



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

| | | |
|----------------------------|--------------------------|----------------|
| President | John Wolters W8QN | (989) 832-9122 |
| Vice President | Keith Johnson KB8SOE | (989) 488-4337 |
| Secretary | Linda Hodges KC8MUD | (989) 486-3771 |
| Treasurer | Larry Macklin N8CGP | (989) 631-7748 |
| W8KEA Station Trustee | Larry Macklin N8CGP | (989) 631-7748 |
| Midland County EC/RO | John Wolters W8QN | (989) 832-9122 |
| Midland County AEC | Chris Rose KB8UIH | (989) 832-7179 |
| Newsletter Editor | Pat Mullet KC8RTW | (989) 828-6657 |
| Newsletter Publisher | Art Peters KOACP | (989) 400-3745 |
| ARRL Liaison | John Tallman KB8PGW | (989) 859-0364 |
| ARRL VE Liaison | Dennis Klipa N8ERF | |
| Web Page Chairman | John McDonough WB8RCR | (989) 631-0178 |
| Club Historian | Stan Rowe K6VWE | (989) 837-7252 |
| Quartermaster | Lee Hodges KC8ITI | (989) 486-3771 |
| Public Information Officer | Pat Mullet KC8RTW | (989) 828-6657 |
| Field Day Committee | John Tallman KB8PGW (Ch) | (989) 859-0364 |
| | Pat Mullet KC8RTW | (989) 828-6657 |
| Swap Committee | Pat Russell W8PMR | (989) 832-2924 |
| | Chuck Cribley WA8LQD | (989) 488-9409 |
| | 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 — Cancelled

Law Enforcement Center, 2727 Rodd St.

Next CLUB Meeting — Thursday August 4, 2016, 7:30 PM

Salvation Army Bldg., 330 Waldo Ave.

Talk-in 147.000+

August 2016

Static Discharge

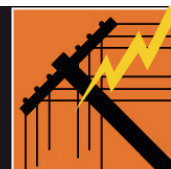
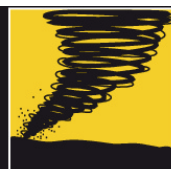
John Wolters, W8QN

Well, the July meeting recapped the Swap results with our Treasurer reporting the financial results, which were positive, and a discussion about the future. We've a lot more to talk about later on this subject. There was not a report on Field Day but those that attended said that they all enjoyed it. I thanked all involved with the planning of the June activities and again want to thank Pat Russell and Chuck Cribley for Swap planning, Dorie French for her service in many of our activities, and John Tallman for Field Day.

Larry Macklin will talk about SDR receivers in our August Club meeting. Hope to see you there.

John Wolters, W8QN

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



MARC Minutes

Linda Hodges, KC8MUD

Thank-you John W8QN for bringing ice-cream to the meeting. The ice-cream social was a delicious treat and a great way to begin the evening.

John W8QN brought the meeting to order at 7:40 P.M. with 26 guests and members present. A sign-in sheet was passed around and introductions were made.

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/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)

If you have any additions or corrections to the minutes please bring them to the attention of the secretary Linda KC8MUD.

- Treasurer's Report—Larry N8CGP—Thank you to all those members who have renewed their membership. The highlights included a report on the financial aspects of the Swap. A motion on the floor to donate \$300.00 to the Salvation Army for the use of the building. Seconded and Passed

- Swap Report—Pat W8PMR—The Swap did well, the presentations, social activities and the VE sessions were all successful. Thank—you to all who helped set up and clean up afterwards. A long discussion followed about how to get more vendors and people to come. Thank-you to those people who contributed door prizes.

- Salvation Army Building—Jim KD8HIH— Jim says he needs some help to explain to the building board members the importance of our club and the services we give to the community.

- Balloon Launch—Dennis N8ERF—Thank-you to everybody who helped. Two balloons were successfully launched and recovered. It was an awesome day and the kids and adults had a terrific experience that they will remember.

- Field Day—John KB8PGW was not present at the meeting. Members who were at the Field

Day site reported a nice time.

- Dirty Dog Run— Lee KC8ITI— We need help on Aug. 27th for the Dirty Dog Run. This event takes place at City Forest and helps the SOS organization to control the pet population.

