dx news

the magazine of the National Radio Club

VOLUME 41 JANUARY 9, 1973 NUMBER 11

"By gosh ! NRC is getting better 'n' better 'n' better....! Keep up the great work ! (Steve Kennedy, Sarasota, FL)

ON THE INSIDE....

- Trans-Polar DX (conclusion) - RjE
- The Etiology of the Great Circle Path - GPN
- A Review of the FMS-3 Frequency Marker Standard - Foxy
- January Propagation Forecast - HQ

NEW MEMBERS

William Andres - 101-25 115th St., Richmond Hill, N.Y. 11419 (re-joins)
* David W. McBride - Box 131, University Centre Bldg., University of Manitoba, Winnipeg, Manitoba, R3T 2N2, Canada
* Richard E. Lawrenson - 28 Carl Dr., Tiverton, R.I. 02878
* Peter W. Kemp - 13-B Fleetwood Ave., Bethel, CT 06801
* Allen Denny - Box 300, Brule, WI 54820
* Sam Brainerd - 900 Kirkwood Hwy., Apt. D6, Newark, DE 19711
Albert J. Mariani, 7 Morison Terr., Springfield, MA 01104 (re-joins)
* (Mrs.) Linda Brodsky - 245-16 149th Ave., Rosedale, N.Y. 11422
* Martin J. Wright - c/o C. D. Hadsell, RR 3, Springfield, IL 62707
* Ralph B. Daniels - 35 Bryant Rd., Ajax, Ontario, L1S 2Y5 , Canada
* Robert E. Hackett - 1931 Steves Ave., San Antonio, TX 78210
* Louis Buehler - 2264 Sibley, St. Charles, MO 63201

Welcome to the NRC, folks -- why not write to Ernie Cooper and introduce yourselves in Musings, and while you're at it support our other sections too!

As of 1/1/74, we're averaging 14 net new members per month. Our total now is up by 42 since 10/1, to 577. Let's knock that 600 mark off by April, eh what ?

RENEWALS

Gainey, Junker, Ryden, Kadet, Allen, Schneider, Truax, Barton, Geary, Krakow.

NOTES fr NRC/NJPC

We have now got our technical review force set up, and its first order of business will be to review a couple of articles we've held pending because we here at NJPC hadn't enough experience in the theory and to check them out. Included in that will be RJE's LSCA article noted elsewhere herein. This committee will review any articles which NJPC feels needs to be checked. This is not meant to disparage anyone submitting articles, mostly to correct any possible errors, or to recommend clarification of points which the committee feels are perhaps too technically complicated for our non-technical members. (cont'd page 2)

C. P. C. TEST SCHEDULE

SAT.	JAN.	12	0015-	* WCSS-1490	Amsterdam, NY	1000/250 U	NNRC
MON.		14	0200-	* WDBC- 680	Escanaba, MI	10000/1000 U	NNRC
			0600-0800	* WKRT- 920	Cortland, NY	1000 U	NNRC
MON.		21	0100-0200	* WCSH- 970	Portland, ME	5000 U	NNRC
			0300-0330	* KOKO-1450	Warrensburg, MO	1000/250 U	NRC
			0300-0400	* KABQ-1350	Albuquerque, NM	5000/500 U	NNRC
MON.		28	0000-0800	* KIAK- 970	Fairbanks, AK	5000 U	NNRC
			0330-	* KFAY-1250	Fayetteville, AR	1000 D	IRCA
			0400-0500	* KCRA-1320	Sacramento, CA	5000/1000 U	NNRC
THU.		31	0645-0700	* KBTC-1250	Houston, MO	1000 D	IRCA
MON.	FEB.	11	0200-	* WHIS-1440	Bluefield, WV	5000/500 U	NNRC
WED.		13	0545-0600	* KLYR-1360	Clarksville, AR	500 D	IRCA
MON.		18	0130-0330	* ....-1505	The Valley, ANGUILLA	500 U	NNRC
SUN.		24	0230-0300	* KGVO-1290	Missoula, MT	5000 U	NNRC
MON.		25	0130-	* WKZO- 590	Kalamazoo, MI	5000 U	NNRC
MON.	MAR.	4	0115-	* KWPM-1450	West Plains, MO	1000/250 U	NNRC

DETAILS....

WCSS - PoP. Reports to Lloyd Smith, CE, WCSS, Midline Rd., Amsterdam, 12010. (Ken Benner)

WDBC - Will test w/ 10 kw day pattern mostly. V/s: Robt. Haslow, WDBC, Box 419, Escanaba, 49829 (Gene Vonderembse)

WKRT - This is RS, but will run extra IDs both on AM and on 99.9 FM, in which CE is most interested. V/s: Bruce L. Mackey, CE, WKRT, 292 Tompkins St., Cortland, 13045. (Ken Benner)

##

NOTES &c FROM NJPC, cont'd from page 1.....

- What with daylight time upon us by the time this reaches you (will go into effect 1/6/74) all domestic sections revert to ELT. We note that Canada will remain on EST with the possible exception of Ontario. All of the other provinces are so far North that a change would actually waste energy. Option is that of the Provincial Government.

- The Hammarlund HR-10 advertised last issue is gone -- sold. We are trying to get some more of them. More news later.

- GOVERNMENT DOES IT AGAIN ! As many of you no doubt now know, the postal rate increase due for 1/5/74 has been postponed by the Cost of Living Council until at least 3/1. Our dues hike necessitated by this increase has already gone into effect, and will remain that way. The extra monies will help us to hedge against the rises in paper costs which are beginning to catch up with our printer, and which will necessitate an increase in costs for our next printing contract.

8¢.....?

- It is our sad duty to inform the membership that Bob Foxworth will no longer be Reprint Manager for the NRC, due to some personal and logistical difficulties. PT & RjE have picked up the paperwork, and it is now back in North Jersey. We apologise in advance for the additional delay of about one week in processing orders received since 12/20 or so.... Thusly, we simultaneously announce that we are seeking a member (or members) willing to take over the Reprints Service. Requirements are that you have at least 6 hours per week to devote, have room for at least 5 file-drawer-sized boxes, have ready and convenient access to good-quality, cheap, large-quantity Xerography, and be willing to maintain roughly one-week service. More details from HQ.

*** Anyone who has a copy of Volume 39 #18 or Volume 39 #26, please send same to HQ, or write us and tell us you have it (if it's complete). We seem to have lost our copies of same. (Or at least I have, hi) -RjE

editor.. Alan Merriman
P. O. Box 6
Fairfax, Va. 22030

international dx digest

Phone 703 - 354 - 2135 before 2200 ELT - All Times GMT - Deadlines Are Saturday

New stations, changes, etc.....

ALASKA KICY-850, Nome has applied for a power increase to 10 kw. (NZDXRL)

ANGOLA "Voz do Zaire" on 1570 is presumed to be at S. Salvador, the Regional Capital and "Emissora Regional do Cuanza" on 1583 at Salazar. (D. Tapsell, MWC)

ARGENTINA Radio Ciudad de Buenos Aires is new slogan for R. Municipal on 710. Radio Splendid has moved to 990 from 910 and R. Excelsior has moved to 910 from 990. (MWC)

AUSTRALIA The following are projected changes: 2BH-570 to increase power to 500 watts. * 8TC-680 to increase power to 1 kw. and get improved antenna. * 4AT-720 is now 4 kw. and is to get an "anti-fade" antenna (?) * 2TR-1000 to move here from 720 and increase power to 2 kw. directional. * 2LT-1370 to increase power to 2 kw. * 8AL-1380 (ex 1530) increase power to 2 kw. (NZRDXL)

BAHAMAS ZNS3-1060 Freeport, Grand Bahama is now independently IDing as "Radio 10-60". (DSWCI via Edmunds)

BRAZIL Radio Nacional de Brasilia has ordered a 500 kw. MW transmitter. They are currently on 1250 (ex 1210). (SCDX and Distance via MWC) ** ZYD62 R. El Dorado, Rio has moved to 1220 (Ex 550) and increased power. (B. Olsson, MWC)

CANARY ISLANDS R. Las Palmas is now on 956 (ex 827) (Baker, MWC) * RNE on 620 is now operating 24 hours. (Emblem, MWC)

DAHOMEY A new 100 kw. transmitter is being built at Cotonou. It will use a North-South directional antenna. Currently on 1475 with 1 kw. (NZDXRA)

GERMAN DEMOCRATIC REPUBLIC Berliner Rundfunk has a new transmitter on 1385. Power and location unknown. (MWC)

IRAN Radio Tabriz is noted at times on 635 (nom. 645). * Radio Banar Abas is on 629 with 10 kw. (NZDXRA)

MADEIRA Emissora Nacional on 1331 now closes at 0100. (MWC, Baker)

NORTH KOREA The two networks use the following IDs: Program 1 (625, 635, 695, 725, 785, 817, 877, 1000, etc.) "Chosong Chunyang Pangsong". Program 2 (655, 687, 735, 1080, etc.) "Pyongyang Pangsong". (Ryden)

NORWAY Televerket is experimenting with Single Sideband on 1484 with 50 watts from Oslo. (DSWCI via MB via MWC)

PACIFIC ISLANDS A grant by the Carnegie Trust has gone to the University of the South Pacific for the founding of a network of educational stations in the Pacific. /(NZDXRL)

PHILIPPINES During a brief visit to Manila in mid-Dec. the following was noted: The 620 spot, formerly occupied by DZXL of the now deactivated ABS-CBN network is still empty. The planned move of KBS's DWWW on 1280 has not taken place (KBS also operates DWKW on 600. ** DZCH-1600 is still silent. ** DZEM has moved from 1520 to 1460 (the stn formerly on this channel, DZBU, is out of business. ** On 1190 is a new stn, DWBL. This is an American type all mx stn. Using same type of jingles as AFRTS, and, like some other Manila stns, they drop the first "D" in their call, thus one jingle went "W-B-L More Music". ** The PBS stn on 1500, ex-DZCP is using the call DRIM! According to Filipino DX expert Charles Taylor this is a local joke. Their local FM outlet is using the call DZFM which coincides with (Cont.)

PHILIPPINES (Cont) the initials of President Ferdinand Marcos, so they felt the call of DZCP should be changed to correspond to Dr. Imelda Marcos, the first lady. (Ryden)

SOUTH KOREA The following changes of MBC stns are not reflected in WRTH 73 or 74: HLCQ Taejon is now on 760, HLCT Taegu is now on 810 and HIAV Pohang on 1110.(Ryden)

SOUTH VIETNAM Me a Viet-Nam which means "Mother of Viet Nam" is the name of a stn on 678, obviously operating from South Vietnam, with broadcasts for North Vietnam. Heard in Japan at 1755 s/off. (NZDXRA)

SPAIN The following frequency changes have taken place: 1st. Program, Bilbao-638 (ex 998) 20 kw; Zaragoza-638 (ex 1313) 10 kw; Santander-854 (ex 971) 20 kw; Oviedo-728 (ex 548) 50 kw. All on until 0200. **Radio Peninsula, Malaga on 728 (ex-1007);** Campo de Gibraltar-1313 (ex 728) 10 kw. (Emblem and Olsson via MWC)

SWAZILAND Swazi Music Radio is sked 1600-2200 on 1376. (NZDXRA)

TUNISIA A new MW relay is being built in Gafsa in SW Tunisia. No indication of frequency or power. (DT via MWC)

UPPER VOLTA A new 100 kw. xmtr in Ougadougou will open on 737 later this year. It will replace the current 1 kw xmtr on 1340. (NZDXRA)

YUGOSLAVIA Radio Belgrade-683 is to increase power from 400 to 2000 kw. A new 400 kw transmitter has been ordered for the second program (1007?) (DT via MWC)

MONACO Radio Monte Carlo is now on 701, // to 1466. (Stefano via MWC) Wonder if this could be a relay via Andorra? (ED)

And now, what's actually being heard.

584 -SPAIN RNE Madrid very nice 0040 12/22 w/CL mx; freq 583.9999. (Nelson)

590 -MEXICO XEE Durango, Dgo. 12/16 1305-1330. ID seemed to be "Radio Campo, La reina de la musica ranchera". (Gleason)
-MEXICO XEFD Rio Bravo, Tamps. 12/17 0030-0100 w/8 minute fast TC's. Ranchera mx, lots of Texas ads. (Gleason)

600 -COLOMBIA HJHJ Barranquilla, well atop Cuban w/lively IA mx, many R. Libertad ID's 0612 12/16. (Forth)

610 -MEXICO XEGS Guasave, Sin. 12/16 0038-0050 w/SS rock. No ID's heard, but one ad gave adr as "in front of XEGS". (Gleason)

647 -UNID TA This weeks "funny" catch. Big George Kelley was checking out the band on 12/21 on my equip when he called my attention to what seemed to be AA on this channel about 2250. The sig was quite strong on peaks and programming seemed to be vocal mx only; some times it sounded like AA and some times like Hindi - mostly a woman singer. Went right through 2300 without an ID; took a fade about 2315 and never recovered. **My first thought was** Turkey which I tentatively logged several years ago mixed w/BBC. A quick DF check gave a bearing of 46 ± 5 degrees which cuts through England but to the North of Daventry. A freq check gave 646.9994 ± 0.7 Hz. Clues: TA's were generally poor this night, **especially low banders; this favors BBC. The** programming was very much unlike that heard from BBC at this time earlier in the week; nice cl mx at that time. **This was not MOR Eastern mx ala Ravi Shankar;** this was the real stuff - and no ID at 2300; this doesn't sound like BBC. [illegible] hasn't noted either Turkey or Saudi Arabia on this channel in over a year. The freq is OK for BBC; being "Cesar's Wife" they're on 647.0000. I'm unhappy about the programming and the DF though...Most likely ID's (in order): BBC experimenting w/FS here (they're currently making some major changes). Simferopol, Ukraine w/R. Moscow FS. **Saudi Arabia or the Turk. Someone new.** [illegible] gone native. (Nelson) Trust BGK to come up with something weird. By the way, what freq was WOJX on at the time? (ED)

665 -PORTUGAL EN Lisbon fine level 0048 w/Xmas mx 12/22. (Nelson)

683 -KAZAKH SSR Kustany w/IS, local ID at 0230 (Spain off). Announced in Russian "Govorit Kustany" followed by **news in vernacular.** 12/10, 1st logging.(Trower)

715 -HONDURAS HRTV R. Caribe fair on peaks 0045-0100 on 12/22. (Nelson)

719 -TUNISIA/PORTUGAL Norte I excellent w/pips 2200 and ID by man in PP; then into news. Sfax audible weakly in the background w/man speaking in AA. **Norte frequency 719.0015; Sfax 719.0318.** (Nelson)

720 -COLOMBIA HJAN Barranquilla was heard 12/15 around 0450 w/"Emisoras Unidas" slogan, not the "Radio Barranquilla" that I've seen somewhere as their new **slogan. The previous evening (here) a Colombian (Presumably HJAN) signed** off at 0457 but did not seem to this Sat. night. (Freeman)

728 -**UNID LA Central American poor to fair 0001-0015;** pro YNG which has been noted drifting around here in the past. Freq 727.9441 on 12/22. (Nelson)

735.5-**CUBA Radio Revolucion now on 735.5360;** powerful 0358 on 12/18 w/chimes and ID. Manages to mess up both 735 and 737; what a pest! (Nelson) ** 12/22 noted w/good sigs 0000+. **"Saw" it earlier on the SB-620 but presumed it to** be HCBG1. Programming was // to 630, 640, 690, 740 and others. **Complete** network ID 0030. CMAQ has been missing from 742 for a while now. This Cuban causing weak het w/another stn on freq, probably HCBG1 u/same. Who **this Cuban? (Sundstrom) Pro the one from 742.** (ED)

737 -SPAIN RNE Barcelona good w/jazz piano mx 2232; freq 736.9995 12/16. (Nelson)

740 -VENEZUELA YVNC Radio Maracaibo 12/22 surfacing o/Cuban and 2-3 others w/ID at 0000. CBL apparently had lost xmtr sometime prior to 2340 t/in, was on intermittently for a few seconds at a time, then off a couple of minutes thru 0040 when apparently back on for good, probably on lower power as loop could null them completely (plus auroral condx.). **Hard to pull audio from any one stn here.** New. (Sundstrom)

746 -HOLLAND/UNID TA Lopik dominant 2148 on 746.0000; bad QRM from 2nd TA on 746.1132 from tune in; the resulting het chopped up both audio's quite badly and made language ID of 2nd one very difficult but I believe it might be AA. **Bearing for this one is substantially to the South of Lopik and Cott**bus; also too far South for Syria. Appears to be a North African; I suspect either the new 2.5 kw Spanish Sahara "Cultural Program" stn or the low powered Moroccan reportedly due on the channel this year. **I'll stay after it; it** might be a goodie. Nothing reported by EBU that fits and I haven't noted it before this year; seems to have just come on. Makes a nice audible low-pitched het on the channel. 12/17. S/off or final fade-out about 2206. (Nelson) There is also a low powered Algerian here. (ED)

755 -ENGLAND BBC Radio Carlisle heard on opening day 11/24 at 0810. Colosal QRM from Portugal. A few local news items heard and IS based on folk tune "John Peel". Not heard since. Only 500 watts. (Trower)
-PORTUGAL Lisbon like a local in FF 2207 12/17. (Nelson)

764 -SENEGAL/SWITZERIAND/UNID TA Dakar very strong w/woman in vernacular 2139 on 12/17; Sottens audible underneath w/woman in FF occasionally dominant. A 3rd carrier visible on the scope at the same time and bits of audio breaking thru around 2145 but nothing definite. **Dakar on 764.0011, Sottens on 764.-**0000, and 3rd carrier on 763.9792. The 3rd stn was probably Omdurman, Sudan which was measured on 763.977 by the Sorrento EBU stn a few weeks ago; no other TA this far off the channel. (Nelson)

782 -PORTUGAL CSB9 good 2030 w/PP Xmas carols (nothing I recognized) 12/16. (GN)

818 -ANDORRA/MOROCCO A terrible mess 2242 on 12/17; Andorra and Rabat about even and a 29 Hz SAH chopping them both up. Woman announcers w/"Sud Radio" and coo-coo ID 2245; Andorra on 817.9997; Rabat on 818.0284. So much for Moroccan freq control, hi! Rabat very strong in AA 2250. (Nelson)

825 -COSTA RICA TIOS Radio Titania, San Jose was heard at 0700 12/21. Usually mx without announcements, and I had to listen a long while to catch the definite **ID. Rather poor as is par from this area at present time.** (Freeman)

827 -MOROCCO/SPAIN Oujda 2 on top of the channel in Berber 2254 on 12/17; good copy on EAJ1, Barcelona at times around 2256. Oujda on 827.0101; EAJ1 on 827.-0002. (Nelson)

834 -BELIZE Radio Belize nice sig 0120-0135 w/woman reading quaint local childrens Xmas story; racy undertones a la calypso that the kids aren't supposed to get... Freq 834.0459. (Nelson)

840 -MEXICO XEFG, Celaya, Gto. heard 12/15 w/s/off amnt at 0136. In and out w/ poor sig. Mark it a daytimer in your IA Log. To indicate seperate Day/Nite power and list Estados would be nice improvement when log is reissued. WHAS weak at above hour from residual daytime ionization. (Freeman)

845 -ITALY RAI poor 2311 on 12/17; woman speaking in unid language. Freq 844.-9999; terrible splash from local WHDH-850. (Nelson)

854 -SPAIN RNE Murcia; woman w/news in SS and [illegible] net ID 2315; strongest I have ever heard this one. Freq 854.0004 on 12/17. (Nelson)

860 -BRAZIL ZYD68 R. Mundial, Rio 12/24 w/SS 0720+, Mundial ID's 0726, 0731. Anmts 0730-0731, back to mx, fade out 0750. No EE heard as depicted in IRCA Foreign Log #2. When sig up, ex one for tape file. At bottom, some splash from WWL and XEMO QRM, latter a pest! XEMO has got to be more than 5 kw. ZYD68 even good on newly acquired Hammarlund HR-10 portable that Edmunds corralled for me (see Edmunds review in NRC's DXN of 8/8/73. New, Brazil #2 and much better than Globo-1180 hrd in 8-73. (Sundstrom)

-DOMINICAN REPUBLIC HILR Santo Domingo strong as usual o/unid w/Radio Clarin ID and LA mx 0634 12/16. (Forth)

872 -CANARY ISLANDS/SPAIN EAJ57 R. Juventud, Tenerife and EAJ101, Zaragoza mixing it up at tune in 2222 on 12/17; EAJ57 generally on top. EAJ101 on 871.9966 and EAJ57 on 872.0441 this night; good DF for Canary Islands but no positive ID. **African condx unusually good on 12/21 and this night** EAJ57 the only one audible on the channel; measured 872.0442 this night and full ID 2319, 2330 and 2358. Chimes and anthem 0000; carrier cut 0002:20. Same s/off format as noted several years ago when EAJ57 on 893V kHz. (Nelson)

900 -BARBADOS "CBC Radio" closing 0410 11/7 w/long dedications "especially to our Senior Citizens". Good signal w/Milan off on this occasion. (Trower)

914 -SURINAM Cesar Objio: the tape you sent is so similiar to what we have heard from R. Nickerie that it's almost certainly what you heard and your DF confirms it. (Nelson)

920 -MEXICO XECQ Culiacan, Sin. 12/16 0100-0130 w/soft SS rock and ID after records of "Me gusta la C - Q" and a cukoo sound 3 times. Actually on about 921. Promotes self as the stn w/the best soap operas. (Gleason)

935 -MOROCCO Best signal of the year 2215 12/21; full AA ID taped for library. Local quality reception. (Nelson)

975 -COSTA RICA TIRS R. Atenea, San Jose heard 0400 11/15 at end of "Commentario de la politica Nacional". "Atenea-975" frequency given. Fair signal, QRM from unid Latin on 976 playing Andean music. (Trower)

980 -MEXICO XENR Nueva Rosita, Coah. 12/17 1210-1225 w/nortena and ranchera mx.

