

Mich-A-Con RF

Iron Mountain, Michigan

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N8LT's WORKBENCH Buy or Build?

"There exists a class of people who take a much greater pleasure in anything home-made, and which they understand from beginning to end, than in the store article, even if the latter does look and work better..." , Edward Trevert, in "Experimental Electricity", pub. 1890.

IN THE BEGINNING...

Early in the last century, at a time when people were fascinated (unlike today) by the rapid developments in science, the new discovery of communication without wires grabbed the imagination of many. Published articles describing the apparatus used by the early wireless pioneers like Hertz and Marconi (who, incidentally, always insisted that he was an Amateur) prodded backyard experimenters to experiment on their own using and adapting anything they could get their hands on. Improvisation was essential, home construction was a must. Early transmitters used a high voltage discharged across a spark gap to generate their radio waves. High voltage spark coils were expensive and difficult to build so most "Amateurs" began by adapting the Ford Model "T" spark coil to the task and were soon

"talking" all the way across town. (In the beginning there was only telegraphy, practical voice came later with the invention of the vacuum tube.) Even as the wireless field burgeoned and factory built equipment and innumerable manufactured parts became available, their high cost severely limited what the average Amateur could afford and building one's own equipment was still essential for all but the wealthiest. It was years before equipment targeting the Amateur became affordable but even in the 1930's most Amateur stations contained much more home built than purchased equipment, especially transmitters. Even then, CW was still the dominant mode, AM transmitters and parts to build them were still very expensive.

Considering those beginnings it seems surprising that we have "progressed" to the point that most newcomers don't seem to be aware that it isn't necessary to buy everything you use in Amateur Radio. Or, that there are some people out there that hardly buy anything they can build themselves, even their rigs. And no, they're not all technicians and engineers. "Home brewing" isn't dead. Many

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Mich-A-Con ARC September 13th Meeting Minutes

The meeting was called to order by President Tom Martin, W8JWN, at 6:30 PM.

Secretary Report:

The minutes of the July 12th meeting were read and approved.

Treasurer Report:

The Treasurer's Report was presented by Tom, W8JWN. As of this meeting we have \$131.84 in checking, \$1,890.42 in the savings account, \$1,367.53 (\$.53 interest) in the repeater account and \$26.00 petty cash. Transactions: \$74.20, Jon's Signs, WE Energies \$22.55, SBC \$22.99, WE Energies \$6.27, SBC \$22.99. Deposit \$10.00 dues.

Dues collected during the past month: James Faulkner \$20.00 (2006 dues). We have 39 members, including 15 new members, that have paid their 2005 dues. 10 members on last year's roster have not yet paid.

Repeater Report:

Lee, N8LT, reported that a WE Energies crew checked the tower for loose clamps, etc. and found none. They suggested that we try moving our antennas lower on the tower (away from their antennas) to try to solve the noise problem. Lee recommends that we install our spare 2-meter antenna at the 80 foot level to see if that solves

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Words from the President

I have had the opportunity to read the material for this month's newsletter before publication, in order to get an idea of what to write about in the "Words" column. I had an idea of what I was going to write about but I thought that my comments on the Detroit Lions would lead to censorship by our editor. Besides, what does football (notice I didn't use the adjective *professional* before football because the Lions don't, in my opinion, deserve to be classified as a professional team) have to do with ham radio? So, I have decided to make a few comments on Lee's (N8LT) Workbench article "Buy or Build."

I happen to be of the Heathkit and army surplus era. I have built a "home brew" CW transmitter from junked TV parts, a Heathkit SB220 linear amplifier, a Heathkit receiver, a Heathkit wattmeter, an antenna relay box to switch between three antennas with the remote control on the operating desk, many wire antennas, including a three element cubical quad with bamboo spreaders, a two element wire beam for 15 meters, and various switching devices for the shack. I haven't attempted any solid state or printed circuit board projects in the last 25 years. Age has crept up on this OM. (Pun intended.) I like to use the "250-watt" soldering gun. I also like to see the components that I'm trying to solder!


Recently, I ordered a roofing filter modification for my Yaesu FT1000MP HF transceiver. Since I like to operate in contests and hunt for DX, this mod would provide more selectivity on SSB. This filter, along with the INRAD 2.1 kHz filter I added for the 2nd IF, would provide for less IMD during crowded contest conditions. The modifications also improve CW selectivity but to a lesser degree. I only dabble in a few CW contests anyway. So, I can live with this slight improvement.

The installation was easy, no soldering required on the MP, and took just a few minutes. Removing the many screws from the radio's case took longer.

