THE SIGNAL

Newsletter of the Bella Vista area Radio Club

Arkansas' Largest Amateur Radio Club

ARRL Field Day 2026

JUNE 27-28

Metfield Park

49 Commonwealth Road

Bella Vista, AR

- May meeting – The ISM Band
- 2026 BVRC FD Volunteer Sign-ups Ongoing
- K5A & W1AW/5 Special Event Stations
- Community Outreach Team – Donut Stop Half Marathon
- Big Operating Events in June!
- A Small Solar Power System For Radio Operation
- EXPERIMENTER'S CORNER – Restoring a Sparton 1951 AM/FM Radio
- The Quest for a Perfect Antenna
- BVRC Members Operate Portable in ARQP
- DXCC Den – Midway Island

JUNE 2026

Monthly Meetings: 1st Thursdays @ 7 p.m.
Arkansas Law Enforcement Training Academy (ALETA)
3424 S. Downum Road, Springdale AR

(HAM 101 Workshop for Newcomers @ 6pm preceding meeting)

Club Calls: N5BVA / W5NX

(Repeater Nets) (Contesting, Operating, Special Events)

BVRC Twin Linked Repeaters:

Bella Vista: 147.255 +600 khz offset, pl 162.2

Springdale: 444.100 + 5 MHz offset, pl 162.2

Website: www.bellavistaradioclub.org

BELLA VISTA RADIO CLUB ARKANSAS

The Largest Amateur Radio Club In Arkansas!

Serving members in northwest Arkansas, southwest Missouri, & northeast Oklahoma

WEEKLY BVRC NETS

HAM 101 NET

Mondays @ 7 pm on the
WX5NAS Skywarn Link System

Bentonville – 146.865, -offset, pl 103.5
Springdale – 147.315, +offset, pl 97.4
Fayetteville – 147.315, +offset, pl 110.9
Huntsville – 443.625, +5 MHz, pl 97.4
Green Forest – 145.310, -offset, pl 103.5

LEGACY NET

Wednesdays @ 7 pm on the
BVRC Dual Linked Repeaters

N5BVA/Bella Vista
147.255, +offset, pl 162.2

N5BVA/Springdale
444.100, +5 MHz, pl 162.2

3830 ROUNDTABLE

Sunday Afternoons
4:00 pm during CST
4:30 pm during CDT

3.830 MHz

SOCIAL JUNCTION NET

Sundays @ 7 pm on the
WX5NAS Skywarn Link System

Bentonville – 146.865, -offset, pl 103.5
Springdale – 147.315, +offset, pl 97.4
Fayetteville – 147.315, +offset, pl 110.9
Huntsville – 443.625, +5 MHz, pl 97.4
Green Forest – 145.310, -offset, pl 103.5

SLOW SCAN TV NET

"The Slow Scan Show"

Fridays @ 7 pm on the
BVRC Dual Linked Repeaters

N5BVA/Bella Vista
147.255, +offset, pl 162.2

N5BVA/Springdale
444.100, +5 MHz, pl 162.2

NEXT BVRC MONTHLY MEETING

THURSDAY, JUNE 4, 2026 @ 7PM
ARKANSAS LAW ENFORCEMENT TRAINING ACADEMY
3424 S. DOWNUM ROAD
SPRINGDALE, AR

June Meeting Information

HAM 101 Workshop, 6pm preceding monthly meeting – Esteemed BVRC member Michael Kemper – W5KMK returns with an epilogue on the exciting digital mode of FT8 as he moderates this month's Workshop topic, "Working the Dark Side 2.0 – An In-depth Look at Custom Settings for FT8 and FT4". Among other items, Michael will be discussing some of the handy operating tools included in the FT8 software that you may not know about, along with the faster paced FT4 mode. If you're into FT8 and want to have a deeper understanding of the software, be sure and join us!

BVRC May meeting, 7pm – Veteran operator and distinguished BVRC member Murray Harris – W5XH will be presenting a very interesting program, with "Vertical Antennas - The Unsung Heroes of Amateur Radio". We all know Murray is the club's foremost authority on amateur satellite operation, but in his 67-year ham journey he has worked with many types of antennas of which he will be dedicating this month's program to the vertical. Among Murray's topics will be the theory of operation of verticals, the diverse types of verticals, and how to put up a functioning quarter wave ground mounted vertical. An interesting and informative evening it will be! Don't miss out!

SEE YOU THEN!

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Role Model BVRC Volunteers That Have Inspired Us All

A couple of years ago, BVRC members walked into our ALETA meeting lecture room for one of our regular monthly meetings. As usual, the evening's PowerPoint agenda welcomed our members and guests and there was the usual buzz in the air with the face-to-face QSO's that precedes the start of our meetings.

On this night, there was something different … something curious that was displayed on hooks on the white board at the front of the room:

Those in attendance that night will remember these hats were the visual aids I used to highlight the various roles that our own **Tom Northfell – W5XNA** filled for our club. I had often referred to the many hats Tom wore to reference all he did for our club in the various roles he fulfilled toward our club's success:

- Public Information Officer *Tom Northfell W5XNA*
- Member at Large *Tom Northfell W5XNA*
- Membership Committee *Tom Northfell W5XNA*
- Chief License Class Instructor *Tom Northfell W5XNA*
- Field Day Committee *Tom Northfell W5XNA*

Fast forward a couple of years and I find that we need to acknowledge another outstanding volunteer who plays a major role in BVRC's success. While not all his "hats" are official club titles, he nevertheless tirelessly performs many monthly and yearly activities that are vital to the club's success. Just like Tom-W5XNA, he doesn't call attention to himself or the vital work he does, but I'm sure you'll recognize him by the fruits of his efforts:

- Schedules and organizes the HAM 101 monthly pre-meeting presentations
- Schedules and organizes the monthly meeting Feature Presentations
- Sets up the audio/visual equipment and infrastructure for the monthly meetings
- Plans and organizes yearly BVRC Special Event Station activities
- Plans and Conducts the yearly BVRC CW Academy
- Plans and organizes the BVRC yearly Rookie Roundup event
- Plans and organizes the BVRC's Arkansas QSO Party activity
- Newsletter Committee Don Banta K5DB (editor of our nationally recognized The Signal newsletter)

Yes, our own **Don Banta-K5DB**, is another of our club's outstanding volunteers who works quietly to contribute to our club's success.

Of course, there are *so many more* of our members that I could just as easily highlight, for all they do as volunteers to contribute to the club. However, I think that both Tom and Don have served as unique role models to inspire so many of us in the club to consider what we could do to volunteer to help our club be the exciting, vibrant, and "happening" club we want it to be. So many of you have stepped up, whether long time members or club "newbies" to help in any number of ways.

I believe it is the standard of volunteerism set by Tom's and Don's "servant's heart" that have shown us all the way.

