W8KEA MARC

SPECIAL SERVICES CLUB

MIDLAND AMATEUR RADIO CLUB
PO BOX 1049, MIDLAND, MICHIGAN 48641
www.w8kea.org

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	Keith Johnson KB8SOE	(989) 488-4337
	Pat Mullet KC8RTW	(989) 828-6657

LIFE MEMBERS
Don W8WOJ, Lee KC8ITI, Dennis N8ERF, Larry N8CGP, Denny WD8BPT, John WB8RCR

Midland County Public Service Net, Thursdays at 9 PM
W8KEA Repeater — 147.000 MHz+ PL 103.5 • W8QN Repeater — 443.325 MHz+ PL 103.5
W8KEA Digipeater — 145.090 MHz

Next ARES®/RACES Meeting — Thursday April 7, 2016, 6:00 PM
Law Enforcement Center, 2727 Rodd St.
Next CLUB Meeting — Thursday April 7, 2016, 7:30 PM
Salvation Army Bldg., 330 Waldo Ave.
Talk-in 147.000+

April 2016

Static Discharge

John Wolters, W8QN

The Skywarn® training meeting came off well at the Law Enforcement Center. There were 45 persons in attendance and a lot of good questions were asked. We will get back to our regular locations and times for the April meetings. The April presentation will be by Dave Wallick, and cover Summits and Beaches On The Air (SOTA/BOTA). And finally, Chris Rose, KB8UIH is looking for additional help to support the MS walk on April 30th. If you can help but need equipment we can cover that. Please contact Chris or myself, W8QN@arrl.net.

MARC Minutes

Linda Hodges, KC8MUD

The evening started at the LEC with Weather Spotter Training presented by Dave Cook from the National Weather Service. Dave was introduced by the new Midland Emergency Coordinator, Jenifier Boyer

• John W8QN started a business meeting at 8:34 P.M. with around 17 members and guests present

• Treasurer's Report, — Larry N8CGP, Thank you to all those who have renewed their licenses

• Testing Session—Lee KC8ITI— There will be a testing session at the Salvation Army Building on March 12th. Registration at 8:30a.m. Testing beginning at 9:00a.m.

• Dirty Dog Run—Lee KC8ITI—The date has been moved to August 27th. Operators are needed

• Auction update—Lee KC8ITI— A total of $560.00 was raised. Thank-you to everybody who participated and thank-you to Lee for organizing this worthwhile event

• MS Walk —John W8QN— The date is April 30th, more details to come

• Dow Run— John W8QN— The date is May 21st, more details to come

• Field Day— There is still no committed chair for Field Day

• Digital Session— John W8QN —There is a Digital Training Session on the 17th of March after the Voice net. And *FLDigi* training on the 10th and 24th

• Traverse City— John WB8RCR— John shared his experience at a Traverse City Conference. Also John says Dave N8LBF will be a presenter at the Annual ARRL Michigan Section Outing near Lupton on July 8th and 9th

NET Controls:

March 10th	John W8QN
March 17th	Bob W8LSS
March 24th	Lee KC8ITI
March 31st	John W8QN

A motion to adjourn the meeting was made by Larry N8CGP and seconded by Dorie N8WTQ

Meeting adjourned at 9:15 p.m.

Respectfully submitted,
Linda KC8MUD
MARC Secretary

MARC MEETINGS

Keith Johnson, KB8SOE, is in charge of special events and topics for the MARC monthly meetings. If you have any agenda items, or topics for the meetings, please contact Keith at (989) 488-4337, or via e-mail: kb8soe@arrl.net.

COMMUNICATIONS

Pat Mullet, KC8RTW, is in charge of communications and publicity for the club. If you have any questions or ideas regarding these areas, please contact Pat at kc8rtw@arrl.net

EXAMINATION SCHEDULE

Saginaw - All future VE testing will be done on an appointment basis only.

