



W8KEA



MARC

MIDLAND AMATEUR RADIO CLUB
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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, November 1, 2018, 6:00 PM
Law Enforcement Center, 2727 Rodd St.
Midland ARC Meeting — Thursday, November 1, 7:30 PM
Salvation Army Bldg, 330 Waldo Ave.
Talk-in 147.000+

NOVEMBER 2018

View from the Top of the Tower

Lee Hodges, KC8ITI

I hope you all are getting things taken care of before cold weather gets here. We've had some nice days but it looks like cooler temperatures are on the way. As fall and winter approach club activities for the year tend to wind down. There are some ongoing club projects that will be wrapping up this fall. The big one is the current repeater project. The reformed committee is finishing up the equipment orders and planning the repeater site upgrades. The committee will be asking for help on various parts of the upgrade so if you would like to give a hand let one of committee members know.

If you are a RACES member remember that new RACES cards will be issued at the beginning of 2019. Midland County Interim EC/RO Jack, K8GTG is handling all of the paperwork needed for the new cards. If you haven't heard from Jack and you're a RACES member or you want to become a RACES member give

**When all else fails...
...Amateur Radio!**



Jack a call. Also, there are many changes coming to the ARES® program as well with levels of certification being required. Lots of new information coming out so stay tuned.

As you read this newsletter take a look at the front banner page. There is a list of club positions on the page and if your name is listed let me know if you're still interested in holding that position for the club. Also

MARC MEETINGS

Art Peters, KOACP, 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 Art at (989) 400-3745, or via e-mail: kOacp@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/exam-search.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)

check your contact information and if it is not correct let Pat, KC8RTW or me know.

There are some requests for help on various radio related projects from the general public. I'll let you know what these are from time to time and maybe you can lend a helping hand. Midland schools would like to get another middle school electronics club started. I'm not sure we have the manpower to take on another school club but it is something we will be checking on.

I've been helping Linda, KC8MUD and my in-laws get ready for an estate sale. Both of Linda's parents have passed away and now is the time to get rid of 60 years of family collection. All of this has brought home the point

of how much is too much. For instance, do I really need to save that neat old tool that I may never use or only may use once more in my life? I have many projects that I have intended to do that have been on the shelf for 20 plus years and 20 years ago they were state of the art projects. But not so anymore with new better ways of accomplishing the same thing. When is the time to let go. Having helped with several estate type of cleanups I've come to the point where I don't want my family to have to decide what needs to be saved and what must go when I become a silent key. Gives you something to think about doesn't it?

Lee - KC8ITI

MARC Minutes Linda Hodges, KC8MUD

The meeting was called to order by Lee KC8ITI at 7:30 pm with 27 members and guests present. Introductions were made and a sign-in sheet was passed around.

Please bring any corrections or additions of the minutes to the attention of the secretary.

- Presentation— Jack NX8A— Jack gave us a Introduction to Packet Demonstration. Questions, answers and discussion followed.

- Florence relief— Lee KC8ITI— Lee told about how Michigan Amateur Radio Operators were on Hurricane Florence relief duty during the storm.

- Treasurer's report— Larry N8CGP— Thank-you to all those members who have renewed their dues. Larry also gave us a speed net up-date.

- Guest— Kristen Getsen— Kristen is the Coordinator for the STEM Outreach Program. She was asking for volunteers to help students with some soldering projects. She left information and

contacts.

- ARES®/RACES— Jack K8GTG— Jack had a discussion about membership, the emergency warning system and an EC/RO update. Chris KB8UIH has asked that emergency weather reports be relayed back to him.

- Repeater site— Larry N8CGP— No changes at site at this time and no new equipment yet.

- HS Report— Dennis N8ERF— School Club Meeting are going well with 26 students at the Middle school and 14 at the High School level.

- By-Laws— Dennis N8ERF— No report at this time.

- Repair— Lee KC8ITI— Lee has the Homer Township Radio for repairs. Has ordered parts and will be done soon.

- Tower— Lee KC8ITI has had an e-mail from a young couple in Mt. Pleasant who need a large tower and antenna removed from their property. If any body would like this equipment please contact Lee and he will pass on

Amateur Radio is a Contact Sport!

the information.

