



MICH-A-CON

Iron Mountain,
Dickinson County, Mich

February 2020

Meeting Reminder: Second Wednesday of the Month

Which is **February 12, 2020** at 07:00 PM at the Dickinson Library, Iron Mountain. Please be there and support the cause of Amateur Radio.

From The President

Brrrrr! I've about had it with the cold and ice. This winter seems to be the worst in years. Of course as you get older, the cold seems to affect you more.

Propagation is poor today, as I operate in the CQ WPX RTTY contest. European stations are pretty weak on 20 meters. Last night 40 meters was poor as well. Lots of "AGN"s from stations not copying serial numbers. The 40 beam didn't perform very well in this contest.

Looks like another capacitor went on the Butternut vertical. SWR off the charts on 80 meters. It was working fine before the contest. Murphy strikes again!

I don't have a lot to say this month. My brother-in-law died Thursday on a trip to Green Bay. He was my golfing and gambling buddy. We always had a bet on the Packer/Lion game. He was a rabid fan of the Pack. Of course, I pulled for the Lions. RIP, John R. Due to the wake, I'll not be at the Wednesday meeting. Scott will take over.

73,

Tom W8JWN

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MICH-A-CON AMATEUR RADIO CLUB MINUTES OF January 8th, 2020

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

Secretary Report

Minutes of the December 11th, 2019 meeting were read and approved.

Treasurer Report

Balances as of January 8th, 2019:

Checking: \$37.55

Savings: \$2,751.35 (Repeater: \$1,535.66)

Cash: \$118.00

Repeater Report

Bob Meyers reported that the two meter repeater is currently on the four bay antenna.

The new Hustler antenna is reading as an open circuit. The problem may be a broken connector or feedline.

Old Business

Tom Martin reported that he received written confirmation from the IRS, after the December meeting, that our tax problems are indeed over. He is currently waiting to receive the correct form to file for our club's status.

**New Business**

Club dues for 2020 are now due. The rates are \$20 for an individual and \$30 for a family.

Pete Schlitt, Dickinson County Emergency Coordinator, reported that there will be a state-wide high water drill on April 15. The Emergency Operations Center will activate from approximately 9:00am to noon. He would like to have someone from the club come to the EOC and operate. Persons with interest should get in touch with Pete after February 1.

Adjournment

Meeting adjourned at 7:30. (Skip Caswell/Scott Jarmusch)

For the Good of the Order

Attendees reported on their recent activities.

Attendees

Tom Martin	W8JWN	Debbie Grabowski	KD8VTS
Scott Jarmusch	KA8TFF	Bill Grabowski	KD8VTT
Joe Ferris	KC9TQR	Duane Lundamo	KE8GHE
Burt Armbrust	WB8EBS	Gary Schafer	K4FMX
Bruce LaLiberte	KD9HQD	Pete Schlitt	KC8JRH
Terry Moriarity	K9TRY	Jan Schafer	Visitor
Brian Lucas	W9BGL	Joyce Williams	Visitor
Bob Meyers	WA8FXQ		
Skip Caswell	KE9L		



News

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

Rapidly approaching is our Great Lakes Division Convention. This year, it will be held in conjunction with the Toledo Mobile Radio Association's annual hamfest in Perrysburg, OH on March 14 and 15.

ARRL President Rick Roderick K5UR will be there to meet members and serve as the keynote. Another special attendee is Bob Heil K9EID of Heil Sound who will be a guest speaker. Check our web pages at: www.toledoglc.org for the full details.

During our conventions, we honor several radio amateurs in the Division for their outstanding efforts in service to ham radio and their community. These awards are presented based upon nominations coming from the local amateur community (THAT'S YOU) and we all have the opportunity to contribute to this effort. Below are the criteria for each of the awards. Please review these and if you are aware of someone whom you feel is worthy of one of these awards, please send your nomination to the Great Lakes Div. Selection committee c/o w8wtd@arrl.org. You will need to include a write-up in your nomination explaining why your candidate is deserving of the award.

