



MICH-A-CON

Iron Mountain,
Dickinson County, Mich

January 2019

Meeting Reminder: [Second Wednesday of the Month](#)

Which is **January 9, 2019** at **07:00 PM** at the **Dickinson Library, Iron Mountain.** Please be there and support the cause of **Amateur Radio.**

From The President

Words from the President

Our next meeting, Wednesday January 9th, is DUES R DUE night. You can find a membership form at the end of this newsletter.

Two of our repeater "experts" won't be at the meeting. Bob, WA8FXQ and Gary, K4FMX, will be in Eagle River, WI attending a Yaesu Fusion presentation of WIRES-X, a new system that has replaced all 2 meter repeaters in Japan. I'll let the boys explain more at the next meeting. Bob will also be presenting a satellite demonstration at the February meeting.

I'm presently operating in the ARRL RTTY RU, while I'm typing this article. I have three keyboards in front of me and so far I've hit the correct one each time. HI! Conditions aren't the best. I haven't worked a single European station. I've been on 40 and 80 meters the most.

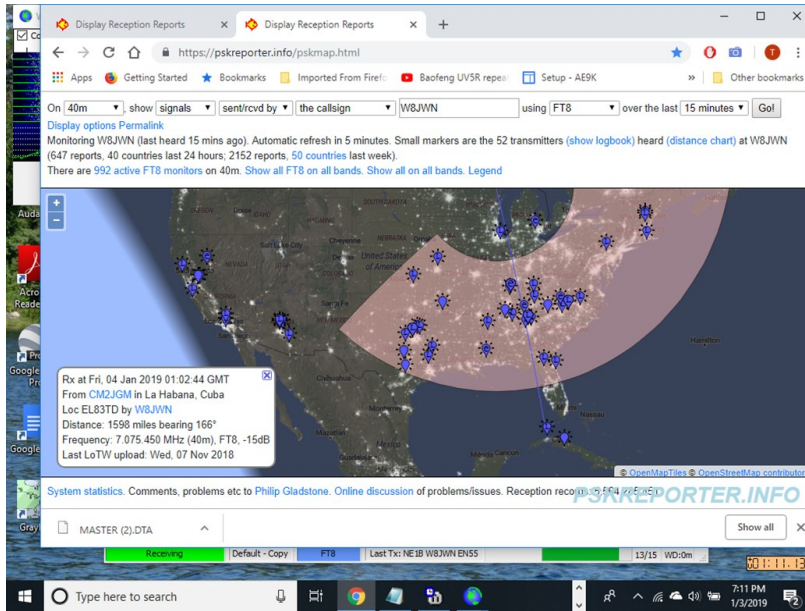
The contest started at 1800 UTC and it is presently 0429 UTC. I've made 392 contacts. This seems like a domestic contest. Not much DX. I started on 20 meters but nothing worked outside of NA.

I just sent my call on this keyboard! My first mistake.

Have many of you guys been using the PSK Reporter? It is a great way to check out your FT8 signal.

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The image is a screen shot taken when I was 40 meters running 30 watts to my Inverted Vee. One of the receiving stations in Cuba had me at -15dB. Not bad for that distance. I was +6 closer in to Michigan.

Well, back to the contest. By the way, I worked Wisconsin twice after I emailed Joe to get on RTTY! During the last contest, I missed WI as a multiplier!

See you Wednesday!

73,

Tom W8JWN

MICH-A-CON AMATEUR RADIO CLUB MINUTES OF December 12, 2018

President Tom Martin called the meeting to order at 7:05 pm.

Secretary Report

Minutes of the November 7th, 2018 meeting were read and approved.

Treasurer Report

Balances as of December 12th, 2018:

Checking: \$80.95

Savings: \$2750.16 (Repeater: \$1216.52)

Cash: \$38.00

Repeater Report

Bob Meyers reported that he currently has the two-meter controller, the 440 radio, and the Marquette link unit at his home. Once adjustments are completed, they will be reinstalled at the repeater site.

Old Business

The Echolink equipment is again in need of relocation from Gary Schafer's residence. Tom Martin will try it and see how it works from his home.

ARRL Field Day 2018 results are posted in the December issue of QST. Our effort ranked fifth in Wisconsin 3A with 342 QSOs and 1,868 points.



Club members should continue to contact local amateur licensees, if possible, and invite them to attend a club meeting.

New Business

The club holiday party will be held on Saturday, March 23, at Bartoletti's in Aurora, beginning at 6:00. There will be five menu items to choose from.

Annual club dues can be paid at the January 2019 meeting.

The yearly payment to WE Energies for the repeater is due (\$30). Tom Martin will contact treasurer Debbie Grabowski for a check.

Adjournment

Meeting adjourned at 7:21. (Skip Caswell/Burt Armbrust)

Presentations

Skip Caswell demonstrated the use of crimp-on coax connectors.

Dave Thomas gave a presentation on set-up and operation for digital modes.

For the Good of the Order

Attendees reported on their recent activities.

