



MICH-A-CON

Iron Mountain,
Dickinson County, Mich

September 2018

Meeting Reminder: **Second Wednesday of the Month**

Which is **September 12, 2018** 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

Fall is approaching! Cooler temps are a nice respite from August's heat. Antenna time!

Speaking of antennas, if you weren't at the last meeting, you missed a very informative presentation on antennas by Jack Hudson, W9MU. He gave us some food for thought on setting up Field Day antennas. Two element beams are better than tribanders. Stations in our area don't need a good front to back ratio. Looks like Dave, KG9Y, has the best antenna. HI! Jack also affirmed the idea that antenna tuners shouldn't be used, if you want to have the best transmitting system. He also said that you shouldn't use a tuner, if your SWR was less than 2:1. I have had a tuner in-line with an SWR of 1:5-1. My Alpha amp likes a very low SWR to get full power.

This coming Sunday, at 9:00am, August 16, we will have W8FYZ from Trenary here to install a new Hustler 2/440 antenna at our repeater site. Allan will also install a 4 Bay 440 antenna that Gary, K4FMX, donated. Other work will also be done. More details at the **Wednesday meeting which will begin at 7:00** at the library. We are now on the fall/winter library schedule.

For those that follow propagation, the Solar Flux Index is around 67. The last time it was that low was in 2010. It was 170 on September 7, 2014. Looks like we have at least four more years before we see a marked improvement on the 10-20 meter bands. 40 and 30 meters will be the "go to" DX bands. With that in mind, I should have my 40 meter beam back up before October. Hopefully, **all** antennas will be working by then.

As I'm writing these words, I'm listening to 20 meter SSB. It's the WAE (Worked All Europe) contest. Signals are terrible. Very little activity heard. I checked Solarham.net and A is 5 and K is 2. SFI is 69. HF Conditions are 80 Fair/Good and 30 through 10 meters is Poor.

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Hope to see you all on Wednesday.

73, Tom
W8JWN

MICH-A-CON AMATEUR RADIO CLUB MINUTES OF August 18th, 2018

President Tom Martin called the meeting to order at 6:30 pm.
Tom Martin will take minutes for our absent secretary.

Secretary Report

Minutes from the July 11th meeting were waived.

Treasurer Report

Balances as of August 8, 2018.
Checking: \$80.95
Savings: \$2,848.74 (Repeater \$1,356.72)
Cash: \$33.00

Repeater Report

Allan Augustyn, W8FYZ, from Trenary will be contacted to climb our tower on Pine Mountain. Re pairs need to be made.

Old Business

None

New Business



Some members not getting newsletter. Update membership list on Web page.

Adjournment

Meeting adjourned for a presentation on antennas by guest Jack Hudson, W9MU.

50/50 Drawing won by Bill Grabowski, KD8VTT. \$20 went to our treasury

For the Good of the Order

Attendees reported on their recent activities.

Minutes taken by Thomas Martin, W8JWN.

Attendees

Tom Martin	W8JWN	Brian Kucas	W9BGL
Scott Jarmusch	KA8TFF	Bruce LaLiberte	KD9HQD
Debbie Grabowski	KD8VTS	Scott Beeman	NE8E
Bill Grabowski	KD8VTT	Jack Hudson	W9MU
Gary Schafer	K4FMX	Jan Schafer	Visitor
Terry Moriarity	K9TRY	Joyce Williams	Visitor
Burt Armbrust	WB8EBS		
Skip Caswell	KE9L		

News

ARRL Urges Regulatory Regime to Keep Non-Amateur Satellites off Amateur Spectrum

ZCZC AG13

QST de W1AW

ARRL Bulletin 13 ARLB013

From ARRL Headquarters

Newington CT July 11, 2018

To all radio amateurs

ARRL wants the FCC to facilitate bona fide Amateur Satellite experimentation by educational institutions under Part 97 Amateur Service rules, while precluding the exploitation of amateur spectrum by commercial, small-satellite users authorized under Part 5 Experimental rules. In comments filed on July 9 in an FCC proceeding to streamline licensing procedures for small satellites, ARRL suggested that the FCC adopt a "bright line test" to define and distinguish satellites that should be permitted to operate under Amateur-Satellite rules, as opposed to non-amateur satellites that could be authorized under Part 5 Experimental rules.

"Specifically, it is possible to clarify which types of satellite operations are properly considered amateur experiments conducted pursuant to a Part 97 Amateur Radio license, and [those] which should be considered experimental, non-amateur facilities, properly authorized by a Part 5 authorization."

ARRL said it views as "incorrect and overly strict" the standard the FCC has applied since 2013 to define what constitutes an Amateur Satellite, forcing academic projects that once would have been operated in the Amateur Satellite Service to apply for a Part 5 Experimental authorization instead. This approach was based, ARRL said, on "the false rationale" that a satellite launched by an educational institution must be "non-amateur" because instructors were being compensated and would thus have a "pecuniary interest" in the satellite project. ARRL said well-established Commission jurisprudence contradicts this view.

