MT. AIRY V.H.F. RADIO CLUB, INC.

CHEESE BITS

PACK RATS

W3CCX

CLUB MEMORIAL CALL

ARRL Affiliated Club

SCANNED TO PDF BY BERT, K3IUV, 2013

VOLUME XLII | September 2000 | Number 9

The PREZ SEZ

The thought of going into September is not a pleasant one! Where did the summer go again? The grass didn't turn straw-like again, but I bet we are all getting tired of cutting the stuff. With it this tropical, I thought there should be a radio benefit. Shouldn't there be some evening tropo to accompany the weather pattern? Maybe it's there in the morning when I am not on! For now, I'll just keep riding the tractor (I thought my son was supposed to do that???) But, here anyway, school has started, soccer has started, and diving will start in a couple of weeks. It must be the way of the 90's+. I don't remember all of this when I was a kid! (I think that is why I got a ham license!).

Anyway, there are a few important items to note, as we move into the fall season:

MICROWAVE UPDATE 2K – fast approaching. I already blew off a mandatory annual work conference w/ my boss (in Boston). I hope it sticks, because his boss occupies the office next to mine (in Princeton)! I think I'm OK, but we'll see. Hopefully this is noise floor stuff to him! Check elsewhere in this CheeseBits for more info on the various planned activities for Thursday thru Saturday.

Hamarama 2000 – Don't just figure that there is an over abundance of help, and sleep in. VHF+ activity is probably at an all time low, and so might be the club volunteer status. The event should have an "UP" year as it is connected w/ MUD, so we need help. The good news, as we learned last year, is that parking is much easier at the Grange, (unless it gets soupy). Stay tuned for other organizational announcements to prepare for the event.

OK, now I can look back at what happened over the last month. First was Perseids 2K. I started out a couple days before the predicted peak on HSMS, with the intention of going to random SSB when the burns got more frequent, and longer duration. I made 5 contacts in total, 4 on HSMS and one on SSB. Maybe the peak was in the middle of the night, but I sniped a few on either side, for 4 new grids! (must be near the century mark) I had a good 25 second burn during a HSMS sked. Too bad, could have exchanged all info and had a small rag chew also. But it took another 10 minutes to wait for more rocks to complete, as I recall. That's the downside of the mode during a shower. A sole SSB qso netted a EN48 contact, for a new one.

Then we (family) got into the car and went up to Al's for the club picnic. The optimal picnic site was hampered by lousy weather! The pool got some use, but then the bolts started coming down! We did get to BS about our tower projects and meteor burns, and tilt a few 807's! My thanks to Al (N3ITT) and Carol for hosting the event again this year.

Continued on page 3

MEETINGS

Third Thursday each month at 8:00 PM
Southampton Free Library
947 E. Street Road
Southampton, PA 18966

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PACKRAT 222 MHz REPEATER - W3CCX/R

222.98/224.58 MHz, Churchville, PA FN20LE

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	N3ITT	(1 Yr) Al Sheppard, alitt@epix.net
	N3PLM	(1 Yr) Chris Getman, getmanc@nad.com

PACK RAT BEACONS - W3CCX/B

FM29JW Philadelphia, PA
50.080 144.284 222.065 432.295 903.072 MHz
1296.251 2304.037 3456.220 5760.190 10,368.152 MHz

MONDAY NIGHT NETS

TIME	FREQUENCY	NET CONTROL
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/WA3DRC
9:30 PM	1296.100 MHz	WA3NUF
10:00 PM	903.100 MHz	N3AOG

COMMITTEE CHAIRMEN

LADIES' NIGHT:	N3AOG	215-443-9965
JUNE CONTEST:	N3ITT	610-847-5490
HAMARAMA:	W3KJ	215-256-1464
VHF CONFERENCE:	KB3XG	610-584-2489

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Progress was made on 10gig, despite my prediction of last month! The transverter is now together and working. I am now working on the offset feed dish. I don't think I'll make the second weekend of the 10gig contest, but January is looking good! More bench projects are going here also. I am waiting for the monkey wrench! Too much progress of late. Murphy is around the corner, I'm sure!!

As we move into the fall season, remember the upcoming events are important for the health of the club, and fast approaching! Please help in any way you can.

73, Ed, WA3DRC

CALENDAR OF COMING EVENTS - SEPTEMBER 2000

2 Birthday of Hiram Percy Maxim, W1AW, on Sept. 2, 1869.

3 **Labor Day**

9-11 **September VHF QSO Party**. Starts 1800 UTC Saturday and continues thru 0300 UTC Monday. See Aug QST, page 114 for rules. Get on and at least give out a few points. Participation Pins available for everyone making 25 or more contacts.

14 Mt. Airy VHF Radio Club **Board of Directors meeting** will be held at the QTH of Ed, WA3DRC, at 8 PM. Call (215) 322-2105 for directions. Directors and all interested parties are welcome.

16 Schnecksville, PA, Schnecksville Fire Department, Delaware Lehigh Amateur Radio Club, RR 4 - Greystone, Building, Nazareth, PA 18064-9211, Talk-In 146.70- (pl 151.4), 444.900+ (pl 151.4). Contact Carl AA3IX 610-261-0403

16-17 **ARRL 10 GHz and Up Contest**. See July QST page 93 for the rules.

