

"Congratulations on your success in producing a fine bulletin and most interesting helpful technical articles."
(Stuart Penn, Illinois)

IN THIS ISSUE...

NRC Reprint List, No. 2 - Mark Katz
Some Quantitative Aspects of Vertical Patterns - Chris Lucas
Broadcasting in Cuba - Ron Schatz
1973 Issue of the RFS Cuban List - Ron Schatz

ANEW MEMBERS THIS WEEK...

*Robert Soderberg, PO Box 901, Orange, Ca. 92666
*Paul Desautels, RD 2, Enfield, NH 07348
*Jeff Brasier, 10341 Shirley Ave., Northridge, Ca. 91324

Welcome to the Club, guys; don't be shy, drop a note to Ernie and introduce yourself in a Musing!

RENEWALS THIS TIME...

Penn... Smith (Joe Jr.)... Luton... Parsons... Kissack...

CONRAD GETS RIPPED OFF...

By phone we learn that Florida member Jerry Conrad was recently the victim of a burglary in which all of his DX'ing equipment and his prized tape library were taken. He's gotten some of the equipment back - though he had to buy it back from the hock shop himself... **His DX tapes are gone, though, and he would greatly appreciate hearing from any of our members who happen to have dubs of his tapes - his unique Beverage receptions, for example. Contact him at 160 Palmyra Dr., Orlando, Fla., 32807. (HQ extends its sympathies, Jerry; we know how you feel...)** In the same vein, do we have any insurance people or lawyers out there who could please write an article for DX NEWS describing how one goes about insuring ones DX equipment and treasures, etc.? And now that two top DX'ers have lost their tape libraries, isn't it about time you put copies of yours in a safe place?!

NOTES FROM HQ... Compounded minor delays have continued to plague the Log project - illness among the workers, shortage of manpower, etc. We are intentionally holding down the size of DX NEWS a bit to take the pressure off the printer somewhat; we increased the press run at the last minute due to the unexpectedly large response from the membership and that'll have an effect too... **The mailing envelopes are all set to go and we'll mail immediately when we get them.** First member to complain about delays is automatically put in charge of the next Edition, hi! *** Mark Katz reports that over 3,000 pages of reprints have gone out recently and that he is now caught up; about 6,000 pages of items from the new list this issue are on hand to fill orders right away. A copy of the old reprint list is available from HQ for a SASE.

*GPN & BGK

SPECIALS

April 6	W H I I	1570	Ray Springs, Miss.	1,000	D-1	1:30 - 3:00	NRC
April 7	W P X C	1410	Prattville, Alabama	5,000	U-4	1:30 - 3:00	NRC
(or Sat. April 14, same time)							
Mon. April 9	W K I X	1370	Lebanon, Tenn.	1,000	D-1	2:00 - 3:30	NRC
9	W X C L	1350	Peoria, Illinois	1,000	U-4	2:00 -	NWRC
Tue. April 24	W C H E	1580	West Chester, Penna.	250	D-1	12:15 - 12:30	NRC
Mon. May 28	W P L N	900	Philadelphia, Penna.	1,000	D-1	5:15 - 5:30	INCA

Sorry, b we cannot find any copy on the WKIK-1370 TEST, but we suggest looking for cycl tones, perhaps Morse Code ID's, and to send your report to Mr. G. E. Clark II. This is probably their Proof of Performance Test, an annual event.

WXCL. This has been on the list for a long while, and will finally materialize on Monday morning, 4/9/73. They will probably use current Country/Western hits. Send reports to William Bro, Engineering Department, WXCL, 3641 Meadowbrook Road Peoria, Illinois, 61604.

ERC'S APRIL FUEL SECTION

This year, April Fool's Day is on Passion Sunday. So, all you Poels out there - make LOVE - not war!

This column in past issues used to appear annually. Now, it's printed only once a year. But, still in black and white.

We see they are now parading the smiles to wear Bermuda Shorts. Now - we always wanted to see Len Kruss's legs!

There's been some snickering about some of the claimed receptions of late, like Muranski's carrier on 989 - that's right - a carrier only, and fading yet! More likely it was Junior's electric toothbrush, upstairs.

We understand that WBBK-1380 is losing money. Now, instead of running a monthly frequency check, they go for a regular monthly Welfare check!

One of "That other club's" young, young members has recently joined the ERC. He tells us of their "Twenty States Heard" award, and suggests we do similarly. We are going to start giving Merit Badges for tying knots in our dial cords.

They have a slogan in Texas, "Remember the Alamo." KESP's slogan, heard recently, is "Forget the Alamo."

We've noted a lot of our NWOCers listen to the syndicated program "Back to the Bible." We sure tried, but it's darned hard to read it that way.

Some of the things many many Misers say similarly "Last but not Least", and - '73 in '73." Wonder where these smarties were four years ago!

We've been thinking of some of the easiest jobs in radio, to wit:
 Disc Jockey at WPAT-990.
 Musicologist at WCB-880.
 Sales Manager at KPOF-910.
 Weatherman for KESP-1570.
 Sports director at KFUO-890.

And then there's the fuss over whether it's kilocycles, kilohertz, or kiloHertz. This corner goes for kiloCycles. We don't buy Hertz but we do buy cycles!

At any rate, you leather jacket boys - get on your motorHertzies and come into Boston for the bit Convention by Cape Cod Bay.

Anyway, you get on your bikes and cycle into town - and when you hit your thumb with a hammer, it Hertz. In fact, it even cycles a little.

MUSINGS OF THE MEMBERS

THOMAS R. COOPER
 238 EAST 214 STREET
 BROOKLYN, NY 11208

RICH KERRY - 16 Chelmsford Road - Rochester, New York - 14618

Zot! Tis we again. I'm still getting adjusted to having a loop, so a lot of the following is probably easy pickins for youse guys out there in NRCland, but here goes: 2/26- Superpest WAKC-1460 s/off @ 12:35 w/carrier to 12:50. WAKC is apparently thinking about going AM (Heaven forbid) according to announcements. Jan, WOKC-1460 s/off w/CJOY following @ 1:07. That left a jus-ble w/WBNS way on top. 1:21, and WBLR-1390 bulldozing the frequency w/c/v. 1:42, WIBC-1360 w/rr & QRM from WRAY Wis. for a sev state. 2:11, and WCFK TEST heard o/u WWHL w/8-7 signal. 3:15, and WBBT-1280 heard strong w/WHOoff. 3:43, KLES-TEST u/WMM, but with several nice IDs heard clearly, 5:30pm, WMB-1250 w/8-7 signal. 3/1- 6:45pm, WPTH-1540 fair o/KDEL. 3/4- 5:27pm, WACE-730 heard w/CBS sports o/n WPTT, both poor. 5:41, WHPD-880 w/rr in WCHS null. 6:40, WBBB-750 heard w/rr w/no problem from WBB for first N.E. ever. 7:17, WGH-910 w/c/w in CNO null - fading a problem here. 3/5- OKEY-910 a/w for report after three logs @ 5:33pm. 7:30, YVWH-700 R. Popular w/ID way o/WLM, & YVIL-670 R. Rumor o/Cuban & a trace of WMAQ on a super Auroral eve. 3/12- 12:25am found WBBB-1500 weak but clear with Powerline program. 1:07, I heard the s/off of a station on 1560 weak w/traces of "CBS Network" & "Ten kw". I checked all U.S. stations but none fit, but thanks to Jim Reid's Muse 3/7, my uniD turned out to be KXWP & all the pie-ces fit! That's what DX Clubs are all about! Anyway 3/13- 4:34, CSBK-1070 heard o/WKCK w/BS on CHCK & rebk CSKOK. That would make a pretty good song, hi - bet-ter than "Dead Skunk" anyway, hi. Veries from WBLJ WMBE WGBR WJAB WYXZ WSAI CKPH (#6 Toronto) WBBB (#6 Buffalo) WJAC (#6 Flint? Hope, hi.) WMBE KFRB CKYB WARD WOJF WCAO CROW WNL WCHC WBYA WCFK WGH & la t but not least KLES. At that rate, I oughta have my first 5,000 by end end of the month. However, my grand total presently stands at 117! Remember, when you phone rings, don't say hello - say "I listen to EOD!" (and see what the person on the other end says). While you're figuring it out, T3 and good DX.

CHRIS LUCAS - 407 Elmwood Avenue - Ithaca, New York - 14850

Ten new loggings during the past week. The week started with a great catch, my most distant graveyard yet. Just before going to bed on 3/7, I turned on the RX, & discovered all signals were considerably below par, indicative of Auroral CX. I logged WMB-1240 Melbourne, Fla. @ 2:01am, which was dominating the frequency @ 1,015 miles! Nothing else was audible on 1240, although um WBBB may have been in the mess. At 2:10am such-tried-for WLCY-1380 was an easy log. I spent more time in the graveyards, to no avail. 1450 was um WIPM Va., 1490 had nothing readable except semi-local WOLF. 1400 was um WSGA & other unIDables. 1340 had a het of 100 cps or so, w/BS dominating, who? 1230 has AM-6 semi-local WBY-1230, so I didn't really try much on this frequency. Many other interesting logs could probably have been had, had I not had to have been up at 3am the next morning. 888 3/7- WKO-660 o/looped CJBC, w/some WBCU splahh. A good friend of mine has just become PD at WKO, & I bet he'll be surprised to find out I heard WKO here. It was @ 6:29pm s/off. WMAK-1300 Tenn. @ 6:15pm, and surprisingly clear s/off of KHEB-1350 Ark. @ 7:13pm w/YL announcer. 3/8- WMLC-1490 N.Y. @ 6pm. 3/9- WJAB-1440 Me. @ 5:4 pm s/off. WBY-1350 Conn. @ 6:01 s/off. 3/12- WDBE-1490 Conn. @ 5:51pm w/school lunch listings (wow! hi.) WJVA-1580 Ind. @ 6:46 s/off, right after WKO s/off. With three new graveyards this week, total is now 73. Total loggings now 74. I note my graveyard total runs consistently close to 10% of total loggings. How 'bout the rest of you? WJW-1140 Mass., N.Y. has quit OC testing daytimes; only WJVA & WREY audible there now, both quite weak, es-pecially WREY. WJW really ought to be BS soon. I've ordered my NRC Log, & am anxiously awaiting its arrival. I also hope daytime pattern book materializes soon. T3.

AS THEY SAY IN LEVITOWN, PA., "WBBB"-1490 - "WE'RE BOSTON CONVENTION BOUND."

JCE SIMAN - 4148 Booth Place - Apt. #3 - Kansas City, Kansas - 66103
 Long time, no Muse. But with school and work, very little time is left for DXing or Musing. What DX there has been: 5/3- WFBC-1330 ID surfaced 1:10a after WX in KFH null for S.C. #1 in log book; UNID-TR-850 here 1:58am tune in, KQ really giving it a hearing. It IDed @ 1:59:30 as a f/c w/ "W---?" but KOA completely smothered call, TT off exactly @ 2am, simultaneous with time pip of KOA's NBCN. Any help? 3/14- KSIW-1450 w/ID @ 8:15am after gospel mx. In reply to Ken Onyschuk's comment on KIDL-1380 in Musing of 3/7, Fairway, Kan. is a suburb of Kansas City, with mucho big houses, big cars, etc. They recently ran a contest to find the "missing U" of KUDL, giving clues treasure-hunt stule to its location. During the contest their SID became "K-cuckoo-D-L". This may have caused some unwary DXer problems with that ID, hi! Grand prize in contest was a Dodge Colt. Sorry this Musing contains so little DX, but during Spring break next week I should have more time to DX. However, CX seem to be on the decline with the year's first twister touching down last night SW of here. Ah, more of that good ole Summer thunderstorm QFN - ugh! I can only deplore the phony Musing in Musings 3/7 and agree with ERC - it wasn't very funny. 73 & good DX, all.

DOUGLAS B. SHARP - 2902 Gidson Avenue - Zion, Illinois - 60099
 Contrary to what I wrote and told HQ, I will be renewing my membership soon. Since I last reported in July, I graduated from Michigan State, got married, joined the Navy, went to Boot Camp, moved three times, and now will be moving again. I thought I'd have to go on ship, but luckily I got shore duty in Father Jack Pejza's unit, San Diego. So, that is my next DX location. In that time since July, I only had one time to scan the dials at night, 2/16, finding practically the same as at my old DX location, Lansing, Mich. Even local WILS blasted out something else on 1320 with its Jack Dykstra Ford ad. There were only four that came in that I hadn't logged at my old DX location: WSEC-1240, WMAK-1270, WTAQ-1300, and WRIN-1400. There were a couple of surprises: WOAI on 1200 is much stronger here than in Lansing, also WJAR-1220 and KDKA-1020 although the distance is greater. I'm glad WGRY-1590 honored my request for a DX TEST. I wonder if anyone else wrote there too. (Yes, Douglas - Jim Poterba did - ERC) I visited them a while back - a very friendly station. I intend to write to local WZLW-1500 here in Zion for a TEST, too. Best of DX.