The 50/50 drawing was won by Janet Schafer. The club treasury was enriched by \$20.0

Attendees

Tom Martin	W8JWN	Gary Schafer	K4FMX
Scott Jarmusch	KA8TFF	Dudley Brown	K8CIV
Joe Ferris	KC9TQR	Dave Rittenhouse	KE8GHH
Bob Meyers	WA8FXQ	Janet Schafer	Visitor
Brian Lucas	W9BGL	Joyce Williams	Visitor
Bruce LaLiberte	KD9HQD		
Burt Armbrust	WB8EBS		
Skip Caswell	KE9L		
Tim Miller	N8TUM		
David Thomas	KG9Y		

News

Third Wednesday Monthly Communications Exercises Set

ZCZC AX01
QST de W1AW
Special Bulletin 1 ARLX001
From ARRL Headquarters
Newington CT January 3, 2019
To all radio amateurs

FEMA Region 10 will conduct monthly communications exercises (COMMEX) on the third Wednesday of each month, starting on January 16, 1730 - 1900 UTC. Amateur Radio operators are invited to take part. The intent of these exercises is to test and exercise interoperable communication (federal/state/local/tribal/Amateur Radio) during a major disaster in which the communication infrastructure is significantly damaged or destroyed.

FEMA Region 10 will use the call sign WGY910. Other stations associated with agencies and organizations that provide response support in accordance with the National Response Framework are encouraged to participate.

The COMMEX will use these "dial" or "window" frequencies on 60 meters - including 5,330.5 kHz, 5,346.5 kHz, 5,357.0 kHz, 5,371.5 kHz, and 5,403.5 kHz - as part of the exercise. The area of operation is the continental US.
NNNN



Great Lakes Division Registered Hamfests to End of Year (Corrected)

There were several glitches in this morning's hamfest posting for upcoming ARRL Sanctions hamfests. Some hamfests were missing from the list and several dates were corrupted. Here is an updated listing, re-verified from the ARRL HQ record of approvals.

11/3/18	Grant ARC Hamfest	Georgetown, OH
12/1/18	Fulton Co. Winterfest	Delta, Oh
12/2/18	Lanse Creuse Hamfest	Madison Hts, MI
1/20/19	S.C.A.R.F. Hamfest	Nelsonville, OH
1/27/19	Hazel Park Hamfest	Hazel Park, MI
1/27/19	Tusco ARS Hamfest	Strasburg, OH
2/17/19	Livonia Hamfest	Livonia, MI
2/17/19	Mansfield Hamfest	Mansfield, OH

ARRL Great Lakes Division
Director: Dale R Williams, WA8EFK
wa8efk@arrl.org

ARLB032 W1AW 2019 Winter Operating Schedule

ZCZC AG01
 QST de W1AW
 ARRL Bulletin 1 ARLB001
 From ARRL Headquarters
 Newington CT January 3, 2019
 To all radio amateurs

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.

Morning Schedule:

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

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.

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)

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.

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

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.

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

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.

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

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 December 2018 issue of QST or on the web at, <http://www.arrl.org/w1aw-operating-schedule>.

NNNN

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

ARRL MICHIGAN SECTION NEWS

Greetings to all the Amateurs of Michigan (from December),

Compiled below are Cheers, Changes, and Comradery. This and more awaits you in the December 2018 Michigan Section Newsletter. As we ever so gently slide into the official start of Winter, toss another log on the fire (not your station log please) and settle in for some mostly correct, reasonably accurate, and hopefully non-disturbing news from in and around the state.

My apologies for the late publication, sometimes schedules simply get in the way!

I Wish That Jim Would

Not much mind reading activity goes on here. If there's something going on in your patch, and you want to tell the Section about it, you might want to consider pointing it out to me. I am only too happy to include details about your upcoming events, elections, and whatever else you'd like to share. Please note that timing is everything. Again, predicting the future and determining what your thinking are not among my skillset.

Affiliated Clubs

From Bill Loeber, NU3D our Section Affiliated Club Coordinator

I would like to thank our Section Manager for promoting the updating of your Affiliated Club status in the last Section News. Also, a big thank- you to all of the clubs that have updated their information and renewed their Affiliated Club status. To the clubs that have not done so yet, please jump in and update, it is quick and painless - let's go for 100%! One last thing, after reviewing many of our clubs in the MI section, I would like to suggest that you consider applying for the coveted status of a Special Service Club. Please check out the ARRL website to see the benefits besides the obvious

ones. As of this writing, we only have seven in our section and I am sure we can grow this number. If I can be of any help in renewing your club status as an Affiliated Club and/or the Special Service Club, please don't hesitate to email me or give me a call. We are all in this together.

Bill Loeber, NU3D

New Officers At Many Clubs

I appreciate those who have taken the time to send this along, and I'm happy to post them in the Section Newsletter:

Shiawassee Amateur Radio Association 2019 Officers

President	Kevin Middleton, K8MID
Vice President	Don Warner, WB8GUS
Secretary	Phil Bates, AC8FW
Treasurer	Dennis Phillips, KC8ETW
Trustee	Charles Dafoe, K8DZH
Trustee	Michael Middleton, KF5MYQ
Trustee	Mike Rothe, AB8VS

2019 USECA ARC Officers:

President:	Jim Marek N8KKG
Vice-President:	Jim Hoffman K8JEH
Treasurer:	Gary Simms K18M
Recording Sec:	Rob Lifton NY8W
Membership Sec:	Brenda White KD8SGB
Board Members (3):	
	Glen Garant VE3GQG
	Jim Blackford KD8YAF
	Linda Line KD8SAI

Michigan Section Digital Radio Group Meeting

Fourteen 'DRG Representatives', District EC's, and Section Staff from all around Michigan gathered Saturday December 15th in Howell for a three-hour long meeting discussing the status of Packet Radio data networking around the state.