GEORGE S. WILSON III W4OYI LIFETIME ACHIEVEMENT AWARD The Radio Amateur in the Great Lakes Division whose lifetime achievement record merits recognition for outstanding contribution to the Amateur Radio Service. The nominee is active on the air and in Amateur Radio organizations. The Wilson recipient is an all-around Amateur whose lifetime activities, attitudes, and achievements might serve as an example to others. At the time of nomination, nominees must have been licensed Radio Amateurs for at least 30 years and be at least 50 years of age. Emphasis is placed on service to others rather than self, diversity of Amateur Radio interests and Activities, evidence of continuing self-challenge via Amateur Radio, and outstanding contributions to Amateur Radio. Devotion to Amateur Radio is balanced with attention to work responsibilities and family life. This award is presented at the discretion of the Awards Committee and Director. The recipient must be a current ARRL member.

GREAT LAKES DIVISION AMATEUR OF THE YEAR AWARD The Radio Amateur in the Great Lakes Division whose outstanding record in the year preceding nomination merits recognition for contribution to the Amateur Radio Service. The Amateur of the Year, is an all-around Amateur, whose activities, attitudes and achievements may serve as a guiding example to

others. Devotion to Amateur Radio is balanced with attention to work responsibilities and family life. The Amateur of the Year exemplifies the "Amateur's Code." In selecting the award recipient, emphasis is placed on service to others rather than self, diversity of Amateur Radio interest and activities, evidence of continuing self-challenge and outstanding contributions to Amateur Radio. The recipient must be a current ARRL member.

TECHNICAL ACHIEVEMENT AWARD
The Radio Amateur(s) in the Great Lakes Division whose technical excellence exemplifies "continuation of the Amateur's proven ability to contribute to the advancement of the radio art" and whose attitude exemplifies the highest dedication to service to others and to science rather than self. Particular value will be placed on evidence of continuing contributions to the Amateur Radio Service. Groups of two or more Amateurs may be nominated for a joint award in this category. Technical achievement may be demonstrated through activities such as the following: publications, research and development, creativity in hardware, software and firmware systems design and implementation, technical instruction, application of advanced technology to public service communications. This award is presented at the discretion of the Awards Committee and Director. The recipient(s) must be a current ARRL member.

DX ACHIEVEMENT AWARD
The radio amateur(s) in the Great Lakes Division who has dedicated time, talent and service to DXing. The award is given especially in recognition of an exemplary lifetime DX record. Recipients are active on the air and in DX Amateur Radio organizations. The DX achievement recipient is also an all-around Amateur whose lifetime, ethical DX activities, good operating practices and notable achievements of the recipient might be viewed as examples to follow by others. At the time of nomination, nominees must have been licensed Radio Amateurs for at least 20 years and be at least 50 years of age. Emphasis is placed on DX totals (Honor Roll, DXCC Challenge, etc), DXpeditions served on, Elmering/Mentoring other DXers plus other outstanding DX related accomplishments. Devotion to Amateur Radio is balanced with attention to work responsibilities, and to civic and family life. This award is presented at the discretion of the Awards Committee and Director. The recipient(s) must be a current ARRL member.

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We will also present the JOSEPH J. PHILLIPS, K8QOE, NEWSLETTER AWARD. This award will be given to the highest scoring newsletter submitted in Great Lakes Division competition to the newsletter review committee. Each newsletter for the con-

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 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-

test will have been declared newsletter-of-the-year for the Section it represents during the present year; however, when the timing of the Division Convention occurs too early in the year to permit selection of a newsletter for the year, winners for the previous year may be submitted. Each of our three Section Managers will establish the criteria for selecting the candidate newsletter(s) from their respective Sections.

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://arrrl-greatlakes.org>

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>.

NNNN

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,

I'm hopeful that the new year has started out well for all of you. I do remember that Popular Science magazine had predicted some years back that by 2020 we'd have flying cars – that might have been a bit of a miss. What they didn't foresee is all of the positive technology changes we have witnessed in amateur radio – and there's more to come!

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.

No 2020 Livonia Swap

Please be advised that the Livonia Amateur Radio Club (an ARRL Affiliate Club, Michigan Section, Great Lakes Division) has cancelled its annual ARRL sanctioned Swap and Shop event, scheduled for February 23, 2020. The club's Board of Directors took this action following many problems encountered dealing and communicating with the venue operator. They do intend to resume this popular event in 2021.

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!

From Our Section Emergency Coordinator

Most of you are aware that this year's SET will exercise VHF simplex. Yes, it will be hard, but it is a skill we need to build. There is still plenty of time until October 10, so if you use the time well, you can be successful.