995 -ECUADOR (Tentative) Weak LA noted on 995.0246 on 12/18 0030- /(Gleason) 0100; DF consistant w/assumed ID as HCEW2, Guayaquil. Signal getting worse; not worth waiting for an ID. Haven't heard HCEW2 for years; used to be a regular. (Nelson)

1000 -COLOMBIA HJDP Radio Colosal, Neiva logged at S7 to 8 level from 0913-1005 on 12/14. Report in the mail. (Wilkinson) ** Logged weakly with no QRM at 0345 on 11/14. (Trower)

1010 -MEXICO XEWS Culiacan, Sin. 12/16 0140-0202 w/tropical mx format similiar to that of XEUR-1530. "Radio Fiesta" jingle before and after all records, and singing time checks. (Gleason)

1030 -ARGENTINA LS10 Radio del Plata, Buenos Aires heard here 0825-0855 12/17. Heard w/mx and talks and mentions of Argentina. Left tape on 0835-55 and haven't played it back yet. TRS says they ID at :15 and maybe at :45 too, so will have to see if it tapes. (Edmunds)

1055 -COLOMBIA HJFZ Voz del Centro, El Espinal frequent ID's for another 1st logging, both from NRC tips. (Trower)

1110 -MEXICO XERCN Mexico, DF 12/15 0200 on w/a Mexican equivalent of "The History of Rock n Roll" w/things from 1950 thru 1972 and a time pip after all records. Lousy signal, like all DF stns here. (Gleason)

1115 -MOROCCO Ouarzazate fair 2243-2245; AA mx. There are 2 stns on the channel; Ouarzazate and Tangier; DF indicates that most of the power this night was coming from the former. **Freq measured as 1115.0019; 12/21.** Morocco unusually good this night. (Nelson)

1150 -MEXICO XEJP Mexico, DF Radio Variedades 12/17 0930 in and out of XERM w/SS rock. Not enough to report. (Gleason)

1151 -ENGLAND A new IBA stn was heard running engineering tests on 12/10; location given as Birmingham. (Ericson, Sweden, via Nelson)

-ENGLAND IBA Manchester test fair 0910 12/1. (Trower)

-SCOTLAND Radio Clyde w/test program 0130 12/11. Announced regular programming evening of 12/31. Deep fades through Romania OC. Have no idea of when LBC will move here; at the moment they have more problems to sort out than shifting frequency. (Trower)

A GOOD TURNOUT THIS [illegible] CONSIDERING THE LOUSY CONDX. WILL THINGS EVER IMPROVE?

1180 -MEXICO XEFR Mexico, DF 11/17 0740-0800 w/SS rock and oldies. Seemed to disappear at 0800, but it may have just faded out. Show sponsored by Bacardi, and seemed to be giving away rum to callers. (Gleason)

1190 -MEXICO XEWK Guadalajara, Jal. w/XEW ID's alone on this channel on 11/26 around 0200 during period of brief but deep geomagnetic disturbance that knocked out powerful KEX (270 miles North) as well as East stns as close as KREX, 750 miles. **Earlier at 0045 I had heard KKEY-1150 s/off and later by** 0430 even KDKA was back in well. WWV 6 hour indices had low point almost 24 hours earlier. Is this pattern regular and of any use for BCB predictions? A Index listed as 34 on 11/25 and only 17 on 11/26. (Freeman)

1196 -MOROCCO Agadir fair 2244-2250 w/Berber mx on 12/16; frequency 1195.9608. SAH visible from VOA but no audio at this time. (Nelson)

1214 -GREAT BRITAIN Radio One; jazzy piano mx to ID by man 2300 on 12/16; quite strong but very bad selective fade a la Langenburg-1586; this type of fade **is not usually so pronounced this low in the band. Freq 1213.9999. (GN)**

1225 -COSTA RICA TIBB Radio BB, San Jose was heard w/"Radio B B" ID at 0559 on 12/21 for the first time in several weeks that the signal has been at all **solid enough to read. Condx from CA have been generally poor, but this** station seems to be suffering from detuned equipment, as they were best Costa Rican a year ago. (Freeman)

1232 -MOROCCO Tangier very high in AA 2235; ending vocal cut, woman announcer. Frequency 1231.9984 on 12/21. (Nelson)

1241 -UNID 12/15, noted pip/het/bits of audio in SS w/mx, basic beat seemed to be virtually unchanged. A Coca-Cola ad noted 0555. This listened to 0500-0600+, but just not strong enough to ID. Looped SW approx. (Sundstrom)

1265 -ST KITTS Radio Paradise 12/17 0450 w/a very solid stable signal and hymn show w/listeners letters. Slight het on the high side. First time here, and sort of amazed by the strength. Must really destroy 1260 and 1270 on EC. (Gleason) Slight het noted on WWDC-1260 on car radio here, Dave, but not bad otherwise. (ED) ** Heard w/beautiful signal 0300 11/15. Audio and hymns sounded very pleasant - I must admit to a liking for Evangelical stations. (Trower)

1280 -MEXICO XEHS Los Mochis, Sin. heard 12/16 0600 // XEUAS w/"sorteo de la universidad". **XEUAS also on past s/off w/reduced power for annual fund** raising raffle. Also announced XERJ-1320, but this not heard. XEHS was in and out for over 45 mins. w/"powerful" 250 watts. (Gleason)

1295 -NETHERLANDS WEST INDIES PJD2 St. Maarten heard 0130 11/29 w/US Rock, spot for Garden Center, but cannot catch slogan. (Trower)

1350 -MEXICO XETB Torreon, Coah. again 12/15 1200 s/on w/"Buenos Dias Laguna" program and jingle which repeats "T-B" twice. Soft SS rock. I had a lot of SS KCOR w/nortena mx hashing him up. (Gleason)

-MEXICO XELBL name is Radio Fiesta Musical. Someone once commented that these things somehow become perpetrated, so I'd better correct the missing "L" before I get a voodoo curse put on my SPR4. (Gleason)

1360 -MEXICO XESA Culiacan, Sin. 12/15 0115-0145 when I finally got an ID and one lone spot. Local KRUX was 95% nulled and I was having a harder time with another EE station. Then suddenly I got XEDI, Chihuahua, Radio Mundo with "good music" for enough to report. (Gleason)

1385 -PHOENIX ISLANDS WXLE Canton Island was in and out on 12/3 from 0828 to 0930 tune out. All programming was AFRTS originated during this time. Good orchestral mx was interrupted at 0927½ for the announcement "This is the American Forces Radio and Television Service" and again at 0929 for the brief announcement "You are listening to WXLE from Canton Island in the Phoenix Islands, Radio 85". Weak but reportable copy. (Freeman)

1394 -ALBANIA Radio Tirana the strongest TA on the band 2321 in SS; signed off 2326:30 after anthem leaving 3 weak carriers on the channel. 12/16. (Nelson

1439 -LUXEMBOURG Like a local 0245-0300 w/Byrd's album except for bad selective fade; man gives ID as "Music Radio" 0203. (Nelson)

1440 -MEXICO XELZ Radio L-Z, Mexico, DF w/tropical mx 12/17 0900-0930 w/xmas promotions. Very good signal at times, 1st time heard. (Gleason)

1443 -NETHERLANDS WEST INDIES PJF1, Saba, 12/25 apparently AN w/EE-SS(?) anmts, mx 0640 tune in. but not until 0715-0730 when several ID's in EE and repeated, various forms of seasons greetings given in EE was positive ID made Severe splash from 1440 at times. Signal fair at best, long fades into the noise. New. What is power ... 1 kw? (Sundstrom)

1470 -MEXICO XESM Radio Fiesta, Mexico, DF 12/17 0830-0900. This, like all the other stations in the group (660-710-970-1220-1500) were on til 4 AM local time through Xmas holidays. This according to anmt on XERPM. (Gleason)
-MEXICO XEHI Ciudad Miguel Aleman, Tamps. 12/16 1200 w/ads for businesses in Texas and ranchera music. (Gleason)
1480 -MEXICO XETKR Monterrey, N.L. s/on 12/17 1155 and into ranchera mx show. Reception possible due to 7 min. late s/on of KLEO. (Gleason)
-MEXICO XENS Navojoa, Son. 12/17 0129-0200 w/almost nothing but ads .... as many as 15 in a row. Has name, but I couldn't pull him out of KWIZ at the end of records to get it. (Gleason)
1490 -MEXICO XEOR Guayamas, Son. 12/15 1200 s/on w/Alborada Ranchera show, w/3 records per half hour, 20 minutes of spots. ID as "D-R". Another SS behind him but not enough to ID. (Gleason)
1496 -PORTUGAL CSB21 Radio Altituda, Guarda. S/on 0800 w/Sousa march, "Blaze Away" I think. Rough audio and sideband splash. ID as "Aqui Portugal, Guarda, Radio Altituda" then into "Sound of Music" tunes. (Trower)
1520 -MEXICO XEZQ Huimanguillo, Tab. 12/17 1141-1146 during a dead period in KOMA test. Good signal, and ID was made from local spots. Was looking for XEYP, which was not heard. 2nd Tobasco station. (Gleason)
1529 -USSR (European) In response to a request for info regarding the Soviet stn being heard here around 2200, Bengt Ericson (Vaxjo, Sweden) reports that the drifting station currently around this frequency is on a bearing (from Vaxjo) which passes through Krasnovodsk near the Caspian Sea. He believes it must be closer than Krasnovodsk, though, because it is audible in Vaxjo during the daytime. Combining his bearing w/ours, the station appears to be located in the Ukraine or perhaps Byelorussia. More info will be coming soon from Olle Alm, Arctic's Soviet expert. (Nelson)
1530 -MEXICO XEUR Mexico, DF, Radio Onda 12/17 0945 through KFBK OC w/tropical mx and jingle ID's. I'd almost forgotten what its like to have a 50 kw. station do 80% modulation w/1000 Hz tone while listening to a very weak station! I was told that this station is automated at night. Sounds it. Played one record that was 16 minutes long. (Gleason)
1560 -MEXICO XESE Champton, Cam. 12/16 1200-1215 when XEJPV signed on late. One clear ID giving power as 5 kw. Lots of XEVIP, which is also new. Most distant XE to date. (Gleason)
-PUERTO RICO WRSJ San Juan 12/16 s/on 1100 in EE w/SSB o/Cuban, very good signal. WRSJ proceded to hang in there until WQXR put its OC on at 1130. Of course, much weaker by 1130. 1560 is a good SR DX frequency on Sunday as WQXR doesn't modulate until 1200, and one can usually hear stuff thru the OC at 1130+. (Sundstrom)
1570 -UNID GG Speaker. I've gone over Merriman's tape several dozen times with all of the possible comb filter settings. Result: not much more than you got out of it originally. Moral: you can filter out QRM but you can't upgrade substandard modulation... Seriously, it's definitely in GG and the audio quality is poor enough to make the DDR transmitter on 1570 a real possibility. While the E. German station on 1570 is officially listed as only 20 kw, Arctic lists it as 250 kw and the signal quality reports from EBU support that figure: the strength at the EBU net stations is not much less than that of Langenburg-1586. The gal does give an address before the phone numbers but I'm not at all certain that the city is "London". If the day of reception were any but Sunday I'd say that DDR was almost a certainty. But many domestic stations run minority programming on Sunday-including tapes and discs from overseas stations, and the hour was early enough for one of these domestic transcription airings. I suggest sending the tape to Rolf Hlodorn in Germany; even if it does turn out to be DDR programming, though, you've got to make certain that it wasn't a canned program being aired by one of the many domestics on 1570. (Nelson) Thanks Gordon. Just one question. Why did you list this under "Trivia" in your report, hi. (ED)
1580 -MEXICO XEACH Monterrey, N.L. My error for not being more specific. This one, announcing 1590 is now regularly noted before XEDM's s/on. The new Jones Log shows 5 kw on 1590, but someone musta made a big mistake. At least they are close. (Gleason)
1586 -GERMAN FEDERAL REPUBLIC Langenburg fairly good w/Bavarian accordian mx 0150 on 12/22; their signal has really been down this year - wonder why? (Nelson)

1590 -MEXICO XEBZ Ciudad Delicias, Chih. 12/15 0100 s/off to return 1300. Slogan "La Rancherita" w/jingle ID's and all ranchera mx. This is a change in published location. I've been taken on this frequency by KXEM, so I was careful about ID. KXEM ID's as "XEM" and is all SS. (Gleason)
1595 -UNID 12/23, noted in SS w/mx from 0605 thru 0617 apparent s/off, sig fading badly. Hrd "musicali" (or something approximating that) 0607, easy listening type mx. Het by someone on 1594, much weaker. I'd say latter was Portugal, but TA's not noticeably present. Very strange condx, impossible to get decent loop bearings. Help. (Sundstrom) 1595 likely the Nicaraguan who has been here for a year or so. (ED)

* * * VERIFICATIONS * * *

640 -CUBA CMQ see 880.

780 -CUBA CMJL see 880.

880 -CUBA CMAF sent v/q w/CMQ & CMJL w/frequency, time and date in 9 months w/ letter from L. Miranda of Relaciones Internacional. Mailed from Havana. (Forth)

980 -MEXICO XEFQ Cananea, Sonora "La Voz de la Ciudad de Cobre" v/1 from Pedro L. Diaz, owner at Box 95. Letterhead says "500 watts - 100% modulacion". (Gleason)

1030 -MEXICO XEQR Mexico, DF v/1 from Mario Giron Rosales at usual address in 2 weeks. Mentions night power as 5 kw. I thought the new NARBA allowed them 50 kw. DA? (Gleason)

1162 -HONDURAS HRGF Radio Paraiso sent v/1 in 3½ weeks for a taped-registered report. Signer is Roy S. Villafranca M., Gerente-Propietario and he mentions other reports from New York, Chicago and Mexico. Also info about a new stn, HRTR-1070 Radio Danli, Danli about 20 kilometers north of El Paraiso. (ED)

1265 -ST KITTS Radio Paradise sent card and letter in 2½ weeks, same details as last issue. (Wilkinson) Looks like this one has started verifying at last as I've seen several other veries reported from them. (ED)

1320 -MEXICO XERJ Mazatlan, Sin. nice detailed v/1 from Oscar Perez Escobosa, Presidente; Apartado 60. Part of Sistema Radio-Pac, XETK, XECQ, XESA, XEGS XETNT & XEZA. (Gleason)

1380 -MEXICO XEKV Villahermosa, Tab. v/1 w/illegible signature. Lerdo No. 610. "Radio Mexicana" operates 24 hours w/1 kw. Also sent Xmas card. (Gleason)

The reporters for this issue.....

Russ EDMUNDS - Wayne, New Jersey
Karl FORTH - Villa Park, Illinois HQ-160, SM-1
Dave GLEASON - Scottsdale, Arizona SPR-4, Sanserino loop
Gordon NELSON - Watertown, Massachusetts Modified HQ-180A, Altaz loop
Lars RYDEN - Tokyo, Japan
Tom SUNDSTROM - Willingboro, New Jersey HQ-150 w/SB620, SM2 & HQ-140X, DX-150A,
Geoff TROWER - England Long Wire
Hank WILKINSON - North Hollywood, California
MWC - Medium Wave Circle
NZDXRA - New Zealand DX Radio Association
NZDXRL - New Zealand DX Radio League

U.S.S.R. - According to Arctic's Bulgarian member the USSR is in the process of replacing all their long wave transmitters with medium wave. They supposedly have at least 100 new transmitters under construction - each 100 kw. or more. (Nelson)

If anyone has any unid SS stations on tape, DAVE GLEASON will be happy to try and ID them for you. He can handle 3 3/4 and 7½, all track configurations and also has cassette equipment. Just be sure you include a SASE envelope for return of the tape. Address - 7721 East Wilshire Drive, Scottsdale, Arizona 85257 -73-

DOMESTIC DX DIGEST

editor.. Wes Boyd
960 W. Liberty
Girard, Ohio 44420

Telephones: Wes Boyd 216-545-4543
Jerry Starr 216-534-1394

Hello again. This edition comes to you live from Dr. Jerry's magic mystery abode hidden somewhere in the deep woods of Hubbard. As the scene unfolds, we find:

changes

+610 CHNL BC granted increase to 5000 night
680 WMPS TN CP to 3/14/74
710 WEGG NC CP to 5/19/74
720 KQRX NV CP to 5/9/74
++800 CBQ ON should be call for Thunder Bay, per annct on CBC net, went RS 12/17 (BV)
860 WKKO FL dropped application for night operation (CL)
900 WKXA ME ex-WCME
950 WJPC IL format now R&B
1010 WGUN GA CP to 2/28/74
+1030 KTWO WY granted non-directional days
++1150 CKIQ BC granted to 10000 days
++1190 C??? ON Mississauga 10000 D3 granted
1220 CJRB MB Sked: NSP as is CFAN/CHSN (BV)
1230 CFPA ON dropped CBC since Thunder Bay-800 went RS (JO)
+1270 CFGT PQ change city name to Alma per CRTC
+1280 CP **VA Appomattox granted 1000 D**
1300 WFBR MD CP to 5/21/74
+1300 WRKT FL Sked: 0500-0000 daily, drops 24 hr due to energy crisis
++1290 WICE RI now all talk days, sports, talk and jazz evenings
+1340 CJPI BC Vanderhoof on RS now (BP)
++1370 CHPQ BC Parksville on RS // CHUB 1570 and is NSP (BP)
1380 WDAT FL is now 24-hours per trade magazine altho FCC sez full time not on yet. Can anybody confirm?
1400 C??? BC Golden granted EE 1000 250 U1
1410 KJCH TX Cleveland CP 500 D3, call granted
1450 KUPY WA Sked: 0900-0200 (BP)
++1470 KVIN OK Vinita CP, add call. (Heard on ETs by Bill Stone)
++1500 WKAX AL Russellville noted on ETs since 11/9, possible before, may be RS by now, but letters have been returned marked "address unknown" (DFT) Hey, Dave... WKAX phone is 205-332-4246, located on LaGrange Road in Russellville, either write or call back.-JS)
1520 WGNB FL ex-WGNP
KYXI OR MM SP 0500-0800 (BP)
1550 WRIZ FL seeks WRHC
+1560 ---- IA Iowa City initial decision grants 1000 1000 U2
+1570 WGLX OH Galion now on RS

r c's

December:
2nd MM: WGON-1400 (BS), WCAZ-990 (PRD),
2nd TU: WHLN-1410, KDIO-1350 (BS)
2nd TH: WBHB-1240 (JS)
2nd FR: WNSL-1260 (JS & HWB)
2nd SA: WYWY-950 (JF), KCHA-1580 (PRD)
3rd MM: WHSC-1450 (JMP & HWB), WPJD-1550, WKIG-1580, WFTR-1450 (JMP), KUDI-1450 (JEC), WBBQ-1340 (TRS), KXEO-1340, WDIC-1430 (HWB), KWLA-1530 (ELK).....ELK??? **Who was that masked man??? (JS)**
3rd TU: WGUS-1380 (DM & TRS)
3rd WE: WAMI-860 (KDF)
3rd FR: WSKE-1050 (JS)

4th MM: WCCR-1580 (HWB), KTNM-1400 (DM) (We passed KTNM studios on vacation last month, has about 50-foot tower grounded in sand. Excellent catch. I hate you, Dan (JS)

FC CHANGES:

2nd SA: KSCJ-1360 IA 12/8 FC/TT 0103+ (TRS) Not on new list
3rd MM: WVMG-1440 GA 12/17 anncd as FC, ending 0040 w/TT (HWB)
3rd TU: WLOV-1370 GA 12/18 noted w/mx (Dixie), ID every min.0102+ (TRS) listed on 0110-0120

NOT HEARD:

2nd FR: WLIQ-1360, WBLO-1470 (HWB)
3rd MM: KLUC-1140, KDHI-1250 (JEC), WCON-1450, WSSC-1340 (HWB)
3rd TH: WHII-1570, WPRY-1400 (HWB)
3rd FR: WAAC-1300 (JS & HWB), WPRY-1400 (HWB)

sunset & evening

560 CKCN PQ 12/14 o/u un-id EE 1710-1730 (JWB)
580 CHLC PQ 12/14 on top 1705, ID 2 min later (JWB)
610 WIOD FL 12/16 noted 1810-1813 on car radio during brief WIP XR failure (TRS)
CHNC PQ 12/14 alone at 1700, no WIP (JWB)
CKTV ON on top 1600, first time in years, no WIP (JWB)
680 WCAW WV 12/7 w/C&W, spots to 1715 power cut (KDF)
WRNG GA 12/7 noted w/ s/off prayer and SSB 1728 (CL)
750 WPDX WV 12/7 s/off w/SSB 1700 (KDF)
810 WCEC NC 12/11 good w/ s/off 1700 after Tobacco Net nx (JMP)
870 WKAR MI 12/4 o/WHOA w/ s/off 1700, mention of 90.5 FM (CL)
WHOA PR Not domestic but can be a fooler w/ Ai Net nx 1701, followed by Reasoner-Smith Commentary (CL)
WGTL NC 12/4 s/off 1711 followed by vocal Lord's Prayer (CL)
Good w/ s/off 12/9 o/u WHCU 1714 (JMP)
980 CHEX ON 12/19 w/MoR 1610-1620 (WH)
1000 WHWB VT 12/16 on top 1628-1631 w/RR, s/off and SSB. Vt #2 (BAB)
1060 CJRP PQ 12/19 w/FF MoR, much holiday mx 1600 (WH)
1090 WJKM TN 12/10 C&W and spots o/KAAY 1722 (DM)
1100 WLRB GA 12/10 excellent s/off 1730 o/WWWE, no ZDK (JMP)
1120 WUST DC 12/2 s/off 1645, fantastic signal (JF)
1130 WCBX NC 12/21 in clear w/ s/off 1700, no SSB (JWB)
WPUB NC 12/21 in WCBX background, think off 1700 (JWB)
1150 WAXX WI 12/2 w/wx 1720 w/CKOC/WGGH (JF)
1190 WANN MD 12/15 ID 1644 in WOWO null, followed by Xmas mx (JF)
1300 WPNH NH 12/21 on 1800+ for area flooding (SM)
1330 WYGO KY 12/13 w/ s/off 1715 o/WEVD, etc. (JMP)
1370 CKLV PQ 12/8 all alone w/FF nx 1732 (JF)
WGOH KY 12/15 w/WSPD looped 1659 w/ID, local ads and nx, actually over WSPD 1704 (RF) The only thing over WSPD here is sky (JS)
1380 WPKO OH 12/15 w/ID "Serving Pike County", Xmas mx 1705, Ohio #83 (RF)
WLCY FL 12/16 w/RR, jingles, etc 1810 (KDF)
1470 WVBS NC 12/20 w/nx, wx 1655-1658, then gone (ELK) (MOOSE-JS)
WSAC KY 12/16 s/off 1730, poor (KDF) (So am I-JS)
1510 WYRU NC 12/21 must be this one, sounded like "WIRD", no such on 1510, off 1705 (JWB)
1520 WTHE NY 12/5 noted s/off 1644, should be 1630 in Dec. (CL) (Oops!)
1530 WJDM NJ 12/10 briefly 1608-1612 w/nx, wx and Union Buick spot (PRD)
1540 WKYK NC 12/21 alone 1705-1715 (JWB) 12/20 s/off 1715, good signal, not enuf for report (ELK) What else do you want, anyway ?
1550 WCTW IN 12/7 ID in mess 1801 (KDF)
WIRV KY 12/15 o/u CBE w/ s/off 1714, no SSB (RF)
1560 WAFI KY 12/15 u/WQXR w/ s/off 1715 (RF)

