



MICH-A-CON

Iron Mountain,
Dickinson County, Mich

January 2020

Meeting Reminder: Second Wednesday of the Month

Which is **January 08, 2020** at **07:00 PM** at the **Dickinson Library, Iron Mountain.** Please be there and support the cause of Amateur Radio.

From The President

First, let me wish everyone a very Happy New Year 2020! This is the year for perfect vision!

The new year started with a formal letter from the IRS canceling our penalty. The six month wrangle with the IRS is finally over. Thanks to the help of Michigan Senator Debbie Stabenow's office and many hours of communicating with that agency via letters, phone calls, and travel to their Marquette office by your president. Thank you to all of the members for your support the past six months.

The new year is also the beginning of contesting for me. This weekend is the ARRL RTTY RU. Like last year, FT-8 will be an acceptable mode in the contest. I'm a purist and would prefer that the ARRL should not add FT-8 to the popular RTTY contest. But, times are changing and the bands would be pretty quiet without FT-8 and FT-4. RTTY signals have basically disappeared from the airways. During non-contest periods, it is very rare to hear a single signal.

In preparation for the contest, I was trying to get my second radio set up for FT-8 to interface with the N1MM+ logging program, when I came across W9MB (Mike) on 17 meter FT-8. He was very strong on my screen but I guess I wasn't very strong at his QTH. It took several attempts to get him in the log. WK9U (Jason) was also on 17 working European stations right and left. I couldn't get any of those stations to come back to me, although I was using 100 watts! I'll have to check with him to find out how much power he was using.

As I write these "Words", I'm using my FT-1000MP on 20 meter FT-8. My antenna is a Mosley CL-33 at 35 feet. Power output is 60 watts and I'm working dozens of European stations at 1500 UTC. WSJTX works alone Now, I will try to interface it with N1MM+. I'll update Sunday after the contest.

UPDATE

N1MM and WSJTX work together. Nice to have low power FT-4 on the second radio.

40 beam works great. Worked everything I could print.

Vertical stinks on 80. Need a better 80 antenna for the second radio.

Good contest but poor conditions on Sunday.

DUES DUE WEDNESDAY

73,

Tom W8JWN

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MICH-A-CON AMATEUR RADIO CLUB MINUTES OF December 11th, 2019

President Tom Martin called the meeting to order at 7:00 pm.

Secretary Report

Minutes of the November 6th, 2019 meeting were read and approved.

Treasurer Report

Balances as of December 6th, 2019:

Checking: \$97.25

Savings: \$2,750.15 (Repeater: \$1,514.16)

Cash: \$118.00

Repeater Report

Bob Meyers reported that the repeater is not receiving as well from the North as before. He will order a Cushcraft power divider to increase signal into the four bay. Bob also reported that our repeater registration with the frequency coordinator has been renewed.

Al Augustine will return in the Spring to finish antenna work on our tower.

Old Business

Tom Martin reported that our tax issues appear to be resolved.

**New Business**

The yearly tower lease bill for \$30.00 has been received.

The club Holiday party is scheduled for March 14 at Mike's on Main, in Norway. It will be a buffet format, with the menu to be determined at a later date.

A motion (Skip Caswell/Bruce LaLiberte) to pay \$47.00 to reimburse Debbie Grabowski, for awards presented at the 50th Anniversary banquet, was approved unanimously.

A motion (Bruce LaLiberte/Skip Caswell) that the club pay 50% of the food cost at the March party was approved unanimously.

Adjournment

Meeting adjourned at 7:31. (Bob Meyers/Bill Grabowski)

For the Good of the Order

Attendees reported on their recent activities.

Attendees

Tom Martin
Scott Jarmusch
Joe Ferris
Burt Armbrust
Bruce LaLiberte
Tim Miller
Terry Moriarity
Brian Lucas
Bob Meyers
Skip Caswell

W8JWN
KA8TFF
KC9TQR
WB8EBS
KD9HQD
N8TUM
K9TRY
W9BGL
WA8FXQ
KE9L

Debbie Grabowski
Bill Grabowski
Joyce Williams

KD8VTS
KD8VTT
Visitor

FCC Formally Adopts Proposals to Remove Amateur 3-GHz Band, Invites Comments

ARRL Bulletin 24 ARLB024 From ARRL Headquarters
Newington CT December 19, 2019
To all radio amateurs

At its December 12 meeting, the FCC formally adopted a Notice of Proposed Rulemaking (NPRM) in WT Docket 19-348 and invited comments on its plan to remove "existing non-federal secondary radiolocation and amateur allocations" in the 3.3 - 3.55 GHz band and relocate incumbent non-federal operations. The FCC said it's seeking comment on appropriate "transition mechanisms" to make that happen. ARRL has indicated that it will file comments in opposition to the proposal. The amateur 9-centimeter allocation is 3.3 - 3.5 GHz. The NPRM comes in response to the MOBILE NOW [Making Opportunities for Broadband Investment and Limiting Excessive and Needless Obstacles to Wireless] Act, approved by the 115th Congress to make available new spectrum for mobile and fixed wireless broadband use.

The NPRM can be found online in PDF format at, <https://docs.fcc.gov/public/attachments/FCC-19-130A1.pdf>.

"By proposing to delete the existing non-federal secondary allocations from the 3.3 - 3.55 GHz band, we are taking an important initial step towards satisfying Congress's directives and making as much as 250 megahertz of spectrum potentially available for advanced wireless services, including 5G," the FCC said in the Introduction to its NPRM.

Currently, the entire 3.1 - 3.55 GHz band is allocated for both federal and non-federal radiolocation services, with non-federal users operating on a secondary basis to federal radiolocation services, which have a primary allocation, the NPRM explains.

The FCC said it is seeking comment on relocating non-federal licensees to another band. With respect to amateur operations, the FCC invited comments on whether sufficient amateur spectrum exists in other bands that can support the operations currently conducted at 3.3 - 3.5 GHz. The 3.40 - 3.41 GHz segment is earmarked for amateur satellite communication. "We seek comment on the extent to which the band is used for this purpose, whether existing satellites can operate on other amateur satellite bands, and on an appropriate timeframe for terminating these operations in this band," the FCC said. If non-federal licensees are relocated to 3.1 - 3.3 GHz band, the FCC proposes that they continue to operate on a secondary basis to federal operations, consistent with cur-

rent band allocations.

Some comments began to arrive before the FCC formally adopted the NPRM, as it points out in a footnote. Kevin Milner, KD0MA, the secretary/treasurer of the Ski Country Amateur Radio Club in Colorado, has argued that the club's equipment cannot be re-channeled below 3.4 GHz, and the club is seeking relocation costs. Devin Ulibarri, W7ND, told the FCC that amateur networks in the current band cannot move easily into other amateur allocations because there is no readily available commercial equipment to support the bandwidth, the FCC recounted.

In the event the proposed amendments are adopted, the FCC "seeks comment on relocation options and on transition and protection mechanisms for incumbent non-federal operations."

