



DX NEWS

*the magazine of the
National Radio Club*

— SINCE 1933 —

VOLUME 51 ISSUE 25 APRIL 16, 1984

From the mail we've gotten here at HQ, sounds like everyone enjoyed the last issue. However, what's all this talk about the cover being multi-color??? It all looked the same color to me, hi.

Word from the R & D Department is that the 7th Edition of the Domestic Log Book will be out later this year, in time, I'm told, for the '84-'85 DX Season. So stayed tuned for futher info on this and other projects.

1984 NRC CONVENTION not that far away, not too early to plan for. There's a Reservation Form, on the inside back cover, for your convenience. This annual great event is held over the LABOR DAY WEEKEND, Aug 31st thru Sept 2nd.

Antique Radio And Tube Co. George Fathauer, 1725 W. University, Tempe, AZ 85281, 602-894-9503. According to Dr. Tom Gruis, this guy has some 60,000 tubes on stock. When you contact him tell him you got the word from Tom and the NRC!

Data Transfer via Modem can be done at HQ. Procedure is as follows: Call First, voice, make arrangements with HQ personnel. You will be instructed what to do and so forth after voice communications is established. And Please don't wait till the last minute to transfer your article, story, or column, UNLESS you've already done it once with us. We haven't had any problems yet with anyones machine but there's always a first. Equipment online: Hayes Modem, 110 or 300 baud available, etc. You may call when phone rates are favorable for YOU.

On Oblique Propagation - by Dallas Lankford is a "get out your calculator and VisiCalc" type article, hi. Interesting to say the least. Not recommended for adults over 26, hi.

Varactor Diode Applications, by Mark Connelly. Another get out your tools article. This will keep you busy over the summer months. Along with the previous fine articles by Mark. When you finally do build these projects why not let us know how they worked for you thru the MUSINGS column or maybe even write a follow up comment or article. Something to think about.

Remaining Publishing Schedule for Volume 51:

<u>Issue</u>	<u>Masthead Date</u>	<u>Pub Session Date</u>
26	May 7	April 29
27	June 11	June 3
28	July 16	July 8
29	August 20	August 12
30	Sept. 24	Sept. 16

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| 2.....AM SWITCH | 29.....On Oblique Propagation -
(Technical Article) |
| 3.....DDXD | 37.....Answers to Page 27 |
| 7.....IDXD | 38.....Book Review -
Music in the Air |
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Form |
| 13....SPORTS NETWORKS | 48.....NRC Facts & Your Name !!!
and Postage Due !!! |
| 15....VARACTOR DIODE APPLICATIONS | |
| 23....BANDSCAN | |
| CENTERFOLD...1340 KHZ Stn Location Map | |
| 26....SOMETHING NEW & PUZZLING | |
| 27....NRC HAM OPERATORS LIST | |

Sue

Mike

AM SWITCH

JERRY STARR
C/O WSRD RADIO
401 N. BLAINE AVENUE
YOUNGSTOWN, OHIO 44505

CALL LETTER CHANGES

Old call:	New call:	Old call:	New call:
800 WKVE KY Cave City	WSMJ	1240 WQBO PA Selinsgrove	WYGL
920 WTND SC Orangeburg	WKSD	1250 KVAR TX San Antonio	KXET
930 KYSS MT Missoula	KLCY	1360 WAZA GA Bainbridge	WYSE
KVGM WA Yakima	KBNG	1370 KXLF MT Butte	KCEZ
1030 *New CA Folsom	KHWY	1400 WXAM VA Charlottesville	WKAV
1080 WZTQ WV Hurricane	WVKV	1420 KSCR WA Renton	KRIS
1130 KKSI IA Mt. Pleasant	KILJ	1450 KTXH MT Whitefish	KSKR

APPLICATIONS FOR NEW STATIONS

720 MS Ellisville: 1000 D1
890 PR Cebila: 250 D1
1000 AL Robertsdale: 1000 D1
1100 GA Woodbine: 10000 D1
1300 FL Saint Augustine Beach: 500 D1
1330 NY Springville: 1000/1000 U4
1490 UT Salina: 1000/250 U1
1560 WA Sumner: 500 D1 (applicant for frequency vacated when the FCC cancelled KFWY's license. KFWY held a CP for 1000/1000 U3 on this frequency but never put it on the air. It is not known if this CP would go to the new licensee or if he would have to apply for it again)

GRANTS FOR NEW STATIONS

None

APPLICATIONS FROM EXISTING FACILITIES

1050 WMSG MD Oakland: power to 1000
1150 KASH MN Albany: power to 2500
WTWZ MS Clinton: move to 1120 kHz, power to 2500 D1
1520 WRSL KY Stanford: power to 1000
1550 WKVL TN Clarksville: day power to 2500
1560 KLLV CO Breen: decrease power to 5000 (CP, not on air)

GRANTS TO EXISTING FACILITIES

790 KXQR CA Clovis: 2500/2500 U4
960 WJCM FL Sebring: 5000/1000 U4
1030 WXJS TN Memphis: change to non-DA daytime and CH powers (CP, not on air)
1070 WGOS NC High Point: relocate XR
1230 WBHP AL Huntsville: changes in antenna system
1240 KBWA AZ Williams: to 1180 kHz 10000/1000 U1
1260 KIPR TX Diboll: move to Huntington, TX, reduce power to 500 D1
1350 KIPO HI Lihue: to 570 kHz 5000/5000 U1, relocate XR
1420 KTJS OK Hobart: changes in antenna system
1500 WLWL NC Rockingham: to 770 kHz 5000 D1

OTHERNESS

750 FL Englewood: application for new station returned
760 FL Destin: application for new station returned
930 NE Ogallala KOGA: application for power increase returned
1030 KS Wichita: application for new station returned
1190 FL Calahan: application for new station returned
1250 AK Homer KBBI: application for 890 kHz returned
1500 TN Jamestown WDEB: application for 820 kHz returned

73 and Good DX,

Jerry & BKF

Jerry Staff & Burrealo K. Foonman
(Let's see if HQ catches these typos)

KNUS
TALKRADIO 71

4450 MORRISON ROAD
DENVER, COLORADO 80219

SPEAKING TO A MEETING OF THE British Medical Association, Dr. John Havard warned that special ultrasound equipment used to monitor fetal heartbeats can also pick up ambient radio signals. One expectant mother was listening to her baby's heartbeat in his office, he said, when she suddenly heard what sounded like a voice from her womb saying: "Hey, Charlie, go to 14 Molton Street."

VIA JEFF LABET

DOMESTIC DX DIGEST

DAVE SCHMIDT
42 CHELWYNNE RD.
CASTLE HILLS
NEW CASTLE, DE 19720

Here is the NRC column which matches the excitement of driving the Pennsylvania Turnpike! When sending your items in, please keep them on one side of the paper, type or neatly write, skip a line (leaves some space) between items. We will make the switch to EDT at the end of the month, times til then will be EST. Confused? Read on!

SPECIAL:

550 KUSA MO ST LOUIS - 3/19 1630 noted w/new calls, CW music, ID, local ads, ex-KSD which bit the dust 3/19 0124. (2B-MO)
1110 WUHN MA PITTSFIELD - Per verie, their CP for 5000 watts directional will be operational by July 1st with the main lobe going northeast toward Albany, NY. (KG-PA)
KRCX CA ROSSVILLE - 3/20 2050-2100 o/KRLA w/Spanish programs and ID, Radio Capitol still the slogan, ex-KPIP. (DKK-CA)
1220 KDFC CA PALO ALTO - 3/14 2123 noted w/s/off w/dual ID w/KDFC-PM, s/o: was 8 minutes late, still classical, ex-KIBE. (DKK-CA)
1260 WBUD NJ TRENTON - Per talk w/CE, station has been running 500/250 non directional for 4 YEARS due to problems with antenna system move with old management, work underway in getting new DA system put in. (DS-DE)
1280 KREL NV HENDERSON - 3/21 2034-2042 atop KJOY/KKAL/KFRN w/tele-talk format and many mentions of travel and tourist spots in NV and AZ, requesting calls on various subjects, many ID's, call and format change, ex-KYOV. (DKK-CA)
1450 WCEA MA NEWBURYPORT - Now here w/1000/250 as of 3/18, ex-1470, no mention of this in Broadcasting or AM Switch! (STAN-MA)
KDXU UT ST GEORGE - Switch to 890 will probably be in late summer. (Info per L. John Miner, GM, KDXU).

FREQUENCY CHECKS:

3rd Mon - WVPC-1530 0054-0102 fair w/WCKY w/TT. (MD-MA)

EMERGENCY BROADCASTS:

1520 WIBG NJ OCEAN CITY - 3/30 0020-0100+ weak in WKBW null w/CW Music, ID's, storm related info. Again 3/31 0345-0400 still on this AM w/storm info and CW music, fair signal at times. (DS)
1550 WAAV AL HUNTSVILLE - 3/28 0157 very good w/rock music and severe thunderstorm watch for 3 county area til 0045, your favorite station, Dave! (JM-PA) And Neals closest unheard! (DS)

MIDDAY - MIDNITE:

600 WOKV FL JACKSONVILLE - 3/4 1820 good w/ID and ABC Talk Radio programming. (JB-NY)
WCAO MD BALTIMORE - 3/22 2355 good w/Country Roundup contest, PSA and CW music. (JM-PA)
610 WTVN OH COLUMBUS - 3/24 1904 good w/610 Weather Watch, ID and 70's type rock music. (JM-PA) With REAL rocks, hard stuff! (DS)
620 WSUN FL ST PETERSBURG - 3/3 1933 very strong w/CW music and "Sun Country" slogan on an all request weekend. (JB-NY)
680 WKDJ TN MEMPHIS - 3/27 2142 ID, B/Sol music, no KPEQ. (2B-MO)
790 WMC TN MEMPHIS - 3/7 2035 good w/CW music, ID. (SP-WI) (WPT-DC)
810 WSJC MS SOUTH MIAMI - 3/7 2001 good atop WTAR w/news, female anc'r. MAGEE - 3/4 1841 very strong in WGY null w/promo for gun show at the local armory. (JB-NY) And next week, they'll have a display of avacados! (DS)
850 WIDE AL BIRMINGHAM - 2/29 1824 very good w/wide 85 slogan, weather, Beatles music, noted again 3/4 1817 w/another Beatles record. (JB-NY) Sounds a little buggy to me! (DS)
860 WBGR MD BALTIMORE - 3/18 1810-1815 on top w/gospel music and full data s/off w/mention that they are still 1000 watts. (KG-PA)
900 WJJD GA SAVANNAH - 3/7 1826 alone in CHML null w/muddy signal but did catch clear ID and location, anc'r said good night then played an MoR song apparently up til s/off. (JB-NY)
910 WJCW TN JOHNSON CITY - 3/5 2300-2307 noted w/CBS news, local weather, CW music. (WR-FL)
940 WMAZ GA MACON - 3/15 1818 fair w/weather, oldies, female anc'r. (WPT)
970 WNVN MI ISHPEMING - 3/19 2001 good w/rock music and Q107 ID's, apparently fogot to shut down AM xtr and was running PM programming. (RK-IL) Who cares! (DS)

110
wvnh

WNAX Radio570

WJUN
1220 PEOPLE RADIO



85ACKVL

Gilley's

1000 WXTN MS LEXINGTON - 3/22 1912 s/off w/SSB w/WOFL. (SB-MO)
 1030 KHOG AR FARMINGTON - 3/18 1918 good w/music, sports, ID. (RK-IL)
 1060 WAMT FL TITUSVILLE - 3/18 1846 w/bumper sticker contest promo. (WR-FL)
 1070 WKDR NY PLATTSBURGH - 2/26 1715 in well w/full data s/off, fighting w/WSCP. (JB-NY) Was it a TKO? (DS)
 1090 CHRS PQ JACQUES CARTIER - 3/11 1754-1800 MOR music, French talk and detailed s/off, o/WBAL. (TF-CT)
 1100 KKLL MO WEBB CITY - 3/18 1930 good w/s/off, new station on air, power given as 5000 watts D1. (RK-IL)
 1110 CBD NB ST JOHN - 3/17 1810 in o/CKJD w/weather for area provinces, faded after about 3 minutes. (TF-CT)
 1190 KJEM AR BENTONVILLE - 3/22 1927-1929 good/fair w/CW music up til s/off o/WOMO. (SB-MO)
 1270 WXYZ MI DETROIT - 3/7 2050 fair w/talk show on politics. (SP-WI) Wonder who listened to that? (DS)
 1300 WSYD NC MT AIRY - 3/17 1927 evidently on day power, way atop w/MOR music, ads, ID. (JM-PA)
 1320 WHIE GA GRIFFIN - 3/4 1832 good w/ID and promo for midday news. (JB-NY)
 1330 WPTP FL FT PIERCE - 3/5 2127-2135 Sports Line talk show, ID. (WR-FL)
 1340 WLAT SC CONWAY - 3/18 1855 w/AM/FM ID and Charlie Daniels music. (WR)
 1350 WKGE SC DARLINGTON - 3/4 1831 very strong w/anc'r that sounded a lot like Gomer Pyle, ID into "wings of Faith" program. (JB-NY) Gee, I don't think Gomer sounds that bad, but he hasn't been on TV for a while and needed a job so....(DS)
 1370 WXCL IL PEORIA - 3/16 2020 fair w/political anc't, ID. (SP-WI)
 KGNO KS DODGE CITY - 3/14 1954 surprisingly good w/promo, ID and oldies. (JR-WI) Well, that's surprising! (DS)
 1380 WDAT FL ORMAND BEACH - 3/18 1855-1857 in/out w/Cuban, noted w/time check and weather report. (WR-FL)
 WYNK LA BATON ROUGE - 3/22 1855 fair w/PSA then faded. (JM-PA)
 WAOK GA ATLANTA - 3/5 1901 fair w/end of Carl Rowan report, ID. (WPT)
 1390 WPMJ OH YOUNGSTOWN - 3/18 1925 fair w/old songs o/u WSCI. (SP-WI)
 WGWY MI CHARLOTTE - 3/22 1844 good w/full data s/off w/mentions of Christian radio. (JM-PA)
 1400 WRAX PA WILLIAMSPORT - 3/7 1840 good w/mention of something new coming to WRAX, faded before I could find out what! (JB-NY)
 1410 WIZM WI LA CROSSE - 3/19 1907 o/u WING w/fair signal w/news, weather and oldies. (SP-WI)
 KCLO KS LEAVENWORTH - 3/14 1949 fair w/talk show w/female anc'r, no sign of WING or WIZM, etc. (JR-WI) Where is etc.? (DS)
 1420 WBRD FL BRADENTON - 3/19 1845 noted w/s/off w/female anc'r, no SSB, thought WC Fla s/off time was 1900. (WR-FL) Only if you can tell time! (DS)
 WKCV VA WARRENTON - 3/18 1810 CW music, ID's as "The King of Country and Western Music", s/off w/Golly Hallululul! (TF-CT) Is that in the Top 10? (DS)
 1440 KPUR TX AMARILLO - 3/14 1940 fair w/Top 40 music, 14 KPUR ID's. (JR-WI)
 1490 WESL IL E ST LOUIS - 3/27 2147 w/ID, 3/Sol music, rare at nite. (SB-MO)
 1500 UNID 3/17 1944-1950 someone w/non stop CW music, even with but mostly u/KSTP til fade out. (BW-OK)
 1510 KIRV CA FRESNO - 3/20 2030 completely atop KTIM w/ID. (DKK-CA)
 1530 WBCW PA JEBANETTE - 3/11 1826 "Culture Club" DJ show, rock, faded by s/off. (TF-CT) If I had a program like that, I think I'd fade out, too! (DS)
 WVFC PA MCCONNELLSBURG - 3/11 1817-1830 rock music, ID's as "C 15", hope that they verie! (TF-CT) Should....(DS)
 WHYP PA NORTH EAST - 3/6 1824 weak w/gravel voiced anc'r who is a real classic! (JB-NY)
 1540 KUQQ TX FORT WORTH - 3/11 1903 in Spanish w/local ads, ranchera music u/KXEL. (SB-MO)
 1550 WYOU FL TAMPA - 3/8 1845 good w/Spanish talk, mention of Tampa. (WPT-DC)
 1560 KKAA SD ABERDEEN - 3/17 1935-1939 ads, weather, ID as "K K Double A" w/jingle, CW music. (BW-OK)
 WAGL SC LANCASTER - 3/4 1656 in well rather early w/"Waggle Country" slogan, ID. (JB-NY)
 1570 WBUZ NY FREDONIA - 3/6 1823 very strong w/weather scan forecast. (JB)
 1580 WKUN GA MONROE - 3/4 1835-1845 s/off, amending report of last BDXD, music was mixture of MOR/CW w/Hit Country ID. (KG-PA) For some reason, the computer that verifies all BDXD reports missed that, must be a program error. (DS)
 WVKO OH COLUMBUS - 3/18 1830-1845 preaching, s/off w/advice to tune to 94.7 FM. Good signal. (TF-CT) (JR-WI)
 KZIA NM ALBUQUERQUE - 3/14 2005 alone w/fair signal w/ID, NBC news.
 KPIK CO COLORADO SPRINGS - 3/16 1956 fair/good w/religious music up til s/off. (SP-WI)

WYNZ 9 AM

wpaz
 RADIO 1370
 A Great Scott Station
 MONTGOMERY COUNTY'S
 MOST POWERFUL RADIO STATION



1590 WJSC TN JOHNSON CITY - 3/4 1735 on top w/ad for the ABC Sunday Night Movies. (JB-NY)
 WAIK IL GALESBURG - 3/24 1335 fair/poor w/Paul Harvey, ads, Brown-field network farm report, weather, EZL music, jingle/ID and ABC news, no KMOZ. (SB-MO)
 WONY IL EVANSTON - 3/19 2015 poor w/ID in English into foreign language program then faded. (SB-MO)
 1600 KMDO KS FORT SCOTT - 3/17 1929 caught tail end of s/off w/SSB, in/out of jumble. (BW-OK) King of the jumble, eh? (DS)
 WANR WV SHELBY - 3/18 1833 s/off w/mention of 50 watt PSSA. (KG-PA)
 WRNC NC REIDSVILLE - 3/18 1847 o/all w/promo saying they are #2 rated station in Rockingham County and knocking on #1's door!(KG-PA)

MIDNITE - MIDDAY:

540 CBK SK WATROUS - 3/18 0225 fair w/classical music, almost positive. (JM-PA) Might be CBEP-ON, don't they run the same AN stuff which is on CJBC-860? Hmmm? (DS)
 550 *WGR NY BUFFALO - 3/23 0005 noted on OC this AM (Friday), may have also been off 3/22 0205, just WJLM noted. (DS-DE)
 560 CJKL ON KIRKLAND LAKE - 3/21 0110 atop nullled WFIL w/rock music, ads. Again 3/22 0150 alone in WFIL null w/ads, ID, rock music. (DS)
 WIND IL CHICAGO - 3/22 0200 fair w/Talk Radio, ID, weather, possible Mutual news, very tough to get this one! (JM-PA)
 *WGAI NC ELIZABETH CITY - 3/3 0103 noted on BT w/TT and ID. (JB-NY)
 580 KCUA AB EDMONTON - 3/20 0210-0220 again in KMJ null w/classical music, raising to good level at times. (DKK-CA)
 *WHP PA HARRISBURG - 3/26 0015 noted off early this AM, running various TT, OC. (DS-DE)
 *UNID 3/19 0200 strong TT, looping SW, also 3/26 0215. (JM-PA)
 590 *WMBS PA UNIONTOWN - 3/27 0130 noted on TT. (JM-PA) And TT to you!
 600 WMT IA CEDAR RAPIDS - 3/21 0037 good w/local anc't of scholars concert, big band/EZL music. (JM-PA) So what! (JM!)
 610 WDAF MO KANSAS CITY - 3/21 0118 very good w/CW music and Sunday 61 Classics Night w/dance lessons! (JM-PA) I hope that's what "OX" meant, John, and not something dirty-ah! (DS)
 630 CJET ON SMITH FALLS - 3/12 0204 fair w/BN news, ID. (RK-IL)
 730 *UNID 3/22 0140 someone here w/quick sweep tones, OC. Again 3/23 0015 w/various TT, sounded to be a PoP. (DS-DE)
 *WPIT PA PITTSBURGH - 3/23 0003 noted w/TT and OC. (JM-PA)
 760 *WJR MI DETROIT - 3/26 0210 noted w/TT. (JM-PA)
 780 *UNID 3/20 0140 very good w/TT, looping SE. (JM-PA) CBJ made a frequency change-ah! (DS)
 850 WKIX NC RALIGH - 3/19 0140 good w/KIX ID, CW music, faded to WJW. (JM)
 860 *WOAY WV OAK HILL - 3/22 0145 very strong w/religious program from Moody Bible Institute, also 3/20 0130 w/MOR music, s/off by 0200 both AM's, also 3/21 0634 w/partial s/on. (JM-PA)
 880 KIXI WA SEATTLE - 3/18 0930-1000 w/MYL format, ID, mixing w/KJJR/KWIP but gradually taking over, also noted 3/21 2104-15 way o/KRYN. (DKK-CA) Don't confuse the computer! (DS)
 920 CTRY MB PORTAGE LA PRAIRIE - 2/27 0129 good w/CW music, C-Fry ID's. (RK)
 940 WMIX IL MT VERNON - 3/18 0228 w/Larry King show, MO ID into Mutual News. (JM-PA) ID on 2 hour not necessary but nice! (DS)
 1000 KKIM NM ALBUQUERQUE - 3/16 0825-0900 w/religious programming o/u KOMO, ID, atop at times. (DKK-CA) TNVR! (DS) **Means Turkey Never Verified Report! Can't keep secrets. 813!
 1020 *KDKA PA PITTSBURGH - 3/25 0135 noted w/TT this AM, WTKN noted in OC. (JM-PA) The benefits of living in Pittsburgh...super city!(DS)
 1030 KHOG AR FARMINGTON - 3/10 0858 noted w/CW music, traces of WBZ. (SB)
 1060 *KYN PA PHILADELPHIA - 3/18 0120 noted w/TT this AM. (JM-PA) Rats. (DS)
 1140 KSOO SD SIOUX FALLS - 3/25 0200 poor w/ID, ABC news, WRVA off. (SB-MO)
 CKXL AB CALGARY - 2/26 0310 fair w/rock music, MST time checks, ID. (RK-IL)
 1220 KTSJ CA POMONA - 3/18 0900 atop CJOC w/s/on, quickly into religious format, signal pretty spotty. (DKK-CA)
 1250 WDAE FL TAMPA - 3/5 0003-0005 w/ABC news, local weather, ID. (WR-FL)
 1260 WWDC DC WASHINGTON - 3/5 0007 ID atop Cuban noise, mention of 24 hours a day, local WSUA off. (WR-FL) My closest unheard!(WPT)
 1290 WDGS IN NEW ALBANY - 3/18 0601 good w/s/on, only 3 left to go in the state of IN. (RK-IL) 821
 1300 WOOD MI GRAND RAPIDS - 3/26 0100 very good w/NBC news, weather, Talknet, anc't that they must s/off due to technical problems at 0128, returned 0138, no sign of WERE. (JM-PA) They were off due to technical problems. (DS)
 1340 KFKP KS KANSAS CITY - 2/20 0209 good w/ad, promo, ID. (RK-IL)
 1360 *WZBB MD BALTIMORE - 3/19 0145 very good w/ST w/Michael Jackson music, ID's. (JM-PA)



KW!P
 FOX BROADCAST GROUP
 COLUMBIA TRISTAR

- 1380 WNVR CT NAUGATUCK - 3/20 0019+ fading but xint signal at times w/ MoR/Top 40 music, 14 NVR ID's, weather, local music store ad every half hour, "Home of the Hits". (JM-PA) And the prune factory would be "Home of the Pits"! (DS)
- 1510 *NLAC TN NASHVILLE - 3/31 0405 noted on OC this Saturday AM, equal w/local WMRE. (DS-DS)
- 1520 WROW IL CLINTON - 3/16 0749-0810 good w/fades w/CW music, local ads, UPI news and local weather. (JM-PA)
- WIBG NJ OCEAN CITY - 3/16 0700 good w/local ads, AM 1520 weather, CW music, duel ID, UPI news, xint signal earlier before ID. (JM)
- *WKBW NY BUFFALO - 3/22 0210 noted off leaving KOMA at fair level. (DS)
- 1540 KQCB TX GALVESTON - 3/21 0001 fair/poor w/B/Sol music, ID, mixing w/KXEL/WPTR. (EB-MO)
- 1550 KQWB ND WEST FARGO - 3/19 0400-0510+ in/out w/KRGO/KXXR w/rock music, ID as "AM Stereo", good ID w/weather, surprised me as was looking for KVAN. (DKK-CA) Worse things have happened, TNVR!
- *WJLY PA BRADDOCK - 3/21 0235 noted w/TT, ID mentions ET. (JM-PA)

BELOW THE BROADCAST BAND:

- 515 RRQ IA ROCK RAPIDS - 3/20 0020 areobeacon fair w/CW ID's. (RK-IL)
- 521 INS MT MISSOULA - 3/20 0124 fair w/CW ID's. (RK-IL)

ETC.:

Nice column for this late in the season, there is still some good stuff to heard. When you hear something, jot it down and send it along.

We'll be making another trip to NC so I'll have a few notes on things heard up and down IB1.

As an alternative, we recently sat in on a taping of the "UNCLE FLOYD" TV show, done in Newark, NJ! Very enjoyable.