Thank you Tom and Don and <u>all</u> our wonderful club volunteers!

73, Jan – WB5JAN

MAY PROGRAM FEATURES PRESENTATION ON ISM BAND

It was another unique BVRC meeting for May, as members were treated to a topic never presented before at a BVRC meeting, as Justin Goggans – K5JCG gave a splendid presentation on the ISM Band. Justin spoke to another packed house.

The ISM (Industrial, Scientific, and Medical) bands are specific portions of the radio spectrum reserved internationally for non-telecommunication applications, such as RF heating, microwave ovens, and medical diathermy. These bands are defined by the International Telecommunication Union (ITU) to allow devices that generate strong electromagnetic interference to operate without disrupting licensed communications.

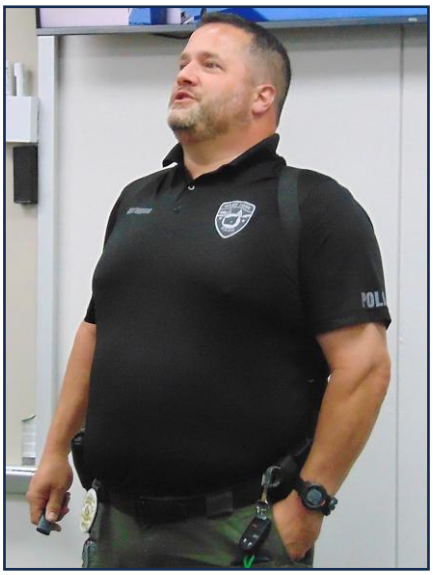
Key characteristics of ISM bands include:

Unlicensed Use: While originally intended for industrial and medical equipment, these bands are widely used for low-power, short-range wireless communication technologies like Wi-Fi, Bluetooth, and Zigbee because they do not require a government license.

Interference Tolerance: Devices operating in these bands must be designed to tolerate interference from other ISM equipment, as users have no regulatory protection from such disruptions.

Common Frequencies: The most frequently used ISM frequency ranges are 2.4 GHz, 5.8 GHz, and sub-GHz bands like 915 MHz (ITU Region 2) and 868 MHz (ITU Region 1), though allocations vary by country.

Justin has become quite involved with the ISM band and has acquired a large amount of knowledge on how to operate this portion of our frequency spectrum using LoRa (Long Range) technology.



Justin – K5JCG

LoRa is a proprietary physical layer modulation technology that utilizes Chirp Spread Spectrum (CSS) to enable low-power, long-distance communication for IoT devices. It operates in the unlicensed ISM (Industrial, Scientific, and Medical) frequency bands, allowing for open deployment without license fees, provided local regulations regarding power and duty cycles are followed. LoRa's key advantage in these bands is its ability to receive signals up to 20 dB below the noise level, offering significantly greater range and interference resilience compared to traditional modulation methods like FSK. This allows battery-powered sensors to transmit small data packets over distances of up to 70 miles in rural areas or 3 miles in urban environments.

Justin shared that communication on the band is via text messaging, limited to 200 characters per message. Unknown to many hams, he said there are around 70-80 LoRa nodes across NW Arkansas that are active.

He also illustrated the two most popular platforms – Meshtastic and Meshcore – and discussed the pros and cons of both systems. He also featured a Meshtastic starter kit that can be purchased for around only $32.00, thus making it relatively easy to get started operating in this facet of radio communication. Justing emphasized that the ISM band can become a vital means of communication during an emergency, the most practical applications being AUXCOMM and EMCOMM.

If you are interested in getting started in this remarkably interesting area of radio, check-out Justin's website at www.NWAMesh.org. THANKS JUSTIN FOR AN OUTSTANDING PROGRAM!!!!!!!!!!!!!!!!!!!!!!!!!!!

The May HAM 101 Workshop preceding the main meeting was conducted by Alex Smith-KI5EQK and Brad Ponder-KJ5CWR on the topic of "The Tactical Awareness Kit for Public Service Communication". They demonstrated the many tools that can be used with ATAK and how it can be ultra useful for the BVRC Community Outreach Team.

THANK YOU ALEX AND BRAD FOR A SPLENDID WORKSHOP!!!

BVRC VE REPORT
From Don Banta – K5DB
BVRC VE Coordinator
May 2026

Congratulations!

Curtis McKee – KJ5PWZ
New Technician!

Robert Lichti – KJ5IMS
New Amateur Extra!

Next month's exam sessions (NOTE CHANGE OF VENUE FOR THE 2 PM SESSION):

- ***June 13, 10 am – Shiloh Museum, 118 W. Johnson Ave, Springdale***
- ***June 13, 2 pm – Coldwell Banker Building, 3113 N. Walton Blvd., Bentonville***

If you wish to test, you must register for an exam session.
To register, and for additional instructions,
go to the TESTING tab on the BVRC website:

https://bellavistaradioclub.org/testing/

BVRC NEEDS YOU!

FOR FIELD DAY 2026
JUNE 27-28!

The biggest ham radio event of the year is just around the corner! Mark your calendar and join us for food, fun, fellowship, operating, & hands-on experience in setting-up portable ham stations. Volunteers are needed for set-up, tear-down, food, drinks, snacks, accessories, etc. If you would like to help, contact

Tom-W5XNA at:
w5xna@arrl.net

DON'T MISS OUT!!!

Announcing BVRC Special Event Station K5A

Commemorating the 190th Anniversary of Arkansas Statehood

◄ K5A QSL card that will be used for the event as well as given to each BVRC member participant.

Arkansas became a state on June 15, 1836. This year marks the 190th anniversary of Arkansas' joining the Union. To commemorate this milestone, **BVRC club station W5NX will be on the air at the ALETA building with the Special Event callsign *K5A* during the weekend of Saturday, June 13, and Sunday June 14. Operating hours will be in the following segments for both days, with 4 operators the first two segments, and 3 operators for the final segment (11 total operators):**

9am-1pm, 1pm-5pm, 5pm-8pm.

Provided propagation is good, the pileups will be large with Special Event Station enthusiasts attempting to work K5A. *This big event will present an excellent opportunity for any interested club member (and especially newcomers) to enjoy and experience HF operation* (and also a 'warm up' for Field Day).

If you're interested in signing-up to operate this exciting event, send an e-mail to Don-K5DB with the date(s) and segment(s) you'd like to operate:

arsk5db@gmail.com

Sign-up and join us! Only 11 slots available!

BVRC ASSISTS IN DONUT STOP HALF MARATHON

The BVRC Community Outreach Team performed yet another outstanding feat of public communications assistance on Saturday, April 18, in Fayetteville for the Donut Stop Half Marathon event.

And finally...they experienced a beautiful day to put their operating skills to work as opposed to the last several events where they had to brave wet and cold conditions.

