

DIGITAL

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DJ's roving reporter Jules, W2JGR with Warren, AF9Q holding Little-Bit-Starr. (Please turn to page 10 for the rest of the story)



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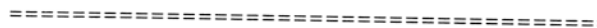
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Silent Keys



TWO FRIENDS NOW SILENT KEYS

Jules W2JGR reported that Bob Stanek W0HAH well known and beloved RTTY operator died Sept. 16th at 72. Bob was devoted to the RTTY mode. He refused to own either a microphone or a key. Bob had been ill for the last two years. He was nearing the 300 DXCC total when he was no longer able to operate his keyboard.

In addition to his ham radio activities, he was a seasoned clown who had the name of Rags. He enjoyed performing, always gratis, for school children, and local parades. In the early 90's he was one of a group of clowns invited to perform at the White House. We will miss him.

Dick K0VKH reported that Larry Workman KA0JRQ passed away several weeks ago. Cancer claimed yet another victim! Larry was at Dayton just a few months ago and seemed perfectly healthy. Larry was, as always, a fine companion and those hours in the hospitality suite will be long remembered. Larry was one of the original MSO operators on RTTY, a pioneer in the development of Amtor, Pactor and Clover mail boxes. A distinguished amateur, we will miss him, too.

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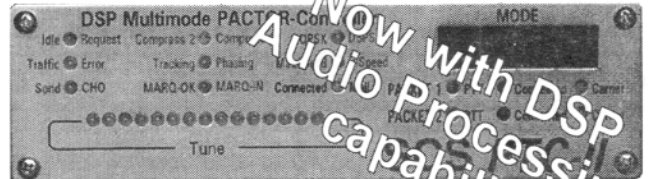
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The PTC-II-Hardware:

- Three simultaneously available communications ports: HF and up to two VHF/UHF Packet ports.
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The Contest Chair

Hints, Tips & Inspiration for Better Scores

by Ron Stailey, AB5KD • 504 Dove Haven Dr • Round Rock, TX 78664
E-mail: <ab5kd@easy.com>



Hello Contesters/Dxers! It's November already, and that means it's time for WAEDC RTTY Contest. It should be a real treat with S/W that does QTC exchanges. Lets all join in and see just how much fun it really is. Remember in WAE RTTY mode you can send and receive QTC's from anyone outside your own continent. Many Europeans didn't remember that last year.

In December we have the new 8 hour TARA RTTY Sprints. Remember the new starting time is 1800 UTC. See new rules in Oct issue or on the Journal's website..

Results, The first RTTY North American QSO Party

by Ron Stailey, AB5KD and George Fremin III, WB5VZL

The first running of the NCJ RTTY North American QSO Party was a great success. Activity on the bands was fantastic and 132 logs were received. Many entries were from contesters entering their first RTTY contest. Everyone seemed to enjoy the NAQP contest format and indicated they would be back next year looking to improve their scores.

The race for the top spot was hotly contested with stations from the W3, W4, W5, W6, W7 and W0 making the top ten. At the end the battle came down to three operators. KF3P, AA5AU and AB5KD battled it out for the top slot. Don AA5AU logged the most contacts with 460. Tyler KF3P topped the pack in multipliers with 136. Ron AB5KD topped them both in total score with a winning combination of QSOs and multipliers. Ron made 454 QSOs and 132 multipliers. Twenty and forty meters were the workhorse bands. WA7FAB had the largest QSO number on twenty meters with 253 contacts.

All three of these ops were using two radios - making it possible for them to call CQ on one band while tuning another for new contacts and multipliers. Although this has been done for years in CW and SSB contesting it is somewhat new to RTTY contests. It seems that after this contest a big discussion has flared up on the RTTY mail reflector with some saying that folks using two rigs should be in the multi-op category. Others feel that it is just another test of operating and station building skills towards the goal of putting together a bigger score.

The multi-op category was won by AA7UN. The NAQP multi-op category is a two transmitter type of multi and it has proven to be a very popular and competitive class of entry in the SSB and CW events and I am sure it will grow to that in the coming RTTY NAQP contests. It should be noted that this is the first RTTY contest to have a two transmitter category.

The team competition seemed to go over quite well with fifteen teams submitting scores. The RTTY Rats took top honors with a combined score of 207,085.

Although this is a North American event there was quite a bit of DX activity. In fact Tapani OH2LU formed a team of four DX stations and one US station. Other DX calls heard were OH2GI, G3YJQ, GW5NF, ON9CNC, SM3KOR, S57W, FO5OF, PT2BW, KG4AU, NP2E, TG9AXB, HK0JOM and ZD8DEZ.

We want to pass a big thank you to everyone that made the first running of the RTTY NAQP contest a great success. We hope to see you in next years contest - get that RTTY gear warmed up.

Soapbox:

I had a lot of fun in the first RTTY NAQP test, I also like having NAQP RTTY in July...WF1B. The contest was great, shorter contests will encourage more to participate...WA4VQD. This contest will be a great test when it gets going...VE3UR. RTTY NAQP test gave me a reason to get my RTTY back in operation. Hopefully, next year I'll be able to devote a full effort...WA4DYD. Lost 20m in the 3rd hour of the test. 10m was open but no activity heard here...KA2CYN Activity was slow across the pond, wish we could work other DX stations for a point and U.S. stations for mults...OH2LU. Had a lot of fun...N6HC. A heartfelt thank you for the hard work that makes the NAQP possible. I'm looking forward to the next one...AA6TY. I enjoyed the NAQP test, I learn something new in every test...KC4ZHQ. I sure had a lot of fun, lets do it again...KF4BU. Had a great time in my 1st RTTY test...NA5Q. Been active in RTTY almost two years, enjoyed the contests very much...N2LEB. A very competitive event...N1RCT. My first RTTY contest. Had a ball...AE2T. The test was great fun...W8FDV. This was my first real attempt at a RTTY test, look for me in the next test, with a higher score of of course...WF2S. I was impressed the QSOs are becoming more rapid fire, like CW. This should help the top scorers get better rates. Thanks to the NCJ and AB5KD for their efforts...WW6D. Only operated on 20m, we had a Hum-Dinger of a rain and lighting storm. But it was fun any way...WA6L0D. My first ever attempt at RTTY. I will definitely be upgrading my RTTY operation with improved filtering and better logging capability. Thanks for sponsoring another great contest...AB5SE. Log somehow got deleted after the first 5 hrs!! Isn't it funny how you never get past fundamentals...AA5BE. Hoping for improved conditions next year...N8FEH. This was my first RTTY contest and my first RTTY contacts. I really enjoyed it, looking forward to the next test. KD4LTR. Thunder storms caused me to un-plug during the test, I had a lot of fun. See you in the next one...N4AN This was the first RTTY test I've ever participated in and found it interesting...K5YAA.

Top Ten Breakdown:

Call	Score	Q's	Mits	10	15	20	40	80	Team
AB5KD	59,796	454	132	8/2	32/12	208/45	154/42	52/31	RTTY Rats
AA5AU	57,500	460	125	11/6	48/13	199/42	157/41	45/23	P.of Doom
KF3P	55,624	409	136	14/7	30/13	133/39	145/42	87/35	RTTY Rats
WA4VQD	47,601	378	129	22/15	74/24	185/42	65/29	32/19	FSCT
WA7FAB	40,492	384	106	0/0	8/4	253/47	94/37	29/18	King Salmon
KN6DV	36,396	346	108	0/0	32/171	73/43	117/37	24/11	Left Coasters
K0RC	35,203	336	107	1/1	5/2	133/36	141/39	56/29	Green Keys
N6HC	35,152	338	104	2/1	22/121	82/401	21/41	11/10	Left Coasters
KA4RRU	34,743	320	111	8/4	18/6	142/37	95/39	57/25	Warriors
AD4TG	34,384	307	112	28/16	54/251	50/37	60/25	15/9	Pile Drivers

Team Scores:

The RTTY Rats

AB5KD 59,796
KF3P 55,624
NA4M 32,656
WF1B 30,200
WA6VZ128,809

207,085

Purveyors of Doom

AA5AU 57,500
K1IU 24,206
N5MTS 23,751
VE6KRR22,532
G0AZT 18,920

146,909

Florida Space

WA4VQD 47,601
HC4HW 30,956
AF4Z 24,108
AA4FC 17,846

120,411

King Salmon

WA7FAB 40,492
WA7FOE 29,580
KD7P 26,574
W7LZP 17,064

113,710

- The Left Coasters (KD6DV, N6HC, WA6SDM, KD6TO, W6SX) — 112,421
- Woodridge Wireless Warriors (KA4RRU, WA4ZXA, WD4KXB, KC4ZHQ, KC4UH-101, 617
- The Underdogs Team (KE7GH, K7WUW, K17RW0, W3GG) — 69,044
- Lost MT. Expeditionary Force (WB5B, K15JC, VE3XAG) — 65,274
- Green Keys (K0RC, KD8FS, WA0AC1) — 64,686
- Pile Drivers (AD4TG, WA4GKM, KT4FY) — 49,860
- MT. Valley Radio Club Maineiacs (N1RCT, WG9B) — 47,473
- Keystones Radio Amateurs of PA (N3KVF, K3SWZ) — 19,146
- Cellar Dwellers (AA6TY, VE7OR, N0IT) — 11,065
- The Jet Set Team (OH2LU, OH2GI, SM3KOR, GW5NF, W2JGR/0) — 10,146
- Texas DX Society (KB5YTV, K5WA) — 7,740

1996 NAQP RTTY FINAL RESULTS

CALL	QSO's	Mults	Score	State	Teams
Single Operator Category:					
WF1B	304	100	30,200	RI	RTTY Rats Maineiacs P. of Doom
N1RCT	299	93	27,435	ME	
K1IU	247	98	24,208	RI	
WN1E	76	46	3,496	MA	
N1AU	33	22	759	MA	
N2D	211	82	17,302	NY	NY NY NY NY NJ
AE2T	129	60	7,740	NY	
KA2CYN	116	57	6,612	6,612	
WF2S	96	55	5,290	5,290	
WB2WPM	97	53	5,044	5,044	
KB2SIX	68	43	2,924	2,924	
WA2ZZX	58	35	2,030	2,030	
KD2YG	38	23	874	NJ	
N2LEB	29	18	522	NY	
KF3P	409	136	55,624	MD	
N3KVF	203	87	17,661	PA	
W3GG	213	78	16,614	MD	
NE3H	172	74	12,728	PA	
W2UP	141	63	8,757	PA	
K3SWZ	55	27	1,431	PA	Keystone
WA4VQD	378	129	47,601	FL	FSCT Warriors
KA4RRU	320	111	34,743	VA	
AD4TG	307	112	34,384	FL	Pile Drivers
AA4NC	304	110	33,440	NC	
KC4HW	287	109	30,956	FL	FSCT Pile Drivers
KT4DI	282	102	28,764	FL	
K4GMH	255	99	25,146	VA	Warriors FSCT
KC4UH	257	96	24,576	SC	
AF4Z	248	94	24,108	FL	Warriors FSCT
KB26GID	227	91	20,657	GA	
WA4MME	233	87	20,010	VA	Warriors FSCT
WA4ZXA	230	86	19,608	NC	
AA4FC	203	89	17,846	FL	Warriors FSCT
WD4KXB	182	83	14,940	VA	
KQ4QM	166	72	11,952	NC	Pile Drivers Warriors
WA4GKM	154	62	9,548	TN	
KC4ZHQ	125	62	7,750	VA	Warriors
W4IF	104	60	6,180	VA	
KT4FY	105	57	5,928	FL	Pile Drivers
N4AN	56	35	1,960	AL	
WA6LOD	54	23	1,242	NC	GA NC
WA4DYD	26	34	884	GA	
AE4ON	33	23	759	NC	TN FL
KD4LTR	26	19	494	TN	
KX5U	18	12	126	FL	
AB5KD	454	132	59,796	TX	RTTY Rats (Plaque Winner) P. of Doom
AA5AU	460	125	57,500	LA	
WB5B	326	104	33,800	TX	LMEF RTTY Rats
NA4M	314	104	32,656	TX	
NA5Q	310	106	32,648	TX	LMEF
KI5JC	282	100	28,200	TX	
KD5ZM	268	94	25,192	AR	P. of Doom
N5MTS	277	87	23,751	TX	
W5PLN	219	80	17,520	TX	TDXS TDXS
KB5YVT	129	60	7,740	TX	
K5WA	100	53	5,300	TX	MS MS
KI5IB	103	31	3,145	MS	
KA5LGP	76	41	3,116	MS	NM AR
WF5T	74	40	2,960	NM	
AB5SE	53	53	1,885	AR	TX AR
N5NXS	60	24	1,500	TX	
AB5BE	47	27	1,242	AR	
KN6DV	346	108	36,396	CA	Left Coasters Left Coasters
N6HC	338	104	35,152	CA	
WA6SDM	243	87	21,141	CA	Left Coasters P. of Doom
W6/G0AZT	220	86	18,920	CA	
KD6 TO	180	79	14,220	CA	Left Coasters
K6HGF	121	53	6,413	CA	
WA6YOO	112	57	6,384	CA	Left Coasters
W6SX	106	52	5,512	CA	
KJ6HO	98	50	4,900	CA	Cellar Dwellers
AA6TY	88	48	4,224	CA	
WB6ITM	86	37	3,145	CA	CA CA
KD6PRF	77	40	3,080	CA	
WW6D	41	29	1,189	CA	CA CA
N6PC	24	23	552	CA	
WA7FAB	384	106	40,492	OR	King Salmon King Salmon
WA7FOE	297	102	29,580	WA	
KE7GH	325	91	29,302	AZ	Underdogs RTTY Rats
WA6VZI	294	99	28,809	AZ	

KD7P	309	86	26,574	WA	King Salmon
W7LZP	216	79	17,064	WA	King Salmon
N7UJJ	213	78	16,380	AZ	
K7WUW	151	70	10,570	WA	Underdogs
AA7CP	157	59	9,263	OR	
WB4UIC	27	11	297	NV	
AB7NV	12	8	97	OR	
AA0CY	13	7	91	NV	
WB8ENR	241	91	21,658	OH	
KD8FS	209	86	16,511	MI	Green Keys
N8FEH	134	65	8,710	MI	
K8ODW	111	67	7,439	MI	
K8CV	106	53	5,618	MI	
W8FDV	98	46	4,508	OH	
W8BYRS	71	40	2,840	OH	
KC4IYD	56	27	1,512	OH	
WG9B	240	86	20,038	IN	Maineiacs
WT9Q	152	62	9,424	WI	
AA9RR	59	24	2,065	WI	
KB9KWL	6	5	30	WI	
K0RC	336	107	35,203	MN	Green Keys Green Keys
WA0ACI	190	69	12,972	MN	
KI7RW/0	184	69	12,558	NE	Underdogs
WA0WHT	140	57	7,866	MN	
N0IT	117	54	6,813	MO	Cellar Dwellers
KG0PI	126	54	6,804	KS	
W2JGR/0	139	41	5,421	MN	Jet Set
K0BX	105	43	4,515	MO	
AA0PU	64	37	2,368	MO	
N0IBT	82	24	1,968	CO	
N0AUI	49	26	1,274	KY	
VE6KRR	264	86	22,532	AB	P. of Doom
VE6RAJ	190	71	13,419	AB	
VE2KAD	113	65	7,215	PQ	
VE3XAG	79	46	3,634	ONT	LMEF Jet Set
GW5NF	77	42	3,234	GW	
SM3KOR	53	27	1,431	SM	Jet Set
FO5OP	43	26	1,118	FO	
VE2SB	35	25	875	PQ	
G3YJQ	32	19	608	G	
OH2LU	56	8	56	OH	Jet Set
VE7OR	7	4	28	BC	
OH2GI	2	2	4	OH	Cellar Dwellers Jet Set

Multi/Operator Category:

AA7UN	290	89	25,721 (Plaque Winner)
VE3RU	75	36	2,700

Multi/Operator Crew:

AA7UN	AA7UN, KJ7TH
VE3UR	VE3UR, VE3PKA

Check Logs:

K5AAY, N3SL, KF4BU, NB9C, N5LUQ, WB5YIK, WB5OLC, PT2BW,

Next Month:

Dick N1RCT will fill in for me as I will be out in Colorado most of December.

