

The **KEY**

The Newsletter of the Contoocook Valley Radio Club

Volume 10, Number 6

December, 1998

Programs

The CVRC Christmas Party will be held at the Cat-N-Fiddle Restaurant on Tuesday, December 8th, 1998 located on Manchester Street in Concord with rag-chew, err ... beverage "hour" beginning at 6:00 PM. This is a family affair and will feature the infamous Yankee Gift Swap. Bring a wrapped seasonal or humorous gift to swap. Contact Mark McGartland, N1VRT, at 224-5425 promptly for reservation information.

CVRC meetings are held on the second Tuesday of the month in Contoocook, NH. Members and nonmembers alike are welcomed. Talk-in is on the K1BKE 146.895 -600 kHz (100 Hz PL) repeater.

Spring Flea Market Planned

A working date of Sunday, March 28th, 1999, has been picked for the CVRC Spring Flea Market. Use of the Henniker Community School Cafeteria (same location as this past year) is hoped to be confirmed soon. Save the date NOW!

The KEY is published every other month at the beginning of the even numbered months. The deadline for articles and submissions is the fourth Tuesday (coinciding with the usual business meeting schedule) of the preceding month.

New Officers for 1999

Elections for the 1999 slate of officers were held at the November meeting. The new CVRC president will be Marc Fraser, N1QGM. Marc narrowly defeated Nancy Robinson, N1IMB, in the race for president. Larry Beavers, W1GTA, will be vice-president for 1999. The race for VP was also a close one with Larry receiving just a few more votes than Dale, AF1T. Cliff Eisner, N1GJF, will be the new club secretary, and Dave Connors, N1KTP, will continue on as treasurer for another year. Thanks to all those who were willing to run and good luck to the new officers!

North Country Report Larry Ledlow N1TX/KL7

Hello again, my friends! Fall has arrived in earnest, both in NH and Alaska. Just around Labor Day the birches started turning to brilliant gold. The sparse bushes on the taiga and some frosted berries in the hills added nice reds to the mix, and the weather turned warm again. After a cool, damp August, September had some phenomenal weather, not to mention wonderful sights and scenery. Connie managed to get a day pass for me on the train to Denali National Park, about a four-hour ride. It was a perfect day, and one which I wish you all could have shared.

Mid-September nights brought enough darkness to let us see the aurora borealis. Wow!!! Translucent green ribbons, drapes, clouds, bubbles, and swirls dance across the sky. Sometimes the movements are slow and hypnotic, but others are jet-

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plane fast! The show is well worth the price of admission: a warm coat. It gets down to about 10°F at night.

The light show doesn't stop at sunrise. The sun groans long and hard until finally, about 9 AM, it reluctantly leaves the horizon. By 11 AM it has drifted above the trees. In another two months our daylight hours will be halved to just over three. The extended sunrises and sunsets paint everything with gold and pastel blues and pinks. The canvas is mostly white now. Snow finally fell the night of October 13th. It was the latest first snowfall since 1987, and about four inches have followed since.

We moved most of our things into our new cabin the day before it snowed. Our tiny place makes up in charm what it lacks in actual floor space and headroom. Our lot has plenty of antenna room, though, so start looking for N1TX/KL7 on 20m or 15m CW around 2300-0100 UTC. I have been able to hear very good signals from W1AW during the 2300 code practice session. Times and modes are variable, but weekends are best for catching me. Otherwise, send a message or, and we can try a sked. Our new phone is 907-488-8399. Mailing address remains the same.

All the best for now!

73 Larry

Update: K1BKE on WNNH

Tom Matisko, N1SKZ

As reported in the last issue of The Key Janice Bailey of WNNH interviewed Larry, W1GTA, and myself for the public affairs program New Hampshire In-Touch. The interview was aired on Sunday November 15th and a copy of the interview will be given to the CVRC for our archives. Due to last minute scheduling at WNNH, advance notice to the club was not possible. Again, thanks to Janice and WNNH for allowing the club to the air-time to promote Amateur Radio and the CVRC.



Earth - Moon - Earth Communications at 902 MHz

Dale Clement, AF1T

WHY DO IT?

- A. Technical Challenge - Marginal signals mean everything must work!
- B. Only way to work beyond tropo range of several hundred miles.
- C. Relatively inexpensive and available components work better at 902 MHz than at 1296 MHz and up.
- D. Promote activity - this band really needs it!
- E. Ultimate DX?? W.A.S. could be achieved!