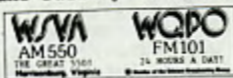
Next issue in two weeks, get them tips/contributions/heards for the 11th time sent or a flock of doves will roost in your receiver!

HOT DIALERS:

- JR-WI/John Rieger, West Allis, WI/ICR70, R1000, Kolwalski Loop
- STAN-MA/Stan Mores, Bradford, MA
- MD-MA/Marc DeLorenzo, Framingham, MA/Car Radio, Whip
- TP-CT/Tony Fitzherbert, Fairfield, CT/ICF5W
- WPT-DC/Bill Townsend, Washington, DC/ICF5W, TRF
- BW-OK/Bruce Minkelman, Tulsa, OK/R390A, Longwire, 40 mtr dipole
- DKK-CA/Don Kaskey, San Francisco, CA/HQ140X, SM2
- JB-NY/Jerry Bond, Rochester, NY/HQ140XA, Loop
- KG-PA/Kermit Geary, Walnutport, PA/HQ180, R389, LW, SM2
- WR-FL/Walt Rogers, Miami Beach, FL/R600, Sansarino Loop
- SP-WI/Sheryl Paskiewicz, Manitowoc, WI/DX400, MPJ 1020
- RK-IL/Robert Kramer, Chicago, IL/R10000, HQ140X, HQ129X, various loops
- JM-PA/John Malicky, Pittsburgh, PA/Aiwa AR158
- EB-MO/Eric Bueneman, Hazelwood, MO/ DX200, Superadio
- DM-OH/Dan Myers, Toledo, OH/Just thought I'd put his name in the column!
- DS-DE/-Sorry, Dave, THATS NOT PRINTABLE! -MK- HQ180A, SM2, Superadio, Short LW



As an alternative to IDXD, we offer this study of signals heard in the underground railway of Mahtone, Mexico!



73's - Good DX!

KMJ Radio
News/Talk 58

INTERNATIONAL DX DIGEST

CHUCK HUTTON
1035 LATHAM ROAD
DECATUR, GA 30033
(404) 633-1198
BEFORE 2300 ELT

Times are GMT. For ELT subtract 5 hours. Deadlines are usually Monday

- 173 MOROCCO in later than the Moroccan MW stns at 0735 2/26 loud and clear w/FF mx, then US c&w song then FF anncr. (Kaz)
- 236 LUXEMBOURG loud and clear w/FF man and woman into FF pop mx 0422 in nice cx to Europe 2/26. (Kaz)
- 531 SWITZERLAND Bernmunster fair-good w/530 beacon GRM notched w/instrumental mx then GG anncr 0550 2/26 w/cx favoring Europer rather than the usual Algerian.
- 550 CUBA CHAA R. Rebelde Pinar del Rio with "transmite Radio Cadena Nacional desde Habana Cuba, territorio libre en America" then man with news at 0445 o/WKRC 3/, good. (Frodge)
- 555 NICARAGUA HTC555 R. Diez y Nueve de Julio man and woman with Radio Sandino promos, baladas after 0500 2/22, poor. (Frodge)
- 560t GUYANA Sparendam presumed w/semi-local WGAN phased--poor and occasionally audible w/accented EE man and woman talking 0337 2/22. (Kaz)
- 567 IRELAND Tullamore w/big OC o/unid w/talk in unid lang 0527 2/26 and poor-fair in sloop later at 0433 w/EE talk, then mx. (Kaz)
- 580 VENEZUELA LV de la Fe, Maracaibo in loud and clear w/ID 0520 3/5. (Renfrew)
- 594 MOROCCO Oujda in nicely way o/595 het w/FF net 2355 2/17. (Kaz)
- 600 COLOMBIA R. Libertad, Barranquilla w/full ID 0525 3/5. (Renfrew)
- 600 SURINAM Paramaribo noted back on for the first time 2350 3/10. Xint on all antennas and entertainment quality on the Beverages w/program of mx including Hindi chants, pop mx in lang, lively SA mx and a multilingual anncr who said "have a nice weekend" in EE. Went into DD at 2350 for presumed ID and definite mention of AM and FM frequencies and Paramaribo. This was almost completely dominant in semi-au cx. (Kaz)
- 603t MADEIRA Funchal I believe to be the stn taped here in superb N. African area cx 2359-0007 2/18 w/three (or four with last pip interrupted) long pips on the hour. PP male anncr peaking poor-fair. Soft instrument-a; mx noted at 0015. Also strong carrier but too much GRN 0013 2/22. France is heard to s/off 2300. Can anyone confirm the pips as Madeira? (Kaz)
- 610 TRINIDAD noted almost alone w/very little WGR on Beverage in au cx 0040 3/4 w/calyppo mx. (Kaz)
- 612t IRELAND Athlone presumed w/OC (like 567) looping towards the UK (not Morocco) 0530 2/26. Morocco was in after 0600 s/on but at 0702 I noted a SAH when faded leaving instrumental mx again looping to the UK at 55 degrees. All other Moroccans also faded out around 0700-0715. (Kaz)
- 620 BRAZIL Fortaleza ZYH590 xint and pinning the S-meter during opening 2351-2353 3/4. "assuncao" ID and Brazil and carnival mentioned by excited PP men. Fair o/stn w/religious mx and SAH. (Kaz)
- 621 UNID w/woman in romance lang, sounded like FF but too far u/ Canary Islands GRM to tell 0346 3/11 w/.33 Hz SAH. Belgium isn't supposed to be on this early but little else likely. (Kaz)
- 630 PUERTO RICO Salsa Sesenta Tres, Santurce with, guess what, salsa music 0420 3/5. (Renfrew)
- 640 GUADELOUPE presumed with FF man and woman discussing current events 0935 3/1. Very good quality signal. (Renfrew)
- 648 GAMBIA Bonto poor w/Afro rhythmic mx looping 100 degrees 0016 2/22 on later than usual 0000 s/off. Occasionally heard but suffers from GRN usually. (Kaz)
- 650 HONDURAS HRWV LV de Centroamerica San Pedro Sula 0130 3/10 poor w/long ID, promo, talk to 0140 when WSM took over. (Frodge)
- 655 EL SALVADOR R. Nacional in poorly u/WNBC with orchestral mx 0450 3/2. If I can hear this at all u/WNBC its a sign of auroral cx. (Renfrew)
- 675 FRANCE Marseille poor-fair w/FF man mentioning "La Fran- caise" in some WRKO sloop, then into mx 0037-0039 2/26. (Kaz)
- 693 UNID instrumental mx of moderate tempo, man in unid lang 2355-0003 2/26-no pips or anncrs across the hour would rule out BBC and looped too far to the south for UK anyway. (Kaz) (Believe it or not I have heard the BBC go right across the hour from time to time.....CH)
- 710 VENEZUELA YUKY Caracas R. Capital 0450 3/1 fair with woman giving long ID, sung anthem, off at 0457, better on 711 (? CH) u/WOR. (Frodge)
- 720 COLOMBIA Barranquilla HUAN 0313 3/11 fair with LA mx, promo after every song as "cadena radial...Colombia" equal to or under WGN. (Frodge)
- 720 JAMAICA Kingston RJR 0502 3/1 poor with very deep-voiced man with soul mx pgn, Guyana ad, RJR ID at 0523 u/WGN, better or 721/2. (Frodge)



Washington Q&A

A reader in Washington inquired about the propriety of WWRG/Washington still using its longstanding former call letters, WRC, at all times except the legal hourly station ID.

A station spokesman says the arrangement is entirely legal - WRC is merely the station's slogan, no different from WRXG calling itself Q107. The FCC attorney, expert on call sign law (and lore) agrees that nothing is amiss. As long as the legal ID is in order, the Commission doesn't concern itself with slogans.

Any complaint about the matter would have to be filed in a local court, according to the expert, and probably the only party with standing to file such a suit would be WRC-TV/Washington. Of course, WWRG and WRC-TV are both owned by NBC, although the radio station is due to be sold shortly.

If you have a question our Washington Bureau can help answer, call Brad Woodward at (202) 466-4860 or write him at 818 Connecticut Ave. NW, Suite 300, Washington, DC 20006.

KOVC
VALLEY CITY, N. DAK. 58072



8
720 PORTUGAL Norte-Azurara loud and clear mixed equally w/WGN // 666 2240 2/25 and 0025 2/26. (Kaz)
729 UNID carrier just a few dB too weak to put audio past 730 domestic groundwave; on the Beverages 2307 3/4. I doubt Spain as usual pests 774, 855, 792 etc. were au'ed totally out. I'm thinking Cape Town which is a similar path to Angola which was also in. (Kaz)
740 BRAZIL Salvador ZYH446 very good w/two PP annrs and excited R. Sociedad de Bahia ID 0023 and nearly xInt w/two Salvador ments and R. Sociedad ID 0043 3/4. (Kaz)
756 WEST GERMANY Braunschweig fair-very good w/nice soft instrumental mx till 0600 2/26 when 6 pips (like BBC's but higher pitched) then GG woman anncr then GG man with news. (Kaz)
760 BRAZIL Fortaleza ZYH558 very good w/R. Uiraperu ID then several "Uiraperu" (Pronounced oo-rah-peru) mentions during promo 0016 3/4 before blasted away by YU00. (Kaz)
760 BRAZIL/GUYANA/VENEZUELA ZYH588 atop 0150 3/9 w/PP anncr mentioning "do Brazil" gradually taken over by Guyana w/EE accented religious pgm which faded down and mixed with YU00 for 0200 anncts from Guyana. YU00 solid atop after 0202 w/Radio Puerto la Cruz ID. WJR phased out. (Kaz)
765 SENEGAL Dakar good w/man in vernacular w/guitar like mx in background 2246-2252 3/7; WABC no problem. (DeLorenzo)
765 SWITZERLAND Sottens fair w/FF man 0512 2/26. This is almost never heard at sunset here due to Senegal. (Kaz)
770 VENEZUELA Caracas YUKK 0100 3/10 fair but virtually alone in au cx w/R. Nacional de Venezuela ID. I was looking for CX112. (Kaz)
774 MOROCCO Agadir // 702 w/netowrk C program 2252 2/21 mixed w/usual Spanish dominant, fair. (Kaz)
780 BRITISH VIRGIN ISLANDS ZBVI good w/BBC sports report 2253-2255 3/7; no QRM. (DeLorenzo)
783 PORTUGAL/EAST GERMANY Miramar bkasting in at 0006 2/26 s/off w/PP NA then carrier cut leaving Burg which was also loud and clear but weaker than Portugal. Burg had a GG male anncr w/a variety of mx 0015. (Kaz)
790 BARBADOS St. George good and almost alone in au w/calypso mx 0006 3/4. (Kaz)
792 SPAIN Sevilla bombing in w/"Bridge Over Troubled Water" 0012 2/18. A regular but rarely this strong. (Kaz)
800 VENEZUELA Maracaibo YUTB noted u/Bonaire w/"exitos" ID into lively mx 0347 3/5. (Kaz)
810 BRAZIL Fortaleza ZYH589 local-like in amazing au cx w/Fortaleza mention and "Verdes Mares" ID 2358 3/4. Pinning the meter and as strong as WGY ever is !! At 2344 was only very good-xInt but still way o/QRM. (Kaz)
820 CUBA CMBU R. Ciudad de Habana good, alone w/man and woman in SS using this ID 2257-2300 3/7. (DeLorenzo)
820t SURINAM Paramaribo w/819 Moroccan het/QRM notched I heard what sounded like R. Apintie ID by man after lively mx in unid lang. Poor signal 2322 3/10. (Kaz)
825 PANAMA R. Peninsula loud and clear (never ever heard before!) with rapidly spoken ads 0530 3/5. (Renfrew)
834 BELIZE R. Belize with news promo, SS prayer, rousing musical ending, EE full ID and news at 0031 3/1, good. (Frodge)
836 AZORES Ponta Delgada poor-fair w/nx in PP followed by what sounded like Radiodifusao Portuguesa ID by man 0803-0805 2/26 hetted by 837 Canary Islands which faded by 0815 while more westerly 836 lasted till 0830. (Kaz)
846 ITALY Rome good w/nice, romantic II mx w/some WHDH slop as cx became less AU 0227 3/5. (Kaz)
864 FRANCE Paris fair w/church mx // 837 0604 2/26. (Kaz)
880 BRAZIL Belo Horizonte ZYL275 noted 2246 3/10 blasting WCBS w/PP vocal. Commonly heard when Brazil is in. (Kaz)
909 ALGERIA Tamanrasset very poor but // 891 w/AA violins and moaning occasionally audible from 2340-2357 by notching 910 and using regenerative tuner to pull up audio on 909. XInt North African cx with no TA's north of Iberia in 2/21. (Kaz)
910 UNID came in well over domestics with SS talk and mx (big clues!) (to some, yes-CH) 0545-0615 3/5. Three doorbell IS (1-3-5 chord) at 0608. Maybe Cuba? I've not heard the Cadena Agramonte net before. (Renfrew) (I've never noted a doorbell on Agramonte; they use a musical passage as an intro to their ID-CH)
914 SURINAM Nieuw Nickerie xInt and best ever w/pop DD mx 2306 and still blasting 2340 w/chanting 3/4. (Kaz)
920 COLOMBIA Cartagena HJAE in well w/WHJJ phased w/TC and Emisora Fuentes ID 0404-0407 3/5 in au cx. I'm still lookinf for other LA's on this channel but no luck. (Kaz) Cuba is the only other LA heard here-CH
940 CUBA CMKD Holguin with short news commentaries and Radio Reloj after each-pips and "RR" in CW every minute 0024 2/16. (Frodge)
944 ANGOLA Luanda nailed down // 1367 w/MoR EE pop song then Muzak in and out to good peaks in super \afro cx 2330-2355 3/3. Also heard

9
1206t SIERRA LEONE suspected w/mx and talk 2325-2330 3/4 during xInt African cx (Bordeaux s/off is 2300). Heavy distant storm QRM at the time obscured language identification of signal which was in and out. This stn used to go to the west coast (and even more unbelievably all the way to Georgia-CH) but now doesn't get out at all. (Kaz) True of a lot of stns-sometimes I think they never replace the finals after they go on the air-CH
1215 ALBANIA Lushnje to good peaks // 9500 w/AA pgm then trumpet IS at 0358 3/11. Commonly heard around this time. (Kaz)
1224 SENEGAL Ziguinchor peaking to very good-xInt w/nice tribal African singing 2326 3/3 and then talk between two men in vernacular. No QRM or slop. (Kaz)
1224 SPAIN report sent to the synchronized Spanish stations. Program of popular music; vocals by man and woman 2317-2358 1/14. (Gustafson)
1233t CYPRUS Cape Greco probably the one putting bits of audio that sounded like mideast mx thru slop 0328 3/12 then 1323 was in. I've also noted the Czech here, when cx are good for east Europe. The Moroccan doesn't come on 'till 0600 as was observed last month. (Kaz)
1296 BULGARIA 2/27 man and woman in unid language 9428-0443. Did not send a report. No positive identification. (Gustafson)
1300t BRAZIL ZYH586 w/other stns from the north coast of Brazil in well I tuned here and heard PP talk poor-fair and fading unfortunately into increasing domestic QRM 2305-2306 3/10. (Kaz)
1314 SPAIN unid stn just putting SS audio past a low growl of low hets 2220 3/10. (Kaz)
1314 UNID TA signal here on Afro Beverages out after 2300 3/4. (Kaz)
*****1323****CYPRUS Zyyi first noted w/talk by deep voiced EE man // 9410 poor 0320 3/12 and fair peaks thru slop w/"Oue Sera Sera" then "Eye of the Tiger" taped // 9410, 0332-0334 poking through slop. Still in 0341 w/operatic song just audible before fade out due to sunrise there. This is BBC relay. XInt cx to that area on high BCB band as 1521 Saudi was as good as local-like WKBW. I believe this to be the first US logging of Cyprus. (Kaz) Congratulations even if it isn't because this is a rare logging-CH
1341 UNID het here 0256 and soon faded. I'm wondering if Kuwait had something to do with this as cx were good to that area as 1521 was strong and "the boys on Long Island" heard Oman 1413 at 0200. British stns not into well at the time (just a few weak hets) so may not have been N. Ireland. I'll be trying for Kuwait here. (Kaz)
1349 MAURITANIA Nouakchott absolutely local-like! w/AA nx 2314 3/3 and just as good on 3/4-rendering 1350 completely useless. Pinning the S-meter forcefully! (Kaz)
1367 ANGOLA Luanda-this off frequency teaser caught // 944 in and out to good peaks w/mx 2330-2355 3/3. I'm not sure if always // as this is the first time I've had both in at the same time. (Kaz)
1386 GREECE possibly this one 2/27 at 0505 with talk by a man. No report to this one either since no positive ID. Sure would like to have landed this one. Need Greece. (Gustafson)
1394 UNID het/carrier here continued a bit past 0000 3/4. I'll bet it is Azores or Togo. Any European/African members know? (Kaz)
1475.1 BENIN Cotonou poor // 4870 w/mx best described as modern African pops 2250-2252 3/4. This is likely the stn Hakiel and I have been chasing all season around this old-plan channel. (Kaz)
1502 TOGO Kara-this off freq unid finally pinned down w/rhythmic African mx to fair-good peaks, // to and better than 3222 SW. Accented FF anncr and NA at s/off, carrier cut at 2305 3/3. Some QRM from Spain 1503 at 2230 and from Senegal 1503 later. No WTOP in au cx. (Kaz)
1503 SENEGAL Tambacounda heard reasonably well after Togo 1502 s/off at 2305 3/3 w/African mx and anncr in vernacular. Increasingly au cx zapped Spain 1503 and usual superpest WTOP-1500. (Kaz)
1512 SAUDI ARABIA 2/2 at 0101 with guitar and flute. Believe they played NA, then man with religious chanting. Report sent to them. (Gustafson)
1521 UNID a brief hint of Koran chanting came through a strong het on WKBW 0315 2/22. (Renfrew)
1530 VATICAN CITY noted u/WCKY w/nx in unid lang by man and woman 0407 3/11. (Kaz)
1554 GABON Melene fair w/Cayman het notched 2255 3/4 w/accented FF talk after mx. Quite common. (Kaz)
1566 TUNISIA-has this one changed schedule? Have not heard him sign on at 0430 for the past few months. This one used to be a regular. (Gustafson)
1566 UNID faint evidence of Arabic music program-too faint to compare with Tunisia 7225 with an accuracy 2305-2315 2/29. (Renfrew)
1584 UNID SS news program 0700 3/2. I was able to hear key words indicating Spain but too difficult to hear entire phrases. Seven pips (at least) on the hour. Gone by 0705. (Renfrew)
1602 UNID carrier in WUNR slop 2247 3/4 in Afro cx. I'm dreaming of Gabon or Ascension Island. (Kaz) Don't let anybody accuse you of thinking small.....CH

to good peaks w/PP man anncr and soft Muzak 2315 2/16. Faded out before 2400 s/off. (Kaz)

954 SPAIN Madrid fair w/SS tak through abnormally high sloop for this freq 2321 2/25. (Kaz)

963 NORTH SEA R. Caroline nabbed w/US rock 0458 then EE anncr w/two R. Caroline mentions then pop oldie till 0509 2/26 with poor-good signal. (Kaz)

891 ALGERIA Algiers very good w/980 sloop reduced w/notch w/FF net not // 891 which was AA net at the time 2310 2/21. (Kaz)

990 GRENADA noted fair w/BBC news w/new pest WNYR zapped by au cx 2305 3/4. This stn is much weaker than the powerhouse that was here prior to the invasion. (Kaz)

999 SPAIN Madrid well o/998 het from Morocco which often is dominant here and in some sloop from WCFL/CFLP on 1000. Fair w/pop mx and SS talk 2305 and good for a while at 2323 2/25. (Kaz)

999 UNID (possibly Southampton) sounded like British EE woman mixing in w/Spain briefly at 2325 2/25. It didn't seem to be coming from adjacent 1000 stns. (Kaz)

1000 BRAZIL Sao Paulo ZYK522 noted in passing very good w/usual format of PP song then anncr 2247 3/10 xint with no QRM!! in superb Brazilian cx 3/4 at 2303 w/PP song. (Kaz)

1008 NETHERLANDS Flevoland fair w/DD talk through some 1010 sloop 0518 2/26. (Kaz)

1008t UPPER VOLTA Bobo-Dioulasso suspected peaking poor-fair w/accented FF talk 2257-2259 fade into ZYH625 sloop. AU cx w/NO TA's in north of 90 degree bearing 3/4. (Kaz)

1010 BRAZIL Fortaleza ZYH625 good w/fanfare and about a dozen "O Pavo" (sounded like "oo-pah-voch" ID's, Brazil mentions good and clear way atop w/no WINS in very AU cx 2300-2302 3/4. (Kaz)

1012 COLOMBIA HJ2D Monteria R. Panzenu 0046 3/10 w/ID "Aqui Radio Panzenu" then Hawaii 5-0 mx, man with LA mx and many ID's and promos-het with CFRB on 1010. (Frodge)

1026 UNID (Spain or Canary Islands) poor with bits of SS talk above low growl w/WBZ phased 2349 2/17. (Kaz)

1030 HAITI Radio 4VEH heardw "Songs oin the Night" 2330-2400 3/4 and w/complete EE s/off at 2400. Ended with "Amazing Grace". No sign of WBZ at all. Thanks to J. Bond (good old 007-CH) for the tip, first time heard in yeard and first time on 1030. (Renfrew)

1040 BRAZIL Sao Paulo ZYK537 to very good peak w/PP talk--then back again 2301 3/10 w/PP talk mentioning Brazil, some WBZ sloop. Also heard 3/4 good before lost to other LA's 2318 and 2357 w/PP talk mentioning Brazil. (Kaz)

1040 COLOMBIA 0400 3/1 good w/world news, "Caracol Bogota" and net ID's o/SS and WHO. (Frodge)

1052t LIBYA Tripoli likely w/adjacent Morocco 1053 // 1044 notched. Talk in WHN sloop 2334 2/17 and w/less sloop 2345 w/AA chanting and singing not // 827 but not listed as // either. Xint North African cx. (Kaz)

1070 CUBA Guantanamo CHML 0458 2/16 poor w/anthem briefly dominant o/CBA. (Frodge)

1071 FRANCE synchros fair w/FF man and woman // local-like 164 0615-0618 2/26 w/1070 notched. (Kaz)

1107 EGYPT Btara poor w/AA chants o/low growl as this is still slightly below 1107 0310 2/21. (Kaz)

1116 ITALY Bari et al poor w/II talk by man 0520 2/26. (Kaz)

1130 BRAZIL Rio de Janeiro ZYJ461 fair-good almost in the clear in au cx w/R. Nacional ID in PP 2320-2321 3/4 and was noted u/ WNEW around 2310 3/10. (Kaz)

1134 SPAIN unid stn noted fair-good w/SS talk, maybe nx 2223 3/10. As usual it didn't stay up long enough to hear an ID. (Kaz)

1160t BRAZIL unid stn here w/PP on 72 degree LW which luckily nulled the SS QRM on the other antennas 2334 3/4 and poor-fair on same antenna 2320 3/3 w/PP talk mentioning "Santo"-possibly R. Esperito Santo but far too tentative to even attempt to claim. (Kaz)

1170 COLOMBIA HJNW Cartagena 0413 2/16 man with "caracol... Cartagena Bolivar" then TC. QRM de otra SS and WJVA. (Frodge)

1179 SPAIN-one of the many SS stns on this channel noted poor w/SS nx 2155 and up to fair w/SS nx mentioning "Valencia" three times at 2243. QRM'ed by stn w/mx at 2253. WHAM phased out and resultant het notched 2/26. (Kaz)

1188 UNID (presumed Hungary) poor w/moderate tempo mx in CHTN-1190 sloop w/pest WQWO phased 0317 2/21. Lots of east Europeans were in but none were strong. (Kaz) (Wait just another year or two....CH)

1197 AUSTRALIA ?? heard identifying themselves as "Double T" 3/15 at 0515 with what sounded like a broadcast from Sapphire. (Parkhurst) I bet this is 400 from Southport-CH

1200 BRAZIL Fortaleza ZYH585 very good w/PP anncr followed by BBD mx 2303-04 3/10. Faded down and was QRM'ed by 1197 Morocco het. This Brazilian must be received at sunset and before YVOZ fades in. (Kaz)

I typheth this part after returning from trips to Washington D.C. and New York which wiped out any chance of getting the column to Mike this time. I hope no distraught types were driven to acts of self-destruction over this event. This gave me a chance to mess around a bit as evidenced by the "arrangement" of items above. This way makes it much easier to enter into both the word processor (Wordstar) and the data base (dBase II) that I use. Unfortunately I can't seem to find a data base that likes to format things the way that IDX is formatted (lines 2 and up for each item are tabbed in). If you can help me with this, please drop me a line....

The people this time are:

Marc DeLorenzo-Hyannis, MA car rx, whip antenna
Harold Frodge-Midland, MI ???? (you screwed up, Harold)
Hilding Gustafson-Dunedin, FL HQ140X, SM2
Neil Kazaross-Ogunquit, ME R70, Bohac loop, MWJ, 1350' Beverages, 175' LW, 310' LW, phasing unit, APT2 tuner, 402 amp, 10SNEI directional static source

H. Parkhurst-Nenana, AK

???? (you screwed up too, HP; you guys trying to give back the room that all of Kaz's things take up?? CH)
HQ150, SM1

Jim Renfrew-Rochester, NY

Tidbits from Mr. Frodge: three new Venezuelans per DXistas de la Amistad of Venezuela-(1) 1470 R. Vibracion, Carupano with 10 Kw, (2) 1500 R. Dos Mil, Cumano with 10 kw and (3) 1570 R. Guarapiche, Maturin with 10 kw. Harold also shakes the foundations of modern civilization by noting that there are 179 LA splits listed this year in WRTVH as opposed to last year's 171. That will probably show up on the convention quiz next year so remember that, guys. Lastly, note the all-new Nicaraguan calls. GOODBYE TILL NEXT WEEK!