We concluded that we have four distinct "networks" - the BPQ (NetROM) network, the Michigan AMPRnet TCP/IP network (JNOS), the Mi7 BPQ network, and the Mi6 microwave network (TCP/IP). Three of the four form a mostly "homogenous" network linked together via the NetROM protocol, and two of the networks speak TCP/IP natively. But ALL networks are well integrated with one another, so access to ANY provides reachability to ALL.

As all these networks have been growing in size only shows that Michigan Hams have an increased interest in connecting us all together for both the benefit of the average Ham, as well as to move critical information during EMCOMM emergencies and drills. And as these networks grow we hope to provide maps and node lists on the <http://WWW.MI-DRG.ORG> website to help all interested parties in connecting to and using this data resource. The more trained and equipped Hams we have the better prepared we are in times of disaster.

The Michigan Section "Digital Radio Group" was established in 2004 and has been in continuous operation ever since, with the goal to assist Michigan Hams in working together in a more coordinated manner with regard to Packet data networking, digital voice/data modes such as P25, D-Star, DMR, C4FM/Fusion, and HF digital modes. The DRG assists all groups to work together toward a common goal, create interconnections between dissimilar networks and modes, and to help train and advise groups interested in these powerful tools in the Amateur Radio hobby. This is all done in an effort to meet the Michigan Section Mission Statement:

"Develop the Michigan ARPSC Program into a fully integrated communications team ready, willing and able to provide radio communications support to public service agencies and the citizens of Michigan "

Further information and resources can be found at the <http://WWW.MI-DRG.ORG> website.

We thank you all for your continued participation!
--- Jay Nugent WB8TKL

Hospitality Acknowledgements

December 2nd L'Anse Creuse Swap (K8JK)
December 14th SEMDXA Meeting (K8JK)
December 15th DRG Meeting (K8JK)

Michigan ARRL Section Staff Travel Plans

January 27th, 2019	Hazel Park Swap (K8JK)
February 17th, 2019	Livonia Swap (Section Staff)
March 16th, 2019	Crossroads 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 24C Mon 2000
D8EN - District 8 Emergency Net 3.909 Wed 2000
GLETN – Great Lakes Emergency and Traffic Net 3.932 2000 Daily
MVTN – MI VHF Traffic Net IRA Link System 2100 Mon, Wed, Fri, Sun
NLEUP - Northern Lower Eastern UP Net 146.64- 18:30 Daily
SEMTN – SE MI Traffic Net 146.76- 2215 Daily
TMMTN – Thumb Mid-Michigan Traffic Net 147.30+ 2130 Mon - Sat

Michigan Amateur Radio Public Service Corps (ARPSC) Activities for November 2018

Station Activity Reports (SAR) for November 2018

WB8WKQ 282, K8ED 168, N5MKY 122, WD8MWD 114,
WB8TQZ 75, WD8USA 52, KB8KM51, KE8CEH 49, K8RDN 38,
KE8CYC 29, KC8NFN 15, KE8BYC 10, KD8ZCM 6,
WB8RCR 5, KC8YVF 3

Public Service Honor Roll (PSHR) for November 2018:

WB8RCR 175, WD8MWD 150, WD8USA 140, KE8CYC 129, ,
K8RDN 124, N5MKY 110, WB8TQZ 110, KE8BYC 100, KE8CEH
100, KC8YVF 95, WB8WKQ 90, K8ED 90, KD8ZCM 81,
KC8NFN 55

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

Net traffic for November 2018:

Michigan Amateur Communications System 154
The Michigan Net 65
Southeastern Michigan Traffic Net 60
Michigan Traffic Net 37
Upper Peninsula Net 36
Michigan VHF Traffic Net 33
Michigan Digital Traffic Net 18
Northern Lower Eastern Upper Peninsula Net 3



Saginaw County ARES Net 3
 District 5 Hospital Net 3
 Total Volunteer Dollar Value for November 2018: \$ 34,931

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

From Roberta, K8RJE, and myself we wish you all the best of the holiday season, and may your 2019 year start on a positive note!

I'm looking forward to hearing from all of you, and to visit your local club or group. Thanks to all of the radio amateurs who continue to make the hobby great! Get Active, Get Involved, and Get On The Air!

73

Jim K8JK

Dales Tales

Greetings, welcome to "Dale's Tales" for January 2019.

Best wishes for a happy and safe New Year. As we move into 2019 let me offer my thanks to all of you in the Great Lakes Division for your outstanding service to amateur radio. As I have been fortunate to travel around the division to meet with you at club meetings and hamfests, I am always pleased to discuss your ideas and suggestions for improvements to our great hobby. Thank you for those contributions. I frequently find it a humbling experience. To those who hold elected and appointed positions in our Field Organization: you gals and guys are the movers and shakers that make this all work - a thousand thanks to you all. Everybody - keep your creative juices flowing in 2019.

A MESSAGE FROM Bart W9JJ:

To: ARRL Contest Clubs

Re: RTTY Roundup and more update

... follows are a couple updates for contest clubs.

- FT8 and the ARRL RTTY Roundup (<http://www.arrrl.org/rtty-roundup>) is just a couple weeks away (January 5-6, 2019). This is an event, since its announcement in November 1988 QST, that not only promotes RTTY, but in this new event it also promoted using all digital modes that existed at that time, and those that would follow. As we enter 2019, now some 30 years later, our newest popular mainstream digital mode (FT8) is poised to bring activity to new levels. In January 2019 QST (p.72-73), Joe Taylor, K1JT, presented an article as a how-to for ARRL RTTY Roundup (now with and FT8) to assist participants. As your club members head into the holidays, here's a link to that article that they may review as they prepare for the event (see <http://www.arrrl.org/files/file/ContestResults/2019/January%202019%20QST%20-%20Taylor%20-%20FT8.pdf>).

