



N.E.W.S. LETTER



The Publication of the North East Weak Signal Group

January 2009

Volume Eighteen

Issue 1

President: N1JEZ, Mike Seguin
Vice President: KA1OJ, Mark Foster

Current Officers
NEWSLetter Editor W1FKF, Don Twombly

Secretary: W1GHZ, Paul Wade
Treasurer: WA1MBA, Tom Williams

Next Meeting January 10, 2009

Presentation by Tom Williams, WA1MBA
78 GHz Amplifier Project

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Reminder

ARRL January VHF Sweepstakes 17th - 19th

Don't Forget

**The North East Weak Signal Group
2 Meter VHF and Above Net
Every Thursday at 8:30 PM Local 144.250
W1COT, WZ1V or K1PXN Net Control**

MEMBERSHIP in the N.E.W.S Group is \$15 per year. Apply to Tom Williams, WA1MBA. Email tomw@wa1mba.org
You may download an application from our web page <http://www.newswhf.com>

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Preferably via email with "Newsletter" in the subject line to donw1fkf-news@yahoo.com

The President's Corner

The ARRL January VHF Sweepstakes is right around the corner. It starts on Saturday January 17th. I will be on again from my camp in Newark, VT FN44ar. The plan is to try and run some higher power this year. I have my 6M kilowatt running. I hope to have power on 2M as well. Don't forget to point your beams north once in a while. With the recent ice storm and damage it caused, I wonder what impact we might see in the contest here in the Northeast.

Speaking of ice, make sure to look at what Dave, K1WHS experienced during the storm on page 3!

It's never too early to start thinking about election of officers and BOD seats. With the exception of Mark, K1MAP's BOD seat, everything is up for grabs. Elections aren't until next July, but they're closer than you think.

On the Mt. Equinox beacon front, I've been in contact with Brian, WA1ZMS. Right now it looks like 5760 will be the first band we attempt to install. Brian has mentioned that his power bill will most likely rise a bit. I'd like to discuss possibly helping him out at the next meeting.

Our presentation this time is the WA1MBA 78 GHz amplifier project. Tom has the amp running. I missed going to MUD this year and seeing it. I'm pleased he'll be doing an encore presentation for us.

Thanks to Gordon, W1OUN for a great presentation on early EME. I especially liked the construction pictures of Arcibo.

I hope everyone has a great holiday season!

73,
Mike, N1JEZ

From our Treasurer

The treasury is in good shape as we continue to have some 2008/2009 dues payments trickling in. Come to the January meeting for a full report.

At the November meeting I advertised that I would get copies of the UK "Backscatter" Microwave/VHF compendium for those who raised their hands. The UK Microwave Group managed to get air shipment for the cost of sea shipment, and extended the favorable conference price to our club. I will be bringing them to the January meeting. After the exchange rate and shipping, the cost for each one is \$26, which is slightly better than I had originally predicted. Please bring cash or your checkbook

to the meeting. I will be careful to make sure that everyone who ordered will get one, but I got extras, so there should be some for those who missed the November meeting.

The ice storm of Western Mass and Southern New Hampshire of December 2008 left my home without a way to get out for three days and no electricity for over seven days. The good news is that I suffered no antenna damage.

See you at the meeting,
Tom WA1MBA

From our Secretary

Board of Directors

Agenda for NEWS meeting:

- remaining meeting dates for 2009: sept 26, nov 14

- Mt. Equinox beacons

Board meeting adjourned 1240

NEWS Meeting , Storrs Library, Longmeadow, MA

Called to order by President, N1JEZ, at 1315

Letter of thanks from NOBARC for \$50 donation

NEWS hats still available

opportunity for beacons on Mt. Equinox, VT

suggested bands: 2304, 5760, 24GHz, 1296

Meeting dates for 2009: Sept 26, Nov 14

ANNOUNCEMENTS

WA1MBA report from Martlesham new Compendium available - Tom took orders

NEW BUSINESS

2009 Eastern VHF/UHF Conference April 17-20 Enfield
new ARRL band plan committee

TREASURER'S REPORT

77 paid members, 13 permanent 25 not renewed
balance \$2973 - enough members for continuing expenses

-MOTION - K1AE - move account to regional bank with no fees approved unanimously

Meeting adjourned.