16-17 **York Hamfest**, York County Vo-Tech High School, 2917 South Queen Street, York Hamfest, PO Box 351, Dover, PA 17315. Talk-In 146.52 , Contact 717-764-8193 phone / fax or 717-764-4805 (fax, 24 hours) or **www.yorkhamfest.org.**

21 **First indoor meeting** of the fall season of the Mt. Airy VHF Radio Club will be held at the Southampton Free Library on Street Road in Southampton, Pa. All members and interested VHFers are invited to meet and share with us. For directions check **http://www.ij.net/packrats/hamarama.htm.** "Roving for Fun and Profit" will be presented by Rick, K1DS.

24 Bowie, MD, **FAR Hamfest,** Prince George's Stadium, ½ mile S of US-50 and US-301, Talk-In 146.52, 7.290 MHz AM, Contact 301-345-7381, **http:www.amateurradio-far.org.**

28 **LEAP INTO THE MICROWAVES** with the Packrats! 903 and above. Every 4th Thursday of the month operate from 8 to 10 PM local time on any band 903 MHz and above. For coordination on those difficult long haul contacts 144.260 MHz is the suggested liaison frequency

29-30 **Microwave Update 2000** at the Holiday Inn Select, Bucks County, 4700 Street Road, Trevose, PA 19053. See more details in this issue of Cheesebits. See further announcement info in this issue of Cheesebits. **http://www.ij.net/packrats/MUD_2000/mud.html**

Oct.

1 **HAMARAMA 2000** will be held at the Middletown Grange Fairgrounds in Wrightstown, Pa. TI on 146.52 MHz.

TID BITS

VUCC Award Checking: If you want QSL cards checked for your initial VUCC Award or an update, contact Harry, W3IIT at 610-584-4846 or hbrown@voicenet.com.

Articles from the **UKSMG's Six News** magazine. Chris, G3WOS, UK Six Metre Group, http://www.uksmg.org

Prototype Time-Sharing Multi-Band Beacon, http://www.uksmg.org/multi-bandbeacon.htm

S79MX, 6m Activity from Seychelles http://www.uksmg.org/s79mx.htm

Six Metre Transceivers, http://www.uksmg.org/historical_rigs.htm

The Story of PA3HEN/MM, http://www.uksmg.org/pa3henmm.htm

XE1/G0JHC, Dec '99 to Jan '00, http://www.uksmg.org/xe1-g0jhc.htm

The new Yaesu FTV-1000 6m transverter, http://www.uksmg.org/ftv1000-transverter.htm

Updated Overview of 6m, http://www.uksmg.org/overview.htm

Don't forget to visit our Announcement page every to keep up to date with what's happenimg on 6. http://www.uksmg.org/notice.htm

By the way, the last time I looked we had 999 MEMBERS! If you are not a member why not join and take us over our 1,000 target for 2000!

CHEESEBITS SUBSCRIPTIONS

Cheesebits subscriptions are available to everyone interested in activities and information from the VHF thorough the microwave frequencies. Subscriptions are for 1 year of 12 issues. For a subscription, send the following information:

Name:_____ Call: _____

Street Address: _____

Town: _____ State: _____ ZIP: _____

Subscription Rate: $10.00 per year (USA), $12.00 (Canada), $15.00 (Worldwide)

September 2000 Send to: SUBSCRIPTION/ADVERTISING MANAGER:

Bob Fischer, W2SJ, 7258 Walnut Avenue, Pennsauken, NJ 08110

The **Palm Pilot Logging Program** has been improved to allow grid entry by tapping on a grid map, plus some other enhancements. a similarversion worked well in the UHF contest. versions for 10 GHz, 10 GHz & up, ARRL VHF contests. and others, as well as BD_Palm are all available on my web site: **www.w1ghz.cx**. please let me know if you use them; suggestions for improvement welcome. 73, Paul, W1GHZ.

Current **DX records for all of the VHF and Above Bands** can be found via W5LUA's record keeping at: **http://www.ntms.org/DXRecords.htm.**

W8ZH (K8HI) SK. On Tuesday Aug. 22, 2000 we lost a good ham and better friend. Paul D. Wolfe W8ZH(K8HI) passed away. We'll miss you Paul. De Dave K8WW.

The ARRL Letter, Vol. 19, No. 31, August 18, 2000, **FCC GRANTS EXPERIMENTAL LICENSE FOR 2300-2305 MHz**

The FCC's Office of Engineering and Technology has issued an experimental license to a California company to test market a wireless Internet system in the San Diego area on 2300 to 2305 MHz. Amateur Radio has a secondary allocation on 2300-2310, the lower segment of the 13 cm band. According to the ARRL band plan, the 2300-2305 MHz segment supports a variety of amateur activities, including weak-signal CW, SSB, digital modes and moonbounce as well as beacons and translator inputs and outputs. The ARRL continues efforts to get 2300-2305 MHz elevated to primary status for amateurs.

The FCC issued the call sign WB2XIK to Array Comm Inc of San Jose to deploy its "i-BURST" wireless Internet technology using up to 3000 "market trial" participants with portable units and up to 50 base station nodes, each with50 W EIRP. The license, granted in April but only recently made public by the FCC, is good for two years. Typically, the FCC gives no notice of experimental applications until they are granted.

The experiment would be conducted within a 35-mile radius of San Diego. Market trial users will be equipped with laptops and i-Burst wireless modems that operate at a maximum EIRP of 1.3 W. The company says it will make clear to participants that the system is experimental and temporary. Array Comm said it chose the 2300-2305 MHz band for its propagation characteristics and because it's near frequencies under consideration for so-called third-generation or "3G" services. "The band has not been allocated for a primary use and this is not heavily encumbered with existing users," the company said in its application materials.

