

MRAC Hamateur Chatter

The Milwaukee Radio Amateurs Club

May 2016 Volume 24, Issue 5

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

Feature Article



E.V. Rider

Ben Nelson circles Lake Michigan on electric vehicle

Electric bill no more. This is the ultimate goal and the pine tree that formerly stood a good 20 feet tall now lies fallen in the grass next to the garage.

Ben Nelson never cut down a tree of this size before. Actually, he's never cut down a tree of any size before. But to make space for his new garage – a much bigger one, which when constructed, will have the capability of holding two solar panels, both 27×29 feet, on the roof – the tree had to go.

And since he'd never before cut down a tree and just to make sure it didn't fall on the existing garage – his still standing and extremely cluttered one – Nelson deferred to a 1978 Time/Life copy of "Cabins and Cottages" and followed step-by-step instructions.

This, Nelson says is how he "goes about things." For any project – which, for Nelson, primarily involves making something work better, be more efficient, have less waste – he reads about it, then does it. This is how he'll credit, for instance, learning to configure a contraption that flushes his toilet with old laundry water. Or how he turned his 1996 Geo Metro into a total electric vehicle – or "E.V." as he terms it – a few years back.

(With the latter, Nelson specifies that it only took a "300-page book and a couple of Internet videos" to switch out the engine with an electric forklift motor and six 12-volt car batteries. Granted, he could only go in a 20 mile range, but he was back on the road).

Ask Nelson if he's an engineer, and he gets visibly irritated. It's a roundabout way, he senses, of asking what he does for a living. In fact, it's a question he hates so much that he'll avoid parties in order not to be asked. It's a question that if you do ask him (and, by the way, you'll instantly feel disappointed in yourself for doing so), he'll answer that he doesn't have an engineering background but did "take a shop class once."

Nelson will say he's simply a guy who instead of watching T.V. prefers to be in the garage tinkering. "And I've found," says Nelson, when catching up with him in his driveway of his Oconomowoc home this past October, "anything is possible with a library card and a socket wrench."

And you'll find that Nelson continually downplays his own ingenuity. Particularly, at this moment, when he's standing next to his souped-up 2007 Vectrix, a discontinued brand of miserably performing electric motorcycle, of "maxi-sized scooter," as it was sometimes described. Nelson bought his used for \$400 off eBay. Soon, he had the Vectrix rigged up with 18 batteries – stripped from a totaled Nissan Leaf found in a junkyard – and was driving it around Lake Michigan.

"All total, 1,276 miles," says Nelson, of the eight day trip from which he just returned. "All done without a drop of gas." Still intact, over the back wheel, is the boxy, makeshift storage compartment built primarily out of some aluminum poles and absconded .



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"Ron Johnson for Wisconsin Senate" lawn sign. In it, he kept his tent and sleeping bag. (Nelson camped out each night of his trip. Not only because it was cheaper but because most campsites have an electrical outlet. He could plug in and recharge while he slept).

An exterior side served as a sandwich board of sort, proclaiming – in large letters across it – his "Loop the Lake" mission of "1000+ Miles, NO Gasoline." Nelson used it as a travel log as well, writing with a Sharpie all the places – in Wisconsin, the U.P., Michigan and Illinois – he stopped, with the corresponding mileage. He also listed the answers of the top three questions people repeatedly asked him along the way. The list reads:

- 1) "60-90 miles." (Answering: How many miles is he averaging a day?)
- 2) "About two hours." (Answering: How long does it take him to recharge?)
- 3) "No, I am not an engineer."

Since being home, Nelson is now repeatedly asked, "What's the next journey?" A question that is yet another that bothers him. On this afternoon, Nelson motions to the aforementioned pine tree he cut down to make way for the new garage – that will bring him closer to never having to pay another electric bill for the rest of his life. That, he says, is the journey he's on.

Then Nelson, taking the opportunity to be the one with a question, asks, "Isn't that enough?"

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ARRL Newsline

The K7RA Solar Update

Average daily solar flux and sunspot numbers rose over the past week. The average daily sunspot number rose 5 points to 64.1 while average daily solar flux was up 11.6 points to 100.4. Geomagnetic indices were quieter, with average planetary A index decreasing from 22.6 to 9.9 and average mid-latitude A index dropping from 14.6 to 10.9.

USAF and NOAA predict solar flux at 100 on May 20-24, 95 on May 25-26, 90 on May 27-28, 95 on May 29, 100 on May 30 through June 1, 95 on June 2-7, 100 on June 8-9, then 95, 100, and 105 on June 10-12, 100 on June 13-16, 95 on June 17-21, 90 on June 22-24, 95 on June 25 and 100 on June 26-28.

Predicted planetary A index is 22, 16, 12 and 6 on May 20-23, 5 on May 24-27, then 15, 25, and 10 on May 28-30, 5 on May 31 and June 1, 12 on June 2-3, then 35, 30 and 15 on June 4-6, 5 on June 7-9, then 8, 15, 25 and 12 on June 10-13, then 8, 18, 25 and 12 on June 14-17, then 8, 5 and 10 on June 18-20, and 5 on June 21-23.

F.K. Janda, OK1HH, of the Czech Propagation Interest Group sends a weekly geomagnetic activity forecast for the period May 20-June 15, 2016.

Geomagnetic field will be:

Quiet on May 23, 26-27, June 9-10

Mostly quiet on May 24, June 3, 14-15

Quiet to unsettled on May 25, 28, June 1-2, 7-8, 11,

Quiet to active on May 20-22, 29, 31, Jun 4-5, 12-13

Active to disturbed on May 30, June 6

Increased solar wind from coronal holes is expected on May 22-26, June 1-2, 6-8, 14-15.

Jeff Hartley, N8II, of Shepherdstown, West Virginia sent this report about what he is hearing in FM19ck.

"It seems like low MUF conditions are here to stay, but 15 meters is open to southern Europe most days starting around 1400-1500 Z.

"I operated the 7th call area QSO party May 7-8 until 0320Z on the 8th. Fifteen meter activity was way down, especially on phone, and propagation was poor, but there were solid signals from AZ and NV from 1600Z through past 2130Z, and all states of the 7th area were worked during the opening, but the more northern areas MT, ID (worst), WA and OR were mostly not that loud and in and out. The peak was around 2000Z. My 15 meter QSO total was 49 vs 167 in 2015; SSB was 10 vs 65.

"What was lost on 15 meters was gained on 20 meters with noticeably less absorption mid-day due to lower solar flux allowing for more QSOs, although some mobiles were still lost in the noise. Things really started cooking around 1940Z through 0100Z and I was able to run quite a few stations on phone and even some on CW. Mobiles were easy copy, but phone activity did not seem all that high. The total tally was 350 20 meter QSOs (my best ever) vs 258 last year.

"Forty meters was affected by the beginning of the solar storm, but not that badly. I made more QSOs than last year and most stations were easy copy. It is about 0300Z (2300 EDT) before the Sun sets on the west coast at this time of year, so I did not start working OR/WA until around 0215Z. Almost all of the signals, even AZ, sounded hollow with flutter, but the signal levels were down only slightly from what I would expect. In fact, W7RN in NV was S9+ 25-30 dB without flutter. Obviously, the K index was high. It was very easy to tell the New England QSO party W1s from the 7s just by their signal quality. I did not wait long enough for 80 meters to open before going QRT. I operated low power, 150 W.

