

PACK RATS'



PACK RATS

CLUB CALL: W3CCX

MT. AIRY VHF RADIO CLUB, INC.

CHEESE BITS



MT. AIRY VHF RADIO CLUB, "THE PACK RATS", PHILADELPHIA, PA. W3CCX
NET FREQUENCIES: 50.150, 144.150, 222.125, 224.58/222.98, 432.110, 903.100, 1296.100 MHz
AFFILIATED CLUB: AMERICAN RADIO RELAY LEAGUE ARNS

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

SCANNED TO PDF BY BERT, K3HUV, 2013

VOLUME XXXVII

February 1995

Number 2

THE PREZ SEZ

We can all rest a little easier with the January Contest behind us. I'd like to thank all those who participated in the contest, especially those who put forth an extra effort this year. The Packrats put a lot of time and energy in the contest effort this year, perhaps a bit more than in the past, if that can be possible. A quick glance over this year's scores shows that many were on new bands and had made improvements to their stations and operating skills as compared to last year. Whether you got on a new band, put up better antennas helped other club members with projects, or just plain worked harder this year, I thank you for your effort. A big "attaboy" to our fearless contest leader, Al, N3ITT! The competition was as fierce as ever this year but The packrats showed their true colors. Time will tell how we stacked up against our competitors.

After I operate any contest I always seem to find myself reflecting a bit on things. How did I do compared to last year? Where did I improve my score and what still needs work? After each contest I operate throughout the year I usually come to the conclusion that operating skills are every bit, if not more important than my station's capabilities. In fact, I'd say that most of my improvements in score this year is directly related to operating skills. Every time we get on the air, whether it's for a casual CQ, get in on a band opening, or operate one of the several contests throughout the year, we're improving our operating skills. There are plenty of chances for each of us to improve our operating skills and habits. We can start by getting on during the activity nights once or twice during the week. Let's each work on that!

Our upcoming Crying Towel meeting is always a blast! This is a great meeting to bring a friend or visitor. Another great meeting just around the corner is our annual Homebrew Night. Last year we had to set up additional tables to display all of the great projects. Why not take the time and call someone today that you think would enjoy visiting one of these meetings? It's always good to see new faces at our meetings. CU there!

73, Paul Drexler, WB3JYO

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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/RPTR

222.98/224.58 MHz, Churchville, PA


OFFICERS: 1993-1994

PRESIDENT: WB3JYO, Paul Drexler
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WB2YEH, Bob Fisher (1 YRS)
N3ITT, Alan Sheppard (2 YRS)
WA3NUF, Phil Migulez (2 YRS)

TIME	<u>MONDAY NIGHT NETS</u>		
	FREQ.	NET CONTROL	
7:30 PM	50.150 MHz	K3EOD	
8:00 PM	144.150 MHz	W2EIF	
8:30 PM	222.125 MHz	WB2YEH	
8:30 PM	224.58R MHz	K3ACR	
9:00 PM	432.110 MHz	WA3AXV	
9:30 PM	1296.100 MHz	WA3NUF	
10:00 PM	903.100 MHz	N3AOG	

COMMITTEE CHAIRMEN

LADIES' NIGHT: WA3YUE 610-630-1875
JUNE CONTEST: WB3DNI 215-672-5289
HAMARAMA: WB3JYO 609-538-1687
VHF CONFERENCE: KB3XG 610-584-2489



THE AMERICAN RADIO RELAY LEAGUE **OST**

HUGH A TURNBULL, W3ABC
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and
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"Gisele"
K3WAJ

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WILMINGTON, DEL. 19803

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Lynne D. Whitsel

209 Frog Hollow Road
Churchville PA 18449
215 355-5730

Feb. 1995

- 9 Packrat board of directors meeting at the QTH of Brian, N3EXA at 8:00 P.M. Call 215-257-6303 for directions.
- 9 Birth of Brendan Behan, Dublin 1923
- 11 **AURORA '95** sponsored by the Northern Lights Radio Society will be held in Brooklyn Park, Minnesota. for information, contact Paul Husby, W0UC ,at 612-642-1559.
- 11 **January Contest wrapup session** at the QTH of Ron, WA3AXV, starting at 10 AM. Get your logs and checksheets to your contest coordinator so they can be checked and submitted.
- 12 **Lincoln's Birthday.**
- 14 **St. Valentine's Day.** Remember your sweetie.
- 16 **Packrat meeting** at the Southampton Free Library on Street Road in Southampton, Pa. at 8:00 PM. The theme of the evening will be our annual "Crying Towel" session. The best story of what went wrong during or in preparation for the January contest wins the coveted "Crying Towel". All friends and interested parties are welcomed to come enjoy the evening with us.
- 18-19 **ARRL International DX Contest-CW.** See Dec. QST page 122 for rules.
- 20 **Presidents Day**
- 22 **Washington's Birthday .**

Health and Welfare

Dave, N3CX is out of the hospital and is undergoing therapy.

