

Vol. 23 No. 1

[www.mvus.org](http://www.mvus.org)

Jan 2009

**Meeting Fri 23 January**  
**at the Hometown Buffet near SR 725 and Yankee Rd.**  
**in Centerville**

**MVUS Sunday Net at 14:30 UT** (currently 10:30 AM local time, EDT).  
The net frequencies are primarily **144.280 Mc and 28.960 Mc.**

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## Happy New Year 2009!

I like to thank everybody who sent in dues, sometimes including encouraging notes. Please compare your label, the date shown is the date your dues are paid up to. Let me know of any discrepancy. We have dropped a few guys we hadn't heard from in years. If you receive your newsletter by e-mail only, your dues are \$5 per year.

Also I like to encourage everybody to scratch his head and try to write something for the upcoming newsletters. I am sure you must be doing something or running across something of interest to your fellow hams. We have to think ahead, younger hams will have to jump in and take over our society. Tom, N8ZM, Steve, K8UD and I have been in charge of MVUS for a long time.

Let's all get moving and have a successful New Year 2009!

Gerd, WB8IFM, hamming since WW2.

**Hamvention this Year: 15 / 16 / 17 May !!!**

## DE N8ZM

For most of the last two weeks it has been dreary and very cold here in SW Ohio, but it has been much colder elsewhere. So I am not going to complain; it would likely fall on many deaf ears.

At our December meeting, we discussed a lot of interesting things, and a little bit of club business. The 1296 beacon antenna is ready to go if the tower climbers ever show up (that's a whole story too big for this column), but we are hopeful. Gerd and Steve's transponder is coming along nicely, with good help from John Human. The VHF/microwave forum is shaping up nicely, with Red Dakin and Mike Schulsinger moving things along. (Side note to Red and Mike: I had a chance to talk with Todd Collins a few days ago, and he assured me that we have a time slot. The show's emphasis is on digital stuff this year, so topics related to WSJT, etc. for weak signal work would be especially appropriate).

I have sent in the paperwork for our Hamvention booth already, and am assured that we will be there. The booth should be in the same location, but may have a slightly different number as they have revised their numbering scheme. There now are two letters added to indicate the part of the building in which the spaces are located. Last year I believe we had 327C. We also had a discussion about how we could attract more people to it, but the only idea that seemed to catch on was 'booth babes'. However, as my XYL laughingly pointed out to me that night on the way home, it is highly unlikely that any of us would ever be able to serve in that role, or attract anyone who meets the requirements. I think she also said that we (me, in particular) had darn well better not try to, either. I'd guess that the treasury might be hard pressed to support the expense anyway. So ideas for interesting attractions of a more geeky nature are definitely needed.

As I write this, the January VHF contest is winding down, and the N8ZM team was not able to get on the air from our contest site this time due to there being over a foot of snow on top of a half inch of ice up on the hill. As my 4WD truck wouldn't start anyway, we didn't have the security of being able to reliably get everyone in and out this time, so we bagged it. Most of us did get on from home, though, so it was still a lot of fun.

As Spring is fast approaching, it is time to start thinking about a Saturday tech session, so let me know at the meeting if you are interested. We also need to consider if we want to tackle another FMT, or any other new projects.

And of course, Happy New Year!

Tom, N8ZM.

**Transponder Progress:** Sri, there isn't any. John, N8VZW, left town for Florida ( he'll be back!) and the wx has been really COLD. There was a break, but it was around the holidays with a lot of family business taking precedent! We'll keep you posted! 73, Gerd, WB8IFM

## This and That 1-09

**Saving on Heating Cost.** ...Of course, I had gotten a wood stove (in Massachusetts) and burned lots of nearby firewood, newspapers and junk mail. ... If a wood stove would fit into my house in San Francisco, I could just burn my 60 lb per week of junk mail and cut my heating cost a lot. [Bob Pease]