Also at its December 12 meeting, the FCC considered another NPRM in WT Docket 19-138 that would "take a fresh and comprehensive look" at the rules for the 5.9 GHz band and propose, among other things, to make the lower 45 MHz of the band available for unlicensed operations and to permit "cellular vehicle-to-everything" (C-V2X) operations in the upper 20 MHz of the band. The FCC is not proposing to delete or otherwise amend the amateur allocation, which would continue as a secondary allocation.

This NPRM can also be found online in PDF format at, <https://docs.fcc.gov/public/attachments/FCC-19-129A1.pdf>.

The Amateur Radio Emergency Data Network (AREDN) has offered its voice in challenging the FCC proposals on the two bands, saying their adoption would "eliminate our use of the most-effective resource hams have to build its networks."

"The AREDN Project is able to leverage low-cost commercial devices solely because they are designed to operate on adjacent allocations," AREDN said on its website. "Moving to other allocations would be difficult if not impossible without a complete redesign, manufacture, purchase, and installation of new custom amateur hardware and software..., raising the price out of reach for the typical ham."

Interested parties may file short comments on WT Docket 19-348 via the FCC's Electronic Comment Filing Service (Express). Visit the FCC "How to Comment on FCC Proceedings" page for information on filing extended comments at, <https://www.fcc.gov/consumers/guides/how-comment>.
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ARRL to Oppose Proposal to Eliminate 3.3 - 3.5 GHz Amateur Allocation

QST de WIAW
ARRL Bulletin 23 ARLB023
From ARRL Headquarters
Newington CT November 26, 2019
To all radio amateurs

SB QST ARL ARLB023
ARLB023 ARRL to Oppose Proposal to Eliminate 3.3 - 3.5
GHz Amateur Allocation

At its December 12 open meeting, the FCC will consider adopting a Notice of Proposed Rulemaking (NPRM) that proposes to remove the amateur radio 9-centimeter allocation at 3.3 - 3.5 GHz. ARRL plans to comment in opposition to the proposed action. According to an FCC "Fact Sheet," the proceeding WT Docket 19-348, "Facilitating Shared Use in the 3.1 - 3.55 GHz Band," is a follow-on from the MOBILE NOW Act, approved by the 115th Congress, which requires the FCC and the US Department of Commerce to make available new spectrum for mobile and fixed wireless broadband use. It also requires the FCC to work with the National Telecommunications and Information Administration (NTIA) to evaluate whether commercial wireless services and federal incumbents could share spectrum between 3.1 and 3.55 GHz. NTIA manages spectrum allocated to federal government users.

The Fact Sheet can be found online in PDF format at, <https://docs.fcc.gov/public/attachments/DOC-360941A1.pdf>.

"This Notice of Proposed Rulemaking would propose to remove the existing non-federal allocations in the 3.3 - 3.55 GHz band as a step towards potential future shared use between federal incumbents and commercial users," the FCC Fact Sheet explains. "By taking the initial step needed to clear the band of allocations for non-federal incumbents, the Commission furthers its continued efforts to make more mid-band spectrum potentially available to support next generation wireless networks - consistent with the mandate of the MOBILE NOW [Making Opportunities for Broadband Investment and Limiting Excessive and Needless Obstacles to Wireless] Act."

The NPRM proposes to clear the 3.3 - 3.55 GHz band of existing non-federal users by removing non-federal secondary radiolocation and amateur allocations [emphasis added] in the 3.3 - 3.55 GHz band and to relocate incumbent non-federal users out of the band. The FCC would seek comment on relocation options and "transition mechanisms" for incumbent non-federal users, either to the 3.1 - 3.3 GHz band or to other frequencies, and on how to ensure that non-federal secondary operations in the 3.1 - 3.3 GHz band will continue to protect federal radar systems.

Regarding the Amateur and Amateur-Satellite Service allocations, the FCC NPRM asks whether existing amateur spectrum in other bands might support operations currently conducted in the 3.3 - 3.5 GHz band. The 3.40 - 3.41 GHz segment is designated for amateur satellite communication. "We seek comment on the extent to which the band is used for this purpose, whether existing satellites can operate on other amateur satellite bands, and on an appropriate timeframe for terminating these operations in this band," the FCC NPRM says.

Also at its December 12 meeting, the FCC will consider another NPRM in WT Docket 19-138 that would "take a fresh and comprehensive look" at the rules for the 5.9 GHz band and propose, among other things, to make the lower 45 MHz of the band available for unlicensed operations and to permit "Cellular Vehicle-to-Everything" (C-V2X) operations in the upper 20 MHz of the band. The FCC is not proposing to delete or otherwise amend the amateur allocation, and it would continue as a secondary allocation, but the primary allocation for 5.850 - 5.925 GHz would change.

The amateur radio 5-centimeter allocation is 5650.0 - 5925.0 MHz, and the NPRM, if approved, would address the top 75 MHz of that amateur secondary band. While no changes are proposed to the amateur allocation, anticipated more intensive use by primary users could restrict secondary amateur use.

The band 5.850 - 5.925 GHz has been reserved for use by dedicated short-range communications (DSRC), a service in the intelligent transportation system (ITS) designed to enable vehicle-related communications, the FCC said in a Fact Sheet in WT Docket 19-138.

"The Commission initiates this Notice of Proposed Rulemaking to take a fresh and comprehensive look at the 5.9 GHz band rules and propose appropriate changes to ensure the spectrum supports its highest and best use." ARRL also will file comments opposing any changes affecting the 5-centimeter amateur allocation.

This Fact Sheet can also be found online in PDF format at, <https://docs.fcc.gov/public/attachments/DOC-360940A1.pdf>.

Both draft FCC proposals are subject to change prior to a vote at the December 12 FCC meeting, and there will be opportunity to file comments and reply comments on the final proposals after they are released.

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ARLB032 W1AW 2020 Winter Operating Schedule

ARRL Bulletin 1 ARLB001
From ARRL Headquarters
Newington CT January 2, 2020
To all radio amateurs

Morning Schedule:

Time	Mode	Days
1400 UTC (9 AM EST)	CWs	Wed, Fri
1400 UTC (9 AM EST)	CWf	Tue, Thu

Daily Visitor Operating Hours:

1500 UTC to 1700 UTC - (10 AM to 12 PM EST)
1800 UTC to 2045 UTC - (1 PM to 3:45 PM EST)

(Station closed 1700 to 1800 UTC (12 PM to 1 PM EST))

Afternoon/Evening Schedule:

2100 UTC (4 PM EST)	CWf	Mon, Wed, Fri
2100 "	CWs	Tue, Thu
2200 " (5 PM EST)	CWb	Daily
2300 " (6 PM EST)	DIGITAL	Daily
0000 " (7 PM EST)	CWs	Mon, Wed, Fri
0000 "	CWf	Tue, Thu
0100 " (8 PM EST)	CWb	Daily
0200 " (9 PM EST)	DIGITAL	Daily
0245 " (9:45 PM EST)	VOICE	Daily
0300 " (10 PM EST)	CWf	Mon, Wed, Fri
0300 "	CWs	Tue, Thu
0400 " (11 PM EST)	CWb	Daily

Frequencies (MHz)

CW: 1.8025 3.5815 7.0475 14.0475 18.0975 21.0675 28.0675
50.350 147.555
DIGITAL: - 3.5975 7.095 14.095 18.1025 21.095 28.095 50.350
147.555
VOICE: 1.855 3.990 7.290 14.290 18.160 21.390 28.590 50.350
147.555

Notes:

CWs = Morse Code practice (slow) = 5, 7.5, 10, 13 and 15 WPM
CWf = Morse Code practice (fast) = 35, 30, 25, 20, 15, 13 and
10 WPM
CWb = Morse Code Bulletins = 18 WPM

CW frequencies include code practices, Qualifying Runs and CW bulletins.

