

# MRAC Hamateur Chatter

The Milwaukee Radio Amateurs Club

November 2014 Volume 22, Issue 11

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

## Presidents' Letter

Today, I had the pleasure of meeting astronaut Chris Hadfield VA3OOG, a Canadian astronaut who recently spent time on the International Space Station (ISS). He was in Milwaukee for an event and book signing, and stopped into the MPTV studios to conduct a satellite interview with the BBC.

After the BBC interview, we had a chance to talk about his experiences as a ham radio operator on the ISS. Even though there are two ham radio stations onboard the ISS, Chris doesn't often find time to operate. When he does, he spends time talking with school groups via partnerships with local ham clubs back on earth.

The ham clubs work with local schools to teach students about radios and communications through space. Then, these partnerships lead to building a club station that allows the kids to talk directly with the astronauts on the ISS during a scheduled event. This was a highlight for Chris, as he loved connecting directly with the kids while serving on the ISS.

This is another great example of how ham clubs can do public outreach into the communities, teach the technological and communication skills used in ham radio, and directly connect how the science of

potential project idea for our club as well: both for outreach and to bring in new ham radio members.

Speaking of other club events: don't forget that our next meeting will be a week earlier than normal due to Thanksgiving. The next meeting is on Thursday, November 20th. This month's program will be a demonstration of how to use an oscilloscope. We'll demonstrate the basics of how a scope works and what you can use it for. There will also be some hands-on time for people who are interested in working with the scope. Additionally, we will continue our discussion of the 2015 Makers Faire.

In other club news, a reminder that we will not have a raffle this month, since Tom will be hunting. Also, the club is in the process of purchasing a new Yaesu DR-1X repeater. Yaesu is offering clubs in the beta-testing program a great deal on the new version of the repeater. This is a great opportunity, and we'll be discussing this more at the meeting.

*'73 Dave, KA9WXN*



### MRAC Officers:

#### Terms Expiring in 2016

- President – Dave, KA9WXN
- V-President– Dan, N9ASA
- Secretary – MBH, KC9CMT
- Treasurer – MBH, KC9CMT
- Director – Mark, KB9RQZ

#### Terms Expiring in 2015

- 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](http://www.w9rh.org)

Mail correspondence to:

**M. R. A. C.**

**PO Box 26233  
Milwaukee, WI**

**53226-0233**

Board of directors meeting called to order at 6:58 pm by Dave Shank, KA9WXN club president.

Director's present: Michael KC9CMT, Dave KA9WXN, Joe, N9UX, Hal, KB9OZN, Al, KC9IJJ, Dan, N9ASA. Mark, KB9RQZ

Absent: None. There is one vacancy on the Board of Director's.

The Board of Director's minutes were accepted as published in the September Chatter by a motion forwarded by Michael, KC9CMT seconded by Al, KC9IJJ. The Treasurers report was given by Michael, KC9CMT. A motion was made by Dave, KA9WXN to accept the Treasurers report as read; Al, KC9IJJ seconded the motion. The September balance ended with \$18,977.83 in our Club accounts. We make about \$9 a month in CD interest. We still will be sending the ARRL Spectrum Defense Fund \$200 early in 2015. The Church will be getting a donation of \$100 for allowing us to use their facility for the 2014 calendar year. The Treasurers report was accepted as reported by a motion made by Hal, KB9OZN, and seconded by Michael, KC9CMT. Dave, KA9WXM is on the cover of the CQ magazine for the month of September. Dan, N9ASA, ran the print job for our swapfest fliers, so those will be ready to hand out at the MRC91 Swapfest this Saturday, November 1<sup>st</sup>.

**Meeting programs:** For the month of October, Joe, N9UX will be giving a program on the great Balloon chase that occurred early in the month of October. Many members have oscilloscopes and do not have the technical training to take measurements with these complicated devices. This may be given as the meeting topic during the November meeting. The November membership meeting will be the 20th due to the thanksgiving holiday. The Board of Directors meeting will be the next week. There will be no meeting held in December due to the holidays. The January 2014 meeting topic may be a vendor given program on the Yaesu, Fusion technology. The February meeting will be a food gathering again in 2014. March and April 2015 are still open for presentations. The idea of satellite communications came up. Mark, AB9CD purchased a Wi-Fi range extender for the membership meeting site, the basement of Redemption Lutheran Church. Hopefully, all members will now be able to access the internet through the churches network. Hal, KB9OZN, has discussed the amount of refreshments that should be offered at the membership meetings. The refreshment concession has never been profitable, but, it was never intended to be even a small revenue source for the club. The clubs' intention is to have the refreshment concessions break even.

**Field Day:** The farmers market will be at Konkel park in Greenfield again in 2015. Dave, KA9WXN will be meeting with the city of Greenfield in January 2015 to secure our spot at Konkel Park in June of 2015. Dave will be asking the membership for station captains to help coordinate activities during field day.

### **Special Project Committees & Committee reports:**

**Repeater Report:** Dave, WB9BWP is the repeater trustee. The club would like more than one repeater control operator. A club repeater control operator should be a extra class operator to have the kind of privileges that are necessary to operate field day to its fullest extent. We need to ask for volunteers at the membership meeting.