"Sunday propagation was very poor due to the solar storm and that lingered into Monday with 15 meters almost totally dead."

We received a couple of comments from *W6ELProp* users.

Lloyd Rasmussen, W3IUU, of Kensington, Maryland wrote: "I am blind and use the *Window-Eyes* screen reader. The text output of *W6ELProp* works just fine for me under *Windows 7* and *10*."

John Leroy, W4JKL of Mount Sterling, Kentucky wrote: "*W6ELProp* can be installed and run under *Wine* for *Linux*. I run it on my *Debian 8 Jessie* box with *Wine* set to emulate *Windows XP*. I installed it on *Wine* drive_c in the root directory. Once you run an on-screen path prediction and close the window, you must minimize the program and then maximize it again to see the menu entries. The other functions don't require this. The mapping functions work correctly. Thanks for reminding me to try this. I normally use *HamCap* by VE3NEA under *Wine* and it works correctly. *IonoProbe* by VE3NEA also works correctly under *Wine* and will feed the latest online data to *HamCap*, but another tool is always welcome!"

For more information concerning radio propagation, see the ARRL Technical Information Service at <http://arrl.org/propagation-of-rf-signals>. For an explanation of the numbers used in this bulletin, see <http://arrl.org/the-sun-the-earth-the-ionosphere>. An archive of past propagation bulletins is at <http://arrl.org/wlaw-bulletins-archive-propagation>. More good information and tutorials on propagation are at <http://k9la.us/>.

Monthly propagation charts between four USA regions and twelve overseas locations are at <http://arrl.org/propagation>.

The Evolving Battery

The Li-ion battery has not yet matured. Chemical compositions change as often as once every six months. According to Moli Energy, a large manufacturer of Li-ion batteries, the chemical composition of Li-based batteries changes every six months. New chemicals are discovered that provide better load characteristics, higher capacities and longer storage life. Although beneficial to consumers, these improvements wreak havoc with battery testing equipment that base quick test algorithms on fixed parameters. Why do these changes in battery composition affect the results of a quick tester? The early Li-ion batteries, notably the coke-based variety, exhibited a gradual drop of voltage during discharge. With newer graphite-based Li-ion batteries, flatter voltage signatures are achieved. Such batteries provide a more stable voltage during most of the discharge cycle. The rapid [voltage drop](#) only occurs towards the end of discharge.

A 'hardwired' tester looks for an anticipated voltage drop and [estimates](#) the SoH according to fixed references. If the voltage-drop changes due to improved battery technology, erroneous readings will result.

Diverse metals used in the positive electrode also alter the open terminal voltage. Manganese, also referred to as [spinel](#), has a slightly higher terminal voltage compared to the more traditional cobalt. In addition, spinel ages differently from cobalt. Although both cobalt and spinel systems belong to the Li-ion family, differences in readings can be expected when the batteries are quick tested side-by-side.

The Li-ion polymer has a dissimilar composition to the Li-ion and responds in a different way when tested. Instruments capable of checking Li-ion batteries may not provide reliable readings when quick testing Li-ion polymer batteries.

The Cadex Quicktest™ Method

A battery quick test must be capable of adapting to new chemical combinations as introduced from time to time. Cadex solves this by using a self-learning fuzzy logic algorithm. Used to measure analog variances in an assortment of applications, fuzzy logic is known to the industry as a universal approximator. Along with unique learning capabilities, this system can adapt to new trends. Similar to a student adapting to the complexity of a curriculum, the system learns with each battery tested. The more batteries that are serviced, the higher the accuracy becomes.

Cadex *Quicktest*™ is built on the new Cadex 7000 Series battery [analyzer](#) platform. This system features interchangeable battery adapters that contain the battery configuration codes (C-codes). When installed, the adapter sets the analyzer to the correct battery parameters (chemistry, voltage rating, etc.).

To enable quick testing, the battery adapters must also contain the matrix settings for the serviced battery. While matrices for the most common batteries are included when acquiring the adapter, the user is asked to enter the information on those adapters that have not yet been prepared for quick testing. This can be done in the field by 'scanning' the working battery.

The 'Learn' program of the Cadex 7000 Series battery analyzer performs this task by applying charge-discharge-charge activities on the test battery. Similar to downloading a program into a PC, the information derived from the [battery sets](#) the matrices and prepares the Cadex *Quicktest*™ function.

The 'Learn' program completes its cycle within approximately four hours. One learning cycle is the minimal requirement to enable the Cadex *Quicktest*™ function.

With only one battery learned or scanned, the confidence level is 'marginal'. Running additional batteries through the learning program will fill the matrix registers and the confidence level will increase to 'good' or 'excellent'. Like a bridge that needs several pillars for proper support, the most accurate quick test results are achieved by scanning individual batteries that have SoH readings of around 100, 80 and 60 percent. The confidence level attained for a given battery adapter is indicated on the LCD panel of the analyzer.

The Cadex *Quicktest*™ can be performed with charge levels between 20 and 90 percent. Within this range, different charge levels do not affect the readings. If the battery is insufficiently charged, or has too high a charge, a message appears and the analyzer automatically applies the appropriate charge or discharge to bring the battery within testing range. Charging or discharging a battery immediately prior to taking the reading does not affect the Cadex *Quicktest*™ results. The reader may ask whether the Cadex *Quicktest*™ system can also learn incorrectly. No — once the learning cycles have been completed for a given battery, the matrix settings are firm and resilient. Testing bad batteries will not affect the setting.

Spoilage is only possible if a number of bad batteries are purposely put through the 'Learn' program in an attempt to alter the existing matrix. Such would be the case when scanning a batch of batteries that have not been properly formatted, have been in prolonged storage, or are of poor quality. To protect the existing matrix from spoilage when adding learning cycles, the system checks each new vector reading for its integrity before accepting the information as a valid reference. Learned readings obtained from defective batteries are rejected.

If a battery adapter has lost its integrity as part of 'bad learning', the matrix setting can be erased and re-taught. As an alternative, Cadex will make recommended matrices available on the Internet. Users may also want to exchange learned matrix information with each other. Copying battery adapters by inserting a recognized adapter into the analyzer will achieve this. Another method is 'Webcasting' the matrices over the Internet.

Is Lithium-ion the Ideal Battery?

For many years, nickel-cadmium had been the only suitable battery for portable equipment from wireless communications to mobile computing. Nickel-metal-hydride and lithium-ion emerged in the early 1990s, fighting nose-to-nose to gain customer's acceptance. Today, lithium-ion is the fastest growing and most promising battery chemistry.

The lithium-ion battery

Pioneer work with the lithium battery began in 1912 under G.N. Lewis but it was not until the early 1970s when the first non-rechargeable lithium batteries became commercially available. Lithium is the lightest of all metals, has the greatest electrochemical potential and provides the largest energy density for weight.

Attempts to develop rechargeable lithium batteries failed due to safety problems. Because of the inherent instability of lithium metal, especially during charging, research shifted to a non-metallic lithium battery using lithium ions. Although slightly lower in energy density than lithium metal, lithium-ion is safe, provided certain precautions are met when charging and discharging. In 1991, the Sony Corporation commercialized the first lithium-ion battery. Other manufacturers followed suit.

