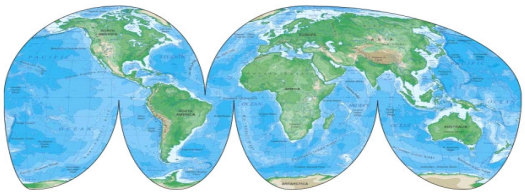
# MOUNT VERNON AMATEUR RADIO CLUB

C  Q

## January 2007 Newsletter

MEETINGS SECOND MONDAY OF THE MONTH AT THE RED CROSS ANNEX BUILDING,
300 N MULBERRY ST, MT. VERNON, OHIO
REPEATER FREQUENCIES: 146.790 (-) K8EEN /R  444.750 (+) KC8YED /R  53.790 (-) WA8YRS/R
***SUNDAY NIGHT ARES NET AT 8:00 P.M  ON THE K8EEN REPEATER OPEN TO ALL***

### FROM THE EDITOR

I would like to congratulate Mike McCardel, KC8YLD, our new club president. Mike has been a dedicated servant of the club for several years now, and I have enjoyed working with him on many projects. The most important of these projects has been the recruitment and training of new hams via our Technician Class course. Mike was instrumental in recruiting Volunteer Examiners so we could once again do ham radio testing locally. I am sure Mike has some fresh ideas for the club and look forward to an interesting year. Live long and prosper, Mike.

Ham Radio News went out with a bang last year. First was the expanded phone privileges and then the dropping of Morse Code. Oh, you didn't know that? Please read the second article in this Newsletter to catch up.

Things will no doubt slow down and get back to normal. I don't believe there is anything else pending from the FCC. The ARRL is still fighting the BPL battle, thank goodness. That brings me to a point. If you are not a member of the ARRL, you are missing out on a very good magazine. The ARRL's QST publication. That is the tip of the iceberg however. We need to be supporting the ARRL in its endeavor to protect our rights as Ham Radio operators. Among the many items the ARRL continually deals with is protecting our frequencies, protecting our rights to install antennas and towers, and giving us visibility in the eyes of the public and government. Mad at the ARRL for letting the FCC drop the Morse Code? Perhaps if you had joined the ARRL and voiced your opinion, things would have turned out differently. I do not agree with everything the ARRL does. The fact remains that since day one, the ARRL has done more good for ham radio than all the other ham radio organizations combined. Many times a calming voice in rough waters. Please join the ARRL and support our hobby if at all possible.

Speaking of the ARRL, I have uncovered a nice freebie that the ARRL is giving away. Want to learn more about electronics? The ARRL has a free Power Point presentation and course on basic electronics. You can download it free here:

http://www.arrl.org/news/stories/2005/03/01/6/

It is a large file, and if you cannot download it, let me know. I can put it on a CD for you. Contact me at wa8yrs@arrl.net.

Now, on with the news!

**IMPORTANT NOTICE:**

**DUE TO THE OHIO STATE VS FLORIDA FOOTBALL GAME ON MEETING NIGHT, MONDAY, JANUARY 8, OUR MEETING WILL START A HALF HOUR EARLY, AT 6:30 PM. THIS WILL ALLOW US AN HOUR FOR THE MEETING, AND ALLOW TIME FOR THOSE THAT DON'T WANT TO MISS THE GAME TO GET HOME, OR TO THEIR FAVORITE SPORTS BAR. THOSE NOT INTERESTED IN THE GAME MAY STAY AND CHAT ABOUT HAM RADIO**

**Mt. Vernon ARC Officers**

| | | |
|---|---|---|
| **President:** | **Mike McCardel, KC8YLD** | **kc8yld@arrl.net** |
| | | **Phone: 740-599-6614** |
| **V. President:** | **Don Russell, WA8YRS** | **Wa8yrs@arrl.net** |
| | | **Phone: 740-397-0249** |
| **Secretary:** | **Jeff Butz, N8SM** | **Jaylynn@copper.net** |
| | | **Phone: 740-965-9368** |
| **Treasurer:** | **Barry Butz, N8PPF** | **n8ppf@mvarc.net** |
| | | **Phone: 740-397-7540** |

# MVARC

**Mt. Vernon Amateur Radio Club**
**Minutes for the Annual Christmas Dinner and Meeting.**
**At Ryan's Steak House, Mt. Vernon, Ohio**
**December 10, 2006**

**Attendees:**

| | |
|---|---|
| Ruby Fox | KE4SJC |
| Wes Caldwell | KB8WCU |
| Don Russell | WA8YRS |
| Don Blizzard | W8UMH |
| Carolyn Blizzard | XYL |
| John Nogaj | Technician Elect |
| Marcus Nogaj | Technician Elect |
| Earl Paazig | N8KBR |
| Sondra Paazig | N8RNB |
| Scott Paazig | Guest |
| Don Bunner | KB8QPO |
| Mary Bunner | Guest |
| Linda Helzer | Guest |
| Larry Helzer, DVM | AA8WP |
| Dick Huggins | WD8QHY |
| E. Mike McCardel | KC8YLD |
| Jeff Butz | N8SMT |
| Connie Butz | KC8DLG |
| Barry Butz | N8PPF |
| Ruben Clark | KB2SAI |
| Robert McBride, Sr. | N8QPM |
| Danielle Jenkins | KG8FP |
| Don P. Henderson | KA8LIZ |
| Jerry Walker | KB8JAA |
| Charlene Householder | N8RPZ |

President Clark called the meeting to order at 7:25 P.M.