Tuesday 4/3: it is deadline time and only a few things have rolled in so I'll just patch them into last week's column.....

Radio stations 'switch' to get out information

By Amy Greenzwelg

NEWBERRY, S.C.—Radio stations in cities struck by last week's tornadoes increased news coverage in response to the natural disaster and to meet the information needs of listeners.

WKMG, Newberry, S.C., was the only local station able to broadcast the tornado warning. The city's local station, according to WKMG Vice President and General Manager Roscoe Bedenbaugh had lost power, and did not regain emergency power for two hours. After WKMG broadcast the warning, it too lost power. It was restored three hours later.

WKMG eliminated commercials and stepped up news coverage to inform the area of the extensive damage. Bedenbaugh said, WKMG, usually a day-time station with a country format, was prepared to continue broadcasting all night, but Bedenbaugh said, that by 12:30 a.m. "all seemed calm," and the station ceased broadcasting until 6:30 a.m.

The following morning, WKMG had one reporter at the Emergency Operations Center and one reporter roving the city interviewing people on the streets.

Eight minutes after the tornado hit Newberry, it touched down in Winnsboro, S.C. WKMG General Manager Jim Brownell said his news team was on the scene 10 minutes later. Ten minutes after that, WKMG was feeding the story

with actualities to six other local stations, three stations out of state, and UPI. The station's usual format is country and adult contemporary music.

WKMG was not damaged. But among the damage done, Brownell said 40 houses and two schools were destroyed, six killed and there was \$6 million in damages.

WEWO and sister station WSTS-FM in Laurinburg, N.C., suffered no physical damage, but were "knocked off the air since yesterday evening. (Wednesday)," when the electricity in the station's tower went off, said Walter Sturdivant of the news department.

FCC To Hear Radio Cocaine Case

The question of whether drug use affects a person's qualifications to be a broadcast licensee (R&R 323) will be considered by the full FCC. Alan Levin is appealing to the Commission last week's Review Board grant of an AM license in Dillon, CO. Dillon Broadcasting won, even though owner Robin Theobald was accused of using cocaine.

"I think the decision is disgraceful and sends the wrong message to broadcasters about their responsibilities as licensees," said Levin, one of two losing parties. He added, "We intend to remind the Commission of President Reagan's strong commitment in the fight against illegal drug use."

Meanwhile, Review Board member Norman Blumenthal issued a strong dissent in the Dillon case, citing "an unacceptable risk of potential irresponsibility." He accused the majority of taking a "duck dive" and shooting "itself in the... ah, decision."

The board discounted the cocaine issue because Theobald — who admitted using the drug once — was never charged under state or federal laws.



AM < 3MWOOD

KAYL 990 101.5

12 TOP END

CRAIG HEALY
66 COVE STREET
PAWTUCKET, RI 02861

1600-1800 KHZ RANGE TIMES ARE GMT DEADLINE: LAST. SAT. OF MONTH

Loggings:

1610 WA Tumwater 0630 3/10 TIS Repeated road construction message, ment of Exit 99. Fair. (Martin)
1614.2 ??? 0556 3/25 KA83309 poor. (Healy)
1616.9 ??? 3/84 Cubic Argo ("cricket") loud day/nite. (Thomas)
1618.7 ??? 3/84 One pip every 4 secs. (Thomas)
1619 ??? 3/84 "RRP" repeated, 30 secs on-30 secs off. (Thomas)
1620t AUSTRALIA Tasmania (Hobart) 0905 3/12 7RPH presumed w/ pop mx in passing. Male EE anncr. Unneeded, but nice. (Martin)
1620 ??? 3/84 "SBT" beacon. (Thomas)
1628.5 ??? 3/84 Cubic Argo. (Thomas)
1630 ??? 3/84 SS male, LSB. Very weak. (Thomas)
1632 ??? 3/84 Cubic Argo. (Thomas)
1640 ??? 1036 2/13 KA83694 in very fast code. No DAID, looped N/S with a good signal. (Peterson)
1646.6 ??? 3/84 Cubic Argo. (Thomas)
1662 ??? 3/84 Cubic Argo. (Thomas)
1674 ??? 3/84 Cubic Argo. (Thomas)
1690t TAIWAN Kaosuing 1530 3/11 Possibly the station hrd again w/ non-stop CC mx, no announcements. Very weak. (Martin)
1700 ??? 3/84 "ZM" beacon. (Thomas)
1714 ??? 3/84 Cubic Argo. (Thomas)
1714.5 ??? 3/84 "IH" nights, "TS" days. (Thomas)
1716 ??? 3/84 "NSS" days only. (Thomas)
1729 ??? 0533,0537,0541 3/16 "D7K" and dash poor. (Healy)
1740 ??? 3/84 "NAH223K" (Thomas)
1745 ??? 3/84 Decca HiFix ("J") (Thomas)
1746 ??? 3/84 Decca HiFix ("K") day/night (Thomas)
1747 ??? 3/84 Decca HiFix ("L") day only. (Thomas)
1748 ??? 3/84 Decca HiFix (Thomas)
1754.4 ??? 3/84 One pip every 2 secs. Day/night. (Thomas)
1762 ??? 0519,0523 3/16 "FRB" fair-good. (Healy)
1764.3 ??? 3/84 "SEI" cricket. Day/night. (Thomas)
1766.3 ??? 3/84 "IH" cricket. Day only. (Thomas)
1767.4 ??? 3/84 Cubic Argo. (Thomas)
1769 ??? 3/84 Cubic Argo. (Thomas)
1770 ??? 3/84 Cubic Argo. (Thomas)
1771 ??? 3/84 Cubic Argo. Day only. (Thomas)
1772 ??? 3/84 Cubic Argo. (Thomas)
1775.5 ??? 3/84 Cubic Argo. Very Slow. (Thomas)
1776 ??? 3/84 One pip every 2 secs. (Thomas)
1780 ??? 3/84 Several weak unreadable CW stations, nights. (Thomas)
1790 ??? 3/84 Several weak CW stations. "JW" is one. (Thomas)
Pat Martin-Seaside,OR-Radio,antenna
Gerry Thomas-Pensacola,FL-R70 and 80 meter dipole
Art Peterson-Richmond, CA- Radio, antenna
me-R7A and 125 foot loaded LW

As we approach Spring and Summer, the static level is already increasing at my QTH. Good to hear a few things still poking through the noise and such. FRB noted again on 1762. It was there back in November and I have to wonder if it switches frequency in some pattern or is truly random. I'll keep a lookout for it.

I remember reading recently, I think in "Lowdown", that there is some doubt that the stations we hear around 1635, 1637 etc. are really fishing buoys. Anyone care to share some thoughts on that?
Decca, the makers of the "HiFix" navigational system is now Raycel in Houston, TX. Anyone have any contacts there? I doubt they would just up and send us their customer/ frequency list as their's is a most competitive business. I will send a letter and try for whatever info they'll give. If we had a contact in their company it would be easier.
Of course, if any of you government types reading this decide to send me the info to solve the secrets of the 1600-1800 kHz universe, I'll be glad to have it. Anonymous tips gratefully accepted, hi.
All in all, we have a lot of mysteries up here. Even effort such as made by Vincent Pinto in his work with the FCC monitoring stations has not really pinned down who or what most of these stations are. Is it a case of simple lack of knowledge, or a coverup of military stuff that we might be better off not finding out about. I hate to think cloak and dagger on these beacons we hear, but someone somewhere must know about these things. 'Til later.

SPORTS NETWORKS

Barry S. Finkel 13
10314 S. Oakley Ave
Chicago, IL 60643

Here are the first United States Football League networks.

Chicago Blitz		1370 WGNW-WI	1480 WFXW-IL	1540 WL01-IN ^a	(+ 1 FM)
820 WAIT-IL	1280 WMRO-IL	1420 WIMS-IN ^a	1490 WZOE-IL ^a		
New Orleans Breakers (1984)					
540 WNOE-LA	990 KXLA-LA	1230 KLIC-LA	1400 WFPR-LA	1520 KXWK-LA	
910 WLCS-LA	1050 KLPL-LA	1240 WHIS-MS	1470 KLCL-LA	1590 WCCL-MS	
920 WBOY-LA	1110 WFCG-LA	1250 WHNY-MS ^b	1490 WBND-MS		
970 KSYL-LA	1220 WLBI-LA	1270 WHLC-MS	WHDC-MS	(+14 FM)	
WRKN-MS	WMDC-MS	1320 WRJW-MS	KEUN-LA		
Memphis Showboats					
560 WHBQ-TN	1230 WCHA-MS	1290 WAT0-TN	1410 WJED-TN	(+22 FM)	
620 WRJZ-TN	WAKI-TN	1310 WDXI-TN	1450 WLAF-TN		
940 WCPC-MS	1240 WGRM-MS	1330 WNIX-MS	WROX-MS		
1110 WKRA-MS	1250 WKBL-TN	1380 WIZO-TN	1470 WXCC-MS		

Here are the baseball flagship stations (from "Broadcasting" 2/27/84)

Atlanta Braves	680 WCNN-AL	100 Ernie Johnson, Skip Caray, Pete van Weiren, John Sterling
Baltimore Orioles	1300 WFBR-MD	60 Jon Miller, Tom Marr
Boston Red Sox	1390 WPLM-MA	77
California Angels	710 KMPC-CA	14
	107.5 KLVE-CA ^c	5 (Spanish) (FM)
Chicago Cubs	720 WGN-IL	46 Harry Caray, Vince Lloyd, Lou Boudreau
	105.1 WOJO-IL	0 (Spanish) 25 games only (FM)
Chicago White Sox	670 WMAQ-IL	22 Lorne Brown, Joe McConnell
Cincinnati Redlegs	700 MLW-OH	95 Marty Brennaman, Joe Nuxhall
Cleveland Indians	1100 WWWE-OH	35 Herb Score, Nev Chandler
Detroit Tigers	760 WJR-MI	39 Ernie Harwell, Paul Carey
Houston Astros	104.1 KRBE-TX	30 (FM)
	920 KYST-TX	0 (Spanish)
Kansas City Royals	580 WIBW-KA	105
Los Angeles Dodgers	790 KABC-CA	25
	1020 KTNQ-CA	2 (Spanish)
Milwaukee Brewers	620 WTHJ-WI	50 Pat Hughes, Bob Uecker
Minnesota Twins	830 WCCO-MN	30
Montreal Expos	600 CFCF-PQ	38 (English)
	730 CKAC-PQ	40 (French)
New York Mets	1050 WHN-NY	10
New York Yankees	770 WABC-NY	60
Oakland Athletics	560 KSFO-CA	14
	105.3 KBRG-CA	? (Spanish) (FM)
Philadelphia Phils	1060 WCAU-PA	25
Pittsburgh Pirates	1020 KDKA-PA	35
San Diego Padres	760 KFMB-CA	4
	1420 XEXX-BC	15 (Spanish)
San Francisco Giants	680 KNBR-CA	7
	1050 KDFY-CA	0 (Spanish)
Saint Louis Cards	1120 KMOX-MO	108 Jack Buck, Mike Shannon
Seattle Mariners	570 KVI-WA	17
Texas Rangers	820 WBAP-TX	12
Toronto Blue Jays	1430 CJCL-ON	26

^a These three stations will not broadcast the entire Blitz schedule.

^b The Breakers' list has a typo, WHYN

^c "Broadcasting" magazine has a typo, KLUE. I am assuming that KLVE is correct.

Kyet **KWIX** **Waaax** 570
1450
P. O. BOX 819
MOBERLY, MISSOURI
63258
THE ALL AMERICAN SOUND

Atlanta Braves - 1984 Tentative (baseball)	1150 WPLP-FL	1150 WAGW-TN	1360 WNAH-TN	1450 WCNS-SC
580 WGAC-GA	1170 WCOV-AL	1240 WUVA-AL	1370 WLOV-GA	WNYB-SC
600 WKV-FL	1220 WOFF-GA	1270 WTNT-FL	1380 WTQB-NC	WSPB-FL
630 WMFD-NC	1230 WBLJ-GA	1280 WNPT-AL	1390 WHMA-AL	WGNB-TN
680 WCNN-GA	WAXX-GA	WSAT-NC	1400 WVN-VA	1460 WBCU-NC
710 WKRG-AL	WAUD-AL	WIPC-FL	1400 WVNC-VA	1470 WCLA-GA
800 WJAT-GA	WFAI-NC	1290 WMSA-GA	1400 WVNC-VA	1490 WMOG-GA
860 WDMG-GA	WFMR-NC	WHKY-NC	1400 WVNC-VA	WRED-GA
910 WJCV-TN	WGGG-FL	1310 WTIK-NC	1400 WVNC-VA	WRLD-AL
930 WMGR-GA	WSBB-FL	1320 WOBM-AL	1400 WVNC-VA	WNRB-SC
WSOC-NC	WCNH-FL	1330 WMLT-GA	1410 WDAX-GA	WMBM-FL
940 WMAZ-GA	WJNO-FL	1340 WBBT-GA	1420 WRCG-GA	1540 WZAL-GA
960 WGRD-FL	WKCE-TN	WTIF-GA	1420 WRCG-GA	1550 WYXX-GA
970 WSTX-VI	1240 WBHB-GA	WQKE-SC	1430 WGF5-GA	WKVL-TN
1050 WCGA-GA	WDUN-GA	WBAC-TN	1450 WGPC-GA	1590 WVNA-AL
1070 WAPI-AL	WLAG-GA	WKGN-TN	WBHF-GA	(+25 FM)
WKEW-NC	WMS-GA	1350 WGAD-AL	WMVG-GA	
1130 WMGA-GA	WPAX-GA	WEZY-FL	WVLD-GA	
1150 WDX-SC	WTWA-GA	1360 WLCM-SC	WDLK-AL	
Birmingham Stallions (USFL)	Jim Fyffe, Herb Winches	1480 WABB-AL		
590 WRAG-AL	1170 WBIB-AL	1490 WANA-AL		
600 WIRB-AL	1190 WAYD-AL	1410 WIQR-AL		
730 WJMM-AL	1230 WAUD-AL	1430 WFHK-AL		
920 WKYD-AL	WKML-AL	1440 WHYY-AL		
580 WKLF-AL	WHOD-AL	1450 WSMQ-AL		
990 WPIK-AL	WTBC-AL	1570 WCRL-AL		
1050 WRFS-AL	1240 WULA-AL	1580 WATH-AL		
1070 WAPI-AL	1250 WZOB-AL	1360 WABT-AL		
1090 WXBK-AL	WETU-AL	WT N-AL		
1110 WBCA-AL	1280 WPID-AL	(+17 FM)		
Pittsburgh Penguins (NHL)	Mike Laing	1470 WEGN-AL		
620 WHJB-PA	1230 WBVP-PA	1480 WBTS-AL		
940 WESA-PA	1280 WKST-PA	1480 WBTS-AL		
Pittsburgh Spirit (MISL)	John-Paul Dellacamera			
1410 KQV -PA	(no network)			
Pittsburgh Pirates (baseball)	Larry Frattere, Jim Rooker			
1020 KDKA-PA	(I have no network list yet.)			
Pittsburgh Maulers (USFL)	Sam Hover, Jack Ham			
620 WHJB-PA	1230 WBVP-PA	105.9 WAMO-PA		(+ 1 other FM)
920 WMMN-WV	1240 WBBW-OH			

Introduction

The varactor is a diode which can be used as a voltage controlled variable capacitor. This is done in a reverse biased condition (cathode voltage more positive than anode voltage). Low value varactor diodes have long enjoyed popularity in VHF/UHF TV tuner applications and also in functioning as externally adjustable trimmers to peak the performance of various circuits within professional grade commo RX's (communications receivers).

Several varactors introduced recently have relatively high maximum capacitance (over 300 pF) and high Cmax/Cmin ratios (12 to 1 or better). These include Motorola's MV1401, MVAM108 and MVAM109.

Instead of using the traditional 10 to 365 pF variable capacitor in antenna tuner, loop, VFO, phaser, and receiver circuits; one may sometimes find that the varactor is a useful alternative. The primary focus of this article will be the use of these larger capacitance varactors, as there already have been articles in the DX press (available as reprints) about using the smaller capacitance varactors as externally tweakable trimmers in home brew receiver designs.

There are both advantages and disadvantages associated with replacing a conventional variable capacitor with a varactor diode. Each circuit to be considered has its own particular characteristics which may weigh towards use of varactors or towards use of variable capacitors. The advantages and disadvantages of using varactors in several MWDX-enhancing projects will both be addressed.

VARACTOR ADVANTAGES

SIZE: A varactor diode and its associated pot generally occupy less space than a full sized 10-365 pF air variable capacitor. Miniature mica-dielectric variable capacitors may occupy less space, but these mini-caps. are notoriously prone to early failure.

IMPROVED CIRCUIT BOARD LAYOUT: A varactor may be mounted directly on an active front end circuit board with other components, whereas a variable capacitor is control panel mounted (in other words, off the circuit board). The cable connection between the variable cap and the circuit card adds extra capacitance (decreasing the Cmax/Cmin ratio). If the variable cap is "floating" (= neither side grounded), undesired stray coupling leading to unplanned feedback may be another side effect. Floating variable capacitors present assorted other problems, such as hand capacitance detuning effects and mechanical assembly / mounting difficulties far greater than those involved in the installations of one side grounded variable capacitors. The pot controlling a varactor, on the other hand, controls only DC, not RF, so it may be located at a considerable distance from the circuit card with no stray coupling problems, reduction of tuning range, or other ill effects. Cabling to this control pot can be simple twisted pair or 2 conductor speaker wire rather than expensive, harder to prepare coaxial cable.

REMOTE TUNING CAPABILITY: This is, by far, the greatest advantage of varactors over variable capacitors. A tuner or tunable-amplifier may be located at a considerable distance from a control box. Remote tuning is very valuable when the antennas to be used must be in a noise free, good signal pickup area (e.g. outdoors) while the receiver to be used is in an area of considerable RF noise (and also, perhaps, of considerable broadcast signal attenuation).

A typical situation demanding a remote tuner is that of a DX shack located in the basement of a large steel frame apartment or industrial building, a shack site far from widows or other outside exposures. Any antenna wire brought in from the outside picks up so much noise (from fluorescent lights, TV's, dimmers, computers, motorized machinery, etc.) that it would be worthless at the point that it reached the receiver. The solution would be to locate a wire aerial either on the roof of the building or in a nearby open outdoor area; an outdoor remote tuner amplifier fed by this aerial could then send desired frequency signals back to the receiver site through low-impedance shielded coaxial cable to prevent any noise pickup. A second coaxial line, consisting of 2 inner conductors and a ground shield, would transfer amplified DC power, varactor control voltage, and power ground to the remote tuner from the control box. Good grounding and stiff RF-decoupling at each end of the DC lines, as well as proper impedance management on the RF coaxial line, would be required to keep noise pickup to an absolute minimum.

Thanks to John Malicky and Fred Holland, WAPI for help with this page.
Stallions' list has WT N Selma; the third letter is unclear.
This is a correction to the column in issue 22, where I had listed WAMO-AM as the flagship station. The Maulers are on FM only.

FCC OKAYS COMPENSATION

Cuba Issues New Threat To Disrupt U.S. Radiowaves

As the Voice of America gets ready to put Radio Marti on the air next month, Cuba has once again threatened to strike back with some form of high-powered broadcasts on the U.S. AM band.
"We are preparing to respond at the level of aggression," Cuban Vice President Carlos Rafael Rodriguez told the Washington Post in Havana last week. "That is, the nature of the response will depend on the severity of the aggression. It will be proportional." And he noted ominously, "There are a lot of ways. Their use depends."
Rodriguez did not indicate whether Cuba would respond only on Radio Marti's frequency, 1180 kHz, or on other American channels, as well. Stations licensed to 1180 are WHAM/Rochester; WKKE/Pearl, MS;

Features of the FCC program include:
• A \$250,000 limit per station.
• Interference to at least 10% of the population normally receiving a station's primary or secondary service.
• Interference on at least 30 out of 60 consecutive days of monitoring by the station.
• Full compensation for expenses in the cost of monitoring, plus planning, designing, engineering and testing new facilities.
• New equipment compensation limited to the cost of the old equipment replaced, minus depreciation.
• No funds for land costs or legal fees.
• Periodic monitoring by the FCC on all 107 AM channels.

R&R/Friday, March 23, 1984

VARIABLE CAPACITOR DISADVANTAGES

INFERIOR STRONG SIGNAL HANDLING CAPABILITY: A varactor being 'hit with a strong signal will tend to produce spurious signals on other frequencies. The more strong signals present, the worse the spur problem gets as the varactor starts behaving more like a mixer and less like a capacitor. The variable capacitor, on the other hand, is relatively 'bulletproof': not likely to introduce any distortion products. With varactors, steps have to be taken to ensure that, when desired stations are properly peaked, garbage from way off channel stations is kept to a minimum. Reducing overall system sensitivity by loosely coupling the antenna is often the only solution. This is usually implemented by selection a small value coupling capacitor (less than 22pF) between the aerial wire and the tank. Unfortunately, doing this severely reduces low-band sensitivity (already at a disadvantage if aerial length is less than 100 m.). The small input coupling capacitor solution is OK if the strong offending stations are MW broadcast only; it, however does not cure VHF mixing caused spurious 'hash' in areas of strong TV & FM signals. Indeed, the small coupling capacitor makes the VHF QRM situation worse: MW signals are attenuated considerably, whilst VHF signals sail through even an input capacitor as small as 5 pF with little difficulty. Inductive loose coupling may be one way to lick the VHF trash problem. This may be accomplished by connecting the aerial wire to the junction of two inductors that we'll call L1 and L2: L1's value would be about 90% of the total required tank inductance, L2 the other 10% or so. The opposite end of L2 is routed to ground whilst the opposite end of L1 goes to the tuning capacitance. Really difficult spur problems may require custom designed band pass and band reject filters, optimized for the specific aerial, ahead of the remote tuner. It's useful to note that a longer aerial will present fewer VHF related spurious problems than a very short one. Urban and suburban areas, the most likely locations requiring the use of remote tuners, also present the greatest problems in the realm of strong signal management.

NEED FOR REGULATED CONTROL VOLTAGES: For a varactor to maintain a (somewhat) constant capacitance, the control voltage should be regulated. Regulators gobble up a good deal of current to transform an unregulated or sloppily regulated (and perhaps noisy) input DC voltage to a lower, firmly regulated, clean output DC voltage suitable for varactor control. Many varactors do not attain their minimum capacitance until the applied voltage is considerably greater than 9 volts. [Note: Maximum varactor capacitance is at a minimum applied voltage; minimum capacitance at maximum applied voltage. Normal minimum voltage is about 1.5 V.]

These considerations make battery operated varactor control circuits impractical, at best. Use of a mains AC to regulated DC power supply is mandated for good results. For the MVAM108 and MV1401 varactors, with required maximum voltages in the 9V to 12 V ballpark, the Radio Shack #22-124 regulated 12 VDC supply (designed for home operation of car stereos and CB's) is probably the cheapest, easiest way to go. Some mains powered commo RX's may provide built in user accessible regulated supplies of +12 VDC or greater.

GREATER EXPENSE (in some circumstances): A high capacitance varactor may alone cost close to the \$7 to \$11 price tag that a good 10-365 pF air variable retails for today. Even a two air variable scheme (10-365 pF main tuner in parallel with a 3-30pF fine tuner), costing about \$15, may be cheaper than a one varactor setup when you consider that, for really good varactor control, a regulated DC supply is necessary. Furthermore, a 10 turn type pot with a turns counter dial (another sizeable chunk of cash) is the best way to control varactor voltage for fine tuning capability rivalling that of a dual variable air capacitor configuration.

Other cost considerations include the need for additional fixed value resistors, coupling/decoupling capacitors, and RF chokes in some varactor implementation strategies. Few DXers live within reasonable driving distance of electronics shops (catering to the general public) which stock the new high-C varactors. Therefore, the costs of shipping and handling get into the varactor cost consideration equation, as well.

RANDOM CAPACITANCE DRIFT: A varactor, even when controlled by an absolutely pure and stable filtered DC voltage, may shift its capacitance (admittedly just slightly) more than an air-variable capacitor would. This could be detrimental in critical applications such as the production of phasing-nulls and regeneration (super-Q) peaks: situations demanding a set capacitance that remains rock steady until intentional change is desired.

WHEN TO USE VARACTORS

Varactor technology is best applied (1) in remote tuners properly designed to prevent undesirable overloading/spurs, (2) in receiver local-oscillator circuitry and AGC-controlled circuitry in which the varactor will be acting upon a known acceptable level, essentially single frequency signal, and (3) in

Circuits where the length of cable between a panel mounted capacitor and internal circuit card components could contribute too much capacitance or other undesirable side effects.

When Not to Use Varactors

There is little or no justification for using varactors in non-remote tuners, especially in those not requiring 'floating' tuning capacitors and in those which will be used (1) in strong signal areas, (2) for regeneration, (3) for phasing and/or (4) with batteries or with no other required power sources (e.g. passive tuners).

