

MRAC Hamateur Chatter

The Milwaukee Radio Amateurs Club

January 2016 Volume 24, Issue 1

One of the World's Oldest Continuously Active Radio Amateur Clubs—since 1917

Presidents' Letter

Now that we are fully into 2016, we are looking forward to all of the wonderful events we have planned for February. But first, a few reminders.

Our first MRAC meeting for 2016 will be on Thursday, January 28th at 7pm. This month's topic will be a show and tell from Dave WB9BWP as he demonstrates a USB microscope that can be used for printed circuit board work as well as a hot-air soldering tool for surface-mount soldering. Also, beginning this month, Dave will present information about our club's history at each meeting as we lead up to our 100th anniversary next year.

Related to our anniversary, we have extended our Logo Contest until our February 25th meeting. The goal is to create a new club logo for our 100th anniversary, so everyone is welcome to submit their design concepts (even if you aren't an MRAC member!). If your design concept is selected by the MRAC membership, you will get a jacket with new logo AND a year's free membership in the club.

Remember, we want the new logo to showcase and celebrate our 100 years as the organization. So in terms of design, it's important that the new logo is readable at various sizes (from "very small" on a business card to "very large" on a banner). We plan on using this new logo just like the ARRL used their 100th anniversary logo, and it will be prominently displayed on all of our promotion and documentation moving forward.

Not a professional artist? You can still enter your logo idea! Once the final logo is selected, we will work with a professional graphic artist to polish the logo for our use. So, please bring your designs and ideas on a 8.5 x 11 sheet of paper (in color, if possible) with your name and callsign to the club meeting on February 25th.

Besides the logo contest, we've got lots of events planned for February. We start the month with our annual Midwinter Swapfest on February 13th. Doors open to vendors at 6am, and to the public at 8am.

New this year, we are using Paypal for advanced booth registration and ticket sales, so be sure to check out the website for more information: <http://www.w9rh.org/club-events/swapfest/>

We always need volunteers for Swapfest, so if you want to volunteer your time to help with registrations, set up, or clean up/tear down, please email me at ka9wxn@gmail.com. All volunteers will be well-fed after we tear down, so please be generous with your time.

After the Swapfest, our next event will be the MRAC Simplex Contest starting at 1pm on Sunday, February 21st. This year's contest date was moved due to Superbowl Sunday. You can check out the contest rules on our website: <http://www.w9rh.org/club-events/simplex-contest/> and really forward to everyone participating.



MRAC Officers:

Terms Expiring in 2016

- President – Dave, KA9WXN
- V-President– Vacant
- Secretary – MBH, KC9CMT
- Treasurer – MBH,,KC9CMT
- Director – Vacant

Terms Expiring in 2017

- Director – Al, KC9IJJ
- Director – Hal , KB9OZN

The Club Phone Number is: (414) 332-MRAC or

(414) 332- 6 7 2 2

Visit our website at:

www.w9rh.org

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PO Box 26233

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Finally, our annual Potluck Dinner meeting (previously known as the "Food Meeting") will be held on Thursday, February 25 (the same night that the Logo Contest submissions are due!). Profits from our Swapfest help to defray costs for this gathering, as does everyone's donation of a dish to pass as part of the potluck dinner. The club will provide a main course, soft drinks/water, and utensils. Chef Al KC9IJJ is still working on the menu, and we are really looking forward to seeing everyone for this fun, social event. Please feel free to invite your ham friends and others who might be interested in ham radio.

Hope to see you all at everything we have planned in the next month!

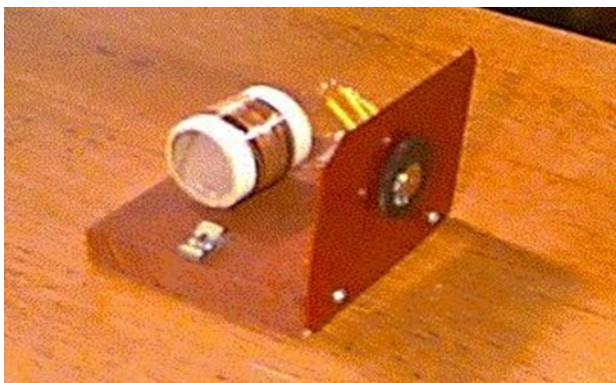
'73 Dave, KA9WXN



The Experimenter Bench

A Crystal Radio Wave Trap

This is a little circuit that is a real giant killer when you are trying to nose up to a loud local to look for the little guys. Basically, it is a tuned circuit placed in the antenna path to your rig, which traps and then dissipates the signal, or at least a bunch of it, from a station, allowing you to reduce interference between stations. There is nothing fancy to it, but a little care in construction and operation can make it really work well. Here is one of mine:



I used a 1 1/4 inch diameter cardboard core, and wrapped 100 turns of #32 enameled wire around it, closely spaced, and attached the ends of the coil to a 200 pF variable capacitor. This forms the tank circuit. I also wound over the first coil a second one, using 15 turns of #22 enameled wire, and ran each end to fahnestock clips - the antenna is connected to one clip, and the second goes to the antenna tuner, the set, or what have you. To use, just tune your receiver to the offending station, and then adjust the trap's capacitor until it reduces the signal. About 15 seconds is all the time you need to become a pro. The #32 wire, being of relatively high resistance, dissipates the signal that makes the tank circuit resonate (real engineers have assured me this is a bunch of baloney, and they are probably right, but my little trap works fine for all that - smart money says to make it of larger wire).

The #22 wire transfers the signal inductively from the antenna circuit while offering a low resistance path for other frequencies. It tunes fairly sharply, so tune slowly. You could install a bypass switch for times when the trap isn't needed, but I just tune to trap out of the way, with no signal loss to that I can notice. If you have more than one station you want to knock out at the same time, put more traps in series with this one. I have two which I use to cut out the two strong signals from two stations dominating the top of the band only 50 kHz apart. They are still too close together to listen between them, but I can certainly get much closer above and below them now. I might try a few more turns on the smaller coil to see if it sharpens up the signal a little. This was a first attempt, and I haven't tried to optimize it. Had I wound the coil for about 400 uH, I could have gotten full band coverage - actually, in my QTH, there are no loud ones below about 690 kHz, so this setup works fine for me with the 200 pF capacitor.

While you are winding the 100 turn coil, go ahead and put a tap in it, say at 30 turns or so. Then you can use the trap for a crystal set as well by adding a detector and earphones across the 30 turns. This lets you do at least two things:

1. It is a nice little crystal set all by itself.
2. You can operate it as a crystal set alone, listen to it while you adjust the trimmers on the capacitor for best frequency coverage - particularly handy if you use a different size wire, different number of turns, different capacitor or different diameter core. Don't leave out the smaller coil of #22, or whatever you use; I tried this trap without the small coil, and it literally wiped out the whole BC band, no matter what frequency it was tuned to - on the other hand, if this is built to be resonant at the shortwave broadcast freqs, it cuts out a larger portion of the offending band.