N3NIA is recovering from a heart attack.

Deak, W3AJF, is recovering from a fall resulting in a crushed vertebra.

222 MHz TRANSVERTER KITS from N.E.W.S.

By: Ron Klimas, WZ1V via the Internet

Our kit is based on the Zack Lau (KH6CP) design that appeared in July '93 QEX, "A no-tune 222 MHz transverter". It consists of 3 high quality double sided plated thru-hole tinned copper boards, plus all parts and documentation for \$100 PPD (MINUS case, SPDT coax relay, SPDT DC relay, connectors). The filter sections are strip-line on the PCB's, and are capacitively loaded with fixed chip caps. Typical performance: TX- 50 mW out for -3 dBm 28 MHz drive, 10 mW outfor -10 dBm drive. Rx - over 90 dB of honest blocking dynamic range.(0.05 uv sensitivity @ 10 dB S/N using an Icom 735 for an IF). At this time there are only a FEW of these left.

Contact Stan Hilinski, KA1ZE, 17 Pilgrim Dr., Tolland CT 06084; 203-872-6197 eve for availability BEFORE ordering.

A 50 mW in 20 Watt out linear PA kit is available from Down East Microwave for \$100 (module + pcb + all parts except heat sink).
DOWN EAST MICROWAVE.

CHEESEBITS SUBSCRIPTIONS

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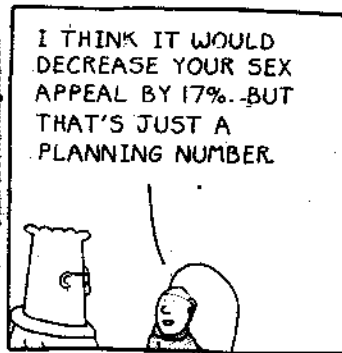
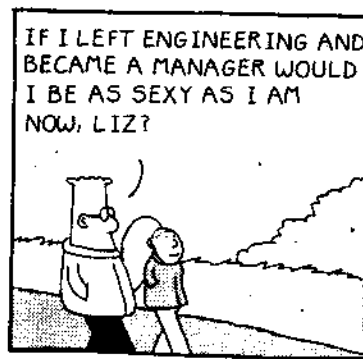
February 1995

Send to: **SUBSCRIPTION/ADVERTISING MANAGER:**

Bob Fischer, WB2YEH

7258 Walnut Avenue

Pennsauken, NJ 08110



TEN-TEC LOW COST 50 MHz TRANSVERTER

By: Ron Klimas, WZ1V via the Internet

I finally heard one of these \$99 six meter transverters on the air this weekend (via K1THP in Connecticut). He sounded fairly good with it and described it to me as follows: 14 MHz IF, 8 Watts PEP out, took 12 hours to build, includes case/knobs/connectors even pre-cut/stripped wire. An adjustable pad accommodates up to 20 watts of IF drive. (Don't know what the minimum drive is). Discrete components design (eg., 4 diode mixer). In his opinion, receiver performance was adequate (he was using a TEN-TEC Argosy as his IF radio). Don't ask me why they didn't use 28 MHz IF, but for \$99, who can complain I guess?

ARRL BULLETIN 4 SPECTRUMCHANGES

The FCC has voted to allocate spectrum from 2310 to 2360 MHz for satellite digital audio radio services (DARS). This band is part of spectrum from 2300 to 2450 MHz, all of which is currently allocated to the Amateur and Amateur Satellite Services in International Telecommunication Union Region 2, on a secondary basis, with the exception of 2310 to 2390 MHz, which is not allocated to amateurs. The FCC said the new DARS would allow direct satellite-to-ground radio to areas of the country and to minority and ethnic groups that are inadequately served by traditional, "terrestrial" radio. The Commission said that service and licensing rules for the new allocation would be addressed in a later rule making. This was action in FCC General Docket 90-357.