WAEDC Contest Records: All records compiled by Eddie Schneider, W6/G0AZT

WAEDC RTTY Records:

Year	C/S	QSO's	QTC's	Mults	Score
S/Opr All Band:					
1993	UH8EA	737	324	419	444,559 World
1994	S56A	533	40	33	309,756 Europe
1995	JA5EXW	130	191	116	37,236 Japan
1995	K1IU	614	400	371	376,194 NA
1994	VE7SAY	344	35	116	43,964 Canada
1990	4M5RY	317	387	221	155,584 SA
1992	ZD8LII	714	204	199	182,682 AF
1990	VK3EBP	69	155	56	12,544 OC
1993	UH8EA	737	324	419	444,559 AS

Multi/Single

1995	RK9CWA	629	1197	467	852,742 World
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1995	RU1A	954	522	476	559,776	Europe
1990	JA7YAA	223	190	148	61,124	Japan
1993	W0NGA	491	290	281	219,461	NA
1992	YW1A	205	30	68	15,980	SA
1995	RK9CWA	629	1197	467	852,742	AS
1992	7Q7XX	???	???	???	15,980	AF

Note: These statistics do NOT necessarily reflect plaque/trophy/certificate winners. They are a general view of past achievements and are meant to encourage more activity from different areas of the World..

Next three Contests:

Contest	Dates	Start Time	End Time	Off Times
WAEDC	Nov 09-10	0000 UTC Sat	2400 UTC Sun	36 of 48 hrs
SPRINTS	Dec 14-15	1800 UTC Sat	0200 UTC Sun	No Off Times
Roundup	Jan 04-05	1088 UTC Sat	2400 UTC Sun	24 of 36 hrs

ARRL's RTTY Roundup, this contest is the WAR between the States and the Canadian Providence. It's a very popular contest in the U.S. and Canada. Many DX stations participate as well. It's a blow and go rate contest from start to finish. With lots of categories to participate in. Last year S/Ops finished in the 1300 QSO range in HP and 1000 QSO range in LP category. Scores ranged from 130K in S/Op HP and in the high 80's in LP Nick UT0I set a new (out side NA) DX record of 72.808 Score. I'm sure Roundup '97 will be a new record breaking year in all categories..

Until next time, 73's de Ron AB5KD

Remember big antennas high in the sky work better than little ones close to the ground...

Club Stimulates RTTY Interest with Kit Project

Part I

by Jan A. Heise, WA4VQD

131 Sand Pine Road • Indialantic, FL 32903 • e-mail: <jheise@tng.net>

Background

The Platinum Coast Amateur Radio Society (PCARS) is a radio club in Melbourne, FL. The club has over 250 members, but many of them are only with us during the winter. Over the years Don Winn, AF4Z, the club technical chairman, has led many different club construction projects. This project started in early 1995 when several club members expressed an interest in an RTTY unit to work with the shareware Hamcomm software. Several members provided system requirements and design input, and the result was a full-featured AF4Z Multi-Modem.

The goal was to keep the price affordable to all club members, but build a quality unit equal to or better in performance than commercial TNC units. The unit also had to be fun to build and easy to assemble and tune, even for an inexperienced kit builder. Hence, a lot of thought and effort went into the design, component selection, and PC board layout. To help with assembly and prevent solder problems, the PC board was silk screened showing part placement. The bottom has a solder mask to prevent solder bridges and to give the kit a more professional look.

Don did the electrical design, schematic capture, PCB layout, and parts list. One of the club members made a tooling jig to allow the chassis to be drilled. Several club members got together on a weekend and drilled and silk screened the units. On another weekend club members got together and packaged all the parts into kits. One of the members took a kit and wrote the assembly manual while he assembled his kit. Thirty-five kits were originally packaged for club members who signed up for the project. About fifteen club members participated in the various tasks required to make the project successful, and as time went on it truly became a club project.

Functionality

The AF4Z Multi-Modem was designed to support all the features in Hamcomm, a shareware package which was developed by DL5YEC. The multi-modem was primarily designed for 45 baud RTTY; however, it can be used at much higher rates. It will operate in either FSK or AFSK mode. It supports up to 110 baud ASCII and CW reception and transmission. The unit also supports multiple Amtor modes. By using the built in comparator demodulator, the unit supports WEFAX and NAVTEX. With other software, such as JVFAX or SSTV, it can be used for SSTV transmit and receive.

The computer interface can be wired for use with Hamcomm or with other software packages such as RTTY by WF1B. Many of the club members purchased both of these software packages. I have found that for general RTTY rag chesing, DX work, or experimenting with the multiple modes, I like using Hamcomm. But for contest work, I use the WF1B software.

Mechanics

The PCB for the unit is 4" x 4.5" in size and has over 100 parts. It is housed in a Radio Shack enclosure which is 3" H x 5" W x 6" D. The enclosure is clean and simple. On the front is a four position rotary switch to turn on the unit and select the mode. There is also a power LED and an LED for Mark and Space tuning. The back panel contains two 1/8 inch phone jacks for separate audio input and output, 12V DC input, a five pin DIN for AFSK and PTT, and an RCA jack for the FSK/CW keying output. A cable with a serial port connector was provided for the computer interface.

Of course there are always those of us who cannot leave anything alone. I have added scope and external tuning indicator outputs on the back of my unit. Several others have added a driver chip and DIP LED indicator on the front to allow easier tuning than the mark and space LEDs. Also, the Hamcomm program uses different RS232 pins than RTTY by WF1B, so some of us are using cable adapters or have installed a switch to change the signals going to the computer. The unit is designed to allow easy modifications as new software programs become available.

The Results

As a part of this project, in order to get club members some experience in operating RTTY, we organized multi-operator single transmitter efforts using my WA4VQD call for the August 1995 SARTG contest and the September 1995 CQ/DJ WW RTTY contest. In both these contests we had several operators who had never operated RTTY before, and only a couple of us had ever used the WF1B software. We stressed that the objective was to have fun and get some experience, but everyone really got into the competition. After those two contests we had twelve people who had good RTTY contest experience. As an added bonus, we achieved a certificate for third place multi-single in the SARTG and third place multi-single USA in the CQ/DJ WW RTTY contest.

Over twenty of the club members have completed the kits. There is nothing like a contest or DXpedition to really check out a piece of equipment. Several of us first used our own AF4Z multi-modems for a contest in the 1996 ARRL RTTY Roundup. I was extremely pleased with the performance of my unit and my second place SOH in the Southeastern Division. I used my multi-modem with a small oscilloscope for tuning. The unit had the ability to copy signals I could barely make out on the scope or hardly hear. Ever since that contest, my commercial TNC has been sitting in the closet.

Our club organized a multi-single high power contest effort using the multi-modem and Don's AF4Z call for the DJ WPX RTTY contest in March 1996. Again the unit performed very well and we received a plaque for our efforts. I tried to convince everyone it was just the unique AF4Z call, but Don insists it is the superior performance of the multi-modem. Experience helps, but it is not everything because once again we had a couple team members who had not operated RTTY. Of course I also attribute our success to my unique training method. I stand over the operator's shoulder with a ruler in my hand and hit his knuckles whenever he pushes the wrong key on the WF1B software.

The July 1996 NAQP was the first time that some of our club members participated in a contest on their own. We had ten local club members in the contest. Eight of us used our AF4Z Multi-Modems and each of us was very satisfied with the performance. Some of us were more satisfied than others with the scores, even if we did not win any plaques. Our next month's club meeting program will be "NAQP Murphy Tales" or "The reason I didn't do better in the NAQP was. . ." Oh, by the way, the "Pile Drivers" owe the "Florida Space Coast Team" dessert after the club meeting.

Conclusion

The AF4Z Multi-Modem turned out to be everything that we wanted in a club project. It helped introduce a number of hams to RTTY operating and contesting. It also helped them understand how RTTY works and improve their technical skills. This article will be followed by a more technical article on the AF4Z Multi-Modem. It will contain a block diagram, technical overview, and description of how the unit works. Don ordered additional boards and parts for more kits and has them available for those who would like to build one.

Acknowledgments:

AF4Z Multi-Modem kit is available for \$79.95 from:
Don Winn, AF4Z
1882 Barkley Ave., Melbourne, FL 32935
(407) 254-9495
dwinn@tng.net

Shareware versions of Hamcomm are available on many BBS.
Hamcomm Version 3.0 is available for \$30 from:
Wilhelm Schroder, DL5YEC
Augsburger Weg 63, D-33102 Paderborn, Germany

RTTY by WF1B Version 2.5 is available for \$49.95 from:
Wyvern Technology, Inc.
35 Colvintown Road, Coventry, RI 02816-8509
(401) 823-7889
wf1b@ids.net

Biographical Sketches:

Don Winn, AF4Z, is an electrical engineer at Harris Corporation Government Aerospace Systems Division. Don is an Extra Class licensee who was first licensed in 1965. He enjoys design and construction of ham radio projects, and has led many technical club projects in local amateur radio clubs.

Jan Heise, WA4VQD, is an Information Systems Manager at Harris Corporation Electronic Systems Sector. Jan holds an Extra Class license and was first licensed in 1964. He enjoys DXing, contesting, and RTTY operation. Jan was a member of the 1995 South Georgia Island (VP8SGP) DXpedition team.

Beedle Beedle

A series of digital snippets

by Crawford Mackeand, WA3ZKZ
115 S. Spring Valley Rd. • Wilmington, DE 19807

Chance is a very fine thing. There are those who thrive on risk. It keeps them sane by not telling what lies around the corner. There are those who are risk-averse, and life must be a sore trial for them. Like anything else the operation of chance has its upsides and its downsides though. For us radio folk, noise might be the main downside. Getting less physical, less technical, let's think for a moment about the chances of working good DX.

What are the negatives? Well, it may not be physically possible at the time and frequency we have selected. So we need to try a bunch of different times of day and different frequencies. In the long run too, we need to try a bunch of different times of year and phases of the sunspot cycle. So doing will also help us hit those times when ionospheric storms are agin us. Of course we will also have many more unsuccessful sessions at the rig, but the more we hit it, the better that chance.

Let's try another. Our DX friend may be at the beach, or asleep, or even at work. Or maybe we have a decent beam and it's pointed in the wrong direction at the wrong moment in time. There are two ways of dealing with these problems. One is to set up a schedule, which offends the DX purists, (who must be the risk-takers among us at heart) and the other is as above, just be around more. There may be more than one band workable, but he's on the other one. Remedy, be a band-hopper. There may be a pile-up almost as soon as he comes on the air. Remedy, be there when he does come on. How? Be on the air more often.

There is a very regular pattern to all this, controlled by chance, unless we want to set up QSOs, and that is "the more times and places you try, the more times you succeed". Even at the bottom of the sunspot cycle the DX chances are there. Listening regularly to WWV at different times of day, it is quite remarkable how often, here on the East Coast, WWVH comes barreling in from Hawaii even when it looks like a pretty unlikely event based on the data. It all comes back to the thought that what keeps us alive and on our toes is the fact that we don't know what's around the next corner. We can predict what is likely to be there, but to know what's real and take advantage of it, ya gotta be there! So get on the air, work HF bands, and live a long time. You'll work a lot of DX.



DX News

The latest digi-doings from around the globe

by Don Hill, AA5AU PO Box 625, Belle Chasse, LA. 70037 • email: <AA5AU@bayouweb.com>



Myanmar DXpedition this Month!

It appears we may get to see Myanmar on RTTY after all. After a setback earlier this year the Central Arizona DX Association hopes to put on a BIG effort from this rare Asian country, formerly called Burma, from the 16th to the 25th. They will use the callsign XZ1N. Since October '95, there have been operations from XY1HT, XZ1A, XZ1N and XZ2BH. There have been no reports of RTTY activity from the earlier DXpeditions. Vince, K5VT, and Jack, WA7LNW, will be the RTTY operators. Let's hope propagation and luck are with them (and us!). For more details check out their web page at <<http://www.getnet.com/~kf7ay/myanmar.html>>

'96 CQ/DJ WW

If you didn't have fun in this year's CQ/DJ WW RTTY DX Contest you simply weren't there. Despite terrible propagation forecasts, overall band conditions were much better than the WWV numbers were showing for this year's contest. Even with very low solar activity and an A index in the teens for the entire contest, there were DX paths available that we have not seen in some time, especially on 10 and 15 meters. 40 was average, 80 was good, but 20 meters was awesome, especially on Sunday.

RTTY DX was plentiful. Several of the rare CQ zones were represented. VE2GSO Zone 2, RA0FU Zone 19, VS96BG Zone 24, NH2G Zone 27, SU1ER Zone 34, 5X1T Zone 37, and FR5DX and FT5WE Zone 39 were some of the notables. There were over 100 DXCC countries active. RTTY stations were spread from 14058-14102 kHz on 20 meters.

Operating Low Power with a couple of A3 tribanders (one with the 40 meter add-on kit) and coaxial inverted vee's for 80 and 40/15 meters, I was able to work 81 DXCC countries and 29 CQ Zones. Into the next solar cycle it may be common place to work DXCC in this contest. And with some luck, perhaps someone will work all 40 CQ Zones. RTTY is still on the rise as a competitive mode. This contest is a DXtravaganza.

More on CQ Zone 34 including 5A

If you did not snag that rare Zone 34 this time, you still have a chance. Ezzat, SU1ER, sports a very nice station in Heliopolis. He is currently active on Clover on 14066 and 14070.12 kHz lsb most afternoons Cairo time. Also look for him on Pactor. In a reply to the report on Zone 34 in the September DX issue, Ezzat states that Dr. Sid-Ahmed, ST2SA, is active on Pactor and Amtor from Sudan.

Interestingly Ezzat stated that he discussed the possibility of digital communications with Ali, one of the local operators of 5A1A, during the German Radio Fest meeting. And that "Soon they will be on the air". How soon is anyone's guess. We will all be keeping our eyes open for news of this possible digital operation. There is a real possibility it could be on a digital mode other than RTTY. Keep your Pactor and Clover skills sharp. QSL SU1ER at his home address: Ezzat S. Ramadan, PO Box 78, Heliopolis, Cairo, 11341 Egypt.

Special Canadian Prefixes

If you come across some exotic prefixes, here is why. Dave VE2ZP/VE9CB reports "On 13 September 1996, Industry

Canada authorized all Canadian Amateurs to use special prefixes to commemorate the 60th anniversary of the Canadian Broadcasting Corporation (CBC). The CBC was founded by an act of the Federal Parliament on 2 November 1936."