Included with the roofing filter mod was a bonus main receiver AF filter modification to cut the high frequency hiss by 10 db. This "hiss" is only bothersome on CW. I read the instructions and prepared to install the mod. But, wait! The mod required me to solder a very small capacitor to another capacitor on the audio board. OK. I looked at the capacitor on the board to find the leads to solder over. I couldn't even see the leads! OK. According to the instructions, "Gently bend the capacitor to reveal the leads. Then, fashion small hooks on the bonus capacitor leads and quickly solder with a small iron." Oh, no! Wait. I have a 25 -watt "pencil" iron that I had purchased years ago for some odd reason. I continued reading the instructions. "Use care to not unsolder C3015." This is when I stopped and took stock of the situation. I can hardly see any leads to add another capacitor let alone solder. My magnifying glass lens is scratched and not self-supporting. I have a \$2000 radio belly up on the workbench, waiting for the operation that will improve my 20 minutes of CW reception this winter and I am wielding a soldering iron that I have never used before. Let's pause to think about this...end of pause. I put down the iron and returned the Japanese array of boards and cables to the safety of its case.

Perhaps Lee should have mentioned that one of the necessary tools needed for construction was a huge magnifying glass on boom and a finger transplant for working on Japanese circuit boards; since, I'm all *thumbs* when it comes to these tiny components.

Mich-A-Con ARC Activities for October 2005

SUN	MON	TUE	WED	THU	FRI	SAT
						1
2 ARES	3	4 Tnn				8
9 ARES	10	11 Meeting				15 Breakfast
16 ARES	17	18 Tnn				22
23 ARES	24	25 Tnn				29
30 ARES	31					

October Club Activities

ARES Nets are conducted at 6:00 PM Central Time every Sunday evening on our 2-meter repeater (146.850 MHz.)

Please join us for the Tuesday Night Net on the 4th, 18th and 25th at 6:30 PM on the 2-meter repeater (146.850 MHz) Dennis, KD8AIT, is our Net Control Operator.

Monthly meeting on Tuesday the 11th at the Grace United Methodist Church, 721 Norway Street in Norway. The meeting room is upstairs next to the sanctuary. Pete Trembl, K8PT, will be presenting a program on his annual DX-pedition to Jersey, in the Channel Islands at 6:30 PM. The business meeting will follow. Visitors are welcome!

Saturday Morning Breakfast, 9:00 AM on the 15th at the Holiday Kitchen in Iron Mountain, on US-2 across from Econo Foods.

N8LT's WORKBENCH - Buy or Build?

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people still build things. Perhaps the most popular home brew projects these days are antennas (and maybe they always have been). To see what's really going on "out there in the world of Amateur Radio" try searching the web for "homebrew+radio" and "glowbugs" (one word, they're home made vacuum tube projects). Building simple vacuum tube powered equipment is a popular pastime. Of course it's not only vacuum tubes people build with, solid state projects abound. And you'll find countless links to other Amateur Radio sites and topics as well as Web magazines, including at least one devoted to antennas.

WHY BUILD YOUR OWN

If you wish to be on the cutting edge of technology in Amateur Radio you will have to build at least some of your equipment; it's simply not being manufactured yet. The early pioneers of single sideband, slow scan television, packet, and the other modes we take for granted today all had to be equipment builders, just as those experimenting with DSP (Digital Signal Processing), digitized voice, and "software defined radios" do today. It's only after such pioneers lead the way and stir sufficient interest in something new within the Amateur community that manufacturers will begin producing products for the "masses" so they too can participate.

If you want something you can't buy because of its uniqueness or unavailability, building is your only option. If you want to save money or want something you can't afford (or, maybe you're just too cheap to spend the money like me), building can make it possible and even save you a bundle (especially on antennas and antenna tuners). There's another reason many people build their own equipment too, the thrill and satisfaction of using something they built themselves.

You don't have to design anything if you don't want to or are unable, there are magazines and books full of construction projects, not to mention those that can be found on the Web. Of course, you're free to modify and adapt such designs to better suit your needs or available parts. If you like to experiment with your own or other people's ideas, new or old, vacuum tube or solid state, or anything unusual, you will have to build your own.

There's one more reason for building equipment; anything you can build is repairable, by you. And, you won't be afraid to take the cover off to try, after all, you're the one that put it on in the first place.

HOME BREWING

There are several means to an end when building. One is the fine art of home brewing. Here you start from scratch using what parts you have and can acquire by what ever means. It's the most flexible because you can set out to build just about anything, limited only by the parts available and your skill as a builder. Projects can usually be modified to accommodate available parts; sometimes the available parts determine the project. Build-

ing also affords the opportunity to incorporate unique parts not readily available to a manufacturer for mass production or extraordinarily high quality parts that might not be feasible in manufacturing. Such parts can often be salvaged from surplus equipment or purchased cheaply through surplus parts dealers. Old military equipment is often an excellent source of high quality and unique parts.

One option is to incorporate one or more of the available simple kits into your project. Another popular activity is to adapt manufactured equipment by modifying it to serve your own end. In the past, modifying surplus military equipment to Amateur use was a very popular activity. My first receiver was a very popular military aircraft receiver that was designed to be controlled remotely. The receiver was modified by installing the needed operating controls in the receiver, adding a home made power supply, and an outboard audio output stage to drive a speaker. There is still some inexpensive surplus military equipment available that can be adapted to Amateur use.

Bare (unpopulated) printed circuit boards are available from FAR Circuits and other sources for most projects published in radio and electronic magazines and handbooks making construction much easier. While simple projects can be handled by most everyone, advanced projects may require considerable knowledge and skill.

