



# CHEESE BITS

First  
Experimental  
Electronic Version



**W3CCX**

**Club Memorial Call**

ARRL Affiliated Club

Volume XLIII

July 2001

Number 7

### June Club Officer Election Results:

President: Brian Taylor, N3EXA

Correspondence Sec'y: Jim Antonacci, WA3EHD

Vice President: Ben Kelsall, WA3RLT

Treasurer: Dave Mascaro, K3DM BOD: 1 Yr, Paul Sokoloff, WA3GFZ

Recording Sec'y: Walt Zumbach, WA3AQA

BOD: 2 yr, Phil Miguelez, WA3NUF & Joe Taylor, K1JT

### Millennium Mountain Men-June VHF Contest 2001



Front row l to r: NE3I, N3OZO, KB3XG, AA3GN, WA3DRC Standing l to r: K1JT, WA2YUE, K3DMA, N3EXA, WA3NUF, W2SK, W2PED, WA2OMY, N3ITT, WA3RLT, N3EVV, W2SJ, W3KJ

CONGRATULATIONS PACKRATS ON A JOB WELL DONE!!!! Good show Packrats. The June VHF contest is now behind us, and what a weekend it was! The wx was perfect, there were no catastrophic breakdowns, no major injuries and the food was great. Even the bears and bugs stayed away! But the best part of all was the turnout. The call was put out by myself and others and the Packrats responded, in force! This year there were plenty of hands available through the event.

There was one glitch that looked ominous at first but turned out to almost be a non-issue. We found OUT ONLY DAYS BEFORE THE CONTEST that a road crew was scheduled to pave the access road and we had to be down off the mountain....at 8:00 Mon morning. This presented a real challenge for tear down. Word was put out and again the club responded!! There were 18 Packrats on the mountain Mon. morning for tear down (possibly a record number) Needless to say it was the fastest tear down ever, and we were down off the mountain with a few minutes to spare!! Again, thanks to all the Band Captains, Doc and Don (The Food Guys), truck drivers, operators, and all who helped out at the mountain. Also tnx to all who worked the club station from home, and to AA2UK and K1DS (The Rovers). GREAT JOB!

Looking forward to the June 2002 VHF QSO PARTY!!!! 73, AI N3ITT

Pack Rats **CHEESE BITS** is a monthly publication of the **Mt. AIRY VHF RADIO CLUB, INC.** -Southampton, PA.

SUBSCRIPTION RATE: \$10.00 PER YEAR (USA)  
\$12.00 PER YEAR (CANADA)  
\$15.00 PER YEAR (ELSEWHERE)

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Deadline for articles and swap-shop is the monthly meeting date. Non-commercial swap-shop items free of charge.

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**PACKRAT 222 MHz REPEATER - W3CCX/R**

222.98/224.58 MHz, Churchville, PA

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June Contest: N3ITT 610-547-5490

HAMARAMA: W3KJ 215-256-1464

VHF Conference: KB3XG 610-584-2489

**PACKRAT BEACONS - W3CCX/B**

FM29jw Philadelphia, PA

50.080 144.284 222.065 432.295 903.071 1296.251 MHz

2304.037 3456.220 5763.190 10,368.140 MHz (as of 3/1/01)

**MONDAY NIGHT NETS**

| <b><u>TIME</u></b> | <b><u>FREQUENCY</u></b> | <b><u>NET CONTROL</u></b> |
|--------------------|-------------------------|---------------------------|
| 7:30 PM            | 50.150 MHz              | WA3EHD/K3EOD              |
| 8:00 PM            | 144.150 MHz             | N3ITT                     |
| 8:30 PM            | 222.125 MHz             | W2SJ/N3EXA                |
| 8:30 PM            | 224.58R MHz             | W3GXB                     |
| 9:00 PM            | 432.110 MHz             | W3RJW                     |
| 9:30 PM            | 1296.100 MHz            | WA3NUF                    |
| 10:00 PM           | 903.100 MHz             | N3AOG                     |