Corunna - Contact Thomas Carpenter (517) 579-0599 ki8as@charter.net.

Bay City - All future VE testing will be done on an appointment basis only.

Isabella/Clare Counties - Contact Gus Glass, K8GUS at k8gus@arrl.net

With all examinations, your original license, a copy of that license, a second photo identification (drivers license, etc.) and a check or money order for $15.00 made out to "ARRL/VEC" are required.

The address listed below gives testing sessions scheduled for Michigan. http://www.arrl.org/arrlvec/examsearch.phtml?State=MI

SUBMISSIONS FOR NEWSLETTER

Contact Pat Mullet, KC8RTW at kc8rtw@arrl.net if you want to submit anything for the newsletter.

I need your items by the 15th of the month. Anything received after that may not make it into the newsletter for that month.

If you prefer to download the MARC newsletter from our web site, or have trouble with delivery via USPS, contact John, W8QN at w8qn@arrl.net.

MEDIA HITS!

Have you seen or heard mention of the Midland Amateur Radio Club in the news or in the paper? If so, please forward it, or mention of it to either Pat, KC8RTW (kc8rtw@arrl.net) or John (w8qn@arrl.net)

My Two Cents

Pat Mullet, KC8RTW

Following my problems with RFI in my Icom IC-7000's transmitted audio during a recent contest, I installed a pair of Palomar Engineers Model BA-8 Slip-On Ferrite Bead Common Mode Choke Kits I had on hand which I had intended for use during Field Day. A quick test transmission showed a decrease in the interference in my computer monitor, but not an amount worth attempting a contact to verify any improvement. Better, I decided, to go ahead and bring out the big guns, so I went online and ordered a pair of Palomar Engineers BA-1-1500 Current Choke Kits. I finally got them assembled and installed last week, and put them to the test this last weekend. A quick test showed minimal interference with my monitor, so I trolled around the 40 meter band until I found a ragchewing session about to break up. As the pair, one in Cleveland, one in Indianapolis signed, I called the last one on the air. Unfortunately, the report wasn't so rosy. I've still got RF on my audio. They wondered if I was using a battery or a power-supply, as well as wondering if it would be possible to physically change the location of my transmission line.

Good suggestions, but I'm still going to be doing more research online—I'd really like to have the

Amateur Radio is a Contact Sport!

7000 up and running when the Michigan QSO Party rolls around.

Speaking of research, for quite some time I've been thinking of building a modified version of the 5 Element 2 Meter Yagi project which appeared in the July 1999 issue of *QST*. Though RadioShack no longer carries the FM antenna the project is based on, Antennacraft still manufactures it. Utilizing some old TV antenna parts, I could take Antennacraft's FM6 antenna and using a longer boom, build a 7 or 8 element antenna. Naturally, I'd want a 440 MHz Yagi to accompany it, but I'd have to scratch build that from DIY material. The hard part of that seems to be locating the boom to element insulators.

You might remember that the January 2016 issue of *QST* featured a CW key "grown" on a 3D printer. During my time googling boom insulators, I came across numerous amateur radio related patterns for 3D printers. Everything from boom to element insulators to window line dipole center insulators to custom insulators for Anthony Monteiro, AA2TX's 70 cm EZ Lindenblad satellite antenna! If anyone in the club knows someone who has a 3D printer available to them, it might be worth our while to see if the club might be interested in organizing a "group buy" project and approaching that person about their willingness to consider such a project. I haven't looked, but I'm certain that there's plenty of ham radio related 3D printer patterns online, and converting CAD diagrams into patterns shouldn't be too difficult. Definitely something to look into.

That's enough for this month. I hope to hear you on the air.

73, Pat, KC8RTW

ARES® / RACES — John Wolters, W8QN

The training with *FLDigi* continues. The practice session moves to the 2nd and 4th Thursdays at 8 pm. (before the voice net). We will meet on the repeater and then move to 146.490 simplex. This is a training session so it is not necessary to have any experience to join. There will also be some sessions that will replace the normal ARES®/RACES meeting on the first Thursday of the month. Please look for e-mails announcing those dates.