KITS

An excellent way to get started building is through the use of kits. Building kits teaches you how to identify different kinds of electronic parts, how to install them, construction techniques, and, allows the inexperienced to build more complex equipment than they otherwise could with home brew construction. Complete kits provide all of the parts necessary as well as step by step instructions for assembly, adjustment, and use of an end product with professional or manufactured appearance and performance. Unfortunately, the famous kit manufacturers of the past like Heathkit, Knight, Globe, Johnson, and Eico are no longer with us. That doesn't mean that kits are a thing of the past. There are more kits available today with a wider choice of projects than ever before. Though few match the likes of those bygone manufacturers, they're still an excellent resource.

There are countless small inexpensive kits consisting of a circuit board and a few parts that do things like make games, flashing light displays, noise makers, small motor speed controllers, motion detectors, voice scrambler/descramblers, metal detectors, and many other useful devices with which you can get your feet wet. One or more of these small kits can often be incorporated into your own more sophisticated projects. There are even simple kits for the purpose of learning soldering (soldering is required for nearly all electronic kits though there are some simple kit exceptions).

There are more sophisticated kits available too. Receivers, transmitters, transceivers, and test equipment such as digital multimeters and signal generators can be had in kit form. There are

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educational kits, robotics kits, power supplies, and the like. How about simple inexpensive receivers for the aircraft band, two meter band, 6 meter band, ten meter band, HF bands, and short wave bands, not to mention the AM and FM broadcast bands. Receiver kits such as these can be had for as little as \$50 including the enclosure. (Keep in mind that a \$50 receiver is not going to perform as well as a multi-hundred dollar receiver though its sensitivity may be nearly the same. For example, you can forget about digital frequency readouts and simply dialing in the frequency of interest and think more like crude analog dial scales and having to tune around a bit to find your station. While such receivers lack sophistication they can still be very useful.)

KITS, WHAT YOU GET

Traditionally, kits have included all parts to make a complete "nothing else to buy" finished product, some have even included the solder. Today, kits come in a variety of forms so read their descriptions carefully. Some are complete with all required parts including a step by step assembly manual like the typical kits of old. Most common among the small kits are those which supply a circuit board, all circuit board mounted components, but often do not include necessary sources of power, enclosure, knobs, etc. At the other extreme, some may be little more than a bare circuit board with only the hard to find or special components supplied.

Though you don't have to pay for the labor to assemble a piece of equipment when you buy it as a kit, they're not always cheaper. There are at least two manufactured HF transceivers (by Yaesu and Icom) that are cheaper than the Elecraft K2 transceiver kit for example. It is up to individuals to decide which is the better choice for them.

KITS, WHAT'S AVAILABLE

There are countless kits available, from a simple circuit board and a couple of components for under \$10, to a complete HF transceiver for \$600 or more depending upon the options chosen. There are many simple kits under \$10 and the vast majority are under \$100. Here's a quick summary from a few kit manufacturers and suppliers:

Antique Electronic Supply: Maybe you had a "Rocket Radio" when you were a kid. You can relive that exciting experience again. Ever wonder what it was like to use a foxhole radio like many of the troops did in W.W.II? Yup, there's a "W.W.II Foxhole Radio Kit" too. If you're nostalgic for the "good old days" when men were men and radios used tubes you haven't been forgotten by the kit industry. You can still choose from regenerative receivers, audio amplifiers, a phono oscillator, a battery eliminator to power them with, and even a few antenna materials, tuners, and wave trap kits if you really need them. Of course if you're more into rolling your

own, they have those hard to find parts like Galena crystals, crystal mounts, cat's whiskers, coil forms, and even a reproduction of a loose coupler. They have many other parts available too, and of course just about any tube you may need, sometimes on sale for really cheap prices. If all you really want is some good ideas and "how-to", their book section includes 8 different volumes on crystal sets alone, including one on receiving FM! Other topics cover audio (including guitar amps), troubleshooting tube gear, shortwave receivers, antique collecting and restoration, reprints of old tube manuals, and on, and on, and on. Not all of the publications deal with antiquity.

Their catalog and summer flyer are downloadable as well as available by mail.

Elecraft: Elecraft makes some very nice and unique equipment in kit form whose performance competes very favorably with the factory assembled competition. Besides their renowned K2 (and K2/100) HF transceiver kit, Elecraft also has two other transceivers, a number of accessories for them, 6, 2, and 1-1/4 meter transverters (20 to 25 watts output), some useful "mini-module" kits, antennas, and other items. (A transverter is a combination receive and transmit converter that converts received and transmitted signals from one band to another. For example, these transverters will convert a 10 meter (28 to 30 MHz) radio into a 6, 2, or 1-1/4 meter radio so you can operate these bands using an HF radio with ten meter coverage. The converters work with all the modes available in the radio you're using with the transverter so if you have a multimode radio which covers the 10 meter band you can extend its range and all its features to a VHF band with a transverter.) Each Elecraft transverter covers the bottom 2 megahertz of its respective band.

Elecraft manuals are very good and cover assembly, checkout, alignment, and operation. Their complete manuals can be downloaded.