2400 MHz REPLY MADE

To all radio amateurs SB QST ARL ARLB002ARLB002

The ARRL has filed reply comments on an FCC notice of proposed rulemaking, in ET Docket 94-32, a proposal to reallocate a block of spectrum from federal government to commercial use. Some of that block includes parts of the 2400 MHz band shared by Amateur Radio on a secondary basis with the government. In earlier comments, the ARRL asked that the Amateur Service be given primary allocation status at 2402 to 2417 MHz, that it be given at least co-primary status at 2390 to 2400 MHz, and said it would be desirable to make the entire segment 2390 to 2450 MHz amateur primary. In its reply comments, the ARRL said that most of the comments filed by others in December didn't respond to FCC questions regarding the compatibility of the proposed commercial services with the Amateur Service. The League said that the bulk of comments filed were "absolutely silent" on the effect of a new proposed use, either from 2390 to 2400 MHz or from 2402 to 2417 MHz, on the Amateur Service, with the exceptions of comments by In-Flight Phone Corporation and Apple Computer, both of whom suggested ways of coexisting with amateurs. The ARRL called the use of competitive bidding in this case "a means of avoiding specific allocation planning by the Commission" and said it was inappropriate. The FCC's "flexible allocation" plan would be, on its face, the League said, "in lieu of making any public interest determination at all as to the highest and best use of the spectrum." That highest and best use, the League said, was Amateur Radio. More information was in January 1995 QST, page 91

10 GHz RECORD CLAIMED

To all radio amateurs SB SPCL ARL ARLX001ARLX001

Roger Bowman, VK5NY, and Walter Howse, VK6KZ, have claimed a new world distance record on the amateur 10 GHz band. On December 30, 1994, the two worked over a path of 1911 kilometers. Both VK5NY and VK6KZ were portable, the former near his home in Adelaide and the latter portable near Perth. VK5NY used 180 milliwatts to a 400 mm dish while VK6KZ ran 100 mW to a similar antenna. The 2 way contact was on SSB. The previous 10 GHz record of 1018 km was held by WA6CGR and XE/N6XQ. N6CA and KH6HME continue their efforts to span the 3973 km path between California and Hawaii on 10 GHz. Howse said there was a typical high pressure cell in the Great Australian Bight, a large inlet body of water, and that good signals were present over the 1900 km, nearly all water path on 144, 432, and 1296 MHz. On the second night, VK5NY drove 250 km to another location in an attempt to once again increase the record distance, but no contact was made. VK6KZ reports hearing, and being heard by, David Minchin, VK5KK, a few km farther than VK5NY, but no 10 GHz 2 way contact resulted. VK6KZ lives about 1000 km (some 600 miles) from his portable location near Perth, and must drive there to make these attempts at UHF records. "I have to choose the right time." he said.

Hurry please! Have you looked at the price of a HAM-M (HAM IV) lately? My goodness its enough to cause massive heart failure. Those of us who have been around long enough to remember that for the princely sum of about \$100, one could move into the big time from a U-100 or CDR clicker to a HAM-M rotator. This was about 25 years ago when a Ben Franklin was worth something and the democrats were running the country (no connection). Sometime between then and now the HAM-M has become a big buck item, commanding a large chunk of change. And to add insult to injury, it has changed one iota. It's still exactly the same rotator as my vintage units. What has changed is the control box (for the better) and the fact that for somewhere between \$350 and \$400 smackers you don't even get the lower support assembly! I must be getting old. Another positive is that the unit comes with a replacement south centered meter face if you want to change from the north centered scale installed.

The point of this article is that I thought one of the really nice improvements to the control box that I heard about was the addition of a switch that allowed you to check full rotation calibration without turning the rotator to the stop. You know what, that feature has been removed from the latest models! The calibrate pot is still on the front (another nice improvement) but the switch has been deleted. Major bummer.