The minutes from the November 13th meeting were read and a motion to accept them was made. The motion was approved.

**Old Business**
The Election Ballots have been opened and tabulated. Dick Huggins WD8QHY announced the winners.

**President:**
Mike McCardel KC8YLD

**Vice President:**
Don Russell WA8YRS

**Treasurer:**
Barry Butz N8PPF

**Secretary:**
Jeff Butz N8SMT

**Member of the Board of Directors:**

Don Bunner KB8QPO

**Repeater report:**

Don Russell, WA8YRS, reported that the 2-meter repeater is working fine. The 6-meter repeater has been improved and is now putting out 100 watts.

The Technician class was a success. Don wanted to point out that Marcus Nogaj who passed his test is 10 years old. He also pointed out that Barry Butz passed the General and Extra written exams and as soon as the dust is settled on the new FCC Morse Code ruling he will be granted his Extra License. The Technician Class plans to dive right into the General Class Licensing requirements.

**Emergency Coordinator Report:**

Bob McBride, N8QPM encouraged all members to keep an eye on the weather since winter is on the way and to prepare your vehicles in case of an emergency. He reminded everyone to check into the regular Sunday Night nets as well as the weather nets.

A motion to adjourn the meeting was made and seconded. The meeting was adjourned at 7:41 P.M.

## FCC ELIMINATES MORSE CODE AS EXAM REQUIREMENT!

**(From the ARRL letter December 22, 2006)**

Early next year, the US will join the growing list of countries that no longer require Amateur Radio applicants to pass a Morse code test as the entry ticket to HF. Announcement of the pending historic rule change arrived with no fanfare December 15 in an FCC public notice. A full-blown Report and Order (R&O) in the proceeding, WT Docket 05-235, followed December 19. The best estimate of when the Morse code requirement will go away officially is sometime in February -- 30 days after the R&O appears in the Federal Register.

"We . . . believe that the public interest is not served by requiring facility in Morse code when the trend in

**Newsletter Credits**
**Editor: Don Russell, WA8YRS**

**Clip Art and Cartoons** thanks to http://wm8c1.50megs.com/radio_clip_art.htm, http://www.qsl.net/k4adl/, http://pages.prodigy.net/kg0zz/clipart/ham_art3.htm, http://www.arrl.org/,

**The ARRL letter** is a weekly e-mail publication by the ARRL. You may read the entire ARRL letter by visiting the ARRL Web page at http://www.arrl.org/. **Other News** from: http://ky4ky.com/fyi.htm.

**The ARES E-Letter** is an e-mail digest of news and information of interest to active members of the ARRL Amateur Radio Emergency Service (ARES). Past issues of The ARES E-Letter are available at http://www.arrl.org/ares-el/. Issues are posted to this page after publication.

**Project OSCAR** is a monthly column written for Newsletter Editors. Columns will appear as space permits. You may download all the columns yourself at: http://www.projectoscar.net/beacon.php

**Members are encouraged to send articles pertaining to ham radio, with an emphasis on local activities, equipment reviews, and personal experience to wa8yrs@arrl.net or Don Russell, WA8YRS, 815 Brookwood Road, Mt. Vernon, Ohio 43050**

amateur communications is to use voice and digital technologies for exchanging messages," the FCC said in its R&O. "Rather, we believe that because the international requirement for telegraphy proficiency has been eliminated, we should treat Morse code telegraphy no differently from other Amateur Service communications techniques."

The FCC says it deems the current regime of written examinations "sufficient to determine whether a person is qualified to be issued an Amateur Radio operator license."

The FCC cast aside arguments that Morse ability is advantageous in emergencies, concluding that most emergency communication is handled using voice, data, or video techniques. The Commission also turned away assertions that retaining a Morse requirement would help keep out the bad apples.

"The record is devoid of a demonstrated nexus between Morse code proficiency and on-the-air conduct," the FCC observed. It concurred with one commenter's observation that "maintaining the code requirement does not purge Amateur Radio of bad operators. Education and self-policing does."

The FCC also ordered that all Technician licensees present and future -- whether or not they've passed a Morse code test, will get privileges on 80, 40, 15 and 10 meters identical to those of Novice licensees. "In eliminating this disparity between Technician and Technician Plus licenses, we are simplifying the Amateur Service licensing structure and promoting regulatory parity," the FCC said.