Develop/practice voice messaging skills. The video is still there from 2017 (<https://youtu.be/14wY3zcMn2o>), the definitive guide is the ARRL's Methods and Practices Guidelines, but the best medicine is practice. Practice at your meetings and join any of the numerous traffic nets that happen every day (<http://nts-mi.org/netinfo.php>). The nets will appreciate the additional traffic.

Test your circuits. Learn where you can go to get good simplex coverage and work out the paths to adjacent counties. Do some weekend tests with your next door neighbors. Take your mobile to some high place, maybe even borrow your repeater's antenna for the test. Drive up to the top floor of a parking structure. Use your imagination.

The morning of January 25th the SEOC will be monitoring 147.48 and 446.125 simplex for testing. If we can tolerate the interference and have enough operators, we MAY also be listening on 146.52. We might arrange additional tests later on if needed.

Get active, learn what you can do, and have fun.

73 de WB8RCR

Michigan ARRL Section Staff Travel Plans

HARA Swap (Negaunee, MI) February 1, 2020 (WA8EFK)

Hospitality Thanks

Hazel Park ARC Swap (K8JK)

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 December 2019

Station Activity Reports (SAR) for December 2019

WB8WKQ 367, WD8MWD 136, K8ED 134, WB8TQZ 102, N5MKY 96, K8BKM 92, KE8KOC 66, K8RDN 45, KD8ZCM 34, WD8USA 32, KE8CEH 21, KE8BYC 13, WB8RCR 8

Public Service Honor Roll (PSHR) for December 2019:

KE8BYC 363, WD8MWD 230, KE8KOC 205, N5MKY 155, WB8RCR 153, WD8USA 122, KD8ZCM 119, WB8TQZ 110, K8ED 100, KB8RCR 95, K8RDN 92, WB8WKQ 90, KC8YVF 77, KE8CEH 51, KB8PGW 18

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

Net traffic for December 2019:

Michigan Amateur Communications System 107

The Michigan Net 70

Michigan Traffic Net 51

Southeastern Michigan Traffic Net 40

Upper Peninsula Net 36

Michigan VHF Traffic Net 24

Michigan Digital Traffic Net 10

Saginaw County ARES Net 5

Luce County ARES Net 2

Northern Lower Eastern Upper Peninsula Net 1

Monroe Co ARPSC Net 1

NTS person-hour Value for December 2019: \$ 41,200

(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

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 February, 2020.

The January ARRL Board meeting in Newington, CT began with discussion about renewing the annual employment contract with Howard Michel WB2ITX, ARRL's CEO which had reached its expiration. By a majority vote, the Board elected to not renew the contract.

Former interim CEO Barry Shelley N1VXY has agreed to resume that roll for about six months while we pursue the selection of a new CEO. I would not expect to see any radical changes in the current programs that ARRL has in place. I am pleased that Barry is willing to assist as we begin our CEO Search. He returns with many years of experience and is well liked by the HQ staff.

Rapidly approaching is our Great Lakes Division Convention. This year, it will be held in conjunction with the Toledo Mobile Radio Association's annual hamfest in Perrysburg, OH on March 14 and 15. ARRL President Rick Roderick K5UR will be there to meet members and serve as the keynote. Another special attendee is Bob Heil K9EID of Heil Sound who will be a guest speaker. Check our web pages at: <http://www.toledoglc.org/> for the full details.

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

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

This month I want to echo what Dale has said about the Great Lakes Convention. Mark your calendars and check your plans to see if you can attend. There will be excellent speakers and a lot of interesting topics in the forums. It will be worth the trip, no matter what part of the three states you are coming from. Meet some of your fellow hams in the Division, and take back some new knowledge to your club or your area. Maybe something will spark a new interest in an aspect of ham radio that you hadn't thought of.

Second, look around your local club or your local area. Are you seeing a ham who has been doing outstanding work this past year, or more likely, over many years? Consider nominating that person for an award, if there is a category they best fit. Dale has listed all the awards and the criteria necessary. Maybe you know a future award winner.

Finally, a word about the new publication from ARRL, *On the Air*. It is finally out there, and has been enthusiastically received by new hams and experienced hams alike. How do you get a copy? Well, ARRL will send only one print magazine, so you will have to choose between QST and *On the Air*. However, you can get both magazines digitally, so if you are an experienced ham who wants to see *On the Air*, go to the website and discover how to get the digital editions. If you're a newly licensed ham, you should check out the new magazine, and perhaps choose the option of having that magazine in print form. You'll find great advice and hints about operating, rigs, building simple projects, etc. And, the good news is, this is just the first of several new programs the League will be offering to members over the coming year.