- Freebies— Pat W8PMR—Pat brought some free items on the back table.

NET controls:

July 14th Art K0ACP

July 21st Chris KB8IUH

July 28th John W8QN

- Announcements—John WB8RCR— John mentioned an upcoming fundraising golf outing and Michigan Section Family Outing at Lupton.

- Tall Ships—Lee KC8ITI— Lee reminded us of the tall Ship Celebration coming up in Bay City. Hams can operate from the ship's location.

- Field Day Video—Steve WA8Y—Steve showed two videos of his contacts through the ISS using his FM Packet Repeater equipment during the Field Day exercises.

A motion was made by Larry N8CGP to adjourn the meeting. Seconded by Dorie N8WTQ.

The meeting was adjourned at 9:00 p.m.

Respectfully submitted,
Linda KC8MUD
MARC Secretary

My Two Cents

Pat Mullet, KC8RTW

As I write this, it is Tall Ships Weekend in Bay City. The USS Edson Amateur Radio Club is scheduled to be on the air for the event, and I'm hoping to work them on HF. If you're a paper chaser, check sources such as *QST*, *CQ* and their online websites for

special event stations. Not only is it fun to collect some one-of-a-kind QSL cards, but it's a way to fill in the holes in your quest for WAS and other awards.

Last night on the Midland County Public Service net, the topic was VHF infrastructure in

Amateur Radio is a Contact Sport!

Midland County, a topic generated by the School Clubs' recent high altitude balloon launch (BTW, there was a nice article concerning the launch in Wednesday's [Midland Daily News](#).) I thought it might be an opportune time to mention that the Pleasant Valley repeater is currently down because of the failure of the final amplifier due to a lightning strike.

Another problem encountered during the balloon launch was a dearth of APRS digipeater coverage in the area between Gladwin and Midland. A quick glance at

APRS.fi shows a great number of holes from Midland to the north and the west. My little Igate in Shepherd barely covers the town—other than that, Isabella County is barren. Too bad we don't have an in with someone at the new Courtyard Marriott Hotel in Mt. Pleasant—the roof would be a great place to put in a digi. But that's something for later conversations.

Get on the air and have some fun.

73, Pat, KC8RTW

ARES®/RACES John Wolters, W8QN

There will not be an operations in September.
ARES®/RACES meeting in John Wolters, W8QN
August. We will return to normal

Future Club Meetings

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.

August – SDR Receiver Discussion and Demo, Larry

Macklin, Salvation Army Building, 7:30 pm

September - Open

October – WSPR Demonstration, Will Halphen, Salvation Army Building, 7:30 pm

Reporting Severe Weather

I would like to ask all to please look at what is accepted as severe weather reporting criteria: [Reporting Severe Weather](#).

Please remember that dark or scary clouds, lighting, heavy rain, and marble-sized hail are things that don't need to be mentioned. Marbles come in so many different sizes it is a terrible analogy to hail size.

Exceptions the above comment about rainfall, if streets flood or

rainfall obscures visibility I would like that reported.

I know that we don't get many severe weather events and may not remember what we need to be doing when they occur. If you would, print the information at the link above from the NWS and keep it handy for future events.

Thank you,
Chris Rose
KB8UIH

Electronics and Wireless Communications Clubs

Northeast Middle School

We have just completed our first year with the Northeast Middle

School E&WCC and by any measure it has been an awesome success. The middle school club is led by Dennis Klipa, N8ERF; Will Halphen, K8VFO

Upcoming Events

7/18-19 Tall Ships Weekend
8/27 Dirty Dog Run

Michigan Hamfests

7/16 Shelby Township
7/16 Lowell
7/30 Lansing
8/6 Escanaba
8/7 Port Huron
9/10 Shelby Township
9/18 Adrian
9/24 Wyoming
10/8 Alpena
10/15 Muskegon
10/16 Kalamazoo
10/30 Madison Heights
12/4 Madison Heights

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.

and Bernadette Wood, a teacher at Northeast Middle School. We want to thank the additional MARC volunteers who helped make this a success: Jackie Klipa, N8NNA; Dave Wallick, N8LBF; Chuck Cribley, WA8LQD; Walt Kline, WB8WNF and several NE Middle School teachers; Brian Brown, Carmen Kessler and Susan Trahan.

