DX MONITOR

THE BULLETIN OF
THE INTERNATIONAL RADIO CLUB OF AMERICA

September 8, 1973 Vol. 11, #1

DX CALENDAR

(All times listed are Eastern Local Time)

Mon. Oct. 1	0200-0500	WMIX	940 Mt. Vernon, IL	5 kw	D
Mon. Oct. 15	0100-0130	WWBR	1350 Windber, PA	1 kw	D1
Fri. Oct. 19	0001-0230	WBLF	970 Bellefonte, PA	.5 kw	D1
Mon. Oct. 22	0200-0230	WCRO	1230 Johnstown, PA	1 kw	U1

WMIX program will consist of 100/400/500/1000/7500/10000 hertz tones, with frequent IDs. Program will test both 5 kw main transmitter, as wellas the 1 kw standby, the 250 watt proposed nite power, and the 110 watt PSA power. DXers are invited to try to also catch WMIX-FM on 94.1 mHz, which will be on at the same time. Calls welcome, but attractive pink and blue QSL card will be send only for written reports. Tapes welcome. Address reports to:"Lewis A Pifer, CE, WMIX Radio, Box 1238, Mt. Vernon, IL 62864. Arranged by Jim Poterba for NRC.
WWBR test will consist of C&W music and IDs. Send reports to Mr. Frank Danato, WWBR, 1311 Midway, Windber, PA 15963. Arranged by Brian Cartwright for IRCA.
WBLF will play music with station IDs. Reports go to Glenn Daugherty, WBLF, Box 88, Bellefonte, PA 16823. Arranged by Brian Cartwright for IRCA.
WCRO will have TT, rock, jingles, and frequent IDs. Send reports to Mr. Fred Kendij, WCRO, Carnegie Building, Johnstown, PA 15901. Arranged for IRCA by Brian Cartwright.

BROADCASTING INFORMATION

Broadcasting Information (as compiled by Mike Worst) from the July 23 to Aug. 20 issues and the CRTC

CKEK	570	1-U	Cranbrook, BC	to 10-D, 1-N
CJOX	710	1-U	Grand Bank, Nfld	to 610, 10kw DA2
new	710	5-D	Blacksburg, VA	granted WQBX
WXMT	730	1-D	Merrill, WI	" WJMT
KMCO	900	½-D	Conroe, TX	requests KIKR
WCOC	910	5-D 1-N	Meridian, MS	" WOKK
CJON	930	10-U	St. John's, Nfld	to 25kw
WCRM	990	¼-D	Clare, MC	start operation
WWDA	990	½-D	Wisconsin Dells, WI	requests WNNO
WJSW	1010	¼-D	Maplewood, MN	" WMIN
KHYM	1060	5-D	Gilmer, TX	start operation
WSLG	1090	½-D	Donaldsonville, LA	to Gonzales, LA
CBQR	1110	40w	Rankin Inlet, NWT	to 1160, 40w
new	1130	1-D	Rainelle, WV	CP
KIZZ	1150	1-D	El Paso, TX	requests KISO
new	1160	¼-U	Barceloneta, PR	CP
new	1190	5-D	Bay St. Louis, MS	requests WPUP
KZEE	1220	¼-D	Weatherford, TX	to 1kw-D
CFEK	1240	1-D ¼-N	Fernie, BC	to 1-D, 500w-N
new	1240	1-D ¼-N	Baie Verte, Nfld	CP, //CKCM-620
WFBM	1260	5-U	Indianapolis, IN	requests WNDE
KWFR	1260	1-D	San Angelo, TX	granted KIXY
KSMK	1340	1-D ¼-N	Kennewick, WA	requests KOTY
new	1350	1-U	Gander, Nfld	CP

THE INTERNATIONAL RADIO CLUB OF AMERICA--a non-profit club devoted to listening to distant radio stations on the broadcast band (540-1600 kHz). IRCA is a member of the Association of North American Radio Clubs (ANARC), dedicated to promotion of cooperation between the major radio clubs in North America.

CLUB OFFICERS: President: Richard C. Evans, Box 2048, Gary, IN 46409
Secretary-Treasurer: Carl "Skip" Dabelstein, Lincoln, NB
Board of Directors: Percy R. Kesteven, Father Jack Pejza, John Zondlo, Nancy Gantzer, Bill Nittler, Bob Foxworth, Ed Krejny

MEMBERSHIP RATES (Per year)
First class (North America) $9.50 U.S.
Air mail (North America)$13.00 U.S.
Overseas rates--apply for rates
Sample bulletin--50¢ or 3 International Reply Coupons
Make all checks and money orders payable to IRCA and send to 12536 Arabian Way, Poway, CA 92064.

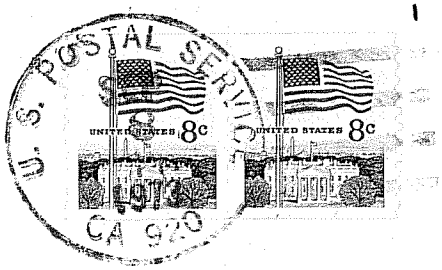
DX MONITOR, the official bulletin of IRCA, is published 34 times a year by the San Diego Publishing Committee. Weekly from November to March, three times in October, twice in September, April, and May, and once in June, July, and August.
Editor-in-Chief: Father Jack Pejza, 3266 Nutmeg St., San Diego, CA 92104. (714-282-0076 or 714-282-2184)
Publisher: Grant Manning, 12536 Arabian Way, Poway, CA 92064. (714-748-6538)

IRCA publishes the IRCA Foreign Logs, listing over 1500 foreign stations heard on the broadcast band. Vol. I, $2.75 to members, Vol. II $3.00 to members.

Please send self-addressed stamped envelope for correspondence with publishing headquarters.

Printing by San Diego Printers, San Diego, CA

IRCA
12536 ARABIAN WAY
POWAY, CALIF. 92064



EXP 4/6/74 V11N28 1
Michael G. Worst
3608 Phinney North
Seattle, WA 98103

FIRST CLASS

WHIL	1430	5-D		Medford, MA	requests WWEL
WHER	1430	1-D		Memphis, TN	" WWEE
KILO	1440	1-D	½-N	Grand Forks, ND	granted KKXL
WBYG	1450	1-D	¼-N	Savannah, GA	requests WQQT
WOKK	1450	1-D	¼-N	Meridian, MS	" WQIC
new	1500	½-D	¼-CH	Youngstown, OH	CP
new	1510	1-D		Marco Island, FL	requests WRGI
new	1530	1-D		Jeanette, PA	granted WBCW
WBAZ	1550	½-D		Kingston, NY	" WKOT
WOKI	1550	1-D		Oak Ridge, TN	to ND

all powers in kw.

The following are PSA's with power as shown:

WFMC	730	1-D		Goldsboro, NC	360w from 376
WDDT	900	1-D		Greenville, MS	99w
WMIX	940	5-D		Mt. Vernon, IL	110w
WCTN	950	1-D		Potomac-Cabin John, MD	500w
KDCE	970	1-D		Espanola, NM	112w
WJSB	1050	1-D		Crestview, FL	24w
WKOK	1070	10-D	1-N	Sunbury, PA	500w
WPUB	1130	1-D		Camden, SC	5.8w
KFSC	1220	1-D		Denver, CO	17w
KDDR	1220	1-D		Oakes, ND	250w
KRMC	1220	¼-D		Midwest City, OK	7w
WPRJ	1310	1-D		Parsippany, NJ	172w
WFSR	1380	½-D		Bath, NY	106w
KBOP	1380	1-D		Pleasanton, TX	500w from 250
WRSW	1480	1-D	½-N	Warsaw, IN	500w from 1000
KMAV	1520	¼-D		Mayville, ND	250w
WGHC	1570	1-D		Clayton, GA	286w from 298
WPDC	1600	½-D		Elizabethtown, PA	280w from 234

FLASH TIPS

KBTR-710, Denver, CO has changed its calls to KERE. Format is contemporary C&W. KDEN is now the all-news station in Denver, according to Rob Harrington. SWL Spectrum Magazine has ceased publication with issue #7. Subscribers are being refunded the unused portion of their subscriptions.Wolfman Jack has moved from KDAY-1580, Santa Monica, CA to WNBC-660, New York City, and will do the 7-midnight show there, as of August 1.This per 6/30 Billboard, via Bill Hardy. According to the Los Angeles Times ofAug. 31, Rev. Carl McIntire sailed aboard a boat called The Wild Goose on Aug. 30 to board the converted mine sweeper which has been equipped with a 10 kw broadcasting studio for his Radio Free America. However, the skipper, following international rules, refused to allow him to transfer to the ship, thus frustrating McIntire's plans to have an inaugural broadcast. The ship is anchored three miles off the New Jersey coast.No frequencies have been announced for RFA.

GEOMAGNETIC INDICES

July 25-31	10	28	25	15	20	19	26
Aug. 1-7	9	20	9	10	9	13	8
Aug. 8-14	11	6	4	3	5	13	8
Aug. 15-21	5	3	1	4	6	8	6
Aug. 22-28	10	17	44	29	16	19	23

PROVINCE OF THE MONTH

The next PoM will be for Northwest Territories and the Yukon. Information is needed on type of programming, special programs, IDs used, slogans, s/off and s/on times, how well the station is heard in your area and the best time to try, type of verie and signer if any. Send information by October 30 to David Oliphant, Suite 1803, Garneau Towers, 8510-111 St., Edmonton, Alberta, Canada T6G 1H7.

PUBLISHING INFORMATION

The next few issues of DX Monttor will carry the following dates of publication: Sept. 22, Oct. 6,20, 27, and weekly from then until the end of March. Deadline for flash tips and other last minute information for each issue will be Sept. 15, 29, Oct. 13, and each Saturday from then on. Membership dues are to be sent to publishing HQ, 12536 Arabian Way, Poway, CA 92104.

Because of the change in page format, with offset printing, persons wishing to contribute articles, etc. are asked to write to publishing HQ to receive a sample of the new typing format. SDPC doesn't want to have to keep retyping material sent to us for publication. Basically, the format for typing masters consists of a column 5 inches wide.

With the shorter lines used now, each DX Forum report might seem to be longer now. The limit is still, however, 15 full (7") typed lines. This will be converted into about 20 or so 5" lines.

REPRINTS

Since SDPC assumed the job of publishing, there have been a number of requests for reprints of articles, etc. which have appeared in DX Monitor. All requests made prior to May 15 to Don Erickson will be filled by him. It is no longer feasible, however, for the club to continue to furnish free reprints. The BoD has approved the sale of reprints in the future. The charge will be 5¢ per page by third class or 6¢ per page first class to members; 6¢ third class or 7¢ first class to non-members. A list of available reprints is being prepared and will be published shortly.

NOTE CHANGE OF ADDRESSES FOR BRUCE HEIMBURGER, EXDF, AND JOHN ZONDLO, CDXF, BELOW.

NEW MEMBERS PACKET

All members who joined before May 15 should be receiving their NMPs from Don Erickson. If you have not yet received it, contact Don. A new NMP is being prepared by SDPC and will be available, most likely within a month, and will be sent to all members who joined after May 15. Since this NMP will cost about $1 apiece, the BoD has agreed that the NMP will be considered as three issues of DX Monitor. In other words, during the first year of membership, a member will receive the NMP and 31 issues of DX Monitor.