NET Controls:

Oct 11th John W8QN

Oct 18th Wendy K8WSR

Oct 25th Jack K8GTG

Larry made a motion to ad-

journal, seconded.

Meeting adjourned at 8:15 pm

Respectfully submitted,

Linda KC8MUD

MARC Secretary

My Two Cents

Pat Mullet, KC8RTW

By now I'm certain most of us have heard of the proposed shutdown of the US time stations WWV, WWVH and WWVB. Most consumers have never heard of the stations run by the National Institute of Standards and Technology, but how many have so-called "atomic clocks" keyed to and set by the signal from WWVB? The number of these clocks, watches, even home weather stations must range in the hundreds of thousands across the country by now. I think there's gonna be some grumbling from lotsa folks on the horizon when the public finds they have to keep resetting their clocks—and you thought the flashing clock on your old VCR was annoying!

It seems like hams have been using WWV to set their clocks and as a frequency standard from day one. WWV also made for a quick and dirty way to check propagation. Simply tune into "2.5, 5, 10, 15, 20 and 25 MegaHertz", as announced each hour, and if you heard the familiar ticking, you knew the band was open.

These days, setting your station clock has generally become a matter of picking an online time server for your station's computer. The problem is, if you don't have an in-

ternet connection, you can't automatically update the time. And with new digital modes like JT-8 and WSJT-X, timing has become critical. So, you're in the field, you need accurate time, what do you do?

Do it the easy way, use GPS.

"Puck" or "Mouse" type GPS receivers, especially the USB style that came bundled with the now discontinued Microsoft *Streets and Trips* software can be found on Ebay ranging from \$5.00 to \$30.00—plug them into your computer and you have a NMEA data stream, including a super accurate clock at your fingertips.

A quick *Google* search will yield plenty of freeware GPS time sync software; my current favorite is [BktTimeSync](#) by IZ2BKT. This software allows your computer to sync to an internet time server or to your GPS module.

If you download a com port splitter, you can re-map the NMEA data stream to two or more com ports, allowing your GPS to feed mapping or APRS software or anything else at the same time it's syncing you computer clock.

It's not a convenient as tuning into WWV, but it will serve your needs, especially if you're out in

Upcoming Events	
MS Walk	April 29, 2018
Dow RunWalk	May 19, 2018
Museum Ships	Jun 1-3, 2018
Midland Hamfest	June 16, 2018
ARRL Field Day	June 23-24, 2018
Michigan Hamfests	
10/20	Muskegon
10/21	Kalamazoo
10/28	Madison Heights
12/2	Madison Heights
1/27	Madison Heights
2/17	Livonia
3/16	Kalamazoo

Area Nets	
SVARA; Mn,	147.24 MHz, 2100 ET
Gladwin; Tu,	147.18 MHz, 2000 ET
BARTS; Tu,	145.31 MHz, 2100 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	

the field.

That's it for this month. Hope to see you on the air.

73, Pat, KC8RTW

ARES®/RACES

Jack Robinson, K8GTG

Hello again. Our next ARES®/RACES meeting will be at the Midland Law Enforcement center, 6:00pm on November 1st. We'll review and finish up any last remaining RACES applications so that we'll be ready for the 2019 RACES renewal. So far we have 11 completed applications and roughly another 8 almost

there. Bring your applications and smiling faces so we can finish this process. If we get the overhead projector working (smile), we'll preview ARES Connect, the ARRL system for tracking upcoming meetings, hours attended, and the like.

In other news, a big thank you to the members of the club who

helped with the monitoring of the city/county sirens on October 6th. We had roughly a dozen units monitored for proper operation during the normal monthly siren test. Using our skills of observation and reporting, we captured the performance of those sirens and filed a report with the city team looking into the sirens. A

more detailed article was published by the *Midland Daily News*. In that article, it mentions how the aging system (20+ years

old) is showing issues and may need to be replaced. There may be a need for more volunteers at a future siren test - get out your radio,

raise your hand, and stake out a siren!