More fun; put it in the ground path instead, and it works about the same. Put it before or after the antenna tuner (if you use one) - works about the same. Use it as a crystal set along with the other set, and you can listen to two stations at the same time - no, you can't listen to the same station with both sets if they are in series - the one rig cuts out the other. You can even use a trap to provide power to a small transistor amplifier stage if the trapped signal is large enough.

On the air testing with a dc millivolt meter across the 47k resistor in my detector circuit (see my testing page) shows a signal reduction on "trapped" stations of about 6 to 14 dB with the trap. I suppose if you have a real monster in your neighborhood, you can put two traps on it for a double stomp; I couldn't see much advantage to the second trap when I tried this. I have not found the need to use a trap bypass switch when the trap isn't in use; I just shove the tuning cap to the other end of the band, and don't notice a reduction in set sensitivity elsewhere. I also notice that on really strong locals, the difference in signal level of 6 dB or so isn't very noticeable, and tuning the trap "by ear" is a bit difficult. When I tune off the offending station a bit, however, I can see the effect of the trap more readily. I made mine as an outboard unit, but you can just as easily incorporate into your main set, just don't make the coils of the two circuits in line (on the same long axis) with each other or you will mutually couple them, which makes for confusing tuning.

One of the unexpected benefits of a trap, as I found out, is that it can enhance the operation of an otherwise sensitive but not so selective crystal set. Using a trap with slightly modified Radio Shack crystal set, I heard a brand new station coming in from several hundred miles away that was ordinarily masked by a stronger station.

Trapping with the pros: Probably the most effective trap is an inductively coupled one. Here's how to make and use it: Make a coil of the same dimensions as your set's main tuning coil, and parallel it with a variable capacitor, also like the one your set uses. Now, place the new trap coil in line (on the same axis) with the main tuning coil, and, with the set tuned to an offending station, tune the trap capacitor to null the station. You can vary the depth of the null by moving the two coils apart. If your set has a separate antenna tuning circuit, the trap coil should be on the side of the set tuning coil away from the antenna coil. I have one of these and have gotten over 30 dB of fairly sharp signal rejection with it. Be advised; when using an inductively coupled trap, expect some interaction with the tuning coil. Using an inductive trap can give some interesting results you don't get from one placed in the antenna line.

More trap fun: If you have a set using in-line antenna and main tuning coils, inductively coupled to each other, here is something else to do with your inductively coupled trap. When trying to dig out a weak station, get as close to it as you can, then tune the trap for a null. Now, take the trap coil and place it between the antenna and main tuning coils. With some careful tuning, you can often isolate the weak station. The trap is giving you an additional stage of filtering and selectivity, and you are now using "triple" tuning. In this configuration, the trap is now functioning as a transfer circuit. You will notice that best performance is with the coils separated from each other by a coil diameter or so.

Good results have been reported with in-line traps using largish coils, with the tuned circuit portion of the trap inductively coupled to a separate coil connected to the antenna line which can be moved away from the main trap coil to provide variable coupling.

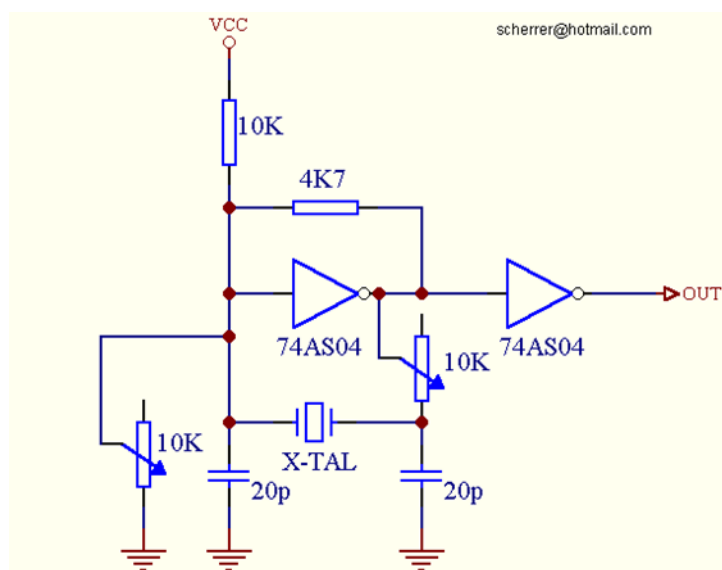
I would like to report that trapping my two strong locals opened up the top of the band for me; it didn't completely, but I can now get stations as close as about 20 kHz.

I have been able to successfully trap the HF ghosts somewhat that bedevil me early in the evening, but feel the need to work on this some more. Multiple hf intruders are really tough, but the HF trap I made doesn't use a coupling coil, and is rather broad, so gets a largish portion of the lowest shortwave broadcast band, and suppresses a couple of stations sometimes.

Crystal Oscillator Circuits

A well-designed crystal oscillator will provide good performance with TTL gates.

Two types of crystal oscillator circuits can be used: One with series resonance, or one with parallel resonance.



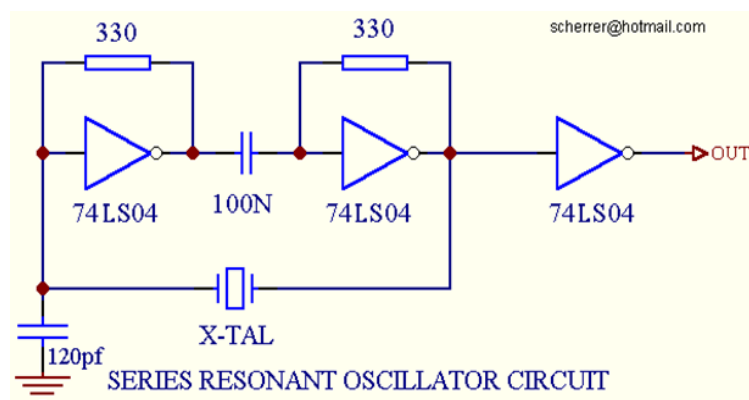
PARALLEL RESONANT CRYSTAL OSCILLATOR CIRCUIT

The Figure above shows implementation of a parallel resonant oscillator circuit.

The circuit is designed to use the fundamental frequency of the crystal.

The 74AS04 inverter performs the 180-degree phase shift that a parallel oscillator requires.

The 4K7 resistor provides the negative feedback for stability. The 10K potentiometer biases the 74AS04 in the linear region. This could be used for external oscillator designs.