DX GET-TOGETHER

ASWLC and SPEED have joined together to sponsor a general DXers get-together October 20 and 21, 1973 in Tustin, CA, at the Bel Air Motor Lodge, 140 West 1st St., Tustin, CA 92680. Talks are "semi-planned" on receivers, antennas, QSLing, hobby problems, DX bookkeeping, general DX aids, and whatever else comes to mind. The entire meeting will be quite informal. There will be a $2 registration fee to cover the cost of the meeting room and refreshments. Motel rooms will cost $18 for 2 in a room with 2 beds, $14 for a single, and $20 for 3 persons in 2 beds or $22 for 4 people in two beds. If you plan on attending, contact Don Johnson, P.O. Box E, Elsinore, CA 92330 (714-674-4591 after 0100 GMT). Make your own arrangements for motel rooms. Your publishing committee plans on attending, so be there to find out what you can about the hobby and to have a good time.

DX ROUNDUPS

EASTERN

CAROL SCHWEIGER
41 Lawndale Road, Stoneham, MA 02180

Carol is on vacation and will include all reports received in the next EDXR.

CENTRAL

RICHARD C. EVANS
Box 2048, Gary, IN 46409

Deadlines: 9/12, 9/26, 10/10

OF SPECIAL INTEREST:

730	WJMT	WI	Merrill, 8/7 2054 fair w/new call MoR music. (JA)
740	KRMG	OK	Tulsa, now plays oldies (late 50's early 60's) along w/MoR. Sked: AN, off SM 0200-0800, MM 0100-0600. (JB)
1300	KCNW	OK	Tulsa, now MoR/Mx 0600-0200 (off daily!). Was #1 C&W stn in town until KVOO went C&W. KVOO beat them in ratings so went MoR. (JB)
1440	KKXL	ND	Grand Forks, 8/18 0230-0235 fair w/new calls and RR Mx. Frequent IDs. (JA)
1570	**WSWV	**VA**	Pennington Gap, r/c w/s/off at 0339, not 0345 per list. 8/4.(KHB)

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550	KOY	AZ	Phoenix, 8/6 0333 fair u/KTSA with ID, mild rock. (SHM)
570	WKYX	KY	Paducah, 8/4 with fair signal, ID at 2256, Nx & Mx, just enough for report. V/q. (TB)
	WWNC	NC	Asheville, 0430 ID w/Nx & Wx, later (0434) w/C&W 7/29. (KHB)
	WMAM	WI	Marinette, noted 8/26 about 1730 on car Rx 10 miles east of Benton Harbor, Mich. Brief, good. (rce)

600 WBDN MI Escanaba, fair in WMT null with "Big Six Wx Watch", then into rock 1715 7/28. (DP)

WREC TN Memphis, poor signal u/o WMT & others w/MoR 0616 8/2. (DP)

620 CKCK SAS Regina, noted w/chorus ID 0433 8/7. Somewhat regular here.(KHB)

730 WPAL SC Charleston, 8/23 0600 good with s/on annmt, soul Mx. (SHM)

WLIL TN Lenoir City, 8/23 0606-0616 fade poor with news. (SHM)

740**WBAM**AL**Montgomery, ETing w/TT 0116 8/13 ID 0128. KRMG OC kept static down. (JB)

790 WMC TN Memphis, 8/21 2125 w/mention of country WMC. Format change? (JB)

800 CFOB ONT Ft. Francis, 7/22 0010 poor o/u CKLW/PJB w/ID and song from survey. RR music. (JA)

810 WJPW MI Rockford, nice daytime catch, across the lake, w/all kinds of Mx; C&W, oldies, and newies; 1611 7/29. (KHB)

850**WYDE**AL**Birmingham, 8/4 announced f/c 0155-0202 off. Used TT and IDs about every 2 min. Wrote stn to see if regular. (JB)

WKBZ MI Muskegon, fair o/u KOA w/MoR until s/off 0000 7/28. (DP)

860 KNUJ MN New Ulm, 8/18 2125-2130 fair u/ CJBC w/oldies RR to s/off 2130(JA)

890**WLS***IL**Chicago, off & testing MM 0202(JB)

910 CKLY ONT Lindsay, Nx, Wx, sports with Bob Kennedy, 0455 8/2. Hrd also 8/6 AM. (KHB)

CBO ONT Ottawa, in and out at 0007 7/29 w/CBC Nx, ID at 0011. (KHB)

WRNL VA Richmond, 8/26 0202 weak to fair, w/ID and Wx for Richmond. (JA)

WHSM WI Hayward, 8/21 2113-2115 exc. with s/off and SSB. MoR, C&W Mx. (JA)

930 WLBL WI Auburndale, 8/2 2050-2055, poor u/WBCK w/talk and Clx. Mx. // to WHA-970. (JA)

940 CBM PQ Montreal, 8/22 0104 w/TL giving Wx and s/off. 1st time hrd. (1st time tried too, hi.) (JB)

WCIT OH Lima, 8/21 2030 poor w/s/off but ID came through well. (JA)

WCSW WI Shell Lake, 7/21 2158 good w/ s/off and SSB. Member of NAB. C&W music. (JA)

970 CKCH PQ Hull, 8/17 2240-2243 fair o/u WWSW FFC w/BB. (JA)

WMAY IL Springfield, r/c 0115 1st Sunday not on or would have hrd it.(KHB)

980 WCUB WI Manitowoc, in good o/WAOP with "CUB Wx" 1509 7/28. (DP)

1010 KXEN MO St. Louis-Festus, 8/17 2045-2100, good o/u CFRB w/gospel music to sign/off. (JA)

1020 WPEO IL Peoria, exc. signal w/lifeline 1045 7/29. (DP)

1040**WHO***IA**Des Moines, ETing 0311 7/29, ID as "WHO - Des Moines, Iowa, on intermittent tests". Also hrd 8/5 AM. (KHB)

1080 WNWI IN Valparaiso, another goodie, with PSA & ID 1730 7/29. (KHB)

1090 WGLC IL Mendota, 8/24 2031-2034 fair to good w/Wx for Mendota and MoR music. (JA)

1130 CKWX BC Vancouver, 8/6 0219 fair with "Secret Agent WX" contest, PSAs, requests to 685-3507, MoR Mx.(SHM)

1170 WLKE WI Waupun, last part of s/on 0700 8/5, then C&W Mx. (KHB)

1180 VOA FL Marathon, 8/9 program in SS, very good signal w/much fading & QRM, at 2030. (TB)

1220 WBCH MI Hastings, 8/23 2021 good but faded rapidly w/Tom Beasley Show, heavy rock. (JA)

1250 WQDE GA Albany, f/c 8/16 w/Mx, IDs every 15 min. surprise here 0145. (TB)

WHNY MS McComb, 7/29 2255 fair w/end of play, into Nx. (SHM)

1270 WCMR IN Elkhart, 8/11 2315 good on top of mess w/ID, finally logged this elusive one. (JA)

1280 KTLK CO Denver, 8/18 0300 fair w.rock, "Double K" slogan. (SHM)

WNAM WI Neenah, Wards spot 1447 8/5 (KHB)

1290 WSHF AL Sheffield, 8/4 w/morning program, from remote TV center-new. (TB)

1300**KWCK**AR**Searcy, 8/6 ET w/TT 0200-0215(JB)

WMAK TN Nashville, 8/6 briefly w/"67 deg. at WMAK" 0214. QRM from KWCK ET and KVET. (JB)

1330 WEAW IL Evanston, caught s/off u/severe SS QRM. 2100 8/4. UNID SS stn. (KHB)

1330**WFBC**SC**Greenville, 8/5 0243 sports rpt., jingle, and RR Mx. KFH off. (JB) 8/20 w/f/c tone and ID 0132.(TB) regular here 7/24 2000 strong.(MH)

1340 KRMD LA Shreveport, 8/5 0225 w/ID as All-American Radio and C&W Mx. (JB)

KICK MO Springfield, 8/6 0122 jingle, RR Nx 0129. Made no use of their unusual call. (JB)

KTOW OK Sand Springs, now off nightly 0100 Their sig. is wk & fady here at night (about 20 miles). Format is C&W music. (JB)

WRIT WI Milwaukee, w/lots of ads, Wx and sports. IDs after every song. 2015 8/4. (KHB)

???? ?? unID, 0250 w/RR on the "Midnight Special". Promo for American Top 40 also. Gave CDT TC. (JB)

1350 WPDR WI Portage, w/lots of IDs and "The best of 1968" 2007 8/4. (FHB)

1350 WISV WI Viroqua, 8/7 2115 good o/WBAY w/s/off. MoR music. (JA)

1370 WCOA FL Pensacola, 8/14 w/Mx 2115 Wx, fair signal. (TB)

KXLF MT Butte, 8/20 0145 w/"Monitor Weekend" pg. "66 deg. in the Mining City". No WSPD QRM as it is at almost right angles from this reception path. New State. (JB)

1400 WBAT IN Marion, pulled ID out of the mess "WBAT Double Fun" 0230 8/4 (KHB)

WJET PA Erie, 7/29 0228-0302 fair to good w/RR Mx and ID on AL Knight Show. (JA)

1410**WPCX**AL**Prattville, noted 0130 8/16 with daytime 5kw xmtr on for test, with R&R and Wx. (TB)

WING OH Dayton, 7/30 0212 fair but fady w/message from president and GM Gene Bennett. (SHM)

WIZM WI LaCrosse, in well 0613 w/"Good Morning, This isWIZM"...gone after that. 8/7/ (KHB)

1430 WFOB OH Fostoria, 8/11 2115-2130 wk to fair, u/WIRE/CKFH w/Indian-Rangers BB game. (JA)

WBEV WI Beaver Dam, caught ID in passing 1901 8/4. (KHB)

1440 WGEM IL Quincy, 7/30 0112 good w/rock,Jim Roberts Show, Wx 0115. (SHM)

1450 WHTC MI Holland, surprisingly above WVON w/Mutual Nx 1600 7/28. (DP)

KFIZ WI Fond du Lac, w/Brewers BB, waited from 1815-1900 to get ID, 8/4(KHB)

WRCO WI Richland Center, ID u/KFIZ 1859 8/4. (KHB)

1460 WXOK LA Baton Rouge, 8/4 w/Mx, Nx, Temp. 84 deg. much local WFIX slop, good signal. (TB)

WRAC WI Racine, w/Nx and oldies rock 1807 8/4. New here. (KHB)

1470 WBKV WI West Bend, jingle, ID at 1756 before Brewers coverage, 8/4(KHB)

1480 KLMS NE Lincoln, 8/17 2127 w/promo for KLMS T-shirt. (JB)

1500 WZBN IL Zion, w/oldies rock and promo for the AARP (figure it out!) 1739 8/4. (KHB) (Amer. Assoc. of Retired People--rce)

1510 KROB TX Robstown, 8/20 2112 poor u/WLAC with s/off. SSB. (SHM)

WAUK WI Waukesha, w/light rock w/lots of ads, 1722 8/4. (KHB)

1520 WNMT GA Garden City, 8/16 0130 test of 1kw rig, good signal, tone, Mx, mixed with ID every 5 min. (TB)

WSVL IN Shelbyville, 8/16 2230-2305 wk u/KMPL/WKBW w/local BB game, one ID at 2245. (JA)