See you at the Convention, I hope!

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

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.

2/1/20 HARA	Negaunee, MI
2/8/20 Cherryland	Traverse City, MI
2/16/20 Mansfield	Mansfield, OH
2/23/20 Livonia	CANCELLED for 2020
3/7/20 Cave City	Cave City, KY
3/14-15 GL Conv/TMRA Hamfest	Perrysburg, OH
3/21/20 Gallipolis	Gallipolis, OH
4/1/20 NOARS Winter Hamfest	Elyria, OH
4/11/20 Crossroads	Kalamazoo, MI
4/11/20 Cuyahoga Falls	Cuyahoga Falls, OH
4/18/20 Chassell Hamfest	Chassell, MI
4/18/20 Portsmouth Hamfest	Portsmouth, OH
4/19/20 GMARC Tech EXPO	Madison Hgts, MI
4/26/20 Athens Hamfest	Athens, OH

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 require some advanced planning.

73, Ham it up!

Dale Williams WA8EFK
Director Great Lakes Division

ARRL PROPAGATION BULLETIN

QST de W1AW
 Propagation Forecast Bulletin 6 ARLP006
 From Tad Cook, K7RA
 Seattle, WA February 7, 2020
 To all radio amateurs

We saw a nice run of Solar Cycle 24 and Solar Cycle 25 sunspots from January 24 through February 1. Daily sunspot number reached a short term peak of 18 on January 26.

Average daily sunspot numbers declined from 11.1 reported in last week's propagation forecast bulletin ARLP005 to 4.7 over the current reporting week, January 30 through February 5.

Predicted solar flux for the next 45 days is 71 on February 7-14, 72 on February 15-20, 73 on February 21-22, 74 on February 23-29, 72 on March 1-3, 71 on March 4-11, 72 on March 12-18, 73 on March 19-20, and 74 on March 21-22.

Predicted planetary A index is 8 on February 7, 5 on February 8-24, 10 on February 25-26, 5 on February 27-29, 8 on March 1-3, and 5 on March 4-22.

Geomagnetic activity forecast for the period February 7 to March 04, 2020 from F.K. Janda, OK1HH.

"Geomagnetic field will be quiet on: February 12, 15-23
 quiet to unsettled on: February 8, 10-11, 13-14, 24, 27, March 1-4
 quiet to active on: February 7, (9, 28) unsettled to active on:
 (February 25-26) active to disturbed: none

"Solar wind will intensify on: February 7, 12-15, (16,) 18-20
 (21-22,) 26, (March 4).

"Parenthesis means lower probability of activity enhancement."

David Moore sent this:

"Scientists have unlocked one of the mysteries of how particles from flares on the Sun accumulate at early stages in the energization of hazardous radiation that is harmful to astronauts, satellites and electronic equipment. Using data from NASA's Parker Solar Probe, they observed one of the largest events that shows how plasma is released after a solar flare can accelerate and pile up energetic particles generating dangerous radiation conditions."

"<https://www.sciencedaily.com/releases/2020/02/20200203162844.htm>."

AA2F sent this in a message he titled "Martian sporadic-E?"
<https://bit.ly/2H14NgL>

Ted Leaf, K6HI, Kona, Hawaii sent this: <https://bit.ly/2OAFwhn>

Jeff, N8II reported on January 31:

"The CQ World Wide 160 Meter CW contest on January 25-26th featured the best conditions I have ever experienced in a top band test. I worked 34 outside of NA DX QSOs on the first night and 90 Europeans the second night running 100W to my half sloper!

"From 0030-0330Z signals were incredibly strong from Europe. I was able to call CQ and get many EU answers from all over the continent and was called by P33W in Cyprus and 4X2M in Israel. A total of 26 Germans were logged in the contest. The highlight of the first night was being called by CX6VM in Uruguay for my best DX of the weekend.

"The solar flux continues to inch higher, but openings on 17M to Europe are generally poor and just an occasional Mediterranean opening occurs on 15M around 1500Z."