Field Day Chairman

I am happy to announce that John Tallman, KB8PGW, has accepted the responsibility for Field Day Chairman. So, if you have any questions about the when and where of Field Day, please contact John. I hope to have an update at the April meeting.

John Wolters, W8QN

Future Club Meeting Presentations

The following is a list of the future presentations that will be made at club meetings.

We reserve the right to change, substitute, or change the date as the case requires.

April—Summits and Beaches On The Air, Dave Wallick, Salvation Army, 7:30 pm

May—Fox Hunt, Salvation Army, 7:30 pm Bring you own equipment or use equipment from the High School club. This will help you prepare for assisting the High School track its balloon launch if you choose to.

June—Panel discussion of Mobile HF Radio. Radios, Antenna, Power, Setup, Fun. Salvation Army Building, 7:30 pm

July— Use of HF on a Cruise Ship, Salvation Army Building, 7:30 pm

Upcoming Events

4/18	Mi QSO Party
4/25	MS Walk
5/16	Dow Run
6/4-5	Museum Ships Event
6/27-28	Field Day
7/18-19	Tall Ships Weekend
8/27	Dirty Dog Run

Michigan Hamfests

5/7	Cadillac
5/14	Chassell
6/10	Newberry
6/18	Midland
6/19	Monroe
7/16	Lowell
7/30	Lansing
8/6	Escanaba
10/8	Alpena
10/15	Muskegon
10/16	Kalamazoo
10/30	Madison Heights

* Denotes date based on 2015 event

Area Nets

SVARA; Mn, 147.24 MHz, 2100 ET
Gladwin; Tu, 147.18 MHz, 2000 ET
BAARC; Tu, 145.31 MHz, 2100 ET
Isabella Co EOC 146.72 Mhz, 1900 ET
Canadian Lks, Wed,146.8, 2100 ET
Edmore, Th, 146.8, 2000 ET
MARC; Th, 147.00 MHz, 2100 ET
District 3 ARPSC; Su, 145.31 MHz, 1830 ET
Mi VHF Trffc Net; MWF, 145.15 MHz, 0900 ET
TMMTN; Mon-Sat, 147.30 MHz, 2130 ET
MACS; Sun-Sat, 3953 kHz 1100 ET
MIARPSC; Su, 3932 kHz, 17:00 ET
UPN; Sun-Sat, 3920 KHz, 17:00 ET
MITN; Sun-Sat, 3952 kHz, 1800 ET
QMN; Sun-Fri, 3563 kHz, 1830 & 2200 ET
WSSBN, 3932 kHz, 1900 ET
UP-ARES; Fr, 3932 kHz, 1930 ET
GLETN; Sun-Sat, 3932 kHz, 2030 ET
SEMTN; Sun-Sat, 145.33, 2215 ET
MiDTN - 1900 local Tu, Th, Sat 3.583
+waterfall, Oivia 8/500

MARC MERCHANDISE

T-Shirt	S- XL	$10
	2X - 3X	$12
Long-Sleeve Tee	S- XL	$12
	2X - 3X	$15
Crew Sweatshirt	S- XL	$18
	2X - 3X	$20
Hoodie	S- XL	$24
	2X - 3X	$26
Zipper Hoodie	S- 3X	$30
Winter Coat	S- XL	$42
	2X - 3X	$45
Spring Jacket	S- XL	$32
	2X - 3X	$35
Hat		$10

All garments are royal blue with white print and embroidered name and number. Extended sizes available.

Please call Bill Lee at B&C Sportswear with questions @ (989) 839-4537.