1530 KRYT CO Colorado Springs, 8/4 2157 s/off after light RR Mx. No SSB. Poor signal under WCKY. (JB)

1540 WTKM WI Hartford, w/Polka Mx and Nx, 1700 8/4. (KHB)

1560**WDXR**KY**Paducah, 8/16 w/f/c 0149-tone & Mx w/many IDs, good. (TB)
1570 WHII MS Bay Springs, 8/24 2100 wk o/WOKZ w/s/off. inv. to tune to FM. (JA)
1580 CBJ PQ Chicoutimi, ID 2200, then Nx, Taped an hour later, 8/4. (KHB)
WJVA IN South Bend, 0654 w/C&W on Bob Barley Show. 8/7. (KHB)
WTTN WI Watertown, s/on w/SSB 0700 on the second, then into Nx. 8/7. (KHB)
1590 WQQW CT Waterbury, 8/25 0300 weak u/WAKR w/ID and CBS Nx. Oldies RR. (JA)
WAWA WI West Allis, w/weird show, gospel type 1609 8/4. (KHB)

PER THE LIST:

1st MON:	KBTA-1340 AR	1st SAT:	WIRV-1550 KY Mx
1st TUE:	KDBS-1410 LA	1st SUN:	WDAN-1490 IL
1st THU:	WLSI- 900 KY		KCII-1380 IA
	WKCB-1540 KY	3rd MON:	KXEO-1340 MO
1st FRI:	WGOK- 900 AL	3rd SAT:	KCNI-1280 NE

A TIP OF THE HAT THIS WEEK TO:

JA - JIM ALBRECHT, 3313 N. Weil, Milwaukee, Wis.
JB - JIM BOYD, 9017 E.29th Ct., Tulsa, Okla.
KHB - KEITH BIRLINGMAIR, Rt. 20, Box 20, Elkhorn, Wisconsin 53511
TB - TOM BUTAS, 5612 Alta Dena, Drive, Huntsville, Alabama 35802
rce - RICK EVANS, Box 2048, Gary, Ind. 46409
MH - MIKE HOGAN, 4811 Euclid, East Chicago, IND.
SHM - STEVE MOSS, Rt. 7, Box 939, Austin, Texas
DP - DAVID PETERSON, 800 Humboldt, Winnetka, Ill.

Many thanks for those who voted for me in June. Most of the club files appear to have arrived here by now, proving that 3rd class mail isn't always slow, hi. I enjoyed the convention, much more than I thought I would. Will those who have submitted proposals and/or applied for editorships and not hrd from me yet this month, let me know? Also, we need a new r/c list editor. If you're interested, contact me! 73 for now. rce.

WESTERN

JEFF BRASIER
10341 Shirley Ave., Northridge, CA 91324

The Good Guys are:

(PRD) Paul R. Daplyn- c/o Dept. of Energy, Mines & Resources Polar Continental Shelf Project- Tuktoyaktuk, Northwest Territories
(MH) HN Mike Hardester, USN- Lemoore, CA 93245 U.S. Naval Hospital- Box 89- Car radio in car
(BH) Bill Hardy- 303 W. 10th- Aberdeen, WA 98520 G.E. C-2510 w/built-in loop
(JAB) Jeff Brasier- 10341 Shirley Avenue- Northridge, CA 91324 HQ-129-X w/4' box loop

**********((((((((((%%%%%%%%%))))))))))##########

570 KLAC CA Los Angeles noted off the last 3 or 4 MMs in a row. Possibly now SP-MM, instead of NSP. Hope! (JAB-CA)
730 KLOE KS Goodland hrd @ s/on w/out SSB on 7/24 @ 0730 w/fair sig o/CKLG. (MH-CA)
KSVN UT Ogden finally hrd at s/on 8/21 o/XEX, KDAZ. 0800, OC at 0755. (JAB-CA)
850 CKRD AB Red Deer 0600 7/22 o/KTAC w/nx, KOA not hrd. (BH-WA)
940 CJIB BC Vernon 0332 7/21 "IB News", mx, spots for Vernon, much stronger than ever before & way o/formerly strong KFRE, so CJIB may now be on 10 kw nights. (BH-WA)
980 KSVC UT Richfield hrd 8/22 w/s/off u/local KFWB 2300, which would make it 9 pm UT time. (JAB-CA)
1330**KGAK**NM Gallup hrd 8/22 w/TT 0200-0215 o/local KFAC w/IDs every 5 mins. (JAB-CA)
1340 KENT? AZ? Prescott: TT hrd 8/21 0445-0500 w/ID at end, with what sounded like KENT call letters. V. Strong o/Mexican. Funny thing, stn. not listed in Broadcasting Yearbook or in AZ Phone Directory. (JAB-CA)
1400 KATI WY Casper weak o/u QRM 0445 8/4 w/wx & rr mx on Frank Barrett show. ID at 0440. Not enuf for report though. (PRD-NWT)(nice catch-JAB)
1540 ZNS-1 Nassau tent'ly hrd here w/EL mx 8/20 w/EE announcer. Static too bad for positive ID. First hrd by WLC of Tucson. (JAB-CA)

##########

KSOUR 830 Sherman Oaks has raised power w/a result of a much better signal here. Not much DX done lately because of job

like about going offset, is that when I type this column, sometimes a letter doesn't hit hard, so a could look like an o. 73's in 73 and gud DX. This is being typed 8/24 pm because tomorrow I go to Hawaii for 2 glorious weeks with a trip to Credo's maybe and a talk w/Roycroft who already gave me instructions on how to contact him. Blye.

DX FORUM

EASTERN

BRUCE HEIMBURGER
1710 CAMBRIDGE RD., ANN ARBOR, MI 48104

(No copy received by press time. Ed)

CENTRAL

JOHN ZÖNDLO
Shales Hall
Muncie, IN 47306

Deadlines: 9/13, 9/26, 10/11

Morris Sorensen-God's Narrows, MB ROB OMO
With the year end rush at God's Narrows School I didn't get around to reporting to Rick but some of my better catches in May and June included WDAF, WBEN, WNFL, KDKO, XEG, KOEL and CKGB. I put up a new 50' lw and have been experiencing good daytime reception from stations in the 500 to 1000 mile, including 5 KWers in ND and SD and 50 KWers from Minneapolis-St. Paul and Chicago. I also get CBWB-690, a 40 watt LPRT o/100 miles away in Wabowden, Man. all day now. I will be holidaying in Ontario this summer and may get to the CIDX convention in Kingston. 73

Karl Forth-630 S. Ardmore-Villa Park, IL 60181
Summer BCB-DX was fairly good throughout the month of July. I think I wound up with about 12 new stations, the best of which were KROX-1260, WXVW-1450 and WLCX-1490. A couple of veries: WAKO-910 (tnx ST!), KBRX-1350 and WXVW-1450 to bring totals to 934/505 45/44 and 8/8. Winter is best for DX but summer is best for GXing, hi (Amen-jz). The convention in Hammond should be a lot of fun. I'll be arriving on Friday with Bert Kramer, Al Ogrizovich, Randy Hartman and Mike Nikolich. I hope you'll give the auctioneer (AWO) an "offer he can't refuse." The SDPC is doing a good job so far but I don't think that it is their decision alone to regulate size of sections, etc. The decision of going offset should be decided by the membership or at least the BoD. All for now, see you at the convention and may all your GX be good ones, hi.

Tom Butas-5612 Alta Dena Dr.-Huntsville, AL 35802
Hi, hope your summer has been good. Not much new here with the bad noise level not leaving till late. Went down to all the locals last week and got my long awaited veries. Station WEUP-1600 here used a computer to do all the program, operation and maintenance logs along with billing commercials as it prints the logs, all the announcer has to do is put the cards in order. Some veries here to report- v/q WEUP, WVOV, WWSW, CFRB, WPXC, WMAL & KTRF (After 1 year). V/l WAMB, WNGC, WAGG & WIZO. Received a verie for the April 2, 1973 WRAN 1510 Dover NJ freq. check, state #36. Still got some WVOV & WBHP SC, interested please write, return postage requested. Richard Eddie, hope you got the package w/ your WBHP verie & folder I sent. I am in favor of offset printing- it has many advantages for a club of our size. Guess that's about all for now. 73's good DX.

Mark Fisher-3032 Boynton Ave.-South Bend, IN 46615
Greetings from the land of Hoosier DX! Things have been very busy here for me, so I haven't had time for DXing, much less club business. I want to say that if they keep up the bulletin's quality as they have been, the SDPC will do just as good a job as DEE. Now about the business of taped vs. written veries. A tape should be in an entirely different category of its own, since a tape is much easier to obtain than a QSL, since a tape takes minutes while QSLs takes at least a week and some 2 or 3 years. Only DX worth note here was when I picked up ZNS-1 in June (Sorry FJP). I hope to do more DXing during this winter, by simply ignoring the tube (if I can figure out how to do that). Anyway, 73's, Good DX and I hope I have more DX info next time.

(Continued on Pg. 10)

DXWW

Father Jack Pejza, 3266 Nutmeg St., San Diego,CA 92104
Use GMT in reports.

It is with a great deal of regret that I have submitted my resignation as DXWW Editor to President Rick Evans. Once we get on a weekly schedule, it will be impossible for me to do both the job of Editor-in-Chief and also DXWW Editor. The (almost) five years I have had this job have been most enjoyable; I have learned a great deal about foreign DX ,and have certainly made a lot of friends through my editorship. Once a suitable replacement is found, this job will pass into other hands.

REPORT FROM THE PHILIPPINES--Charles A. Taylor, DeLeon Apts., Sorsogon, Sor. H-318.
Reintro: 26 years old, ex-US Nav, married to Filipina, Leonor. Have 3 house-wreckers, who assist me by eating letters, dropping books, uprooting grounds, breaking lead-ins, etc. Expecting to go back to school soon, and education costs much less here than back in the "world." Have been DXing since 1957. Home totals were 45 states, 6 provinces, 19 countries verified from Indianapolis before enlisting Nav which killed that temporarily. Best were KFQD, then 730, WJTO-730 ME, WHEB-750 NH, KGBT-1530 TX, and CBLG-730 20W LPRT Ont. Here have 324 logged (positive ID) from Sorsogon. Main DX interest here is S.E. Asia which is very interesting, more so than my specialty in the "world", LA DX. Equipment: RX Heath GR-78 with outboard SSB adaptor-cum-MF (complete TX tail-end), plus window-sill antenna for MW. Frequency measuring equipment: Heath IB-1101 and EICO 330 signal generator with added voltage regulator and vernier freq. control. Sorsogon is an excellent DX location with both locals DWFA-793 and DZMS-1251 off 2300 LT. Rainy season is extremely noisy but Oct.-March have been quite DX DX, contrary to published world noise charts. Other hobbies: Electronics (vocation/advocation) and jogging 8 km (5 mi) a day.

DX info: Re my 10/28/72 DXWW commentary on locations of high power PRC MW XR sites: the 1340 kHz outlet mentioned therein is now positively known to be the XR of the Kwang Tung Regional. Apparently uses a DA directed at about Luzon during Tagalog language program to Phil. 1200-1230, 1430-1600. Also differing DA pattern during Vietnamese program to VN 1230-1430, 1500-1600. Would estimate to be 100 kW/ND. Maybe more during FS utilization, but probably rely on voltage gain of DA pattern. Admiral Nelson: if you spy this, it seemed to me that Hsia Men JKT-1107 was originating local programming. Noted with what appeared to be non-CJKT programming until 2200 7/10/73 at which time joined CJKT for news (that's assumed) and continued with opera 2215-close. Still no local IDs out of Fu Jou-580. Anyone wanting more info on proofs of location of PRC-1340 XR for FS, write me directly. Also have noted Kiang Su-700 and Shang Hai-990 returning to the air as Chung Yang J.K.T. after regular close-down (abbreviated hereafter as c/d). This would explain to an extent the multitude of no location R. Peking/CJKT listings in some sources. Proof: frequency of CJKT xmission exactly same as domestic outlet on same freq. Average signal intensity jumps though, implying a DA for signal gains to certain target areas. Much more research remains to be done and still have to acquire a DF loop.