ARRL told the FCC that justification exists to expand the category of satellite experiments conducted under an Amateur Radio license, "especially those in which a college, university, or secondary school teacher is a sponsor." But, ARRL continued, a compelling need exists to discourage Part 5 Experimental authorizations for satellites intended to operate in amateur allocations by non-amateur sponsors, "absent compelling showings of need."

"There is no doubt but that Amateur Radio should be protected against exploitation by commercial entities, and there should be a compelling justification for a Part 5 Experimental license issued for a satellite experiment to be conducted in amateur spectrum,"

ARRL said. "A defining criterion for this latter category should be that there is no other spectrum practically available in lieu of Amateur Radio allocations."

ARRL noted that International Amateur Radio Union (IARU) policy regarding satellites operated in Amateur Radio spectrum is only to coordinate satellites where licensees and control operators are radio amateurs and having a "mission and operation" consistent with the International Telecommunication Union (ITU) Radio Regulations' definitions of the Amateur and Amateur-Satellite services.



Resolution 659, adopted at World Radiocommunication Conference (WRC) 2015, included protective language against non-amateur satellites operating in Amateur-Satellite spectrum, and the exclusion of any amateur bands from spectrum that might be considered at a future WRC for allocation to the Space Operation Service.

IARU announced in 2017 that it would no longer coordinate non-amateur satellite operations and adopted new satellite frequency coordination guidelines. Under that policy, educational and university satellites may be coordinated only when an identified amateur component exists, and the mission is to teach and train students in satellite communication and building and launching satellites. The individual responsible for the satellite's communications must be an Amateur Radio licensee. IARU will also continue to coordinate space stations operating under an amateur license and having "a clear amateur mission," as well as satellites where a licensing administration directs the use of an amateur band.

ARRL asserted that incorporating Amateur Radio in experiential learning using small satellites - e.g., CubeSats - is good for Amateur Radio, for students, and for the advancement of technology, and it urged the FCC to adopt a regulatory paradigm that encourages this approach.

AMSAT-NA also filed comments in the proceeding. The AMSAT remarks reflect several of the same concerns expressed by ARRL, including the suitability of authorizing certain satellites built by universities and non-profit organizations in the Amateur Satellite Service, and expressing opposition to satellites licensed as experimental under FCC Part 5 rules operating in the Amateur Satellite bands. Interested parties may file reply comments in the proceeding, IB Docket No. 18-86, by August 7, 2018.

NNNN





Great Lakes Division Registered Hamfests to End of Year

With

summer approaching, here is an update of the currently registered ARRL hamfests in the Great Lakes Division through the end of the year.

9/8/18	Grand Rapids GRAHamfest	Wyoming, MI
9/8/18	Greater Louisville Hamfest	Sheperdsville, KY
9/9/18	Findlay	Findlay, OH
9/16/18	Central Kentucky Hamfest	Richmond, KY
9/16/18	Adrian	Adrian, MI
9/22/18	OHKYIN ARS Hamfest	Cincinnati, OH
9/23/18	Cleveland Hamfest	Berea, OH
9/29/18	Paintsville Hamfest	Paintsville, KY
10/6/18	Vette City	Bowling Green, KY
10/8/18	Michigan State Convention/GL HamCon	Brooklyn, MI
10/10/18	Microwave Update	Fairborn, OH
10/13/18	Cave Run Hamfest	Moorehead, KY
10/20/18	Muskegon Color Tour	Muskegon, MI
10/22/18	Kalamazoo Kalamazoo, MI	
10/27/18	Hazard Hazard, KY	
10/28/18	USECA Madison Hts, MI	
12/2/18	Lanse Creuse Madison Hts, MI	

ARRL Great Lakes Division

Director: Dale R Williams, WA8EFK

wa8efk@arrl.org

ARLB032 W1AW 2018 Spring Operating Schedule

QST de W1AW
ARRL Bulletin 8 ARLB008
From ARRL Headquarters
Newington CT March 12, 2018
To all radio amateurs

Morning Schedule:

Time	Mode	Days
1300 UTC (9 AM ET)	CWs	Wed, Fri
1300 UTC (9 AM ET)	CWf	Tue, Thu

Daily Visitor Operating Hours:

1400 UTC to 1600 UTC - (10 AM to 12 PM ET)
1700 UTC to 1945 UTC - (1 PM to 3:45 PM ET)

(Station closed 1600 to 1700 UTC (12 PM to 1 PM ET))

Afternoon/Evening Schedule:

2000 UTC (4 PM ET)	CWf	Mon, Wed, Fri
2000 " "	CWs	Tue, Thu
2100 " (5 PM ET)	CWb	Daily
2200 " (6 PM ET)	DIGITAL	Daily
2300 " (7 PM ET)	CWs	Mon, Wed, Fri
2300 " "	CWf	Tue, Thu
0000 " (8 PM ET)	CWb	Daily
0100 " (9 PM ET)	DIGITAL	Daily
0145 " (9:45 PM ET)	VOICE	Daily
0200 " (10 PM ET)	CWf	Mon, Wed, Fri
0200 " "	CWs	Tue, Thu
0300 " (11 PM ET)	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 2230 UTC (6:30 PM ET), 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 0000 UTC (8 PM ET) Thursdays and 0000 UTC (8 PM ET) Fridays.