DIGITAL = BAUDOT (45.45 baud), BPSK31 and MFSK16 in a revolving schedule.

Code practice texts are from QST, and the source of each practice is given at the beginning of each practice and at the beginning of alternate speeds.

On Tuesdays and Fridays at 2330 UTC (6:30 PM EST), Keplerian Elements for active amateur satellites are sent on the regular digital frequencies.

A DX bulletin replaces or is added to the regular bulletins between 0100 UTC (8 PM EST) Thursdays and 0100 UTC (8 PM EST) Fridays.

Audio from W1AW's CW code practices, CW/digital bulletins and phone bulletin is available using EchoLink via the W1AW Conference Server named "W1AWBDCT." The monthly W1AW Qualifying Runs are presented here as well. The audio is sent in real-time and runs concurrently with W1AW's regular transmission schedule.

All users who connect to the conference server are muted. Please note that any questions or comments about this server should not be sent via the "Text" window in EchoLink. Please direct any questions or comments to w1aw@arrl.org.

In a communications emergency, monitor W1AW for special bulletins as follows: Voice on the hour, Digital at 15 minutes past the hour, and CW on the half hour.

All licensed amateurs may operate the station from 1500 UTC to 1700 UTC (10 AM to 12 PM EST), and then from 1800 UTC to 2045 UTC (1 PM to 3:45 PM EST) Monday through Friday. Be sure to bring your current FCC amateur radio license or a photocopy.

The W1AW Operating Schedule may also be found on page 91 in the January 2020 issue of QST or on the web at, <http://www.arrl.org/w1aw-operating-schedule>.
NNNN

ARRL MICHIGAN SECTION NEWS

Greetings to all the Amateurs of Michigan,

'Twas a few days before Christmas, and across most the bands, were a good many amateurs sharing peace and joy among all hams. Among all their hopes for this special time of year, were of course, many presents, and perhaps some new gear! But the greatest of gifts we can all share so dear, is our hope for peace and joy throughout the New Year!

(My apologies to Clement Clarke Moore)

Michigan Section Looking for Affiliated Club Coordinator

We are looking for a volunteer to work as the Section Affiliated Club Coordinator. The ACC is the primary contact for each amateur radio club in the Section, specializing in motivating, aiding, and coordinating joint activities of amateur radio clubs. The only requirements are spirit and an ARRL membership. Slide over to ARRL.ORG to read more about this position. Feel free to reach out to me if you're interested and want to discuss how you might fit into this or any other Section role.

Travel to Local Clubs and Events

I love getting a chance to meet with hams all over Michigan! Amateur Radio has been a part of my life for more than 50 years, and it's great to hear from others about their personal adventures in the hobby. Sadly, timing, distance, and my schedule outside of the world of amateur radio do not always permit me to show up everywhere, especially without planning. Other members of the Section Staff also love to get out and visit. These don't have to be formal events; I was recently invited to a radio club breakfast and had a wonderful morning! Please let us know what we can do to help your local club become even more successful.

Tell Me Something Good!

The Motor City Radio Club is sponsoring an active attenuator build led by Stan Briggs K8SB. Registration and ordering is required by January 15, 2020, and the cost is \$25.00. The build will be conducted on Saturday, February 1, 2020 from 9 AM until 12 noon, at the Trenton Faith United Methodist Church, 2530 Charlton Rd, Trenton MI 48183. For more information and signup details contact the Motor

City Radio Club at their website:

<http://www.w8mrm.net/event-3603333>

I am sure your organizations are doing new and fun things. Why not drop me a note about what is happening in your area? I'd love to hear from you!

State Government Liaison Yearly Report highlights for 2019

From Ed Hude WA8QJE

Starting off 2019 I spent a considerable amount of time meeting with State Legislators/Aides and Senators/Aides educating them about amateur radio, what it can do especially in emergencies. For some it was a refreshing their memory, because they recalled a relative or friend that was involved with amateur radio.

In addition early on I monitored and made appearances at the State Legislature including testifying at the House Transportation Standing Committee Meeting regarding the proposed Distracted Driving Legislation identified as House Bill 4181 by Rep.. Manoogian, House Bill 4198 by Representative Cole, House Bill 4199 by Representative Sheppard. I worked with the Representatives and the Democratic Policy Staff Advisor as well as the House Republican Policy Advisor in attempt to create exemptions and clear language as to the different FCC licensed services that was included in the exemption in the amended in the proposed legislation. My work also included garnering support from the Michigan Association of Chiefs of Police, and the Michigan Sheriffs Association.

As we approached June, I worked with the Governor's Office inobtaining the yearly Amateur Radio Proclamation. Into early summer I worked on a request from a amateur radio operator who was having difficulty with zoning issues and the City of East Lansing. I was in touch with the local Michigan Municipal League Representative who is also a member of the Tower/Antenna Committee who also reached out to the East Lansing Zoning Authority.

I also received numerous requests for information over the year from Amateur Radio Operators. Lastly, I am watching fast paced last minute legislation identified as Senate Bill 0288 regarding distracted driving and under 18 drivers. We are reaching the end of the year and the remainder of the bills will

most likely die in Committee only to be reintroduced in 2020. The legislative website that is used to look up legislation is experiencing some difficulties and the State is working to repair the issues.

Lastly, should anyone pick up on proposed legislation that could or would affect Amateur radio, please feel free to send me an email with information concerning the matter.

Edward Hude, WA8QJE
State Government Liaison for Michigan

Michigan ARRL Section Staff Travel Plans

Hazel Park ARC Swap January 19, 2020 (K8JK, WA8EFK)
HARA Swap (Negaunee, MI) February 1, 2020 ()

Hospitality Thanks

December 1st , L'Anse Creuse Swap (K8JK, WA8EFK)

Michigan Public Service Activities

Michigan Section Traffic/ARPSC Nets (all times local)
Please note that time adjustments may be necessary due to propagation changes. Contact your net manager for alternate frequencies and/or times.