The energy density of lithium-ion is typically twice that of the standard nickel-cadmium. There is potential for higher energy densities. The load characteristics are reasonably good and behave similarly to nickel-cadmium in terms of discharge. The high cell voltage of 3.6 volts allows battery pack designs with only one cell. Most of today's mobile phones run on a single cell. A nickel-based pack would require three 1.2-volt cells connected in series.

Lithium-ion is a low maintenance battery, an advantage that most other chemistries cannot claim. There is no memory and no scheduled cycling is required to prolong the battery's life. In addition, the self-discharge is less than half compared to nickel-cadmium, making lithium-ion well suited for modern fuel gauge applications. Lithium-ion cells cause little harm when disposed.

Despite its overall advantages, lithium-ion has its drawbacks. It is fragile and requires a protection circuit to maintain safe operation. Built into each pack, the protection circuit limits the peak voltage of each cell during charge and prevents the cell voltage from dropping too low on discharge. In addition, the cell temperature is monitored to prevent temperature extremes. The maximum charge and discharge current on most packs are limited to between 1C and 2C. With these precautions in place, the possibility of metallic lithium plating occurring due to overcharge is virtually eliminated.

Aging is a concern with most lithium-ion batteries and many manufacturers remain silent about this issue. Some capacity deterioration is noticeable after one year, whether the battery is in use or not. The battery frequently fails after two or three years. It should be noted that other chemistries also have age-related degenerative effects. This is especially true for nickel-metal-hydride if exposed to high ambient temperatures. At the same time, lithium-ion packs are known to have served for five years in some applications.

Manufacturers are constantly improving lithium-ion. New and enhanced chemical combinations are introduced every six months or so. With such rapid progress, it is difficult to assess how well the revised battery will age.

Storage in a cool place slows the aging process of lithium-ion (and other chemistries). Manufacturers recommend storage temperatures of 15°C (59°F). In addition, the battery should be partially charged during storage. The manufacturer recommends a 40% charge.

The most economical lithium-ion battery in terms of cost-to-energy ratio is the cylindrical 18650 (size is 18mm x 65.2mm). This cell is used for mobile computing and other applications that do not demand ultra-thin geometry. If a

slim pack is required, the prismatic lithium-ion cell is the best choice. These cells come at a higher cost in terms of stored energy.

Advantages

- High energy density - potential for yet higher capacities.
 - Does not need prolonged priming when new. One regular charge is all that's needed.
 - Relatively low self-discharge - self-discharge is less than half that of nickel-based batteries.
 - Low Maintenance - no periodic discharge is needed; there is no memory.
- Specialty cells can provide very high current to applications such as power tools.

Limitations

- Requires protection circuit to maintain voltage and current within safe limits.
 - Subject to aging, even if not in use - storage in a cool place at 40% charge reduces the aging effect.
 - Transportation restrictions - shipment of larger quantities may be subject to regulatory control. This restriction does not apply to personal carry-on batteries.
 - Expensive to manufacture - about 40 percent higher in cost than nickel-cadmium.
- Not fully mature - metals and chemicals are changing on a continuing basis.

The lithium polymer battery

The lithium-polymer differentiates itself from conventional battery systems in the type of electrolyte used. The original design, dating back to the 1970s, uses a dry solid polymer electrolyte. This electrolyte resembles a plastic-like film that does not conduct electricity but allows ions exchange (electrically charged atoms or groups of atoms). The polymer electrolyte replaces the traditional porous separator, which is soaked with electrolyte.

The dry polymer design offers simplifications with respect to fabrication, ruggedness, safety and thin-profile geometry. With a cell thickness measuring as little as one millimeter (0.039 inches), equipment designers are left to their own imagination in terms of form, shape and size.

Unfortunately, the dry lithium-polymer suffers from poor conductivity. The internal resistance is too high and cannot deliver the current bursts needed to power modern communication devices and spin up the hard drives of mobile computing equipment. Heating the cell to 60°C (140°F) and higher increases the conductivity, a requirement that is unsuitable for portable applications.

To compromise, some gelled electrolyte has been added. The commercial cells use a separator/ electrolyte membrane prepared from the same traditional porous polyethylene or polypropylene separator filled with a polymer, which gels upon filling with the liquid electrolyte. Thus the commercial lithium-ion polymer cells are very similar in chemistry and materials to their liquid electrolyte counter parts.

Lithium-ion-polymer has not caught on as quickly as some analysts had expected. Its superiority to other systems and low manufacturing costs has not been realized. No improvements in capacity gains are achieved - in fact, the capacity is slightly less than that of the standard lithium-ion battery. Lithium-ion-polymer finds its market niche in wafer-thin geometries, such as batteries for credit cards and other such applications.

Advantages

- Very low profile - batteries resembling the profile of a credit card are feasible.
- Flexible form factor - manufacturers are not bound by standard cell formats. With high volume, any reasonable size can be produced economically.
- Lightweight - gelled electrolytes enable simplified packaging by eliminating the metal shell.
- Improved safety - more resistant to overcharge; less chance for electrolyte leakage.

Limitations

- Lower energy density and decreased cycle count compared to lithium-ion.
 - Expensive to manufacture.
 - No standard sizes. Most cells are produced for high volume consumer markets.
- Higher cost-to-energy ratio than lithium-ion

Restrictions on lithium content for air travel

Air travelers ask the question, "How much lithium in a battery am I allowed to bring on board?" We differentiate between two battery types: Lithium metal and lithium-ion.

Most lithium metal batteries are non-rechargeable and are used in film cameras. Lithium-ion packs are rechargeable and power laptops, cellular phones and camcorders. Both battery types, including spare packs, are allowed as carry-on but cannot exceed the following lithium content:

- 2 grams for lithium metal or lithium alloy batteries
- 8 grams for lithium-ion batteries

Lithium-ion batteries exceeding 8 grams but no more than 25 grams may be carried in carry-on baggage if individually protected to prevent short circuits and are limited to two spare batteries per person.

How do I know the lithium content of a lithium-ion battery? From a theoretical perspective, there is no metallic lithium in a typical lithium-ion battery. There is, however, equivalent lithium content that must be considered. For a lithium-ion cell, this is calculated at 0.3 times the rated capacity (in ampere-hours).

Example: A 2Ah 18650 Li-ion cell has 0.6 grams of lithium content. On a typical 60 Wh laptop battery with 8 cells (4 in series and 2 in parallel), this adds up to 4.8g. To stay under the 8-gram UN limit, the largest battery you can bring is 96 Wh. This pack could include 2.2Ah cells in a 12 cells arrangement (4s3p). If the 2.4Ah cell were used instead, the pack would need to be limited to 9 cells (3s3p).

Restrictions on shipment of lithium-ion batteries

- Anyone shipping lithium-ion batteries in bulk is responsible to meet transportation regulations. This applies to domestic and international shipments by land, sea and air.
- Lithium-ion cells whose equivalent lithium content exceeds 1.5 grams or 8 grams per battery pack must be shipped as "Class 9 miscellaneous hazardous material." Cell capacity and the number of cells in a pack determine the lithium content.
- Exception is given to packs that contain less than 8 grams of lithium content. If, however, a shipment contains more than 24 lithium cells or 12 lithium-ion battery packs, special markings and shipping documents will be required. Each package must be marked that it contains lithium batteries.
- All lithium-ion batteries must be tested in accordance with specifications detailed in UN 3090 regardless of lithium content (UN manual of Tests and Criteria, Part III, subsection 38.3). This precaution safeguards against the shipment of flawed batteries.