Great job C.O.T.!

If you're interested in joining the Community Outreach Team, contact Alex: ki5eqk@gmail.com.

The BVRC Community Outreach Team for the Donut Stop half marathon, from L to R: Brad Ponder-KJ5CWR, Mike Calvi-KF5RUO, Drake Rush-KJ5MXM, Blake Smreker-WØDEV, Chris Johson-KE4EIF, Canaan Johnson-KJ5EMJ, Van Allen-W5VAN, Team Leader Alex Smith-KI5EQK, and Front: Matthew, son of WØDEV.

KJ5MXM at one of the race checkpoints

KF5RUO at another of the event checkpoints

The Month of June Is a Big Month for BVRC!

Bella Vista area Radio Club organizes a diverse range of events that foster community, promote skill development, and celebrate the hobby's rich traditions. These gatherings serve both new and experienced operators, offering opportunities for learning, fellowship, and practical application of amateur radio principles. One of the most prominent events is Field Day, a 24-hour exercise conducted annually to simulate emergency communications using portable power sources and temporary setups. This event is a cornerstone of club activities, emphasizing preparedness and real-world operational readiness.

BVRC also hosts educational workshops and hands-on projects, such as using a multi-meter, crimping connectors, and building antennas such as tape measure Yagis. These sessions are often designed for beginners and General/Amateur Extra license upgrade candidates, allowing participants to gain practical experience and sometimes take home completed projects.

For those interested in improving their operating skills, BVRC organizes operating events focused on voice, CW (Morse code), or digital protocols like FT8. These events are usually in the form of participating in contests or Special Event Station activations which are a fashionable way to celebrate historical milestones and global themes. For example, BVRC has recently operated Special Event Stations during the total solar eclipse of 2024, to commemorate the 5th anniversary of the JB and Johnelle Hunt Nature Center, operating from Mount Magazine-the highest point in Arkansas, celebrating BVRC's 30th anniversary in 2023, and for this month of June will be operating as K5A commemorating the 190th Anniversary of Arkansas Statehood as well as W1AW/5 in the ARRL 'Year of the Club' event.

Community service is another key focus, with BVRC's Community Outreach Team supporting local events such as parades, marathons, and festivals by providing communication support. Our club also participates in public service events like the annual Santa Net, where children can contact Santa via the BVRC twin repeaters.

Additionally, during Field Day, BVRC organizes fox hunts – direction finding exercises where participants locate hidden transmitters – adding a fun, interactive element to the hobby.

Overall, BVRC's club events are designed to build skills, strengthen community ties, and promote the values of preparedness, innovation, and international goodwill through amateur radio.

Whether through emergency drills, educational workshops, or festive celebrations, these events ensure the continued vibrancy of BVRC in the NW Arkansas amateur radio community.

Three events, such as what has been previously mentioned, will be occurring in June, 2026. If you want to experience fun operating and great ham radio camaraderie and fellowship, be sure and sign-up for one – or all – of them!

A Small Solar Power System for Radio Operation

By Stu Turner – WØSTU

(Article courtesy of Ham Radio School - https://www.hamradioschool.com/ , used with permission)

Putting together a small solar power system to power your transceiver is quite simple with modern components, and it is affordable with most budgets. This article provides some general background and guidance on building a simple solar power system, and these concepts can be applied to construct systems across a range of power capacities.

Components: A solar power system typically consists of three main components that can be purchased separately or in packages. Individually purchased components can be mixed and matched to construct systems of different powering capability. As illustrated in Figure 1, the three main components are:

1. Photovoltaic panels (solar panels) - These are arrays of individual solar cells that convert sunlight into electrical power. Typically, numerous individual 0.5-volt cells are connected in series to raise the panel output voltage to a higher value, and multiple sets of series cells are connected in parallel to provide increased current. The power of a panel, in units of watts, is determined by the product of voltage x current. Commercially available panels can produce 100 watts or more in bright sunlit conditions. Combinations of panels can produce much more power.

2. Charge controller - A charge controller receives the output of the photovoltaic panel(s) and conditions it for the purpose of safely charging a battery that will store the energy produced by the panels. A solar charge controller keeps the battery from overcharging, avoiding damage. It also blocks current from flowing in reverse, from the battery to the panels. The charge controller varies the voltage and current required by the battery chemistry type as the battery charge begins to approach its maximum.

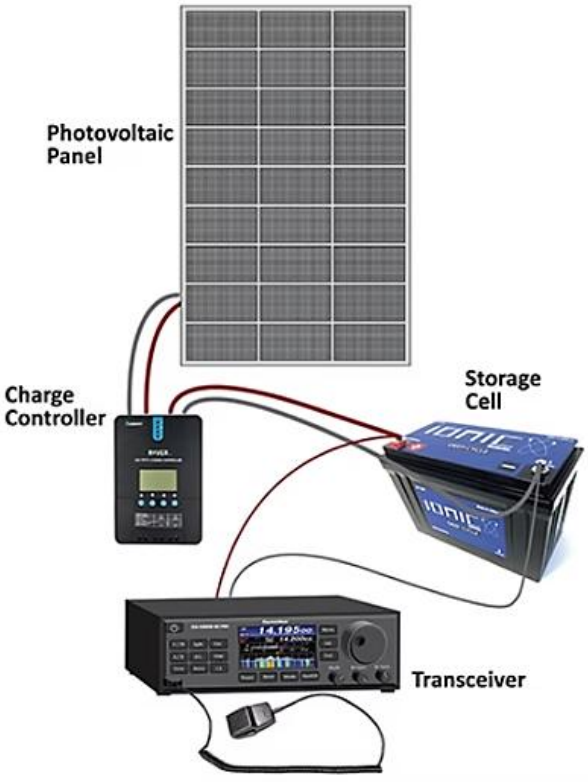


Figure 1: A simple solar power system for a transceiver is comprised of a photovoltaic panel, a charge controller, and a storage cell.

b) MPPT Charge Controller - A maximum power point tracking charge controller is more efficient than the PWM type of controller because it does convert excess panel voltage into charging current. The MPPT controller allows the panel to produce power at its maximum power point of current and voltage, converting this power into a safe and optimized charging profile for the battery chemistry type. MPPT controllers are generally more expensive than PWM controllers, but they provide reduced charging times.

3. Battery - Often one or more deep cycle cells, the battery or battery bank stores the energy produced by the panel. The most common battery chemistries used today are lithium-ion (or the very similar lithium iron phosphate) and lead-acid. Each chemistry type has unique charging profile requirements, and the charge controller should be set to match the battery chemistry. A wide range of battery capacities are available, expressed in amp-hours, and higher capacity cells will be more expensive than lower capacity cells.

