

STATIC SHEET

2013 DMRAA Hamfest

The Des Moines Radio

Amateurs' Association is proud to present the 2013 DMRAA Hamfest on April 20, 8 a.m. to 1 p.m. in the Elwell Center at the Iowa State Fairgrounds. Admission is \$6 and children under 12 are free.

Radio City and D&L Antennas will be on hand, and reservations are still coming in from other vendors!

The Elwell Center is a recently-renovated 15,000-sq.ft. climate-controlled facility with ADA accessibility, and convenient restrooms. A full-service concession stand will be provided during the Hamfest by Campbell's.



Flea market tables can be rented for \$20 for the first table and all subsequent tables are \$10 each. Payment is due upon entry of the Hamfest venue. Cash and checks are accepted

(sorry, no credit or debit cards). Checks can be made payable to the Des Moines Radio Amateurs' Association. Tables can be reserved online at the

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Officers and Board

Kevin Sanders	KØKDS	President
George Noble	KK7FM	Vice-President
Kirk Nelson	WL7CLI	Secretary
Bill Claypool	NUØQ	Treasurer
Bruce Brumm	KCØZMT	
Ron Hobbs	NØXWI	
Chuck Hoveland	WØIBG	
Scott Kirstein	NØOOD	

2013 DMRAA Hamfest

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DMRAA Hamfest website at <http://www.dmraa.com/hamfest/> until April 19.

VE testing for all classes will be available in the nearby Maytag Family Theater. Testing fee is \$15. Contact Rick Allen NOCFL with any questions via e-mail at n0cfl@arrl.net. Registration begins at 9 a.m., and no testees will be admitted after 9:30. Testing will begin at 9:30 and end at approximately 11:45.

The Iowa Repeater Council will be holding a forum beginning at 10:30 a.m. in the meeting room next to the Campbell's concession stand (in the southwest corner of the Elwell Center).

The DMRAA will be presenting the annual Bob Evans Award at the Hamfest. This award celebrates the contributions of a DMRAA member to the area amateur radio community and the recipient is nominated and selected by the DMRAA board and officers.

Each paid admission receives one raffle ticket for door prizes. This year we are offering as a grand prize a Kenwood TM-V71A dual-band mobile radio. The advanced Kenwood TM-V71A dual bander provides sophisticated, high-powered performance on 2 meters and 440 MHz. Power levels are 5/10/50 watts on both bands. The large radio display clearly conveys the status of the radio. The radio's controls are very logical and feature separate volume/

sqelch for bands A and B. 1000 memories can be alpha tagged up to six characters. Other features include: scanning, weather alert, password, dual receive on same band and cross-band operation. This dual bander has ten dedicated EchoLink® memory channels as well EchoLink sysop-mode operation. The rear panel has dual audio outputs and an SO-239 [UHF type] antenna jack (USA version). Runner-up prizes will also be awarded throughout the day, including multiple Baofeng UV-5R's paired with aftermarket high-gain antennas.

Gift certificates to the ARRL's online store will also be given out as door prizes. These gift certificates can be used on any merchandise in the ARRL's online store, including books, kits, videos, clothing, and more!

Talk-in will be available on the club's W0AK Des Moines repeater, 146.940 (negative shift), PL tone 114.8.

For full details on the DMRAA Hamfest, table reservations, and award presentations, visit the DMRAA Hamfest website at <http://www.dmraa.com/hamfest/> or contact a DMRAA board member.

President's Soapbox

Kevin Sanders - K0KDS

Looking back, it's hard to believe it's been this long. Our general club meeting in May will be the conclusion of my tenure on the DMRAA board, one year as vice president and most recently, two years as president. Scheduling conflicts and additional responsibilities I gained after taking on a new role at work will prevent me from devoting as much time to the DMRAA, although I will continue to participate in the club and support amateur radio as a whole in any capacity that I can.

As a ham that is relatively "green" behind his ears, it's been a worthwhile experience to learn and grow with the club and overcome challenges together. Moreover, it's been an absolute privilege to be able to work with such an outstanding board supporting me. I believe that turnover -- the so-called "changing of the guard" -- is healthy for the club and promotes diversity and new ideas within the organization.