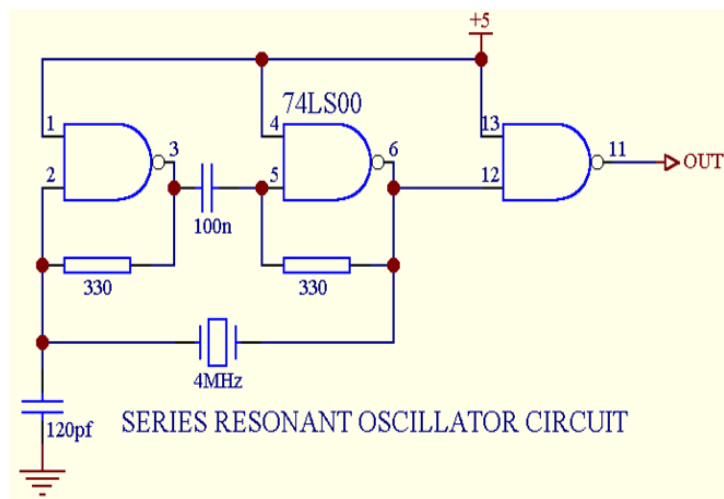
SERIES RESONANT OSCILLATOR CIRCUIT

The Figure above shows implementation of a series resonant oscillator circuit.

The circuit is also designed to use the fundamental frequency of the crystal.

The inverter performs a 180-degree phase shift in a series resonant oscillator circuit.

The 330 Ohm resistors provide the negative feedback to bias the inverter in their linear region.



The Figure above shows implementation of a series resonant oscillator circuit, using TTL NAND GATES.

This circuit is **tested** and found working with the following IC types:

7400 Total current consumption is 21 mA.

74LS00 Total current consumption is 15 mA.

74HCT00 Don't use this type, it will NOT work, because the HCT type is too fast.

The parallel resonator above doesn't work with 74HCT04. Well, in fact it doesn't. But it's not because the HCT technology is faster than LS, or, too fast. In fact the propagation delay is similar in HCT and LS. What really happens is that the HCT technology has a higher gain, that is, the inverter has a much sharper characteristic than LS devices. So, with that configuration, it gets very difficult to bias the inverter in the linear or high gain region. Nevertheless, because the HCT is a low power technology, and nowadays preferable, there's a very simple circuit to build clocks with HCT. I think that you know the configuration, yet I leave it here just in case you don't. Note that this configuration doesn't work with LS because of the gain being too low to bias the inverter.

SW/MW listening and Working the "Grayline".

Otherwise, I find I can comfortably get most 5 kw stations inside a 70 or so km radius during the day. After dark, the dx stations come in really well, and you can get some nice dx then, with some 50 kw stations working as your "band markers", since you hear them almost every night. A couple of hours either side of midnight are generally most profitable for chasing dx; some stations sign off around midnight local (for them), and open up the band for other stations on the same or close frequencies.

Working the "grayline" and other peculiarities of the listening day and listening year: Listeners generally find that they are limited to "locals" from mid-morning to late afternoon. About the best dx in those hours has been a 1 kw station about 140 miles away, and it was a serious dig that can't be done every day.

Many of the Cuban stations start to sign off around then - can be heard all over the dial in the early evening. The biggest opportunities for interesting propagation and new low power stations seems to exist a couple of hours either side of sunset and sunrise and sunset, or what is referred to as the gray-line. Two factors are at work here. The first is the change in propagation in the atmosphere because of the transition between daylight and dark. The other is due to stations changing operating status at sunrise/sunset; some change power levels and others start or stop their operating day. Remember that nobody gets a clear channel anymore, and the frequency on which you heard a low power local during the day may be occupied by a distant station at night. You can get within 40 kHz of the a 600 watt, 60 kHz of the 1000 a watt, and can slide into the next 10 kHz channel of the 115 watt. Good dx starts to go away in April or so as the days get longer, and really stinks in the summer, all the way into late fall.

Larry WR6K claims a signal generator or other outboard oscillator placed near the set can help locate stations on the xtal set by acting as a beat frequency oscillator against the carrier of a weak station. First he gets a station on his powered receiver, tunes the sig gen until he hears a beat note, and then tunes the xtal set to see if he can find the beat note - if he can, the station is out there, barely, but just not loud enough to hear the audio; if you don't touch that dial, and wait a few minutes, it may come in. That's exactly what direct conversion receivers do. He has a couple of other tricks for the sig gen: One is to use a modulated signal to tune the xtal set smack dab on a frequency; then you wait to see if the station comes in (just don't touch that dial). Trick number two is to put the unmodulated sig gen signal on a spot frequency of interest, and use it to inject a carrier into your xtal set for any station on that frequency - not sure why it works; either carrier injection alone or overcoming detector threshold levels, or both, but he claims it can boost sensitivity by up to 10 dB. Of course, you have to turn the sig gen off at some point to claim crystal set reception.

Use an audio amplifier. This will allow you to find out what signals are making it past the detector, and allows you to tune them in sharply. Then, you can go back to your headphones and wait to see if the signal will improve to the point of headphone reception. If you do this a lot, perhaps what you also need is a better set of headphones.

Have a second antenna. Usually this one will be shorter and/or have a different orientation. Experience indicates that even a less optimum antenna can sometimes get a station than the main antenna.

How to Survive the Freezing Cold

by [Charles W. Bryant](#)



A couple walks to the subway in the snow and sleet in the Brooklyn borough of New York City.

Spencer Platt/[Getty Image News](#)

There are plenty of cold-weather survival scenarios. You might be an avid camper or hiker lost in the dead of winter. You could be the victim of a plane crash in the Swiss Alps. Maybe you've had a car accident going over the river and through the woods to grandmother's house. Or perhaps you've simply lost electricity for an extended period of time in your own home. Knowing some basic tips and tricks can help make a difference in your comfort level, and even whether or not you make it through the night.

Nearly 50 percent of the Northern Hemisphere's total land-mass can be classified as a cold region at some point in the year [source: Discovery Channel]. Ocean currents, elevation and wind all have an impact on how frigid it gets. Within these regions there are two subclassifications -- wet cold weather and dry cold weather. **Wet cold** describes conditions where the average temperature over a 24-hour period is 50 degrees Fahrenheit. This typically means that there are freezing conditions at night followed by thawing temperatures the following day. **Dry cold** means that the average daily temperature is below 14 degrees. In dry cold conditions, there is no thaw.

The other thing that's factored in with cold weather is **wind chill** -- the effect of moving air on exposed skin. Antarctic explorer Paul Siple coined the term "wind chill factor" in the late 1930s to help describe the effect that wind has on heat loss. He experimented by timing how long it took to freeze water in varying degrees of wind strength [source: USA Today]. In layman's terms, wind chill is described as how cold it "feels."

Cold weather has a dramatic effect on human health. According to a University of California, Berkeley economist, deaths related to cold reduce the average life expectancy of Americans by a decade, if not more [source: UC Berkeley News]. Cold weather also indirectly causes fatalities through accidents due to snow and ice, carbon monoxide poisoning and house fires. The elderly and the infirm are most susceptible to cold weather illness and injury, although the same UC Berkeley study reports that women make up two-thirds of the deaths after a cold spell.

