often regarded as a high-performance, cost-effective option compared to other radios in its class.
- **Extra Features:** Includes useful features like ECHO, Roger Beep (RB), SWR protection, and voltage protection to prevent damage.
- **Easy 11-Meter Conversion:** Users report that the radio can be easily modified to expand coverage into the 11-meter (CB) band.

Key Specifications Overview

- **Frequency Range:** 28.000–29.700 MHz
- **Channels:** 360 (6 bands, 60 channels each)
- **Input Voltage:** 13.8V DC
- **Weight:** 1.5 KG

Ham Classroom: HF for the Newly Licensed Technician (cont'd)

An Inexpensive Antenna

A simple wire dipole is widely considered the best inexpensive DIY antenna for 10-meter beginners because it is easy to build, requires minimal materials, and provides excellent performance for long-distance DXing. To construct one, you only need two lengths of insulated copper wire—standard 14 or 16-gauge speaker wire works perfectly—and a way to connect them to your coaxial cable, such as a male BNC to Banana plug binding post. You'll need a female BNC to SO-239 adapter to connect to the coax cable. The total length of the antenna should be approximately 16.5 feet, with each side of the wire measuring about 8 feet and 3 inches to resonate near the 28.400 MHz technician voice segment.



Female BNC to Banana Plug Adapter



Male BNC to SO-239 Adapter

The assembly process is straightforward and can be done without expensive tools by following the **468/frequency formula** (468 divided by 28.400) to calculate the exact wire length in feet. You attach your coax to the adapter and the other end of the adapter to the Banana plug. One of the wire arms of the antenna is attached to one connection point on the adaptor (it doesn't matter which one you attach) and the remaining wire to the other. For the ends of the wires, inexpensive electric fence insulators or small lengths of PVC can be used to prevent the wire from grounding out when you hang it. You'll attach the end of one wire to the insulator or PVC pipe, repeat the process for the other wire, and use some Nylon cord to attach the insulator or PVC pipe to a tree branch.

For the best results, you should hang the antenna as high as possible, ideally 15 to 20 feet above the ground, using nylon rope or heavy fishing line to suspend it between two trees or other supports. If you have limited space, you can also mount it in an "Inverted V" configuration, where the center is high on a single pole and the ends angle down toward the ground. This setup is particularly effective for Technicians because it is omnidirectional, allowing you to pick up signals from multiple directions without needing an antenna rotator.

Tuning your dipole is the final step and can often be done using the built-in SWR meter on your radio rather than a dedicated analyzer. If your SWR is high at the bottom of the band, the antenna is likely too long and needs to be trimmed an inch or two at a time from each end. This hands-on project costs less than \$40 and provides a deep understanding of how radio waves interact with the environment, often outperforming commercial antennas that cost ten times more.

Ham Classroom: HF for the Newly Licensed Technician (cont'd)

Make sure to purchase enough Coax Cable to run from the antenna to your transceiver. 50-Feet should do it and you can find it on Amazon.com for about \$25. If you are interested in different antenna types, I've written about them in previous editions of the QSA-5. Building your own antenna will prepare you for your DXing career. If you're a newly licensed Tech, please email me with any questions you have about working the 10-meter band and antennas. I'll be happy to answer them.

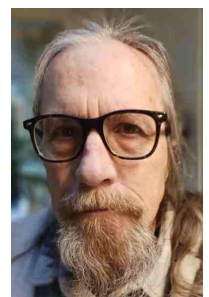
The Power Supply

A 13.8-volt direct current (DC) power supply is the backbone of any 10-meter export radio base station. While these radios are designed for automotive use (12V–13.8V), bringing them indoors requires a dedicated power source that converts 120V AC household current into the stable, clean DC power required for reliable communication. Because 10-meter export radios often boast higher power output (high-wattage amplifiers) compared to standard CBs, choosing a robust power supply is critical to avoid voltage drops, audio distortion, and potential damage to your equipment.

Key Considerations for Choosing a Supply

- **Amperage (Current) Requirements:** Most 10-meter export radios, particularly those with 50-watt to 100-watt+ output power, require a substantial amount of amperage to operate safely and at full power. It is generally recommended to use a power supply capable of delivering **at least 20 to 30 amperes continuously**, even if your radio calls for less, to prevent overheating the supply.
- **Voltage Regulation:** The supply must output a consistent 13.8V DC (or as close to this nominal rating as possible) to match a typical, fully charged car battery system. Proper regulation ensures the radio doesn't underperform due to low voltage or get damaged by overvoltage.
- **Linear vs. Switching Types:**
 - **Linear Power Supplies:** Known for being very clean (low radio frequency noise), heavy, and durable, often preferred for sensitive communication environments.
 - **Switching Power Supplies (Switch Mode):** Smaller, lighter, and more efficient. While once known for generating RF noise, modern, high-quality switching supplies designed for ham radio are excellent, cost-effective options.
- **Safety Features:** Ensure the power supply has built-in protection against overcurrent, overvoltage, and short circuits.