Varactor Circuit Implementations

Now that we've covered the pro's and con's of varactor diodes, it may well be worthwhile to see how these devices are connected to replace the conventional variable capacitor. The Motorola RF Data Manual is a goldmine of useful information in this regard; it also covers related areas of interest such as high frequency amplifier design using both discrete transistors and the immensely valued MWA & MHW ranges of hybrid amplifiers/'gain boxes'. The symbol for the varactor diode is like that of a conventional diode except that it has an added line at the cathode end. Some add a curved line instead of a straight line just as some represent a capacitor with a straight line and a curved line instead of with two straight lines.

Figure 1 shows the common varactor symbol in use:

Figure 1

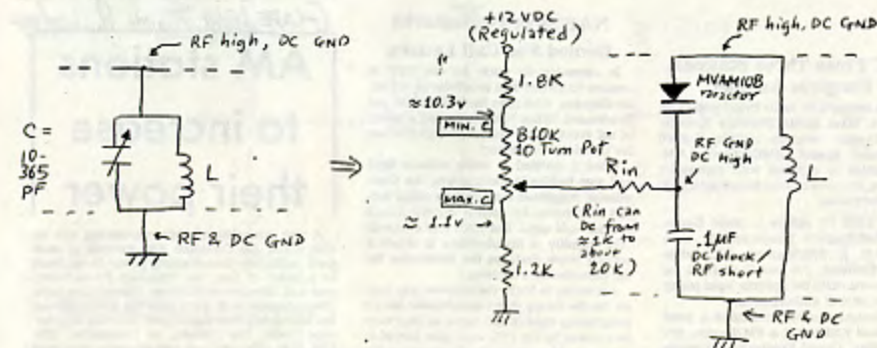


Circuits to follow include:

- Figure 2: C to ground from RF-high in parallel-LC tank
- Figure 3: 'Floating' C across balanced loophead (DC ground accessible via loop center-tap)
- Figure 4: 'Floating' C, general case (DC ground not necessarily available to cap. in the original circuit design.)
- Figure 5: A varactor-tuned non-remote MW aerial tuner
- Figure 6: A varactor-tuned remote MW aerial tuner (semi block diagram format, based upon Figure 5).
- Figure 7: A varactor VFO (variable-frequency oscillator) for broadcast band applications [receiver LO, QRP transmitter driver, frequency-spotter/digital-counter driver, etc.]

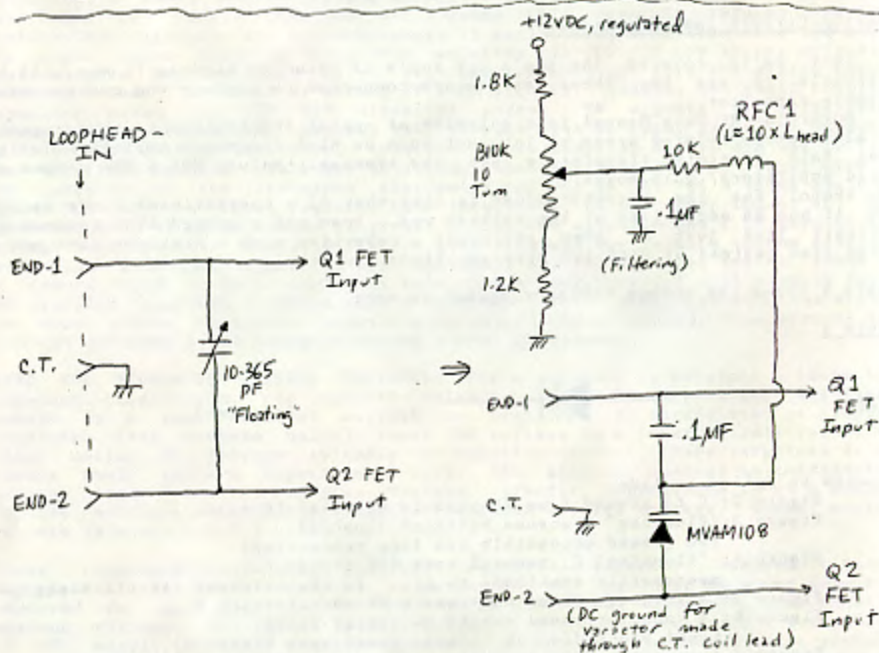
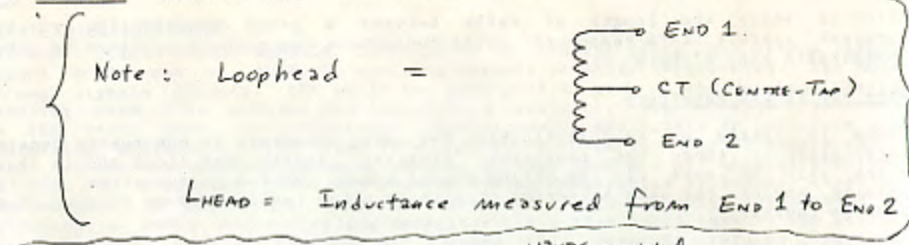
Appendix: Manufacturer-Supplied Plots of Capacitance versus applied Reverse Voltage

Figure 2 Parallel-LC-tank from RF-high to ground



VARIABLE CAPACITOR VERSION

VARACTOR VERSION



VARIABLE CAPACITOR VERSION

VARACTOR VERSION

(Note: when changing from variable-capacitor to varactor it may be necessary to decrease loophead inductance)

88 *GLOVE MAIL*

AM stations to increase their power

A new international radio agreement will enable about 100 Canadian AM stations to raise their night-time broadcasting power by as much as a factor of four, the Canadian Radio-Television and Telecommunications Commission says. The increases will not affect the areas served, but will strengthen signals and increase interference levels. The stations, on frequencies 1230, 1340, 1340, 1400, 1450 and 1490 kilohertz, generally operate with 1,000 watts in the daytime and 250 at night, but under the new North American Regional Broadcasting Agreement, will be able to move to 1,000 watts in night operations.

via Peter Weeks

FCC Fines Three Stations, Forgives Another

Fines imposed on radio broadcasters by the FCC Mass Media Bureau's Enforcement Division recently include a \$2000 assessment against KMCC/Clevis, NM. The station is charged with repeatedly violating the rules against broadcasting lottery information.

Fined \$1000 for failure to make Equipment Performance Measurements were WSUX-AM & FM/Seaford, DE, while WMRP/Lewisville, PA was fined \$1000 for failure to maintain the antenna input power to within 10% of authorization.

The Commission has rescinded a \$1000 fine against KHDN-AM & FM/Hardin, MT for not filing Annual Employment Reports (Form 395) for 1980, 1981, and 1982. It turns out the stations have had no employees since going bankrupt, and dark, 14 months ago.

NAB Says Trademarks Denied For Call Letters

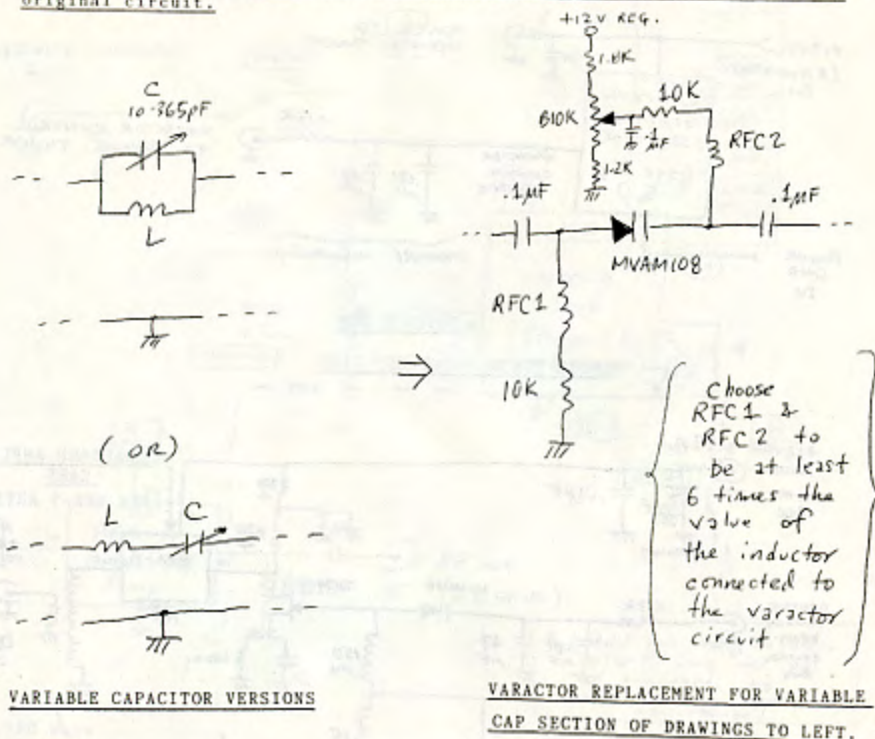
In renewing its pitch for the FCC to resume its former role as arbiter of call letter disputes, NAB says the U.S. Patent and Trademark Office has reaffirmed a policy of not granting service mark registrations for broadcast call letters.

When it decided to make stations fight call sign battles in local courts, the Commission suggested that stations could protect themselves by getting service marks on their call signs. But NAB now contends "the inability of broadcasters to obtain a service mark destroys the foundation for the Commission's decision."

According to NAB, the decision was based "on the theory that a broadcaster has no proprietary right in call signs, as they may be revoked by the FCC and, upon loss of license, would revert to the Commission."

NAB concludes that a lawsuit against unfair competition and service mark infringement would be "dangerously uncertain" because of the policy.

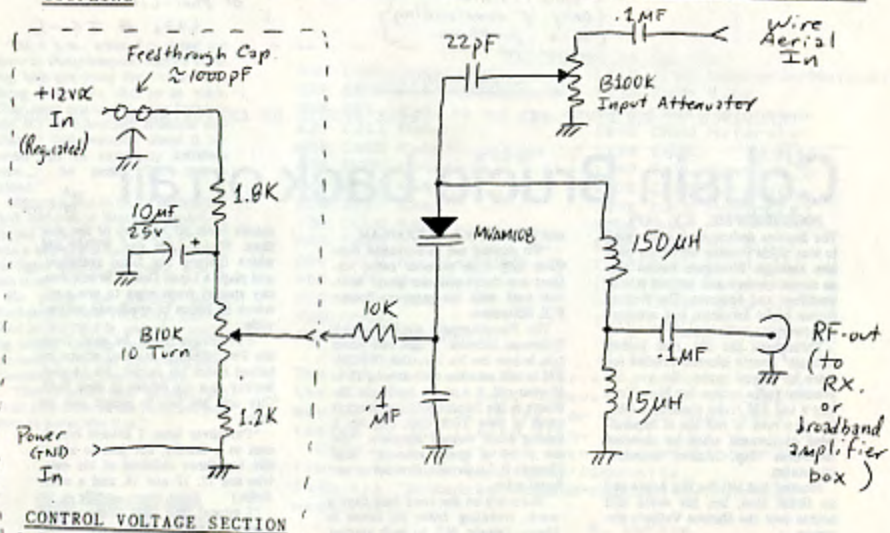
19 **Figure 4** General case 'floating' (= neither side grounded) variable capacitance. DC ground connection to capacitor presumed to be absent in original circuit.



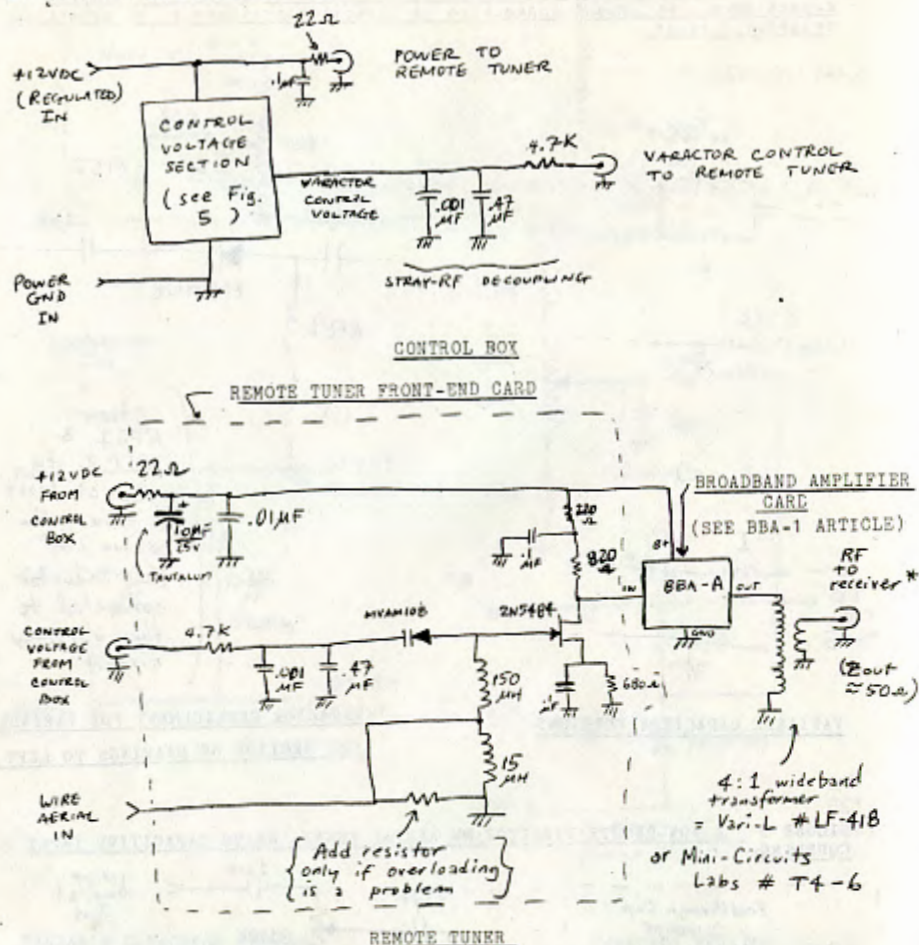
VARIABLE CAPACITOR VERSIONS

VARACTOR REPLACEMENT FOR VARIABLE CAP SECTION OF DRAWINGS TO LEFT.

FIGURE 5 A NON-REMOTE VARACTOR MW AERIAL TUNER, USING CAPACITIVE INPUT COUPLING



NOTES: THERE IS LITTLE APPRECIABLE VOLTAGE DROP ACROSS THE 10K FIXED RESISTOR. WITH THE VARACTOR CATHODE AT APPROXIMATELY +1.2VDC, THE FREQUENCY OF PEAK RECEPTION SHOULD BE APPROXIMATELY 530 KHZ WITH THE ABOVE CIRCUIT. IF A +10 VDC CATHODE TO GROUND VOLTAGE IS SET, RESONANCE AT (ABOUT) 1620 KHZ SHOULD OCCUR.



*IMPEDANCE AT RECEIVER-END OF RF CABLE SHOULD BE APPROXIMATELY 50 Ohms.

Cousin Bruce back on air

POUGHKEEPSIE, N.Y. (AP) — The Beatles dedicated a nutty song to him. Elvis Presley nervously paid him homage. Strangers hailed him on street corners and invited him to weddings and funerals. The Rolling Stones broke furniture and urinated in flowerpots in his honor.

Throughout the 60s, disc jockey "Cousin" Bruce Morrow rivaled the stars he helped make. He was the premier radio emcee for New York City's top AM radio station, WABC, during a rock 'n' roll era of unparalleled excitement when he elevated the words "Hey, Cousin!" to celebrity status.

Morrow has left the Big Apple and its fickle fans, but his voice still booms over the Hudson Valley's airwaves.

Now at 46, he's making a splash on six stations owned by the Sillerman Morrow Broadcasting Group in Poughkeepsie, on WJJB-FM 98 FAME, in Middletown on WALL-AM and WKGL-FM, in Northampton, Mass. on WHMP-AM and WHMP-FM

and in Dover, N.J. on WRAN-AM.

"We started out to surround New York City with monster radio stations and that's still our goal," Morrow said with his partner, Robert F.X. Sillerman.

The Poughkeepsie station, which Sillerman Morrow bought two years ago, is now the No. 1 station (WPDH-FM is still number one) among 18- to 49-year-olds, 6 a.m. to midnight listeners in the Dutchess-Ulster market north of New York City, and No. 1 among adult women listeners. "We see it as a great success," said Thomas P. La Grutta, director of national sales.

Morrow's on the road four days a week, traveling from his home in Morris County, N.J. to each station, directing all programming and training his disc jockeys in the mile-a-minute Cousin Bruce mode. They offer eclectic programming, with a nostalgic dose of late fifties and sixties hits.

He broadcasts live at least once a

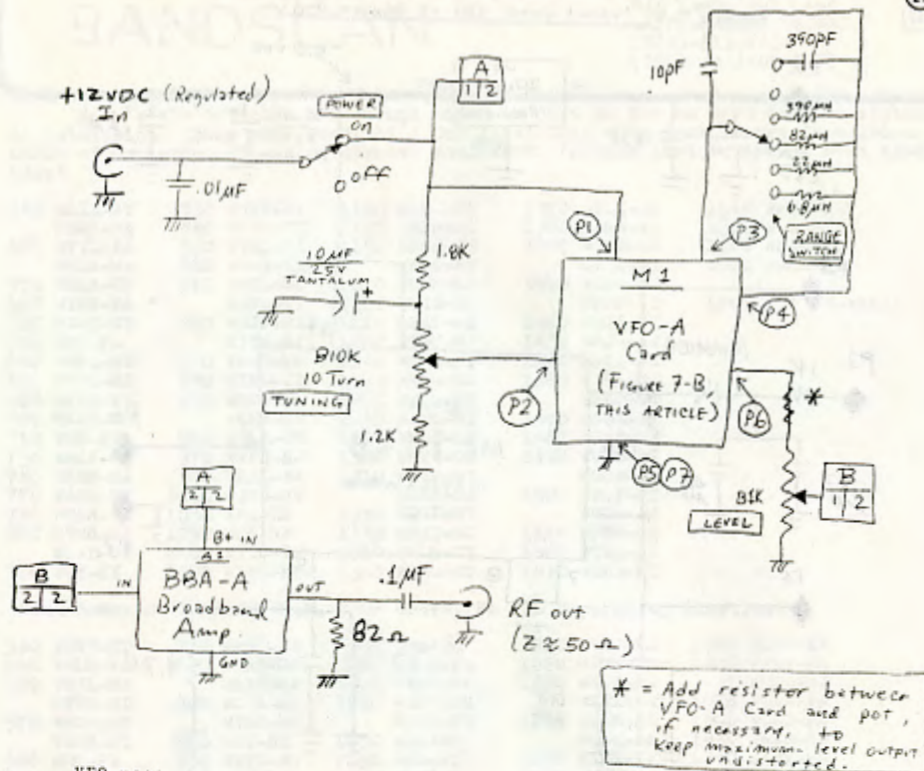
month from all but two of the stations, WALL-AM and WHMP-FM which feature Big Band nostalgia, and plays a taped Cousin Bruce Sunday special from noon to one p.m., which he hopes to syndicate nationwide.

"I'm always nice," he said, from the Poughkeepsie station, where he talked about his career, his 14-year heyday as a top emcee in New York City and his ties to music and its stars.

"I'm never blue. I always broadcast to a family, not just to kids." (He has three children of his own, who are 11, 17 and 18, and a wife, Jodie.)

"I appeal to a very nice mass of people. Nasties do not like me, cynics don't like me — I epitomize a fun, simplistic, relaxed style. I'm sunshine, bubbly and I'm a circus..."

CONT. BOTTOM OF NEXT PAGE →



- VFO uses
- (1) zero beat station, take frequency measurement on a digital counter (= "spotting")
 - (2) Drive a low powered transmitter (e.g. 1750 metre band)
 - (3) local oscillator in homebrew receivers.

"At 4 p.m., when I'm doing my show in Poughkeepsie, they're cooking, kids are doing their homework, doing their cars, they're at work. They have sex to me, they bathe to me. It's an extremely intimate medium. I feel beautiful about it because I'm an extremely intimate man..." he said. "I'm their friend."

Morrow's yen to be an entertainer first bloomed in Brooklyn, where he played a cavity in a school play. "I was a bad egg, a bad tooth, and then the lights went on and I said, 'Bruce, this is it!'"

He joined the All-City Radio Workshop in New York City, apprenticed at WNYE-FM, and after studying acting, singing and dancing, he cut several records, one with Lionel Hampton, which went nowhere.

"They're pretty bad," he said, "but I still play them on the radio and ask them to guess who it is."

Stereo AM in Canada

540 CJSB Motorola	1810 CFRB Magnavox/Motorola
570 CHYM Harris/Magnavox	1850 CHUM Kahn
580 CKY Kahn	1870 CFAX Motorola
620 CJCI Motorola	1890 CKKW Motorola
630 CHED Kahn/Magnavox	1130 CKWX
630 CKOV Motorola	1140 CKXL Kahn
660 CFFR Kahn	1150 CKOC Motorola
680 CFTR Kahn	1270 CJCB Motorola
730 CKLG Kahn	1280 CHAM
800 CHAB Kahn	1280 CJSB Motorola
880 CKLW Harris/Motorola	1320 CJSO Harris
980 CHPL Motorola	1320 CHQM Motorola
920 CJCH Kahn	1470 CJOV Motorola
980 CKNW	1540 CHIN
980 CFPL Motorola	

The Kahn system is on the air, or on order by the listed stations, however, other systems may be on air on order, or are or have been tested by the listed stns.

CHIN will go stereo when it goes 24hrs full time, with probably 50Kw/15Kw nite.

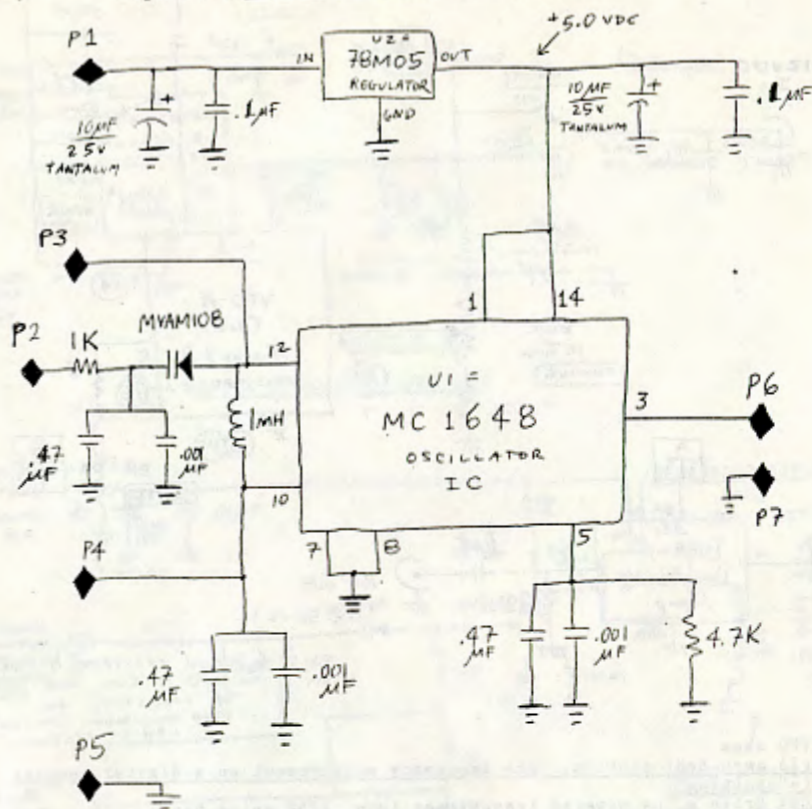
Info via "Broadcaster" & "Broadcast Technology" magazines.

B. Vernon

KTTS
AM/FM

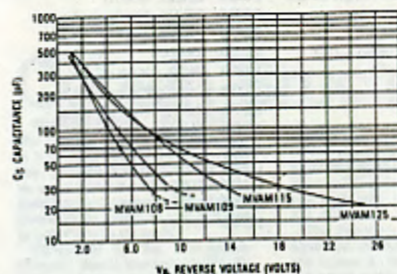
WJJB BIG 10

Figure 7-B VFO-A Card (M1 of Figure 7-A)

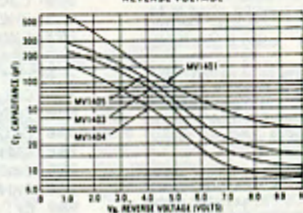


APPENDIX Manufacturer supplied varactor voltage verses capacitance plots.

CAPACITANCE vs. REVERSE VOLTAGE



DIODE CAPACITANCE vs. REVERSE VOLTAGE



**** END ****

Is it that time of the year again for you? Trying to weigh which magazines to stay with? Uncertain which one gives you more dollar for dollar? If your reading this then your decision should already have been made! Only **DX NEWS** offers you the famous **CUBAN LIST**, only **DX NEWS** offers you **CPC TEST INFORMATION**, only **DX NEWS** keeps you up to the minute with call letter changes with **AM SWITCH**. Do we need to go on? Of course not, your mind is made up. Your going with **DX NEWS** !!!!!