Cables & Connectors: Most solar panels will use photovoltaic (PV) cables with MC4 connectors. The MC4 means "multi-contact, 4 mm diameter." The MC4 comes in male-female pairs, and they have a locking clip to prevent accidental disconnection. They are sealed, weatherproof connectors that provide excellent conductivity and represent an industry standard promoting interoperability among separately purchased components..

Figure 2: The MC4 connector is typically used with PV cables. (Image courtesy Ecoflow.com)

Most photovoltaic panels will provide short leads of PV cable with MC4 connectors from the back of the panel. Longer PV cables are connected to the short leads with the MC4, leading to the charge controller. Typically, a charge controller will have input ports requiring pigtail termination of the PV cables rather than an affixed MC4 connector.

Heavy gauge wire is used from the output of the charge controller to the battery terminals. Heavy ring connectors crimped or soldered to the heavy gauge wire are convenient for many battery terminal connections. For most small solar power systems, 12 AWG or 10 AWG insulated wire is recommended for the controller-to-battery connections. A good safety practice is to install an in-line fuse in the positive connection rated for the maximum output current of the charge controller.

Connection of the transceiver to the battery should use transceiver manufacturer-recommended wire gauge, or the manufacturer-provided power cable. Ring clamps may also be convenient for this battery connection, and including in-line fuses near the battery in both positive and negative connections is a good safety precaution. Since you may want to easily disconnect your transceiver from the battery, the use of quick disconnects such as Anderson Powerpole® connectors is recommended for the battery leads.

Figure 3: A small solar power system including two 100-watt panels, an MPPT controller, 85 amp-hour storage cells, and a Powerpole power distribution bus.

Example System: Figure 3 shows an example of a small solar power system used by the author to power a portable 100-watt transceiver along with various camping equipment such as LED area lighting, a small refrigerator, and a device recharging station. The system is comprised of two 100-watt photovoltaic panels connected in parallel using two PV Y-cables and feeding an MPPT controller mounted in the top of a dual-storage cell holding box. The controller is connected to two lithium-ion deep cycle storage cells housed in the box and connected in parallel to provide 85 amp-hours capacity and 13.8 volts output. A Powerpole® connector distribution bus is connected across the two storage cells, with various fuse ratings among the eight available outputs. A separate (green wire) battery recharging connection is seen extending to the left of the battery box for an alternative AC recharging connection.

Figure 4: The back side of the hinged solar panels showing PV Y-cables and storage of aluminum props.

Figure 4 shows the back of the solar panels. The panels are hinged together and close in a clamshell approach that stores the PV cables and aluminum props used to stand the panels at desired angles to the sun. The PV Y-cables are visible that connect the two 100-watt panels in parallel and join to the two PV cables that lead to the battery (red & black).

This example system provides continuous power for the camping needs and 100-watt radio operations when at least modest sunlight is available to recharge the storage cells. In bright sunlight, recharging the storage cells from 50% capacity to 100% capacity is accomplished in about 7 hours (~42 amp-hours). Daily recharging of 10% (8.5 amp-hours) or less of the storage capacity is usually accomplished in under 2 hours, even with irregular sunlight.

Recently, the two rigid 100-watt photovoltaic panels were replaced with an integrated set of folding panels weighing 18 pounds and rated at 200 watts. These make transportation and storage of the solar system much easier and efficient.

The products used in the rigid panel example are:

Renogy 100 watt, 12 volt, monocrystalline PV panels (2)

Renogy RoVER 30 amp MPPT charge controller (1)

Renogy PV extension cables, 20' (+/- pair)

BougeRV solar connector Y branch parallel adapter cables (2)

Renogy 30 amp ANL fuse and fuse holder (1)

Ionic 50 ah lithium-ion deep cycle (or LiFePO4) storage cell (1)

Ionic 35 ah lithium-ion deep cycle (or LiFePO4) storage cell (1)

Chunzehui F-1005 9-port 40A connector power splitter distributor (1)

Anderson Powerpole® connectors (various)

10 AWG and 12 AWG insulated wire (various)

Be sure to do your homework before purchasing components to ensure compatibility and desired feature sets, as well as the desired power capacities. But a DIY solar power system can be constructed easily from the components highlighted in this article that provides excellent long-term power for your portable station.

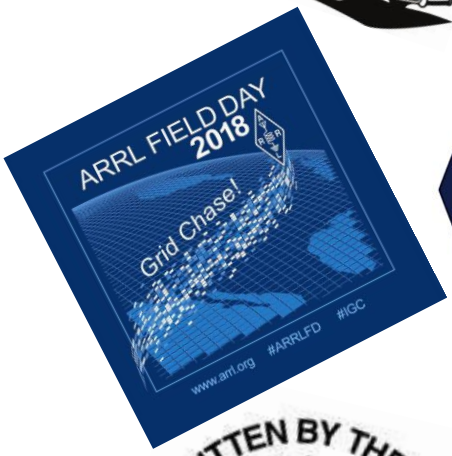
JUNE 27-28

WELCOME New BVRC Members!

John Henley – KG5TTZ – Bella Vista
Curtis McKee – KJ5PWZ – Lavaca, AR
Brad Thompson – AC5CQ – Oklahoma City, OK

Since 1933

Don't Miss This Year's Field Day!!!



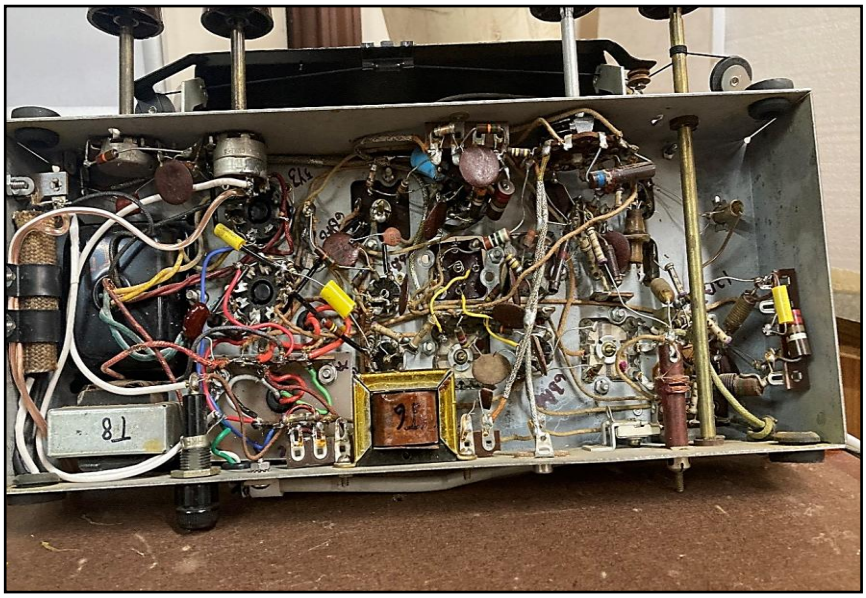
EXPERIMENTER'S CORNER

By Dr. Bill Durham – KG5ZCI

Restoring a Sparton 8M10 1951 AM/FM Radio

I am writing this article as a follow-up to Brian Harris – WA5UEK's excellent program on restoring old radios. Brian and I share a passion for old tube radios. Our restoration approach is very similar so I thought I would describe a real project so that those interested can see some of the realities. I am currently working on a Sparton radio built in the very early 50's. The radio belongs to Terry Atwood – WA5ARJ from Boxley, AR in Newton County, and has some very fond memories from when he was a child listening to the old-time radio programs like the "Green Hornet".