So, there is everything you need, as a newly licensed Tech, to get onto the 10-meter band. Try DX out and don't make the mistake I made, waiting until I had my Extra Class license. While the time between my Tech and Extra Class was short, I lost out on a number of potential contacts. There's an entire planet of amateurs out there who would be happy to make contact with you.



Hugh Patterson, KN6KNB

Ham Classroom: New 60-Meter Rules: A New Era for 5 MHz Access

As of February 13, 2026, the landscape of the 60-meter band has officially shifted for the U.S. Amateur Radio operators. Following the FCC's adoption of the 2015 World Radio communication Conference (WRC-15) standards, amateurs have finally gained a contiguous 15 kHz allocation.

For General Class operators and above, this marks a transition from a strictly "channelized" mindset to a more flexible, frequency-agile operating environment.

The New 15 kHz Allocation: 5351.5 – 5366.5 kHz

The headline change is the introduction of a contiguous band segment. Unlike the legacy channels, this segment allows for traditional VFO tuning and the use of all modes authorized in the amateur service.

Technical Specifications at a Glance

Feature	New Allocation (5351.5–5366.5 kHz)	Legacy Channels (1, 2, 4, & 5)
Frequency Range	5351.5 – 5366.5 kHz	5332, 5348, 5373, 5405 kHz (Center)
Status	Secondary	Secondary
Power Limit	9.15 Watts ERP	100 Watts ERP
Max Bandwidth	2.8 kHz	2.8 kHz
Modes	All (Phone, CW, Digital)	Phone (USB), CW, Digital

The Fate of "Channel 3"

Operators should be aware that the former Channel 3 (5358.5 kHz) has been incorporated into this new 15 kHz sub-band. Consequently, the power limit for this specific frequency has been reduced from 100 watts ERP to 9.15 watts ERP.

Secondary Status: Spectrum Sharing

As a Secondary, our right to these frequencies is contingent upon not causing "harmful interference" to primary users. The 60-meter band is a critical resource for:

- Federal Government & Military: Essential for tactical communications and the Military Auxiliary Radio System (MARS).
- CODAR Coastal ocean dynamics applications radar (we learned about the system in the last edition of QSA-5)
- SHARES (Shared Resources): A DHS program for emergency coordination.
- Fixed & Mobile Services: Utilized internationally for point-to-point and maritime communication.

Rule of Thumb: If you detect a non-amateur station, you must immediately relinquish the frequency. For all 60-meter transmissions, you must monitor for primary users prior to and during operation.

Context: The History of 60-Meter Access

The 5 MHz range has long been a subject of negotiation between the amateur community and the National Telecommunications and Information Administration (NTIA).

- 2003: The Federal Communications Commission (FCC) initially granted U.S. amateurs access to five discrete channels.
- 2012: Regulations were relaxed to permit Continuous Wave (CW) and Digital modes (such as FT8 or PACTOR), and the power limit was increased to 100 watts ERP.
- 2026: The complete 15 kHz contiguous allocation is implemented, aligning the United States with international standards.

Ham Classroom: New 60-Meter Rules: A New Era for 5 MHz Access (cont'd)

How Does This Compare to Previous Expansions?

This represents the most significant modification to HF (3–30 MHz) privileges in recent years. While we frequently perceive band expansions as commonplace, they are historically infrequent:

- **2017 Expansion:** The last time amateur radio operators received new spectrum was the addition of the 630m (472 kHz) and 2200m (135 kHz) bands.
- **WARC Bands (1980s):** The last major HF band additions were the "WARC" bands (30m, 17m, and 12m) following the 1979 conference.
- **The 2026 Shift:** Today's change is unique because it combines a new allocation with a power reduction (on Channel 3), necessitating operators to be more meticulous with their station records.

Upgrade Your License

Technician Class operators seeking to capitalize on these unique NVIS (Near Vertical Incidence Skywave) frequencies are encouraged to upgrade to General Class; the Marin Amateur Radio Society is hosting its next license exam session on April 11, 2026, at the MARS Clubhouse in Mill Valley.