Array Comm acknowledged Amateur Radio's secondary occupation of the segment but downplayed the likelihood of interference between its experiment and amateur weak signal work in the vicinity.

The City of Los Angeles recently was granted an experimental license to operate a TV downlink system in the 2402-2448 MHz band. The ARRL has protested that grant as well as a similar application from Los Angeles County. The ARRL has no immediate plans to protest the Array Comm grant. Experimental licenses are granted on a non-interference basis.

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Microwave-Update 2000 UPDATE

Microwave Update is rapidly approaching so if you haven't made plans to attend yet, now is the time. You can down load a reservation form **www.ij.net/packrats**

MAKE HOTEL RESERVATIONS NOW!

The CUTOFF DATE for the group rate is SEPTEMBER 8 th. Mention "Microwave Update" to get the group discount. Phone # for the Holiday Inn is: (215) 364-2000

LAST CALL FOR PAPERS:

If you plan on presenting a paper at Update 2000, please contact JohnKB3XG@aol.com ASAP. Update normally publishes an impressive volume of articles. Your contribution will be greatly appreciated.

SPEAKER LIST: (so far)

1. Millimeter Surplus, Will Jensby, W0EOM.
2. 13 cm Gs9B Amplifier Update - August 2000, Ed Krome, K9EK.
3. An Update of Laser Transceiver for the ARRL 10 GHz and Up Contest, Lilburn R. Smith, W5KQJ.
4. Portable 10/24 GHz Transverter, Dave Meier, N4MW.
5. Thoughts on the Psychology of Finishing your Microwave Station or- How to 'Shoot the Engineer' and Get Building, Doug Millar, K6JEY.
6. Optimizing TWT Power Output for Narrow Band CW/SSB Operation, James W. Vogler, WA7CJO.
7. A Tutorial for Using Sonnet Lite, James C. Rautio, AJ3K.
8. Large Dish Cassegrian Development Using CAD & Spreadsheet For Millimetric Bands & Practical Implementation, Martin Farmer, G7MRF.
9. The Allure of Microwaves or A Survey of Radio Amateurs who Use Microwave Bands, Tom Williams, WA1MBA.
10. To Be Announced, Dave Olean, K1WHS.
11. Polarization Effect of EME, Al Katz, K2UYH.
12. Antenna Optimization with the use of Genetic Algorithms, Walt Bohman, K3BPP.
13. Millimeter-Wave Proliferation Program, Narrow Band 24 GHz, Rod Roderique, WA0QII/K3QI and Jeff Kruth, WA3AKR
14. 13 cm Quick and Easy, Ron Marosko, K5LLL.
15. Restoring a HP 8410 Network Analyzer, KB2VSQ.
16. To be announced, Steve Kastro, N2CEI.
17. Periscope Antenna Systems, 10 GHz without Feedline Loss, Paul Wade, W1GHZ.
18. Using Surplus 23 GHz Modules at 24192 MHz, Al Ward, W5LUA.
19. Will This Rover Site Make the Path?, Richard Frey WA2AAU,
20. PC Board Log Periodic Arrays, Kent Brittain, WA5VJB.
21. Dish Construction & Mounting Techniques, Tom Whitted, WA8WZG.
22. A 100 Watt 1296 MHz Amplifier, John Sortor, KB3XG.
23. Use of 10 GHz TWTA's on 24 GHz, James W. Vogler, WA7CJO.

SURPLUS LIST: (so far)

1) Fred Chassey
2) Dillsburg Aeroplane Works
3) Fazzio's
4) Fertiks
5) Hanifins
6) Kentronix
7) LB Metals
8) Surplus Al
9) The Surplus Shed
10) SSB Electronics
11) N2CEI Fest & Party

This sounds like fun. Steve will have a tent, food, and beer, not to mention some prime microwave goodies in his back yard on Thursday. Other "vendors" that will be hauling microwave junk to Steve's place are: K1FO, WA8WZG, W5ZN, WA8RJF, W0RSJ, WB2ONA, K1WHS, W5LUA, W1GHZ, N1DPM, and waiting on others.

If anyone knows of any other "GOOD" surplus spots in the area, please contact JohnKB3XG@aol.com

ANTENNA MEASUREMENT PARTY:

The microwave and dish antenna measurement party which usually occurs on Sunday morning of the Microwave Update weekend will be held at the same location as the Pack Rat hamfest. Paul, W1GHZ has agreed to conduct the tests using DEM test equipment. Please contact W1GHZ wade@tiac.net or JohnKB3XG@aol.com if you plan to bring something to be tested.

SWAP SHOP:

(send all ads to the editor)

FOR SALE: CALLSIGN HISTORY. Name and address of each holder since 1912. Cost $20 plus SASE for printed CERTIFICATE. Wanted Call Books before 1970 and QST's before 1940 will buy or trade. Also looking for 1x2 Ham Radio License Plates for my collection. Ron Allen W3OR. PO Box 73, Bethel, De. 19931-0073 or call 302-875-1100.

FOR SALE: Home Brew 6 and 2 meter transmitter and amplifier, rack mounted in a 4 ft/6 in. cabinet plus test equipment. Contact Tony Muscero, K3UKW, at 215-271-8898. Will be at Hamarama if not sold before then.