The credit for the club's successes certainly doesn't belong to me -- it belongs to our board and our vibrant membership base that makes our club what it is today. We

have been able to maintain a healthy membership base, a strong relationship with Polk County ARES, the ARRL field organization, we regularly host excellent presentations, we have seen events such as the hamfest and Field Day grow each year even when faced with challenges, our repeater systems are stable, and we remain fiscally sound.

If you have ever thought about becoming more active in the club, I would recommend running for a position on the board without hesitation. When I was first elected as a newly-minted ham, I had reservations. Would I be able to live up to expectations without letting the club members down? Do I possess the knowledge to lead a technological club? Will I get stuck picking up the slack? After becoming involved in the board, those reservations passed, because I learned first-hand that everyone brings some sort of a unique advantage to the table. I have worked with such an excellent board that supports each other.

What else can you do? You can support the club by recruiting new hams, paying dues,

supporting the leadership, and most of all, by getting involved!

There are countless people who have helped behind the scenes. In addition to current and former board members, in no particular order, Bill Claypool NU0Q, Dean Madsen N0XR, Mark Globuschutz K0MJG, Dennis O'Brien KA0DOS, Ron Hobbs N0XWI, Bruce Brumm KC0ZMT, Craig Rose KC0YHU, Ben Sinclair KC0ZMX, Kirk Nelson WL7CLI, and Scott Kirstein N0OOD, there's also Tom Reis N0VPR, Mike Waldron AE0MW, Rick Allen N0CFL, Dan Miller AC0OF, Shane Searcy N0ZXJ, and many others that have provided unquantifiable support to me and the club, helping build onto our successes.

I also want to send a special thank-you to Dr. George Noble KK7FM, our current vice president, who has been a fixture at DMRAA events since I've become a ham (and even prior to that), especially at Field Day. George is also retiring from the board. Actually, he's retiring altogether and will be moving back to the northwestern United States with his wife, Marti, who has also been spotted at Field Day. Prior to me serving as president, George set a very

sturdy foundation for me in the same role. George will still have a few months with us before he returns to 7-land, so please be sure to join me in congratulating him on his retirement.

With the resurgence of amateur radio, we have a lot of voices to

add to the conversation and helping hands to work on projects and special events, but are we missing yours? There are many opportunities to contribute to the club, including this month's hamfest and planning for this year's Field Day, just around the corner in June. If you are interested in

servicing the club in any capacity, please feel free to reach out to myself or another board member and we'll get you started. With your helping hands and voice in the conversation, I'm very optimistic about the club's future!

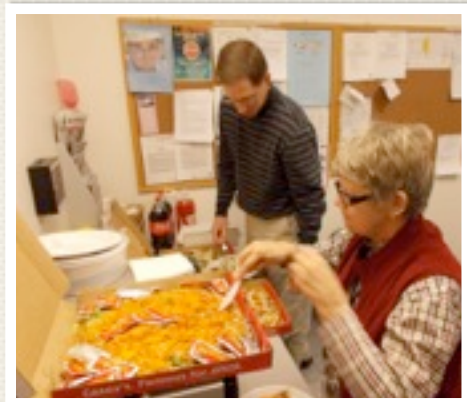
DMRAA treats the Weather Service to Pizza

The Des Moines Radio Amateur's Association treated the National Weather Service Des Moines staff to a pizza lunch the 26th of March at the Weather Service office in Johnston. The amateur radio community in central Iowa has benefited from a wonderful association with the NWS. From spotter training every year for DMRAA members to Skywarn appreciation days there has been great relationship.

The DMRAA board wanted to thank the NWS by feeding them. Pizza was delivered at noon and again in the evening so all the staff would be included.

The Des Moines office supports an extensive amateur radio station KØDMX in the operations room. This station includes two dual-band radios, an Icom 746pro for HF, an Icom 2820 D-Star unit and control head to several linked repeaters in Iowa connected via the ICN fiber optic network. The station supports two operators when needed for severe weather operations.

Brenda Brock, KCØNEX Meteorologist in Charge thanked the club on behalf of the NWS staff.



Yaesu FT-60 Clone Cable Build or Buy?