Technical Compliance: ERP vs. PEP

The 9.15-watt ERP limit is the most critical obstacle. Please note that this is Effective Radiated Power, not transmitter output.

- **Dipoles:** A half-wave dipole is presumed to have a gain of 1 (0 dBd). If you utilize a dipole, your transmitter output should be 9.15 watts PEP or less.
- **Gain Antennas:** If you employ an antenna with gain, you must reduce your PEP so that the total radiated power remains below 9.15 watts ERP.
- **Records:** Amateurs are required to maintain records of antenna gain calculations in their station logs when utilizing antennas other than a standard dipole on this band.

Embracing the Spirit of Amateur Radio

The newly allocated 60-meter frequency band extends beyond a mere slice of spectrum; it serves as an invitation to revisit the fundamental principles of our hobby: experimentation and stewardship. Whether you are testing low-power digital modes or enhancing an NVIS antenna for emergency preparedness, it is crucial to remember that we are merely guests on these frequencies. By adhering to "Listen First" protocols, maintaining precise power levels, and cultivating a culture of courteous cooperation, we demonstrate that the amateur service is a capable and disciplined partner in spectrum sharing. Engage in the airwaves, explore the new VFO flexibility, and let us showcase the capabilities of 9 watts!



Gerald McCarthy, W6NOV

Ham Classroom: Amateur Radio's Evolution from Tubes to Terabytes

In 1966, an amateur radio operator (ARO) sat in the radio shack, the smell of warm vacuum tubes and ozone filling the air as they tuned a massive [Heathkit](#) dial. In 2026, a ARO might be sitting in the same room, but they are more likely staring at a high-resolution waterfall display on a computer screen, watching as a global network of stations automatically logs contacts across the planet.

For sixty years, critics have predicted the demise of amateur radio. They argued that the telephone, the internet, and the smartphone would render the hobby obsolete. Instead, the "Original Social Network" has proven both remarkably resilient and adaptive. The following timeline captures this evolution through the lens of growth and technological shifts.

Six Decades of Connectivity

Year	U.S. Licensed Operators	Most Popular Equipment	Most Popular Modes
1966	~275,000	Heathkit "SB" Series , Collins S-Line	CW , AM , Early SSB
1976	~300,000	Kenwood TS-520 , Yaesu FT-101	SSB Phone, FM Repeaters, CW
1986	~420,000	Icom IC-735 , Kenwood TS-440S	SSB , FM , Packet Radio
1996	~670,000	Yaesu FT-1000 , Kenwood TS-570	SSB , FM , RTTY/Packet
2006	~660,000	Icom IC-706MKIIG , FlexRadio (Early SDR)	SSB , FM , PSK31 , CW
2016	~740,000	Icom IC-7300 , Elecraft KX3	FT8 , SSB , DMR (Digital Voice)
2026	~780,000*	SDRs (Software Defined Radios)	FT8/FT4 , SSB , VARA

*Estimated based on 2024-2025 growth trends.

The Digital Revolution

The introduction of digital modes didn't happen overnight; it was a slow burn that turned into a wildfire (sorry, with 35 years in the fire service I couldn't resist). While [RTTY](#) (Radio Teletype) has existed since the post-WWII era, the true "digital revolution" began in the early 1980s with [Packet Radio](#) and hit its stride in the late 1990s with PSK31.

However, the release of [FT8](#) in 2017 by Nobel laureate Joe Taylor (K1JT) changed everything. By 2026, digital modes account for more than half of the activity on the High Frequency (HF) bands.

To understand why the amateur radio landscape has shifted so dramatically toward digital, it helps to look at the "signal-to-noise" reality. While [SSB](#) (voice) requires a relatively strong signal to be intelligible, modes like [CW](#) and [FT8](#) can dive deep into the noise.

Here is a technical comparison of the three most popular modes used by operators in 2026:

Feature	CW (Morse Code)	SSB (Voice)	FT8 (Digital)
Bandwidth	~150 Hz	2.4 kHz to 3.0 kHz	50 Hz
Minimum SNR	~ -15 dB	~ +10 dB	~ -21 dB
Primary Method	Human ear/brain	Human ear/brain	Computer DSP (Soundcard)
Power Efficiency	High (100% duty cycle)	Moderate (Peak power)	High (Constant carrier)
Hardware Reqs.	Simple keyer/oscillator	Complex modulator	PC + Soundcard Interface
Information Rate	~20 words per minute	~150 words per minute	75 bits per 15-sec window
"Human Element"	Very High (Individual "fist")	Highest (Unique voice)	Low (Automated exchange)