1570 WTQX AL 12/21 fair to 1745 s/off (SM)
WGLX OH 12/20 just made it thru QRM w/ID 1646 (JWB)
WGHC GA 12/20 on top w/ s/off (JWB) **Time?**
1580 WKUN GA 12/20 fair 1718-1727 s/off (ELK) (YAK-JS)
WSKT TN 12/12 s/off in clear 1728 (JWB)
WCCR IL 12/12 s/off 1730, fair u/Unid SSB (JWB)
WBBA IL 12/12 s/off 1743, long ID, FM promo, SSB (JWB)
KNIM MO 12/12 quite readable 1755-1800 (JWB) **(Looks like it pays to park on 1580 in the evening- JS)**
1600 WEUP AL 12/19 clear and alone 1715-1727, odd s/off tune, no WWRL (JWB)
WFRC NC 12/19 took over after WEUP s/off, still no WWRL (JWB)

midnight to sunrise

540 CBK SA 12/19 nice signal at s/off 0205, rare o/SSers here (JWB)
550 WHLM PA 12/10 Strong on DX (DM) Noted weakly on DX 0151 (CL)
If on, not heard, checked 0130 and 0150 (TRS) Not heard here either (JS & HWB)
560 WGAN ME 12/24 tentative 0546, hrd call thru 5 or 6 stations, WIS on top and WFRB on 0600 killing chance, could have been WGAI if they were on, but needing Maine I may have been overanxious. (BAB) (WGAI is usually a boomer here, Bruce.. or a Brucer here,Boom...or whatever.....JS)
580 WIBW KS 12/18 first time in years 0135-0153+, solid (WH) (How about right on and far out? -JS) Wx and ID thru the pile-up 0308 (BAB) **(Those piles can be murder-JS)**
590 WRTH IL 12/11 o/u mess w/promo, EZ listening mx, Cuban looped (RF)
610 WDAF MO 12/17 DX not heard, too much KFRC (JEC)
620 WTMJ WI 12/18 w/C&W o/u WETE talk 0155 (WH)
CFCL ON 12/3 FF ID thru WTMJ/WVMT 0007 (JF)
630 KXOK MO 12/17 Test, if on, didn't make it, just Cuban & WMAL (JMP)
12/17 Test not heard 0200+ (TRS) ID thru WMAL, etc 0345 (BAB)
CHLT PQ 12/24 strong w/RR and FF 0442 (BAB)
680 CFTR ON 12/19 w/classical-type music to 0200 ID, then more mx, ET? Usually RR (CGB)
690 KEOS AZ 12/18 popped in for ID and TC 0153, then gone under XETRA and KHEY w/Cuban looped (JS)
WAPE FL 12/17 testing 0306, strong (ELK) (CARIBOU!-JS)
730 WPIK VA 12/3 ET/OC, ID way under CKAC 0059 (PRD)
740 KRMG OK 12/3 ET/OC/TT/ID 0115-0132, again 12/9 0320-0332, possible day pattern ET (PRD) (Their 50 KW day pattern has less power toward you than the 25 KW nite pattern)
Unid ?? TT/OC atop KCMC 12/17 0336-0345 and 12/21 0158-0235, no IDs, possible different stations (ELK)
KCMC TX 12/17 alone 0214 w/C&W, no announcements except for "KTAL-FM" (BAB)
KCBS CA 12/24 noted w/nx 0250-0300+ (HWB)
790 WAKY KY equal to CHIC 12/18, both RR,0200 (WH)
800 CKLW ON 12/11 off 0202, leaving only XEROK (DM) **(Mark Dailey probably tripped over the cord and unplugged the station-JS)**
850 WRUF FL 12/10 DX logged 0310-0340+ w/TT/OC, only had one ID at 0300 s/on per friend in NNRC (TRS) Good on DX 0300-0310 tune-out (JMP)
CBH NS 12/24 CBC and local nx 0500 mixing w/XEMO (BAB)
Unid ?? 12/19 w/TT/OC, steady S-9+ signal, monitored 0155-0410, looped N/S, not a single ID (JS)
Unid ?? 12/17 strong TT noted 0346 and 0416, almost ruined WKKO DX, **managed to hear WKKO s/off (ELK) (We think this oft-testing, non-IDing station here is WOAY per DF, etc-JS & HWB)**
WKKO FL 12/17 DX noted s/off 0405-0406, fair (ELK) **12/17 DX good** u/Unid TT (DM) **DX fair in OC holes of TTer (HWB) DX clear** (JWB) DX weak u/ET 0334-0352, sounded like RS w/RR (KDF) I slept thru it (JS)
+910 CKLY ON 12/16 s/on 0558 w/GSQ, sked change (TRS)

920 KARN AR 12/10 good w/wx & RR (BP)
WOKY WI 12/10 ET w/mx & jingles 0315 (BS)
940 CBM PQ 12/14 still on 0235 w/opera, 2nd act of Aida (JS)
KIOA IA 12/10 first time this season 0340-0350 o/WINZ (JMP)
970 WANV VA 12/10 DX, if on, not heard, checks 0305 & 0320 (TRS)
990 CBW MB 12/17 s/off 0205 after CBC nx o/WNOX w/WIBG off, not often heard here, an SSB buried in noise following CBW's GSQ (TRS)
1050 WSKE PA 12/21 RC/TT 0015-0024, off early (JS)
1150 WBAG NC 12/17 s/on 0600, no SSB thru WDEL nx (TRS)
WIMA OH 12/2 finally w/MoR u/CKOC 2330-2345 (JF) (Oops, wrong section. Hummm. Indian have too much fire-water -JS)
1170 WWVA WV 12/25 off 0103-0500 for yearly Xmas SP (HWB)
1220 CJRL ON 12/3 weak w/wx 0103 and WGAR off (JF)
CKSN PQ 12/3 s/off 0100, great signal w/GAR off (JF)
WENC NC 12/23 on top 0800, often heard about this time on SM (JWB) (Yep, and usually on this frequency, too-JS)
1230 WBVP PA 12/3 DX 0230-0233 WCWA s/on (DM) 12/14 noted, seemd AN w/ RS, RR mx 0225+ and several days after (HWB)
1240 WJIM MI 12/13 local quality w/local nx 0230-0235 (JS)
\+ WBHB GA 12/13 ending FC 0303, listed 0300-0315, S-9+ (JS)
Unid ?? 12/13 weak dial tone, assume FC, fade-in 0311, off 0320, this a 2nd Thursday, looped N/S, nothing listed (JS)
WWNS GA 12/17 on 0300-0317 w/20 seconds of audio in that period, ID 0304, jingle 0315 (JMP)
++ WCNC NC 12/11 TT/ET 0053-0100 (BS) Possible FC?
1250 WREN KS 12/24 on top briefly 0410 (BAB)
1260 KSPL TX 12/10 s/on atop all 0700, quickly lost (BP).
WNSL MS 12/14 ending loud RC/dial tone 0244 (JS)
Unid ?? 12/10 w/RR 0600-0700, sports 0630, probably WNDR or WNDE but too much QRM from pest JOIR to ID (BP)(Yeh, Bruce, that darned old JOIR ruins it here, too-JS)
+1280 CJMS PQ 12/10 w/FF/RR 0405-0410, no CHAM, log sez SP is Sunday, change? (CGB)
+1290 KOIL NB 12/10 w/promo for "Love That KOIL" bumper stickers 0412 o/u WHIO/WNBF (CGB) How long has WNBF been AN?
1330 WRIE PA 12/18, new AN pest here w/snatches WFBC, no WHOT 0045 (WH)
WAEW TN 12/16 s/on 0700, no SSB o/u mess (DM)
WETZ WV 12/8 s/on 0602 w/SSB (KDF)
+1340 CJPI BC new station first noted 1000 w/C&W/MoR 11/16 (BP)
1360 WBAY WI 12/17 on top 0050-0100 w/C&W, then CBS nx (ELK) (CLUB-JS)
1370 WFEA NH 12/24 nx heard weakly 0525 u/the all-powerful WSPD (BAB)
CHPQ BC new station came on sometime early Dec. // CHUB-1570 most of the time and seems NSP, looks like I'll never hear WSPD again (BP) (You cry alone, Bruce-JS)
WSPD OH 12/18 o/u WFEA w/MoR 0125 (WH)
WFDR GA 12/8 s/on w/SSB 0601 (KDF)
Unid ?? 12/17 SSB way u/WSPD 0052 (HWB)
WFEA NH 12/21 noted fair u/ WSPD 0120-0125 (ELK) (ASELTZER-JS)
1380 WGUS SC 12/18 RC 0104-0111+ TT and plenty of IDs (WH)
1390 KCBC IA 12/17 0511, promo mentions "From Dayton, Ohio right here on KCBC", apparently some event to be broadcast in future(JEC) (Dayton has no future-JS)
*CKKC BC noted 0300-0515 o/u KCBC (JEC)
1400 KTNM NM 12/24 noted TT during FC sked for KTNM, called and asked for CW ID, poor signal but taped (DM) (Arguhh gnug frafph-JS)
1410 WPOP CT 12/3 u/WING w/RR during rare CKSL SP 0230-0239(JF)
1440 WHIS WV 12/19 w/NBC nx 0000, s/off SSB 0009 (WH)
WHHY AL 12/19 w/RR 0000-0030 (WH)
* CFGO ON off nightly 0000-0530 except weekends since 12/4, gearing up for 50 KW (PRD)
WVMG GA 12/17 ET, announced FC w/dial tone 0039-0041 (HWB)
WROK IL 12/17 noted w/RR and "W-Rock", now AN-7 (HWB)

+1450 KUPY WA ex-KAYE, after 6-year battle w/FCC refusal to renew license, left air 11/8, promptly replaced by KUPY. Sked:0900-0200 w/Uptempo MoR (BP)
1470 KVIN OK 12/9, Vinita on announced FC 0335-0400 (BS)
WBIG NC 12/12 s/on over everything w/SSB [illegible] (KDF)
1480 WHBC OH 12/10 ET/OC/TT/MX, off 0232 (JMP)
[illegible] CA 12/14, ID 0925 (JEC)
*1500 CKOK BC 12/17 w/nx/wx/sports til 0308, then s/off, no NA, QRM from XERH and Unid EE, also vocal SSB 0329, KXRX? (ELK)
+1520 KIXI OR SP is Sunday morning 0500-0600 (BP)
*WTUU OH new AN-8, C&W, MM SP 0100-0500 (DM)
1530 KFBK MO 12/17 DX, great signal (DM) Easy on DX 0235-0330, thanks to Flash Alert (JWB) Excellent on DX (KDF) DX in well 0240+ (SM) DX heard well (HWB) On top 0239-0255, pre-DX TT, only slight KFBK QRM, Heard phone call from Paul Hart (ELK)
WAAO AL 12/17 possibly the TTer thru KFBK 0238-0240 (JEC)
Unid ?? 11/18 short s/on 0645, mention of 1000 watts, then SSB, followed by soft MoR. SRS maps say WMBT or WENG (BP)
1550 Unid ?? 12/19 CC 0015, still on 0430, no ID (JS)
KIWA IA 12/10 DX 0218-0300 o/u WAAY/KKHI (BS) Good 0236-0251, mentioning phone calls from DXers (JMP) DX weak 0316-0342 (PRD) Fair thru local HNL, only CW IDs heard thru WAAY, tho RJE said signal bombed in there (TRS) (Maybe RJE was the one bombed-JS)
1560 WRSJ PR 12/15, this was the SSB 0431, then s/on by female in EE (JS)
WMIC MI 12/17 s/on 0600, then local nx, nice signal on PSA (ELK)
1580 WCRV NJ 12/17 on ET 0025-0045 (ELK) (EAGLES-JS)
KWKH TX 12/15 DX not heard, if on (TRS)
WGLS GA 12/25 not noted 0120-0200+, only weak FF o/u KLOU (HWB)
1590 WQOW CT 12/21 evidently not AN anymore, looged 0022-0108 s/off, believe s/on announced as 0455 (ELK)

OTHER STUFF AND ASSORTED THINGS:
Latest poop from FCC in reference to return to Daylite time, some 100 daytimers on clears will be granted PSA's, some very low power, with the exception of Hawaii. However, at this point it looks like another 243 stations on Canadian and Bahama clears will not be getting PSA's.

Note to FM DXers from JWB: New WPDE Punxsutawney is now on.

Mickey Mouse Freaks take note! Disneyworld in Florida is now running carrier current on 650 kHz. Jerry Conrad has them killing WSM at 30 miles away. Has continuous voice announcements, no IDs

Lowly, Domestic DXers, you are now in the company of the infamous ELK, whose contributions in this section break a long, cold silence from the Masked Marauder on the Big Lake. Welcome aboard, Ed. Cheers! Anyone for hearts? P.S. Your hubcap is still in the ditch-JS

Reporters: (Number after listing is mailing time to HWB)
BAB: Bruce A. Boomer, (2), Nutter Fork, WV, Sony
CGB: Gordon Bailey, Ridgeway, ON, Hallicrafters SW500 (3)
JWB: Joe Brauner, Punxsutawney, PA, SX-99, LW (1)
JEC: James Critchett, Yreka, CA, SPR-4, 2-foot loop (4)
PRD: Paul R. Daplyn, Ottawa, ON, National HRO500, 4-foot loop (4)
JF: Jeff Falconer, Clinton, ON, Kenwood 9R-59DS, SM-1 (3)
WH: Wayne Heinen, Orchard Park, NY, Surplus RBB-4, 4-foot loop (2)
ELK: Crazy Ed Krejny, Middleburg Hts, OH (1) equipment unknown (stolen?)
SM: Stan Mersa, Bradford, MA, HQ150, SM-1 (3)
JMP: Jim Poterba, Yardley, PA, HQ200, SM-1 (3)
TRS: Tom Sundstrom, Willingboro, NJ, HQ150, SM-2, DX150, LW (2)
DFT: Dave Thomas, Tampa, FL, equipment unknown (E)
SAG: Silas Ali Gator, Rainee City, FL, Swampwater-Kast (28M)
Outta space....Bye Bye, Wesley and Jer. 73, etc! Jerry - HeBest

TRANS-POLAR DX - (conclusion)

RjE

V - DISCUSSION

Now, in a general way, we are ready to explore the practical applications of these factors on the trans-polar signal paths. Figure 5-1 depicts the sunrise and sunset data pertinent to reasonably good quality reception of Urumchi on 1525 kHz.. We will consider the period ½ hour before sunrise at the transmitter site as being the last possible time for good quality reception along this path under good to average conditions, and consider likewise that reception of a similar nature will not occur until after ½ hour after sunset at the receiver site. The line drawn over the Asian continent represents the former time, and the line drawn over North America represents the latter. The time between these two lines, then, (1715-1900 EST or 2215-0000 Z) is the period when reception of the station should be possible from this standpoint. These same lines are indicated, but both over the North American continent in Figure 5-2. The arc shown on this map indicates the estimated position of the southernmost edge of the auroral absorption zone under average conditions. This map, in conjunction with the data presented previously in the text as to bounce points via F2 propagation, or that relative to the chordal mode, should indicate several of the parameters relevant to the Urumchi receptions, or at least as much as we can hope to do without more detailled knowledge of the vagaries of the auroral absortpion zone, or of the specific propagation mode which is responsible for these receptions.

We can, however, make several observations from it. It will be highly unlikely to hear Urumchi North of the arc representing the auroral absorption zone, or even within a hundred miles or so of it, for only very good geomagnetic conditions would allow the line to move far enough North to allow those normally in this relationship to it to be free of the auroral absorption it brings. We must continue to bear in mind that this line is merely an average of data which form a statistical construct, and is therefore very mobile, and very non-regular in form. Likewise we can note that as we approach sunrise at the transmitter, we have picked up much darkness to the west of the receiver site (or in surrounding areas in North America) which brings with it the consequent added QRM from regional or clear-channel stations which could reduce the quality of trans-polar receptions significantly.

Moving on, we can now look to the prospects of ECNA receptions of Bangkok VOA on 1580 kHz., or AIR-Calcutta on 1130 kHz., taking into account all of the considerations we have previously explored. Figure 5-3 shows the corresponding locations of skip bounce points for F2 propagation from Calcutta to New York for 4, 5, & 6 bounce paths. Figure 5-4 shows a similar pattern for the Bangkok to New York signal path. It is generally conceded that the more bounces an F2 path encompasses, the less likely it is to yield good reception. While one may compare these paths to paths to Australia or New Zealand, we must remember that there are certain striking differences: namely that a DU path would be almost entirely over water, which is generally believed to be a more efficient reflector than is land; that the noise pickup consequent with each bounce is greater when that bounce is made on land; and finally, that there is no auroral absorption ring to contend with. While we cannot rule these paths non-viable out-of-hand, we can state with not a small degree of certainty that they would only be likely under extremely good geomagnetic conditions, and that they are far more fortuitous in terms of geography and geometry than any of the other paths we have discussed. If the chordal mode is relevant, however, the only factors would be those of sunset and sunrise, and the added distance, which might prove to have no effect at all. If the M modes are relevant over these types of distances, then we could have either a corresponding increase or decrease in the viability to be expected, depending on the type of M mode which pertained, and whether it contacted the earth or a reflecting layer for many of its bounces.

Figure 5-1; Sunrise – Sunset Map for Urumchi-1525.

Figure 5-2; Sunrise – Sunset Map for Reception of Urumchi – 1525 in ECNA.

Figure 5-3; Great Circle Map depicting F2 bounce points for 4-, 5-, & 6F2 paths, Calcutta to New York.

Figure 5-4; Great Circle Maps depicting F2 bounce points for 4-, 5-, 6-, & 7F2 paths, Bangkok to New York. a) shows 4F2 & 6F2 while b) shows 5F2 and 7F2.

Delving further into the possible viability of the Calcutta to ECNA path, or at least that to Northeastern NA, we find that the most likely paths would be 6 or 7F2. As the path distance is 7921 miles (to New York), we can derive angles of arrival for these paths as well as others through the formula noted previously, as we have done for the stations under discussion in Figure 5-5 . For a 5F2 path from Calcutta to New York, we have an arrival angle of 7.5°. For a 6F2 path the angle is 11.1° and for 7F2 it is 14.6°. Naturally, we must deal with the problems inherent in that number of bounces on that path, as we have already done. While these considerations in and of themselves do not point toward the likelihood that this path would be viable except under exceptional conditions, we must confront ourselves with what is perhaps the most substantial obstacle to North American reception of AIR-1130, namely, the lofty Himalaya Mountains, which are among the tallest in the world, lie to the North of Calcutta, and right along the signal path to Northeastern North America. With a path of 5, 6, or 7F2, we have angles up to 14.6°, and with the mountains located between 325 and 400 miles from the transmitter site, the spectre of horizon blockage of the signal path at the transmitter end is indeed significant. In fact, simple geometry may tell us if such paths are extremely tenuous if anything, thus forcing us to defer to greater-bounce paths or chordal propagation. Upon completion of such calculations, however, we find that an object 6 miles high at 350 miles distance will be cleared by a signal leaving the transmitter at any angle greater than 1°, therefore not even a 4F2 path would be obstructed. In arriving at this conclusion, we have used plane geometry, and not spherical, as it is simpler, and that such a calculation would yield a greater obstruction quotient, as we'll call it here, than would the utilisation of the proper spherical formulae. Thus, we find that we can now dismiss out of hand, any possible consideration of horizon blockage of the VOA-1580 signal by the mountains of Tibet. We have delved into this consideration because of the fact that it may become significant for other transmitter and/or receiver sites, and is therefore non-trivial knowledge for the student of trans-polar DX'ing.

Figure 5-6 is another composite chart denoting the status (on the ground) for sunlight or lack of it for the various stations under discussion herein. All calculations shown are from the analemma and from the NRC sunrise/sunset tables. This chart would be valuable both for F2 propagation as well as for chordal propagation, as both correlate to sunrise and sunset effects. In perusing this chart, we note that the figures given for Petropavlovsk are the only ones which stretch the imagination a bit as to a total-darkness path, as sunrise at the XR precedes sunset at the RX, albeit by a smallish amount of time. Even Bangkok, with its Southerly location, has a sunrise time which is well after local sunset in ECNA--only trouble with that one is that it's a domestic channel, and there's a domestic station fairly far North on 1580, otherwise a wave antenna might be helpful from ECNA as is already being done for AIR, inasmuch as domestic interference can be pretty much nulled out. Recent reports indicate that Sabah, Malaysia on 1475 may also be a candidate for a trans-polar path to ECNA, however it has two notable drawbacks -- low power (comparatively speaking) and an extra 1000 miles to travel, which would likely add another F2 skip. Add to that the fact that local sunrise there is approximately 1530 EST in December and January and you run into a few obstacles to such a reception. In such cases as this, a reversal of the sunrise-sunset pattern we've used here (i.e. DX'ing sunrise at the receiver and sunset at the transmitter) may well be more useful. In this particular case, we can note that sunset will occur at Sabah roughly at 0400 EST, while sunrise in ECNA isn't until 0730 based on a reception date of January 15. By comparison, Petropavlovsk sunset is about 0000 EST. Here again, the paths for these stations pass west of North for ECNA, and are therefore expected to be more viable at ECNA sunrise.