BANDSCAN

ERIC BUENEMAN
836 LAMPLIGHT LANE
HAZELWOOD, MO 63042
(314)-895-1436
(1700 TO 2400 ELT)

Here's the official NRC column which is just as fun as Dave Schmidt listening to Quiet Riot! (Bang your head, hi!) Our first scan this month comes from InOzma DAJIN of Copiague, NY, using unknown equipment. (Please list equipment next time.) (day)

540 WLIK-NY	830 WNYC-NY	1100 WLLI-NY	1370 WALK-NY	1540 WRGA-PA*
560 WFIL-PA	840 WYIM-CT	1130 WNEI-NY	1380 WBA-NY	1560 WJAN-NY
570 WCA-NY	860 WTEL-PA	1150 WONA-CT	1400 WOND-NJ	1580 WLLN-NY
580 WTAG-MA	880 WCBS-NY	1170 WOBX-NJ	1410 WHTG-NY	1600 WRLL-NY
600 WICC-CT	910 WRKL-NY	1190 WLIB-NY	1420 WLIS-CT	(NOI: * ex-woni)
600 WIP-PA	920 WHJJ-RI	1210 WCAU-PA	1430 WJAN-NJ	
620 WSKQ-NJ	940 WFAT-NJ	1230 WOKC-NJ	1440 WJUN-NY	
630 WPRO-RI	960 WLI-CT	1240 WGBS-NY	1450 WJLN-NY	
660 WNBC-NY	970 WNDJ-NJ	1250 WJTA-NJ	1460 WJAN-NY	
690 WADS-CT	990 WZLD-PA	1260 WMMX-CT	1470 WJUN-NY	
710 WCR-NY	1010 WINS-NY	1280 WADO-NY	1480 WJIT-NY	
730 WACE-MA	1030 WBS-MA	1290 WGLI-NY	1490 WJUN-NY	
740 WGBM-MA	1050 WHN-NY	1300 WAVZ-CT	1500 WJUN-NY	
770 WABC-NY	1080 WTIC-CT	1310 WVIP-NY	1510 WJUN-NY	
790 WTAR-VA	1090 WBAL-MD	1330 WJLK-NJ	1520 WJUN-NY	
800 WTMR-NJ		1340 WJUN-NY	1530 WJUN-NY	
810 WGY-NY		1350 WJUN-NY		

Next Scan: DAVE RAUDENEUSH, Pine Grove, PA (GE Superadio) (daytime)

540 WIMV-MD	770 WABC-NY	980 WRC-DC	1210 WCAU-PA	1390 WJAN-PA
550 WJLN-PA	790 WTAR-VA	990 WZLD-PA	1220 WJUN-PA	1400 WJUN-PA
560 WFIL-PA	800 WCHA-PA	1000 WIOO-PA	1230 WJUN-PA	1410 WJUN-PA
570 WCA-NY	810 WGY-NY	1010 WINS-NY	1240 WJUN-PA	1420 WJUN-PA
580 WHP-PA	830 WNYC-NY	1030 WBS-MA	1250 WJUN-PA	1430 WJUN-PA
590 WARM-PA	850 WEEU-PA	1050 WHN-NY	1260 WJUN-PA	1440 WJUN-PA
600 WCAO-MD	860 WTEL-PA	1060 KYW-PA	1270 WJUN-PA	1450 WJUN-PA
610 WIP-PA	870 WHCU-NY	1070 WKOK-PA	1280 WJUN-PA	1460 WJUN-PA
620 WSKQ-NJ	880 WCBS-NY	1090 WBAL-MD	1290 WJUN-PA	1470 WJUN-PA
630 WJLN-DC	900 WFLN-PA	1100 WGFA-PA	1300 WJUN-PA	1480 WJUN-PA
660 WNBC-NY	910 WBSA-PA	1110 WJAN-PA	1310 WJUN-PA	1490 WJUN-PA
680 WJLN-DC	920 WKVA-PA	1130 WNEW-NY	1320 WJUN-PA	1510 WJUN-PA
690 WYIS-PA	930 WJAN-PA	1140 WJAN-VA	1330 WJUN-PA	1530 WJUN-PA
710 WCR-NY	940 WJLV-PA	1150 WDEL-DE	1340 WJUN-PA	1540 WJUN-PA
730 WNAK-PA	950 WFEN-PA	1170 WJUN-NY	1350 WJUN-PA	1550 WJUN-PA
740 WVCH-PA	960 WHYL-PA	1180 WJUN-NY	1360 WJUN-PA	1560 WJUN-PA
750 WJLN-DC	980 WJLN-PA	1190 WJUN-NY	1370 WJUN-PA	1570 WJUN-PA

1580 WJUN-PA
1590 WJUN-PA
1600 WJUN-PA
WRLL-NY

(Dave Schmidt would be mad if you didn't hear WCHS-1520-PA, hi!-el editor)

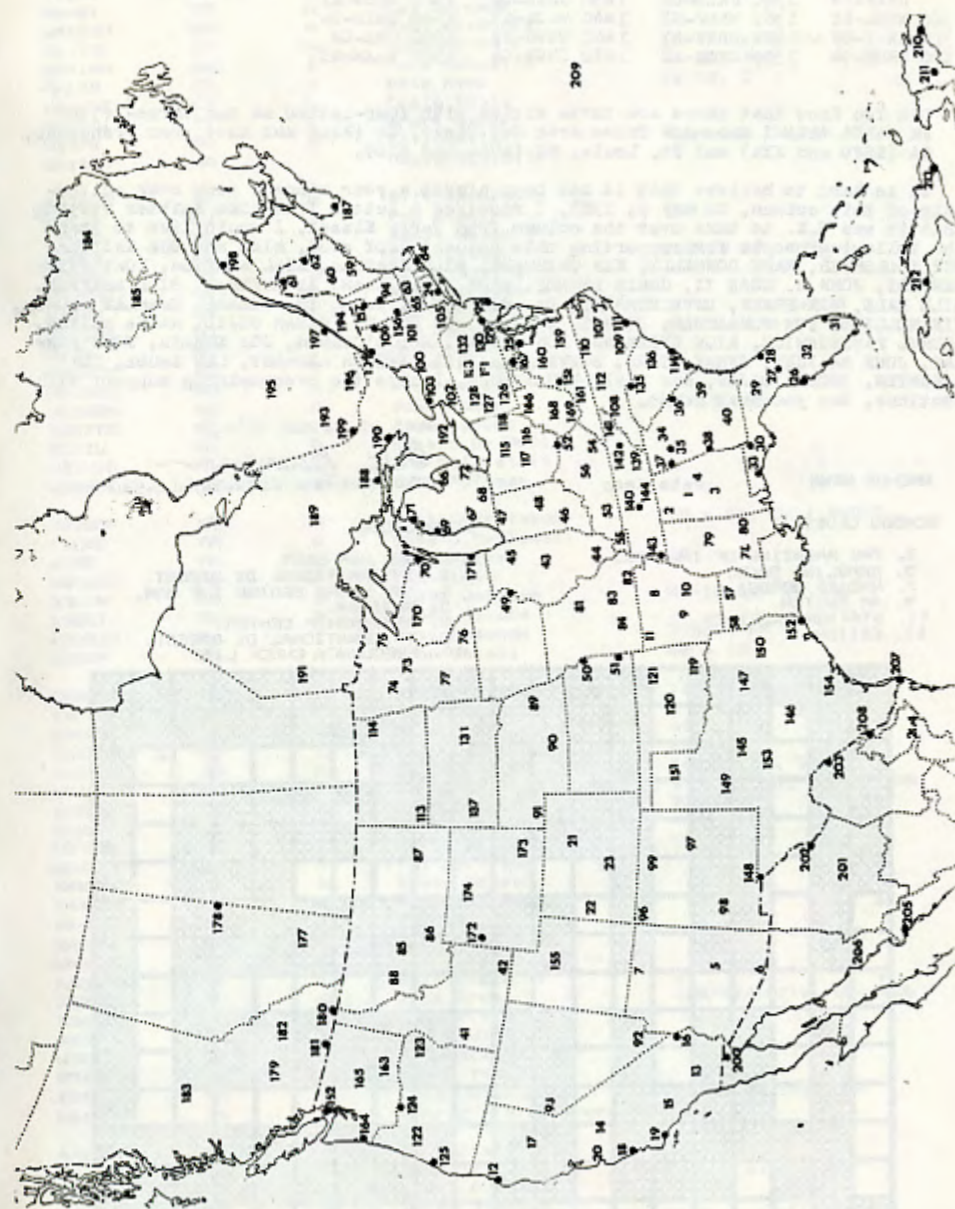
Next Scan: TOM LANGMYER, Amherst, NY (Panasonic RF-2200, Gz superadio) (day)

540 CHEF-CN	640 WHLO-OH	810 WGY-NY	960 CKWS-CN	1140 WJUN-NY
550 WGR-NY	660 WNBC-NY	850 WJW-OH	970 WJUN-NY	1150 WJUN-NY
570 WSYR-NY	680 CFTR-CN	860 CJBC-CN	980 CFFL-CN	1170 WJUN-NY
580 WJUN-CN	690 CBF-PQ	870 WHCU-NY	990 WJUN-NY	1180 WJUN-NY
590 CKWM-CN	710 CJRN-CN	880 WCBS-NY	1010 CFFB-CN	1190 WJUN-CN
590 CKWM-CN	740 CEL-CN	900 CHML-CN	1020 KJKA-PA	1220 WJUN-CN
590 CKWM-CN	760 WJR-MI	920 CKXK-CN	1050 CHUM-CN	1230 WJUN-NY
610 CKTB-CN	770 WABC-NY	930 WJUN-NY	1080 WJUN-NY	1240 WJUN-NY
620 WJUN-NY	790 CHIC-CN	950 CKBB-CN	1100 WJUN-CN	1250 WJUN-CN
630 CFCC-CN	800 CKLW-CN	960 WJUN-NY	1120 WJUN-NY	1260 WJUN-CN

Note On Page 26 ->

1. WXXR CULLMAN	72. WEXL BOYAL OAK	143. WLOK MEMPHIS
2. WYOR FLORENCE	73. EQBR BRAINERD	144. WCDT WINCHESTER
3. WMBK SELMA	74. KOLM DETROIT LAKES	145. FUKC ABILENE
4. WFER SYLACAUGA	75. WEVE EVELETH	146. KHLB BURNET
5. KIRO MIAMI	76. KRCC ROCHESTER	147. KAND CORSICANA
6. KFBR NOGALES	77. KWLM WILLMAR	148. KSET EL PASO
7. KPCE PAGE	78. WJMB BROOKHAVEN	149. KFMX LUBBOCK
8. KETA BATESVILLE	79. WKOZ KOSCIUSKO	150. KRBA LUFKIN
9. KZNG HOT SPRINGS	80. WAML LAUREL	151. KSNZ PAMPA
10. KCAT PINE BLUFF	81. KXED MEXICO	152. KOLE PORT ARTHUR
11. KBRS SPRINGDALE	82. ELID POPLAR BLUFF	153. KTEO SAN ANGELO
12. KATA ARCATA	83. FSHO SALEM	154. KGMV VICTORIA
13. KWXY CATHEDRAL CITY	84. KICK SPRINGFIELD	155. KLVE HEBER CITY
14. KMAK FRESNO	85. KCAP HELENA	156. WYWR POULTNEY
15. KDOL MOJAVE	86. KPRK LIVINGSTON	157. WSTJ ST JOHNSBURY
16. KSFLE NEEDLES	87. KATL MILES CITY	158. WKXY COVINGTON
17. KORV OKOVILLE	88. KYLT MISSOULA	159. WMAP HOPEWELL
18. KATY SAN LUIS OBISPO	89. KHUB FRENONT	160. WJMA ORANGE
19. KIST SANTA BARBARA	90. KGFV KEARNEY	161. WBLB PULASKI
20. KOMY WATSONVILLE	91. KSID SIDNEY	162. KAGT ANACORTES
21. KDEN DENVER	92. KLAN LAS VEGAS	163. KOTY KENNEWICK
22. EQIL GRAND JUNCTION	93. KBET REBO	164. KAPA RAYMOND
23. KVRH SALIDA	94. WDCR HANOVER	165. KMWV WENAWATCHEE
24. WNHG NEW HAVEN	95. WMDI ATLANTIC CITY	166. WHAR CLARKSBURG
25. WYCE WASHINGTON	96. KKBK AZTEC	167. WEPH MARTINSBURG
26. WTAN CLEARWATER	97. KSYX SANTA ROSA	168. WMON MONTGOMERY
27. WUFL CLERMONT	98. KSLI SILVER CITY	169. WKYE WELCH
28. WRDD DAYTONA BEACH	99. KYIT TAOS	170. WLDY LADYSMITH
29. WDSR LAKE CITY	100. WMRO AUBURN	171. WBCS MILWAUKEE
30. WTYS MARIANNA	101. WENT GLOVERSVILLE	172. KSGT JACKSON
31. WPSR PALM BEACH	102. WKSJ JAMESTOWN	173. KYCN WHEATLAND
32. WSEB SEBRING	103. WLVN LOCKPORT	174. KWDR WORLAND
33. WFSH VALPARAISO	104. WMSA MASSENA	*175. WUNA AGUADILLA
34. WGAU ATHENS	105. WALL MIDDLETOWN	*176. WSTA CHARLOTTE AMALIE
35. WIGO ATLANTA	106. WIRY PLATTSBURGH	177. CKBR BROOKS
36. WBBQ AUGUSTA	107. WWOV GREENVILLE	178. CIOK-1 GRAND CENTRE
37. WCAA CEDARTON	108. WJRI LENOIR	179. CHNL-2 ASHCROFT
38. WOKS COLUMBUS	109. WTSR LUMBERTON	180. CFKC CRESTON
39. WBET LYONS	110. WCBQ OXFORD	181. CKGF GRAND FORKS
40. WTIF TIFTON	111. WAAV WILMINGTON	182. CKCR REVELSTOKE
41. KXTC NAMPA	112. WATR WINSTON-SALEM	183. CIVR VANDERHOOF
42. KACH PRESTON	113. KPOK BOWMAN	184. CFCB HAPPY VALLEY
43. WSOY DECATUR	114. KXPO CRAFTON	185. CFLV WABUSH
44. WHPI HERRIN	115. WNCO ASHLAND	*186. CFYK YELLOWKNIFE
45. WJOL JOLIET	116. WOUB ATHENS	187. CJLS YARMOUTH
46. WBIW BEDFORD	117. WIZE SPRINGFIELD	188. CKNR ELLIOT LAKE
47. WTSC ELKHART	118. WSTV STEUBENVILLE	189. CFLH HEARST
48. WLBC MUNCIE	119. KIHN HUGO	190. CFBQ PARRY SOUND
49. KROS CLINTON	120. KXXY OKLAHOMA CITY	191. CKRE PED LAKE
50. KRKR KANSAS CITY	121. KTOV SAND SPRINGS	192. CKDK WOODSTOCK
51. KSEK PITTSBURG	122. KLOO CORVALLIS	193. CHAD AMOS
52. WCM1 ASHLAND	123. KWVR ENTERPRISE	194. CJAN ASBESTOS
53. WBCN BOWLING GREEN	124. KHIR HOOD PIVER	195. CFED CHAPAIS
54. WKCB HINDMAN	125. KBBP NORTH BEND	196. CKMG MANIWAKI
55. WNB5 MURRAY	126. WCVI CONNELSVILLE	197. CFOM QUEBEC
56. WKEY RICHMOND	127. WSAJ GROVE CITY	198. CGCA-7 STE-ANNE-DES-MONTS
57. KVOR BASTROP	128. WOLJ OIL CITY	199. CKVT TEMISCAMINGUE
58. KRMD SHREVEPORT	129. WMAT PHILADELPHIA	200. YEAA MEXICALI
59. WFAU AUGUSTA	130. WRAW READING	201. XEJK DELICIAS
60. WDMC DOVER-FOXCROFT	131. WTRN TYRONE	202. XERH OJINACA
61. WLVC FORT KENT	132. WKRZ WILKES-BARRE	203. ZEDH CIUDAD ACUMA
62. WYOU HOULTON	133. WHPA WILLIAMSPORT	204. XENV MONTERREY
63. WGAW GARDNER	134. WOKC CHARLESTON	205. XECM LOS MOCHIS
64. WNBH NEW BEDFORD	135. WPHI ROCK HILL	206. XEOS CIUDAD OSREGON
65. WBRK PITTSFIELD	136. WSSC SUMTER	207. XEMT MATAMOROS
66. WLEW BAD AXE	137. KIJV HUFON	208. XEBK NUEVO LAREDO
67. WLAU GRAND RAPIDS	138. KTOQ RAPID CITY	209. ZBM-2 HAMILTON
68. WCSR HILLSDALE	139. WBAC CLEVELAND	210. HIPT SAN FRANCISCO DE MACORIS
69. WYTE MANISTEE	140. WCRM COLUMBIA	211. HIBZ SAN JUAN
70. WAGN MENOMINEE	141. WGRV GREENEVILLE	212. CMHU CIENFUEGOS
71. WWPZ PETOSKY	142. WKCH KNOXVILLE	213. WGBY GUANTANAMO BAY

**Not Plotted

BY:
BILL HALE

1260 WLKK-PA	1330 WRIE-PA	1400 WYSL-NY	1490 WBTA-NY	1570 W502-NY
1270 WFLD-NY	WEBO-NY	1410 WDOE-NY	1500 WDEE-NI	1590 WGGC-NY
1280 WFXN-NY	1340 WLVL-NY	1420 WLNA-NY	WTOP-DC	1600 CHNN-ON
CHAM-ON	1350 CKLB-ON	1430 CJGL-ON	1520 WKBN-NY	
1300 WAKL-NY	1360 WKOP-NY	1440 WJUL-NY	1540 CHLN-ON	
1310 CKOY-ON	1370 WRTK-NY	1460 WSWG-NY	1550 CBB-ON	
1320 CFGM-ON	1390 CKTC-ON	1470 CHOW-ON	1560 W-ART-NY	

Did You Know that there are three cities with four-letter AM and three-letter FM calls that I know of? Those are: San Diego, CA (KPFF and KOB), San Francisco, CA (KSFO and KYA) and St. Louis, MO (KUSA and KSD).

It is hard to believe that it has been almost a year since I took over editorship of this column. On May 9, 1983, I received a letter from Mike Knitter stating that it was O.K. to take over the column from Terry Klasek. I would like to thank the following people for supporting this column: ARDY KUGG, MIKE and SUE KNITTER, GUY KUDLEMYER, MARK CONNELLY, KEN ONYSCHUK, BILL PRATHER, NIEL WOLFSON, TONY FITZ-HERBERT, JOHN H. ROSE II, CHRIS HAMBLY, MARK SCLESINGER, ED ROEFMAN, BILL SNAFFER, BILL HALE, TIM BRAUN, DAVE SCHMIDT, Dr. RICHARD E. WOOD, The WILARD, CHARLES GEORGE, JIM ROLLINS, TOM CONNATSER, JOHN T. ARTHUR, RON SCHATZ, CESAR OBJIO, MAINE HEINER, SHERYL PASZKIEWICZ, RICK OVERMANN, DON KASKEY, ROD O'CONNOR, JOE KURZIN, JOHN HARMAN, JOHN MALICKY, JERRY STARH, STEVEN PARADIES, ARTHUR LAURENT, LEN KRUSE, TOM LANGMYER, THOMER DAJIN, and DAVID RAUDENBUSH. I hope the overwhelming support will continue. See you next month.

Best of DX and 73's,

Eric Bueneman
Eric Bueneman-KDAX/STL/WLS-5Mo

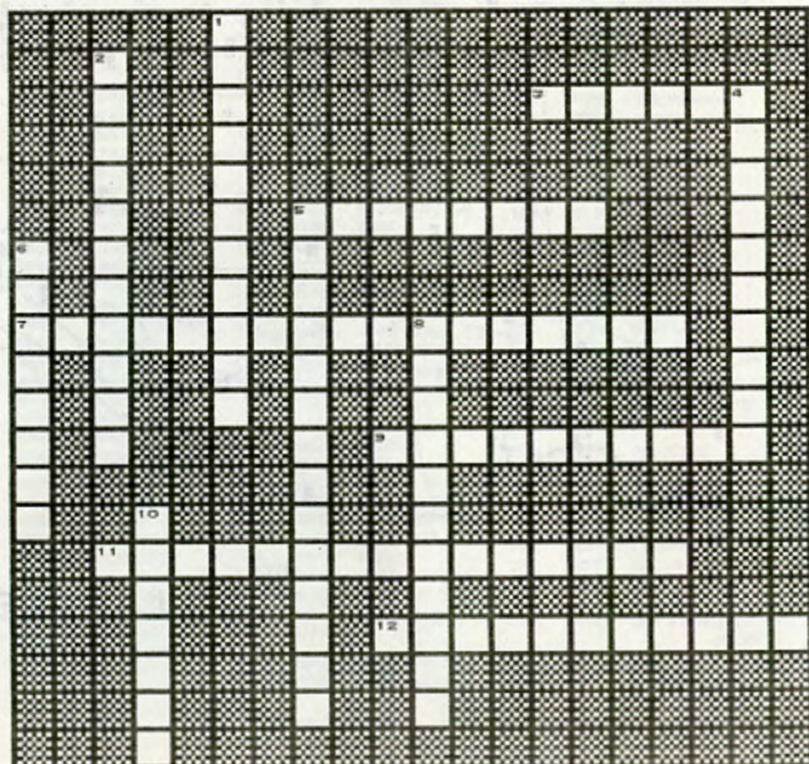
NRC-DX NEWS Pete Kemp

ACROSS CLUES

3. THE MAGAZINE OF THE NRC.
5. RAMBLIN' BACK.
7. NRC (3 WORDS).
9. AM SWITCH
11. STATION PROFILES
12. EDITOR

DOWN CLUES

1. NRC HAM LIST
2. INTERNATIONAL DX DIGEST.
4. THE WOMAN BEHIND THE MAN.
5. MUSINGS.
6. MEMBERSHIP CENTER.
8. INTERNATIONAL DX DIGEST.
10. FREQUENCY CHECK LIST.



CALL	STATE	CLASS	NAME	OPERATIONS
KA1BCP	MA	T	Larry Weil	
N1CQ	MA	E	William Shaheen	
W1EX2	VT	A	Bob Curtis	80-10 Mobile, 20-6 Base
KA1GI	CT	A	Les Berkman	
WA1GXN	MA	A	Paul Burkhardt	
KA1IGP	CT	N	John Morus	10/15/40/80 CW
WA1IGN	MA	E	Mark Connelly	75 AM, SSB
KA1KD	CT	A	Pete Kemp	80-10; 2
KA1KDF	RI	N	Craig Healy	
WA1POI	CT	A	Bruce Kampe	
W1YPK	MA	G	Bill Bailey	40AM,SSB,CW,FAX,RTTY
KA1KRR	MA		David Duquette	
KA2AB6	NY	N	Bill Thompson	
N2CJS	NJ	G	Rob Stonier	2FM
W2DPF	NJ	T	James Welch	
W2DYR	NJ	A	Eric Cruser	160-10 AM, SSB
N2EAW	NY	G	Nolan Stephany	
KA2EHZ	NY	T	Bill Bergadano	
K2EUH	NY	E	Bob Foxworth	2 FM + LOW BANDS
WB2GHA	NJ	G	Tom 'Skip' Arey	80-10, 2FM
KR2H	NJ	E	Harry Helms	
WB2NTP	NJ	T	Frank Passage	
WA2OB0	NJ	N	Paul Mount	
WA2WEN	NJ	A	John Bowker	80-10 SSB
WB2ZTR	NY	G	John Lancos	
KC2ZU	NY	A	Ronald De Ment	
WB2VGD	?	G	Bob Galerstein	
WB2SOK	NY	G	Dale Foltman	
KA3BGP	MD	N	Bill Hutchinson	15 + 40, CW + PHONE
K3CHD	PA	G	Donald Myslowski	
K3DE	PA	E	Herb Heller	10
WB3GEJ	MD	G	Bob Binau	
K3LXN	MD	G	Steve Johnson	40-10 CW 20 SSB
K3WEI	PA	G	Glenn Jacobs	
WB2JBH	PA	T	Russ Edmunds	2 SSB, FM
W3QKP	PA	A	John Shiels	80 & 15
WB4AFR	SC	E	Al Earnhardt	160/80/40 CW, SSB
K4AUH	NC	E	Edwin Goad	
W4CNR	SC	A	George Mulfinger	40
KA4DAP	NC	T	Bill Coleman	80/40
WD4ELO	GA	A	Chuck Hutton	160-10 CW, SSB
WA4GHK	FL	T	Jim Hagan	2, 220, 432 + 1750 KHz
K4GLU	VA	E	Alan Merriman	20 CW
K4HZF	VA	G	David Kennedy	
WD4JBU	GA	?	Ed Durden	
WD4JLT	KY	N	Pat Hartlage	
K4KVR	GA	G	David McLean	
KA4SKB	KY	N	Mark Williams	
AK4W	NC	E	Ed Best	
WA2NNQ	GA	A	Stewart Romain	
WA3SAD	SC	A	LT. Stephen Martin	
KA5PKW	VA	T	Bill Whitacre	2
K8GVU	KY	G	Dick Truax	160/40/15/10, CW, SSB
K8AKK	GA	G	Dave Fischer	
AK5E	TX	E	Tom DeWitt	
W5EPL	TX	A	Bob Hackett	
W55UV	NM	A	Glenn Thompson	
K85ZQ	OK	A	Bruce Winkelman	40-15 CW,SSB; 2FM
WA1YTK	TX	T	Conrad 'Chick' Durocher	
AH6DO	HI	A	Al Mariani, MD	
W61UW	CA	A	Jim Hill	
WB3ANO	CA	T	Larry Putman	
K7LJ	CA	E	Larry Johnson	
WB7DKS	AZ	A	Cliff Reno	
KA7EJU	WA	N	Bill Hardy	40
W7HR	UT	E	Marvin Zitting	
N8CCC	OH	T	Gordon Anderson	2, 220, 440 FM 7 NOVICE CW
AEBI	OH	E	Ken Noffsinger	
KABICC	OH	T	Brad Lovett	
K8NDY	OH	T	George Greene	
KABRYG	WV	N	Howard Tate	
W8SHN	OH	A	Paul Buehler	

WD91RV	IL	A	Alan Mayer	2-88 SSB, FM
KCP1H	IL	A	Keith Kerchner	
KB91V	WI	A	Bill Marvin	
WA9WME	IN	G	Randy Davis	
NIACO	IL	T	Jeff Cohen	
W3CRH	IL	G	Jeff Kadet	18 AM/SSB/CW, 15/20/40 CW
K3PXR	IL	A	Al Resnick	
K8HTF	IA	E	DR. Tom Gruis	
K8LOK	NE	G	Bob Greenlee	
W8MHR	ND	A	Bob Van Wormer	
K8SBV	KS	A	Carl "Skip" Dabelstein	80-10 CW
KD7CX	SD	A	Kermit Schol	
W8JRP	MO	A	John Tudenham	
WD91NP/1KA6	?	T	Charles Taylor	low bands (Okinawa)
VE2AQP	PQ	B	Andy Rugg	3.5 14 21 MHz, CW
VE3LEG	ON	?	Robert Cuthill	
VE3LSK	ON	G	Jeff Falconer	160-18 CW
LASVAA	Norway		Geir Stokkeland	80-10

Send all additions, corrections, etc. to the editor:
WB2BJH, RUSS EDMUNDS, 753 VALLEY ROAD, BLUE BELL, PA 19422

Interference plagues electric units

By JOHN HOLUSHA

A cordless telephone dials random numbers when a vacuum cleaner is turned on. Network television cameras at Edwards Air Force Base in California are turned off because they emit signals that interfere with communications between the U.S. space shuttle and its controllers on the ground.

