



# MICH-A-CON

Iron Mountain,  
Dickinson County, Mich

May 2020

## Meeting Reminder: Second Wednesday of the Month

Which is **May 13, 2020** at 07:00 PM at the Dickinson Library, Iron Mountain. Please be there and support the cause of Amateur Radio.

**CANCELED DUE TO COVID-19 GOVERNMENT RESTRICTIONS**

## From The President

I hope that all of you enjoyed the two days of spring weather that we witnessed during the first days of May. Now, as I type these "Words", the temperature is 38 degrees on May 10<sup>th</sup>!

During this STAYATHOME period of our lives, I haven't felt the urge to do much outside. We did some yard work and took a long walk every day but that's about it. I've played radio every morning. Until this past weekend FT-4 and FT-8 have been the main modes. I have made 594 contacts on all bands but 12 meters. I even made one contact on 10 meter FT-8.

I've used all of the antennas at my disposal: Mosley CL-33, Mosley 40 beam, 40 Inverted V, 160 Inverted L. 80 meter sloper, Butternut vertical, and a very low (25 feet) Carolina Windom purchased at our club swap fest. I have varied my power from 10 watts to 300 watts. The higher power was used to work Oman on 20 meter FT-4.

This past weekend was the Volta DX RTTY contest. The Italian contest is in honor of Alessandro Volta.

From Wikipedia:

**Alessandro Giuseppe Antonio Anastasio Volta (18 February 1745 – 5 March 1827) was an Italian physicist, chemist, and pioneer of electricity and power<sup>[2][3][4]</sup> who is credited as the inventor of the electric battery and the discoverer of methane.**

The term "volt" comes from his name. I used 12 volts in the contest to power my Icom 756 Pro II to 90 watts out in the contest. It was fun to "play" a little RTTY for a change.

Propagation has been fickle these past weeks. SFI was 68 on Friday and then went to 71 on Saturday. Now, Sunday afternoon it's 67! I'm sure that this is the bottom of Cycle 24.

We will have another club meeting On the Air Wednesday at 7:00 pm. Hopefully, this will be the last time away from each other.

73, and Stay Safe!  
Tom W8JWN

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# RSGB Hope QSO Party

**A series of 90 minute duration daytime contests that has been introduced on a temporary basis to help and support radio amateurs who are isolated at home and would appreciate contact with other people.**

This contest series is open to all entrants and is not restricted to RSGB members. This series is for Single Operator Fixed Stations only (please no Multi-Operator, Portable or alternative address operation entrants at this time). A requirement of the series is that participants must be in full compliance with all measures in respect of Covid-19, that are currently applied by the authorities at their station location. This series does not contribute to the HF Championship and is not linked to any RSGB Affiliated Club contests.

Scoring is "Anyone works Anyone" – a scoring QSO does not need to include a UK station.

QSOs are encouraged before and after the contest periods. We include recommended frequencies for SSB discussion after each event in these rules.

Participants are encouraged to call "CQ HQP" or "CQ Hope QSO Party". We would like to see the number of participants growing as the series runs. On SSB and CW please be sure to ask if the frequency is in use before calling.

Please enter as many or as few events as you wish - you may wish to concentrate on one mode or to try all four modes.

We suggest entrants use a CQ WPX template in their contest logging software for the SSB, CW and RTTY events; this will log correctly but will not score correctly for this series - all logs will be rescored during adjudication. For FT4 the latest WSJT-X package will be appropriate and this is described below.

If you have any queries about these rules, please e-mail [hf.query@rsgbcc.org](mailto:hf.query@rsgbcc.org)

## ***MICH-A-CON AMATEUR RADIO CLUB MINUTES OF April 8th, 2020***

President Tom Martin called for check-ins at 7:00 pm on the 146.850 repeater.

### **Secretary Report**

The minutes were not read.

### **Treasurer Report**

Balances as of April 8th, 2020:

Checking: \$337.55

Savings: \$2,692.35 (Repeater: \$1,820.66)

Cash: \$118.00



### Repeater Report

Bob Meyers reported that the high northeast antenna is working well. The Echolink unit is again at Bob's residence and is working okay.

Bob believes he will order a Comet GP3 Dual Band 7-foot antenna for the repeater.

It was also noted that more than likely Al Augustine will not be climbing here in April.

### Old Business

President Tom Martin reported that the reimbursement check of \$275 has been returned to the club.

The April emergency test at the Dickinson County EOC has been postponed. There will be no work on the antennas there.

Greg Johnson N9GJ, reported that the Technician license class he had planned is now on hold. It will be conducted after the COVID 19 situation has passed.

### New Business

A couple of weather spotter locations are in need of filling. One at Keyes Peak and also in the Goodman area.

Bob Meyers will get info on linking our repeater to the Marquette system to Tom Martin, for use during severe weather.

Field Day 2020 plans are still undetermined. We have until early June to decide if and where we will operate.

Scott Jarmusch asked about the status of a two-meter radio that the club purchased and donated to the local American Red Cross organization. The local Red Cross organization will be contacted about the radio.

### Adjournment

Meeting adjourned at 7:20.