Items For Sale

Still lots of club equipment still available. It doesn't benefit anyone sitting in my basement and garage so I will start listing what is available in the newsletter on a rotating basis. Here is the third group with suggested prices but if interested lets talk. Email kc8iti@arrl.net or Phone (989) 486-3771.

Lee, KC8ITI – Club Quartermaster

- 40 Foot Aluminum Tower 5 Sections \$400.00

- Cushcraft R-7000 Multiband Vertical \$200.00
- Heathkit SB-614 Station Monitor \$75.00
- 100 Ft Saxton 8316 52 Ohm Coax \$75.00
- 13 Ft RG-8 Foam \$4.00
- 14 Ft RG-8 Foam \$4.00
- 28 1/2 Ft Belden 8259 RG-58 \$17.00
- 38 Ft Channel Master RG-8 Coax \$40.00
- 73 Ft 9913 50 Ohm Low Loss Coax \$73.00
- 75 Ft Belden 8214 RG-8 \$136.00
- 80 Ft Belden 8214 RG-8 \$145.00

- 13 Ft Channel Master RG8 Coax \$10.00
- 27 Ft RG8 Coax \$20.00
- Diamond X-50NA 2m/70cm \$75.00
- Cushcraft AR270B \$100.00
- Cushcraft ARX-2 2m Ringo Antenna \$40.00
- Cushcraft ARX-2 \$40.00
- Cushcraft ARX-2 \$40.00
- Cushcraft ARX-2 \$25.00
- Cushcraft ARX-270N \$150.00
- Hustler G6-144B \$75.00
- 2 Meter Vertical Antenna \$20.00

School Clubs Update

We have started our sixth year of the high school electronics club on September 18th and the 4th year of the NE Middle School Electronics Club on September 19th. I could not be happier with the student and advisor participation. Right up front I want to acknowledge the leadership contributions of the Advisory Board, include Will Halphen, K8VFO; Lee Hodges, KC8ITI; Art Peters, K0ACP and Andrew Fawcett, KD8ULJ. We also have an amazing crew of volunteer advisors who are helping us out. At the high school, John McDonough, WB8RCR and Jackie Klipa, N8NNA are lending a hand. Also, a former student member and University of Michigan student who is taking a semester off, Ethan Brown, is also helping us at both the high school and the middle school.

Also assisting us at Northeast Middle School are Jack Robinson, K8GTG; Jackie Klipa, N8NNA; Carman Kessler (School Sponsor and co-leader with N8ERF and K8VFO); Brian Brown (teacher) and high school students, Caroline Zeigelein and Felecia Morey! Counting Ethan, that is 9 mentors for the

students at NE. That is AWESOME and we need every one of them!

At the high school we have 9 students who are attending regularly and another 5 who are involved in Marching Band but who have committed to joining the club after the football season is over. At the middle school we have 28+ students who are all thoroughly engaged in the projects. At the high school we got a Fox Hunt in early before the days became too short. Unfortunately, it was the night of the heavy rains and tornado warning, so we held it inside the school. With all of the reflections, it was an even bigger challenge. The second Fox got water soaked but was none the worse for wear.

At the middle school level we are introducing students to the world of electronics through a series of exercises and activities. They have learned about voltage, current and resistance. Then they learned how to solder while constructing a UV LED flashlight, and then learned how to make voltage, current and resistance measurements on their LED flashlight. They also did an exercise where the practiced measure the voltage

of batteries and resistance of resistors and then compare those values to the values they determined using the resistor color code. We are planning a Fox hunt this week, if we can avoid the rain.

In the middle school all of the students, with a few exceptions all work on the same projects and activities. In contrast, at the high school level all of the activities are self-paced. The students are required to complete a few basic exercises to either learn the basics or demonstrate to the advisors that they have a basic understanding of electricity and magnetism. Some of the basic exercises are also designed to expand their awareness of different aspects of the hobby such as radio operation, digital electronics and embedded programming. Upon completion of the basic exercises, the students can choose to 1) explore additional exercises to expand their understanding of electronics, or 2) build a variety of electronic kits while gaining an understanding of how they work, or 3) work on more complex projects from a list of suggestions or from the own imagination. The mentors will help guide the students through their projects. The

BIG and I mean HUGE surprise for me was that all of the students said they wanted to learn MORSE CODE. So for the first 10 minutes the club meetings, that is exactly what we are doing. Also, School Club Roundup is approaching soon and Art, K0ACP, will be leading the students through that activity. It should be fun.