650 DYFL Philippines, Borongan, E. Samar. First time on nearest unheard 1247 8/7. Easily separable from 650 (since it's on 650.901) but much sideband splatter from DZRH, DXOR-650.

690 ... China, Si An, Shen Si. Actually on 689.980. First positive ID at c/d 1620 8/14. Lists say local but ID as "Shen Si JKT" so guess upgraded. Estimated 50 kw.

700 ... China, Nan King, Kiang Su "Kiang Su JKT" at c/d 1445 8/4. Actually on 699.9965. Heavy QRM from VTVN-700 Da Nang. XR c/d at 1445 but returns later as CJKT as per 990. Estimated 50 kw.

770 BEV88 Taiwan, Tao Yuan, Hsien Sheng,KT" noted good 1530 to 1605 close. Unusual ionospheric cx at this time as was alone with Hu Peh below. On 770.033.

770 ... China, Wu Han, Hu Peh. "Hu Peh JKT" noted good alone with BEV88 until 1605 close. Regular but first positive ID.

800 ... China, Si Ning, Tsing Hai "Tsing Hai JKT". Surprised to hear this one at c/d 1535 8/11 through USSR OC below. First time noted ever. Must be 100 kW.On 800.005.

800 ... U.S.S.R., OC through which two other 800 items rode. This XR joins CC barrage into PRC at 1600. Lists show Dushanbe, Tadzhikstan. Can anyone confirm or deny?

800 ... South Vietnam, Quang Ngai apparently the one c/d at 1545 8/11 under USSR OC. Tune in time to hear last few bars of RVN NA followed by the cither solo. That's RVN. Too far under USSR OC to get f/c but very close to 800.

860 BED25 Taiwan, Kao Hsiung, Tai Wan/BED27 Hua Lien both BCC 1st net. Fair to good. Mixed but BED25 probably one atop as propaganto Kao Hsiung superior to propagation elsewhere to Tai Wan. Logged at BCC 1st Net group ID 1601 with calls, freqs, locations, 8/5. 1 kw each. On 859.986 kHz.

918 ... Khmere Republic, Phnom Penh. Has been noted back on air after long absence 6/18 after 1600. Not noted while in Vietnam 69-70. On 917.951.

950 ... China, Fu Jien Prov. Fukien Front Bc St. Positive ID at opening 2010 7/13. //to other FFBS freqs. 820, 670, 930, 950, 1010. 1020, 1380, 1540 and SW with PLA programs. Estimated 10 kW. Right on freq.

955 ... Khmere Republic, Bokor(?) has been // with 918 s since I noted 918 back on. Apparently AN. WRTH-73 lists this with 1 kW. Sounds like 50. Neither this or 918 are positively IDed, but I know Cambodian when I hear it.

990 ... China, Shang Hai municipality, "Shang Hai JKT", positive ID at 1620 c/d 7/11. Cuts carrier which returns at 1625 weaker, as with different DA as per 700. Estimated 50 kw when ND. 989.926 kHz, then back on 990.000 on 8/13.

1076v... Thailand, UnID heard 1430 7/7. Definite Thai language. Jor So 1075. Bangkok listed. Weak to fair.

1107 ... China, Hsia Men (Amoy) Hsia Men JKT IDed on 2nd try, at 1535 closing 7/10. Weak to fair. Estimate 5 kw. Here, not 1115 per WRTH-73. Returns as jammer after closing, probably for BEC30-1110 now here. On 1107.460.

1110 BE.. Taiwan, UnID, can't make out ID. Official list shows BEC23 Tai Pei 1 kw, and BEC 30 I Lan, 5 kw, both Ministry of Nat. Defence. Continues past 1600. On 1109.939.

1110 BEC22 Taiwan, Kin Men Dao, Tai Wan. Opens nightly at 1600 (0000 LT) with NA and announces "Kwang Hua" (Ministry of Defence,Political Warfare group) and "Kin Men KT" followed by two call signs BEC47 and BEC22. WRTH73 shows Kin Men as BEC47-800, but official list says BEC50. Neither shows BEC22 which is probably this freq. although pre-historical ('67) FBIS shows Kin Men BEC29 this frequency. Noted //BED2-750, BEC38-840, and BEC97-1100 in some sort of barrage xmission to mainland a few AMs ago. Does anyone have up-to-date info re this honker? On 1110.031.

1290 ... China, UnID c/d at 1620 8/8. Sounded like Yin Chuan local but too much QRM to be sure. 1290.011.

1310 ... China, re Credo Bisquera's query on 3/24/73 DXWW. No Fu Jien Front Bc. St. is currently here. Probably has moved to 1380 (qv). S.E.Asian list shows Chung King, Szech Wan; Pao Ki, Shen Si; and Tsi Nan, Shan Tung. Choose your favorite.

1320 ... China, Nan-King Kwang Hsi, "Kwang HsiJKT" finally IDed 1433 7/6. Regular but hard due to QRM, het with 1320. Actually on 1319.914.

1380 ... China, Fu Jien Prov., Fu Jien Frong Broadcast St. with PLA [People's Liberation Army] program. Not listed in available lists (possibly ex-1310); positive ID 1400 7/6 is //670. 820. 930, 950, 1010, 1020, 1540, and various SW. All other FFBS close at 2000 to reppen 2010 (summer sked) but this 1380 outlet cuts carrier and doesn't return till LSS 1000 s/on. Speculate that this XR may be used for other purposes. Right on frequency.

1412 BBC Masirah Island, Muscat BBC Relay. Noted here 0130 6/26 right on frequency with BBC General Overseas Service continuously. Thought this was on 1410 where first noted in 70-71. Happened to note 2 kHz higher. Had to search for list on this new frequency; found it in NZRDXL. No ID (at least local) so not positive.

1540 ... China, Fu Jien Prov. Fukien Front Bc. St. First postive ID 2020 7/13. Mixed with BED78 fair. Estimated 10 kW. Now have only FFBS-820 to ID to complete FFBS. Right on frequency.

1575 ... China, Wen Jou, Che Jiang. Positive ID, "Wen Jou JKT" 1505 7/7. IDs twice before cutting carrier. Audible het with someone else on 1575. On 1574.769.

LISTENERS' LOGGINGS--TRANS-ATLANTIC

557 IBA England, London. The General Service station for the Independent Broadcasting Authority, has been allocated this frequency. Will be called Capital Radio.(IBApress release, via Charles Malloy)

719 IBA England, London, London Broadcasting Company, the news station for IBA, will be here. (IBA news release, via Charles Malloy)

764 ... Senegal, Dakar, old familiar muezzin chanting 0605-0611 8/25 for first appearance of the season, that much IDable but soon faded to only a carrier swish thru static. Been looking for it since about 8/1. First appearance in 1971 was on 8/6, in 1972 9/2. My experience suggests it becomes a regular after its initial appearance each season.(GM,C)

818 ... Andorra/Morocco during evening hours (0000-0200) week of 8/13, two stations clearly discernable here, both with FF. TAs are starting!! These are the "tip-off" stations for me. (JMP,E)

818 ... Zambia, Lusaka detectable 8/24 from 0252 tune-in until 0315 fadeout. At one point I noted what was undoubtedly an African selection although it sounded very Mid-Eastern. This would tend to support Denzil Baker's theory concerning the alleged RBC Arabic XMSN. During this same period there was a het on 782 (probably SABC) while earlier at 0230 SUO could be heard under WWV on 2500, and ORTF-Reunion on 2446. (CMS,E)

944 ... Mozambique, Vila Pery. A regional station will open herebefore the end of 1973, with 5 kw. (SCDX)

1151 IBA England. The IBA commercial stations will operate here and 1546; this means the BBC transmitter on 1151 will soon be closing down. The London stations will not for some time (up to 2 years) obtain permission for erecting the necessary directional antennas. The London site will be at Saffron Green, Hertfordshire. (Charles Malloy, via SCDX)

1322 ... Bulgaria,the new high-powered station here has been heard relaying the 2nd programme of the R. Sofia home service. The station is probably located in Vidin, in the NW part of Bulgaria. (SCDX)

1475 ... Mozambique,Joao Belo, a new regional station will open here with 5 kw later in 1973. (SCDX)

1520 BBC England, Nottingham, BBC Radio Nottingham is now operating here with 1 kw. (BBC news release, via Charles Molloy)

1586 WDR West Germany, Langenberg carrier and bits of audio very strong here 0000-0100 week of 8/13, most evenings. Very regular. (JMP,E)

TRANS-PACIFIC

830 JOBB Japan, Osaka 8/6 male JJ, femme ID, IS, ID at 1240, pips at 1300. Fair with noise and fading. KIKI nulled with rock.8/13 male JJ, IS, pips, poor with noise and fading. Noted 8/20 with male JJ, female with ID, IS, ID, fair with noise. KIKI nulled XEVQ s/on 1245. (RS,W)

877 ... North Korea, Wonsan 1255 8/15, male KK, fair with noise. (RS,W)

890 HLKB South Korea, Pusan 1245 8/9, male KK, poor, fading with noise. 8/15 male-female KK, fading in/out with JOHK; both good at times. Another station, maybe CC? Good as last season. (RS,W)

1040 ... China, Shang Hai 1210 8/9 with femme JJ, peaked at 1230. Good with fading, noise. 8/15 1230 with male and female JJ; good with some noise. (RS,W)

1080 K... Alaska, Anchorage. Application for new 10 kw station here by Mt. Susitna Broadcasting Corp, 360 K St, Anchorage, AK 99501. (8/13 Broadcasting, via AMG)

LATIN AMERICA

690 CMBC Cuba, Habana playing classical music with YL for IDs, heard mention of "Radio Enciclopedia". 8/6 0715. (PRM,E)

711 HJFT Colombia, could this be the SS station I heard 7/29 at 0500? Could not be heard while tuned exactly to 710 (KMPC), but only while tuned slightly higher. Was in with fair/poor signal, ID that sounded like "Ecos del Combeima HJFT." Can't really be sure of this one. Have sent out a tentative report. (ASL,W)

860 HILR Dominican Republic,Santo Domingo, R. Clarin fair 8/3 0905-0915 with SS brassy music, and many jingles. Jingle at 0913 had 7 R. Clarin's in it! Occasional deep fades. (KHB,C)

940 XEQ Mexico, D.F. noted in passing with s/off (no NA) 0600 8/21. Quite strong over WINZ. This quite regular, probably the most regular from Mexico City here. (JMP,E)

990 XECL Mexico, Mexicali, BC, 8/21 0521 clear call-in SS atop channel, then several spots and mentions of Mexicali. Atop a couple of stations, including KKIS with baseball but no real sign of CBW until 0600. Spot kept saying "Aloha" in SS (not KTRG, hi). Then variety of music and spots, "R. Mundo" and call mentioned often. Relog, but first time before CBW s/off, so DX CX are gradually returning! (BH,W)