Ham Classroom: Amateur Radio's Evolution from Tubes to Terabytes (cont'd)

Key Takeaways from the Data

- **The "Weak Signal" King:** FT8 is roughly 30 dB more efficient than SSB. In practical terms, this means if you have a poorly placed wire antenna in a noisy city, FT8 can "see" a signal that a voice operator wouldn't even know was there.
- **The Spectrum Saver:** You can fit nearly 50 FT8 signals or 15 CW signals into the space taken up by a single SSB voice conversation. This efficiency is why the bands often feel "crowded" even when the voice portions are quiet.
- **The Survival of CW:** Despite being technologically "outclassed" by digital modes, CW remains popular because it sits in the sweet spot: it is narrow-band and efficient (like digital) but remains a purely human-to-human interaction (like voice).

The Impact of SDR (Software Defined Radio)

By 2026, the shift to SDRs has made switching between these modes seamless. Unlike the 1966 equipment that required physical filters and crystal oscillators, modern rigs use math to define the mode. To a 2026 operator, the difference between CW, SSB, and FT8 is often just a click on a touchscreen.

Impact on Traditional Modes:

- **CW (Morse Code):** Despite the FCC dropping the code requirement in 2007, CW has remained popular. It is the "original" digital mode, and purists still value it for its human-to-human connection. Digital modes haven't "killed" CW; they've simply provided an alternative for those with poor antennas or high local noise.
- **SSB (Voice):** Single Sideband remains the heart of emergency traffic and "ragchewing" (casual conversation). However, digital modes like FT8 have undeniably drawn operators away from voice during poor solar conditions, as digital signals can be decoded even when they are buried deep in the noise.
- **AM:** Once the king of the airwaves in 1966, AM is now a niche "vintage" mode, kept alive by enthusiasts who love the warm, high-fidelity sound of antique gear.
- **FM Repeaters:** The rise of [DMR](#), [D-STAR](#), and [System Fusion](#) has shifted much of the local VHF/UHF traffic from traditional analog FM to digital voice networks that link repeaters globally via the internet.

A Zero-Sum Game?

Has the rise of digital modes taken away from voice and CW? In a literal sense, yes—band segments once filled with the hiss of static and the warble of voices are now filled with the rhythmic "chirp" of FT8. But in a broader sense, digital modes have saved the hobby. They allow operators in urban environments with massive electrical interference to stay active. They allow AROs with modest wire antennas to make contacts in Asia or Europe when the sunspots are low.

The magic of amateur radio in 2026 isn't that we can talk locally, regionally or across the world—the internet does that for free. The magic is that we are still doing it using nothing but the physics of the ionosphere, whether we're tapping a key, speaking into a mic, or letting a computer pulse a message into the ether.

While modern digital modes provide incredible efficiency for the hobbyist, there remains a vital heart to the local community found within the Marin Amateur Radio Society (MARS) repeater system. High atop peaks like Mt. Tamalpais and Barnabe, these repeaters provide a critical backbone for both casual "rag chewing", RCV/ACS communications and public service support across the unique topography of Marin. By staying active on the MARS repeaters, you aren't just testing your signal; you are participating in a legacy amateur radio, ensuring that even when the internet falters, the MARS community remains connected through a robust, volunteer-maintained legacy network.



Gerald McCarthy, W6NOV

Ham Classroom: Do it Yourself (DIY) Radio References

Microcontrollers and Single Board Computers

Using these small and inexpensive computers, amateur radio enthusiasts can build both accessories, such as antenna tuners, and fully functioning transceivers.

Arduino: The Arduino microcontroller board was the first to popularize these devices. They are inexpensive, can be used for a variety of radio related projects, and have lots of open source software.

Raspberry Pi: Did you ever wish you could have a PC small enough to fit into your shirt pocket? The Raspberry Pi 4 is a fully functional Quadcore 1.6 GHz computer, about the size of a package of playing cards. It has an Ethernet jack, two USB 2 ports, two USB 3 ports and two HDMI ports.

Electronics

Electronic Printed Circuit Boards (PCB): If you design and build projects that require specific circuit boards, you know how difficult it is to find a board that will work for your purposes. Designing a board and then having it made can be expensive. [PCBway](#) has a large number of radio PCBs you can purchase and then add components to. They also can take your design and fabricate a PCB at a very reasonable cost.