The high school club is open to all high school students in Midland County, so students from Dow High, for instance,

are more than welcome to join the fun. The only 7th grade or above school that is not covered by our clubs is Jefferson Middle School. We are exploring, on a trial basis the development of a small electronics club at Jefferson Middle School in cooperation with Christine Brillhart as part of their preparation of Science Olympiad. One alternate option is to invite students from Jefferson to join the NE club, which was a proposal by Carman Kessler. Jefferson gets out

earlier than NE but travel between the schools may be an issue. The other issue is one of volunteer resources. With two clubs already in operation with so many volunteers already committed, it might be a challenge to expand even further. I will let you know how the experiment goes.

Best Regards,
Dennis Klipa, N8ERF
Advisory Board Chair

FAA Reauthorization Act of 2018 Overhauls Marking Requirements for Short Rural Towers

(ARRLWeb—10/09/2018) Thanks to ARRL efforts on Capitol Hill, language in the 2018 Federal Aviation Administration (FAA) Reauthorization Act, just signed by President Donald Trump, resolves the issue of problematic or preclusive rules affecting some rural Amateur Radio towers. The previous FAA Reauthorization Act of 2016 had instructed the FAA to enact tower-marking requirements, similar to those in some state statutes, aimed at improving aircraft safety in the vicinity of meteorological evaluation towers (METs). These towers are typically between 50 and 200 feet and set up in rural areas, often on short notice.

In the wake of fatal crop-dusting aircraft collisions with METs, the National Transportation Safety Board (NTSB) had recommended that states institute laws, sometimes called “crop duster” statutes, requiring marking and registration of METs. While some state crop-duster laws exempted ham radio towers, federal regulations dating to the 1996 FAA Reauthorization Act did not, and ARRL had expressed its concerns since.

“There is no evidence whatsoever that even one Amateur Radio antenna below 200 feet has ever been involved in an aviation accident,” ARRL General

Counsel Chris Imlay, W3KD, said. “To impose painting and lighting requirements on Amateur Radio antennas between 50 and 200 feet tall would preclude many, if not most, of the exurban, rural, and, in some cases, suburban Amateur Radio antennas that are and will be sited outside incorporated towns and cities. This would ironically defeat the entire reason such antenna facilities are sited in those environments: because rural and exurban areas are where such antennas are permitted and the few areas where antennas are not precluded entirely by private land use regulations.”

Prior to 2017, per long-established FAA regulations, unless such short radio towers were located within the glide slope of airports or heliports, they were not required to be painted or lighted.

After attempting to address the issue through the FAA, ARRL’s legislative team met with staff members of Senator Jim Inhofe (R-OK) and other lawmakers and their staffs associated with the congressional committees of jurisdiction. Senator Inhofe — himself a pilot — was of the view that the 2016 legislation was excessive and that exemptions should exist for both broadcast and Amateur Radio antennas and support structures. “We worked with our close allies at the Na-

tional Association of Broadcasters (NAB), [who were] afraid that this legislation would have a large adverse effect on short broadcast towers,” Imlay recounted. “We also worked with the Association of American Railroads, which has hundreds of short towers along rail lines in rural areas that would have been affected.”

Imlay said Section 576 of the large 2018 FAA reauthorization now requires that the only towers less than 200 feet tall that have to be painted and lighted are meteorological aids and those within the glide slope of an airport or heliport. The remainder of such towers in rural or agricultural areas lower than 200 feet need to only be included in an FAA-maintained database, which will be updated by the owners of such towers.

Imlay credited members of the ARRL Legislative Advocacy team, as well as Senator Inhofe and ARRL’s broadcast and land mobile association partners for getting the language revised in the new, 5-year Reauthorization Act. “We consider this a big success for Amateur Radio,” Imlay said, “and it would not have been possible but for the visibility that has been achieved for ARRL through our active Capitol Hill advocacy for the Amateur Radio Parity Act.”