Yaesu has offered to sell the MRAC a Fusion repeater for \$300. This is a great deal for the club, a \$1800 repeater for \$300. The board of directors' would like to pursue this deal. Matt, made a motion to allocate funds to buy the fusion repeater from Yaesu, Dan, N9ASA, seconded the motion, and the motion was carried by a unanimous vote of 6-0. There was a antenna issue at the repeater tower site. It had to be corrected and cost \$348 to fix. The cost will be shared by the clubs that use the tower. MRAC would need to pay approx. \$90. The board of Directors' has authorized the expenditure of \$90 to cover our share of the cost to repair the antenna and tower structure. The board of directors will vote to spend this amount with the approval of the membership.

**New Business:** There have been discussions with the Menominee Falls library people about our ability to remain in our present location for the clubs Board of Directors' meetings. We need to start working on what we are going to do during the AES SuperFest in 2015. Dave, KA9WXN proposed to the board that the Club have a booth at the Maker's Fair to take place in the fall of 2015. Booth space in the structure at state fair park is \$150. For that price we would get a 10 x 10 booth space. It would be easy enough to set up an antenna outside the facility, for a special event station. The LeFrog group was mentioned has a partner in this venture. The clubs' anniversary is in 2017. We need to start planning event stations for the entire year. Dave, KA9WXN will attempt to generate interest among the membership in forming a committee to handle planning.

**Swapfest Committee:** Dave, KA9WXN called in our swapfest event to the ARRL office for publication on their website. The club should promote the use of these bands to keep the spectrum alive. The club would like to promote the 10-10 international radio club. Dan or Dave are going to contact American Science and Surplus about having a table at the MRAC swapfest.

**Special Projects:** The club needs someone to take over the FM simplex contest for February of 2015. What swapfest will the club be manning tables at in 2015? Definitely, the West Allis ARC swapfest in January. All others are optional. Ham radio is on the rise numbers wise, with more retirees and younger people entering the hobby, due to the influx of cheap Chinese HT Radios for sale. The club really needs PR and recruitment. Having a ARRL convention in Milwaukee, sponsored by the MRAC in conjunction with the clubs 100th anniversary, would be a big event and draw people from all over the Midwest. It would take 2 years plus to organize a national convention.

Clubs throughout the country need to use the spectrum that they have been given. Both 440 & 220 are not used very often in the Milwaukee area. Hal, KB9OZN is discussing the idea of adding of adding different food items to attract members to the club meetings. Club calendar is a project that the Board of Directors' would like to pursue. We would like to organize meeting programs far enough in the future that a calendar of programs can be produced. Our archivist, Dave DeFebo needs someone to help digitize slides. Al, KC9IJJ has volunteered to work with Dave on this project. Bldinfofourms.net is the Atlantic division directors' site that shares content for club newsletters.

A motion was made to adjourn the meeting at 8:24 pm by Dave, KA9WXN seconded by Matt, KB9RQZ. Meeting adjourned at 8:30 pm. The room was returned to an organized condition as it was when the room was opened.

A motion was made to adjourn the meeting at 8:50 pm by Dave, KA9WXN seconded by Michael, KC9CMT. Meeting adjourned at 8:55 pm. The room was returned to an clean and organized condition as it was when the room was opened.

The October membership meeting was called to order at 7:05 pm by Dave Shank, KA9WXN club president.

**Meeting program:** The meeting program tonight will be given by Joe, N9UX, titled Raspberry Pi and Amateur Radio, and is about the great Balloon chase the took place earlier this month, that ascended to 102K ft., and terminated in a Fenimore marsh, wetland area, east of Madison. The payload has yet to be recovered as of October 30<sup>th</sup>. The balloon with package is still in the marsh after considerable effort to recover the package over the last few weekends. It is in a very inaccessible reedy part of the marsh. The Raspberry Pi was designed in England as a training tool for children. It has a single USB port, but no Real Time Clock. It is designed as a barebones computer system. Model B comes with 512K Ram, has LAN, USB, GPIO plugs, HDMI plug, and uses a SD card to load the BIOS and operating system, with is Linux. Some accessories to the Pi are a camera, USB devices.

Joe's Raspberry Pi projects: APRS from the Pi + TNC-Pi. TNC-X.com produces a version of their TNC for use with the Pi. It mounts directly to the Pi. KISS-mode TNC requires software. KISS mode is "Keep It Simple Silly". The Balloon Journey, Dave, KA9WXN put a camera onto another Pi and took still photos during the balloon journey. The entire 4 lb. payload was contained within a Styrofoam container. Joe took a launch video that is 4 Mb in size. The Balloon chase turned out to be a very fun project, and Joe is planning on doing this again sometime in the future.

**Business meeting preliminary discussions:** The combined meeting minutes from September were accepted as published in the September HamChatter by a motion forwarded by Michael, KC9CMT seconded by Al, KC9IJJ. The Treasurers report was given by Michael, KC9CMT. The September balance sheet ended with \$18,977.93 in our Club accounts. The Treasurers report was accepted as reported by a motion made by Hal, KB9OZN, and seconded by Al, KC9IJJ. There was a Makers' fair here at Milwaukee's State Fair Park this October. The club would very much like to have a booth at next years' Makers' fair. Yaesu has given the MRAC the option to buy a \$1800 Fusion repeater for \$300. The Board of Directors voted at there last meeting to go ahead and buy this unit. The club has a Facebook page that the MRAC would like to

The club needs new people to volunteer for the board of directors. The club also needs people to help out with both content and proofreading of the club newsletter. Pancho would like to see more club members check in during the 2 meter net on Friday nights at 9 pm. The club wants to develop project committees that would report to the board of directors.