By Larry KA0FTO

Being an electronic hobbyist for many years, I decided to build a cable rather than purchase! After building I have had second thoughts. The plugs are 4 conductor 1/8". Now try to find those! I ordered 3 (1 spare) from a local Electronics supply house. Tom NOVPR ordered a cable and he received it before my 4 conductor plugs arrived. His cable was as cheap as my Plugs. His cable had all 4 conductors connected. According to the documentation I found, just 2 conductors are all that is required? Not wanting to damage either FT-60 I used my 2 conductor cable and it worked just fine. Oh yes it took me about 2 hours to build the cable. My first try one conductor was open and after opening one end the wire solder to the plug had come loose. These 4 conductor Plugs are very difficult to solder to. 3 conductor plugs, or Stereo plugs, have solder tabs for each conductor but not the 4 conductor. I will include photos of what they look like.



Figure 1- shows from the top down a 4 conductor, 3 conductor, or stereo as they are sometime called, and finally on the bottom a 2 conductor.



Figure 2- there is not much to solder to on the right side of the photo as the shield, pin 4, is the only solder tab. The solder side on the right counts 3,2,1,4 from left to right. The plug on the left side counts from left to right 1,2,3,4. 4 is the shield and 2 is what I connected the center of Shielded cable.



Figure 3- is what I received from the Electronics Supply house. Note it is made in the USA?

Continued...

Yaesu FT-60 Clone Cable Build or Buy?



Fig 4. Note the small tip of a 45Watt Soldering IRON.

Figure 4- is the small tip 45 Watt Soldering Iron I had to use to solder to that 4 conductor plug.



Fig 6. Two FT-60R units with the CLONING cable plugged in.

Figure 6- shows the two FT-60R radios with the CLONE cable plugged in.



Fig 5. The cable plugs into the upper jack under the rubber cover MIC/SP.

Figure 5- is the cover over the MIC/SP jack the CLONE cable plugs into.



Fig 7. My home brew cable on the left with the purchased cable on the right.

Figure 7- shows my home brew CLONE cable with the one that Tom N0VPR purchased. His cable looks much better and has all 4 conductors connected. I have not tried his cable because of all 4 conductors being wired through when just 2 are required.

Continued...

Yaesu FT-60 Clone Cable Build or Buy?

Cloning is explained on page 65 in my 2004 or 2012 Yaesu FT-60R Manual.

1. Turn both Radios off.
2. Connect the Cloning cable to both MIC/SP jacks on each Radio.
3. Press and hold the MONI switch, just below the PTT switch, while turning on each radio. It does not make any difference which radio you turn on first. F1 SETRST should show up on the display.
4. Rotate the DIAL knob, on each radio, until F8 CLONE shows up then press F/W momentarily.
5. The display will disappear for a short time then CLONE will appear on both radios when the "CLONE" mode is activated on both radios.
6. On the Destination radio, press the MONI switch and --RX-- will appear on the LCD display.
7. Press and hold the PTT switch for one second on the source radio --TX-- will appear on the Source radio, and the data from this radio will be transferred to the other radio or destination. As the data is passed a bar graph appears on the bottom of the display and gradually expands across the bottom until the CLONING (copying) is complete.
8. If there is a problem during the cloning process, ERROR will be displayed. Check your cable connection and battery voltage and try again.
9. If the data transfer is successful CLONE will reappear on both displays. Turn both radios off and

disconnect the cloning cable. Once the cable is disconnected you can turn the radios back on and they should operate normal with the same data now on both.

SO SHOULD I HAVE PURCHASED A CABLE, CT27A, FROM YAESU FOR \$14.99? YOU BE THE JUDGE OF THAT. THE PROCESS OF SOLDERING TO THAT 4 CONDUCTOR PLUG IS ENOUGH TO MAKE YOU THINK TWICE. BY THE TIME YOU PAY \$6.00 FOR THE PLUGS PLUS THE COST OF THE SHIELDED CABLE?

Other sources sell the cable cheaper than \$14.99 but not sure if all 4 pins being connected would affect the operation?

Just Pin 2 and 4 are all that is needed.

73s from Larry. KA0FTO

Polk County ARES

Scott Kirstein - NØOOD

The next meeting for Polk County ARES will be on April 15 at the Polk County Emergency Operations Center 1907 Carpenter Avenue. It will begin at 7pm. We will be running through our upcoming events and we'll have a recap of the Fight for Air Climb.