Cells & batteries must be separated to prevent short-circuiting and packaged in strong boxes.



June 8, 1984, Barneveld, WI F5 Tornado



Note: On June 8, 1984, a violent tornado struck the village of Barneveld in east-central Wisconsin. Last year (2009) marked the 25th anniversary of the tragedy. NBC15 produced the following stories. To watch these videos, click on the video links ABOVE.

By NBC15's Dana Brueck:

25 years ago Monday, a powerful tornado wiped-out Barneveld. The tornado hit after midnight while many people were sleeping. 90% of the village was damaged or destroyed. The tornado was rated as an F-5 on the Fujita Scale; one of only two tornadoes in the history of Wisconsin to achieve such a rating. The Barneveld tornado claimed nine lives, seven of them in one neighborhood.

The names of those who died:

Robert Arneson
Matthew Aschliman
Ralph Hammerly, Jr.
Kirk Holland
Bruce Simon
Cassandra Simon
Jill Simon
Elaine Slewitzke
James Slewitzke

The youngest victim to die 25 years ago was a 2-year-old boy. NBC15's Dana Brueck interviewed his mother, who says she still thinks of her son, Matthew, every day.

"If anyone has never lost a child you'll never know."

Sue Clerkin lives with the unimaginable loss every day.

"And it's not like the death of a parent," she says, "I thought that was the end of life, and then Matthew died and everything kind of changed, totally."

The afternoon of June 7th, 1984 Sue and her husband at the time, Charles Aschliman, were working in the yard of their home on Swiss Lane, on Barneveld's far east side.

"The day, it was very windy."

By nightfall, the wind would pick up over Barneveld with deadly force.

"I looked over my right shoulder and knew that he was dead."

"Our kids have, for some reason, always been afraid of thunder and lightning."

Their son Michael already was in bed with his parents when younger Matthew began to cry.

"I just told Charlie to move over, I got another one in here." Within seconds, shortly before 1:00 AM, Sue sensed a problem.

"I could hear it coming."

"...just ran through the house... "

Charlie with Michael, Sue with 2-year-old Matthew in her arms...the family dashed toward the basement.

"And it knocked us down, and I felt a pinch in my finger."

"He never cried, never said a word," she says, "So then I kicked my feet out from behind me and rolled on my back, and that's when he gasped for air."

Under a black sky pouring down raindrops the size of quarters, the family headed to the fire station around the bend from their home.

"At that time I could tell when it lightnined, my finger was cut off and that right side of my body hurt."

Sue would spend several days in the hospital, getting some 200 stitches in her neck.

"I didn't know anybody died until I watched it on TV. I had no clue."

The flying debris that severed her finger, killed Matthew, whom she believes was an angel among them.

"I do believe that if he didn't cry and wake us up that we would've all died."

The Aschlimans re-built but eventually moved away from Swiss Lane.

"I lived my life around the weather for several years, several years."

Nowadays, Sue is re-married, a bar owner and mom to several other children.

"Time waits for no one. It doesn't matter what happens in your life, it just does not wait for no one."

But it helps ease the pain of the one who was lost.

"I think about him every day ... I think about what he'd look like, what he'd be doing."

"He saved our lives. He did."

Barneveld has grown the last 25 years - and victims of the tornado have grown up, changed by the disaster.

The tornado claimed 9 lives, from as young as 2-years-old to people in their 50s. The community has moved beyond the tragedy, but survivors still find their village is known for what it survived.

"You know they always said, Barneveld's protected by the mounds. We're never going to have a tornado here," Sue Clerkin says.

The morning of June 8th, 1984 proved what many believed about their village was a myth.

"Still to this day, every time I go to Barneveld, it's still windy, it's always windy there," Clerkin says.

Trevor Simon, known by many as TJ, cannot remember the day. He was short of his second birthday when the tornado killed his parents, Bruce and Jill, and his big sister, 8-year-old Cassie. A newspaper article after the disaster details Trevor's injuries. He was thrown three blocks from his family's home on Swiss Lane, then found along railroad tracks.

"They found me and then they recognized me 'cause you know, they knew my dad, knew me."

"One of the dead was Bruce Simon... "35-year-old Bruce Simon was well known among first responders, having trained many of them.

"He seemed from what I'm told to be a pretty extraordinary person, you know, like he was a teacher, he was a nurse, EMT, in the air force."

Trevor says the stories about his family almost seem like fairy tales.

"I don't know. He just seemed too good to be true. I wish I could've gotten to know him but what can you do, you know." Nowadays, Trevor lives in Green Bay. He grew up with his natural father's brother, Rick and his wife, Judy, in Watertown. He also has grown up in a wheelchair, paralyzed by the injuries he suffered as a toddler. But, a fan of wheelchair basketball, he says he's proud to share his story with his teammates - a story of survival.

"When I go out and say mine, they just kind of look at me with disbelief, like you're pulling my leg. And I have to say, just go look it up, you know."

If Barneveld's known by some for its windy days, it's also known for its resolve - to do what it promised after the tornado - not to give up, but to go on...

"It can either make you or break you, it can," Clerkin says. A number of people say they still get nervous when severe weather heads their direction. They say they never will forget the tragedy of June 8th but they've also put it away, let it go for the families and the community itself.

By NBC15's Chris Woodard:

As the first news station on the scene that night, the images captured by NBC15 photographers are some of the most dramatic; showing just how desperate the search was to find and help any survivors.

"I still shake my head when I think of those scenes."

For Rick Fetherston, the horror is still fresh 25 years later. As an NBC15 News Anchor in 1984, he walked straight into a nightmare.

"The disaster here in Barneveld isn't just one story, it's many stories."

... stories of fear and loss that seemed never ending.

"I held my little baby like this and we spun around at least once or twice."

"I don't know, it just all happened so fast. Big crack of lightning come, the electricity all went off and next thing you know all the walls were falling in."

"It was shocking and it didn't compare to anything else so it was a powerful story from day one, people were shaken by it" said Fetherston. Perhaps no one saw more horror that night than an NBC15 reporter. "Jay Jones of our staff was the first news reporter on the scene that night" said Fetherston.

Clip from Jay Jones: "Rescue workers spent 3 hours digging the dead and injured out of the rubble, over 200 were hurt, 66 required hospitalization, 9 people died."

What Jones didn't tell viewers is how he spent hours not reporting, but trying to save lives.

"Jay, being an EMT, spent the first part of his time there actually assisting victims" said Fetherston. "I mean he let us know how bad it really was." For longtime NBC15 weatherman Elmer Childress, 25 years later the tornado is still hard to figure out. He says seemingly appearing out of nowhere. "Even though I had spent years and years in Kansas in tornado alley I had never really seen anything like that" said Childress.

Today, NBC 15's studios are much different than they were back in '84. Then the entire station went off the air at 12:30 a.m., so even if Childress had been here when the tornado quickly developed, a few minutes after he'd left for the night, he wouldn't have been able to go on air and warn anyone.