The radio was dead when I got it, no sound but the lights came on. Fortunately, no smoke either. As can be seen in the photo, the radio is a console model with a phonograph. I started the project by replacing the power cord with a three-wire cord and securing it to the chassis. I used the same hole as the original cord and found a convenient screw for the cable tie. The next step was replacing the electrolytic capacitor and all the paper/wax capacitors. I use polyester capacitors for the wax capacitors (bright yellow in the photo on the following page). Ceramic disk capacitors rarely fail from old age, so these were not changed. There are also a few blue ones which are electrolytics.



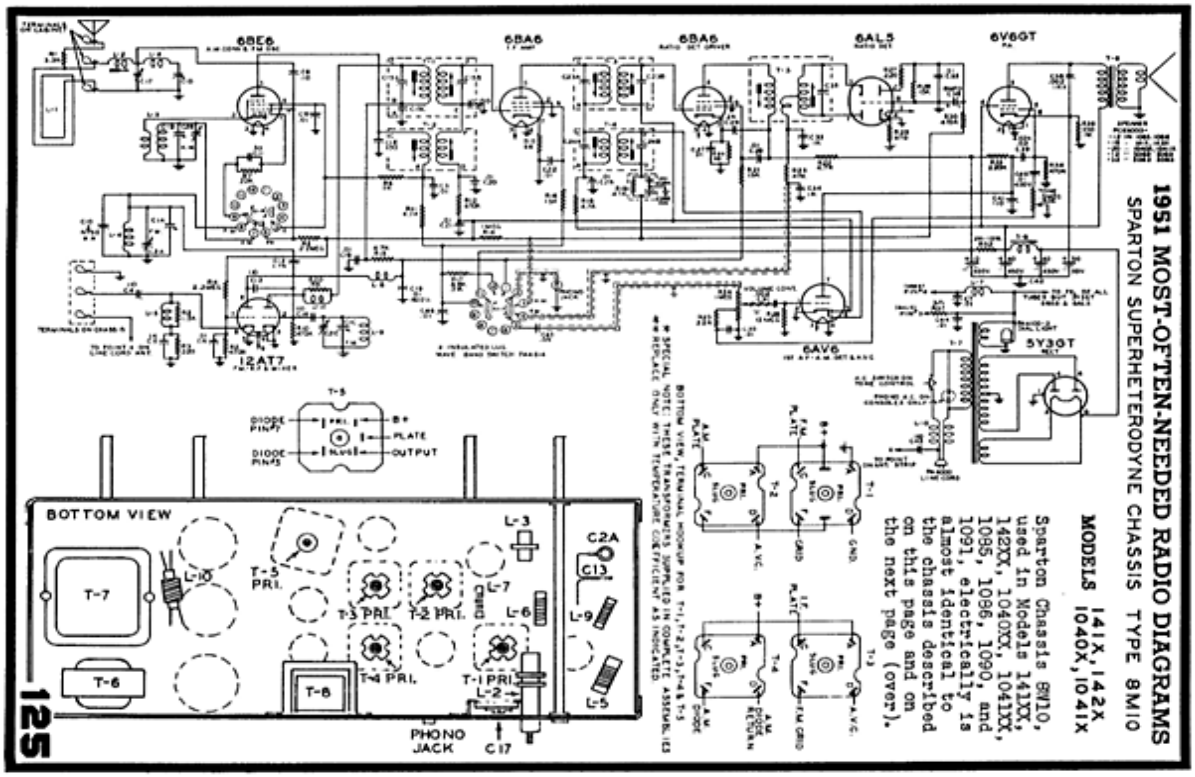
Opinions vary a lot on replacing the filter electrolytic, typically a single large can type (bluish can in back of large power transformer). I like to try to salvage the can and stuff new capacitor into the can. This can be a lot of work, but it provides a neat place for the new capacitors and maintains the original look of the chassis. Getting the capacitors out of the can may be very challenging. The can is made of thin aluminum, and the first task is to remove the bottom. The bottom is typically phenolic plastic and that is crimped into the bottom. I use a small screwdriver to bend up the crimp a little at a time being as careful as possible not to damage the can beyond the crimp. In most cases a steel ring is under the crimp. Once the ring is removed the bottom can be pried out along with the electrical connectors. In the present case the material inside, a mixture of foil and paper, was glued into the can and therefore difficult to remove. I drilled some of it out and ultimately put the can in my metal lathe and very carefully bored out the contents. As expected, the last little bit was loose and fell out easily.

New electrolytics with the proper voltage rating are much smaller than the old ones. In this case, I was able to get all four capacitors in the can with room to spare. I was not able to salvage the solder pins on the bottom of the can, so I ran 5 colored wires out the middle of the bottom. These were terminated on a small piece of PC board with two appropriately sized terminal strips. The PC board was bolted over the location of the old capacitor (visible in lower left photo to left of transformer label T6).

At this point things were getting a bit crowded, and I still needed to get a fuse holder in place. I added the fuse holder by very carefully drilling a hole near the place where the line cord entered (near T8). Note the strain reliever, this is very important. The original radio had a large noise filter running across the bottom along with a 10-watt resistor. I moved the filter over to the left side (held by 2 cable clamps) of the chassis which was mostly open and the resistor was moved to the top of the chassis for better cooling.

The radio was now safe enough for a power check. No smoke but still the radio was quiet. There was a little hum in the speaker, but the volume was independent of the volume control. This suggested a problem in the audio section or a basic power

supply failure. The pilot lights lit and the filaments were glowing, so the next step was a few voltage measurements. I had a schematic, but it was low resolution and I was unable to read any of the print.



However, there was enough to see that the transformer-based power supply had a full-wave bridge (5Y3) and the pin out of most tubes are available on the internet. Voltage at pin 8 was 250 volts which is in the ballpark for a radio of this age. Same for the voltage at the plate of the audio amp (6V6GT). I followed the voltages across the filter capacitors, and all were good except the voltage at the end of the 10-watt resistor, only 50 V. This resistor fed all the tubes except the final audio amplifier tube.