We are now about a month away from the Market to Market relay. This is the first year for this event in Iowa, and obviously the first year Polk County ARES has had the opportunity to help out with the 75 mile event. If you have not taking the time to volunteer to help out with this event, please send me an email (NØOOD@arrl.net) or call me at (515) 490-7414 and we can get you signed up.

Thanks for your continued support.

2013 Schedule:

Fight For Air Climb - April 7th

Market to Market Relay – May 11th

MS Walk - May 18th

Dam to Dam June 1st

ARRL Field Day - June 22nd-23rd

Camp Sunnyside Walk With Me - June 22nd

Camp Sunnyside Regatta - July 18th

State Fair Parade August - 7th

Head of Des Moines Rowing Regatta - September 28th

Asthma Walk - TBD

Des Moines Marathon - October 20th

Living History Farms Cross Country Race – November 23

Scott Kirstein

NØOOD

Polk County ARES EC

515 490-7414 (cell)

n0ood@arrl.net



Area Nets

Ames

Sunday	147.240+	7:00pm	Story County ARES Net
Wednesday	147.375+ t114.8	9:00pm	Cyclone Amateur Radio Club

Boone

Sunday	146.850-	9:00pm	Boone County ARES Net
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Des Moines

Sunday	146.610- t114.8	8:00pm	Central Iowa ARES Net
Sunday	146.940- t114.8	follows ARES	Central Iowa Technical Net
Sunday	146.820- t114.8	9:00pm	ARTS Net
Wednesday	146.610- t114.8	11:00pm	Night Owls Net
Thursday	146.940- t114.8	7:00pm	Polk County ARES Net

Marshalltown

Sunday	147.135+ t141.3	6:00pm	CIRAS Net
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Perry

Monday	145.190- t114.8	8:00pm	Dallas County ARES Net
Monday	145.190- t114.8	follows ARES	HARC Net

Webster City

Monday	147.015+	7:00pm	Hamilton County Radio Club Net
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Statewide Nets

Mon-Sat	3.970	12:30pm & 5:30pm (6:00pm summer)	Iowa 75 Meter Traffic Net
Sunday	3.970	5:30pm (6:00pm summer)	Iowa Traffic and Emergency Net
Monday	3.990.5	5:30pm (1st Monday of the month)	Iowa RACES Net
Sunday	1.973	9:30pm	Iowa 160M ARES Net

ARES Nets serve several purposes:

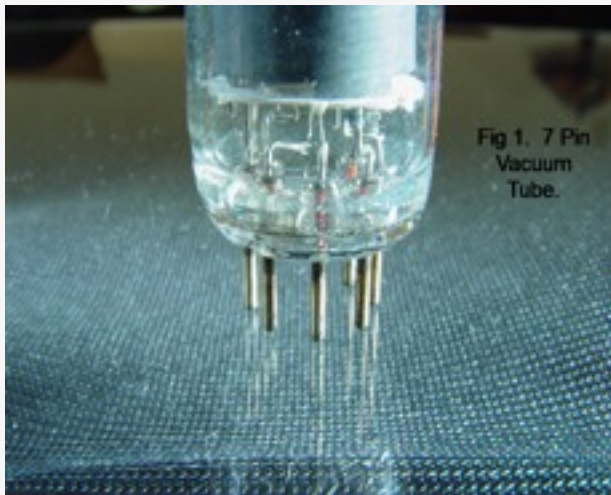
- Operator training
- Training of Net control operators
- Passing formal traffic

Please check in!

What Was It #5!

By Larry KA0FTO

What is the photo in fig 1. below? This one should be easier than the last one. Most Hams under the age of 40 might have never seen one of these. It is a 7 pin vacuum tube just setting on a sheet of clear plastic. I made it a little more difficult by shining a red LED flashlight on it.



Many Vacuum tubes you can purchase on line from various sources. How about a 7 pin socket for the above? Of course I have some 7 and 9 pin sockets. I even have some 8 pin Octal sockets. Have you seen any of the 8 pin LOCKTAL type sockets? There was a center metal pin that snapped into a mating locking device. The 8 pin Octal tubes just slipped in via a center plastic guide with a keyway so you would put them in the proper way so the pins counted 1-8 as all pins are separated by the same distance.

You could actually plug in the tube almost in the dark and just turn it until the keyway lined up and then push the rest of the way down.