PRESENT ACTIVITY LEVEL:

Stations contacted by AF1T
WB0TEM, IA, 27 May, 1990
W0RAP, IA, 27 May, 1990
K5JL, OK, 27 May, 1990
W5LUA, TX, 8 May, 1998
K2DH, NY, 23 May, 1998
NU7Z, WA, 23 May, 1998
WA8WZG, ON, 24 May, 1998
Yet to contact VE4MA (MB), KSZN (AR)
(K5ZN is not operational yet).

SPECIAL CONSIDERATIONS OF E.M.E. PATH
Very high path loss- approximately 268 dB; due to great distances (480,000 miles round trip) and poor

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lunar reflective surface. This is 15.5 dB worse than at 144 MHz! Moon's distance from Earth varies —1 dB less loss at Perigee (closest), 1 dB more loss at Apogee (furthest).

"New Moon" (Close to Sun) is poor, because solar noise masks signals.

Pickup of terrestrial noise can mask signals.

Faraday Rotation - Signals change polarity as they rotate through the Earth's atmosphere.

Libration Fading - Rapid fading appears to "break up" code characters. Due to wobbling of Moon with respect to Earth, and to scattering of signal from Moon's uneven surface (Signals return out-of-phase).

Earth's Ionosphere - can attenuate signals (Aurora, etc.). - Not very significant at 902 MHz. And above.

Doppler Shift - Apparent Frequency changes as Moon moves with respect to your station. This can be greater than + or - 2 KHz at 902 MHz.

Tracking the Moon - It moves an average of 15 degrees/hour. Moon's window must be common to both stations.

ANTENNA CONSIDERATIONS:

Antenna needs > 56 dBi (54 dBd) round-trip gain. At least 28 dBi antenna gain is needed to contact another similar station, or to hear your own echoes, assuming a 200 watt transmitter.

A 10 or 12 foot dish is marginal, and often available free! It would take 16 long yagis to work as well - probably not worth the effort!

Clean pattern - low side lobes, etc, to reduce noise pickup.

Feed Antenna should be chosen to match the dish F/D Ratio. VE4MA Scalar Feed-Horn (see 1989 Proceedings of Central States V.H.F. Conference, pgs. 35-43), or EIA Dual-Dipole, work well.

Beamwidth - Determines accuracy needed for aiming at the Moon. Typical -3dB Band Width of a small dish is 7 or 8 degrees, so the antenna should point within 2 degrees of the Moon which requires updating every few minutes.

Tracking the Moon - Either AZ-EL or Polar Mount may be used. TVRO systems may be modified.

Polarity Rotation - Nice, but not used by most stations at 902 MHz (Effort would be justified if activ-

ity level increases). Even nicer would be the use of Circular Polarization, as is done at 1296 MHz, but all stations are presently using linear Horizontal Polarization.

Low V.S.W.R. and weatherproof connections are important.

Mechanical Considerations - will it stay up? A large antenna should be low to the ground, for safety and wind-load considerations, and ease of assembly.

EQUIPMENT NEEDED:

Transverter - May be home-built or commercial (Down East Microwave has inexpensive kits). Typical I.F. is 28 MHz or 144 MHz.

Pre-amplifier - use low-noise GaAsFET(<0.5 dB) mounted near RX-TX relay at feed antenna.

Receiver - Use good H.F. or 2 meter Receiver with transverter. There are no complete SSB/CW transceivers available for 902 MHz.

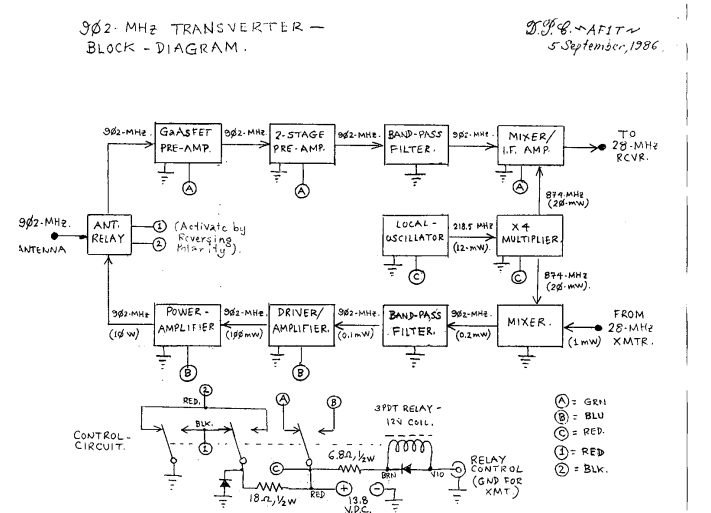
Transmitter - Use good H.F. or 2 meter transmitter to drive transverter.

