HAMATEUR CHATTER

The Milwaukee Radio Amateurs Club

March 2012, Volume 20, Issue 3

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

Presidents Letter

We start off this column with the clubs' first silent key for 2012, Roman Hudzinski W9JPS. I can't offer much about Roman as I hadn't seen him in many years. He was a life member having joined the club in 1938. He was 96 when he passed in late February. I also want to make mention of someone who was not a MRAC member, Larry Stefaniak N9KVI. Larry was one of a group of Muskego hams who regularly get together to hang out for a couple of hours at Muskego city hall every non-winter month.

Larry made every gathering up to the last year or so. What was impressive about that was he was 94 when he passed a couple of weeks ago. By the way for all you other senior members who use age as an excuse for not being able to use a computer, Larry did have high speed internet in his home (besides an HF beam on his roof).

February was a big deal for MRAC. First there was the FM Simplex Contest, then the Hamfest, and then finally the club meeting which was a party covering the just past holiday season, the club's 95th anniversary and another successful hamfest. March is no less filling, but it's all jammed into 3 consecutive days. Things like the March meeting with Gordon West and friends and Superfest featuring a 95th Anniversary special event operation are fairly big deals. I challenge every club member to pass the word about those activities to ALL local hams they know and come in contact with.

In 2005 we had 71 people at the first meeting where Gordon West appeared. Can we equal that again?

I constantly hear club members on the air not mentioning club activities while at the same time talking about other club's activities. Maybe we are just not interesting enough for them.

For the special event at Superfest, we need people to staff the normal club PR table (including setup and tear down), supervise the radio operations, actually operate the radio, get certificates to people operating the radio, handle certificate printing and distribution of award certificates, receive, correlate and scan any incoming QSL cards and a few more items. That sounds like more than 1 or 2 people. It even covers people who can not make it to Superfest (things like the certificate and QSL operations). Do you have a little time to help?

April is elections for 4 directors. The current officers (Prez - me, VP - no one, Secretary - Michael KC9CMT, and Treasurer - Joe N9UX) all have terms expiring. Based on the latest by-laws, 4 directors will be elected and then at the May board meeting those 4 new directors and the 3 carry over directors (Hal, Al, Dan) will decide who among them will be the 4 officers.

Not from the general membership, from the 7 directors. This is how the club operated from 1917 until 1951. Why they changed, I don't know. That is how some other organizations (not necessarily ham radio related) operate. Is this a better system than the "normal" elected officers? I don't know that either. It is an attempt to shake things up in the club.

Did you notice a name for Treasurer? Joe N9UX has jumped in as Treasurer. I mentioned that In the January column. All the bank stuff has been taken care of and now Joe is in full swing as Treasurer. Another new name is Dan N9ASA who spoke up at the February meeting.

MRAC Officers:

Terms Expiring in 2012

- President – Dave,WB9BWP
- V-President– Vacant
- Secretary – Mike, KC9CMT
- Treasurer – Joe, N9UX
- Director – Mark, AB9CD
- Director – Dave,KA9WXN

Terms Expiring in 2013

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

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

(414) 332- 6 7 2 2

Visit our website at:

www.w9rh.org

Mail correspondence to:

M. R. A. C.

P.O. Box 240545

Milwaukee, WI 53223

Letter From The President, Concluded.

Dan has completed some of his recent educational activities and has said he would like to be on the board, so he gets the open director spot which expires in 2013. That means just in time for the next election we almost have a full board (anyone want to be VP for a couple of months, maybe kick the tires, so to speak?).

April is elections. I would like to see some other people run for office.

People who really want to do things for the club. Why? As an example, I am currently President. I am also the historian with the tasks of updating and maintaining the history book and the photo album. During the last 2 years while I have been President, I have done pretty much the bare minimum for the history book and almost nothing for the photo album. I am also one of the repeater technical guys. It would have been great to have some anniversary announcements on the repeater. Also announcements for the hamfest, FM simplex, and more. None of that has happened. Mark AB9CD and Dave KA9WXN are also part of the technical committee (and board members).

We promised the RAIN report a few years back. Well guess what? With all 3 of us on the board that and other things have not happened. Everyone on the board has been doing multiple jobs. With Joe N9UX coming back to the board, Tom N9UFJ running the raffle and Jeff K9VS working on the FM Simplex Contest and Pancho KA9OFA as Friday night net controls are the only people not on the board working on any club activities. Sort of makes it hard to get some things going. Besides, the people I just mentioned are not full time club employees, they need time to do their own "stuff", sort of like you must do.
If you really don't want a hand in running the club, but want to be a member, why not encourage others to run for the board? Why not help get some new members?
Oh yes, besides the March meeting being something special, the April meeting will feature West Mountain Radio discussing their products as well as digital mode operating. Some of that will be taking place at Superfest.
Come to the April meeting and get some extra info and a bit more personal time with the presenters.