A food gathering with Pancho and Jerry will be taking place immediately after tonight's meeting at Denny's on Capitol drive.

## Weather Hazard Awareness

### Potential for deer crashes will be high again this fall



Although a robust deer population is a boon to hunters and automotive body shops, the speedy and unpredictable animals are hazardous for drivers on Wisconsin roads every fall. October and November are the mating season for deer, and they soon will increase their activity particularly at dusk and dawn while moving back and forth between their bedding and feeding areas. As they roam, deer may dart unexpectedly onto roads and into the path of vehicles.

Last year, Wisconsin law enforcement agencies reported a total of 18,338 deer vs. motor vehicle crashes, according to the Wisconsin Department of Transportation (WisDOT). Waukesha County had the most motor vehicle vs. deer crashes reported in 2013 with 809. Dane County had the second most with 786 followed by Shawano County with 748. In Shawano and Green Lake counties, more than half of all reported crashes in 2013 involved deer. Deer are the third most commonly struck objects in Wisconsin traffic crashes (behind other vehicles and fixed objects).

"To avoid hitting deer with your vehicle, you need to slow down whenever you see them nearby. If you see one deer, there are probably more in the area that could dash in front of your vehicle," says David Pabst, director of the WisDOT Bureau of Transportation Safety. "If you can't avoid a deer in the road, it's safer to hit the brakes and hit the deer than to swerve suddenly and try to miss it. If you swerve, you risk losing control of your vehicle and hitting another car or a stationary object like a tree."

Motorcyclists must be especially careful because deer crashes can be fatal. Motorcycles were involved in six of the eight fatal deer vs. motor vehicle crashes in Wisconsin last year. "The one exception to the 'don't swerve' advice applies to motorcyclists," Pabst says. "Motorcyclists should slow down, brake firmly and then swerve if necessary to avoid hitting the deer. If they must swerve, motorcyclists should try to stay

within their driving lane to avoid hitting other vehicles or objects.”

WisDOT and the Wisconsin State Patrol safety officials offer the following advice to prevent deer crashes and injuries to motorists:

- Be on the lookout for deer, eliminate distractions while driving, and slow down especially in early morning and evening hours, which are the most active times for deer.
- Always buckle up. There are fewer and less severe injuries in vehicle vs. deer crashes when drivers and passengers wear safety belts.
- If you see a deer by the side of the road, slow down and blow your horn with one long blast to frighten it away.
- When you see one deer, look for another one. Deer seldom run alone.
- If you see a deer looming in your headlights, don't expect it to move away. Headlights can confuse a deer, causing it to freeze.
- Brake firmly when you notice a deer in or near your path.
- Don't swerve suddenly because you may lose control of your vehicle.
- If you hit a deer, get your vehicle off the road if possible, and then call a law enforcement agency. Walking on a highway is dangerous, so stay in your vehicle if you can.
- Don't try to move the animal if it is still alive. The injured deer could hurt you.

## Autumn Leaves Present Driving Hazards

Fall is the picture-perfect time of year when many drivers take to the road to view the autumn colors. The leaves are beautiful to see, but when wet or in piles on the roads, they present driving hazards unique to the season. The Car Care Council reminds drivers to prepare for fall driving conditions by having their vehicles' tires, brakes and wipers checked before heading out on the road.

“Drivers should be aware that wet leaves on the road surface can make stopping difficult, and piles of leaves can obscure potholes, curbs and street markings,” said Rich White, executive director, Car Care Council. “Add to these hazards the fact that road conditions can change from ideal to miserable in a matter of minutes, and what you have is a potentially dangerous situation.”

Tires can affect the car's ride, handling, traction and safety, and are a critical connection between the car and the road in all types of driving conditions. To maximize tire life and safety, check the inflation pressure and the tread depth, and inspect the sidewalls for cracks or punctures. As a general rule, tires should be rotated every 6,000 miles and balanced.

The brake system is the car's most important safety system. Brakes are a normal wear item for any car, and brake linings, drums and rotors, as well as brake fluid, should be checked at each oil change.

To help ensure the performance and safety of wipers, blades should be replaced every six months or when cracked, cut, torn, streaking or chattering. Windshield wiper fluid should be checked monthly and only washer fluid should be used.

## The Experimenters' Bench

### ESD Electrostatic Discharge Tutorial

Electrostatic Discharge or ESD awareness is particularly important for anyone associated with electronics. As integrated circuits become more compact, and feature sizes shrink, active devices as well as some passive devices are becoming more prone to damage by the levels of static that exist in a normal environment.

To combat its effects, industry is spending very considerable sums of money to prevent damage to electronic components from the effects of static. Anti-static areas using protective antistatic workbenches, as well as measures for ensuring people are not carrying static are all used. Using what are termed EPAs or Electrostatic Discharge Protected Areas, the destructive effects of static on electronics equipment during manufacture can be virtually removed.



In view of the fact that ESD is so important electronics manufacturing and development companies go to significant lengths to overcome the effects of ESD. Specially protected areas using a variety of ESD products including anti-static mats, ESD benches, ESD bags and packaging, ESD wrist straps, soldering irons adapted to absorb static, and much more are all implemented. These ESD precautions enable the effects of static to be overcome, and ensure the long term reliability of the products being developed and manufactured.