**THURSDAY NIGHT NETS (1st & 4th of the month)**

9:30 PM 2304.100 MHz W3KJ, & go to 3.4G & up after

## **Editor's Column**

It's a delight to have this whole publication finished before the end of the month. As many of you probably have the same hectic schedule that I keep, if left to the last minute, it would barely get into your hands by the end of the intended month. It is another pleasure to receive electronic media to place in the newsletter. At times it appears that Harry may want this editorship back, especially since he is a heavy contributor. And thanks also for volunteering to staple, fold and label and stamp the issue! On the other hand, I never seemed to be able to find enough time to get all the new microwave gear set up for the rover. Perhaps the arrival of the new 3 and 5 G amps, and the week before the contest arrival of a 2.3 preamp deferred my activity, but there were also a lot of work and family commitments that blocked the time. But I remember, this is the way it goes... despite the best intentions. I am reminded that for those of us



**Microwaves on  
the Mountain  
June, 2001**

who have the ability to get on 10G, one of the most outdoor fun contests of the year takes place on a weekend in August and another in September, the 10G and above cumulative contest. Although last year I traveled up to the mountain again for this, I made no contacts from there, but did work both W3KJ and KB3XG when I returned home. I'm hoping for better results and greater local participation this year. And if you have a 10G station that you can load into the van, call me and let's go together!! It's always more fun when two of us go out and share the tasks of 2m liaison and hunting down other 10G stations. Who knows, we might even want to try getting up to New England and operate Mt. Greylock or Watchussett.

**73, Rick, K1DS**

## 2001 June Contest Honor Roll

The following Packrats and friends have distinguished themselves by giving their time and effort in support of the club June contest expedition to Mt Pocono, PA.

**Set-up, Tear-Down, and Operators:**

|                |              |        |                         |       |        |
|----------------|--------------|--------|-------------------------|-------|--------|
| N3ITT          | AA3GN        | WA3DRC | W3GAD                   | N3OZO | WA3YUE |
| W2SJ           | W2SK         | WA3NUF | KF6AJ                   | KB3XG | K3IUV  |
| N3PLM          | K3DMA        | N3EVV  | NE3I                    | N3FUJ | WA1YHO |
| WA2OMY         | WA3GFZ       | WA3RLT | K1JT                    | W3KJ  | N3EXA  |
| W2PED          | WU3C         | AA3RE  |                         |       |        |
| <b>Rovers:</b> | K1DS / N1XKT | AA2UK  | <b>Walking Wounded:</b> | W3IIT |        |

### Please Take Note!!

- The meeting date for the month of July has been changed to the second Thursday, in order to accommodate certain vacation schedules. This will be the Annual White Elephant sale, at the QTH of WA2OMY, bring your goodies and cash.
- The dates for the microwave nets have been changed to Thursdays on non-meeting nights starting at 9PM.
- The Board of Directors meeting has been moved to the third Thursday for this month only, July 19th at the QTH of K1DS, 206 Kimberton Drive, Blue Bell, PA to accommodate the White Elephant Auction date change. Directions will be sent on email.
- Cheese Bits may be moving to an on-line publication. You must send an email to the editor to confirm that you can receive and read a PDF file. Please respond asap to: rick1ds@hotmail.com

# Radio Action - July 2001

| SUN | MON  | TUE | WED  | THU  | FRI  | SAT |
|-----|--|-----|--|--|--|-----|
| 1   | 2 Monday night nets-check page 2 for freq and times  | 3   | 4  | 5 See changes for Microwave nets dates and times on page 2                   | 6  | 7   |
| 8   | 9 Monday night nets-check page 2 for freq and times  | 10  | 11   | <b>Thurs, July 12th-Meeting and WHITE ELEPHANT AUCTION QTH of WA2OMY 8PM</b> |  | 14  |
| 15  | 16 Monday night nets-check page 2 for freq and times | 17  | 18   | 19 Board of Directors meeting, QTH of K1DS 8PM                               | 20   | 21  |
| 22  | 23 Monday night nets-check page 2 for freq and times | 24  | 25   | 26 See changes for Microwave nets dates and times on page 2                  | 27   | 28  |
| 29  | 30 Monday night nets-check page 2 for freq and times | 31  | Saturday, August 4th, Club picnic and pool party at QTH of N3ITT-bring a covered dish and a swim suit! |  | August 4th-5th, UHF contest 222 and above, starts @1800UTC for 24 hrs. |     |

## June Contest Bits

Thanks to all who helped at the mountain, and all who worked us over the weekend! It was a great weekend both weather wise and hanging out with all who could make it up. Special thanks to the setup and teardown crews, who made the heavy work easier this year. And most of all, thanks to our contest chairman; Al, N3ITT for another organizational success, and to our food (and water) engineers; N3OZO, Don & W3GAD, Doc for keeping us fueled! It was also a great to have so many visitors operate, and give the weekend residents a chance to relax a bit. Also, for those that did not come; but did get on the air thanks for working the club station.