The response from the students was tremendous. We had 47 students show up for the first actual meeting, not the informational meetings that were held beforehand. However, it quickly settled down to about 32 students for most of the year. Spring sports caused another small reduction and we ended up at about 24 students, which is wonderful. One of the more remarkable things was that about 40% of the students were girls!



Our Elf Lea working on her Touch Sensor Alarm

We started out by learning how to solder by assembling some kits that K8VFO designed. One was an LED flashlight and the other was a touch sensor audio alarm based on a 555 timer. For both kits he designed circuit boards and had them made up. Fox hunting is always a big deal for all ages. We had ordered the hand held radios. So we had the students build Tape Measure Yagis from kits assembled by N8ERF. The final challenge was building the offset attenuators. This was a kit designed by Stan, K8SB, which is a challenge for

beginners, in part because the circuit board has no silk screen and it involves some tight mechanical assembly as well. And the students were up to the challenge.



K8VFO helping his daughter Misa with Payload Preparation

We now have 10 Fox Hunting rigs and the students have gotten to be so good at Fox Hunting that finding a fox on school grounds is now too easy. So for the last fox hunt of the year, we upped the challenge. One fox was hidden at N8ERO's QTH and the students had to plot bearings to see who could come the closest. The second fox was an unannounced portable fox. It was hidden in the backpack of one of the students as she walked around the playground but no one knew it was going to be a moving fox. One of the hunters successfully figured it out and spilled the beans!

We did learn one very important lesson from that Fox Hunt. Metal objects, such as flag poles, swing sets and buildings can re-radiate the signal and appear to have a stronger signal that the actual source a few blocks away! Overhead wires can have a similar effect. Almost every map turned in by the students had at

least one bearing line that was nowhere near correct but rather ran right through the flag pole in front of the school!

Along the way, students learned about electricity, magnetism, resistors, capacitors, inductors, diodes and transistors. We had an extra bonus when we took a field trip to Aerospace Engineering Day at the University of Michigan. This was a tremendous hands-on learning opportunity and was a big hit with the students and adults alike with activities such as building and launching a rocket, a team project to build a paper airplane, flying a hovercraft, testing a wing in a wind tunnel, making models of constellations and building part of the airframe for a dirigible craft that was flown at the end of the day.



Odin – KE8EPC at UofM working on the airframe

The latter part of the school year was focused on preparation for a High Altitude Balloon launch and recovery. The students chose between six different groups organized by job responsibilities; Flight Prediction, APRS tracking, RDF tracking, Photography, Payload, and Launch Vehicle. Each team had a list of skills that they had to learn and mas-

It's Not Your Grandfather's Amateur Radio!

ter in order for the launch and recovery to be successful. Each team also developed their own Pre-Launch Checklist to ensure that everything got done.



Felecia explains to Principal DeBoer how to do a flight prediction while Jackie – N8NNA listens in.

The Flight Prediction team had to learn how to use the habhub.org/predict online software to predict the flight of the balloon. In order to do that they had to learn how to identify viable public launch sites and work with the Payload team to learn the mass of the payload. They learned about the effect of payload mass, the amount of helium in the balloon and the winds aloft on the flight of the balloon and at what altitude the balloon would burst. They learned to adjust the amount of helium to alter the flight path to ensure a safe landing in an area free of forests, swamps and big lakes like Huron....and Canada! The photography team was responsible for ensuring that the GoPro Camera mounted in the payload collected the images they wanted and for documenting the events on the ground. The APRS group had to learn about GPS tracking, programming the trackers to send the appropriate data and for operating the software used to track the balloons. The Payload team was responsible for constructing and assembling all of the transmitters, sensors, cameras, mascot, signs, and alarms into the payload and fitting

the ropes that would attach to the launch vehicle. The Launch Vehicle team had to learn how to assemble the overall system, including filling the balloon with helium without letting loose of the balloon prematurely, sealing the balloon, attaching the parachute, building and attaching the radar reflector and finally attaching the payload. Mastering the Bowline knot was very important. The RDF team was responsible for programming the fox transmitter, being proficient in Fox Hunting and for being part of the recovery team using RDF to find the payload in case the APRS system failed.

A report of the launch is found elsewhere in this newsletter.