Audio from W1AW's CW code practices, and CW/digital/phone bulletins is available using EchoLink via the W1AW Conference Server named "W1AWBDCT." The monthly W1AW Qualifying Runs are presented here as well. The CW/digital/phone 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.

FCC licensed amateurs may operate the station from 1400 UTC to 1600 UTC (10 AM to 12 PM ET), and then from 1700 UTC to 1945 UTC (1 PM to

3:45 PM ET) Monday through Friday. Be sure to bring your current FCC amateur license or a photocopy.

on page 90 in the March 2018 issue of QST or on the web at, <http://www.arrl.org/w1aw-operating-schedule> .

The complete W1AW Operating Schedule may be found NNNN

ARRL MICHIGAN SECTION NEWS

Greetings to all the Amateurs of Michigan,

For this month, a couple of asks, a couple of rants, some words to live by, and the usual data you've come to expect; in this "Pure Michigan Section" report.

Joe Miller KJ8O

Joe has served on the Section Staff as the Affiliated Club Coordinator for the past few years. After Joe's recent retirement, he and his wife Irene chose to execute their plan to move closer to family in California. In typical well-organized style, they made the move to their new QTH in Desert Hot Springs in just two short months.

I had only enjoyed the opportunity to work with Joe in his role as Affiliated Club Coordinator for a very short time, but it was a real treat to engage with him and his "can do" style. Joe was a huge asset to the Michigan Section ARRL staff, and I will miss working with him.

Section Staff Positions

With Joe Miller leaving the section, I am looking for person to step into the role as Affiliated Club Coordinator. Duties of an ACC are listed on the ARRL website. If you are interested, drop me a note. Even if the ACC role isn't one that you see yourself in, there will be plenty of opportunities to join the section staff. Motivated self-starters with a passion for amateur radio? I want you to join our team and make a difference.

Official Observer Program

ARRL, and especially its Ad Hoc Committee charged with revitalizing the Official Observer (OO) Program for the

future, wants you to know the details of the new Volunteer Monitoring (VM) Program right away. At its July 2018 meeting, the ARRL Board of Directors approved a plan for the establishment of a new VM Program. This will be quite different from the OO Program that was created back in 1982. Based on extensive negotiations with the FCC, the new VM Program will improve the level of enforcement in the Amateur Service for years to come. It will help to fill the gap created two years ago when FCC closed many of its own field offices and retired much of its staff. That had the unfortunate effect of reducing its ability to respond to Amateur Radio enforcement problems.

For a considerable time, our OOs have been frustrated, along with the rest of us, because the FCC was limited in its ability to take direct action on an OO report about a bad operator. Now, things are about to change. After months of discussion with the FCC, the OO/AA corps is to be replaced by a "Volunteer Monitor" (VM) program. The program differences are extensive, both in policies and procedures, necessitating a total revamping.

My sincere thanks go out to a group of unsung heroes, our corps of Official Observers/Amateur Auxiliary (OO) operators. These guys and gals spend countless hours in front of their equipment listening to all of us to insure we don't move too close to a band edge, don't wait too long between IDs or don't commit a host of other rules violations. They mail us a quick reminder, or often send a compliment about our good operating practices.

The OO/AA program will change, and you'll hear more in the coming weeks. Personally, I am surprised that folks seem to have passed judgement before the implementation phase has begun. Perhaps they really can see into

the future? If so, I need to hit them up for winning lottery numbers.

Great Lakes HamCon News

Great Lakes HamCon 2.0 scheduled to occur this October at Michigan International Speedway has been cancelled. Failure to come to a final agreement for the use of the speedway led to the difficult decision to cancel the event. With just two months remaining, the issues caused by the lack of agreement are insurmountable.

Refunds for event tickets purchased will be made. Purchases made via PayPal will be made through PayPal. Arrangements for refunds for cash purchases are being formulated and will be announced soon. The support of our affiliated amateur radio clubs and their members was very much appreciated. We share your disappointment that this year's event cannot be held. Thank you for your understanding. Please join me in thanking those folks who held the vision of bringing a world class event to our state. I supported and will still support their efforts. It takes very little talent to point out flaws, but lots of character and commitment to stand up and take charge.

100 New Michigan Section Members by January 2019

Ok, here's the ask. To prove a point, we need to add 100 new ARRL members to the Michigan Section roster by the end of the year. To encourage all of you to recruit, drop me a note after someone you've influenced has joined (with your callsigns). I will enter you into a small raffle (funded by me). These should be new members, not renewals. I've been told that this is impossible, but I think it's easy goal.