Electronic Components and Parts: Many of us involved in amateur radio are constantly tinkering with electronics. It seems to be part of our genetic makeup! Here are some companies that sell electronic components and parts: [Electronics Plus](#) (in San Rafael), [Digikey](#) (claims to have the world's largest selection of electronic components), and [Jameco](#) (a good source for almost everything, especially mainstay items such as resistors, capacitors, etc.).

Homemade Antennas

Many new amateur radio enthusiasts put a great deal of time and effort into researching their first radio. However, they often neglect the most important component to a successful radio experience: the antenna. Even if you have some ham radio experience, antennas can be a daunting subject. Commercially manufactured antennas can be expensive and beyond your budget. Even if you have the funds available to purchase an antenna, reading through the antenna's specs can be akin to reading some long lost ancient language. A good solution for increasing your knowledge of antennas and radio wave propagation, not to mention cutting the costs down, is to build them yourself:

[Antenna building basics](#)

[Instructions for a VHF/UHF dual band antenna](#)

[Good Reference for several antenna types](#)

[Build an HF dipole antenna](#)

[A step-by-step guide for building a simple antenna](#)

[Introduction to antennas](#)

Marin Amateur Radio Society Board of Directors Meeting 2-12-26

Call to Order 19:30 Hours (7:30 PM)

Attendance:

☒ **President:** Curtis Ardourel WA6UDS
☒ **Secretary** James Saltzgaber KM6WWY
☒ **Director** Richard Cochran AG6QR
☒ **Director:** Ed Essick K6ELE
☒ **Trustee W6SG** Marc Bruvry KF6VNT

☒ **Director** Kathy Funke-Spicher KM6URP
☒ **Treasurer** Bruce Bartel N6VLB
☐ **Director** Steve Toquinto KB6HOH
☐ **Trustee K6GWE** Brian Cooley K6EZX

☒ **Adopt agenda- MSC TO ADOPT AGENDA AS PRESENTED**

☒ **Approve minutes of 8 January board meeting** as published in QSA-5 MSC without objection.

☒ **Secretary's Report/Communications -Jim KM6WWY-** Insurance policies/quotes received for upcoming (March 2026) Insurance renewals. COI was issued to Travis Marina for the 2026 Public Service kickoff luncheon.

☒ **Treasurer's Report** – Bruce N6VLB – Year-end report was Published in QSA-5.

Members Present: Milt Hyams KM6ASI, Scott Pasternak KN6ZDN, Charlie Benett AI6TT, Skip Fedanzo KJ6ARL, Antonis Papas AA6PP, Gerald McCarthy W6NOV, Mark Klein K6AOW, Rob Rowlands AB6JR, Dan Sobel N6HLZ

Committee and other Reports:

1. **Membership** Curtis WA6UDS – Currently 92 55% of the membership totals at the end of last year, 56% February 2025 membership.
2. **Facilities** Skip AJ6ARL – Needs to add a pull strap on garage sliding door as suggested by Charlie AI6TT. Kathy KM6URP- Discussed the possibility of adding a second exit doorway, adjacent to the outside water heater closet. This will be further discussed once the clubhouse cleanup project has been completed.
3. **VOAD/RCV** Skip KJ6ARL – RCV Planning Team meeting is tomorrow. Recent RCV simplex connectivity testing results will be discussed. Relay points to use simplex when repeaters are not available can be determined using the data gained from the testing. RCV's capacity and manpower available needed to add additional CBO or similar organizations if requested will also be explored.
4. **Technical** Antonis AA6PP – Milt KM6ASI is transitioning Antonis onto the committee. The next Critical Mass, February 22, will be the first training session for the upgraded radio room. We now have some equipment that requires training to properly operate. Members will be required to have a training orientation before operating. Antennas have been added and the switching system expanded. Proper line up of radios/antennas is important to prevent damaging radios. Proposed and agreed that Repeater budget funds be moved from the Public Service budget to the Technical Committee. Will be accomplished with the budget to be adopted for 2026.
5. **Public Service Events** – Scott KN6ZDN- 2026 Kickoff event was held on Sunday February 8th at the Travis Marina. The report of COVID being present at the kickoff event was incorrect. Marin Century Committee has requested to use the clubhouse, as in the past, for their organizational meetings. We will receive a certificate of insurance from them. Use of the clubhouse by Marin Cyclists was approved.