MACS - MI Amateur Communications System 3.952 1000 Daily
UPN – Upper Peninsula Net 3.921 1700 Daily; Noon Sun
MIARPSC – MI Amateur Radio Public Service Corps 3.932 1700 Sun

QMN – The Michigan Net 3.563 1830 and 2200 Daily

MITN – MI Traffic Net 3.952 1900 Daily

MIDTN – MI Digital Traffic Net 3.583 (Olivia 8/500) 2000 Tu, Th, Sat

MIADS – MI ARES D-Star Net Reflector 24A Mon 2000

D8EN - District 8 Emergency Net 3.909 Wed 2000

GLETN – Great Lakes Emergency and Traffic Net 3.932 2000 Daily

MVTN – MI VHF Traffic Net IRA Link System 2100 Mon, Wed, Fri, Sun

NLEUP - Northern Lower Eastern UP Net 146.64- 18:30 Daily

SEMTN – SE MI Traffic Net 146.76- 2215 Daily

TMMTN – Thumb Mid-Michigan Traffic Net 147.30+ 2130 Mon – Sat

Michigan Amateur Radio Public Service Corps (ARPSC) Activities for November 2019

Station Activity Reports (SAR) for November 2019

WB8WKQ 395, WB8TQZ 125, K8ED 104, WD8MWD 90, K8BKM

83, N5MKY 80, K8RDN 54, WD8USA 44, KE8CEH 38, KD8ZCM 18, WB8RCR 5

Public Service Honor Roll (PSHR) for November 2019:

KE8BYC 232, WD8USA 200, WD8MWD 170, WB8RCR 160, KB8PGW 150, N5MKY 125, K8ED 120, WB8TQZ 110, KC8YVF 109, KB8RCR 90, WB8WKQ 90, K8RDN 90, KD8ZCM 88, KE8CEH 88

Brass Pounder's League (BPL): No reports this month

Net traffic for November 2019:

Michigan Amateur Communications System 120
The Michigan Net 68
Southeastern Michigan Traffic Net 51
Michigan Traffic Net 45
Upper Peninsula Net 38
Michigan VHF Traffic Net 37
Northern Lower Eastern Upper Peninsula Net 6
Saginaw County ARES Net 4
Great Lakes Emergency Traffic Net 3
Michigan Digital Traffic Net 2
Red Cross Net of Greater Grand Rapids 1

NTS person-hour Value for November 2019: \$ 42,907
(NOTE NTS PERSON VALUE ONLY)

More information is available at <http://nts-mi.org/>.

Come join us on our traffic and public service nets.

A hearty thanks to the hundreds of volunteers across the State of Michigan who work hard as volunteers to hone their skills month after month to make sure they are ready for any situation that may arise. Our ARPSC and NTS programs are an integral part of AuxComm, which in turn is an integral part of the Michigan State Police Homeland Security Division. Public service is in the DNA of Amateur Radio, one of many reasons we enjoy so many radio frequencies to utilize, experiment with, and enjoy.

Final Thoughts

On behalf of my XYL, Roberta (K8RJE) and myself, we wish you the best of the holiday season. Consider introducing your friends and family to amateur radio during the holidays. Want to be more involved? Consider volunteering for a Section position! Thanks to all the radio amateurs who continue to make the hobby great! Get Active, Get Involved, and Get On The Air! See you all at a swap or club meeting soon!

73

Jim K8JK

Dales Tales

Greetings, welcome to "Dale's Tales" for January, 2020.

Well, here we go, off to a brand new year. Without doubt some interesting and exciting things will come to Amateur Radio. New equipment, advancing technologies, more products and features in a single package will arrive this year. (Who would have expected the arrival of a NANO-VNA vector network analyzer for \$50 to appear in 2019? See the review in QEX magazine for January).

Your League is looking at preparing a different version of a proposal to offer some antenna installation relief to those living in areas where antennas are restricted by Homeowners' Associations. ARRL Continues to support changes to FCC rules regarding symbol rates for digital communications, changing some band plans to limit Automatically Controlled Data Stations to certain sub-bands. Both issues have associated consequences and your Board of Directors continues to work within its several committees to reach satisfactory conclusions in each situation. Both topics are scheduled to be discussed at the January Board meeting.

So let me ask you a serious question: Are you going to be an Ambassador for Amateur Radio in 2020? Opportunities await as we enter this year. As a leader in this hobby - and you are if you are an ARRL Member - we all must be prepared to tell others about ham radio, how we serve our communities, how we enjoy DX, how we enjoy contesting, Fox Hunting, construction projects, VHF/UHF operation, satellite operating and (insert your favorite facet here).

Each of us bears the responsibility to do what we can to insure the future of Amateur Radio. By keeping our friends and neighbors aware of what we do and keeping our community leaders apprised of the service ham radio provides, we are able to secure the niche that ham radio has. ARRL Headquarters staff cannot do it alone, each of us needs to "sell" our individual part of ham radio to those we know. Let's not keep ham radio a secret. Tell the world about us. Together, we can insure a bright future for both us and those that follow.

OUR GREAT LAKES DIVISION web page does carry news from some of the recent events in the Division, useful links and information as well as some neat photos supplied from around the Division. Check it out: <http://arrl-greatlakes.org/>

Be sure to check your ARRL Section's news pages for the latest local happenings, club and net information.

At the request of our neighboring ARRL Midwest Division, we have the following special announcement:

Greetings from St. Louis! St. Louis & Suburban Radio Club's annual hamfest, Winterfest, is January 24th & 25th, 2020. This

year we are the Midwest Division conference and expanding to a two day hamfest with lots of activities including the W9DYV Symposium, DX/ARRL Banquet and Contest College. We are also putting together an Education Alley on Saturday to feature the local First Robotics team, maker spaces, STEM, ARISS, YO-TA and other fun events like kids texting vs CW, a CW speed test and kit building.

Winterfest boasts 30K sq. ft. of indoor space with 3 forum rooms running all day, 100+ vendors and over 1500 attendees for the two day event. We are looking at a bigger event with becoming the division conference.

Our website can be found at <http://winterfest.slsrc.org> if you want to check out all the events. We would love for you to come and attend for the weekend, as we have lots of activities planned!!!!

73
Kyle Krieg
AA0Z
SLSRC President

For those involved the Fox Hunting, this announcement may be of interest:

Active Attenuator Construction Bee: Stan Briggs K8SB, will be conducting a Construction Bee to satisfy the many requests to build his universal active attenuator. The attenuator is a powerful tool for use in radio direction finding and amateur radio "Fox Hunts" and will work with any radio receiver.

Date: Saturday February 1, 2020. Time: 9:00 am to noon.
Location: Trenton Faith United Method Church, 2530 Charlton Rd, Trenton, MI 48183

All parts and components to build the attenuator, including the enclosure, will be provided ready for attendees to solder and assemble their own units. Each unit will be tested / demonstrated to verify correct operation at the conclusion of the program. Note: Attendees must bring their own soldering equipment (Soldering Iron—15 watt, solder, needle nose pliers, etc.

Registration / Order is required by January 15, 2020, via the Motor City Radio Club website at: <http://www.w8mrm.net/event-3603333> where full project details are available.

TOM'S TOME Comments from your ARRL Vice Director Tom W8WTD.

Greetings and Happy New Year! Some people like to take this time to reflect on the past year. I prefer to look forward. For instance, this year we have our Great Lakes Division Convention. And it will be here soon. The dates are March 14 and

15th in Toledo, Ohio. Hope you'll make plans now to attend.

A lot of planning has gone into this event. There are lots of forums on all sorts of topics, so if you want to learn more about a particular aspect of ham radio, you should find what you want. Plus, the hamfest and flea market on Sunday is worth attending. The website is now active: www.toledoglc.org.