From 0000 UTC 26 October until 2359 29 December 1996, Canadian Amateurs may use the following special prefixes in place of their regular prefixes:

Regular Prefix	Special Prefix
VA2	XM2
VA3	CJ3
VA7	VX7
VE1	CG1
VE2	CI2
VE3	CI3
VE4	XL4
VE5	XM5
VE6	VA6
VE7	XK7
VE8	CH8
VE9	VB9
VO1	XO3
VO2	CZ6
VY1	CK5
VY2	XN2

Digital Doings

Angola, D2/D3. Alex, PA3DZN (aka WH2L, 9Q2L, TR2L, 9X5EE), was expected to be active in early October from Luanda for a duration of a minimum of 6 months. He plans to use his TS-50 and R7 (10 - 40m), but a Force-12 C4 beam and a 600W amplifier will be shipped to Luanda as well. For 80 and 160 meters, he will try to install the usual wire antennas, the environment permitting. Operation will be on CW, RTTY, and SSB. Callsign and QSL information was not yet available at press time.

Armenia, EK. EK6OCM is a regular on the VK2SG RTTY DX Notes. Look for him on 20 meters around 1800z. I've not received a QSL route for this station yet.

Auckland and Campbell Islands, ZL9. Ron ZL2TT, a member of the ZL8RI team that went to Kermadec in May of this year states "Yes we are going to go to ZL9. The tentative date is January 1999. That is when the WX is best and conditions radio wise should be a lot better. We have just raised the first 1000 bucks for the trip so we are on the way. Serious planning will start early in 1997 and we will keep the DX community well advised what we are up to."

Brunei, V8. Gerald, V85GA, has been very active on 20 meter RTTY. Look for Gerald around 1500z. QSL is via the callbook address.

Chad, TT. Serge, TT8SP, has been very active on CW but was reported not to have RTTY gear. In mid September, a spot came out putting him on 14085 kHz RTTY. I have yet to confirm that Serge was or is active on RTTY, so be alert.

Comoros, D6. If you worked the D68XS DXpedition in September, QSL to DL4XS. They were quite active on RTTY on both 15 and 20 meters.

Crozet Island, FT5W. Ron, K6OZL, reports receiving his

FT5WE QSL from F5GTW. That is great news. Sam, FT5WE, recently caused some embarrassment to several USA hams that called him split above 7150 kHz, which is illegal in the USA. It seems Sam was working stateside on SSB and went to RTTY upon request but still listening in the phone part of the band. Refer to the frequency chart included with herein for legal frequencies for USA as stated in Part 97.305 of the FCC Rules and Regulations.

Faroe Islands, OY. OY4TN sends this along. "Someone told me that I was not in the callbook, but I sure will be there next year, in the mean time my QSL is via OY6FRA. My address can also be found on some Hamcall server (not sure where). I am new as a Ham on HF, and RTTY is the mode I like best. Also QRV on SSTV (mostly running 20 meters). OY6FRA, The Club station of OY, is also active on RTTY."

Guinea Bissau, J5. Hans, DK9KX, and Dieter, DJ9ON, members of the Cologne DX Group, were active on RTTY as J59KX and J59ON respectively. If you make the contact, QSL via their homecalls.

Heard Island, VK0. Two additional operators have been added to the long list of those scheduled to go to Heard Island. This makes for a total of 23 brave souls signed up. The team also announced that two containers of equipment have been shipped to Reunion Island and that everything appears to be running on schedule.

Italy, I. From 21 to 29 September the special station IY1EY was active on RTTY during the "Loano Elettra Award", issued to commemorate the radio electric experiments made by Guglielmo Marconi from the ship "Elettra" between 1916 and 1936. QSL via IK1QBT.

Jamaica, 6Y. 6Y5/JJ3SRU and 6Y5/KB5VRF were also active in the CQ/DJ WW contest. QSL JJ3SRU/6Y5 to the home call. QSL KB5VRF/6Y5 via JR4PMX.

Lebanon, OD. Francois, OD5PL, continues to make himself available on 20 meter RTTY. QSL via HB9CRV.

Madagascar, 5R. Jean Michel, F6AJA, is back in France after his 5R8FI operation and says he will have his QSL cards printed as soon as possible. He also mentions that Gerard was to stay there, as 5R8EN, until the middle of October and can continue to make QSO's on RTTY. 5R8EN was active in the CQ/DJ WW contest. Jean has the 5R8EN logs up to September 7th (with the 5R8EN/P logs from Nosy Be).

Ray Shonkweiler, formerly 7P8SR, has been working a lot of 40 meter CW from his new QTH in Madagascar as 5R8FK. Ray was very active on RTTY from Lesotho. Let's hope we start seeing Ray's new callsign come across our monitors soon.

Madeira Island, CT3. Hernani, CT3BX, made a tremendous effort in the CQ/DJ WW contest using the following antenna system:

10m: 6 el. mono band beam
15m: 4 el. mono band beam
20m: 4 el. mono band beam
40m: 2 x 5 el. LPDA in direction of USA and EU plus R 7000
80m: 2 phased dipoles plus R 7000+
+ TH5DX and wire antennas

Hermann, HB9CRV/CT3FN, Hernani's QSL manager states "All QSL's will be answered via bureau or direct. QSL route is via HB9CRV. Please don't send QSL cards to the CT3 bureau because they often arrive with some YEARS of delay on Madeira!"

Marion Island, ZS8. Dominik, DL5EBE, DX-Editor of CQ DL explains why Chris, ZS8IR, was off the air for a while. Chris apparently took a 200 km walk around the island! He returned to the base camp in time to give out a few 40 meter contacts in the CQ/DJ WW contest.

Rodriguez Island, 3B9. Jon, EA2KL, and Luis, EA3LM, have obtained a license to operate from this rare Indian Ocean QTH. The operation is scheduled for October 31 to November 5. There has been no confirmation that they will have RTTY gear, but as in all such situations, be ready. They will operate from Mauritius (3B8) before and Reunion Island (FR) after the 3B9 stint. QSL's via the homecalls.

St. Helena Island, ZD7. Desmond and Margaret Peters, ZD7DP and ZD7SM, continue to pop up on 20 meter RTTY. Desmond will go to CW on request.

St. Pierre et Miquelon, FP. Jack, N1REU, plans on bringing his KAM Plus and laptop to operate RTTY during his planned DXpedition set for August 1997. Jack has set up a web page to keep us informed on the details: <http://www.cris.com/~Jackhamm/FP.html>

San Marino, T7. If you worked the group of YL's from the YLRCI Elettra Marconi as T70A in September, QSL is to A.R.R.S.M., PO Box 77, 47031 Republic of San Marino or via the bureau.

Seborga, T0. Although Seborga is not recognized as anything except a part of Italy, several stations have been operated from this location using the unofficial prefix of T0. Hans, DL7CM, came up on RTTY back in September using the call T0OU and caused quite a stir among keyboarders.

Sri Lanka, 4S. 4S7NR continues to be active on RTTY and was worked in the CQ/DJ WW contest. 4S7JRG is now being worked on Pactor.

Tanzania, 5H. 5H3LM has been active on 20 meters near 14087 kHz around 1900z.

Wallis Island, FW. Klaus, DL5IAR, announced that DJ2EH, DJ4OI, and DL8NBH will be active from Wallis Island from 22 October to 4 November. Calls will be FW/homecalls. QSL routes will be announced soon. They will be active 10-160 meter SSB, CW, and RTTY.

WAZ Note: Arie, 4X6UO writes "Hi Don, well here is my WAZ on RTTY, nr is # 99, got the confirmation couple of weeks ago..." Congrats to Arie. And it seems I made yet another error in my reporting of RTTY WAZ numbers. I incorrectly listed Jay WS7I as having #26/20m when it was actually Jules W2JGR that holds that certificate, Jay holds #36/20m. Sorry Jay and Jules.

Telnet Note: John Downing, N6YRU/V31DX, has started a Telnet Access to DX Packet Clusters list. It is now available, in HTML table format, on the NG3K Amateur Radio Contest/DX Web Page. The URL is: <http://cpcug.org/user/wfeidt/Misc/cluster.html>

Here are the band segments that are allowed for HF digital operations including RTTY according to Part 97.305 of FCC Rules and Regulations for the USA. Frequencies are in mHz.

80m	3.50-3.75
40m	7.00 - 7.15
30m	10.1-10.15
20m	14.00-14.15
17m	18.068-18.110
15m	21.00-21.20
12m	24.89-24.93
10m	28.00-28.30

Remember to stay within your band limits.

73 & DX de Don AA5AU

Report from the South

The 5th Annual New Orleans International DX Convention

by Jules Freundlich, W2JGR - DJ's Roving Reporter
825 Summit Avenue, Apt. 1401 • Minneapolis, MN 55403-3188



IDRA's Glenn, W6OTC tells how it was at YK0. (photo by W2JGR)

The 5th Annual New Orleans International DX Convention (NOIDXC) was held this year on the Labor Day weekend. It was the handiwork mainly of Mike W5ZPA, Wondy K5KR, Syl KB5GL, Warren W5VBX, Don W5FKX, John KV5E, Stan W5JYK, assisted by others. You will notice that this group is heavily weighted in digital interests. As expected, many of the presentations emphasized the extent of RTTY DX operating.

The one and a half day program covered a broad scope of DX experiences, touching on such diverse operations as YBOARV, 1A0KM, YK0AA, XR0Y/XR0Z, Project Goodwill (Albania), V51, Lord Howe, Heard Is., XZ, and ZL8. (IDRA's own W6OTC was one of the featured presenters)

Bill Kenamer, K5FUV, of the ARRL DXCC desk, was just in from Myanmar, and hardly recovered from jet lag. He was on hand to do QSL checking and to give a presentation on the 1995 XZ1A Myanmar Dxpediton. As might be expected he also fielded some knotty questions regarding the DXCC. Bill, incidentally, stated that in his own personal opinion, it is just a matter of time until we see Amateur Radio fully operational in P5, North Korea.

In addition to the expected features relating directly to DX operations, Stan, W5FKX gave a fascinating picture of how to use the Internet to enhance the enjoyment of DXing. Using his laptop computer in a time-lapse mode (which eliminated waiting time), Stan projected on the big screen a cruise through the various hyperlinks of interest to DX oriented amateurs. It was so realistic that the audience thought, at first, that he was on-line. The technology used in this presentation brought to my mind the many 'Rube Goldberg' attempts that were tried, not ten years ago, in attempting to project a real-time computer screen image suitable for viewing by a large audience. That problem, obviously, has been solved.

A tutorial on lightning protection, useful to all amateurs regardless of their special interests, was given by Wes, N5WA. Using excellent pictures of his own installation, Wes demonstrated both the principles and practice of protecting/grounding a station installation located in a private house. Those of us who live in high rise apartment buildings could only watch and wonder how to apply such principles to our situations.

At the superb Saturday night banquet, Rick K5UR, ARRL Delta Division Director presented the DXer of the Year award to Kan Mizoguchi, JA1BK for his participation in, and contributions to, many rare DX operations. This was followed by a presentation by AI WA3YVN, of the 1996 ZL8RI Kermadec expedition.



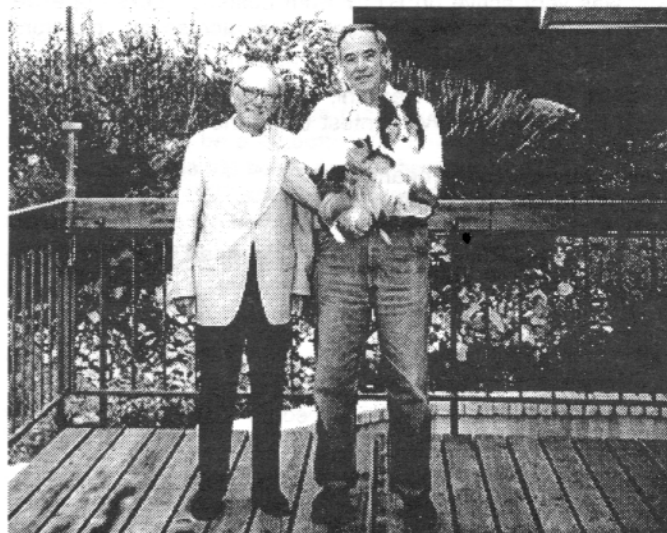
DXers always enjoy a good dinner. (photo by W2JGR)

One of the hidden advantages of any ham convention, is the socializing that goes on behind the scenes...meeting old friends and making new ones. The NOIDXC is no exception. Friendly chats, pats on the back, and heated discussions make for a mixed stew, that is unique to this fraternity.

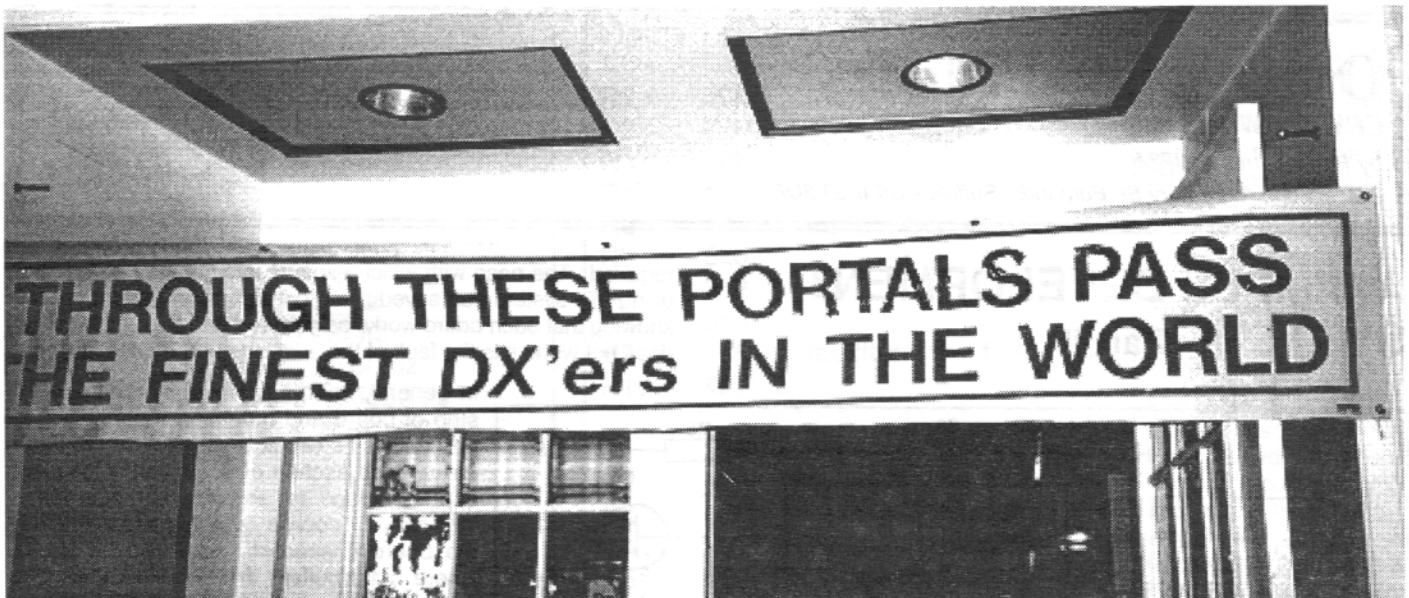
The geographical representation was quite diverse. As might be expected, attendance was heaviest from the local area, including sizable delegations from Arkansas and Mississippi. East coast, West coast, and Midwest were represented as well as Taiwan, and Japan. New Orleans, situated as it is, midway between the two coasts, and no more than a 2-1/2 hour flight from the upper Midwest, is a natural for an international convention. The NOIDXC site is in one of the most interesting areas of the city, the French Quarter, making it a perfect place to bring wives. I'll be back there next year.