I was especially glad to have the BIG teardown crew, that made it possible to get off the mountain at 7:58 to avoid conflict with the road paving crew which was quickly encroaching the mountain top. Thanks to the crew that made that happen! Thanks again to all who participated, **Ed WA3DRC**

As Mr. W2SK said; "2001 will be known as the year of the snake bite." Here is a partial list of problems and failures:

1) My Yeasu rotator was not rotating after it was installed and the tower was in the "UP" position Thanks to John, WU3C for hoisting the mast out of the tower to replace the rotator.

2) I forgot to remind Pat, W2SK to bring his TS-830 IF. I didn't realize this until Saturday afternoon around 1pm. Pat had to drive back to FN20 to retrieve it.

3) Several hours into the contest, 903 was way down on power. Removing some jumpers wires revealed that the 200W final was acting like an attenuator. We had to run the rest of the contest using 20W.

4) The 1296 phasing harness had at least one bad connector on

each cable. The problem was that the shield was never combed out and the pressure of the ferrule severed the shield wires. We did the best we could be cutting an equal length off of each cable, but I'm certain that the phase coherency between each cable was far from optimum.

5) My 2304 no-tune went deaf. The LNA was fine. The problem must be either the MIMC on the board or the mixer diode. Thanks to Ed, WA3DRC who allowed me to modify (butcher) his 2304 rig so it would be compatible with my IF scheme.

6) The input and output connectors on my 3456 TWTA are colored coded but the attenuator is not. The amp was expecting 1mW but I accidentally drove it with 100 mW. By some strange twist of fate, the TWTA survived.

7) I re-crystaled my 5760 rig for 145 MHz IF. I only had minimal time to burn in the new crystal. As a result, the LO brick became unlocked on occasion. Banging on the PTT switch a few times temporarily solved this problem.

8) I put together a new 10 gig DownEast no-tune for the contest using Steve's new 2W PA. I also outfitted a 2 foot offset dish with one of Paul's (W1GHZ) horn feeds. I did not have time to finish this project and had to resort to using my old rig.

9) Paul, W2PED helped me into the wee hours of the morning on Wednesday before the contest tuning up both of the 24 gig rigs. We added a LNA to the mountain rig and found that the rover rig had a bad

903 MHz IF mixer. I just plain forgot to fix the mixer problem at home. Paul, WA3GFZ offered a mixer out of his 10 gig rig but it did not work at all at 903. I wound up manually switching IF and mixer cables.

Along with all of our problems there were some things that went right:

1) All of the microwave bands were re-crystaled for 145 MHz. This made a big difference in the receive mode on all bands since we were far away from the W3CCX two meter station operating frequency.

2) Ben, WA3RLT brought along a stand alone 1296 rig. I brought a single looper for 1296 and put it on top of the microwave mast. This worked out great as a liaison frequency and coarse antenna pointing for the microwave Q's.

3) I stole an idea from Brian the Rover (ND3F). He uses 220 FM into a horizontal Yagi. This gets you far above the SSB activity and the horizontal position of the antenna gives you 20 dB of attenuation from the people on FM. I'm certain that Rick, K1DS will agree that the putting up a liaison 220 FM station was worth the effort. (actually, this is an old W2SZ rover idea/K1DS, ed)

4) Our effort on 24 gigs paid off. Saturday night we worked K3YTL, (Gerry of SSB Electronics) on SSB. Gerry was running 100 mW and W3CCX was running 1W. The signals were S9. Gerry and I spent several minutes rag chewing on 24 gigs until his battery went dead. The next day Celeste and I went out to FN20 and FN10 to increase the grid

count on that band. The contact from FN10 was relatively weak but the contact was easy. Our total grid count for 24 gigs this year was 4.