In this presentation, we have tried to explore many of the relevant variables which affect medium-wave propagation, especially as it occurs in the North Polar Zone. Many of the statements made herein are based upon scanty information, or information which is sufficiently limited to be of only marginal statistical validity. The main purpose has been to expose them, and their ramifications, and to attempt to relate them to trans-polar DX receptions. The author fully realises,

Station	Co-Ordinates Lat.	Long. (2)		Distance (1)		12/1	12/15	SUNRISE TIME (EST) 1/1	1/15	2/1
Urumchi	44	-88		6472		2027	2041	2048	2045	2033
Petropavlovsk	53	-162		5169		1559	1619	1625	1619	1600
Khabarovsk	49	-138		6000	*	1720	1736	1743	1737	1723
Kyzyl	52	-93		6000	*	2020	2038	2044	2038	2019
Irkutsk	53	-104		6000	*	1950	2008	2016	2009	1950
Bulun	71	-127		4850	*	A	A	A	A	2041
Sredne-Kolymsk	67	-153		4550	*	1750	A	A	A	1707
Murmansk	69	-33		4000	*	A	A	A	A	0107
Helsinki	60	-25		4155		0153	0217	0223	0216	0148
Reykjavik	64	22		2683		0428	0448	0458	0448	0413
Thule	76	67		2534		---- in Arctic Twilight from 11/3 to 2/9 ----				
Bangkok	14	-101		8452		1822	1833	1840	1843	1843
Calcutta	22	-88		7921		1930	1939	1947	1950	1946

1 - See note 1 in Figure

2 - East Longitude is denoted by minus sign.

A denotes station in Arctic Twilight on this date. No effective sunrise or sunset exists.

Figure 5-6; Chart showing Sunrise and Sunset data for various transmitter locations for various dates during mid-Winter.

and expects, that subsequent research into these areas, if oriented toward medium waves, may well alter, or even contradict some of the assumptions made herein. Likewise, all conclusions drawn with respect to the relative viability of the respective modes of propagation are based on the available information, and are, of necessity in such cases, somewhat subjective. Emphasis has been placed repeatedly upon the idea that very little can be taken as certain in the realm of medium-wave signal propagation, and that while we can establish possibilities and/or probabilities, they must not be taken as gospel, immutable fact.

ACKNOWLEDGEMENTS---

The author wishes to express his sincere and profound gratitude to those individuals who have helped to make this article possible: Father Jack Pejza, whose initial article on this subject in DX MONITOR over a year ago first sparked this entire idea; Gordon Nelson, whose articles over the years served as springboard material, and whose review of the rough draft helped to tie up several theretofore uncertain details; Richard Lauhead, who kindly programmed and ran the necessary formulae on computer, and supplied the printouts; and to Page Taylor, without whom the initial albeit tentative and as yet unidentified logging and DX tip on same has provided the incentive to pursue this effort. Thank you all. -RjE

REFERENCES

1. Nelson, G. P. :"Medium Wave Signal Paths, Parts I & II", DX NEWS, 1969.

2. Nelson, G. P. :"Skyline Blockage: Sources of Uncertainty in Calculated Arrival Angles for Medium Wave Signal Paths", DX NEWS 2/14/73.

2A. Pejza, Father Jack: "A Beginner's Guide to the Ionosphere, Parts I & II" DX NEWS 5/13/72 & 2/14/73.

3. Bold, Gary E. J. : "The Influence of Chordal Paths on Signals Propagated to the Near Antipode of a High Frequency Radio Transmitter", IEEE Trans. Antennas & Propagation, Nov. 1972.

4. Phillips, G.J. & Knight, P. : "Effects of Polarisation on a Medium-Frequency Sky-wave Service including the case of Multihop Paths", Proc. IEE, Vol. 112, #1, January 1965.

5. Nelson, G. P. : "Medium Wave Signal Paths, Parts III & IV", DX NEWS, 1970.

6. Pejza, Father Jack : "Skyline Blockage", DX NEWS : 2/14/73.

7. Nelson, G. P. : "Geographical Patterns in BCB DX Reception During Periods of High Auroral Activity", DX NEWS , 1971

8. Feldstein, Y.I. & Starkov, G.V. : "Dynamics of Auroral Belt and Polar Geomagnetic Disturbances", Planetary Space Sciences, Pergammon Press, Northern Ireland, 1967.

9. ibid.

10. Strahler, A. N. : Introduction to Physical Geography, 2nd ed., John Wiley & Sons, N.Y., N.Y. 1970. (pp 68-80 & 91-94)

11. Pejza, Father Jack : "Transpolar Reception" DX MONITOR, 11/7/71.

(The above references are referred to by numbers within the text. The following references are provided as background and additional reading matter of relevance to this subject)

12. Feldstein, Y. I. & Starkov, G. V. : "The Auroral Oval in the IGY and IQSY Period and a Ring Current in the Magnetosphere", Planetary and Space Sciences, Vol. 16, Pergammon Press, Northern Ireland, (1968)

13. Nelson, G. P. : "Solar Control of Dawn E Blanketing on the MW BCB", DX NEWS , 1965

14. _____ : "East-West Symmetry and the Fade-In Problem", DX NEWS, 1966.

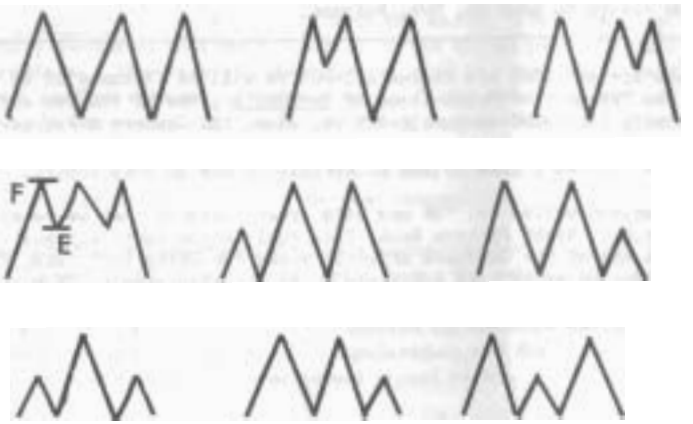
15. _____ : "Medium Wave Propagation", How To Listen To The World, World Publications, 1969.

16. Stringer, W.J., Belon, A.E., & Akasofu, S.-I. : "Latitude of Auroral Activity During Periods of Zero and Very Weak Magnetic Disturbance", J. Atmospheric & Terrestrial Physics , Vol. 27, 1965. Pergammon Press, Northern Ireland.

17. Stringer, W. J. & Belon, A.E. : "The Statistical Auroral Zone During IQSY and its Relationship to Magnetic Activity" J. Geophysical Research , Vol. 72 , # 1, 1/1/67.

APPENDIX I. The following diagram and explanatory material is reprinted from Nelson, Reference # 2 above for reference:

" Once we allow the possibility of M-type intra-ionospheric reflections, the problem of calculating the expected signal arrival angle becomes even worse. At each point where the signal path could pass through the E region, we have to admit the possibility of an effective E reflection there. In the case of our Boston to Lisbon path, for example, we have to enlarge our catalog of likely possible paths to include several likely M-type paths as shown in the figures." (below)



APPENDIX II. Formula for computation of arrival angles and algorithm, reprinted from Pejza, Ref. # 6 above, for reference:

$$\alpha = \sin^{-1}\left(\frac{(R+H)\cos\theta - R}{\sqrt{2R(R+H)(1-\cos\theta)}}\right)$$

where

R = radius of earth ; θ = angle at center of earth ; H = height of layer (F assumed 300 km.; E assumed 100 km.); D = distance in statute miles transmitter to receiver.

For F reflection,
N = 2 if D < 2400
= 4 if 2400 < D < 4800
= 6 if 4800 < D < 7200
= 8 if 7200 < D < 9600
etc.

For E reflection,
N = 2 if D < 1380
N = 4 if 1380 < D < 2760
N = 6 if 2760 < D < 4140
N = 8 if 4140 < D < 5520
etc.

V1 = D/N
V2 = V1 x 0.0144
V3 = cos V2
V4 = 1 - V3
V5 = 6680 x V3
V6 = V5 - 6380
V7 = 0.85×10^8 x V4
V8 = $\sqrt{V9}$
V9 = V6/V8
$\alpha = \sin^{-1}$ V9

For E reflection, substitute:
V5 = 6480 x V3
V8 = 0.825×10^8 x V4

NOTES: No diagrams within this article are drawn to scale excepting maps. Figure 4-1 after a similar diagram in Strahler.

PROPAGATION FORECAST -- JANUARY 1974

1-6 : Mediocre. MWA cx continue -- minor short-term TA/TP openings possible, at LSS & late evenings.
7-13: Deterioration of cx. Increased noise.
14-17: Major aurora with very slow recovery.
18-19: Recovery phase.
20-23: Short period of above-average cx. High-latitude paths open.
24-29: Steady improvement. Bands remain open. MWA effects minimal.
30-31: Sudden return to poor cx. MWA. Noisome.

Ray Moore advises that his custom all-BCB rx will be featured in an article in the February or March issue of Ham Radio , One of the few articles commercially published on an all-BCB rx. Also, the January & February issues of Radio-Electronics will carry articles by Ray on modern communications rxes. *** We'd like to see an article in DXN on both topics, Ray-RJE

Radio Nederland writes us: "It was with great pleasure that we received and read the N.R.C. Night Pattern Book. This publication certainly must be considered as one of the landmark efforts by and for DXing hobbyists. Everyone involved must be recognised for their abundant generosity to DX hobbyists. We will be presenting a very favorable review of the book on the January 10th issue of "DX Juke Box"."

THE ETIOLOGY OF THE GREAT CIRCLE PATH

*Gordon P. Nelson

In a recent edition of DX Monitor it was suggested that the Okinawa VOA station on 1178 kHz might be audible on the East Coast of North America during the late afternoon hours by means of the "long" great circle signal path. While long path reception is common on higher frequencies, its existence on the MW band remains problematical. In the debate which followed the original speculation it became obvious that there is widespread misunderstanding among DX'ers regarding the relationship between great circles and actual signal paths. In view of the importance of this topic to any discussion of long-distance MW reception patterns or to direction finding, this article will attempt to provide some background on this little-appreciated aspect of propagation.

In his reply to Martin, Hauser[1] says, "A radio signal, no matter how powerful, is going to follow the shortest path between two points"; Foxworth[2] restates the same point, "Physics laws say that electromagnetic signals travel in a straight line, and this straight line path does not go near Scandinavia". Both of these experienced DX'ers seem caught up in a basic misunderstanding of a fundamental aspect of ionospheric MW radio propagation. While Maxwell's equations do indeed require that a travelling electromagnetic wave propagate in a straight line, this is only so in the event the signal is propagating through a uniform homogeneous medium such as free space. The ionosphere is anything but a homogeneous medium and the trajectory of any particular skywave signal between two points cannot be taken for granted - especially on MW frequencies.

First of all, while we all commonly speak in terms of MW signals on "great circle paths", that's not what we really mean. The actual signal path is a complex 3-dimensional trajectory which may extend vertically several hundred kilometers. When we stretch a string on a globe or draw a straight radial on an azimuthal projection map to visualize "a great circle path" we are visualizing the projection of the actual 3-dimensional signal path onto the surface of the earth. While indeed a great circle arc between two points on the surface of a sphere is the shortest path on the surface, the fact that ionospheric radio signals usually tend to propagate along paths whose projection is a great circle has nothing to do with the fact that a great circle arc is a geodesic on an ideal sphere.

The tendency for real signal path projections to approximate great circles arises from the fact that the ionospheric "layers" responsible for signal return and long distance skip propagation are more-or-less parallel to the surface of the earth below. As long as the ionospheric structures responsible for signal return are spherically symmetrical and concentric with the earth, it follows from Snell's law and elementary geometry that the projection of the signal path will be a great circle arc on the surface. The very simplest model used in ionospheric research pictures the earth as a perfect sphere surrounded by perfectly spherical reflecting surfaces corresponding to the various ionospheric layers responsible for signal return. This is the model tacitly assumed by Hauser and Foxworth and while all signal path projections will indeed be great circles the model demands a higher degree of symmetry than is actually present in the real ionosphere.

The real ionosphere behaves much like a compressible magnetic fluid and actual ionospheric "layer" structures are far from being the smooth and perfectly spherical surfaces necessary to assure that signal path projections will always be great circle arcs.[3] The ionosphere is a complex and rapidly changing dynamic structure containing a wide variety of irregularities and distortions which play a key role in determining the nature of actual signal paths.

In the likely event that the signal passes through or is returned from a region of

the ionosphere which is not parallel to the surface of the earth below, the signal will experience a lateral deviation from the original path; in such a case the path projection will not be a great circle arc. An ideal direction finder[4] at the receiver site will indicate that the signal is arriving on a deviated path and the measured angle of signal arrival in the horizontal plane will differ from that calculated on the basis of a great circle assumption. As long as the ionospheric tilting along the path remains significant the signal will propagate on a non-great-circle deviated path and direction finding will show an apparent bearing anomaly. At any particular instant the amount of lateral path deviation from the ideal great circle projection depends on the nature of the ionospheric tilts along the path: inclination of the tilted region from local vertical, direction of the tilt relative to the signal path, and the lateral extent of the tilted region relative to the dimension of the signal wavelength.[5]

Of course the ionosphere does not really contain well-defined "layers" but is instead a continuous plasma medium featuring a variety of fairly sharp and pronounced vertical electron density gradients. Medium wave signals are not reflected from sharp layer edges at fixed heights but are gradually refracted by the gradients in electron density in a continuously variable medium.[6] The simple "layer-reflection" image is often quite useful for visualization of many propagation effects but the more complicated full-wave refractive approach must be taken if one is to obtain a complete appreciation for phenomena such as deviated paths, etc.

A more correct statement of the condition necessary to assure a great circle path projection is that horizontal electron density gradients measured normal to the signal Poynting vector at each point be negligible in dimensions compared to the signal wavelength along the entire path. This approach takes into account the continuous nature of the propagation medium and interprets the "tilted layer" as a significant horizontal electron density gradient. We shall continue to use the terms "layer" and "tilt" but one should bear in mind that these terms are simply used as a matter of convenience and only approximate the actual continuous electron density gradient structures in the ionosphere.

It should also be appreciated that the total received signal at the receiver is the vector sum (or integral) of all incoming signal rays and that it is perfectly possible for MW propagation to be sustained over several different effective paths - both deviated and along the great circle - simultaneously.[7] Viewed from the receiver site such a composite signal appears to arrive from a bearing which is intermediate between those for the individual ray paths and weighted by the relative amplitude and polarization properties of each component.[8] Since the ionospheric inhomogeneities responsible for effective tilts vary in an essentially random fashion with time, meaningful quantitative description requires rather elaborate statistical techniques and this is the form in which most "tilt" data is presented in the research literature.[3]

Besides the deviated paths produced by tilts two other sources for non-great-circle propagation are well known. The phenomenon of side-scatter is often used on higher frequencies to circumvent the high level of auroral absorption over the North Atlantic which commonly impairs Transatlantic communication during high levels of auroral/geomagnetic disturbance; both receiving and transmitting antennas are redirected towards a point over West Africa and lateral side-scatter permits reception on a path which appears to make an almost right angle bend from a great circle.[9] I have tried in vain for several years to detect this propagation mode on MW signals (using high precision direction finding); presumably the combination of low scatter efficiency at MW frequencies together with the high auroral absorption for the path leg between Europe and Africa rules this mode out for practical DX

purposes although it may well exist under different circumstances. A more obscure mechanism produces lateral deviations of travelling electromagnetic waves even in media containing no horizontal density gradients through a very complex interaction between the signal and the Earth's magnetic field. Elaborate calculations of the amount of this effect were made shortly after WW II and indicated that this effect is ordinarily quite small although it can become significant if just the right conditions are met.[10] This source of deviated paths is called magnetoionic deviation.

By now it is hopefully obvious that great circle paths cannot be simply taken for granted. While MW signal paths usually follow quite close to the expected great circle track by virtue of the general tendency toward ionospheric symmetry, significant and consistent deviated paths are common and readily observable. The possibility of unusual highly deviated MW signal paths due to any of the causes discussed above cannot be discounted a priori. Only by means of carefully made high precision direction finding bearings can the possibility of a highly deviated path be completely ruled out for any particular DX reception. It is because the conditions necessary for highly deviated paths are usually so rare and unusual that such paths may well prove to be implicated in rare and unusual MW DX receptions.

During the past decade the author has made systemmatic measurements of the direction finding bearings for a large number of long-distance MW DX receptions including receptions here in New England of stations in Central Asia (eastward path), the Far East (westward path), South and East Africa. The precision of measurements initially made was 1^{o} of arc; later the precision was improved to 0.1^{o}. A typical run on a TA station involved anywhere from 10 to 400 independent bearings taken at 15 second intervals with continuous oscillographic monitoring for sub-audible heterodynes[11] to prevent spurious bearing measurements caused by "second station pulling" due to inaudible cochannel stations.[8] Needless to say we have amassed a large amount of data and have just now begun to analyze it in depth. But some important observations and generalities are even now quite apparent:

a. A good part of the second-to-second and minute-to-minute variation in measured path bearings for a distant MW station is the polarization error caused by the interaction between the direction finding antenna and the time-varying parameters of the signal wave polarization figure and not to actual path deviations.

b. Persistent deviated bearings of at least 5^{o} are consistently observed under two special conditions only - (i) Near the time of dawn at the transmitter site. This is apparently the well-known sunrise/sunset ionospheric tilting effect.[12] Similiar but lesser effects are observed as the terminator nears the receiving site. (ii) During the initial phase of a major geomagnetic/auroral disturbance, substantial path deviation is noted for those TA's still audible on paths reaching the highest geomagnetic latitudes. This is believed to be due to ionospheric tilts and deformations associated with the passage of auroral substorms.[13]

c. Very high (geomagnetic) latitude paths such as Sinkiang-1525 and Pyongyang-655 show rapid bearing fluctuations of several degrees and the shallower DF nulls characteristic of multi-path propagation. There is no evidence for highly deviated path reception of Sinkiang-1525 even when auroral/geomagnetic activity is high. More data is needed.

d. There may be stable path deviations of several degrees for stations in South and

East Africa. This effect is observed well before the onset of dawn-induced tilting and may be the result of the well-known Equatorial Geomagnetic Anomaly and its associated ionospheric deformations.[14] Again, more data is needed.

In summary, the data we have gathered to date suggests that - generally speaking - most long-range MW DX reception occurs on paths which are instantaneously within a few degrees of expected great circle bearings. Short-term tilts and antenna polarization effects produce apparent bearing errors which are essentially Gaussian in distribution and long-term time integration (c. 1 hour) of measured bearings can regularly yield mean bearings within 1^{o} or better of the calculated great circle bearing. The greatest evidence for deviated paths occurs when the signal traverses the region south of the auroral oval, passes through very high geomagnetic latitudes, through the South Atlantic, and along the terminator. Highly deviated scatter paths may exist but have not been observed here.

Intriguingly, evidence for deviated paths is strongest for many of the signal paths of greatest interest to the MW DX'er and which have traditionally produced some of the best DX catches!

* * * * * * * * * * * * * * * *

NOTES AND REFERENCES:

1. Okinawa by the Side Door? Glenn Hauser, DX Monitor, 10/27/73
2. Okinawa Revisited...by Short Path Only. Robert Foxworth, DX Monitor, 11/3/73
3. Phase and Amplitude Variability in Medium-Frequency Ionospheric Transmission. D. Brennan and M. Phillips, MIT Lincoln Lab Technical Report No. 93, 1957.
4. We qualify the antenna as "ideal" to preclude polarization effects; the best large aperture DF antennas for this type of research are radial Beverage arrays.
5. On the Bearing of Ionospheric Radio Waves, K. Miya, Rep. Ionosphere Research Japan, Vol. 11, No. 3, pp. 130-144, September 1957.
6. The Magneto-ionic Theory and its Applications to the Ionosphere, J.A. Ratcliffe, Cambridge University Press, 1962. **Chapter 13 is particularly relevant.**
7. Radio Waves in the Ionosphere, K. Budden, Cambridge University Press, 1961; Chapter 20.
8. High Precision Direction Finding of Medium Wave Skywave Signals. Part I: Fundamental Properties of Loop Antennas and Apparent Bearing Errors. G. Nelson, DX NEWS, July, 1965.
9. Ionospheric Radio Propagation, Edited by K. Davies, N.B.S. Monograph 80, 1965. Sections 4.6.5 and 4.6.6.
10. The Application of Magnetoionic Theory to Radio Waves Incident Obliquely Upon a Horizontally Stratified Ionosphere. H. Booker, J. Geophys. Res., 58, 1949.
11. Subaudible Heterodynes on the Medium Wave Broadcast Band, Gordon Nelson, DX NEWS, October 1965.
12. Lateral Deviation of Radio Waves at Sunrise, W. Ross and E. Bramley, Nature (London), Vol. 159, p. 132, Jan. 25, 1947
13. Ionospheric Layer Tilts at Ottawa, Canada. N. Burtnyk, et al., Canadian J. Physics, vol. 40, p. 1614, 1962.
14. Global Electron Density Distributions from Topside Soundings. K. Chan and L. Colin, Proc. IEEE, Vol. 57, No. 6, June 1969.

Review of the FMS-3 Frequency Marker Standard

by Bob Foxworth

A FMS-3 Frequency Standard has been tested, and this report on its operation should be of interest to many DXers, especially the Foreign DX specialists.

Purpose. This device provides a marker, or calibration signal throughout the radio spectrum, including VLF, Longwave, BCB and through the SW range and into the VHF range, although the markers become quite weak at the higher frequencies. It is a more involved type of crystal calibrator (100 khz calibrator) found in many communications receivers. Unlike the standard calibrator, which has just an off-on switch (and a trimmer for exact freq. adjustment), this unit has a switch to allow the user to select the marker interval, that is, the distance between the marker pips, as well as an off-on function, and freq. trimmer.