The hamfest in February bettered last year (and that wasn't bad for a later-day first effort). One negative was the loss of the CQ 2012 calendar from the MAARS club table (along with a pen). If it was mistakenly taken by someone reading this, just return it to any board member and we will excuse the mistake. If it was not a mistake and was stolen, and you are reading this, you are a jerk, enjoy yourself. This year marked the appearance of door prizes at the hamfest. MRAC wishes to thank ARRL and Don Michalski W9IXG, RF Adapter Guy, and N3FJP Software for their generous donation of prizes. If you do business with any of them say thanks for MRAC and MAARS.

Come to the March meeting, come and participate at Superfest, do some stuff, do some radio (I say that a lot, don't I).

Board of Director's Meeting Minutes

Board of directors meeting called to order at 7:03 pm by Dave DeFebo WB9BWP, club president.

Director's present: Mark, AB9CD, Al KC9IJJ, Dave WB9BWP, Michael KC9CMT, Dave KA9WXN.

Absent: Joe N9UX, Hal KA9OZN.

Preliminary discussions:

Table the meeting minutes until next month's board meeting. This month's meeting is a month early and the Chatter has not yet been published. A February treasurers report was given by the outgoing treasurer. Cash will have to be withdrawn from club accounts to provide change for the swapfest on Saturday. Amount to be calculated by Mark AB9CD. Projections are for 200 people as paid admissions for the swapfest.

MATC/MPTV now owns the facility that the swapfest is held in. Food will not be sold this year, but coffee may be available.

New club insurance policy went into effect on February 1st.

Some names have been dropped from the Yahoo group.

A roster should be made up for circulation at the club.

Al KC9IJJ has reported that four people have responded to the RSVP for the February Membership meeting food gathering. Some people have suggested that the meeting start early so that people can consider this as their evening after work Dinner. Dinner setup will start at 5:30 pm. Food will be ready at 6:30 pm. No cooking will be done on site, just food warm up. Tables will have to be set up, we hope people from the membership will also arrive early for setup. Final details will be planned after the conclusion of the Swapfest.

March meeting will be on the 29th, the day before the AES SuperFest. Gordon West will give a presentation along with perhaps some more guest appearances.

April, a representative from West Mountain Radio will be giving a presentation to the club. April is also supposed to be the election month for the club. No candidates or committee has been formed to advance this election cycle. Elections are now deemed tentative for the April meeting due to the low number of candidates again this year.

May will be the club auction night. June will be a show & Tell night regarding antennas. The June meeting is before ARRL field day this year. No meetings in July or August.

The FM simplex contest was this last weekend. There did not appear to be as many people as last year taking part in the contest. Numbers of contacts were down from last year. Club should look into getting other groups involved in the Contest, Such as the Madison, Jefferson & Racine, Kenosha groups.

Board of Director's Meeting Minutes

Joe N9UX is already working on certificates for the contest this year. A plaque will be given out during SuperFest again this year.

There will be three classes of tickets this year at the clubs swapfest. Al KC9IJJ will have four hundred tickets printed up. Next year we will have special vendor tags for our use.

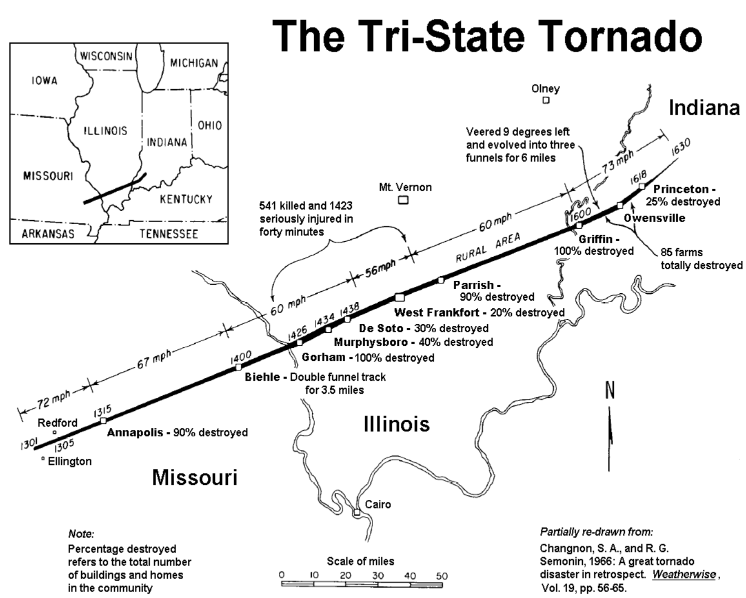
Ham classes are still being proposed for March this spring. Advertising is going along slowly this time around. Advertising has been proposed for local newspapers & Discovery world.