**Insertion Loss Acrobatics.** It took me a while but then I got it. The scale had numbers like 200.0m, 400.0m. Well the dB was missing and mdB meant milli dB or 1/1000th of a dB, fully “spelled out” we have 200.0 1/1000<sup>th</sup> of one tenth of one Bell; actually this is just .2 dB [Gerd, WB8IFM]

**Implement Your DLP Ideas.** Texas Instruments’ discovery 4000 starter kit lets developers create applications based on TI’s digital light processing (DLP) system. Kits start at \$4999. [www.ti.com]

**Listen to the Customer.** It is not always best to listen to “experts”, as it is to listen to your customers, who certainly know what they can use. [Cristos Tsironis, Focus Microwaves, Montreal]

**Where is Ground?** Crusty old Kurt tells us: the location of electrical ground really is fuzzy! The ground currents from your antenna go way down into the ground, they are maximum at the surface and gradually diminish with depth. For example they drop off to a quarter of the surface current at 45 feet at 1 MHz and just 20 feet at 10 MHz. This is for average ground[Kurt N. Sterba, Nov-08, World Radio]

**Golden Antennas.** Reference Standard (antennas) should not be used for daily testing to prevent physical damage to them from unexpected shock impulses and vibration occurrences. Antennas used as reference standards should be treated as “Golden Antennas”. [Daniel D Hoolihan]

**Cell Shock.** I recently dropped my cell phone, inadvertently of course, and at least once or twice on a concrete floor, which gives it a severe shock. Each time I was very lucky as the cell phone kept working just fine. But soon I noticed that the battery was exhausted much sooner than usual. So, there is a good chance that as the electronics survived the shock, the battery did not. We all marvel at the batteries getting smaller to fit the small phones and cameras; the components inside, however, get thinner and more susceptible to shock. And these batteries are not cheap! [Gerd, WB8IFM]

**Hunkering Down.** ...The icon of a modern-day depression might be something as subtle as the flickering glow of millions of televisions glimpsed through living room windows, as the nations unemployed sit at home filling their days with the cheapest form of distraction available. [Drake Bennet, Boston Globe]

**Current Gobbling in the EU.** The presently “stand by losses” of tvs, video recorders, stereos, washing machines, microwaves and other electrical appliances are going to be reduced. By the end of 2009 these losses may not exceed one watt and by 2013 not one half watt in the European Union. Today these losses are 10, 20 even 30 W, the equivalent of letting a light burn day and night. The manufacturer has to install a small component costing less than a dollar. This is no problem and has been done in Japan for some time already. [Peter Sennekamp]

**Funny Noises.** There were funny noises coming over the church’s PA systems. Two wireless microphones were being used. I described this to the congregation’s computer guru who also maintains computers for the Kettering schools. He suggested it sounded like somebody was text-messaging close by. [Jerry, WA8BOB]

**Brats.** You cannot carry on a reasonable, intelligent, and logical conversation with a brat. A brat’s only purpose is to get what it wants at any cost. [John Gyorki]

**Errors.** To kill an error is as good a service as, and sometimes even better than, the establishing of a new truth or fact. [Charles Darwin]

## Penthouse Living

By Gerfried, DH8AG & Renate, DB9DR

We live in a penthouse of a 7-story building which puts us 20m (66') above ground and presents a 360 degree clear view of the surrounding area, an ideal location for VHF/UHF and microwaves, which was and still is my main interest.

When we were looking for a flat in 1986, the selection was great, similar to what it is now, and, of course, when I did see this one, my mind was made up: it had a nice location on the edge of town, was the tallest building around and the penthouse, of course, sits on top of the roof with access to the roof, ideal for erecting and experimenting with antennas.

We were not sure whether the owner of the house was good-natured or just not knowledgeable about ham radio. In any case we got the following sentence added to the lease: "The erection of a ham radio antenna system is permitted"

Starting out with just a 4 element Yagi in 1986, now in the year 2008, there are the following antennas. A 7 element Yagi for 2m and a 13-element Yagi for 70 cm, both on a mast at a level of 24 m (79'), and 26m (85') above ground. Both beams are horizontally polarized and meant for dx in SSB and CW.