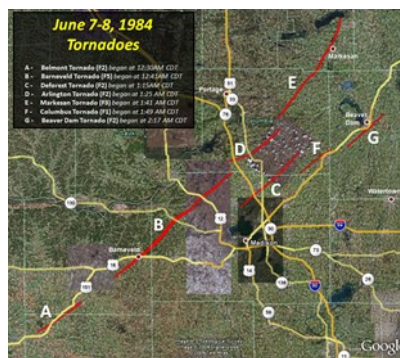
"We just didn't have the communication back then that I guess we needed."

What they did have were cameras....

... to capture the horror...

... and the rebirth.

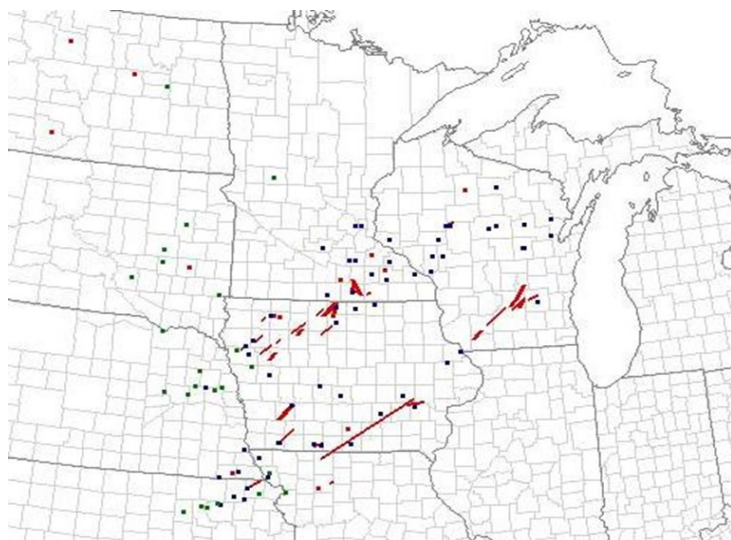
A part of history Barneveld will never forget, and a history cemented in the minds of those who witnessed it forever. Shortly after the Barneveld tornado, Elmer Childress says the station made the decision to stay on the air later at night and they began the practice of staying on with live forecasts until weather threats were over.



Early in the morning hours of June 8, 1984, a series of tornadoes affected portions of Southern Wisconsin. A number of these tornadoes were strong to violent, causing significant damage. The most notable tornado was the one that struck the town of Barneveld, Wisconsin in Iowa County shortly before 1

AM.

About 90 percent of the town of Barneveld was destroyed. 93 homes were destroyed, and 64 were damaged. Seventeen of eighteen businesses and public buildings in the village were destroyed. This tornado was rated a F5 on the Fujita Scale for tornado intensity. A F5 is the highest rating that a tornado can achieve, and this particular tornado was given a F5 rating because of the severity of the damage caused to relatively new construction homes in Barneveld. More information about this tornado, and other tornadoes in the outbreak, is available below.



A map of the severe weather reports on June 8, 1984 courtesy of SPC's online SeverePlot.

The severe weather outbreak spanned 8 states including the Eastern Dakotas, Eastern Nebraska, Northeast Kansas, Northwest Missouri, Iowa, Southern Minnesota and Wisconsin. The most significant severe weather occurred from Iowa, north-eastward into Southern Minnesota and Southern Wisconsin. This was also the same area that experienced the most tornadoes and the most persistent and severe thunderstorm activity through the late afternoon and evening of June 7th.

SEVERE WEATHER INGREDIENTS JUNE 7, 1984



Left: A depiction of the severe weather ingredients and surface fronts at 7 PM June 7, 1984.

SURFACE WEATHER MAP 10 PM CDT JUNE 7, 1984



Left: A depiction of the basic surface weather conditions at 10 PM June 7, 1984.

The two maps above show the general weather setup back on June 7-8, 1984. The image on the left is a composite image with several severe weather ingredients overlaid. It depicts the conditions around 7 PM on June 7, 1984, but please note that some smoothing and estimation was used in the production of that graphic. Shaded in purple, blue, and yellow are the varying levels of instability ahead of the low pressure

system, based on the actual observed lifted indices. You can see that the axis of best instability encompassed most of Iowa, Southeastern Minnesota and Western Wisconsin at 7 PM. The white lines are upper level streamlines, showing the direction of the wind flow in the upper levels of the atmosphere. Finally, the black shaded and scalloped area is the approximate location of a very strong upper level jet streak. Vertical wind shear, the difference in wind speeds, and wind direction, between the upper levels of the atmosphere and the lower levels of the atmosphere, was maximized underneath the strong jet streak. The tornado outbreak occurred about where the strongest wind shear and most unstable air mass overlapped.

The image on the right shows the basic surface front locations at about 10 PM on June 7, 1984, or about 3 hours prior to the "Barneveld tornado". The storms, at that time, were progressing across Northwest and West-Central Wisconsin, and stretched back through Eastern Iowa and into Northern Missouri. This means that the storms were moving across a very warm, humid, and unstable air mass as they approached Wisconsin. With abundant energy, and strong vertical wind shear, the storms continued to produce severe weather well after dark.

June 7-8, 1984 Tornado Statistics

Known As	Begin Time/ Date	Fujita Rating	Max Path Width h	Approx. Path Length
(A) Belmont Tornado	1230 AM CDT	F2	40	13 mi.
(B) Barneveld Tornado	1241 AM CDT	F5	450	36 mi.
(C) Deforest Tornado	115 AM CDT	F2	50	21 mi.
(D) Arlington Tornado	125 AM CDT	F2	50	16 mi.
(E) Markesan Tornado	141 AM CDT	F3	200	29 mi.
(F) Columbus Tornado	149 AM CDT	F1	30	10 mi.
(G) Beaver Dam Tornado	217 AM CDT	F2	50	13 mi.

A table of the tornadoes over Southern Wisconsin on June 7-8, 1984. All but one of the tornadoes were strong or violent (rated F2 or higher on the Fujita Scale). The map was adapted from a survey map drawn by Dr. Ted Fujita.

Belmont Area F2 Tornado

The tornadoes in Southern Wisconsin were produced by a cluster of supercell thunderstorms that moved northeast through the area shortly after midnight on June 8, 1984. The first tornado that occurred began just south of Belmont in Lafayette County at about 12:30 AM CDT. Mostly tree damage was noted along the path of the tornado, with some trees uprooted, but some structural damage also occurred. A

barn and several outbuildings were destroyed, and a house was unroofed. The tornado moved into Iowa County and dissipated near Mineral Point.

Barneveld F5 Tornado

The second tornado was the strongest of the entire outbreak in the Midwest. This tornado began about 5 to 6 miles southwest of Barneveld at 12:41 AM CDT, and widened and intensified as it approached the town. The Barneveld area was hit shortly before 1:00 AM CDT, and the tornado moved into Dane County quickly thereafter. It struck the Black Earth area around 1:07 AM CDT, but did not dissipate until around 1:40 AM CDT in far northern Dane County. As mentioned, about 90 percent of the Village of Barneveld was destroyed. A significant amount of damage occurred along most of the path, but the most severe damage was in the Village of Barneveld. Some fairly new homes were completely destroyed with only the foundation remaining. Some 25 million dollars worth of damage occurred in Barneveld alone. 9 people were killed, and another 200 were injured. The total path length was about 36 miles and the tornado was on the ground for 59 minutes.