Frostbite and Hypothermia



New Zealand climber Mark Inglis shows his badly frost-bitten fingers as he arrives at Auckland International airport after returning from Kathmandu.

Sandra Mu/[Getty Image News](#)

The two main cold-weather illnesses are **frostbite** and **hypothermia**. Frostbite means that your skin has fallen below the freezing point, and ice crystals are forming within your skin cells, killing them. If you're able to warm your skin, it will form a blister, change from blue to black in color and harden into a shell. This shell will eventually fall off to expose new skin underneath if the damage isn't too severe. This is the very painful "superficial" frostbite. Severe frostbite penetrates all the way to the muscle and bone and is characterized by tingling of extremities and changes in your skin's color and texture. The stages of frostbite are:

- Red skin - initial stage
- White skin - middle stage
- Hard skin - getting severe
- Blisters - severe
- Blackened skin - advanced stage

Severe frostbite usually causes tissue damage, and can even lead to amputation of fingers, toes, hands and feet. It's vital when afflicted with frostbite to warm your skin gradually. Cover your ears and put your fingers under your arms. Don't ever rub the damaged skin or submerge it in hot water -- you'll cause even more damage. Water between 100 and 106 degrees Fahrenheit is ideal to use as a warming agent. If you can, get into a warmer area immediately, even if it's just a tent or shelter. Remove any tight clothing that may restrict blood flow. You can put gauze or cloth between your fingers and toes to soak up moisture and prevent them from sticking together. It also helps to slightly elevate the affected area to reduce swelling.

Hypothermia is when your body loses more heat than it produces and your core body temperature drops. Some of the symptoms of hypothermia are:

- Slurred speech
- Stiff joints
- Loss of coordination
- Slow pulse

- Uncontrollable shivering
- Loss of bladder control
- Puffy face
- Mental confusion

Many times, getting wet in addition to the cold leads to hypothermia, and the result can be as severe as coma or death. To combat hypothermia, get yourself into a warmer environment as soon as possible. Cover with any items you can find -- blankets, sleeping bag, pillows or even newspaper. Most heat is lost through your head, so cover yours immediately if it's not already. If you have on wet clothing, take it off and replace it with some dry duds. If you have no dry clothing, it's better to strip naked than to wear something wet. You should always handle hypothermia victims carefully, as it's easy for them to go into cardiac arrest. Keep them horizontal and calm -- reassure them that they're going to be fine. If you're with someone, get into a sleeping bag together or simply hug each other tight to create warmth. If you're not trapped in the wilderness, seek professional medical attention as soon as possible.

Water and Clothing

Once you've built your shelter, you should focus on water and warmth. The human body can survive for about a week or less without water, depending on conditions. Dehydration can set in within a few hours [source: EPA]. It's important to remember that water is just as important in cold weather survival as it is in hot weather. A minimum of two quarts of water is needed for survival and in cold conditions, you should drink even more [source: Wilderness Survival].

Eating snow may seem like a great idea, but it will lower your core temperature and actually bring on dehydration. Melt your ice and snow in a container if you have one. If not, wrap it in cloth and suck the water out as it melts. It's also important to purify the water by boiling it for 10 minutes whenever possible. Snow and ice in remote locations can be safe to ingest, but it's always a risk. Avoid drinking coffee or alcohol if you have them on hand. It may give you a short term warm-up, but it'll dehydrate you quickly. Try to find open water -- rivers, streams, lakes and springs. If you have no means to purify, get your water from a fast-moving body and strain it with some cloth to remove large bits of sediment. You can read more about collecting water in *How to Find Water in the Wild*.

-Warmth is the next step in your bid to survive the freezing cold. Almost everyone knows that layered clothing is important to stay warm. Use the **C.O.L.D.** acronym to help you remember these important tips:

C - **Clean:** Keep your layers clean. Dirt and sweat can mat down air spaces, reducing your clothes' warmth.

• O - **Overheating:** Sweating dampens your skin and clothes, which leads to further chill. Avoid overheating by adjusting your layers accordingly.

L - **Loose Layers:** Blood flow is essential to staying warm. Tight-fitting clothing can restrict your circulation.

D - **Dry:** Wet clothing is your enemy in the cold. Avoid absorbent cotton fabrics and keep your neck area loose to allow moisture to escape.

Just as you layer your clothing, you should also layer what you have on your feet. Try a thin pair of nylon, silk or wool socks for starters -- then layer with additional wool socks. Keep your feet dry, even if it means taking off your socks temporarily to do so. Mittens are warmer than gloves because your fingers come into direct contact with each other.

While it is a myth that most of your body heat leaves through your head, you still want your head covered for protection against the elements. Get a stocking cap that covers your ears and don't take it off unless you start to sweat. Even a baseball cap can help retain heat. Your parka should ideally be waterproof and lined with goose down or some other fibrous filling. Make sure it's large enough to fit comfortably over your layers and is well ventilated.

Your sleepwear should never be the clothes you wore that day -- chances are they're damp. The best thing to sleep in is some kind of thermal underwear or sweats. Avoid wearing these items during the day to ensure you have something warm and dry to sleep in. Wear your driest socks and keep your hat on. Even though it may feel warmer, don't sleep with your head and face inside your sleeping bag. Your hot breath becomes moist and adds dampness.

Surviving in Your Home

Not every cold-weather survival scenario involves being in the middle of nowhere. If you live in a frigid area and rely on electricity for your heat, you might find yourself freezing in your own home. Winter power outages can be scary situations for the young, elderly and infirm. Wintertime road travelers should also take extra care in planning their journeys. If you live in an area that gets severe weather in the winter-time, you should have a gas-powered heater on hand in case of a power outage. Kerosene heaters are fairly inexpensive and easy to operate. Pick one that's wide and has a low center of gravity. This makes it difficult for you or a pet to knock it over. You should also avoid using flammable solvents and sprays near the open-flame heater.

No matter how cold you get, never use your gas oven as means to warm your home -- the same goes for gas clothes dryers. Carbon monoxide poisoning is a serious threat and hard to detect -- the gas is odorless and colorless. It can lead to nausea, headaches, coma and even death. Invest in a carbon monoxide detector. Many smoke detectors also sniff out carbon monoxide. Have your furnace checked once a year to make sure there's no buildup of carbon monoxide in the system.

If you have a fireplace, use it as your main heat source. Sleep in the room with the fireplace if possible. It's not a bad idea to make sure you have a nice stockpile of wood -- some outages can last weeks. You need to make sure your chimney is clear and clean and always use a fire screen to keep hot embers where they belong. If you're suffering from a power loss and you have no gas heater or fireplace, the same clothing principles as outdoor survival should be used. Layer your clothing well, put on several pairs of socks and always wear a hat. If you have a sleeping bag, put it under the covers of your bed and sleep in it at night. If you get a deep snow, only shovel it if you're in pretty good physical shape -- you could have a heart attack and end up freezing to death in your own driveway.