Description. This unit is sold either as a kit, or as an assembled unit. When it is assembled, it consists of a circuit board, switch and battery holder mounted in a two-piece aluminum metal case. Measurements are 4-5/8 inch wide (11.8 mm) x 2-7/8 inch tall, including rubber feet (7.5 mm) x 4-1/2 inch deep, not including switch knob nor output connector on rear deck (11.5 mm). The unit weighs 14.5 oz. with batteries included. (411 gr.). The case is painted two shades of gray, the panel being close to "Battleship Gray" and the cover more a bluish-gray. Legends are silkscreened on with black paint. The 8-position rotary switch and access hole for the trimmer adjustment are on the front panel. The RF output connector is on the rear. Batteries are mounted internally. Four 1.5 volt "AA" Penlight cells are used. Passing the battery voltage through a diode provides about 0.7 volt drop across the junction. This, and the fact that 1.5 volt dry cells usually provide more nearly 1.4 volts each, when new, yield the 5 volts needed to power the integrated circuits. (Calling these batteries 1½ volt cells is tecnically incorrect). The PC board is high quality, Glass epoxy with tin plated leads.

Operation. The FMS-3 unit uses a 400 khz crystal as the signal source. The crystal is provided in a hermetically sealed metal can with wire leads. No socket. This has two advantages over use of the more common 100 khz crystal, mentioned above. When locating a frequency, especially a HF frequency the user can begin with the widely-separated 400 khz intervals and count his way up to the desired area more easily than if the intervals were closer together. Once "in the ballpark" the unit can then be switched to more closely spaced intervals for closer resolution. Secondly, the higher frequency fundamental is inherently slightly more stable. This is important when one recalls that the error in the frequency of the calibrator signal harmonic is proportional to the error of the crystal fundamental frequency. That is, if the 400 khz fundamental signal - the actual frequency at which the crystal is oscillating - is 10 hz high, at 4 mhz the marker will be 100 hz high; at 8 mhz it will be 200 hz high, and getting to be quite a noticeable error now, and so on. Consider that the 100 khz xtal would have to be only 2.5 hz off freq for the same marker error, as the multiplication ratio is 4 times as much. This higher fundamental makes the CAL. trimmer tune more slowly and so the unit is easier to zerobeat to WWV than other calibrators. (The really advanced individual using a 1.0 mhz, or even a 5.0 mhz crystal, cut specially for high stability, and in a "proportional control temperature oven" will find it even easier to zerobeat to WWV, but the cost is much greater...such great accuracy is not necessary for the application described below).

The 400 khz oscillator is a multivibrator using 2 NOR gates, part of one of the 5 ICs in the unit. The oscillator may be adjusted to frequency by adjusting a compression trimmer (a screwdriver adjustment) from the front panel. My unit was zerobeated to WWV easily and smoothly, with plenty of adjustment latitude on either side. Criticism: The instructions did not mention this - a FIBER BLADE screwdriver is essential to make an accurate setting. The trimmer is in series with the crystal, and the screw slot is "hot" with RF. Hand capacity (more)

caused by using a metal-bladed screwdriver causes noticeable detuning. A fiber bladed screwdriver is a standard alignment tool, made by General Cement etc. If you can't find one in a local electronics store, you can make one out of a piece of plastic very easily using a bench grinder and/or file.

The 400 khz output feeds 5 dividers in sequence. Three divide-by-2 stages, a divide-by-5 and a final divide-by-2 stage. The output of the desired divider is selected by the front panel switch and fed to a buffer amp. This signal is a square wave that is rich in harmonics. A thorough discussion of the nature of square waves, flip-flops, digital logic etc. is beyond the scope of this article. However, each divider (in a divide-by-2 circuit) changes state from "on" to "off" on every input pulse of a certain direction, say, falling, but not on the other or, rising. The output frequency is thus half of the input. Refer to Fig. 1.

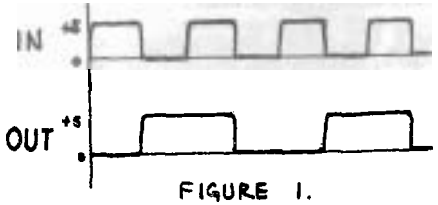


FIGURE 1.

Let "on" be the presence of 5 volts, "off" be zero volts. Note how, every time the input pulse FALLS from 5 to 0, the output pulse CHANGES STATE. However, a rising input pulse has no effect on the output. The output of the stage is a wavelength twice as long as the input. The frequency is halved.

The incredibly fast switching time of modern ICs yield square waves that are really square, and thus rich in harmonics, which is what we want. A square wave is a sine wave with infinite odd-order harmonics. The 5 successive divider stages in this unit can go all the way down to 5000 hz - a division of 1/80 of the fundamental. The harmonics of this 5k hz signal provide a marker every 5 khz through the BCB and lower SW spectrum, if the switch is set to that position. Each marker has the same accuracy as the crystal-controlled fundamental.

More detailed information on the operation of this circuit is found in the one-page instruction sheet provided by the manufacturer.

Marker intervals available are 400, 200, 100, 50, 25, 10 and 5 khz. The particular divider output the switch selects goes to a buffer amplifier, and to the output jack. The buffer keeps changes in the output line (loading, shorts etc.) from affecting the rest of the circuit.

Difficulties. The instruction sheet is vague about the exact interconnection and operation of the dividers. This should not be of concern to the user, generally, unless you want to do your own servicing etc. **The "schematic" shows each logic** element as a box square and not as a logic element by proper symbol. Pin connections are not numbered. Power supply bus lines are not clearly marked and show multiple inputs to each logic element, again with no pin callout. The ICs provided in the unit are one SP380 quad 2 nor gate and four 9L24 dual J-K flipflop. This was a surprise to me, having expected to find the familiar 7400 series of TTL logic employed, before examining the unit. Again, this is not important to the user who expects to treat this unit as a "black box" type of thing. The manufacturer does provide a one-year warranty so this should not be of concern, so long as the user does not modify the kit (see below). In my experience, the possibility of component failure in such a unit as this is very remote.

2. The author's order was not filled for over a month, for an unknown reason. We were finally sent an assembled unit, and charged the kit price (I had specified kit) so likely the problem was a non-recurring one of back-ordered parts or something like that. The unit was billed to a credit card. It was necessary to call the firm on the phone twice to trace the order. We never found out the reason for the delay. Again, this may or may not be a recurring problem. This was in the late summer of 1973. Shortages of electronic parts are becoming widespread as this is being written (Dec. 1973) and this may aggravate the problem.

3) We had planned to use IC sockets in the kit but on inspection of the wired unit sent us, saw that this would not be feasible as the board is a double sided PC board, requiring solder connections on the body side as well as the pin side of the ICs. This would be impossible with the standard Texas Instrument 16-pin Dual Inline Package (DIP) sockets. (Molex pins might work here, though). Again - this is of no consequence unless you plan to experiment and change your own ICs. Again, unless experienced here, let the warranty carry you here. Circuitwise, I see no need to substitute IC types just for experimentation sake.

4) A more irksome problem was that, once the power was turned on, all the dividers were operating at once. Selecting a 50 or 100 khz interval, for example, still yielded faint 5 and 10 khz markers. They were weak but could be heard, especially on the BCB. (Evidently the designer contemplated this unit would be used on the SW freqs and the faint markers likely would not be heard there). We feel that if we are looking for a marker only every 100 khz, there should be NO intervening signals. Opening the case showed that when the board was wired, long leads of about 4 inches each were provided to run to the switch, when more like 1½ inch would suffice. This was apparently so the switch could be wired up free-floating and then swung into place. These 4-inch long leads, each carrying RF, were coupling among each other and feeding small amounts of 5 and 10 khz marker into the output buss at all times, despite the panel switch setting. The remedy is to unsolder each lead from its switch terminal, one by one, pull it to form a straight line instead of looping around in a wide arc, cut off the excess, and strip and resolder to the switch lug. Do one lead at a time, so as to not get them mixed up (if you do lose your place, the board is marked, on the underside). Leave a half inch extra slack in the 5 and 10 khz leads and dress them away from the others, to minimize further unwanted coupling.

Modifications. Dressing (placement of) the leads nearly cured the leakage problem. One other step was decided on. Note here that doing this work will nullify the warranty. In fact, the steps above, in (4) probably would, also. Anyway, two toggle switches were mounted on the front panel. The first one became the new off-on power switch. There was an occasional intermittent contact in the half of the 8-position rotary function switch that handled the power, so the off-on function of that switch was wired shut and the new toggle added in its place. This is shown as Fig. 2, switch A. This not only cured the intermittent but also made it possible to pulse the marker on and off at any desired marker, instead of having to rotate the switch through its arc, back and forth. This pulsing is sometimes necessary, to identify that you do have the marker, and not an OC. Getting back to the leakage problem (Difficulties, 4; above) a second toggle switch was added to control the DC to the final 2 divider stages. This is switch B in Fig. 2. We recommend using miniature toggle switches, so that they fit in the cabinet. I used the SPST J-M-T made by JBT Co. and given away as samples at the IEEE Show, or the C&K 7101, or Jap copies are available. All they need is a single 1/4-inch hole in the panel. The result then is that turning on A only gives the higher freq markers, and for 10 and 5 both switches must be on. The rotary switch must still be operated as before.

The reader should be able to trace out the leads involved. Wiring of the main power switch A is a simple substitution. Switch B is more complicated because the way the board was laid out, the power from the dropping diode feeds Dividers 4 and 5 before feeding the rest of the circuit! If you want to add the switch to your unit (remember, just for BCB DXing its not all that essential but if you use the marker on SW it becomes increasingly helpful to have it, if you have to find unknown frequencies with the marker) then do this. See Fig. 3. Break the foil lead on the underside of the board. You will have to remove the 4 long 4-40 bolts holding the board down, and the rotary switch, to lift the board up and over, to get at this point. Use an Xacto knife or similar and cut out a 1/8 inch or so segment. Tacksolder a thin, flexible wire to the side of the break marked X (the IC2 and 3 side of the break). We have to route the voltage from the "OFF ON SWT" terminal hole on the PC board, that hole which is closest to IC5 (tied to the dropping

(more)

diode), then through Switch A, then to the switch lugs jumpered together and acting as a tie point, and then to the underside of the board, to the point marked X. See Fig. 4 for pictorial designation of this. This powers ICs 1,2 and 3 whenever Switch A is on. Then, as the "tie point" on the rotary switch already has voltage on it, closing Switch B then feeds power to ICs 4 and 5, going through the "OFF-ON SWT" terminal hole closest to IC4 on the board. Note that only one tacksolder connection has to be made at the foil break, not two.

For personal preference, the phono jack was removed, as the author tries to make it a practice to avoid such connectors in all RF service. The resulting 1/4 inch diameter hole remaining on the back of the chassis was enlarged to 3/8 inch with a tapered reamer, deburred, and a BNC jack mounted. (Type UG-1094/U was used; a UG-657/U fits too but costs more). This has no effect on the operation of the unit except for the much greater reliability of the connectors and contacts over a period of time. The Radio Amateurs Handbook shows how to connect the mating BNC plug, UG-260/U using RG-59/U coax cable; it is not complicated.

An output attenuator is useful for attenuating the marker pip down to the approximate level of an incoming signal, or to provide a weak signal to set up a rcvr with. Unfortunately there is not really enough space on the front of the panel to mount a potentiometer, and the rear is not easy to reach. I chickened out from further butchery of my unit and am using a pot mounted in a separate box for a output level control. See Figure 5 for details. I am using a 2.5 megohm pot in a aluminum Minibox. Size not critical, just big enough to contain the pot (same as the volume control in your receiver, as size goes) and the 2 connectors. You should use a high value pot so the full value of load resistance is presented to the marker output, but too high a value gives a small control range on the adjustment. I suppose a 250K or a 500K ohm pot would work well; I used the 2.5 meg because it was what I had handy. If you have a choice, get a linear taper, if you have a audio (log) taper on hand, try it, it will probably work just as well. Make sure you connect it to feed the marker out to the high (end) terminal of the pot, and the wiper (center) then feeds the rx input. Reversed, you would short out the marker output with the pot turned all the way down. The low (end) terminal is the common ground.

Conclusions. The strong selling point for this device as far as the Broadcast Band DXer is concerned is the availability of the 10 and 5 khz markers, providing simple, accurate determination of these frequencies (multiples of) whenever needed. An example might be on an auroral Monday morning, tuning to a frequency such as 1070, 1190, 1210 (WCAU was off 12/10/73 and 2 LAs were heard there) and any unidentified signals on such as these channels can be easily checked to see if they are exactly on channel, or a few hundred hz high, or low. All that is necessary is to turn on the unit, set it for 10 khz, turn the pot so the marker level is roughly equal to the unID, and listen for a het. An experimantal tweak of the CAL. adjust, and a listen to the direction the het moves, will show which direction, frequencywise, the unID is. The 5 khz mode is extremely handy, too. Students of fade-in times etc. can generate a marker at, say, 1265 khz exactly and peak the rcvr up there in late afternoon, and then sit on channel waiting for Radio Paradise to fade in, confident in the knowledge that at least one variable (the correct tuning of the rx) has been eliminated. If you are using a 50-hz wide IF channel and a chart recorder etc, and looking to detect carrier, then the correct tuning of the receiver becomes very important, indeed. **Identification of** split freq. signals, e.g. Peru-854 and Curom-855 (either or both may be heard at times in the evening, or, say, 745 and 746 khz,)is greatly facilitated by use of the marker. A paper is in preparation describing in detail use of these marker pips in conjunction with a Heath SB-620 Spectrum Analyzer for signal identification, and this topic will be dealt with properly in that paper, which should appear in DX News probably in January 1974.

(more)

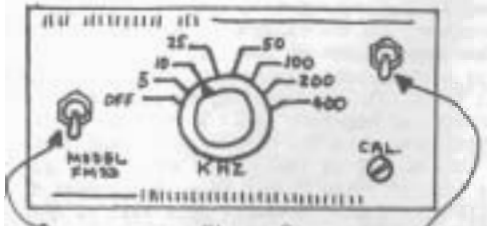
Connection to the Receiver. Refer to Fig. 6. The simplest method of coupling the signal to the receiver is by connecting a couple of feet of wire to the output jack of the calibrator and letting it act as a transmitting antenna. It is fairly easy to couple the signal into Space Magnets and into Loops this way. Positioning the lead closer or farther away can change the coupling and thus the strength of the calibrator pips. If this is done, the output attenuator would not be necessary but the main disadvantage with this method is the mechanical instability of the coupling arrangement. Because the wire antenna from the calibrator will likely have to run to within 1 or 2 inches of the Space Magnet or Loop, it would have to mechanically rotate with the S.M. of Loop; a cumbersome arrangement that just begs for something to get pulled over and fall to the floor. Coupling, then, is more involved, if you want to vary it. A mechanical arrangement would have to be devised, to anchor the wire lead at various distances from the S.M. or Loop, and lock it in position. **Another disadvantage to this method is that,** a situation can arise wherein the user wants to turn off his Loop or Space Magnet (e.g. disconnected antenna condition) but still have the calibrator signal present. This will be detailed in the Spectrum Analyzer paper. If the calibrator signal comes through the antenna stage, then you have a "both-or-neither" signal condition.

A direct connection to the antenna is not recommended, primarily because it can upset the balance of a loop's null, in addition to factors mentioned above.

The instructions supplied with the unit suggest wrapping an insulated wire lead around the insulated antenna lead running to the receiver. This assumes that the leadin to the receiver is a single conductor wire. However, if your connection between your antenna and receiver is coaxial cable, or shielded wire, this coupling arrangement will not work.

The most acceptable way of getting the calibrator signal into the receiver is to mount a separate connector on the rear deck of the receiver chassis, near to the antenna terminal. This new jack can be a SO-239 type, a BNC, a phono jack or even a barrier strip type screw terminal. Whichever you like to work with, have on hand or can mount the easiest. Ilike the BNC type, again, because they are reliable connectors and easy to connect and disconnect when straining to reach around the back of the receiver. Using the separate connector for the calibrator leaves the antenna circuit undisturbed. You can connect a small 5 pf or 10 pf **(5 or 10 uuf)** capacitor, voltage rating not critical, between the CAL INPUT jack you just added and the center connector of the coax jack on the back of your HQ-180 or to the A1 terminal if you have a HQ-129, 140, 150 etc series receiver with the A1-A2-G type arrangement. Connect to the A1 side so that if you use a longwire input to the receiver, you can connect A2 to G with the jumper strip provided. (If the cal. signal went to A2 it would be shorted to ground, in such a case.) If you use a FET loop circuit with a balanced, dual coax feedline, you can connect the cal. signal to either side, but mark the side you connect it to "high" and the other side "low" so that if you ever use single-ended input e.g. longwire, in the future, you will know which side to short. My receivers have dual SO-239 coax jacks for the dual FET loop coax feedlines.*When using a single coax line from a Space Magnet type of antenna, I connect to the A1 coax jack (to which the cal. signal feeds) and insert a shorted PL-259 coax plug into the A2 jack. Due to the low impedance of the antenna input circuit, typically a couple hundred ohms, the minimal load of the cal. lead on one side of the antenna coil does not cause any noticeable unbalance. And further, if you use coax line to connect the calibrator/output attenuator to the receiver cal. input jack, it will not pick up any signal and upset loop nulls etc. If you use a single conductor wire for this connection, it will pick up some signal and couple it into the receiver, and degrade loop nulls to an extent. Use the coax for all interconnects! And be sure to use a shielded box (Bud, Premier etc.) for the output attenuator pot. shown in Fig. 5. (*see NRC Reprint R-11.)

Getting It. Data Engineering, Inc., 5554 Port Royal Road, Ravensworth Industrial Park, Springfield, Va. 22151 will send you their catalog free on request. The kit is called the FMS-3 HF Frequency Standard and sells for $32.95, less batteries. They accept Mastercharge and Bankamericard. I like my FMS-3 and recommend it to you.



Switch A. Switch B.

Figure 2. Front Panel.

Unit as sold.

Fig. 4. Top view, from front: board in place on chassis. Pictorial of modifications to power switch wires. (perspective distorted for clarity).

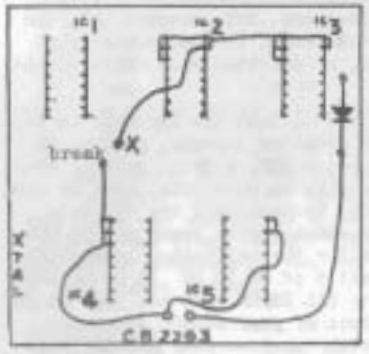
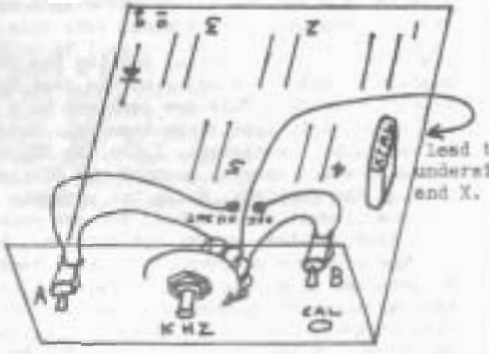
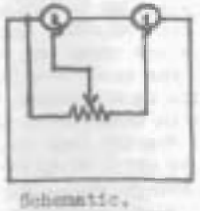


Figure 3. Underside of PC board: V_{cc} (5 volt) leads only shown. The two "off on swt" connections are adjacent to the legend, CB 2293. Foil break is made between IC-4 and IC-2; tacksolder joint at X.



pictorial view.



Schematic.

Figure 5.
Output attenuator: high value pot. See text.

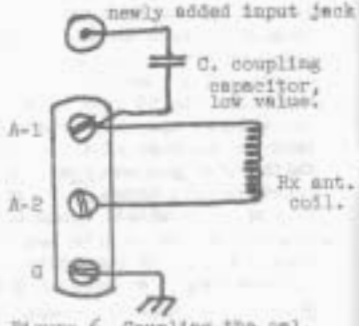
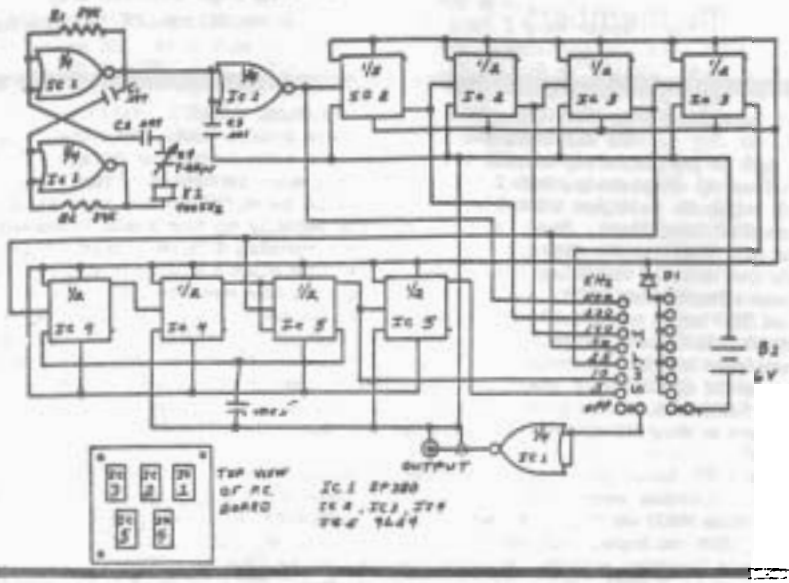


Figure 6. Coupling the cal. signal into the receiver.

FMS-3 FREQUENCY MARKER STANDARD
CIRCUIT DESCRIPTION AND INSTRUCTIONS



SCHEMATIC DIAGRAM--THE 5 CIRCUITS USED IN THE UNIT ARE SPRAGUE IC-3. THEY ARE SHOWN ON THE PICTORIAL VIEW OF THE P.C.BOARD. IC-1 IS A QUAD 2 NOR GATE WHILE IC-2,3,4, AND 5 ARE DUAL JK FLIP FLOPS. RESISTOR AND CAPACITOR VALUES ARE GIVEN ALONG SIDE EACH COMPONENT. THE SP80 SWITCH IS SHOWN IN THE OFF POSITION.