The 7 and 9 pin glass base as in Fig 1 above had a wider gap between pins 1 & 7 or 1 & 9 so they could not be plugged in wrong.

73s from Larry, KA0FTO

You now have the option of paying for up to 3 years when renewing your membership in the DMRAA:

1 Year = \$20

2 Years = \$40

3 Years = \$60

See Bill Claypool NØUQ for details.

The Ham radio license class teaching program of the DMRAA is alive and well in central Iowa. We recently completed a technician class with 100 % pass rate. Our newest Hams include: Lanny-KD0TTJ, Mike-KD0TTP, Dale-KD0TTM, Glynis-KD0TTN, Mike-KD0TTL. Please make them feel welcome and offer help if you should happen to encounter them in the course of your operating activities. Our job as a larger fraternity of ham radio is to support them in their first tentative steps in Ham radio so that they will be there at the other end of radio transmissions in an emergency or when we are just "playing radio". Experience shows that a significant percentage of the newly licensed never actually participate on the air. That is very sad. One of the important functions of a radio club is to encourage everyone's development in the hobby.

This winter, we have taken on the new challenge of trying to teach both a technician class and a general class at the same time. We felt we could do this because the pool of teachers has continued to grow over the past few years. With a good number of teachers, no one gets overworked and there are subs if someone cannot make it on a particular night. For the veterans, it is enormously

satisfying to contribute to the growth of Ham radio in this way and it is also a way of keeping up to date. Several of our newer teachers are from the ranks of the recently licensed. For them, teaching is a way of consolidating what they learned in the classes as well as an entry into the activities of the club.

I got started teaching in Tacoma, WA, when I was approached by Jerry Seligman, W7BUN (SK), after I passed my Advanced class license exam. I was largely self-taught (enough to pass the test) but not confident that I actually knew much about Ham radio. I tried to decline. Jerry convinced me that I couldn't do much harm teaching just one segment. More importantly, he stressed that the way to learn something well was to try to teach it to others. I gave in and asked what he wanted me to teach, thinking it would be rules and regulations, or band privileges, or something bland and non-technical like that. He said "antennas". Noooooo! If there was anything I felt particularly weak about, it was antennas. I did it anyway. Today, I am still a long way from an antenna expert, but I feel a lot more comfortable discussing antennas now.

Currently, we have a core group of six teachers: Dennis, KA0DOS,

Ron, N0QXI, Mark, K0MJG, Dick, KBJOU, Ken, KD0NEW, and me; with a goodly number of others who have helped on one occasion or another. Sometimes, we have more teachers than students, and it becomes difficult to focus on the teaching and avoid degenerating into a social event. In other words, this is not a chore, but instead, more like a party. There is no special qualification required to join us other than a willingness to participate. Teaching requires some study beforehand, to be sure the teacher focuses on what he/she wants the students to take away. The fun starts when one tries to figure out how to make those points with stories, illustrations, or activities.

So, if you are looking to consolidate what you have learned, or explore in more depth, and just want to have some fun in Ham radio, feel free to join in. I don't know if there can be too many participants. Remember, you can also teach on a smaller scale by being a mentor at club activities or ARES events. Please don't forget to look for opportunities to welcome the new Hams.

I've always wanted to launch a high altitude balloon, but never considered trying it until I happened to mention it to a co-worker (Nate, N0CALL), who responded, "Let's launch one!"

We spent a lot of time doing research into what other balloonists have used for payloads, parachutes, balloons, and an array of other equipment like cameras and tracking systems. Our conclusion was that everyone has different ideas, so we just decided to go for it with what little we had learned.

Our first mistake was to try this ourselves without asking anyone in the club for help!

Attempt #1

We used a styrofoam cooler to house our payload, as many others have used in the past. We ordered a 1000 gram balloon from Kaymont and selected an 8 foot parachute to go with it.



Much to the amusement of some of my fellow hams, the payload consisted of two iPhones, a Yaesu VX-3, an OpenTracker USB, a Garmin eTrex GPS, and a Canon Powershot S110. We built a small dipole, mounted vertically for the VX-3.

To top off what may be the world's most expensive styrofoam cooler, we used rare and valuable helium as our lifting gas, mainly because I was afraid of hydrogen. My partner was not, and I should have listened to him!