If you're traveling in wintry conditions, think ahead and put some blankets or a sleeping bag in your trunk. Always keep some waterproof matches or a lighter in your glove box, and if you get stranded and go for help, don't forget to take them with you. You should also have a map of the area you're traveling through, even if you know it well. Blizzards can disorient you, and a good map can be the difference between life and death. You should also let someone know when and where you're going, and pack an emergency kit for the trip. Aside from blankets and matches, a first-aid kit, a gallon jug of water and some energy bars or chocolate can come in handy.

The Thought Experiment

The Conscience Of The Machine

by **Wendell Wallach**

Computers touch nearly every facet of modern life, from desktop systems that facilitate entertainment, communication and research, to financial systems that initiate millions of transactions on world markets daily. The robots are also coming. They are already evident (although perhaps not recognized), as household appliances, manufacturing systems, museum guides, hospital delivery systems, toys, and even as lethal weapons deployed in Iraq and Afghanistan. Soon we will have service robots caring for the elderly and home-bound. Engineers have always been concerned about the safety of the systems they build. However, designers of computerized systems cannot always predict how they will act in new circumstances with new inputs, therefore safety requires that as the technology becomes more sophisticated, computers and robots will become moral reasoners. So philosophers and engineers are starting to work together to build computer systems and robots that can make moral decisions.

The development of autonomous computers and robots making decisions that can increasingly affect humans for good or bad has given rise to a new field of inquiry, variously known as Machine Morality, Machine Ethics, Friendly AI, Artificial Morality, and Roboethics. It focuses on the prospects for building computers and robots that are moral decision-makers. Designing computers and robots that will not harm humans is both a practical and a philosophical challenge.

'Machine Morality' addresses a number of questions:

- Are machines the kinds of entities that can in principle make moral decisions? If so, why? If not, why not?
- Is moral decision-making something that can be computerized? If so, how?
- Does humanity want machines making moral decisions? When? In what circumstances?
- Whose or what morality should be implemented?

As well as the computational possibilities, the philosophical issues that arise in thinking through these questions are very rich.

The ethical behavior of machines is determined by the values designed into their systems. Initially, complex machines will operate in limited contexts, and to the extent that the designers can predict all the situations a machine will encounter it will be (designed to be) operationally moral. However, as systems cross the threshold where the designers and engineers can no longer predict how they will behave with new inputs, the machines will need a kind of functional morality. That is to say, they will need to process an array of moral considerations in the selection of a course of action.

Whether machines will eventually be artificial moral agents with human-like intelligence and self-awareness is a subject upon which theorists disagree. However, this topic already stimulates serious reflection by philosophers, legal theorists, and futurologists. Discussions about when artificial agents might be held responsible for their actions, and whether they might deserve property and civil rights, have furthered the understanding of moral agency and legal responsibility. While futurology is full of fascinating and illuminating thought experiments, given the relatively primitive state of present-day AI research, the discussions tend to indulge highly speculative possibilities. For the foreseeable future, machine morality will be mainly about ensuring that autonomous systems are safe and that their actions reflect human values.

This issue offers several articles that touch upon different dimensions of machine morality. The first, '[The Challenge of Moral Machines](#)' extends my brief introduction to this new field by outlining the basic issues.

Much of the excitement arising from machine morality is due to the way in which it forces us to consider human ethics and decision-making in new ways. For example, is it essential to have emotions or consciousness to be a moral agent? Steve Torrance inquires '[Will Robots Need Their Own Ethics?](#)' This is followed by the analysis of possibilities James Moor proposes for thinking about artificial moral agency in '[Four Kinds of Ethical Robots](#)'. Analyzing the computational requirements for implementing a rule-based theory of ethics such as utilitarianism or Asimov's laws for robots, is one approach to building moral machines. Tom Powers' discussion on '[Machines and Moral Reasoning](#)' considers how a computer might follow Kant's categorical imperative. Finally, the team of Susan Leigh Anderson (philosopher) and Michael Anderson (computer scientist) have been at the forefront of both philosophical reflection on and experimental implementations of moral decision-making by computers. In an article the Andersons co-authored, they introduce some of their experiments and consider '[How Machines Can Advance Ethics](#)'.

On behalf of all the contributors to this special issue, I invite you to join us in the philosophical enquiry stimulated by the practical need to build moral machines.



Mole City

By John Senka

Shortly before Thanksgiving 1968, Charlie Company 4/9th 25th Infantry Division, better known as "Manchus," lost 2/3 of their unit when Captain Winters and his men walked into an NVA base camp.

Our platoon had spent the prior night on an ambush patrol. As we walked into the fire support base. I joked with radio operator, Dave Briggs, of North Collins, N.Y. Little did I realize this would be the last time I would see Dave or my other buddies alive.

After this, our unit spent many days in limbo; only a handful of grunts. Most of us hoped we would be sent to the rear. No such luck-- our ranks were filled with brand new replacements. We nervously awaited for some word of our next destination. Finally we were told to send our radios, and personal belongings to the rear area. We were also issued flak jackets. We would rendezvous with Alpha and Bravo companies about 2 "clicks" from the Cambodian border.

The following days were spent on patrols and digging large, deep bunkers Henry Maul, a quiet redhead from Wyoming was always close by, however, Don Culshaw, a muscular, seasoned rifleman from Minnesota was my partner in the construction of our bunker. Don and I spent several days in the hot sun, digging and filling sandbags. We placed steel over the bunker, and laid the sandbags over the steel. We later dug out the rice paddy dikes and placed the earth over the sandbags. This not only camouflaged our position, but provided an unobstructed view on our side of the perimeter. We were proud of what we had built. We both agreed we could do this for the rest of our tour if it meant not having to confront the enemy. Ironically, neither of us would get to use the bunker.

It was December 22, 1968--Christmas Truce. A prisoner exchange was taking place nearby. We spent our morning walking through a nearby village. We held our empty M16's in one hand and our loaded magazines in the other; our arms were held high over our heads. Several of our group passed out T-Shirts as a gesture of peace and goodwill. We hadn't received mail, or other supplies in several days. We were eating green eggs for breakfast; supposedly from Gook chickens. Finally, at about 9:00 that night, we received fresh supplies, mail, Christmas cards, cookies and miniature Christmas trees from home. I remember Don placing a 2 foot artificial tree on top of our bunker. I also was pleased and surprised to get a Christmas card from Bruce Pealer. Sgt. Pealer, a combat Vet from Johnson City, Tennessee had served with me at Ft. Jackson, How happy we were!