After the convention I visited fellow retiree Warren AF9Q, who has a private astronomical observatory at an elevation of 8200 feet ASL in Cloudcroft, NM. Warren has been an amateur astronomer for years. His observatory houses a 60 cm (24") reflecting telescope of his own design.

His current project is the observation and coordinate measurement of Trans Neptunian Objects for the International Astronomical Union. These objects are typically fainter than



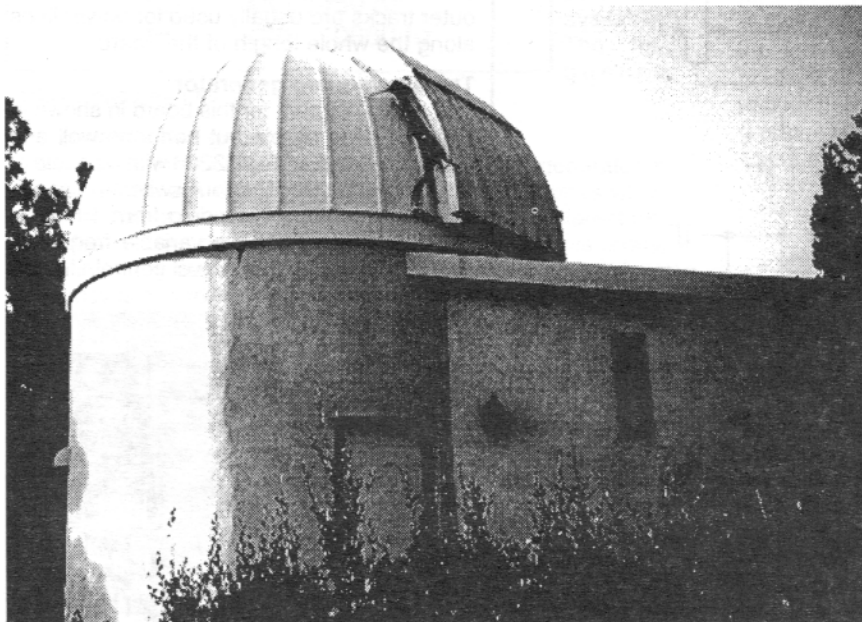
Jules, W2JGR with Warren, AF9Q holding Little-Bit-Starr. (photo by W2JGR)



It's hard to miss the entrance to the New Orleans International DX Convention. (photo by W2JGR)

magnitude 22 and were thought to be beyond the reach of amateurs, until he succeeded, last year, with a few of them. He told me it is an exercise in pulling extremely faint "signals" out

to sit through the night, peering into an eyepiece, bundled up in heavy sweaters, with their camera plates ready to affix to their telescope. The 3.5-m telescope at Apache Point collects light on its concave primary mirror which is then reflected up to a smaller secondary mirror located at the top of the telescope. The light is then reflected down to a flat third mirror. This last mirror directs the light to any of several instruments such as electronic charge coupled device (CCD) cameras, spectrographs, etc. These signals are converted to digital data, which are stored for later analysis. And it is all done by remote control from the comfort of a nearby heated (or air conditioned) control room, or a distant laboratory thousands of miles away.



The Observatory at AF9Q. (photo by W2JGR)

Following the tour at Apache Point, we drove to nearby Sacramento Peak which houses the National Solar Observatory. This facility is devoted exclusively to studying the sun. Its unique construction consists of a mirror assembly atop a 136 foot tower that follows the sun, and directs its image down a 238 foot long tube, in vacuum, to a 64 inch mirror which then reflects the image back up to an instrumented observation room. The day we visited, the local real time monitor at the visitors' entrance showed one sunspot on the sun's face!

of the mud. Unlike communications or radar work there is not only temporal noise to contend with but also spatial noise in the CCD camera arrays. Optimizing S/N ratio in several domains, he says, has been extremely challenging and educational. Three computers control the telescope operation. One contains a data base of thousands of sky images, a second displays the image that he wishes to view, selected from the data base, and the third displays the current image as seen by the telescope.

During my stay at Cloudcroft, Warren and his XYL Beverly N9JVN, took me, along with Mike KK5IE, to the Apache Point Observatory at Sunspot, NM (elev. 9200 ft.) which has several large telescopes. One of these is a 2.5-m diameter telescope under construction, which will start conducting later this year, the Sloan Digital Sky Survey (SDSS). An important aspect of this survey is to generate a three dimensional picture of the local universe! Now that's DX!

Thanks to the digital computer, no longer do astronomers have

73 Jules W2JGR (the DJs roving reporter)



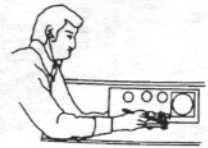
Wondy, K5KR was Master of Ceremonies. (photo by W2JGR)

Other Digital Modes

CCW & CW

by Peter Lumb, G3IRM

2 Briarwood Ave • Bury St. Edmunds, Suffolk • UK IP33 3QF



A SIMPLE DEVELOPMENT SYSTEM - Part II

required. The ease with which experiments can be put together using this system has saved me a considerable amount of time knowing that each board works as required and that, if the set-up does not work, it is the fault of the additions and not the system.

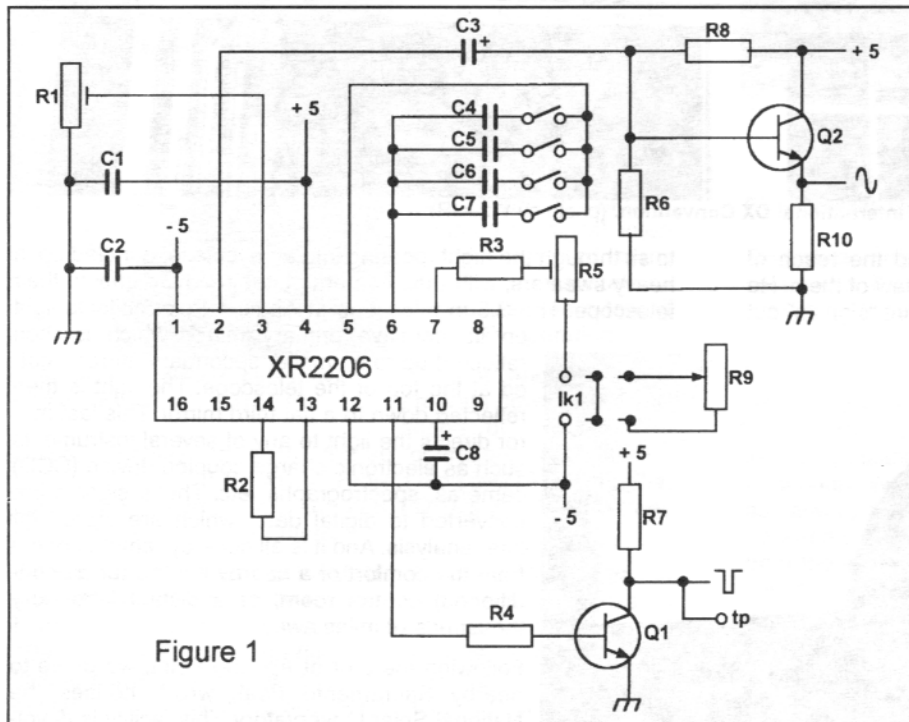


Figure 1

In general, boards are built by cutting off a strip of board and mounting a connector at one end. The circuit is then assembled and the unused section of board cut off leaving enough space to add another connector. You can, of course, add connectors along the board if needed. This can be useful where octal buffers are needed avoiding a lot of long lines to end connectors. The end connector can be used for interconnections between boards and the power lines can be continued through to add a piggyback board if needed. This is how the square wave generator and keyer board are joined. The two outer tracks are usually used for power lines along the whole length of the board.

The sine/square generator

The circuit diagram for this board is shown in Figure 1. It is simple but performs well and consists of an EXAR XR2206 with a couple of transistor buffers. The four switched capacitors allow a range extending from 10 Hz to 100 kHz using R5 as a variable frequency control. R1 is the output level control. In normal use

In the first part of this article I described the basic arrangement for the system and suggested some ways in which Veroboard can be used to advantage. Now I want to describe some of the units I have built. In all there are now about 25 boards including the sine/square wave generator to be described together with a square wave generator and keyer to make a burst generator. The only other items normally in use are a multimeter, a small frequency meter and an oscilloscope. The first two items are small enough not to need much bench space but there is no way I know that the oscilloscope can be miniaturized without sacrificing versatility. Other board items include:

- Several clock oscillators using different crystals and divider chains giving many frequencies
- Several separate divider chains
- A digital filter using MF 10 devices
- An indicator board to monitor 8 bits of data
- A board to generate digital inputs
- A single pulse generator with complementary outputs
- An RS232 converter
- An 8 bit A to D converter and a D to A converter
- Another A to D and D to A converter but using 12 bits
- A loud speaker amplifier
- An audio mixer
- A noise generator
- A programming board for P.I.C. devices

All these plug into the system and can be inter-connected as

Ik1 is fitted to connect R5 in circuit but the link can be replaced with a multiturn potentiometer R9 for fine adjustment. This enables me to set the frequency within 1 or 2 Hz at most settings. By making R9 smaller, finer adjustments to frequency can be made. Simply set R9 to zero and set the highest frequency you want with R5, R9 then lowers the frequency. Sine wave output is available from Q2 and a square wave from Q1. The test point on Q1 is for connection to a frequency meter and is brought out to a separate connector on top of the board so that the frequency can always be measured while

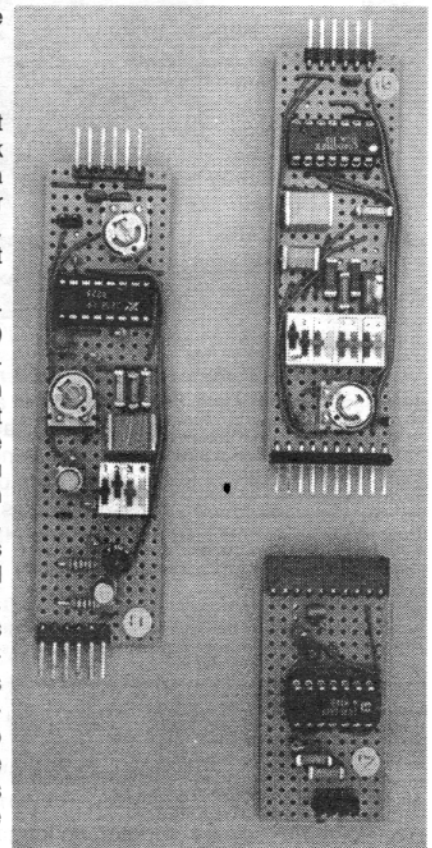


Figure 2 components list

R1	20k	
R2	470k	trimpot frequency
R3	10k	
R4	10k	
R5	470k	

C1	330n	1.5 - 33 hz
C2	33n	15 - 350 hz
C3	3n3	140 - 3580 hz
C4	300p	1440 - 35550 hz
C5	100n	
C6	100n	
C7	33u	
C8	100n	
C9	100n	

Optional additional ranges

1u	0.5 - 12 hz
100n	5 - 110 hz
10n	45 - 1150 hz
1n	420 - 10660 hz

stability has been found to be excellent.

The square wave generator

It may seem unnecessary to have a square wave generator in addition to the one described above but there are times when a sine and a square wave generator need to be on different frequencies. The diagram in Figure 2 is self-explanatory. Complimentary outputs are available at pins 10 and 11 and the frequency is controlled by the switched capacitors and R2. The range available with the capacitors shown is from 1.5 Hz to

Figure 1 components list

R1	50k	trimpot level
R2	220	
R3	10k	
R4	1k	
R5	100k	trimpot frequency
R6	5k6	
R7	2k2	
R8	3k3	
R9	10k	multitum fine frequency
R10	4k7	

C1	100n	
C2	100n	
C3	100u	
C4	1u	10 - 100 hz
C5	100n	100 - 1Khz
C6	10n	1Khz - 10Khz
C7	1n	10Khz - 100 KHz

both outputs are available. The frequency

depends on how you set the frequency controls. I have found this arrangement very useful for testing in audio filters at different speeds. It can also be used for testing computer Morse decoding programs. With the addition of a noise generator you can have the beginnings of a system for testing filters in noise or, possibly, for noise reduction dsp programs. To use the keyer all that is necessary is to plug the board into the output connector of the square wave generator (connections are, of course, made to agree) and connect the sine wave generator. Pin 11 on the generator connects to pin 12 on the keyer. The corresponding pins 10 and 6 are also connected. The sine wave generator connects to C9 and the keyed output is available at C6.

about 35 kHz- However, if you look at the photograph you will see that I have 8 ranges using intermediate values as noted in the frequency list. In most cases this is not necessary but I have found the extra ranges useful on occasions. As with the other generator a separate test point is provided to connect the frequency meter.

The keyer

This is also shown in Figure 2 and, when connected to both the sine and square wave generators, will provide a burst generator giving a string of audio bursts. The output is, of course, the same as a string of dots or dashes at various speeds and fre-

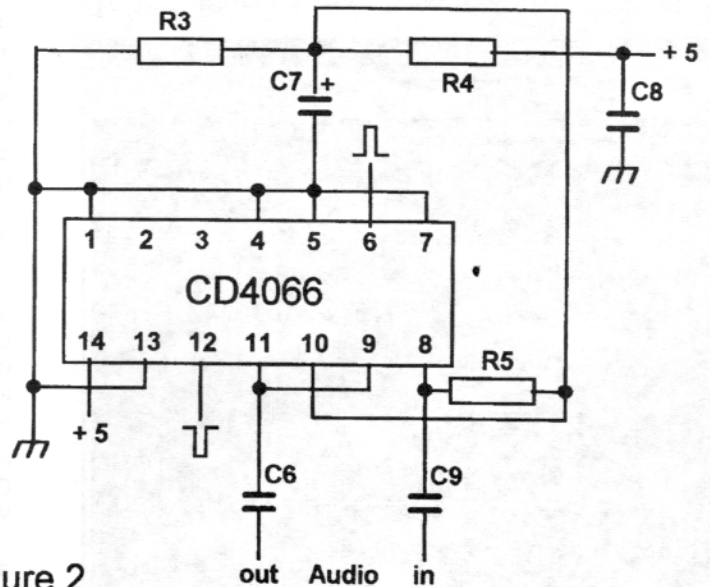
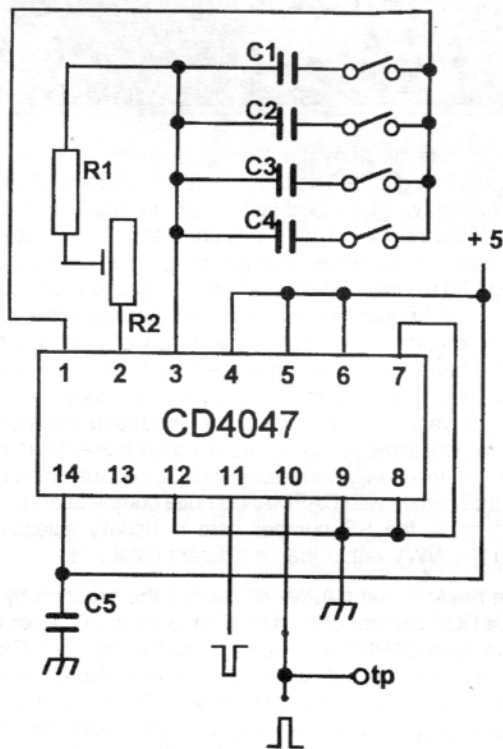