More Tid Bits

2000 ARRL August UHF Contest results of K1DS, EPA Section

Band	QSOs	QSO pts.	Mults.
222	39	114	11
432	33	99	9
903	16	96	5
1296	17	102	4
2304	8	8	4
3456	5	5	2
10368	1	1	1
Laser	1	1	1
TOTALS	120	426	39

Claimed score = 16,614

Roving Adventures: August UHF Contest via K1DS. Every outing brings more improvements to the rover van and operating. This time I was able to remote the controls for the 10G rig, and operate it from inside the van and turn it from inside--not that it made much of a difference, as only worked one QSO on that band with W3KJ.

Conditions appeared to be low to average, and activity level was spotty. There were several Packrats that helped boost scores with QSOs on all bands from the 2 usual grids that I visited. All the gear worked fine, and save for a few occasions that I forgot to plug a connector in, or switch the microwave IF, operating was smooth. If there was a glitch, it was that the computer mouse stopped working after 5 QSOs, and we went back to paper logging. The problem there is that I have to re-enter everything on the computer in post-contest mode to submit my scores. No long hauls--best on 222 and 432 was north to FN03, and on 1296 to FN43. As WA3UGP was well entrenched on Camelback, we decided not to visit the mountain, and spent the time comfortably locally in FN20 and FM29. I suspect that from some of the activity that I heard that there will be some excellent scores from other active Packrats. I greatly appreciated all the coaching and patience from callers, as we cked out those microwave contacts on 2304 and 3456. One of the most difficult tasks is turning the mast by the armstrong method. I must either get a rotator, or manage a thrust bearing to ease the turning of the mast with 10 fairly stiff coax cables. Perhaps it is time to consider splitting the VHF/UHF and microwave masts onto different mounts. 73, de K1DS

1st weekend 10GHz, de K1DS. KB3XG got a late start on Saturday, but from a ridge north of Allentown, standing on top of his Explorer with the headset on and turning the dish, he worked K1DS and W3KJ for starters over a 40+ mile path, and the proceeded to work W1GHZ, who was on Mount Kearsarge in FN43. W3KJ had QSOs with K1DS, KB3XG and K1UHF for his long haul QSO, despite concerns that he was not hearing things as well as previously experienced. K1DS travelled up to Camelback. The good news was that the van made the trip fine, and the transmission got it up the hill without incident. The bad news was that he made no QSOs on 10Ghz from up there, despite being able to contact stations throughout New England on 2 meters for scheds. He did have an eyeball QSO on the mountain with Ben, (WA3RLT??) who took advantage of the nice weather to bring his wife and daughters up for a look the mountain view. Next month we get another chance!

KB3XG a little more luck on Sunday. Worked K2CBA FN42BL and WA1MBA FN32SL. I almost completed a "Q" with W1GHZ but Paul's TX blew up as he was sending his "RRR". I also worked Joe W3KJ and Ron W3RJW. 4 contacts in 6 hours. Pretty bad "Q" rate wouldn't you say? Everyone said 2 meters was way down. I just happened to catch Tom, WA1MBA on 2 and was able to get the attention of the guys on the other mountain. Tom acted as the middle man relaying information between FN21 and FN42.

ARLB037, RF SAFETY RULES NOW IN FORCE FOR ALL AMATEURS

Starting September 1, every US amateur is required to fully comply with the FCC's RF exposure guidelines.

The regulations, which went into effect January 1, 1998, require US Amateur Radio operators to read and understand the rules and, where necessary, perform technical evaluations to determine that their stations are compliant with the new regulations. Up until now, only hams who have had to file an Amateur Radio application with the FCC have had to certify compliance with the RF exposure rules. As of September 1, all amateurs must comply.

Under the regulations, an amateur station must not exceed the maximum permissible exposure limits for transmitter operation.

"These regulations are not a major burden on the Amateur Radio Service," said ARRL Lab Supervisor Ed Hare, W1RFI. "Most hams are already in compliance with the MPE requirements; some hams will need to conduct a simple station evaluation."

A complete description of the rules is available on the ARRL Web site at http://www.arrl.org/news/rfsafety/. The site also contains resources to make your station evaluation quite painless. Address questions about RF safety and the FCC exposure guidelines to ARRL Lab Supervisor Ed Hare, W1RFI, ehare@arrl.org.

Leif Asbrink, SM5BSZ's DSP Program for Weak Signal Work and other DSP Programs

A Brief Summary by Roger Rehr, W3SZ

First of all, two gif files are attached: D10SM5WD.gif is a screen shot of Leif's program displaying the signal of the W3CCX repeater at the headphone jack of my DSP-10 144 MHz Transceiver, with no DSP processing in the DSP-10. The RF signal was attenuated 20 dB before being fed into the DSP-10 to simulate a weak signal. D10af9yc.gif is the same signal recorded a few minutes later by AF9Y's program FFTDSP. This is included for comparison.

Please note I am still learning Leif's program and the FFT parameters I used to collect these data are not ideal, the bin widths are too wide, and I haven't fully figured out how to set the width/center of the spectral/waterfall displays.

So this is just a "preview". Please go to Leif's site and browse around the pages for better illustrations of what the display looks like. The main page for the PC Radio is given below, but the page with this URL:

http://ham.te.hik.se/homepage/sm5bsz/linuxdsp/fftvers.htm has some really nice screens.

Below is my "blurb" on this subject. I apologize if it is too long for some. I had a lot of requests for different types of information on this subject, and decided it would be best to put it all together and let the reader decide what to read and what to not read. I included some URL's so you could explore. Anyway, the text is small in size compared to the two gif files.

