



Happy New Year!

The Spectrum



Issue 01

January 2005

Words From The President

Another year has come and gone. It's amazing how quickly time flies.

The club has come a long way in a short period of time. The work on the QRM room is almost complete. It will not be long that radios will be operational anytime a member would like to use them. It was great on Skywarn Day to hear HF, PSK 31 and all the normal noises associated with amateur radio coming out of the shack. Let me tell you, we had a lot of good signals from the QRM room that day!

My goal for this upcoming year is to try and make sure that if there is something you would like to learn or do with Amateur Radio, you will be able to do it with CARS. We have people with lots of knowledge from building and repairing antennas, to working satellites to digital modes of communication. We have folks that love to participate in contesting. We have folks that want to use amateur radio to help their communities in time of need. I do not know of another hobby that allows people to try and experience so many different things.

There are great things in store for the club this upcoming year and I am glad that I can be a part of the excitement with each and every one of you.

Happy Holidays from my family to yours and may everyone have a safe and prosperous new year!

73's
Keith
KG4ZXX

Raising an Aluminum Cloud

Leo KG4PWC

It was the weekend after Thanksgiving 2004 and gastronomic excesses must have caused mass migratory movement as 14 Hams converged on the QRM room on what started out as a very chilly morning in the low 30's. But by the afternoon the temperature climbed into the high 50's and the sun came out to see an aluminum cloud pointing north. Like all unnatural clouds, this one took an eruption of energy to lift into the sky.

If us Hams ever wonder why people think us as some sort of social anomaly, you only have to look at the gleeful expression of awe and inspiration as we watched this mass of aluminum lift skyward. But in another world, we would be a community erecting a barn for our neighbor. We would be a family building our house in the frontiers or we would be a company team completing a pivotal project. The erection of the log periodic antenna is physical evidence of the transfer of the role of club station from the Chesapeake Center for Science and Technology to the QRM room. The placement of the primary antenna christened the shack and launched it into a new era.

We had two portable electric screwdrivers, soldering irons and rows of tools that would make any chief Elf shop foreman happy. Despite the combined IQ of some of the finest minds in the Chesapeake Amateur Radio club, the project still caused some major headaches with seized nuts, broken and incorrectly sized U-bolts and some errors in measurements.

See "Cloud" on page 5

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Links of Interest

[Ham radio animated clipart and Graphics](#)

[Battle of the Ironclads \(Hampton Roads\) Official Records and Battle Description](#)

[KG4ZXX Page](#)

Upcoming Events

CARS Meeting

Monday, January 5th, 2005 7:00 PM
QRM Room

SHACK DAY!

Saturday, Jan 10th

ARRL's Kid's Day

Jan 2nd, 2005

Monitor Merrimack Event

March 5th, 2005

Spring Fest

April 8th, 2005 (Setup)
April 9th, 2005 (Event Date)

You Should Have Seen the One that Got Away!" ARRL November CW Sweepstakes

Leo KG4PWC

It is a common theme in any epic that the journey is more important than achieving the end. For the new Ham, that journey primarily involves getting licensed. Then there is building your first station and making your first contact. Some journeys take years to complete. If you have the time, getting the first 100 confirmed countries does not take very long but getting on the DX honor role with confirmed contacts for over 326 geographic areas takes 4-6 or more years. The most satisfying accomplishments, usually involve great skill. Just like fishing, to be able to consistently catch the citation fish takes skill and dedication.

OK enough of the soapbox! I had the honor of being invited to join members of the DXCC club to their annual outing to Don Lynch's (W4ZYT) alternate QTH near Corolla, N.C. In some circles, Don is known as "Mr. Contest". Besides being on the DX Honor Roll, he is one of two people who got me started in Amateur Radio. He actually is a professional colleague that I would periodically run into at meetings. He invariably would ask if I had gotten my license. After I got my license in 2001, he would ask how my CW was coming along. Once he knew I was thoroughly infected by the CW bug, I was reminded for 6 months to keep November 6th and 7th free, the weekend of the American Radio Relay League CW Sweepstakes.

November 6th started out with the Portsmouth Amateur Radio Club ARRL examination session. I knew that a number of the Volunteer Examiners (VE's) were away on a Boy Scout trip to help with the radio merit badge. So I volunteered to help out. Many of you know I have been the CARS VE Liaison for the last couple of years and

have assisted with several VBARC and PARC exams, but I had never done the Code portion. Well I was asked to lead the Morse Code section! So I started my day at 5 words per minutes with a character speed of 15 wpm. After helping out, I set out to North Carolina.