PROGRAM - Show and Tell Session

W1RIL - tape of pager interference on 144.190

W1RIL - homebrew 78GHz Waveguide relay

N1JEZ - Thunderbolt GPS

N1JEZ - SBMS Rubidium standard

WZ1V - tape of K4MHZ beacon

Duct Tape auction was led by WA1MBA to benefit club

W1OUN - Early EME

K1WHS Ice Storm December 2008

Power came back on Wednesday afternoon, but went off again at 6 AM Thursday morning, and was off until about 11 AM Thursday. It is now back on.

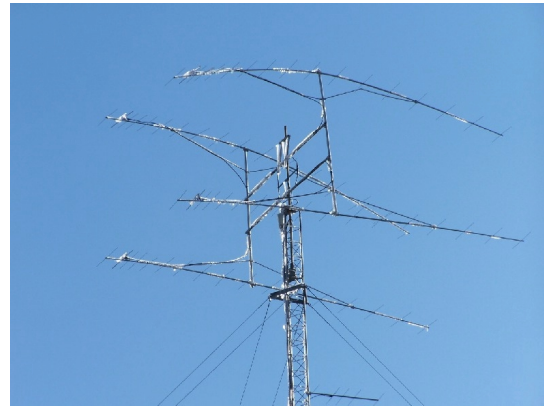
The storm was interesting in that it covered a different geographical area than the 1998 storm did. Back then, the big population centers were not hit for the most part. Only high elevations or areas farther north of me were hit. In 1998, Milton village just below the hill, and 2 miles away, had almost no ice. Rochester, NH had rain. My house had about 1" of radial ice, while the hilltop shack 200 feet higher got clobbered with many inches! A tower 17 miles NE of me on Fort Ridge in Shapleigh, ME. had 8" of ice that stretched the 5/16" EHS Steel guy wires, and wrecked the guy grips. The tower barely survived. Many Rohn 25 towers in rural fire departments collapsed under just the weight of ice. That was 1998.

This time, the major ice was in Southern NH., with coatings of around 1 1/2" or more in some places. Areas to the north and east of me had less ice. Central coastal Maine had maybe 1/2" of radial ice. Eastern Maine had almost none. My house and the ham shack ended up with 1" to 1 1/4" of radial ice. I measured a chunk that fell off the 222 tower guy wire on Saturday noon. I saw 1 1/4" there. I think the house down lower, had closer to 1", but it was still enough to finally do in my old EME array on Friday at about 11 AM. There is almost nothing left. There may be 10 yagis that could be fixed up easily. The other 14 are smashed up, as is the masting and tower sections. Too bad aluminum scrap has tanked. I might have gotten a few bucks for the debris.



I could not go up to the hill and check the main station until Saturday. Falling limbs made walking in the woods very dangerous. I could see some of the antennas from the house, using binoculars. It looked scary at first. The ice loading was very bad.

The VHF Contest station, though, has weathered the storm pretty well. The only casualty was the 144 MHz array of 4 X 17B2 Cushcraft yagis. I had modified the braces before I initially put them up, to strengthen them for ice loading. They went up in 1998 after the last storm wiped out my old array. Over the years, I have had to repair the braces on the top two yagis, as they just cannot hold up heavy ice loads. This storm was no exception. The two braces on the top yagis buckled between 11:30 and 12 noon on Friday. The booms were severely bent downward, but have come back a bit as the ice finally fell off on the following Monday. The antennas are still there.

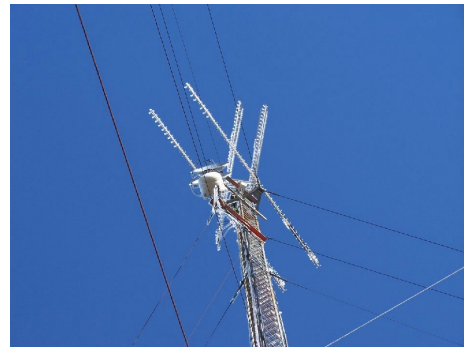


The rest of the hill did very well. The 432 array looked quite bad Friday morning. I thought the steel mast had bent, but it was just leaning due to the heavy weight on the front of the booms. When the ice fell off, it all went back to normal.

The new 222 MHz array did very well too. The boom is about 1 ft shorter than the 144 yagis, but the new brace I put on 222 made all the difference. I built it for harsh weather, and each brace weighs 7 lbs; about as much as the rest of the 28 ft yagi weighs. They held up very well. The H frame became distorted, as one of the cross arms bowed and put some uptilt in the array, but it went back to the horizon after the ice fell off.