Outside Andrews Air Force Base near Washington, communications interference is traced to a cash register in a drug store. The British magazine New Scientist warns that radio pranksters risk explosion and death from possible sparks as they try to confuse electronic metering systems in gasoline pumps with powerful communications radios.

These incidents are manifestations of the growing load on the radio frequency spectrum and the proliferation of sensitive micro-electronic devices.

Any time a material that conducts electricity meets an electromagnetic field, an electrical current is likely to be generated. The wires leading into electronic equipment can act like antennas in such cases, feeding in false signals unless precautions have been taken to screen them out.

Left unshielded, the results can range from false readings on instruments to wrong commands from control units. As microprocessors and electronic chips grow in-

pacemakers are warned to stay away from microwave ovens to avoid possible dangerous malfunctions.

An area of growing concern about electromagnetic interference is the automobile industry. "The air is polluted with high frequency waves," said Howard Freers, chief testing engineer for Ford Motor Co. of Detroit. "As we put up more satellites and transmit more data, we are getting more and more signals in the air."

The issue is particularly complicated for motor vehicles. Most modern cars carry computers that control the amount of fuel and air going into the engine to get the best possible combination of higher fuel economy and lower exhaust emissions.

Some are quite complex, doing such things as shutting off the air conditioning compressor under heavy acceleration to ease the load on the engine and reduce fuel consumption.

Today's automotive computers are only the beginning. With most car models becoming similar in size, the auto companies plan to use technological features, many of them electronic, to distinguish between models.

On the way, for example, are suspensions that can shift from sports car to limousine handling at the touch of a button, skid-control

As the auto companies have loaded more electronics on cars and trucks, they have developed more elaborate testing methods to ensure control units will not make an engine stumble and buck when a car passes by an airport radar system, or that the readings on digital displays will not change if lightning strikes.

"It is a horrendously complicated problem," Mr. Cole said. "The more electronics you use, the more potential problems there are. If even a small percentage of the cars on the highway got into accidents because of this, the product liability problems could be huge."

Testing new equipment for electromagnetic compatibility is often difficult. The auto makers cannot set up powerful transmitters and run new models by them because the emissions would scramble legitimate communications signals.

In the past, they drove prototype cars and trucks past such well-known electromagnetic hot spots as the Voice of America's radio transmitters north of Cincinnati.

Because such rough-and-ready testing inevitably misses some frequencies, the car companies have been forced to build large enclosed test chambers to bathe forthcoming models with electromagnetic radiation, from very low frequencies of 60 hertz (cycles a second) to very high frequencies in the range of 40 gigahertz — 40 billion cycles a second.

Ford's \$12-million (U.S.) test laboratory about 20 miles north of Detroit is the newest of these installations. It has two main test cells, one enclosed with wire mesh to prevent frequencies up to 20 megahertz from leaking out, and an anechoic, or energy absorbing, chamber for frequencies up to 60 gigahertz.

Vehicles to be tested are mounted on a dynamometer, which simulates the load conditions as if in motion on the highway, then operated by remote control while signal generators march up and down the frequency range.

ference. The solution was to use fiber optics cables, which transmit data by light rather than electricity, to link the vehicle with instruments outside the test cell.

The turntables, cooling and exhaust fans and dynamometers in the test cells are hydraulically driven to avoid operating problems.

Gary Vrooman, a Ford test engineer, said most of the problems have been overcome, including some that may have been difficult to foresee.

When the engineers put the installation into operation last summer, they set off the fire alarm in the building. On investigating, they found it did not have enough shielding against electromagnetic interference.

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Via
Feter
Weeks



104 West Eighth St.
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THE NEW
KRVN
880 kc
50,000 Watts

Dallas Lankford
(c) April 1981
revised December 1981

ABSTRACT

The Booker [1939,1949] flat earth analysis of oblique incidence propagation is extended to the curved earth case. The approach is similar to that of Chatterjee [1953], but with different assumptions and a different treatment. Critical frequency formulas for T- and L- propagation are derived and numerical solutions are computed for low wave elevation angles with typical and minimal nighttime mid-latitude electron densities.

Booker [1939] observes that the propagation of a magneto-ionic component may be represented by the wave function

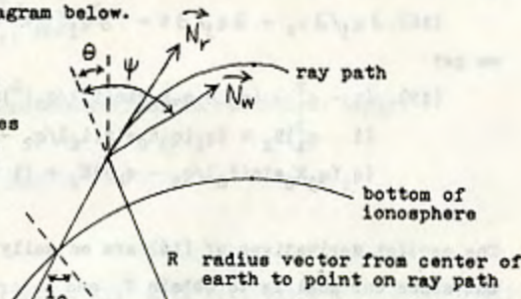
$$(1) \exp[ik(ct - \mu(\psi)(x_2 \sin(\psi) + x_3 \cos(\psi)))]$$

in the case of a flat earth. For a spherical earth equation (1) takes the form

$$(2) \exp[ik(ct - \mu(\psi)(x_2 \sin(\psi - \theta) + x_3 \cos(\psi - \theta)))]$$

where the Cartesian coordinate system has been chosen so that the x_3 direction is vertical at the point of reflection; the wave does not vary in the x_1 direction, and ψ and θ are defined by the diagram below.

* Note: Reflection means returned to earth. Radio waves in the ionosphere are not reflected as light from a mirror (except perhaps when sporadic E is present), but instead are refracted.



By the difference formula for sin we find that

$$(3) \mu(\psi)(x_2 \sin(\psi - \theta) + x_3 \cos(\psi - \theta)) = \mu(\psi)x_2 \sin(\psi) \cos(\theta) - \mu(\psi)x_2 \cos(\psi) \sin(\theta) + \mu(\psi)x_3 \cos(\psi - \theta),$$

and since Snell's law for a curved ionosphere is

$$(4) \mu(\psi) \sin(\psi) = R_0 \sin(i_0) / R$$

where R_0 is the radius to the bottom of the ionosphere and i_0 is the angle of incidence on the bottom of the ionosphere, taking parameters

$$(5) q_1 = \mu(\psi) \cos(\psi - \theta),$$

$$(6) q_2 = R,$$

$$(7) q_3 = \cos(\theta), \text{ and}$$

$$(8) q_4 = \mu(\psi) \cos(\psi) \sin(\theta)$$

we find that the propagation of a magneto-ionic component may be represented by

$$(9) \vec{P} = \vec{P}_0 \exp[ik(ct - x_2(q_3 R_0 \sin(i_0)/q_2 - q_4) - x_3 q_1)], \text{ and}$$

$$(10) \vec{E} = \vec{E}_0 \exp[ik(ct - x_2(q_3 R_0 \sin(i_0)/q_2 - q_4) - x_3 q_1)].$$

The derivation of formulas (9) and (10) was inspired by both Booker [1939, 1949] and Chatterjee [1953]. The remaining derivations are merely a retracing of Booker [1939, 1949] taking equations (9) and (10) as our starting point. Our treatment will therefore be brief, and we refer the reader to Booker [1939, 1949] for additional details and discussion.

From Maxwell's equations

$$(11) \text{curl } \vec{H} = (\vec{E} + 4\pi \vec{P})/c, \text{ and}$$

$$(12) \text{curl } \vec{E} = -\dot{\vec{H}}/c$$

we get

$$(13) \text{curl curl } \vec{E} + (\vec{E} + 4\pi \vec{P})/c^2 = \vec{0}.$$

Taking

$$(14) \vec{P}_0 = P_1 \vec{i} + P_2 \vec{j} + P_3 \vec{k}, \text{ and}$$

$$(15) \vec{E}_0 = E_1 \vec{i} + E_2 \vec{j} + E_3 \vec{k}$$

and substituting into (13) and then setting

$$(16) \partial q_j / \partial x_k = \partial q_j / \partial t = \partial^2 q_j / \partial t^2 = 0$$

we get

$$(17) \begin{aligned} (1 - q_1^2 - (q_4 - q_3 R_0 \sin(i_0)/q_2)^2) E_1 + 4\pi P_1 &= 0 \\ (1 - q_1^2) E_2 + (q_1(q_3 R_0 \sin(i_0)/q_2 - q_4)) E_3 + 4\pi P_2 &= 0 \\ (q_1(q_3 R_0 \sin(i_0)/q_2 - q_4)) E_2 + (1 - (q_4 - q_3 R_0 \sin(i_0)/q_2)^2) E_3 \\ &+ 4\pi P_3 = 0, \end{aligned}$$

The partial derivatives of (16) are actually not 0 in general, but since our goal is to obtain T- and L- critical frequency formulae and the same formulae are gotten with or without the assumption of (16), we have taken the mathematically simpler approach of assuming (16). Now solving for E_1 , E_2 , and E_3 in (17)

we get

$$(18) \begin{aligned} E_1 &= -4\pi P_1 / \Lambda, \\ E_2 &= -4\pi (BP_2 + CP_3) / \Lambda, \text{ and} \\ E_3 &= -4\pi (CP_2 + DP_3) / \Lambda \end{aligned}$$

where

$$(19) \begin{aligned} \Lambda &= 1 - q_1^2 - (q_4 - q_3 R_0 \sin(i_0)/q_2)^2, \\ B &= 1 - (q_4 - q_3 R_0 \sin(i_0)/q_2)^2, \\ C &= q_1(q_4 - q_3 R_0 \sin(i_0)/q_2), \text{ and} \\ D &= 1 - q_1^2. \end{aligned}$$

Now substituting E_1 , E_2 , and E_3 of (18) into

$$(20) u\vec{P} + x\vec{E}/4\pi + i\vec{P} \times \vec{y} = \vec{0}$$

where

$$(21) u = 1 - iz, \quad x = 80.5N/r^2$$

$$z = \nu/\omega, \text{ and}$$

$$\vec{y} = y_1 \vec{i} + y_2 \vec{j} + y_3 \vec{k}$$

we get

$$(22) (u - x/\Lambda)P_1 + (iy_3)P_2 + (-iy_2)P_3 = 0,$$

$$(iy_3)P_1 + (-u + xB/\Lambda)P_2 + (xC/\Lambda - iy_1)P_3 = 0, \text{ and}$$

$$(iy_2)P_1 + (-xC/\Lambda - iy_1)P_2 + (u - xD/\Lambda)P_3 = 0.$$

A square, linear, homogeneous system of equations has non-trivial solutions if and only if the determinant of the coefficient matrix is zero. Thus, we write

$$(23) \begin{aligned} (u\Lambda - x)((xB - u\Lambda)(u\Lambda - xD) - (-xC - iy_1\Lambda)(xC - iy_1\Lambda)) \\ - iy_3\Lambda^2(iy_3(u\Lambda - xD) - (-xC - iy_1\Lambda)(-iy_2)) \\ + iy_2\Lambda^2(iy_3(xC - iy_1\Lambda) + iy_2(-u\Lambda + xB)) = 0 \end{aligned}$$

Assuming that absorption is negligible at the reflection point,

$$(24) u = 1,$$

and then substituting the reflection conditions

$$(25) q_1 = q_4 = 0,$$

$$q_2 = R_1, \text{ and}$$

$$q_3 = 1$$

into (23), and since the reflection conditions imply

$$(26) \Lambda = B,$$

$$C = 0, \text{ and}$$

$$D = 1$$

we get

$$(27) \begin{aligned} \Lambda x^3 + (-2\Lambda^2 - \Lambda)x^2 + (\Lambda^3(1 - y_2^2) + \Lambda^2(2 - (y_1^2 + y_3^2)))x \\ + \Lambda^3(y_1^2 + y_2^2 + y_3^2 - 1) = 0 \end{aligned}$$

by equating the real part resulting from substituting (24) and (25) into (23) to zero, and

$$(28) y_1 y_2 y_3 \Lambda^3 - y_1 y_2 y_3 \Lambda^3 = 0$$

by equating the imaginary part to zero.

From (27) we get the so-called transverse equation

$$(29) x^3 + (-2\Lambda - 1)x^2 + (\Lambda^2 - \Lambda(y^2 - 2))x + \Lambda^2(y^2 - 1) = 0$$

by setting

$$(30) y_2 = 0$$

where in equation (29) and the remainder of this article

$$(31) y^2 = y_1^2 + y_2^2 + y_3^2.$$

Also from (27) we get the so-called longitudinal equation

$$(32) x^3 + (-2\Lambda - 1)x^2 + (\Lambda^2(1 - y^2) + 2\Lambda)x + \Lambda^2(y^2 - 1) = 0.$$

by setting

$$(33) \quad y_1 = y_3 = 0.$$

It is almost miraculous that the cubic equations (29) and (32) have solutions that are easy to guess, namely

$$(34) \quad x = \lambda, \text{ and}$$

$$(35) \quad x = (1 + \lambda \pm ((1 - \lambda)^2 + 4\lambda y^2)^{1/2})/2$$

in the transverse case (the first solution is guessed, the cubic is then factored into its linear and quadratic factors, and the quadratic solutions are found from the quadratic formula), and

$$(36) \quad x = 1, \text{ and}$$

$$(37) \quad x = \lambda(1 \pm y). \quad (\text{in the longitudinal case})$$

For low wave elevation angles it can be shown that the ordinary and extraordinary rays satisfy the following equations for transverse (denoted T) and longitudinal (denoted L) propagation.

$$(38) \quad \begin{array}{ll} \text{ordinary} & T \quad x = \lambda \\ & L \quad x = \lambda(1 + y) \\ \text{extraordinary} & \\ f > f_H & L \quad x = \lambda(1 - y) \\ & T \quad x = (1 + \lambda - ((1 - \lambda)^2 + 4\lambda y^2)^{1/2})/2 \\ & L \quad x = 1^* \\ & T \quad x = (1 + \lambda + ((1 - \lambda)^2 + 4\lambda y^2)^{1/2})/2. \end{array}$$

where

$$(39) \quad f_H \text{ is gyrofrequency at reflection height.}$$

For low wave elevation angles one can solve (38) for the maximum frequency reflection formulas, namely

$$(40) \quad \begin{array}{ll} \text{ordinary} & T \quad f_o = f_o^{90}/\lambda^{1/2} \\ & L \quad f_o = ((f_H^2 + 4(f_o^{90})^2/\lambda) - f_H)/2 \\ \text{extraordinary} & \\ f > f_H & L \quad f_x = ((f_H^2 + 4(f_o^{90})^2/\lambda)^{1/2} + f_H)/2 \\ & T \quad f_x = ((K + (K^2 - 4\lambda(f_o^{90})^4)^{1/2})/2\lambda)^{1/2} \\ & L \quad f_x = f_o^{90} \\ & T \quad f_x = ((K - (K^2 - 4\lambda(f_o^{90})^4)^{1/2})/2\lambda)^{1/2} \end{array}$$

where

$$(41) \quad K = (1 + \lambda)(f_o^{90})^2 + \lambda f_H^2$$

and

$$(42) \quad f_o^{90} = (80.5N)^{1/2}$$

* Note: when collisions are included, the x-L is transparent below gyro, which brings into question this and previous developments in that case.

with

(43) N the number of free electrons per cubic centimeter and frequency taken in kilohertz. To apply the reflection frequency formulas (40) one chooses a low wave elevation angle which we denote by Δ (say less than 20 degrees) and finds i_0 from

$$(44) \quad i_0 = \sin^{-1}(6370 \sin(90 + \Delta)/6440)$$

where we have taken 6370 km as the radius of the earth and the bottom of the ionosphere as 70 km above the surface of the earth. Formula (44) is derived from the law of sines, and \sin^{-1} is the inverse sine function which is also denoted Arcsin. After i_0 is found, λ can be computed from

$$(45) \quad \lambda = 1 - (6440 \sin(i_0)/R_1)^2$$

where R_1 is the distance from the center of the earth to the reflection point of the maximum reflected frequency. The value of R_1 is thus the radius to a local maximum of the free electron density. For the E layer, the nighttime value of R_1 normally varies from 100 to 120 km above the earth's surface. For the purpose of the calculations below we have taken $R_1 = 6480$ km. Finally one chooses values for f_o^{90} and f_H and plugs into equations (40). Two tables below have been computed for 5 and 10 degree wave elevation angles using typical ($f_o^{90} = 550$ kHz) and minimal ($f_o^{90} = 300$ kHz) nighttime E free electron densities for mid-latitudes, with f_H taken to be 1400 kHz.

		$\Delta = 10$ degrees	$i_0 = 76.93$ degrees	
			$f_o^{90} = 550$	300
ordinary	T	$f_o =$	2195	1197
	L	$f_o =$	1603	686
extraordinary				
$f > 1400$	L	$f_x =$	3003	2086
	T	$f_x =$	2620	1856
$f < 1400$	L	$f_x =$	550	300
	T	$f_x =$	461	193

Note: Longitudinal propagation is not consistent with low wave angle propagation at mid-latitudes.



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$\Delta = 5$ degrees

$i_0 = 80.186$ degrees

		$f_{90}^o =$	550	300
ordinary	T	$f_o =$	2717	1482
	L	$f_o =$	2104	938
<hr/>				
extraordinary				
$f > 1400$	L	$f_x =$	3504	2338
	T	$f_x =$	3065	2048
$f < 1400$	L	$f_x =$	550	300
	T	$f_x =$	487	214

CONCLUDING REMARKS

It would be interesting to compare the above theoretical values with experimental measurements, but to our knowledge none exist. We know of only two low-frequency/medium-frequency oblique ionograms (Fenwick and Barry [1966]), but they were made without recording vertical incidence ionograms at the reflection point. It would also be interesting to retrace some of Booker's other derivations starting with equations (9) and (10).

ACKNOWLEDGEMENTS

We would like to express our appreciation to Dr. Kenneth Davies for reading the first draft of this article and correcting some of our mistakes.

Special thanks to C. M. Stanbury II for pushing me to do this work and for the many long discussions about medium wave propagation.

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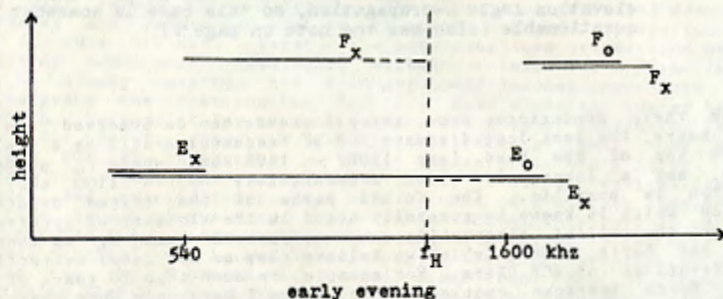
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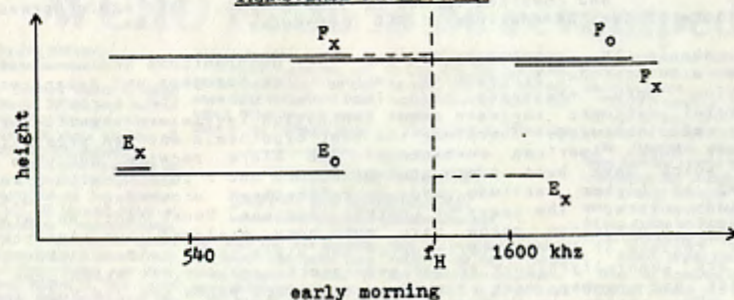
The results of this article are of special interest to BCB DXers because they are a basis of an approximately correct theoretical model of the oblique incidence nighttime ionosphere at BCB frequencies. Since absorption is not included in this theoretical model, the reflection formulas do not yield a complete explanation of long distance (low wave elevation angle) nighttime medium wave propagation. Still, we believe that from the fragmentary theoretical and experimental evidence a fairly complete description of long distance medium wave propagation can for the first time be assembled.

Based on the maximum reflection frequency tables for 5 and 10 degree wave elevation angles the following general depictions of the single-hop, low wave elevation angle, nighttime ionosphere at mid-latitudes can be constructed.

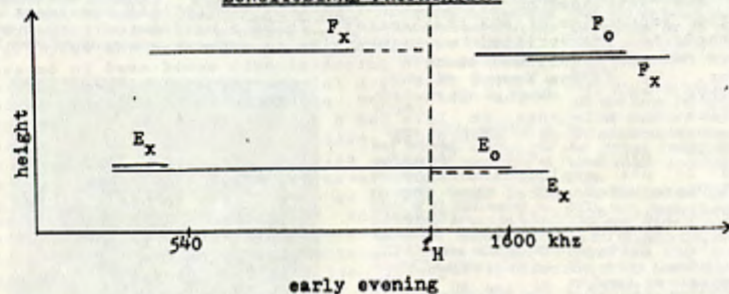
TRANSVERSE PROPAGATION

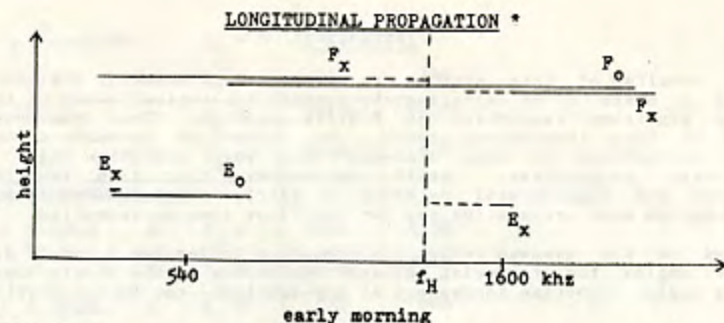


TRANSVERSE PROPAGATION



LONGITUDINAL PROPAGATION *





* Note: At mid-latitudes, there is no such thing as low wave elevation angle L-propagation, so this case is somewhat questionable (also see the note on page 4).

From these depictions some general trends can be observed. In the early evening hours, the best long distance BCB DX frequencies will be a small segment near the top of the band (say 1500 - 1600 kHz) where F_O propagation is possible, and a larger low band segment (say 600 - 1100 kHz) where F_X propagation is possible. The dotted parts of the traces denote the high absorption which is known to generally occur in the vicinity of gyrofrequency (f_H). These theoretical observations are supported both by an ionogram from Fenwick and Barry [1966] (which we believe they do not label correctly) and by the observations of BCB DXers. For example, in more than 20 years of listening at deep North American continental locations I have only once observed a high band TA (trans-Atlantic) opening in the early evening hours (and then only using a beverage antenna), while good low band TA openings are not uncommon during the early evening hours at low sunspot numbers. Even at higher sunspot numbers Dakar 765 is occasionally heard at local sunset. Propagation conditions are quite different in the early morning hours (around local midnight and later). Given low ionization levels, the entire BCB is hypothetically open for F_X , F_O , and combined F_X and F_O propagation. This again agrees with the observations of deep NA continental BCB listeners.

It should be emphasized that the above observations and conclusions apply only to mid-latitude propagation paths. For European and Asian reception, a propagation path traverses high latitudes where the currently available experimental evidence suggests that ionization levels are significantly higher than at mid-latitudes. Therefore the best hypothesis one can presently make is that deep North American continental BCB DXers receive European and Asian signals which have been propagated by both E and F layers, with E reflections occurring at higher latitude and F reflections occurring at mid-latitude reflection points. The cases of Central American, South American, African, and Down Under propagation paths have not been analyzed, but since those paths traverse regions of lower gyrofrequency and since it is believed that ionization levels are generally higher at the geomagnetic equator, it again seems plausible that many and perhaps most of those propagation paths are via both the E and F layers. For those who wish to study the matter in detail we have included a world map of gyrofrequency at 100 km height.