Thanks to everyone that helped me get the microwave station on the air. Thanks to the full time microwave operators, WA3RLT, W2SK, W2PED. Thanks to WA2OMY and the "one armed" W3IIT for helping me unload the truck in FN20HD. Thanks to Rick, K1DS for dropping off a bunch of Lasers at my house before the contest and Walt K3EVV for organizing the Laser Q's up at



N3EXA assisting KB3XG making field repairs, June 2001

the mountain. This job would be impossible with out the everyone's combined effort. **73xg**

Another June QSO party has come and gone. All the equipment worked FB here, but the operator made a few mistakes! Conditions were not very good most of the time and we had to slug it out the hard way for all dx contacts. But I hear six meters was the bomb! I've heard stories about single op stations working over 40 European grids. W2SZ reportedly worked 900 Q's and 171 grids on six, breaking 2 mil score substantially for the first time (~2.4m) !!! Maybe six meters was the reason activity seemed so low on the higher bands. 1296 especially seemed lacking, I can usually work 20-25 grids there but this time only 15. The exception was 10 Ghz which gets better every year, this time providing 13 qso's in 10 grids. On two meters the high points were the short aurora Saturday night, and some decent meteor contacts in the early morning. Anyway I'm not complaining. Enjoyed saying Hi to everyone atgain, and had a great time working the station for a long stretch. Lately my operating has been just a few minutes here and there, so it's nice to really operate for a while. Worked the usual 4 bands (144, 432, 1296, and 10 Ghz.) and managed to make it over 70k so not too bad. Congrats to all the guys on six meters - there should be some fabulous scores. **73 all, Russ K2TXB - FM29PT**

# Coax Impedances, Losses, and the Maligning of UHF Connectors.

TO: The Savvy Microwave Group

FROM: Dick, K2RIW via email.

**Coax Impedance** -- Concerning the possible choices of the impedance of a coaxial transmission line, a great reference is "Microwave Transmission Design Data", by Theodore Moreno, Dover Publications, 1948. On pages 64 through 69 he discusses four criteria for choosing a particular impedance. The four choices displayed in the graph on page 64 demonstrates how non-critical (broad ranged) many of these impedances are. Most of the following addresses air dielectric coaxial transmission lines. Here are some interesting "Moreno" facts:

1. The maximum continuous power handling occurs at an impedance of 30 ohms.
2. The maximum breakdown voltage occurs at an impedance of 60 ohms.
3. The minimum insertion loss occurs at 77 ohms.
4. The maximum shorted line, resonant impedance occurs at 133 ohms.
5. Conductor losses (in dB's) are proportional to the square root of frequency.
6. Dielectric loss (in dB's) are linearly proportional to frequency. Hence, at higher frequencies the dielectric losses become increasingly important.

**Cable Graphs** -- We have all seen graphs of the insertion loss of our favorite cables. They are usually displayed on Log-Log paper with the horizontal axis being frequency, and the vertical axis being insertion loss in dB per 100 feet (or 100 meters). The curious thing is that the insertion loss graph appears as a sloping straight line, with some of the cables displaying a slight upward hook at the highest recommended frequency. Here is the explanation. On Log-Log paper an exponential function appears as a straight line where the slope is proportional to the exponent value. A square root function has an exponent of 1/2. A linear function has an exponent of 1. On most of the cables, only the conductor losses (exponent of 1/2) are significant throughout much of the recommended frequency range. Thus, most of that range is displayed with a slope of 1/2. The hook at the end represents the upper frequency range where the dielectric losses are beginning to kick in. Here the line is beginning to slide into a slope of 1.5, due to the combined effects of the 1/2 slope (conductor losses), plus the 1.0 slope (dielectric losses).

**Estimating Trick** -- Knowing these facts allows you to make some interesting mental approximations. Let's assume you know that your favorite cable has an insertion loss of 1.0 dB per 100 feet at 144 MHz. If your friend asks you what's the approximate loss at 432, here is what you can do. Since you know that the cable is usable to at least 2 GHz, you assume that conductor losses dominate throughout most of the 144 to 432 frequency region, and conductor loss is proportional to the square root of frequency. 432 MHz versus 144 MHz is a 3:1 frequency ratio. The square root of 3 is 1.73. Multiply the 144 MHz loss (1.0 dB) by the 1.73 factor, and you come up with a predicted approximation of 1.73 dB per 100 feet at 432 MHz. Because there will be a slight contribution due to dielectric losses at this end of the cable's operating range you could round your prediction up to 1.75 dB per 100 feet. Try this procedure on the graphs of your favorite

cables and you will be amazed how close the approximation usually is.