A date needs to be firmly picked and then local advertising can begin.

Dave WB9BWP came up with letters advertising upcoming club activities such as the May action and the special event station. Copies of these letters should be uploaded to the Yahoo Director's and Membership group.

Net Committee: The Club still needs to find control operators for the Friday Night 10 meter & 2 meter repeater nets. Work will be done on this in February and March. Our club needs a committee to oversee this important part of our club activities. Pancho has been running the nets by himself for sometime.

Motion made to adjourn meeting at 8:53 pm by Mark, AB9CD, seconded by Michael KC9CMT. Meeting adjourned at 8:54 pm. Room returned to good condition as prescribed by the Library.



Next Regular Meeting

The next meeting will be March 29th 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 information regarding Februaries meeting.

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 **8:30 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) 332-MRAC or 332 - 6722

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: **Kc9cmt@earthlink.net**

or by Post to:

Michael B. Harris

807 Nicholson RD

South Milwaukee, WI 53172-1447

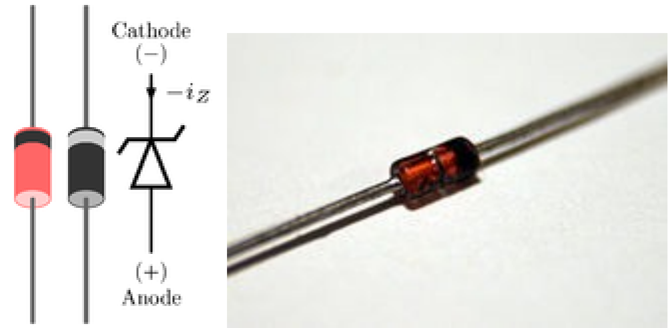
Experimenter's Bench

Zener diode

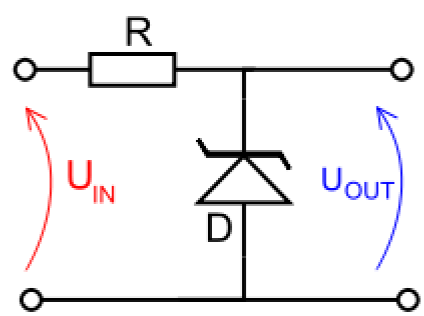
A **Zener diode** is a type of diode that permits current not only in the forward direction like a normal diode, but also in the reverse direction if the voltage is larger than the break-down voltage known as "Zener knee voltage" or "Zener voltage". The device was named after Clarence Zener, who discovered this electrical property.
A conventional solid-state diode will not allow significant current if it is reverse-biased below its reverse breakdown voltage. When the reverse bias breakdown voltage is exceeded, a conventional diode is subject to high current due to avalanche breakdown. Unless this current is limited by circuitry, the diode will be permanently damaged due to overheating. In case of large forward bias (current in the direction of the arrow), the diode exhibits a voltage drop due to its junction built-in voltage and internal resistance. The amount of the voltage drop depends on the semiconductor material and the doping concentrations.
A Zener diode exhibits almost the same properties, except the device is specially designed so as to have a greatly reduced breakdown voltage, the so-called Zener voltage. By contrast with the conventional device, a reverse-biased Zener diode will exhibit a controlled breakdown and allow the current to keep the voltage across the Zener diode close to the Zener voltage. For example, a diode with a Zener breakdown voltage of 3.2 V will exhibit a voltage drop of very nearly 3.2 V across a wide range of reverse currents. The Zener diode is therefore ideal for applications such as the generation of a reference voltage (e.g. for an amplifier stage), or as a voltage stabilizer for low-current applications.
The Zener diode's operation depends on the heavy doping of its p-n junction allowing electrons to tunnel from the valence band of the p-type material to the conduction band of the n-type material. In the atomic scale, this tunneling corresponds to the transport of valence band electrons into the empty conduction band states; as a result of the reduced barrier between these bands and high electric fields that are induced due to the relatively high levels of dopings on both sides.[1]
The breakdown voltage can be controlled quite accurately in the doping process. While tolerances within 0.05% are available, the most widely used tolerances are 5% and 10%. Breakdown voltage for commonly available zener diodes can vary widely from 1.2 volts to 200 volts.
Another mechanism that produces a similar effect is the avalanche effect as in the avalanche diode. The two types of diode are in fact constructed the same way and both effects are present in diodes of this type. In silicon diodes up to about 5.6 volts, the Zener effect is the predominant effect and shows a marked negative temperature coefficient. Above 5.6 volts, the avalanche effect becomes predominant and exhibits a positive temperature coefficient[1]. In a 5.6 V diode, the two effects occur together and their temperature coefficients neatly cancel each other out, thus the 5.6 V diode is the component of choice in temperature-critical applications. Modern manufacturing techniques have produced devices with voltages lower than 5.6 V with negligible temperature coefficients, but as higher voltage devices are encountered, the temperature coefficient rises dramatically. A 75 V diode has 10 times the coefficient of a 12 V diode.