At about 10:00, we were given our orders for the evening. Don was going to go out on a night patrol; evidently Intelligence suspected enemy activity along the Cambodian border. Phil Glenn, a lanky, popular 19 year old from St. Paul, Arkansas; and Jose Olea, a seasoned, pistol packing sergeant from Buffalo, NY would also join the patrol, which eventually totaled nine. My instructions were to occupy and defend one of the others bunkers. Our perimeter consisted of deep bunkers, connected by deep trenches. We were 500 strong. I was glad to see Hank Maul in my bunker. Justin Anderson, a tall blonde Swede from Chicago was also there.

I engaged Malcom True, one of the newest replacements, in conversation. True, who was from Tampa, Florida, had just arrived, along with Jimmy Walker from Red Oak, Oklahoma. The newest "grunt" told me he was married and his wife just had a baby. He was obviously very much in love and a tape recording from his wife was his constant companion.

At about midnight, Lt. Mosher told us to get ready--there was going to be a "Turkey Shoot"! We were told that there were 100 Gooks between the patrol and us, and that the patrol couldn't get back in.

We had no idea that 1500 hard core NVA soldiers were storming in from Cambodia. Little did we know we were outnumbered 3 to 1. I was shocked to find out many years later, that this had been a suicide mission; each enemy soldier had his grave marker strapped to his back. The sky suddenly lit up. It looked like daylight as illumination rounds floated from the sky, dangling from their parachutes. The sky was further brightened as ammo dumps exploded.

The four of us began firing our M16's through the narrow slots in our bunker. We blew all our claymore mines, still not fully understanding the hellish nightmare we were about to face. Malcom True and I climbed out of the bunker and vigorously heaved hand grenades. As we rejoined Hank and Anderson, a grenade suddenly exploded, filling our dark hole with deadly shrapnel. Almost in unison, we screamed, "I'm hit". We were lucky, none of us were hurt badly. We quickly got into position, and laid down a devastating hail of gunfire. Seconds later, a tremendous explosion filled the air. Anderson let out a blood curdling scream! He was within inches of me. Looking his way, I could see he was dead. My eyeglasses were blown off my face, as was my "steel pot". Not realizing my right leg was shattered, I started crawling behind True, out of the smoke filled hellhole, and into a muddy trench. We found another bunker filled with GI's, many already wounded. A young medic was doing his best to help those most in need. Having barely squeezed through the rear entrance, suddenly a thud hit in the mud next to me. My brain told me that a hand grenade was going to blow the Gooks were inside the wire! Impulsively, I threw myself towards the center of the blackened dudgeon.

Following the explosion there was a deadly silence. Trying desperately to regain my senses, I discovered three of my comrades still able to fight. One of them was a new replacement who had just arrived in country. I recall he was from New York City, was slightly over 5 feet tall, and fired a bloop-er (M-79 grenade launcher). Roger Cantrell, also a newcomer, was in good shape, as was Lynn Welker, a respected squad leader from Jonesboro, Arkansas. Unable to move my lower body, I urged the others to keep firing.

Unbelievably, concussion grenades were tossed in; I still remember being hit in the face and hesitating to open my eyes for fear that I was blind. I'll never forget the sudden silence as my eardrums exploded and blood streamed down my face. My lungs and nostrils smelled like and felt like the inside of a gun barrel, as yet a third grenade exploded, filling my belly with hot steel. As I laid there, I prayed that this would soon end.

As I gazed into the area outside of our bunker, the bright light was again visible. The shadow of someone walking in a zombie-like manner appeared. Remarkably, Henry Maul had somehow found me, he crawled into our hole and collapsed by my side. He was somewhat delirious, and I urged him to stay quiet. From the corner of my eye, I could see Sgt. Welker climb out of the bunker and into the trenches. The silhouette of him firing his M-16 has been etched in my mind for 21 years-I remember seeing him hit by small arms fire and rolling past me into the bottom of the bunker. My many attempts to get a response from him were futile. He appeared to be dead.

Hope filled my head and mind as the gunships approached. Their guns rattled away, the enemy became silent. When the choppers departed to resupply, the enemy once again could be seen and heard scurrying among us like dead rats. At one point, an enemy soldier jumped into my shelter this was probably the only time I thought I might die. What crazy thoughts were in my mind? Math! As a high school student, I was lousy at it, absolutely hated it. All I could think of was, "If I knew this was going to happen, I wouldn't have worried so much about math."

Slowly, reaching for my weapon, and aiming at the Gooks heart, I suddenly was painfully aware that the gun barrel was filled with mud. Gently, the weapon was placed beside me, my legs were curled up to protect my vital parts, and groping in the dark I found a fruitcake tin, which I plopped over my head in a desperate attempt to protect my head. Miraculously, no bullets hit me as the "Dink" sprayed the interior of our bunker. How much time had passed? I don't know. Unconsciousness engulfed me.

When my eyes were again opened, there was daylight outside, but complete silence. A different kind of fear came over me. Who won the battle of Mole City? Were the NVA in control? Would I be taken prisoner? How bad are my wounds? The only other person moving was Cantrell. He mechanically told me his leg was no good, and he wanted a drink of water. Feeling a canteen under my torso, I dug with my fingers until I freed it and tossed it to my buddy.

The most beautiful sight I've ever seen was when a black Mortar Sargent poked his head into our blackened grave and rejoiced, "There are some Americans alive in here." I urged him to get Hank out first as he was hurt worse than I. He said, "You get out first, because you're blocking the entrance. Besides, your friend is dead."

I was flooded with emotion when became apparent that I was saved. The reality of what had happened these past seven hours struck me like lightning. The realization that most of my buddies were dead caused me to sob uncontrollably, as tears filled my eyes and fell onto my bloodied uniform. I was filled with anger and hate for having had to go through this. As the second shot of morphine entered my body, I sucked the life out of a Winston. Everyone could hear me screaming, "I hate this place." What a horrible experience! "Send me to L.B.J. (Long Binh Jail), because I refuse to come back."

The medics, who were picking steel out of my gut and leg, assured as I wouldn't have to return because, "You're going home." And I did.

POST SCRIPT

When the medivac chopper landed at the 12th Evac hospital, I was shocked and thankful to see Lynn Welker, whom I thought was dead. We spoke briefly from our stretchers. I made contact with him again in 1990, via telephone. He is an accountant today. Hank Maul, Malcom True, and Justin Anderson all died. Phil Glenn and Donny Culshaw both died heros, as part of the patrol; Jose Olea survived that patrol and is a fireman in California. I've corresponded with the Glenn Family and have met personally with Don Culshaw's family. Jimmy Walker survived this battle unscathed, completed his tour and owns his own construction business in Oklahoma. Jimmy filled in many of the gaps of the Mole City Battle for me, as did Dan Gregory, another platoon member, now living in Montana. After 21 years, X-"Manchu" John Yelton from Newton, Utah is spearheading an effort to get all Charlie Company 4/9 25th Division members who served during 1/68 to 1/69 together for a reunion, especially those of us in the 2nd platoon.