**Cut-Off Frequency** -- As you go beyond the manufacturer's upper recommended frequency, the cable is capable of acting like a round piece of wave guide (WG). The presence of the center conductor adds a little capacitive loading that slightly lowers the WG cut-off frequency. Moreno recommends using this approximate equation for predicting the cut-off wavelength:

$$\text{Lambda} = \text{Pi} * (a + b).$$

a = outer radius of the center conductor.

b = inner radius of the outer conductor.

$$\text{Pi} = 3.1416 \dots$$

In other words, the limiting wavelength is approximately equal to the circumference at the arithmetic mean diameter.

**Coaxial WG** -- Now, don't let this limitation always scare you into submission. The cable isn't going to explode if you use it above the recommended frequency, it just gets a little tricky up there. The first wave guide (WG) mode to consider is the TE11 circular mode. That's the one used by the 10 GHz guys who are using 3/4 inch water pipe as a poor man's wave guide -- it turns out to be a very high quality [low loss] wave guide. In the TE11 WG mode the maximum E-field lines flow from the 6 o'clock position to the 12 o'clock position in the pipe (vertical polarization is assumed). If your coax cable doesn't have any significant bends in it, and the inner conductor is centered, it won't launch any E-field (WG mode) at right angles to the center conductor. Your next question is "what's a significant bend?" The microwaveer's are going to have to study this, but, my gut feel is that a bend radius of greater than 1 foot is OK. It is just a matter of time until some smart amateur intentionally launches both propagation modes in a piece of coax in order to lower the over-all insertion loss. It will require some careful tuning of the launching structures at each end of the cable to insure that the two modes end up co-phase at the top of the tower. This is because the phase velocity of the WG mode is faster than the coaxial mode. This technique can only be applied to a narrow band situation, or a set of narrow band situations (like 5 GHz and 10 GHz).

**UHF Connector Maligning** -- There are many misinformed engineers and amateurs who have been led to believe that a UHF connector is the worst thing ever invented in the RF world -- due to it's lower internal impedance. They believe that each UHF connector causes a 1/2 dB insertion loss and a whole lot of VSWR at 432 MHz. I've heard quite a few amateurs claim that their 432 MHz brick amplifier will now have 1 dB greater gain since they just replaced the two chassis mounted UHF connectors with Type N connectors. This "Old Wives' Tale" has been propagated for decades. Everyone believes it. No one challenges it. Few people have ever make the measurement.

**A High Power "Calorimetry" Test** -- Here is my observation. I took a 432 MHz Stripline Parallel Kilowatt Amplifier and applied 700 watts through a UHF female and a UHF male connector, and then into my antenna feed line. After 10 minutes of 700 watts throughput power the UHF connectors were mildly warm. If I estimate that "mildly warm" represents a dissipation of 3 watts out of 700 watts, that's an estimated insertion loss of 0.019 dB for the pair of connectors. You're about to ask, "how can this be, the internal dimensions are approximately a 35 ohm impedance, it's got to cause a 1.43:1 VSWR?" Well, it doesn't.

**Very Little Total System VSWR** -- The mated UHF connector has an internal connector length of less than 0.9 inches. A free space wavelength at 432 MHz is 27.3 inches. The 0.9 inches represents a phase length of 11.9 degrees. If I plot this up on a

A free space wavelength at 432 MHz is 27.3 inches. The 0.9 inches represents a phase length of 11.9 degrees. If I plot this up on a Smith Chart (or use the mathematical equivalent) I find the following. A 50 ohm antenna with an 11.9 degree long section of 35 ohm line causes an input impedance of (47.9 -j7) ohms. That's an input VSWR of 1.16:1, which gives a worse case reflected-power-caused transmission loss of 0.024 dB. To me that's insignificant. Now, I'll admit that at 10 GHz, where the wavelength is 1.1 inches, that 0.9 inch electrical length connector would be much harder to tolerate.