The reflection properties of the ionosphere together with the absorption properties along a potential path determine what a BCB DXer will hear. This article has developed an approximately correct theoretical treatment of oblique reflection properties at BCB frequencies. To be a useful tool, the theory would first need to be verified experimentally, and then the vertical incidence structure of the ionosphere along a potential path would need to be available to the DXer. We do not expect that such information will be available within the foreseeable future. The absorption properties of oblique incidence BCB propagation do not seem to have had a correct theoretical treatment. First, accurate theories of absorption exist only for vertical incidence and frequencies above 2 mhz. Second, existing vertical incidence absorption theories do not explicitly include terms dependent upon geomagnetic activity. Yet BCB DXers have noticed that BCB DX is more likely to occur during periods of low geomagnetic activity. Propagation researchers have also observed the connection between absorption and geomagnetic activity (see Bourne, I., and Hewitt, L., "The dependence of ionospheric absorption of MF radio waves at mid-latitudes on planetary magnetic activity." *Journal of Atmospheric and Terrestrial Physics*, Volume 30, Number 7 (July 1968), pp 1381 - 1395). Minimum and maximum absorption tend to occur a few days after respective minimum and maximum geomagnetic activity.

Despite the incompleteness of theoretical and experimental evidence, I believe the two principal prerequisites for good long distance BCB DX are now known: (1) several consecutive days of relatively low geomagnetic activity along the potential path, and (2) low E layer ionization levels along the potential path. Either of these two conditions alone will likely lead to poor to fair DX openings, but both are required for really good DX openings.

Of course, belief is always subject to change. Indeed, science may be the only belief system in which doubt plays a fundamental role. If theory and experiment do not agree, or if a theory is inconsistent, a new theory must be found.

We have already mentioned the apparent disagreements of theory and experiment with regard to absorption. There are also potential disagreements between theory and experiment with regard to the reflection properties we have developed in this article. First, the wave equations are derived assuming a slowly varying ionosphere. Somewhere within or below the BCB the ionosphere fails to be slowly varying, and thus our model becomes inaccurate. Current evidence suggests the inaccuracies for low wave elevation angles begin well below the BCB. Second, at low sunspot numbers the E layer ionization levels may fall to lower levels than we have hypothesized so that most mid- and high-latitude BCB DX is entirely or almost entirely via the F layer. The same may be true of equatorial propagation. Third, in our theoretical development the ordinary and extraordinary rays were assumed to propagate independently. However, this is not always true. Under various conditions part of an ordinary ray is converted into an extraordinary ray and vice versa. Thus, even when the F layers are shielded by E layers below, long distance BCB propagation may still be possible via the F layers through mode transition. Fourth, throughout the year abnormally high E layer ionization levels known as sporadic E are observed. This, too, could be a significant cause of long distance BCB propagation. Fifth, with normal or slightly higher than normal E layer ionization levels, the ordinary E could be the primary cause of long distance BCB DX. Without further theoretical and/or experimental evidence, all of the above hypotheses are reasonable explanations of long distance BCB DX.

WCRO radio to be revamped

By Jeff McCreedy
The Tribune Democrat

The new owner of Radio Station WCRO says the station has become stagnant over the years, but that all that is going to change.

"There was no growth up to this point," said Robert J. Hamilton, of Los Angeles, Calif., 70 percent owner of Hamilton Communications, Inc. The sale of the station from Century Broadcasting of Pennsylvania was finalized March 11, two weeks later than anticipated because of some paperwork problems.

Has expansion plans
Mr. Hamilton was in town last week to finalize arrangements for moving to a new location. He talks of plans to expand the news and sports operations along

with more public service. "We want to be a real part of the community," he said as he sat in the general manager's office on the second floor of the Carnegie Building.

With him was Richard Raymond, who came here from Flagstaff, Ariz., to serve as general manager. The station has been located in the Carnegie Building since moving from the former Fort Stanwix Hotel in the late 1960s.

Moving in 3 months
Within three months Mr. Hamilton expects the station to be broadcasting from the second floor of the Mexham

National Bank Building next to City Hall. The new studio, he said, will have approximately 400 more square feet of space.

The station, Mr. Hamilton says, will be updating and re-vamping its music library and adding new equipment. "We plan to go 24 hours very shortly," the new owner said. The station currently has 16 employees, but Mr. Hamilton expects to add a few more. These primarily would be in the news area.

Mr. Hamilton said he was investigating the possibility of AM stereo and didn't rule out adding an FM station. "No stranger to area" While Mr. Raymond is new to the city, Mr. Hamilton isn't. From 1969 through 1970 he was program director and morning air personality at the station. He now is national music director of the chain of 12 RKO-owned radio stations as well as being operations manager for KLF-AM and KATH-FM, two RKO stations in Los Angeles.

"I always liked the city," he said when asked why he had selected Johnstown. "It was a very close-knit city."

He knows the city has problems, but is confident about its future.

"There's nowhere to go but up," he said. "It can pull itself up by the bootstraps." Mr. Raymond, who has been here for several weeks overseeing the changeover, was general manager of a station in Flagstaff. He said he had gotten his first job in radio through Mr. Hamilton.

Family to join him
When Mr. Hamilton was in Flagstaff looking at a property, he met with Mr. Raymond, who agreed to come to Johnstown. Mr. Raymond said his wife and family would be joining him here in May after school ended.

The 36-year-old Mr. Hamilton, who has been in the radio business for 20 years, said he plans to be in Johnstown four or five days a month.

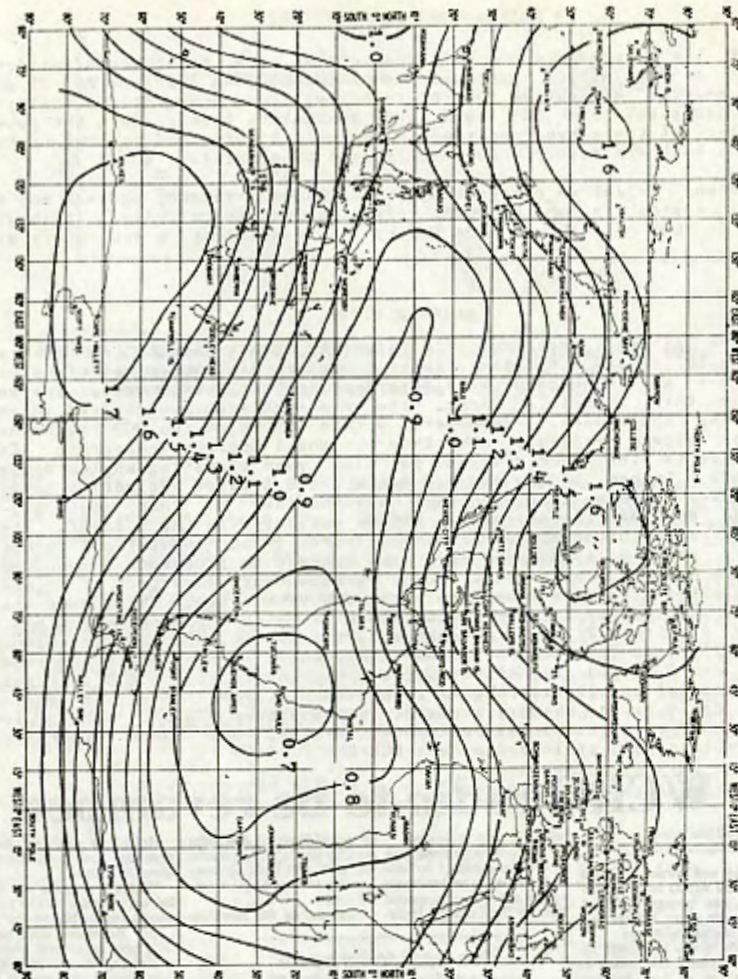
His goal is to own seven AM and seven FM stations — the maximum number that one owner can have under current Federal Communications Commission rules.

Mr. Hamilton said that the FCC was about to allow 1,000-watt stations such as WCRO to retain that power output even after sunset. The station currently must cut back to 250 watts during the evening hours.

Last Thursday the FCC authorized that evening-hour increase.

"We want to be a real part of the community."





WORLD MAP OF GYROFREQUENCY AT 100 KM IN MHz

MUSIC IN THE AIR

The following book should be of great interest to club members:
"Music In The Air" by Philip K. Eberly, 1982 Published and available direct from: Hastings House Publishers, Communications Arts Books, 10 East 40th Street, New York, NY 10016. Price is \$22.75 (Postpaid).

Don't be fooled by the title. This book is about radio. Boy, is it about radio! The author, Philip K Eberly, Vice President and General Manager of WBSA radio, York, Pennsylvania, gives a vivid and colorful history of the radio-popular music scene from 1920 to 1980. The book is loaded with charts, pictures, facts and details of the major radio forces that made the big band era, the swingers, crooners, rock and rollers, disco-freaks all possible.

"...irrespective of what non-musical forces interplay to make a given body of music 'popular', radio in all likelihood will be the ultimate testing ground. Radio will decree what tunes and artists will succeed and how long they will last. The wide range of music available up and down the dials of our radio music boxes is proof there is no single American popular music. There are dozens and dozens.

Here in 21 chapters that range from the makeshift early broadcasts to speculation about Formats of the Future, is a well documented 'history' of radio's contribution to our popular music."

If any club members are interested in meeting the Pilots of the air-waves, Program Doctors and Syndicators, and the forces that make this radio thing tick; if they love radio, then they must read "Music In The Air" by Philip K. Eberly.

Armand Di Filippo

MUSINGS

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The opinions expressed in this column are those of the individual members, and do not necessarily reflect those of the editors, publishers, or the National Radio Club, Inc., or its subsidiaries. Times are local per Muse.

(The DX season wanes, but there's still DX out there to be snatched from the ether. Give a listen and then tell us about it: deadline for #26 is Apr. 21; for #27, May 26.)

Lament: Verification Lowlights

John R. Malicky - 995 Shadycrest Rd. - Pittsburgh, PA 15216

Well, my verie returns have been a great big fat ZERO! I don't believe it, and when Schmidt tells you something, you'd better listen, because when I noted KEEL-710, he said they won't or don't verie and they didn't or haven't! Dave is our E. F. Hutton of DX - hi! First, reporting on my Muse of Issue 21, I know it's still early, but as of this writing, only one Inter DX verie, Belize-834 mailed 1-23, rec'd 2-9. The other 3, Bahamas, Jamaica, and St. Kitts are not in. Second, my most recent verie wasn't even sent this year, but last. It was for the WMPZ-1000 test arriving on 2-21, two weeks ago today. My latest verie for this year came on 2-10 from WAEB-790! Almost every day, when I'm home and checking the mail, I ask, "Where's the beef (veries)!" I still treat this like a hobby and I know we do all we can in getting names and giving help, etc., but what do these stations want? Thank to William Moser of Wishek, ND for calling the toll-free KFYZ hot line. Also to Dave Schmidt for another name for KPNW of which I haven't written yet. Anyway, here's my totals for '83-'84: 62 for 115, or 53.9%, and with ppc from '82-'83, 64 for 123, and with WMPZ 65 for 124 or 52.4%. Some stns who appeared with names in various verie signers, but have not veried for me are WSKE-1040, WFLR-1570, WOKG-1570, WGNV-1220, KEEL-710, WWQ-1430, and KMIS-1050. Others who seem to be non-verifying stns include WAWA-1590, WTHB-1550, WKBO-1230, WTVR-1380, WNNR-1260, WCCP-1560, WEPG-910, WMTG-730, WSJC-810, WTIK-690, and WBDY-1190. Except for WAWA, all these stns were written to in past years with different formats for most. For WBDY this year a ppc was also included for a report when they should've signed off a half-hour earlier. Six weren't given a stamp and didn't verify. WSKE has been written to 3 times in less than a year, twice when he was on 1050. Two were not veried because of address changes, but WWCN-1460 returned and a new address was used before the one listed in DDXD; the other, WISL-1480, never did come back even with an old address. This represents between 24-30 wasted, as I don't want to make it worse than it is, so f/ups will be sent in hopes of more returns. This will probably happen before you read this. It is a good thing I decided to make copies of my reports starting this year. So if all else fails, I'll cut my radio's throat, hi! Next time, the most recent veries that did return and DX.

Steve Francis - 1628 Lodge Street - Alcoa, TN 37710 (pm 3-31; rec'd 3-16)

In a Musing last June, the late John Clements mentioned some of the things he remembered from his years in the hobby, such as \$9.50 dues, Captain Glotz, and the Mexiglenn list. How about others doing likewise in their Musings over the Spring and Summer? After 14 years at the dials (20+, counting pre-DX days), here are a few of mine: Cousin Billie and the "Record Roost" on XELO-800; bad jokes AN from Budd Stagg and sidekick on WSAI-1360; "Woody's Children" (folk singers) on WQXR-1560; Lou Dean AN on WRVA-1140; "The Best of All Possible Worlds" AN jazz from WHAM-1180 (host Harry Abraham was sentenced to prison last year for bank robbery); "Lifeline from Dallas" with Melvin Mundt; Garner Ted Armstrong; NBC Monitor; Dolly Holiday; r&r from WQAI-1200, WCLS-1500, and WKLO-1880 (now WCII); FM-style Muzak AN from WWL-870, WBAP-820, WCKY-1530; the entire dial aswarm with SSB's at midnight and 5 am; no network news in the wee small hours (CBS became the first AN'er on 1-1-73); Herb Jepko; MM SP's; late Sunday s/ons from daytimers; "Blues Radio" WSAC; KMPC-1560 on weekmornings; KNX-1070 a regular pest on MM (a promo I taped in February 1970 went "Morning, noon, and night - get it first, get it right - KNX Newsradio, Los Angeles - now all night, too!"); three or four CPC tests every MM from October through March; Radio Jumbo on 1150 and 545 from Dominica; Ron Riley's "British Billboard" Sunday evenings on WLS; the regular Third Tuesday r/c ("This broadcast is coming to you from Old Mexico") with ranchera mx and tourist info from XEK-960; Cousin Bruce reading the draft lottery numbers over WABC on the evening of 12-1-69; the phony newspaper ads stations would run to build up the morning man's audience ("W--- wishes to apologize for the improper remarks made over the air recently by announcer Rob Randall - we promise you it won't happen again ..." - or something similar); Long John Knebel and Candy Jones; Joe Pyne; small market daytimers running Top 40 formats full-time. (Ah, memories ... may I add a few more? Saturday-morning radio with Big John and Sparky from Cincinnati ... CBS's Sunday evening lineup, with "Our Miss Brooks", "Gunsmoke", "Gene Autry" (and Pat Buttram), "My Little Margie", "Amos and Andy", and my favorite, "The Jack Benny Show" ... "One Man's Family" ... "The Lone Ranger" weekday afternoons on KGGF-690 ... Art Roberts on WLS-690 evenings ... Joe Garagiola, Jack Buck, and (oh,

gosh, help me out; he went on to do Cub's play-by-play) with Cardinals' action on KMOX-1120; funeral notices during the news on small-market radio ... a half-hour of South American folk music on WOAI-1200 Saturday evenings ... Stephen Foster songs sung by Pat Dunn on WDAF-610 at 7:00-7:15 weekday mornings ... Alex Dreier and Mutual news ("That's it; that's it for now.") ... WHB-710 claiming in 1955 or 1956 that they had the largest radio audience in the U. S. ... excuse me, and now back to the present -pls)

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The Last Muse from Temperance*

Fred Vobbe - Honeyradio WHND-560 (metered 3-16; pm 3-15; rec'd 3-19)

This is the last Muse that I will be writing from the sun, fun capital of Southeast Michigan. Due in large to a promotion from Greater Media, I will be moving to the Detroit, Michigan area. Good from my viewpoint, but bad for the DX'ers. Since I will be leaving my position as Chief Operator of WHND, there will probably be no more tests from WHND again! Ernie and Ray, you got the test just in the nick of time! On the DX side, I can witness first-hand what Bob Smolarek was talking about in his 2-14 Muse. I have had several days of that action where the clears just go away and a bunch of southern stations come out of the woodwork. Most of them are SS, and I am sorry that I (A) don't know the band outside the U. S. and (B) don't know the Spanish language well enough to catch ID's. So much for international DX'ing, hi. A few new stations were heard in those openings from LA, TX, and GA, which was a pleasant surprise. At one point there were two stations on 610 with Ntnl Anthems within an hour span, but no ID, drat! Best catch was WSRF-1580 which was solid for about 20 seconds with a good ID, over the local pests. Speaking of local pests, WWHK-1430 is off the air. The station closed after bankrupt proceedings started. They are still dark as of today, 3-15, with no idea when they will be revived. I guess their format of Music of Your Life didn't work too well in a community with an average age of 26 years. Who was the mental midget programmer? As most of you saw in the 3-12 DX News, Greater Media is buying WRC-980. So far it is not known if they will shift the WGAY call sign to 980, or if the format will follow. What is known is that WGAY-1050 is now up on the block at \$950,000.00 as a price tag. My personal feeling is that Paul Swearingen should buy the station, change the call sign to KPLS and move it to the west coast, hi (Okey dokey; how about a small loan? -pls). Paul, I will record a jingle for you singing, "All Muse, all the time". Enough joking; I would just like to thank all of you that have sent reception reports to WHND. Thank to all of you that wrote and took the time and effort to let me know how WHND got out on our tests. Now, back to airchecking Toledo radio before the move. 73's and best of DX to all.

Steve Kennedy - P. O. Box 231 - Immokalee, FL 33934 (pm 3-16; rec'd 3-19)

Howdy to all from the Ear of the Everglades. I hope 1984 has been good to everyone thus far. After a long 8 1/2 years of generally steady employment with WKEM-1490 (WZOR as of 2-1), I am now currently unemployed as the station went dark 2-17-84 at 5:30 pm. WKEM has a long history of many financial setbacks ... changing owners in '74, '76, '81 ... and now I don't know what will happen to it. In '81, it went to a predominantly Spanish-Mexican type format with a c&w program thrown in to try to please everybody. As long-time members of NRC may recall, I live in a community which is about 65% Spanish. However, the business community was not interested in supporting an SS radio station ... thus it eventually ran out of funds and the owners decided to let it go dark. I do not know when it will return to the air, but I do know it is up for sale. To add fuel to the fire, an FM station is slated to open up here soon; and competition here will be keen on the airwaves if WZOR opens back up. I did try to go for a position with the FM, but all positions are filled ... even before the station is slated to take to the air! Thus I am forced to hope for WZOR to resume operations soon ... or find other related work elsewhere. DX here has been nil ... possibly since I devote my BCB DX'ing to daytime-type DX daytime MW DX'ing ... but read NRC reprint "Limits to Daytime DX" ... and it will amaze you how well some stations do get out. Other news ... shack is new all newer solid-state gear ... Kenwood R-1000, FRG-7700, and now an AEA RTTY-CW reader has been put into service since last Muse. The FRG-7700 has 3 IF selectivity positions which is a plus. Like the R-1000, when the FRG-7700 is in its widest IF bandwidth, the recovered audio is excellent when tuned to a decent AM MW or SW station ... just feed into a good amplifier and speaker. Hifi AM does sound more natural than FM. I know; I am an AM radio engineer. FM may sound better due to a lack of static and today's average AM receiver not having wide IF passband. However, FM is now capable of the "warmth" of sound possible with good quality AM due to the pre-emphasis technique used with FM. Most low and middle audio frequencies are greatly attenuated. It is good to see the classic tube receiver is still alive in the MW DX'ing hobby. I know I will miss my old Hammarlund rx's, but someday I may get another one to keep around for the feel of these old sets. I have a 1950 vintage Collins 75A-2 receiver in my entry to my apartment ... not working, but it sure gets a lot of attention from visitors! Maybe the old tubed rigs will never really die ... they will be recycled, rebuilt over many times for future DX'ers to enjoy the special feeling of DX'ing on a mammoth tubed receiver in the wee hours of the morning in the middle of a cold winter night ... those were the days! AM forever!

Martin R. Greer - 38 Brougham St. - Launceston - Tasmania, Australia 7250 (pm 3-13; rec'd 3-19) This my first Muse in DX News. I am 24 years old and have been DX'ing since 15 on and off. I recently joined NRC so I could learn more about MW DX'ing, especially how conditions are between Australia and the U. S. A. I have logged a couple of NA's this year: KPNW-1120 and KDAY-1580 with a report out to KPNW. Other NA's have been heard on 1070, 1130, 1440, and 1540, but I haven't been able to get an ID. KGU-760 and KIKI-830 can be heard here at varying strengths but I've never gotten enough information to send a report. Many Asians are audible here at night from 1400 UTC, usually when Aussies go off. My best catch from there would be DZRH when on 650 at 5 kw. In the past I have mainly concentrated on Aussie stations but this season I have gone for foreign DX. My best Australian catch would be 7QT-837 at 500 watts, surprising though it is in the same state I live in and can only be heard at SS. Most other Tasmanian stations are audible during the daytime except for 7SH on 1584 at 100 watts which also can be heard only at SS. 1584 is a graveyard channel as many low-powered Aussies operate on this frequency. I would be interested to know whether the Tasmanian stations can be heard in NA. The Latin American and African season is coming soon, but I won't be here for some of it as I will be travelling to Miri in Sarawak to visit my sister who lives there; hope to do some DX'ing there. My equipment is a Yaesu FRG-7 and a TRIO GR50KDS and NRC design loop and Yaesu FRT-7700 preamplifier and FRA-7700 ATU plus 75- and 100-metre longwires. 73's and good DX'ing. (And we welcome yet another DU DX'er with a fine report to Musings. Welcome, Martin! -pls)

Carl Dabelstein - 8209 West 78th St. - Overland Park, KS 66204 (pm 3-19; rec'd 3-21) Although I haven't done as much dial spinning this season as I would have liked, I have added a few new stations to my BCB log. The DX test from WLNT hrd on 11-21 heard fairly well at times. On 12-8 I heard WSJP-1130 Murray, KY at 1 am running AP News. I was surprised to hear them at that time as my log shows them as daytime only. 12-10 brought the all-new KAAK-870 in New Hampton, MO, a daytime regular here in the KC area. After several futile efforts I finally succeeded in logging KUCB-770 Lafayette, LA on 12-13 running soul mx at 6:31 am. On 12-19 I logged WDBX-1030 White Bluff, TN putting in a pretty fair signal, giving KTWO a real battle. First new log of 1984 was KSLR-630 (ex KMCA) from San Antonio running gospel music at 6:30 pm. On 1-5 I heard the s/on of WMBD-880 in Nashville at 8, giving KRVN a pretty good battle. I heard the new local KBSM-1030 in Blue Springs, MO running pre operations testing on 1-8 at 2 pm. They finally took to the air on 2-1. 3-2 brought the s/on from WUIV-1580 Icard Twp, NC at 6:45. They went right into religious programming after a brief wx report. On 3-4 I heard a special open house/pre operation broadcast from KLL-1100 Webb City, MO at 3 pm. They began RS on 3-10 and are a daytime regular here. Later that day, at 7:16 I picked up the s/off of KCLF-1500 New Roads, LA, previously logged as KOXL. 3-5 brought s/off of KDVE-1510 Nederland, TX at 7:30, completely in the clear. Final new logging was WKKX-1560 Paoli, IN s/on at 6 on 3-9. A new milestone in the verie department was reached on 3-15 with a v/1 from KRQX-570 being no. 2.200 (Congrats, Carl! -pls). It was also Texas verie no. 196. Other recent veries have been v/1's from KRDEZ-1800, WLNT-1140, WKOL-1450, KAAK-870, KMTL-760, KJCB-770, KBSM-1030, KLL-1100, and WUIV-1580. Also received v/q from WGCI-1390 and v/PC from WLWY-1300. Hope to add to this total of 2.200 a little bit more before the season ends. Still don't know for sure whether I'll make the convention; I'm trying to make up my mind between the NRC in Colorado or the Indy 500. In any event, good DX to all till next time. (Hope you decide on Colorado Springs, Carl! -pls)

Karl Jeter - 2115 Scarbrough Road - Stone Mountain, GA 30088 (pm 3-20; rec'd 3-22) Well, my prediction of sorts in the last Muse came true, and Kevin Neal Jeter arrived in the world on March 7 at 7:08 am! He and Linda are doing well, and we are quite proud of our healthy son. Kevin weighed in at 6 lb, 14 1/2 oz. (Our heartiest congratulations, Karl and Linda -pls) As a result, despite a week at home, very little DX was squeezed in. However, a few things were heard, which I will get to shortly. First, on the afternoon of 3-9 I received a phone call from WTPR-710 to which I had sent a report recently. It was their nx director, and he said they were excited about being hrd in Atlanta, and wanted to interview me for a nx report. When it was over, he wanted to do a promo, and asked me, "Karl, what radio station do YOU listen to?" Guess what I said, hi. (WSS, on your fillings, no? Hi -pls) They promised a verie and a tape of the nx report and said it was on the way, but almost a week-and-a-half later no sign of it. Also, a big THANKS to Ken Chatterton who tramped over to Rochester recently, and during a visit to WRTK-1370, was able to get my Jan. 1981 report to WSAY veried! They even dug up an old WSAY verie form from the 60's to do it ... very nice, and thanks, Ken! Now, on to some pre-baby DX: 3-3: WFEZ-1390 heard with 7:00 am EST s/on, ment. "MYL" and then into ABC Direction nx; that same day, the WTPR-710 DX ment. above good 6:46:7:00 with "WTPR-All Hit Radio" promos and s/off, with full info and FM ment. Also 3-3 eve., a nice one bagged when KWRE-730 heard at s/off, 7:15 pm with full info. This was heard even better the next eve., 3-4, also at s/off. 3-5: the new KMTL-760 hrd 7:12-7:15 pm with gspl mx, Army Nat'l Guard ad, and s/off, ment. 5800 w., and owned by Sherwood Broadcasting Co. Now, post-baby DX: 3-15: a tent. on WDTM-1150 at 8:03 am with ments of businesses on hwy 45 and Miss. state

line. 3-16: KBOX-1150 noted again with xcint signal from 7:31-7:42 am. Veries received (besides WSAY) are CJSB-540 (for 10-83 rept.) and KWRE-730 (with a real honest OSL card - rare these days!). The verie total is now just 7 away from a new milestone of 1,200. At the rate they are coming in, it may be next season. Thazzit for now ... 73's; gotta go change a diaper, hi!