1015 ?? Extremely weak carrier seems to be here AN in mid-July, mid-August period showing up only as a BFO whistle on a SE-NW bearing. R. Colosal, HJDP, was here for 2-3 weeks late June and early July but with the usual strength. Now it appears Colosal has either gone elsewhere or has vastly declined in its usual strength. Meanwhile 1025 is empty in the AM hours, so hasn't returned there. Also am checking 1020 for Colosal. (GM,C)

1030 XEQR Mexico, D.F. in very good 8/12 at 1025. Several R. Centro IDs. Soft Hawaiian music sung in SS. (ASL,W)

1210 ... Brazil, Brasilia. R. Nacional do Brasilia will add 4 languages to its existing broadcasting, already in EE, FF, GG and SS. New languages will be Italian, Arabic, DD, and Swedish, as well as some major African language. The station is acquiring 3 new 250 kw SW and a 500 kw MW transmitter. Officially uses this frequency on MW. Address: R.Nacional do Brasilia, Caixa Postal 1620, Brasilia, D.F., CEP 70000, Brazil. (SCDX)

VERIFICATIONS

725 SRS Surinam, nice v/q-folder received for follow-up with mint stamps in 12 days; v/s just as "Director." Was pleased to get this one back. (JMP,E)

1050 XED Mexico, Mexicali, BC signed by A. Maldonado Sotomayor. Apparently speaks excellent EE. Letterhead had slogan, La Voz de Baja California." U.S. address is P.O. Box 84, Calexica, CA 92231.(ASL,W)

1265 ... St. Kitts, R. Paradise. Matt Zahner, Baltimore, MD, of NNRC and NRC has a first hour of the first day letter verie from 12/72, and Richard Pistek, Chicago, of NNRC reported in 8/73 NNRC bulletin that he also had just received a verie from them. (Cf 8/4 DXWW). (TRS, E and AMG, E)

1331 RAI Italy, Rome, specific v/q in 9 months for taped report. This card has a painting by Bernardo Bellotto. (AMG,E)

1550 4QD Australia, Emerald, Qsld. received a ABC QSL for 4QD. Specific on frequency, location, and call. Quick reply; only took 15 days for 2 IRCs, air both ways. (WLC,C)

REPORTERS

AMG	3	Angel Garcia, Flushing, N.Y.
ASL	3	Albert Lobel, El Cajon, Calif.
BH	1	Bill Hardy, Aberdeen, WA
CMS	1	C.M. Stanbury II, Crystal Beach, Ont.
GM	2	Gene Martin, Denver, CO
JMP	4	Jim Poterba, Yardley, PA
KHB	1	Keith Birlingmair, Elkhorn, WI
PRM	1	Paul Mount, Teaneck, NJ
RS	4	Ralph Sanserino, Huntington Beach, CA
SCDX		Sweden Calling DXers
TRS	1	Tom Sundstrom, Willingboro, NJ
WLC	1	William Larry Cowles, Tucson, AZ

Cambodia Cambodian insurgents attacked Phnom Penh's main overseas radio transmitter near the city's airport August 7. Military sources said the insurgents blew up a major portion of the installation. The hundred men defending the station threw down their arms and ran after insurgents shouted at them to surrender. The Communist force was estimated at 30 men. (AP, via Raoul Duke, who asks if any DXers have been having problems hearing Cambodia recently)

Great Britain BBC's Radio 4 has improved reception in various parts of the country. First, the transmitter at Moorside Edge has been increased from 150 to 300 kW. This transmitter, on 692 kHz, serves some of the most populous parts of the country. The increased power should cut down on QRM from East Germany in the evening. Also, five low-powered stations willl be installed in the south-western part of England. They are Torquay, 854 kHz, Barnstaple, 683 kHz, Plymouth, 1457 kHz,Redruth, 755 kHz, and Exeter. The first three should be in operation in the fall of 1973; Redruth in the spring of 1974. The Barnstaple station will replace the present one on 692.Powers on these five stations were not announced. (BBC Engineering News Release, via Charles Molloy)

LIST AVAILABLE Charles Taylor, of the Philippines, has sent along a list of stations in Tai Wan which he received from their Ministry of Telecommunications. Tai Wan, also known as the Republic of China, is of course the anti-Communist government of China, under the leadership of Chiang Kai Shek. For a self-addressed stamped envelope, sent to FJP, 3266 Nutmeg St., San Diego, CA 92104, this list will be sent to you.

Rhodesia--C.M. Stanbury II
The following communication has been received from Denzil V. Baker in South Africa, "Having just received my copy of DX Monitor, I noted your comments in DX World Wide concerning Rhodesian Broadcasting Corporation's African Service. I have done a bit of checking on both the MW and SW transmissions. It seems that the RBC MW and SW services are still parallel at all times. I am quite mystified about the report that two Quebec DXers have reported that RBC has a new Arabian transmission. There is no need for such a service as the RBC does not broadcast beyond its borders. I can only assume that the "Arabian" transmission is actually the ordinary African Service conducted in either Shoma or Myjanju languages. The times referred to by these two Quebec DXers seem to indicate that this was the extended Saturday night show until 2200 GMT. Normally the African service closes down at 2010 GMT but on Saturday night their time is extended until 2200 GMT. My report of RBC African Service in DXWW of 7 April was indeed of this extended Saturday night service." While Baker's theory that the Quebec DXers mistook an African language for Arabic may be absolutely true, I do have to question his assumption that "RBC" does not broadcast beyond its borders." For one thing, although it has received virtually no publicity RBC has definitely added at least one and probably two new high powered 120 Meter and/or SW XMTRs; including I believe the one which for some reason operates at the 4th multiple of a Salisbury BCB outlet - 584 kHz which although listed as the General Svc. was logged on one occasion carrying the African svc. RBC's power boosts on frequencies above the BCB would certainly improve reception in other African nations. Also, in view of its NA reception, we might wonder whether the power of the 584 outlet hasn't been beefed up also.

RHODESIA BROADCASTING CORPORATION

Sa.01.07/249

P.O. Box HG.444,
Highlands,
Salisbury.

23 July 1973.

Mr. D.V. Baker,
85 Percy Osborn Road,
Durban.
Natal.

Dear Mr. Baker,

Thank you for your letter, undated, concerning the African Service transmission which you are receiving in your area.

This transmitter is brought into operation at night in the winter months, during the present period of low sunspot activity. We have provided this transmission as an alternative to our normal 90 metre night transmission used for internal coverage, which during the trough of the sunspot cycle, tends to skip at distances less than about 500KM. Incidentally, this medium wave service operates on the reflected wave.

The frequency is 999 KHZ., and the power is 100KW. The transmitter is located at Gwelo in the Midlands area of Rhodesia.

Yours sincerely,

J. Grahame
CHIEF ENGINEER.

LAST MINUTE REPORTS-- Ron Schatz, Miami, FL

1160 ZNS3 Bahamas, Grand Bahama still using old call despite independence.
1550 WRIZ FL, "only Cuban station in U.S." is being jammed by Cuba.
1548 ??? UnID Radio Atalaya is heard evenings; somewhere near Guatemala.

(7)

BBC
Engineering Information Service

BBC LOCAL RADIO TRANSMITTING STATIONS

Station	MF Metres	MF kHz	MF kW
BBC Radio Birmingham	206	1457	1*
BBC Radio Blackburn	351	854	0.5*
BBC Radio Brighton	202	1484	1
BBC Radio Bristol	194	1546	2*
BBC Radio Carlisle (main)	397	755	1
(relay)	206	1457	0.5
BBC Radio Derby	269	1115	0.5
BBC Radio Humberside	202	1484	2
BBC Radio Leeds	271	1106	1
BBC Radio Leicester	188	1594	0.5
BBC Radio London	206	1457	20
BBC Radio Manchester	206	1457	1*
BBC Radio Medway	290	1034	0.5
BBC Radio Merseyside	202	1484	2
BBC Radio Newcastle	206	1457	2
BBC Radio Nottingham	197	1520	1
BBC Radio Oxford	202	1484	0.5
BBC Radio Sheffield (main)	290	1034	1
(relay)	-	-	-
BBC Radio Solent (main)	301	998	1
(relay)	188	1594	0.25
BBC Radio Stoke-on-Trent	200	1502	0.5
BBC Radio Teesside	194	1546	0.25*

Notes

1. The mf service at Derby will open later.
BBC Radio Carlisle (mf and vhf) will open in 1973.

2. Powers marked * will be increased at a later date.

IRCA FOREIGN LOG, Vol. 2

The Editor of the Foreign Log was on vacation during the month of August, so publication of the new volume was delayed slightly. The copy is almost ready now to go the the printers. You still have the opportunity to order your copy now, so that it will reach you as soon as it comes off the press. The cost to members will be $3.00. For those who didn't get a copy of Vol. 1, a special combination offer is being made--get both volumes, each entirely different, for the price of $5.00. Between the two books, over 1500 foreign stations are listed, with times and dates of reception, programming, slogans, and other useful information. This is a must for the foreign DXer, or for that matter, for any MW DXer. Send your check or money order either to FJP or to SDPC HQ.

CLUB NEWS

President's Report

Beginning as soon as you read this, members should send all correspondence concerning the President to President Elect Richard C. Evans (P.O. Box 2048, Gary, IN 46409). Most of the files have been sent to Rick. By mutual agreement between Rick and myself it has been decided to have Rick make the appointments discussed below. This he will do on or after September 15, 1973. We made this arrangement to facilitate a smooth administrative change.

The following positions are open in the IRCA. Unless otherwise noted, deadline for receipt of applications is September 15, 1973. IRCA Application Forms are available free from Rick Evans and completed forms should be sent to to him.

Positions Available

Elections Committee Chairman--responsible for conducting Club elections

Eastern DX Roundup Editor--types up members' DX loggings

Verification Signers Editor--will list the QSL signers from BCB stations as compiled from members' submissions

Graveyard Records Editor--no deadline set. Mike Hogan has resigned due to lack of time. Task involves listing the furthest reporter for GY stations, based on submissions by IRCA members.

Verie Editor--no deadline set. Write Rick for details

DXWW World Wide Editor--Father Jack has resigned due to obligations in his role as Editor-In-Chief. This is an extremely important editorship and Rick would like to hear from as many applicants as possible. It is understood that FJP will continue until a replacement is found.