Being new at this, we just assumed our expertise would lead to an easily recovered payload and lots of pretty pictures.

We launched from Prairie Rose State Park on November 11th, 2012. The weather started out great, with light winds and clear skies. Everything was going well, but the launch was delayed while debugging our APRS tracker. By the time we were ready to launch, the winds had picked up considerably.

There doesn't seem to be a way to return the helium to its tank, so we decided to launch. Suffering rope burns trying to hold the balloon until a pause between gusts, we finally launched!

We were immediately worried as the balloon slowly took flight, then began to drift sideways faster than it rose into the air. While holding our breath, we watched it pick up speed and head for a tree, which snagged the payload.

Continued...

Straining in the strengthening winds, the stuck payload broke free only to snag again in a tall pine tree. My partner scrambled up the tree with amazing speed and freed the balloon, which then drifted over the horizon, never to be seen again.

The last APRS position report from the payload was while it was stuck in the tree. We drove and hiked around, imagining that the balloon was snagged nearby, the OpenTracker and VX-3 still transmitting, but found nothing.

Our predictions showed the balloon landing somewhere near Iowa Falls.

If anyone out there finds a styrofoam cooler full of high end equipment, please let me know!

Attempt #2

While relating the story of our first balloon at a Buffet City lunch, I discovered that Larry (N0BKB) and others have plenty of experience launching (and recovering!) high altitude balloons.

Armed with some new knowledge, spare equipment from Larry, and a few items picked up at the chili feed and auction, we set about building a second payload.



The new payload was designed to be more reliable and much, much cheaper.



We again used a styrofoam cooler, but with a Baofeng UV-3R, OpenTracker+, a special high altitude GPS module, and an HT antenna with a counterpoise. Mounted to the top of the cooler was a cheap Canon camera from Craigslist, and a Spot Satellite Messenger as a backup tracker, just in case the APRS tracker failed.

Our launch site was Lake Anita State Park, on December 2nd, 2012. With help from Larry (N0BKB), Lowell (KB6SDI), and Steve (N0ORU), we filled the balloon with hydrogen and launched!

We had better luck this time. We followed the balloon visually into skies that had just cleared of fog, and were happy to receive frequent updates via APRS.

The balloon tracked North as it climbed through the surface winds, then began drifting East. We quickly packed up and began the chase!

We drove East on I-80, tracking the balloon directly using a Kenwood TH-D72, and on a Macbook with <http://aprs.fi>.

Continued...

Everything was working well as the balloon rose and drifted East, hitting around 60,000 feet as it passed over Des Moines.

While floating at 73,000 feet over Oskaloosa, we suddenly lost APRS tracking. The SPOT backup tracker doesn't work above 20,000 feet, so we were flying blind.

Being optimistic, we continued driving East on I-80, hoping we would hear from the balloon again. If APRS had failed, we should have heard from the SPOT once it descended below 20,000 feet.

Suddenly, the balloon appeared again on APRS at 80,000 feet, just South of Iowa City. Ecstatic, we continued chasing it, even though it was going 140mph, giving us no hope of catching up.

The APRS locations kept coming in, inching ever higher towards 100,000 feet. As the balloon crossed the Mississippi, it hit that magic number!

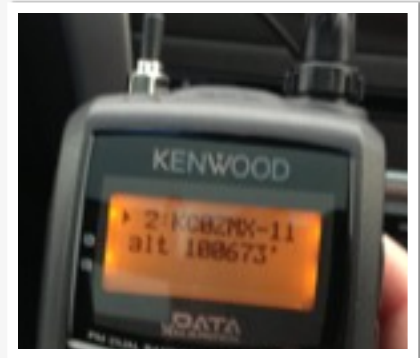
We were only just past Newton when the balloon crossed into Illinois, showing no sign of stopping. Finally the balloon burst at 101,534 feet, near Morrison, Illinois.

As the parachute and payload descended, we lost APRS tracking at 40,000 feet. We stopped in Williamsburg and checked both APRS and the SPOT service over and over, but saw nothing. It wasn't until a few miles back toward Des Moines when a friend called and said it had appeared on SPOT!

The payload ended up landing in a field near Mendota, Illinois after a flight of over 5 hours that reached over 100,000 feet! Unfortunately we were hours from the balloon, and it was getting dark.