It is a lot of work to make the club work but when you see the excitement on the student's faces and you see the spark in their eyes when they suddenly understand something they have been working on, it is priceless. Two of the students asked me what I thought of the club and I kind of chuckled because it isn't what I thought of it that was important. I told them that I thought it was great and asked them what they thought of it. One of them said that he loved it. The other one said that, "It is the best part of my week". If that doesn't put a lump in your throat....

There are so many personal rewards from this experience. I couldn't be more pleased that two of the students earned their Technician licenses at the Swap VE session on June 18th and did all of the studying on their own. Drew Scheffer, KE8EOU and Odin Drake, KE8EPC, are two eager young hams who have a bright future ahead of them.

It is well known that it is a challenge in middle school to get girls to participate and thrive in coed science clubs. We took special care and steps to try to overcome those challenges and I think we were successful, since we maintained the boy girl ratio during the year. I cannot tell you how rewarding it is to see a very shy female student grow and evolve to be-

ing a very self-confident assertive young lady who is no longer shy about stating her opinion or volunteering to take on a task. I just doesn't get any better than that. I have to acknowledge Jackie, N8NNA for her special skills in this area. Jackie really made a huge difference in these girls' lives.

We are already thinking about what we are going to do for the second year of the club, where we will have a lot of returning students and many new ones. It should prove to be great fun for everyone!

High School Club

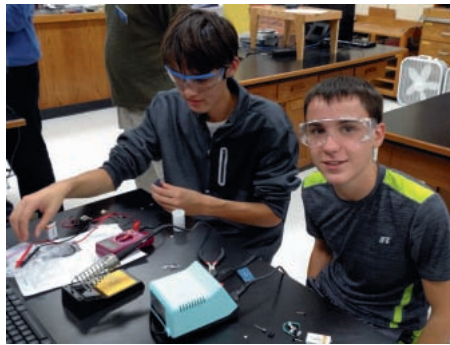
The High School E&WCC has just completed its third year. The club meets at Midland High School, Room 321, on Tuesday evenings from 7-9 PM during the school year. However, the club is open to all high school students in Midland County. This year we were delighted to welcome a student from Bullock Creek and three foreign exchange students.

We had 18 students in the club with only 2 students returning from the previous year and both of them were seniors. We started out the year learning how to solder and building the same LED flashlights and Touch Sensor Alarms that the middle school kids did, but after that we started focusing on learning how to build projects that incorporated a PIC microcontroller and learning how to program the PICs. Our overall objective was to launch and recover a high altitude balloon with a payload containing a suite of sensor boards based on the PIC microcontroller. In November, we did a practice launch where the students focused on the launch and recovery of the balloon and payload. The focus for the rest of the year was on the design, construction and testing of the sensor payload package for the spring launch. Kudos to John McDonough-WB8RCR and Will Halphen-K8VFO for taking the lead on the PIC projects. It would not have

Explore the World with Amateur Radio!

happened without them!

The students started out building a PIC thermometer with a LCD display. They then built a similar board as a development board which they could use to practice writing code and have the results show up on the LCD display. They could also use it to experiment with and expand on what they learned.



Max and Mason working on a project

With some basic skills in hand, Will and John led the students through a process of selecting the

sensors that they wanted to have on the payload. The students then chose which sensor project they wanted to develop. Will and John then led them through the design of the sensor boards and the design of the software to run them. Will did the final board design which could be used for all of the sensors by attaching the appropriate components. Will then had a number of the printed circuit boards manufactured. Meanwhile John spent a fair amount of time enlightening the students about programming PIC microcontrollers in C. Many of the students were already accomplished C++ programmers so this was not completely foreign to them but there is a lot to know and learn about embedded programming.

The students spent a lot of time building their boards. The final product was a stack of boards that included a main processor board with sensor data collection and storage, a GPS board for position, velocity and time data, another board for temper-

ature inside and outside the payload, another for pressure and finally another board that recorded light at various wavelengths. After some debugging all of the boards were ready to go. After recovery of the payload, all of the boards worked as designed. We got some awesome data from the boards that gives us some very cool insight into what happened during the flight. We already have some ideas for other sensors we want to fly next time.