HYMES - 120 Linnhaven Drive - North Syracuse, New York - 13212
 This is my first Musing, but I'm sure you'll be hearing from me again. The following is the result from just spinning the dial. 3/9- CBEF-540 w/female announcer in FF. WSM-650 w/c/w "Friday night Opry". WNBC-660 w/unusually poor signal & heterodone - WMAQ-670 w/talk show at around 11:15pm. CBF-540 good signal w/FF female announcer. WLW-700 I&C w/rr. WGN-720 good-excellent. CKAC-730 barely readable over heavy QRM probably from XEX. CHL-740 good-excellent w/mx. WSB-750 w/sports, good signal. WJR-760 very good w/NX @ 11:30. WABC-770 poor w/rr. WBBM-780 good-excellent w/NX. CKLW-800 I&C & PJB barely audible underneath. WGY-810 fair but crossing from CKLW makes it difficult to read. WRAP-820 extremely weak, but considering my rig (a Sony AM/FM portable w/built-in coil antenna), not bad. WCCO-830 w/NX/sports. WVAS-840 I&C w/mx & ID @ 11:32 - CJBC-860 I&C w/some kind of talk show. WFL-870 w/c/w (another good catch for me). WCRS-880 good-excellent. WIS-890 w/rr excellent. CBM-940 I&C w/mx - WCFL-1000 I&C. On 1010, CFRB & WINS simultaneously. KDKA-1020 I&C talk show w/listeners calling in on the air. WRZ-1030 I&C w/pro EKB (Boston vs. L.A.). WHO-1040 good w/c/w. CHUM/WHN simultaneously on 1050. KYW-1060 I&C w/mx. CBA-1070 fair-good w/mx. WTIC-1080 I&C. WBAI-1090 good-excellent. WWWE-1100 good, two men discussing golf. WBT-1110 I&C. KMOX-1120 fair w/listener call-in show. WNEW-1130 I&C. WRVA-1140 good. WVA-1170 I&C. WHAM-1180 fair-good. WQW-1190 I&C. WCAU-1210 I&C. WJAR-1220 readable but covered at times by UNID QRM. WFER-1300 excellent. WCKY-1530 I&C. WPTX/KXEL-1540. CBE-1550 excellent. WQXR-1560 excellent. CKLM/CFOR-1570. CBF-1580 fair. That's it for now. (Forwarded by Boston Publishing Committee to ERC in Brooklyn). (Welcome to the Section, Bob! We hope you'll get that real good DX soon and will report it to us! -ERC)

WHERE HAVE ALL THE MUSERS GONE? HAVE YOU GIVEN IT UP FOR GOOD? CAN WE HAVE AN INTERESTING MUSINGS SECTION WITH SO FEW TAKING AN ACTIVE ROLE? WE HAVE SOME 00 MEMBERS! WHERE ARE YOU ALL? AREN'T ANY OF YOU GOING TO PASS ALONG YOUR DX?

CESAR OBJIO - Calle 34 Casa #30, Cristo Rey, Zona 5, Santo Domingo, Dominican Rep.
 Hi, friends. To this date (March 13) there are still some guerrillas on the mountains, on Sat/ 3/3 a newspaper printed a news about one of the rebels who supposedly visited this paper's office and gave a lot of information, mostly conflicting stories in contradiction with reality (in my own opinion I did not believe the news). After this all stations started reading the paper on the air as "hot news" and because of this, R. Comercial-1010 was closed again for about one week (it was back on the air Sat. 3/10). In the meantime the owner of the station who was Secretary of Industry and Commerce resigned his position as a protest to the government, but nobody was appointed in his place and he was back in his office some days later, no other station was closed, no information to Sherman for his tip on hearing R. Comercial on 1020k on 1/31 and published on IDKD 2/21 as I am not currently DXing, sorry. Yes, all Dominican stations use day power at night. On Feb. 23 I had the pleasant visit of Ronald F. Schatz and Richard Clark, very glad to have them here, but I was too busy with the building of my house. By the way, they were at the place when the roof was being laid on. We visited some stations: Onda Musical-1150, R. Universal-650, R. Antillas-1120 and R. Guarachita-690. I heard the studios of this station have to be moved as the place will be torn down as well as some other houses around in order to reconstruct the ancient colonial walls. They haven't yet found a good place in the neighborhood for the studios. I was very happy with their visit and hope some other DXers will try to come down and visit my country, everybody will be most welcome. 73 in 73 you all.

RON MUSCO - 16 Chestnut Drive - Windsor, Connecticut - 06095
 A terrible anxiety seizure has resulted in no DX. The 1600 "frotic" netted me WCFM 2/26 2-2:30am w/ WURL. At 2:31 a weak signal appeared and ran to 2:40 when it IDed itself as WURL on w/a special test, weakly heard till 2:58 when I called it quits for the AM. 3/12, the Kansas & Arkansas TESTS not heard, but two new ones in the log: CKSO-790 all alone 3:08-3:30am. CFAC-960 in @ 3:30 w/ no QRM for a change. WKAZ-950 heard 4:06-4:11am w/non-stop mx w/WBEF nullled. 3/16- Up for some f/cs but none heard. CHCK-1070 for #37 from Ontario 12:51-1:11 am s/off, no anthem heard. Unk QRM and surprisingly enough, no WTIC splatter as is usually the case on 1070 & 1090. Third Friday f/cs tried for but not heard: WCDL-1440 WVOS-1240 WERA-1590 WABH-1150 & WMBG-740. Are any of these being heard? Veries in: v/1- WABC WHEN WATER WKEN. v/q-CM WFTT, & W/PP/c WBBM after many tries 73.

ANDREW F. RUGG - 16 Lake Breeze Avenue - Pointe Claire 700, Quebec
 WQXR-1590 is the only verie here. The only new catch was Radio Paradise-1265 on 2/4. This Winter I took a night course in Marketing and it took up all my spare time. I hope that next season I will have more time for BCB DX. In '72-'73, I made only three new catches.

ERNEST R. COOPER - 438 East 21 St. - Carrier Route 56 - Brooklyn, N.Y. - 11226
 I couldn't fit my own Musing in last week, so let's write about the last two MMs. First, 3/12. Somebody TTed with very low pitch cycle tones, 2:32 & on, with no IDs heard here - anybody figure out who it was, or is it possibly WQXR testing with a dummy antenna? There was a MoR keeping WSLR-1350 company most of the morning - who was it? I didn't take the time to wait him out for an ID. WFBG-1290 has the unusual s/off time of 3:06am from HQ! That left a combo of QJFK & WHIO. Cl mx all on 1330 just had to be WCRB, not on next week, thank goodness. There was TT on 1110, OC on 1540, on 990, & OC on 1500 after 3. Jazzy mx on 1530 w/WCKY's OC, certainly not KFKH which has HI at that time. A try for KJJK-950-TEST netted a TT for a half hour with breaks every five minutes, but no voice heard - a tentative was sent, and v/1 in 3/21. Was they! No KJJK nor WRTT, both 950, both set for 1-4 a.m., but an OC dominated all AM, but it was probably that of WPEM. Who's the c/w 1490 station around 6:45-7pm & on, in/out with the millenium? MM 3/19- I started with a new logging today, WYNA-1550 ET/TT/OC/c/w, o/WCKJ etc. Who was the weak one on 1530 who s/off #2, mentioning what soundee like 5,000 watts day power, and 1,000 night power - could it have been KCHY, signing off instead of running AN? Previous to that, they ran MoR down-tempo style mx. They mentioned non-directional daytime. An emergency (Tennessee River rising) ANER on 1550 w/rr turned out to be unnn WAAJ @ 3:40am. At 2:22 on 1260, WEZE on top w/ET, o/WNDR & a TTer. TT on 1230 @ 2:26. 1070 also had a TTer. @ 2:28. Then WKTG-1580 s/on for r/c @ 3:33am. f/c-mx. TT-1190. 4.

IDXD MONITOR REPORTS Page 1 Taylor

Deadline: Fridays of each week; DX phone: 201-838-5721
Reproduction of items contained in IDXD without specific credit to National Radio Club and specific reporter strictly prohibited. It appears that "mini-conditions" preclude a larger IDXD this week— ergo a "Mini-IDXD", hi.

- **575 USSR. Vladivostok(?). Vy strong signal w/Majak px, night-time 1200-1400 GMT, leaving Seoul barely audible. Judging from strength and direction (compared with 1250) this must be Vladivostok (ex-810? Impossible to check due presence of FKN-Tokyo). (Ryden, Japan)
- 580 CUBA. poor-fair signal SS mx, 0815 3/21. (Philip Horman, NY) (Welcome to IDXD! Henceforth, please include call and location of catches!! CMJM Ciego de Avila, which I just had to look up. Ed.)
- 595 DOMINICA. Radio Dominica here w/mx 0121-0127 3/22. (Clayton, NJ) Excellent level 3/14 0112 with country-and-western mx(1), followed by short ID "Radio Dominica", then soul mx 0114. (Ed.)
- 600 COLOMBIA. WJ R. Libertad Barranquilla, mentions of Columbia (sic), SS, 030 3/21, SS pop mx, fast-talking DJ, ID 0641, W. Libertad good signal at 0644. (Horman, NY)
- 700 VENEZUELA. W Caracas, R. Popular 0135-0142 3/22 with up-tempo Latin. (Clayton, NJ)
- 725 SURINAM. SRS, Paramaribo 3/18 0033 in language, Indian-type music, lively DJ, some records seem very short, poor sig. (Horman, NY) (Lang is Hindi. Ed.)
- 820 COLOMBIA. EMB La Voz del Rio Cauca, Cali 3/14 0537, male singer, SS pop song. Present IDs and mentions of Colombia (note sp. Ed.) Good sig. Also 3/21, 0715 a/a WMAP. (Horman, NY)
- 834 BELIZE. Radio Belize 0440 3/21, jazz guitar mx, male EE a mn with low-toned Carib accent, 11 O'Clock News at 0500, IDs, marine forecast 0507. (Horman, NY)
- 860 DOMINICAN REPUBLIC. Radio Clarin 3/18 0650 SS male DJ, SS pop tunes, ment "Santo Domingo", "Radio Clarin" ID 0700. Fair-good signal. (Horman, NY) (Call is HIR. Ed.)
- **930 CUBA. cf. IDXD 3/14/73, IDXD p. 11. Corrections: There are two Cuban stas active this freq: 1) CMAS Consolación del Sur, 250 watts, R. Musical Nacional; 2) CMAS Matanzas, 1 kw., Radio Reloj Nacional. (Schatz, Florida) (Tx clarification, Ron)
- 1035 HAITI. WJFF 0134 3/18, violin concerto, RR male ann, a Bartok piano sonata; Also ann in FF 0151, "Masterpiece Music", s/off 0203. Good reception. (Horman, NY) (Cap Retienne. Ed.)
- **1060 PANAMA. Station on Grand Bahama testing and //1540 on 3/23, 2300 and later. (Junker, Ohio via phone, 3/23)
- 1070 Foked par above tip relayed over phone by Editor, location determined West End, Grand Bahama; pattern is due east. (RFS) WJFF. WHIA Arecibo presumably the one atop channel 0912-0930 w/several very loud, very enthusiastic "WIA"s, w/ASF TCs, SS MoR vocals, Slogan "Wia" not noted NRC LA log. (Edmunds, NJ) (Sri delay, lost items here, and had to be replaced 3/23. Ed.)
- 1070 ARGENTINA. WJ R. El Mundo Buenos Aires hrd under WHIA w/lite vocal mx and occasional "El Mundo" IDs. 0914-0918, 0922 2/19. No other IDable details, also another unID SS there along with WHIA. (Edmunds, NJ)
- 58.5 CUBA. CMAB, R. Artemisa 0230-0233 3/24 following LA MoR inst mx, ID with call and slogan. (Clayton, NJ)
- **1210 CHINA. (cf. previous issues) Acc to Jap experts, this is the Hanyon (Yenbien) Peoples' BC Stn, Yonchi, Kirin Prov carrying Korean px. Still very powerful here and have adjusted freq so no longer het against JOOR. (Ryden, Japan)

- 1250
- 1265
- **1270
- 1385
- 1457
- 1502
- 1525
- 1546

USSR. Khabarovsk. I've about decided this one transmits from the Russian embassy downtown. Is equal in strength to 100 kw. local on 1240 and is solid as a rock. Carries R. Moscow in EE nightly 1130-1200. (Bruce Reynolds, Japan) (Welcome to IDXD, Bruce Ed.)

ST. KITTS. R. Paradise putting in a good steady signal here at 1020 GMT, first time I ever bothered to look. (Bob Bundy, Truk, Eastern Caroline Islands) (Good to hear from you again. Ed)

SOUTH KOREA. (?) VOA px in KK now here at 1330, 1430, 1530 and 2330. Sign on at 1315 with opening anns in EE used by Okinawa! Also KK px carried //1178 Okinawa but no tx site ID in the beginning or end of px. KK px are of 30-minute duration each, remaining time filled up by non-stop orchestral mx. Similar KK px reported on 1240/1310 - a qualified guess is that this is the ex-VUNC tx at Kangwa Island (silent since 30 June 1971) now re-activated. (Ryden, Japan)

CANTON ISLAND. RE: raging 1385 controversy, former local Eniwetok has been off the air for over 2 years. Eniwetok was formerly s/off at 1200 and was GMT -12...stn being hrd is barely audible here. (Bundy, Truk)

Carrier again 0910 and 0941 MM 3/19, not as good as 2/26 (Foxworth, NY)

ALBANIA. Tirana Peking relay FS noted in passing 3/21 at 0400 s/on, good level. (Taylor, NJ)

SPAIN. EAR13 R. Popular de Bilbao noted accidentally with their s/on 0505 3/20 with local ID, short instrumental selections between "R. Popular de Bilbao" promos, and "Buenos dias, Bilbao". (Taylor, NJ)

PRC/unIDs. 2325-2345 3/21 China on top w/Man-woman propagandists, another stn under with RR talk, a warble-jammer in descending minor thirds, and either the same jammer re-formatted or another doing a glissando-like "dive-bomber" routine after 2330. China gone by about 2345, other RR still audible at 0000-0015 re-check (3/22 Z.) (Taylor, NJ)

UKRAINE. Vinnitza noted 3/20 at 2330 w/IS on organ, ID by woman, "Govorit Radiostantziya Rodina" repeated by male ancr. (NOTE BB: IS not as notated cf. DXN 3/7/73, p.14. Is second two bars of "Midnight in Moscow", whereas used to be first two bars of same. Notation follows; the Great Karnak projects next IS for 1974-1975 as #2 below, hi! (Taylor, NJ)