John Herman - P. O. Box 171 - Vinita, OK 74301 (pm 3-21; rec'd 3-24)

Greetings on the first day of spring. I think the DX season is over here when the tornado warnings are on 5 or 6 times a night. Veries received since my last Muse: KFDI, KHOG, KRDS, KAJN, KVQQ, KSAC, WMPZ, KAAM, WMOO, KQYX, KSDN, KCCV, KSOK, KXOL, KOCT, CKTA, KKLL, and CJCL. KKLL-1100 was logged on 3-3 at 3:41 pm CST, testing. They are now RS with 5,000 watts daytime. Address is 831 W. Daugherty, Webb City, MO 64870. The WMPZ verie was a surprise after all these months. For once I can't blame USPS. Have to wonder, though, because my report to KPBC came back with postmarks for Dallas and Sacramento! I wonder if stations notify their post office when a change is made? Totals now are 627 heard in 35 states, 277 reports sent, and 160 veries from 32 states. 93 new ones since 9-10 with 64 reported and 34 veried. From the ads for the new ICOM ICR-71 I assume not many changes. 32 memories! Were any changes made in the IP, PBT? If money allows I'll get another receiver this summer but I'm limiting it to one of 4: HQ-180A, KH-160, R-390A, or SP-600. Good dynamic range and selectivity I need, not 32 memories. I'll keep an eye on the DXchange and other sources. That's it for now. 73's.

Brian Pitman - 834 Milford Dr., Apt. 102 - Kingston, ON K7P 1A7 (pm 3-18; rec'd 3-24) Only 9 new stations have come my way since I last reported: YVQO-640, WLIX-1270, WAMB-1170, WCRK-1150, WMIC-1560, WKCN-910, WSGN-610, WTPP-1060, and WJAT-800. WJAT was a rare catch because CJBQ was off the air that morning, and CKLW and PJB were nowhere to be heard; also, they were on their 500-watt PSA power. A word-for-word transcript of two local ads, and information on two more were sent in a report a month and a half ago with no reply yet. Typically, the ones you want most never answer. I've had better luck with my CPC efforts, though: I'm in the process of arranging a test with WBUC-1460 for some time in May. I think I'll hit him up for a station profile as well. I can almost write one with just the information supplied in his letter. Most of this year's CPC tests were missed because of an inept post office that can't seem to deliver mail with anything approaching regularity. Sometimes I think they deliberately hold my DX News until a few days after the test. And probably snicker about it, too, hi. My NRC mug made it through the mail, though, and I'm thoroughly satisfied. The calendar is great, too; it's got lots of room to write in events like dentist appointments, DX tests, when the utility company is going to shut off your power, etc. An interesting thing happened to me a few weeks back. I phoned the university station, CFRC, to request a song, and got to talking to the DJ about music; we both like obscure bands like Joy Division, Iggy Pop, The Stranglers, etc., and she invited me to bring some of my albums to the station for next week's show. I did, of course, and ended up in the announcer's booth for the whole show. The only thing I said on the air was "yes" when she asked me a question about one of my albums, but I did answer the phone a few times. With CFRC-FM increasing their hours of operation next year they'll need more DJ's, and although the pay is zero, I may look into getting a job there. I was glad to see that WRC decided not to change to WRRR. There aren't too many three-letter calls left in the U. S., and for the sake of an extra "R", it would really be a waste of one of them. The 24-hour CBC is now in effect, but on FM stereo. Mon. through Thurs. starting at midnight and running until 6:00 am is a show from CBC Montreal called "Brave New Waves". It consists of non-commercial mx until 1:00 am, then a talk show with sporadic mx till 6:00. On Fri. and Sat. night, CBC Winnipeg produces Night Lines, a program of non-commercial mx from 12:00-6:00 am. I think these shows are absolutely terrific; it's great to hear stereo rock on a station that's not 100 miles away, which until recently was the situation Kingston was faced with. And as the sun sinks slowly into the west ... 73's.

A Request for Help in Washington and Chicagoland

Tony Fitzherbert - 356 Jackman Avenue - Fairfield, CT 06432 (pm 3-24; rec'd 3-27) Hi, and greetings from Fairfield, as another season passes into our log books! DX-wise: good, but veries: what a low rate of return! Hope next year is better. Now, another request for help. In mid-April, I hope to bring my family to Washington - strictly a tourist trip - but I would really appreciate it if anyone could write and tell me where around Washington are located WMAL, WNDG, WEAM, WPGC, WTOP - at the least, I would like to get some photographs. And, in June, it is time for my annual railroad trip - hopefully Amtrak to Chicago for 5 days of riding and photographing the CNW, Rock Island, South Shore, and CTA trains - but would also like to see some of the studio and XR sites of the Chicago stations - I wonder if I could see the, from WBBE and WIND up to WVON (west of Chicago, I think); that is, the 1390 WVON, who, I believe, changed calls, and WAIT-820. Would also like to meet some Chicago DX'ers. On the Sunday I'm there, I am torn between an XR tour and riding the

CTA system on the Sunday pass, which costs \$1.40! This is a real bargain - lets you get on and off all over the elevated subway system. By the way, there are a bunch of rooftop towers on buildings along the Douglas Park elevated - wonder who they belong to - out in Cicero. Veries - what few have materialized - a v/1 from CFNB-550, a v/1 from CKVL-850, a v/1 from WJKB-1070, and a v/1 from WGH-1250, for a reception of their night power. That's all in the past two months! Here, WMMM-1260 sold their FM, WDJF, to the ex-GM of WICC. He has rented space in an underutilized office building in South Norwalk, although the station is licensed to Westport, and the XR is up in Wilton, and has obtained the call WEBE (for the Black English style for "We Be") and ID's as "Music Radio 108". The station offers rock from the 1970's and more mellow recent mx - not a bad-sounding station - it has live assist with minimum input from the 5 full-time DJ's. So much for now. Some help, please on locations of Chicago and Washington radio. Thanks so much!

Peter Weeks - 775 Reid St. - Fredericton, NB E3B 5G3 (metered 3-21; rec'd 3-27)

(506) 455-6496 Again, greetings from the Maritimes of Canada, where reception of LA's has been especially good, with relative ease of nulling most U. S. and Can. stations. 2 days of ice pellets after a blizzard dumping 55 cm. (22") recently. Wonder when spring will finally arrive! When Musing before, I was using a modified NCR 3-ft. loop as a passive booster beside a Grundig Satellit with substantial gain. Now, thanks to info. supplied by Dallas Lankford, I have been able to find the parts to complete the PET loop amplifier as per Antenna Manual, Vol. 2. When I first completed it, it had more gain than it appears to have now. I wonder if excessive hum due to poor connections has damaged the 2N4416's. Anyway, the gain is somewhat more than with the use of the loop as a passive booster, but the advantages now are (a) greater selectivity, (b) better placement possibilities and tilting which has made a noticeable improvement in reception, and (c) better nulling. A local 50 kw'er, CFNB-550, with xmtr. about 20 miles away can be dramatically nullled in the daytime with the amplified loop much better than before. Some loggings, etc. In the passive mode, I had received WNBC-660 New York regularly with weak signal in midday. Now, with tilting to dodge static, I regularly get WCB-880 with similar level, very readable. WQXR-1560, despite similar 50 kw power, is barely readable after 9:30 am local time these days. International loggings include Feb. 13 10:15 pm Atlantic time R. Libertad-600 Colombia; R. Belize-834 between 10:45 and 11 pm with interview with librarian, quite clear, and the furthest catch, at 11:02, being R. Sutatenza-810 ID'ing in English "Radio Sutatenza transmitting on 810 khz. from Bogota, Colombia," then listing parallel SW frequencies on 75 m. and other bands, then reverting to Spanish, and getting QRM'ed despite WGY null. On Mar. 3, at 9:30 pm, Venez.-700 clear in WLW null with "Radio Popular, popularisimo" with LA mx, singing with clarinet. Mar. 8, 10 pm, Radio Tiempo-1200 Venez. strong with some hits and QRM. March 6, midnight, R. Paradise strong on 825 khz. with relig. pro. A number of times on 531 khz I picked up a weak signal with Arab mx, probably Algeria, but with CFNB sloop. I am most impressed with the productions of Mark Connelly with the circuits of active and passive tuners and phasing units. I was wondering if he is considering phased loops (esp. amplified ones), with some arrangement like one loop directed to a desired station with the other (less efficient one) picking up a nearby station that is to be cancelled out. I imagine that there are many interesting possibilities. The DX News I find most interesting these days, with the technical stuff, the clippings, and the enjoyable Musings. Keep it up. 73's.

Andrew Reninger - 2 Grove St. - Glen Head, NY 11545 (pm 3-26; rec'd 3-29)

Greetings, fellow NRC'ers! Since this is my third Muse, I guess it's about time I introduced myself. I'm 17 years old and live on Long Island. My receiver is a Panasonic RF-2200; currently my #1 antenna is a random length longwire. Since I started 2 years ago (this month) I've logged over 300 stations (I work slow). On a recent trip to Florida, I logged 60 stations in a week (That was fun). I'm also into SW, FM, and pirates (except political types). I'm a member of ACE, for 6 months, NRC for 8 months. My farthest is XEX (an easy one). I'm proud of logging KRMG-740 OK, R. Maracaibo-740, WMAQ-670 IL (thru bad WNBC splash). For some of you old guys (just kidding) this may not impress you as much as it impresses me. TOUGH NUGGIES! Until next time, Keep the Faith, enjoy your weekends, 73's, and WHERE'S THE BEEF?! (No beef here, Andrew; keep the fine reports coming! -pls)

Warren E. Greenberg - 145 Cottage Road - West Roxbury, MA 02132 (pm 3-26; rec'd 3-29)

Since it has been a while since my last Muse, a reintroduction is in order. I am 26 years old and employed by Telco Systems Fiber Optics Corp., which is a supplier to the telecommunications industry by manufacturing fiber optics transmission equipment. I haven't been able to do much DX'ing this season because of work and going to school 3 nights a week, but with some luck I will be able to find some time. The first week of March I spent my winter vacation on the island of Martinique, and here are my catches that I was able to hear during the afternoon (2 pm to 4 pm) eastern time: 640 and 1240 Guadeloupe; 900 CBC Barbados; 1310 Martinique; 720 RJR Jamaica; 1580

VOA Antigua; 800 Bonaire; 825 St. Kitts; 660 Radio St. Lucia; 930 Radio Antilles Monserrat; 840 Radio Caribbean St. Lucia; 990 Grenada; 1060 Voice of Life Radio Dominica; 610 NBS Trinidad; 790 VOB Barbados; 690 Caribbean Beacon Anguilla. These stations were received on a modified TRF with a Radio West Shotgun antenna. The receiving location was the town of St. Ann on the southwest section of the island. These loggings were stations that I was able to identify. There were plenty of Spanish stations that I didn't have time to identify. At night I didn't have much time to DX, so there are new additions to the list. See you in Colorado Labor Day. (You bet! -pls)

Radio Round-Up

Pete Kemp - Bethel, CT (pm 3-26; rec'd 3-28)

Greetings all ... Rumors continue to circulate that the Mutual Radio Network is up for sale. Amway's adventure into the broadcasting field has not been the greatest financially. They have also recently pink-slipped 24 employees ... Arlene Francis, long a mainstay at WOR-710 New York, 23 years, has been replaced on the air. She was offered an opportunity to stay with the organization in a position to be determined, but is expected to decline the offer ... WPLO, Atlanta, will convert to AM stereo in April ... The importance of radio broadcasting has again surfaced with the BBC's International Service reporting results of their mailroom statistics. Listeners of the Hindi language and from Poland registered dramatic increases ... WCAU, in the city of Brotherly, isn't too happy with the 90-day out clause with the Larry King Show. They had wanted to drop King in favor of Richard Hayes, but will have to delay the action, due to legal complications ... In Cincinnati, WLW's listeners will continue to listen to the patter of Gary Burbank; he has recently signed a ten-year contract. This should sooth him just a bit, as he has recently been replaced in the morning slot by Jim Scott. If my memory is correct, this is the same Jim Scott who was on WSAI and WNBC for a short stint a while back ... Also on WLW, Lynn Gladhill, late night talkshow hostess, was canned for allegedly drinking and using profanity on the air. Needless to say, lawyers are involved with this one ... In North Carolina, WCOG is back on the air, after a two-week reorganization period, in the interim programming nothing but the sounds of crashing waves and seagulls. The station PD thought it would get everyone's attention. The station is now programming oldies and beach music; I assume that by beach music the PD means the surfer sounds of the sixties ... In Pittsburgh WTAE has picked up Jon Summers as the new morning DJ and has added the syndicated "Solid Gold Saturday Night" oldies show, from 7:00 pm to midnight ... Viacom has signed an agreement to purchase WEAM in Arlington, subject to FCC approval ... One of the most popular radio shows in England is a midnight computer show, complete with the digital sounds of programs. The BBC has been taking software programs and converting them to sound for distribution. Listeners get ready with their cassette recorders and tape programs off the air, for use of their personal computers. The programs are, for the most part, in the entertainment or educational areas. I would hate to be in a fringe area during the summer static noise levels. You would have to build in a glitch factor. I have heard that an AM station in California is now providing a similar service and will try to find out which one. My source indicated that it might in the San Francisco area. Any ideas??? (One in Seattle programs 15 minutes on Sunday mornings; I don't remember which one -pls) The Spanish International Network (SIN) is skedding Olympic Minutes, in Spanish, for the upcoming 23rd Happening in Los Angeles this summer ... So much for this installment.

Gary Siegel - 2728 106th St. - Toledo, OH 43611 (pm 3-27; rec'd 3-30)

Alohal My trip to Hawaii is now history and it was a great time. Having been back to T-town for a month now it still takes some getting use to the cold and snow - really wish this stuff would take flight back to the poles once and for all, hi! DX'ing in Hawaii is interesting. Strange to hear so many channels clear as opposed to the massive rubble that fills the dial here in the Midwest. Western U. S. and Canadian stations appear to be regular visitors, whereas if a station from that far (2,000 miles+) makes it to my QTH, that is a really super catch. What a difference 2,000 miles of open salt water does to reception. Some notable changes in conditions can be easily seen from the Hilo side of the big island where the west coast is heard nightly to the Kona or west side of Hawaii where such stations are rare at best. All but two Hawaiian stations were taped by yours truly while I was there. Should there be anyone interested in having a tape of a give Hawaiian station I'll be happy to dub you a copy for the cost of sending your tape back to you; an SASE or stamp equivalent of approximately one dollar would pretty much cover this; also allow a few weeks for delivery. As many NRC'ers may know by now the IRCA convention will be held in Toledo this summer from August 17-19 and all NRC'ers are invited to attend. If you need a registration form or other info feel free to contact me. Hope to see many of you in T-town this summer. 73's. (If the Toledo convention is as much fun as the Seattle convention was, attendees should have a real treat. And you don't have to be an IRCA member to attend. Such a deal! -pls)

Ernest Cooper - 5 Anthony Street - Provincetown, MA 02657 (pm 3-27; rec'd 3-30)

Hi, everybody! Here I am again! I went into Mass. General Hospital on Monday, 2-27, was operated on on 2-29 (of all days!) and was released on Thursday, March 8. Instead of a double coronary by-pass, it turned out to be a quadruple by-pass. They used a blood vessel from my right leg for the bypasses, so that not only is my chest still quite sore, but also my right leg. The recovery period is rather long and slow, but those seem to be the rules of the game. I want to thank Stan Morss, Ernest Wesolowski, Frank Merrill, and Bill Wurtzel for their phone calls, inquiring as to how I'm coming along, and many others for your cards and letters of good wishes at this eventful time of my life. Please, no 1-3 am calls! I've done no DX'ing at all since arriving home: I've been sleeping through each night, but at this writing, I still find it difficult to lie down, for it seems to bring on coughing, which is very jarring to my chest, to put it mildly. So I've been sleeping sitting up in a chair, mostly, and waking up around dawn. Four fine veries have been added: WKZQ-1520 (ex-WTGR); Vatican Radio-1602; WPLP-570; and a tremendous package of station info and goodies, together with a v/l and v/q from NRC's Fred Vobbe from WHND-560 - a million thanks, Fred! WHND's second test was heard here between 3:00 and 3:08 am while the fairly close-by AM's, WGAN and WHYN, were carrying news/talk. I believe (but am not sure) WFIL was off that morning, 2-20. Congratulations to the IRCA on its 20th anniversary - it'll take hours to read through their big anniversary issue, which, happily, included their membership list. It's nice to know who else belongs to your clubs, and where they're located! Locally, WVLC-1170 has turned to teletalk mornings and oldies the rest of the time, with no announcer other than taped messages tacked in every once in a while. WCEA-1470 Newburyport MA is now on 1450 with 1,000/250 and dominates this channel with only a bit of background from other stations days, but is lost in the wormcan at night. 1470 features a weak WSRO-MA days now. WILD-1090 is seeking fulltime on 720; accordingly, WCAS-740 is asking for 1090 and a power increase. Back to "work" at WOMR March 31, so - "Forward - March!" (We're mighty glad to see you back to your old tricks, Ernie ... give 'em hell! -pls)

Greg Hardison - 15535 Plummer St., #11 - Panorama City, CA 91402 (hand-delivered and -written, hi -pls)

Lots of good DX was to be heard at the March 23-26 DXpedition east of Twentynine Palms, CA, held in memoriam of H. John Clements. We had a pretty good turnout (20+) including Laurie Boyer, ex-NRC'er from Invercargill, New Zealand (sign him up! -pls). Some of the notables, using my stock AM-only Toyota radio coupled into the 2,500' NE beverage, include: (all on Monday 3-25): 12:45 am PLT WSM-650 with caw mx actually splattering KFI (and wasn't it nice!!). The next 15 or so minutes all had WNBC-660, WMAQ-670 (KBOI on); and WLW-700 plus WSB-750 all well on top of their respective channels. Here's one of these great frustrators: at 1:43 am on 900 kHz, a discussion was taking place between two men - one with an EE accent, the other with a Caribbean accent, about parasitic infections affecting local livestock - the parasite was believed to have originated in Brazil or Guyana. Then, it started fading into CHML and the rest - but not far enough to miss hearing "...CBC..." in a jx that sounded around 20 years old - late 50's/early 60's style of "commercial" mx, common in the Caribbean. Of course, at ID time, Murphy took over - all CHML/CJVI. The haunting question: Barbados??? 2:18 am had KDJW-1010 almost all alone with Dolly Parton, "KThe best and brightest on KDJW". 2:23 am - a surprise as KYW-1060 surfaced through the KVKQ/KRSP/WNOE mess, with a plug for a "KYW Newsradio" documentary on 3-mile island. 2:49 - "10 minutes till 6 on RVA" heard equally with KMJJ/KGEM on 1140 kHz - WRVA, methings! A wistful check back to 640 kHz at 3:10 am had KFI being eaten alive by the Cuban - sounds pretty nice on this coast! 3:20 am: "5:20 on a Monday morning, with WREN" on 1250 kHz, all alone. 3:24 am: long-wanted KAAM-1310, atop channel with a promo for an upcoming Tommy James concert in the Metroplex. Another long-sought: 3:30 am - a rather cornball-sounding announcer with a doorbell (seriously!) for a timecheck: "5:30 at 1320 on your dial, KWHN". Also a tentative on KXYZ, "R. Trece" and SS time check (CLT) heard u/KWNN. 3:50 am: KSWO-1300 heard with soul song "Gloria", folo by ID and Okla. AgriNet Nx. 3:54 am - a mess on 1440, with KPUR r&r, battling KSKX with Topeka wx. The highlight of the morning on 1470 kHz at 4:09 am, in the mess: "...20% off when you mention KGHM ..." Log sez 500 watts in Brookfield, MO - nothing else phonetically close on the freq. 4:30: KWCO-1560, ID, loud, on top. 4:40 am: KSKY-660 with Gospel mx, timecheck and call letters. 73's.

Paul Swearingen - 7310 Ensign - Sun Valley, CA 91352 (818) 765-7651

It's nice to have some DX to report for a change. All receptions on Sharp FV-160 portable inductively coupled to the new Twentynine Palms beverage antenna. (I wrapped several turns of the antenna around the rx and held onto the bare end, hi.) Daytime DX first ... 3-24: between 10:23 and noon (long enough for a sunburn): 600-KCLS AZ, 700-KPAM UT, 730-KDAZ NM, 800-KRVN NE (11 am), 1030-KTWO WY tent, 1100-KREX CO, 1150-R. Sensacion (?), among other obvious AZ and CA. 3-23 and -24 evening DX included 580-WIBW, 1250-WREN, 860-KKOW, all KS and very welcome. The beverage is straight as a string, taut, and terminated, and pointed approximately at St. Louis ... a textbook example.

A second visit the next weekend (4-1, no foolin') produced these evening catches: 4:26 pm 540-KNMX NM; 4:44 pm 660-KSKY TX, 4:54 pm 670-R. Rebelde, Cuba; 5:10 pm 680-KKYX TX; 6:15 pm 720-WGN; 5:00 pm 740-KVPC NM o/KRMG OK; 4:47 pm 750-KMMJ NE; 5:14 pm 790-KXXX KS; 5:16 pm 810-KWSR CO; 5:36 pm 830-WCCO MN; 5:37 pm 840-WHAS KY; 5:56 pm 1370-KGNO KS; 6:04 pm 1470-KRBC TX; 6:06 pm 1480-KLEO KS; 6:00 pm 1500-KSTP, plus the usual clears. Static took over about 6:30 pm and we had to end the listening, unfortunately. I had a great time both weekends and hope to be able to repeat before the desert heat makes DX'ing impossible out in the middle of nowhere. /// Watch for my column in Monitoring Times; I'll be taking over Club Corner and welcoming reports of radio club activities. The column will also profile a club each month, so if you'd like for your club's activities to hit print, have an official club representative forward them to me. 73.



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with Peter Kemp

PERSONALITIES

John McCormack

John McCormack, world-renowned Irish tenor, recently launched his first extended radio series on NBC. He is featured on the Wednesday night Vince program and is supported by a fourteen-piece orchestra conducted by William Daly. McCormack had made many guest appearances at American microphones, but this is his first weekly series. His repertory for the series is made up of songs which he used on his world-wide concert tours and on phonograph records.

Agnes Moorehead

Agnes Moorehead, the funny "Cousin Anna" of the Monday CBS "Evening in Paris" broadcasts, is a stage recruit who has been making it good as a radio comic. She was born in Boston, the daughter of a minister, and spend most of her childhood in St. Louis. She studied drama and later appeared on Broadway in support of such luminaries as Gertrude Lawrence, Elsie Ferguson and Violet Hening. She has taken comedy parts on many network broadcasts and ranks among the leading female comedians on the air.

Bing Crosby

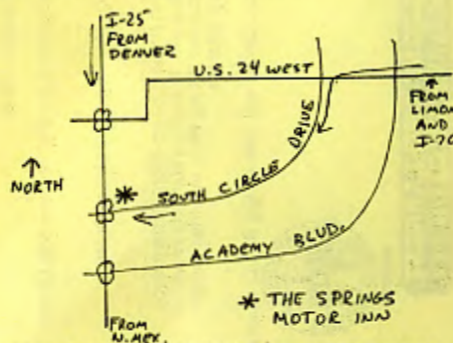
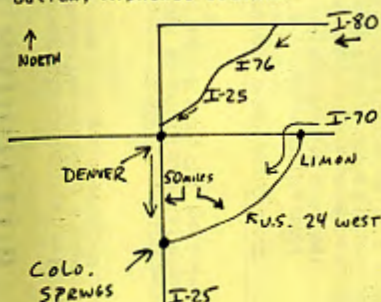
Bing Crosby's decision to return to the air as star of the new Woodbury programs on CBS Monday nights was welcomed in many quarters largely through the songster's splendid talking picture work the past year. Bing's been quite a hit on the screen, and many persons think he's better in the talkies than he is on the air or stage. We hear that he's still much in demand in the Hollywood studios and the for the time being his broadcasts will come from the West Coast, with his old friend, Lennie Hayton, wielding the orchestra baton.

Welcome to the beautiful Pikes Peak Region. Hundreds of attractions and fantastic scenery will greet the lucky members who decide this is the year to start the NRC's second half century. The Springs Motor Inn is centrally located on the south edge of Colorado Springs just east of the Circle Drive exit. See the handy map below.

Registration Fee \$32.00 (US)

This INCLUDES the Buffet Banquet on Saturday Night AND a sight seeing tour by van to the Summit of PIKES PEAK. Room rates are listed below in the handy registration slip. The NRC SWAT TEAM is presently forming up our ranks and busily preparing a host of activities and what nots to keep everyone at a high level of enjoyment. Participate and ENJOY NRC 84 !!!

73 from NRC SWAT TEAM:
Mountain Man, The WIZ, Buffalo K. Foonman, ELK, Waterbug, The Silver Fox, Outlaw, Alphonso Bedoya.



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