## Attendees (Check Ins)

Tom Martin	W8JWN	Nate Mieras	KD8GLP
Scott Jarmusch	KA8TFF	Gary Newman	WW0GN
Joe Ferris	KC9TQR	Debbie Newman	KE0ACH
Bob Meyers	WA8FXQ	Paul Pate	KD9LUJ
Bruce LaLiberte	KD9HQD		
Brian Lucas	W9BGL		
Tim Miller	N8TUM		
Greg Johnson	N9GJ		
Jenni Johnson	N9GCJ		
Duane Lundamo	KE8GHE		



News

**RSGB HF Contest Calendar**

Here are the times and dates'

(a) The series runs for six weeks and may be repeated if circumstances have not changed significantly

(b) Each 90 minute event will be limited to one mode but QSOs can be made on the five contest bands 80m, 40m, 20m, 15m and 10m

(c) The Running schedule for each contest series is:

Day	Time (UTC)	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6
Monday	08:30 - 10:00	SSB	RTTY	CW	SSB	FT4	CW
Tuesday	10:00 - 11:30	CW	SSB	RTTY	CW	SSB	FT4
Wednesday	11:30 - 13:00	FT4	CW	SSB	RTTY	CW	SSB
Thursday	13:00 - 14:30	SSB	FT4	CW	SSB	RTTY	CW
Friday	14:30 - 16:00	CW	SSB	FT4	CW	SSB	RTTY

(d) Dates and times are detailed in the [RSGB HF Contest Calendar](#).

(e) After six weeks the series will be completed. If the series is repeated, all scores will be reset for the new series.

QSTdeW1AW

ARRL Bulletin 7 ARLB007

From ARRL Headquarters

Newington CT February 14, 2020

To all radio amateurs

The FCC has invited comments on a Notice of Proposed Rule Making (NPRM) in WT Docket 19-138, which said the FCC would take "a fresh and comprehensive look" at the rules for the 5.9 GHz band. The FCC proposes to make 5.850 - 5.895 GHz available for unlicensed operations and to authorize transportation-related communication technologies to use 5.895 - 5.925 GHz.

### ARRL HF Band Planning Committee Seeks Comments on Recommendations

The ARRL HF Band Planning Committee is seeking comments and suggestions from the Amateur Radio community on its report to the ARRL Board. At the Board's January meeting, the committee presented its specific recommendations in graphical form for each HF band and each US license class, with the goal of increasing harmony on the HF bands, particularly between CW and digital users.

The recommendations can be found online in PDF format on the [arrrl.org](http://arrrl.org) web site.

"In general, the committee is of the opinion that there is justification for additional space to become available for digital modes, as well as for the operation of digital stations under automatic control," the committee told the Board. "The very changes in spectrum usage that have required our committee's resurgence indicate that digital modes of communication are already increasing in popularity, and the trend is expected to continue or even accelerate. To this end, we have tried to ensure that digital allocations are sufficient for at least a modicum of growth."

The committee also anticipates an increase in automatically controlled digital stations (ACDS). The report further points to "significant use" of modern data modes in emergency communication and said its recommendations provide significant support for the evolution and continued relevance of amateur radio. "Our failure to adapt to these needs could consign amateur radio to the technological scrap heap," the report said.

The committee was revived last summer to consider conflicts between FT and JT modes and other modes. The panel's approach has been to designate distinct assignments for CW, narrowband (NB) data 500 Hz, wideband (WB) data 2800 Hz, and ACDS. For its work, the committee presumed approval of three ARRL petitions to the FCC: RM-11708 (WT Docket WT 16-239-"symbol rate" proceeding), RM-11759 (80/75 meter allocations), and RM-11828 (enhanced Technician privileg-

WT Docket 19-138 files can be found online in PDF format at <https://www.fcc.gov/ecfs/filing/1217200308588>.

The FCC is not proposing to delete or otherwise amend the 5-centimeter secondary amateur radio allocation at 5.650 - 5.925 GHz, part of which includes the 75 Megahertz under consideration.

Comments are due by March 6, and reply comments are due by April 6. ARRL will be filing comments supporting no change to 5.850 - 5.925 GHz for amateurs, as included in the FCC proposal.

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es). The committee also assumed that users can agree to sharing arrangements within a given allocation-narrowband vs wideband sharing within the ACDS allocation, for example. It also took into consideration how mode usage is regulated or planned elsewhere in the world.

In terms of mode classes, the committee agreed on CW, NB data, WB data, NB with ACDS, and WB with ACDS. The committee said it considered these mode classes incompatible and that they should not have overlapping allocations, with the exception of CW, which is authorized within any amateur radio allocation. The committee's approach would maintain the existing low-end 25-kHz CW-only sub-bands for exclusive use by Amateur Extra class licensees.

The panel encouraged CW identification and a listen-before-transmitting protocol for ACDS, if feasible. It also decided that a single allocation for ACDS without regard to bandwidth would be the best approach. "We note that this will put responsibility on the digital community to hold an effective dialog on the issue and to then self-regulate the users of this segment to adhere to the eventual agreement." A need for flexibility in allocations is desirable, the committee said, and considered whether allocations might be time-of-day or time-of-week dependent, for example.

"Modern amateurs must expect to adapt to this kind of fluid assignment of spectrum to incompatible uses, using time-based sharing, rather than only a single assignment," the committee said, expressing the hope that as band plan/sharing agreements are reached that they consider the advantage of non-simultaneous sharing possibilities.

Reiterating the position ARRL has taken in recent FCC filings, the committee said it sees encryption and open-source as enforcement matters as being outside the scope of the Band Planning Committee.

The Committee would like comments by February 19. Comments may be filed online at <http://www.arrrl.org/bandplan>.