Retirement and Ham Radio

11 January 2016 | by [Mike AD5A](#) |

Last Monday, January 4th, 2016 marked my last official day as an employee. I am now retired. I made the decision a year ago, so I've had some time to get ready for the transition. I had a very demanding job and life was a very tight schedule. Now I get to decide when I get up in the morning.

Basically my last day in the office was mid-December, so I've had a nice taste of freedom from employment already. My schedule, or lack thereof, is starting to gel although I'm sure I will go through numerous "phases", I think the pattern is set. So below are a few things that I've already experienced on how retirement will affect my ham radio pursuits.

- I've had time actually read the owner's manual for my radios.
- I've learned to set-up and use the frequency/band memory functions available on the K3
- I now understand more of the menu options for the radio
- I can now operate my HT.
- I'm reading books about antennas

☐ Contacts can actually last longer than 10 seconds

- I love CW and have found that rag-chewing is a very enjoyable aspect of ham radio. I have met some very interesting people and I've started to make a lot of new friends since I've taken time to just call CQ and not append DX to it I joined the local 2 meter weak signal group and I actually check in to their weekly net.. When I'm home I monitor 144.200 on SSB/CW. VHF/UHF can provide a lot of excitement for a DX minded ham. The DX isn't as far, but it's just as satisfying.

☐ Cleaned out my shack

- I've acquired a lot of new equipment over the years, but I haven't gotten rid of much. There are many avenues to sell gear, EBay, QRZ.com, eHam, etc.... Now that I'm retired I will have a more modest ham radio budget and getting rid of the old stuff provides a little cash for even more toys.

☐ Build the kits I've purchased

- I haven't finished this yet, but I've started

☐ Consider more expeditions

- I love SOTA and can now plan extended SOTA activation trips with no time lines. I've activated 10+ IOTA islands and can now consider planning more trips.

What I have come to learn is that Monday is just as good a day as Saturday and weekend crowds are to be avoided. There are no crowds on Tuesdays.

I'm sure I'll write more as I get settled into this new lifestyle.



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Name of Net, Frequency, Local Time	Net Manager
<u>Badger Weather Net (BWN)</u> 3984 kHz, 0500	<u>W9IXG</u>
<u>Badger Emergency Net (BEN)</u> 3985 kHz, 1200	<u>NX9K</u>
<u>Wisconsin Side Band Net (WSBN)</u> 3985 or 3982.5 kHz, 1700	<u>KB9KEG</u>
<u>Wisconsin Novice Net (WNN)</u> 3555 kHz, 1800	<u>KB9ROB</u>
<u>Wisconsin Slow Speed Net (WSSN)</u> 3555 kHz, Sn, T, Th, F, 1830	<u>NIKSN</u>
<u>Wisconsin Intrastate Net - Early (WIN-E)</u> 3555 kHz, 1900	<u>WB9ICH</u>
<u>Wisconsin Intrastate Net - Late (WIN-L)</u> 3555 kHz, 2200	<u>W9RTP</u>
<u>ARES/RACES Net</u> 3967.0 kHz, 0800 Sunday	<u>WB9WKO</u>
* Net Control Operator needed. Contact Net Manager for information.	

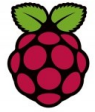
Next Regular Meeting

The next meeting will be on **Thursday, January 28th, 2016**, at 7:00PM. We meet in the Fellowship Hall of Redemption Lutheran Church, 4057 N Mayfair Road. Use the south entrance. Access the MRAC Yahoo group for important details about the February Meeting.

Meeting Schedule:

February 25th 2016- 7 pm

Please do not call the church for information!



Club Nets

Please check in to our nets on Friday evenings.

Our ten meter SSB net is at **8:00 p.m. at 28.490 MHz USB**. Our two meter FM net follows at **9:00 p.m.** on our repeater at **145.390 MHz** with a minus offset and a **PL of 127.3 Hz**.

Visit our website at: www.w9rh.org

Or phone (414)-459-9741



Chatter Deadline

The **DEADLINE** for items to be published in the **Chatter** is the **15th of each month**. If you have anything (announcements, stories, articles, photos, projects) for the 'Chatter, please get it to me before then.

You may contact me or Submit articles and materials by e-mail at: W9rhmrac@Gmail.com

or by Post to:

Michael B. Harris

807 Nicholson RD

South Milwaukee, WI 53172-1447

MRAC & MAARS PRESENT:

Mid-Winter Interclub SwapFest February 13th, 2016

Large Indoor SwapFest with Parking Onsite & Surrounding businesses

The Fifth annual MRAC & MAARS cooperative February Swapfest.

Please, no weapons of any kind.

Radios | Computers

Electronics | Ham Gear

Free parking with \$5 Admission.

6ft. Tables: \$10 in advance,

\$12 day of event. Electricity \$5

Address:

12560 West Townsend Street

Brookfield, WI 53005

Event talk-in on the MRAC

Repeater, 145.390, (PL 127.3).

And 145.130 (PL 127.3)

Grounds open on Saturday From: 6am to 1pm.

Swapfest Runs From: 8am to 12 noon.

Name _____ Call _____

Address _____

City _____ State _____ Zip _____ Phone _____

Email: _____

Table Reservations: \$10.00 _____ x \$10.00 = _____

Advanced Sale Tickets \$4.00 _____ x \$ 4.00 = _____

Electric-Inside- \$5.00 = _____

Total.....= _____

Directions:

Directions From South

Take Ramp (RIGHT) onto I-94 [US-41] towards

I-94 / US-41

At exit 316, take Ramp (LEFT) onto I-43 [I-894]

Keep RIGHT onto I-894 [Zoo Fwy] towards I-894 /

US-45

Continue North, road name changes to US-45 [Zoo Fwy].

At exit 44, keep RIGHT onto Ramp to Capitol Drive

Turn **LEFT** (West) onto W. Capitol Drive

Turn **LEFT** (South) onto N 124th St for 0.4 mi

Turn **RIGHT** (West) onto W Townsend St

Arrive 12560 W Townsend St, Brookfield, WI 53005

Directions From West & I94

Proceed East on I-94

At exit 305B, take Ramp (LEFT) onto US-45 [Zoo Fwy]

At exit 44, keep RIGHT onto Ramp to Capitol Dr.

Turn **LEFT** (West) onto W Capitol Drive for 0.5 mi

Turn **LEFT** (South) onto N 124th St for 0.4 mi

Turn **RIGHT** (West) onto W Townsend St

Arrive 12560 W Townsend St, Brookfield, WI 53005

GPS: N43 04' 48.9", W088 04' 04.3"



Make Check Payable to MRAC & Send a **SASE** to:
MRAC, PO Box 26233, Wauwatosa, WI 53226-0233.