Now I've taken several years to get my mobile station going. I started out with a Radio Shack HTX 100, which is actually a nice 10-meter rig. I used a 10-meter Hamstick and made a few SSB QSO's on long drives. But eventually I got an Icom IC706 MKIIG and a used High Sierra 1500 Screwdriver antenna. I still haven't gotten a paddle for the truck so I'm using a straight key, which I picked up from SpringFest. Well, the traffic was light and the drive was easy so I fired up the old key and sent CQ on 40 meters and low and behold I got someone coming back to me. Well it is a real trick to copy code in the head and remember the call, name and QTH! But I muddled my way through it with several requests to repeat. But I had a nice QSO. I probably was sending between 12 and 18 wpm and receiving at about 20+. However, I would say that it is not something I would do in anything else but on a highway with no traffic. By this time I was on the outer banks and tuning the dial, I got N3G, one of the Coast Guard Auxiliary Special Event stations and I had a nice QSO with Ken.

It was easy to find the house. There are not very many (actually one) beach homes with a triband 3-element Yagi on the balcony and Carolina Windom antenna behind it. I timed my arrival perfectly. Everything was set up and the FOOD was out! I even had a spot to park in. The only surprise was the absence of serious mobile HF antennas on the other cars. But mobile operating is not the conventional way of getting DX contacts or winning contests.

The object of the ARRL Sweepstakes is to get contacts from all 80 sections of the ARRL and Canada during a 24-hour period that weekend. Getting all 80 is called a "clean sweep". Now my idea of a sweepstake is winning some serious money. But in this case, if you get a clean sweep you have to pay to get a mug or a pin. As you can guess, places like Hawaii, Alaska and the Northwest Territory are usually difficult, but Mississippi? Well it turns out with the help of a spotting net, very good operators in the hard to get regions and an awesome sunspot made the far stations relatively easy to "bag". The bands were so wide open that we were hitting the west coast easily on 40 and 80 meters with the Carolina Windom! But Mississippi, you would have thought that the state had no Hams. The members of the club reassured me that this was not unusual. In the past, states like Nebraska and South Carolina were difficult to get and were only logged in the 23rd hour of the 24-hour competition.

See "you should have seen" on page 7

LOCAL NETS

SKYWARN NET Fridays 1900 hours.	146.820 MHz
Old Dominion IRLP Net Sundays 2000 hours. IRLP Node #4865 (Simplex Frequency)	145.600 MHz
CARS 10 Meter Net 2000 hours on Mondays CARS doesn't meet	28.400 MHz
Hampton Roads Public Service Net Mon-Sat 2100 hours	146.970 MHz
VBARC 10 Meter Net 2000 hours on Thursdays VBARC doesn't meet	28.400 MHz
Portsmouth "RagChew" Net Monday & Wednesday 1930 hours	146.850 Mhz
Southeastern Virginia Traffic Net Sun, Tues, Thurs @ 2000 hours	146.850 MHz
Portsmouth Amateur Radio Emergency Services Net Fridays 2000 hours	146.850 MHz

The Battle of Great Bridge

vs.

National SKYWARN Recognition Day 2004

Leo KG4PWC

National SKYWARN Recognition Day has been an event that I considered as a barometer of the Chesapeake Amateur Radio Service (CARS) club's health and a gauge of my skills as a Ham operator. We have been fortunate to be allowed to operate using the NWS Wakefield station, WX4AKQ call sign during a segment of the special event. The first one I attended was in 2002 and we operated out of the old shack at the Chesapeake Center for Science and Technology. We operated 2 stations and had a number of contacts. I learned a lot about setting up scripts, and log sheets. We had noticed that the 40/80-meter dipole tended to bleed over into the Log Periodic antenna and the thin walls made it difficult to hear. I was acutely aware of my deficiency in not having a pair of headphones. The next year, Hurricane Isabel took out our Log Periodic antenna and we had to limp along with the dipole and a portable vertical antenna. Again, the 40/80-meter dipole bled into the upper bands and we basically ran one radio. The weather seemed to match the mood with cold blustery winds and overcast skies.