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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](mailto: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>.  
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# ARRL MICHIGAN SECTION NEWS

Greetings to all the Amateurs of Michigan,

It has been said that amateur radio could quite possibly be one of the first social distancing hobbies. From what I'm hearing on the bands, travel and work restrictions are not stopping many of us from operating. Yes, that's a good thing.

## Stay Safe – Stay Home

Like many other states Michigan residents have been asked to "Stay Home, Stay Safe" by an executive order signed by Governor Gretchen Whitmer. The order clarifies that all Michigan businesses and operations must temporarily suspend in-person activities that are not necessary to sustain or protect life. The order further states that all Michiganders must stay in their homes unless they're a part of the critical infrastructure workforce, engaged in an outdoor activity, or performing tasks necessary to the health and safety of themselves or their family, like going to the hospital or grocery store.

It is important to understand that amateur radio operators are NOT considered a part of the "critical infrastructure workforce" at this time. It would not be in your best interest to use your amateur radio license as the reason you're not in compliance with this executive order. It is never acceptable for any amateur to "self-deploy" to "serve".

The shelter in place initiative is an essential part of curbing the large influx of new exposures and saturation of medical response agencies. Again, please don't self-deploy, and please do not use your amateur radio license as a definition of "critical infrastructure workforce".

## Tell Me Anything Good

The guidelines of social distancing rule out most radio club meetings. Most groups who do breakfast and lunch will also put those activities on hold. Amateur radio testing has been pretty much put on hold. In face of all of this, hams are being inventive. I'd love to hear from more of you. The good news is that email still works.

Share with me what your groups are going to do over the next several months. I'm sure you'll all get creative about this.

## Olympics and the ARRL

A well-kept secret was that the ARRL had been working with the 2020 Olympics planners prior to the COVID-19 Pandemic to place amateur radio in the event lineup along with 5 other new competitive engagements. You might find this a stretch, but after all, amateur radio is a contact sport. Now that the 2020 Olympics as been rescheduled to 2021, perhaps we'll still hear something?

## Field Day 2020

At this moment, there are no plans to change any of the rules or requirements for the upcoming Field Day. If social distancing is still in play, it's gonna require some longer headphone cables!

## Michigan ARRL Section Staff Travel Plans

There just isn't any (physical or virtual) currently to report.

## Michigan Public Service Activities

### Michigan Section Traffic/ARPS Net (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  
 MIARPS – 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 March 2020

Station Activity Reports (SAR) for March 2020

WB8WKQ 412, K8ED 250, K8BKM 137, WB8TQZ 111, N5MKY 103, ND8W 74, KB8RCR 68, KD8ZCM 58, K8RDN 58, WD8USA 35, W8MSK 22

Public Service Honor Roll (PSHR) for March 2020:

KE8BYC 319, ND8W 260, N5MKY 255, WD8USA 150, KB8RCR 140, KD8ZCM 125, WB8TQZ 110, WB8WKQ 90, K8ED 90, K8RDN 87, KC8YVF 82, WB8R 81

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

Net traffic for March 2020:

Michigan Amateur Communications System 153  
 The Michigan Net 110  
 Michigan Traffic Net 94  
 Michigan VHF Traffic Net 53  
 Upper Peninsula Net 36  
 Michigan Digital Traffic Net 25  
 Great Lakes Emergency Traffic Net 23  
 Northern Lower Eastern Upper Peninsula Net 9  
 Saginaw County ARES Net 4  
 District 3 ARPSC Net 3  
 Luce County ARES Net 2  
 Michigan Amateur Radio Public Service Corps 1

NTS person-hour Value for March 2020: \$ 57869  
 (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

Dust off those rigs and get on the air! Consider chatting with locals on the neighborhood repeater or simplex channel. You might even want to try a new mode or revisit an old one.

Visit the ARRL Lifelong Learning Center on the web.

Bobbi and I both are hopeful that you all stay safe and pay close attention to the changing landscape of our "new normal". Please take this COVID-19 thing very seriously, this is more than just a new strain of the flu. Thanks to all the radio amateurs who continue to make the hobby great! Get Active, Get Involved, and Get On The Air! I look forward to chatting with you on the air or on a conference bridge!

Yes, I was kidding about the Olympic thing.

73  
 Jim K8JK

## Dales Tales

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

Sadly, Michigan recently lost its Section Emergency Coordinator, John McDonough WB8RCR. Our thoughts go out to John's family in this time of great sorrow. John was a good friend of everyone involved with the ARRL Michigan Section.

### 2020 Field Day notes from the ARRL NEWS: 04/22/2020

This year, ARRL Field Day promises to be a unique iteration of this annual event, with many individuals and groups coming up with new and interesting ways to adjust their approach. As an event, Field Day is structured to be versatile and can be adapted for any situation.

Many groups have asked how they can adjust their Field Day planning to address social-distancing guidelines that may be in effect in many areas of the country, as gathering at their traditional Field Day site may not be feasible or safe. Instead of participating in a group event this year, consider operating as a Class B, C, D, or E station, utilizing your own call sign.

ARRL will include club names for all participating stations in the published results, so the efforts of your club's members can be acknowledged. While we will not publish an aggregate club score, seeing the name of your club associated with various individual member's results is certainly a way to highlight your club's activity.

**Myriad opportunities are possible in this year's Field Day setting.** These are just a couple.

Consider having an intra-club competition among members, seeing who can make the most contacts during the event. You can award prizes or distribute certificates at a club meeting. This can be a fun way to bolster the activities of individual club members, even though they cannot all gather together at the same location this year. Set up a Field Day Challenge with rival clubs in neighboring communities. See how many members of each club get on the air from their own stations and participate in the event. In addition to "bragging rights," perhaps certificates to the top-scoring individual entries in each category can be presented as part of this inter-club camaraderie.