For those of you who have likewise missed an era, the function can be added to the new boxes with a minimum of effort. I also added a brake light that adds a little piazza to the front panel. Following are the simple modifications:

Locate the wiper arm of the calibration pot (wire goes to ground). Lift the ground end of the wire and connect it to the center arm of a single pole, double throw, momentary push button (or toggle switch) that you have installed on the front panel. The normally closed contact is connected to ground and the normally open contact goes to the backside of terminal #7 on the 8 terminal rotor cable strip. That's it. When in the normally closed position the meter indicates rotor position as always, and when in the normally open position, the meter goes full scale right where you can use the calibration pot to set to full scale. There is a slight error (maybe 5 degrees) because of the difference in ground paths, but you can soon remember a mental compensation factor and put it right on. A nice spot for the switch is dead center between the calibration pot and on/off switch.

Another simple addition is a brake light indicator. I found a small red lamp in the junk box that mounts in a 1/4 inch hole. The voltage is not to important because a resistor can be added to drop the voltage to a value that will give long bulb life for the particular lamp you find. The light is connected between terminal #2 of the rotor cable strip and ground. The area just to the left of the calibration pot is a good mounting location. Adjust the voltage across the lamp with a series resistor that drops the 24 VAC of the brake circuit to about 70 % of the rated lamp voltage ($R=E/I$). Use the lamp current from a catalog or variable power supply to determine the current for the lamp being used.

SWAP SHOP

(send all ads to the editor)

FOR SALE: 1296 Power Amps, 250 watts to 750 watts, 2, 4, and 6 tube cavities using water cooled 7289, 8907 or single tube cavities using TH308, 328, 338 or water cooled Y730. Call or write to Tom Dinyovszky, KB2AH, 405 Union Lane, Brielle, NJ, 08730, 908-223-5067.

FOR SALE:

Kenwood TS520, \$300., MMT 432/28, \$225.00, RF Concepts 4-110 432 MHz Amplifier, 10 watts in, 100 watts out, \$250.00. Contact Brian Taylor, N3EXA, 215-257-6303 (H), 215, 224-2112 (W).

UPCOMING PROGRAMS

By: Gary, WA2OMY

February: Contest Crying Towel Session

March: Annual Homebrew Night

AN INTERNATIONAL CONFERENCE FOR TWO METER EME

By: Bob, WB5LBT

For all interested TWO METER EME Stations. An International Conference for TWO Meter EME is planned for May 25-28 in Baton Rouge, Louisiana, USA. Please mark your calendar. Also requesting if anyone would like to submit a program or subject matter. Expect subjects on DSP Audio Filters and Noise Reduction from factory representatives also information about DSP Signal Processing developed by AF9Y (a must). When all else fails, let me know if you plan to attend and I will forward details of accommodations. Reply thru E-MAIL, EME NET, OR EME BBS MAIL. Regards, Bob Taylor, WB5LBT, 10715 Waverland Dr., Baton Rouge, La. 70815, U.S.A., 504-275-6556

Tom, WA8WZG, reports he has his 10 GHz station up and running with a 32 inch dish with a modified Chapparell feed at 95 feet with the transverter mounted up near the feed using a 8 ft. length of flex waveguide. Runs 8 watts out and has a two stage WB5LUA preamp. On 26 Dec. he worked Indiana, Illinois, and New York (EN61, EN62, EN50, EN51, EN52, FN03 and FN13), all on 10 GHz. He can be reached for skeds or openings at 419-684-7909.

In the Feb 95 issue of 73, Chuck Houghton, WB6IGP, describes microstrip tuning techniques.

In the Feb. 95 issue of CQ, Irwin, WA2NDM shows a circuit for a selectable frequency AC power supply. Powered by 8 to 12 volts dc, it puts out 115 VAC at either 50, 60 or 400 Hz. It may be what you are looking for that surplus TWTA that you couldn't pass up.

The Rochester VHF Group Journal has a two part article on improving DEM Transverters in the Oct. and Nov. issues by Rus, NJ2L.

The Jan 95 issue of the N.E.W.S. Letter has a review of the I.C.E.. 6 meter filters by Fred, N1DPM. Fred was able to tune the 3 Kw low pass filter for insertion loss down to the 0.1 to 0.15 dB level. In the same issue, Paul, N1BWT describes how to order, install and tune-up crystals for Phase-Locked brick oscillators.

In the Jan 95 issue of QEX, Paul Wade, N1BWT, has an article titled "High-Performance Antennas for 5760 MHz. Zach, KH6CP/1 describes 1296 MHz Cavity GaAS FET Preamplifiers., parts schematic and cavity dimensions are provided.