August —SDR Receiver Discussion and Demo, Larry Macklin, Salvation Army Building, 7:30 pm

September —WSPR Demonstration, Will Halphen, Salvation Army Building, 7:30 pm

March 12th VE Session Results

An ARRL sponsored VE exam session was held at the Salvation Army Building, 330 Waldo, on Saturday, March 12th. We had four successful candidates and two unsuccessful candidates. Those earning new licenses or upgrades were: Kevin Alvesteffer, Midland, TECH; Richard Johnson, Weidman, TECH; Max Schneider, Midland, GENERAL and Brian Urch, KE8DAA, Flint, GENERAL.

The Volunteer Examiners who proctored the exams were: Dennis Klipa, N8ERF; Lee Hodges, KC8ITI; Larry Macklin, N8CGP and Bryan Haskins, K8VB.

Congratulations to the new amateurs in the Midland area as well as those earning their upgrades.

Best Regards,
Dennis Klipa, N8ERF
Midland ARC VE Liasion

Spring Technician License Class Scheduled

The Midland Amateur Radio Club is organizing an Amateur Radio Technician License class. The classes, which are open to all ages, start Monday, April 25th and will meet on Mondays and Thursdays for the next seven weeks at Midland High School, Room 321, 1301 Eastlawn Dr. in Midland. Each class will start at 7:00 pm and run approximately two hours, covering everything you need to know to obtain your first Amateur Radio license. There is no Morse code involved.

The Midland Amateur Radio Club does not charge a fee for classes, though the textbook used— The ARRL Ham Radio License Manual Third Edition has a list price of $29.95. If you order the book through the class, you can get in on the club discount and get the book for $25.00.

A testing session for all grades of license will be scheduled at the conclusion of this class.

For more information on the classes, contact the instructor, Lee Hodges at (989) 486-3771, or email Lee at kc8iti@arrl.net.

MS Walk Volunteers Needed!

The MS Walk this year will stage at Midland HS. With the demolition of Central Middle School, the venue has changed. The Walk date is April 30th, with a start time of 11 AM. Operators are needed from 10AM through 2PM. The walk route is around the Dow Chemical Company property South East of the school. Interested operators please send me your email address and I will send route maps. Please keep the maps for future use.

Please advise ASAP if you are available for the MS Walk. I only have 5 confirmed operators at this point. I would appreciate knowing if you can help.

Anyone who is coming out to assist me, I hope to be in front of the school at the front door. If weather does not cooperate I will be inside the building but as close to the front as possible. Look for a bright green/yellow vest and an orange hat.

The net control will operate from the school club room that day. Call on the 2M repeater 147.00+ for any directions or other info that morning. As more information is released I will send it along.

If anyone has any questions use my contact information from the club newsletter. My home telephone number should be there.

Thank you,
Chris Rose, KB8UIH

Dow Run Operators Needed!

The Dow Run occurs this year on Saturday May 21st. They have added a half marathon to the race this year which will kick off at 7 am and be run on the same race course as the 10k run. It is not expected to increase the length of coverage. The only impact on us will be the requirement to be on location about a half-hour earlier.

I continue to look for operators to help with this activity. Any Amateur Radio Operator can participate. If you lack equipment we can supply that, and if you lack experience we can team you up with another operator. Please contact me at W8QN@arrl.net to ask questions or volunteer to help.

Northeast Middle School and Midland High School Electronics and Wireless Communications Clubs

Both clubs continue to enjoy good success and participation. In the middle school we have continued to explore the fundamentals of electronics including resistance, capacitance and inductance. Will, K8VFO, led them through some creative exercises to help understand those concepts. Unfortunately, I was out of town and missed them. Recently, we have been building an Offset Attenuator designed by Stan, K8SB. The attenuator will become part of the Fox Hunting tool kit.

This is the most challenging build so far as there is no silk screening to show the students where or how to place the components and it involves installing it in an enclosure with associated cabling. We are making ten kits so we divided the students into teams and assigned roles for the 3 member teams. One student is the Construction Engineer, responsible for parts placement and soldering. Another student is the Supply Chain Engineer responsible for identifying the parts and making sure the next part is ready when it is needed. The third student is the Quality Control Engineer and is responsible to make sure that the right part is in the right place and is soldered or installed properly. So far, they are making great progress and all kits have passed the preliminary testing before being installed into the cabinets.