A second, crank up mast, putting antennas 27m (88') above ground, sports the following antennas: a 13 el vertical polarized 70 cm Yagi for FM repeaters, a horizontally polarized 33 element Yagi for 1296, a 2-foot dish for 10 GHz, and a 36 element Yagi for 2400 MHz. Those antennas, meant for satellite communication, can be rotated both in azimuth and elevation.

After 30 years in Ham radio, I finally took the CW test, which allowed me to work on the short-wave bands. Now I have a long wire that connects from our high-rise at 20m (66') down to a neighbor's house at 12m (39'). With this 26.5m (87') long wire I communicate on the 40 and 80m bands. For dx I use a vertical, a quarter wave on 20m, extended by a 10-foot support pipe from the surface of the roof. This antenna can tilt over so to not be exposed to strong winds. Erecting this antenna is not unlike a railroad barrier, it just takes 2 minutes. Adding the radials, which double as guy wires, takes a little longer.

At the height where the antennas are they are naturally more exposed to the elements. Fortunately the roof and therefore the entire system is easily accessible for maintenance. All components are from galvanized steel, aluminum or stainless steel materials. Nothing can rust, except the steel cable for the crank-up mast, which needs to be greased every so often as do a few other moving parts.

During a microwave contest it was possible to walk out on the roof with a flashlight to fix a control cable of a rotor. After ½ hour work in the rain (of course) I was back in business.

During the time when I was experimenting with wire antennas, the following episode occurred. I had assembled a dipole, which was lying on the roof ready to be put up. The strong winds had played with my design and changed it into a ball that needed to be untangled. Since I intended to put up this antenna the next day, I went out late at night to do this work. Suddenly a strong beam of light hit my eyes and when I shielded them with my hands and cautiously explored the origin of the beam, I noticed two policemen on the balcony of a neighboring house. I waved and they waved back. The police left and after a few minutes I called the police post, which was very close by and they informed me that the neighbor had reported suspicious activity on the roof and I explained to them what I was doing and that was the end of that. I have never since received any complaints no matter what time of day or night I walk around and fix things.

Looking down from our quarters to the rooftops of our neighborhood and beyond and up to the sky we can observe the approaching weather with great detail. Especially in the summer we often are treated with fantastic sights. We can spot lightning up to 60km (37miles) away. This is easily verified by comparing what we see with the Internet rain radar.

Lightning takes many forms: we observe it between clouds and from clouds to the ground. When the dark front gets closer and the atmosphere gets eerily calm, then it is time to go out clear the terrace and bring down and secure the antennas, go back in, close doors and windows, and wait for the weather to pass.

Sometimes there are strong gusts of wind and we have observed large windows actually forming a bulge so that you are afraid it might break.

Lightning does not always look for the highest point. In the 23 years we've been living here not once were we hit directly. However a house, much lower and only three hundred feet away once got hit. The roof burned down before the fire department could extinguish the blaze.

Of course these storms are the source of our 10 GHz rain scatter and it is fascinating to see a front approach and to direct my 10 GHz dish towards it and see what contacts can be made.

In one case I experienced a front only three miles away and with the dish on it at 240 degrees received a beacon that normally is received at 79 degrees. There are also cases when I can receive a station or stations from all directions. In that case the storm is right on top of us. Under such a condition I received at one time a beacon from northern Germany from a distance of 346 km (214miles). For good rain scatter dx thunderstorms at a distance of 250 to 300 km (~170 miles) and high up are ideal. With only 3W of power, measured at the feed point of the 60 cm dish (2'), distances of 400 to 600 km (~300 miles) can be achieved. A great help for this is the Internet where one can observe a radar map indicating rain and then turn the dish in that direction. Of great help is the Microwave Internet Chat Site of ON4KST. There you can also make arrangements for Europe wide QSOs. Thus far, using my setup with the three watts and the 60cm dish I managed to work: Denmark, Sweden, the Czech Republic, Austria, Switzerland, France, the UK,

the Netherlands, Belgium and Luxemburg.