Tech Tips: Mag Mounts an Issue with More Vehicles With Non-Steel Roofs

(ARES E-Letter —Oct. 17, 2018) More vehicles have non-steel roof panels constructed of fiberglass, aluminum, or carbon fiber. This makes placing a temporary mag-mount antenna on the roof difficult. We have run into this issue sev-

eral times in the past when our radio operators were riding in Support And Gear (SAG), sweep, or pace vehicles during special events or riding along with a Jeep Patrol in the mountains. Recently, I was assisting a neighboring ARES® region

with a special event and was riding in a new law enforcement vehicle that had an aluminum roof panel. The solution was to use an HT Window Mount Clip from MFJ ([MFJ-310](#)). They make a BNC, SMA, and female SMA version of this

clip so you can easily attach an HT antenna and get it outside of the vehicle. It is small enough to throw in a ruck sack if you know you will be operating from a vehicle other than your own. Operators may find other uses for this mount such

as to get an antenna outside of a room with Low-E window treatment, to get some extra height for an HT antenna, etc. It may not have the same ground plane effects of a mag-mount, but it definitely works. — *John Bloodgood, KD0SFY*,

Emergency Coordinator and Public Information Officer, Region 2 District 2, Colorado ARES (Pikes Peak ARES); follow Pikes Peak ARES at: <https://www.facebook.com/PikesPeakARES>

Technical Topics and Information

(ARRL Contest Update — Sept. 19, 2018) Ken Shirriff, who normally writes about restoring vintage computers, recently [took on a Teletype Model 19 power supply](#). He analyzed its regulation characteristics versus modern power supplies, and found that it didn't do too badly. Ken provides a great overview of current loops and Teletype machines, which might inspire additional "Heavy Metal" entries in the ARRL RTTY Roundup.

◆ Zip ties are available in stainless steel for special applications that might require different characteristics than nylon, such as high melting temperature, resistance to various solvents, or better UV survivability. Buy them at your favorite online retailer, industrial supply house, or home improvement store. (Stan,

KK3KK, via SteppIR email reflector)

◆ Potassium hydroxide is that white stuff that leaks out of alkaline batteries (more correctly, cells) and corrodes the inside of your electronic gizmos. This [Instructables article](#) shows how you can remove that gunk, rehabilitate your corroded battery terminals, and potentially restore your equipment to operational condition. (Ward, N0AX)

◆ The latest version of N1MM Logger+ supports the [ARRL 10 GHz and Up contest](#). The name of the contest to use is new contest dialog is "ARRL10GHZ." If you made contacts in the August running of the contest, you could enter the contacts manually into the logging program and edit the time and date to generate a Cabrillo file and verify proper logging

operation. Reports of improper operation should be posted to the [N1MM Logger+ group](#).

◆ At the dawn of the home computer age, microprocessors were available from a wide variety of companies in integrated circuit form. The CDP1802 was an RCA microprocessor, and came in a silicon-on-sapphire version that made it useful for high radiation environments such as space. Several Amateur Radio satellites used this CPU, including [AMSAT Phase 3-D and several OSCAR satellites](#). NASA even used them for the Hubble Space Telescope. Intersil still makes these chips, and you can toggle down memory lane with this Altoids-sized ["Membership Card" CDP-1802 computer kit](#) that you can assemble and program with switches, just like in the old days.

More Technical Topics and Information

(ARRL Contest Update — Oct. 3, 2018) Knowing how and when to use a spectrum analyzer can save time and effort in a contesteer's quest for lower noise floors and better reception. Rohde Schwarz has [published a fundamentals guide](#) discussing the application and use of modern analyzers.

◆ Driveways, sidewalks and other obstructions are a challenge when placing radials or conduits. Jeff, VE3CV, suggests that the [Boritt tool](#) may be appropriate especially if the cost is shared among the members of a radio club.