One club is planning to conduct its Field Day as a 4A club group, with participants spaced to comply with social distancing guidelines within the required 1,000-foot diameter circle and oper-

ating individual stations. This club also plans to set up a "Get on the Air" (GOTA) station. The club's plan is to have the GOTA coach at the Field Day site, while GOTA operators participate via remote link.

Another club is planning to set up a remote-controlled station at its usual Field Day site, with club members taking turns controlling the station from their homes. The club is developing a schedule that outlines when each member of the club will be at the helm via the remote link.

Whatever approach you take to this year's Field Day, keep up to date with the current guidelines issued by local and state health agencies that may impact your proposed operation.

ARRL invites your stories about the interesting and creative ways you're planning to use to adapt your Field Day operation. Share these on the ARRL Field Day Facebook page.

**For the latest news and updates, visit the Field Day webpage.**

Thanks to ARRL Contest Program Manager Paul Bourque, N1SFE

As many know, one of the key annual events associated with the Dayton Hamvention®, Contest University (CTU) has cancelled this year's regular session. Most thankfully, the hosts and sponsors of CTU are making the very best of a bad situation and are offering CTU to everyone at no cost via Zoom video conferencing. Now, whether you are a contester or not, there is something for everyone at CTU. Take a look at their web page at <https://www.contestuniversity.com/course-outline/> for a check of the material being presented. A Link for everyone will open on May 7 with all of the log-in information. The Zoom conference will be held on Thursday May 14.

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

Quarantines. Cancellations. Luckily, we still have ham radio. Yes, most of our in-person activities are not going to happen any time soon, but activity on the ham bands is picking up. On several of the local nets that I participate in, check-ins have increased. I've heard a number of people say that they had been inactive, and are just now getting back to radio. People are trying out new—for them—modes of communications. And since most of us are at least somewhat technical, videoconferences are not beyond us. Virtual meetings are happen-

ing, and even, to some extent, just some informal chats so we can share ideas and check up on each other.

One thing I am concerned about for the near future is getting new hams. Long before any of this pandemic, ARRL was developing education programs for continuing education, but also making sure that we continue to teach ham radio to interested people. Our model has been in-person classes. Yes, many people have studied on their own, but we find that those who did often don't have much of a connection to any local hams, individually or through clubs. And they often don't last.

ARRL and other VE programs are looking at some ways of secure remote testing. We've got to be able to get people to get tested in order to get licenses. This effort will continue. But we may also have to re-think how we teach ham radio to beginners. Keeping "social distancing," what combination of video, slides, and materials will work to help people, so that once we overcome the testing challenges, people are ready to get licensed? If your club is working on that, let me know.

### Stay safe, and get on the radio!

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

**HAMFESTING:** All hamfests in the Great Lakes Division planned through the first of June, are either cancelled or postponed. If your swap is cancelled or the date is going to change, please notify ARRL HQ. We work together with the HQ staff to verify all new date selections in the hope of mitigating date conflicts.

With constant changes underway in all three Great Lakes Division states, and the lack of clarity regarding the resumption of travel, we are not posting any swaps until this situation stabilizes.

## ARRL PROPAGATION BULLETIN

QST de W1AW  
Propagation Forecast Bulletin 19 ARLP019  
From Tad Cook, K7RA  
Seattle, WA May 8, 2020  
To all radio amateurs

We haven't seen a sunspot since Thursday, April 30 when the daily sunspot number was 35. This is a relatively high sunspot number based on recent activity, although not historically. In fact, the daily sunspot number has not been as high since March 21, 2019 when it was 49, and prior to that we need to look back further to the previous year, when the daily sunspot number was 41 on June 22, 2018, to find a sunspot number

For the latest detail on cancelled hamfests, check the ARRL web page at:

<http://www.arrl.org/hamfests/search/page:5/keywords:Cancelled/model:Event>

### CANCELLED FOR MAY:

5/2/20 Cadillac Hamfest	Cadillac, MI	CANCELLED
5/17/20 Dayton Hamvention	Xenia, OH	CANCELLED

It should be noted that there has been a change in the way ARRL contributes to your ARRL sanctioned 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.

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.

73, All the best to you and your family. Stay Safe and Ham it up!

Dale Williams WA8EFK  
Director  
Great Lakes Division  
[wa8efk@arrl.org](mailto:wa8efk@arrl.org)

that was as high.

This, and the fact that last week's sunspots showed the new cycle 25 polarity gives me reason for optimism. I expect solar activity to increase and along with it, the outlook for better HF propagation. Another reason for my optimism is that new sunspot cycles increase at a faster rate than they decline after a activity peak has passed.

That peak of sunspot cycle 25 is expected around July, 2025, +/- 8 months, according to the latest forecast from the NOAA/NASA International Solar Cycle Prediction Panel.

Average daily sunspot number for last week was 5, down from 8.7 the previous seven days. The average daily solar flux rose



from 69.2 to 69.5.

Average daily planetary A index declined from 5.6 to 5.1, and average middle latitude A index slipped from 5.1 to 5.

Predicted solar flux over the next 45 days is 70, every day, May 8 til June 21. In fact, that outlook for a continuous 45-day stretch of solar flux at 70 has been the same since the May 3 prediction.