Since we live in the approach path of the Dortmund and Cologne airports I can often hear beacons reflected from approaching and leaving airplanes. Also I receive reflections from high-flying planes overhead. An unusual reflection came from a hot air balloon that flew by in sight. Here, aiming the dish at the balloon was a bit cumbersome.

At the present time I am not very active on the VHF/UHF amateur bands, my main interest is in 10 GHz. Just recently retired, I am also looking forward doing some building and experimenting. We will see how I can apply my time best. Here and there I do write articles for Ham Radio journals.

With the proliferation of wireless devices the general public got concerned about the effects of electromagnetic radiation and the authorities reacted by imposing stringent regulations on ham radio stations. It turns out that the demanded safe distances from the antenna are harder to control at higher frequencies. Our rules demand a detailed calculation of the total set-up including sketches of the house the lot etc. if your power is above 10 W EIRP. On HF there is not much of a problem. A safety distance of a few meters usually is sufficient.

During the summer months we often take a break from ham radio and enjoy the balmy summer weather sitting outside on the roof terrace in the evening sun, enjoying the privacy, a cool drink, and some times good company.



2m / 70cm Antennas



3 / 23 / 70cm Antennas



## DH8AG “Inside Facilities”

Upper left: Construction corner

Upper right: Measuring corner

Left: Operating Position

## 47 GHz Propagation Comments

By Lloyd, NE8I 9/23/2008

Cumulative report Sept 08 EN74

This is a band of patience and persistence. WW8M and I worked with K3SIW and ran some tests. This is how it works. Some paths worked really good. Others did not.

We spent a major chunk of Sunday on the 29mile Sleeping Bear, Christmas Cove over water path. Beautiful weather, sunny. Driving was slower due to all the bicycles, on the Leelanau tour. At least most of M22 has a bike lane. Lake conditions were excellent, mostly calm. Don and I can work this path pretty regular.

Both our stations were set up on the beach just a few feet above the water. Thing is, successful contacts over distance, takes time. Dedication. It is not just a set it up, aim, make the contact. We know where to aim, from previous experience, which helps. Don, set up his station in beacon mode, once aimed, let her rip. Every now and then check the peak. Watch the signals. Changes noted. Signals build and fall over time with changing conditions. The atmosphere changes refraction, losses and all. At times signals can really build to significant levels. Other times, they drop right out.

Being able to play those signals back, over the link helps. So, for example, our 65 mile across the Lake Michigan path, depends. Takes time, patience.

Last time, it took 3 days of persistent trying. First time, only took an hour. I wish I could say this time of day, or some rule of thumb. If that was so, everyone would just show up at the "right" time. Nope. Does not work that way. You have to set up. Maybe use 24 GHz to line everything up. Then keep trying. Patience, and persistence. Eventually, with time, conditions will build, and you have PROPAGATION. Pure and simple. You set up and beacon. Listen and transmit. Cycles. Maybe work some 10 GHz or whatever else. Read a book. Enjoy the day on the beach. You can eventually develop a feel for things. Don says he has it. I say, I am starting to build it. Lots more to learn. Not just the tiny amount that we have done.

You have the guys out in the western states, mountain topping. Thin dry air and all that. Truly line of site. Then you have us, doing the “over water path” thing. I will say that you start to get a feel. You look out over the lake, and see certain sky conditions. Like the sailors used to talk about lake conditions. Thing is translating them into what it means for propagation. Useful for what we are doing.

## **D-STAR** (Digital Smart Technologies for Amateur Radio) **Demystified**

By Gerd Schrick, WB8IFM with inputs from Keith Baker, KB1SF 1-17-09

I've finally obtained my education on this D-STAR system everybody has been talking about for some time now. It is always difficult to figure something out that is new and introduced by a manufacturer. The thinking today goes, if it's digital then it will sell. Period.

However, speaking as an electronic engineer I do not feel happy using a product that I do not fully understand. That's probably why a lot of innovations pass me by. The way most of these items are advertised does not excite me because the advertising usually doesn't explain how they work and what exactly the "innovation" is.