The FCC took advantage of the occasion to act on the League's Petition for Partial Reconsideration in the "omnibus" proceeding, WT Docket 04-140, calling on the Commission to retain 3620 to 3635 kHz for automatically controlled digital stations by moving the Extra class phone band edge to 3635 kHz. The FCC decided instead to authorize 3585 to 3600 kHz for such operations, and leave the newly expanded phone band intact.

The Commission further amended Part 97 "to authorize Amateur Extra class privileges to all individuals who have been issued a CEPT radio-amateur license by their country of citizenship, and who satisfy other requirements in the Commission's rules."

Although the FCC's Morse code decision came as no surprise, it nonetheless revived debate on the issue. The FCC had proposed more than a year ago to drop the Morse code requirement for all license classes. The record in the proceeding, the FCC said, "reflects a division of views in the Amateur Radio community." After reviewing the more than 3500 comments and counter-proposals radio amateurs had filed, the Commission stuck with its initial proposal.

ARRL President Joel Harrison, W5ZN, had this reaction: "While the Commission's decision to delete the Morse code requirement for an Amateur Extra Class license departs from the ARRL's recommendation, it is helpful to have the matter resolved so we can move forward."

ARRL CEO David Sumner, K1ZZ, expressed a similar viewpoint. "Now that the debate is over, we can focus on learning Morse code simply for its own sake," he said. Sumner pledged that the League would maintain its traditional support of Morse code as an operating mode and would continue to offer Morse training materials as well as such incentives as bonus credit for CW contacts in ARRL-sponsored operating events. ARRL's Hiram Percy Maxim Memorial Station W1AW will keep its schedule of Morse code practice and bulletin transmissions.

Since World Radiocommunication Conference 2003, the UK, Canada, Germany and other countries have dropped their Morse requirements. Sumner said other countries have successfully made the transition to a codeless testing regime, and he doesn't anticipate problems in the US.

The pending disappearance of the Morse code requirement seems to have rejuvenated the urge to upgrade. ARRL Sales and Marketing Manager Bob Inderbitzen, NQ1R, says distribution of General Class license training materials have skyrocketed in the week after the FCC announcement.

The ARRL has posted information relevant to the FCC action in WT Docket 05-235, including an FAQ, on its Web site <http://www.arrl.org/fcc/morse/>.

## VHF/UHF WORLD

**By Don Russell, WA8YRS**

Last month we discussed how timers were used in a repeater. Continuing on with the subject of repeaters, lets talk a little about the antenna system of a repeater system.

One would think that the antenna system would be pretty much standard affair. Far from it. There are several things that need to be considered. What type of antenna should be used? Should one antenna be used for receive and one for transmit, or should the system have just one antenna for both? What kind of feed line should a repeater system use?

Lets take this one at a time. What about the antenna? As with all ham radio systems, the antenna is an extremely important component. One has to remember that a repeater is mostly unattended, and sometimes isolated. Just any antenna will not do. Previous K8EEN repeater techs found out the hard way that a repeater antenna must be at DC ground. In other words, the whole antenna, including the feed should see a path to ground. Lots of VHF/UHF antennas are designed this way. Most fiberglass antennas are not! The problem is lightening! If you have a near lightening strike at a repeater with an ungrounded antenna, chances are that some equipment is going to be lost. If the antenna has a path to ground, then the antenna itself will shed 80 percent or more of the lightening strike to ground. Then, with some luck, the lightening arrestor at the equipment end will handle the rest. We do have a lightening arrestor don't we? (yes). Few system will survive a direct hit, however, so our system has been very fortunate.

Kelly, Warner, N8NMQ, past K8EEN repeater tech, guided the club correctly when they purchased the present antenna. This is a commercial antenna that is always at DC ground. This antenna has no doubt survived many near direct hits and also protected our valuable repeater system.

What kind of feed line should be used in a repeater system? This is something few hams outside of a repeater tech or owner would worry about. Surely RG-8, RG-8x, or 9913 would work okay. Sorry. Wrong answer. As the saying goes, you get what you pay for. Feed line for a repeater system needs to be the best the group can afford. RG-8x would not do, especially with runs over 100 feet. Neither would RG-8. Trust me. I learned this the hard way early on. 9913 may work. It is double shielded making it "signal leak proof". It also has decent loss figures in the VHF and UHF range. At least as good as some of the cheaper hard lines. However, its double shield is what gets it in trouble. 9913 is fine for a radio station that either transmits or receives one at a time. When a station, such as a repeater, needs to transmit and receive at the same time through the same coax (called duplex), then the 9913 cable has problems. It creates noise that is often picked up by the repeater receiver thus limiting how well the repeater receiver can "hear". I have read many reports of this problem when trying to use 9913 or any of its cousins that use double shielding. I guess the two shields rub each other and create a noisy atmosphere. I would imagine there is the possibility of creating noise on the transmitter this way too.

So, in a repeater system, hard-line is usually used. It is completely shielded by one aluminum jacket. If you can afford the really big stuff like 7/8 in diameter on up, then there will be very little loss with a run of 100 to 150 feet. The K8EEN repeater uses 1-7/8 inch hard-line, which was installed the same day the new repeater was installed.