Microstrip Tuning Techniques

By: Kerry Banke

This is a description of the basic approach I have used to successfully retune many tens of surplus amplifiers.

General precautions: Every thing must be grounded to power (earth) ground including the soldering iron tip. The typical FETs in microwave amplifiers will self destruct with more than 5-10 volts on the gate. Apply only as much input rf power initially as required to get a usable output measurement. This reduces the chance of damage to higher power devices prior to getting the output matched. Also this prevents saturation of a stage which then appears to not respond to tuning. Applying more than about +10 dBm directly to small FETs may cause damage. Use current limited power supplies set to limit slightly above normal expected operating current. This will in most cases prevent blowing up the FETs if the negative gate bias is missing or something is accidentally shorted with the tuning wand. With this approach, sequencing of the power supplies is not usually important. Place attenuators directly at the input and output of the amplifier. This removes the effect of poor cable, source and power detector matching. Always remove power when making connections and soldering tuning stubs. Make sure amplifier output is terminated before applying power.

Tuning procedure: Prepare tuning wand and tuning stub material. Cut about 1" or 2" strips about 0.080" wide (not critical) or about the same width as the main 50 Ohm microstrip lines in the amplifier from thin copper or brass stock (.003"-.010"). Tin both sides of the strips and flick off excess solder. Make several tuning wands by cutting one end of a wooden toothpick square at the largest diameter. Using superglue, attach a square (.080"X.080") of the prepared tinned copper or brass to the cut end of the toothpick. Wipe off excess glue from the exposed side of the square & let dry. Remove existing tuning stubs. Using an Exacto knife, make a deep enough cut to disconnect existing tuning stubs from the main 50 Ohm line. Be careful not to cut the thin bias lines. If you are unsure of possible damage to the bias lines, carefully check continuity or use a magnifier to do visual inspection before applying power. In some cases it pays to go through the agony of removing the stub completely as the correct new stub placement may overlap & cause problems. Connect the amplifier to signal source, attenuators, power detector and power supplies.

Turn on power and adjust input attenuation for as low of input as can be readily detected on output. Start at output and slide tuning wand along (in contact with) the main 50 Ohm line watching for an increase in output. Note the maximum output reading obtained with the wand. Remove power and solder a square of the prepared material in the same position as noted by the wand. Do not add solder. The tinning is normally sufficient to allow the new tuning stub to be held in place with the pointed end of a toothpick and then just touched with the soldering iron to reflow the solder. Turn on power and verify that the output is as high or higher than obtained with the wand. Move the tuning stub if required to obtain results equal to or better than the wand. Slide the wand over the previously attached new stub & if improvement can be made, attach another square. Continue this for the entire length of the main 50 Ohm line until no further improvement is found. Increase the input power if working with a power amplifier and retune the output stage for maximum power. Be careful here so as not to mismatch the output so bad with the wand as to damage the FET. The process can be very slow with some stubs only gaining a fraction of a dB. In most cases it will take all of those small increases to get good results so don't expect to see major improvement necessarily with a few stubs. It may. Good luck in this very rewarding process.

Kerry Banke 619-462-2220 Internet address kbanke@qualcomm.com

CALL	W2SZ/2	K3MQH	K1RZ	AA2UK	WA2TEO	KA1ZE	WZ1V	N1DPM
GRID	FN22	FM19	FM19	FM29	FN31	FN31	FN31	FN32
CLASS	M/U	M/L	S	S	S	S	S	S
6	191/34	436/69	158/35	121/34	243/46	154/28	194/32	81/29
2	449/37	879/63	335/51	217/45	405/46	393/30	287/36	215/26
222	119/26	178/42	82/29	74/23	109/28	53/17	73/18	71/18
432	153/23	332/48	140/36	88/21	136/31	128/21	115/22	80/18
903	15/9		22/16		33/17	16/9	17/10	20/12
1296	55/11		45/21	32/9	38/12	24/11	34/12	29/13
2304	7/6				5/3	8/4		7/4
3456	5/4					6/4		5/3
5760	3/3							
10GHZ								
TOTAL	997/153	1825/222	782/188	532/132	969/183	782/124	720/130	508/123
	242,352	518,370	226,540	104,280	267,546	146,444	137,930	109,470
	W2SZ/2	K3MQH	K1RZ	AA2UK	WA2TEO	KA1ZE	WZ1V	N1DPM