The Holy Grail of EME and other weak signal work for many of us is a DSP program that will provide visual evidence of very weak signals over a fairly large bandwidth as well as substantial improvement in signal reception by virtue of DSP processing. Specifically, the ideal program would provide:

1. Waterfall display with adjustable gain, baseline, visualized bandwidth, frequency bin size, and number of averages per displayed line
2. Spectral display with adjustable gain, baseline, visualized bandwidth, frequency bin size, and number of averages per displayed spectrum
3. DSP audio processing with
    a. variable bandwidth filtering with adjustable center frequency
    b. adjustable LMS (or equivalent) noise reduction algorithm
    c. binaural receive capability
    d. defeatable and adjustable AGC
    e. notch filtering

Programs (and accompanying hardware in some cases) to date have each provided one or more of the above capabilities, but no program to my knowledge has provided all of the above. When fully implemented, SM5BSZ's planned software may come the closest of any package to providing all of the above.

Of software/hardware currently available, the superb DSP-10 series comes the closest to doing all of the above. It has an excellent waterfall display with adjustable gain, baseline, and averaging. The visualized bandwidth can be set only to 2400 or 4800 Hz, and frequency bin size is not adjustable. It has an excellent spectral display with adjustable gain and baseline, 2400 or 4800 Hz visualized bandwidth, and ajustable averaging. The frequency bin size is not adjustable. It also has DSP audio processing with 200 and 400 Hz filters, fixed at a center frequency of 600 Hz. It has adjustable LMS noise reduction, binaural receive capability, defeatable and adjustable AGC, but no notch filter. It uses an Analog Devices EZ-Kit Lite to do the DSP rather than a sound card; it just makes use of the PC for control and display, and runs under DOS (NOT a DOS Window). Setting up the audio version is a piece of cake. For performance and versatility DSP-10 is heads and shoulders above the other currently available packages, although I believe the long-in-the-tooth DOS program DSP-Blaster, while very limited in its display capabilities, may still hold the edge in terms of audio signal processing effectiveness. In addition to the audio version, a complete computer-controlled 144 MHz transceiver using the DSP-10 software was described in the September thru November 1999 issues of QST. I have built this and have found it to be superb as a microwave IF. The ability to spot those weak signals that are up to 4 KHz off frequency at 2305 MHz and above is critical in the microwave contests, and this radio really does that superbly. I have not yet tried this RF Hardware Version of the DSP-10 as a 144 MHz weak signal receiver or used it on 144 MHz EME in comparison to my usual system. Other, more recent software doing some of the above include:

FFTDSP, http://www.webcom.com/af9y which provides waterfall display capability but no audio processing, by AF9Y. This is an excellent display which many EMEer's swear by. AF9Y's web page referenced here is a superb tour/reference for a variety of weak signal, DSP, and astrophysical topics

ChromaSound http://www.siliconpixels.com by N7CXI and VE3EC that provides graphic filter control and spectrum display over 5000 Hz or so, along with DSP noise reduction but no waterfall. I don't think it does as good a job as DSP Blaster, DSP-10, or the Hamview author's programs in signal processing, and mention it here just for completeness.

GNASP1, which provides selectable filtering and spectrum output but no waterfall, noise reduction, or notching. See **http://members.tripod.com/~gniephaus/gnasp1/gnasp1.html**. I've not used this much as the filters didn't seem to be anything special and its lack of noise reduction was a real negative here.

Hamview (by I2PHD and IK2CZL), now being replaced by Spectran (version beta4 build 110 as this is written), provides a waterfall display, spectral display, mouse-adjustable filters, an LMS type denoiser. It is still in testing and the current version will not run properly on my Pentium Pro 200 so I cannot evaluate it. The filters/denoiser in Hamview did not work as well for me as those in DSP-Blaster and the DSP-10 audio package. See **http://www.radiodsp.com.**

Leif SM5BSZ has begun the migration and upgrading of his MS-DOS PC radio to Linux. This is what he envisions for the system when complete:

Leif's comments:

I am currently working on a new DSP radio package. This time the system is designed for flexibility so it can be used for many different combinations of computers, A/D boards and analog radio circuitry. The platform is Linux and the package will typically operate with a 486 computer together with a conventional SSB receiver as the minimum configuration. The current high end operation is with a 4-channel 96 kHz A/D board and a Pentium III providing nearly 2 x 90 kHz of useful signal bandwidth in a direct conversion configuration (stereo for two antennas).

When the Linux package is in full operation I will interface it to a modern radio A/D chip and digital data decimation chip. The component cost is very low and there will be an exciting improvement in dynamic range, bandwidth and flexibility.

The LINUX PC-radio for Intel platforms **http://ham.te.hik.se/homepage/sm5bsz/linuxdsp/linroot.htm** will be continously upgraded to show various aspects of digital radio processing and how they are implemented in the dsp package. The Linux PC-radio is not designed for VHF weak signal only. It is very flexible and designed to accomodate routines for all radio communication modes on all frequency bands.

The program can run on a 486 to process 3 kHz bandwidth with almost any sound board. It can also run on a Pentium III with a 96 kHz board such as Digital River Delta44 to produce spectra covering about 90 kHz bandwidth using two mixers to provide a direct conversion receiver (For EME it may be easiest to make a direct conversion receiver for a fixed frequency such as 10.7 MHz and put some converter in front of it).