**Power Tolerance** -- A Type N connector can tolerate low-duty pulses of over 20 kilowatts without a voltage break down. However, steady state power of more than 1 kW could cause the connector to fail from the RF current overheating the center pin. Most connectors have a very similar failure mechanism when steady state high RF power is applied. The UHF connector has an oversized center pin that can more easily tolerate high steady state RF currents. Moreno said that 30 ohms impedance maximizes the power handling, and the UHF connector has an impedance of about 35 ohms.

Each EME'er who is using those expensive type SC connectors on his kW amplifier could probably use UHF connectors for his indoor cable attachments, if he desired to save money. The UHF connector has a larger center pin than an SC connector, it might actually have a larger power tolerance than the SC -- this will require testing. But, remember that the Fluoroloy-H dielectric on the SC connector is designed to be a good heat sync that cools the center pin.

**It's User Friendly Assembly** -- There are probably twice as many amateurs who can do a good job of installing a UHF connector on an RF cable, as compared to a Type N connector. The proper installation and WX proofing of a Type N connector requires considerable finesse and experience. It's almost an art form.

**UHF Connector Faults** -- There are two major faults I can find with a UHF connector when it is being used on 432 and below: (1) the lack of weather proofing; (2) the lack of outer conductor finger contactors. With a proper tape wrapping job, I believe the weather proofing can be accommodated. However, the user must be sure that the internal "teeth" are properly seated, and that the outer nut is kept tight; otherwise the outer conductor can develop a considerable growth in electrical length, with the associated "scratch contacting" noise. For this reason the connector is probably inappropriate for a high vibration environment, unless an auxiliary nut-retaining mechanism is employed. So, maybe it's time we stop saying such bad things about the poor-orphaned UHF connector. For our purposes, it doesn't deserve all that flack. Properly used by a savvy engineer, who understands the idiosyncrasies, it can give you a lot of bang for the dollar. It's been around for 60 years, that's no coincidence. I welcome alternate opinions on all of the above. Please feel free to correct the mistakes. 73 es Good VHF/UHF/SHF DX, **Dick, K2RIW**. Grid: FN30HT84DC27.

### More on connectors from N3NGE:

Hello All, Dick provides some very well presented information on this group of topics. With regard to the UHF connector, he makes some interesting and appropriate observations. There are several points which could be debated as follows.

**1. Popularity:** The primary reason for continued popularity of

this connector type is price. Manufacturers and consumers tend to use the lowest price item which can be fitted to the application, even when performance may be compromised.

**2. Quality:** Because of the price/popularity issue, there are many knockoff "brands", most are very cheap indeed. Good quality UHF connectors are difficult to find, and cost at least half as much as type N of same grade.

**3. Installation:** I have inspected and replaced very many improperly installed PL259 connectors. I believe it safe to estimate that less than 1 in 20 are properly installed. Ham ops and commercial tech are equally poor at this task. Most do not know a good procedure, have the wrong tools, and use cheap parts. Having installed thousands of connectors of varied types and styles on everything from .085 to LDF 7, I still find UHF/RG 8 types among the most difficult to implement properly.

**4. Power:** The big pin will take sustained power if correctly installed. Type N may not be the best choice. I am curious why high duty cycle/high power operators aren't using 7/16 DIN since it is an industry standard, and has many positive attributes.

**5. Mismatch:** If your transmission system has a return loss less than 20 dB, how can you accomplish sweep testing to uncover developing problems? If you disconnect the top of the feed line from the antenna system, and make terminated and open/short circuit sweeps from the bottom, you will be able to analyse/troubleshoot the system. In order to identify early stages of problems like water ingress, dielectric deterioration, loose connections, and the like, you must be able to achieve 30 dB or better to prevent masking the problem. Certainly wouldn't want to put a UHF adapter on the test port of an analyzer. As for tuning out the mismatch, this can be done at lower frequencies. If a cable or jumper needs to be replaced for any reason the tuning must be redone, as it unlikely you can reproduce the same mismatch. I would expect the complete system, including properly matched antennas, to be at least in the 20 dB range (add cable loss  $\times 2 + 1$  for actual typical measured value.)