The 4 X 6 element 144 MHz NORTHEAST Array underneath the 222 array, got bashed in from falling ice. Lots of bent elements, but no real damage to worry about. The LVAs on 144 and 222 are all fine.

The 50 MHz array came through in fine shape too. The 31 ft booms were heavily ice loaded, but had much better bracing than their older versions. I lost all four yagis in the 1998 ice storm. All the microwaves did OK too. The 4 X 47 element 903 MHz loop H frame got twisted around on the mast in the high winds, but the 18 ft long booms were straight as an arrow with the improved bracing. I use a sub boom made of heavy wall 3/4" square aluminum. This is the same arrangement as used on 2304 and 3456. They all looked great too.



I almost lost my ten meter yagi at the house. It is a homebrew 5 element 30 ft yagi up 80ft on a Rohn 25. I had planned to be on in the 10 meter contest last weekend, but the antenna got severely iced up. The rotor would not turn, and I lost AC power. By Saturday morning, the shack temperature was 40 degrees, and all I could run was my 10 watt K3 into an iced up antenna. I felt like that guy in L'il Abner who used to walk around with a black rain cloud over his head. I could stand the cold for about an hour, then went in the house to warm feet and hands by the woodstove. I would have to push Beagle Bailey out of the way to get the best spot.

73,Dave K1WHS

1296 MHz Transverter – Right Side Up

Simple and Cheap

Paul Wade W1GHZ ©2008

w1ghz@arrl.net

The Multiband Microwave Transverter scheme included 1296 MHz with high-side LO injection, to take advantage of the common local oscillator at 720 MHz. This results in tuning that is backwards, tuning down from 144 MHz, and reversed sidebands. While the common LO source has advantages in cost, power, and transfer of frequency offset between bands, a transverter with traditional tuning and frequency readout has some attractions as well, particularly in operating convenience.

The 902 transverter board is pretty simple, with only one frequency-dependent part, the printed hairpin filter at the output frequency – the LO input is untuned. Obviously, changing the filter to 1296 MHz, or other frequency, would make it a transverter for that frequency. All that is required is an LO for that frequency and desired IF.

Local Oscillator

One choice for the local oscillator might be a synthesized source – the new apoLO from N5AC and Down East Microwave (www.downeastmicrowave.com) looks attractive. However, even though the cost is quite reasonable, it is still more than any of the multiband transverters, complete with LO. And there is the question of phase noise – the crystal source on the LO board provides lower phase noise, but the real significance is still open to debate.

The other choice is a new local oscillator board for 1152 MHz. Starting with 64 MHz, the highest readily available oscillator frequency, a multiplication of x18 is required. If we are to stick with two stages of multiplication then one is x3 and the other is x6, a bit harder. The first multiplication on the other LO boards is simply a matter of selecting the desired odd harmonic from the oscillator square wave output – x6 will not do here. Also, the comb-line filter on the other LO board works well at 240, 252, and 144 MHz, so it should also do fine at 192 MHz with appropriate capacitors.

The remaining question is how much output will be available at 1152 MHz from a x6 multiplier. I hacked a 720 MHz LO board to look at the 2nd multiplier output with no filter – roughly -25 dBm was available at 1152 MHz. Allowing for filter loss, 6 or 7 dB for a four-section hairpin, two stages would be required to drive a mixer. Placing one on the LO board, A3, and the other on the transverter board limits the amount of gain in one place, reducing the chances of making an oscillator.

Making an 1152 MHz LO board was then a matter of replacing the 720 MHz filter with an 1152 MHz version. I chose to use a 4-section filter at 1152 MHz in place of the 3-section at 720 MHz, hoping to reduce unwanted outputs. The final board still ended up being slightly smaller, as shown in Figure 1. The schematic diagram in Figure 2 is very similar to the other LO boards – only the component values change.