Roofing filters come immediately to mind. Every once in a while I see them mentioned as if they were something magic. For years, I had absolutely *no* idea what they were and where they fit in. So, one day, I educated myself by "surfing" the Internet, avoiding all posts by manufacturers. It took me less than 5 minutes to find out what they were. And what I found didn't excite me one bit.

Last Saturday at the annual Digital Symposium in Middletown, Ohio, I finally got a chance to look at (and use) a D-STAR radio. To summarize the experience, D-STAR appears to simply be an extension of the well-known Echolink system that has been around for a number of years and has taken up a small niche in Ham Radio.

Now, I use Echolink once a month, accessing it through a local repeater. Echolink uses the Internet as a substitute for the Ionosphere. Of course, Echolink is now competing with Internet telephone and a number of Hams are switching to the latter. So, once again, instead of being in the forefront, we Hams are now following some commercial development. In this case, it's Internet telephone. The D-STAR equipment simply adds a mobile local component to the conversation, just like Echolink does.

And, of course, the digital format of D-STAR is totally incompatible with Echolink. Arrrrgh!

D-STAR goes a step further than Echolink as it digitizes the voice signal coming from the microphone and gives you an option to send text at the same time. Here, the technology jumps on the same bandwagon as "texting"...that loathsome (to many) innovation that today's teenagers have since become quite addicted to.

On the other hand, texting via D-STAR appears on the surface to be a nice feature. However, after trying it, you might find that, by comparison, sending messages via Morse code would be child's play. That's because your input device is a telephone or a clicker-like keypad. Also the readout is a dot-matrix LCD screen. So, almost immediately you need a laptop to use with your radio, which is *exactly* what the D-STAR people's recommendation is. (By the way, the latest fad in the PC notebook department is a notebook computer that is about half the size of a laptop. The new "pint-sized" notebook's best feature seems to be that it is available in colors other than that dreadful, impossible black of the laptop).

Nevertheless, once you connect your radio to a decent display you will be able to scan and ascertain D-STAR equipped repeaters all over the world, all linked by the Internet. During my demonstration in Middletown, I called CQ from the DBOBS repeater in Dortmund Germany, Rainer, DF7DD, came back and we had a nice QSO. The audio was excellent (better than cell phones), however the mike turnover was a little awkward as there was quite a bit of delay. I'm told this is a common byproduct of "digital".

While listening to D-STAR-equipped people discussing local activity, I also learned that everyone seems to have the same difficulties we had when the first VHF walkie-talkies appeared. Most of those units did not have an S-meter, so users were constantly "kerchunking" the repeater to find out whether or not they were still in range. I have no idea if there is a D-STAR equivalent for "kerchunking".

Technically speaking, the actual radio is a standard-sized transceiver for VHF, UHF or the Microwave frequencies. The microphone output feeds into a digitizer and the speaker or headphones are fed with analog audio coming out of a digital demodulator. These two functions are performed by the portion of the radio called the CODEC (coder/decoder). The modulation used is quadra phase and the bit rates are 4.8 kb/s for voice and 128 kb/s for text. The best you can say for this system is that the code the manufacturers use is open source and freely available for use and experimentation

Looking at the D-STAR system as a whole, although simplex mode, directly from one unit to another is possible, emphasis on repeaters and networks. This makes makes the system very dependent on repeaters with connection to the Internet and, because of this, D-STAR radios become totally worthless if those are unavailable in an emergency.

Just imagine being stranded on a desert island. You have boxes full of parts, some broken down radio equipment and maybe an old TV set and rolls of wire. Now, are you going to build yourself a D-STAR radio to reach the next internet-capable repeater? I think not.

Many years ago I met with some Japanese engineers and we compared cameras. That was during the time the Japanese were taking over the camera market. I was amazed at their cameras. They had at least twice as many buttons as the types they were selling in the US.