To this date, the "Barneveld Tornado" remains the second costliest tornado, based on official damage costs, in Wisconsin history with total damage estimated at \$40 million. The ["Oakfield Tornado"](#) on July 18, 1996 remains the costliest tornado in state history, with total estimated damage costs at \$40.4 million. However, if you adjust for inflation to 2009 dollars, the Barneveld tornado becomes the costliest tornado in Wisconsin history. As mentioned, a F5 rating is the highest rating that a tornado could achieve on the Fujita Scale. Only three tornadoes in Wisconsin have attained such a rating since 1950 - the Oakfield tornado, the Barneveld tornado, and another that occurred on June 4, 1958 striking the town of Colfax, Wisconsin.

Deforest Area F2 Tornado

A tornado began at about 1:15 AM CDT, right around Deforest, while the Barneveld Tornado was still in progress further to the west in Dane County. Several houses were unroofed in the Deforest area. The tornado continued northeast into Columbia County. The total track length was approximately 21 miles.

Arlington Area F2 Tornado

A tornado began at about 1:25 AM CDT, right around Arlington, also while the Barneveld Tornado was still in progress off to the southwest. There was some damage to some barns, garages and sheds as the tornado moved northeast for about 16 miles before dissipating in central Columbia County.

Markesan F3 Tornado

The fifth tornado in Southern Wisconsin during this outbreak began at about 1:41 AM CDT. It started near Rio in Columbia County, and moved northeast into Green Lake County with time. A farm near Cambria suffered significant damage to most of the buildings on the property. This tornado likely had the second longest track of the tornadoes that occurred in Southern Wisconsin, close to 30 miles.

Columbus Area F1 Tornado

A tornado began at about 1:49 AM CDT to the west-southwest of Columbus and then moved northeast to near the Columbia-Dodge County border in the vicinity of Columbus. The tornado was on the ground for about 10 miles.

Beaver Dam Area F2 Tornado

The last tornado to occur during the outbreak in Southern Wisconsin began at about 2:17 AM CDT. It started off to the southwest of Beaver Dam in western Dodge County, and then moved northeast, barely missing the city of Beaver Dam to the southeast. The tornado eventually dissipated to the northeast of Beaver Dam in rural northern Dodge County. Fairly extensive damage was noted on a handful of homes, along with some farm outbuildings being destroyed.

ORIGINAL PUBLIC INFORMATION STATEMENT ABOUT THE TORNADOES

AN AREA OF LOW PRESSURE GATHERED STRENGTH ACROSS THE UPPER MIDWEST DURING THE AFTERNOON OF JUNE 7 1984. MOISTURE...SHEAR...AND INSTABILITY HELPED TO SPAWN TORNADOES OF THE F1 TO F3 VARIETY ACROSS NORTHERN MISSOURI... NORTHEASTERN KANSAS...SOUTHERN AND NORTHWESTERN IOWA...AND SOUTHEASTERN MINNESOTA.

AS THE ATMOSPHERE BECAME MORE UNSTABLE BY THE LATE EVENING HOURS...A CLUSTER OF THUNDERSTORMS DEVELOPED OVER SOUTHWESTERN WISCONSIN. THE FIRST TORNADO WAS NOTED TO SPIN UP IN THE BELMONT AREA AT 1230 AM CDT JUNE 8. THIS TORNADO TRAVELED TO MINERAL POINT WHERE IT DISSIPATED. THIS TORNADO WAS RECORDED AS AN F2 ON THE FUJITA SCALE.

AT 1241 AM CDT A SECOND TORNADO SPUN UP SOUTH OF RIDGEWAY AND INTENSIFIED RAPIDLY AS IT CRASHED THROUGH BARNEVELD IN IOWA COUNTY. THE VIOLENT TORNADO CONTINUED HEADING NORTHEAST INTO BLACK EARTH BY 107 AM CDT. THE TORNADO FINALLY DISSIPATED AT 140 AM CDT JUST SOUTHEAST OF LODI...NEAR THE COLUMBIA/DANE COUNTY BORDER.

AFTER A 36 MILE LONG PATH FOR 59 MINUTES...93 HOMES WERE COMPLETELY DESTROYED...64 OTHERS WERE DAMAGED. SEVENTEEN OF THE EIGHTEEN BUSINESSES AND PUBLIC FACILITIES IN THE TOWN OF BARNEVELD WERE ALSO DESTROYED. NEARLY 90 PERCENT OF THE TOWN WAS COMPLETELY DEVASTATED. AT ONE POINT IN TIME...THE WIDTH OF THE TORNADO DAMAGE WAS NEARLY 400 YARDS WIDE.

DESPITE THE TORNADO PROPAGATING THROUGH THE TOWN IN THE MIDDLE OF THE NIGHT...IN COMBINATION WITH THE MYTH CIRCULATING AROUND THE TOWN THAT NO TORNADOES COULD EVER SURVIVE THE HIKE UP THE BLUE MOUND...9 PEOPLE DIED AND 197 OTHERS WERE INJURED. 25 MILLION DOLLARS IN DAMAGE WAS CALCULATED.

IT WAS LATER DETERMINED BY TED FUJITA THAT THE BARNEVELD TORNADO WAS INDEED AN F5...THE HIGHEST LEVEL ON THE FUJITA TORNADO SCALE.

THE CLUSTER OF THUNDERSTORMS THAT SPAWNED THE BARNEVELD TORNADO HAD ALSO SPAWNED OTHER TORNADOES ACROSS SOUTHERN WISCONSIN LATER THAT NIGHT. OTHER TORNADOES INCLUDED...

...THE F2 ARLINGTON /COLUMBIA CO./ TORNADO...
...THE F2 DEFOREST /DANE CO./ TORNADO...
...THE F3 MARKESAN /GREEN LAKE CO./ TORNADO...
...THE F1 COLUMBUS /DODGE CO./ TORNADO...
...THE F2 BEAVER DAM /DODGE CO./ TORNADO...

ALL IN ALL...9 PEOPLE WERE KILLED AND 200 OTHERS WERE INJURED DURING THE ENTIRE TORNADO OUTBREAK. TOTAL DAMAGE WAS CALCULATED AT 40 MILLION...25 OF THAT 40 MILLION OCCURRED IN BARNEVELD ALONE.

...A COMPREHENSIVE SUMMARY OF THE FUJITA SCALE...

...WIND SPEEDS ARE ESTIMATED FROM DAMAGE SURVEYS...

F1...40-72 MPH
F2...73-112 MPH
F3...113-157 MPH
F4...207-260 MPH
F5...261-318 MPH

Early Radio: Military Communications

[Mike Murdock](#) - A True Birthday Story - November 10, 1969

The last week of October was soggy all across northern I Corps. Low clouds hung over the DMZ, filtering the weak sunlight so that shapes barely 100 yards away were shadows.