- National Contest Journal (NCJ) and New Contester Learning / Training Tools: Per the email below, NCJ is asking clubs to talk-up the myriad of tools available to the contest community, and to discuss and share with NCJ what additional learning content may be of interest to your clubs and members. See the email that follows. Be sure to provide any thoughts/suggestions/follow up to NCJ Editor Scott Wright, K0MD at drscott.wright@gmail.com

Wishing you, your club and its members warmest wishes for the holidays!

73,

Bart Jahnke, W9JJ

Contest Branch Manager

ARRL - The national association for Amateur Radio™

SCOTT K0MD's EMAIL TO W9JJ:

From: Scott Wright [mailto:drscott.wright@gmail.com]

Sent: Monday, December 17, 2018 4:29 PM

To: Jahnke, Bart, W9JJ

Subject: Request to send to contest clubs via your reflector

Bart

The NCJ is asking major North American contest clubs to consider expanding the learning and training tools available to help new and mid-skill level contesters learn and raise their skills to the next level.

In 2007, the NCCC published a video series on So2r which I personally found very helpful. They are going to re-post it to their website so all of us can learn from the series. Contest University also posts its lectures to the web and the power point slides - both extremely helpful to new and mid-skill level contesters.

We would like contest clubs to discuss with their members the need to develop additional video based and power point-based training tools on the following topics:

1. How to do the Sprint contest - CW and/or RTTY
2. How to set up and be a Mobile rover in state QSP.
3. Optimization of SO2R techniques in SSB/CW/RTTY con testing
4. How to do SO2V contesting
5. Advice on planning for a 48 hour contest - what are the techniques the winners use?
6. Setting up n1mm+ or Win-test with a rig - a basic how to video or power point set.

The video recordings might record both sides of a QSO, and in the example of the Sprint contest, slow it down enough to show beginners how to "Sprint" when you are done with the QSO, what to do if you lose a "jump ball" and other techniques. It might involve recording, then narrating what to do and listen for in the right and left audio channels.

These are only ideas for what we believe is currently lacking for up and coming contesters. There are probably plenty more issues that our major contest clubs can identify and create training films to help all of us.

You Tube is full of videos describing rigs and other things like building a ham shack table. Perhaps we can post some helpful videos on contesting to You Tube also?

If there is enough interest in this, we can have an inter-club competition and I will award an "Editor's Cup" to the club that makes the best or most innovative video in 2019. It can be awarded perhaps at the 2020 Dayton contest dinner (if the organizers agree).

Thanks for considering!
Scott Wright, KOMD
NCJ Editor

IN OTHER NEWS: With the ARRL Board meeting in mid January and an already full agenda, I am carrying along a pocket full of ideas and suggestions from you all in the Great Lakes Division. Some are continuing discussions and others new offerings. Several will be presented to committees for their initial consideration. To provide you with a brief summary, included are a request to return the Rag Chewers Certificate, add a list of new licensees to appear in QST, continuing a down-scaled version of the OO program, increasing the point value for new hams participating in Field Day, adding a point value for GOTA contacts and consideration of a video Amateur Radio training program. There is much to cover in considering each and every proposal, despite how simple each may ap-

pear. We probably won't see any decisions related to these items for a few months.

For you FT-8 fans, don't forget to check out the MSK144 mode on January 4th as the Quadrantids meteor shower comes about. "Quads" normally has about one meteor per minute, so it should offer some reasonable MSK144 activity on both 6 and two meters. There is a pretty neat Android app (free) called "Sky Map" that will let you easily spot the constellations and just about anything else in the heavens, making antenna aiming a breeze. There is a similar app available for iOS called "Sky View Free".

The effort continues to contact all of the inactive local hams in my community. As to the plan to send letters, so far no replies, despite the inclusion of my phone number and e-mail address. Some may be truly inactive. Interesting.

TOM'S COMMENTS: Happy New Year! As with any change in the calendar, we can look forward to a combination of successes, some disappointments, and some changes during the coming year. That applies to ham radio, as well as in our personal lives.

You know, I remember it being a big thing to make "New Year's Resolutions" as the year changed. Probably because they were too simple and too vague ("I want to do better next year,") I gave up doing that a long time ago. But as I thought about the potential changes coming to amateur radio, I realized that while vague thoughts don't get us anywhere, good strategic planning can outline a good future, one that can actually happen.

So in spite of what I think of "resolutions," I realize that throughout my business career, and now as part of the board for ARRL, I really do think in terms of objectives and goals, and they do work. I want to share with you, if you haven't read them in a while, the strategic plan for ARRL. Here's a link to it on the website: <http://www.arrl.org/arrl-strategic-plan>

We have a simple mission statement: To advance the art, science, and enjoyment of Amateur Radio. That is followed by a vision statement, and then by specific goals for ARRL. I hope you might take a minute or two to read through all of them.

If I were to pick out just one part of the goals statement that everyone could work on, it might be this one: Initiative 2.3: Encourage members to get involved, get active, and get on the air. Of course, every one of the goals is important, but I think getting or staying active and turning on those radios, whatever mode or frequency you most like, is very important and actually fairly easy to achieve. Warm up those inactive repeaters. Get on the magic band. Go digital. Hunt DX. Be active!