- 1550 AUSTRALIA... WAAY AN here now. WKFE (think s/on at 0930) hrd 0937 3/19, CHE OC on by 0940. Looks like 4QD down the tubes. WAAY mentioned "AN" and S7 here. (Foxworth, NY) (Great! Ed.)
- 1550 TAIWAN. AFMT-Taipai is atop the channel here nightly now that PEN-Itazuke is off the air & the Russian formerly here is gone. Makes me think that they were on only to jam PEN, but don't know why they'd bother. Perhaps possible WCNA on a good TP morning. Formerly on 1560. (Bruce Reynolds, Japan)

15 5

PHILIPPINES. DYLA Cebu still heard nightly (i.e. JST) (Nyden, Japan)

@ DYLA Cebu City noted 3/17 1530-1604 s/off NA w/EE MoR show. Just before s/off played "Solidarity Forever", a labor anthem to the tune of "Battle Hymn of the Republic". S/off gave freq as listed 1550 and even included a list of the engineering staff. (Bruce Reynolds, Japan)

1586

W. GERMANY. WDR Langenberg. Carrier and some audio 3/17 around 1700. Not as good as 1602 West German. (Bruce Reynolds)

1590

TAIWAN. APWT-Tainan noted 1545 3/17 w/"China Nights" MoR show, stop channel. (Bruce Reynolds, Japan)

**1594

PORTUGAL. Lisbon CSB+ 3/20 0500 a/on with Tocata in D Minor by Bach, followed by ID, man and woman. Schedule change from WTH '73, and is apparently the one often reported here as unID. (Taylor, NJ)

1602

W. GERMANY. WDR Langenberg; this one was heard from before 1700 to past 1730 3/17; pop mx to 1700, then talk. Peaked about 1720 w/two men talking in GO. Quite readable, but don't speak the language, hi. (Bruce Reynolds, Japan)

...PARAGUAY-645 REVERTED (A continuing episode in the saga of Radio-Whatahi - see):

"Again I must agree with RJE's statement in the "O" issue RE: the Paraguayan on 645. Regardless of my fairly clear taped IDs of Radio San José, I have heard even clearer IDs previously as "R. Encarnación", untaped unfortunately. For a number of reasons previously expressed herein, I feel it best to call Radio San José a mis-ID and side once again with Radio Encarnación. (Ron Schatz) PS. Will accept donations for a trip to Asunción, hi! (RFS)"

Reporters this issue:

Bob Bandy, Truk, Eastern Caroline Islands	(2)
Charlie Clayton, Adelphia, NJ	(3)
Russ Minunds, Parsippany, NJ	(2)
Bob Foxworth, Mineola, NY	(2)
Philip Norman, White Plains, NY	(7)
Carl Junker, Greenville, Ohio	(1)
Bruce Reynolds, Tokyo, Japan	(5)
Lars Nyden, Tokyo, Japan	(4)
Ronald F. Schatz, Miami, Florida	(3)
Page Taylor, Butler, NJ	(6)
	WG200, 2' RJE loop
	HQ150, 4' NBC loop
	HQ150, 4' NBC loop
	SW4, 3' loop
	SK71, SW
	HQ160, 20' shortwire
	R388/URR, LSCA
	SK130, 4' loop

Back of the file ---

Regarding the Far East Network, the WTH has one error on the RCB info. We still have a 250 watt station on 1570 in Chitose but was not listed in WTH. Both Chitose and Sasebo-1570 are unmanned relay transmitters. Misawa-1580 feeds Chitose and Iwakuni-1580 feeds Sasebo. All have local IDs though. Our key station in Tokyo is supposed to be putting out 50 kw. in a cardioid pattern aimed southeast. I don't believe the transmitter is really putting out that much, nor do I believe the pattern is as it should be, but I'm only paid to read the news, hi. --- Bruce Reynolds, Tokyo.

"How far east does your contest run? Hi!" --- Bob Bandy, Truk (St. John's, Newfoundland, hi! Ed.)

TAPE MONITORING SERVICE: Tom Sundstrom, your 1546 is def. Winmitza. Dan Myers, your 740 is PRA4, R. Sociedade da Bahia!



Ron Schatz

"Cuba, primer territorio libre en América".

Thus every station on this Communist island, located only 90 miles from the Florida Keys and the USA, announces every half hour its country's freedom from "Yankee imperialism".

Broadcasting in Cuba is unique, if only for this reason: At the time of all other Marxist revolutions the broadcasting industry in the affected countries was either nonexistent, in its infancy, or government or "commission" operated. When Fidel Castro walked into Habana in 1959 there were over 200 private stations then in operation. The task: Expropriate these stations and consolidate them into a broadcasting system that will serve the cause of Socialism.

History is witness to the fact that this process was a slow one, so as not to "shock" the people. Stations were taken over one by one, announcers and staff were "retired" and replaced by counterparts who held Marxist philosophies, national and provincial networks were enlarged, and tens of "unnecessary" stations were deleted. Later, powerful new transmitters were imported from Czechoslovakia, and the entire system was united into a central organization, the Instituto Cubano de Radiodifusión (ICR), a BBC-like affair complete with its own "pope" orchestra but without the former's independence.

Today Cuba and its six provinces possess the most complicated broadcasting system of any Communist country. It consists of 6 national networks, 5 provincial networks, and a number of local stations. The television service consists of 2 national networks and a provincial network in Oriente. There are low-power FM transmitters, but they are intended only as links and inter-station relays. There is no longer a "Tropical band" operation, but there is a powerful international service, the celebrated Radio Habana Cuba, whose IS chimes out the words: "Adelante cubanos".

The six national "cadenas" (networks) each have studios in the Vedado district of Habana and relay stations scattered throughout the country. The networks are fixed; no stations break away for local programming or identification.

RADIO REBELDE

This is the priority "numero uno" network, relayed by the most powerful transmitters in the country, two of 150 kw each. If a transmitter along the line breaks down (a common occurrence) another station in the city will be substituted to take its place while the damage is repaired.

Programming on Radio Rebelde consists of a regular schedule of native and popular radio, sports (especially baseball), news, "novelas" (plays, serials, etc.), children's programmes, and political commentary. There are regularly scheduled educational programmes as well.

RADIO PROGRESO

This hold-over from pre-Castro days proudly calls itself "La onda de la alegría". The original network has been expanded during the past few years with new stations in Sancti-Spiritus, Bayamo, and Guantánamo. The local address in the Vedado is "Infanta 105".

The format consists also of regularly scheduled programmes, but there is a heavier emphasis on DJ music shows. A news service, known as "Noticiero RP", is presented roughly every 90 minutes.

During the early-morning hours (0000-0530) Radio Progreso re-plays Radio Enciclopedia Nacional, local Habana station CMBQ.

RADIO LIBERACION

This "cadena" is better known to many as CMQ, broadcasting from modern studios in the Vedado - "Radiocentro". The format again consists of regularly scheduled programmes similar to those of Rebelde and Progreso above.

RADIO RELOJ NACIONAL

This unique service has been on the air continuously for over a decade; it is the original "all news" station. The familiar background is created electronically: second-marking pulses and a gong to mark the minute. A "beeper" is keyed manually by the announcer to mark time checks, given every minute on the minute.

There is a team of two announcers on duty at a time, taking turns reading news, commentaries, and "public service announcements", such as the daily schedule of television programmes. If the announcer cannot finish reading the article before the required time check on the minute he (or she) says "continuará", gives the time, then continues with "continuada". It is common practice to give the title of the article and the name of its author, where appropriate, on beginning its reading.

On the hour and half hour time checks are given for several world capitals, the regular identification is made, and the two announcers introduce themselves with "Con ustedes ...".

The time checks on Reloj Nacional have been fairly accurate in recent years, consistently falling one second behind WWV.

CMBF, RADIO MUSICAL NACIONAL

This is the cultural, classical-music programme, considered to be the least important of the national networks. It identifies with a harp interlude and the statement: "Presentando musica para toda la República".

LA VOZ DE CUBA

This is a special national network carried by stations belonging to Radio Rebelde, Radio Liberación, and Radio Revolución. It operates 0000-0530 local time, or during the early-morning hours. There is a definite effort to reach listeners outside of Cuba, and a heavy emphasis on international (Latin-American) music and political commentary. Reception reports are requested constantly, to be sent to Apartado 60-17 in Habana.

PROVINCIAL CHAINS

In addition to the six national networks there are five provincial networks. Programming is similar to that of Radio Rebelde, etc., but on a more regional level. The province of La Habana is too small to support a provincial network, so it lacks one. The other provinces and networks are as follows:

PROVINCIA

Oriente
Camagüey
Las Villas
Matanzas
Pinar del Río

CADENA

CMKC, Radio Revolución
Radio Cadena Agramonte
Dobleve (W), La Frecuencia del Azúcar
Radio Veintiséis (26)
Radio Guamá

LOCAL STATIONS

Local, "home-town" stations take care of local needs in programming. In the larger cities well served by network outlets these stations may tend to specialise, such as Onda Musical in Santa Clara. In smaller towns, where it is generally the only station, programming will show more variety and community attention, such as Radio Caribe on the Isle of Pines.

All stations in the country can be brought together for special programming, say, for a speech by the "Comandante". On such an occasion all stations participate, with the singular exception of Reloj Nacional, which never breaks its news routine.

HABANA LOCALS

Almost every important city and town in Cuba has one local station, and no more than one, with the unique exception of the capital, Habana, which boasts six. With that many local stations under the same management specialisation is necessary:

CMCH, RADIO CADENA HABANA. Native Cuban music, and time checks with a loud gong.

CMCA, RADIO CORDON DE LA HABANA. It used to be in English, now features Latin "rock" and other features for the young.

RADIO INTERNACIONAL. "Presentando música de todo el mundo". Features regularly scheduled programmes of music from various parts of the world. ID's over organ interlude.

COCO, EL PERIODICO DEL AIRE. Also called "La Coco". Heavy emphasis on news and sports with some music.

RADIO ENCICLOPEDIA (NACIONAL). American "background" music, time checks, and bits of trivial information on famous buildings, historic battles, science, etc. - encyclopaedia style.

RADIO POPULAR. A small DJ-run operation with native music and few ID's. Only 250 watts.

TELEVISION

Without getting into detail, there are two television stations in national network form. They are named by the channels in use in Habana, respectively:

Televisión Nacional, Canal 2 / Televisión Nacional, Canal 6

The channels 2 and 6 represent Fidel's attack on the Moncada barracks back in 26 July 1953, considered the first battle in the war to "liberate" Cuba.

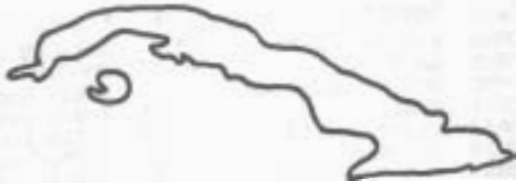
Programming is politically oriented, uses plenty of Soviet importations, and is otherwise lousy. The logos is a 2 or 6 over a flower design, and the ID music is an orchestral version of "Guan-tanamera".

CALL LETTERS

Cuban stations still use call letters, if only for bureaucratic purposes. The call consists of the national prefix "CM-" plus a provincial indicator as the third letter:

- 12
- | | | |
|---------------------------------|-----------------|-----------------|
| CM _i - Pinar del Río | CMF- Camagüey | CMK- Oriente |
| CMB- La Habana | CMG- Matanzas | CML- Oriente |
| CMC- La Habana | CMH- Las Villas | CMO- La Habana |
| CMD- Oriente | CMJ- Camagüey | CMR- Las Villas |

RFS Cuban stn list



Appendix I: CONFIRMING RECEPTION

Getting a QSL out of a domestic Cuban station is quite easy; in most cases it's a matter of common sense:

- 1) Write the reception report in Spanish. Use a report form if necessary. Why? How fast, if at all, would you answer a letter written in Hausa??
- 2) If the station is a network relay, write to the central studio, not to the relay site. E.g., a report to CMKV-600 in San German should be addressed: "Radio Rebelde; Habana 4, Cuba". This is common sense.
- 3) Steer clear of politics in your report. Neither offend the reader by opposing his likely Marxist philosophy nor sound like a phoney revolutionary by agreeing with him. Just stick to the subject.
- 4) Do not send IRC's or return postage, nor include anything in the envelope that Cuban postal authorities might return as possibly containing any "personal articles".

Appendix II: THE MAKING OF THE RFS LIST

The advent of Radio Swan (later Radio Américas) gave Fidel an excuse to free Cuba from the NOLA treaty, so Cuba no longer supplies official lists of its stations to anyone, except to a lucky, "unknown" few. The result is the pitiful, antique lists offered for a price by Vane Jones, the ITU, and White's Radio Log. The only available list approaching "reasonable" accuracy is supplied by the FBIS in their Broadcasting Stations of the World. The FBIS obtains its information through monitoring.

The RFS Cuban Station List (so named by other DX'ers, not by RFS) was developed unintentionally in 1962 through routine DX'ing of Cuban stations. This is not a difficult task, since some 80% of all Cuban stations can be identified from South Florida in broad daylight.

A few years later popular recognition and demand made the list a serious undertaking: Contact was established with the ICR, and DXpeditions were made to Key West and Nassau. As years passed methods were improved and perfected to the point where present lists are estimated to be 97% true to the actual situation. This is far better accuracy than that presently available from most other lists of Latin-American stations.