CALL	W8WZG	K1TR	WA2TIF	N2LIV	WB2WHD	WA1MBA	KD1DU	N1MUW
GRID	EN81	FN42	FN42	FN30	FN22	FN32	FN31	FN32
CLASS	S	S	S	S	S	S	S	S
6	96/40	131/25		111/20	57/13		82/12	19/4
2	179/52	282/29	222/25	157/19	121/18	206/23	139/13	166/21
222	67/31	84/23	43/13	53/13	28/5		28/9	20/8
432	104/35	115/19	93/14	74/15	56/13	69/20	36/8	23/6
903	28/17	12/4		13/6		17/9		
1296	47/17	18/5		23/8	12/6	26/9	5/3	6/3
2304	21/12	5/2				8/4		
3456	7/7					6/4		
5760	9/6					2/2		
10GHZ	3/2					2/1		
TOTAL	561/219	647/107	358/52	431/81	274/55	336/72	290/45	234/42
	279,663	103,897	25,688	53,946	21,670	47,520	16,605	12,390
	W8WZG	K1TR	WA2TIF	N2LIV	WB2WHD	WA1MBA	KD1DU	N1MUW

CALL	W0UC	KA2RDO	KE8FD	W8NJR	K1FO	NC1I	KA1EKR	NA1W
GRID	EN44	FN12	EM89	EM79	FN31	FN32	FN42	FN32
CLASS	S	S	S	S	S	S	M/L	S
6	142/67	68/22	70/32	95/27			106/15	
2	220/48	210/35	242/63	236/55			129/16	83/15
222	61/30	50/25	48/34	56/25			27/8	14/2
432	91/33	67/24	89/41	89/33	234/36	228/33	49/8	33/9
903	13/9	25/12		3/2				5/2
1296	4/2	27/10	9/7	12/9				11/5
2304	1/1	11/5						4/2
3456	1/1	9/4						3/2
5760		6/3						
10GHZ								
TOTAL	533/191	473/140	458/177	491/151	234/36	228/33	311/47	153/37
	143,250	129,920	110,094	102,832	16,848	15,048	18,189	10,989
	W0UC	KA2RDO	KE8FD	W8NJR	K1FO	NC1I	KA1EKR	NA1W

CALL	N2WK	W2HPF	N2ODK	N2LBE	N2NEP	W2ONP	WROG	N1LZC
GRID	FN03	FN13	FN13	FN13	FN12	FN12	EN31	FN32
CLASS	M/U	S	S	S	S	S	S	S
6	259/49	77/22	??/?	??/?	??/?	??/?	36/26	60/13
2	439/48	206/37	??/?	??/?	??/?	??/?	130/51	168/13
222	124/27	63/18	??/?	??/?	??/?	??/?		15/2
432	196/29	86/21	??/?	??/?	??/?	??/?		33/2
903	39/13	32/10	??/?	??/?				
1296	52/12	38/10	??/?	??/?				
2304	27/6	15/5	??/?					
3456	17/4	12/4						
5760	12/4	9/4						
10GHZ	30/4	1/1						
24GHZ								
LIGHT?	14/2							
TOTAL	1213/200	539/132	??/?	??/?	??/?	??/?	166/77	276/33
	506,800	152,724	86,000	53,582	25,380	23,000	12,782	10,692
	N2WK	W2HPF	N2ODK	N2LBE	N2NEP	W2ONP	WROG	N1LZC

30 MHz Beacons - Compiled by G3USF, Dec. 1994

(Contd from Jan. 1995 Cheesebits)