OPERATION--SEE BLOCK DIAGRAM. THE MARKER CONSISTS OF A 400 KHZ CRYSTAL OSC. FOLLOWED BY A DIVIDER COUNT DOWN CHAIN. THE 400 KHZ MARKER IS OBTAINED FROM THE BUFFERED CRYSTAL OSC. THE 200 KHZ MARKER IS DERIVED BY DIVIDING THE 400 KHZ MARKER BY TWO, THE 100 KHZ MARKER IS DERIVED BY DIVIDING THE 200 KHZ MARKER BY TWO. THE 50 KHZ MARKER IS DERIVED BY DIVIDING THE 100 KHZ MARKER BY TWO. THE 10 KHZ MARKER IS DERIVED BY DIVIDING THE 50 KHZ MARKER BY FIVE. THE 5 KHZ MARKER IS DERIVED BY DIVIDING THE 10 KHZ MARKER BY TWO.

OSCILLATOR--THE OSC. CONSISTS OF TWO NOR GATES OPERATING AS A MULTIVIBRATOR WHOSE FREQUENCY IS DETERMINED BY THE CRYSTAL. EACH GATE IS BIAS TO OPERATE IN A LINEAR CONDITION BY APPLICATION OF REG. FEEDBACK THROUGH R-1 AND R-2. CAPACITORS C-1 AND C-2 ARE THE TYPICAL CAPACITORS FOUND IN STANDARD MULTIVIBRATOR CIRCUITS. CAPACITOR C-4 SERVES TO ADJUST THE FREQUENCY TO EXACTLY 400 KHZ.

OSCILLATOR BUFFER--THE 400 KHZ OUTPUT OF THE OSC. IS BUFFERED BY A NOR GATE PRIOR TO COUPLING THE FIRST FLIP FLOP OR DRIVING THE OUTPUT AMPLIFIER.

DIVIDE BY TWO--OUTPUTS FOR THE 200,100,50 and 5 KHZ MARKERS ARE OBTAINED FROM DIVIDE-BY-TWO FLIP FLOPS. FLIP FLOPS ARE STANDARD DIVIDE-BY-TWO LOGIC ELEMENTS.

DIVIDE BY FIVE-- TO OBTAIN A 10 KHZ MARKER IT IS NECESSARY TO DIVIDE THE 50 KHZ MARKER BY 5. TO ACCOMPLISH THIS, 3 FLIP FLOPS ARE REQUIRED. THESE FLIP FLOPS SERVE AS ONE BASIC LOGIC ELEMENT, A DIVIDE-BY-FIVE COUNTER. THE CRYSTAL CONSISTS OF IC-4 AND ONE-HALF OF IC-3.

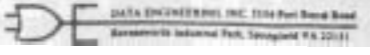
OUTPUT AMPLIFIER--THE OUTPUT AMP. SERVES AS A BUFFER FOR THE DIVIDER CHAIN. IT ALSO DRIVES THE OUTPUT JACK. THE AMP. CAN SUPPLY 2 MA OF BATTERY AND SINK 12.5 MA TO GROUND. THE AMP. HAS A BUILT-IN PROTECTION AGAINST MOMENTARY SHORT CIRCUIT CONDITIONS.

FUNCTION SWITCH--THE OUTPUT FREQUENCY IS DETERMINED BY THE 2 POLE 6 POSITION SWITCH. THE INPUTS TO THE SWITCH ARE OBTAINED FROM THE DIVIDER CHAIN.

BATTERY--VOLTAGE TO THE UNIT IS SUPPLIED BY USE OF FOUR AA PENLIGHT CELLS. VOLTAGE DROPPING DIODE D-1 IS PROVIDED TO DROP THE 6 VOLT BATTERY VOLTAGE TO A SAFE RANGE FOR THE LOGIC ELEMENTS. ONE SECTION OF THE SWITCH SERVES AS A POWER SWITCH. AGING OF THE BATTERIES HAVE LITTLE AFFECT ON THE 400 KHZ CRYSTAL. ANY DRIFT CAN BE CORRECTED BY ADJUSTING C-4. MINIMUM BATTERY VOLTAGE IS ABOUT 3 VOLTS, CHECKED UNDER LOAD.

CALIBRATION--CONNECT AN INSULATED WIRE TO THE OUTPUT JACK. WRAP OTHER END AROUND THE RECEIVER ANTENNA LEAD. SET SWITCH TO 100 KHZ AND ADJUST CAPACITOR C-4 TO ITS MAXIMUM CAPACITANCE. TUNE RECEIVER TO WWV. ADJUST C-4 TO OBTAIN A ZERO BEAT.

APPLICATION--USING AN AUDIO PLUG, CONNECT THE OUTPUT LEAD TO THE PLUG SHELL. CONNECT A SHORT PIECE OF INSULATED WIRE TO THE CENTER TERMINAL. WRAP A COUPLE OF TURNS OF THE INSULATED WIRE AROUND THE RECEIVER ANTENNA LEAD. TO AVOID PICKING UP HUMAN IMAGES, ADJUST THE NUMBER OF TURNS OR THE TIGHTNESS OF THE WRAP TO AVOID OBTAINING EXCESSIVE SIGNAL STRENGTH FROM THE MARKER. NORMALLY, THE SIGNAL STRENGTH WILL INCREASE AS THE SWITCH IS MOVED FROM THE 400 KHZ TO THE 5 KHZ POSITION. CHECK THE ZERO BEAT WITH WWV WHEN YOU USE THE CALIBRATOR; TOUCH UP BEAT IF NECESSARY.



musings of the members

editor.. Ernest R. Cooper
438 E. 21st St.
Carrier Route 56
Brooklyn, N. Y. 11226

G. HARLEY DeLAUTREPE - Box 10 - Hendricks, West Virginia - 20271

It has been a long time since I last wrote into the Musings, but to be perfectly honest I just have not been doing any DXing. I haven't given up completely, but I have been doing more important things. I suppose I ought to tell you that I'm now engaged to be married to a very fine Christian girl from Uledi, Pa. As a result I'm burning up the roads between Hendricks and Uledi. So fatte doing all of that running I have little or no time left for much of anything else. On one of our jaunts though I did notice a billboard advertising WLIT. I guess that this is the new Steubenville, O. station on 950 kc/s. Probably next Summer I'll be leaving W. Va. I shall be living in Grosse Pointe Farms, Mich. which is a suburb of Detroit. I suppose I'll be another hillbilly moving North, but I've been offered a very good job in Detroit, and in addition, I shall be preaching in nearby Ontario. So, my days in "Almost Heaven" are numbered. : Well, I must close, but before I do, let me wish everyone a very Merry Christmas and a most Happy New Year.

CHRIS LUCAS - 89 Round Hill Road - Fairfield, Connecticut - 06430

Another week of DX: 12/4 SSS I tuned to 870 to try for WGTL, expecting to find WHCU on top, but rather needed WKAR-870 Mich. on top to 5pm s/off leaving unn WHOA on top. WGTL-870 did come through @ 5:11 w/s/off followed by singing Lord's Prayer. 12/5- CMJV-900 assumed to be "Voz de Cuba" station at 2:27am, new station WREX-1530 well on top from Chapel Hill, N.C. @ 4:57pm, s/off @ 5. 12/6- YVOV-540 R. Perija, Venezuela, s/on @ 2:57am. At 3 I noted potent Voz de Cuba station on 785, sounded like 100kw. It was there the next night, too, then vanished. Is this CMJN-780 drifting, or what? RFS help! Also 12/6 SSS, WHOL-1600 Pa. @ 4:30pm s/pff, yet another 1600 logging while trying for very elusive WCPK Va. @ SSS. Does anyone ever hear WCPK? 12/7- I went after a couple high-powered clears @ SSS: WRNG-680 Ga. "Ring Radio" s/off @ 5:28pm, WYDE-850 Ala. @ 5:37, "Wide Country." 12/8- WSLW-1310 W.Va. @ 4:50pm w/Christmas mx till 5 s/off. 12/10- Unn WHLM heard briefly on TEST @ 1:51am w/terrible QRM from hets. No go on other TESTs: someone on 1550 u/WAAY, but weak & clobbered by electrical moise, only CKCH u/WWDJ-970, TT heard on 850, but buried & completely unIDable. The morning wasn't a bust, however, as four YVs were logged, First, a station on 830 with slogan "R. Sen-sass-yun" w/mentions of Venezuela, quite potent bury ng WCCO @ 1:40am. Not knowing any SS, I couldn't get full ID. Help! R. Rumbos-670 potent @ 2:11am, R. Maracaibo-740 w/healthy signal @ 4:13am, then, tuning across super-local WOR-710 w/longwire I heard an SS. Switching to loop, I pulled through a pretty good R. Capitol-710 Caracas @ 4:15am. WINS-1010 has been off the last three MMs, although today (12/10) they were back on by 2am. Merry Christmas and Happy New Year to all!

HOUSER GRAIN - 317 South Sangamon - Lincoln, Illinois - 62656

Hi gang - this is my first Muse in the NRC, but there isn't much to Muse about in Central Illinois at the present. It is cold outside and threat of snow. Well, enough of this and back to DX. Only four veries in last two months: 10/17- WWWE-1100 O. @ 2am. 10/25- WETE-620 Tenn. @ 6:55pm. 11/1- WBAA-920 Ind. @ 2pm, & 11/16- WKYX-570 Ky. @ 2:55pm. I have three radios, one 17 transistor six-band Airline; one 14 transistor Philco "700" and one 12 transistor three-band radio. At present I have 34 states, heard 364 stations, domestic & foreign w/187 veries. I also have a C.B. radio, call letters KLK 4055. That is all for now, gang - I wish you all a Happy Holiday season. 73s. If any member has any suggestions for me, please do not hesitate to tell me - I'm doing the best I can with what I have. It is diffucult, but I make the grade. (Welcome to the NRC, Houser, and we hope to hear from you often in Musings! -ERC)

BACK ONTO OUR WEEKLY SKED AGAIN FROM NOW TO EASTER. BE SURE TO BECOME A PART OF THIS SECTION BY MUSING. DEADLINE IS THURSDAYS, AND PLEASE DOUBLE SPACE.
**** YOU FORGOT NJPC'S MID_FEBRUARY SKIP... OTHERWISE WE'RE WEEKLY THO', HI-RJE

GEORGE B. SHERMAN , 104 Pinewood Circle - Rosemount, Minnesota - 55124

DX & more DX! FF on 970 @ 4:15 MM 11/5 had jx "CKCH", Que. #12; WKOP-1360 does things backwards! At 5:25 I just caught end of s/on announcement, then SSB, NX & finally IDed 5:30 for Binghamton #3, hi. CBOF-1250 FF good o/QRM @ 6:04; next WKYO-1360 good o/QRM @ 6:22 w/"KYO WX" then farm NX in depth. How exciting! At leas it's different from 2,000 big city rockers that all so8nd alike! (I'll drink to that! -ERC) CKGB-680 noted u/pests @ 6:55am, possibly rr. MM 11/12- Great again! I remember when I used to get skunked sometimes, now every MM is good - is it me or the CX that's improving? Hopefully, both. I checked 600 to listen to the beautiful absence of AN-6 "local" WMT and what should ID but CFCF Que. in EE @ 2:20 momentarily o/QRM. Then to 570 to sample the silence of AN-6 WNAX another "local" pest. A third station w/announcer "Long John Nebel" & spot for Empire Ford in Mt. Vernon @ 3:10, is this WMCA? (Verily! -ERC) That's what I counted it as, so it better be, hi. At 3:30 KRSI-950 super-local off RS &running OC. I got two IDs almost immediately from WKAZ, poor & WXLW XR test fair. Also unn WBBF. Looks like KRSI's not going to be NSP. HIAT-650 Dom. Rep. @ 4:20am good u/WSM)C but o/HJJX, HIAT ID as "R. Universal". Unn CHNM-740 @ 4:30 s/on - I think they come in most MMs & ought to be possible on WC. 11/14 SSS amazing signal from KWRT-1370 @ 5:50pm way o/QRM w/NX; KCHI-1010 Mo. looked for & found poor s/off-SSB u/KLRA @ 5:59; KRMC-1220 Okla. poor w/XEB/WGAR/KGYN splash @ 6:28 mentioning KRMC Radio & no more heard. S/off? I decided to give in & count my tentatives of last season, LT4-670, Paraguay-645; Urumchi-1525; CMAD-1158.5; & WKVM-810 - do they ID as "R. Reporter?" No sign of WBRI-1500 TEST u/50kw local KSTP, hi. New NSP "locals KOB-770 WTSO-1070 WNDE-1260 WIL-1430. 1380 is wiped out here by NSP WMEE; they were rarely heard as WKJG - ever heard of a call change making a station get stronger? (Yes, when WEEK changed calls, hi -ERC) Merry Christmas & Happy New DX Year!

BRIAN VERNON - c/o Sherritt Gordon Mine - Box 1000 - Leaf Rapids, Manitoba

A Seven-day week is taking its toll on DX. However, lots of good DX to report - KKXL-1440 S.D. s/off @ 2:03am, no SSB, 10/30. KYXI o/KOMA OC, #1 Oregon w/NX/WX @ 6:04am; KDKO-1510 Col. o/KGA @11:35pm w/FB both 11/12. Much-needed WTSO-1070 o/KNX @ 12:34am w/phone show; KRNT-1350 Ia. s/off @ 1:06am 11/14 CJDC-1350 B.C. @ 12:12am w/WX; WOW-590 Neb. @ 2:42am w/ESP promo; XEMO-860 @ 3:15 am w/Soul mx; WMT-600 Ia. w/Hawaii Holiday info; WEBC-560 Minn. w/NX @ 5:25am, all 11/15. KPOW-1260 Wyo. @ 9:10pm w/Budweiser corral 11/17. CFFB-1210 N.W.T. @ 10:59pm w/ID "CFFB Frobisher Bay" also 11/17. A So. Cal. station got me beat w/ID as "Cal. Express" w/rr @ 4:45am, many LP commercials, was this XEPRS-1090 11/25? KBMY-1240 Mon. noted w/Mexican-American program promo @ 4:39am 11/27. Also KRSD-1340 S.C. w/WX; CJSN-1490 w/sports xcoreboard @ 7:35am; KTYN-1430 N.D. w/WX @ 7:42am; KXLO-1230 Mon. w/First Nation Bank WX @ 5:46am. A surprise @ 9, CFEK-1240 B.C. w/ID & NX. Hopefully more DX next time. I hate cliff-hanger endings, ERC - who was Q-13 (Vol. 41 #4)! Count me as another w/v/q from WKTQ after a WKPQ report, never heard WKTQ yet! 73s & have C-fun. (Yep, I forgot to f/up my Q-13 poser - Q-13 is WQBK-1300, Rensselaer, N.Y.! -ERC)

BRUCE REYNOLDS - Route 2 - Warrensburg, Missouri - 64093

Greetings. Not a whole lot of DX to report. MM 12/3 brought only the KMAV-1520-TEST way u/KOMA OC; then fighting R. Minuto on about even terms. 12/8- I caught WPGC on ET-1580 w/various TTs and two briefs @ 12:26am. They left the air shortly thereafter. WBCW-1530 was in on ET u/WCKY's "World Tomorrow" on 12/9 @ 1:22am. MM 12/10- KIWA-1550 good on TEST & PJA6-925 good @ 4:59am s/on w/children singing song about Aruba, then SS s/on & program called "R. Musical". I was very pleased to get a v/q & nice v/l from R. Paradise-1265. Also v/q R. Curom-855, & v/l KMMO & KBBB. Domestic veries extremely slow coming in. Maybe the Holiday rush, but I feat that's not the problem. Anyone have veries from the WMIX or KWYK TESTs? None yet here. I note KWOC-930 is now c/w and also Mutual. MM 1/21 is the sked date for a KOKO-1450 NRC DX TEST. I hope some of you can hear us. I have put up a 900' longwire, but it hasn't performed up to expectations. I haven't found the problem yet. 73.

WE'LL ALL HAVE A HAPPIER NEW YEAR IF YOU WILL MUSE THIS YEAR IN DX NEWS! BE SURE TO DOUBLE SPACE, AND LEAVE OUT PERSONALS. TELL US YOUR DX DAY BY DAY!

LAURENT GAGNON - 994, 4th Avenue - Quebec, Quebec - G1J 3A9
11/30 PM & 12/1 AM, excellent [illegible] opening for the high band, but no European below 1050k. I was lucky to have no TVI at that time, so I was able to tune in w/much more success than usual. 11:25pm, Lille-1376, France het signal from 11:25 to 11:27, @ 11:28, La Marseillaise, 11:30 Cedule & NX in FF, then mx @ 11:32, station still good @ 12:45am. 11:33,Nice-1554 good signal till 1am. 11:35-11:38, R. Luxembourg-1439, in GG & louder than the US stations on 1440k. 11:38, R. Tirana-1457 Albania, woman speaking. 11:45, Monte-Carlo-1466 w/TWR very good signal. 11:47 1475, Vienna, typical Viennese mx, then @ 11:49 announcer in GG. 11:50, 1484 Common Wave stations, no ID. 11:53, 1525, bit carrier, but no sound. 11:55, Mainflingen-1538, W. Germany, for the first time here, good signal but QRM from WPTR/KXEL. 11:57, Beromunster-1562, Switzerland, w/WQXR looped, man speaking in GG for a new country. 11:59, Porto-1578, Portugal for the second time this season & a new PP station on 1594, possibly CSB4, Lisbon. Munich-1602, W. Germany for the first time, gong, & announcement at midnight in GG, signal good till 12:50. 12:15, R. Tirana-1394 good till 12:40. Athens-1385 Greece typical Greek mx. 12:20, Crowborough, G.B.-1295 for the first time. 12:22, R. Tirana-1214 w/QRM from G.B. 11:24, Bordeaux-1205 very poor. VOA-1196 Munich, medium signal only. 12:35 Crowborough1088 w/QRM from 1090. 12:40, R. Nordsee International-1367 for the first time, good for about 15 minutes, and same program as on SW, 6210k. 12:55, 1403 station w/loop SE but not able to ID. For me this is the best European opening since 1/73.

STAN MORSS - Route 3 - Bradford, Massachusetts - 01830
11/21- WTOD-1560 covering WQXR like a blanket 4:45pm & WCTT-1410 Watertown, N.Y. giving WPOP fits @ 4:50. 11/22- WCNR-930 Bloomsburg Pa. o/WWNH while looking for WLLL @ 4:30pm. WVOV-1000 Huntsville Ala. for a report 5:20pm QRM by WCFL WQTY & another w/Flood reports to 5:45 s/off of WVOV & WQTY, and then no sign of flood report station, then only WCFL, so they must have left either @ 5:30 or 5:45. 11/24- WPDC-1600 TEST @ 2am o/u WWRL. CKCW-1220 in strong on AN show. 11/26- WDEE-1500 Detroit noted still on RS @ 1:08am. Radio Rock-1190 in again, QRM by R. Cordillera @ 1:20 & on & still can't pick out a location - maybe WBMJ? WCCR-1580 Urbana Ill. TT to 3:13am for a new one. WFLI-1070 testing w/ 50kw 3:45am. PM, R. Carupano-1110 copied for a report @6pm, bad QRM from R. Mia, Valencia. ZIZ-555 strongest ever @ 9 so copied to 10:05 s/off. Verie, R. Clarin -760, v/1 & pennant. 11/27- WPGM-1570 Danville Pa. to 4:43 s/off, much QRM from WFLR & CKLM, a long-wanted one, leaving 24 more to go in Pa. 11/29- WTNJ-1300 ID @ 4:30 in the clear - but it peaked on ID only for ten seconds - no WTNJ before or after, all WAVZ/WFBR. Nice for tape album, but not enough for a report of course. Verie, KMBZ. 11/30- Annual report to R. Tiempo-1200 in well w/lots of political announcements. Verie, CBGA Matane, Que. ex-CKBL on CKBL-TV photo card, very prompt. 12/3 AM- Another total loss MM which found WBT back AN-7 w/c/w Truckers Show. TT on 1090 2:05, & no breaks for ID - few breaks for carrier. Another shy TT on 1580 & still another @ 3:15 on 1500 & 1490 @ 3:35. PM, WKOT 4:16pm, ex-WBAZ, QRM by WCGR for one new one in December anyhow.

ROGER GIANNINI - 1111 Forest Hills Drive - Belleville, Illinois - 62221
This year I decided to spend a week of my vacation in Hawaii. Mother & I took a tourist group tour which cost $457. We took the SPR-4 to do some DXing & all the [illegible] Richard Wood reported prooves what a fantastic location Hawaii is. We left St. Louis 11/12 PM @ 1 & arrived in Dallas @ 3:40 We had only a moment to DX at Big D. I heard WFOK-970 w/Alfa Omega ID. AM can't penetrate inside the terminal so upon arriva in L.A. I stood by the windows which helped quite a bit. KGO-810 w/traffic 7:55 w/extreme KABC-790 splash. KOA-850 good w/religious mx 7:53, CBS NX just past 850 may be WWL-870. Aboard the plane I checked out CX since the urge to DX was too great to overcome. However I was careful of the passing stewardesses since air regs forbid listening to radios so I checked what was coming in every 20 minutes or so for a couple of minutes. Between 10:30 & 11:15 which was little over half way w/height of 30,000' the following were noted: KFI, no CMQ here, hi, KNBR, KMPC. Between the 900-100 range an unID w/Chiefs-Bears FB was a real thrill to hear. Any chances for KNEW-910? KHVH-1040 has Minn. FB live @ 3pm local & is delayed on TV until 6pm for those coming home from work.

[illegible] FRCHO - 14403 Triskett Road - Apt. 304 - Cleveland, Ohio - 44111
Not much DX to report this time. 11/15- WBAX-1240 3 09am, a new one. 11/20- CKGM-980 1:23am, finally caught this one. 12/2- CFML-1170 doing well w/WWVA looped @ 3:55pm, also a newie. WHEE-1370 @ 4:38pm, this being the first IDable station I've ever dug out from u/WSPD. 1370 is just about washed up here 'cuz of WSPD. 12/3- I finally got WMCA-570 @ 1:02am, they've been elusive (I know you N.Y.C. DXers wouldn't agree!) HJJX-650 doing good w/WSM OC loopec @ 1:26. CHSC-1220 in fine style @ 2:27 w/WGAR off. 12/5- Nice-1554, France in @ 1:28am w/a great signal, but lots of QRN. The German on 1586 also coming through, but poorly. 12/7- WREN-1600 1:35am w/ET/TT etc., apparently switching between 500w & 1kw. 12/10- KIWA-1550 TEST fairly well 2 26am, some trouble from WAAY, & WOKJ (I think), OC. CJRN-710 is another station that makes it here during the day at my new home, but was inaudible at old location. I get a greater "Lake Effect" here from Lake Erie. 73 all, & "DX More in '74!"