Latest forecast from Dr. Tamitha Skov, WX6SWW:
<https://youtu.be/aZWwC72meBA>

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/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 January 30 through February 5, 2020 were 11, 11, 11, 0, 0, 0, and 0, with a mean of 4.7. 10.7 cm flux was 74.1, 73.9, 72.5, 72.2, 72.1, 70.3, and 70.6, with a mean of 72.2. Estimated planetary A indices were 12, 8, 6, 6, 5, 5, and 5, with a mean of 6.7. Middle latitude A index was 9, 6, 4, 4, 3, 5, and 4, with a mean of 5.

NNNN

ARRL DX NEWS

QST de W1AW
DX Bulletin 6 ARLD006
From ARRL Headquarters
Newington CT February 6, 2020
To all radio amateurs

This week's bulletin was made possible with information provided by AA4NC, W0YBS, W3UR, WB0TEV, 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.

AZERBAIJAN, 4K. Furkan, TA7AOF is QRV as 4K6/TA7AOF until February 12. Activity is on the HF bands using CW, SSB and FT8. This includes an entry in the CQ World Wide WPX RTTY contest. QSL direct to home call.

TANZANIA, 5H. Members of the Low Bands Contest Club are QRV as 5H4WZ from Pemba Island, IOTA AF-063, until February 18. Activity is on 160 to 10 meters using CW, SSB, RTTY and FT8. This includes being an entry in the CQ World Wide WPX RTTY contest and the upcoming ARRL International DX CW contest. QSL via OM3PA.

KENYA, 5Z. Scott, WA5A is QRV as 5Z4/WA5A from Ruaka until late March. Activity is holiday style on 40, 20 and 15 meters, and possibly 160 and 80 meters, using mainly SSB. QSL to home call.

JAMAICA, 6Y. Rob, N1TRK will be QRV as N1TRK/6Y from Ne-gril, IOTA NA-097, from February 8 to 20. Activity will be on 40, 20, 17 and 10 meters using primarily FT8 with some SSB. QSL via LoTW.

NAURU, C2. Operators JP3EXR, JH3QFL, JR3GWZ, JA1PFP, JH3VAA are QRV as C21MB, C21AA, C21GW, C21PF and C21VA, respectively, until February 10. Activity is on the HF bands, and 6 meters and 2 meters EME as well, using primarily FT8 with some CW. QSL via operators' instructions.

PALESTINE, E4. Members of Radio Club F6KOP are QRV as E44CC until February 17. QSL via F5GSJ.

SOUTH COOK ISLANDS, E5. Donald, VE7DS is QRV as E51DDG from Rarotonga Island, IOTA OC-013, until February 14. Activity is on 40, 30, 20 and 17 meters using CW. QSL via LoTW.

FRENCH POLYNESIA, FO. Will, AA4NC and Ron, AA4VK will be QRV as TX4N and TX4VK, respectively, from Tahiti from February 11 to 17. Activity will be on all HF bands using CW, SSB, FT8 and FT4. This includes being active as TX4N in the upcoming ARRL International DX CW contest. QSL TX4N via EA5GL and

TX4VK direct to home call.

SOLOMON ISLANDS, H4. Bernhard, DL2GAC is QRV as H44MS from Malaita Island, IOTA OC-047, until April 20. Activity is on 80 to 6 meters using SSB and possibly FT8. QSL direct to home call.

THAILAND, HS. Lory, HB9DUS is QRV as HS0ZKE from Bangkok until the end of February. Activity is on the HF bands using CW and FT8. QSL to home call.

HONDURAS, HR. Dave, VE3VSM will be QRV as VE3VSM/HR9 from Roatan Island, IOTA NA-057, from February 11 to 23. Activity will be on 40, 20 and 15 meters using mainly CW, and possibly some SSB and RTTY. This includes being an entry in the upcoming ARRL International DX CW contest. QSL to home call.

ST. VINCENT, J8. David, WJ2O will be QRV as J8/WJ2O from February 9 to 20. Activity will be on the HF bands, with a focus on the newer bands, using CW and FT8. This includes being an entry in the upcoming ARRL International DX CW contest. QSL via N2ZN.

BONAIRE, PJ4. Michael, HB9WDF is QRV as PJ4/HB9WDF from Kralendijk until February 9. Activity is holiday style on 40 to 10 meters, and possibly on various satellites, using mainly FT8, SSB and FM. QSL to home call.