#### ESD overview

Although awareness has grown considerably in recent years, the problem has existed for a long time. The effects of ESD were noted in military applications where its effects could have devastating effects on munitions and especially gunpowder.

However later, around the mid-1800s paper mills installed basic grounding systems and they also used steam to reduce the effects of static which had been attributed to catastrophes where paper dust in these mills had been ignited.

*Welcome*

Today, many industries need to be aware of the effects of electrostatic discharge.

For the electronics industry, the drastic effects of ESD came to light in a major way with the introduction of the first MOSFET devices. In view of the very high gate impedances that existed it was found that they were easily damaged. Originally it was thought that only devices such as MOSFETs were at risk, but studies soon revealed that far more damage was being done than had been originally imagined. The problem of ESD became more acute as feature sizes on ICs dropped and they became more prone to damage.

### What is ESD?

Static electricity is a natural phenomenon which occurs as part of everyday life. Its effects can often be felt when touching a metal door handle having walked across a nylon carpet. Another effect can be seen when hair stands up after it has been combed. The most dramatic effect is lightning. Here the scale is many orders of magnitude greater than those seen in and around the home. Colossal powers are dissipated in every strike, and its effects can be heard for many miles around. This is a particularly impressive form of ESD.

Static is created when there is movement. When objects rub together there is friction and this causes the surfaces to interact. An excess of electrons appears on one surface while there will be a deficiency on the other. The surface with the excess of electrons becomes negatively charged, whereas the surface with the deficit becomes positively charged.

These charges will try to flow and neutralize the charge difference. They may leak away slowly, or the discharge may take place more quickly. However as many substances exhibit a very high resistance these charges can remain in place for a very long time and wait until a suitable path is created for the discharge to take place. When charges find a path through an electronic circuit, the high instantaneous currents can give rise to damage. As a result ESD is of great importance.

### ESD and the tribo-electric series:

The size of the charge which is generated is determined by a variety of different factors. One is obviously the conductivity of the two materials and also whether the charge between them can leak away. However one of the major influences is the materials themselves and their position of the two materials in what is called the tribo-electric series. The position of the two materials which are in rubbing against one another in this series governs the size of the charge and the relative polarities. The further apart they are in the series, then the greater the charge. The material that is higher up the series will receive the positive charge, whereas the one lower in the series will receive the negative charge. Materials such as human hair, skin, and other natural fibres are higher up the series and tend to receive positive charges, whereas man-made fibres together with materials like polythene, PVC and even silicon are towards the negative end. This means that when combing hair with a man-made plastic comb, the hair will receive a positive charge and the comb will become negative.

### positive charge

- skin
- hair
- wool
- silk
- paper
- cotton
- wood
- rubber
- rayon
- polyester
- polythene
- pvc
- Teflon

### negative charge

### Practical examples of ESD

One of the most commonly visible examples of generating charge is when walking across a room. Even this everyday occurrence can generate some surprisingly high voltages. The actual voltages vary considerably dependent upon a variety of factors, but estimates can be given to illustrate the extent of the problem.

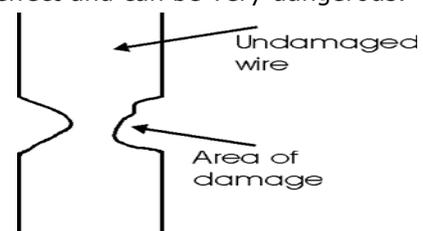
To illustrate the extent of the problem, a variety of instances are detailed in the table below:

### Likely ESD voltages caused by everyday actions

Cause of charge generation	Likely voltage generated (kV)*
Walking across a carpet	30
Picking up a polythene bag	20
Walking on a vinyl tiled surface	15
Working at a bench	5

These are approximate figures and assume a relative humidity of up to 25%. As the humidity rises, so these levels fall: with humidity of around 75%, the static levels can fall by a factor of **very** roughly 25 or more. All these figures are very approximate, because they are very dependent upon the particular conditions, but they give an order of magnitude guide to the ESD levels to be expected.

Although the resulting from ESD appear very high, they usually pass unnoticed. The smallest electrostatic discharge that can be felt is around 5kV, and even then this magnitude of discharge may only be felt on occasions. The reason is that even though the resulting peak currents may be very high, they only last for a very short time and the body does not detect them because the charge behind them is relatively small. Voltages of this magnitude from electronic or electrical equipment where the more current can be source and for much longer will have a much greater effect and can be very dangerous.



### ESD effects on electronics

With most electronics ICs and components being designed to operate at voltage of 5 V or less, it is hardly surprising that electrostatic discharges can cause damage. As a result ESD is of major importance to all who are involved in the electronics industry. For any electronics area manufacturing, repairing, maintaining, or working on electronics equipment in any way, it is imperative that the effects of ESD are taken seriously. To this end ESD measures ranging from full ESD protected areas using ESD workbenches, ESD flooring, ESD clothing, ESD wrist straps and the like are used. Further pages in this ESD tutorial will detail different aspects of ESD, electrostatic discharge and how to combat its effects for electronics equipment.