Power Amplifier- Solid state amplifiers may be combined to deliver 200 watts. A pair of 2C39/7289 tubes, or a single 3CX400U7, in a cavity will work well. Typical gain for a tube amplifier is 10 or 11 dB, so 20 watts of drive is needed. (AFL T uses a converted EIMAC CV2800 cavity).

Transmit-Receive Relay, or cascaded relays, must have High Isolation to protect pre-amp (measure this!) A Transco "Y" relay works well (54 dB isolation results in 1 mW at the pre-amplifier port during transmission).

Feed-Line - The bigger the better! Keep short runs

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6 Meter Notes

Bob Sanborn, W1BDC

from the transmitter (7/8" hardline has approximate loss of 1.5 dB/100 ft.). Use Type N connectors.

Audio Filter - Use earphones with passive or active or D.S.P. C. W. filter (<500 Hz bandwidth) to hear extremely weak signals (most receivers have poor audio systems)

Computer Printout - for Moon tracking data.

Tape/Cassette Recorder - Plug into Audio Filter. Keep a record of your contacts or "the one that got away!"

OPERATING CONSIDERATIONS:

Need for scheduling - 902 MHz E.M.E. Activity is so low that you will not get results by calling CQ!

Use slow speed CW (10-15 w.p.m.).

Typical schedules are 1/2 hour or 1 hour.

Use "TMO" system standard for 432 MHz, with 2 1/2 minute sequences.

Contact Requirements for valid QSO: Both calls must be identified by each station. Exchange of information (typically "m" or "o" signal report). Acknowledgement of calls and information ("R" for Roger; SK at end) by each station.

Check into 432-MHz and Above E.M.E. Net Sat/Sun at 1600 UTC on 14.345 MHz, or use Internet for Information and Schedules.

In October 1964 we moved to Gilmanton Iron Works, NH, and I received the call letters W1BDC. All through the years we watch the propagation reports and the 11 year cycle. In 1957 I made a 2 way contact with England—He on 10 meters and I on 6 meters. I still have the QSL he sent. 1968 went without too many contacts but in 1969 it was good working SM, OH, G, GM, GD, GW, GI, EI, F, I, IS, HA, OK, and many Caribbean stations including VP1, VP2, Belize, LU (one that never QSLed), Haiti, FP000, CO2XZ, and CM2ZX. Then there was KL7IFP, KH6HI (who was my 50th state!), VE1BPY in Prince Edward Island, W4UWH/KP4 Virgin Islands, KP4BCS, GW4LXO, G3EHY, JA4MBM, TI2NA, VP2LAW, VP5RS, WB2RLK/VP9/C6A/6Y5, VP2MX, FY7AS, YV5ZZ, VO1MO, VO2AG Labrador, VE1CR/1 St. Paul Island, VE1AST/1 Sable Island, VE1ANJ, VE3CUA, VE4MB, VE5LY, and VE6NM. There are many more, but I've got to dig out the logs. Although we are not required to keep logs, I strongly advise you to maintain your logs as your personal history of contacts throughout the bands you work. All of my eighteen logs, both mobile and fixed, are in order. I made up an album containing 50 state QSLs and one for DX on 2-6 & 10 meters. I'm looking for a 50 watt transceiver on 10 meters xtal and VFO. Plus a 3 element beam on 10 and a rotator. All this "dirt cheap."

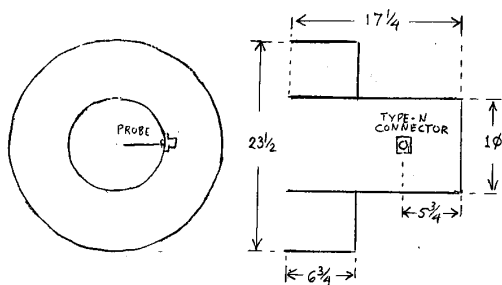
There comes a time when it's "share the rig" time. OMs and XYLs take note. Back in November of 1969 Dot got her Technician license from the FCC. Her call letters were, and still are, WA1MGC (Mighty Good Cook). That day she got on 6 meters on a borrowed Swan 250 SSB rig. Then she received 20 or so congrats from 5 states.