Respectfully submitted, Terry R. Kesteven

President/August 19, 1973

1973 IRCA ELECTION RESULTS

President-- Richard C. Evans 141

Eligible Write-in Candidates:

Donald Erickson	6
Grant Manning	2
Credo Bisquera	1
Dave Christensen	1
Larry Godwin	1

Secretary-Treasurer-- Carl "Skip" Dabelstein 131

Eligible Write-in Candidates:

Larry Godwin	6
Don Erickson	2
Ron Hayter	1
Len Lockwood	1
Joe Markewicz	1
Keith Mehl	1

Board of Directors:

1. Percy Kesteven	117	Joe A. Worcester	12
2. Father Jack Pejza	116	David Shapiro	11
3. John Zondlo	75	Kevin L. Slater	10
4. Nancy Gantzer	74	David P. Stroup	10
5. Bill Nittler	66	Albert S. Lobel	5
6. Bob Foxworth	62		
7. Edward Krejny	62	Eligible Write-in Candidates	
Tom Sundstrom	60		
Dave Faulkner	60	Grant Manning	17
Bruce Portzer	56	Don Erickson	4
Michael G. Worst	50	Greg Allinson	3
Bill Lipis	48	Larry Godwin	3
C.M. Stanbury II	41	Dave Christensen	2
Carol Schweiger	32	Russ Edmunds	2
Steve Taafe	30	Page Taylor	2
Cathy Woodruff	29	H.W. "Hank" Ward	2
Larry Flegle	22	Bruce Heimburger	1
Dave Rogers	21	George Kesteven	1
Joseph W. Plonka	14	Bob Kramer	1
Andrew Hecker	13	Jay Murley	1
Mike McCullough	13	Jim Poterba	1

Proposals:	Favor	Oppose
5.2-25 Amend Bylaws Article V, Section 3, Part 3	136	20
5.2-28 Amend Bylaws Article V, Section 3, Part 5	139	16

Total ballots counted: 168

Dave Prather, Elections Committee Chairman

HAMMOND '73 IN REVIEW

Hammond '73 is now a memory, but it had many great moments while it lasted. 51 people attended the convention, with 42 of them being IRCA members. The other 9 were a mixture of member's families and members of other clubs.

Don Erickson was the first to arrive, surprising the committee by showing up Sunday, August 5. Dave Shapiro arrived Wednesday night, and many others arrived Thursday. The majority of those attending arrived on the opening day, August 10.

Friday was left open for informal discussions, except for an afternoon tour of WJOB 1230 Hammond.

The majority of convention events occured Saturday, August 11. At approximately 11:15AM about 15 people gathered for the station tours. The stations visited were WWCA Gary, WLTH Gary and WYCA Hammond. The evening activities began at 7 with the banquet, which was held in the meeting room. Following the banquet, the guest speaker was Warren Shulz, CE at WFYR Chicago. Mr. Shulz spoke on automation in broadcasting, and also brought along computer printouts and other materials to describe the workings of automation.

Following a short break, the conventioneers gathered in the meeting room for the IRCA business meeting. Larry Godwin conducted the meeting in place of Pres. Percy Kesteven, who did not attend. Topics of discussion included committee reports and comments on the offset printed DXM. In addition, a letter was received from Al Reynolds, ANARC Executive Secretary Al Reynolds, telling us of a resolution passed at their San Diego convention wishing us good luck with Hammond '73. A resolution commending Don Erickson for his work and devotion as IRCA publisher for 5 years was submitted by John Zondlo, and passed unanimously by those present. Results of this year's elections were also announced, and can be found elsewhere in this DXM.

A short break ensued after the business meeting, then back to the meeting room for the IRCA Auction. Al Ogrizovich did an excellent job as auctioneer, with Roger Winsor as an outstanding fill-in when AWO had to head for work. $148.53 was garnered in this year's auction, which included many surveys, handbooks and coverage maps for sale, along with many gag prizes (not all of which I should print, hi.)

Around midnight, 14 members headed out to George Boulles' home in Highland, Indiana for a DXpedition. Several interesting catches were made, but after about an hour or so the static + mosquitoes became so intense that many headed back to the motel.

Sunday's main activity, the IRCA softball game, began around noon at Wedgewood Field in Hammond. A team composed chiefly of CADX members opposed the Assembled Multitude, which included such standouts as Larry Godwin, Randy Minnehan and many others. CADX slipped by the Multitude 13-11 in a four inning game, thanks much to the inept fielding of the CDXF editor (whose name suddenly escapes me). Rumor had it that CADX quit while ahead in fear of the Multitudes hitting prowess. Following the game many members headed for home, while several others populated the meeting room til closing time at 6PM.

Money left over from the convention fund, $58.13, will be put in the club treasury.

Hammond '73 may well go down as the best publicized IRCA convention yet. 3 articles appeared in the Hammond Times, along with shorter articles in the Calumet News and Gary Post-Tribune. Convention committee members were interviewed on WJOB Hammond, WYEN Des Plaines, IL, WCGO Chicago Heights, IL and WYCA Hammond. Announcements of the convention were also aired on local radio and TV stations.

Convention guides are available for the asking from John Zondlo, as is a tape of the IRCA business meeting and auction. Mike Hogan has a tape of the interview done on WJOB which I'm sure he'd dub off a copy of for you. Just send along a 60 minute cassette to him.

We sincerely hope that all attending Hammond '73 had a good time, and best wishes to those planning to bid for next year's convention. Hammond '73 Convention Committee: John Zondlo, Rick Evans, Al Ogrizovich, George Boulles, Mike Hogan and Robert Kramer.

Minutes of the IRCA Business Meeting
Hammond -- August 11, 1973

In the absence of President Percy Kesteven, Secretary-Treasurer Larry Godwin called the meeting to order at 9:00 PM, CDT. He welcomed the DXers present, and read greetings from Percy. He then called for officer and committee reports.

Secretary-Treasurer Larry Godwin reported the membership stands at 454, compared to 466 last year. Over the past two years, the proportion of members receiving the bulletin by airmail and first-class has greatly increased. Last season the DX Monitor contained 500 sheets, compared to 513 for 1971-72 and 483 sheets the season before that. Of the 300 1972 Foreign Logs printed, 256 have been sold at a profit of $295. Financial statements for the fiscal year ended 8/31/73 will be printed in the DX Monitor soon.

Contest Committee Chairman Rick Evans reported on the season's contests and announced winners.

Countries List Committee Chairman Mike Worst reported by mail that he has 5 active members. The latest committee activity was the 1973 Countries List, printed in the 5/19/73 DX Monitor.

Courtesy Programs Committee Chairman Randy Minnehan presented his report. During the season, he had 38 committeemen, of whom 6 were quite active. The proposed CPC contest was cancelled due to lack of interest, and the agreement with NRC regarding the assignment of frequencies between NRC and IRCA has been dropped. More members are needed, especially to arrange tests on the West Coast.

A written report from Elections Committee Chairman Dave Prather was read, announcing the outcome of recent elections of officers and balloting on proposals.

New Member Welcoming Committee Tom Hartloff reported by mail that his 11 active members endeavor to contact each new member as he joins IRCA, explaining club policies, how to best utilize the DX Monitor, and encouraging support for the various columns. Anyone who likes writing letters can join, but committee membership is near maximum at present.

In the absence of Publishing Committee Chairman Grant Manning, Larry Godwin reported on the new proposed offset format. The club has budgeted 480 equivalent mimeo sheets by offset for the new season, compared to 500 sheets last season. We plan to publish 28 1-oz. bulletins and 6 2-oz. issues. We are not planning to use mastheads or envelopes; our current masthead supply ($250) will be written off as a loss. Production costs of offset will be slightly less than mimeo, and dues rates will remain the same. We plan to sell the new mimeo machine purchased a year ago.

Richard Wood mailed a report concerning ANARC (Association of North American Radio Clubs). Our club's representatives to ANARC are Richard, Jack Pejza, and Percy Kesteven. Al Reynolds was elected ANARC Secretary General during the year. IRCA members can help our reps by commenting on current ANARC issues discussed in the periodic ANARC reports in the DX Monitor. The purposes of ANARC are to foster inter-club cooperation, and to acquaint the general public and radio equipment manufacturers concerning the interests and needs of DXers on all bands. The recent ANARC convention held in San Diego was highly successful.

Following the committee reports, John Zondlo read the text of a resolution from the ANARC convention.

Another proposed resolution, authored by Jack Pejza, was read. The resolution, to be sent to the IRCA Board of Directors for approval, would commend Don Erickson for his contributions to the club as Publisher and Editor-in-Chief, would provide for a suitable plaque to be presented to Don, and would give Don a free membership to IRCA for one year.

Larry Godwin summarized a proposal that would grant written and taped verifications equal status in all IRCA columns, contests, and activities. This proposal also will be sent to the Board for a vote.

The meeting was adjourned at 9:23 PM, following the recognition of Credo Bisquera as the IRCA member from the most distant point who attended the convention.

IRCA Auction Report

Following the business meeting, the annual IRCA auction was held. Twenty-nine members and guests purchased 71 items, adding $148.53 to the club treasury. The biggest spender was Dave Shapiro ($29.06).

The auction netted the club considerably less than the $294 last year. However, a sizeable convention registration overage is expected to narrow the difference.

---Secretary-Treasurer, Larry Godwin

FINAL CONTEST STANDINGS

DOMESTIC HEARD

$5.	R. Kramer, Ill.	2070 pts.	56 S&P	219 stns.
$3.	B. Nittler, Neb.	1876	46	199
$2.	B. Portzer, Wash	1654	46	183
$1.	F. Hendricks, Ill	1604	46	190
5.	R. Mayhew, Queb.	1603	45	171
6.	T. Sundstrom, NJ	1574	44	181
7.	D. Oliphant, Alb.	1327	42	159
8.	M. Breger, Texas	1147	46	156
9.	R. Eddie, Mo.	1145	45	149
10.	F. Wheeler, Pa.	1129	42	148
11.	J. Boyd, Okla.	1039	39	135
12.	B. Cartwright, PA	1015	41	125
13.	M. Hogan, Ind.	916	39	129
14.	J. Zondlo, Ind.	874	36	116
15.	A. Napier, Fla.	873	33	115
16.	K. Horne, B.C.	741	31	86
17.	Q. Brown, Ont.	376	22	49
18.	D. Christensen, WA	307	8	32
19.	P. Daplyn, Ont.	284	16	35
20.	C. Gill, NY	275	17	38
21.	J. Boncek, NY	190	21	34

DOMESTIC VERIFIED

$5.	R. Kramer, Ill.	1145 pts.	47 S&P	144 stns.
$3.	K. Forth, Ill.	1047	42	133
$2.	F. Hendricks, Ill	498	26	64
4.	R. Eddie, Mo.	393	32	71
5.	B. Bailey, NY	290	23	45
6.	J. Zondlo, Ind.	251	27	48
7.	R. Mayhew, Quebec	166	17	29
8.	B. Portzer, Wash.	159	16	26
9.	P. Daplyn, Ont.	138	11	24
10.	J. Boncek, NY	73	12	17
11.	C. Gill, NY	57	11	16
12.	M. Coffin, B.C.	55	13	15
13.	M. Hogan, Ind.	25	8	9
14.	B. Scully, Calif.	3	2	2

FOREIGN VERIFIED:

$5.	Q. Brown, Ont.	942 pts.	15 count.	20 stns.
$3.	R. Minnehan, Ohio	487	8	10
3.	B. Portzer, Wa.	431	5	9
4.	L. Abraham, Mich.	414	5	9
5.	R. Eddie, Mo.	225	3	5
6.	M. Coffin, B.C.	172	3	3
7.	R. Dildine, Va.	63	1	1