6. **VE Testing** Jim KM6WWY- Next test session will be April 11th. I am planning on getting in touch with VE groups in neighboring locations to determine the extent that they are using the electronic testing capabilities of the ExamTools software that ARRL has mandated us to use. For the present, we will print out materials from the software and use the in-person/pencil & paper format. I personally like to be able to meet the candidates face to face and get to know the prospective new hams. Bruce N6VLB- Asked if our policy is to give a complementary year's club membership to new Hams that receive their license at our exam. Curtis WA6UDS – He has been honoring the offer to people who upgrade and have not been members previously. It was moved to extend free membership to Hams who successfully took an exam with MARS and that wording be updated in the Club Handout to reflect this policy. MSC to update the club policy.
7. **Comm Truck** Charlie AI6TT- Thanks to the clean up committee for cleaning the paint spill in the driveway. Andrew M. KI6UOC did a great job power washing it up. There were problems with the power system on the van at the Public Service kickoff event. The house battery appeared to be down, and the generator was not powering the system either. Jim KM6WWY – assisted with testing everything once the van was back at the clubhouse. Everything was tested ok at that time. It was possibly an incorrect power panel switch setup was used that may have caused the inverter to come on and drain the house battery. The GFCI feeding the van was reported to have been tripped, and that, along with the power panel being improperly set up, was likely the cause. Laminated copies of the electrical systems diagrams have been put in the van. It was suggested that start-up and shut down check lists be made for the van electrical settings, and Charlie will make those up.
8. **NBAM** Kathy KM6URP- Will be doing equipment flash session on the 21st of February 11:30 am until ? And if necessary, on the 22nd to get all portable equipment on the same software, version 4.26.1.0. Solar panels and associated equipment from the clubhouse have been delivered to Bodega Bay. Ed Witt has them now. Thank you to the clubhouse cleanout group that gathered up all the solar parts and put them in one place for her. Wed Feb 18th is the next NBAM Steering Committee meeting. She has spoken with Greg Waters, who is on the upcoming “Beacon Exercise” committee, and he is interested in NBAM being included in that exercise on April 30th. Mark KM6AOW – Still waiting on Sonoma Mtn. access resolved, will be doing work on English Hill and Castle Rock in the interim. Curtis WA6UDS – NBAM needs to get a budget to MARS for inclusion in the MARS budget.

Old Business:

1. **Club Cleanup Committee** – Curtis WA6UDS – has put out requests for dry wall and other clean up task volunteers. No response so far. Will be moving forward on getting a vendor to do the work. Kathy KM6URP – Cleanup of items from tenants shed removal has been done, driveway was power washed, measured for door for water heater closet. She will get a new door for the water heater closet if we can give her technical specs. The door that had been in the water heater room was deteriorated and not usable. Cardboard was recycled and appropriate items were sent to Salvation Army. Next phase will need help determining what goes to recycling or another disposal. There are paint cans from the shed that need to be sent to recycle. Milt KM6ASI- There are some cans of paint that are from the repainting of the clubhouse exterior and need to be set aside. Additional sorting of the miscellaneous waste in the yard is necessary. It was decided to get an electrician to clean up the wiring in the open wall area in the office where new drywall will be installed. The electrical repairs need to be completed before starting the drywall repairs.

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2. **QSA-5 Refresh** – Curtis WA6UDS – QSA-5 would like to have pictures of members' ham shacks for an April article. Please send photos to Curtis WA6UDS ardourel@gmail.com, or Jay KO6FIR, fcc@manygoodideas.com.

New Business

1. **Clubhouse Fobs** – Kathy because she is now on the board, Antonis because he will be taking over the technical committee, Jerry because he is producing training materials for the new radio in the club Shack. Hearing no objections, Curtis will make the above door fobs.
2. **New Member of the Facilities Management Team** – Skip is having lower back issues that are preventing him from doing the job that he feels is necessary to keep the facilities in order. We are looking for a volunteer (or two or three) to help with the Facilities chores. Contact Curtis WA6UDS if you wish to help with the clubhouse operations or have questions.
3. **Approve insurance renewal for 2026 \$11,171, an increase of 8% from \$10,297.** MSC to renew the insurance. Bruce will keep it on the auto-pay system that we have been using.
4. **Club Budget for 2026-** Curtis WA6UDS – Pro-forma budget is available; he will mail board members a link to the Google Doc to review prior to the March board meeting.

X **Good of the Order** – Rob NZ6J - Donations committee to work spreadsheet of equipment on hand. He will assist with making spreadsheets of equipment and possible sale values. Antonis AA6PP will help.