### Early Radio: Military Communications

#### Ha Thanh under attack, August 1968

Lt Honold and a couple of other Sgts were assigned to us for the operation at Ha Thanh. The Mike Force was always under strength and we had to borrow men from the C Team from time to time. Our objective was to recon the area south of hill 113. The camp thought they were receiving 122 rounds from that location. That's where we first made contact with the NVA. 15th Co Mike Force stayed to the end of the trouble. It wound-up being just Lt Steve Ford and myself with the Company. We did a few patrols and several ambushes. On one of the ambushes, the camp supplied me with a starlite scope and several LAWs. I'm sure glad the tanks never showed up. I remember the trouble that Lang Vei had with the LAWs and I wasn't warm and cozy about using them against Tanks. I do remember that a Company of Cambodians from the Na Trang Mike Force showed up for the party and I took one of their platoons out to set up an ambush one night. I was in camp 25 days after the attack on the teamhouse. Phil Lugo was CO, and I was briefed by Dean Kirkpatrick the outgoing XO/CO. The teamhouse was not used much in September since we were mortared every day at lunch, (they liked to practice - and we had flak jacket time). The team house had shrapnel damage and again, I was told and could see where the concrete was blown away on the third window sill where the round impacted. There were no holes in the ceiling, or the floor, so I can assure you folks that the damage was done with a direct fire weapon. When I asked about who was killed in the teamhouse I never heard about the marines.

If I were in charge and had a 122 round in a hot camp, I would have blown the SOB in place, we were not in prime real estate. Could the marines have been involved in some district headquarters activity on that same date????

#### 1st Lt Robert P Gilmartin, Ha Thanh, 9/68 - 04/69

I think we have the onsite observation of fuza104 and it pretty clearly IDs a direct fire weapon.

Fuza104 did you receive any information on WIAs? US or Indigenous? If they were US then over half the team was either killed or wounded.

As to the dud round, it would probably depend on where it was. If next to an ammo bunker or something similar I just might defer to EOD.

I cut and pasted the entry from the Marine record as shown in the prior emails. It seemed to be very specific as to activity and timeline. Given a Capt. and a CWO were killed and they were not an infantry unit per se, I am inclined to think that they were careful and accurate in their written report (that is just my feeling and could be wrong).

#### SSG Michael J Fairlie, Ha Thanh 9/69-9/70

#### The latest news are from one of A-104 radio operator SGT Ivan Davis

I was the radio operator during that time. It was hectic and crazy for about a month as we were under constant attack and fear of about to get overrun. Woke up one morning, the team gathered up outside and we were looking at the OP3 which was southwest of the camp. The NVA had overrun it the night before and were setting up mortars to hit the camp. I called C team to inform them of the situation. I notified the Air Force to do whatever to the OP, as it was not in our hands. Not very long, jets were pounding the stuffing out of the hill. No sooner than the jets would leave, the NVA was back out hitting the camp with the mortars. The little buggers had really dug in. We had Sean Flynn, a newspaper correspondent, staying with us for a while trying to get a story. He got more than what he was looking for. Later on, it was reported that he was MIA in Cambodia or Laos.

Never did hear the final outcome of his whereabouts. At one time, I called in Naval bombardment from the battleship New Jersey which was sitting off shore of Quang Ngai. They were hesitant to fire the coordinates given to them as it was on the west side of the camp and the Navy was afraid a round might hit the camp. I instructed them to fire as we may not be here much longer. Man, when one of those shells cross over, what an Erie sound. The ground shook just like an Arc Light strike. We were re-enforced by the Mike Force along with Lt. Peoples, who was from A-102, While he was on patrol, he took a direct hit by an RPG. We recovered his body and had him transported to C team.

During this time frame, we had an explosive team at camp. There were 3-4 individuals on site discussing some major items concerning NVA ordinance. I had just left the team house heading back for the commo bunker when the 122MM hit the team house. I jumped in the mortar pit and we took a direct round. After I woke up, I ran to the commo bunker to let C team know we were under serious assault. It was then, Sgt. Dumas, medic, informed me of the casualties. I notified C team on the status of the team

Killed in that action was MSGT. Sosniak, Spec 4 Richard Traster, radio operator, and the 3-4 weapons team. Spec 4 Traster was going to be my replacement when I was being transferred back to C team and eventually the Mike Force in Da Nang.

After the action slowed down, I received a call from the FAC flying overhead that he had a sorty flying around and wanted to know where we would like to have them drop their ordnance. I informed him to hit the valley following the river between OP2 and OP3, which was on the west side of the camp. We did not have any friendly people in the area. A few of the team went outside to watch the planes fly over and drop the bombs. It was a great sight to see. Later, during the after action report, we discovered the NVA were bringing in tanks on that route. Just by chance, we were able to knock them out.

I believe the assault on A-104 went on for close to 30 days. We took a lot of casualties, killed or wounded. Shortly after I redeployed to C team, another radio operator at A-104, who was on site a very short time, was killed while on a mission.

The OP was overrun in August.

At that point it was used as a night location for operations vs being a permanently staffed OP. I believe that had a small contingency of Yards and one VNSF on the OP that night. There were either three or four KIA and the remainder of those that were there gradually trickled back to camp the next day.

Somewhere near the 24<sup>th</sup> of August it was decided that a Mobile Strike Force Company would be sent to help the Team at A-104.

We spent the next night on the perimeter in Camp, and while we were ducking incoming the OP on a hilltop northwest of the Camp radioed in that they were under ground attack. Even with TAC Air support they were overrun and chased off the hill. The next morning we mounted an operation to retake the OP. With the tactical situation as it was we could not let them hang onto that OP looking directly down on the Camp.