We are working with the Aerospace Engineering students at the University of Michigan to establish a mentoring program between them and the students in our Electronics Clubs. It is an exciting opportunity for our students. We will let you know how that works out in the near future.

The high school club continues its work toward building a payload for our spring balloon launch. It is centered on electronics controlled by PIC microcontrollers. What follows is a nice description of the journey so far which was recently posted by John McDonough, WB8RCR, on his blog and referenced on his Facebook page and reproduced here with his permission.

More on the dsPIC-EL

"OK, so a few months down the road we can give a progress report on the dsPIC-EL and the high school club.

First of all, the members of the high school Electronics and Wireless Communications Club are wicked smart. These kids are just unbelievable. Before building the dsPIC-EL boards we gave them a handful of parts, a solderless breadboard, a schematic, and asked them to make the LED blink. Your standard first PIC project, but the guidance they got was very limited. All of the students had little problem accomplishing the task (for that one we used the PIC24FV16KM202 because at the time we didn't have enough of an inventory of dsPICs for all the club members.)

We felt it was useful to start with a "from scratch" sort of build so the club members understood that they don't need to buy an Arduino or some prepared kit to do something interesting. They are perfectly capable of doing whatever they want.

After they had the LED blinking we gave them a few more LEDs and resistors and told them to play. Interesting results, and I think it is useful for them to go off with little guidance and explore on their own.

They then built the dsPIC-EL. The provided dsPIC33EV32GM002 contained an acceptance test so they could see right away that they were successful. (Refer to the construction instructions link on the previous post.) A provided library for the LCD allowed the club members to experiment with the buttons and LEDs and display what they were doing.

Next up was to add sensing. The ultimate goal is to do a high altitude balloon launch in the spring. This balloon is to carry a payload containing sensors for those measurements of interest to the club members. A shield was built for the dsPIC-EL containing a DS1821 digital thermostat. Again, a library was provided to ease the handling of the Dallas One Wire protocol.

For sensing, analog input will be a must, so next the students added a light dependent resistor to their shield and learned how to read voltage.

The final, sort of "directed" experiment was to add a serial EEPROM to the shield. In the spring launch, this will be needed to store the measurements for analysis after the payload is recovered.

The club members then split into small teams of two or three members. One team was responsible for the control processor, one for the storage processor, and the remainder for each sensor module. The plan is for each sensor to take commands from the control processor, report the measurement, and then have the storage processor store the result. K8VFO guided the teams in preparing functional specifications and then designs for each of the modules. Students did Internet research to select sensors and are currently working on firmware for each module.

Initial testing and development is being done on the dsPIC-EL, but the launch payload will use a dsPIC-EL for the control processor, and purpose-built shields for the measurement modules.

K8VFO is also walking the club members through the process of converting their schematics to a PCB layout, sending the design out

to manufacture, and testing the resulting board.

Of course, some of our stronger club members will be graduating about the time we do the launch. We hope the remaining members will return in the fall when we plan to build on this year's progress and address telemetry from the balloon to an earth station.

As I said, these kids are wicked smart."

Posted by John McDonough, WB8RCR, March 7, 2016

The success of these clubs is due to the tremendous volunteer efforts of a lot of people including: John, WB8RCR, Will K8VFO, Lee, KC8ITI, Art, K0ACP, John, AC8QF, Andy, KD8ULJ, Dennis, WD8BPT, Jackie, N8NNA, Chuck, WA8LQD, Dave, N8LBF, Walt, WB8WNF and a number of teachers at Northeast Middle School including Bernadette Wood, Brian Brown, Carmen Kessler, and Ryan Wontorcik.