This year the weather was crisp and clear with no wind. As I was driving to the QRM Room with my High Sierra mobile antenna tuned to 20 meters I had a nice but brief QSO with a fellow in Texas. So the bands seemed to be in reasonably good shape. I had been looking forward to the 2004 National SKYWARN Recognition Day for some time. It was fun being in the middle of a pile-up the last 2 years. It would be our first major radio event in the QRM Room and the new Log Periodic antenna was up! Ricky, KC4RIC, the ever-enthusiastic Ham PSK31 evangelist would be present. He was bringing his gear and having made some 300 contacts using PSK31 in a few months, I new he would have the exchange dialed in. I would also be able to try out a Ten-Tec Omni VI Plus that the club was able to get for the station within the last week.

It had been suggested in the past that we should have a special event station to commemorate the Battle of Great Bridge in addition to our Battle of the Monitor Merrimac special event station we have in March. But the Battle of Great Bridge anniversary date was too close to the National SKYWARN Recognition Day and I hadn't given it much thought. So on the morning of the event, nothing prepared me for the article in the Virginia Pilot, which stated that the battle would be recreated at 600 Callison Dr. Well that was right by the address to the QRM Room. In fact the reenactment would be East, West and North of our QRM Room!

I had preinstalled several ropes in trees the week before so that I could string up both Radioworks Carolina Windom 40LP and 80LP antennas since we didn't have the 40/80-meter dipole up. As I got to the parking lot, I could see a few cars for the reenactment already there. Fortunately, Ruth KB4LIF and Dee Dee KI4DNN arrived, to prevent people from inadvertently running over the baluns. There were a few instances where I thought the battle would be reenacted in the parking lot over who had rights to the parking area immediately adjacent to the QRM room! I managed to get my antennas strung up with the two antennas at about 90 degrees apart and one end of each antenna anchored to the tower. The Carolina Windom 40 LP was about 20 feet away from the tower and both were about 40 feet in the air. Although I was in a hurry, I did enjoy the view from the tower with all the Revolutionary War reenactment going on around me.

The planned start time was 1000 but it wasn't until about 1030 that all the rigs were hooked up. The Ten-Tec Omini VI Plus fed the Carolina Windom 80LP, Ricky's PSK31 station consisting of a Yaesu FT 847 with Yaesu autotuner fed the Carolina Windom 40LP and the club's Icom IC706 MKIIG fed the Log Periodic. An Icom IC 2100 tuned to Keith's IRLP
Continued on next page

node fed the vertical collinear. Keith and my HT's monitored the 146.820 MHz repeater. Rich, WA4BUE, our resident Ten-Tec expert introduced me to the Omni VI Plus. Sonny, K4WYS helped oversee setup and later contacted us on all our bands.

All stations made contacts but the 40-meter band quickly faded. Unlike in years past, with the wire antennas not directly under the beam antenna, the beam antenna was not bothered by interference from the wire antennas. However, we found out that the 40-meter transmission on the 80LP overloaded the FT 847 on the 40LP on the 20-meter band despite the Carolina Windoms' relative locations.

I had ordered some bandpass filters, which are often used in multi-multi contest stations, but they were back ordered. Fortunately the November 2004 QST had a very nice article by H. Ward Silver on stubs. After reading the article I decided to bring along my MFJ antenna analyzer and tree pruning shears. I knew that solid core dielectric coax would have a velocity factor of 0.66 and foam core would be 0.8-0.84. I had done some preliminary calculations and knew that I would need 24 feet of solid core or 29 feet of foam core to make a ¼ wave stub for 40 meters. Bill, WF4R skillfully put a connector on some foam core RG8U and we cut the coax to 30 feet. Since PSK31 is done on 14.060-14.080 we set the MFJ meter to this frequency and measured the impedance of the stub with the end open and shorted. As Bill cut the coax with the tree pruning shears, Barry, W3AFH and I called out the impedances. First it was 123 ohms for the open and 25 ohms for the shorted stub. Cutting off 1 inch at a time we trimmed probably about 1-½ feet and got the impedance to over 1000 ohms open and 0 ohms shorted. The stub was connected to the FT 847 with a T-connector. With the stub shorted, it would null 40 and 15 meters. Voila, the SSB interference from the 40-meter band was almost gone! Unfortunately, 7/030 and 3.530 MHz frequencies were too closely related harmonically to the PSK31 frequencies and CW still overloaded the FT 847 receiver. But at last we could operate on 15 and 40 meters SSB with no significant interference to 20-meters!

Keith KG4ZXX set up the IRLP station and worked the National Hurricane Center in Florida. The HT's provided excellent coverage of those calling in on the repeaters. As with any special event or contest, we share the bands including the repeaters, so you learn to work around people and be patient. The final tally is not in but we probably made about 100 contacts. Ricky had the furthest DX with contacts from Columbia and the Caribbean. I made a number of contacts with the West Coast. As I had stated earlier, I expected Ricky to have PSK31 dialed in, but I was amazed at how much he had automated the whole process. Almost the entire QSO could be done with macros including the logging. This was true "Armchair" radio!