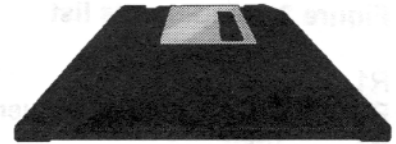
Figure 2

Software News & Reviews

Propagation Theory & Software - Part III

by Jim Coleman, KA6A

250 County Road, 700 N • Ivesdale, IL 61851 / email: <jcoleman@uiuc.edu>



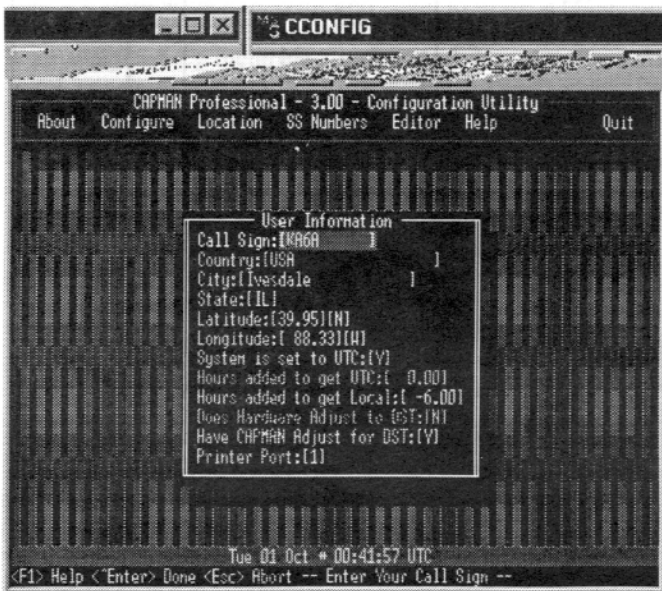
Last month we described IONCAP, the basis for several radiowave propagation programs. We also described the Voice of America suite of propagation programs, called VOACAP, based on IONCAP. This month we take a look at CAPMAN, another shell program based on IONCAP but written for the radio amateur. Like VOACAP, CAPMAN comes as part of a suite of programs. While IONCAP is in the public domain, the CAPMAN shell is a copyrighted commercial product and can be obtained from

Lucas Radio/Kangaroo Tabor Software
552 Wewoka Dr., Boulder, CO 80303
Phone 303-494-4647
Fax 303-494-0937
ku5s@wtrt.net
70511.2570@compuserve.com
<http://ourworld.compuserve.com/homepages/KU5S>

Contact them directly for the latest pricing.

We are reviewing version 3.0 of CAPMAN which requires a 386 or higher processor and only a modest 3 or 4 MB of hard disk space. CAPMAN is definitely a DOS-based program but it will run under Windows 95, with some exceptions noted below. A mouse is optional and really not necessary. Installation is trivial. Included in the CAPMAN suite are six programs. CAPMAN is the basic program for point-to-point radiowave propagation analysis. CCONFIG is a program that allows you to establish your own default parameters for CAPMAN. ICMAN is a compressed version of the US government-issued mainframe computer IONCAP manual. MAKANT is a program for generating your own custom antenna files for CAPMAN. IONEC is an interface program that allows you to convert MiniNEC or ELNEC antenna files for use within CAPMAN. ANTPICS is a compressed pcx graphics file viewer program for examining antenna files. There is a seventh, optional program called CAPMAP which is not a stand alone program but an add-in for CAPMAN that creates contour maps of selected variables over a user-defined area of the world.

Before running CAPMAN for the first time, users should run the CCONFIG program to establish default parameters for use in CAPMAN. This program is a great convenience because it allows you to

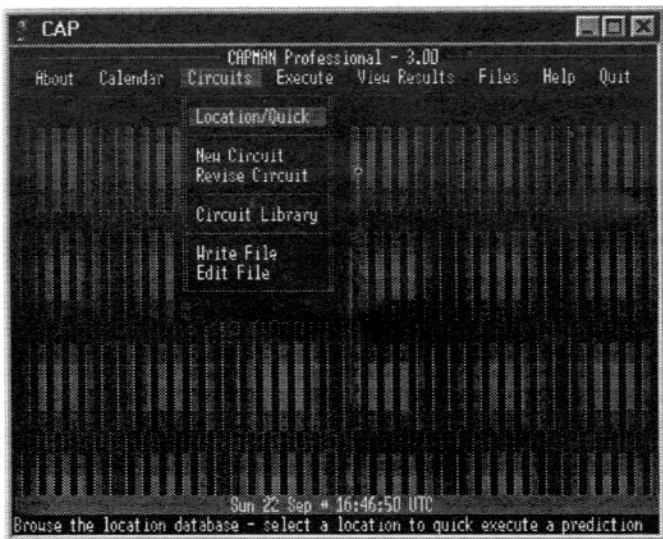


set up CAPMAN to automatically insert your user information and default IONCAP settings. It can be run later at any time to revise the configuration. Any of this information can be easily changed within CAPMAN but, since there is seldom a need to do so, CCONFIG streamlines routine use of CAPMAN. Launching CCONFIG and selecting User from the Configure menu gives the screen shown in Figure 1. The information required here is pretty obvious. Figure 1 also serves to show the general CAPMAN environment. There is a menu bar across the top accessible by the mouse or with the ALT key plus the highlighted letter. Moving around can be done with the arrow keys. The bottom line contains minimal help information and indicates the main keystrokes necessary to complete the task. Context sensitive help is available with the F1 key. Generally throughout CAPMAN, the CTRL-ENTER key sequence completes a task and hitting ESC aborts it.

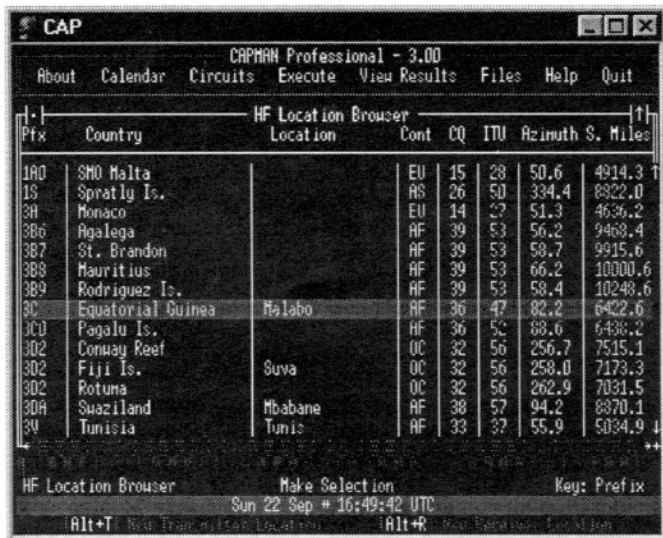


Selection of Defaults from the Configure menu gives the input screen shown in Figure 2. These are defaults for some of the IONCAP parameters we described last month. In many cases, selection of one of the input windows yields another nested input window for more detail. For example, after inserting a number for frequencies, hitting ENTER gives another window for you to enter those frequencies. These frequencies, which we will discuss a little later, are much more important than in VOACAP. I usually choose the cw edges of the ham bands since they are easy to remember and the differences in propagation might be large from band-to-band but are unlikely to vary much within a band. The menu items Location and SS Numbers allow you to export or import these databases for CAPMAN. It is not usually necessary to do so because the Location database that comes with CAPMAN is quite complete and, for near term predictions, the SS number data is usually selected from something like WWV rather than a different database.

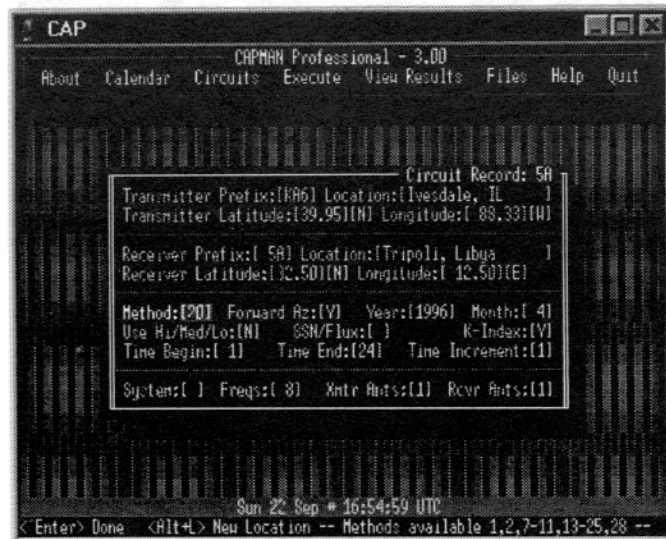
Now we're ready to run CAPMAN. Launch the program by typing CAP at the DOS prompt or double clicking on the CAP.bat icon in Win95. The main CAPMAN screen is shown in Figure 3. Calendar in the menu bar is a month-view calendar that also gives sunrise and sunset in both local and GMT times. Generally to do some point-to-point propagation analysis, you start with the Circuits menu. The menu choice Location/Quick allows you to browse the



Locations database and choose any of the locations to run a Quick propagation check. The Locations database screen is shown in Figure 4. This database was written for hams and is very complete, already including P5, for example. There is also another column, not shown in Figure 4, that allows the user to add notes to any line. The latitude and longitude data are suppressed on this screen view but can be accessed by choosing a country and hitting the ENTER key. New countries are easily added by hitting the F2 key and inserting the new data.

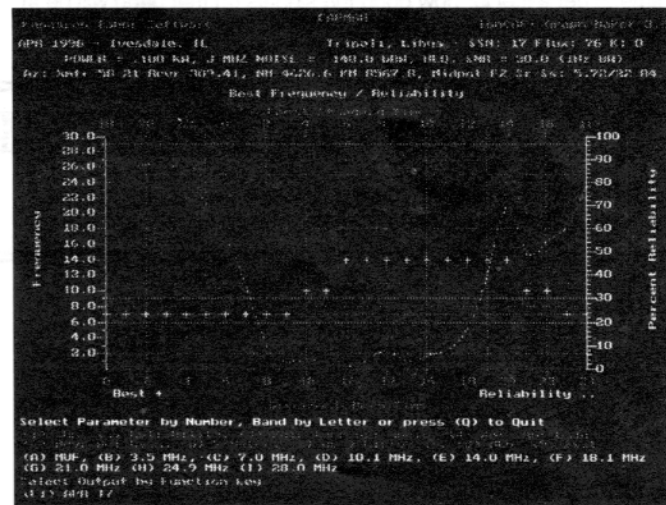


Most of the time, you will be either creating a new circuit or revising one from under the Circuits menu. After choosing New Circuit from the menu, you will be prompted for a name for the circuit record such as the prefix of the country (5A for example in Figure 5) and then the Locations database appears for you to select the receiver location. When it has been chosen, you get the Circuit Record input window shown in Figure 5. The upper box in Figure 5 already contains your user information from the CCONFIG program, the middle box contains information from the Locations database for the country you have chosen, and the lower two boxes contain the default information from CCONFIG. Now you only need to TAB through input window to change any parameters that you choose. You might want to change the date for a future DXpedition, the solar flux to reflect current WWV data, or the antennas to reflect your actual station or the kind of antennas you expect the Receive station to be using. When everything is correct, you hit CTRL-ENTER to accept the data. At this point you can revise or create another record or simply hit ESC to finish revising. CAPMAN then prompts you to write the input file and asks for a name for it. Since all of the



files at various stages of CAPMAN execution have different extensions, you can use the same file name prefix (country prefix, for example) for all of them. So our file for Figure 5 will be 5A.INP.

The next step is to execute IONCAP for the input files you have created. You choose Circuit from the Execute menu and you are prompted for the input file of your choice and the solar flux, and K-index value if you selected that option earlier. Next you are prompted for an output file name. The input file name, with a different extension, is suggested (5A.OUT in our example). The CAPMAN screen is swapped out and IONCAP is executed. Calculations take only a few seconds on 486 or better machines.



To view the results, choose Create Graph from the View Results. At this point the drill is pretty much the same as for all of the earlier steps and a Graph file (called 5A.GRF in our example) is created and the results shown on the screen, as shown in Figure 6. This is where CAPMAN truly shines. The graphics are awesome and the choices are nearly perfect for a ham operator. All of the graphics output screens are dual vertical axis graphs with two sets of simultaneous data. The first screen you see, shown in Figure 6, is something the authors call Best Frequency and the Percent Reliability at that frequency. This is designed for a novice to simply choose the optimum band for a given hour. In the example, 40 meters at 0300Z has the highest reliability and 20 meters at 2000Z looks pretty good.

Many other combinations of graphs are possible by simply pressing a number from 1 to 9 (see Table 1) and a letter key where A is the MUF and B through I are the individual bands you selected in CCONFIG. Simple hitting the "P" key changes the screen to black and white for dumping to a printer.

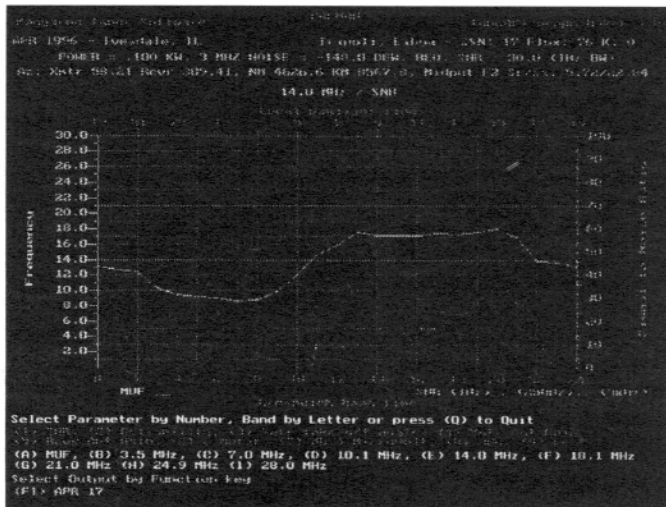


Table 1: CAPMAN Graph Selection Numbers

Number Key	Function
1	SNR
2	Reliability
3	Xmtr take-off angle
4	Xmtr antenna gain
5	Rcvr antenna gain
6	S-meter value
7	dB referenced to 1 μ V
8	Signal in μ V
9	Best frequency

Shown in Figure 7 is a graph of the MUF and the 14 MHz SNR. I usually choose the SNR graphs and step through the bands one at a time to get a feel for how good the signals on that band will be at

any given time and how wide (in time) will the window be open.

The relatively new (to version 3) CAPMAP optional add-in program is accessed by choosing Map from the Execute menu. The basis for CAPMAP is similar to that of VOAAREA in that you select the part of the globe included in the screen image and then by moving around with the arrow keys, you can select contour map variables (selected from the list in Table 1) and frequencies of interest. The CAPMAP feature would have been interesting if I hadn't already seen VOAAREA. This is the weakest part of CAPMAN and I do not recommend purchasing it. The graphics are inferior to VOAAREA. Graph selection via the arrows is cumbersome. This part of the program will not run under Win95 without restarting in the DOS mode and gives a memory swapping error warning that can't even be seen without hitting the Pause key at exactly the right time. Of course, there may be solutions to this memory incompatibility, but I couldn't find one.