Likewise, today's Ham Radios suffer from a similar malady that seems to be common with most other consumer electronics. If you've ever purchased a "do everything" TV remote control, a programmable coffee maker, or a DVD player only to get home and find out that it is too complicated to actually operate, then you are not alone. In the store, most people put *far* too much weight on the number of features such devices have without giving enough consideration as to their actual *usability* of the device once they get it home.

This phenomenon even has a name. It's called "feature fatigue". And if you've ever spent twenty minutes fiddling with your TV remote or trying to figure out how to program your VCR (or to load repeater frequencies into your handheld radio), then...congratulations...you, too, now have some first-hand experience with the disease!

The bottom line is that today's Ham rigs simply have *too many buttons*...so many that I have actually lost contacts because I could not find the right button to switch a simple function on or off!

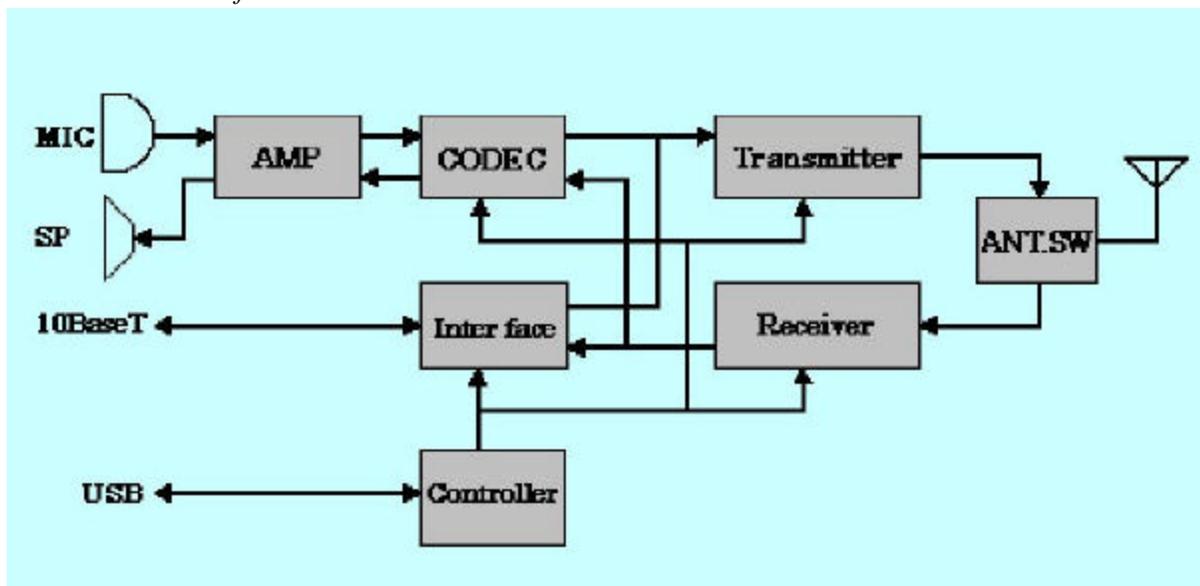
So, before you buy that brand spanking new D-STAR radio with all the neat digital "bells and whistles", I recommend you employ the German general test for radio equipment. First, drop it on a concrete floor and throw away the manual. Then, bring in a couple of experienced radiomen...soldiers trained in radio and have *them* get the equipment on the air and working. Good luck! And just coming out of a three day spell of around zero degree F wx, I have one more suggestion let the soldiers try to operate the equipment with their gloves on! How does the military check the equipment? The move into the thick of a crowded ham band, preferably during a contest weekend and try out their toys!

We here in Dayton just had the dubious distinction (for a brief period) of being the coldest spot in the nation. That gave me another idea for the German general test: Have the soldiers wear gloves!

A good source for D-STAR information is the website of the Washington County (Oregon) ARES/RACES. Icom, the sole manufacturer of D-STAR equipment, has a facility there.

[www.washcoares.org/d-star/powerpoint-presentations/d-star\\_presentation.ppt](http://www.washcoares.org/d-star/powerpoint-presentations/d-star_presentation.ppt)

*Some Illustrations from the Internet:*



Block Diagram of a D-STAR Radio