The plate voltage at the audio preamplifier (6AV6) was zero. Aha, something is wrong here, something fixable. The plate resistor which was connected to the 10-watt resistor was open, an easy fix. I even replaced it with a new/old stock carbon resistor. I plugged the radio in and sadly, although no smoke, the radio was still dead. The plate voltage was now 50 V.

This unit also had a phonograph, so I tried an audio signal into the input connector (RCA) from the phonograph. Nothing! An audio signal fed into the grid of the 6V6GT, however, came out loud and clear. I had already checked all of the tubes, so the preamp tube was good. The preamp also functioned as the AM detector, so while 50 V seems low, I could not rule out the fact that that was supposed to be what it was. I parked that piece of information in my head and took a break.

I plugged the radio in again and hoped to find something obviously wrong. Out of the corner of my eye, I caught a tiny twinkle of light coming from one of the IF transformers. A closer look revealed a spark jumping up and down one side of the transformer base. This was not good because a replacement transformer was not available. I don't give up easily so after another night's

sleep I removed the transformer.

The sparking was due to something called silver metal disease where the silver metal used for the tuning capacitor in the IF can creep out and cause, in this instance, a short to the chassis. So, let's do the obvious, take out the tuning capacitors and replacement them with new. There was enough of the capacitor on the other side (they come in pairs) to get a decent capacitance measurement, 25 pf.

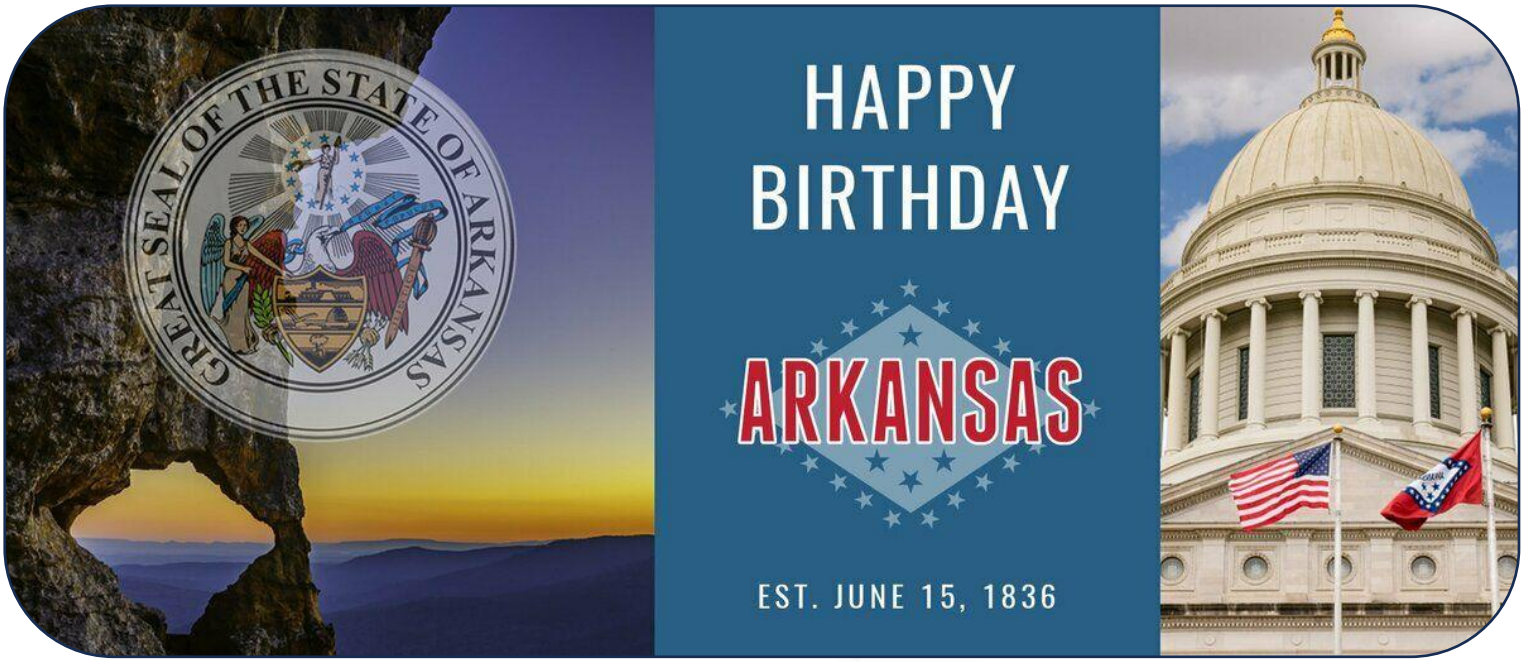
After, several hours of parts swapping etc. I discovered that the transformer had yet another problem. Parasitic capacitance between the coil windings made the transformer resonant at about 8 MHz with no parallel tuning capacitor. This was an IF for FM and should be resonant at 10.6 MHz. As expected, adding a parallel tuning capacitor reduced the resonance frequency to 6 MHz.

I have lots of IF transformers so I decided to just put something in the circuit and see if the AM part of the radio would work. The AM and FM circuits share tubes and the IF transformers in parallel (schematic). I swamped in something that looked appropriate. I turned the radio on and got some life, radio noises and still no smoke, but no stations either.

At this time, I got really lucky and found a Sam's Photofax, for free, online. Sam's Photofaxes were the "go to" publications for service technicians. It gave a list of tube voltages pin by pin and resistance measurements as well. The details of the schematics were still blurry but much better. With this new information, I went back to the 50 V issue and discovered that 125 V was expected. There was a resistor that had looked suspicion from the beginning, and it proved to be open as well. A few other measurements in the area revealed a shorted capacitor.

All these parts were connected to a common point near the sparking IF transformer. I replaced the parts and the sweet sound of many hours of work came in the form of an AM station, clear and loud enough to be heard on the porch of my house at least 100 ft away.

As expected, the FM still does not work. Hopefully, next month's article will provide, in the words of Paul Harvey "the rest for the story".



K5A W5NX

Join the fun and excitement at BVRC Club Station W5NX
Saturday June 13 and Sunday June 14
to commemorate the 190th Anniversary of Arkansas Statehood
with Special Event Station Call Sign K5A!!!

Operating times each day (local time):
9:00 AM – 1:00 PM (4 operators)
1:00 PM – 5:00 PM (4 operators)
5:00 PM – 8:00 PM (3 operators)

A few operating times still available. Sign-up today!

To sign-up, send an e-mail to Don-K5DB with the date(s) and time slot(s) you would like to operate:

arsk5db@gmail.com

Regardless of the frequency in question, many amateurs assume there is such a thing as a perfect antenna..... if only they could find it.