All such diodes, regardless of breakdown voltage, are usually marketed under the umbrella term of "Zener diode".

Uses



Zener diode shown with typical packages. *Reverse* current $-i_Z$ is shown.
Zener diodes are widely used as voltage references and as shunt regulators to regulate the voltage across small circuits. When connected in parallel with a variable voltage source so that it is reverse biased, a Zener diode conducts when the voltage reaches the diode's reverse breakdown voltage. From that point on, the relatively low impedance of the diode keeps the voltage across the diode at that value.



In this circuit, a typical voltage reference or regulator, an input voltage, U_{IN}, is regulated down to a stable output voltage U_{OUT}. The intrinsic voltage drop of diode D is stable over a wide current range and holds U_{OUT} relatively constant even though the input voltage may fluctuate over a fairly wide range. Because of the low impedance of the diode when operated like this, Resistor R is used to limit current through the circuit.
In the case of this simple reference, the current flowing in the diode is determined using Ohms law and the known voltage drop across the resistor R. $I_{Diode} = (U_{IN} - U_{OUT}) / R_{\Omega}$
The value of *R* must satisfy two conditions:

R must be small enough that the current through D keeps D in reverse breakdown. The value of this current is given in the data sheet for D. For example, the common BZX79C5V6[2] device, a 5.6 V 0.5 W Zener diode, has a recommended reverse current of 5 mA. If insufficient current exists through D, then U_{OUT} will be unregulated, and less than the nominal breakdown voltage (this differs to voltage regulator tubes where the output voltage will be higher than nominal and could rise as high as U_{IN}). When calculating *R*, allowance must be made for any current through the external load, not shown in this diagram, connected across U_{OUT}.

R must be large enough that the current through D does not destroy the device. If the current through D is I_D, its breakdown voltage V_B and its maximum power dissipation P_{MAX}, then $I_D V_B < P_{MAX}$.

A load may be placed across the diode in this reference circuit, and as long as the zener stays in reverse breakdown, the diode will provide a stable voltage source to the load.

Shunt regulators are simple, but the requirements that the ballast resistor be small enough to avoid excessive voltage drop during worst-case operation (low input voltage concurrent with high load current) tends to leave a lot of current flowing in the diode much of the time, making for a fairly wasteful regulator with high quiescent power dissipation, only suitable for smaller loads.

Zener diodes in this configuration are often used as stable references for more advanced voltage regulator circuits. These devices are also encountered, typically in series with a base-emitter junction, in transistor stages where selective choice of a device centered around the avalanche/Zener point can be used to introduce compensating temperature coefficient balancing of the transistor PN junction. An example of this kind of use would be a DC error amplifier used in a regulated power supply circuit feedback loop system. Zener diodes are also used in surge protectors to limit transient voltage spikes.

Another notable application of the zener diode is the use of noise caused by its avalanche breakdown in a random number generator that never repeats.

Make A Simple Battery Status Monitor

Monitor battery status with this easy electric circuit project - no skill required!

It is essential that the battery bank in a **renewable energy** system is well looked after. This means that the **voltage** of the battery bank must be known. It can be easily measured with a multimeter or a **voltmeter**, however a fun and inexpensive project is to make a very simple **battery status monitor**.

In a typical 12V system the voltage of the **battery bank** can fluctuate from 10.6 Volts (below this the battery is very dead) when heavily depleted and under load, to as much as 15 Volts when being heavily charged. A healthy full 12V battery bank would usually have a voltage of around 12.6 Volts when not under a load and between 13-14 Volts when being charged correctly - i.e. not too quickly. Therefore it would be interesting to have an indication of the status of the battery bank using an **LED** to show if it is being charged.

For this example we will use the arbitrary figure of 12.6 Volts to indicate **battery bank** under charge however this could value could be set lower or higher according to your own needs and system configuration.

The Battery Status Monitor Introduction

The status monitor uses a **Zener Diode**, a Light Emitting Diode (LED), and a Resistor - components which can be bought for pennies each.

Each **Zener Diode** has a specified *Zener voltage*. If the voltage in the circuit is greater than the Zener voltage, then the *voltage drop* (ie. the voltage reading across the diode) is equal to this Zener voltage. However, if the voltage in the circuit is less than the Zener voltage then no current flows. Therefore, if you put a Zener diode in series with an LED in a circuit, the LED will light if the circuit voltage is greater than the Zener voltage plus the voltage drop across the LED.