Best Regards,
Dennis Klipa, N8ERF

Technical Topics and Information

(ARRL Contest Update—Feb. 24, 2016) Hard-drawn copper wire has traditionally been used for some electrical transmission line and antennas, where its greater tensile strength allows less sag. It can be difficult to work with, and can be hard to find, though at least one source has it in both stranded and solid. For long spans with minimal sag, copper-coated steel may be a better choice.

♦ Using a Raspberry Pi computer and some switchable filters, it's possible to build a camera that allows one to view images captured using polarized light (PDF). Polarized sunglasses can help you see fish through the glare reflecting from water; using variations on this theme, it's possible to use this device to detect man-made materials, chemical plumes, etc. The author of the paper is N2QG.

♦ Building antennas for higher frequencies may require bending aluminum rod. A tool that you can build yourself may be helpful for consistent bends.

♦ Foamed Copper may be a better heat conductor than solid, as it has greater surface area for heat exchange. (Ward, N0AX)

♦ Careful with those network-enabled devices! Make sure you know what you're putting on the Internet.

♦ Old-CPU nostalgia: One company has realized a pin-signal-level replacement for an 8088 using an relatively inexpensive FPGA. Of course, other CPUs and even whole computers have been re-implemented using FPGAs: 6502: Apple II FPGA, generic 6502, or even a PDP-11.

♦ Here are some techniques tempered with humor that you can use to get soldered components off that PC board, provided by one of the principals at Elecraft.

♦ Could you use a Bluetooth switch with your computer? It turns out that under-$3 button hardware can link to your computer, emulating a keypress. These could be handy for some uses in the shack.

WORD TO THE WISE--Gin Pole

It's a device that is temporarily installed on a tower to lift tower sections, masts, antennas, and other items. It typically consists of a pulley atop a hollow pole. At the opposite end of the pole from the pulley is a clamp or other device that allows attachment to the tower. A rope or cable goes from the load, over the pulley, and through the pole. K7NV provides a nice diagram of gin pole use on his website.

More Technical Topics and Information

(ARRL Contest Update—March 9, 2016) Purdue is printing real circuits with an inkjet printer. Researchers there have discovered a means to get a gallium-indium liquid metal mixture to flow through a print head by using ultrasonic waves to break it into smaller particles, and a carrier like ethanol to get it to flow. Once the liquid-metal traces are deposited, pressure is used to make the traces conductive by displacing the oxide layer between the particles.

♦ The venerable 555 timer gets exposed in this teardown. Besides great pictures, find out why current mirrors are used instead of resistors, and learn about other principles of integrated circuit design.

♦ While shopping for something else, I came across a wide selection of adhesive copper tape available from Amazon.com. This would be useful for RF shielding in projects you may be building.

♦ The ESP8266 is a very inexpensive Wi-Fi enabled SoC (System on a Chip) processor. Inexpensive means you can find them on eBay mounted on a small breadboard for under $5. You can also get better-supported ones from AdaFruit. As a way to send data via Wi-Fi using TCP/IP, the chip has been around a while, but has been hampered somewhat by lack of English documentation... but now that's been cured. It turns

out that the chip itself has an 80 MHz processor that is quite capable. If you've been using Arduinos for projects, you may be able to just use one of these - there are libraries that may allow you to run your entire project on just the ESP8266 chip! Someone has even convinced the ESP8266 to broadcast on TV channel 3 (in analog) using one of the pins on the IC. The method of generation is similar to the Raspberry Pi project to generate FM radio signals.

♦ Using just your computer, you may be able to broadcast songs to a radio sitting close by, taking advantage of the RFI generated by logic transitions. Of course, people have been doing this kind of thing for a very long time - see this video of an IBM 1401.