The predicted planetary A index is 5 on May 8 to 11, 8 on May 12, 5 on May 13 to 17, then 10 and 8 on May 18 and 19, 5 on May 20 to 23, 8 on May 24 to 27, 5 on May 28 to 30, then 8, 10 and 8 on May 31 through June 2, 5 on June 3 to 13, 10 and 8 on June 14 and 15, and 5 on June 16 to 21.

There you have it, a nice steady solar flux above the sixties for the next month and a half, and stable geomagnetic conditions too.

On Thursday, May 7, Spaceweather.com reported an incoming solar wind expected to graze our magnetic field on May 10, "causing geomagnetic unrest at high latitudes." Note that our planetary A index forecast above does not show an increase until May 12.

Geomagnetic activity forecast for the period May 8 til June 2, 2020 from F. K. Janda, OK1HH.

"Geomagnetic field will be quiet on: May 13, 26, June 2  
 quiet to unsettled on: May 8, 16, 25, 27 to 31  
 quiet to active on: (May 9, 11 and 12, 14 and 15, 20 to 22, 24,  
 June 1)  
 unsettled to active on: (May 10, 17 to 19, 23)  
 active to disturbed: nothing expected

Solar wind will intensify on: May (11 and 12,) (18 to 21, 23,) 24

Remarks:

- Parenthesis means lower probability of activity enhancement.
- The predictability of changes remains lower as there are no indications."

Jon Jones, N0JK reported on May 6:

"I was active on 50 MHz during the Eta Aquarid meteor shower on May 5.

I worked W4IMD EM84 on 6 meters via meteor scatter using the digital MSK144 mode at 1205 UTC. As W4IMD sent 73, I copied a CQ from Larry Lambert, NOLL who was portable in rare grid DN90. I called Larry, he copied me but we did not complete a contact.

I decoded several other stations including N4QWZ, AI5I, K0TPP,

KE5Q, and WA4CQG on meteor scatter."

Check <https://bit.ly/3fwUP6P> for a dramatic video from Space.com showing images of all daily earth-facing sunspot activity over seven years, including approximately 93 solar rotations, compressed into 200 seconds.

Frank Donovan, W3LPL sent this fascinating information on Earth's three north poles.

"BBC's article this week "Scientists explain magnetic pole's wanderings" has attracted the interest of radio amateurs interested in ionospheric propagation.

[www.bbc.com/news/science-environment-52550973](http://www.bbc.com/news/science-environment-52550973)

Unless you've studied geomagnetic physics you probably never learned, or even heard, that the Earth has three north poles. The BBC article describes the poles very well, but does not address the relationship between the poles and ionospheric propagation.

The geographic north pole is where the Earth's rotation axis intersects the Earth's surface in the northern hemisphere. It affects ionospheric propagation because the orientation of Earth's tilted axis to the Sun varies with the seasons and determines our daylight/darkness cycles throughout the year.

While the magnetic north pole, the focus of the BBC article, is important to navigation systems, it has no significance to ionospheric propagation. Most of us learned about the magnetic north pole when we learned how to use a compass, it is located in the northern hemisphere where the Earth's magnetic field lines are measured to be exactly perpendicular to the Earth's surface. Its position has been drifting about 50 to 60 km per year for about the last forty years.

The geomagnetic north pole, only briefly described in the BBC article, is very important to ionospheric propagation and many other aspects of the Earth's space environment. It is the intersection of the Earth's surface in the northern hemisphere and the axis of a bar magnet hypothetically placed at the center the Earth. It is very significant for ionospheric propagation because it determines the position of the geomagnetic field in the Earth's space environment including, very importantly, its ionosphere. The geomagnetic field very profoundly affects ionospheric propagation. The geomagnetic north pole drifts only about one km. per year, a tiny fraction of the movement of the magnetic north pole described in the BBC article.

[https://ichef.bbci.co.uk/news/624/cpsprodpb/13DC2/production/\\_112164318\\_new-nc.png](https://ichef.bbci.co.uk/news/624/cpsprodpb/13DC2/production/_112164318_new-nc.png)

As an aside, while the magnetic north pole is drifting fairly rapidly, the magnetic south pole is drifting very little at all."

If you would like to make a comment or have a tip for our readers, email the author at, [k7ra@arrl.net](mailto:k7ra@arrl.net). For more information concerning radio propagation, see <http://www.arrl.org/propagation> and the ARRL Technical Information Service 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/w1aw-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 April 30 through May 6, 2020 were 35, 0, 0, 0, 0, and 0, with a mean of 5. 10.7 cm flux was 69.8, 70.2, 69.2, 68.7, 69.3, 69.3, and 69.8, with a mean of 69.5. Estimated planetary A indices were 2, 6, 5, 5, 6, 6, and 6, with a mean of 5.1. Middle latitude A index was 1, 5, 3, 5, 8, 7, and 6, with a mean of 5.

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## ARRL DX NEWS

QST de W1AW  
DX Bulletin 19 ARLD019  
From ARRL Headquarters  
Newington CT May 7, 2020  
To all radio amateurs

This week's bulletin was made possible with information provided by 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.

**MOUNT ATHOS, SV/A.** Monk Iakovos, SV2RSG/A will be QRV until May 10. Activity will be on 20 meters using CW and SSB. QSL via SV2RSG/A direct to Monk Iakovos Kutlumusan, Holy Monastery Koutloumousiou, Karyes, 63086, Greece.