CAPMAP aside, I think CAPMAN is one of the best commercial programs available for radiowave propagation analysis. The single band feature is unique and the circuit graphics are superb. The price is not unreasonable and was recently reduced. The manual is somewhat abrupt but certainly complete enough. The on-line help is very well done. Future generations of this program will hopefully be more fully integrated with Windows. The CAPMAP feature needs a great deal more development before it can compete with VOAAREA.

As you read this, we are heading into the winter months. That means quieter bands, especially the low bands. It also means the contest season is upon us. Even though the time is short for contests, they offer an excellent opportunity to do some propagation lab work, whether you are participating in the contest or not. Run your favorite propagation analysis program and then listen to the stations spotted on your local packetcluster node. Then compare the predicted and your observed SNRs, for example.

REGION II PACTOR MAILBOXES

Courtesy of Joost, ZS5S
 e-mail: zs5s@iafrica.com

This is a list of Pactor mailboxes in Region II. Listed is the mark frequency. Separate bulletins are issued for Amtor and Clover mbo's.

MBO system: (W) = Winlink, (M) = MSYS, (K) = W8KCQ, (O) Other

(+T) = Plusterm

On same freq: (GT) = G-Tor, (P2) = Pactor-2

(B)=beam, (V)=vertical

Sysops only: (X) = Operates Winlink 'External'

9Y4IBN.CHV.TRN.SA - Irvin - Trinidad
 1800-2000: 14073.5 - 1600-1800/2000-2100: 21073.5
AA5BJ.NM.USA.NA - Dusty - 7075 10131 10134 14065 (W)
AA7HS.#EWA.WAS.USA.NA - Steve - Yakima - (W)
 (X)stevehs@wolfenet.com
 3605.37 3627 7069 7070 7071 7073 7075.5
AF5D.#SAT.TX.USA.NA - Joe - San Antonio - Oldham@connecticut.com - (W)
 3620 7070.5 7075 10128 10140.5 14070.5 14073
CP0RCB.BOL.SA - Mark/CP5VW - 7075 -
 mburke@ns.entel.net
FG5FU.GLP.CAR.NA - Andre - 14066 14067 14068 - (M)
K1UOL.CT.USA.NA - Bob - 3620 3621 7071 7072.5 7075.5
 7077 7101.5
 10126 10128 14064.5 14068.5 14071.5 14076 14118

K2PPH.#WNY.NY.USA.NA - 14069 14070 14072.5 14073 14073.5 21070 21075
K4CJX.#MIDTN.TN.USA.NA - Steve - Nashville -
 waterman@telcores.com - (W)(X)
 3621 3623 7070.5 7072.5 7101.5 10128 10140.5 14112.5 14118
K5VMX.#SETX.TX.USA.NA - Bob near Houston - 7070.5 7072.5 7101.5 (W)
 0300-1200: 3620 3621 3622 - 1200-0300: 14112.5 14118
K7SLI.#NWWA.WA.USA.NA - Jim - Seattle - basalop@eski.mo.com
 3627 3629 3632 7068 7069 7071 7073
 10127 10128 10129 10140.5 14069 14071 14073 14118
KB8LUJ - ? - (P2)(+T)
KC5LT.#MM.CA.USA.NA - Allan - San Diego (W) - dedicated MM
 3622 3627 3629 7069 7073 7075.5 10127 10128 10131 14069 14070.5 14075 18105 21072.5
KD7UM.#SLC.UT.USA.NA - Dave - 3621 3623 3627 7073 7075 7077
 10127 10129 14069 14073 14077 21071 21075 28127
NOIA.#SONEV.NV.USA.NA - Bud - Las Vegas -
 budn0ia@aol.com
 3629 7069 7073 7075 10131 10133 14116
 0200-1300: 1825 3625 3627
 1300-0200: 14071 14075 14112.5 14118 18105 21073 24913 28127

N0ZO.#LAKE.FL.USA.NA - Pat - (X) n0zo@unix.cde.com - (W)
 7070.5 7072 7101.5 - 0400-1300: 3618 3620 3622 3623 3624
 1300-0400: 10126 10128 10140.5 14067 14069 14112.5 14118

N1NNM.#ENC.NC.USA.NA - Luke - Millcreek - vert. (W)
 (X) n1nm@coastalnet.com - 7072 7077 7101.5
 0000-1200: 3618 3620 3621 3622
 1200-2400: 7077.94 10126 10130 10140.5 14070 14077

N3PGG.#CEMO.MO.USA.NA - Tom - 3622 7067 7069 10128 - (W)

N5TC.#STEX.TEX.USA.NA - Tom - College Station - (W)
 3628 7066 7067 7068 10135 10136 14078 18106

N6EQZ.#APL.WA.USA.NA - Ted - (X) TedN6EQZ@aol.com - (W)
 3605 3620 3627 3629 7069 7071 7075
 14068.5 14069 14070.5 14071.5 14073.5 14075 14077
 18099 18105.5 21072 21074 28075 28125

N7RAH.#AZ.USA.NA - Don - Yuma/AZ - (W)
 3625 3627 3629 3631 7069 7071 7073 71075
 10127 10128 10129 10131 14069 14071 14072.5 14073

N8PGR.#NEOH.OH.USA.NA - Hans - 71327.3541@com.puserve.com - (W)
 3622 3623 7072 7068 10127.5 10135 14075 14080
 18101.5 21075 21080 28075 28080

N08M.#NEOH.OH.USA.NA - Steve 3630 3635 7072 14074 21074 (M)

NZ2T.#DFW.TX.USA.NA - Bob nr Dallas - 7067 7074 7077.9 7101.5
 10125.9 10128 10140.5 14068 14116 14118 - (V)(W)

TG9QQ.#GTM.NA - Toni - 14067

TG9SO.#GU.GTM.NA - Roberto - 14068 (day 7068 (night)

VA3VSM.#CON.ON.CAN.NA - Dave - 14068.5 14073 (local day light) - (W)
 (X) ve3vsm@muskoka.com

VE2FK.#CAN.NA - Claude - 7072 7073.5 7077 7081 10126 10128 (K)

VE3EG.#ON.CAN.NA - 0700-0900 & 1000-2300 EDT: 7071 7073.5 7076.5 7077
 0900-1000 EDT: 14080

VE7CIZ.#VAN.CAN.NA - George - 14072 14074 21072 21074

W2NRE.#NY.USA.NA - Warren - (X) 76264.3107@com.puserve.com - (W)
 3620 3622 3624 7070 7071.5 7072 10126 10128 10140.5 14112.5 14118 14114 18104 18105

W4NPX.#CVA.VA.USA.NA - Bob - Charlottesville - (X) 73522.1037@compuserve.com - (D)(W)
 3620 7068 7070 7072 10126 10128 14070 21074 28128

W5KSI.#NOLA.LA.USA.NA - Angelo - New Orleans - (W)
 3620 3622 7069 7071 7075.5 7101.5 14068 14070 14073.5 14074 14079
 14112.5 14118 21074 21075 21079 28074 28075 28145 *(7mHz down)*

W5VBO.#AZ.USA.NA - Brian near Phoenix - (W)
 3622 3625 3627 7069 7070 7070.5 7071 7073
 10125 10126 10127 10128 10129
 14070.5 14071.5 14072.5 14112.5 14118 18105

W5ZIT.#TX.USA.NA - Jim - nr Dallas - 7071 7073 7075 10131 10133 10134 (GT)(M)

W7IJ.#WWA.WA.USA.NA - Bill - Roy - 71736.1220@com.puserve.com - (W)
 3605 3620 3622 7068 7069 10126 10128 14068 14069 14118
 18104.5 18105.5 21078 21079, 0800-1600: 7040.85

W7DCR.#OR.USA.NA - Gary - Lapine - (X) gkaehler@bend.net.com - (W)
 3622 3623 2627 7069 7071 7075.5 10126 10127 10128 14069 14070 14075 14077 14118 21069 21074 21076

21081 24915 24925

W8KCQ.#OH.USA.NA - Bill - 3645 7071 7073.5 10128 14079 14080 (K)
 18107.5 21079 28079 - * no forwarding *

W9MR.#SEIL.IL.USA.NA - Ken - Keensburg - (W)
 3621 3622 7070 7076 7101.5 10126 10128 10140.5 14118
 18104 21072 24925 (vert)

W9UWE.#IL.USA.NA - Julius - (P2)(+T)
 7079 14073 14079 14085 21079 21081 28075

WA1URA.#IN.USA.NA - Frank nr Fort Wayne - (X)
 fnmoore@cris.com - (W)
 3620 3622 7071 7075.5 7101.5 10126 10128 10139.5 10140.5
 14069 14070.5 14071.5 14073.5 14075 14112.5 14118 21074 21076 21079

WA2MFY - Peter - 3642 3645 7071 7073.5 7076.5 - (K) * NO forwarding *
 14068 14069 14070.5 14079 14080 21075 21076 21079 28071
 3622.5 7077 7081.5 10128 10129.5 14068.5 14069.5 14070.2
 14073.5 14074 18107.5 21070.5 21073.5 24915 28074

WA7NTF.#TAC.#WWA.WA.USA.NA - gkohtala@halcyon.com - (GT)(M)
 1817 3627 3629 7069 7071 10127 10129
 14068.5 14072 14077 18105 21078 24925 28125

WA8DRZ.#NOCAL.CA.USA.NA - Frank - San Francisco - 73126,3260 (A)(D)(W)
 10126 10127 10128 10129
 14068.5 14069.5 14070.5 14071.5 14072.5 14073.5 14074.5 14075.5

WA9WCN.#IN.USA.NA - Bob - 70272.3212@compuserve.com -
 7070 7072 7101.5 - 2300-1100: 3621 3623
 1100-2300: 10140.5 14112.5

WB2CJL.#WNY.NY.USA.NA - Bob - (B) EU (W)
 1300-2200: 14066.5 14068.5 14069 14070 14073 14112.5 21069 21073

WB5UJO.#TX.USA.NA - Hoppy - 7075 - (W)

WB8NWQ.#CIN.OH.USA.NA - Vince - 3620 3622 3624 3635 7072 10128 14066.5 14070 14072 14118

WG1I.#FN42KK.MA.USA.NA - Mike - Medford - (W)(SEP95)
 3620 3621 3622 3623 3624 3625 3628 7070 7071 7072 7072.5 7073

WG3G.#MM/USA.NA - Bernie 1730-0200: 7041 10126 14062.87 14067 21083

WI7D.#SONEV.NV.USA.NA - Jeff - 71621.1633@com.puserve.com - (A)(W)
 3621 3623 3627 7069 7075 7077 10127 10129 10139.5 14069 14073 14077 18099 21073 21075 24925 28073 28125

XE1M.#CALP.TLAX.MEX.NA - Valentin - 7061 - (M)(GT)

ZF1GC.#GC.CYM.CAR.NA - Frank - fhgs@candw.ky
 14070.5 14071.5 14072.5 14073.5 14074.5 14075.5 21080

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Across the Pond

A look at the digital-doings of our European neighbors

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This month we will discuss experiences in operating the CQWW RTTY contest, as well as take a look at some new and exciting software and take another stab at band-planning.

The Test of the Contest

This year I operated at ON4UN's house as part of a multi-station, multi-operator team. In 1995 we operated as a multi-operator, single-station team and had a lot of fun, but felt somewhat constrained by 10 minute rules, file merging, etc., so we decided to try a full-fledged multi-multi operation.

John, ON4UN, has recently expanded his shack, completely re-wiring everything and wanted a good test of his set-up. Anyone who has ever run high-power in a RTTY contest can tell you that it is the ultimate test for equipment and connections. I think we were able to fully test his station, as we were able to run 2000 watts non-stop from the main station. If you would like a good description of John's excellent antennas, read *Antennas and Techniques for Low-Band DXing*, published by American Radio Relay League.

We had our share of set-up problems. To effectively run as a multi-multi, we needed John's KLM KT34XA yagi in working order, but he had some problems with it on 15 meters. A quick call to KLM brought relief in updated straps, and the problem was resolved.

John has two Yaesu FT1000MPs, and we were using WF1B software with K6STI's excellent RITTY modem. We tried to duplicate my set-up at home where I normally use RITTY wired AFSK into the Packet plug of my Yaesu FT1000D. We quickly discovered that the FT1000MP will not trigger VOX by input audio coming from the Packet plug, unlike my rig where it works fine. A few messages on the Internet quickly determined that the behavior we were witnessing was how the transceiver was designed to operate, therefore we had to wire FSK cables. We were never able to get the FT1000MPs to work correctly with WF1B. The software could set the band properly, but could never read the transceiver's settings. We decided to never touch the rig and always set it from the program.

Once that was resolved, things were ready to go.

Or were we? License to Operate?

I bought a copy of RITTY for my own use, and was very excited by the prospect of testing it in the contest. Three weeks before the contest I started going to ON4UN's house to prepare the stations. I brought the latest copy of WF1B, HAL files (John has a HAL P38 card) and RITTY. In the effort to understand why VOX was not being triggered by input audio from the FT1000MP's Packet plug, John went on the Internet to see if anyone else had that problem.

Brian Beezely, the author of RITTY, saw the note and knew that ON4UN did not buy a license for RITTY. He knew I had, and contacted me. I had inadvertently violated the license agreement for RITTY by taking it over to John's for 2-3 weeks prior to the contest. Brian was very understanding of my circumstance, and understood that I had not meant to violate the spirit of the license, but I had violated it's letter!

I mention this not only to admit my embarrassment, but to warn everyone that you should carefully read your software license agreements before you start using it. K6STI's license agree-

ment is very explicit about its use

To quote: 8 It has been provided to you on the condition that you abide by the following:

1. You will not use the software for professional, business, government, military, or institutional purposes.
2. You will not sell, rent, lend, give away, or otherwise transfer the software to others.

Luckily, Brian allowed me this public violation with just a notice, and we were cleared for the contest!

Failure and Success

We had a great time in the contest, as it was the first RTTY contest that most of the team had operated. We had a special treat in that Trey, WN4KKN, world-famous contester was in Brussels on a 6-weeks work assignment and decided to join the battle for Sunday. It was Trey's first contest with Yaesu FT1000MPs as well as RTTY.

Conditions, especially on Saturday, were not as good as last year. This year I bought a copy of Capman, which is an excellent propagation prediction software package for the PC. It can produce graphs that outline the best frequency for a path, along with a probability for chance of successful contact. We used the charts to remind ourselves of possible openings. If you are interested in a good propagation program, take a look at Capman, from LUCAS Radio/Kangaroo Tabor Software. (And see this month's article by Jim KA6A-Ed).

Saturday afternoon, disaster struck our happy operation all at once. The main station amplifier, as well as my Command HF-2500 amplifier both failed. John was able to fix the main station amp very quickly, but the HF-2500 was out for the count! At approximately the same time, one of the rotor control boxes failed and one of the masts started turning and turning. John uses prop pitch motors for rotors so there was not a stop. Luckily, one of the operators noticed it and stopped it before the coax had been sheared off of the antenna! We lost about three hours of operating time, but we were able to keep things going after that.

How Did You Do?

There were a lot of people in the contest this year, which was exciting at this stage of the sunspot cycle. Many people do not operate the whole period, but take it as an opportunity to upgrade the shack and try out some new software or hardware.

What modem do you use for RTTY?