Clear detail on how the information is obtained for the RFS List is classified, since the list is a potential and actual source of profit for the author. The tenth edition appears in WRTH-1973; the eleventh edition appears, expectedly, in this issue.

compiled by Ronald F. Schatz

Eleventh Annual Edition § Corrected to April 1973

The following list of Cuban medium-wave broadcasting stations is the product of the monitoring activities of the compiler modifying basic data supplied by the Instituto Cubano de Radiodifusión; 23 y L, Vedado; Habana 4, Cuba. Estimated accuracy - 97%

© 1973 by Ronald F. Schatz § Derechos reservados

Freq	Call	Location	kw	Station Name
550	CMAN	Pinar del Río	30	Radio Rebelde/La Voz de Cuba
570	CMHI	Santa Clara	60	Radio Rebelde/La Voz de Cuba
580	CMJM	Ciego de Avila	0.5	Radio Rebelde
590	CMW	S. Ant. de las Vegas	150	Radio Rebelde/La Voz de Cuba
600	CMKV	San Germán	150	Radio Rebelde
620	CMKF	Baracoa	1	Radio Rebelde
630	CMHQ	Santa Clara	50	Radio Liberación/Voz de Cuba
640	CMQ	La Habana	50	Radio Liberación
650	CMKU	Santiago de Cuba	2	Radio Liberación
660	CMHG	Santa Clara	10	Radio Progreso/R. Enciclopedia
670	CMKP	San Pedro de Cacocum	50	Radio Progreso
680	CMHN	Cienfuegos	1	Radio Progreso
690	CMDB	Santiago de Cuba	1	Radio Progreso
700	CMBC	La Habana	50	Radio Progreso/R. Enciclopedia
710	CMJT	Ciego de Avila	5	Radio Progreso/R. Enciclopedia
720	CMDU	Guantánamo	0.25	Radio Progreso
730	CMGN	Colón	30	Radio Rebelde/La Voz de Cuba
740	CMKJ	Holguín	10	Radio Liberación
	CMAQ	Pinar del Río	1	Radio Liberación/Voz de Cuba
	CMJL	Camagüey	10	Radio Liberación/Voz de Cuba
760	CMCI	La Habana	10	Radio Reloj Nacional
770	CMKB	Las Mercedes	1	Radio Revolución
780	CMJN	Camagüey	60	Radio Rebelde/La Voz de Cuba
790	CMCH	La Habana	10	Radio Cadena Habana
810	CMJE	Camagüey	1	Radio Progreso/R. Enciclopedia
820	CMDT	Bayamo	1	Radio Progreso
830	CMCA	La Habana	10	Radio Cordon de la Habana
840	CMHW	Santa Clara	10	W, La Frecuencia del Azúcar
	CMKC	Santiago de Cuba	2	Radio Revolución/V. de Cuba
	CMDC	Holguín	1	Radio Revolución
850	CMJY	Ciego de Avila	1	Radio Cadera Agramonte
860	CMEL	La Habana	1	Radio Internacional
870	CMDF	Guantánamo	10	Radio Rebelde/La Voz de Cuba
	CMAF	Pinar del Río	10	Radio Progreso/R. Enciclopedia
880	CMHD	Santa Clara	1	CMBF, Radio Musical Nacional
890	CMDZ	Santiago de Cuba	0.25	CMBF, Radio Musical Nacional
	CMJV	Ciego de Avila	1	Radio Liberación/Voz de Cuba
900	CMJB	Camagüey	1	CMBF, Radio Musical Nacional
910	CMKH	Guantánamo	0.25	CMBF, Radio Musical Nacional
920	CMAG	Consolación del Sur	0.25	CMBF, Radio Musical Nacional
930	CMGL	Matanzas	1	Radio Reloj Nacional
940	CMBF	La Habana	10	CMBF, Radio Musical Nacional
950	CMDJ	Guantánamo	0.25	Radio Revolución

Reprints 2

Freq	Call	Location	kw	Station Name
960	CMHB	Sancti-Spiritus	1	Radio Progreso
980	CMCK	La Habana	5	COCO, El Periódico del Aire
990	CMHT	Sancti-Spiritus	1	Radio Sancti-Spiritus
1000	CMAP	Guane	0.25	Radio Guamá
1010	CMAS	Pinar del Río	0.25	Radio Guamá
	CMKM	Holguín	5	CMBF, Radio Musical Nacional
1020	CMAC	San Cristóbal	1	Radio Guamá
1030	CMFA	Camagüey	5	Radio Cadena Agramonte
1040	CMBN	Nueva Gerona, I.P.	0.25	Radio Caribe
1059	CMKG	Baracoa	1	Radio Revolución/V. de Cuba
1060	CMBQ	La Habana	5	Radio Enciclopedia Nacional
1100	CMHU	Cienfuegos	1	Radio Ciudad del Mar
1120	CMDL	Holguín	1	Radio Angulo
1130	CMHA	Santa Clara	1	Onda Musical
	CMDW	Guantánamo	0.25	Radio Liberación
1140	CMJK	Camagüey	0.5	Radio Camagüey
1150	CMDO	Banes	0.25	Radio Banes
1159	CMAD	Artemisa	0.25	Radio Artemisa
1190	CMJP	Ciego de Avila	0.5	Radio Surcos
1200	CMKL	Santiago de Cuba	2	Radio Reloj Nacional
1210	CMJX	Morón	0.25	Radio Morón
	CMKD	Holguín	1	Radio Reloj Nacional
1220	CMGY	Pericú	5	Radio Veintiséis (26)
1230	CMGM	Jagüey Grande	0.25	Radio Veintiséis (26)
1240	CMGW	Matanzas	0.5	Radio Veintiséis (26)
	CMKE	Victoria de las Tunas	1	Radio Revolución
1250	CMHP	Sancti-Spiritus	0.25	W, La Frecuencia del Azúcar
	CMKA	Guantánamo	0.25	Radio Reloj Nacional
1260	CMAX	Consolación del Norte	1	Radio Reloj Nacional
	CMDE	Bayamo	0.25	Radio Reloj Nacional
1270	CMJG	Camagüey	1	Radio Reloj Nacional
1280	CMHM	Santa Clara	1	Radio Reloj Nacional
	CMDF	Victoria - Tunas	0.25	Radio Reloj Nacional
1290	CMKS	Guantánamo	0.25	Radio Guantánamo
1300	CMJQ	Nuevitas	1	Radio Nuevitas
1301	CMJD	Ciego de Avila	0.25	CMBF, Radio Musical Nacional
1308	CMHK	Cruces	0.25	Radio Reloj Nacional
1310	CMDD	Bayamo	0.25	Radio Revolución
1320	CMAL	Pinar del Río	0.25	Radio Reloj Nacional
1331	CMJS	Ciego de Avila	0.5	Radio Reloj Nacional
1340	CMGU	Colón	0.25	Radio Reloj Nacional
	Guantánamo Bay N.B.	1	American Forces Radio
1350	CMKY	Puerto Padre	0.25	Radio Puerto Padre
1360	CMBG	La Habana	0.25	Radio Popular
1369	CMKW	Santiago de Cuba	0.25	Radio Siboney
1390	CMKX	Bayamo	0.25	Radio Bayamo
1400	CMJI	Florida	0.25	Radio Cadena Agramonte
1420	CMDX	Baracoa	0.25	La Voz de Baracoa
1430	CMKZ	Palma Soriano	0.25	Radio Baraguá
1450	CMJW	Santa Cruz del Sur	0.25	Radio Maboá
1460	CMCG	Marianao	0.25	Radio Marianao
1470	CMGE	Cárdenas	0.25	Radio Ciudad Bandera
1520	CMKT	Victoria de las Tunas	1	Radio Victoria
1550	CMDV	Santiago de Cuba	0.25	Radio Santiago
1560	CMGB	Cárdenas	0.25	Radio Reloj Nacional
1590	CMDF	Manzanillo	0.25	Radio Manzanillo

ANTENNAS

- A18 THE FLORIDA BEVERAGE, J. Conrad. Jerry describes his own results with a Beverage antenna and compares it with others he has used.
- A19 THE CARE AND FEEDING OF THE WAVE ANTENNA, J. Starr. Construction hints for a Beverage antenna. Prerequisite for this is reprint RE1-Buying Real Estate.
- A20 DOWN TO EARTH GROUNDS, G. P. Nelson. Hints on making a low resistance ground connection for terminating your Beverage.
- A21 ALTERNATIVE METHODS OF AMPLIFICATION FOR AIR CORE LOOPS, R. Edmunds. Describes the use of commercially available RF amplifier kits as loop amplifiers.
- A22 A CALIFORNIA BEVERAGE, Fr. J. Pejza. Another article describing the spectacular results obtained with a Beverage.
- A23 THE TWO-FOOT LOOP ANTENNA, R. Edmunds. Similar to the loop described in reprint A11 but only half the size. Ideal for those who lack the space for a full size loop.
- A24 THE SUPER SIGNAL SNATCHER, D. Fischer. This article describes the theory of the Beverage antenna. Includes equations, tables and many diagrams.
- A25 THE VERTICAL PICKUP PATTERN OF THE MW LOOP ANTENNA, G. P. Nelson. Helpful information for those doing horizon blockage experiments with a loop antenna.

RECEIVING EQUIPMENT AND TECHNIQUES

- R11 RANDOM THOUGHTS ABOUT RECEIVERS, R. Foxworth. Hints on using a crystal calibrator and coaxial antenna inputs.
- R12 AN INEXPENSIVE METHOD OF FREQUENCY MEASUREMENT, P. Taylor and R. Edmunds. Describes a method of measuring the audio frequency heterodyne from which one can determine a station's frequency.
- R13 RECEIVER HOT-RODDING HINTS, R. Moore. Hints and circuits for getting more out of your receiver.
- R14 UP THE CARRIER, W. Bailey. Dig the weak ones out of the mud with exalted carrier reception.
- R15 PRECISION FREQUENCY MEASUREMENT, R. Schatz. How to use the frequency counter- an instrument now within the budget of most DX'ers.
- R16 SELECTIVITY DEVICES, R. Schatz. Basics of tuned circuits, crystal filters, mechanical filters and Q-multipliers.

Direct all correspondence to:

Ronald F. Schatz § P.O. Box 2814, AMF § Miami, FL 33159

Telephone: AC305-251-2196

DOMESTIC DX

- D5 UNDERSTANDING STATION PROCEDURES, J. Starr. Some DX'ers miss out on getting verifications from stations because the program details they list are not part of the station log. This article tells what is.
- D6 CLEARS AND CLASSIFICATIONS, M. Collins. Explains how the FCC allocates channel assignments and station power in accordance with the NARBA treaty.
- D7 USA LPRT, R. Wood. Our equivalent of the low powered Canadian relays is in Alaska.
- D8 NIGHTTIME LISTENING, M. Collins. A variety of programming can be heard on the high-powered clears which cover most of the nation at night.
- D9 NETWORKS, M. Collins. Explains how the four major radio networks operate.
- D10 THE NSP SITUATION, J. Starr. A look at this problem from another side, the broadcaster's.
- D11 DX FROM THE TWILIGHT ZONE, P. Sullivan. For various reasons some stations are audible only at sunrise or sunset. This article gives the reasons.

FOREIGN DX

- F11 DX'ING POLYNESIA AND BEYOND, J. Murley. Very detailed account of the stations in the Pacific which can be heard in North America.
- F12 WHY IS A COUNTRY?, P. Taylor, R. Edmunds and D. Jensen. Comments on the current practice of classifying small islands and land areas as "countries".
- F13 THE ODDS ON EVEN TA'S, R. Schatz. TA's can be heard on some of our 10kHz channels- find out which ones and when to listen.
- F14 DX'ING RARE AFRICANS...SYSTEMATICALLY, P. Taylor and R. Edmunds. A country by country rundown of where and when to listen for the hard to get stations in Africa.
- F15 CZECH YOUR COUNTRIES, S. Bohac. Czechoslovakia is used as an example and introduction in this article on the relationship between a DX countries list and actual political boundaries.

PROPAGATION

- P9 SKYWAVE OR GROUNDWAVE RECEPTION?, G. P. Nelson. How to tell whether the signal from a station you are listening to is arriving via a skywave or groundwave path, or both.
- P10 A BEGINNER'S GUIDE TO THE IONOSPHERE, Fr. J. Pejza. Radio wave propagation is influenced greatly by the conditions in the ionosphere. This article explains the processes which change the ionosphere and the effect of these changes on radio waves.
- P11 THE LIMITS OF MIDDAY MW DX, G. P. Nelson. Comprehensive article describing the factors which influence radio wave propagation and reception during the late morning and early afternoon hours.

- P12 LIMITATIONS IN THE USE OF THE A-INDEX, G. P. Nelson. While the A-index is a valuable tool for MW DX'ers it is easily mis-interpreted. This article shows why.
- P13 BCB RECEPTION DURING PERIODS OF HIGH AURORAL ACTIVITY, G. P. Nelson. Describes the author's research into the effects of the Aurora on MW propagation.
- P14 SKYLINE BLOCKAGE, Fr. J. Pejza. Mathematical derivation of the formulae needed to calculate the effect which the terrain has on signals.
- P15 SKYLINE BLOCKAGE, SOURCES OF UNCERTAINTY, G. P. Nelson. Takes into account the possibility of signals propagating by some less common modes which change the conditions for blocking by the horizon.
- P16 HORIZON BLOCKAGE: CAN FRESNEL DIFFRACTION BE IGNORED?, G. P. Nelson. No, it can't. This article shows how signals which should be blocked by the horizon can sometimes be heard.

LOGS AND LISTS

- L11 ECUADOR STATION LIST, D. Gleason. (November 1971)
- L12 EL SALVADOR STATION LIST, D. Gleason. (November 1971)
- L13 TEXAS STATE NETWORK, P. Hart. Listing of over 90 stations in a large news network. Useful identification guide.
- L14 BEACON STATIONS, SDXK and NRC. Listing of CW aircraft beacons operating on or near the MW BCB.

MISCELLANEOUS

- M14 GREAT CIRCLE BEARING ALGORITHM, D. Fischer. Procedure for calculating bearing from one point to another given the latitude and longitude of each. A FORTRAN program included.
- M15 INFORMATION PLEASE, Fr. J. Pejza. Describes a simple filing system for quick retrieval of pertinent data by station, frequency, etc..
- M16 HOW DIRECTIONAL PATTERNS ARE PRODUCED, W. Boyd. Shows how the stations can create the unusual patterns you've seen in the NRC Pattern Book.
- M17 SITING OF DIRECTIONAL MW STATIONS, W. Boyd. Describes how the combination of directional antenna and optimum site selection can give a station the coverage it wants without unnecessary interference to other stations.
- M18 PRINCIPLES OF VERTICAL PATTERNS, W. Boyd. Introductory discussion of vertical radiation patterns and their significance to BCB DX'ers.
- M19 VERTICAL PATTERNS OF MW TRANSMITTING ANTENNAS, C. Lucas. A more mathematical treatment of vertical patterns. Includes many graphs.