♦ K1TTT performed a destructive teardown of an LED floodlight. Notable is way the LEDs are mounted to provide good thermal conduction. (Dink, N7WA)

Operating Tip

Check those macros! If you haven't done so beforehand, for the first few contacts in a contest, and when switching between Run and Search and Pounce operating modes, take time to verify that the message macros you are using are appropriate to the mode and contest. For example, in some contests, it's not necessary to send RST. A CW macro message containing "5NN" would not be appropriate for RTTY. If you are part of a multiop, or a guest operator in someone's shack, it's good etiquette to ask before changing the macros, or know what the agreed upon policy is for doing so.

MARC Vital Statistics

Memberships Expiring in March

KB8RCR

Memberships Expiring in April

K6VWE
K8VB
K8VFO
KD8HIH

Memberships Expiring in May

None

Members in Good Standing

AC8QF	KA9WCS	KC8ITI	KD8MRB	N8DHF	N8WTQ	WA8KJR
AC8RT	KB8PGW	KC8MUD	KD8QAM	N8ERF	NX8A	WA8Y
K0ACP	KB8RCR	KC8RTW	KD8QXK	N8JBW	W8PMR	WB8FYR
K6VWE	KB8TBI	KC8TQS	KD8ULA	N8KRL	W8QN	WB8RCR
K8RI	KB8UIH	KD0JHX	KD8ULT	N8LBF	W8WOJ	WB8WNF
K8VB	KC8CTG	KD8HIH	KE8CTH	N8LOU	W8ZSX	WD8BPT
K8VFO	KC8IHB	KD8IWB	N8CGP	N8NGT	W8ZSX	WD8ODG

Current Active Club Membership 49

Birthdays Celebrated in March/April

KD8TCH 3/4	KD8QXL 3/18	KC8SRT 4/11	WA8LQD 4/27
AC8RT 3/4	K8VB 3/19	KB8TBI 4/14	KD8HIC 4/27
KB8VSU 3/9	KC8FDM 3/26	KD8CUX 4/17	KA8EZT 4/28
NQ8T 3/15	WD8OEU 3/27	N8KFE 4/18	KD8MQX 4/28
KC8RTU 3/16	W8QN 3/31	KC8IHB 4/19	W8CVZ 4/28
KC8RTW 3/17	KC8TQS 4/9	KD8OLC 4/20	N8JBW 4/30

Anniversaries Celebrated in March/April

K8RRB and ??? 3/4
KC8ITI and KC8MUD 3/6
WD8BPT and Melody 3/13
WD8OEU and Grace 4/17
AC8RT and Julie 4/26

Information is from data received 3/9/2016
Any corrections or questions contact Larry, N8CGP

Pat Mullet
Newsletter Editor
171 E. Orchard Ave.
Shepherd, MI 48883

If you desire to join the Midland Amateur Radio Club, the dues are $20 per year for an individual membership. A family membership is available for an additional $5 per year which covers all of the individual's family members. Family members must reside at the same address as the primary member to be eligible for the family member rate. The membership dues help to cover the operating expenses of the Club, and its radio systems. Membership includes Autopatch privileges on the W8KEA repeater (147.000+), voting privileges at MARC meetings, and a monthly newsletter. Please supply the following information:

Name:_____ Callsign:_____ License Class _____
Address_____
City _____ State _____ Zip _____
Home Phone (____) _____ Work Phone (_____)_____
E-mail address _____
Spouse:_____ Callsign:_____ License Class _____
Birthday: (mm/dd) _____ Anniversary: (mm/dd) _____
Desired newsletter format: Paper copy via USPS _____ or via e-mail_____

Are you an ARRL Member? Y/N Do you want an ARES Application? Y/N

We request this information so we can communicate with you regarding MARC business, and periodically send you newsletters and congratulatory birthday & anniversary greetings. We do not sell this information nor will we knowingly publicize private information without your permission. Information that is publicly available may be distributed to Club members for various purposes, including membership lists, without prior notification.

You may give this completed form to the MARC treasurer, or you may mail it to:

MARC, PO Box 1049, Midland, MI 48641-1049