No matter where you live in the three states of the Division, you should consider coming to Toledo this spring. It's a way to meet other hams from the Division, share what you know, and find out new things in ham radio. I hope to see you there.

On another topic, we hear lots of discussion about the future of ham radio. A lot of us are concerned, and ARRL is responding with a new magazine (On the Air) and other initiatives. And many are doing what they can in their local communities. Another round of introductory classes will be held in many places around the three states. Thank you to all the volunteers.

Here is a question for new hams. Have I gotten on the air recently? And for those licensed for a while—what can I do to help someone enjoy ham radio? For the new person, it may mean just overcoming mike fright and actually trying to get on. Or, perhaps reaching out to someone from the club to ask that question about the antenna you need.

For seasoned hams, maybe you can welcome someone to the local repeater or wherever else you hang out. Perhaps you can find an article to share about antenna building, or better still, show someone how it's done.

Ham radio can continue and will grow, depending on our efforts. Resolve to do something today.

--73, Tom W8WTD Vice Director, Great Lakes Division

ARRL Hamfest Sanctioning offers hamfest sponsors the opportunity to take advantage of some offerings from ARRL. Your Division Director is pleased to make this Sanctioning available to ARRL Affiliated Clubs who have a history of holding regular swaps. One successful swap normally qualifies! ARRL will provide prize certificates, QST will publish the announcement for the swap, post it on-line at the ARRL web site and supply requested hamfest handout material. The club, in exchange, shall provide ARRL a table for "meet and greet" at the hamfest. Consult the hamfest pages on the ARRL web site for the application form.

If you plan to request ARRL Hamfest Sanctioning, please do so well in advance of your Hamfest date, as this allows adequate time for QST Listings. QST requires a 3 month lead time. It should be noted that there has been a change in the way ARRL contributes to your hamfest efforts. Please carefully read the e-mail from ARRL Headquarters confirming your sanctioning as IT CONTAINS IMPORTANT DETAILS REGARDING PRIZES. Be sure to invite your ARRL Officials as soon as your date is set. With 52 weeks and 70+ hamfests in the Great Lakes Division, things do requires some advanced planning.

HAMFESTING: Here is the current Great Lakes Division ARRL Sanctioned Hamfest Schedule covering the next few months. These swaps have received their sanctioning approval from ARRL HQ at the time of this publication.

1/19/20	SCARF Hamfest	Nelsonville, OH
1/19-20	Hazel Park	Madison Hgts, MI
1/26/20	Tusco	Strasburg, OH
2/1/20	HARA	Negaunee, MI
2/16/20	Mansfield	Mansfield, OH
2/23/20	Livonia	CANCELLED for 2020
3/7/20	Cave City	Cave City, KY
3/21/20	Gallipolis	Gallipolis, OH

ARRL PROPAGATION BULLETIN

Propagation Forecast Bulletin | ARLP001
 From Tad Cook, K7RA
 Seattle, WA January 3, 2020
 To all radio amateurs

Sunspots appeared recently, all indicating Solar Cycle 25 due to their polarity, opposite from spots in Solar Cycle 24. Sunspots appeared December 24-26, and it looks like a new Solar Cycle 25 spot on January 1. NOAA did not report it (too weak?) but Spaceweather.com reported a sunspot number of 11 on January 1.

On January 2 NOAA reported the new spot with a sunspot number of 23.

Sorry, but the final propagation bulletin of 2019 was not sent out due to a misunderstanding on my part, so the usual paragraph of numbers at the bottom of this bulletin has an additional paragraph for last week.

Predicted solar flux for the next 45 days is higher than recent forecasts. Solar flux is predicted at 72 on January 3-10, 70 on January 11, 72 on January 12-25, 70 on January 26 through February 7, and 72 on February 8-16.

Predicted planetary A index is 5 on January 3-13, then 12 on January 14-15, 5 on January 16-25, 8 on January 26-28, 5 on January 29 through February 9, 10 on February 10-11, and 5 on February 12-16.

Geomagnetic activity forecast for the period January 3-29, 2020 from F.K. Janda, OK1HH.

"Geomagnetic field will be quiet on January 3-4, 8, 29
 quiet to unsettled on January 5-7, 9-13, 18-21, 25-28
 quiet to active on (January 14, 17, 22-24)
 unsettled to active on (January 15-16)

"No active to disturbed days predicted.

"Solar wind will intensify on January (14,) 15-16, (17, 22-24).

"Parenthesis means lower probability of activity enhancement.

"Everything suggests that we are very, very close to the minimum of the 11-year cycle."

Dick, K1HC wrote on December 31:

"I was on FT8 on 2 meters yesterday from the home QTH in FN42 (400 watts and four 12 element yagis) at about 1630 UTC, and I was watching the PSK Reporter website to see if I was reaching any other stations active on FT8. I saw that K2DRH in EN41 had received my FT8 signal at -14dB. With

that being over 900 miles away, I went to the ON4KST chat page and tried to contact K2DRH there without luck. He was logged in but may have been tied up or away from the computer.

"I am wondering if it was a meteor scatter long burn rather than sporadic-E propagation. However, I switched to MSK144, and I did not see any pings from any other stations. I went to higher power, about 700 watts, and had no further spots on the PSK Reporter from the Midwest.

"I thought you would be interested in the unusual propagation. I will hope for more of it during the ARRL VHF contest in January from FN53 in Maine!"

Goodness! 48 elements in phase and 400 watts with FT8? With that gear, seems like anything may be possible.

If you would like to make a comment or have a tip for our readers, email the author at, k7ra@arrl.net.

For more information concerning radio propagation, see <http://www.arrl.org/propagation> and the ARRL Technical Information Service web page at, <http://arrl.org/propagation-of-rf-signals>. For an explanation of numbers used in this bulletin, see <http://arrl.org/the-sun-the-earth-the-ionosphere>.

An archive of past propagation bulletins is at <http://arrl.org/wlaw-bulletins-archive-propagation>. More good information and tutorials on propagation are at <http://k9la.us/>.

Monthly propagation charts between four USA regions and twelve overseas locations are at <http://arrl.org/propagation>.

Instructions for starting or ending email distribution of ARRL bulletins are at <http://arrl.org/bulletins>.

Sunspot numbers for December 19 through 25, 2019 were 0, 0, 0, 0, 24, and 23, with a mean of 6.7. 10.7 cm flux was 69.9, 70, 70.6, 71, 72.6, 72.7, and 72.1, with a mean of 71.3. Estimated planetary A indices were 13, 5, 5, 4, 4, 3, and 4, with a mean of 5.4. Middlelatitude A index was 12, 4, 4, 2, 2, 2, and 3, with a mean of 4.1.

Sunspot numbers for December 26, 2019 through January 1, 2020 were 11, 0, 0, 0, 0, 0, and 11, with a mean of 3.1. 10.7 cm flux was 72.1, 72.4, 72.2, 72, 70.9, 70.5, and 71.8, with a mean of 71.7. Estimated planetary A indices were 5, 3, 2, 2, 3, 4, and 3, with a mean of 3.1. Middle latitude A index was 3, 2, 0, 0, 2, 4, and 3, with a mean of 2.