Looking forward to seeing lots of you at meetings, hamfests, conferences, and other gatherings during the coming year.

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

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/>

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. If you plan to request ARRL Sanctioning, please be sure to do it well in advance of your Hamfest date, as this allows adequate time for QST Listings. Be sure to invite your ARRL Officials as soon as your date is set. With 52 weeks and 65+ hamfests, things do double up a little. Plan ahead for requesting your ARRL

Officials to attend.

1/20/19	S.C.A.R.F. Hamfest	Nelsonville, OH
1/27/19	Hazel Park Hamfest	Madison Hts, MI
1/27/19	Tusco ARS Hamfest	Strasburg, OH
2/2/19	HARA Swap	Negaunee, MI
2/8/19	Cherryland Swap	Traverse City, MI
2/17/19	Livonia Hamfest	Livonia, MI
2/17/19	Mansfield Hamfest	Mansfield, OH

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

73, Let's go light up the bands!

Dale Williams WA8EFK
 Director
 Great Lakes Division
wa8efk@arrrl.org

ARRL PROPAGATION BULLETIN

ZCZC AP01
 QST de W1AW
 Propagation Forecast Bulletin 1 ARLP001
 From Tad Cook, K7RA
 Seattle, WA January 4, 2019
 To all radio amateurs

Predicted planetary A index is 15, 24, 15 and 8 on January 4-7, 5 on January 8-9, 10 on January 10, 5 on January 11-15, 12 on January 16, 5 on January 17-23, then 20, 12, 12 and 10 on January 24-27, 5 on January 28-30, 12 on January 31, then 15, 15 and 8 on February 1-3, 5 on February 4-11, 12 on February 12, and 5 on February 13-17.

Sunspots returned with the New Year, with sunspot numbers of 13, 16 and 16 on January 1-3. The new region was AR2732, and the area of the spot tripled each day, beginning at 10 millionths of the visible solar disc, then tripling to 30 on Tuesday, and 90 on Wednesday. This made the average daily sunspot number for the reporting week (December 27 to January 2) 4.1, compared to 0 for the previous seven days.

Geomagnetic activity forecast for the period January 4-30, 2019 from F.K. Janda, OK1HH of the Czech Propagation Interested Group compiling this geomagnetic activity weekly forecast since 1978.

"Geomagnetic field will be:
 Quiet on January 10-12, 22-23, 29-30
 Quiet to unsettled on January 13, 20, 27-28
 Quiet to active on January 9, 14, 18-19
 Unsettled to active on January 4-8, 15, 17, 21, 25-26
 Active to disturbed on January 16-17, 24

Average daily solar flux rose slightly from 70 to 70.4.

Average daily planetary A index rose from 4.9 to 9.3, and average mid-latitude A index from 4 to 7.6.

"Solar wind will intensify on January 3-7, (8, 13-14,) 15-19, (20-24,) 25-29

Predicted solar flux for the next 45 days is 72 on January 4-5, 70 on January 6-11, 71 on January 12-19, 69 on January 20 through February 2, 71 on February 3-15, and 69 on February 16-17.

"Parenthesis means lower probability of activity enhancement.

"This forecast was compiled on January 3. The next one will be compiled on January 31."

Jon, N0JK of Lawrence, Kansas wrote on January 3:

"After a relatively lackluster December for sporadic-E, conditions improved at the end of December on to the first few days of the New Year.

"I had 6 meter Es December 28 to Canada, and the 29th to the southeast states. Logged several stations running just 10 watts on SSB.

"But the real DX took place on January 2, 2019. 6 meters opened for sporadic-E around 1700z across North America and stayed open late into the evening. Around 2330z, Es links to afternoon trans-equatorial propagation across the geomagnetic equator set up an opening between North America and Australia.

"VK3OT, VK3DUT, VK4MA and others appeared suddenly on the JT65 and FT8 modes on 50 MHz VK4MA worked east to Illinois on FT8. Larry, N0LL (EM09) decoded VK3OT and VK3DUT on JT65. He worked NH6Y on FT8.

I copied one decode on NH6Y on FT8. The Hawaiian stations made contacts in Texas, Mississippi and the Rocky Mountain states.

"The 'Winter Surprise' North America to VK/ZL openings have taken place in past years, one of the best was late December 2015. But to occur with a solar flux of only 70 is remarkable. Carl Luetzelschwab, K9LA discussed the mechanism of these openings in a column he wrote for the World Radio magazine."

Mike Schaffer, KA3JAW of Easton, Pennsylvania regularly monitors the FM broadcast band for interesting openings:

"On Friday, December 28, 2018 at 5:49 pm EST (2249 UTC) I was monitoring the FM broadcast band on 88.3 MHz and started to hear Spanish music, then when the music ended, a male announcer. The signal which was fairly weak for roughly thirty seconds vaporized, being taken over with a mix from WRAU, Ocean City, MD (50 kW), WPPB, Southampton, NY (25 kW). The unidentified station's announcer sounded Cuban, which would be near 1274 miles to the south.

"While watching the DXMAPS website, spots were starting to come in on 6 meter SSB via Es from MA to AL, 1154 mile path at 2349 UTC.

"On December 29, 0005 UTC 6 meter CW Beacon from Maine to Manitoba, Canada, 1315 mile path.

"By 0018 UTC, the MUF climbed up to 72 MHz above FN04 (Barrie, Ontario, Canada).

"Then the unexpected happened. A report of 6M FT8 from Mas-

sachusetts to New Mexico, 2133 mile path, double-hop Es event at 0032 UTC.