No entry: M. Hogan

LIST OF MYSTERY STATIONS FOR THE 1972-1973 CONTEST

	VERIFIED	HEARD		VERIFIED	HEARD
AL	WBLO-1470	WJRD-1150	NM	KZIA-1580	KTNM-1400x
AK	KYAK- 680	KFQD- 750x	NY	WIRD- 920	WOLF-1490x
AZ	KVSL-1450x	KSWW-1250	NC	WKYK-1540	WETC- 540
AR	KBTA-1340	KLCN- 910x	ND	WDAY-970	KEYZ-1360
CA	KMAK-1340	KPRO-1440x	OH	WFRO- 900	WLW - 700x
CO	KGMC-1150	KNAB-1140	OK	KTAT-1570x	KSEO- 750
CT	WRYM- 840	WEXT-1550x	OR	KUMA-1290	KAST-1370x
DE	WAMS-1380	WILM-1490x	PA	WBCB-1490	WWRF-1400
DC	WRC- 980x	WOOK-1340x	RI	WNRI-1380	WPRO- 630x
FL	WDBO- 580	WSBP-1580	SC	WINH-1470	WBER- 950
GA	WJAZ- 960	WVOP- 970x	SD	KCCR-1340	KDSJ- 980
HI	KUAI- 720	KGU- 760x	TN	WBOL-1560	WIXC-1140
ID	KID- 590	KSEI- 930x	TX	KWBA-1360	WOAI-1200
IL	WDWS-1400	WMCL-1060	UT	KSUB- 590	KRGO-1550x
IN	WCMR-1270	WBAT-1400x	VT	WCVR-1320	WVMT- 620x
IA	KCOG-1400x	KOAK-1080	VA	WYVE-1280	WRAD-1460x
KS	KGGF- 690	KJCK-1420	WA	KAYO-1150	KMU -1360
KY	WLBN-1590x	WHAS- 840x	WV	WRON-1400	WELC-1150
LA	KVOL-1330	KCIJ- 980x	WI	WOSH-1490	WNFL-1440
ME	WGAN- 560	WSME-1220	WY	KTWO-1030	KVRS-1360
MD	WMHI-1370	WHAG-1410x	AL	CJCA- 930	CHAT-1270x
MA	WTTT-1430	WCAS- 740	BC	CHUB-1570	CJOR- 600
MI	WYYY-1470	WALM-1260	MA	CKSB-1050x	CJOB- 680
MN	KQRS-1440	KTCR- 690	NB	CFNB- 550	CBD -1110
MS	WKCU-1350	WACR-1050	NF	CBT - 540	CBNA- 600
MO	KSIM-1400	WEW- 770x	NWT	CFFB-1210	CHAK- 860
MT	KOJM- 610	KHDN-1230	NS	CKBW-1000	CBH - 860
NE	KBRX-1350x	KCNI-1280	ON	CFCO- 630x	CKLB-1350
NV	KORK- 920	KOLO- 920x	PEI	CFCY-630	CFCY- 630
NH	WBBX-1380	WWNH- 930	PQ	CJRP-1060x	CHLN- 550
NJ	WCAM-1310	WERA-1590	SA	CKKR-1330	CJNB-1050
			YT	CKRW- 610	CFWH- 570

x = reported!

DX RECORDS

Bruce Portzer, 14056 5th Ave. South
Seattle, WA 98168

Explanation of format

Name, location	CH	TSH	TFH	NA	SA	EU	AS	AF	OC	YR
	Best	Africa			Best	Oceania				

CH=countries heard, TSH=total stations heard, TFH=total foreign heard, NA SA EU AS AF & OC are the number heard from North America, S. America, Europe, Asia, Africa, and Oceania. YR is year began DXing. An asterisk * after the location means it's time to update your totals.

1. Bill Willis, Calif.	74	1294	299	148	53	21	47	1	26	60
	Dakar-764				4GM-1570					
2. Larry Godwin, Colo.	65	1250	402	139	152	18	13	2	48	57
	Freetown-1205				2VM-1530					
3. Eugene S. Allen, Calif.	60	3521	513	26	11	2	7	2	12	23
	Dakar-764				6WF-690					
4. Jerry Osborne, Ont.	54	863	210	101	58	43	3	8	-	65
	Agadir-1196									
5. Bill Raczko, Ohio *	53	1196	254	123	62	20	-	4	1	
	Freetown-1205				KORL-650					
6. Tom Sundstrom, N.J. *	53	833	176	77	23	50	1	7	2	57
	Bayda-1124				VSZ1-844					
7. Dr. Michel Breger, NY*	49	895	194	62	81	44	-	6	1	
	Morocco-611				KORL-650					
8. Jim Poterba, Penna.	46	1275	146	102	27	11	1	4	1	71
	Morocco-818				KORL-650					
9. Bruce Portzer, Wash.	42	1148	220	109	20	2	50	1	38	64
	Dakar-764				3YW-1460 2kw					
10. Jay Murley, Calif. *	42		191	88	32	5	38	-	28	48
					VQO-1030					
11. Father Jack Pejza, CA*	40	671	223	124	35	1	31	-	32	68
					3YW-1460 2kw					
12. Larry Abraham, Mich.	35	1250	183	110	70	2	-	-	1	60
					KORL-650					
13. Jerry Monroe, N.Y. *	30	680	90	40	32	15	-	2	1	71
	Algeria-529				KORL-650					
14. Dave Whatmough, Ont. *	28	1662	86	76	3	4	-	1	2	65
	Dakar-764				KAHU-940					
15. Jon Pearkins, B.C.	28	750	97	56	11	-	17	-	13	64
					3LO-770					
16. Ernie Wesolowski, Neb.*	27	1549	82	64	5	-	2	1	7	58
	Dakar-764				4YA-780					
17. Brian Cartwright, Pa.	27	1296	112	92	15	5	-	-	-	
18. Robert L. Neal Jr., Ca.	27	612	93	56	15	-	5	1	16	67
	Dakar-764				VSZ1-844					
19. Frank Wheeler, Pa.	26	2715	139	119	16	2	-	-	2	31
					1YA-760					
20. George W. Jensen, Md.*	26	590	77	61	13	3	-	-	-	52
21. Bill Migley, Ohio *	26	576	76	52	21	2	-	-	1	
					KORL-650					
22. Grant Manning, Calif.*	24	538	144	90	25	1	22	-	6	57
23. Andy Hecker, Calif. *	21	535	59	47	6	2	8	-	11	68
					1YA-760					
24. Joe Markewicz, Man.	20	782	85	59	21	1	-	-	4	67
					KTOH-1350					
25. Allen Napier, Fla. *	20	620	139	113	26	-	-	-	-	68
26. Richard T. Eddie, Mo.*	19	1074	58	48	9	-	-	-	1	67
					KORL-650					
27. Elliot Strauss, N.J.	19	883	143							
28. Tim Saltmarsh, N.H.	19	542	55	33	20	1	-	1	-	71
	Algeria-529									
29. Ralph Kemper, Colo.	17	1024	118	101	15	-	-	-	2	68
					KGU-760					
30. Dave Christensen, Wa.	17	569	65							68
					Fiji-890					
31. James L. Pitts Jr., Cal.	17	544	94	69	11	-	4	-	10	70
					KMVI-550					
32. Nancy Gantzer, N.Y.	16	805	43	29	13	1	-	-	-	69
33. George Greene, Ohio	16	709	39	33	4	1	-	-	1	60
					KORL-650					
34. Mike Hardester, Calif.	16	389	53	29	6	-	9	-	9	68
					VSZ1-844					
35. John Tull, Mo. *	16	300	29	24	5	-	-	-	-	70
36. Stephen Francis, Tenn.*	15	958	82	68	14	-	-	-	-	70
37. James P. Mohler, Iowa *	15	55	16	12	3	-	-	-	1	69
					KIKI-830					
38. Richard Ryrholm, Ohio	14	1186	39	31	8	-	-	-	-	69
39. Cathy Woodruff, Ohio *	14	541	28	24	4	-	-	-	-	69
40. Ron Hayter, B.C.	14	476	50	27	2	-	10	-	11	69
					2YC-660					
41. Robert Buddenbohn, Md.*	13	994	86	67	19	-	-	-	-	67
42. Ken Horne, B.C. *	13	530	67	46	-	-	27	-	4	68
					KTOH-1350					
43. Budd Bailey, N.Y. *	13	371	25	20	5	-	-	-	-	71
44. David Peterson, Ill.	12	741	40	33	7	-	-	-	-	70
45. Richard Mayhew, Que.	12	608	17	13	4	-	-	-	-	69
46. Houser Crain, Ill.	12	100	54							67
47. Robert Kramer, Ill.	11	989	31	24	6	-	-	-	1	70
					KORL-650					
48. Larry Flegle, Fla. *	11	340	15							72
49. Darryl Belanger, Man.	10	515	35	30	4	-	-	-	1	64
					KPUA-970					
50. Parker Moore, B.C. *	10	386	42	26	2	-	8	-	6	68
51. Keith Birlingmair, Wis.	9	245	28	18	10	-	-	-	-	
52. Thomas White, Va *	8	422	6	5	1	-	-	-	-	68
53. John Zondlo, Ind. *	7	660	11	7	4	-	-	-	-	70
54. Jeff Brasier, Calif.	7	350	46	40	2	-	3	-	1	72
					KIKI-830					
55. David Oliphant, Alta. *	7	304	18	15	1	-	-	-	3	69

Note the new format this time. This one should be more compatible with the two column offset style than the old format was. Comments and suggestions on other ways this column could be formatted would be greatly appreciated. Next time stay tuned for best verified from Delaware, Georgia and Hawaii, followed by a listing of everybody's most distant verie. If you haven't told me what your most distant verie is, do it now while you're thinking of it. 73 till next time and good DX.bp.

(CDXF continued from Pg. 4)

Carl "Skip" Dabelstein-3300 N. 56th St.-Lincoln, NE 68507

I was sorry that I was unable to attend the convention. For the fifth year in a row my summer camp with the Army Reserves was held at Ft. Knox during the convention. Veries have been coming in quite well during the summer months. Totals have risen to 1,462 with the addition of the following: WMOB, KIND, KSOP, TICAL, KMER, WPEH, KRWB, KZRK, WJBC, KAFF, KEND, WNVL, KVPI, KINE, WROB, WFIX, KBGO, KWPC, KHYM, KRDO, KTRF, WAAO, XELZ, KTTS, XET, KCHF, WBRI, WMOO, HJKA, KLBK, XEUN, all v/l's. V/f: WATM, WUNI, KIRL, WXYZ. V/q: 4QD, CHEX, WGBS, WCOX, WWWE, KBOW, SRS. V/cm from WEAS, KSSS. V/ppc from WEVE, KWOW, KSEO, KCNW. Wouldn't it be nice if during the upcoming DX season we could eliminate the anti-veries, veries vs. tapes, and club democracy vs. dictatorship garbage that has taken up so much space in this section during the last couple of years? 73's

Steve Taaffe-127 Morris Hall, V.U.-Vincennes, IN 47591

Greetings everyone. The convention was great and was good to see, Credo, Pat, Bill and Dave plus DEE all make from the WC. The convention planners did a great job in organizing the convention and AWO and RWW deserve some credit on the auction. It was also good to see LBG and his girlfriend make it from Colorado. There was quite a bit of excitement in room 303 where the beer was, naturally, hi. Before the convention I had the great fortune of traveling out to the "mile high city" of Denver and enjoyed visiting Gene Martin plus while at Denver I visited Denver University and later that week went down to Canon City to visit Blake Lawrence who was doing his gig at KKAM. Also by coincidence George Greene from Akron, Ohio was at BWL's, small world. School will be in progress when you read this and I've decided after talking to many members at the convention to count my totals from Dayton, Ind. plus here in Vincennes. Several people are doing this or have done it. Out of 400 stations logged here in Vincennes only 44 are new ones I haven't heard in Dayton, so the totals stand at 1350/482, 49/48, 9/9, 30/11. Only verie is KLAK from the trip. V/s is Art Ortega. 73's from VU.