Telephone (414) 459-9741 Our website address
<http://www.w9rh.org>. Email may be sent to:
swapfest@w9rh.org, or

Kc9cmt@arri.net Reservations postmarked
after Feb 5th will be will-call only.

Milwaukee Radio Amateurs' Club

FM Simplex Contest



Purpose: To promote FM simplex operation and VHF/UHF contesting while giving new hams an opportunity to develop their contesting skills.

Date: **Sunday, February 7th, 2015**

Time: 2m (1PM – 2 PM), 70cm (2PM – 2:30PM) ,
6m (2:30PM – 3 PM), 1.25m (3PM - 3:30PM)

Region: Southeastern Wisconsin (Grids-EN52, EN53, EN62, EN63) Contacts with other grid squares are also welcomed.

Bands: 2 meters, 70 centimeters, 6 meters, 1.25 meters

Categories: Base, Mobile, HT, and Club

Awards: Certificates given for 1st in each category and individual band with 2nd and 3rd awards based on committee discretion. Limit one award per person. Winning club is recognized on a plaque at AES Milwaukee.

Points: 2 meters-(1 point), 70 centimeters-(2 points), 6 meters (2-points), 1.25 meters-(3 points)

Special Multiplier: **1.5 score multiplier for Technician Class participants.**

Bonus Points: Make a contact with the MRAC station W9RH (any band), and receive a 10 point bonus on your score.

Log Information Required: Call sign of station worked, frequency, time, and grid square.

Detailed Contest Information: Detailed contest information and entry forms can be downloaded from the MRAC web site at www.w9rh.org.

VE Testing:

February 27th, 9:30am— 11:30am

No testing: June, July or December

Location: Amateur Electronic Supply Time: 9:30 AM (Walk-ins allowed)

ALL testing takes place at: Amateur Electronic Supply 5720 W. Good Hope Rd. Milwaukee, WI 53223

Area Swapfests

Feb. 13th, 2016 [MRAC & MAARS Mid-Winter Interclub SwapFest](#) Location: Brookfield, WI Type: ARRL Hamfest
Sponsor: Milwaukee Radio Amateurs' Club & Milwaukee Area Amateur Radio Society

MRAC Working Committees 100th Anniversary:

- Dave—KA9WXN

Net Committee:

- Open

Field Day

Dave—KA9WXN, Al—KC9IJJ

FM Simplex Contest

- Joe – N9UX
- Jeff – K9VS

Ticket drum and drawing

- Tom – N9UFJ

Newsletter Editor

- Michael-KC9CMT
- Pancho– KA9OFA

Webmaster

- Dave, KA9WXN

Refreshments

- Hal—KB9OZN



Welcome

Membership Information

The Hamateur Chatter is the newsletter of MRAC (Milwaukee Radio Amateurs' Club), a not for profit organization for the advancement of amateur radio and the maintenance of fraternalism and a high standard of conduct. MRAC Membership dues are \$17.00 per year and run on a calendar year starting January 1st. MRAC general membership meetings are normally held at 7:00PM the last Thursday of the month except for November when Thanksgiving falls on the last Thursday when the meeting moves forward 1 week to the 3rd Thursday and December, when the Christmas dinner takes the place of a regular meeting. Club Contact Information

Our website address <http://www.w9rh.org>

Telephone **(414)-459-9741**

Address correspondence to:

MRAC, PO Box 26233, Milwaukee, WI 53226-0233

Email may be sent to: w9rh@arrl.net . Our YAHOO newsgroup:

<http://groups.yahoo.com/group/MRAC-W9RH/>



CLUB NETS:

- The Six Meter SSB net is Thursday at 8:00PM on 50.160 MHz USB
- Our Ten Meter SSB net is Friday at 8:00PM on 28.490 MHz ± 5 KHz USB.
- Our Two Meter FM net follows the Ten meter net at 9:00PM on our repeater at 145.390MHz - offset (PL 127.3)



The MRAC HamChatter is a monthly publication of the Milwaukee Radio Amateurs' Club. Serving Amateur Radio in Southeastern Wisconsin & all of Milwaukee County

Club Call sign – W9RH

MRAC Website: <http://www.W9RH.org>

Editor: Michael B. Harris, Kc9cmt, kc9cmt@Earthlink.net

Milwaukee Area Nets

Mon.8:00 PM 3.994 Tech Net

Mon.8:00 PM 146.865- ARRL Newsline

Mon.8:00 PM 146.445+ Emergency Net

Mon.8:00 PM 146.865- Walworth County ARES net

Mon. 8:00 PM 442.100+ Railroad net, also on EchoLink

Mon. 8:45 PM 147.165- ARRL Audio News

Mon. 8:00 PM 442.875+ WIARC net also on EchoLink 576754

**Mon. 8:30 PM 146.820 Waukesha ARES Net —
on the 1st, 3rd, and 5th Monday of each month.**

Mon. 9:00 PM 147.165- Milwaukee County ARES Net

Tue.9:00 AM 50.160 6. Mtr 2nd Shifter's Net

Tue. 9:00 PM 145.130+ MAARS Hand Shakers Net

Tue. 8:00 PM 7.035 A.F.A.R. (CW)

Wed. 8:00 PM 145.130+MAARS Amateur Radio Newsline

Wed. 8:00 PM 147.045+ West Allis ARC net

Wed. 8:00 PM 28.365Mhz 10/10 International Net

Wed. 8:00 PM 147.270+ Racine County ARES net

Wed. 9:00 PM 145.130+MAARS SwapNet, Allstar FM-38

Thur. 8:00 PM 50.160, 6 Mtr SSB Net

Thur. 8:00 PM 443.800+ Tech Net

Thur. 9:00 PM 146.910+ Computer Net

Fri. 8:00 PM 28.490 MRAC W9RH 10 Mtr SSB Net

Fri. 9:00 PM 145.390+ W9RH 2 MTR. FM Net

Sat. 7:30 AM MW Classic Radio Net , Freq.—3885 AM

Sat. 8:00 PM 146.910+ YL's Pink HAMsters Net

Sat. 9:00 PM 146.910+ Saturday Night Fun Net

Sun 8:00 AM, State ARES Net 3967/3977.5/145.470

Sun 8:30 AM 3.985 QCWA (Chapter 55) SSB net

Sun 9:00 AM 145.565+ X-Country Simplex Group

Sun 8:00 PM 146.910+ Information Net

Sun 8:00 PM 28.365 10/10 International Net (SSB)

Sun 9:00 PM 146.910+ Swap Net

Daily: Milwaukee — Rag Chew Net: 7:00 AM, 3850 SSB + Florida Net 7 am, 14.290 mhz.

2meter repeaters are offset by 600KHz - - 70 centimeter repeaters are offset by 5 MHz

SSB frequencies below 20 meters are LSB and for 20 Mtr and above are USB.