Elenco: How about a hand sized 6 and 2 meter FM radio for \$43.25 (only \$34.95 at Ocean State Electronics). Why tie up an expensive transceiver monitoring a frequency when all you really need to listen is a receiver? It could also serve as a monitor to check your own or someone else's signals, or maybe as a low cost receiver for some of the direction finding kits out there. Elenco supplies a nice educational instruction manual which not only details construction with illustrated step-by-step assembly instructions but includes a discussion of the circuit theory, FM modulation, and some of the basic design philosophy. It also contains the audio amplifier theory of operation along with optional experiments to measure the audio amplifier section's gain and frequency response, all in basic english for the non technician. Optionally, detailed instructions are included to show you how to check out each basic section of the circuit as it is completed. There are even a couple of quizzes (answers provided) to measure what you've learned along the way.

Elenco has a number of educational kits and courses. There are small inexpensive courses available, such as one for learning about electronic components, which includes over 50 individual components and a 28 page illustrated manual including five "self tests" for \$11.95. Other courses include one with Basic Electronics Experiments (over 50) using a solderless bread board (inexpensively available anywhere including Elenco and, unbelievably, Radio Shack). It's available with its 72 page manual for \$16.50. A bit more pricey at \$41.50, you can get the kit with a computer interface that turns your computer into an oscilloscope and spectrum analyzer at audio frequencies, a good way to check for distortion in audio oscillators, amplifiers, and other equipment.

There are "Solder Practice Kits" including surface mount components (the rage these days), AM and AM/FM radio "Training Course" kits, and 31 small Educational Kits similar to those available from Ramsey. Some are just for fun, others quite practical, like the resistor and capacitor substitution boxes.

There are very useful kits such as power supplies, multimeters, and test equipment like a function generator, transistor and diode tester, even a "Telephone Line Analyzer Kit". Of course there are more diverse kits like solar powered (toy) cars, robot kits (who the heck cares about robots?), and for the truly timid, a few "non-soldering" kits. Perhaps you'd like a Cola (as in soda pop) powered digital clock kit for instance.? Of course there are a number of no solder "Electronic Science & Project Labs". There are even "Snap Circuits Educational Kits" (parts are mounted in plastic carriers which can be "snapped" together to form experimental circuits).

Their catalog is downloadable and contains many other items besides kits.

MFJ: Formerly, many of their kits were identical to the Vecronics kits. MFJ purchased Vecronics and continues to operate it as a separate company. Most of the kit redundancies between them have been eliminated but MFJ still lists a few kits under their own logo including the MFJ-93XXK series of QRP Cub HF transceivers, the MFJ-8100K Shortwave Regenerative Receiver Kit (same as Vecronics VEC-102K), and the MFJ-8400K Two Meter Receiver Kit (same as Vecronics VEC-104K). MFJ sells Vecronics kits and lists them in their catalog.

For an idea what the MFJ kits are like, you can download the manuals from their web site. The downloaded manuals are supplied less the schematic diagram and some component location drawings but you can certainly see what building the kit would be like.

Ocean State Electronics: Maybe you'd like a one IC radio, a two station intercom, or a 'phone pickup with amplifier kit (you're not planning on spying on the kids now are you?). Maybe a PIC (Micro Chip microprocessor) programmer or a regulated power supply kit? They have an audio amplifier, stereo VU meter, relay board, some oscillator building blocks,

or some "Chip on Board" projects like train sound effects, cell phone sound effect (Ugh, who the heck would want something like that?), assorted melodies, ambulance, fire, and police sounds (clear traffic out of your way in a hurry), heck, you can even get a board that plays "Happy Birthday", and it's only \$5.95. Perhaps you're into more sophisticated stuff like an RIAA Equalized Preamplifier kit (for you young guys that's a phono preamp; phono, you know, like in phonograph?), three digit counter module, LCD temperature meter, or maybe a 12 Bit Data Acquisition System (a bit pricey at \$79.95). Imagine the fun you can have with a Sound Effects Generator, a Voice Changer (disguise your voice when you make those anonymous phone calls), or an electronic combination lock. Of course there are Amateur Radio related kits too, like VFOs and simple receivers. There are too many kits to even touch on them all. I'm not even going to mention the "Mechanical Motorized Wooden Kits or all the silly stuff. How about a stairway to heaven game? Take it to church.

Ocean State carries many of the Elenco kits (and at lower prices than direct from Elenco), and some hard to find parts often sought after by Amateurs such as ham band crystals, variable capacitors, plug-in coil forms, B&W coil stock, toroid cores, tube sockets, semiconductors, not to mention many conventional components.

Ramsey Electronics: Need a metal detector to find the keys you lost? Maybe check for Radon gas with a Geiger counter (can you do that?). If you have security on your mind there's an "Electronic Barking Dog"; think of it, no vets, dog food, boarding, or grooming, and, you can choose from two different barks, all for only \$32.95! How about an "Ultrasonic Parking Radar" or maybe a "Speed Radar Gun" to check those neighbors recklessly careening down your street? Know someone you'd like to drive crazy? Get an "Electronic Dripping Faucet" kit. Of course they have mundane stuff too like a "Direction Finder" and "Electrocardiogram Heart Monitor". Yes, there are also a number of Amateur Radio related kits like receivers, preamps, transmitters, and antennas ('guess all purchased antennas are "kits" now days). Did I mention practical stuff like test equipment kits, "Electronic Lab" kits and "Learning" kits? In fact over 100 kits in 9 different categories including Amateur Radio, Test & Measurement, Hobby Kits, and Educational kits. There are even a few non-soldering kits.