**AZERBAIJAN, 4K75.** Look for Azerbaijani amateur radio operators to be using either 4J75 or 4K75 prefixes starting May 5, to celebrate the 75th anniversary of the victory in WW2. The length of the activity is not known at this time.

**INDONESIA, 8C2.** Members of the ORARI are active as 8C2WFH (Work From Home), until May 19. Activity is on 80, 40, 20, 15 and 10 meters using CW, SSB, RTTY, BPSK31 and FT8.

**JAPAN, 8J.** Look for special event station 8J1ITU to be QRV from April 30 to May 31. Activity is to celebrate the anniversary of the ITU World Telecommunication and Information Society Day on May 17. QSL via the JARL Bureau or eQSL.

**UNITED ARAB EMIRATES, A60.** Look for activity under special call sign A60FTDMC during FT8DMC activity weeks, July 1 to 31, on various HF bands. QSL via OE4VIE.

**INDIA, AU2.** Members of the West Bengal Radio Club,

will be active as AU2COV until July 26. Activity is to provide assistance in fighting against the COVID-19 pandemic. QSL via VU2WB.

**ENGLAND, GB75.** Members of the RSGB Contest Club will activate the following call signs May 1 to 31 and August 1 to 31: GB1945PE, GB1945PJ and GB75PEACE. Operations will be on various HF bands and 6 meters using CW, SSB and the digital modes. QSLs are only via LoTW and eQSL. No paper QSL cards.

**SOUTH KOREA, HL40.** Look for special event station HL40GDM until May 31. Activity is to celebrate the 40th anniversary of the May 18 Democratic Uprising in Gwangju. Operations will be on all bands and modes. QSL via HL4CCM, direct, by the Bureau, eQSL or ClubLog.

**AUSTRIA, OE50.** Jo, OE4VIE is active as OE50MHZ until June 30 to mark the 30th anniversary of the first provisional release of the frequency range 50 to 52 MHz for Amateur Radio in Austria. Operations will be on CW, SSB and the digital modes on 6 meters. QSL via LoTW and eQSL, paper QSLs will be sent automatically via the Bureau.

**POLAND, SN100.** Czeslaw, SP9FZU will be active with the special call sign SN100PS in memory of Second Silesian Civil War in 1920. Activity will be on various HF bands. QSL via SP9KAG, by the Bureau or direct.

**STAY AT HOME STATIONS.** More special event stations will join the cause to raise awareness of restrictions necessary to fight the spread of the coronavirus and to thank health and medical workers worldwide, including: 3G2HOME Chile, HG20HO Hungary, 4JOSTAYHOME Azerbaijan, 4MSTAYHOME Venezuela, HZ1STAYHOME Saudi Arabia, 4U2STAYHOME Austria, IO6STAY

Italy, 4X2BESAFE Israel, 5B4STAYHOME Cyprus, 5W19STAYSAME Samoa, K2H United States, 6Y6STAYHOME Jamaica, 8A1HOME Indonesia, OD50SH Lebanon, OH0PYSYKOTONA Finland, 9K9STAYHOME Kuwait, A60SH/1 U.A.E., OH0STAYHOME Aland Island, AT2GOK India, ON4HEROES Belgium, AX2020STAYHOME Australia, CH2IR Canada, CN20SH Morocco, CQ8STAYHOME Azores, CT1STAYHOME Portugal, CV7STAYHOME Uruguay, DX0STAYHOME Philippines, E2STAYHOME Thailand and E7STAYHOME Bosnia & Herzegovina. KENYA, 5Z. Andy, 5Z4/G3AB is QRV on CW in his evenings on 20 and 17 meters.

**ZAMBIA, 9J.** Mario, IK1MYT is QRV as 9J2MYT. He plans to be QRV through the end of this month. Look for him using SSB on 20, 17, 15 and 10 meters. QSL direct only, to IZ3KVD.

**75TH ANNIVERSARY OF WWII.** During the month of May,

many stations will be active commemorating the end of World War II. Look for the following special event prefixes to be active: 4X75 Israel, RP75 Russia, EV75 Belarus, GB75 England and N. Ireland, GU75 Guernsey, UP75 Kazakhstan.

**THIS WEEKEND ON THE RADIO.** The SARL VHF/UHF Digital Contest, CQ-M International DX Contest, VOLTA WW RTTY Contest, SKCC Weekend Sprintathon, Arkansas QSO Party, FISTS Spring Unlimited Sprint, 50 MHz Spring Sprint and the WAB 7 MHz Phone Contest are on tap for this weekend. The 4 States QRP Group Second Sunday Sprint is on May 11 and the RSGB 80-Meter Club Championship is on May 13. Please see May 2020 QST, page 69 and the ARRL Contest Calendar and WA7BNM Contest Web Sites for details.

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## Review

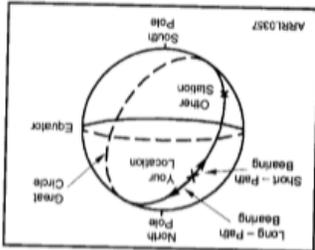
This section is dedicated to refreshing what qualified our Licensing. Something different will appear each month. Enjoy....