"At 0037 UTC MUF shot up to 95 MHz above EN92 (London, Ontario, Canada).

"A report of brief Es in the FM broadcast band from near Williamsport, PA (FN11) to various south Miami, Florida stations (EL95) up to 1118 miles away at 0055 UTC.

"Forty-five minutes later, analog television channel 6 with a plus offset was observed, likely from Cuba.

"Now the western panhandle of Florida to the lower Hudson Bay-James Bay, Canada with the MUF stabilizing at 95 MHz on a 1572 mile path at 0100 UTC with FT8 mode.

"By this time at 0115 UTC I expected the MUF to begin crashing down into the HF bands. Nope, the MUF rose 4 MHz higher to 99.

"Yikes, it is 8:15 pm EST (0115 UTC) and the Es storm continues! At 0133 UTC MUF remains at 99 MHz.

"By 0158 UTC, finally a report of a weak analog television channel 2, CHBX in Sault Ste. Marie, Ontario (EN76) was detected in Akron, OH (EN91) via short-hop sporadic-E at 406 miles. The video rendered an advertisement for 'Boxing Week' with a boxer dog."

Jeff, N8II of West Virginia wrote on December 29:

"The only 'ray of sunshine' Xmas week was some long path into Australia on 30 and 40M CW and Japan on 40M SSB and CW this week. It had been nearly 2 years since my last JA QSOs on 40M outside of contests and I failed to work any in this year's CQWW as well.

"That was until Friday night the 29th GMT date when there was widespread sporadic-E right in time for the Radio Amateurs of Canada Winter Contest. I ran all 6 bands within 4 minutes with VE9HF in New Brunswick and worked several VE3s on 20M and then many on 40M in the 0100Z hour along with many USA stations some at very short distances in the 1/2/3/4/5/8/9th call areas on 40 SSB.

"10 meters was open to W4/5, lots of activity. Saturday morning 20 was open to EU as usual as well as Eastern Canada, and by 1500Z to western Canada as well with lots of Manitoba and Saskatchewan activity. On 15 CW, I worked Slovenia, France, and England. Also worked on 15 were W5/6/7/0 and QC and ON on backscatter as well as SK, AB, and BC."

Jeff Howington, ADOAK of Fairfax, Iowa sent this on December 29: "Regarding Al, W1VTP's inquiry in your 28 December bulletin, the Australian Space Weather Services has a web page at <https://bit.ly/2sbceum> that might better address his needs. It provides Hourly Area Prediction (HAP) charts containing easy to understand graphical MUF (foF5) data for various locations. Al can select the Boston map from the pull down list.

"That map typically shows roughly concentric rings centered on Boston that are color coded to indicate the maximum usable frequency a Boston base station should use to reach a mobile at various distances away. It's not a stretch to mentally re-center the rings to Al's station in Manchester to give an idea of where his signal will go from that location. Note that these maps are good only for one hour and are refreshed on the hour.

"I've used the HAP map centered on Kansas City with good success while running a NVIS net in the Midwest Region. Since nearly all nets are fixed in the frequencies they use, these maps can help select the best times to run the net, and they can also provide information as to which stations can best serve as relays to net control assuming you know their locations."

Check the ADOAK page on QRZ.com for more on Jeff's interests and work at Collins. 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 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 December 27, through January 2, 2019 were 0, 0, 0, 0, 0, 13, and 16, with a mean of 4.1. 10.7 cm flux was 68.5, 69.3, 69, 69.4, 69.3, 71.9, and 75.2, with a mean of 70.4. Estimated planetary A indices were 5, 24, 11, 10, 7, 6, and 2, with a mean of 9.3. Estimated mid-latitude A indices were 5, 19, 9, 7, 7, 5, and 1, with a mean of 7.6.

NNNN

ARRL DX NEWS

ZCZC AE01

QST de W1AW

DX Bulletin 1 ARLD001

From ARRL Headquarters

Newington CT January 3, 2019

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.

VIET NAM, 3W. Neven, LZ1COM is QRV as 3W9ND from Hoi An until January 5. Activity is on 20 meters using SSB. QSL via LoTW.

ISRAEL, 4X. A group of operators are QRV with special call 4X0M from the Masada fortress until January 6. Activity is on 80 to 10 meters using CW and SSB with two stations active. QSL via IK2DUW.

WEST MALAYSIA, 9M2. Rich, PA0RRS is QRV as 9M2MRS from Penang Island, IOTA AS-015, until February 15. Activity is on the HF bands using CW, RTTY, PSK and FT8. QSL to home call.

ANDORRA, C3. Salvador, EA3QS is QRV as C31CT from the C37AC club station. Activity is on the HF bands using CW. This includes being on 160 meters, conditions permitting. QSL to home call.

THE GAMBIA, C5. Przemyslaw, SP3PS is QRV as C5SP from Sanyang. He is active on 80 to 10 meters using SSB and FT8. QSL direct to home call.

SOUTH COOK ISLANDS, E5. Milan, OK1DWC is QRV as E51DWC and is here for the foreseeable future. Activity is on the HF bands. This includes being an entry in the upcoming CQ World Wide 160 Meter CW contest. QSL to home call.

KYRGYZSTAN, EX. Andrea, HB9DUR is QRV as EX0DX until January 9. Activity is on 40, 30, 20, 17, 15 and 12 meters using FT8. QSL via bureau.