Some of the Ramsey kits appear to be virtually the same as Vecronics kits, in which case I recommend the Vecronics kits if you plan to get the enclosure kit too because it's aluminum rather than the plastic one Ramsey offers for the same price (aluminum provides electrical shielding, plastic provides none).

The kit manuals are downloadable but may be missing the schematic and some of the component location drawings. They're quite adequate to show you what your getting and what kit assembly will be like. The Ramsey catalog can be downloaded and contains many other items besides kits.

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TenTec: Many of TenTec's kits are complete and supplied with drilled, painted, and silk screened enclosures. However, for those TenTec kits which do not include the enclosure, an enclosure is available but it is undrilled, unpainted, and without labeling or markings; all of which are up to you. They have receiver kits including regenerative receivers, their "Any Band" direct conversion receiver kit (which comes with components to build it for any one Amateur band from 160 through 10 meters, you pick the band at the time of assembly) and a 9 band digital frequency readout Amateur/SWL receiver kit.

They also have useful transverter kits for 6 and 2 meters, including 20 meters to 6 meters, 10 meters to 2 meters, and 2 meters to 6 meters. The Transverters cost \$119 each, cheaper than another radio, especially in the case of modes such as SSB (and all the digital modes that use it) and CW. The 2 meter to 6 meter transverter, for example, will give your 2 meter radio the same capabilities on 6 meters that it has on 2 meters (except possibly power output since these transverters only put out 10 watts) and with full frequency coverage of 50 to 54 MHz.

There are a number of transceiver kits available including a 2 meter synthesized digital readout FM transceiver kit and single band QRP transceiver kits for 80 through 15 meters and some small accessory kits. TenTec also has a number of fully assembled products.

Vectronics: Seldom use your car radio because you can't find anything worth listening to or because you can't stand the never ending barrage of commercials? How would you like a shortwave converter to convert the shortwave bands down to the AM broadcast band so you can tune them in on your car AM radio? (Easily switched in and out with the push of a button to restore normal radio operation.) Think about it, you can be driving down the road listening to commercial free programs and news from the BBC (British Broadcasting Corporation) and many other countries. Talk about a status symbol, and you can tell people you built it yourself! Works at home too. You can have one for \$27.95 (kit). Vectronics has over 30 different kits including radios, preamps, and QRP equipment; even a soldering course kit. Most kits do not include the enclosure. However, an aluminum enclosure kit for most of the kits that don't have one is available for \$14.95. The manuals for their kits are downloadable and indicate the skill level required to build the kit, the schematic and some parts placement diagrams may be missing. Their manuals are very good for learning.

PARTS

One of the big advantages of kits is that they usually supply all the parts, or at least the hard to find parts, and may include predrilled circuit boards, panels, chassis, and other metal work with professionally silk screened labeling. When you home brew, you're strictly on your own. The real secret to home brewing is to use salvaged parts and parts bought cheaply from surplus dealers, adapting the design to accommodate parts you

have available. Of course the more knowledgeable you are, the more flexibility you will have. If you have to buy all of the parts for a project at premium new-part prices you may be better off (cheaper) to buy a kit, or even a ready-built unit, unless it's a small project. Incidentally, perusing electronics parts and equipment catalogs can be very educational since most items are pictured or illustrated and the parts listings will give you a good feel for not only what's available but what sizes and values are commonly used. Most catalogs are available for the asking, very easy today over the Internet, and the smaller ones can often be downloaded.

Besides parts vendors, there's a great storehouse of parts available in old radios, televisions, VCRs, and other electronic and electrical appliances routinely put in the garbage. Salvageable parts vary from small hardware (like those small metric screws you can't buy anywhere) to resistors, capacitors, controls, jacks, wire (like that tiny stuff you also can't buy anywhere), connectors, cables, transformers, power supplies, diodes, transistors, integrated circuits, heat sinks, motors, etc., etc., etc. Never throw anything away without disassembling it first and salvaging what you can in parts (besides, it will take up less space in the garbage can that way).

SOURCES

Sources for prime parts include companies like DigiKey, Mouser, Jameco, Allied Electronics, and Newark Electronics as well as many, many small mail order vendors. Check magazine advertisements (don't forget the classifieds) and the footnotes of construction articles for sources of parts and parts catalogs. Also perform Internet searches. The Club web site contains a list of vendors. Antique Electronic Supply specializes in parts for antique radios but carries many other items for builders.

Most parts suppliers sell kits, including many of those mentioned above, or something similar.