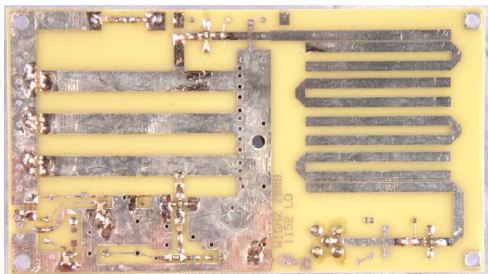


Figure 1 – 1152 MHz LO Board

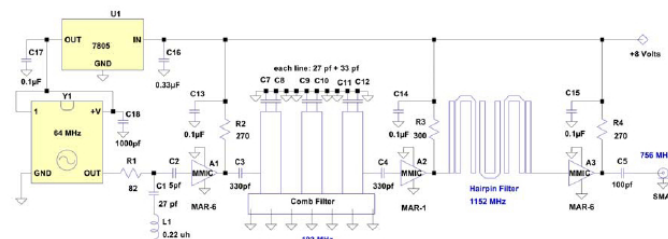


Figure 2 – 1152 MHz LO Schematic Diagram

Output from the prototype LO board was about -5 dBm at 1152 MHz, with other products at least 30 dB down. The bias resistors for the multipliers, R2 and R3, might need a bit of trimming for maximum output power – higher order multipliers are more sensitive than the x3 multipliers used in the 720 MHz LO board. 1296 MHz Transverter The only significant difference between the 902 MHz transverter and the 1296 MHz one is the filter. The filters for 902, 1152, and 1296 MHz all use the same design parameters – only the lengths of the hairpin legs change. The measured response curves for the latter two filters are shown in Figure 3 below. An attractive feature of the 1296 MHz filter is the notch below the passband, created by the side-coupled input and output lines – the notch falls right around 1152 MHz, providing some extra LO rejection for free.

The other slight difference is that the length of the bias stubs for transmit and receive amplifiers is shorter, to tune them to 1296 MHz. The LO amplifier, needed with the 1152 MHz LO board, is untuned, with just a ¼ watt resistor for bias. The LO amplifier provides enough power for the mixer – I measured +5 to +7 dBm before soldering down the mixer. Other LO sources might provide more power, so the amplifier might be unnecessary and could be replaced with a simple wire.

All the changes take less space, so the transmit and receive sections are shuffled slightly to take advantage of the extra space. A prototype of the transverter is shown in Figure 4. The schematic diagram is shown in Figure 5.

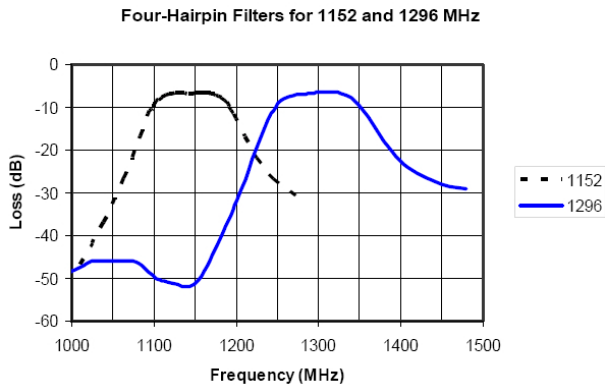


Figure 3

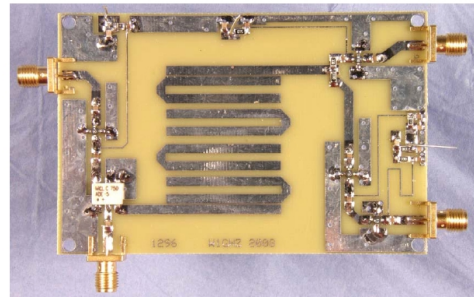


Figure 4 – 1296 MHz Transverter Board

Summary

This transverter, like the other multiband transverters, is intended as a simple, cheap, rover rig – probable cost less than \$100. It could also be a way for VHF operators and contesters to try 1296 MHz, probably the microwave band with the most activity. It also has potential as building blocks for a more serious station, but real metal filters are recommended for operation with power amplifiers or in high-RF environments.