SCOTLAND, GM. Special event station GB2KW is QRV near Inverness until January 28 using vintage gear. QSL via LoTW.

THAILAND, HS. Lars, SM6NT is QRV as HS0ZME until April 9. Activity is on the HF bands. QSL to home call.

DENMARK, OZ. Mirko, DJ1AA is QRV as OZ/DJ1AA and OZ/DJ1AA/m on Mors Island, IOTA EU-171, until January 5. Activity is on the HF bands near the IOTA frequencies. QSL to home call.

SEYCHELLES, S7. Mike, OE6MBG is QRV as S79AA from Mahe, IOTA AF-024, until February 2. Activity is on 160 to 10 meters, and 6 meters as conditions permit, using CW and SSB. QSL via LoTW.

SWEDEN, SM. Members of National Association of the Active Seeing Impaired club station SK5CG are QRV with special event station SF50CG during all of 2019 in celebration of their 50th anniversary. QSL via SM0BYD.

TUVALU, T2. Antoine, 3D2AG is QRV as T2AR from Funafuti until January 31. Activity is on the HF bands, including 160 meters. QSL to home call. In addition, Apinelu, T2AT is QRV on the HF bands using FT8. QSL via N7SMI.

ANTIGUA, V2. Randy, WW6RG will be QRV as V25RA from January 7 to 9. Activity will be holiday style on 20, 17 and 15 meters using QRP power. QSL to home call.

ST. KITTS AND NEVIS, V4. Bernie, W3UR and Becky, N3OSH will be QRV as V47UR from Calypso Bay, St. Kitts Island, IOTA NA-104, from January 8 to 20. Activity will be holiday style on 160 to 6 meters using CW and SSB. QSL via LoTW.

THIS WEEKEND ON THE RADIO. The ARRL RTTY Round-up, ARRL SSB Kids Day, AWA Linc Cundall Memorial CW Contest, NRAU 10-Meter Activity Contest, NCCC RTTY Sprint, QRP 80-Meter CW Fox Hunt, NCCC CW Sprint, PODXS 070 Club PSKFest, Schwaben Contest, World Wide PMC Contest, RSGB AFS CW Contest and EUCW 160-Meter CW Contest are all on tap for this weekend.

The IQRP Quarterly Marathon runs from January 7 to 13.

The ARS Spartan Sprint is scheduled for January 8.

The CWops Mini-CWT Test, Phone Fray and QRP 40-Meter CW Fox Hunt are scheduled for January 9.

The Canadian National Parks on the Air, CNPOTA, operating event runs for the entire year of 2019, with special stations on from Canada's parks and historic sites.

Please see January 2019 QST, page 91, 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....

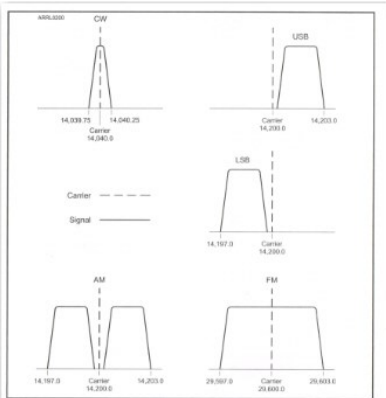


Figure E1A01 — An illustration of the relationship between carrier frequency and the actual signal sidebands. Most transceivers are configured to display the carrier frequency and not the frequency of the sidebands so the amateur needs to take care to keep all of the signal in the band.

E1A03

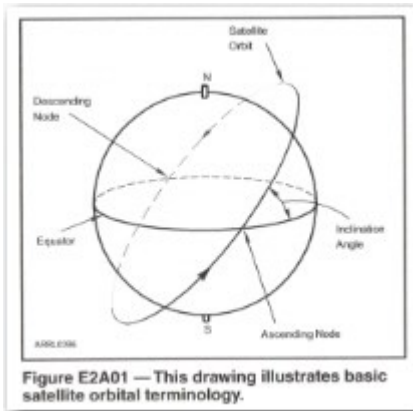


Figure E2A01 — This drawing illustrates basic satellite orbital terminology.

E2A03

T1A06 What is the FCC Part 97 definition of a beacon?

- A. A government transmitter marking the amateur radio band edges
- B. A bulletin sent by the FCC to announce a national emergency
- C. An amateur station transmitting communications for the purpose of observing propagation or related experimental activities.
- D. A continuous transmission of weather information authorized the amateur bands by the National Weather Service

T2A06 Which of the following is required when making on-the-air test transmissions?

- A. identify the transmitting station
- B. Conduct tests only between 10 p.m. and 6 a.m. local time
- C. Notify the FCC of the transmissions
- D. All of these choices are correct

T3A06 What term is commonly used to describe the rapid fluttering sound sometimes heard from mobile stations that are moving while transmitting?

- A. Flip-flopping
- B. Picket fencing
- C. Frequency shifting
- D. Pulsing

G1A06 Which of the following frequencies is within the General Class portion of the 75-meter phone band?

- A. 1875 kHz
- B. 3750 kHz
- C. 3900 kHz
- D. 4005 kHz

G2A06 Which of the following is an advantage when using single sideband as compared to other analog voice modes on the HF amateur bands?

- A. Very high fidelity voice modulation
- B. Less bandwidth used and greater power efficiency
- C. Ease of tuning on receive and immunity to impulse noise
- D. Less subject to interference from atmospheric static crashes

G3A06 What is a geomagnetic storm?