Should a repeater use one antenna for receive, and one for transmit, or simply use one antenna? Believe it or not, when repeaters first came out, a lot of repeaters used two antennas. The two antennas had to be separated by about 50 feet vertically to keep the repeater transmitter from overloading the repeater receiver. Now days, a typical repeater uses a duplexer to keep things tamed down. You should consider a duplexer a very sharp filter that keeps the repeater transmit signal from getting into the repeater receiver. A duplexer usually consists of two or three separate filters (called cavities) on each leg on the repeater system. Three on the transmit side, and three on the receive side. Each filter needs to have 30 to 45 db attenuation so that when hooked up to each other, the total system has an attenuation on each leg of over 90 db. One can guess what would happen if a duplexer failed and a portion or all the transmit power went directly into the receiver. I can smell the smoke just thinking about it.

Unless picked up as used equipment, duplexers are very


**Come to the January meeting and get your free "ham Radio Upgrade" CD. This CD has all the information you need to obtain your Technician Class License, or upgrade to General Class. Included on the CD is a Freeware logging program, a printable single sheet log, a printable Radiogram, and more! Make a copy for a friend and introduce him/her to the wonderful world of ham radio.**

expensive. They also need expensive test equipment to adjust. Andy Thrasher, KC8EVM, from Alexandria, Ohio helped tune up the K8EEN repeater duplexer when we installed the new system. Since I paid attention, I know the drill. Luckily Steve Dick, KC8YED, has the necessary equipment if there ever comes a time when these duplexers need readjusted again.

Stay tuned. Next time we will finish up on repeaters by describing the audio system, and maybe start on a new subject.

## HAM HISTORY
## By Barry Butz, N8PPF

**Credit for this article goes to: International Electrotechnical Commission (IEC)**
http://www.iec.ch/100years/techline/

This month's installment is about American patriot, founding father, and Renaissance man Benjamin Franklin (1706-1790).

Born in Boston, as a British colonial citizen, Benjamin Franklin led an extraordinary life of diverse accomplishments as a printer, author, experimenter, inventor, diplomat, statesman and philosopher. Having made his fortune as a publisher in Philadelphia by the age of 40, Franklin soon found the leisure to try electrical experimentation, corresponding and publishing on this topic until he joined the American revolutionary cause in 1775. The letters he wrote to his London correspondent, Peter Collinson, from 1746-49 are of enormous historical significance. Even as a novice in the field, Franklin introduced to the world the language of 'positive' and 'negative' electricity to describe the processes of charging and discharging. These in turn were used to describe both the operation of his recent invention, the flat plate electrical condenser, as well as to explain the electric shock – another term coined by Franklin – which it gave to unwary users.

In 1749-50 Franklin developed a theory to explain the remarkable phenomena revealed by his experiments. Since electricity flowed through all matter, he inferred it must consist of extremely 'subtle' particles. Collectively these particles constituted an indestructible electrical 'fluid', a positive charge indicating an excess of this fluid and negative charge with a deficit. As Franklin made an unlucky guess about the physical direction in which currents flowed, later generations had to treat electricity as negatively charged. Ever concerned to apply his theories to public benefit, Franklin had the crucial insight that lightning was a form of electricity and famously risked his life to prove this in the 1752 thunderstorm experiment, using a metal key to extract sparks from a damp kite string.

For several years Franklin used his theories of electricity to design early forms of lightning rod intended to protect property from the damage of intense electrical discharge. Although modern lightning conductors are built on rather different principles, Franklin is acknowledged as their inventor – along with other such innovations as bifocal glasses and the catheter tube. Franklin's accomplishments as the experimenter who first explained electricity and tamed lightning are epitomized in the many editions of his classic "Experiments and Observations on Electricity", first published in 1751.

## ComPIOnents January 2007
## By Mike McCardel, KC8YLD

### "When All Else Fails"

With our ever-growing dependency on technology in our daily lives one has to wonder when we actually have gone overboard. Don't get me wrong. I love gadgets. I want the newest smaller, fastest but I certainly don't need it. Recently my brother-in-law moved in while he is recovering from a stroke. Jim is getting better every day, but had a set back recently and had to go to the hospital. In route, in the ambulance they were trying to monitor his blood with a digital machine, which they just couldn't get to work. It wasn't life threatening but one has to wonder what about using a sphygmomanometer and a stethoscope ($50 words for the equipment used to get blood pressure the old analog way).