RECEIVER REVIEWS

- RR1 DRAKE SPR-4, E. Behr and R. Fischer
- RR2 SONY TR-1300 AND TFM-1600, R. Schatz
- RR3 LAFAYETTE HA-600A, R. Schatz
- RR4 HEATH GR-78, R. Schatz

ORDER FORM FOR NRC REPRINTS

The articles on this list are available from the National Radio Club, Box 99, Cambridge Mass. 02138 for a small charge to cover costs of duplication and postage.

The rates are:

NRC Members- 6¢/page via 3rd class mail, 7¢/page for 1st class.
 Non-members- 8¢/page " " " " " " " " " " " " " "

Third class mail is usually slow and erratic, first class is recommended.

The NRC Reprint Service is strictly a volunteer effort; please be patient if your order is delayed slightly.

Please circle the numbers of the articles requested. The number in parentheses is the number of pages.

A18 (3)	P9 (3)	M14 (5)	R11 (2)
A19 (3)	P10 (10)	M15 (2)	R12 (1)
A20 (3)	P11 (16)	M16 (3)	R13 (10)
A21 (2)	P12 (3)	M17 (2)	R14 (1)
A22 (2)	P13 (15)	M18 (3)	R15 (3)
A23 (5)	P14 (10)	M19 (9)	R16 (7)
A24 (14)	P15 (9)		
A25 (4)	P16 (10)	D5 (8)	L11 (4)
		D6 (4)	L12 (2)
F11 (10)	RR1 (10)	D7 (1)	L13 (1)
F12 (3)	RR2 (1)	D8 (6)	L14 (1)
F13 (3)	RR3 (2)	D9 (6)	
F14 (6)	RR4 (2)	D10 (2)	
F15 (10)		D11 (3)	

Total pages _____ at _____¢/page= _____

NAME _____

ADDRESS _____

ZIP _____

Please use a separate sheet for other correspondence or items unrelated to this order. Failure to do so will only result in your order being delayed.

SOME QUANTITATIVE ASPECTS OF VERTICAL PATTERNS

*Chris Lucas

THE NRC NIGHT PATTERN BOOK HAS BEEN A GREAT AID TO DXERS. A GLANCE IS ALL IT TAKES TO SEE IF A STATION NULLS TOWARDS YOU OR HAS A LOBE IN YOUR DIRECTION. IF YOU HAVE COMPARED THE PATTERNS SHOWN WITH ACTUAL LISTENING EXPERIENCES YOU WILL NOTE SOME STATIONS WHICH SHOULD BE HEARD ARE NOT WHILE SOME WITH NULLS IN YOUR DIRECTION ARE QUITE AUDIBLE. THIS ARTICLE WILL EXPLAIN WHY THIS IS SO AND SHOULD HELP YOU OBTAIN MORE INFORMATION FROM THE PATTERN BOOK.

THE PATTERNS SHOWN IN THE PATTERN BOOK INDICATE THE ELECTRICAL FIELD STRENGTH IN DIFFERENT DIRECTIONS FROM THE TRANSMITTER DUE TO RADIATION IN THE HORIZONTAL OR GROUND PLANE. WHEN CONSIDERING NIGHTTIME SKYWAVE WE MUST DEAL WITH RADIO WAVES LEAVING THE ANTENNA SYSTEM AT SOME ANGLE ABOVE GROUND. THIS ANGLE OF ELEVATION WILL BE REFERED TO AS ANGLE B IN THE FOLLOWING DISCUSSION. RADIO WAVES AT BROADCAST BAND FREQUENCIES NORMALLY PROPAGATE AT NIGHT BY REFLECTION OFF THE E LAYER OF THE IONOSPHERE. (SEE NOTE #1.-G.P.W.) THE SHORTER THE DISTANCE FROM THE TRANSMITTER THE GREATER THE ELEVATION OF ANGLE B. FOR SINGLE HOP TRANSMISSION BEYOND 700 MILES ANGLE B IS QUITE SMALL. IN THIS CASE THE PATTERN BOOK GIVES A GOOD IDEA OF HOW A STATION WILL BE RECEIVED. HOWEVER AT DISTANCES PROGRESSIVELY LESS THAN 700 MILES ANGLE B BECOMES PROGRESSIVELY LARGER AND THE PATTERN BECOMES CONSIDERABLE ALTERED FROM THE GROUNDWAVE PATTERN INDICATED IN THE PATTERN BOOK. HOWEVER ONLY A CERTAIN TYPE OF PATTERN IS APPLICABLE.

WE WILL IGNORE FOR NOW THAT RADIO WAVES RADIATE PREFERENTIALLY IN A GROUND PLANE. AN ANTENNA SYSTEM COMPOSED OF TWO OR MORE TOWERS LOCATED ALONG A STRAIGHT LINE PRODUCES A PATTERN WITH A SPECIAL KIND OF SYMMETRY. THE PATTERN IN THREE DIMENSIONS IS SYMMETRICAL ABOUT A LINE CONNECTING THE BASES OF THE TOWERS. FROM HERE ON THIS WILL BE REFERED TO AS THE "AXIS OF SYMMETRY". FOR THE GROUND PLANE PATTERNS SHOWN IN THE PATTERN BOOK THE TWO DIMENSIONAL PATTERN PRODUCED IS SYMMETRICAL ABOUT AN AXIS OF SYMMETRY.

EXAMPLES: WROW 590'S PATTERN IS SYMMETRICAL ABOUT A AXIS RUNNING ALMOST N & S. THAT OF WICC 600 IS SYMMETRICAL ABOUT AN NW-SE AXIS, AS IS WTOR 610. WVAJ 620 HAS AN AXIS OF SYMMETRY RUNNING MORE OR LESS N & S. WINR 680'S AXIS GOES NE-SW, WHILE WELM 1410 IS NEARLY N & S.

THE RESULTS OF THIS ARTICLE CAN NOT BE APPLIED UNLESS YOU KNOW WHICH AXIS OF SYMMETRY CORRESPONDS TO THE LINE IN WHICH THE TOWERS LIE. ALSO IT IS NOT NECESSARY TO HAVE IN-LINE TOWERS TO PRODUCE A SYMMETRICAL PATTERN. FOUR TOWERS LOCATED AT THE CORNERS OF A SQUARE WILL ALSO PRODUCE A SYMMETRICAL PATTERN. ANY CALCULATIONS BASED ON THIS ARTICLE ARE ACCURATE ONLY IF THE TOWERS ARE ACTUALLY ALONG A LINE.

AT THIS POINT WE WILL INTRODUCE ANOTHER ANGLE WHICH WE WILL CALL ANGLE A. THIS IS AN ACUTE ANGLE BETWEEN THE AXIS OF SYMMETRY AND A LINE FROM THE TRANSMITTER TO THE RECEIVER. A DEFINITION OF THIS ANGLE IS SHOWN IN FIGURE #1.

(While propagation by means of reflections from the night E layer is quite common on the medium-wave band, F-layer reflections are also important. Whether a particular signal will pass through the E region and continue on to experience an F-layer reflection or be reflected back towards the ground by the E layer instead will depend upon several complicated factors. The nature of the E layer present is important ("normal" night E vs sporadic E) as is the signal frequency compared to the blanketing and critical frequencies of the layer. See "Skyline Blockage - Sources of Uncertainty in Calculated Arrival Angles", DX NEWS, 2/14/73 for a more detailed discussion of actual MW reflection heights. As with skyline blockage, the only way around the basic uncertainty in the effective reflection height is to consider all possible likely reflection modes taking into account the limits of likely height variation for each layer. This will yield a collection of possible signal arrival angles, the extremes of which are the limiting rays. Gordon Nelson)

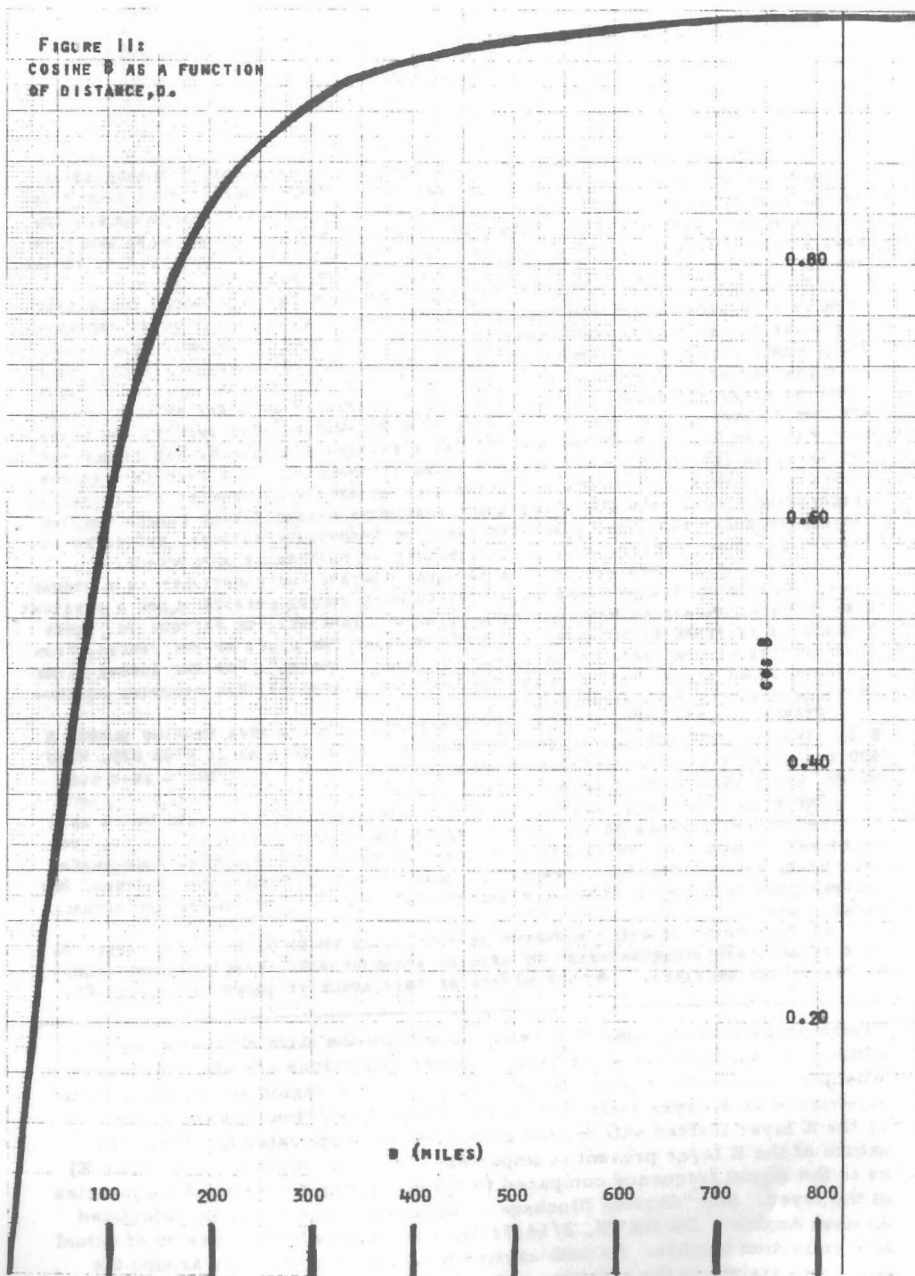
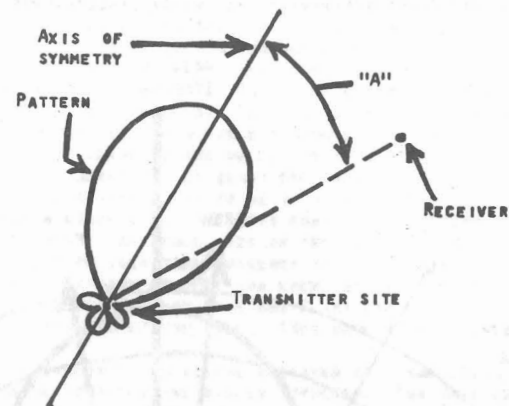


FIGURE I
DEFINITION
OF ANGLE A.



ANGLE B HAS BEEN DEFINED AS THE ELEVATION ANGLE, AND IT VARIES WITH THE TRANSMITTER-RECEIVER SEPARATION. THIS SEPARATION IS ALWAYS MEASURED ALONG THE GREAT CIRCLE PATHS. SOME TRIGONOMETRY GIVES THE FOLLOWING EXPRESSION FOR THE COSINE OF ANGLE B.

$$\cos B = \frac{(3960 + H) \sin \left(\frac{D}{7920} \right)}{\sqrt{(31,363,200 + 7920 H) \left(1 - \cos \frac{D}{7920} \right) + H^2}}$$

IN THIS EXPRESSION THE ARGUMENTS OF THE SINE AND COSINE ARE IN RADIANs, AND MEASURED IN MILES. H IS THE REFLECTION HEIGHT AND D IS THE TRANSMITTER-TO-RECEIVER DISTANCE ALONG THE SURFACE OF THE EARTH. FOR DISTANCES UNDER 700 MILES AND AN ASSUMED REFLECTION HEIGHT OF 65 MILES THIS EXPRESSION SIMPLIFIES TO:

$$\cos B = \frac{(0.508) D}{\sqrt{0.254 D^2 + 4225}}$$

THIS EXPRESSION WILL PROVIDE AN ANSWER WITH LESS THAN 1% ERROR. FIGURE II IS A GRAPH OF COSINE B VERSES THE TRANSMITTER-RECEIVER DISTANCE D.