- T1B11: What is the maximum peak envelope power output for Technician class operators using their assigned portions of the HF bands?
- 200 watts
  - 100 watts
  - 50 watts
  - 10 watts
- T2B10: Which Q signal indicates that you are receiving interference from other stations?
- QRM
  - QRN
  - QTH
  - QSB
- T3B09: What are the frequency limits of the UHF spectrum?
- 30 to 300 kHz
  - 30 to 300 MHz
  - 300 to 3000 kHz
  - 300 to 3000 MHz
- G1B08: When Choosing a transmitting frequency, what should you do to comply with good amateur practice?
- Insure that the frequency and mode selected are within your license class privileges
  - Follow generally accepted band plans agreed to by the Amateur Radio community
  - Monitor the frequency before transmitting
  - All of these choices are correct

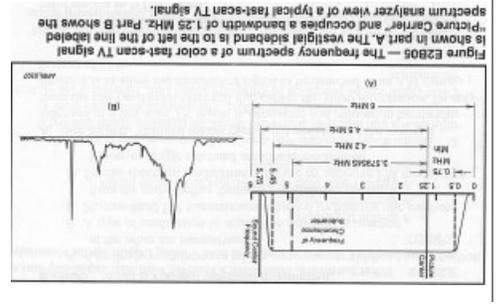
- G2B11: What frequency should be used to send a distress call?
- A. Whichever frequency has the best chance of communicating the distress message
  - B. Only frequencies authorized for RACES or ARES stations
  - C. Only frequencies that are within your operating privileges
  - D. Only frequencies used by police, fire or emergency medical services
- G3B06: What usually happens to radio waves with frequencies below the LUF?
- A. They are bent back to the Earth
  - B. They pass through the ionosphere
  - C. They are completely absorbed by the ionosphere
  - D. They are bent and trapped in the ionosphere to circle the Earth
- E1B08: What limitations may the FCC place on an amateur station if its signal causes interference to domestic broadcast reception, assuming that the receivers involved are of good engineering design?
- A. The amateur station must cease operation
  - B. The amateur station must cease operation on all frequencies below 30 MHz
  - C. The amateur station must cease operation on all frequencies above 30 MHz
  - D. The amateur station must avoid transmitting during certain hours on frequencies that cause the interference
- E2B08: Which of the following is a common method of transmitting accompanying audio with amateur fast-scan television?
- A. Frequency-modulated sub-carrier
  - B. A separate VHF or UHF audio link
  - C. Frequency modulation of the video carrier
  - D. All of these choices are correct
- E3B05: Which amateur band typically support long-path propagation?
- A. 160 to 40 meters
  - B. 30 to 10 meters
  - C. 160 to 10 meters
  - D. 6 meters to 2 meters

ANSWERS

Figure E308 — A drawing showing a great circle path between two stations. The short-path and long-path bearings are shown from the perspective of the Northern Hemisphere station.



RF Spectrum Ranges	Abbreviation	Frequency Range
[T3B08 - T3B10]		
Very Low Frequency	VLF	3 kHz - 30 kHz
Low Frequency	LF	30 kHz - 300 kHz
Medium Frequency	MF	300 kHz - 3 MHz
High Frequency	HF	3 MHz - 30 MHz
Very High Frequency	VHF	30 MHz - 300 MHz
Ultra High Frequency	UHF	300 MHz - 3 GHz
Super High Frequency	SHF	3 GHz - 30 GHz
Extremely High Frequency	EHF	30 GHz - 300 GHz



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, RTTY and data)
10 meters	28.000-28.300 (CW, RTTY and data)
	28.300-28.500 (CW and SSB)

- been observed on 6 meters but it is quite uncommon experience long-path propagation on the 160 to 10 meter bands. Long-path propagation has can occur on any band that provides ionospheric propagation. That means you might
- E3B05: C Long-path propagation (propagation in the opposite direction to the more-direct short path) information without affecting the AM video components.
- E2B08: D The first choice is how commercial stations transmit the audio information in a TV signal. The second is the way most hams send ATV audio because it is easier than adding an FM signal to the broadcast station.
- E1B08: D [97.121(a)] Only by avoiding the frequency or frequencies used when the interference occurs would one reduce the interference and that's reflected in the rules. This assumes that the amateur station is not actually transmitting a spurious signal on the frequency of the broadcast station.
- G3B06: C The lowest Usable Frequency (LUF) is the frequency below which ionospheric absorption attenuated the radio signals to below the atmospheric noise levels. Since absorption increases with decreasing frequency, signals at frequencies below the LUF cannot be received via skywave communication.
- G2B11: A [97.405] When normal communications are not available and the immediate safety of human life or protection of property is involved, all of the normal rules for an amateur station are suspended so that you can obtain assistance. This means that any method of communication, on any frequency, and at any power output may be used to communicate and resolve the emergency. It doesn't matter if the distress is personal to the station or a general disaster. Just be sure you have a real emergency!
- G1B08: D [97.101(a)] Choosing a frequency is straightforward: Be sure the frequency is authorized to General class licensees, follow the band plan under normal circumstances, and listen to the frequency to avoid interfering with ongoing communications.
- T3B09: D
- T2B10: A QRM: Your transmission is being interfered with ..... 1: Nil, 2: Slightly, 3: Moderately, 4: Severely, 5: Extremely
- T1B11: A [97.13] Below 30 MHz, Technician licensees are limited to 200 watts PEP on HF bands. With a few specific restrictions Technicians are allowed the full legal limit of 1500 watts PEP output above 30 MHz.