Making the Battery Status Monitor

We want our LED to light when the voltage of the **12V battery bank** is 12.6 Volts or higher to indicate the batteries are being charged by our **renewable energy** set-up. Let's use the following components:

1 x 8.2 Volt **Zener diode**.
1 x standard **green LED** (Specifications: maximum current 30mA, voltage drop 2.5 V).

In order to make the LED last as long as possible we will not use the maximum current - instead we will aim for around 15mA.
The total voltage drop across the Zener diode and LED will be 8.2+2.5=10.7 Volts. A **resistor** is therefore required to prevent too much current getting to the LED and destroying it. The difference between the battery bank target voltage of 12.6 Volts, and the voltage dropped by the Zener and LED of 10.7 Volts is 1.9 Volts. These 1.9 Volts must be dropped across a suitable resistor with a current of no more than 15mA - therefore using **Ohm's Law** we find that resistance = 1.9 Volts / 0.015 Amps = 127 Ohms coincidently the exact value of a manufactured resistor. Normally you would select the resistor with the nearest value above the resistance value calculated with Ohm's Law.

Therefore add to the parts list for this project:
1 x 127 Ohm **Resistor**.

Choosing Correctly Power Rated Components

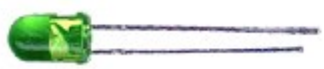
We now need to check the **power dissipated** in the Zener diode and resistor at different voltages so we can select suitably rated components, and check that the current flowing through the LED when the battery bank is at its maximum voltage is below the manufacturer recommended maximum.

If the **battery bank** were to hit 15.5 Volts the voltage drop across the Zener diode would remain fixed at 8.2 Volts and the drop across the LED at 2.5 Volts, therefore the voltage drop across the resistor would increase to 15.5-8.2-2.5=4.8 Volts. Again using *Ohm's Law* we find that the current through the resistor (and therefore through the LED) will rise to 4.8 Volts / 127 Ohms = 38mA. This is a little over the manufacturer recommended maximum current however, if your 12 Volt battery bank is regularly at 15.5 Volts the expense of replacing your little LED a couple of years early will pale into insignificance compared to the cost of the damage to your battery bank!

The Experimenters Bench Continued

Putting the Battery Status Monitor Together

There is no need to worry about soldering this together - the legs of the LED, resistor, and Zener diode can simply be twisted together. The last item you will need is:
1 x Length of One Amp **bell wire** (split along its length into two pieces of wire).
..which is very cheap - or you can cannibalize any other single-core insulated wire you have lying around. With a maximum current of 40mA flowing through it the wire does not need to be thick, but it is best to always use insulated wire to prevent accidently short-circuiting the battery bank.



The short leg on the LED (pictured above) is the cathode and is connected with the wire to the negative terminal of the battery.

The cathode of the Zener diode (pictured above) is marked with a stripe (silver in this example), however Zener diodes are placed into circuits in reverse, so next connect the positive anode (long leg) of the LED to the positive (no stripe) end of the Zener diode.
Finally the cathode of the Zener diode is connected to one leg of the resistor, and the other leg of the resistor connected to the positive terminal of the battery bank with wire.

The green LED of the completed simple battery bank status monitor will now remain lit as long as the battery bank voltage stays above 12.6 Volts.

Developing the Battery Status Monitor Further

This **battery status monitor** could not be more basic - it just indicates when the batteries have 12.6 Volts or more. However it would be very simple to extend the monitor to include an over-charge warning indicator when the voltage reaches say 14 Volts, and a battery healthy indicator which is lit as long as the voltage is over say 11.8 volts.

Simply recalculate the values of resistor and Zener diode required for each additional monitor and join each string of components in parallel to the battery to be monitored. The whole thing can be soldered together and built into a suitable box with the LEDs labeled so that everything looks tidy and you have a project to be proud of!

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Early Radio: Combat Communications

1st Signal Brigade

While the U.S. Army employed thousands of combat troops in Southeast Asia during the Vietnam War, thousands more combat support and combat service support troops were also deployed to Vietnam to support the combat elements. Among these were soldiers from the Signal Corps, who were tasked with providing reliable communications for U.S. and allied troops. The largest Signal Corps unit organized for the war was the 1st Signal Brigade, which had a peak strength of 21,000 soldiers in 1968 and was by far the largest brigade in the U.S. Army at the time.

The U.S Army Signal Corps had established a presence in Southeast Asia in the early 1950s when the French were attempting to re-establish control over Indochina. As the U.S. involvement in Vietnam escalated in the 1950s and 1960s, additional signal units arrived and their missions grew increasingly complex. It became apparent that better coordination was needed to maximize the capabilities of the Army's communications network. At the request of Military Assistance Command, Vietnam, (MACV) commander GEN William Westmoreland, a series of studies were conducted to gauge the feasibility of consolidating all signal organizations above field force level under one command. The result was the creation of the 1st Signal Brigade.