We started for the base of the hill the OP was located on with 2<sup>nd</sup> Platoon in the lead. I was always at, or near the front of the formation, so being point man of the point platoon moving to contact didn't seem that strange to me. As I was sneaking along a trail in the dense cover right at the base of the hill I felt what seemed like a light nudge on the front of my right shoulder, and heard a shot from less than 15 yards away. I tried to aim my M-16 to return fire, but it wouldn't work quite right. I looked down at my shoulder, and there was a hole through the strap of my indigenous ruck that was weeping a little bit of blood. I thought, hmmm you dumb shit, you just got shot. I dropped and rolled off the trail. A little firefight broke out, but after I saw that the platoon had deployed correctly I worked my way back to where the U.S. LT and SGT were located in what was laughingly termed the Company Headquarters.

I dropped the ruck, and they took a look at the front and back of the wound (good thing I didn't get a look at the back), slapped on a couple of field dressings, and we called in a med-evac.

The Ha Thanh AO was hot, and at some point a Stars and Stripes Correspondent decided to come out to the Camp. That day he attached himself to us. I couldn't get over how little impact I felt, and it still didn't hurt very badly if I didn't move it, so when the Stars and Stripes guy was hovering like a mother hen, and kept wanting to give me morphine injections I got a little hostile and told him exactly what I was going to do, and where I was going to put that morphine syrette if he didn't get out of my face. He finally got the hint. The med-evac chopper showed up, and that was the end of the fighting for me.

In addition to the Mobile Strike Force Company sent to Ha Thanh, several days later a company of CIDG with a U.S. lieutenant and sergeant from Minh Long (I believe) was sent out to reinforce A-104 also. The day after I was wounded, in another attempt to retake the OP by the company from Minh Long, the LT was killed, and the SGT wounded (I bumped into the SGT in the hospital in Japan) at the same spot on the ground where I was shot.

I learned that Team Sergeant Sosniak was killed about an hour after I was med-evaced when the NVA dumped a 122mm rocket into the Teamhouse.

After my second tour to Vietnam ending in early 1973 (with the 1<sup>st</sup> Air Cavalry near Bien Hoa, and SRAC in Pleiku) I requested reassignment to 5<sup>th</sup> Group, which by this time had rotated back to Fort Bragg. While there I ran into SFC Zickefoose, the Intel NCO at A-104. "Zick" told me that after I was evacuated every American at the Camp ended up being killed or wounded. I never confirmed that. I only know of the LT from Minh Long, MSG Sosniak, and a Team member I didn't know listed as KIA in early September. I did notice that a number finished out their tours, so if wounded it must have been lightly.

I did hear that the Air Force knocked out 6 tanks that had bypassed A-104, and were east of the Camp when destroyed.

**from Sgt M Thornton: should put an end to the 75mm recoilless versus the 122mm mortar attack theory. Sgt Melvin Thornton took a patrol the following day to locate the firing sites and got a visual on what hit the Teamhouse.**

I would like to add a little to what you already know about what happened to PFC Trastner and MSG Sosniak. While serving as the teams Sr. medic at Ha Thanh from Sept 67 to Sept 68, I was in a trench line near my bunker when the 122mm rocket hit the teamhouse. I grabbed my aid bag and ran for the teamhouse, as I entered I immediately came across PFC Traster who was still alive, but had received a massive head wound to the back of his head. I bandaged his head, then left him there (still alive). I then responded to other team members yelling for help, they had removed MSG Sosniak, Capt. Gesreagan and another man (who I thought was a Sea-bee) from the teamhouse.

Capt. Gesreagan had a very serious shrapnel wound to the knee. MSG Sosniak had 10 to 15 serious shrapnel wounds to the chest and abdomen. He was still alive with a faint a heartbeat, but had problem breathing due to his wounds. I continued with his resuscitation for about 30 min. until the med-evac chopper arrived, he was still alive when put aboard, as was PFC Traster.

I have little knowledge of the other casualties, as MSG Sosniak had my full attention before the evacuation. It might be of some interest to some readers that the reason so many people were in the team house at the time was the result of a caribou pilot having scrounged up a pallet of ice cold milk and was dropping a few cases at each A-site in I corps. MSG Sosniak had just returned from the airstrip with them.

I can clear up some of the questions raised about the missiles and their locations. The missile in the wire was about 20 to 30 feet from the inter perimeter wire. It was lined between the teamhouse and the latrine. One had a perfect view of it, right in front of them, if one was dumb enough to use the piss tube.

As for the doubts about what it was that hit the teamhouse, the next morning I took a small patrol out the front gate and toward the general direction we though the missiles were coming from. Less than one click from the camp, tucked in behind the edge the little village of GO VI (1) and between the base of OP 3 and the river, we found 3 missile launching sites. these sites consisted of a long trench with a bream at one end and a long split tube of bamboo which had been hollowed and smoothed out, running along the top of the bream. You could visually get down and see that were aligned with the LLDB and the US teamhouse.

I took some photos and then destroyed the launchers with hand grenades. We immediately returned to camp and I discussed the matter with the temporary CO Lt. Kilpatrick , who was new to the camp, and only became the CO after LT. Eagle had been relieved of command . At my urging he called for air strikes on the missile launch site and on one end of village of GO VI (we gave our strikers 30 min. to get their families out of the village). I have no doubt that they were 122mm tubes and 2 had been used, and to this day I believe everyone in the village had to know they were there.