**Summary:** I would tend to side with those who believe the UHF connector is the worst possible cable interface in common use today. They have the potential to be unreliable, unpredictable, and difficult to duplicate, primarily due to variations in quality and installation. Because the impedance is not specified, cables can not be swapped out at will due to phase angle problems. Yes, they can work, I just happen to despise the UHF connector in general. With the common availability of very good crimp connectors and proper crimp tools, anyone should be able to make excellent assemblies whether UHF or N, with a little practice. **Len N3NGE FN20ad**

### More on connectors from K0CQ:

I've use UHF for a long time, just because radios come that way. Mostly I put on a UHF to BNC adapter and use BNC for anything that I'm changing. Years ago, running an RCA 2m FM mobile in a VW beetle, I burned the connector UHF connector black from arcing (18 watts) when it worked loose. If a coax connector had the center pin of the UHF connector and an impedance matched outer conductor contact stronger than N, like maybe 7/16 it might be a good connector. The N connector has too small a center pin for real power, just like the HN. The outer contact on the HN is decent. The C and similar connectors have a sturdy center pin and a weak outer contact. 7/16 looks like a decent connector, and is popular in the cellular industry, but its not as readily available

◆ and when found can be pricey. I've found that water in air insulated coax like Belden 9913 doesn't necessarily show up as a significant change in reflected power, just excess transmission loss at 445 MHz. Though the water and the spiral were quite visible with a simple TDR. And the water moved when the coil of coax was shaken. **73, Jerry, K0CQ**

## Cheese Bits Salutes Silage, K3DS

ARRL 2001 Atlantic Division Award Winners announced: The ARRL Atlantic Division Awards Committee has named Roy Heimel, AB4XS, 2001 Atlantic Division Ham of the Year.

**Dennis Silage, K3DS, received the 2001 Atlantic Division Technical Achievement Award.** The committee members made their choices based upon ballots received. Heimel has served his club, the Headwaters ARC, in many capacities and has organized and taught amateur radio licensing courses. He has been associated with the Boy Scouts for over 22 years, and served as a Girl Scout leader. Silage, K3DS, is the technical chairman for the Delaware County ARA and the Mid-Atlantic ARC. He is a frequent speaker on technical subjects at amateur radio clubs through out the Philadelphia, Pennsylvania area--from ARRL on-line--**Bernie Fuller, N3EFN, ARRL Atlantic Division Director.**

## <http://www.TVInterference.org>

With the help of Al Waller, K3TKJ I have registered the domain for <http://www.TVInterference.org> The purpose of this site is to help us enjoy our hobby more by minimizing the problem of TVI and RFI. I don't think there is a ham among us that has not curtailed his activity due to such problems. I need lots of support! All the comments, suggestions and help I can get will make it a success. Please look at the page and understand that it is only a mockup at this point the result of only a few evenings work, so far. My idea is to put a database engine that will collect as many RFI incidents as possible and collate those reports in a browseable or searchable form. Not only hams can benefit from it but also our neighbors. I even think it may possible to get some response and cooperation from the electronic manufactures that create the problem; especially if they see that this web page may effect their sales. I think it should be oriented so that we can direct our neighbors with RFI to the page and get them educated. Once they understand the problem and who is actually responsible then we can offer some real assistance without a confrontation. Directing one of my neighbors to the FCC Interference site got him off of my case. I need the following advise, opinions and assistance:

General suggestions—any and all welcome.

Opinions on Legal issues.

Someone to write the following text pages:

How a ham should deal with the problem.

How a consumer electronics consumer (your neighbor) should deal with it.

How to fix Television interference for off the air reception.

How to fix Television interference for cable or satellite reception.

How to fix Telephone interference for corded phones.

How to fix Telephone interference for cordless phones.

Miscellaneous interference, baby monitors, alarms, garage door openers, toasters, etc.

Help with html coding.

Help with database and search engines.

Help with maintaining links to other pages.

Help with graphic design.

Help with publicity and promotion.

Whatever else I can get help with or you think that you can help with. Please talk this up! Bring it up at your local radio club, and on the air, have anyone interested contact me at <mailto:comments@TVInterference.org>.