Like all CARS' activities, we had plenty of food. Bill demonstrated his culinary skills and we all enjoyed a great lunch. Karon, KI4FNR and family, Tom, KI4HNF and son, Matt, KF4EPI, Stewart, KG4KJW and Lee, KI4CAV stopped by. The highlight of the Day was the arrival of the Channel 48 cameraman and WAVY TV 10 meteorologist Jeremy Wheeler. Successfully running and demonstrating multiple modalities was very gratifying. Special thanks go to Dee Dee, KI4DNN who organized the event. I think the club is doing well and I continue to learn with each event.

73
Leo
KG4PWC

SKYWARN Day...2005



Bill (WF4R) and Ricky Lee (KC4RIC) check out PSK-31



Leo (KG4PWC) working the HF side of the house

“Cloud” from page 1

The antenna is about 36 x 20 feet in size and weighs about 60 lbs. It seems almost magical in its ability to handle 5 different bands including 20, 17, 15, 12 and 10 meters. All

elements are active. Depending upon the view, it looks like the skeleton of a very large kite or a strange kind of insect or an interplanetary sail. The longest element droops like a long wing at the bottom of its down stroke. Certainly if there was any significant wind during the installation, one could imagine that it would take off with a dozen Hams hanging by the talons of a large bird.

The antenna elements, which had been assembled, earlier by Sonny K4WYS and Ricky KC4RIC were laid out on the ground and attached to the boom. Phasing lines, the balun and the feedline were attached. Sonny and Rich WA4BUE came early to bless the efforts. The multitude of parts, screws and nuts of varying sizes made the process arduous. It took the team 3 hours to accomplish these tasks. Standard Ham nutrition consisting of soda, coffee, doughnuts and pizza buoyed our activities.

With hurricanes and storms occurring on the weekends on a regular basis the antenna raising had been put off for some months. The morning weather seemed ominous, but as the clouds started to clear away, the antenna, was slowly hoisted up the tower. The antenna had a line at both ends and 2 sets of lines under the elements to keep the antenna from doing a death roll. Jim KG4WOJ was chief Tower Meister and perched himself with his family taking pictures on top of the tower. A temporary mast with pulley was attached to the tower. Bill WF4R oversaw the task of hoisting the antenna. Ron KI4FNN was positioned on the roof for assistance and the rest of us, Keith KG4ZXX, Paul K4PRB, Ruth, KB4LIF, Matt, KB1LCS, Lee KI4CAV, DeeDee KI4DNN, Tom KI4FNH, Don KB4NKP, and yours truly manned the other ropes. The antenna was lifted, tilted vertically, rotated and then rolled horizontally into its final position.

When the last bolt was secured, and Jim climbed off the tower, the antenna was picture perfect. Jim a self avowed QRP opportunist took advantage of the antenna to hook up his Yaesu FT 817 and with Keith at the mike proceeded to contact a station in Dayton Florida off the back side of the beam on 20 meters. With 2 watts, he got a S6 report!

Thanks to everyone for an enjoyable and highly rewarding day.

73
Leo
KG4PWC



Naked Tower



The Crew



Jim....The W4CAR climbing hero



Almost



SUCCESS!

Tales From the SkyWarn Coordinator

DeeDee KI4DNN

I thought I would share with you my adventures of being South Hampton Roads SkyWarn Coordinator. Since I decided to take this position in our wonderful club here, I have been busy with keeping our Friday night SkyWarn net going, and also preparing for SkyWarn Recognition Day. I was not at last years event, as I was not yet a ham, and not able to come that day. So I really wasn't aware of all the things that I would need to do.

There have been so many things to do, that this one person has not been used to doing at all. While I was somewhat aware of the activities involved because of my association with Ruth (KB4LIF) who was then doing the job of sky warn coordinator. She has been a wonderful helper and adviser, for me, and still is.

For one thing, when SkyWarn Recognition Day appeared on the web site I knew that it was my job to get that known to the club and get things going. Along with all that comes making the event known to others in the city. It meant calling TV stations and talking with the meteorologist there, and trying to tell them about the event. Let me tell you, my first attempt at this was with my favorite channel WVEC. I talked to Evan Stewart first, and he told me that my best bet would be to ask Craig Moeller, or Julie Wilcox. Well I did just that, I called back and talked to Craig the next day, he told me he would very much like to come out, but had all ready had a full schedule and to check with Julie. I did that, but unfortunately she didn't return my call or email. I was a little disappointed with it, but that was okay, there were other channels to get.