The [fire support base](#) at [Con Thien](#), the "Hill of Angels", was a quagmire. Days of heavy rain had turned the red earth into gruel. On the tank trail and other places churned by tracked vehicles the yard deep mud had the consistency of pudding. Passing vehicles splashed parallel channels which quickly refilled with the oozing, relentless, muck. The soupy substance was level with the running boards of trucks and flowed into the floor boards of smaller vehicles.

Marines trying to cross the road were forced to wait until a tank of armored personnel carrier passed, momentarily clearing two semi-solid footholds in the sea of sucking, clinging mud. As a vehicle passed, the young men would jump into the closest track, regain their balance and leap to the second track. Men too slow or with legs too short to clear the sometimes waist deep furrows found themselves encased in

the slime, tugging mightily to extricate themselves before the next speeding vehicle approached. Boots hastily pulled on without being tightly laced were frequently left behind, and once the mud closed over anything in its grasp, all trace of the item disappeared. Woe be unto the individual who had the misfortune or poor judgment to allow his weapon to slip below the surface.

The single track road leading south towards Cam Lo and Route Nine was all but impassable. Nothing moved north or south except absolutely essential men and materials. Men trudged forward, bent from the waist, laboriously pulling each foot from the mire only to plunge it once more into the filth, driven downward by the weight of weapons and equipment. Vehicles slewed and slid along, spraying everything and everybody with the ever present mud.

The low weather, coupled with a high tempo of operations further west, severely limited the helicopter transportation available. The limited air lift placed an increased burden on the ground transport wallowing up "ambush alley" through the fire support bases at Yankee Station and Charlie Two. Anything other than ammunition, fuel and the inevitable "C" rations remained in the marshalling areas at [Dong Ha](#), the 3rd Marine Division "rear". As the supply line stretched thinner and thinner, items other than essentials began to disappear. Eventually, an evening arrived when the last warm Black Label was consumed. Searches through the bunkers buried in the soggy hill side confirmed that the Marines at [Con Thien](#) were out of beer.

Beer took on a greater prominence at the fire bases scattered across the top of South Viet Nam. Most of the potable water was so heavily chlorinated that its taste resembled a cross between Listerine and diesel fuel. Clothes or skin washed with this water smelled like choline almost permanently. Many a thirst was quenched and many a meal was eaten with warm beer rather than water. Beer was a link to the "world", a momentary glimpse back at recently departed days of high school and parties and girls. Beer was the international currency. Beer could acquire things that money could not touch. A young Marine who would not sell his last bar of soap for any amount of MPC would gladly do so for enough beer. (MPC (military payment currency) was [monopoly money](#) printed with colorful and idyllic scenes of a peaceful Viet Nam none of the Marines in northern I Corps had ever seen). Soap, cigarettes, and other creature comforts were often available if there was beer to trade. A convoy stranded at some tiny outpost when the road closed each evening might easily persuade an adventurous tank crew to escort them "home" for the promise of a case of beer. Drinking beer was macho, Marines were macho. Marines drank beer. As the rains continued into November, the Marines at Con Thien were out of beer.

As transportation slowed and supplies became harder to find, only war-related ingredients moved. Despite the quicksand roads, the heavy skies, and the frequent enemy interruptions, the Army, that well-spring of endless shiny new trucks and clean uniforms continued to resupply their eight inch howitzer battery with the huge artillery ammunition necessary to support the war. At least twice each week Army ammunition convoys made the trek from [Dong Ha](#) and Quang Tri carrying their deadly missiles.

Late one afternoon a fantastic rumor spread through the water logged Marines clinging to the sides of Con Thien: The most recent Army resupply had brought in a pallet (84 cases) of beer! Evidently the Army battery commander intended to issue his men a ration of beer each day as a morale booster. The Army had locked this treasure in a closely guarded [CONEX box](#). This box, a 10 foot square steel container sat squarely in the middle of the artillery battery's area, several yards away from the nearest bunker or gun emplacement. The hinged door of the box was secured with a heavy chain bound with a massive padlock. Access to the CONEX box was comparable to holding the keys to Ft Knox.

The Marines operating the intelligence gathering outpost at Con Thien possessed a small diesel fuel generator. Their powerful radios could not operate on batteries and as the sole source of electricity, they had parleyed their good fortune into admittance to the artillery battery's field mess. Providing the Army with lights was a small price to pay for warm chow once a day. As Marines lucky enough to eat in the Army field mess passed the CONEX box they would cast furtive glances in its direction, but extra attention brought instant jealous reactions from nearby soldiers. No dragon ever guarded her horde more suspiciously than that beer was guarded.

As days passed and the soldier's daily ration shrunk the beer supply, the Marines became desperate. Beer was being consumed, beer, the fruit of the gods, the currency of the world, the mark of manhood, was in the hands of the dog faced, draft-riddled, United States Army!

Private First Class Schmucatelli was standing radio watch, monitoring the situation reports and time checks of the Marines standing the "lines" and operating the evening's listening post outside the perimeter. Suddenly, four of his platoon mates burst into the operations bunker. Smeared with mud, they demanded the unit's [bolt cutters](#), part of the inventory of items each successive Marine dutifully inventoried and signed for when assuming radio watch. Schmucatelli was extremely apprehensive about relinquishing control of any of the items he was signed for. Previous personal counseling sessions with the First Sergeant had impressed upon him the importance of "taking charge of his post and all government property in view". No amount of cajoling or threatening could convince Schmucatelli to deliver the bolt cutters. Finally, after a hushed consultation the quartet of Marines confided in Schmucatelli that they needed the bolt cutters to "unlock" the Army's [CONEX box](#). A young man of screwed judgment and unusual analytical skills, Schmucatelli immediately produced the bolt cutters, admonishing his fellow conspirators that their loss would result in another, more instructional, visit with the First Sergeant. Armed with the bolt cutters, the four Marines disappeared into the rain storm pounding Con Thien.

Schmucatelli's mind soon began to conjure up countless situations which would prompt the First Sergeant to need those [bolt cutters](#) in the middle of a dark, rainy night. Each sound from outside the bunker brought visions of the approaching First Sergeant, something to be anticipated with much more apprehension than any North Vietnamese sapper foolish enough to be out on such a miserable night. Finally Schmucatelli could stand the waiting no longer and stepped out into the night, turning toward the Army artillery battery invisible in the rain. As he anxiously searched for signs of his returning

bolt cutters, the artillery battery burst into a frenzy of light and activity. Flashlights criss-crossed the area, men could be seen running from bunkers and shouts pierced the distance between Schmucatelli and the turmoil. Schmucatelli's heart sank, his friends had been discovered, the bolt cutters would be lost, he would spend more quality time with the First Sergeant, and worst of all, there would be no beer. As the rain pounded his helmet, Schmucatelli forlornly watched the artillery battery and tried to compose some plausible excuse for his dereliction of duty.

Slowly the activity beyond him became more orderly and concentrated in four specific areas. Schmucatelli was sure the would-be beer thieves must be cornered. In addition to any official reprimands his friends would receive he was sure they would also be handled none too gently by their captors. As his mind raced, trying to decide if he should call for reinforcements or just wait for the inevitable, he noticed that the four concentrations of activity did not converge as they should have with four captured Marines. The soldiers were not cornering his platoon mates, they were preparing their four howitzers for an emergency fire mission! Life was good again, perhaps his friends would survive the night, perhaps he would get the First Sergeant's bolt cutters back, perhaps there would be beer. As the roar of the huge cannons began to split the night and high explosive and steel began to rain down somewhere out on the coastal plain, Schmucatelli resumed his anxious wait.