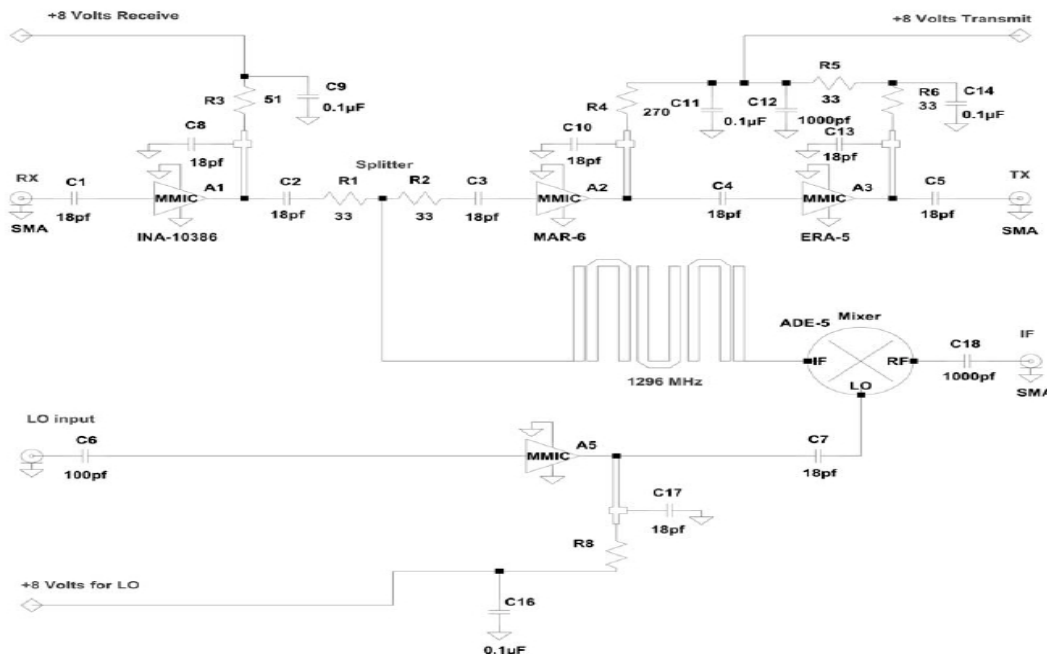


Figure 5 – 1296 MHz Transverter Schematic Diagram

2009 Southeastern VHF Conference

The 2009 Southeastern VHF Society conference, www.svhfs.org, will be April 24th and 25th in Charlotte, NC. Final details of the facility will be posted at SVHFS web site.

I (Steve, N2CEI) have volunteered again this year to be the Technical Program Chairman for the conference. I am seeking individuals that wish to have their most recent amateur radio experiments, activities, and projects published in the 2009 Southeastern VHF conference proceedings. Simple one page reports or multiple page publications will be considered for the proceedings. If you have something related to amateur VHF/UHF or Microwave radio operation that you wish to share with the "Ham" community, please drop me an E-mail at svhfs2009@downeastmicrowave.com. Also if you wish to make a presentation of your paper or any other amateur related VHF/UHF or Microwave topic, please e-mail me. We will publish a list of presenters at the SVHFS website as we accrue them. We had excellent presentations and a great publish technical proceedings at the 2008 conference. We hope to duplicate that this year.

The SVHFS also sponsors the Design Contest open to all radio amateurs. Last year we awarded \$4200.00 in prizes to the top 6 entries and we hope to do this again this year.

If you have any questions or comments, please drop me a note.

73, Steve, N2CEI

www.hudsonvalleytowers.com

We provide service within 200 miles of Poughkeepsie, NY doing tower and antenna work. Maybe some of your club members could use our service, weak signals need big antennas!!

73, Ray W2RE

VE3WCC Weak Signal Beacon

At last I can report that the West Carleton Amateur Radio Club weak-signal beacons are now fully operational from FN15wg. Now instead of individual KU4AB horizontal omni antennas, each of them is driving a half-wave stack of KU4AB antennas (Should give us about 8 dBi gain still omni-directional but with the power directed out about 20-30 degrees above horizon). Actually all four stacks are nested at about 25 ft up, on a single 10 ft mast, and the antenna modeling shows almost no degradation. I will be writing that up when I see all working as well in practice as the modeling predicts. As before the TX's are 3W Hamtronics exciter modules: TA-51-50 on 50.009 MHz, TA-51 - 144 on 44.297 MHz, TA-51-222 on 222.063 MHz, and TA-451 on 432.358 MHz

Please listen for us down there and let me know any reception reports as we are very interested in what these nested stacks are doing in practice.

Vy 73

Doug Leach - VE3XK WCARC Beacon Committee Chair
E-mail ve3xk@rac.ca

Website <http://www.simplysurf.net/~dleach>

K8GP Contest Logs

I do not post often to reflectors, but this thread is important to all VHF contesters and operators.

There have been discussions for several years about making logs from VHF contests public. I have seen several posts against making logs public and I can understand that some folks feel this is an invasion of privacy. We at K8GP, have tried for over ten years to be innovative with our operating, station design, activating as many bands as we can, helping rovers build stations to work not only us but EVERY other station they can work. Several years ago we tried to alleviate QRM near 50.125 by moving to 50.145 and we encouraged others to do the same but this is a free country and some choose not to move.