Hospitality Acknowledgments

Thanks to these organizations and clubs for their outstanding hospitality shown to the MI ARRL staff:

Central Michigan Swap

Livingston Amateur Radio Klub (yes, it's spelled with a "K")

Michigan ARRL Section Staff Travel Plans

September 16th Adrian (K8JK)

October 21st Kalamazoo (K8JK)
October 28th USECA

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 July 2018

Station Activity Reports (SAR) for July 2018

WB8WKQ 272, K8ED 195, WD8USA 190, WB8TQZ 108, WD8MWD 104, N5MKY 78, KE8CEH 53, K8BKM 32, WB8RCR 14, K8RDN 12, KE8IKT 11, KD8ZCM 4, KE8BYC 3

Public Service Honor Roll (PSHR) for July 2018:

KE8BYC 351, N5MKY 161, WB8RCR 149, WD8USA 140, WD8MWD 130, WB8TQZ 110, K8ED 90, WB8WKQ 90, KD8ZCM 74, KE8CEH 69, KE8IKT 68, K8RDN 58, KC8YVF 44

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



Net traffic for July 2018:

Michigan Amateur Communications System 109 Michigan Traffic Net 95 The Michigan Net 62 Southeastern Michigan Traffic Net 55 Upper Peninsula Net 44 Great Lakes Emergency and Traffic Net 37 Michigan Digital Traffic Net 27 Michigan VHF Traffic Net 27 Northern Lower Eastern Upper Peninsula Net 11 Saginaw County ARES Net 2 District 5 Hospital Net 1 Red Cross Net of Greater Grand Rapids 0 Michigan ARES D-Star 0 Luce County ARES Net 0 Genesee County ARPSC Traffic and Training Net 0 District 3 ARPSC Net 0 Michigan Amateur Radio Public Service Corps 0 District 8 Emergency Net 0

Total Volunteer Dollar Value for July 2018: \$ 29,444

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

The chorus from a popular song sums it up for me:

"If you have a dream go chase it,
If you feel hope don't waste it,
If you find love embrace it,
And never take a single breath for granted, The story's yours, go write it, Tomorrow's undecided, Our days are counted on this planet, Never take a single breath, Take a single breath for granted....."

I'm looking forward to hearing from all of you!

73

Jim K8JK

Dales Tales

Greetings, welcome to "Dale's Tales" for September 2018.

The following news was announced earlier this week by ARRL Headquarters:

Newington, CT – August 27, 2018 – The Board of Directors of ARRL, The national association for Amateur Radio, has elected Howard E. Michel, PhD, WB2ITX, of Dartmouth, MA, to be the association's new Chief Executive Officer, effective October 15. Michel is currently Chief Technology Officer at UBTECH Education, and Senior Vice President of UBTECH Robotics, a \$5 billion (U.S.) Shenzhen, China, AI and robotics company. As the Chief Technology Officer at UBTECH Education, Michel helped build this company from a start-up in China to \$100 million in valuation.

"I have amateur radio to thank for starting me on a very successful career, and I'm excited about the opportunity to further ARRL's goals as CEO. Leading the League will allow me to 'give back' to a great community and provide similar opportunity for future generations,"

Michel said. "I have been a licensed ham for fifty years, and I've seen many changes in the hobby. One of my top priorities as CEO will be to develop new products and services so all licensed hams, whatever their license class or interest, find value in League membership," he added.

Michel first became licensed as WN2ITX when he was about 16 years old and upgraded to General Class and Advanced Class within a year of that.

He upgraded to Extra Class in 2000. He notes that he has always had a strong interest in building and repairing radio equipment. "I've operated CW/AM/FM/SSB/Digital

on 80/40/20/15/10/2 on equipment that I have either built, repaired or modified.”

“We are excited to have someone of Howard’s qualifications to lead this organization,” said Rick Roderick, K5UR, ARRL president. “Howard’s management experience, along with his experience at leading a membership-driven association, makes him an ideal person to move this organization forward,” Roderick said.

In 2015, Michel was the volunteer president and CEO of the Institute of Electrical and Electronics Engineers (IEEE), a volunteer-led 501(c)3 association advancing technology for the benefit of humanity.

“In any large membership-led organization such as ARRL, its members and volunteers are its greatest asset, and a good staff-volunteer relationship is crucial to its success,” Michel said. “I intend to build on this relationship and multiply and amplify the efforts of both staff and volunteers in furthering ARRL’s goals to advance the art, science, and enjoyment of Amateur Radio.”

Michel is a retired U.S. Air Force officer having served as a pilot, satellite launch director, engineer and engineering manager, including a tour in the People’s Republic of China where he served as a senior U.S. Government technical representative enforcing technology-transfer control plans and procedures during two satellite launch operations.

He notes that during his time in the military, wherever he could set up an antenna he took the opportunity to operate.