I hope to hear from you all, perhaps next some one hears that you are a ham radio operator they will NOT say, "Oh, your one of those guys that bothers my TV set!". **73, Del Schier K1UHF**

## Movin' Your Cheese (Buy-Sell-Swap)

◆ I have the following: 8410b network analyzer w/ sampling unit; 8418b aux display holder; 8743a reflection transmission test set; 2-18 GHz 8709b synchronizer and an 8616A 1.8 to 4.5 Gc signal generator. I bought this stuff at the AEL auction here at work (now BAE systems). It was in working order when I bought it, but I have not personally tested it. I don't have the manuals, but could probably dig some copies of selected pieces up. This equipment is NOT refurbished, I am looking to get around \$400 of value from the trade. I am looking to put some bands on the air now that I have finished my new building. I would like a 6m DEM transverter/amplifier or a 6 meter radio or something similar. I could use a 220 fm box as well. I am not a stickler thought, if your interested, let me know what you have.

John Kedziora WU3C, RF Engineering, BAE Systems - Aerospace Electronics, 305 Richardson RD, Lansdale PA 19446  
215 996 2467 (voice) 215 996 2099 (Fax)

◆ I have for sale a California microwave 6ghz amp for sale. I checked it out on the test bench. The following was observed: Input @5760 was -1dbm output was +39 dbm (near 10 watts). Amp comes with power supply for input of -48vdc. Requires heat sink. Comes with some paperwork, not much available that I have found. For \$100. I will answer any inquires. Thanks.

Chuck wa2onk

◆ The microwave amplifier power supply is now available. The added features are: a set of PTT-activated, "kick" relay contacts for 28 vdc relays, a spare set of complete relay contacts (C, NO, NC); PTT either high or low; +10 - 10.5 regulated B+; regulated -6 vdc for bias on the California Microwave 3456 amplifiers (10 watt) people are modifying and regulated -12.5 vdc for bias on the Avantek 5760 amplifiers people have acquired (former railroad units using -24 vdc primary and 10 watts out with 0 dbm IN). Relays are all 8 amp contact rated. The B+ can not be provided to the amplifier if the bias is not present at the correct value when PTT is applied. Note: I have pictures of the power supply installed on an Avantek amp, for those that are interested I will send to you direct. They show the Avantek amplifier stripped down to its basics. The long pcb on the side of the amplifier chassis distributes B+ and bias the the multiple stages in the amplifier, this is the only external component that remains with the RF section once you remove all the heat sinks, -24 vdc power supply, chassis parts -- about 15 #s of stuff you don't need for ham work. The aluminum top on which the power supply is mounted is a sufficient heat (1/4") and is the top we are making from a jig for those that don't want to drill the 24 holes involved. If you decide to make your own top, be sure to save the RF absorption material from the heat sink when you remove it - then glue it (using a silicon glue) to your new top -- IF you don't the amplifier WILL oscillate !!! Owen, K6LEW, FM18lx <http://www.c3iusa.com> 800-445-7747

◆440 FM Transceiver and antenna package

Yaesu FT-7200 35 watts in perfect condition plus FM antenna. 25 element K1FO on a 17 foot boom. Both for \$250.

Herb WA2FGK Contest Station [wa2fgk@epix.net](mailto:wa2fgk@epix.net)

Rover stations continued to account for a large part of the action. Pictured on the right is the N2JMH rover van, with its tilt-up tower in the travel position. The interior has a well arranged and appointed station for virtually all VHF, UHF and microwave frequencies, with a substantial amplifier complement. Cables are fed through the rear window, with the use of a plexiglass replacement that has multiple feed-through connectors. This visit prior to the contest provided for some stimulating conversation. They started the contest from High Point in NJ. More details and his gear and score may be available in the future.



Pictured on the left and ready to roll is AA2UK's rover van. The central mast telescopes skyward almost 50 feet, clearing most of the local trees when needed. Bill started his roving on the mountain, and then headed north to FN22 and beyond. Not pictured in this issue is the K1DS/N1XKT rover van, fully equipped for 6 thru 10G plus laser. Five grids were activated, providing many with the FN10 and FN30 grid multipliers on the microwave frequencies. Additional rover driver/operators are welcome. If you or a friend want to try roving with me in the August UHF or the September VHF contests, call Rick, K1DS at 610-270-8884.