At this time the command of the camp was in complete disarray.



Area map showing Go Vi (1) and (2)

## The Thought Experiment

### Review of Modern Physics

Quantum mechanics emerged in the beginning of the twentieth century as a new discipline because of the need to describe phenomena, which could not be explained using Newtonian mechanics or classical electromagnetic theory. These phenomena include the photoelectric effect, blackbody radiation and the rather complex radiation from an excited hydrogen gas. It is these and other experimental observations which led to the concepts of quantization of light into photons, the particle-wave duality, the de Broglie wavelength and the fundamental equation describing quantum mechanics, namely the Schrödinger equation. This section provides an introductory description of these concepts and a discussion of the energy levels of an infinite one-dimensional quantum well and those of the hydrogen atom.

### Wave-Particle Duality

Quantum mechanics acknowledges the fact that particles exhibit wave properties. For instance, particles can produce interference patterns and can penetrate or "tunnel" through potential barriers. Neither of these effects can be explained using Newtonian mechanics. Photons on the other hand can behave as particles with well-defined energy. These observations blur the classical distinction between waves and particles. Two specific experiments demonstrate the particle-like behavior of light, namely the photoelectric effect and blackbody radiation. Both can only be explained by treating photons as discrete particles whose energy is proportional to the frequency of the light. The emission spectrum of an excited hydrogen gas demonstrates that electrons confined to an atom can only have discrete energies. Niels Bohr explained the emission spectrum by assuming that the wavelength of an electron wave is inversely proportional to the electron momentum.

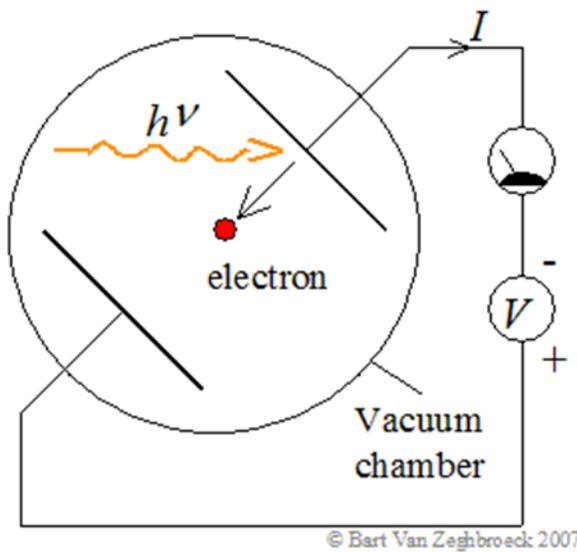
The particle and the wave picture are both simplified forms of the wave packet description, a localized wave consisting of a combination of plane waves with different wavelength. As the range of wavelength is compressed to a single value, the wave becomes a plane wave at a single frequency and yields the wave picture. As the range of wavelength is increased, the size of the wave packet is reduced, yielding a localized particle.

### The photo-electric effect

The photoelectric effect is by now the "classic" experiment, which demonstrates the quantized nature of light: when applying monochromatic light to a metal in vacuum one finds that electrons are released from the metal.

## Thought Experiment

This experiment confirms the notion that electrons are confined to the metal, but can escape when provided sufficient energy, for instance in the form of light. However, the surprising fact is that when illuminating with long wavelengths (typically larger than 400 nm) no electrons are emitted from the metal even if the light intensity is increased. On the other hand, one easily observes electron emission at ultra-violet wavelengths for which the number of electrons emitted does vary with the light intensity. A more detailed analysis reveals that the maximum kinetic energy of the emitted electrons varies linearly with the inverse of the wavelength, for wavelengths shorter than the maximum wavelength.



Experiment Set-up to Measure the Photoelectric effect

The experimental apparatus consists of two metal electrodes within a vacuum chamber. Light is incident on one of two electrodes to which an external voltage is applied. The external voltage is adjusted so that the current due to the photo-emitted electrons becomes zero. This voltage corresponds to the maximum kinetic energy, K.E., of the electrons in units of electron volt. That voltage is measured for different wavelengths and is plotted versus the inverse of the wavelength as shown in Figure 1.2.2. The resulting graph is a straight line.

Albert Einstein explained this experiment by postulating that the energy of light is quantized. He assumed that light consists of individual particles called *photons*, so that the kinetic energy of the electrons,  $K.E = p^2/2m$  equals the energy of the photons,  $E_{ph}$ , minus the energy,  $q\Phi_M$ , required to extract the electrons from the metal. The workfunction,  $\Phi_M$ , therefore quantifies the potential,

which the electrons have to overcome to leave the metal. The slope of the curve was measured to be 1.24 eV/micron, which yielded the following relation for the photon energy,  $E_{ph}$ :

$$E_{ph} = h\nu = \frac{hc}{\lambda} \quad \text{Equation 1.2.1}$$

where  $h$  is Planck's constant,  $\nu$  is the frequency of the light,  $c$  is the speed of light in vacuum and  $\lambda$  is the wavelength of the light.

While other light-related phenomena such as the interference of two coherent light beams demonstrate the wave characteristics of light, it is the photoelectric effect, which demonstrates the particle-like behavior of light. These experiments lead to the particle-wave duality concept, namely that particles observed in an appropriate environment behave as waves, while waves can also behave as particles. This concept applies to all waves and particles. For instance, coherent electron beams also yield interference patterns similar to those of light beams.