It was share alright. Each 6 meter contest we took 1-hour turns at the Swan 250 SSB and made very good scores.

Both Dot and I were introduced to six meters when W1MEU showed up one day with his Swan 250. "I'm going to loan you this rig for three weeks to get on six meter SSB." After showing us how to tune it by the manual we had a ball contacting many states and locals. We later bought a used Swan 250.

VE4MA FEED-HORN
SCALED FOR 903-MHz.

*Dale Clement
AF1N
MAY, 1998.*



PROBE: #12 Copper wire $\approx 3\frac{1}{2}$ in Long.
(Trim for Best V.S.W.R., or add TFE Tubing Sleeve, if too short).

For $\phi .375$ F/D Dish, the Plane of the Scalar Ring should be $\sim \phi .25$ in. Back from the Front Edge of the Main Wave-Guide

SCALING-FACTOR: $\frac{1296}{903} = 1.435$

Data From: Barry Malowanchuk, VE4MA —
Proceedings of the 23rd Conference
of the Central States V.H.F. Society, 1989,
Pgs 35-43.

Merrimack County ARES Corner

Tom Matisko, N1SKZ, EC

Net: 20:00 Local Time, Mondays
Frequency: 146.894 ? (CVRC Repeater)
Alternate: 147.570 Simplex
e-mail: t_matisko@conknet.com

As many long-time readers of The Key know, Ron Herman, K1PDY, served for several years as Emergency Coordinator for Merrimack County Area ARES. Well a few months ago Ron decided it was time to hang-up his Emergency Coordinator's badge and I was nominated to take his place. First, I would like to thank Ron for his leadership in ARES over the past years. Ron kept the net alive over those years and led a successful activation during the ice storm last winter. Again, thanks Ron.

Now, some reading this article may ask why should anyone bother taking a leadership position in an origination that irrelevant in today's high-tech world. With cell phones, trunking commercial systems, inexpensive no-license-required hand-helds, who needs Ham Radio for emergencies or public service? Well, New London did last year and so did the Bow Bike race. In both of these events, members of Merrimack County Area ARES assisted by providing their equipment and expertise. True last winter was the first time in a long time that we were asked to help during an emergency, however, we are regularly asked to help during public service events. Both, the assistance provided in New London and our involvement in parades, walk-a-thons and such provide Amateurs an opportunity to prove we are worthy of the spectrum we are allowed to use. It is my belief it is up to each of us to give back some of what we take. Working with ARES is my way of giving back, I invite it to be yours. No we may not be able to use our skills on a regular basis to assist in emergencies, but we can help during public service events so we are prepared

for worse. If you have not yet done so, please join us on the CVRC repeater on Mondays at 20:00 to take your first step into ARES. For those of you who may not have a 2-meter rig with tone capabilities, K1JY has reprogrammed the repeater to disable the tone during the net. Thanks Lindsay. I would like to thank those hams that regularly check into the net. In today's busy world it is often difficult to find extra time, thank you for fitting ARES into your schedule.

Please feel free to contact me if you have suggestions regarding how ARES can be bettered. I am open to suggestions and realize ARES will work only if members are kept involved and interested. It's up to you to make the suggestions and me to evaluate and implement them. I am readily accessible via phone (603-464-4095), e-mail (t_matisko@conknet.com) and packet (BBSWOK).

One last tidbit; if you think we are irrelevant in today's world, then we will be and we will only have ourselves to blame.

FCC Announces Shift in Amateur Radio Enforcement Functions

The Federal Communications Commission announced a change in the handling of enforcement actions concerning the Amateur Radio Service. By internal arrangement between the FCC's Compliance and Information Bureau (CIB) and the FCC's Wireless Telecommunications Bureau (WTB), as of September 1, 1998, all investigation, evaluation and processing of radio amateur related enforcement matters have been transferred to the CIB. Adopted: September 25, 1998. News Media Contact: David Fiske (202) 418-0500. CIB Contact: Meribeth McCarrick at (202) 418-0654, Compliance and Information Bureau contact: Riley Hollingsworth at (717) 338-2502.