X **Executive Session** – Not needed

X **Adjourn** - MSC to adjourn at 21:13

Next Regular Meeting 6 March 2026

Next Board Meeting 12 March 2026

Marin Amateur Radio Society Special Board of Directors Meeting 2-19-26

Call to Order 19:30 Hours (7:30 PM)

Attendance:☒ **President:** Curtis Ardourel WA6UDS☒ **Vice President** Kathy Funke-Spicher KM6URP☒ **Secretary** James Saltzgaber KM6WWY☒ **Treasurer** Bruce Bartel N6VLB☐ **Director** Richard Cochran AG6QR☐ **Director** Steve Toquinto KB6HOH☒ **Director:** Ed Essick K6ELE☒ **Trustee W6SG** Marc Bruvry KF6VNT☐ **Trustee K6GWE** Brian Cooley K6EZX☒ **Adopt agenda** MSC without objection

Members Present: Rob Rowlands NZ6J, Milt Hyams KM6ASI, Gerald McCarthy W6NOV, Scott Pasternak KN6ZDM, Don Magdanz KI6MZX

New Business: Bruce N6VLB Ed K6ELE & Kathy KM6URP asked for an executive session discussion on the scope and schedule of the ongoing clubhouse repairs, particularly the replacement and repair of the damaged/missing drywall. It was decided to adjourn to Executive Session to discuss this as a board prior to discussion with the Public Service Committee for the purpose of allowing outside groups to use the clubhouse prior to completion of the work.

1. Club repair status – Curtis WA6UDS Outlined to the Public Service Committee that the present work on the clubhouse must be completed before we allow non-MARS groups to use the clubhouse. Additional work must be contracted for before we schedule outside groups' use. Milt gave a report on the work being done and what the present status is. Drywall will be first done around the power panel in the office area and in the garage area. Estimate and schedule will be received March 3rd. Work crew parties will be needed to move things out of the way for the drywall. After the sheetrock is installed, new areas will require painting. New shelving in the back will be put in place along the west wall. All of the donations and other equipment will need to be inventoried and then moved to the new shelves. Following that, the ceiling drywall in the area that was subject to previous flooding from the apartment deck. Authority was given to Milt to sign the contracts for the club and will only require approval by Curtis for up to \$10,000 without further board action. This was MSC by show of hands. Milt KM6ASI – We need work party prior to the 3rd for clearing access to the repair areas. Likely 5 or 6 people for about 2 hours. Tuesday 2/24 @ 10 am was designated, Curtis will announce it. Coax cable installation will be worked Sunday March 1st.
2. MCBC Clubhouse use – Don KI6MZX Requested Curtis WA6UDS inform the Marin Cyclists group the clubhouse will be temporarily not available, so they get it from “the horses mouth.” Curtis agreed and will contact the Marin Cyclists and make sure that they understand the situation. No date has been or will be chosen until the work has been completed. Don suggested that we advise that outside group meetings may not be available to be held at the until after the 2026 Public Service season has been completed. We will advise if that changes. Curtis agreed that it would be best and he will pass that on to Marin Cyclists.

☒ **Good of the Order** Nothing noted☒ **Executive Session** Adjourned to Executive Session at 19:47. Returned to open meeting at 20:07.☒ **Adjourn** MSC without objection to adjourn 20:49 Hours (9:49 PM)

Marin Amateur Radio Society

Balance Sheet Comparison - Custom (as of January 31, 2026)

Distribution account	TOTAL	
	As of January 31, 2026	As of January 31, 2025 (PY)
Assets		
Current Assets		
Bank Accounts		
CD	0.00	0.00
MARS BUILDING FUND (8795) - 3 - 2	1,960.40	3,000.90
MARS GENERAL FUND (4328) - 9 - 1	80,666.16	75,473.17
Money Market	0.00	0.00
VE Session Cash	0.00	0.00
VE Session Cash Received	0.00	0.00
Total for Bank Accounts	\$82,626.56	\$75,474.07
Accounts Receivable		
Other Current Assets		
Uncategorized Asset	0.00	0.00
Total for Other Current Assets	\$0.00	\$0.00
Total for Current Assets	\$82,626.56	\$75,474.07
Fixed Assets		
club house- 27 Shell Rd. MV	58,983.00	58,983.00
Total for Fixed Assets	\$58,983.00	\$58,983.00
Other Assets		
Total for Assets	\$141,609.56	\$137,457.07
Liabilities and Equity		
Liabilities		
Current Liabilities		
Accounts Payable		
Credit Cards		
Other Current Liabilities		
Total for Current Liabilities		
Long-term Liabilities		
Equity		
Retained Earnings	22,664.1	15,577.46
Net Income	-5,454.54	-2,520.39
Opening Balance Net Assets	124,400.00	124,400.00
Total for Equity	\$141,609.56	\$137,457.07
Total for Liabilities and Equity	\$141,609.56	\$137,457.07