SOLDERING

Don't let a lack of soldering or construction experience stop you. All it takes is practice. Elecraft also has a very nice downloadable soldering tutorial (N0SS_SolderNotesV6.pdf) on soldering how to, and how not to, including illustrations and photos of good and bad solder joints. Ramsey has a nice illustrated and downloadable "Kit Building and Soldering Guide", (KitBuilding2kE.pdf), which covers tools, parts identification, soldering techniques, and construction procedures. And, don't forget my recent article on soldering in the April 2005 issue of the Club Newsletter, available on the Club web site (www.qsl.net/ka1ddb/). There are also several kits designed to develop soldering skills as well as a number of non-soldering kits available to get your feet wet without having to do any soldering.

TOOLS

"But what about tools? I don't have all those special tools needed for electronics work." What special tools? All you need for assembling kits are long nosed pliers, wire cutters, a couple of small screwdrivers, and a small inexpensive "pencil" soldering iron (no, your clunky 250 watt soldering gun out in the garage won't do, save it for those PL-259 coax connectors). If you're a Radio Amateur (or even thinking about being one) and don't already have these simple tools, go immediately to the nearest hardware store and get them before the embarrassing fact gets out! Every edition of the Radio Amateur's Handbook (now known as "The ARRL Handbook for Radio Communications") has a chapter devoted to construction practices covering tools and techniques.

Home brewing may require a few more simple household tools for metal working such as a drill and some small drill bits, tin snips, hammer and center punch, maybe a combination square, hacksaw, etc.

SO...

It doesn't cost anything to look, what are you waiting for? Check 'em out. There are even kits for kids (if you really need an excuse). Downloading and reading some of the excellent assembly manuals can be a virtual course in electronic construction techniques even if you never buy the kit, and, you can take those "courses" for nothing! Elecraft, Vectronics, and Ramsey manuals, to name a few, are very educational. The Elecraft manuals are first class. Of course you can also download old kit manuals by Heathkit, Knight, Globe, Johnson, and Eico. In fact they can be used like detailed magazine construction articles to homebrew some of those old circuits from scratch.

With the kits available today, no one can say they don't know enough about electronics to be able to build something. Amateur Radio is so much more than just talking into a microphone or pounding a keyboard (including the one button "keyboard" called a telegraph key). Don't let manufacturers shackle you with their limited offerings, embrace the freedom of doing it yourself, chart your own course, expand your horizons, live a little, resolve to build something; you CAN do it!

Some of the Internet Sites:

- www.elecraft.com/
- www.elenco.ws/
- www.farcircuits.net/
- www.oselectronics.com/
- www.mfjenterprises.com/
- www.Ramseykits.com/
- www.tentec.com/ (select the "Radio" then "Kits" links)
- www.tubesandmore.com/ (Antique Electronic Supply)
- www.vectronics.com/ (select the "kits" link)

N8LT

Candidate Statements for the Upcoming Election of ARRL Great Lakes Division Director and Vice Director

Neil Sablatzky, K8IT, (Director)
A Novice operator at age 14, I enjoy Amateur Radio Public Service, Experimentation, and Operating most modes. I have provided public service operations for many events, including: New York City Marathon, MS-150 Bike Tours, Michigan UP-200 Dog Sled Races, and many Skywarn, ARES, RACES, and Storm Recovery Nets. I am a member of the ARRL High Speed Multi Media Working Group, serve as a local AEC, and enjoy training amateurs on new subjects.

After 31+ years of Amateur Radio, (Extra, Age 46), our hobby is facing declining interest, we are in danger of losing frequency bandwidth, facing antenna restrictions, and losing public acceptance of Amateur Radio.

The Future.

First, we must elect active, progressive thinking and technically competent leadership.

Second, we must evaluate every mode, frequency allocation, and operating procedure. We need to adjust for the future, but not at another mode's expense. While a CW test is not needed, given a mirror or flashlight, what other mode can replace CW?

Third, we must not abandon the new Amateur. We must address the availability of training, offered to new amateurs, once they pass the test.

Fourth, we need youth. We must communicate that Amateur Radio is fun, group conversations are common place, and students with licenses can earn the required community public service needed for high school graduation. We must boost the number of significant college scholarship grants by teaming with industry to market Amateur Radio, as a skill set development opportunity.

Fifth, the ARRL must become the voice of the amateur. This requires that the Board of Directors listen to its members, and not sanction causes such as "Regulation by Bandwidth" if the result limits operation and experimentation.

Please email to: k8it@arrl.net for additional information. I, K8IT, look forward to serving as your Great Lakes Division Director.

Dan Romanchik, KB6NU, (Vice Director)

Amateur radio and the ARRL face a number of difficult problems. Two of the most urgent are declining membership (currently less than 25% of licensed amateur radio operators are ARRL members) and diminishing clout in Washington, but there are others. I think most of our problems stem—not from the number of licensees—but from the number of *active* radio amateurs.

While there have not been any scientific surveys, some estimate that up 50% of all licensees are inactive. For whatever reason, these folks lost interest and are amateur radio operators in name only.

This is a shame, if you ask me. Inactive hams don't show up for public service events or work CW or experiment with circuits or send letters to their Congressmen and Congresswomen.