◆ VHF and up, up, up, up enthusiasts may want to [check out](#)

[research on graphene's potential as a detector for signals](#) in the infrared light range of the spectrum. The novel part of the work described in the article is that a room-temperature thermal sensor is possible, and graphene's thermal response time can be as small as a nanosecond, which could support fast communications. Ward, N0AX, points out that light wave contacts are already used in some contests, and could be a potential "non-licensed facet that is open to non-hams on operating teams."

◆ It's sort of like a cloud chamber, but for radio waves. [Cells filled with "excited cesium atoms"](#) are likely NOT going to be in any type of desktop transceiver

any time soon, but they have been used to optically detect and demodulate radio waves. Features of these new detectors include frequency discrimination, overload immunity, and resistance to electromagnetic interference and pulses.

◆ ["Some Recent Developments in the Art of Receiver Technology: A Selected History on Receiver Innovations over the Last 100 Years"](#) published by Analog Devices, starts with Marconi, and ends with a discussion of highly integrated SDR designs. It's a good overview of the evolution of receiver design. (Ward, N0AX)

Still More Technical Topics and Information

(ARRL Contest Update—Oct. 17, 2018) Ka Kit Lam, KM6VGZ, [published an article on using cloud services to decode snippets of human speech received over a UHF/VHF channel](#). His included code samples might be useful as the basis of progress toward an "SSB Skimmer." I asked him via email what his next steps might be, and he said: "To improve speech recognition for ham radio conversation at scale, I think data is the key. Collecting lots of data from ham radio conversation and training a machine learning (ML) model based on the collected data is a promising direction... Currently, I

am occupied by other stuff. I need more time to figure out what the next steps are for this project."

◆ An SSB skimmer would require means to recognize and tune in individual SSB Signals. Robert Dick's article, "Tune SSB Automatically," in the January/February 1999 issue of QEX outlines some techniques that the author was using nearly 20 years ago on a 200 MHz Pentium computer.

◆ KE4AL uses an [Excel spreadsheet called the GridMaster to log his progress toward working the 488 US grid squares](#). He's been updating and improving it over time, and has also

included additions by K7TAB. The spreadsheet has evolved to feature upcoming scheduled operations and record past rover activity. (K0FFY and WF7T via Twitter)

◆ Rod, WE7X, found that the [Harbor Freight HFT 63422](#) magnetic LED light "to be very handy. The base is magnetic, so it will stick in most places on the outside of my van, and the head rotates and swivels so it makes a good general area work light, with a moderately broad beam for...setting up and taking down antennas after dark." (via PNWVHFS reflector)

MARC Vital Statistics

Memberships Expiring in October

KC8RTW

W8RBF

WN8QGV

Memberships Expiring in November

AD8BA

KC0CJC

Memberships Expiring in December

None

Members in Good Standing

AC8RT	K8VFO	KC8MUD	KD8QAM	N8ERF	W8PMR	WD8AXR
AD8BA	K8WSR	KC8RTW	KD8QXK	N8GEM	W8QN	WD8BPT
K0ACP	KB8PGW	KC8VOA	KD8ULJ	N8JBW	W8RBF	WN8QGV
K2VMH	KB8RCR	KD0JHX	KE8DON	N8NGT	W8WOJ	
K6VWE	KB8SOE	KD8HID	KE8EOS	N8WTQ	WA8LQD	
K8GTG	KB8UIH	KD8HIH	KE8JNA	NX8A	WA8Y	
K8RI	KC0CJC	KD8MMH	KE8KDP	W8LSS	WB8RCR	
K8VB	KC8ITI	KD8OLC	N8CGP	W8NYO	WB8WNF	

Current Active Club Membership 51

Birthdays Celebrated in October/November

W8WOJ 10/3
W8ZSX 10/5
N8WTQ 10/10
KC0CJC 10/15

KB8PGW 10/25
WN8QGV 11/4
K6VWE 11/13
KB8UIH 11/27

Anniversaries Celebrated in October/November

WB8RCR and Eileen 10/12
KB8SOE and Darcie 10/19

KC8IHB and KB8LQM 10/23
N8GEM and Maryann 11/22

Information is from data received 9/2/2018
Any corrections or questions contact Larry, N8CGP

Amateur Radio. . . We Do That!



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