A perfect antenna would radiate the maximum amount of energy with little or no loss, yet would also solve all your installation problems. It would fit perfectly in whatever environment you chose, such as in a small yard or on the roof of your vehicle.

But alas, you have as much chance of finding the perfect antenna as you do being transported back to the Medieval ages. There is no such thing as a perfect antenna. Every antenna design has shortcomings. The best you can hope for is to find an antenna with the fewest deficits for your particular situation.

An antenna may do one thing very well, such as operating on more than one frequency band with little loss. However, that same antenna may also be too large for your needs, or it may require a rat's nest of tubes and wires making it unattractive to you neighbors.

A directional antenna for VHF or UHF can offer excellent performance, but only if it's elevated as high as possible. If you aren't blessed with a tall antenna tower or a convenient rooftop, you'll never enjoy the full benefits of the design.

At HF frequencies, directional antennas can be quite large, and some designs also need to be elevated. You'll need to be elevated. You'll need tolerant neighbors, or lots of land, or both. And yet even these antennas are not perfect.

Your Antenna Quest

Because perfect antennas do not exist, you need to modify your quest and attempt to find an antenna that will give the best performance at the frequencies you desire without becoming an eyesore or a budget breaker.

The good news is that there are many antenna designs available, and with a bit of research you're bound to find one that does the best job for you, whether it's an antenna you purchase from a dealer, or one you build yourself.

Many amateurs prefer to build their own antennas because it's fun to try assorted designs to see which one works best. Pick up copies of *The ARRL Antenna Book* or *ARRL's Small Antennas for Small Spaces* and you'll find a wealth of interesting designs to try.

Buyer Beware

Whether you are shopping for antennas at a dealer, or considering published designs, be careful not to be misled by incredible claims. Another useful saying to remember is, "If it seems too good to be true, it probably is."

Here are some claims that should raise red flags for you:

Vertical antennas that don't require radial wires.

Yes, it is possible to design a vertical antenna that doesn't use radials, but unless the antenna in question is a vertical dipole, you still need a pathway for the RF currents to return to the antenna. This means radials. Without radials, a vertical antenna can still radiate, but not very well. Avoid any vertical antenna that claims exceptional performance without radials.

100% efficiency.

An antenna that is 100% efficient, radiates all its RF energy without a single microwatt of loss. However, unless the antenna is made of exotic, as-yet-discovered materials, 100% efficiency is impossible. If you see an advertisement that makes this claim, turn the page quickly.

Miniature HF antennas.

The lower the frequency, the bigger the antenna. So how do some manufacturers get away with claiming that their low-band HF antennas will fit in a suitcase? What they have done is use a creative combination of coils and other components to achieve a feedline match at the desired frequency, resulting in a 1:1 standing wave ratio (SWR). But a 1:1 SWR does not mean that an antenna is efficient, and efficiency is what really counts. In these tiny HF antennas, most of your precious RF energy is lost as heat. Unless you can't get on the air any other way, always choose a full-size antenna instead.

Wild claims about gain.

If you see antennas advertised in *QST*, you'll notice that very few of these advertisements include gain figures. *Antenna gain* is measured in decibels (dB) and describes how powerfully the antenna directs your RF energy. The reason for the lack of gain figures is that the magazine requires proof of any gain claims a manufacturer makes.

Anyone can build an antenna and make all sorts of claims about its performance. Unless they've gone to the trouble of having the antenna analyzed or tested on a laboratory-grade antenna test range, there is no way to know the truth.

That's why *QST* requires proof; most other ham magazines don't. When you read an advertisement or an article where antenna gain figures are tossed around, be careful. Ask where those decibel figures came from!

SWR of less than 1.5:1 on every band.
An antenna that can give you an SWR of 1.5:1 on all bands is either grossly inefficient, or the advertisement isn't telling you that the low SWR is only present through a *limited portion* of every band. A low SWR is critical to allowing your transceiver to lead its maximum power into the antenna, but it says nothing about how well the antenna performs on the air.

So Which Antenna is Best?

The answer to this question is a combination of the following:

- It functions on the frequencies you want to operate, providing low SWRs at these frequencies, or at least SWRs low enough to be adjusted by an antenna tuner.
- It fits within the space you have available.
- It has a low visual profile, if that is important for your station.
- It can focus your signal in a desired direction, if that is one of your goals.
- It can handle the amount of RF energy you intend to use.
- It can be built or purchased at a price you can afford.

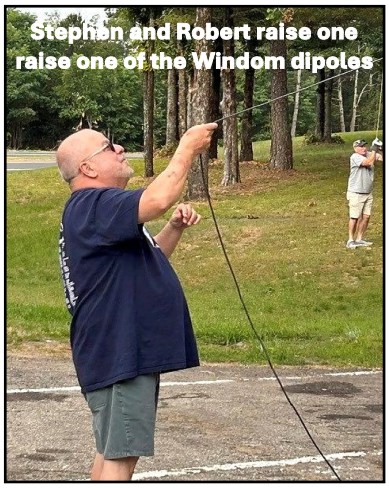
There are antennas you can buy or build that will meet all these requirements, although you may have to compromise. For instance, you may find an antenna that fits the space you have available, but it may not operate on all your favorite frequencies. In the end, it's just a matter of shopping or researching carefully. Good luck on your quest!

BVRC Members Operate Portable Stations for 2026 Arkansas QSO Party

Four BVRC members trekked to a rest area on I-40 east of Clarksville, AR on May 16 and setup a portable station on a 4-county line for the 2026 Arkansas QSO Party. Members of the group were Robert Hill-K5NZV, Dana Hill-W5DGH, Stephen Ponder-N5ZE, and Don Banta-K5DB. Permission to operate from the rest area has been granted by ARDOT. The group operated with the call sign **N5A**. They activated the four counties of Johnson, Logan, Pope, and Yell, thus giving any station working them 4 county multipliers for 1 QSO.

Although the bands were in sub-par condition, the Windom dipole antennas performed very well. The group made 1,028 QSOs, working 37 states, 4 Canadian provinces, and 1 DX (Slovak Republic). It was a super enjoyable day with lots of operating excitement on phone and CW.

Robert-K5NZV, Dana-W5DGH, Don-K5DB, and Stephen-N5ZE



Stephen and Robert raise one raise one of the Windom dipoles

One of the Windom dipole antennas at around 60'

Dana takes a break from phone operation, while Robert racks-up QSOs on CW

Stephen making folks happy with a 4-county QSO on SSB

Another popular portable station operating location with BVRC members who enjoy operating in the ARQP while activating multiple counties is Liberty Church. The church is located on a dirt road 3 miles south of the Dry Fork community, which is about 12 miles east of Huntsville on US-412. The church lies within about ¼ mile of the tri-county line intersection of Carroll, Madison, and Newton Counties. The dirt road is rough in spots to get to the church, but when you do arrive you're definitely "away from the crowd" and in a gorgeous Ozarks location.