All of us at K8GP are proud of our scores: how many other stations come to mind that have worked VUCC on 10 bands in one contest, not once but twice! CQ makes the CQVHF logs public. Therefore, WE HAVE DECIDED TO MAKE ALL OF OUR LOGS PUBLIC ON OUR WEBSITE. In my opinion, making logs public adds credibility to the entire process and might even spur folks to try new things like eme, WSJT, scatter, etc. to bolster their score. We will also make every effort to obtain the logs of all the rovers in the area and publish their logs so there will be no doubt they are trying to keep within the spirit of the contest and work everyone they can and to show they do not participate in grid circling, pack roving, pack circling, circle jerking, captive roving or any of the other stuff that seems to be happening. Contesting is to check the effectiveness of your station, its' operators and create activity for EVERYONE, not to figure out a way to cheat the system. When you win a contest, it should be because you had the best station and best propagation and the best operators - not because you found a loophole in the rules. We also extend the offer to any and all stations who do not have a website or are not members of a large VHF group such as NEWS, Packrats, Rochester, SEVHF, SMC, Northern Lights, the Texas groups, PNWVHFS, etc. that we will make a page available to post the Cabrillo file of your logs. Andy, K1RA, our web guru will whip up a fancy page with your logs available for all to see in a non-threatening, non-hostile way. We encourage all of the other VHF groups to follow suite and make your logs public. Yes, we all make mistakes and errors will be found, but that's the breaks. If you copy a call wrong or transpose a letter or number, oh well! We hope all VHF operators and groups will consider this proposal of making logs public.

2009 will hold some new, interesting and exciting things for K8GP and marks my 30th year of VHF contesting. K8GP will continue to build our station, help others build stations, push the envelope of technology.

73, Terry W8ZN - ex K8ISK/WD8ISK

**35th EASTERN VHF/UHF CONFERENCE:
APRIL 17-19, 2009
CROWNE PLAZA HOTEL (860)-741-2211
1 BRIGHT MEADOW BLVD. (OFF RT.5)
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4/17/09 FRIDAY LODGING
6:00pm 'til HOSPITALITY ROOM Socializing, Photo displays
 Snacks, Refreshments and More.
4/18/09 SATURDAY REGISTRATION, FORMAL TALKS, BANDSESSIONS, LABORATORY TEST
 SESSION, EQUIPMENT VENDORS & MUCH, MUCH MORE.
7:30am REGISTRATION BEGINS
8:30am TALKS BEGIN We have the following set up:
8:45 am ANNOUNCEMENT more to come soon
9:00am *Dale Clement, AF1T - Basic Antenna Theory*
9:15am 6,2 & 222 BANDSESSION,
10:00am *Paul Wade, W1GHZ, author of QST MicroWavelengths column - WaveGuide
 Filters*
10:00am 432, 903 & 1296 BANDSESSION,
10:45am AUCTION/BREAK,
11:00am *Brian Skutt, ND3F - Backpack Rover - Updated*
11:00am Someone Goode W1 2304 & up BANDSESSION,
12:00pm LUNCH (on your own)
1:00pm AUCTION,
1:15pm *Paul Drexler W2PED - 24 GHz Updates*
2:00pm *Phil Theis, K3TUF - Digital Station Enhancements*
2:00 - 5pm *Test Lab to xxx GHz - TBD*
3:00pm *Ken Schofield, W1RIL - 60 Years of Building*
4:00pm BREAK
4:30pm *NEWS MEETING - N1JEZ*
7:00pm BANQUET (7 PM - 8:30 PM)
8:20pm Tom Kirby Award Presentation
8:30pm VHF - MICROWAVE TRIVIA QUIZ, TBD
9:00pm DOOR PRIZE EXTRAVAGANZA, Someone Goode
4/19/09 SUNDAY
8:00am-11am VHF-SHF SWAPnSELL - Mark Casey - K1MAP
 (bring your VHF-SHF goodies and lots of money)

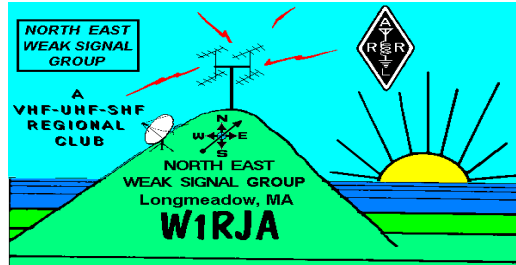
DIRECTIONS & RESEVATIONS

FROM SPRINGFIELD, I-91 TO EXIT 49, LEFT OFF RAMP, TAKE 2ND RIGHT.
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N.E.W.S. Group Membership Application