Slowly, stealthily, four apparitions appeared out of the night. These things weren't his comrades, these things weren't even human! Four characters from some grade B horror film approached him. Four squishing, dripping, misshapen globs of mud, unrecognizable as any known living creature, each carrying two cases of beer (and one also carrying a pair of bolt cutters) panted up to the operations bunker door. The Marines had arrived and the situation was well in hand. Amidst laughter and gulps of air, Schmucatelli's friends explained how they crept up the ridge to the CONEX box, froze in it's shadows as the artillery battery came alive in preparation for the fire mission, and then, masked by the noise and confusion of the moment, captured their objective! Schmucatelli, with the bolt cutters once more safely in their proper place, added that he was glad he had loaned them for the "mission". His friends exchanged glances and then explained that unbelievably, they had found the key in the CONEX box's lock! The bolt cutters weren't even used! Perhaps the sweetest part of the entire escapade was that the eight cases of beer now in the possession of the Marines had been the last cases in the container. Now they had beer and the Army didn't!

Next morning, the CONEX box was found securely locked, but the key was nowhere to be found. Once the chain was cut and the loss discovered, the entire battery area was turned upside down. When the battery commander learned that the last of his beer was missing, life became miserable. Extra duty was meted out for the most minor infractions, and the CO's rage, transmitted to his [noncoms](#), soon permeated the entire command.

The day after the Marine's raid on the Army beer locker was November 10th, the 194th birthday of the United States Marine Corps. Although holidays arrived and passed in Viet Nam with little more than a pause, the Marines always found time

to celebrate their heritage. In trenches in France, in swamps and jungles in the Pacific, on frozen ridgelines in Korea, and in countless other locations, sometimes in the midst of battle, the greeting "Happy Birthday Marine!" had been repeated for almost two centuries.

Despite his foul mood as a result of the beer theft, the artillery battery commander greatly admired the Marines, and offered the meager fare available in his field mess for a birthday celebration. A crude cake was prepared and plans went forward for all Marines not occupied with duties to assemble in the artillery battery for a cake cutting.

Late on the afternoon of the 10th the Marines gathered on the hill at Con Thien. Most were covered in mud, many were injured, and all were weary. The combination of the foul weather, the rigors of life literally scratched from the earth, and the ravages of regular and violent contact with the enemy left the young men near exhaustion. Nevertheless, it was the 10th of November and they would remember their fellow Marines and the heritage which made them the special breed they were. As the cake was cut, the Army commander remarked that the traditional toast would be missing from the Marine's celebration that year. From out of the gathering stepped five young men carrying armfuls of beer. Amid whoops and backslapping, they proudly passed out their treasure. C ration cans and canteen cups were soon filled and when all present, to include the Army battery commander, had a beer, the Marine company commander raised his can and toasted "Gentlemen, the United States Marine Corps!" Handshakes and birthday greetings were exchanged all around and as the weary Marines, now one year older, began to descend to their bunkers in the mud below the ridge, the Army commander thanked the Marine lieutenant for sharing his precious beer. Knowing what a priceless commodity beer was, the Army officer remarked that this was just another illustration of the discipline of the Marines. While his soldiers had broken in and stolen the last of the Army beer, the Marines had the fortitude to save theirs for this occasion. **HAPPY BIRTHDAY MARINES!**



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Chatter Deadline

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

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

or by Post to:

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

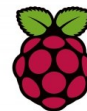
Next Regular Meeting

The next meeting will be on **Thursday, May 26st, 2016**, at 7:00PM. We meet in the Fellowship Hall of Redemption Lutheran Church, 4057 N Mayfair Road. Use the south entrance. Access the MRAC Yahoo group for important details about the February Meeting.

Meeting Schedule:

June 30th, 2016- 7 pm

Please do not call the church for information!



Club Nets

Please check in to our nets on Friday evenings.

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

Visit our website at: www.w9rh.org

Or phone (414)-459-9741

Name of Net, Frequency, Local Time	Net Manager
<u>Badger Weather Net (BWN)</u> 3984 kHz, 0500	W9IXG
<u>Badger Emergency Net (BEN)</u> 3985 kHz, 1200	NX9K
<u>Wisconsin Side Band Net (WSBN)</u> 3985 or 3982.5 kHz, 1700	KB9KEG
<u>Wisconsin Novice Net (WNN)</u> 3555 kHz, 1800	KB9ROB
<u>Wisconsin Slow Speed Net (WSSN)</u> 3555 kHz, Sn, T, Th, F, 1830	N1KSN
<u>Wisconsin Intrastate Net - Early (WIN-E)</u> 3555 kHz, 1900	WB9ICH
<u>Wisconsin Intrastate Net - Late (WIN-L)</u> 3555 kHz, 2200	W9RTP
<u>ARES/RACES Net</u> 3967.0 kHz, 0800 Sunday	WB9WKO
* Net Control Operator needed. Contact Net Manager for information.	

VE Testing:

May 28th, 9:30am— 11:30am

No testing: June, July or December

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

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

Area Swapfests

June 6th, Starved Rock Radio Club/Princeton Illinois Hamfest Location: Princeton, IL **Type:** ARRL Hamfest

Sponsor: Starved Rock Radio Club (W9MKS)

June 11th, Lakes Area Amateur Radio Club, FreeFest
7-11 am. Lyons Town Hall, Lyons WI

Free Admission for Buyers and Sellers

MRAC Working Committees

100th Anniversary:

- Dave—KA9WXN

Net Committee:

- Open

Field Day

Dave—KA9WXN, Al—KC9IJJ

FM Simplex Contest

- Joe – N9UX
- Jeff – K9VS

Ticket drum and drawing

- Tom – N9UFJ

Newsletter Editor

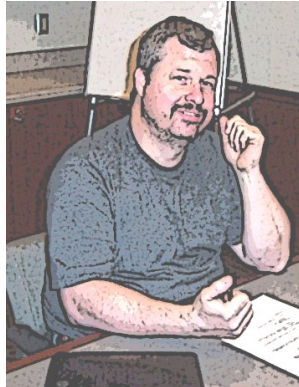
- Michael-KC9CMT
- Pancho- KA9OFA

Webmaster

- Dave, KA9WXN

Refreshments

- Hal—KB90ZN



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@arri.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 \pm 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

Welcome

Milwaukee Area Nets

Mon.8:00 PM 3.994 Tech Net

Mon.8:00 PM 146.865- ARRL Newsline

Mon.8:00 PM 146.445+ Emergency Net

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

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

Mon. 8:45 PM 147.165- ARRL Audio News

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

Mon. 8:30 PM 146.820 Waukesha ARES Net —

on the 1st, 3rd, and 5th Monday of each month.

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

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

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

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

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

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

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

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

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

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

Thur. 8:00 PM 443.800+ Tech Net

Thur. 9:00 PM 146.910+ Computer Net

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

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

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

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

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

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

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

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

Sun 8:00 PM 146.910+ Information Net

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

Sun 9:00 PM 146.910+ Swap Net

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

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

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