Later in that week, at the doctors, they tried taking his temperature with a device they place on his forehead. It didn't work until the third try. Meanwhile, I'm sitting there thinking "Hello, thermometer!" Newer technology isn't always the most cost effective. In point would be the US spending a million dollars to invent a pen that wrote in space while the Soviet Union used pencils. (I prefer a pencil, although I must admit my favorite one is mechanical.) So it is with communication technology. Its good to learn the digital ways, to be able to use

repeaters, echolink, Winlink, ect., but when the supporting systems for all of these fail we fall back to simple radios, a wire and battery power and we're on the air! No cell tower network necessary. No computer necessary. Less expensive, well, maybe…

We have all heard, recently, that the FCC has decided to drop the Morse Code requirement for all license classes. Thirty days from when this change is published in the National Register it will became law and Technicians will automatically gain 400 KHz on 10 meters, 100 KHz on 15 meters, 50 KHz on 40 meters and 50 KHz on 80 meters. This includes a "whopping" 200 KHz of phone privileges between 28.3 and 28.5 MHz on 10 meters. 200 KHz is not a lot of bandwidth. In fact it is less than 1 hertz per Technician. With the 10 meter being as dead as it has been this year, one may ask, "What can I do to increase my chances to make HF contacts? The answer is easy.

1. Learn CODE!
2. Upgrade to General.

Remember, just because you didn't pass a code test doesn't mean you can never use it. In fact I believe most of the fear of learning code wasn't the code, but the test. The fear of failure, I believe, kept more people from upgrading than fear of the code. If I can upgrade without learning the code why, you may ask, would I want to learn the code?

My first answer is the fun and challenge of it, second would be to not waste your newly gained bandwidth. Even with the new band expansions, over one third of all bandwidth in the General class allocation is for CW and FSK, and since CW communication uses significant less bandwidth than voice more conversations can take place within the same space. Here is my challenge to any ham that hasn't passed the code test. It's not to late to learn. You don't have to put yourself at risk by passing a test. You can learn at you own pace and without a deadline.

**WE WILL HELP YOU!**

One last thing, you never need to apologize because you became a ham or upgraded after the FCC drops the code. You followed the rules as they were in effect when you got your license, just as I did when passed at 5 wpm or Don or Doc and many others did when they passed at 20 wpm. It is not your fault they changed the rules. However, it is your right to take advantage of the rules and your responsibility to follow them.

The Ohio Section announced the realignment of its nine ARES Districts recently. The only change in our District 6 was the addition of Medina County. We will still report to Mansfield for Skywarn and Jay Bookwalter, KC8GNL, will remain as our District 6 DEC. Statewide the new alignment consists of districts having 8-11 counties each while the old plan the span contained 5-18 counties per district. The new plan also minimizes the number of DECs that may need to coordinate with Citizens Corps within the same county grouping. Changes go into effect January 1, 2007. To see SEC Frank Piper's comments as well as a new district map visit http://www.iarc.ws/ohio/SEC/default.htm.

I would like to congratulate Don Russell WA8YRS, Jeff Butz N8SMT and Don Bunner KB8QPO for their re-election to VP, Secretary and Board of Director, respectively and to Barry Butz N8PPF, for his election to Treasurer. I would also like to thank everyone for his or her support in electing me President for the next year. I offer a special thank you to Ruben Clark KB2SAI, our outgoing President, who served MVARC for in that capacity for four years. We appreciate his leadership and guidance during that time. Ruben will remain active on the Board of Directors for one year and will continue serve as an Assistant EC and as liaison to Citizen Corp.

January's meeting will be at 6:30 PM, Monday Jan 8, at the Red Cross. Note the early start. We promise to keep it short so we can all get home in time for the OSU game.

Mansfield Hamfest is February 11 at the Richland County Fairgrounds.

February's meeting will be 7pm Monday Feb 12, at the Red Cross. This meeting will be our first annual "give away". You must be a club member to win. You need not be present to win. We are intending to have a couple of gift certificates for Universal Radio and/or the ARRL as well as some other ham gear. Watch for more details in February's Newsletter. Dues are only $12 a year (3.3 cents a day), so if you haven't already, join today!

I have recently taken possession of a gift of ham equipment from Trish Rankin, the widow of Dave Rankin K4AWO who died last January, most of it is "shack stuff" however, some of the equipment may be placed in the February give away after we have inventoried and tested it. There are also two transceivers which I will recommend be retained by the club as temporary loaners to new hams and others who might be without a radio. Both have passed the initial smoke test, but we are looking for user's manual to be sure they are operable. Also, there is a Bird Thruline 43 wattmeter with 7 slugs in a leather case with instruction book. I would like to retain this as a club item, but we could sell it, or give it away in February. I will consult with the trustees and other officers before we make that decision. If anyone would like make a comment on these please contact me via email kc8yld@arrl.net

**KUDOS**

Ruben Clark KB2SAI four years of quality service as President of MVARC

Tony Speigel, KC8UR who recently took the EMCOMM level 1 training online from the ARRL.

Marcus Nogaj, KD8EVP of Johnstown

John Nogaj, KD8EVQ of Johnstown

Arlin Bradford KD8EVR of Gambier

Kenneth Hodges KD8EVS of Marion

Kris Reese of Lima

Gamanie Pelaketiyage KD8EVT

Who all passed their Technicians License at our testing session in December. Of particular note was Marcus KD8EVP who at 10 years old is Knox Counties youngest ham. In addition Kenneth Hodges KD8EVS was 78. The age spread of 68 years is one of the largest ever at a testing session anywhere!