Marin Amateur Radio Society

Profit and Loss Comparison (January 2026)

Distribution account	TOTAL	
	Jan 1 - Jan 31 2026	Jan 1 - Jan 31 2025 (PY)
Income		
Donations	70.00	824.00
Dues	30.00	30.00
Rent	2,850.00	2,700.00
Total for Income	\$2,950.00	\$3,554.00
Cost of Goods Sold		
Gross Profit	\$2,950.00	\$3,554.00
Expenses		
Food	163.37	165.36
Garbage	54.22	52.74
Insurance	\$860.81	\$567.00
Comm Van Insurance	74.58	71.83
Total for Insurance	\$935.39	\$638.83
Office Supplies & Software	13.00	13.00
Public Service Expense	2,341.72	
Taxes & Licenses	4,442.48	4,164.36
Telephone	111.54	
Utilities	278.00	95.11
Accounting		65.00
Awards		200.00
Equipment < \$2,500		431.48
Web Services Expenses		0.00
Total for Expenses	\$8,339.728	\$5,825.88
Net Operating Income	-\$5,389.72	-\$2,271.88
Other Income		
Other Expenses		
MESH Grant Disbursement	64.82	248.51
Total for Other Expenses	\$64.82	248.51
Net Other Income	-\$64.82	-\$248.51
Net Income	-\$5,454.54	-\$2,520.39

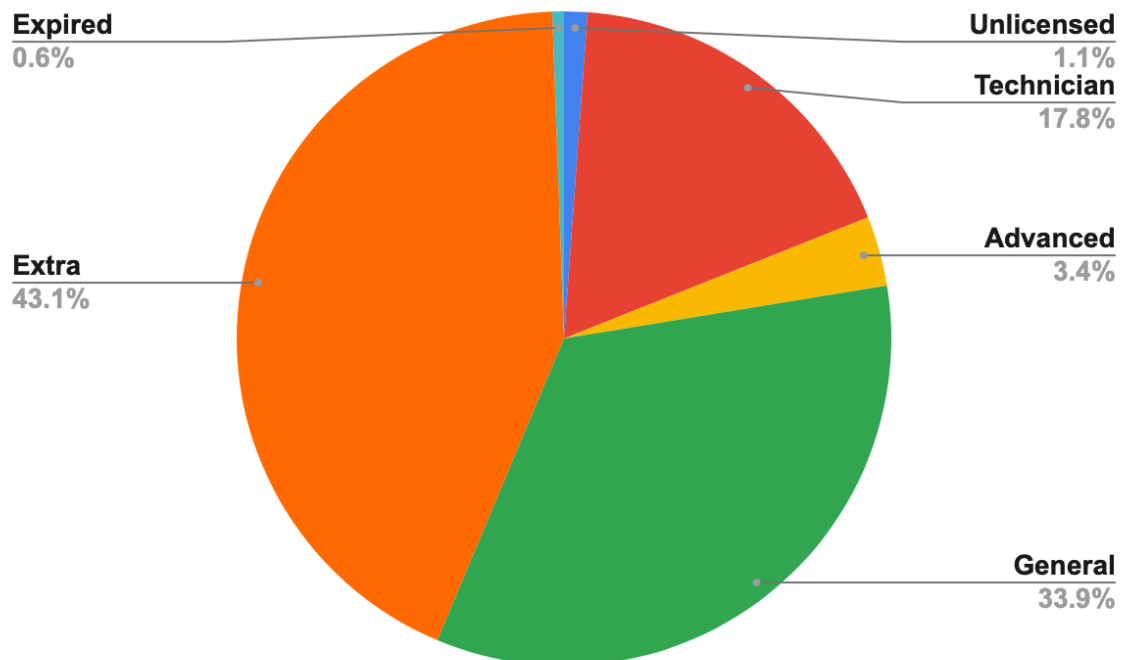
This Month's Quick Online Survey



[Which handheld radio make & model would you recommend that everyone own?](#)

Last Month's Survey Responses

What is your current amateur radio license class?



On Saturday afternoon (2/21/2026) Dan Healy (K6NQZ) and Milt Hyams (KM6ASI) were called on to investigate the Simulcast System going off the air. They went to our Tam Middle Peak repeater site to find that the cause of the problem was that power went out at the site and the back-up generator ran out of fuel. We coordinated with the generator technician on site and waited until the generator was restarted and our simulcast system went back on the air operating normally before leaving.