This is an ongoing project. The current version only produces spectrum graphs with user selectable resolution and averaging. More sophisticated processing will be added gradually.

The package will provide more than 30 kHz bandwidth with a standard audio board and should be very useful for 10 GHz EME and any other mode where a wide spectrum range has to be searched. I am using Red Hat 6.1 and it works fine on several computers. I am using OSS for the sound board devices and they charge USD 40 (if I remember correctly) for the Delta44 option. For the screen I use svgalib. For the future I will try to make the package run under several Linux distributions. Someone tried SuSe but that did not work, I do not know why. I have bought Caldera, Debian, SuSE and Mandrake and some time I will try to get the software run under these distributions - but right now other things have higher priority. You may have to change sound.h and run make to select the drivers for your system< See belos–W3SZ>. I am using two sound boards so I can run the audio output at a low speed. For CW modes there is no need for 96kHz output.... end Leif's comments.

The goal here at W3SZ is to have something like Leif describes. John K3PGP helped me to get started with a homebrew computer-controlled receiver using TUF-1's for mixers, a couple of computer-controlled frequency synthesizers for the LO's, and the DSP-10 as the final audio stage. This has worked well, but the visible bandwidth with the DSP-10 at 4.8 KHz was less than the 10-30 KHz I want. Hence my interest in Leif's software.

I had never used Linux, or any unix before, but found that with a little help and some quick reading I was able to get Linux installed on my Windows 95 computer and Leif's program running over a couple of evenings. Right now, as Leif pointed out, his computer just gives a visual display of the audio. But hopefully there is more to come, and I wanted to keep up with his progress so I bit the bullet and started now.

I run a Pentium Pro 200 with a soundblaster AWE32. The machine was originally set up to dual boot with NT and Win95 so I can't boot linux from a hard disk...I just boot from floppy when I want to run linux. I will eventually get a separate machine for linux. I have 1.5 GB HD space set aside for linux (about right), 128 MB RAM (much more than I need, I think), Number Nine Virge S3 type video card, PS2 3 button mouse. I am running Red Hat Linux 6.2 and got the OSS sound drivers off of the web from **www.opensound.com** ; they are not free but made the installation pretty simple. I had never used linux before and don't really know C but I was able to get going with the docs on the web from OSS and Red Hat (www.redhat.com). So its not too hard to do. Please note: f you have Windows NT on your system and you install Linux to boot from a hard disk you will have a disaster...do not do this. I believe you must do a CUSTOM install in order to choose the option of NOT installing LILO on the hard disk (the boot utility). To me, even if I could have set it up to boot from the hard disk, I likely would have taken this route...when I want to boot to Linux, I boot from the Linux boot floppy. When I want to boot to Windows, I pop the floppy part way out of the drive before start-up.

The main notes I have from my experience at installing all of this are:

1. I used Partition Magic to set up the partition for Linux. There is a good section in "Red Hat Linux for Dummies" (I felt this was just what I needed) that goes over the actual installation of Linux. I'd recommend getting this and reading it carefully. Also read the Installation Manual that comes with Red Hat Linux. Got the Standard Version of Red Hat Linux, for $29.95 list.
2. After you install Linux and are sure its working OK, you unzip Leif's dsp files and the oss files using the linux utility "tar", invoking the parameters zxvf. Exactly how to do this is detailed very nicely in the OSS installation file "INSTALL". The expanded OSS files from the OSS archive file which you can download from their website listed above have to go into the directory /tmp to be installed. I put Leif's files in **/home/rrehr/sm5bsz**. When tar expanded them it put them in a subdirectory /dsp, i.e., in **/home/rrehr/sm5bsz/dsp**. Tar, the C compiler, etc are all in the RedHat Linux package. Install the development tools packages when you install linux to get the C stuff. (I *did* a custom install so I could make sure I didn't overwrite the boot sector on my hard drive; I DID NOT install LILO!!!).
3. Install the OSS sound drivers and get them working before you compile Leif's program (see section '5' below).

4. I changed the parameters in the sound.h file for SND8 from /dev/dsp5 to /dev/dsp and for SND16 from /dev/dspW to dev/dsp1. I just used dsp and dsp1 because these were used in the stock linux text that was "commented out" in the sound.h file, and so they seemed like a good place to start. I don't know if other values would work or work better for my AWE 32.

5. I needed to change the location of "soundcard.h" referred to in "sound.h" to /usr/lib/oss/soundcard.h. as that is where the OSS install program put it. Once you've made that change to the file sound.h. make sure you're in whatever directory you have Leif's files in and type "make". This will use his "Makefile" to compile the program and produce the executable file "dsp". You run this from the command line in this directory (again, on my machine its /home/rrehr/sm5bsz/dsp) by typing "./dsp". This will bring up the menu screen of Leif's program.

6. I have avoided setting up the mouse in his program ("T") as when I did this early on it destroyed mouse function in the program (but not elsewhere in linux). Set up the display parameters, and then to to "U" to set the A/D and D/A parameters. Then go to "F" to see if all is well. Then go to "A" and "B" etc and play around.

Let me know if you need help or if there are more details of interest that I neglected. Below are some details on the look/feel of the program.

The spectral display is very nice and its great the way the bandwidth and center frequency etc can be varied. The bandwidth as well as the center frequency of the display are changed using the mouse, and the floor and gain of the waterfall are changed by clicking on the appropriate parameter field with the left mouse key and then using the keyboard to enter the new parameter.