- A. A sudden drop in the solar flux index
- B. A thunderstorm which affects radio propagation
- C. Ripples in the ionosphere
- D. A temporary disturbance in the Earth's magnetosphere

E1A06 Where must the carrier frequency of a CW signal be set to comply with FCC rules for 60 meter operations?

- A. At the lowest frequency of the channel
- B. At the center frequency of the channel
- C. At the highest frequency of the channel
- D. On any frequency where the signal's sidebands are within the channel

E2A06 On what band would a satellite receive signals if it were operating in mode U/V?

- A. 435 – 439 MHz
- B. 144 – 146 MHz
- C. 50.0 – 50.2 MHz
- D. 29.5 – 29.7 MHz

E3A06 Which of the following is required for microwave propagation via rain scatter?

- A. Rain droplets must be electrically charged
- B. Rain droplets must be within the E layer
- C. The rain must be within radio range of both stations
- D. All of these choices are correct.



ANSWERS

T1A06: C [97.3(a)(9)] Beacon stations are restricted to certain sub-bands to keep them from causing interference since they transmit under automatic control and do not listen for other activity.

T2A06: A Identification rules apply to on-the-air test transmissions, as well, no matter how brief. The call sign must be given once every 10 minutes and at the end of transmissions.

T3A06: B Because "dead spots" from multipath are usually spaced about $\frac{1}{2}$ - wavelength apart, VHF or UHF signals from a station in motion can take on a rapid variation in strength known as mobile flutter or picket-fencing.

G1A06: C [97.301(d)] Although the 75 and 80 meter bands are part of a single amateur band, the difference in wavelength is enough for there to be a distinction between 75 meters at the higher frequencies and 80 meters are the lower frequencies. General class licensees have access to the following portions of the 75 meter band ($f = 300/75 = 3.800 - 4.000$ MHz on CW/Phone/Image

G2A06: B: Single sideband (SSB) voice communication is used much more frequently than other voice modes on the HF bands because it uses less spectrum space. One sideband and the RF carrier are not transmitted with an SSB signal. That means SSB transmissions are more power efficient, since the full transmitter power is used for the remaining sideband rather than being divided between the two sidebands and carrier as it would be for AM.

G3A06: D: Geomagnetic disturbances result when charged particles from a solar flare reach the Earth. When these charged particles reach the Earth's magnetic field, they are deflected toward the North and South poles. Radio communications along higher-latitude paths (latitudes greater than about 45 degrees) will be affected more than paths closer to the equator. The charged particles for the Sun may make the F-region seem to disappear or seem to split into many layers, degrading or completely blacking out long-distance radio communications.

E1A06: B: [97.303(b)] All amateur signals on the 60 meter channels must be centered within the channel.

E2A06 A: Reference chart E2

E3A06: C: Rain can reflect radio waves of a wide frequency range so if the rain is within radio range of both stations, it is likely they can make contact by reflecting their signals off the rain.

LINKS AND STUFF

Under re-construction. Watch for the orange barrels

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

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

Area Repeaters

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

ARRL Affiliated Club Area Nets

UP Net 3921khz
 Daily 5pm EST
 Sunday Noon EST

UP CW NET 3590khz
 Sunday 7pm EST

160 Net 1895khz
 Everynight 0100UTC
 Dailey 0600UTC

Midcars 7258khz
 Daily 0730am EST
 0200pm EST

Outhcars Node 9614
 Saturday 0900am EST

UP Echolink Node 9617
 Sunday 8pm EST

Copper County ARES
 146.88
 Wednesday 9pm EST

**Mich-A-Con Social and
ARES**
 146.850
 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://kera-mi.net/skywarn/>

Band Conditons: <http://bandconditions.com/>

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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 or 6:30 PM Summer

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
W8XBO	ARMBRUST	ED	IRON MOUNTAIN	906-779-5593	w8xbo@sbcglobal.net
KC9KVP	BAKER	BETH	NIAGARA		
KB9AVX	BAKER	SCOTT	NIAGARA	715-251-1944	kb9avx@yahoo.com
KB8SBP	BERTOLDI	BILL	KINGSFORD		
W8BEY	BEY	DANA L.	KINGSFORD	906-774-7937	lst797@charter.net
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
KB8ETK	KOMBLEVICZ	JOSEPH	IRON MOUNTAIN	906-774-4094	kombleviczj@charter.net
KD9HQD	LaLIBERTE	BRUCE	NIAGRA, WI	?	liberte@borderlandnet.net
	LUCAS	BRIAN			bag99@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	?	?
K8ABS	RIVERSIDE	JIM	IRON MOUNTAIN	906-458-0773	jriverside@charter.net
W8IFI	RYE	JIM	CRYSTAL FALLS	906-875-3582	jimrye@up.net
K4FMX	SCHAFFER	GARY	NIAGRA, WI	?	GARYSCHAFFER@LARGERIVER.NET
KG9Y	THOMAS	DAVE	NIAGARA	715-251-1393	ke9y@arrl.net

BLACK: Paid Members

BROWN: Past or Unpaid Members



MICH - A - CON

Please remit dues to:

**Debbie Garbowski, KD8VTS
203 Camp 5 Road
Crystal Falls, MI 49920**

Name: _____

Call Sign: _____

Address: _____

City, State, Zip: _____, _____, _____

Email Address: _____

Phone: _____

ARRL Member? Yes _____ No _____

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

Annual dues for Full Membership -

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

If family membership, please list additional:

Names: _____

Call signs: _____

City, State, Zip: _____

Annual dues are Payable January 1st.

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