The students had a great time and when asked what they wanted to do next year, they said, "build more stuff". I want to thank the other volunteers who assisted the high school club during the year: Lee, KC8ITI; Art, K0ACP, John, AC8QF; Kathy, KD0JHX; Jackie, N8NNA; Andy, KD8ULJ and Dennis, WD8BPT.

Best Regards,
Dennis, N8ERF

E&WC Clubs' High Altitude Balloon Flights

On June 17, 2016, a beautiful warm, cloudless calm day, more than 60 people, students, parents, teachers, and ham radio volunteers from the Midland area participated in the launch of two high altitude balloons into the skies over mid-Michigan and their recoveries. Both the Northeast Middle School and the High School Electronic and Wireless Communications Clubs had been working all year toward a High Altitude Balloon (HAB) launch. The balloons were



Prepping the payloads for launch

launched from the Lost Arrow Resort on Secord Lake north of Gladwin, thanks to the generosity of Cheri Jensen. The balloons were recovered a few miles north of M-46, one of them north of Merrill and the other north of Breckenridge.

The middle school and high school students had been preparing for this launch all year developing their skills in electronics, fox hunting and direction finding and all the skills required to launch and track a balloon. We used the National Incident Management System's Incident Command System to organize this event. The Event Commander was NE Middle School teacher Bernadette Wood, the Operations Chief was Dennis Klipa, N8ERF and the Communications Unit Leader was Dave Wallick, N8LBF. Dennis was responsible for training and preparation before the launch and for the actual launch itself. In addition to his communications responsibility Dave was also responsible for the most ex-

tensive and complicated part of the event, the tracking and recovery phase.

Two balloons went up, two balloons came down and both payloads were recovered within 6 hours of launch and everyone went home safe. It was a successful day. And there were plenty of learnings to go along with it. It doesn't get much better than that!



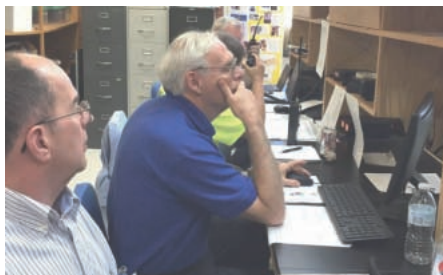
Bryce, Max, KD8WMC and Jonah attach the radar reflector

The launch went fairly smoothly with Will Halphen, K8VFO making

sure that the all of the electronics were working properly and Dennis, N8ERF watching over the students as they prepared the launch vehicles for launch. The checklists were checked, the APRS trackers were transmitting, the Fox transmitters were transmitting, the cameras were taking pictures and the data loggers were capturing sensor data. Salome Do was celebrating her birthday so a few of the students stopped and picked up a helium filled party balloon to launch with the other two HAB balloons.



Very shortly after launch the APRS signals showed up on APRS.fi and the fox beacon was heard in Midland by the Net Control Station at the Midland High School ham radio station which was operated by John, W8QN; Keith, KB8SOE and Chris, KB8UIH. The trackers who had been deployed in the field in the neighborhood of the predicted landing zone started taking RDF directional bearings and reporting them to net control. At net control, Keith, KB8SOE took the data and plotted it on maps to try to follow the balloon flights and compare them to the APRS data they were receiving.



W8MHS Net Control Station

There are four levels of tracking and recovery systems on the payload. The primary system is APRS which gives you a point on a map along with a trail showing where it has gone. The backup for that is a Fox transmitter which sends out a CW beacon on a 2 meter frequency and radio direction techniques are used to track it. The third level is a very loud audio beacon that can be heard from some distance. The fourth level is a label on the payload stating to call this person at this phone number if found. All four systems have been used in practice.

The reason for the Fox beacon is in case the APRS transmitters fail. In the previous two launches, the APRS transmitters had failed due to a coaxial connector failure, which was not detected until after the second launch. That fault had been repaired and the system was extensively tested. However, at about 50,000 feet both trackers stopped transmitting and the RDF teams were on full alert. What had been hoped would be a good practice turned into a real hunt for the payloads. Both payloads were tracked until the Fox beacon signals were lost.

Fortunately, the APRS system on the Northeast Middle School payload came back to life and made one transmission less than 30 seconds before hitting the ground at about 35 miles an hour due to a parachute failure. The RDF teams were deployed in that general area and after a short time an RDF team was able to locate and recover the payload!