A quick survey on the Internet showed some interesting results. Surprisingly, many of the very top guns are using multi-mode TNCs, instead of dedicated RTTY cards or hardware. Six respondents were using KAM/KAM Plus setups, while five were using PK232MBXs. Almost all of these were very happy with the ability to hear weak signals. The HAL PCI-4000/M card was second most popular with three users. With two respondents each, the AEA PK900, HAL P38 card and RITTY were the third most popular choices.

One interesting trend: people are starting to use more than one TNC! I know that we did this at ON4UN, where we ran RITTY, and used a PK900. Initially, we wired up the PK900 to get a mark/space scope output for tuning. We were happy enough with the RITTY tuning indicator in WF1B, however, so we start-

ed watching the output from both screens in order to get the very best copy. Several respondents mentioned using two modems also.

This might be a coming trend for RTTY contesting. After WF1B gets radio networking and packet spotting implemented, maybe he should consider multiple TNCs!

Another major trend seen in the replies is the usage of DSP. DSP technology, covered in many previous articles in Digital Journal, is a powerful tool for the digital ham. Amateur operators using Yaesu FT1000MP, Kenwood's TS-870 or Icom's IC-775 were also likely using the in-built DSP functions of their transceiver. Almost a third of all respondents mentioned usage of an external DSP filter. Of course, the hams using RITTY, or any of the HAL cards are using DSP processors for their modem. Of the external DSP filters, the MFJ-784 was the most popular, followed by NIR-12, DSP-59+ and the NIR 10.

Soundblaster Does It Again!

Being interested in digital amateur radio is sometimes a very tiring pursuit! There is so much to explore that I sometimes get overwhelmed with discovering new things.

A case in point is slow-scan TV. Occasionally you might hear those very funny tones around 14.230 and wonder what is going on. I always was interested but never had the opportunity to see what was happening because I did not have anything that could send or receive the various formats.

A local friend, ON7VT, is an avid SSTV'er. He mentioned to me once that he had discovered a fantastic program called W95SSTV and I should try it out. That evening, I downloaded a beta-copy of the program and loaded it up.

W95SSTV is a program written for Windows 95 or Windows NT 3.51 PCs that have a sound card. It uses the line input to your sound card for receiving the signals from your rig, and the line output of your sound card for sending pictures. No longer do you need any specialized equipment for SSTV, as long as you have a sound card, you are in business! It is interesting what is happening in the sound card universe. No longer are sound cards accessories, they are co-processors handling specialized tasks. I think we are just starting to see a revolution in DSP programming, due to sound cards.

I am just starting to explore slow-scan TV. I have just learned to tune a signal correctly, and am working on developing some nice pictures to send. W95SSTV is pretty simple to use, even for a beginner like me. A built-in tuning indicator, as well as a signal-strength meter is part of the screen output. W95SSTV can automatically tell what format of picture is being received. In fact, there is little for you to do, except click the Start or Auto-RX button to start receiving pictures.

W95SSTV is still in the beta-testing phase. You can download the beta test version from: <http://www.wolfenet.com/~jlbarber/sstv.htm> or <ftp://ftp.cciw.ca/pub/u124/SSTV/w95p207.zip>; CIS Hamnet Forum, "Software/Pictures" library. The software is written by Jim Barber, N7CXI, and William Montgomery, VE3EC. To register the software, the cost is \$50, which seems very reasonable. If you are interested, like I am, in discovering SSTV without spending a great deal of money, try W95SSTV!

With so many new products that use sound cards hitting the market, I think we will shortly see a similar phenomenon that has occurred with serial ports. It seems everyone has the need to connect more equipment to their computer that they have serial ports available to connect them. This will now occur with sound cards.

For instance, I could want to run the *dsp* filter software from K6STI at the same time that I run RITTY while wanting to hear my logging software announce cluster spots via the voice announcement. Is the day very far away that we will want to have 3 sound cards in the same computer?

XPWare Hits Again!

Gary Johnson is back, with the promised version of XPWare for Windows, called XPWIN. No longer do you need a separate version of XPWare for your TNC, as XPWIN supports the following TNCs:

- AEA PK12, PK88, PK96, PK232, PK900, DSP232, DSP1232 and DSP2232
- Kantronics KAM, KAM+, KPC-3 and KPC-9612
- Hal Communications DSP-4100, P38 and PCI4000M
- Pacomm PTC and PTC-II
- SCS PTC, PTC-Plus and PTC-II.

This means that XPWIN covers every major TNC that you might normally desire to connect! Quite an impressive feat! You can have two TNCs controlled by XPWIN, so you can switch between one and the other in real-time. I use the main screen for controlling my HAL P38, and the other screen for using my Kantronics KPC-3 for cluster connections. XPWIN supports Host mode on the Kantronics so I assume it is possible to connect a KAM, for instance, and utilize both ports while at the same time using the P38. This would mean that you need two transceivers if you want to utilize the HF port of the KAM at the same time as the P38, but I can see when that would be fun also!

XPWIN also provides transceiver control for:

- Kenwood (all with radio interface capability)
- ICOM (all with radio interface capability)
- Yaesu (FT767, FT840, FT890, FT900, FT990, FT1000 and FT1000MP).

As with other version of XPWare, modes covered are:

- RTTY
- Amtor
- Pactor
- G-tor (depending on TNC support)
- Clover (depending on TNC support).

For Clover users, Gary has now implemented a new tuning indicator mechanism very similar to the HAL software. It is very easy to use and seems more responsive than some tuning systems I have seen. This also means that you should have the latest version of the HAL firmware to use with XPWIN.

I was very comfortable using the product after a couple of hours, which is good for a product with this capability. One immediately appreciated feature is that you can click on any call sign received and start initiation of a connect, depending on what more you are using.

I will not go into a full product review of XPWIN at this stage. I feel it is another great program from Gary, and you should try it out if you are interested in a Windows-based TNC program. Everything works very well, and it is surely a good bargain if you decide to keep it. Gary has continued with his excellent policy of allowing 100 free tries before requiring registration. If you are interested in downloading the current version from the Internet, point your browser at:

- WWW : <http://www.indirect.com/user/gjohnson>
- FTP : <ftp://ftp.indirect.com> directory [www/gjohnson.com](http://www.gjohnson.com)

Band-Planning Proposal for 20 Meters

I have mentioned several times in this column about the crowded, and sometimes, heated conditions on 20 meters. The lack of frequency space has caused some modes to get into territory wars reminiscent of the feud between cattlemen and sheep herders during the late 1800's in the United States. There is nothing that would naturally cause a cattle herder to dislike a sheep herder. Both animals are very similar in temperament and habit, and the business of raising and selling cattle and sheep is very similar. The only reason for conflict is territory!

Today on 20 meters, we have packet people from 14100 down to 14090 (14087 in Europe). RTTY users are from 14087 down

to 14080. Pactor and Amtor normally reside from 14080 to 14070. In the 14070 to 14060 band, it is a real potpourri of BBSs, QRP CW, Clover, Pactor II, etc..

It is not uncommon to see Clover and Pactor stations dueling it out at 14065.5 while there is empty band space between 14080 and 14070. The feeling is strong that "These are my frequencies and if you start using them where will I go?"

Therefore I have two proposals:

1. Spread out!
2. Spread out more!

I think we need to eliminate the sub-band ownerships. By nature of the width of the signals, and the presence of many BBSs, I think that Packet users should stay where they are today. Some will argue the same for RTTY users, a proposal with which I have no problem. Lets leave the current BBS main frequencies alone, as well as the QRP CW frequency.

BUT!!!! Lets spread out all of the other modes from 14080 downwards and eliminate the artificial territories! Why fight for a frequency when there are plenty available elsewhere? This will help the problem today, but as the sun spots start to re-appear, we will soon see that there are no more frequencies clear between 14100 and 14060. Therefore, I propose that we spread out even more.

I seldom hear signals from my QTH between 14060 and 14055. Again, why are fighting each other when there is space available? Therefore, I propose that we spread the digital band downwards to 14055.

Please respond to this proposal. If we can agree, a formal petition can be made to the major Amateur Radio associations to endorse this proposal. We can continue to discuss this problem, but it is time for action. When the propagation returns, we are going to be in much worse condition than today. Let's take this time to fix it and prevent further problems!

Lets apply some leadership and solve our own problems.

Clover Jamboree

On the Internet, there has been discussion about creating a Clover Party, to promote the usage of Clover.

The basic proposal is that during one 48-hour weekend, all Clover stations get on the air and contact as many people as possible on any possible HF band. Discussions have occurred about whether to make it a contest-type of event, or something similar to the Jamboree on the Air (JOTA) where Boy Scouts get on the air to contact as many people as possible. At this stage, we believe it should be a Jamboree-styled event instead of a contest.

We are finalizing the rules/guidelines for the event, and a date at this moment. Initial proposals are that it occurs the final weekend in January 1997. Once we finalize things, we will publish them on the Digital Journal website, as well as on the Advanced Digital Techniques Reflector. If you are interested, please drop me a note via e-mail and I will ensure you are kept up to date!

That's it for this month! Hope to see you on the air, and remember that the IDRA WPX contest is not so far away!

73 Neal

Review: Superloop III Antenna

by Dick Stevens, N1RCT

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THE PROBLEM

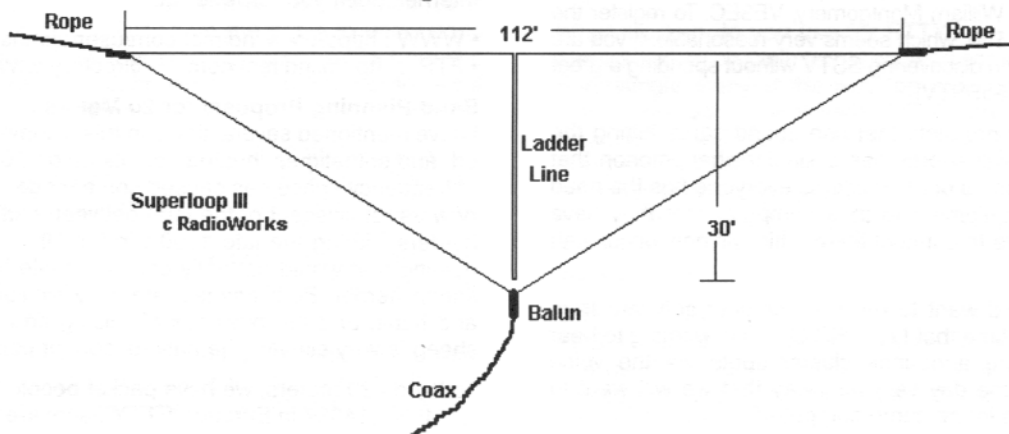
Like many operators with small lots, a G5RV was about all I can fit for the 80 and 40 meter bands. The G5RV is 102 feet long and has a 34 foot section of twinlead followed by coax into the shack, possibly with some sort of RF choke on the coax. The ends are typically supported by ropes up in the trees. An 80 meter dipole would be about 134 feet long.

My tiny village lot (.22 acres) is great for taxes but limited in antenna potential and zoning laws prevent real towers. I had an 80 meter horizontal loop for a year, but was not able to support 4 corners at any height above about 22 feet. I was able to get

a G5RV up at 57 feet and running north/south and it was a much improved performer so the old loop was retired.

In an effort to improve on my G5RV for 80/40 meters (contesting mostly), I searched many antenna books and catalogs. I really needed something that would go on the same supports as the G5RV (as it was at the highest possible height on my lot) and was dual band. I tried the Van Gordon 80/40 stacked dipole for a while but had constant tangle problems and the performance seemed no better than the more versatile G5RV. I then tried the RadioWorks "Superloop III" designed by Jim, W4FTU, and refined over the years, although the basic "trick" involved goes way back.

Fig. 1 Plan View



PHYSICAL VARIATIONS

The standard arrangement is shown in Fig. 1. It looks like an inverted delta loop and is 112 feet across the top. It fit on the same ropes as my G5RV used and the coax even started at about the same point in space. The wire is heavy 14 gauge copper. If your space doesn't quite allow this, the top corner insulators can be moved to shorten the 112 foot dimension; also additional insulators can be added to the diagonal wires to make a rectangular shape and raise the bottom balun up in the air more. I also added 6 feet of wire to move the resonant frequency closer to the band bottoms for digital work. The loop can also be mounted upside down and slanted if you only have a single support available. As with all loops, the area enclosed is important and so is the average height; the standard inverted delta shape is a very good compromise.

ELECTRICAL CHARACTERISTICS

The "trick" to the Superloop is the 30' length of ladderline hanging down from the center insulator. This length has been tuned so that appears to be an open-circuit stub on 40 meters; thus the antenna becomes two full-wave wires (at 40 meters) and is commonly referred to as the Bi-Square antenna. On 80 meters, it appears to be just more wire and the antenna becomes a single wave vertical loop. This happens automatically and no switching is involved. A special balun is provided which gives a match between the 50 ohm coax lead-in and the higher resistance of the loop. For best matching, a 1/2 wavelength coax is

recommended (e.g. 99' of RG-8X); however mine is about 70 feet into my diff-T tuner and the SWR < 2 points are 3495 to 3787 but the short coax gives a minimum on 40 of 2.05 at 7090 kHz. If you need to run without a tuner, close attention to the coax length will help. The balun is the typical ferrite rod in a PVC pipe with foaming urethane inside. This has the effect of heat insulating; mine works fine on 500 RTTY watts contesting, but real high power may be a problem on RTTY; but those guys all have beams, right?

OPERATING RESULTS

I have used this to make perhaps 500 contacts on 80 meters and 1000 on 40 meters in 7 months; the furthest being New Zealand on 40 and Moscow on 80 meters, mostly at 500 watts (and all the reports were 599, hi). The diagonal wires make it partially a vertical antenna with a nice reduction in polarization QSB. In the SARTG this year, I had the highest number of 80 meter contacts from NA. From W6/G0AZT in California on 40 meters, I got the comment "You would not believe how loud you are out here". All-in-all, I think it doubled my contacts on 80/40 over the G5RV. RITTY helped on the reception, but they had to copy my CQ first. The Superloop tunes up fine on the 20, 15, 10 bands but I have not used it there. Antenna, ropes, and coax will run you about \$US 135. Radio Works advertises in CQ and QST and have an interesting catalog.

73 de Dick

One Man's Opinion

by Phil Kam, KA9Q

e-mail: <kam@qualcomm.com>

Note: discussion about Spread Spectrum on the Hfsig reflector is widespread. This knowledgeable group of experimenters and practitioners often talk in a language only engineers or rocket scientists understand. But every once in a while, a memo flies by that is of more than passing interest. This one, from Phil Karn KA9Q, is of a very good example and worthy of a much wider circulation than Hfsig allows. Phil, by the way, is the person who contributed NOS to the packet world, including source code. In this note, Phil picks up where the discussion paused momentarily on this note—"So what use are the ham bands if you can only use a single mode over medium distances, and only do things you could no much easier using the public networks?" We have all heard the question before in one for or another. We rarely read such an informed response. - N2HOS

Since it seems that Spread Spectrum (SS) and its black boxes is coming up again, I'd like to address it in the larger context of where ham radio is going and where I think it has gotten off the track in the 25 years I've been licensed (I qualify for QCWA in November — gotta sign up!)

So what use are the ham bands if you can only use a single mode, over local distances, and only do things that you could do much easier using the public networks?

The same question could be asked for SSB and CW, not just digital. What use is ham radio if a) its public service aspects been rendered obsolete by advances in commercial communications and b) while the technology and amateur skill-set have remained totally stagnant (for 20 years and counting), well behind the commercial state of the art?