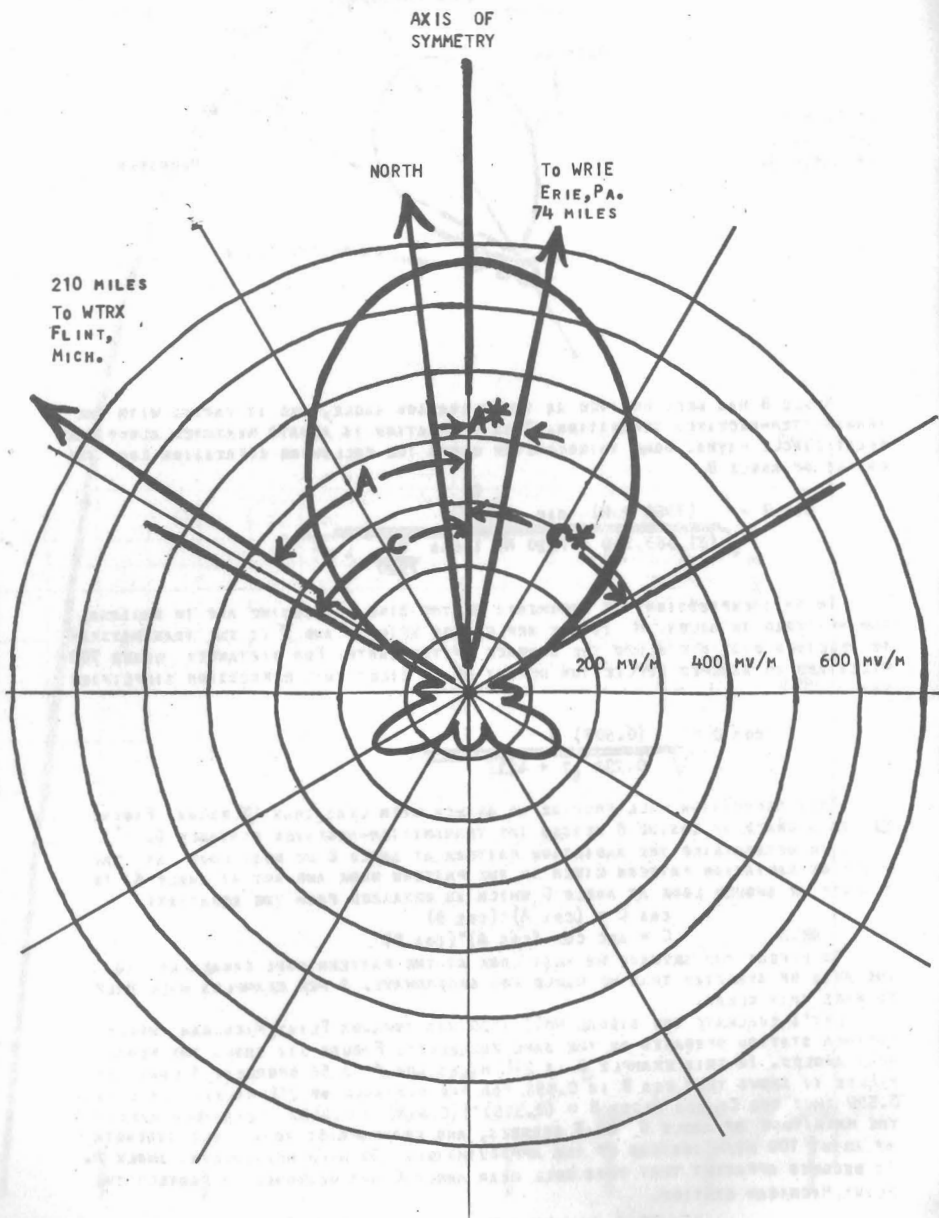
IN DETERMINING THE RADIATION PATTERN AT ANGLE B WE MUST LOOK AT THE POINT ON RADIATION PATTERN GIVEN IN THE PATTERN BOOK AND NOT AT ANGLE A. IN REALITY WE SHOULD LOOK AT ANGLE C WHICH IS OBTAINED FROM THE EQUATION:

$$\begin{aligned} \cos C &= (\cos A) \cdot (\cos B) \\ C &= \text{ARC COS } (\cos A) \cdot (\cos B) \end{aligned}$$

IN EFFECT FOR SKYWAVE WE MUST LOOK AT THE PATTERN MORE BROADSIDE TO THE AXIS OF SYMMETRY THAN WE WOULD FOR GROUNDWAVE. A FEW EXAMPLES WILL HELP TO MAKE THIS CLEAR.

LET'S EVALUATE THE SIGNAL WHOT 1330 HAS TOWARDS FLINT, MICHIGAN WHERE ANOTHER STATION OPERATES ON THE SAME FREQUENCY. FIGURE III SHOWS THE PERTINENT ANGLES. IN THIS EXAMPLE D IS 210 MILES AND A IS 56 DEGREES. A LOOK AT FIGURE II SHOWS THAT COS B IS 0.858 FOR THE DISTANCE OF 210 MILES. COS A IS 0.559 THUS $\cos C = \cos A \cdot \cos B = (0.559) \cdot (0.858) = 0.480$. THIS THEN MAKES THE MAGNITUDE OF ANGLE C 61.3 DEGREES, AND CORRESPONDS TO A FIELD STRENGTH OF ABOUT 100 MV/M INSTEAD OF THE APPROXIMATELY 150 MV/M MEASURED AT ANGLE A. IT BECOMES APPARENT THAT THIS NULL NEAR ANGLE C WAS DESIGNED TO PROTECT THE FLINT, MICHIGAN STATION.

FIGURE III: PATTERN OF WHOT CAMPBELL, OHIO AND THE ANGLES USED IN CALCULATING SKYWAVE RADIATION TOWARDS ERIE, PA. AND FLINT, MICHIGAN.



EXAMPLE #2:

HERE WE WILL EVALUATE THE SIGNAL THAT WHOT 1330 DIRECTS TOWARDS ERIE, PA. WHERE ANOTHER STATION OPERATES ON 1330 KHZ. THE PATTERN MIGHT INDICATE TO YOU THAT WHOT DOESN'T PROTECT THIS STATION AT ALL, BUT THIS IS NOT THE CASE. USING FIGURE III AGAIN WE FIND THE ANGLES OF INTEREST, A^* AND C^* . THE $*$ BEING USED TO DISTINGUISH THESE ANGLES FROM THOSE USED IN CONNECTION WITH THE STATION IN FLINT, MICHIGAN. FOR THIS EXAMPLE $D = 74$ MILES AND $A = 11$ DEGREES. FIGURE III TELLS US THE VALUE OF $\cos B$ IN THIS CASE IS 0.502 AND $\cos A$ IS 0.982. THUS $\cos C = \cos A \cos B = (0.982) \cdot (0.502) = 0.493$. THIS MAKES THE MAGNITUDE OF ANGLE C 60.5 DEGREES, AND THIS CORRESPONDS TO A FIELD STRENGTH OF 120 MV/M AT ONE MILE TOWARDS ERIE AND LIES QUITE CLOSE TO THE NULL. THE GROUNDWAVE RADIATION TOWARDS ERIE IS MUCH HIGHER (AT ANGLE A) AT ABOUT 640 MV/M AT ONE MILE. THIS IS A PRIME EXAMPLE OF WHERE A LOCATION SEEMS TO BE IN A LOBE WHILE IT IS REALLY IN A NULL AS FAR AS SKYWAVE IS CONCERNED. THERE IS CONSIDERABLE ERROR POSSIBLE IN THESE EXAMPLES MOSTLY DUE TO THE SMALL SIZE OF THE PATTERNS IN THE PATTERN BOOK AND THE SLIGHT ERRORS THAT INEVITABLY OCCURRED IN THE DRAWING OF THESE PATTERNS. IF WE HAD THE EXACT PATTERN OF WHOT AND KNEW THE EXACT BEARING OF THE AXIS OF SYMMETRY WE MAY HAVE FOUND THAT ERIE AND FLINT LIE DIRECTLY IN THE NULL INSTEAD OF WITHIN A FEW DEGREES OF THE NULL. (SEE NOTE #2-- W. BOYD)

EXAMPLE #3:

IN THIS EXAMPLE WE WILL EVALUATE THE SIGNAL RECEIVED AT ITHACA, N.Y. FROM WPTR 1540 ALBANY, N.Y.. FIGURE IV SHOWS THE ANGLES INVOLVED. FOR THIS EXAMPLE WE HAVE $D = 142$ MILES AND THE CORRESPONDING $\cos B = 0.746$ (FIGURE II) THUS $A = 29$ DEGREES AND $\cos A = 0.875$.

THEREFORE $\cos C = \cos A \cos B = (0.875) \cdot (0.746) = 0.652$ HENCE $C = 49.5$ DEGREES. THIS ANGLE IS VERY CLOSE TO THE NULL AND IT IS DIFFICULT TO GET A VALUE FOR THE FIELD STRENGTH AT ONE MILE. HOWEVER THIS SHOULD BE A FIELD OF ABOUT 100 MV/M. IT SHOULD BE POINTED OUT THAT THE RADIAL AT ANGLE C IS ON THE OTHER SIDE OF THE NULL FROM THE RADIAL TOWARDS ITHACA AT ANGLE A . GROUNDWAVE SIGNAL TOWARDS ITHACA IS APPROXIMATELY 300 MV/M AT ONE MILE AT ANGLE A .

EXAMPLE #4:

INSTEAD OF CALCULATING THE FIELD AT ONE POINT WE CAN CALCULATE THE ENTIRE PATTERN CORRESPONDING TO RADIATION AT A CERTAIN ELEVATION ANGLE (B). IF WE CONTINUE THE CASE JUST CONSIDERED WE CAN CALCULATE THE ENTIRE PATTERN. FIRST WE EVALUATE THE PATTERN AT AN ELEVATION ANGLE OF 41.75 DEGREES CORRESPONDING TO THE TRANSMITTER-RECEIVER DISTANCE OF 142 MILES ($\cos B = 0.746$). SEVERAL REPRESENTATIVE POINTS CAN BE TAKEN AND THE RESULTING ANGLE C AND FIELD STRENGTH EVALUATED. THIS HAS BEEN DONE BUT TO SAVE SPACE THE CALCULATIONS WON'T BE SHOWN, RATHER THE RESULTING PATTERN IS SHOWN IN FIGURE V. THE PATTERN SHOWS THAT IF YOU WERE TO CIRCLE THE TRANSMITTER AT A DISTANCE OF 142 MILES YOU WOULD GET THE STRONGEST FIELD IN APPROXIMATELY NORTH AND EAST DIRECTIONS, 49.5 DEGREES FROM THE AXIS OF SYMMETRY. THESE LOCATIONS ARE A FEW MILES WEST OF PLATTSBURGH, N.Y. AND THE SOUTHERN PART OF BOSTON, MASS. THE WEAKEST SIGNALS LIE ACROSS THE AXIS OF SYMMETRY TO THE SOUTHWEST OF ALBANY, 10 MILES WEST OF SCRANTON, PA. WE NOTE THE REAR LOBE HAS DISAPPEARED AND THAT THE PATTERN ITSELF IS SOMEWHAT SMOOTHER. THIS SMOOTHNESS AT HIGH RADIATION ANGLES IS A GENERAL RESULT.

YOU WILL REMEMBER THAT WE ASSUMED THAT TRANSMITTING TOWERS RADIATE EQUALLY WELL AT ALL ANGLES ABOVE THE HORIZON, THIS IS JUST NOT TRUE. HOWEVER THE EFFECT IS THE SAME WHETHER A STATION IS NONDIRECTIONAL (SINGLE TOWER) OR DIRECTIONAL (MULTIPLE TOWERS). AS ANGLE B INCREASES THE STRENGTH OF RADIATION GENERALLY DECREASES. EXTREMELY TALL TOWERS HAVE PECULIAR VARIATIONS IN FIELD STRENGTH WITH INCREASING B . FIGURE VI SHOWS THE RELATIVE RADIATION AT VARIOUS ELEVATION ANGLES B COMPARED TO RADIATION IN THE HORIZONTAL PLANE. IT IS PLOTTED IN $\cos B$ SINCE WE HAVE BEEN WORKING DIRECTLY WITH THIS QUALITY IN THIS ARTICLE. NOTE THAT OF $\cos B$ OF ABOUT 0.80 THE RADIATION DROPS TO ZERO FOR A $5/8$ WAVELENGTH ANTENNA. THIS VALUE OF $\cos B$ CORRESPONDS TO A TRANSMITTER-RECEIVER DISTANCE OF ABOUT 168 MILES (SEE FIGURE II). AT THIS DISTANCE FROM A STATION USING A $5/8$ WAVELENGTH ANTENNA VIRTUALLY NO SKYWAVE WILL BE RECEIVED. IT SHOULD BE NOTED

FIGURE IV: PATTERN OF WPTR ALBANY, N.Y., AND ANGLES USED IN CALCULATING THE SKYWAVE RADIATION TOWARD ITHACA, N.Y.