Name: _____ Callsign: _____ Grid: _____

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City: _____ State: _____ Zip: _____

Phone (home) _____ - _____ - _____ Optional (work) _____ - _____ - _____

Email _____

ARRL member? Y N Electronic Newsletter Delivery? Y N

Operational Bands (circle) 50 MHz 144 MHz 222 MHz 432 MHz 903 MHz

1.2 GHz 2.3 GHz 3.4 GHz 5.6 GHz 10 GHz 24 GHz 47 GHz

76 GHz Light Other (list)

The North East Weak Signal [N.E.W.S.] Group is being established to form a comradery among fellow VHF-UHF-SHF enthusiasts, and support a convenient means to exchange technical information. We currently have 6 meetings per year, held at a centrally located facility, and provide a "NEWSLETTER" that is distributed 2 weeks prior to each meeting. Any contributions to this publication are appreciated and can be sent to: Don Twombly, W1FKF 23 Maura Dr. Woburn, MA 01801 Email: donw1kf-news (at) yahoo (dot) com. Dues are \$15/year. Remember, this group is formed by VHF'ers for VHF'ers.

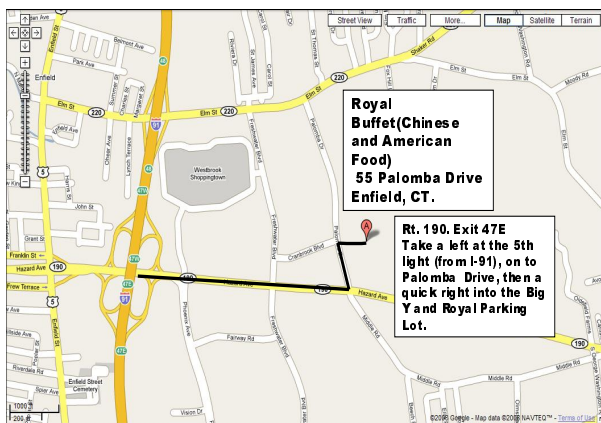
Mail to:

North East Weak Signal Group
 c/o WA1MBA
 Tom Williams
 PO Box 28
 Shutesbury, MA 01072

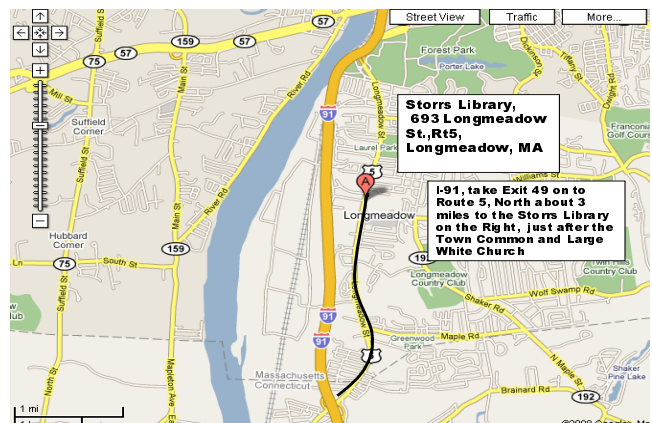
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ARRL Affiliated Club



Board Meeting and Lunch



Meeting Location



SSB Electronic USA manufactures and distributes HF, VHF, UHF and SHF equipment covering 10 MHz to 47 GHz

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**Next Meeting
January 10, 2009**

**Presentation by Tom Williams, WA1MBA
78 GHz Amplifier Project**

**1 PM at the Storrs Library
693 Longmeadow Street, RT 5
Longmeadow, MA**

**N.E.W.S Hats will be available at the next meeting!
\$12 each - cash (bring some singles please) or check.
See Mark, KA1OJ**

***Don't Forget*
The North East Weak Signal Group
2 Meter VHF and Above Net
Every Thursday at 8:30 PM Local 144.250
W1COT, WZ1V or K1PXE Net Control**

**North East Weak Signal
Group**

**c/o WA1MBA
Tom Williams
PO Box 28
Shutesbury, MA 01072**



Check your membership expiration
date on your mailing label!