Barry Butz N8PPF, who passed both his General and Amateur Extra written exams at the same session. Barry said he was going to give the FCC six months to drop the code before he worried about the code, but they did so in only six days. Barry is poised to be the countries first no code Extra.

See you all at the meeting.
73,
EMike McCardel, KC8YLD

## REPEATERS AND STUFF

**By Don Russell, WA8YRS**

Well, the FCC has finally done it. They have eliminated the Morse Code Requirement for all ham classes! No, I am not happy about it. However, as I have said in these pages before, you accept changes or get out of the hobby. Ham Radio has been a way of life for me since 1963. I have no intention of going on strike now. Besides, I prefer to look at the positive side of things. The elimination of the Morse Code requirement should produce a population explosion of the General Class and Extra Class licenses, perhaps even in ham radio itself. I propose that those still complaining about this historic event grow up, get on with life, and welcome all new hams of any class with open arms. This could be the start of something big!

The no code Technician license was always meant to be an entry level license; and an easy way for people interested in ham radio as a public service/emergency communications medium to quickly get a ham license. This intent has been proven over the years. Almost all the technical questions have been eliminated from the Technician Class test. There are still a few basic formulas that need to be learned, but these are the same set of formulas the old Novice Class test dealt with. There are only two questions presented on the technician class test dealing with these formulas. So, basically, the Tech test is more about rules and regulations and operating procedures than anything else. This is good. We want new hams to learn how to properly operate their equipment. As they get experience and evolve as a “ham”, they will find their place, be it electronics, antennas, propagation, operating, or public service, etc.

Looking back on things, I believe the FCC has been preparing us for this day for a long time. Decreasing the difficulty of the Tech Class exam, expanding the phone frequencies.

I am not concerned about Morse Code dying out. It may eventually, but you are talking 10 to 20 years from now. If us old timers play it right, we may be able to entice some newcomers into learning Morse Code. Morse Code does have its advantage when it comes to QRP work, Contesting, and even message handling. How long does a laptop run on battery power? How long will a QRP radio run on Battery power? From my experience, a QRP radio will run a very long time on battery power, while a laptop will run 2 to 3 hours tops. So, if power is interrupted, a laptop may be good for a few hours of digital work, but then the operator will be back to the old hand key. If he knows how to use it.

The ARRL has made the comment that it will continue to support Morse Code as a mode of communications. I would hope that this means continuing their daily on the air Code Practice, and their Code Proficiency Program which give certificates of accomplishment for various Code Speeds. In fact, I may practice up and submit for these certificates myself.

What happens now? I think a lot of people that got their Technician license years ago and are now inactive will revisit ham radio. Lets face it. Ham Radio was not what they thought it would be. Remember, Techs are limited to 50 Mhz. and above. This tends to limit the distance one can get out. To me, the true ham radio that is in the publics eye, and that which non hams think of when the topic of ham radio is brought up, is of hams talking world wide. That is the part that sparks an interest. Talking to people in countries around the world!

Sorry, but the channelized VHF and UHF FM bands are more like the CB radio of the 60’s. Limited communications range, except for a few openings now and then. Of course, we are much better behaved than our CB brothers, and I hope that continues. Peer pressure works. I don’t have a problem with this type of operating or I would not be on 2-meters or be one of the

clubs repeater techs. As Mike, KC8JEZ, pointed out: Rag Chewing is Rag Chewing, no matter what the frequency.

But I digress. Your will see a surge of interest in ham radio. From computer geeks that want develop and use their own digital modes to the professional technical community that always wanted to get into ham radio, but never did because of the darn Morse Code!

I believe that our club should take advantage of this opportunity. We should be contacting Boy Scout troops and other youth organizations offering to demonstrate ham radio. There should be many adult groups and yes, even senior citizens looking for a hobby that would make retirement more enjoyable. Contacting Schools offering to teach ham radio and organize school clubs would be a good thing for our club to do.

Two or three club members can not do this alone. A Mt. Vernon Amateur Radio Club working together can.

Continuing on the subject of introducing ham radio to the public, I would like to suggest that our club take advantage of the ARRL Library Book Set program. This program sells a set of ARRL books intended to be donated to public libraries. The books include The ARRL Handbook, The ARRL Antenna Book, The ARRL Operating Manual, The Radio Amateur's Satellite Handbook, The Ham Radio License Manual, The ARRL General Class License Manual, the ARRL Extra Class License Manual, the ARRL FCC Rule Book, Understanding Basic Electronics, The RFI Book, Morse Code: The Essential Language, Your Intro to Morse Code (audio CD's), N0AX's Radio Puzzler, The ARRL Instructor's Manual, Transmitter Hunting, The ARRL Map of the World, and Night Signals (fiction).

The ARRL sells this set for $200. I totaled it up and the cost if each book was bought separately would be $333.40. A very good deal.