At this point, at least here. there is no audio output from the soundboard while the program is running, but just the graphics (which are very nice, especially in the weak signal CW screen). Currently there is a waterfall display at the top, with the spectral display below; kind of like DSP-10 but reversed. and with the ability to change the width of the display in terms of Hz (within the range permitted by your prior choice of FFT parameters) as well as physically on the screen. the center frequency. the zero point of the spectral display as well as its amplitude range using the left mouse button in real time. You can create .gif files of the screen by just typing "g" and following the instructions.

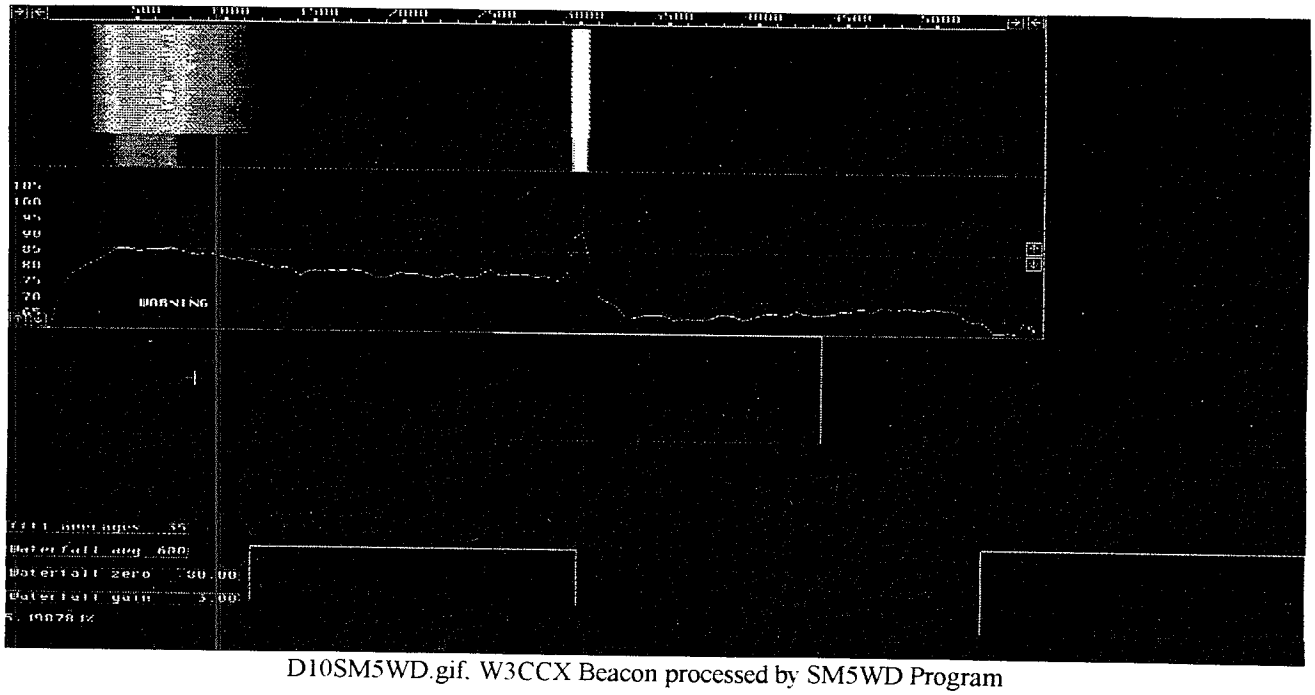
Read the files settings.txt and mouse_on_graph.txt in the dsp directory to see how to control things once you have the program running.

But anyway, RIGHT NOW the spectral display is the best there is that I've seen in terms of its on-screen adjustability. although I don't have it all figured out yet and there IS still room for improvement.