Constituted on 26 March 1966 and activated six days later on 1 April in Vietnam, the 1st Signal Brigade was given the complicated mission of originating, installing, operating, and maintaining an incredibly complex communications system that fused tactical and strategic communications in Southeast Asia into a single, unified command. At the time of its creation, the brigade brought together the three signal groups already in Southeast Asia along with several signal battalions and other units, excluding those organic to field forces and divisions. The 1st Signal Brigade, as an arm of U.S. Army Strategic Communication Command (STRATCOM) and headquartered at Longh Binh, came under the operational control of U.S. Army, Vietnam (USARV). The first commander of the brigade, BG Robert Terry, and the commanders who followed him, also served concurrently as Assistant Chief of Staff, Communications-Electronics, USARV.

The 1st Signal Brigade was tasked with providing communications to U.S. Forces scattered over more than 60,000 miles of territory that included jungle, mountain ranges, and coastal lowlands. One new emphasis of the brigade was on training, and one of the brigade's first acts was to establish the Southeast Asia Signal Training Facility in 1966 to supplement the Army's stateside training programs. Eventually, the facility would train signalmen from the other U.S. services and allied nations involved in the war. In addition, the first centralized photographic coverage of the war began with the creation of the Southeast Asia Pictorial Center. Photographers from the center's operating unit, the 221st Signal Company, would go on to document much of the combat action in Vietnam.

The signalmen of the 1st Signal Brigade made major improvements to communications in Vietnam. Old shortwave systems were largely eliminated and more advanced troposcatter and satellite systems were introduced. By 1968, the Integrated Communications System -- Southeast Asia, was completed, providing some 470,000 circuit miles in Vietnam and Thailand. The completion of the Corps Area Communication System added another 153,000 circuit miles and provided secure communications to even the most remote base camps. In addition, phone services were greatly improved and the Automatic Digital Network (AUTODIN) was introduced, greatly improving the speed, security, and reliability of communications.

Along with efforts to "keep the shooters talking," the soldiers of the 1st Brigade often came under fire and fought as combat troops when necessary, especially during the Tet Offensive in January - February 1968. The 69th Signal Battalion played a key role in the defense of Tan Son Nhut Air Base near Saigon. Troops from the 362d Signal Company rescued a group of surrounded MPs in Dalat. Company C, 43d Signal Battalion, located in a strategic area of Kontum, City in the Central Highlands, drove off several VC attacks. The 513th Signal Detachment earned a Valorous Unit Citation and the 544th Signal Detachment earned a Navy Presidential Unit Citation for their efforts to support the Marines besieged at Khe Sanh despite facing heavy attacks.

As the war wound down in Vietnam, the brigade continued to provide communications for the troops remaining. Eventually, the 1st, which had shrunk to some 1, 300 men, was transferred to the Republic of Korea in November 1972. Today the 1st Signal Brigade, the "Voice of the ROK," remains in South Korea, with its headquarters at Camp Humphrey, providing communications support for the United Nations Command, U.S. Forces Korea, and the 8th U.S. Army.

Am Broadcasting

Am broadcasting is the first voice broadcasting system in use and it is still with us. In many things AM is worse than FM on technical perspective. From a technical perspective, there should be no contest between AM and FM. The 9 kHz RF channels in the LF and MF bands set the maximum audio bandwidth for AM at 4.5 kHz. In practice, the frequency response of most AM radios is typically -3 dB at 3.5 kHz, whereas FM offers 15 kHz bandwidth as well as stereo. AM reception is relatively stable even on moving car, this is why some people prefer it on car and on voice programs. At the end of the 1990s, AM listening is showing signs of decline. AM remains viable for news and sports services, but is less likely to be successful for music formats.

Local broadcast stations in USA use an amplitude-modulated (AM) transmitter connected to a vertical antenna with a minimum of 120 buried radials for a ground plane. The radiated field has a strong ground wave extending as far as several miles from the antenna. This ground wave can cause noise problems to other systems. Communications towers at a height nearly equal to the quarter wavelength of the AM station frequency not only influence the radiation pattern of the broadcast station, but also provide considerable energy in the ground return of the tower. If your tower is within the influence of a broadcast tower or electrical substation, you should expect some of this energy to appear in the ground system of your station. A tower grounded at its base without other connections will not bother anyone other than to produce pattern disturbance.

However, a closed current loop is provided when conductive appendages such as microwave dishes, VHF, UHF and 800MHz/900MHz antennas are attached. Cables leaving the tower at some elevation usually are attached to the electronic equipment, thus providing another current path separate from the tower ground. Often the shunt current is of sufficient magnitude that it interferes with the station ground.