We continued to search the area for the high school payload until about 4:30 pm when we decided that it was time to send the students home. It had been a long day and everyone was tired. We knew that the battery on the Fox beacon was only going to last for another 6 hours so a few of the adults decided to continue to search. Dave, N8LBF; Will, K8VFO; Mark, KC8GRQ and Den-



Ben and Jake RDFing for the payload (top) that they are holding (bottom)

nis, N8ERF reviewed the predicted flight path and divided up the area south of M-46 for further searching. On the way to his search area, N8ERF remembered noticing that the predicted flight path had a westerly portion that went right over M20 for several miles. But the data collected before the APRS failed show that the actual, westerly flight path was 3 or 4 miles north of M20. Dennis decided to take a route north of M46 to get to his assigned search area and was monitoring the Fox frequency using a mobile rig and 5/8 wave vertical on his car. As he turned south to head toward Breckenridge he heard the unmistakable tones of the Fox Beacon. YES! Attempts to take a bearing revealed that the tape measure antenna coupled to the Baofeng HT could not pick up the signal at that location. Dennis called for help and the other three folks headed his way. While talking with the other folks he noticed that the APRS signal had come back to life and was being received by his APRS enabled mobile radio which indicated that the payload was 1.3 miles south of his locations. He then restarted his laptop computer and the APRSIS32 tracking software which showed its exact location. Using his smartphone as a hot spot he was able to Igate the

location to the APRS network so everyone could see it on APRS.fi. A short time later the troops arrived at location nearest the reported landing site and proceeded to recover the payload on foot. The grass in the field where it had landed was quite tall and the audio beacon was a big help in locating the actual position! What a great feeling to have recovered both payloads.



KC8GRQ's son recovering the second payload



Actual flight paths from APRS.fi

This last little story is one of many stories that can be told about our adventure on that day. And they are being retold over and over again by the participants. I have heard from a number of parents who tell me that their child cannot stop talking about the event. That is truly music to my ears.

The data that we got from the sensor modules are stupendous and are not yet fully analyzed. That will be another great story to tell in the future.

Thanks to everyone who participated for making this a truly memorable adventure.

Best Regards,
Dennis, N8ERF

Technical Topics and Information

(ARRL Contest Update—June 29, 2016) RemoteQTH.com has a new [modular antenna switch](#) kit that could be useful in your station-building activities. By combining multiple modules, it can scale in the number of antennas or in the number of transceiver to what the application requires.

♦ Trung, W6TN, [details how a Mumble server can be set up to serve audio from a remote radio](#), in the context of accessing a remote Ele-

craft KX3 from a mobile phone. A Mumble audio server could be a component you need for your remote station.

♦ Adding wireless network capability to some of our serial-attached contest gear is easier with inexpensive chips like the [ESP8266](#). There's a wealth of information now available on how to utilize this chip, and one person went so far as to [WiFi enable his Fluke Multimeter](#).

♦ With 6-26 MHz coverage, Tim,

K3HX, suggests with tongue firmly in cheek that [one of these 200-ton monster antennas](#) (PDF) would make for a memorable 2017 Field Day.

♦ The [Senior Director of Audio Engineering for NPR suggested a method for not allowing changes](#) to certain microphone settings: using epoxy to make the setting permanent. The complete interview also discusses other details which broadcasters are concerned about in a 'commercial' environment.

More Technical Topics and Information

(ARRL Contest Update—July 13, 2016) Tom, K5RC, has been orchestrating the construction and installation of new 80 meter beams at the Comstock Memorial Station,

W7RN. It is a big, big project. Some details: The 80 meter beam antenna sports 91-foot elements, weighs 600 pounds, and has a 75 foot boom. Force 12 assembled the elements. A

200-foot crane was used to place the antennas onto the monopoles. Many people have been involved in this project, and on installation day, the crew consisted of K7NV, K6NV,

KH2TJ, XE2K, K6NA, K6DGW, K5XI, and of course K5RC. Tom has [photos](#) on the [W7RN website](#), and HD drone video was captured by AA7XT. You can get a sense of the size of the antenna in this [video of the tips being installed](#). Hector, XE2K, had the task of affixing the antenna to the tower, and [he's pictured at the top in the video](#). He also has an [album of photos from the event](#).