[illegible] FAIT - 346 Walworth Drive - Cleveland, Ohio - 44132
Hi. I've been too busy to do much DXing today & all week, except a couple days. On 12/5 I heard WGIG-1440 u/a BKB game on WHIS around 8pm. The next morning I was up @ 5:30 looking for SRS on 1370. That frequency was a mess w/WSPD dominant all AM. Only thing that came through was a list of school closings, from who-knows-where @ 7:15am. At 7:55 there was too much QRM on 1370, so I tried to hear the pattern change of CHOK-1070. Howeve, @ 8am, IBC changed power & pattern completely burying them. On 12/9, I looked for SSS on 1390, but the only station that came through w/a clear ID u/WFMJ was WEOK @ 5:40pm. (WEOK's off by 4:45pm in December, Bill -ERC). Two weeks ago I sent to Trans-World Radio Netherlands Antilles a DX report for their station on 800 @ 11:30pm EST (2330) on 11/25; an IRC; & a 500-word essay disagreeing with their religious message of the day. Today I got from them: a v/q for 2330 GMT on 11/25; a 1974 calendar; a partial script for the program that I sent the report on; & a bunch of Bible tracts. Not bad, all things considered, but I still wish they could have put the correct time on the verie. 73s to all.

KEN ONYSCHUK - 12934 Page Court - Blue Island, Illinois - 60406
Just this morning, 12/9, I DXed my 500th station; KNEI-1140 Ia. @ 8am. I was up just after 7 SM so I thought I'd give KSOO-1140 another try. I had a bit of a "regional" mess for a while but I thought I heard a KSOO ID @ 7:28 but ID was too incomplete for a legal newie. However, enough mentions of Waukon during a c/w program, 7:30-8, even at 250w PSA gave it away, excellent signal. Nice to read XEKE-980 is doing Winter League BB. Now if only they could add a little EE & 100kw, hi! I enjoyed Vol. 41 #7 very much, as I do every issue. Where else could I be so informed on what's going on? 73s for now.

RONALD F. SCHATZ - Box 592814 - AMF - Miami, Florida - 33159 305-945-4915
Just a note to let you all know I'm still around - if somewhat busy w/college & the business. I DX on rare occasions, & then I have to put up w/an insipid racket from a bad power meter, & Florida Power & Light is being struck, so I can't do much about it. The first two articles of my "cardioid array" (LSCA) series have been made available to the NJPC, & I guess they'll print it up when they see fit. Congats to Merriman on surviving the typing of the 12/3 IDXD: I know what he went through - believe me! Remember - any NRCer is welcome to partake of the Schatz hospitality while visiting these parts, especially during the Holiday season, so please stop on by. Les deseo a todos muy felices pascuas y 73. (I wish you all Happy Holidays).

RON B. SCHILLER - 1951 N.E. 28th Court - Lighthouse Point, Florida - 33064
Veries in from WUNI-1410 WMOO-1550 KCTA-1030 WTMP-1150, all v/1 & a v/q from WSMB-1350. Combined totals now 1,607 (N.J. & Fla.). A slim DX week as I spent three days in (downtown) Senatobia, Miss. at a furniture factory. (How could you stand all that excitement, Ron? -ERC) 12/2, WAME-1480 6:17-6:24 am u/WRDW on RS. I copied easy WCBS-880 for a report in clear 6:30-7am. WJCM-960 RS @ 7 but too weak to copy. 12/3- Looking for DX TEST on 1520, only Radio Minuto, Colombia, heard. 12/10- WAOK-1380 battling new ANer WDAT @ 3am. No sign of any TESTs - 850 had TT, no ID heard. WWDJ & an SS on 970. Unk ET-1590, loud but alas, no ID. 73.

GORD BAILEY - 3627 Elm Street - Box 818 - Ridgeway, Ontario - [illegible] - 1NO

Once again the Niagara Peninsula speaks! Not much DXing lately as my attention temporarily driven elsewhere. But Holidays are here, which means more time off to DX all hours of the night. Latest DX: 12/10- UnID SS strong about 1200k w/SS-type mx & announcements, 2:50-3am. They mentionedMaracaibo & Caracas and "Lorenzo Hernandez" (whoever that is). (What, Gord - you don't know LORENZO HERNANDEZ??? -ERC) Some slop from WOWO ET/TT, who is it? Also, CJMS-1280 @ 4:05-4:10 strong in FF w/no CHAM to be heard. This could be a new SP on the latter's part. Other DX in recent weeks: KNX-1070 (Cal. #1) CKLM-1570 WIRL-1290 CKAC-730 CFGO-1440. Reports out to some, more to follow. Attention Joe Brauner in Pa. in response to DDXD question, WBEN-930 was AN-6 initially when it went to 24 hour sked.c They have been AN-7 for the last two to three years, methinks. They held an ET w/many TT & OC 3am & on 12/10. Between WBEN & CHML-900 & WEBR-970, the 900-1000k range is taken care of as far as NSPers go. That's about all for now, except to say that I will correspond with anybody & will also tape-spond via cassette method. I'm going up to Quebec City from 2/7 -2/11 to tour city with my class. I may make it some kind of DX-pedition in spare time up there. I'm looking forward to their famous Winter Carnival. I may even hear a real live LPRT, hi. I've said enough. Happy Holidays to all everywhere, and make that New Year's Resolution to MUSE! 7$ to all, good DXing.

MORRIS SORENSEN - God's Narrow, Manitoba - ROB - OMO

DX continues at a fine pace here. CX seem to be slightly Auroral these days with new catches as follows: 11/25- CJOK-1230 Alta. very strong w/PSAs etc. @ 1:17am. 11/30- XEUN-860 (University de Mexico) surprisingly atop CJBC @ 11:34pm. 12/1- KGYN-1210 Okla. briefly o/WCAU @ midnight; KSAL-1150 Kan. w/BKB scoreborad @ 12:07am. MM 12/3- WING-1410 w/rr @ 3:12am, HJJX-650 (Emisora Monserrate) w/ID @ 3:27. 12/6- TAs beginning to return with hets on 1394, 1439, 1586, etc. FF audio on 1554 around 6:15pm, obviously ORTF Nice, but I couldn't get an ID. No veries have been received here since last. 73.

BRIAN G. PITMAN - 11 Regent Street - Kingston, Ontario

Well, here it is Dec. 9 and no snow, just freezing rain. Which with the exception of 12/7 is how stations have been coming in, drizzle! One verie in from WSBS-860, v/1. DX these past few weeks has been: 12/4- 3:54pm WLNG-1600, WRAR-1000 in @ 4:45 s/off, & @ 5 I heard ID from WKYB-1000. 12/5- WLFA-1590 w/NX @ 5, IDs as the Queen City. 12/7- WLIX-540 @ 4:16. At 4:37, WTUX-1290 w/stock report; WKEG-1110; WSKT-1580 s/ ff @ 5:30. At 5:35, WQTY-1000 IDed, & @ 5:45 way o/CHML, CJBR-900 heard & KFAL s/off, who mentioned a 6am s/on. 12/8 - At 4:35pm on 930 I heard CFBC w/a fair signal. 12/9- WCJW-1140 @ 2:41pm. At 5 07, WBUK-1560. WBNO-1520 s/off @ 5:14pm. I noted KTUF-1580 s/off @ 7:15, report sent. 12/10- KRVN-880 in from 5:45 till 6pm w/NX. That's all for now, & if any DXer is in Kingston please drop in for a beer & chit-chat. PS- It started to snow just after I wrote this report! 73 & good DX.

ANDRES F. RUGG - 16 Lake Breeze Avenue - Pointe Claire, Quebec - H9S - 5H9

New veries are WCKL-560 WHYZ-1070 & WWEL-1430, all v/1. I also received a v/q from WFBC-1330 which improves upon a 1961 v/PP. I didn't make any new loggings. On 11/24 I came home inebriated from a cocktail party & completely forgot about the WPDC-1600 TEST. That day @ SSS I noted traces of CKTL-1420 u/WWSR. I checked 630 for the new CJIA but there are no signs of it. Next DX session was on 12/10, when I reported YVOZ-1200 during MM ER. They never replied to a 1964 report. I tried vainly for the KIWA-1550 TEST. Unfortunately, CKLM-1570 was slobbering down to about 1540. Whenever I could null them, I'd get a strong signal from CJMS-1280 on 1549! Thus, no KIWA. It was very interesting to read about NRC's financial status in "DX NEWS." A Quebec ham club named "RAQI" recently circulated their audited financial statements. They have about the same revenues as NRC, but are appealing to the membership to cover a $15,000 deficit. Season's Greetings, & 73.

PAUL R. DAPLYN - 830 Denison Crescent - Ottawa, Ontario - K1A 2N5

If any Lafayette HA-230 & HE-30 owners have serious drift problems (i.e. 25k on BCB) please write! I hae to modify Jon Pearkin's HA-230 to correct this. I believe the HE-30 has identical oscillator circuitry, but send me a schematic just in case! My OKEY SC offer is still on. Latest interesting veries: WHPL-610 WLSI-900 WMEL/WGST-920 WKDE-1000. NRC Log addition: CHLO-1570 postal code is N5P 3T8. That's all, folks!

BILL STONE - Locust Hill, Ontario - LOH 1JO

I got my first DX NEWS #7 12/3 issue on 12/7, last was #5 11/12 gotten on 15th. What an issue this #7! Congrats to all the editors - great job. Also to members for getting data to 'em - only way they can do it - keep at it. First, Gary Simpson or Tyrone, Pa. Yes, CHWO & many Canadians have a lot of programming especially for our new Canadians - CHIN-1540 uses 51 languages daily for example. And on 1240, I think I've heard WEDC use all but Chinese. Now to DX. I've been restricted three weeks now - my own dang fault - I used a 16 lb. sledge to brace my antenna supports - wrong tool for lad with spine trouble. It's clearing slowly - vision distortion - even yet docs say no boob tube. Newspaper reading is 15 minute sessions, no more. I'm wearing ruffs - eye doc says vision OK, no need to change glasses - should clear in four or five weeks. 12/8- 1600, u/WAAM, atop WWRL, I did not hear call letters, but talked about Clayton, N.C., TT 12:40-1:40am. 2:09-3, 1230k, three stations using TT - at 2:30 one said KIAM or KYAM Wichita in Kansas. Would you lads, Nelson, Foxy, Edmunds, etc. check out 1270 - who is interfering station? Tone starts, heard as early as 4:30am, goes AN. Ditto 1560 & 1580 - CRTC will be monitoring 1580. As for 1560, often fouls up WQXR longhair mx 12-1am & s/off - smears Paducah. As for 1550, we know who the culprits are - FCC action past five to six months. Big question - have American stations quit verifying? Three in six weeks! I'm getting veries back more rapidly from Americas South of Mexico. *** 1270 is off-freq. Cuban het. Replacement #6 sent. - RJE

JIM POTERBA - 949 Queens Drive - Yardley, Pennsylvania - 19067

Howdy! Latest DX doings: 12/9- WGTL-870 fair u/WHCU/WWL 5:03pm. 12/10- Best MM this season, as I copied five reports: KIWA-1550 TEST (a much-wanted since I forgot to report their '71 TEST) 2:36-2:51; WRUF-850 TEST 3:03-3:10, then a surprise, YVMH-690 for report @ 3:20am. I finally got around to taking a report on KIOA-940 3:30, & YVLL-670 for report w/4am s/on. That evening, WLBB-1100 Carrollton, Ga. good 5:15pm. 12/11- WCEC-810 for report 5pm. 12/13- WYGO -1330 for report 5:15pm. 12/14- WRBX-1530, new one in Chapel Hill, S.C. for report 4:48pm. 12/16- HIBE-1180 reported, 5:40am. 12/17- Fair MM, KPCR-1530 TEST was an LPC (right, ERC?) (Yep! -ERC) & thanks to Wes Boyd's tip, WWNS-1240 logged on re-TEST 3:04am. Veries: WAPE-690 KLRA-1010 WQIZ-810 WLOP-1370 WFSP-1560 WKLM-980 WLFH-1230 WINX-1600 WWRL-1600 WBFD-1310 WCHL-1360 WSRO-1470 WBVP-1230 CJRC-1150 Monte Carlo-1466 & Vienna-1475. I hope DST brings some good DX chances!

SCOTT BROCKWAY - 112 North Crescent - Rome, New York

S'been a long time since I've visited these pages, but I figure to do so more often, hopefully, in the future. I've been very busy with school work & no let-up in sight but for one month's vacation I'm on now. CX here lately have been good - getting better as the temperature drops. WBZ-1030 in like a rock @ 2:15pm for an indicator. A quick scan at this time (2:15) shows at readable level: WCKL-560 WSYR-570 WROW-590 WHEN-620 WNBC-660 WINR-680 CBF-690 WOR-710 WDOS-?-730 WWNY-790 WGY-810 CJBC-860 WHCU-870 WCBS-880 WBRV-900 WGHQ-920 WIZR-930 WIBX-950 WTRY-980 KDKA-1020 WBZ-1030 WSEN-1050 FFC on 1160, WWLE-1170 WHAM-1180 WSOQ-1220 WLFH-1230 WNDR-1260 CJMS-1280 WNBF-1290 WTLB-1310 WFNY-1350 WKOP-1360 WFBL-1390 WALY-1420 WKAL-1450 WPAW-1540 WBVM-1550 CKLM-1570 WMCR-1600. When I do listen though, I guess I'll just go for tests & new states, countries, and provinces. The post-rate hike puts a damper on correspondence of all kinds. Oh well, NJPC: Nice smooth transition - keep up the good standards of the ole RPC! Good luck! To all, a Merry Christmas & hopefully, a Happier New Year than the present one!

GEORGE KELLEY - WEAN/WPJB-FM - 75 Fountain Street - Providence, Rhode Island

Long time no see, little brothers! All sorts of bizarre new things have gone down since I last Mused. I haven't done any DXing since I started school last Spring. However, now that I'm employed I've got more time. I'm an engineer at the above-mentioned stations, and yes, if you need WEAN-790 verified you can send a report to me as the Chief is really quite busy here. Later. (Congrats on the new job, George! How about a WEAN DX TEST? -ERC)

MUSE MORE in '74! Deadlines are Thursdays - keep inside 20 lines if possible, and DOUBLE SPACE! No personals in your Musings, and no Verie Signers' names in 'em either. Fill 'em with YOUR DX!

ANGEL M. GARCIA - 137-05 Franklin Avenue - Flushing, New York - 11355

I cranked up the HQ-180 & SM-1 for the Venezuelan Elections of 12/9. The first YV of the night was noted @ 11:17pm 12/9 on 1110 battling WHT w/ ERs. Was this YVQT or YVRX? R. Coro-1210 w/ER, IDing as "RC" 1:04; R. Comana-680 w/ER @ 1:13. No sign of usual WABA until 3:10; R. Punto Fijo-940 chiming along 1:20; R. Margarita-1020 1:25; YVTT-1070 w/ER @ 1:38 & 2:26, anyone ID this one? R. 810-810 w/ID through a mess of WGY testing but I caught myself mapping at the record button & missed taping it. R. Maracaibo-740 2am; Ondas Portenas-640 2:10; R. Rumbos-670 2:10; R. Girardot-650 a powerhouse w/femme announcer @ 2:26; R. Barquisimeto--690 w/CHBC 2:24; R. Barinas-1190 w/ER finally an ID u/WOWO which was testing all AM; R. Sensacion-830 w/ID u/WCCO @ 2:49. Also noted TV ERs on 820 & 990 but no IDs. MM 12/10 non-TV DX: R. Melodia-735 Ecuador playing The Beatles 12:28; Emisora Atlantico-1069-plus Colombia, 12:45; R. San Sebastian-1025 Spain nice ID by femme 1:30, WDR-1586 was only a carrier this AM! XEAL-1010 Mexico presumed station mentioning "Musica de Peque" & IDing as "Diez-Diez", QRM from CFRB w/WINS off @ 1:26. Good DX in the New Year! (Welcome to Musings, Angel! Do check in often - nice DX! -ERC)

AIAN IMPRESCIA - 201 East 17 Street - New York, New York - 10003

Since this is my first Musing, let me introduce myself. I am 26, DXing 13 years, with many "lay-offs". I have logged 1,230 stations from 50 states, nine provinces, five continents and 39 countries. I have verified 985 stations from 50 states, nine provinces, five continents and 29 countries. I w/a Hallicrafters SX-110 & a Lafayette HE-30 as a standby. My antenna "system" is a 100' piece of wire suspended from a 6' fishing pole, hung out a 17th floor window. I was a member of the NRC back in 1963-64, but sort of lost interest in DXing for a while. But I got bitten again by the DX Bug, and after stuggling "on my own" I decided to re-join the "greatest DX Club in the world." Believe me, even though I was a member for only a year, the NRC helped me immeasurably. To DX: It has been slow, but I'm still trying (I will go back only as far as 12/2). I logged WJWS s/off @ 4:54 on 1370 in the clear. 12/3- I logged WERC RS in the clear - I have been passing this off as an unn because my old WJ has them listed as WBRC rather than new call WERC. Also 12/3, XEOY R. Mil very good w/SS & then s/off @ 3. 12/15- Nice-2 @ S-9 in FF @ 1am on 1554, first time here. 12/17- RS WKBO-1230 topping WITH @ 1:37am. And KPCR-1530 TEST w/phone talks mostly from NRC (including Page Taylor) @ 2:45 & some mx - good signals, but WKBW splatter. And WPJD-1550 TEST @ 3:05am, mx and many IDs. 12/18- WARV-1590 R.I. w/ET @ 12:50 w/good signals, completes R.I. here. And lastly, R. Tricolor-1500, XERH Mexico o/WDEE @ 1:30am. Veries- v/q- WTUX WWWE R. Trinidad WKTQ HRVC. v/PP/c-WGTO KKYX WABB WGOW, v/q KWKH. V/1- WGSO KOPY KLCL KELO KARN WFSO WQYK WIBR WALD WTSB WRMT CFGO HILR (& banner) HJKC HIBG R. Paradise WKCY WAKY WDAK CFTR WJWS. I also have heard good signal from WAKY-790 WDAK-550 WDAF-610 WSGN-610 KGHL-790 R. Paradise & CFTR. If anyone needs these, look for them between 12 & 4am - I have had them here almost every night. R. Paradise is exception - s/off @ 10pm EST. C U N 7. (Welcome back, Alan, & welcome to Musings! Do it often! ERC)

ROGER GIANNINI - 1111 Forest Hills Drive - Belleville, Illinois - 62221

I have obtained an R390 w/trade for R388 from Fair Radio, Lima, Ohio. The price was $700 w/200 allowance. Set seems to be brand new. Sensitivity is great w/IA splits more noticable than on the SPR-4, well at least, mine. R. Dominica-595 for example is better seperable from local WRTH. ZIZ-555 noticed between KSD-550 cuts. 12/2 PM- I noted WTOP fair level 8:54. 1586, 1554, 1466 noted @ 11:50pm. 12/6 PM- UnID of 11/6 WLCY-1380 w/Rare Earth promo, 10:14 w/KBWD lopped. 12/8 PM- WCOA w/HS BKB 8:30 w/WSPD looped. R. Juventude-660 overpowering WNBC. A real surprise @ 1:15am on 12/9 - 1180, instead of usual PRE3/XEFR, KOFI sneaked through for a few minutes w/BKB scores & mentions of Eastern Montana. I will count it for state #41, report sent. A real surprise on 12/11 PM w/logging of WPTR-1540 instead of KXEL @ 6:28 w/ID & mentions of Albany, strong until 6:50 when KXEL took over. Not noted next day. YVOZ, 1586, 1554, 764, 665 at fair good level between 6:15 & 8:30pm. 73 & my everybody's FB team win at their bowl games. Watch out for the Cowboys and a Merry Christmas & Happy New Year to everyone.

74 WILL BE THE YEAR OF THE HOUND - THE "DX" HOUND, THAT IS. MORE MORE IN '74!

CARL DABELSTEIN - 3300 North 56 Street - Lincoln, Nebraska - 68507

I haven't been at the dials much this season as last, but long enough to get the following veries: TGM XEVIP KWYK KTTR WGNS KBRJ WTRO WHLO CFTR CKAY WARF, v/ls. KHKC (25th anniversary card) WKIS WTTO R. Paradise WKTQ, v/qs. Also v/r from KGTN KTMF WBBA, plus v/c from WDQN. Total now is 1,498 verified. DX since last Mjsing has been: 10/1- WMIX-940 TEST heard poorly u/KIOA. 10/4- KRDO-1240 Colorado Springs running AM @ 3. 10/5- KVRS-1360 Rock Springs, Wyo. w/TT @ 2:40, announced as r/c. 10/15 brought KTTR-1490 Rolla Mo. NX & s/off @ 1:10. WGNS-1450 Murfreesboro, Tenn. AN @ 3. R/c from WHIS-1480 heard @ 3:15. 10/22 brought WKIS-740 running AN w/NX @ 4. KTMF-1350 New Prague, Minn. s/on @ 7am. 10/24- KEEN-1370 San Jose heard w/NX @ 5:55 folo by WFEA, Manchester, Nh. s/on @ 6. WMVO-1300 Nt. Vernon, O. s/on 10/25 @ 6. On 10/28 s/ons from WKDO-1330 Corbin, Ky. heard @ 6 & WDAL-1330 Meridian, Miss. @ 6:59, folo by WTRO, Dyersburg, Tenn. @ 7. MM 10/29 brought the following: KRZL-1580 Ex-KBGO NX @ 5:55. At 6 I heard the folling ID on 1550 - Esta es KEATE, R. Mexicana, on 1590 kHz". Who is this? WAXU-1580 Georgetown, Ky. s/on @ 6:45. 11/6- KERD-1590 Eastland, Tex. TT @ 1 announced as quarterly r/c. CFTR-680 Toronto heard on 11/17 w/surprisingly strong signal @ 10pm. 11/19 brought KWLA-1530 r/c @ 1:45. CKAY-1500 Duncan, B.C. s/off @ 3:11. WIS-560 Columbia, S.C. s/on @ 5:58 & KPBA-1590 Pine Bluff, Ark. s/on @ 6:59. 11/25- WAKF-1240 Jasper, Ala. s/on @ 6. MM 11/26- No chance for WSAR TEST as WMAX was ETing, & KROX-1260 Crookston, Minn. TT @ 1:10. R/cs from KGIW-1450 & WMIS-1240. NNRC TEST from KRCO-690 heard poorly @ 4 w/code IDs. The Lincoln Clan was saddened by the passing of fellow DXer & IRCAer Bernie Macholan in late November. I hope you fellows are hearing all of the DX TESTs I have been lining up. Til next time, 73s & the very best of Season's Greetings.