Sky-wave propagation is generally regarded as a disadvantage in the MF bands used for AM broadcasting. However, it also offers the possibility of covering large areas with a single transmitter, especially in the MF and HF bands. Where there are low levels of both co-channel interference and man-made noise, sky-wave coverage is very attractive for international broadcasting. A major problem for sky-wave services is that multipath propagation through the ionosphere causes time-varying selective fading.

AM broadcasting bands are nowadays adapting also to new digital technologies. The combination of advanced digital modulation schemes with new algorithms for the digital compression of audio signals offers tremendous potential - even within 9 kHz or 10 kHz RF channels. Digital systems can offer enhanced performance - probably giving performance equivalent to monophonic FM services - whilst being much less fragile than AM in terms of immunity to interference and selective fading.

AM Broadcast Communications Concluded:

Digital Radio Mondale (DRM) is investigating such systems, with the objective of agreeing a single standard for digital radio in the AM bands. This could be used as the long-term replacement of AM broadcasting in the HF bands, as well as in the LF and MF bands. Ideally, the DRM solution will be applicable to existing AM transmitters with only minor modifications. Unfortunately, the real cost of switching from AM to digital services is in the purchase of millions of new radios that listeners need to buy to get those new services. AM broadcast stations un USA have frequencies is 10 kHz steps. In Europe AM station frequencies have generally 9 kHz steps.

NOAA News Bulletin

NATIONAL FLOOD SAFETY AWARENESS

THIS IS A TIME FOR INDIVIDUALS, FAMILIES, BUSINESSES AND COMMUNITIES TO UNDERSTAND THEIR RISK FOR FLOODING AND TAKE PRECAUTIONS TO PROTECT THEIR FAMILIES AND HOMES IN THE EVENT OF FLOODING.

FLOODS CAN HAPPEN AT ANY TIME, ANYWHERE ACROSS THE UNITED STATES, WHICH MEANS WE ALL NEED TO BE PREPARED NOW, SAID FEMA ADMINISTRATOR CRAIG FUGATE. THERE ARE SIMPLE STEPS EVERYONE CAN TAKE TO PREPARE FOR FLOODING, SUCH AS DEVELOPING A FAMILY EMERGENCY PLAN, HAVING AN EMERGENCY SUPPLY KIT AND PROTECTING YOUR HOME OR BUSINESS FROM FLOODING BY OBTAINING A FLOOD INSURANCE POLICY. FLOODS ARE ONE OF THE MOST COMMON HAZARDS IN THE UNITED STATES, HOWEVER NOT ALL FLOODS ARE ALIKE. FLOODS TYPICALLY OCCUR WHEN TOO MUCH RAIN FALLS OR SNOW MELTS TOO QUICKLY.

WHILE SOME FLOODS DEVELOP SLOWLY, FLASH FLOODS DEVELOP SUDDENLY. HURRICANES CAN BRING FLOODING TO AREAS FAR INLAND FROM WHERE THEY FIRST HIT THE COAST, AS WE WITNESSED LAST YEAR FROM THE DEVASTATING IMPACTS OF HURRICANE IRENE AND TROPICAL STORM LEE. CHUNKS OF ICE FROM A THAWING RIVER CAN BLOCK ITS NORMAL FLOW AND FORCE WATER OUT OF ITS BANKS. YET, THERE ARE SIMPLE STEPS CITIZENS CAN TAKE TODAY TO REDUCE THEIR RISK TO ALL TYPES OF FLOODS. FLOOD SAFETY AWARENESS WEEK IS AN EXCELLENT TIME FOR INDIVIDUALS AND COMMUNITIES TO UNDERSTAND THEIR FLOOD RISK AND IMPLEMENT PRECAUTIONS TO MITIGATE THE THREAT TO LIFE AND PROPERTY.

FLOODING IS THE LEADING CAUSE OF SEVERE WEATHER-RELATED DEATHS IN THE U.S., AND THIS IS ESPECIALLY TRAGIC SINCE MANY ARE PREVENTABLE. OF THE NEARLY 100 FLOOD-RELATED FATALITIES EACH YEAR, MOST OCCUR AS PEOPLE ATTEMPT TO DRIVE ON FLOODED ROADS.

IN MANY CASES, THE WATER IS EITHER TOO DEEP OR MOVING TOO FAST FOR DRIVERS TO MAINTAIN CONTROL OF THEIR VEHICLE, AND IN EXTREME CASES THE ROADWAY MAY BE WASHED AWAY ENTIRELY, SAID JACK HAYES, DIRECTOR, NOAA/S NATIONAL WEATHER SERVICE, WHICH PRODUCES AN ARRAY OF FLOOD OUTLOOKS AND FORECASTS, INCLUDING WATCHES AND LIFE-SAVING WARNINGS.