Michel has a notable academic background, including currently being a Visiting Professor in the Department of Electrical and Electronic Engineering Science, University of Johannesburg in South Africa.

Previously he was a member of the faculty at the University of Massachusetts Dartmouth and the University of Dayton in Ohio.

Michel says that some of his favorite activities include attending hamfests to find old stuff to repair or repurpose, contest operating, and DXing, especially on 80/40 meters. He adds that he is a Life member of the Southeastern Massachusetts Amateur Radio Association.

Michel will succeed Barry J. Shelley, N1VXY, who had been serving as ARRL’s CEO since January of 2018 following the resignation of Tom Gallagher, NY2RF. Shelley had been ARRL’s Chief Financial Officer since January of 1992.

Again, change comes to our Headquarters operation. While it is inevitable, sometimes we are uncomfortable with the unknowns that change brings. Particularly with new leadership, we are especially alert to even the very minor differences in the various ways the "new guy" influences day-to-day operations.

So as we gear up to welcome Howard Michel in October, let’s gear up for the expectations regarding the new ideas he will bring. Will we all agree with every decision? Of course not, and that should not be a consideration. Will we reach accord, will we achieve consensus, will we find common points? Yes, and that’s the way it should be. Let’s also be supportive by continuing to bring out our own new ideas as we face the future of our hobby, especially as we introduce newcomers to ham radio and mentor them into being good operators. That’s the important goal.

TOM’S COMMENTS: Comments from our Vice Director Tom Delaney W8WTD

Who is a ham? What does a ham do? I was thinking about that recently as I looked back on my summer. Not much operating. Well, wait, there was Field Day. And lots of repair, lots of planning. Wanting to make sure that all the systems will operate, both at my home station and for the clubs I work with.

Those of us who have been in ham radio for a while tend to remember certain hams we knew from the 1950s and 1960s, who had a reputation for staying in their basements (or wherever the shack was) and talking for hours around the world. And a few of us still do that. We have groups dedicated to helping each other find and work those rare call signs.

Then there are others who talk little but tinker a lot. Maybe it’s more than tinkering, but whatever you call it, it’s technical. Maybe it’s just keeping equipment re-



paired, maybe it's restoring life to old equipment, or it could even be real scientific advancement.

And of course, these days, with fires and floods and storms all around us, a lot of people spend time preparing for, and actually operating during a disaster. Just this past week, with the hurricane threatening Hawaii, the ARRL home page talked about "Ham Aid" and the preparations to make sure equipment was available in case a large-scale relief effort was needed.

There's ham radio in each of those activities. We all tend to do what we like, and every now and again, something new will catch our interest.

All of it is valuable to the future of ham radio.

So let's keep at it. Make sure your gear works. Get on and chat once in a while with friends. And in particular, reach out to new hams and help them with projects so they learn and improve.

Looking forward to seeing and talking with many of you during the upcoming hamfests this late summer and fall.

--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. 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.

9/8/18	GRAHamfest	Grand Rapids, MI
9/8/18	Greater Louisville	Louisville, KY
9/9/19	Findlay Hamfest	Findlay, OH
9/16/18	Adrian Hamfest	Adrian, MI
9/16/18	Central Kentucky	Richmond, KY
9/22/18	OHKYIN Hamfest	Cincinnati, OH
9/22/18	GMARC Trunk Swap	Shelby Twp, MI
9/23/18	Cleveland Hamfest	Berea, OH
9/29/18	Paintsville Hamfest	Paintsville, KY
10/6/18	Vette City	Bowling Green, KY
10/11-14/18	Microwave Update	Fairborn, OH
10/13/18	Cave Run Hamfest	Moorehead, KY
10/20/18	Muskegon Color Tour	Muskegon, MI
10/21/18	Kalamazoo Hamfest	Kalamazoo, MI
10/27/18	Hazard	Hazard, KY
10/28/18	Massillon	Massillon, OH
10/28/18	USECA	Madison Hgts, MI
11/3/18	Grant ARC Hamfest	Georgetown, 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

AP36
 QST de W1AW
 Propagation Forecast Bulletin 36
 ARLP036 From Tad Cook, K7RA Seattle, WA
 September 7, 2018
 To all radio amateurs

SB PROP ARL ARLP036
 ARLP036 Propagation de K7RA

Sunspots disappeared again, since August 28. Average daily sunspot number dropped from 17.7 (during the prior week) to 0, (naturally).

Average daily solar flux declined from 70.6 to 67.8. Geomagnetic indicators quieted, with average daily planetary A index changing from 19.9 to 6.3, and mid-latitude A index going from 13.4 to 5.9.

Predicted solar flux is 68 on September 7-14, 75 on September 15-17, 72 on September 18-22, 70 on September 23, 68 on September 24 through October 1, 70 on October 2-6, 72 on October 7, 70 on October 8-9, 75 on October 10-14, 72 on October 15-19, 70 on October 20 and 68 on October 21.