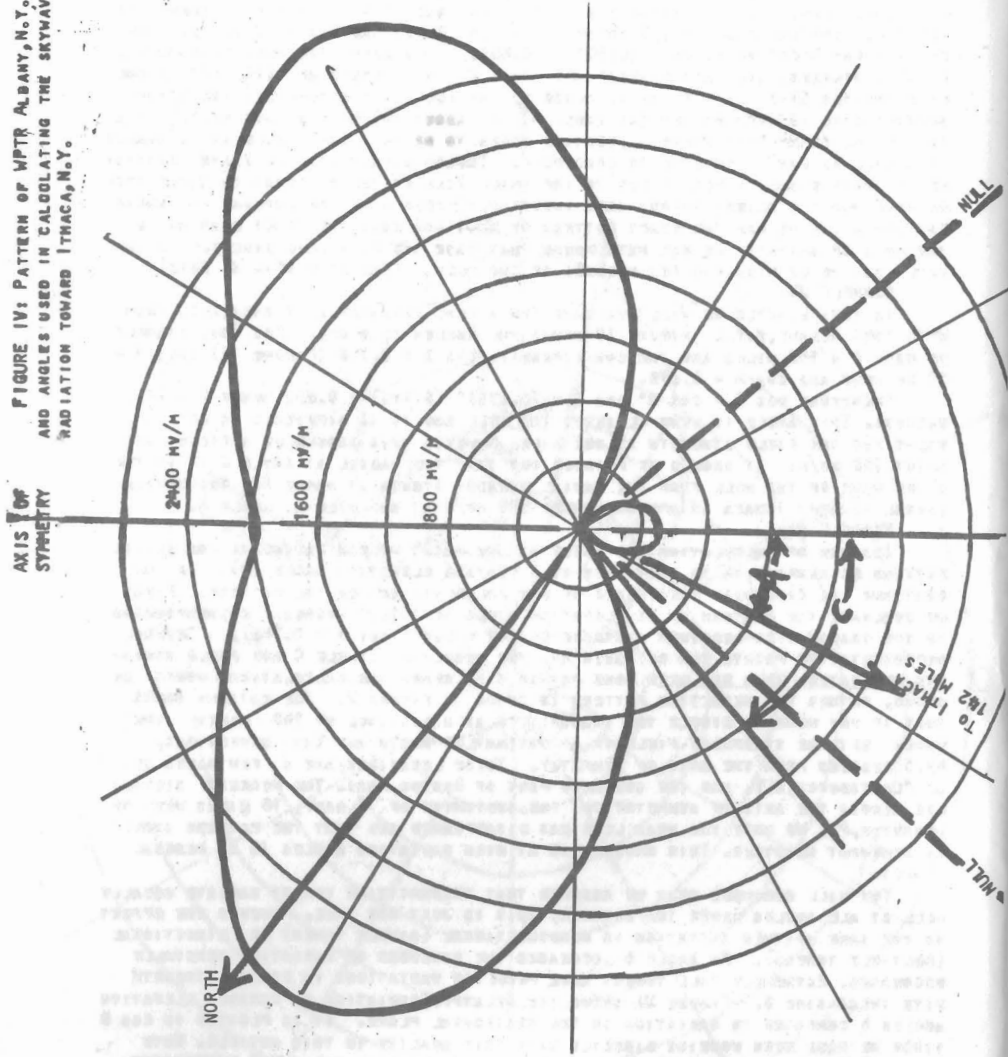
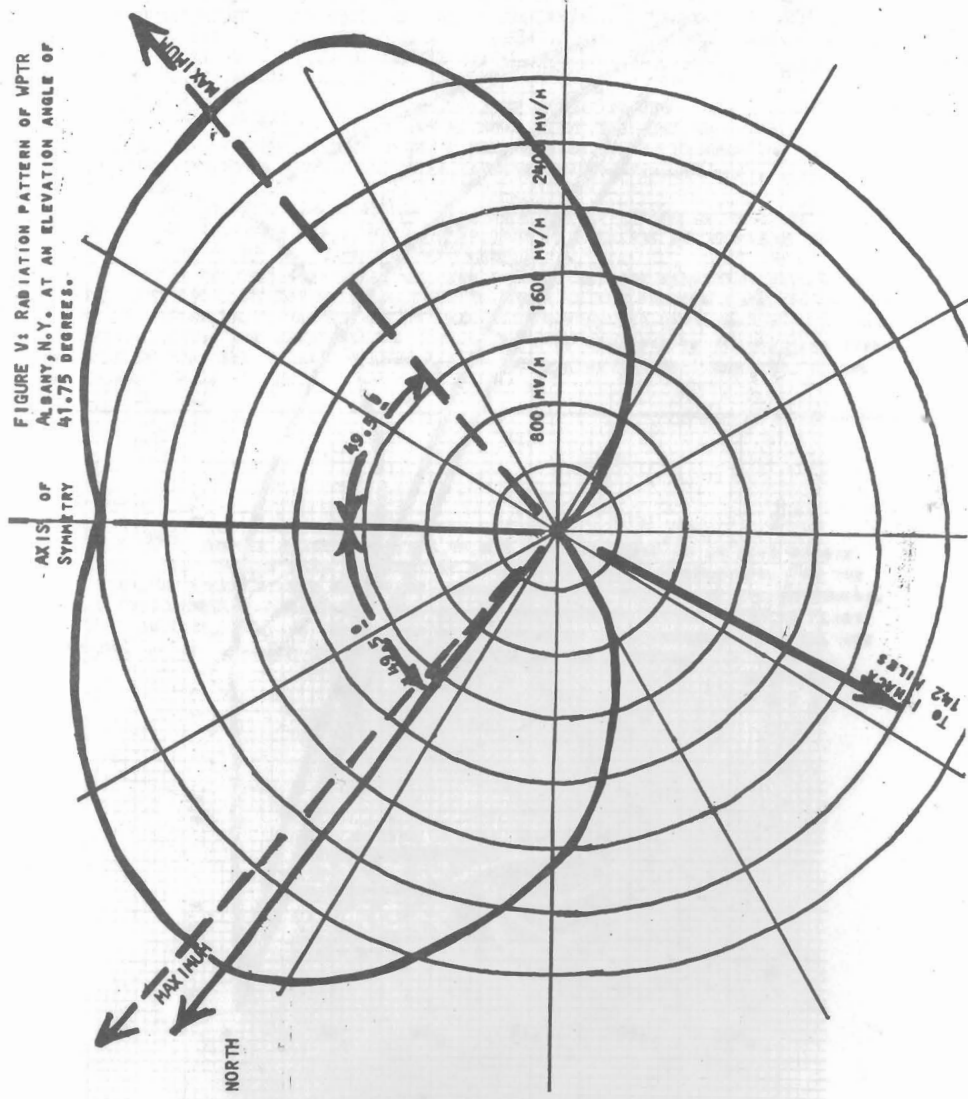
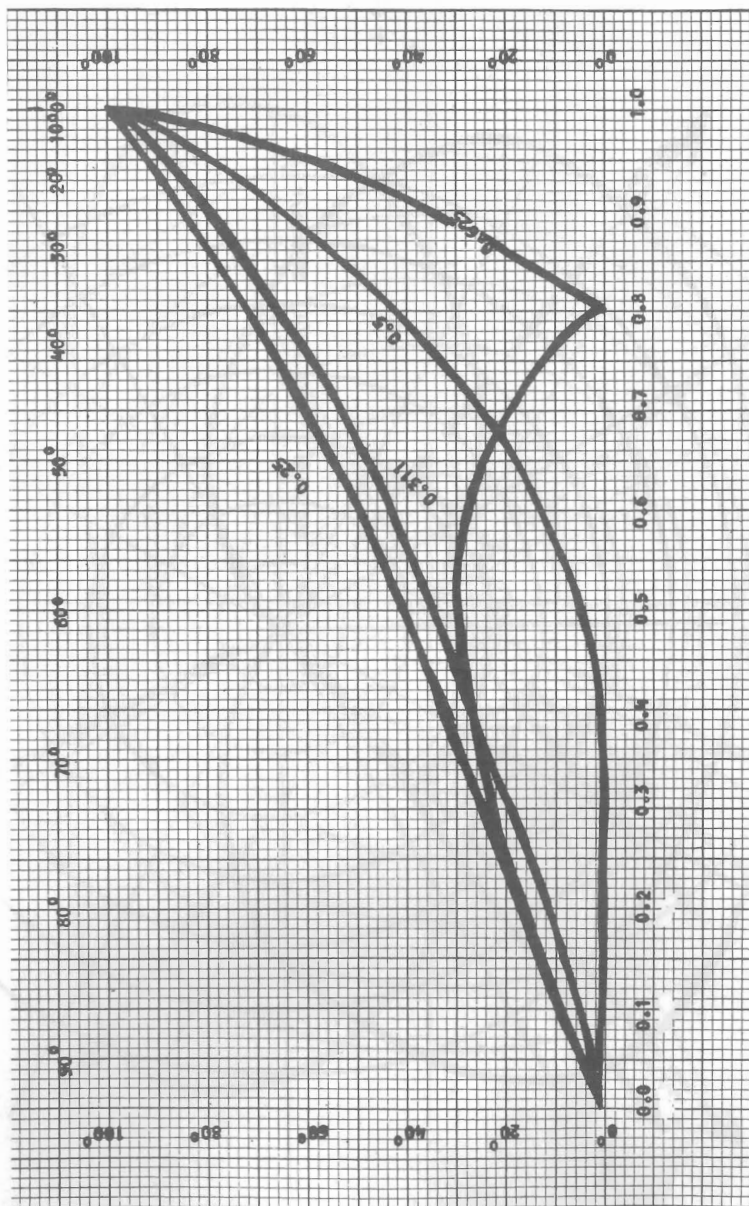


FIGURE V: RADIATION PATTERN OF WPTR ALBANY, N.Y., AT AN ELEVATION ANGLE OF 41.75 DEGREES.





THAT THE TALLER TOWERS RADIATE A STRONGER SIGNAL IN THE GROUND PLANE THAN THE SHORTER TOWERS DO. A RADIO STATION USING A $5/8$ WAVELENGTH TOWER HAS A GROUND PLANE FIELD STRENGTH OF ALMOST DOUBLE THAT OF A STATION USING A $1/4$ WAVELENGTH ANTENNA OF THE SAME FREQUENCY.

THE PATTERN OBTAINED FOR WPTR IS NOT CORRECT IN MAGNITUDE ALTHOUGH IT IS CORRECT IN SHAPE (FIGURE V). WE WOULD HAVE TO KNOW THE HEIGHT OF WPTR'S TOWERS IF WE WERE TO GET THE CORRECT MAGNITUDE OF THE PATTERN. IF THEY WERE $1/2$ WAVELENGTH TALL FIGURE VI SHOWS THE FIELD STRENGTH IS 34% OF THAT IN THE GROUND PLANE ($B = 41.75$ DEGREES, $\cos B = 0.746$). SHOULD THESE TOWERS BE $5/8$ WAVELENGTH TALL THEN THE APPROPRIATE FACTOR IS 12%.

LOCAL WTKO 1470 RECENTLY BEGAN NIGHTTIME OPERATION FROM FOUR IN-LINE TOWERS ON THE SOUTH END OF ITHACA. THESE TOWERS SEEM TO BE $5/8$ WAVELENGTH TALL WHICH MEANS IT SHOULD BE DIFFICULT TO RECEIVE THEM 165 TO 170 MILES FROM THE TRANSMITTER. RECEPTION WOULD BE DIFFICULT IN TORONTO, ONTARIO-PUNXSUTANNEY, PENNA.- OR PLAINFIELD, N.J.

IF A STATION USES TOWERS OF TWO OR MORE DIFFERENT HEIGHTS, AS IS OFTEN DONE, THE RESULTS OF CALCULATIONS SHOWN IN THIS ARTICLE WILL NOT BE ACCURATE EVEN THOUGH THE TOWERS DO LIE IN A STRAIGHT LINE.

WE SHOULD MENTION THAT THE RADIATION PATTERN AT SOME ELEVATION ANGLES CAN BE DIFFERENT FROM THE GROUND PLANE PATTERN SHOWN IN THE PATTERN BOOK. ESPECIALLY FOR LARGE ANGLES WHICH CORRESPOND TO TRANSMITTER-RECEIVER DISTANCES OF LESS THAN 150 MILES. IF YOU ARE BROADSIDE TO A STATION'S ANTENNA SYSTEM THE PATTERN STAYS THE SAME IN YOUR DIRECTION. REGARDLESS OF THE DISTANCE A NULL REMAINS A NULL AND A LOBE REMAINS A LOBE.

NOTE #2...

THE WHOT ANTENNA SYSTEM CONSISTS OF A 5 IN-LINE ARRAY ON AN AXIS OF SIX DEGREES. THESE TOWERS HAVE A HEIGHT OF SLIGHTLY OVER 0.5 WAVELENGTH. FOR THE MOST PART THE CALCULATIONS ARE QUITE ACCURATE EXCEPT THAT WE USE TALLER TOWERS. IN REALITY THE NULLS QUESTIONED EARLIER ARE DESIGNED TO PROTECT WTRX IN FLINT AND WRIE IN ERIE. DUE TO THE NUMBER OF STATIONS ON THIS FREQUENCY SEVERAL ARE PROTECTED BY THE REDUCED SKYWAVE OFF THE SIDE OF THE PATTERN.