We had decided to turn back and recover the payload another day when Kevin (K0KDS) noticed a station closing in on the last APRS position of our

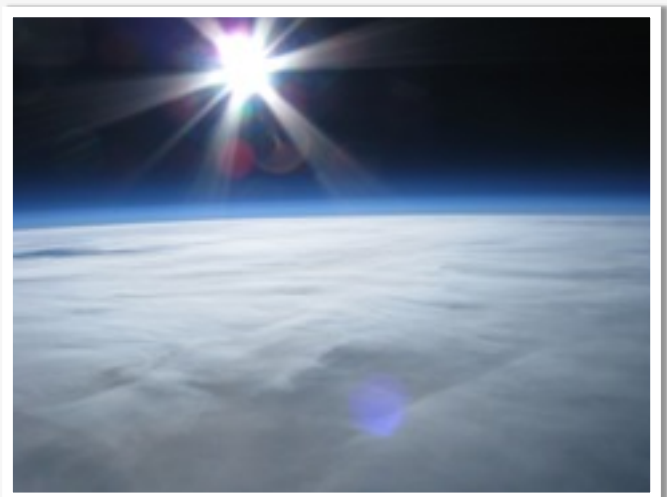
balloon. Knowing that the tracker had failed, Kevin was able to relay the SPOT coordinates to Kurt Clausen (KB9RKU), who recovered the payload for us.



Kurt ended up driving all the way to Newton to meet me and return the payload, where we had dinner while going over the 800 photos captured by the payload. The flight was a success!

We have since launched a smaller balloon to 40,000 feet and are planning another launch soon. With each launch we're experimenting with different equipment and construction techniques.

High altitude ballooning is an exciting way to combine ham radio with many other disciplines, and it's a lot of fun!



2012 DMRAA Calendar

General Meetings and Events

January 22 - General meeting
February 5 - Board meeting
February 26 - General meeting
March 5 - Board meeting
March 26 - General meeting
April 2 - Board meeting
April 20 - DMRAA Hamfest
April 23 - General meeting
May 7 - Board meeting
May 28 - General meeting
June 4 - Board meeting
June 22-23 - Field Day
June 25 - General meeting
July 2 - Board meeting
July 23 - General meeting
August 6 - Board meeting
August 27 - General meeting
September 3 - Board meeting
September 24 - General meeting
October 1 - Board meeting
October 22 - General meeting
November 5 - Board meeting
November 26 - General meeting

Testing Sessions

4/20/2013

DMRAA Hamfest
Iowa State Fairgrounds
9:30 AM (Walk-ins allowed)

4/25/2013

South Middle School
Waukee
7:30 PM (Walk-ins allowed)

7/21/2013

Johnstone Supply Company Classroom
1:00 PM (Walk-ins allowed)
(515) 795-2162

Hungry and looking to meet local hams?

Friday's at the City Buffet
on University (next to
Toys R Us) a group of
hams meet for lunch.

This is an informal
meeting and provides an
excellent opportunity to pass information while
enjoying a nice selection of Chinese cuisine. The
group usually arrives around 11:45 and breaks up at
about 1:00. All are welcome, including family
members.



DES MOINES RADIO AMATEURS ASSOCIATION

The Static sheet is bi-monthly (six per year) publication of the Des Moines Radio Amateurs Association. It is provided via email to the membership of the DMRAA. Please feel free to forward to prospective club members and interested Amateur Radio Operators.

The DMRAA is affiliated with the ARRL,

The national association for Amateur Radio.

Des Moines Radio Amateurs Assn.

P.O. Box 88

Des Moines, IA 50301

DMRAA.com

E-mail: info@dmraa.com



Membership Application

Name: _____

Address: _____

City: _____, State: _____ Zip: _____

Phone Number: (____) _____ Email: _____

Call Sign: _____ Class: (E) (A) (G) (T)

ARRL Member? Y / N

What are your primary interests in amateur radio? _____

What are you interested in learning about? _____

How would you like to volunteer with the club? _____

Dues:

\$20 Single

\$40 2 years

\$60 3 years

Mail application and payment to:

DMRAA

P.O. Box 88

Des Moines, IA 50301

Email: info@dmraa.com