Then, I talked to Channel 3's chief meteorologist there, Dave Parker. He told me, that they had a full schedule and long working hours this week and everyone was looking forward to the weekend off, so they would not be able to come to the shack either for sky warn Day. I said, well thank you and I certainly understand.

Then I called Channel 10 again as I had called on Monday, talking to Jon Cash, and he told me Jeremy Wheeler would be the best bet for that day, he works that morning, and would probably be able to come by. So I waited to hear from him on Wednesday, Dec.1st. and nothing came through. So I made another call to make sure he got it, and he had not received my call. So I talked to him directly about it, and told him what we are doing on Saturday and would he be able to come out for us and possibly do a story or just come by and give a talk on natural disasters and emergency preparedness. He said that he would be able to do that, and would be getting off work at 11:30 and would be by at 12:15

I told him, thank you very much, Sir really appreciate it. I would be waiting for him at the front of the QRM Room. I

told him just where we are located, in the best way I could. (I am not very good with directions) but told him how I come to the shack. I was so excited and relieved.. Whew!! I wanted someone to be there for us, but I wasn't going to be upset if I couldn't get anyone, disappointed but not upset. I know this is a busy time of the year, and people do have other plans all ready laid out. So I was sure glad to know that he could come out for us.

I also got the notice up for sky warn day at the WCTV-48 (the local channel) on the bulletin board that airs on that channel. Also the notice for our monthly club meetings is up there too. I also have put up on the Channel 10 website community calendar the notice about our event on Saturday too. Hopefully that will be up and running on the 3rd. I was hoping that they would be able to tape it, but they are booked up.

I submitted the story to both channels as a news story idea. When I finished talking to Jeremy Wheeler, I was so excited and happy, that I called Ruth (KB4LIF) our past president and Keith (KG4ZXX) our new president about the news. I wanted them both to know about it personally. This was a big thing for me, I have never done something like this before in my life, talking with the media and getting things lined up, Wow.. that is huge for me.

I also sent the notice to Virginia Pilot, in hopes of it getting into the newspapers. Then I sent it to WFOS radio station. I was going to call but decided to just send it via the web, under the comments/request area. I figured that as long as they get the notice, that is okay.

Oh yes, let me not forget that the biggest thing was to make sure that CARS had the permission to use the Wakefield Call sign WX4AKQ. Thanks to Ruth, who had talked to both Joe Wagner and Bill Sammler from the Wakefield office, we have permission to use it. Also this year the Wakefield office is also participating in SkyWarn recognition Day. They had not participated in a long while and this was good news.

Now comes the big day, of getting things going on SkyWarn Recognition Day and having some fun and talking with other NWS stations across the US. And also getting some real experience with making some contacts outside of the local area. This is a great help and practice for this Technician Amateur operator because I would like to do more come field day in the summer.

Well I think that is for now folks. thanks for reading.

73's to all
Dee Dee/KI4DNN

“You should have seen” from page 2

From listening to the bands on Friday night and looking up the ARRL rules for the CW sweepstakes, I knew what I was getting into.

You exchanged a number of the contact that was incremented by one with each new contact, your category or priority, you call, your check and your section. Although we had one radio, we had several operators. In addition to the spotting net, we had a kilowatt linear amplifier. We were therefore a multi-operator station or “M”. The check was the year the station operator was first licensed. In the case of Don, W4ZYT, that was 1959. So our exchange was “NR# M W4ZYT 59 NC”. Although Don reassured me early on that operators typically operated slower, and that this was a good contest to get started with, I knew from my experience with many other Hams, like fisherman, the truth sometimes gets a little stretched. Well my worst fears were confirmed Friday when stations that began operating were going at 35-45 words per minute! The main part of the contest did not start until about 1400 EST, Saturday.

Don led off and I was immediately impressed. I’ve seen some reviews of the Bencher Paddle in www.eham.net that were less than flattering, but everyone of the operators except two of us used Bencher Paddles. I brought my Kent Paddle and there was a nice Vibroplex Iambic Key. But the Bencher was the key for the weekend and Don could make that key fly and sing at the same time. The most amazing thing to watch was Don’s ability to pick out call signs hearing it sent once among other signals and while tuning the dial so the pitch of the signal was constantly changing. The radio was almost always set with the wider bandpass filter with the 500 Hz narrow filter rarely engaged. Don has been a Ham for 45 years and is well known nationally if not internationally and he recognizes many of the calls and many recognize his. All of this was occurring at 30 to 45 wpm.