So, I am going to propose the Mt. Vernon Amateur Radio Club set aside $100 from its treasury, and ask for donations from club members for the balance so we may purchase this set of books and donate them to the Public Library. If we have more than $100 in donations, we would simply buy a few other selected books to go along with this book set.

I forgot to mention that the books on Ham Radio currently at our Public Library are very old, and were donated by the Mt. Vernon Amateur Radio Club. It is time we updated this.


**Membership Form**

Club dues run from Jan. 1 until Dec. 31 and are collected during the last quarter of the year. You can mail in the dues to the address below or bring them to a meeting. Dues are prorated for new members at the time of application. Visit our Web Page at www.mvarc.net

Dues Schedule: $12 regular

$10 for second member in the same family, for those over 65 yrs. of age, and for those living outside Knox County

**Mt. Vernon Amateur Radio Club, P.O. Box 372, Mt. Vernon, OH 43050**

Name_____Call-Sign_____

Street_____

City_____State_____Zip Code_____

Phone Number_____License Class_____

ARRL Member (Y/N)_____E-Mail_____

Extra Donation (Optional)_____

Members are entitled to a free MVARC E-Mail address. Would you like one? No_____Yes_____

If yes please enter password_____

Other Comments:

# GENERAL STUDY GUIDE
# PART 3
### FROM EARL PAAZIG, N8KBR
http://studyguide.eqth.org/

**Read through this material a couple of times, then visit one of the many on-line web pages that allow you to take a General Class practice test. Here are a few: http://www.aa9pw.com/radio/ , http://www.eham.net/exams/ , http://www.qrz.com/ham/ Take a practice test every month and see how your score improves**

**SUBELEMENT G4 -- AMATEUR RADIO PRACTICES [5 Exam Questions -- 5 Groups]**

**Two-tone test**
- Two audio-frequency sine waves are used to test the amplitude linearity of a single-sideband phone transmitter while viewing the output on an oscilloscope.
- When testing the amplitude linearity of a single-sideband transmitter, two non-harmonically related tones are fed into the microphone input, and the output is observed on an oscilloscope.
- Any two audio tone frequencies may be used in a two-tone test of the linearity of a single-sideband phone transmitter, but they must be within the transmitter audio passband, and should not be harmonically related.
- A two-tone test analyzes transmitter linearity performance.
- Two non-harmonically related audio signals are within the modulation bandpass of a transmitter to conduct a two-tone test.

**Electronic TR switch**
- An electronic TR switch would normally appear between the transmitter and low-pass filter in an HF transceiver block diagram.
- An electronic TR switch preferable to a mechanical one because it has a higher operating speed.
- A diode is like a switch in that it permits current flow when forward biased and blocks current when reverse biased.

**Amplifier neutralization**
- As a power amplifier is tuned, the reading on its grid-current meter indicates the best neutralization when a minimum change in grid current as the output circuit is changed.
- Neutralization is necessary for some vacuum-tube amplifiers to cancel oscillation caused by the effects of interelectrode capacitance.
- In a properly neutralized RF amplifier, negative feedback is used.
- A neutralizing circuit cancels the effects of positive feedback in an RF amplifier.
- The reason for neutralizing the final amplifier stage of a transmitter is to eliminate self oscillations.

**Test equipment**
**Oscilloscope/Monitoring oscilloscope**
- An oscilloscope contains horizontal- and vertical-channel amplifiers.
- A digital oscilloscope is an oscilloscope designed around digital technology rather than analog technology.
- A monitoring oscilloscope is the best instrument to use to check the signal quality of a CW or single-sideband phone transmitter.
- The RF output of the transmitter is connected to the vertical input of a monitoring oscilloscope when checking the quality of a transmitted signal.
- To check AM or SSB transmitter modulation using double trapezoidal patterns on an oscilloscope, couple the RF output signal to the vertical plates and external trigger; set the internal sweep to twice the modulating frequency.

**Signal tracer**
- A signal tracer would normally be used to identify an inoperative stage in a receiver.

**Antenna noise bridge**
- A noise bridge is normally connected between a receiver and an antenna of unknown impedance and is tuned for minimum noise.
- One way a noise bridge might be used is for pre-tuning an antenna tuner.

**Field-strength meters**
- The purpose of a field-strength meter is to monitor relative RF output.
- A field-strength meter may be used to monitor relative RF output during antenna and transmitter adjustments.
- In order to raise the S-meter reading on a receiver from S8 to S9, the power output of a transmitter must be increased approximately 4 times.
- A field strength meter provides the field pattern of an antenna.
- Close-in RDF work might be an application for a field strength meter.
- A noise bridge could directly provide characteristic impedance for an unknown length and type of transmission line.

**Audio rectification in consumer electronics**
- You would install bypass capacitors in home-entertainment systems to reduce or eliminate audio-frequency interference.
- If a properly operating amateur station is the cause of interference to a nearby telephone you should install RFI filters at the affected telephone.
- Distorted speech from the transmitter's signals is heard from a public-address system if audio rectification of a nearby single-sideband phone transmission occurs.
- On-and-off humming or clicking is heard from a public-address system if audio rectification of a nearby CW transmission occurs.