50035	ZB2VHF	Gibraltar	TM76HE	35?	5-el Yagi	varies	F1	Summer
50037	ES0SIX	Nr Haapsalu	KO18PG	15	Horiz Dip.	E/W	A1	24
50039	FY7THF	Kourou	GJ35	100	GP	Omni	F1	24
50040	VO1ZA	St Johns	GN37	10	1/4 Vert	Omni	F1	24
50040	CX8BE	Montevideo	GF15	8	4-el			NON-OP?
50040	SV1SIX	Nr Athens	KM17UX	25	Turnstile	Omni	A1	24
50042	GB3MCB	St Austell	IO700J	40	Dipole	E/W	F1	24
50042	YB0ZZ		FK60					U/C
50043	ZL3MHF	Christchurch	RE66	20	Vertical			24
50044	JR6YAG	Okinawa	PL36	20	5/8 GP	Omni		OP?
50045	OX3VHF	Julianchaab	GP60QR	15	GP	Omni	F1	24
50045	YV5ZZ	Caracas	FK60					NON-OP?
50046	VK8RAS	Alice Springs	PG66	15	X-Dipoles	Omni		24
50047	4N1SIX	Nr Belgrade	KN0400				F1	24
50047	JW?SIX	Svalbard		10	2 Yagis	160/340		Spring 95
50047	JD1BFI	Ogasanasa		3	Delta			2100-1000z
50048	JA7YYL		QM08OW	10	GP	Omni		24
50050	GB3NHQ	Potters Bar	IO91VQ	15	X-Dipoles	Omni	F1	24
50050	FO5DR	Mahina	BH52	50	Dipole			OP?
50050	ZS6DN	Nr Pretoria	KG44DE	100	4-el Yagi	SE low	A3	24 EXP
50050	VE7SIX	Kaleden	DN09	130	Quad			NON-OP
50051	LA7SIX	Tromso	JP99LO	30	4-el Yagi	190o		24
50052	PA3FYM	Utrecht		9	Horiz Dip.	N/S		workday
50052	Z21SIX		KH52MK	3	4-el Yagi			18/24hrs
50054	VK3SIX	Nr Hamilton	QF02	15	Vertical	Omni	A1	24
50054	OZ6VHF	Oestervraa	JO57EI	50	Turnstile	Omni	A1	24
50055	ZS6DN	Nr Pretoria	KG44DE	100	4-el Yagi	SE hi	A3	24 EXP
50055	V44K	St Kitts/Nevis	FK87QH	3.5				UC
50056	EH3CUU		JN12FE				A1	QRT?
50056	VK8VF	Darwin	PH57	100	Horizontal		A1	24
50057	VK7RNW	Lonah	QE38	25	Horizontal	Omni	A1	24
50057	TF3SIX		HP94CC	50	5/8 Vert.	Omni	F1	24
50058	VK4RGG	Nerang	QG62				A1	24
50059	VE3UBL	Brougham	FN03KW	10	Turnstile	Omni	A1	24
50060	GB3RMK	Nr Inverness	IO77UU	40	Dipole	N/S	F1	24
50060	WA8ONQ	Cincinnati OH	EM79	2	Turnstile	Omni		NON-OP?
50060	W5VAS	Slidell LA	EM40XA	25	Squalo	A1	24	
50060	K4TQR	Birmingham AL	EM63OM	4	Dipole	NW/SE	A1	24
50060	PY1AA							OP?
50061	KH6HME	Pahoa HI	BK29	20	Quad			24
50061	WBORMO	Fairbury IH	EN10	25	Squalo		A1	24
50062	WA8R	Lawrenceberg IN	EM79	11	loop			24
50062	PY2AA	Sao Paulo	GG66	25	GP	Omni		24
50062	GB3NGI	Garvagh	IO65PA	20	Dipole	140/320	F1	24
50063	KB6BKN	Novato CA	CM88	3	3-el	E	A1	INT
50064	KH6HI	Honolulu	BL01	80	Turnstile	Omni		24
50064	GB3LER	Lerwick	IP90JD	30	Horiz Dip.	N/S	F1	24
50065	GB3IOJ	Jersey	IN89WF	10	Vertical	Omni	F1	24
50065	WD7Z	Yucca NM	DM75	75	Squalo			NON-OP
50065	W3VD	Mt Airy MD	FM19NE	7	Squalo	A1		24
50066	WA1OJB	Bowdoinham ME	FN54	10	2-e	1 Vert. on EU	A1	24?
50065	NB3O/1	RI	FN41	100	4-el Yagi			NON-OP
50065	W0LJR	Aurora CO	DM79	20	2-ring halo			SHARED
50065	KA0CDN	" " "						SHARED
50066	VK6RPH	Perth	QF78	10	Omni		A1	INT
50067	OH9SIX	Pirttikoski	KP36OI	35	2xTurnstile	Omni	A1	24
50067	W4RFR	Fairview TN	EM66WA	2			A1	24
50067	WZ8D	Nr Dayton OH	EM79UG	10	6-el	A1		IRREG
50067	N7DB	Boring OR	CN85RM	5	halo	Omni	A1	INT
50067	KD4LP	Holston Mtn TN	EM86TL	75	GP	Omni	A1	24
50069	K6FV	Woodside CA	CM87UL		100 varies		A1	24
50068	W7US	Mt Lemmon AZ	DM42PJ	50	3-el	E	A1	24
50069	W0BJ	North Platte NE	DN91	5	Turnstile	Omni	A1	NON-OP
50069	W4HHK	TN	EM55HA	1	Slope Dip.			NON-OP
50070	WB4GJG	Danville VA	FM06	1	Dipole			NON-OP?
50070	W2CAP/1	Cape Cod MA	FN41	15	Vert. Dip.	Omni		24
50070	KM4ME	Harvest TN	EM64VV	10	GP	Omni		NON-OP?
50070	WB0CGH	Corinth TX	EM13	1.5	Halo			NON-OP?
50070	WA7ECY	Trousdale OR	CN85SM	10	Squalo			NON-OP
50070	K0HTF	Des Moines IA	EN31DX	2	Inv. Vee	A1		INT
50070	KB4UPI	Birmingham AL	EM63	1	Dipole			NON-OP
50070	N4LTA	Spartanburg SC	EM94AX	10	1/2 halo			NON-OP?
50070	EA3VHF	Lerida	JN01	.25	5-el Yagi	NW	A1	24
50071	WB5LUA	McKinney TX	EM12SJ	1.5	Halo	Omni	A1	24
50071	W0VD	Joplin MO	EM27VD	10	1/4 vert.	Omni	A1	24?