NNNN

ARRL DX NEWS

DX Bulletin 1 ARLD001
From ARRL Headquarters
Newington CT January 2, 2020
To all radio amateurs

This week's bulletin was made possible with information provided by KM3T, The Daily DX, the OPDX Bulletin, 425 DX News, DXNL, Contest Corral from QST and the ARRL Contest Calendar and WA7BNM web sites. Thanks to all.

FIJI, 3D2. Darren, VK4MAP is QRV as 3D2DJ from Viti Levu, IOTA OC-016, until January 15. Activity is on 80 to 10 meters using SSB. QSL to home call.

MALDIVES, 8Q. Sergey, RX3AMY is QRV as 8Q7BS from Mahibadhoo and Maafushi Islands, IOTA AS-013, until January 23. Activity is holiday style on 40 and 20 meters using SSB and some CW. QSL to home call.

THE GAMBIA, C5. Przemo, SP3PS is QRV as C5SP until January 17. Activity is in his spare time on 40 to 6 meters using SSB, FT8 and FT4. QSL direct to home call.

CAPE VERDE, D4. Egil, TF3EO is QRV as D44KF from Sal Island, IOTA AF-086, until January 9. Activity is on the HF bands using mostly CW and some SSB. QSL via LoTW.

FEDERAL REPUBLIC OF GERMANY, DA. Special event stations DF70DARC and DP70DARC are QRV during all of 2020 to celebrate the 70th anniversary of DARC. QSL via DK5DC.

PALESTINE, E4. Vasily, R7AL, Vasily, RA1ZZ, Leo, RW9JZ and Nick, R5EC will be QRV as E44RU from a location near Jericho from January 6 to 12. Activity will be on the HF bands using CW, SSB and various digital modes with four stations active. QSL to R7AL.

KYRGYZSTAN, EX. Andrea, HB9DUR is QRV as EX0DX from Bishkek until January 11. Activity is on the HF bands. QSL to home call.

SWITZERLAND, HB. Special event stations HB40HTC and HB40HC are QRV during 2020 to celebrate the 40th anniversary of the Helvetia Telegraphy Club. QSL via bureau.

COLOMBIA, HK. Members of the Liga Radioaficionados Manizales are QRV with special event station 5K6RM until January 14 to celebrate the Manizales Fair. Activity is on the HF bands using CW, SSB and various digital modes. QSL to HK3RM.

ST. LUCIA, J6. John, AI6LY will be QRV as J6/AI6LY from Janu-

ary 4 to 11. Activity will be on the HF bands using SSB and various digital modes. QSL to home call.

NETHERLANDS, PA. Special event station PA75VERON is QRV during all of 2020 to celebrate the 75th anniversary of VERON. Activity is on 40 to 10 meters using FT8, and 2 meters and 70 centimeters using SSB and FM. QSL via LoTW.

SEYCHELLES, S7. Andy, HB9JOE is QRV as S79JOE. Activity is on the HF bands using CW, HF and FT8. QSL via LoTW.

PALAU, T8. Kazuyoshi, JH6WDG will be QRV as T88AQ from Koror Island, IOTA OC-009, from January 7 to 13. Activity is on 160 to 6 meters using CW, SSB and FT8. QSL to home call.

EUROPEAN RUSSIA, UA. Members of the Russian Robinson Club are QRV as special event station R200ANT until March 31 to commemorate the discovery of Antarctica 200 years ago. QSL via RZ3EC.

ST. KITTS AND NEVIS, V4. Fred, WB4M will be QRV as V4/WB4M from St. Kitts, IOTA NA-104, from January 5 to 11. Activity will be on the HF bands. QSL via LoTW.

TURKS AND CAICOS, VP5. Dave, KM3T will be QRV as VP5/KM3T from January 7 to 14. Activity will be holiday style on 160 to 10 meters using mostly CW and possibly FT8. This includes being an entry in the upcoming North American CW QSO Party. QSL via LoTW.

SOUTH SUDAN, Z8. Sigfrido has been QRV as Z81S/p from Abyei. QSL via operator's instructions.

THIS WEEKEND ON THE RADIO. The Stew Perry Topband CW Challenge, NCCC RTTY Sprint, NCCC CW Sprint, RAC Winter Contest, Gedebage CW Contest, Original QRP CW Contest and RAEM CW Contest are all on tap for this weekend.

The IQRP Quarterly Marathon runs from January 6 to 12.

The ARS Spartan Sprint is scheduled for January 7. The CWops Mini-CWT Test, AWA Linc Cundall Memorial CW Contest, Phone Fray and QRP 40-Meter CW Fox Hunt are scheduled for January 8.

Please see January 2020 QST, page 81, and the ARRL and WA7BNM Contest Web Sites for details.

NNNN



Review

This section is dedicated to refreshing what qualified our Licensing. Something different will appear each month. Enjoy....

- T1B06 On which HF bands does a Technician class operator have phone privileges?
- A. None
 - B. 10 meter band only
 - C. 80 meter, 40 meter, 15 meter, and 10 meter bands
 - D. 30 meter band only
- T2B05 What might be the problem if a repeater user says your transmissions are breaking up on voice peaks?
- A. You have the incorrect offset
 - B. You need to talk louder
 - C. You are talking too loudly
 - D. Your transmitted power is too high
- T3B04 How fast does a radio wave travel through free space?
- A. At the speed of light
 - B. At the speed of sound
 - C. Its speed is inversely proportional to its wavelength
 - D. Its speed increases as the frequency increases
- G1B03 Which of the following is a purpose of a beacon station as identified in the FCC rules?
- A. Observation of and reception
 - B. Automatic identification of repeaters
 - C. Transmission of bulletins of general interest to Amateur Radio licenses
 - D. Identifying net frequencies
- G2B06 What is a practical way to avoid harmful interference on an apparently clear frequency before calling CQ on CW or phone?
- A. Send 'QRL' on CW, followed by your call sign; or, if using phone ask if the frequency is in use, followed by your call sign
 - B. Listen for 2 minutes before call CQ

- C. Send the letter 'V' in Morse code several times and listen for a response or say 'test' several times and listen for a response
- D. Send 'QSY' on CW or if using phone, announce 'the frequency is in use' then give you call and listen for a response

G3B01 How might a sky-wave signal sound if it arrives at your receiver by both short path and long path propagation?

- A. Periodic fading approximately every 10 seconds
- B. Signal strength increased by 3 dB
- C. The signal might be cancelled causing severe attenuation
- D. A well-defined echo might be heard

E1B03 Within what distance must an amateur station protect an FCC monitoring facility from harmful interference?