Predicted planetary A index is 12, 10, 5 and 5 on September 7-10, 20, 15 and 12 on September 11-13, 12 on September 13, 10 on September 14-15, then 15 and 10 on September 16-17, 5 on September 18-21, then 12 and 8 on September 22-23, 5 on September 24-29, 8 on September 30, 5 on October 1-3, then 8, 12, and 8, on October 4-6, then 5, 18 and 15 on October 7-9, 12 on October 10-11, then 10, 15 and 10 on October 12-14, 5 on October 15-18, then 12, 8 and 5 on October 19-21.

When might sunspots return? In recent periods such as this when the Sun has been blank for days or weeks, I've referenced predicted solar flux values and assumed that relatively higher flux values may indicate when we may see the return of sunspots. But this has often led to disappointment.

Looking at the latest forecast (from <ftp://ftp.swpc.noaa.gov/pub/forecasts/45DF/>) it would seem that September 15-17 (when predicted solar flux is 75) and October 10-14 (the same) are likely times to see sunspots again, or at least more likely than days with lower solar flux predictions. We'll see. In each case when an expected sunspot return did not appear, the solar flux forecast changed in advance of the predicted enhanced period.

"OK1HH Geomagnetic activity forecast for the period September 07 till October 03, 2018

"Geomagnetic field will be:

Quiet on September 9, 17 Quiet to unsettled on September 10, 18-20, 25-28 Quiet to active on September 8, 13-15, 24, October 2 Unsettled to active on September 7, 12, 16, 21, 29-30, October 1 Active to disturbed n September 11, 22-23

"Solar wind will intensify on September (10-11,) 14-17, (21,) 22-24, (25), October 1

"Remarks:

- Parenthesis means lower probability of activity enhancement.

- Reliability of predictions remains low, of course.

"F. K. Janda, OK1HH (from Czech Propagation Interested Group compiling this geomagnetic activity weekly forecasts since 1978)."

Frank Donovan, W3LPL of Glenwood, Maryland wrote on August 31:

"The Solar-Terrestrial Centre of Excellence (STCE) reports that last weekend's reverse polarity sunspot group 2720 belongs to current Solar Cycle 24.

"Because of its reversed polarity, some websites claimed sunspot group 2720 was possibly one of the first groups of new Solar Cycle 25. This is simply not true, in view of its very low eight degree latitude.

"The next Solar Cycle 25 sunspot groups should have both reversed magnetic polarity and much higher heliographic latitude, typically 20 to 40 degrees from the equator.

"Only two tiny short-lived numbered sunspot groups are currently assigned to new Solar Cycle 25, sunspot group 2620 in December 2016 and 2694 in January 2018. While both tiny sunspots were assigned to Solar Cycle 25, there is some uncertainty about which sunspot cycle they actually belong to. A few additional sunspot groups belong to Solar Cycle 25, but they were so tiny and very short-lived that they did not get an assigned sunspot number.

"During each solar cycle, about 3% of all active regions have reversed polarity but do not belong to the previous or next solar cycle. This percentage varies somewhat from one solar cycle to the next. With 2000 to 3000 sunspot groups per solar cycle, this means that every solar cycle has a few dozen reverse polarity sunspots that belong to the ongoing sunspot cycle despite their reverse polarity.

"See the full STCE story at:

"www.stce.be/newsletter/pdf/2018/STCEnews20180831.pdf

"This STCE news item provides more details on these numbered and unnumbered Solar Cycle 25 regions and how solar magnetograms are used to detect opposite polarity sunspots:



"www.stce.be/news/422/welcome.html "

Thank you, Frank. Readers may want to check the W3LPL page on QRZ.com for impressive photos of his antennas, including this one:

<https://bit.ly/2MR1ZYL>

Here is the latest from Dr. Tamitha Skov, dated September 4:

<https://youtu.be/GRjrIQYVZ6A>

Ran across this, from the end of August:

<https://youtu.be/qtc2oqeSKoo>

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 August 30 through September 5, 2018 were 0, 0, 0, 0, 0, 0, and 0, with a mean of 0. 10.7 cm flux was 68.3, 67.5, 68.3, 67.7, 68.1, 67.5, and 67.5, with a mean of 67.8. Estimated planetary A indices were 4, 5, 5, 5, 9, and 11, with a mean of 6.3. Estimated mid-latitude A indices were 5, 4, 5, 5, 4, 9, and 9, with a mean of 5.9.

NNNN

ARRL DX NEWS

QST de W1AW
DX Bulletin 37 ARLD037
From ARRL Headquarters
Newington CT September 6, 2018
To all radio amateurs

This week's bulletin was made possible with information provided by K5SL, 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.

BHUTAN, A5. Zorro, JH1AJT and Champ, E21EIC are QRV as A5A until September 14. The main purpose of this trip is to meet with Foreign Ministry officials to discuss progress on a youth development project. Activity is on 40 to 10 meters using CW, SSB and FT8. QSL via JH1AJT.