My basic philosophy in ham radio has always been to build open systems that can be taken apart, learned from, modified and improved by anyone who feels like it. I'm very disturbed by an almost complete conversion of the amateur market during

the time I've been a ham to impenetrable, proprietary "black boxes".

In the old days one could expect the manual for any piece of gear you'd buy to include a complete schematic, as well as a comprehensive theory-of-operation section. Heathkits were the best. I used to spend hours poring over those schematics, learning whatever I could. I think I've always spent more time (and had more fun) doing that than actually operating the equipment!

I think the trend to the black box started when microprocessors first appeared in amateur gear. By itself this was a very good development, as writing and modifying software is an almost ideal ham activity; the capital costs are minimal compared to hardware, and the results are easily shared.

But I don't know of a single major ham manufacturer that prints the microprocessor source code for their transceivers in the manual. They continued to provide schematics, but more and more of the functionality was now performed inside an impenetrable rectangle marked "CPU".

Even TAPR, an organization otherwise remarkable for its openness and commitment to amateur education, treated the source code to its TNCs as proprietary and gave it out only under license to manufacturers who paid substantial fees.

And now we have three major HF digital modes, Clover II, Pactor II and G-TOR. Not only are they all implemented solely in black boxes with unpublished source code, but even the modulation schemes themselves are largely unpublished. (At least the AX.25 protocol implemented by the proprietary TAPR TNC code was published).

Even worse, at least two of the three (Clover and G-TOR) are covered by granted or pending patents — the absolute antithe-

sis of the cooperative amateur spirit. (I've seen the Clover patent. As with most patents today, it describes only one tiny aspect of the real product — the use of sequential carriers to combat ISI — and gives almost no insight into the complete system. It apparently remains a trade secret.)

To be sure, this mimics the usual practice in the commercial radio industry — every Part 15.247 device I know of is a proprietary black box, heavily covered by patents. And many of them are crap (both the radios and the patents!) I feel strongly that if ham radio is to come close to justifying its existence, we need to develop new modulation modes AND we must do it in a totally open, cooperative, GNU-like fashion. All waveform designs and source code made freely available, at least for amateur radio uses.

In other words, the goal of ham radio isn't just to develop and deploy the most advanced radio modulation techniques possible. That's already going on outside ham radio with far more talent and resources than we can possibly bring to bear. And you don't need a ham license to use them.

No, the real reason to develop and deploy new technologies in the amateur service is to make it possible for anyone interested to participate and perhaps learn something in the process. No amateur would be forced to get his hands dirty with the details of spread spectrum, coding or whatever, and I am under no illusions that more than a small percentage of hams will want to. But it is vitally important to encourage that small percentage, because they will almost single-handedly justify ham radio's continued existence — not the DXers, contesters or ragchewers. Not that I have anything against those activities. But they simply won't pay the rent anymore.

So this means we have to do three things: 1) Set an example by designing and producing open, fully documented modula-

tion schemes and the hardware and software to implement them, and encourage any interested parties to experiment, modify, contribute and learn; 2) lobby for more rational licensing requirements that emphasize the increasing importance of relevant technical expertise in ham radio (i.e., abolishing the CW test for all license classes); 3) lobby for the least restrictive rules possible for emission modes, bandwidths, etc., delegating all intra-service interference issues to the hams themselves instead of hard-coding them in the FCC rules.

I won't make any guarantees that no one will ever suffer interference from an experimental SS system. But who ever said we're entitled to any guarantees at all? I consider it a challenge to work these things out for ourselves. The FCC rules already let us do lots of things in theory that clearly could interfere with other amateurs, such as running 1.5KW of FM in the middle of the 2m satellite band. But by and large most hams are willing to cooperate, foregoing something that is technically legal in order to help another ham. (The few that don't cooperate probably also ignore FCC rules anyway!)

Voluntary bandplans and gentlemen's agreements already exist on many bands to promote a plurality of modes, and I'm confident that they can be adapted to deal with spread spectrum. As can novel newer methods for mitigating interference, such my idea of a standard narrowband packet channel for dynamic local interference resolution. (If somebody nearby is QRming you on a particular frequency, you complain on the packet channel and the interfering transmitter automatically QSYs, QRPs or shuts up. Think of it as a general form of busy tone multiple access.)

We're not directing air traffic, and we're not dispatching ambulance and police services. We are supposed to be technical experimenters, teachers and students. And if we aren't, we'll soon be nothing at all.

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Digital Journal Index

January 1, 1995 thru September 1996

Compiled by Bob Boyd, W1VXV • PO Box 571 • Kennebunkport, ME 04046

Note: Bob W1VXV assembled the index information for the period January 1, 1995 through September 1996. We appreciate his effort and look forward to future updates. Please note that regular single-subject columns such as DX, Contest and Last Word are not included. Since they are in every issue, and the subject is obvious, there is no need to list them.

Back issues for 1995 are available on floppy disks from the Digital Journal Disk Library (see page 27). 1996 will be available in March, 1997.

All issues are available on microfiche from ESF Copy Service (see page 29).

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9501Packet Power	Wolf, Dave	WO5H	packet, vhf
9501LANS in Ham Shack/Part II	Richter, Paul	W4ZB	LAN, Ethernet, cabling
9501Basic Packet Radio	Renardson, Wayne	NZ4W	packet, book review
9501A Bit of History	MacKeand, Crawford	WA3ZKZ	wireless printing telegraph
9501MFJ-784 super DSP Filter	Boyd, Bob	W1VXV	DSP filter
9502Pactor II - Part II	Rink, Tom & Clas, Martin	DL2FAK & DL1ZAM	pactor, protocol, PSK, PTC-II, PACTOR-II
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9502TCP/IP & the Internet	Kasser, Joe	W3/G3ZCZ	TCP/IP, packet, internet
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9502A Bit of History	MacKeand, Crawford	WA3ZKZ	mechanical-TTY
9502Keep the RightTime	Boyd, Bob	W1VXV	clock-correction, time, RightTime
9502Propogation? It's a SNAP	Boyd, Bob	W1VXV	propogation, SNAP
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9503A Bit of History	MacKeand, Crawford	WA3ZKZ	wireless printing telegraph
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The Last Word

from the Editor

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Repeat after me ! I will renew my IDRA membership for three years before November 15th! I will do this so I can save twice! I will also send a gift membership to a friend, and save again!

Having said that, it is time to act and act now. Let me repeat the savings story so you know exactly how to calculate your bonus. If you live in North America, renew at \$61 instead of \$68; or three years air mail at \$74 instead of \$85.

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That's not all. Be generous and send the Digital Journal to a friend at home or elsewhere and save \$5 off the normal one year membership rate. This is the time of the year to send a gift to someone. Make it the Digital Journal! Send two gifts, save \$10, send ten gifts, save \$50!

If you have any questions about these rates, do not hesitate to send me an Email message or call me at 813 596 3105. It is very important to the IDRA to have your long term support. Help us get out of debt, help increase the membership. Now is the time. Now is the place. Get your credit card or checkbook and go to work! IDRA needs your help at this very moment.

Remember this . . . IDRA needs your help and it needs it now. Do Something!!

We thank Phil Karn KA9Q for his contribution to our pages this month. In a world where most Internet exchanges and reflectors shed more heat than light, Phil illuminates the screen with cogent, thoughtful comments. He makes us think about our habits and attitudes. Our hobby needs more of his kind. Phil speaks and acts on the same frequency. When he says the amateur digital communication world should be 'open' we know he is serious for he is the one who contributed NOS to the packet world, source code and all. When he says . . . "We're not directing air traffic, and we're not dispatching ambulance and police services. We are supposed to be technical experimenters, teachers and students. And if we aren't, we'll soon be nothing at all" . . . we had damned well better listen. Read the article and distribute it to your unfortunate friends who are not members of IDRA for it is an important statement about the state of our art.

We also thank Jan WA4VQD for his story this month. He and a few others turned a radio club into a den full of RTTY experts and they started from scratch. What a great idea! Don't miss part two in the December issue. Nor, since Jan is also a very serious contender, can you miss the January story about his journey to GITMO for the worldwide contest last September. His contributions are much appreciated.

Florida winds and salt spray took their toll and the R7 finally had to be recycled. The 'no-name' hurricane of a few years back cracked the base of the unit and created a 'leaning Tower of Pisa' image that irritated me every time I drove up to the house. So I worked the 800-number magic and had the new R7000 delivered within a few days.

No regrets, now that it is up and running, except that I also ordered the 80 meter add-on kit. That was a big mistake. Thinking it was a trivial extension of the 24 foot length of the

antenna, I didn't really think about some of the practical problems of extending the electrical length enough to handle the 80 meter band. Two packages arrived by UPS. I opened up the basic pack and it was all familiar. And all improved. Cushcraft streamlined and simplified all the knick-knacks hung on the R7. Great stuff, easy to assemble, quality materials . . . all of the things I have enjoyed in using the R4, R5, R7 and now R7000 family of products at home and on motor homes.

Then I opened the other box. The first thing that tumbled out was an endless pile of guying rope—450 feet in all! Next came the counterpoise wire, and it soon became apparent that there was no way I could even think of using this antenna in the R7000's location. It now resides on top of a twenty foot pipe which is tied to the eave of the house with a Radio Shack stand-off bracket. Come to find out the R7000/80 meter antenna is really designed essentially as a free-standing unit on an eight foot mast, triple guyed, triple counterpoised configuration. This was a large disappointment.

So I remain without an 80 meter presence. Perhaps there is a government program for the band-disadvantaged souls such as me, but until I find such assistance, I remain without a voice on 80. Not that it is all that important, mind you, but when all the other bands fail, it would be nice to continue racking up a few QSOs in these contests that pollute our bands at least once a month. Hi!

Back to the good news. A couple of friends helped walk the pipe, antenna attached, into its deep hole, raised the pipe to the eaves, at which point I climbed the ladder and put the stainless U-bolt around the pipe, tightened the stainless washers and bolts and sighed a sigh of relief. I tried to do it alone a day earlier. Gen had a fit as I displayed a complete inability to tilt with those windmills! Let me tell you that a 24 foot antenna on top of a 20 foot pipe just ain't gonna go into that five-foot hole and reach a vertical position without more than two hands on the job. That's rule number one! God Bless Friends!!

Today, after I returned from New York, I finished up double checking the fittings on the coax, ran it to the external antenna switch (using up a bundle of plastic tie strips in the process—my favorite tool) and put the ladder away. I then went to the rig and checked out the SWRs. The antenna performed as advertised right across all seven bands. I have yet to be disappointed with Cushcraft's performance in the R4-R7000 family. Only the R7000+ dismays me . . . and I will have to figure out what to do about that later.

Meanwhile, my other antenna project moved forward as well. The KT34A (which rests at about thirteen feet when the tower is down) is a threatened species. The oak tree beneath it, a little larger than an acorn a few years ago, now extends up into the elements of this fine antenna. I pruned the tree, but the only long term solution is to raise the yagi at least five feet from its current resting place, a move that produces far more freedom than the height would suggest. Neighbor David is an engineer, a non-ham but one who erected commercial antennas on towers up to and including 1000 feet while working his way through Georgia Tech a few years back. I offered a few suggestions as he thought about the problem. He nodded, then asked me to measure the diameter of bottom of the tubular element of the tower. Easy, I thought. A piece of wire produced a reasonable approximation of the target. A few days passed but on Thursday

he showed up with a gigantic micrometer. "They don't trust your measurements," Dave said. They, in this case, were his machinists who were about to mill a large block of aluminum into a collar that, when locked in place on the lowest element, would keep the antenna five feet higher than now. First class concept! There has been no delivery yet, but I think I am in good hands, and so is the tower. God Bless Neighbors, too.

More thoughts about hard drives. The trend toward cheap drives continues. Two gigs, 2.6 gigs, 3 gigs or more . . . now standard on basic mass-market computers. Such volume staggers the imagination. A few months ago, though, I pointed out that, after partitioning the mega-drive into manageable units of 500 Megs, there was indeed a way to make good use of the space. If you are a MS Bookshelf user, by way of example, copy the CD-ROM to one of your new drives. The access speed increases dramatically and you enhance the value and timeliness of the information. And use the reference far more frequently simply because it is always on tap. If you use a lot of graphic files, pluck your favorite source files and put them in another one of the drives. And so on. On my local network, my computers now have access to the equivalent of eight CD-ROM disks even though there are only three CD drives on the system. Every thing from Bookshelf to Encarta to QRZ is on tap everywhere.

But that is not all. Perhaps the next most efficient thing you can do is export your Windows swap file to another drive. This can be done with a second internal or external drive and is a simple task but has a profound impact on the organization of your drives and the speed with which Windows functions. The change is not difficult to make if you have the second drive available. Go to System Properties in the Control Panel and click the Performance panel. Then click Virtual Memory. (This, in old-fashioned terms is the swap file. I must apologize to MS for suggesting that Win95 uses a swap file). Tell Win95 that you wish to manage your own file size by clicking the second option. You can then choose a different hard drive. Let the file size setting on that drive be expansive. If it shows that 150 Megs is available, set the file settings at "0" minimum and "150" maximum (or No Maximum). Click okay and Win95 will warn you and ask if you wish to continue. Click Yes. Immediately the "Let Windows manage your swap file" option is highlighted. Worry not. Note that your new disk drive destination is shown in the dimmed portion of the window. If it isn't repeat the process.

Then, before you do anything else, optimize both your drives with Norton's

Speedisk, or any other similar program of your choice. There will be a persistent gain in the performance of Win95. And continue to defrag your drives regularly because that helps as well. The optimization process will take far less time than before simply because there will be far fewer screwed up clusters.

Finally, there is the age-old question of back up. Tape? Optical? Zip? Or some other newfangled device? Nada. I use hard drives for this critical task. I have two needs. First, I want a mirror of my "C" drive on another local drive. You know, if the drives goes belly up, I want to be able to switch the "D" drive to the boot position and go on about my business. In addition, though, I need to carry the same mirror to house number two when late Spring arrives. You can't do that with an internal drive!

Here's how it works at this QTH. First, using Drag and File Gold (a highly recommended 32 bit shareware file manager for Win95 that is widely available, and a tremendous bargain. Be sure to register!), I click the "C" drive icon and tell the program, the first time around, to copy everything, including sub-directories to drive "D." In less than five minutes 500-plus Megs moves from one drive to the

other. Then, I repeat the process to drive "E." This is a one gig external SCSI drive that I can pack away in my brief case and take with me whenever I wish.

Every day, I back up the critical files to both drives in less than 30 seconds. Once a week I back up the full disk to both, but by clicking the "New or updated files only" box, the time required is cut to perhaps one minute per drive. This beats the heck out of any other form of backup. The data is there, instantly available. Just the other day, a newly installed program corrupted the ver.dll file. Within seconds, I replaced it from the other drive and went on about my business. Try that with a tape drive! Even if my primary computer blows up, the external SCSI drive backup can be attached to any other SCSI chain—and I am back in business instantly! Very comforting.

Examine the costs and convenience and I think you will agree that hard drives are the cheapest and perhaps the best way to back up even the most complex system. Try it, you'll like it.

Enough for this month. Time to count our blessings, and we have many!

73 de Jim N2HOS sk

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
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***** NOTICE ***** NOTICE ***** NOTICE *****

Frank Fallon N2FF, long involved in our digital world and long a heavy-duty volunteer in the antenna wars in and around the New York area, has turned politician. He is running in the Hudson Division and deserves your support. Go to the Journal's website. There is a link to his site there.

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