- A. 1 mile
- B. 3 miles
- C. 10 miles
- D. 30 miles

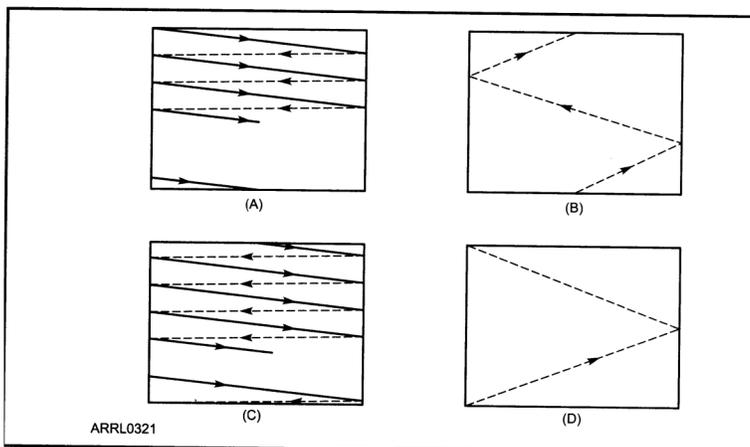


Figure E2B03 — This diagram shows the interlaced scanning used in analog TV. In field one, 262½ lines are scanned (A). At the end of field one, the electron scanning beam is returned to the top of the picture area (B). Scanning lines in field two (C) fall between the lines of field one. At the end of field two, the scanning beam is again returned to the top, where scanning continues with field one (D).

E2B03 How is an interlaced scanning pattern generated in a fast-scan (NTSC) television system?

- A. By scanning two fields simultaneously
- B. By scanning each field from bottom to top
- C. By scanning lines from left to right in one field and right to left in the next
- D. By scanning odd numbered lines in one field and even numbered ones in the next

E3A17 What is meant by circularly polarized electromagnetic waves?

- A. Waves with an electric field bent into a circular shape
- B. Waves with a rotating electric field
- C. Waves that circle the Earth
- D. Waves produced by a loop antenna



ANSWERS

- T1B06: B: [97.301(e), 97.305]
- T2B05: C: An overmodulated FM signal has excessive deviation and is said to be overdeviating. Overdeviation is usually caused by speaking too loudly into the microphone and may cause interference on adjacent channels. If often generates noise or distortion on voice peaks, called 'breaking up.' To reduce overdeviation, speak more softly or move the microphone farther from your mouth.
- T3B04: A: All radio waves travel at the speed of light in whatever medium they are traveling such as air.
- G1B03: A: [97.39a(9)] A beacon station normally transmits a signal for operators to observe propagation and reception characteristics. For this purpose, FCC rules specifically allow an amateur beacon to transmit one-way communications.
- G2B06: A: After listening for a short period of time, if you do not hear another station transmitting on the frequency, it is good practice to make a short transmission asking if the frequency is in use. It may be that due to propagation you are unable to hear the transmitting station, but the listening station can hear you. On CW, the Q signal 'QRL' and on the phone 'Is the frequency in use?' followed by your call sign, gives the opportunity for another station to respond.
- G3B01: D: Normally you will expect radio signals to arrive at your station by following the shortest path between you and the transmitting station. If you are listening to signals on your receiver and you hear a well-defined echo, even if it is a weak echo, the chances are you are hearing signals arrive at your station over a long path. The slightly longer time it takes the signals to travel the longer distance around the Earth results in a slight delay when compared to the direct short path.
- E1B03: A: [97.13(b)] A 1600 meter (1 mile) protection zone is required to limit the effect of noise and other spurious emissions on sensitive facilities
- E2B03: D: A picture is divided sequentially into pieces for transmission or viewing; this process is called scanning. A total of 525 scan lines comprise a frame in the US television system. Thirty frames are generated each second. The fast-scan TV frame consists of two fields of 262-1/2 lines each. The odd numbered lines are scanned in one field and the even numbered ones are scanned in the next. The half line is the secret to the interlaced scan pattern.
- E3A17: B: It is possible to generate waves in which the electric and magnetic fields rotate as they travel while maintaining their right-angle orientation. This condition is called circular polarization. It is particularly helpful to use circular polarization in satellite communication, where polarization tends to shift as the signal traverses the ionosphere or the satellite moves.

Table 7.3
Technician HF Privileges
200 watts PEP maximum output

Band (Wavelength)	Frequency (MHz)
80 meters	3.525 – 3.600 (CW only)
40 meters	7.025 – 7.125 (CW only)
15 meters	21.025 – 21.200 (CW only)
10 meters	28.000 – 28.300 (CW, RTTY and data)
	28.300 – 28.500 (CW and SSB)

LINKS AND STUFF

Under re-construction. Watch for

Copper Country Podcast

George, (W8FWG) is offering this new service from the ARRL. It is entitled "**So Now What?**" and is geared to the NEW HAM. We will continue with the original podcast of ("**The Doctor Is In**") too, and the two will alternate from week to week, each Friday night at 9 pm Eastern time over the Calumet Repeater 147.315 MHz PL-100.0 Hz.

Delta County Amateur Radio
Escanaba, MI
www.dcars.org

Copper Country Radio Amateur
Dollar Bay, MI
www.ccras.net

Area Repeaters

Escanaba 147.15+	100.0
	145.13- No PL
Wells	444.30+ No PL
Gladstone	
IRLP 4013 147.55 Smpx	100.0
Champion	146.82- 100.0
Cooks	146.70 - 110.9
GrdMarais	147.195+ No PL
Gwinn	146.64- 100.0
Iron Mtn	146.85 — 100.0 444.85 — 100.0
Iron River	145.17- 107.2
Ishpeming	146.91- No PL
IRLP 8993	443.50+ 100.0
Manistique	146.79 - No PL
Marquette	146.97 - No PL
	147.27+ 100.0 444.80+ No PL
Menominee	147.00+ 107.2
Newberry	146.61 + No PL
	147.09+ 114.8
Republic	147.09+ No PL
South Republic	146.82 + 100.0
Trenary	147.03 + 100.0
Wetmore	145.41- 100.0

ARRL Affiliated Club Area Nets

UP Net 3921khz
Daily 5pm EST
Sunday Noon EST

UP CW NET 3590khz
Sunday 7pm EST

160 Net 1895khz
Everynight 0100UTC
Dailey 0600UTC

Midcars 7258khz
Daily 0730am EST
0200pm EST

Outhcars Node 9614
Saturday 0900am EST

UP Echolink Node 9617
Sunday 8pm EST

Copper County ARES
146.88
Wednesday 9pm EST

**Mich-A-Con Social and
ARES**
146.85
Thursday 0630pm CST
ARES follows

ARRL WEB PAGE: <http://www.arrl.org>
ARRLMICHIGAN: <http://www.arrl-mi.org/>
US REPEATERS: <http://www.usrepeaters.com>
Tropospheric Ducting Forecasts:
<http://www.d/infocentre.com/tropo.html>
MICH-A-CON : <http://www.qsl.net/ka1ddb>

FCC Universal Licensing System: <http://wireless.fcc.gov/uls/>
QTH Com: <http://www.qth.com/>
QRZ <http://www.qrz.com/>
E Ham Net <http://www.eham.net/>
UP Skywarn: <http://kcra-mi.net/skywarn/>
Band Conditons: <http://bandconditions.com/>

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Mike Boileau: 906 563 1350
 Terry Moriarity: 715 251 1670

Activities:

Second Wednesday of the month the Mich-A-Con Amateur Radio Club meets in the Dickinson Country Library at 7:00 P.M. Winter

Visitors and prospective members are always welcome!