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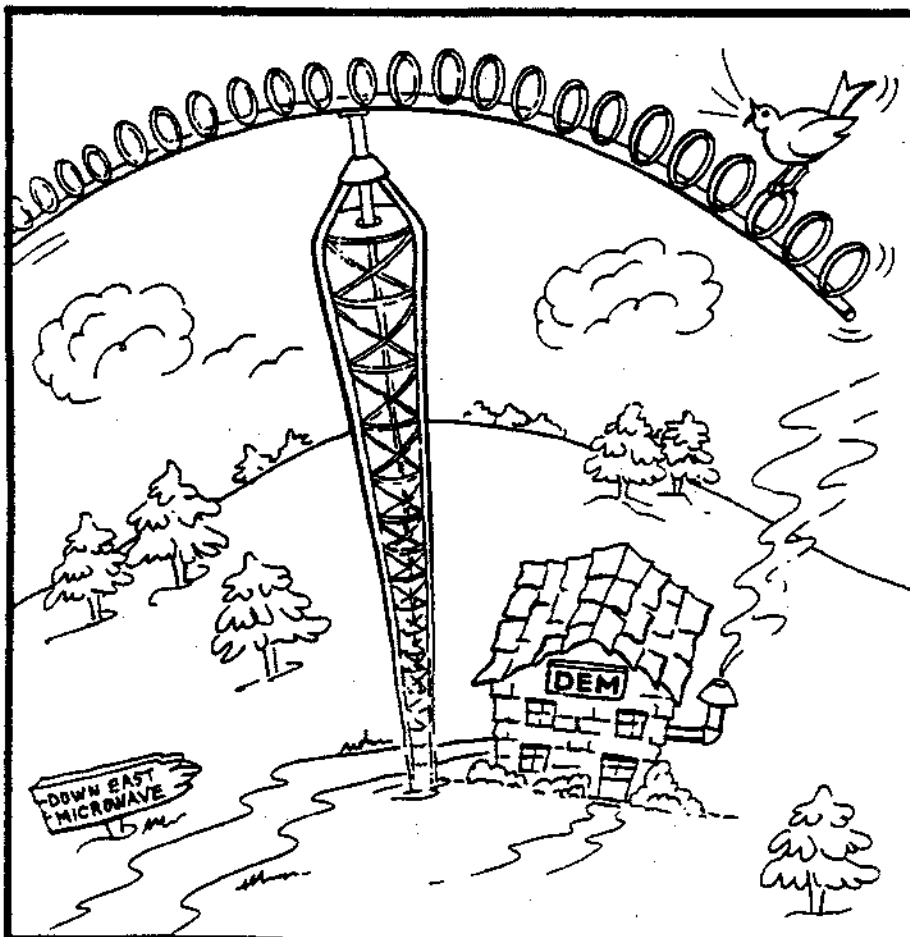


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