FERNANDO DE NORONHA, PY0F. Andre, PP6ZZ is QRV as PY0FF until February 18. Activity is in his spare time on the HF bands using all modes, including FT8 and FT4. This includes being an entry in the upcoming ARRL International DX CW contest. QSL via W9VA.

ANTARCTICA. Club station RI1ANC on Vostok Base will be QRV beginning February 10. Activity will be on the HF bands using FT8 with some CW and SSB. QSL via RN1ON.

BELIZE, V3. Bob, W0YBS is QRV as V31CO from Caye Caulker, IOTA NA-073, until his return on February 26. Activity is on the HF bands using CW, RTTY and FT8. QSL to home call. In addition, Victor, WB0TEV is QRV as V31VP from Maya Hill Lodge until February 11. Activity is on 160 to 10 meters using SSB, RTTY and FT8. This includes being an entry in the CQ World Wide WPX RTTY contest. QSL to home call.

UK SOVEREIGN BASE AREAS ON CYPRUS, ZC4. Robert, G4WXJ is QRV as ZC4RH until February 13. Activity is on the HF bands, including Satellite QO-100, using CW, SSB and FT8. QSL to home call.



THIS WEEKEND ON THE RADIO. The CQ World Wide RTTY WPX Contest, QRP 80-Meter CW Fox Hunt, NCCC CW Sprint, SARL Field Day Contest, Asia-Pacific Spring CW Sprint, SKCC Weekend CW Sprintathon, KCJ Topband CW Contest, Dutch PACC Contest, YLRL YL-OM Contest, OMISS SSB QSO Party, FISTS Winter Unlimited CW Sprint, RSGB 1.8 MHz CW Contest, Balkan HF Contest and the Classic Phone Exchange will certainly keep contesters busy this upcoming weekend.

The CQC Winter CW QSO Party and 4 States QRP Group Sec-

ond Sunday Sprint are scheduled for February 10. The ARRL School Club Roundup runs from February 10 to 14. The CWops Mini-CWT Test, RSGB 80-Meter Club Data Championship, Phone Fray, NAQCC CW Sprint and QRP 40-Meter CW Fox Hunt are all scheduled for February 12.

Please see February 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....

- T1B08: Which of the following is a result of the fact that the Amateur Radio Service is secondary in all or portions of some amateur bands (such as portions of the 70cm band)?
- U.S. amateurs may find non-amateur stations in those portions, and must avoid interfering with them
 - U.S. amateurs must give foreign amateur stations priority in those portions
 - International communications are not permitted in those portions
 - Digital transmissions are not permitted in those portions
- T2B07: How can you join a digital repeater's talk group?
- Register your radio with the local FCC office
 - Join the repeater owner's club
 - Program your radio with the group's ID or code
 - Sign your call after the courtesy tone
- T3B06: What is the formula for converting frequency to approximate wavelength in meters?
- Wavelength in meters equals frequency in hertz multiplied by 300
 - Wavelength in meters equals frequency in hertz divided by 300
 - Wavelength in meters equals frequency in megahertz divided by 300
 - Wavelength in meters equals 300 divided by frequency in megahertz
- G1B05: When may music be transmitted by an amateur station?
- At any time, as long as it produces no spurious emissions
 - When it is unintentionally transmitted from the background as the transmitter
 - When it is transmitted on frequencies above 1215 MHz
 - When it is an incidental part of a manned space craft retransmission
- G2B08: What is the "DX window" in a voluntary band plan?
- A portion of the band that should not be used for contacts between stations within the 48 contiguous United States
 - An FCC rule that prohibits contacts between stations within the United States and possessions in that portion of the band
 - an FCC rule that allows only digital contacts in that portion of the band
 - A portions of the band that has been voluntarily set aside for digital contacts only