**RF ground**
- If your third-floor amateur station has a ground wire running 33 feet down to a ground rod, you might get an RF burn if you touch the front panel of your HF transceiver because the ground wire is a resonant length on several HF bands and acts more like an antenna than an RF ground connection.
- To avoid stray RF energy in your amateur station keep the station's ground wire as short as possible.
- With regard to station grounding it is NOT true that only transceivers and power amplifiers need to be tied into a station ground.
- With regard to station grounding, RF hot spots can occur in a station located above the ground floor if the equipment is grounded by a long ground wire.
- The RF exposure limits of the human body are NOT covered in the National Electrical Code.

- Induced currents in conductors that are in poor electrical contact can cause the unintended rectification of an RF signal.
- An intermittent RF ground is one cause of severe, broadband radio frequency noise at an amateur radio station.
- A ground loop can be avoided by connecting all ground conductors to a single point.

**Speech processors**

- The reason for using a properly adjusted speech processor with a single-sideband phone transmitter is it improves signal intelligibility at the receiver.
- If a single-sideband phone transmitter is 100% modulated, the speech processor will add nothing to the transmitter's output PEP.
- The operating benefit that a properly adjusted speech clipping provides is it prevents overdriving the transmitter's modulator stage.

**PEP calculations**
**Formulas:**
**Vpeak = Vpeak-to-peak/2**
- **Vrms = Vpeak*0.7071**
- **PEP = (Vrms*Vrms)/Z**

- If an oscilloscope measures 200 volts peak-to-peak across a 50-ohm resistor connected to the transmitter output, the output PEP from the transmitter is 100 watts.
- If an oscilloscope measures 500 volts peak-to-peak across a 50-ohm resistor connected to the transmitter output, the output PEP from a transmitter is 625 watts.
- If an average-reading wattmeter connected to the transmitter output indicates 1060 watts, the output PEP of an unmodulated carrier transmitter is 1060 watts.

**Formulas:**

- **V = sqrt(R/P) as derived from V=I*R and P=I*V**

- The voltage across a 50-ohm dummy load dissipating 1200 watts would be 245 volts.

**Wire sizes and fuses**

- Only the "hot" (black and red) wires in a four-conductor line cord should be attached to fuses in a 240-VAC primary (single phase) power supply.
- Wire size, AWG number 12, is normally used on a 20-ampere, 120-VAC household appliance circuit.
- The maximum size fuse or circuit breaker that should be used in a household appliance circuit using AWG number 12 wiring is 20 amperes.

**Common connectors used in amateur stations: types; when to use; fastening methods; precautions when using**

- A DB-25 connector is NOT designed for RF transmission lines.
- When installing a power plug on a line cord you should:
- Twist the wire strands neatly and fasten them so they don't cause a short circuit
- Observe the correct wire color conventions for plug terminals
- Use proper grounding techniques
- *(All of these choices)*
- A direct, fused power connection to the battery using heavy gauge wire would be the best for a 100-watt HF mobile installation.
- The type of coaxial connector, Type N, would be a good choice to use for 10 GHz feed-line connections.

**HF mobile radio installations**

- It is best NOT to draw the DC power for a 100-watt HF transceiver from an automobile's cigarette lighter socket because the socket's wiring may not be adequate for the current being drawn by the transceiver.
- The HF mobile antenna system most limits the effectiveness of an HF mobile transceiver operating in the 75-meter band.

**Emergency power systems**

- **Generators**
- All of the following is true of both a permanent or temporary emergency generator installation:
- The generator should be located in a well ventilated area
- The installation should be grounded
- Extra fuel supplies, especially gasoline, should not be stored in an inhabited area
- *(All of these choices)*
- You should avoid placing a gasoline-fueled generator to power your station inside a building or outside an open window.
- Safety precautions you should observe when using a gasoline-fueled generator to power your home station:
- Always ground the frame of the generator
- Use only generators that produce a clean sine wave output
- Make sure that the engine is well lubricated
- *(All of these choices are correct)*
- During a commercial power outage, it would be unwise to back feed the output of a gasoline generator into your house wiring by connecting the generator through an AC wall outlet because:
- It presents a hazard for electric company workers
- You may draw too much current, overloading your generator
- Power may be restored to your house, damaging your generator
- *(All of these choices are correct)*

**Battery storage devices and charging sources including solar**

- When a lead-acid storage battery as it is being charged it gives off explosive hydrogen gas.
- Photovoltaic conversion is the name of the process by which sunlight is directly changed into electricity.
- The approximate open-circuit voltage from a modern, well illuminated photovoltaic cell is 0.5 VDC.
- The panel's voltage rating and maximum output current determines the proper size solar panel to use in a solar-powered battery-charging circuit.

**Wind generation**

- The biggest disadvantage to using wind power as the primary source of power for an emergency station is a large electrical storage system is needed to supply power when the wind is not blowing.