## LINKS AND STUFF

*Under re-construction. Watch for the orange barrels*

### 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

*Delta County Amateur Radio*  
Escanaba, MI  
[www.dcars.org](http://www.dcars.org)

*Copper Country Radio Amateur*  
Dollar Bay, MI  
[www.ccrac.net](http://www.ccrac.net)

### 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**  
146.850  
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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[tmartin@chartermi.net](mailto:tmartin@chartermi.net)

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**Scott Jarmusch, KA8TFF**

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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	<del>KD8VTT</del> 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	<a href="mailto:wb8ebs@yahoo.com">wb8ebs@yahoo.com</a>
	ANDERSON	ADAM			<a href="mailto:adammarinette@yahoo.com">adammarinette@yahoo.com</a>
	ANDERSON	VICTORIA			<a href="mailto:adammarinette@yahoo.com">adammarinette@yahoo.com</a>
KC9KVP	BAKER	BETH	NIAGARA		
KB9AVX	BAKER	SCOTT	NIAGARA	715-251-1944	<a href="mailto:kb9avx@yahoo.com">kb9avx@yahoo.com</a>
KB8SBP	BERTOLDI	BILL	KINGSFORD		
K8DDA	BRAY	MIKE	VULCAN	906-201-1550	<a href="mailto:mikebray@chartermi.net">mikebray@chartermi.net</a>
KE9L	CASWELL	SKIP	IRON MOUNTAIN	906-774-3371	<a href="mailto:acaswell4238@charter.net">acaswell4238@charter.net</a>
KC8QZG	DAKE	DAVE	NEWBERRY		
KC9ZBC	DOLATOWSKI	SCOTT	GOODMAN	715-633-1006	<a href="mailto:kc9zbc@live.com">kc9zbc@live.com</a>
KC9TQR	FERRIS	JOE	FLORENCE	517-589-4386	<a href="mailto:jrferris@borderlandnet.net">jrferris@borderlandnet.net</a>
N9MBG	FRY	ED	PEMBINE	906-221-7307	<a href="mailto:efry7849@gmail.com">efry7849@gmail.com</a>
KG8NK	GEMBOLIS	LOUIS	ISHPEMING	906-485-5442	<a href="mailto:lgembolis@chartermi.net">lgembolis@chartermi.net</a>
KE8FWN	GRABOWSKI	BILLY	CRYSTAL FALLS	?	
KD8VTS	GRABOWSKI	DEBRA	CRYSTAL FALLS	906-284-2450	<a href="mailto:kd8vts@gmail.com">kd8vts@gmail.com</a>
KD8VTT	GRABOWSKI	WILLIAM	CRYSTAL FALLS		
KC8TH	HEYBOER	TOM	IRON MOUNTAIN	906-779-0481	<a href="mailto:heyboer.tom@gmail.com">heyboer.tom@gmail.com</a>
N8ATS	HOLMES	SAM	PEMBINE	906-322-8507	<a href="mailto:chopsam@centrylink.com">chopsam@centrylink.com</a>
KA8TFF	JARMUSCH	SCOTT	IRON MOUNTAIN		
N9GCI	JOHNSON	JENNI			
N9GJ	JOHNSON	GRG			
KB9EMU	KNUTSON	WILLIAM	FENCE	715-336-2250	<a href="mailto:dknutson54@gmail.com">dknutson54@gmail.com</a>
KD9HQD	LaLIBERTE	BRUCE	NIAGRA, WI	?	<a href="mailto:liberte@borderlandnet.net">liberte@borderlandnet.net</a>
KD9EWZ	LIGHTNER	FR MICHAEL	NIAGRA, WI	?	?
W9BGL	LUCAS	BRIAN			<a href="mailto:bagel99@gmail.com">bagel99@gmail.com</a>
KE8GHE	LUNDAMO	DUANE	?	?	?
W8JWN	MARTIN	THOMAS	IRON MOUNTAIN	906-774-5463	<a href="mailto:tmartin@chartermi.net">tmartin@chartermi.net</a>
WA8FXQ	MEYERS	BOB	VULCAN	906-396-0119	<a href="mailto:meyersb@uplogon.com">meyersb@uplogon.com</a>
KC8LRP	MEYERS	MARGE	VULCAN	906-396-8913	<a href="mailto:mgmeyer@uplogon.com">mgmeyer@uplogon.com</a>
N8TUM	MILLER	TIMOTHY	FLORENCE	715-696-6517	<a href="mailto:timmiller.up@gmail.com">timmiller.up@gmail.com</a>
K9TRY	MORIARITY	TERRY	NIAGARA	715-251-1670	<a href="mailto:kb9zer@yahoo.com">kb9zer@yahoo.com</a>
ND8M	PAUL	JARED	NORWAY	989-660-9535	<a href="mailto:jaredpaul@me.com">jaredpaul@me.com</a>
KD8SZA	PAUL	MICHELLE	NORWAY		
KC9NFT	PERRON	BARRY	FLORENCE	715-696-6175	<a href="mailto:bperron2@netzero.com">bperron2@netzero.com</a>
KC8JRI	REED	GORDY	IRON MOUNTAIN	906-779-1254	<a href="mailto:gordyreed@charter.net">gordyreed@charter.net</a>
KE8GHH	RITTENHOUSE	DAVE	IRON MOUNTAIN	?	?
K4FMX	SCHAFFER	GARY	NIAGRA, WI	?	<a href="mailto:GARYSCHAFFER@LARGERIVER.NET">GARYSCHAFFER@LARGERIVER.NET</a>
KG9Y	THOMAS	DAVE	NIAGARA	715-251-1393	<a href="mailto:kg9y@arrl.net">kg9y@arrl.net</a>

BLACK: Paid Members

BROWN: Past or Unpaid Members

**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.