- G3B04: Which of the following applies when selecting a frequency for lowest attenuation when transmitting on HF?
- A. Select a frequency just below the MUF
 - B. Select a frequency just above the LUF
 - C. Select a frequency just below the critical frequency
 - D. Select a frequency just above the critical frequency
- E1B06: What is the National Radio Quiet Zone?
- A. An area in Puerto Rico surrounding the Arecibo Radio Telescope
 - B. An area in New Mexico surrounding the White Sands Test Area
 - C. An area surrounding the National Radio Astronomy Observatory
 - D. An area in Florida surrounding Cape Canaveral
- E2B05: Which of the following is an advantage of using vestigial sideband for standard fast-scan TV transmissions?
- A. The vestigial sideband carries the audio information
 - B. The vestigial sideband contains chroma information
 - C. Vestigial sideband reduces bandwidth while allowing for simple video detector circuitry
 - D. Vestigial sideband provides high frequency emphasis to sharpen the picture
- E3B02: What is the approximate maximum range for signals using transequatorial propagation?
- A. 1000 miles
 - B. 2500 miles
 - C. 5000 miles
 - D. 7500 miles

ANSWERS

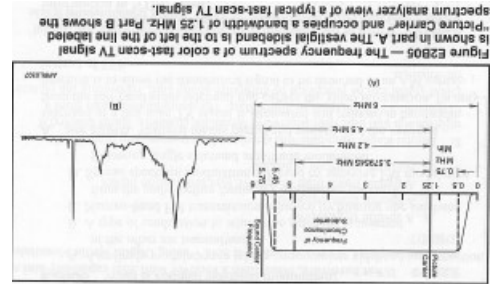


Figure E2B05—The frequency spectrum of a color fast-scan TV signal is shown in part A. The vestigial sideband is to the left of the line labeled "picture carrier" and occupies a bandwidth of 1.25 MHz. Part B shows the spectrum analyzer view of a typical fast-scan TV signal.

- T1B08: A: [97.303] A primary service is protected from harmful interference by signals from secondary services. The secondary service gains access to the frequencies in the allocation with the understanding that it must not cause harmful interference to primary service users and it must accept interference from the primary users.
- T2B07: C: The central DMR controller organizes users of the DMR network into talk groups. Each talk group has an ID or code. By programming your radio with those IDs and codes, you can join the group and your audio will be shared with all other members of the group. Talk groups allow groups of users to share a channel at different times without being heard by other users on the channel.
- T3B06: D: Radio waves travel at a constant speed (the speed of light). Thus wavelength = 300 / frequency (in MHz).
- G1B05: D: [97.113(c)] Normally, music may not be transmitted by an amateur station. This is to avoid infringing upon commercial broadcast activities. Music is often used in communications between ground control and manned space craft for such things as waking up the astronauts. In this case, since it is an incidental part of the transmission and not the primary purpose of it, the music can be retransmitted by the amateur station along with the rest of the transmission, as long as the amateur station has NASAs permission to retransmit the audio
- G2B08: A: Outside the United States, particularly in ITU Regions 1 and 3, amateurs share the 160 and 180 meter band with government and commercial stations. They may have very limited allocations, as well. Typically reserved for contacts with stations outside the U.S. and Canada, the DX window is a small section of a band where these stations can transmit and be heard without having to compete with stronger domestic signals. As worldwide amateur allocations gradually align with each other, DX windows are becoming less necessary.
- G3B03: A: Ionospheric absorption (attenuation) is lowest just below the Maximum Usable Frequency (MUF). Use a frequency just below the MUF for the highest received signal strength.
- E1B05: C: [97.3(a)(33)] The National Radio Quiet Zone protects the radio astronomy facilities for the National Radio Astronomy Observatory in Green Bank, West Virginia, and the Naval Research Laboratory at Sugar Grove, West Virginia. It is composed of parts of the states of Maryland, West Virginia and Virginia.
- E2B05: C: The frequency spectrum of a color fast-scan TV signal is shown in Fig E2B05. The vestigial sideband is to the left of the line labeled Picture Carrier and occupies a bandwidth of 1.25 MHz. Part B shows the spectrum analyzer view of a typical fast scan TV signal. Including a vestigial sideband allows the video signal to be recovered with simple AM detector circuits, as opposed to requiring the more complex SSB demodulators. By only including part of the unused sideband, the full bandwidth of an AM-DSB signal is not required.
- E3B02: C: Maximum transequatorial propagation range is approximately 5000 miles – 2500 miles on each side of the magnetic equator.

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

Copper Country Radio Amateur
Dollar Bay, MI
www.ccras.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/>

ABOUT OUR CLUB....**Club Officers****President:**

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tmartin@chartermi.net

Vice President

Scott Jarmusch, KA8TFF

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 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
KD9EWZ	LIGHTNER	FR MICHAEL	NIAGRA, WI	?	?
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@arll.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.