Club Repeater:

The Club maintains two repeaters which are located on Pine Mountain (Elevation 1650 ft) in Iron Mountain with tower and facilities provided by the Wisconsin Electric Power Co. The range of the 2 meter repeater is about 40 miles. The range of the 440 MHZ repeater is about 25 miles. Both are under normal conditions, depending upon terrain.

The Repeater Specifications:

The 146.85 repeater is a Yaesu DR 1 digital and Analog repeater Frequency. 146.85 minus offset, 100 hz PL tone encode and decode Power 50 watts. The Controller is an Arcom RC 210 . It is also System Fusion capable.

. The 440 MHZ repeater is a GE Master II 444.85, plus offset, 100 hz pl tone. 35 watts output. The Controller is a Arcom 210.

The 2 meter and the 440 can be linked. The repeaters share a Diamond dual band antenna at a tower height of 125 ft.

We're on the Web!

<http://www.qsl.net/ka1ddb/>

Previous editions of the Newsletter can be accessed by a link on the **news** page

From Your Newsletter Editor

Thank you to those contributors and critiques.
 Welcome your articles - They make the Newsletter.

For those not getting the Newsletter, it is because I have an incorrect email address. Please give me the correct address.

The following is referenced from <http://www.dx-code.org>

DX Code Of Conduct

I will listen, and listen, and then listen again before calling.

I will only call if I can copy the DX station properly.

I will not trust the DX cluster and will be sure of the DX station's call sign before calling.

I will not interfere with the DX station nor anyone calling and will never tune up on the DX frequency or in the QSX slot.

I will wait for the DX station to end a contact before I call.

I will always send my full call sign.

I will call and then listen for a reasonable interval. I will not call continuously.

I will not transmit when the DX operator calls another call sign, not mine.

I will not transmit when the DX operator queries a call sign not like mine.

I will not transmit when the DX station requests geographic areas other than mine.

When the DX operator calls me, I will not repeat my call sign unless I think he has copied it incorrectly.

I will be thankful if and when I do make a contact.

I will respect my fellow hams and conduct myself so as to earn their respect.

SkyWarn Spotters (2018)

Steve Johnson	K8CRY	Millie Hill
Tom Martin	W8JWN	Millie Hill Overlook
Burt Armbrust	WB8EBS	Hill above Wells Fargo, along US-2
Skip Caswell	KE9L	Merriman/Granite Bluff area
Barry Perron	KC9NFT	Keyes Peak
Bob Meyers	WA8FXQ	Faithhorn area (if not in Copper Country)
Terry Moriarity	K9TRY	Niagara
Dave Thomas	KG9Y	Niagara
Bill Grabowski Debbie Grabowski	KD8VTT KD8VTS	Mansfield Township/Johnson Potato Farm area
Sam Holmes	N8ATS	Pike Plains, Dunbar
Joe Ferris	KC9TQR	Vicinity of CR-N, U, & C in Florence County
Scott Dolatowski	KC9ZBC	Goodman

MEMBERSHIP

Call Sign	Last Name	First Name	City	Phone	Email
WB8EBS	ARMBRUST	BURT	QUINNESEC	906-774-8383	wb8ebs@yahoo.com
KC9KVP	BAKER	BETH	NIAGARA		
KB9AVX	BAKER	SCOTT	NIAGARA	715-251-1944	kb9avx@yahoo.com
KB8SBP	BERTOLDI	BILL	KINGSFORD		
K8DDA	BRAY	MIKE	VULCAN	906-201-1550	mikebray@chartermi.net
KE9L	CASWELL	SKIP	IRON MOUNTAIN	906-774-3371	acaswell4238@charter.net
KC8QZG	DAKE	DAVE	NEWBERRY		
KC9ZBC	DOLATOWSKI	SCOTT	GOODMAN	715-633-1006	kc9zbc@live.com
KC9TQR	FERRIS	JOE	FLORENCE	517-589-4386	jrferris@borderlandnet.net
N9MBG	FRY	ED	PEMBINE	906-221-7307	efry7849@gmail.com
KG8NK	GEMBOLIS	LOUIS	ISHPEMING	906-485-5442	lgembolis@chartermi.net
KE8FWN	GRABOWSKI	BILLY	CRYSTAL FALLS	?	
KD8VTS	GRABOWSKI	DEBRA	CRYSTAL FALLS	906-284-2450	kd8vts@gmail.com
KD8VTT	GRABOWSKI	WILLIAM	CRYSTAL FALLS		
KC8TH	HEYBOER	TOM	IRON MOUNTAIN	906-779-0481	heyboer.tom@gmail.com
N8ATS	HOLMES	SAM	PEMBINE	906-322-8507	chopsam@centrylink.com
KA8TFF	JARMUSCH	SCOTT	IRON MOUNTAIN		
KB9EMU	KNUTSON	WILLIAM	FENCE	715-336-2250	dknutson54@gmail.com
KD9HQD	LaLIBERTE	BRUCE	NIAGRA, WI	?	liberte@borderlandnet.net
W9BGL	LUCAS	BRIAN			bagel99@gmail.com
KE8GHE	LUNDAMO	DUANE	?	?	?
W8JWN	MARTIN	THOMAS	IRON MOUNTAIN	906-774-5463	tmartin@chartermi.net
WA8FXQ	MEYERS	BOB	VULCAN	906-396-0119	meyersb@uplogon.com
KC8LRP	MEYERS	MARGE	VULCAN	906-396-8913	mgmeyer@uplogon.com
N8TUM	MILLER	TIMOTHY	FLORENCE	715-696-6517	timmiller.up@gmail.com
K9TRY	MORIARITY	TERRY	NIAGARA	715-251-1670	kb9zer@yahoo.com
ND8M	PAUL	JARED	NORWAY	989-660-9535	jaredpaul@me.com
KD8SZA	PAUL	MICHELLE	NORWAY		
KC9NFT	PERRON	BARRY	FLORENCE	715-696-6175	bperron2@netzero.com
KC8JRI	REED	GORDY	IRON MOUNTAIN	906-779-1254	gordyreed@charter.net
KE8GHH	RITTENHOUSE	DAVE	IRON MOUNTAIN	?	?
K4FMX	SCHAFFER	GARY	NIAGRA, WI	?	GARYSCHAFFER@LARGERIVER.NET
KG9Y	THOMAS	DAVE	NIAGARA	715-251-1393	kg9y@arrl.net

BLACK: Paid Members
 BROWN: Past or Unpaid Members



MICH - A - CON

**Please remit dues to:
Debbie Garbowski, KD8VTS
203 Camp 5 Road
Crystal Falls, MI 49920**

Name: _____

Call Sign: _____

Address: _____

City, State, Zip: _____, _____, _____

Email Address: _____

Phone: _____

ARRL Member? Yes _____ No _____

Please make check payable to: **Mich-A-Con ARC**

Annual dues for Full Membership -

Single \$20 __ Family \$30 __ Repeater Only \$10 __

If family membership, please list additional:

Names: _____

Call signs: _____

City, State, Zip: _____

Annual dues are Payable January 1st.

Dues for New Members are Pro-rated. Please remit \$1.67 per month for a Single membership or \$.50 per month for a Family membership.