♦ Elektor has [updated its 2007 SDR receiver](#) in the new form of an Arduino shield. The claimed range is from 150 KHz to 160 MHz. A video has been posted of the [board in ac-](#)

[tion](#), used with SDR-Sharp, decoding SSB and CW signals on 40 meters. It appears the Arduino assumes the role of the USB interface in the original design, and that I-Q outputs are still processed by a PC.

♦ In the January VHF Contest results, letters were used to denote the band capabilities of each station. The "P" designator is for light communications. The Internet of Things (IOT) [Industry is now considering using light instead of RF for communications](#) for data transmission between devices to avoid RF congestion.

♦ Larry, N6NC, suggests a meth-

od for using an antenna analyzer to determine the resonant frequency of an antenna trap. As a parallel L-C circuit, he found inductive coupling to be necessary: "Wind 8 turns of #14 AWG wire at one wire diameter spacing around a 3/8" to 1/2" diameter tube or dowel. Solder the coil to a PL-259 or BNC connector, and cover it with heat shrink tubing. When plugged into an analyzer, and inserted into the trap, the analyzer will act as a grid dip meter using the analyzer's SWR meter." [Dave, KG0ZZ, has a YouTube video illustrating how to perform this measurement.](#)

| MARC Vital Statistics | | | | | |
|---|------------------------|------------------------|-------------|--------|--------|
| Memberships Expiring in July | | | | | |
| NONE | | | | | |
| Memberships Expiring in August | | | | | |
| NONE | | | | | |
| Memberships Expiring in September | | | | | |
| NONE | | | | | |
| Members in Good Standing | | | | | |
| AC8QF | KB8SOE | KD8HIH | KE8DON | N8WTQ | WB8FYR |
| AC8RT | KB8TBI | KD8IWB | KE8DOP | NX8A | WB8RCR |
| AG8B | KB8VSS | KD8MMH | KE8EOW | W8LSS | WB8WNF |
| K0ACP | KC8CTG | KD8MRB | N8CGP | W8PMR | WD8AXR |
| K6VWE | KC8IHB | KD8QAM | N8DHF | W8QN | WD8BPT |
| K8RI | KC8ITI | KD8QXK | N8ERF | W8WOJ | WD8ODG |
| K8VB | KC8M | KD8ULA | N8JBW | W8ZSX | WN8QGV |
| K8VFO | KC8RTW | KD8ULT | N8KRL | W8ZSX | |
| KA9WCS | KC8TQS | KE8CTH | N8LBF | WA8KJR | |
| KB8PGW | KD0JHX | KE8CTI | N8LOU | WA8Y | |
| Current Active Club Membership 57 | | | | | |
| Birthdays Celebrated in July/August | | | | | |
| KB8RCR 7/2 | KD8DWX 7/21 | K8VFO 8/6 | WB8FYR 8/24 | | |
| KG8YG 7/6 | WB8RCR 7/21 | KB8QYB 8/9 | KD8IWB 8/27 | | |
| K8RRB 7/8 | N8LMS 7/27 | N8LBF 8/17 | N8DHF 8/29 | | |
| KA8ORL 7/11 | W8OKN 7/30 | WD8BPT 8/18 | KD8EUR 8/31 | | |
| N8NGT 7/14 | N8XD 8/1 | W8JB 8/23 | | | |
| AG8B 7/18 | KB8QWO 8/3 | KD8MRB 8/24 | | | |
| Anniversaries Celebrated in July/August | | | | | |
| KE8CTI and Molly 7/8 | KB8TBI and Margie 8/8 | KE8DON and Marcia 8/18 | | | |
| KC8RTU and Brenda 07/20 | WB8FYR and WD8ODG 8/13 | KA0KPP and Gail 08/19 | | | |
| KD8MQX and Emily 7/20 | KD8ULA and Judy 8/14 | | | | |
| KD8QXL and KE8EOX 8/04 | K8VB and ??? 8/15 | | | | |
| Information is from data received 7/13/2016 | | | | | |
| 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 _____
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City _____ State _____ Zip _____
Home Phone (____) _____ Work Phone (____) _____
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Spouse: _____ Callsign: _____ License Class _____
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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:

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