This year, Joe Hott-W5AEN and James Wood-N5ZMX traveled to the tri-county line and really enjoyed themselves activating the counties, during beautiful weather. They used the call sign W5AEN.

(Editor's note: YOU can have exciting ham radio operating moments like this, too! All it takes is a little effort and planning. Make plans now for your own portable operation in next year's ARQP, or...get involved with the operating events that BVRC offers throughout the year.)

Joe-W5AEN operates under the excellent permanent canopy adjacent to the church

James-N5ZMX at one of the two stations operating from Liberty Church

Liberty Church was established in 1846, just 10 years after Arkansas was admitted to the Union.

Midway Atoll (aka Midway Island) is a 2.4 square mile atoll in the North Pacific Ocean. It is an insular area of the United States and is an unorganized and unincorporated territory. The largest island is Sand Island, which has housing and an airstrip. Immediately east of Sand Island, across the narrow Brooks Channel, is Eastern Island, which is uninhabited and no longer has any facilities.

Roughly equidistant between North America and Asia, Midway is the only island in the Hawaiian Archipelago that is not part of the state of Hawaii. The United States Fish and Wildlife Service (USFWS) administers the Midway Atoll National Wildlife Refuge. The refuge and surrounding area are part of the larger Papahānaumokuākea Marine National Monument.

From 1941 until 1993, the island was the home of Naval Air Facility Midway Island, which played a crucial role in the Battle of Midway, June 4–6, 1942. Aircraft based at the then-named Henderson Field on Eastern Island joined with United States Navy ships and planes in an attack on a Japanese battle group that sank four carriers and one heavy cruiser and defended the atoll from invasion. The battle was a critical Allied victory and a significant turning point of the Pacific campaign of World War II.

Compared to a population of around 3,000 during the WWII period, only about 50 people now live on Midway Island. Visiting the atoll is possible only for business reasons, which includes permanent and temporary USFWS staff, contractors, and volunteers, as the tourism program has been suspended due to budget cutbacks. In 2012, the last year that the visitor program was in operation, 332 people made the trip to Midway. Tours focused on the unique ecology of Midway and its military history.


Midway Island memorial

Midway's economy is derived solely from governmental sources. Nearly all supplies must be brought to the island by ship or plane, although a hydroponic greenhouse and garden supply some fresh fruits and vegetables.

Former WWII bunkhouses

Albatrosses are in abundance on Midway Is.

3-Inch Anti-Aircraft Gun

Eastern Beach, Midway Is.

The usual method of reaching Midway Island is on chartered aircraft landing at Sand Island's Henderson Field, which also functions as an emergency diversion point runway for transpacific flights. An example of this occurred in 2011, when Delta Air Lines Flight 277, a Boeing 747 traveling from Honolulu to Osaka, made an emergency landing at Henderson Field due to a cracked windshield. The US National Wildlife Refuge employees working on the atoll assisted the landing and cared for the nearly 380 passengers and crew for eight hours until a backup plane arrived. No injuries were reported.

Midway Island was transferred from U.S. Navy jurisdiction to the USFWS on October 31, 1996, via Executive Order 13022 signed by President Bill Clinton. While the USFWS assumed management of the Midway Atoll National Wildlife Refuge in 1988 as an "overlay" refuge, the full transfer of control occurred after the Naval Air Facility closed in 1993 and the final contingent of Navy personnel departed on June 30, 1997.

The transition marked a shift from national defense to wildlife conservation, with the atoll later designated as the Battle of Midway National Memorial in 2000 to honor its historic significance. Today, the refuge is part of the larger Papahānaumokuākea Marine National Monument and serves as a critical habitat for nearly three million nesting seabirds, mainly albatrosses.

Prior to 1996 and because of its particularly remote location and political status as a U.S. Navy base not part of the State of Hawaii, Midway was added as a separate entity on the DXCC countries list. During this era, there were two main amateur radio stations there: KM6BI on Sand Island and KM6CE on Eastern Island. Many other amateurs operated under callsigns from their quarters. They all provided a vital link to home via messages and phone patches.

Since 2000, there has only been one DXpedition from Midway. Operators Jim/G3RTE and Phil/G3SWH planned to operate as W4M in March/April 2002, but the expedition was cancelled due to the closure of the Midway Phoenix Company tour operator.

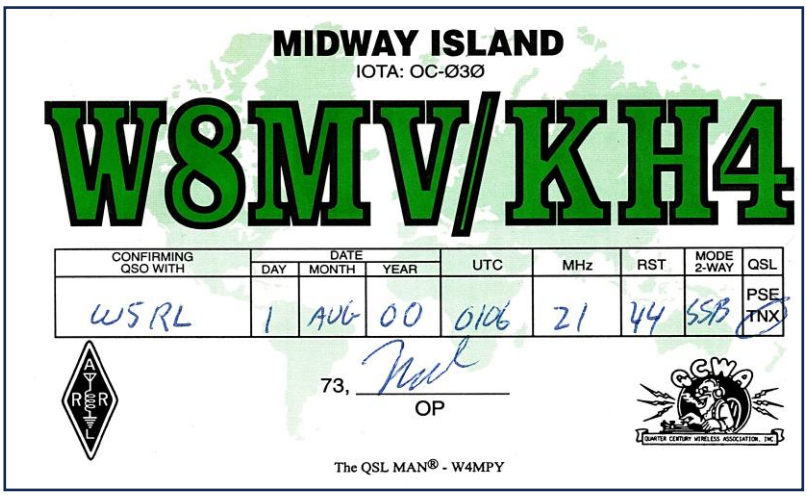
However, in 2009, the USFWS permitted amateur radio operations the first time since 2002. This initiative aimed to encourage visitors to experience Midway's wildlife, history, and culture, with amateur radio being a significant aspect of this experience. The operation, call sign **K4M**, involved a team of 19 operators who activated the atoll for a 10-day period.

Due to current circumstances requiring permission by the USFWS to travel to the island, coupled with it being 17 years since its last activation, Midway ranks #10 on Club Log's Most Wanted List. Needless to say, it's rare.

I was able to work Melvin-W8MV on one band with my old call of W5RL in 2000 when he was visiting the island. I distinctly remember that QSO on 15 meters as conditions were not good that day and I did not have an amplifier at the time. I consider it lucky he heard me. That is the only contact I've ever had with Midway, as I was not around to work the K4M DXpedition.

There are no current plans that I can find on any of the DX outlets for a future Midway Island DXpedition. Let's all hope one comes into fruition in the near future, so we can add this rare entity to our confirmed countries list, or gain more band counters for the Challenge award.

K4M DXpedition from 2009



(My Midway Island QSL from 2000 when I had the call W5RL)

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