How can we encourage amateur radio operators to be more active? One thing we can do is develop classes that will teach people not only what they need to know to pass a test, but what they need to know to be successful amateur radio operators. These include how to solder, how to make voltage and current measurements, and how to make simple antennas.

Better support for clubs is also needed. Clubs are where the action is. Good clubs bring hams into the hobby and turn them into active amateur radio operators. Bad clubs turn people away from amateur radio and foster bad stereotypes about amateur radio and amateur radio operators.

And finally, we need to start getting youth into amateur radio again. We must show them how technically challenging ham radio can be, but even more importantly, how much fun it can be.

I'm running for Great Lakes Division Vice Director so that I can work on these issues. With your support, we can make ham radio better.

ARRL Great Lakes Division Candidate Statements	
<p><u>Gary Johnston, K14LA, (Vice Director)</u> I love amateur radio, and I believe amateur radio deserves quality leadership. I want to have the opportunity to again be part of this Division's leadership team as your Vice Director. I have been licensed for 32 years, and believe I am highly qualified to serve.</p> <p>Over the past 3 years since serving as Vice Director and Director, I have provided leadership as chair of two Great Lakes Division Conventions, served as division webmaster for greatlakes.arrl.org, and have received EC-1 certification. And I have traveled from Sault Ste. Marie and Lupton Michigan to Murray and Louisa Kentucky, and throughout Ohio promoting amateur radio and the League.</p> <p>I have worked in amateur public service providing communications support in several disasters over the years, including tornados, floods, hurricane Marilyn in the Virgin Islands, and with the FBI and NDMS during the 1996 Atlanta Olympic bombing <http://www.nku.edu/~johnston/atlanta.html>. I have worked as an EC then DEC, then as an Assistant Director to 5 Directors before</p>	<p>servicing as Vice Director and Director. I am a university professor and computer consultant.</p> <p>My main interests include keeping the airwaves clean and protected, regulations enforced, and spectrum properly managed. I will work actively to counter the many threats we face such as unlicensed RF devices, tower restrictions and unfiltered BPL.</p> <p>I enjoy working CW and DX, as well as APRS and high speed multimedia. I have traveled the world with my FM rig, receiving several reciprocal licenses from Austria to Australia.</p> <p>In 1997 I was voted NKARC Ham of the Year for my efforts in helping the club to secure a grant and repeater site on an AT&T cellular tower.</p> <p>For more information see my home page at www.nku.edu/~johnston/hambio.html.</p> <p>I will sincerely appreciate your vote.</p> <p><u>Jim Weaver, W8JE, Director</u> Candidate statement not received before newsletter was published.</p>

Randy, KB9ZES, is being cleaned and refurbished in preparation for painting. The tower is about 37 feet long and is in 3 sections. A hinged base and rotor plate will be fabricated by Bob.

Tom, W8JWN, met with Mark Frazee of the VA Hospital today. The hospital renovation is almost complete. When patients are moved to the newly renovated area, space may become available for our club station on the 6th floor. We should know more in November.

Tom, W8JWN, reported that the club picnic scheduled for last month was cancelled because of bad weather. The pop purchased for the picnic will be kept for next Field Day.

Mike, K8DDB, sent a card to Paul, WB8SZI, during his stay in the hospital for pneumonia. Mike read a card sent to the club from Carol.

New Business:

Mike, K8DDB, presented a request for reimbursement of \$39.12 for secretary and newsletter expenses incurred over the past 9 months. A motion was made by Burt and seconded by Skip to reimburse Mike and it was approved by those in attendance. Tom presented Mike with a check for the requested amount.

Tom, W8JWN, reported that on October 11; Pete Trembl, K8PT, will present a program on his DXpedition to the Channel Island of Jersey. The presentation will take place at 6:30 PM and will be followed by our business meeting. The program, a travelogue as well as having content covering the radio DXpedition, would be of interest to club members and others as well. We hope to have a good turnout for his presentation.

Mike, N9NBN, reported that he passed his Extra Class exam in August. Good job, Mike!

Tom, W8JWN, asked attendees for "Good of the Order" reports. A discussion followed.

Adjournment:

The meeting was adjourned at 7:28 PM

Submitted by: Mike Bray

Attendees:

- Mike Bray, K8DDB (Secretary)
- Lee Michaud, N8LT
- Burt Armbrust, WB8EBS
- Skip Caswell, KE9L
- Dennis Beurjey, KD8AIT
- Tom Martin, W8JWN (President)
- Terry Moriarity, KB9ZER
- Bob Uren, KC8TWG
- Jon Mott, KC8QYP
- Mike Boileau, N9NBN (Vice President)

September 13th Meeting Minutes

(Continued from page 1)

the problem. If not, we could try moving it to the 60 foot level. Our antennas at the 120 foot level will remain there because the noise problem only manifests itself on the 2-meter repeater. The antennas at that level are used for packet and our 444.850 MHz repeater.

We also need a 30 foot tower for installation of our remaining packet system antennas, and proposed link to other repeater systems. The tower would be attached to the blockhouse. Terry, KB9ZER, said he could supply a tower. Bob, KC8TWG, will fabricate the necessary supports for the tower and antennas. Lee will be in charge of the project, which we hope to have completed sometime this fall. Monies for this project will come from the repeater account.