RICHARD WOLF - 7410 South 127 - Skyway, Washington - 98178

Only TEST heard here this season was KBND-1110 which is a regular here anyway. I was counting on KRCO-690 to bring me a new station, but I got only CBU-690. Clipping in #6 about KAYE-1450 needs a bit of updating. Here goes: Jim Nicholls turned over the station to Henry Perozzo, new call is KUPY. 11/16- CKGF-1340 w/ID u/KAGT/KSMK @ 3:30am. 11/18 - KGW-620 w/good daytime signal @ 2:14pm. CFPR-860 o/u XEMO w/Detroit-Montreal hockey @ 9. MM 11/19- KFAB-1110 w/NX @ 12:55, KBND off. KMOX-1120 over & even w/KPNW w/NX @ 12:59. 11/22- Turkey Day - I got recordings of local daytimers KXA-770 KQIN-800 KBLE-1050 KASY-1220. 11/25- KFXD-580 finally o/KVI splash w/rr @ 8:20pm. KCLM-1330 o/KPOK w/c/w @ 7:45pm. MM 11/26- KORL-650 in the clear w/tele-talk @ 1:45. Reports sent to KCLM CJNB & CFGP. V/1 received from CJNB & CFGP. CFGP says they are directional North letting CJNB take most of Alberta. No recent DX because I've been spending most of my time working on an old 1937 vintage Philco RX. I've been working two years on it and I'm no further than where I started. First I managed to get a tunable, but weak signal, then an untunable weak signal w/AC hum. I put in new filter condensers & turned it on again, getting a high voltage arc at the base of the rectifier tube. I must now reinsulate the leads from the transformer and find a new 5Y4. I'm short on stamps so pass this on to Ron Musco: KTWp1250 ain't, ain't been, or ain't gonna be 24 hours unless KWSU-1250 is moved. I'm with Schmiet, drink Shasta! 73 to y'all.

DAVE SCHMIDT - 42 Chelwynne Road - Castle Hills - New Castle, Delaware - 19720

Things are slowing down again. To DX: 12/10- KIWA-1550 TEST sorta weak but there w/rr, 2:46-2:55. WAAY/KKHI also there. 12/15- WFIR-960 copied on AN rr show w/just jingles, PSAs & mx, 2:29-2:50am, only WELI there w/'em, no CKWS (for once). 12/17 a bust, sounded like a Summer morning, CX bad, too many unIDs, I'll erase that day from the month, hi! 12/19- WIXZ-1360 w/oldies, very strong 4:54 till power/pattern switch @ 5:00:00 exact, hi! Veries, slow in coming back but here's a few: v/1- WISE-1310, v/c WIFE-1310, WAHT-1510 & a fine v/1 from CJCH-920. Said detailed reports show DJ's following format at that hour of the morning, hi! About a v/x, Xerox copy for a verie, a la WBVP-1230 -DX & as was WRYT WCHL WHIX of last season. Here's one for this so-called "energy crisis" - only stations to be on AN are the key EBS stations, all others off from 1 till 5am. This would cut down on a lot of this very unneeded duplicating in many cities but wouldn't black out everyone from information, if it be needed. In Philly, instead of having seven ANs, it would be cut down to CAU & WIP. Only way to stay on AN would have to be obtained through special permission, same thing daytimers use in case of an emergency. I'd like to see the government pull one of the tests now with this new EBS system like it did back in the 50s with the old 640 & 1240 Civil Defense network. Next project is f/ups again. I'll get KRGO-1550 verified yet, hi! 73s.

BILL COLEMAN Jr. - 114 Circle Drive - Rocky Mount, North Carolina - 27801
Non-collect calls are taken till 2am every night at 919-443-4030. Always appreciate any DX tips. It's been a long time since I last sent in a Muse. I am no longer living in Raleigh, so those of you who have corresponded with me in the past, please make note of my new address. For you new members, I am a union projectionist as my full time job, & I work part-time at WKBQ, Garner, N.C., 1000k. If any of you needs a verie from this station send a correct report with return postage to my home address and not to the station, as they don't believe in answering. I s/on SMs @ 7:15 for this month, December, & 7:30 for Jan. Age here is 29, and married. RXes here: Hammarlund super-prp BC1004 (300k-10m) & an Allied SX-190. Antenna 150' LW E/W. Verie received from R. Free America on 1160. I'd like to hear from any of you interested in a DX get-together here at my house. This will be a chance for some of you to show off your veries, brag about your best catch, etc. Anyone interested in coming, write & let me know about some good date for the get-together. Rocky Mount is located on Hwy #301, & so far not too much trouble in finding gas. 73s & Merry Christmas & Happy New Year to all. I'm still trading air checks, jingles, and very much interested in old radio shows. Write soonest. Peace. 73s.

RONALD F. SCHATZ - P.O. Box 592814 - AMF - Miami, Florida - 33159
What's bringing me out of hibernation here is Mike Levintow's article on tandem-loop systems, which I read with great interest. It so seems that I must respond to his comparison of his system with the cardioid array. This is not a subjective response because CAs are "my thing" so to speak, but an objective one to correct an unintentaional deviation from fact. First of all, cardioid arrays will do the following: 1) Permit reception of stations lying 180 degrees in bearing from strong, interfering stations, 2) Permit reception of stations lying beyond strong, interfering stations on the same bearing, 3) Mass null stations on graveyard and other crowded frequencies, 4) Determine the true, unambiguous bearing of an unknown station. The tandem-loop system will do only no. 1 above & none of the other feats, since only the cardioid array has a wide null and sharp vertical directivity. Also, since tandem-loop math is relatively complex and delicate the device can only be used by trial-error, while cardioid performance is almost as predictable & piannable as a regular figure-8 loop. And cardioid arrays do NOT necessarily emplo seperate tuning units for signal matching; in fact, there are more controllable variables in the tandem-loop system than on the cardioid array, 5-3 to be exact. So a 5-variable trial-and-error cannot possibly be simpler to operate tha a cardioid array! This is not to say that the tandem-loop system doesn't have merit, but its utility is quite limited. By the way, neither system is empirically successful in mulling out more than one station by controlling relative null angular separations, so the multi-null feature of th4 tandem-loop system is not as useful as it looks. Questions on this? Call me any Sunday at 305-945-4915, or read my "Loop-Sense Cardioid Array" series now running in DX Monitor. ** LSCA article will run in DXN shortly-RjE

LEO ALSTER - 335 Princeton Avenue - Rahway, New Jersey - 07065
This initial Musing is long overdue. I guess I would be classed an oldtimer as I started DXing in 1926. I continued to 1932. Then I became involved in College, Professional School, Marriage, the Army, and starting a retail hardware business. It was1961 before I went back to my favorite hobby. Let me tell you about my first DX RX. It was a five tube Freed-Eisman Neutrodyne. It consisted of two R.F. stages, a detector stage and two stages of audio amplifcation. The set was powered by a six volt storage battery and two 45 volt B batteries and used the historic 201A triodes. There were three individual tuning dials for each of the variable condensers; a rheostat for varying filament voltage and a rheostat for varying the voltage to the plates of the audio amplifiers. By present day standards, selectivity and sensitivity was poor. With a 50k spread between the local powerhouses in N.Y.C. it was well nigh impossible to receive any stations between them. However, we were fortunate as there was no such station as an AN & by midnight they were all off the air. That is when DX tuning was begun. To this day, I can still remember that April morning in 1927 when I listened to KFI for the first ime w/a signal that was so loud & clear that it seemed to come from around the corner! (Welcome to Musings, Leo, and we surely hope you'll bring us up to date on your DX dialings! -ERC)

NO NAME - 175 Honore Avenue - Sarasota, Florida - 33580 **(Steve Kennedy -- RjE)
Howdy y'all from the retirement Capitol of the South. It's Muse time again. CX have been better. I wish we would have a long cold spell as it would tend to improve reception. Big news this month is a v/q from R. Paradise-1265, which took 21 weeks. Also in the doings is a vintage Lafayette HE-30 in new condition. Totals: TDXH 381, TDXV 204, states 31, 13 countries. Re: letter in #6 DX NEWS about using longwires in addition to a loop, it's agood idea because many times it might be possible if you use an LW w/one RX and a loop with another RX to hear a new catch with a diversity setup. I have noted many DXers are resorting to expensive RXes and it seems to make others feel like a novice when using an inexpensive RX. Well, to those who use DX-150, A-2515, etc., take heart - I have been DXing ten years on MW & it never ceases to amaze me what can be heard with an inexpensive RX. I have been able to listen to stations on channels adjacent to my locals and hav no problem thanks to the SM-1. The trick is a good antenna. GPN has written good articles on improving RXes & I'd suggest trying them before going out & spending $500-plus. Since I also DX SW, I have found the modern RX made today, SX-190, R-4B, SPR-4 etc. can provide about as good a performance as would ever be needed, if a good antenna is provided. By the way, some of the older RXes may be valuable in a few years as antiques. I have an old HRO-5 in storage and have been offered 250 clams for it, so hang onto your RX. Also I have two good tips - try sending reports to the person heard personally at the station - it might net more responses. Also for preserving v/ls, buy page protector made out of mylar, these can really save a verie from dog ears, and can be really nice bound in a notebook. 30, 73s, good DX, Merry Christmas.

ROGER GIANNINI - 1111 Forest Hillls Drive - Belleville, Illinois - 62221
I didn't check all the Hawaiians but here is what I did find. The talk show on KORL ends @ 5am w/the sounding of a ship's whistle & then the Hawaiian anthem is played every midnight to start the new day. My favorite station that I listened to the most was KLEI-1130, whose format majority consists of big band & early 50s hits interspersed w/some Hawaiian mx. KUMU-1500 has Muzak-type FM-type mx. Rockers are KKUA-690 KIKI-830, KPOI-1380. KAIM-870 is classical, KAHU-940 c/w. Mother & I stayed at the Outrigger West. However, one night was spent in a magnificent home of a friend we knew quite well in Aiea. The home even had a pool & a magnificent view of Honolulu from Diamond Head to the Arizona Memorial. This was on 11/14 & did an evening of DXing between 6:30-10:30 local time at a general's home at Hickam. On both occasions the antenna was only 50' of TV leadin wire strung out and tied to the fence in each yard. DXing in the hotel except for SW was impossible because of very h8gh fluorescent noise. Spurs are very bad w/a good signal of KGU's second harmonic on 1320 & other images are even noted in Hickam at night. A report of what was heard will be sent to Alan Merriman to be presented in IDXD. I didn't ID everything heard because of the good signals from such stations as 4QD/KKHI, Peking-1040, WOAI. I plan to go back there for a full two weeks when vacation time rolls around again. Aloha.

WAYNE HEINEN - 126 Linwood Avenue - Orchard Park, New York - 14127
Hello - it's me (yech). Just a short note to those whose ears have been fooling them. WNDR-1260 is still in Syracuse N.Y. on NSP AN as far as I have heard, format, rr. They are my continual pest. I haven't heard WFHM in many years. If you've seen a Toyota Land Cruiser with the top on and the doors off, ERC, you wouldn't say that! DX has yielded reports to WIBW-580 KMJO-1550 CHEX-980, WHIS-1440 WHHY-1440 KFI-640 (after years of ignoring them) WSUF-1580 Details in DXDD. I am planning a trip to WCJW-1140 in the near future. As far as I know they haven't been too responsive, likewise my local WXRL-1300. If anyone has Western N.Y. verie problems give me a holler & I'll see what I can accomplish. I hope everyone weathers well. See you sometime again.

BILL HITCHINSON - 2412 Ellis Road - Baltimore, Maryland - 21234
I finally piled up the Hammarlund, & did a little listening. On 12/17 WJIC-1510 in w/NX @ 3pm, WRYM-840 in strong @ 4, WSYB-1380 in over the hash @ 4:15pm, WMAZ-940 in @ 5:35, WSAY-1370 good @ 5:55pm. So much for DXing in the snow (7" of the blasted stuff). On 12/19, WHEB-750 noted @ 4:50pm after local WBMD s/off. WEAW-1330 in good @ 5:07pm, & WCMB-1460 barely readable u/the slush @ 6:32pm. All this with the DeLuxe Space Magner. WFBR-1300, local here, is talking about going Stereo - how can an AM st tion do this? (By moving to the FM band?? -ERC, and welcome back, Bill!)

STAN MORSS - Route 3 - Bradford, Massachusetts - 01830

12/5- WRIE-1330 doing well on AN show 2-3am. Three reports out to Pa. now & 23 more unverified. WRIE had tough QRM from WFBC & some from WTRX, & a third. PM, WKTP-1450 South Paris, Me. 4:25pm o/mess which included WSNO/WRKD/WKXL & other unn locals- I was again looking for WKRI, and still, no sign. 12/6 AM- WBRL/WRDO/WLDE, all in WLLH null, 6:45am, to 7:15 while looking for WLIN, but who needs WRDO? PM, WCEF doing well on 1050 against WHN @ 5pm. 12/7- WOSC-1300 in well to 4:30 s/off & plug for WKFM, then c/w in/out and a beautiful s/off of WXRL @ 4:45 - but pulled a Mary Jane with tape equipment and no tape, so I'll have to try again. WERE in after WXRL off. 12/8- WKCY-1300 Harrisonburg, Va. topping channel 4:40pm tonight. A pleasant surprise on 1130 - signal about equal to WNEW turned out to be WASP to 4:45pm s/off, and no sign of WCAR. 12/10- WCRV -1580 testing 1:35am. Venezuelan ERs on 1020, 960, etc. using Radiodifusora Nacional ID. CKGM & WSRF both AN this MM. No sign of WANV-970-TEST, QRM CKCH/WWSW &I guess WWDJ, but nothing that sounded like WANV. It seems that AN sked are being expanded - added to and new stations going AN as fast as possible -in case a cutback is ordered later, maybe - a new rip-off for us farmers - I had a cord of wood stolen for the first time - maybe there'll be fewer snowmobiles to even up the problems.

CURTIS D. ENGBERG - 80 Concord Road - Wayland, Massachusetts - 01778

Not much to say because I haven't spent much time at the dials, but there have been a few good TA nights on the high end of the band. 11/12 was one, where even stations on 1546 & 1548 were clearly separable, but unID. Nothing below 1500 even audible. 11/23- Lowband N.Y.C. powerhouses were u/SS stations, but at the same time Chicago stations came in good, most unusual. Cubans seem to be popping up all over the dial: 742, 785, 778 being some of the places heard recently, but not consistantly. 11/28- HJCY-810 on top @ 7:30pm as were other low band SSes, yet CHN-640 was above Cuban. 12/15- High band TAs in very good. 1602 German easily separable from UNR, & 1594 audio at best level ever heard here. I tried for KWED TEST on 1580, but WCLS had tio much rr. I thought I heard a station under w/CST, but announcements were too soft to catch any ID. Mx was fairly good though. At 4:05am I caught ET announcement from KUAT-1550 very loud, so lost sleep was not a waste. 73.

RICHARD WOLF - 7410 South 127 - Skyway, Washington

CFFB-1210 carrier in strong but bothered by fast fade, KGYN, and WCAU @ 8:10-8:15, 12/13. CFCP-1440 w/NX @ 8:30 same day. XEGM-950 was heard w/SS programs u/KJR-950 on my clock radio. I guess David Kable wants a station like KUUU-1590. They are an exclusive AM "Oldies" station that plays everything from Bill Haily to last month's gooddes. I don't listen to them, though; my favorite local stations (entertainment-wise, not DX-wise) are KJR-950 w/Top 40 and more so, * KOL-FM. KOL-1300 now simulcasts the FM programs after 7pm PST. Their format is a Top 40-Oldies mixture, playing three or four hits, announcing their names at the end, then play more or have a commercial. KOL has a DJ, but is more-or-less the same. They cut the gab out, to put it simply. I frequently listen to the CBC rock program on CHK-540, or CBR-1010, whichever comes in better. CBU-690 always has a fast fade, they probably have a null this way. CHX-740 is heard u/KCBS. I'm still waiting for my reprints so I can build an Altazimuth loop. I guess I never mentioned it in my last Muse, but my 16th birthday was on 11/12, & my present was reception of CFGP-1050. I'll try to arrange a TEST with them, but they will be tough (to hear since they are directional North). Did anyone else hear them on 11/12? ERC, what equipment do you use? C'mon gang, DX & report to IDXD or DDXD, and MUSE about it! 73. (HQ-180-C & SM-1 -ERC)

BOB SHAW - WCLT - Newark, Ohio

For the past year I've been with WCLT as continuity director & production manager, and would enjoy hearingfrom everyone! I'm afraid I let my membership lapse mainly because I don't often find time to DX. I have noted however that Newark (about 40 miles E of Columbus) is a good spot, being away from the ANs in Cleveland is nice, & the Akron-Canton stations are not well received, but best of all, after dark even the Columbus stations do not provide mich QRM (and a glance at the pattern book shows why), TVN is easily over-ridden by WIP, & WBNS is nearly inaudible! WCLT schedules irregular ETs on Saturday AMs, but most often it's for our 50kw FM, but AM should have a PoP in Jan. on a Sat. but I eon't know what weekend until it's too late, so if WNJR goes off, maybe you'll catch us though I doubt it, as we have a poor signal for 500w, & even Frank Merrill, who dropped in last Spring (pure co-incidence!) has never heard us in the Detroit area. Merry Christmas to all in NRC.

ERNEST R. COOPER - 438 East 21 Street - Carrier 56 - Brooklyn, New York - 11226

12/10 was ER day in Venezuela, and I don't even know who won! I hope I did, with two reports sent, to YVNA-660 which came atop R. Uno in Colombia & XERPM for at least ten minutes at 2:40-2:54am. Another YV was topping the Colombia/Cuba combo on 600 earlier, but unID, and faded out of the picture soon. Off today were WHEN/WSUN-620, & WINS-1010. Then u/WGY's incessant ET/mx-ing, I logged & reported R. 810, YVLP, Valencia, AN-ER. I noticed a TT-effect on about 737 amd also 683 k which seems to be a "parenthesis" around WOR. 12/14- An FFC was topping 1450 frequently @ 5:40-7:10pm, but alas, unID, as these critters seem to frown on IDs or even hints of IDs! On SM 12/16, WKQW-1300 was pushing weakly u/WAVZ - almost enough for a report, which I'll combine with a "next time" log. MM 12/17- All the NYC ANs were back at it, the power shortage be damned, hi. TT heard on 860 @ 2:26-2:31 & on u/a loud OC, undoubtedly CJBC's. Also TT on 690 @ 2:36 & n, on/off. A very noisy AMtoday, but KPCR-1530-TEST managed to crash through the crashes a la Good Ole Summer Time for a report, thanks to the card from Wes Boyd. KKIM-1000 r/c not heard; TT-900 @ 2:20; and WWSC-1450 ANing and topping that slot today. Anybody catch the ID of the TTer on 1520 u/WKBW, 3:14-4:03 & on, IDs were made, but that cacaphony on WKBW made it impossible to get anything like even one call letter. OCs on 15501560-1580 & a TT on 1500 around 3:30am. WKIG-1580 r/c-mx, unn, heard to s/off @ 3:45. 12/19- I always wake up to WQXR-1560 @ about 6:40am, & lo and behold, today - no local at all, just a lot of slobber from 1570 & so I sped to the DX set, the HQ-180, and wow - I thought I I had died & gone to Heaven as I merrily logged WSMD, La Plata, Md. (pronounced La Plate-eh, news to me, hi) and a most-wanted one, CFRS-1560, which s/on @ 7:15. Reports to both! WQXR was still off 12/20, but nothing other than these two in the morning, and twilight time is too early for me to get home from work in time to cash in on. WQXR back on, 12/21. I dunno what happened - does anyone else? MM 12/24- Oy vay, another local AN is born - WNJR-1430, but taking a tremendous shellacking from CKFH. Report to WCCR-1580, new r/c-TT 3-3:15. WABC-770 off today. A Venezuelan s/on u/WTIC-1080 @ 3 55, unID. I got home early today to do some twilighting, & logged one for a report - WRAR-1000 4:32-4:45 s/off, after WHNB's s/off @ 4:31. Also, new WREX-1530 u/WCKY, 4:52-5 s/off. C U N 7.

Power rationing may hit stations

Voltage reduction in New England said to have harmed TV quality, and there's talk of shutdowns

The possibility of "rolling blackouts," which could disrupt broadcast schedules, has been raised by the New England Power Exchange.

Under a proposal being considered by the exchange—a power company consortium that controls the sharing of electrical power in Massachusetts, New Hampshire, Vermont, Maine, Connecticut and Rhode Island— power would be shut off in certain areas for two hours during various parts of the day, from 7 a.m. to 10 p.m.

Bob Connolly of Boston Edison, spokesman for the exchange, said the blackout would be a last-resort measure but that in that event the exchange hopes stations would be able to stay on the air to broadcast public information as necessary.

Reportedly, the exchange has told New England broadcasters that such a blackout would not take effect before February and has indicated broadcasters would be given several weeks' notice.

For several weeks the New England area has been operating with a 5% voltage reduction between 4 p.m. and 8 p.m. five days a week. The reduction is said to result in degraded TV picture quality. According to Mr. Connolly the next technical step would be blackouts, which he called "power interruptions." However, he said he did not know when or if that step would be taken.

Rolling blackouts could prevent stations without auxiliary power from staying on the air during the two-hour period. But several New England broadcasters pointed out that auxiliary power facilities would be usable only as long as fuel is available. Some said their decision to use auxiliary power during a blackout period would depend on the time period. A spokesman for one Boston outlet said the station would, for example, shut down if an afternoon soap opera was involved, but use auxiliary power to broadcast evening news programing.