It is the wave-like behavior of particles, which led to the de Broglie wavelength: since particles have wave-like properties, there is an associated wavelength, called the de Broglie wavelength and given by:

$$\lambda = \frac{h}{p}$$

where  $\lambda$  is the wavelength,  $h$  is Planck's constant and  $p$  is the particle momentum. This expression enables a correct calculation of the ground energy of an electron in a hydrogen atom using the Bohr model described in section 1.2.4. One can also show that the same expression applies to photons by combining equation (1.2.1) with  $E_{ph} = pc$ .

Example: A metal has a workfunction of 4.3 V. What is the minimum photon energy in Joule to emit an electron from this metal through the photo-electric effect? What are the photon frequency in Terahertz and the photon wavelength in micrometer? What is the corresponding photon momentum? What is the velocity of a free electron with the same momentum?

The minimum photon energy,  $E_{ph}$ , equals the workfunction,  $M$ , in units of electron volt or 4.3 eV. This also equals

$$E_{ph} = q\Phi_M = 1.6 \times 10^{-19} \times 4.3 = 6.89 \times 10^{-19} \text{ Joule}$$

**Thought Experiment**

The corresponding photon frequency is:

$$\nu = \frac{E_{ph}}{h} = \frac{6.89 \times 10^{-19}}{6.626 \times 10^{-34}} = 1040 \text{ THz}$$

The corresponding wavelength equals:

$$\lambda = \frac{hc}{E_{ph}} = \frac{6.626 \times 10^{-34} \times 3 \times 10^8}{6.89 \times 10^{-19}} = \frac{1.24 \text{ } \mu\text{m}}{E_{ph} \text{ (eV)}} = 0.288 \text{ } \mu\text{m}$$

The photon momentum, p, is:

$$p = \frac{h}{\lambda} = \frac{6.626 \times 10^{-34}}{0.288 \times 10^{-6}} = 2.297 \times 10^{-27} \frac{\text{kg m}}{\text{s}}$$

And the velocity, v, of an electron in vacuum with the same momentum equals

$$\nu = \frac{p}{m_0} = \frac{2.297 \times 10^{-27}}{9.11 \times 10^{-31}} = 2522 \text{ m/s}$$

Where m0 is the free electron mass.

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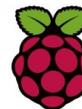
**Next Regular Meeting**

The next meeting will be on Thursday, January 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 details about the February Meeting.

**Meeting Schedule:**

**February 26th, 2014 - 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](http://www.w9rh.org)

**Or phone (414)-459-9741**

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



**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](mailto:W9rhmrac@Gmail.com)

**or by Post to:**

Michael B. Harris  
 807 Nicholson RD  
 South Milwaukee, WI 53172-1447

## VE Testing:

January 31st 2015, 9am— 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

Jan. 10th, 2015 [43rd Annual Midwinter Swapfest](#)

**Location: Waukesha, WI Type: ARRL Hamfest**

**Sponsor: West Allis Radio Amateur Club**

**Website: <http://www.warac.org/swap/index.htm>**

01/18/2015 | [WCRA's 48th Annual Mid-Winter Hamfest](#)

**Location: St. Charles, IL Type: ARRL Hamfest**

**Sponsor: Wheaton Community Radio Amateurs**

**Website: <http://wheatonhamfest.org>**

## MRAC Working Committees

### 100th Anniversary:

- Dave—KA9WXN
- Dan—N9ASA

### Net Committee:

- Open

### Field Day

Dave—KA9WXN, Al—KC9IJJ

### FM Simplex Contest

- Joe - N9UX
- Mark - AB9CD

### Ticket drum and drawing

- Tom - N9UFJ

### Newsletter Editor

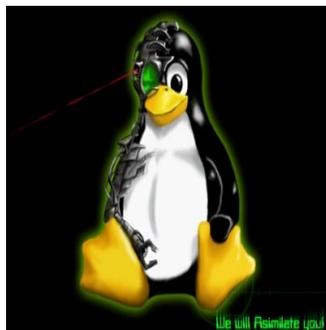
- Michael-KC9CMT

### Webmaster

- Dave, KA9WXN

### 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)-459-9741**

Address correspondence to:



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

Email may be sent to: [w9rh@arrl.net](mailto: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](mailto: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.8:45 PM 147.165- ARRL Audio News
- Mon. 8:00 PM 442.100+ Railroad net, also on EchoLink
- Mon. 8:30 PM 442.875+ WARC W9CQ net also on EchoLink 576754
- Mon. 8:30 PM 442.150+ 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 147.270+ Racine County ARES net
- Wed. 9:00 PM 145.130+MAARS SwapNet, link to FM-38
- 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 SSB Net
- Fri. 9:00 PM 145.390+ W9RH 2 MTR. FM Net
- Sat. 8:00 PM 146.910+ YL's Pink HAMsters 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 146.910+ Information Net
- Sun 8:00 PM 28.365 10/10 International Net (SSB)
- Sun 9:00 PM 146.910+ Swap Net
- Daily: Milwaukee – Florida Net 7 am, 14.290 mhz.

**Thursday's 8:00 PM 448.300+ Tech Net**

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

Wisconsin Amateur Radio Club Monday evening 70cm net: WIARC Net on Monday evening @ 8:00 p.m. on 442.875 MHz repeater or 147.390 repeater, EchoLink node # 576754.