REMEMBER, IF CONFRONTED WITH A WATER-COVERED ROAD FOLLOW NATIONAL WEATHER SERVICE ADVICE: TURN AROUND, DON/T DROWN.

NOAA WILL ISSUE THE 2012 U.S. SPRING OUTLOOK AND FLOOD ASSESSMENT ON MARCH 15.

FEMA AND NOAA WILL PROVIDE THE PUBLIC WITH KEY INFORMATION RELATED TO FLOOD HAZARDS, AND WAYS TO PROTECT YOURSELF AND YOUR PROPERTY EACH DAY OF NATIONAL FLOOD SAFETY AWARENESS WEEK.

READ HTTP://WWW.BLOG.FEMA.GOV THROUGHOUT THE WEEK TO STAY INFORMED AND TO GET INVOLVED. ADDITIONAL RESOURCES CAN BE ACCESSED ONLINE AT THE FLOOD SAFETY AWARENESS WEEK LANDING PAGE.

FOR MORE INFORMATION ON FLOOD SAFETY TIPS AND INFORMATION, VISIT HTTP://WWW.READY.GOV.

FOR INFORMATION ON HOW TO OBTAIN A FLOOD INSURANCE POLICY, VISIT HTTP://WWW.FLOODSMART.GOV.

NOAA/S MISSION IS TO UNDERSTAND AND PREDICT CHANGES IN THE EARTH'S ENVIRONMENT, FROM THE DEPTHS OF THE OCEAN TO THE SURFACE OF THE SUN, AND TO CONSERVE AND MANAGE OUR COASTAL AND MARINE RESOURCES. JOIN US ON FACEBOOK, TWITTER AND OUR OTHER SOCIAL MEDIA CHANNELS.

FEMA'S MISSION IS TO SUPPORT OUR CITIZENS AND FIRST RESPONDERS TO ENSURE THAT AS A NATION WE WORK TOGETHER TO BUILD, SUSTAIN, AND IMPROVE OUR CAPABILITY TO PREPARE FOR, PROTECT AGAINST, RESPOND TO, RECOVER FROM, AND MITIGATE ALL HAZARDS.

VE Testing:

Saturday, March 31st, 2012 - AES (Superfest) - 8:00 -11:00 AM

Saturday, April 28th, 2012 - AES - 9:30 AM

Saturday, May 26th, 2012 - AES - 9:30 AM

Saturday, July 28th, 2012 - AES - 9:30 AM

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

Area Swapfests

April 4th, 2012 Madison Hamfest Location: Stoughton, WI
Type: ARRL Hamfest
Sponsor: Madison Area Repeater Association
Website: http://www.qsl.net/mara/swapfest.html

May 5th, 2012 Ozaukee Radio Club's May Hamfest Location: Cedarburg, WI Type: ARRL Hamfest
Sponsor: Ozaukee Radio Club
Website: http://www.ozaukeeradioclub.org

May 6th, 2012 The DeKalb Hamfest. Sandwich, IL
Type: ARRL Hamfest Sponsor: Kishwaukee Amateur Radio Club Website: http://www.kish-club.org

MRAC Working Committees

95th Anniversary:

- Dave—KA9WXN

Net Committee:

- Open

Field Day

Dave—KA9WXN, Al—KC9IJJ

FM Simplex Contest

- Joe – N9UX
- Jeff – K9VS
- Brian— K9LCQ

Ticket drum and drawing

- Tom – N9UFJ
- Jackie – No Call

Newsletter Editor

- Michael-KC9CMT

Webmaster

- Mark Tellier—AB9CD

Refreshments

- Hal—KB9OZN

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) 332-MRAC (6722)**

Address correspondence to:

MRAC, Box 240545, Milwaukee, WI 53223

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)

Milwaukee Area Nets

Mon.8:00 PM 3.994 Tech Net

Mon.8:00 PM 146.865- ARES Walworth ARRL News Line

Mon.8:00 PM 146.445 Emergency Net

Mon.8:00 PM 146.865- ARES Net Walworth

Mon.8:45 PM 147.165- ARRL Audio News

Mon. 9:15 PM 444.125+ Waukesha ARES Net

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

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

Tue. 7:00 PM 145.130 MAARS Trivia Net

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

Wed. 8:00 PM 145.130 MAARS Amateur Radio Newsline

Wed. 9:00 PM 145.130 MAARS IRLP SwapNet d FM-38 Repeaters (IRLP 9624)

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

Thur. 9:00 PM 146.910 Computer Net

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

Fri. 9:00 PM 145.390 W9RH 2 Mtr. FM Net

Sat. 9:00 PM 146.910 Saturday Night Fun Net

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 146.91 Information Net

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

Sun 9:00 PM 146.91 Swap Net

2 meter 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.