Don has a very nice keyer, sold by the www.idiompres.com known as the CMOS 4. The rig was a Yaesu FT 890. The Carolina Windom was up about 50 ft in the air along with the Mosley Tribander. Now all the members of the club that were in attendance had over 200 DX contacts with several who had 300+ and they all strictly operated CW. There was not a single microphone in the house. The radio’s headphone jack was connected to an audio mixer, which allowed two people to use headsets. One logged and the other operated the radio and the paddle.

I’ve been a serious CW operator for one year. I made about 80 CW contacts during Field Day, but that was by my lonesome at my own pace and with no pressure. To

say I didn’t feel any pressure would have been another one of those Ham Radio tall tales. But the atmosphere was almost “party” like and the weather was absolutely gorgeous. So I had the opportunity to sit in both chairs and send and log. I was very glad that I had some experienced operators to double-check my work. By the end of the weekend, I had gotten better (not necessarily good but better) at sending and receiving at 30 wpm. It was thrilling to say I bagged a couple of the “need to get” sections. Making errors in the log is part of the whole experience and we inadvertently dropped one number in the middle of the night. It also turned out we had recorded a “MI” or Michigan station that was actually a “MS” or the missing Mississippi station about the same time. It is remarkable that men in their 50’s and 60’s would operate only with a few hours or less sleep all for the sake of having fun with Amateur Radio. Don not only was an A+ operator, he was a great host, providing hot breakfast and a steak dinner at the end.

By the time we left, the solar flare had hit the Earth’s geomagnetic sphere and band conditions just plummeted. But we had over 440 contacts, a “clean sweep” and over 63,000 points! We helped take down the antennas and rigs and tidied up the place. It was a great weekend. So the journey continues. I’m still practicing my code and cannot wait till Field Day and next November.

73
Leo
KG4PWC



CARS Dinner Meeting Minutes
December 6th, 2004

President Keith Ainsley, KG4ZXX, called the meeting to order at 6:40 PM, At Ryan's Restaurant on Sam's Circle. There were 32 members and guests present for the Holiday Party.

The reading of last months minutes were waived because they were published in the December Newsletter "*The Spectrum*". Self-introductions followed with members and spouses plus a friend from Williamsburg in attendance.

The *Treasurer's report* was waived to hold the business part of the meeting to a minimum.

To keep the business meeting to a minimum, the president as recommended by the Board of Directors presented only the current outstanding business for the club.

The Boards recommendation of a contribution to the Air & Space Museum in the amount of \$100.00 was presented and it was moved and approved by a voice vote by the membership.

The membership was requested to have a person volunteer to coordinate and schedule the quarterly dinner meetings. The group suggested Ruth Bigio, KF4LIF, to be the coordinator for her good job in setting up this dinner meeting. However she said that she respectfully declined the honor due to her other commitments. President Keith said that the board would hold the position open for anyone interested.

A club member has volunteered to match the club's appropriation to purchase a new transceiver to set up the third station of three operating stations at the new meeting site. A Yaesu FT-847, 160 meter to 70 CM transceiver "Earth Station" with matching FC-20 automatic antenna tuner and MD-100 desk microphone has been found for less than \$1,400.00. A motion was made and seconded to authorize up to \$700.00 to match the purchase of the radio for the club. The appropriation was approved by a unanimous voice vote.

In closing Dee Dee Hunter, KI4DNN was recognized for her outstanding action in coordinating the recent special event held by the club on December 4th at the QRM Room celebrating "National Sky Warn Recognition Day. Over 20 members and friends participated at the shack and the total count of contacts has not been counted yet.

The business part of the meeting was declared over and Keith Said "Let's eat!" And then a good time was had by all.

Sonny Hood, K4WYS
Secretary

Answers to last months weather quiz

Oh yes, I almost forgot, the answers to the winter weather quiz that was in last months newsletter. Here they are:

Fill in the blank

1. Watch
2. Warning
3. Kitty Litter
4. Antenna
5. Carbon Monoxide
6. Layers
7. Mittens
8. Winter
9. Wind chill
10. Snow Drift

True or false

1. T
2. F
3. T
4. F
5. F
6. T
7. T
8. T
9. F
10. F



The Spectrum

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