FRENCH GUIANA, FY. Manfred, DL5FAB is QRV as FY/DL5FAB from Kourou until September 18 while here to participate in the launch preparations for the satellite MetOp-C. Activity is on the HF bands using CW and FT8. QSL to home call.

ST. LUCIA, J6. Bill, K9HZ is QRV as J68HZ from Soufriere until September 17. Activity is on 160 to 2 meters using CW, SSB and RTTY, mostly from 2000 to 0700z. QSL via LoTW.

MARIANA ISLANDS, KH0. Harry, JG7PSJ will be QRV as KH0/KW2X from Saipan, IOTA OC-086, from September 12 to 18. Activity will be on 40 to 10 meters using CW, SSB and RTTY. QSL direct to home call.

ST. MAARTEN, PJ7. Randy, K5SL will be QRV as PJ7/K5SL from September 8 to 15. Activity will be on 40, 30, 20 and 17 meters using CW and SSB. QSL to home call.

POLAND, SP. Special event stations SN100ID, SN100IP, SN100JH, SN100JP, SN100L, SN100PS and SN100PW are QRV until November 11 to celebrate the 100th anniversary of Poland's independence. QSL via bureau.

GREECE, SV. Oliver, DK7TX will be QRV as SV8/DK7TX from the islands Paxoi, Vido, and Kerkyra, all IOTA EU-052, from September 9 to 15. Activity will be on the HF bands. QSL to home call.

DODECANESE, SV5. Claudio, HB9OAU will be QRV as SV5/HB9OAU from Karpathos Island, IOTA EU-001, from September 8 to 20. Activity will be on 80 to 10 meters using SSB and FT8. QSL to home call.

ANTIGUA, V2. Bud, AA3B will be QRV as V26K from September 8 to 17 while doing maintenance on the station. His activity will be in his spare time on the HF bands using primarily CW. QSL direct to home call.

AUSTRALIA, VK. Members of the Hills Amateur Radio Group will be QRV with special Marconi call sign VI6MAR-CONI on September 8 and 9 to celebrate the 100th anniversary of the First Direct Wireless Message from the United Kingdom to Australia. QSL via operators' instructions.

THIS WEEKEND ON THE RADIO. The ARRL September VHF Contest, North American CW Sprint, NCCC RTTY Sprint, NCCC Sprint CW Ladder, Worked All Europe SSB DX Contest, Kulikovo Polye 20-Meter CW Contest, SARL Field Day Contest, SKCC Weekend CW Sprintathon and the Russian Cup Digital Contest are all on tap for this upcoming weekend.

The 4 States QRP Group Second Sunday Sprint and RSGB 80-Meter Autumn SSB Series are scheduled for September 10.

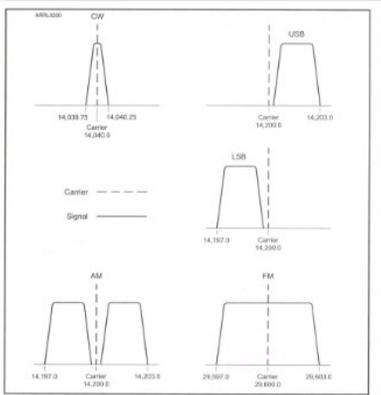
The CWops Mini-CWT CW Test and Phone Fray are scheduled for September 12.

The ARRL International Grid Chase runs during all of 2018.

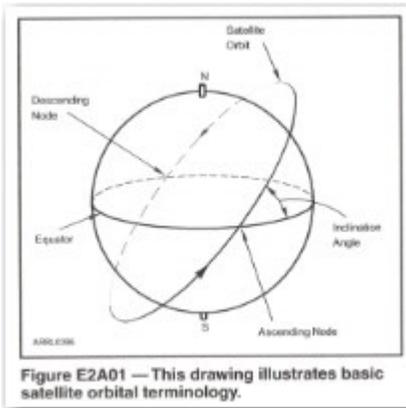
Please see September QST, page 83, and the ARRL and WA7BNM Contest Web Sites for details.
NNNN

Review

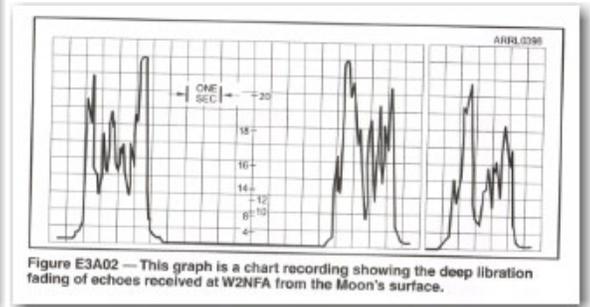
This section is dedicated to refreshing what qualified our Licensing. Something different will appear each month. Enjoy....



E1A02



E2A02



E3A02

(T1A02) Which agency regulates and enforces the rules for the Amateur Radio Service in the United States?