Wes Boyd
WHOT

SALMON ARM 580 kc
CKXR
CKCR Radio
 REVELSTOKE 1340 kc

DOMESTIC X DIGEST



EDITOR:

R. J. Edmunds
box 946
Wayne, n. j. 07470

Greetings and solutions again. Many change items this time. Canadian data from John Oldfield, most of U.S. data from ERC's "Hrd Since Last Issue" thing going back about 6 weeks up to present.

changes

- + 560 CHTK-BC SCH: NSP
- + 570 CFWH-YT SCH: 1000(1100)-0457(0408) -both skeds in parentheses for Sun.
- + 580 WKTY-WI SCH: 24 hrs, SP MM 0300-0600
- + 630 CP -PQ Lachute, 500/1000 U4. (Yes, finally this time it's for real)
- + 710 KIRO-WA NET: M
- * 800 CJLX-ON Owners of CFEK/CKEK have applied to CRTC to take this over. CJLX was recently deleted.
- + 840 WHAS-KY SCH: NSP
- + 900 CP -BC Donald Station, 40 U1, // CBU-690
- + 950 WCTN-MD ex-WXLN. Is on.
- + 960 WERC-AL SCH: NSP
- * 1000 WSUM-OH Should be on soon now, as are hiring personnel (JS)
- + 990 CBFU-PQ Clova now here 40 U1 ex-710, not listed in log there either.
- + CP -BC Terrace, 40 U1, FF // CBUF-FM, Vancouver.
- + 1060 KYW -PA MM SP begins 0100. (TRS)
- + 1170 CKGY-AB New call, Red Deer. Expects to run NSR. Air date 6/1/73.
- + 1230 CJOK-ABT Correct power is 1000/500 U1.
- + CJNL-BC SCH: 24 hrs.
- +xx 610 CHNL-BC SCH: 24 hrs.
- + 1260 CFRN-AB SCH: SP MM again
- + WEZE-MA SCH: SP MM 0100-0300
- +xx 1230 KYSM-MN SCH: NSP
- + 1310 WEEL-VA SCH: NSP
- + 1340 CHAR-NWT SCH: NSP daily.
- + 1370 CP -BC Parkerville, 1000 U2, // CHUB-1570 (AN-6) but w/ 2 hrs local
- + 1380 WAMS-DE SCH: AN SA, SU AMs.
- + 1390 WEAM-VA SCH: NSP
- + 1400 CJNL-1 -BC SCH: NSP
- + KVOY-AZ SCH: NSP
- + 1450 WKTQ-ME NET: Ae
- + 1470 CJVB-BC SCH: 24 hrs, SP MM
- + 1490 CHGO-BC SCH: 24 hrs, SP MM
- + KEDI-CO SCH: NSP
- * WLDB-NJ Noted still on while in Atlantic City on business. Will no doubt be on pending appeal (TRS)
- + 1510 WNLC-CT SCH: 24 hrs, SP MM
- + 1540 KBES-WA SCH: NSP

call applications

- 1230 WJEF-MI req. WCUZ
- 1340 WJOI-AL req. WXOR
- 1490 WSRA-FL req. WHAY

REPRINTING OR RECOPYING OR OTHER USE OF MATERIALS CONTAINED IN DDXD WITHOUT PROPER CREDIT TO THE INDIVIDUAL REPORTER AND THE N.R.C. IS STRICTLY PROHIBITED. COPYING OR REPRINTING MATERIAL CREDITED TO OTHER CLUBS IS PROHIBITED UNDER ANY AND ALL CIRCUMSTANCES. - The management.

r/c's

29

- FEBRUARY : 1st MM: KDLA-1010, KREH-900. (NRC); 3rd MM: WBTS-1480, KLMS-1480, KAKO-1400, KVOP-1400, (NRC); KTHS-1480, KSYL-970, KPUR-1440 (PKH)
3rd TU: KOLY-1300 (PKH).
- MARCH: 1st MM: KCUZ-1490, KVSL-1450 (PKH); 2nd MM: KDTH-1370, KTYN-1430, KOVE-1530 (JMP); 3rd MM: WDIC-1430, KWKY-1150 (JMP), WPJD-1550, WAAO-1530 (JMP, WB), WKSK-1600, WORV-1580 (WB), WBBQ-1340, WCON-1450 (JS); 3rd TH: WHII-1570 (TRS); 3rd FM: WWDR-1080, WSKE-1050, WMNS-1360 (JMP).

- CHANGES: 1st SA: WCBY-1240-MI new time is 0300-0310. (NRC)
- 2nd MM: KEIN-1310-MT new time is 0500-0530. (JO)
- 2nd FM: KSPR-1590-AR is now 0530-0545, ex. 3rd SA. (PKH by card.)
- 3rd MM: WAAO-1530-AL new time is indeed 0230-0245 as rep'd by RJE earlier. Conf'd by JMP. JS acknowledged error in time conversion, hi.
- WHSC-1450-SC new time 0115-0130 (JS)

sunset & evening

- 620 WVMF-VT Hrd 3/15 w/IDs between records 2232 & 2239 at times atop o/WVNJ, no sign of WHEN. (TRS)
- 630 CJET-ON 3/15 2230 ID ending one religious pgm, beginning another w/ exc. sig., new here (TRS)
- 730 WACE-MA S/off w/SSB 1800 3/18 w/local-like WPIY looped. Was semi-regular here last winter (JS)
- 1020 WCIL-IL Noted weakly 1850 w/KDKA looped. Tho this appears occasionally WPEO never hrd. (JS)
- 1050 WCEF-WV Killing usual WBUT @ s/off 1831 3/18 (JS)
- 1070 WNCT-NC 3/15 w/ wx fest, ID 2215 local car dlr ad o/CBA. (TRS)
- 1510 WJCO-MI Topping WLAC 1830-45 s/off 3/18 w/ c&w mx. (JS)
- WLKM-MI S/off SSB 1845 3/18, ment. s/on 0530 which seems a bit early for a daytimer. (JS) ** True - RJE
- 1560 WFSE-WV Strong s/off SSB 1828 3/14 u/o WQXR. (JMP)
- 1600 WITF-OH Quite good w/ s/off no SSB several mentions of FM 3/14 1845
- WAQI-OH Not unusual, but vy strong 1830 s/off 3/12. (JMP)

midnight to sunrise

- 600 WMT -IA Mostly atop normally-dominant WPDQ 3/19 0151 w/CBS mx (RF)
- 620 WSUN-FL Good 3/19 0200 mostly atop w/ mx (RF)
- 860 WGOM-IN ET w/rr noted 0228 3/19, loud (JS)
- 900 WSWN-IL ET-sounded like re-broadcast of WWV. ID 0125 2/26 (PKH)
- 910 WFDW-MI OC ET 3/14 0045-0130+, few IDs (WB)
- 920 WOKY-WI S/off 0058 w/SSB 3/19 w/ no ment. of s/on time. (WB) ** Hmm, normally off later, no ?? -RJE
- 940 WINZ-FL Killing freq. for a change, only CJGX u/0201-15 3/16 (WB)
- WGRP-PA From sig. & DF, this was ETing 3/16 0230-0300 (WB)
- 950 WRYT-MA Exc. on 3/19 TEST. Both pws good, but 500w in battles w/ WKAZ crap 0130-0300+ (WB)
- @ 3/19 TEST s/on 0130 exc. here momentarily thru WPEN OC which went off 0132. Easy, then. (TRS)
- @ Atop unID TT w/ TT, IDs. Strong on 5kw (+25/s9). S8 on 500 watt psa. 3/19 0130 (JMP)
- 970 WFLA-FL Regular pest not noted MM 3/5, anybody know why?? (PKH) ** maybe they were off???, hi -RJE
- WAVE-KY Testing w/mostly OC, only one poor ID hrd 0202 3/5, signal much weaker than usual, AXR or DA, maybe. (PKH)
- KOIN-OR Copied ID weak 0200 u/WAVE OC, KAKC. Only 3rd time ever hrd here. 0300 s/off lost u/QRM. (PKH)
- 1000 KKIM-NM F/c not hrd here, tho cx indicate I should have. Is this 3rd or 4th MM check?? (JS) ** Hrd 3rd MM Nov, Dec., Jan., Feb. -RJE
- 1060 KAMA-TX Test copied 2/26 but was 0200-0205. IDs at start and finish. (PKH)

WIBC-IN ET most of 3/19. KNY,WINA,WFLI 1st. (WB)
 1110 WHIM-RI ET/OC 0130 3/19, not sure if beginning, end, or middle. hi,
 but atop KFAB & WSLV. (JMP)
 WSLV-TN On ET 0133 3/19 w/WHIM, o/KFAB, playing "Dixie" betw. anncs.
 (gets kinda boring, hi), w/ many IDs. (JMP)
 WNAR-PA W/ET latter part of MM 3/19 w/ several IDs hrd. OC-TT. (JMP)
 1140 WQBA-FL Hrd 3/19 0307 o/uKRAK while looking for KLUC test. Had rrmx,
 0310 ID. New (RF) ** rr mx ?? This is an SS'er,y'know-RjE
 @ 3/19 ID 0300 in midst of apparent ET-OC noted while look-
 ing for KLUC, not hrd. (TRS) ** RF, this most likely what
 the ID was in unless WQBA ETs w/rr -RjE
 1150 KXLR-AR ET-TT starting 0500 2/26, no WDEL earlier. QRM vy bad, even
 usual pest KDEF suffering, hi (PKH) ** Was this f/c??-RjE
 Useta be listed this time. Hrd last season. -RjE
 * 1210 WCAU-PA OC 0100-0230+ 3/19, hope this continues (WB) ** Don't count on
 it, hi -RjE
 1230 WERI-RI Local quality 3/16 0355-0405+ (WB)
 1260 WFBM-IN Finally w/ several clr IDs and ecology promo atop channel
 0106 3/16 (JMP)
 1280 WKST-PA Again, a long-wanted one seemed to be atop CHAM. Had rr,
 many IDs, quite good cons. little power this way. (JMP)
 1290 WHIO-OH S/off 0123 3/19 no SSB (WB)
 WVCW-WV Well atop channel w/ID & sx 0430 3/17 (JMP)
 1300 KWCK-AR In '04 "On the air for external frequency measurement" then
 TI. sn't seem to be much pattern to this, but they do test
 freq. by MMs. Exc. sig as usual. (PKH) (PKH)
 1310 WDXI-TN 0104 s. gets in weak but regularly after WRR s/off. Hrd 3/5
 xx 1330 WEBC-NY 3/19 ET noted 0015thru ID 0034. barely atop freq. new. (TRS)
 1320 unID Tele-talk format w/WJAS & WHOT slop. 0020-35+ no DF (WB) ***
 What date hrd ?? -RjE
 1340 WLAV-MI Good 3/14 0240 atop w/ID;0241 rr; 0243 wx (RF)
 WMID-NJ Surfaced briefly w/ ID 3/14 0246, new (RF)
 1360 WKAT-FL Atop w/WDRG off M 3/12, had tele-talk show w/ calls "from
 Dade County " or other surrounding areas. ard 0150 (JMP)
 1390 WFMJ-OH ET-OC-TT 0205-0330+ 3/16 (WB)
 1400 WOND-NJ 3/16 w/mx, ID, etc. 0354-0404+ (WB)
 unID C&W AN 3/16 in WOND fades. WJET/WYSL/WINC/WPAY absent (WB)
 1440 WVMG-GA ET w/hi-freq. TTs 0035-0045+ 3/19. Only one poor ID 0041.(WB)
 1450 WVCN-IL O/u 3/14 0229 w/soul mx, 0230, ID, "WVCN Cicero, the Stoned
 Giant" (RF) ** That's their problem. -RjE
 WILM-DE ET-TT-OC noted 0100-35+ 3/19 L&C. Anncd as unsked eng. test.
 Said Rosie Gee show would resume when test completed. (JS)
 1460 KBSF-LA Test copied weak 2/26, 2 IDs from 0125 to ard 0210, bad QRM de
 WPNX. (PKH)
 1490 CHYM-ON Believe this 0202-06 w/nx,(male & female anncrs.) 3/15 (WB)
 1530 KCHY-WY Finally hrd 0250-0330 3/19 continuous mx pgmg, then simply
 "KCHY, Cheyenne" 0301:50. Abt. 50-50 w/KFBK. ID 0325 as "24
 hours a day with 10000 watts of gold power, this is KCHY,
 Cheyenne" (JS)
 @ Had McR u/KFBK, but no IDs. Starr w/ lower noise level, sez
 KCHY. MM 3/19, sez IDs every 15-20 mins. Till I catch ID, I re-
 fuse to count it. but had to be,.... (WB) (WB)
 WCKY-OH Off & w/ETs 3/15 0130-0245+; 3/16 0140-0330+ & MM 3/19 as usual
 1550 WYNA-NC ET w/ c&w mx & TT noted 0210+ 3/19 (Starr)
 1560 WGLB-WI ET w/Mitch-Miller stuff 3/14 0113-0120+, also 3/2 w/same.(WB)
 @ ET way atop 3/14 0113 w/Mitch Miller mx. 0117 TC, ID, then more
 mx to 0121 ID. 0127 final ID then TG (RF)
 WTAI-FL 3/18 s/on noted 0615 all alone o/CM-- until WTRQ s/on 0630(TRS)
 1580 KTGR-MO Et-mx noted w/ID 0316, annc'd as "program tests" off 0320 3/19
 (JS)
 1590 KWEY-GK ID in ET 0125 2/26, don't think regular thing. (PKH)

1600 WLNQ-NY ET/TT noted 0029 2/20. ID 0117 (JS)
 WHOL=PA ET-TT noted 0056, ID 0059, then off 2/20 (JS)

REPORTERS:

Jerry Starr (JS) - Youngstown, Ohio - HQ-180, 4' loop
 Wes Boyd (WB) - Youngstown, Ohio - HQ-180A, 4' loop
 Richard Frcho (RF) - Cleveland, Ohio - HQ-180A, SM-2, 100' LW
 Paul K. Hart (PKH) - Fort Worth, Tx. - SX-28A w/MF, box loop w/ amp/. Fisher
 90T w/ SM-1
 Tom Sundstrom (TRS) - Willingboro, N.J. - HQ-150 w/ SM2 or DX-150A w/ LW.
 Jim Poterba (JMP) - Yardley, Pa. - HQ-200 w/ SM-2.
 John Oldfield (JO) - Edmonton, Alta., Republic of Western Canada

Thassit for now, 73 de RjE *AK*

DDXD HOTLINE - (201) - 335 - 6397 - ANSWERED IF HOME.

MORE OF ERC'S APRIL FUEL SECTION...

OK, boys - we've finally found out what GFN is talking about in those articles!
 It's BCB DX! Sorta fancy, though - not like turning on your radio, tuning it and
 looking for new stations, but it's BCB DX none-the-less! But ya still gotta
 hear 'em on the receiver!

We are contemplating a few new abbreviations, like:

NSFP - No silent period, hardly.

ANSP - Almost no silent period.

NKSP - No known silent period.

SFPR - Silent periods really rare.

SPFW - Silent period'd be welcome.

SPOW - Silent period only a wish.

But, here's to the last Sunday of April - the only day all year that the MSP sta-
 tions are on the air only 23 hours!

But woe to the last Sunday of October - that's the day they're on TWENTYFIVE hours!

And now, this column will observe its regular 51 week silent period. If you have
 any comments, please send them all to Don Ericsson of IRCA - he's got broad
 shoulders! Look at all he endures!