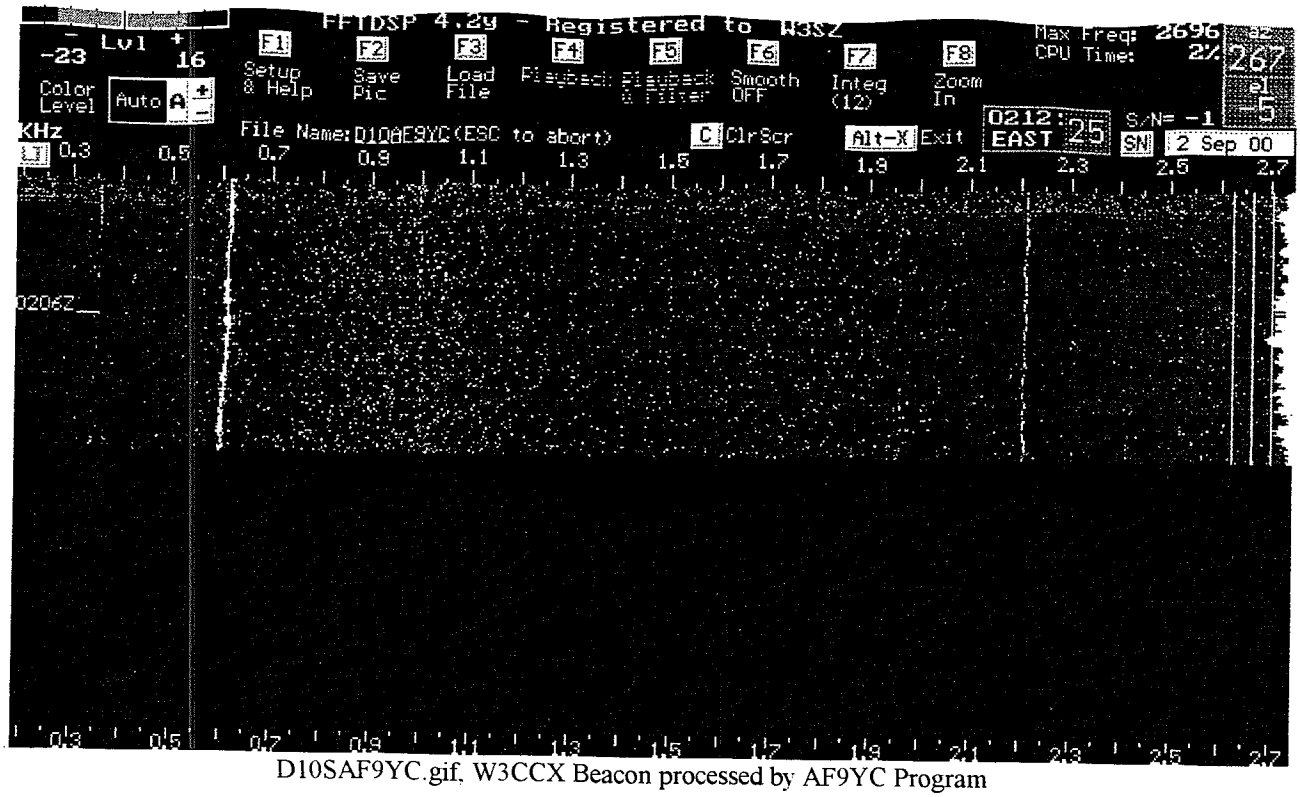
GOOD SHOW. Leif!!

As noted above, I've used FFTDSP. DSP-Blaster. Spectran. HamView. and DSP-10 here over the past several years; If Leif continues with this it should obviate the need for the others...

73. Roger Rehr, W3SZ. ex-AA3QK. ex-WA3JYM. **http://home.epix.net/~rrehr/w3sz.htm**



D10SM5WD.gif. W3CCX Beacon processed by SM5WD Program



D10SAF9YC.gif, W3CCX Beacon processed by AF9YC Program

2000 VHF/UHF FALL SPRINTS: Rules and Reporting

1. Object: To work as many amateur stations in as many 2 X 1 degree grid squares as possible, using authorized amateur frequencies on the50, 144, 222, 432MHz and Microwave (902 MHz and above) bands during the contest periods.

2. Contest Period:

2.1 The 144 MHz Sprint will be from 7 PM to 11 PM local time on Monday, September 18, 2000.

2.2 The 222 MHz Sprint will be from 7 PM to 11 PM local time on Tuesday, September 26, 2000.

2.3 The 432 MHz Sprint will be from 7 PM to 11 PM local time on Wednesday, October 4, 2000.

2.4 The Microwave (902 MHz and above) Sprint will be from 6 AM to 1 PM local time on Saturday October 14, 2000. Choose any 5 hours, in one hour increments, to operate, and clearly indicate in log which hours were operated. The Microwave Sprint is one Sprint and certificates will be awarded for highest total score (i.e. total number of contacts on all bands 902 andabove, times total of all multipliers, recounted separately on each band.)

2.5 The 50 MHz Sprint will be from 1200Z until 1900Z on Saturday October 21, 2000.Choose any 5 hours, in one hour increments, to operate and clearly indicate in log which hours were operated.

3. Exchange: Grid-square locator. Signal report optional.

4. Scoring:

4.1 QSO Points: One point for each complete QSO.

4.2 Multiplier: The total number of grid squares worked. Each 2 X 1degree grid square worked counts as one multiplier.

4.3 Final Score: Multiply QSO points by multipliers. Each sprint is scored separately.

4.4 Rovers score in accordance with original rover rules, i.e. multipliers begin again in each new grid activated.

5. Reporting: Logs must be submitted no later than four weeks of the closing date of the each event. Only submitted logs are eligible for awards. Logs must be in ARRL format (log sheets and summary sheet as used for ARRL VHF contests) to be accepted, and must show current address to be eligible for awards Electronic submissions in ARRL acceptable electronic format may be mailed on diskette or e-mailed with log file as an ATTACHMENT only (Not in the body of e-mail).

5.1 144MHz Sprint logs to: Neil Taylor N4ION, 655 CR 41, CLANTON AL 35046.n4ion@hiwaay.net

5.2 222MHz Sprint logs to: Bob Lear K4SZ, PO Box 1269, Dahlonega, GA 30533

5.3 432MHz Spring logs to: Jim Worsham W4KXY, 1915 Oak Wind, Lane, Buford, GA 30519, w4kxy@bellsouth.net

5.4 Microwave Sprint logs to: Steve Adams K4RF, PO Box 1255, Cornelia, GA 30531, k4rf@contesting.com

5.5 50MHz Sprint logs to: Ray Rector WA4NJP, 3493 Holly Springs, Rd, Gillsville, GA 30534, wa4njp@aol.com

6. Certificates for top three non-Rover finishers in each sprint and top three Rovers in each sprint if sufficient Rover competition is shown. Results will be posted on this reflector and www.svhfs.org

7. Use of telephone, packet or internet methods to coordinate contacts is acceptable, so long as complete exchange of call signs and grids is accomplished on the relevant amateur radio band.

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