- A) FEMA
- B) Homeland Security
- C) The FCC
- D) All of these choices are correct

(T2A02) What is the national calling frequency for FM simple operations in the 2 meter band?

- A) 146.520 MHz
- B) 145.000 MHz
- C) 432.100 MHz
- D) 446.000 MHz

(T3A02) Why might the range of VHF and UHF signals be greater in the winter?

- A) Less ionospheric absorption
- B) Less absorption by vegetation
- C) Less solar activity
- D) Less tropospheric absorption

(G1A02) On which of the following bands is phone operation prohibited?

- A) 160 meters
- B) 30 meters

C) 17 meters

D) 12 meters

(G2A02) Which of the following modes is most commonly used for voice communications on the 160 meter, 75 meter, and 40 meter bands?

A) Upper sideband (USB)

B) Lower sideband (LSB)

C) Vestigial sideband (VSB)

D) Double sideband (DSB)

(G3A02) What effect does a Sudden Ionospheric disturbance have on the daytime ionospheric propagation of HF radio waves?

A) It enhances propagation on all HF Frequencies

B) It disrupts signals on lower frequencies more than those on higher frequencies

C) It disrupts communications via satellite more than direct communications

D) None, because only areas on the night side of the Earth are affected

(E1A02) When using a transceiver that displays the carrier frequency of phone signals, which of the following displayed frequencies represents the lowest frequency at which a properly adjusted LSB emission will be totally within the band? (chart E1A01)

A) The exact lower band edge

B) 300 Hz above the lower band edge

C) 1 kHz above the lower band edge

D) 3 kHz above the lower band edge

(E2A02) What is the direction of a descending pass for an amateur satellite? (chart E2A01)

A) From north to south

B) From west to east

C) From east to west

D) From south to north

(E3A02) What characterizes libration fading of an EME signal?

A) A slow change in the pitch of the CW signal

B) A fluttery irregular fading

C) A gradual loss of signal as the Sun rises

D) The returning echo is several hertz lower in frequency than the transmitted signal



ANSWERS

- Answers:
- T1A02: C. [97.1] The FCC is responsible for regulating telecommunications in the United States and all of its possessions. (Ham Radio License Manual, pg 7-2)
- T2A02: A. 146.52 MHz is the standard 2 meter simplex calling frequency. 446.000 MHz is the 70 cm band simplex calling frequency.
- T3A02: B. Vegetation can also absorb VHF and UHF radio waves. This can result in greater range in the winter.
- G1A02: B. The 30 meter band is restricted to CW, RTTY and data transmissions only.
- G2A02: B. Amateurs normally use the lower sideband for 160, 75, and 40 meter phone operation. Whether the upper or lower sideband is used is strictly a matter of convention and not regulation except 60 meters where upper sideband is required. The convention developed from the design requirements of early SSB transmitters. Although modern amateur SSB equipment is more flexible, the convention persists.
- G3A02: B. A sudden ionospheric disturbance (SID) is often the result of solar flares that release large amounts of radiation. Ultraviolet and X-ray radiation from the Sun travels at the speed of light, reaching Earth, the level of ionizations in the ionosphere increases rapidly. This causes D-layer absorption of radio waves to increase significantly, affecting lower frequency signals more than the higher frequency signals.
- E1A02: D. Reference chart E1A01
- E2A02: A. Ref chart E2A01. If the satellite is moving from north to south as it passes over your area, then it is making a descending pass.
- E3A02: B. Libration fading is multipath scattering of the radio waves from the very large (2000 mile diameter) and rough Moon surface combined with the relatively short term variations of the Moon in its orbit. Libration fading of an EME signal is characterized in general as fluttery, rapid, irregular fading not unlike that observed in tropospheric scatter propagation. Fading can be very deep, 20 dB or more, and the maximum fading will depend on the operating frequency. You can see the effects of libration fading in the accompanying figure recorded at the station of W2NFA (ref chart E3A02).

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
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/>

ABOUT OUR CLUB....

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Scott Jarmusch, KA8TFF

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

Activities:

Second Wednesday of the month the Mich-A-Con Amateur Radio Club meets in the Dickinson Country Library at 7:00 P.M. Winter 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	jjimrye@up.net
K4FMX	SCHAFFER	GARY	NIAGRA, WI	?	GARYSCHAFFER@LARGERIVER.NET
KG9Y	THOMAS	DAVE	NIAGARA	715-251-1393	kg9y@arrl.net

BLACK: Paid Members

BROWN: Past or Unpaid Members



MICH - A - CON

Please remit dues to:

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

Name: _____

Call Sign: _____

Address: _____

City, State, Zip: _____, _____, _____

Email Address: _____

Phone: _____

ARRL Member? Yes _____ No _____

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

Annual dues for Full Membership -

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

If family membership, please list additional:

Names: _____

Call signs: _____

City, State, Zip: _____

Annual dues are Payable January 1st.

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