ARES:

Dennis, KD8AIT, reported that a calling plan has been purchased from callingpost for ARES. Dennis will need help in conducting the Sunday ARES and Tuesday Night Nets for the next 6 to 8 weeks because of his upcoming surgery. The ARES Net Control script will be posted on the club's website. Please call Dennis if you are able to help.

Old Business:

Bob, KC8TWG, reported that the tower donated to the club by

Mich-A-Con Amateur Radio Club
Membership Application/Renewal Form

Please remit dues to:
Mike Bray, K8DDB
W3821 Waucedah Road
Vulcan, MI 49892-8483

Name: _____
Address: _____
City, State, Zip: _____
Call Sign: _____
Email Address: _____
Phone: _____
ARRL Member? Yes _____ No _____

Annual dues are due in January—Please make checks payable to Mich-A-Con ARC
Annual dues for Full Membership - Single \$20 ____ * Family \$30 ____ * Repeater-Only - \$10 ____**

If family membership, please list additional names and call signs:

* The dues for NEW members are prorated - you only pay for the remainder of the year! Please remit \$1.67 per month for a Single membership or \$2.50 per month for a Family membership.

**If you are an occasional or seasonal user of the repeater, please consider our Repeater-Only-Membership.

Exam Schedule

City: Iron Mountain
Location: Dickinson County Library
Room: Conference Room
Time: 9:30 AM Central Time
Contact: Mark Lewis, N8UKD
Telephone: (906) 774-6598

Exam Date: Nov 5, 2005
Exam Date: Feb 4, 2006
Exam Date: May 6, 2006
Exam Date: Aug 5, 2006

Examinees should bring 2 pencils, a pen for the official paperwork, the originals AND copies of any previous credit that you have earned (Certificates of Successful Completion or current license), 1 photo id (usually a driver's license) and 1 other id. (usually a birth certificate or SS card), a calculator if needed (make sure your memories are cleaned out), and the test fee (2005 fee is \$14).

Mich-A-Con RF is published by the Mich-A-Con Amateur Radio Club of Iron Mountain.

Items for Mich-A-Con RF should be in the editor's hands by club meeting day (2nd Tuesday of the month) to be included in that month's edition. Please consider writing an article related to Amateur Radio to share with your fellow members. Send the article in plain text and attach any photos, etc., don't worry about format, that's the editor's job.

Send to:
mikebray@chartermi.net
(906) 563-7020

Permission is hereby granted for the reproduction of material found in Mich-A-Con RF unless otherwise noted, provided that proper credit is given to the author and Mich-A-Con ARC.

Repeaters

The club maintains two repeaters, which are located on Pine Mountain in Iron Mountain, with tower and facilities provided by the Wisconsin Electric Power Co.

Identifier: WA8FXQ/R IMT

Output	Offset	PL Tone
146.850 MHz	minus	—
444.850 MHz	plus	100

Both repeaters have an auto patch with a toll restriction. The auto patch on the 2-meter repeater can be used with permission. The 440 auto patch is for club use only.

A club net is held on the 2-meter repeater every Tuesday at 6:30 PM except the 2nd Tuesday of the month, which is club meeting night.

Mich-A-Con RF

Mich-A-Con ARC
c/o Michael F. Bray
W3821 Waucedah Road
Vulcan, MI 49892-8483

Mich-A-Con RF

Club Meetings

The Mich-A-Con Amateur Radio Club meets on the second Tuesday of the month at 6:30 PM in the Grace United Methodist Church (upstairs in the room next to the sanctuary), 721 Norway Street in Norway, Michigan. Visitors and prospective members are always welcome!

The URL for the Mich-A-Con ARC web site is:

<http://www.qsl.net/ka1ddb/>

Previous editions of Mich-A-Con RF can be accessed by a link on the news page.

The ARRL DX Bulletin on the Upcoming Activities page is updated each Thursday and the contests section is updated on a monthly basis.

CLUB OFFICERS

President:

Tom Martin, W8JWN
(906) 774-5463
tmartin@chartermi.net

Vice President:

Mike Boileau, N9NBN
(715) 251-3137
n9nbn@netnet.net

Secretary:

Mike Bray, K8DDB
(906) 563-7020
mikebray@chartermi.net

Treasurer (Pro Tem):

Tom Martin, W8JWN
Mike Bray, K8DDB
(Shared responsibility)

Reminders

The monthly meeting for October is on TUESDAY the 11th in the Grace United Methodist Church, 721 Norway Street, Norway, Michigan. (Upstairs in the room next to the sanctuary.) There will be a program on the DXpedition to the Channel Island of Jersey by Pete Treml, K8PT, starting at 6:30 PM. The business meeting will follow. Visitors are welcome!

Don't forget to vote for your choice of Director and Vice Director in the upcoming ARRL Great Lakes Division Election. These people help form ARRL policy and influence the direction Amateur Radio will be heading in the future.

Please support the club, its repeaters and packet system by becoming an active, dues-paying member. We can do more with your help!