Credo A Bisquera-IRCA Hammond Convention

I'm taking this opportunity to contribute to CDXF since I'll probably never have a chance again. Reading the Central & Eastern DXFs will have more meaning now that I have met some of you. I'm having a ball logging stations that I don't ever expect to hear in Hawaii. Congrats to all the new officers and new board members. Also, orchids are in order for the Hammond '73 Convention Committee for a ob well done! Aloha--

Keith Birlingmair-Rt. 2, Box 20-Elkhorn, WI 53121

Greetings. Note new address. On the subject of tape veries: If the DXer records his own voice along with the station, then it can be considered proof that he himself heard the station. Location, tho, is much more difficult. For example, if I had recorded WWCA-1270 while in Hammond, nobody could have proved that I had not heard it from Elkhorn. That's a poor example, tho, because the other members who came know I was there. I think you see what I mean, tho.

(Continued on Pg. 16)

IRCA CONSTITUTION and BYLAWS

CONSTITUTION OF THE INTERNATIONAL RADIO CLUB OF AMERICA, INC.

(In effect August 19, 1973)

ARTICLE I - NAME

The name of the organization shall be the International Radio Club of America, Inc.

ARTICLE II - PURPOSE

The purpose of the International Radio Club of America shall be to promote the hobby of radio listening on the AM Broadcast Band)

ARTICLE III - MEMBERSHIP

Membership in the Internation Radio Club of America shall be open to anyone in any nation interested in the hobby of broadcast-band DXing.

ARTICLE IV - DUES

Dues in the International Radio Club of America shall be enacted on an annual basis, the amount to be determined by the appropriate governing body, to be known as the Board of Directors.

ARTICLE V - OFFICERS

The government of the International Radio Club of America shall be comprised of the following officers:

1. President
2. Secretary-Treasurer
3. Board of Directors (seven members)

ARTICLE VI - ELECTIONS

Elections for President, Secretary-Treasurer, and Directors will be held every two years.

ARTICLE VII - CONVENTIONS

The one official internationl meeting of the International Radio Club of America shall be the annual convention.

ARTICLE VIII - AMENDMENTS

Amendments may be made to this Constitution by submitting a proposal in written form to the President of the International Radio Club of America at least 60 days prior to the beginning of the annual convention. To become enacted (as) an amendment, the proposal must receive a full hearing before the members assembled at the business meeting at the annual convention, and announcement must be made at that time to express the intent to have the full club membership vote on the proposal. In addition, to become enacted, a proposal must receive a two-thirds majority of the total club membership..

BYLAWS OF THE INTERNATIONAL RADIO CLUB OF AMERICA, INC.

(Revised to August 19, 1973)

ARTICLE I - NAME

The name of this organization shall be the International Radio Club of America, Inc. and the official abbreviation IRCA may be used in referring to this organization.

ARTICLE II - PURPOSE

The purpose of the IRCA shall be to promote the hobby of radio listening on the AM Broadcast Band, 510 to 1630 kiloHertz.

ARTICLE III - ELECTION OF OFFICERS

Section 1 - Frequency of Elections; Term of Office

Regular elections shall be held in odd-numbered years to elect the officers listed in Article V of these Bylaws, including the Chairman of the Board. All terms of elective office shall begin at 0001 Mountain Local Time, on September 15 of odd-numbered years (or, in case of replacements, at 0001, Mountain Local Time, on the date of the DX Monitor in which the results of elections are announced), and shall expire at 2400, Mountain Local Time, on September 14 of odd-numbered years.

Section 2 - By Whom Elected

Part 1 - The President and Secretary-Treasurer shall be elected by the membership at large. Each member in good standing shall have one vote for each office.

Part 2 - The seven members of the Board of Directors shall also be elected by the membership-at-large. Each member in good standing may vote for seven of the candidate seeking Directorships.

Part 3 - The Chairman of the Board of Directors shall be selected by the Directors on the Board in accordance with Article III, Section 6.

Section 3 - Eligibility to Hold Office

Any member in good standing, regardless of where he lives, shall be eligible for regular election to any office provided he has held one year's continuous membership in the IRCA as of April 15 of the election year. For purposes of special elections, the requirement shall be one year's continuous membership as of the effective date of vacancy of the office in question, such date to be determined by the President. It is not necessary for an eligible member's name to be printed on a ballot for him to be elected.

Section 4 - Authority for Elections

The Election Committee Chairman (ECC), appointed by the President and confirmed by the Board, shall handle all aspects of all elections of officers, whether regular or special, with complete authority.

Section 5 - Regular Elections; Procedures and Dates

Part 1 - The President shall be responsible for announcing in the DX Monitor full details concerning the upcoming elections approximately February 15 of election year.

Part 2 - Nominations shall be open for President, Secretary-Treasurer, and the seven members of the Board of Directors from March 1 through April 15. Only one nomination each for President and Secretary-Treasurer, and only seven nominations for the Board, shall be allowed each IRCA member. All nominations must be submitted in written form to the ECC by April 15.

Part 3 - As soon as possible after April 15, the ECC shall send to the Secretary-Treasurer a list of all nominees. The Secretary-Treasurer will return the list to the ECC as soon as possible, indicating which nominees have been members in good standing for the required one-year period.

Part 4 - The ECC shall notify by letter all eligible candidates concerning their nomination by May 1. Each letter of nomination shall contain the names of all eligible members who have been nominated for the particular office in question. Such letters must stress that the nominee must reply in writing if he accepts the nomination, and each such letter must request from each nominee a campaign statement, not to exceed 15 stencil lines, to appear in a June issue of the DX Monitor. However, a nominee is not required to submit a campaign statement provided he has duly notified the ECC of his intention to run for office. An IRCA member may be nominated for more than one office, but he must decide for which he prefers to run and so notify the ECC. A nominee who has indicated his intention to run for an office may not be considered as a write-in candidate for another office in the same election.

Part 5 - All letters of acceptance of the nomination, and all campaign statements, must reach the ECC by May 20. The ECC shall prepare the ballot and the campaign statements and submit them to the Publisher by June 1. Ballots shall contain spaces for write-in candidates.

Part 6 - Elections: Ballots and the printed campaign statements are to be mailed to all members via first class mail separate from the June issue of DX Monitor, and are to be postmarked during the second calendar week of June of the election year.

Part 7 - The ballots are to be returned to the Election Committee Chairman prior to August 1.

Section 6 - Election of the Chairman of the Board

The ECC shall ballot the Board of Directors soon after each regular election to determine the Chairman of the Board, who will be the spokesman for the Board and will be responsible for assuming the President's office in case it is vacated during the current term. In the event the Chairman of the Board becomes Club President, he shall be required to resign his Board position. The ECC shall then ballot the Board of Directors again to determine the new Chairman of the Board.

Section 7 - Special Elections of Officers

In the event the Secretary-Treasurer, the Chairman of the Board, or a regular Director on the Board resigns, or in any other circumstance requiring a special election of officers, a special election shall be conducted as soon as possible by the ECC, in accordance with the relevant procedures outlined above. If advisable, the various deadline dated fixed in Article III, Section 5 shall be altered by the ECC, but the relative timing of the various procedures will be retained.

Section 8 - Determining Winners

The seven eligible members who receive the most votes cast shall be deemed winners during a regular election of the Board of Directors. In all other elections, whether regular or special, the eligible member who receives the most votes cast shall be declared the winner.

Section 9 - Ties in the Balloting; Insufficient Nominees

Part 1 - In the case of a tie in the balloting for President or Secretary-Treasurer, the Board of Directors (to be polled by the ECC) shall break the deadlock. In the case of regular elections, such deadlock shall be broken by the newly-elected Board members.

Part 2 - In the case of a tie in the balloting for the Board of Directors, a run-off election among the persons who tied will be executed immediately by the ECC. In the event there is a tie in the run-off election, the elected members of the Board shall determine the winner. A deadlock in the Board voting shall be broken by the President, or in the event his office is vacant, by the Secretary-Treasurer.

Part 3 - In the case of a tie in the balloting for the Chairman of the Board, the President (or in the event his office is vacant, the Secretary-Treasurer) shall cast the deciding vote.

Part 4 - In case no persons are nominated to fill the office of President or Secretary-Treasurer, or in case fewer than seven eligible members are nominated to the Board of Directors, and no eligible write-in candidate(s) is (are) declared the winner(s), the Board shall select the officer(s) in the best manner they see fit.

Section 10 - Announcement of Results of Elections

The results of all regular and special elections shall in all cases be announced by the ECC in the DX Monitor within 30 days after the deadline for receipt of ballots. If it may be done in a timely manner, the election results shall first be announced by the ECC or his appointee at the annual business meeting.

ARTICLE IV - DUES

Dues will be collected on an annual basis and the amount will be subject to change by the action of the Board of Directors. The Secretary-Treasurer will be in charge of collecting dues.

ARTICLE V - OFFICERS AND DUTIES

Section 1 - Officers

The government of the IRCA shall be comprised of the following officers: President, Secretary-Treasurer, and seven members of a Board of Directors.

Section 2 - Duties of Officers

Part 1 - President

a. Shall preside at all official club functions, including the annual business meeting, when in attendance. If he is not to be present at an official club function, he will, whenever possible, appoint a member who does plan to be present to preside at the official club function; this appointment is not subject to Board approval.
b. Shall be responsible for protecting the reputation and dignity of the IRCA, and promote and administer the affairs of the club to the best of his ability.
c. Shall, with the approval of the Board, have the power to bring reprimand and revocation proceedings against any member who he deems is not adhering to the rules of the organization; he must submit in written form any findings to the Board for their action.
d. Shall have the power to appoint the chairman of any committee, with the advice and consent of the Board of Directors.
e. Shall have the power to remove a chairman of any committee for neglect of duty; this action must in turn be approved by the Board.
f. Shall have the authority to act on any suggestions or proposals, making any recommendations if he so desires, but also submitting the primary proposal to the Board of Directors; any action on a suggestion or proposal is subject to the final approval of the Board.
g. Shall have the power to vote on any proposal that does not receive a majority decision by the Board of Directors during the contemporary administration so as to break any deadlock that would occur.
h. Shall not have veto power over actions of the Board.
i. Shall be responsible for the inclusion of the complete IRCA Constitution and Bylaws, as amended during the previous year, in one of the summer issues of the DX Monitor each year.
j. Shall be responsible for reporting the results of voting by the Board of Directors in the DX Monitor; such reports to be made by the time a ballot is circulated among the membership dealing with matters that were presented to the Board for decision.
k. Shall, in September of each year, request the Board to reconfirm the appointment of each Editor and Committee Chairman currently serving the club. Such request will be accompanied by the President's recommendation concerning each individual, based on a review of the past year. The Contest Manager and the Courtesy Programs Committee Chairman, however, are to be reconfirmed in May of each year.

Part 2 - Secretary-Treasurer

a. Will be in charge of collecting all dues for membership and membership renewal.
b. Shall issue IRCA membership cards.
c. Shall keep an up-to-date list of all members.
d. Shall keep a complete financial records of all monies received and spent.
e. Shall submit every six months a condensed financial statement to the Board for their examination, and, at the time of said submission, shall present the statement to the membership through the official club publication. The financial statement of the club must be approved by the Board of Directors before publication in the DX Monitor.
f. May, with the consent of the Board, appoint members to assist him in some of the bookkeeping work.
g. Shall be responsible for recording and filling minutes of the annual business meeting. In his absence at the business meeting, he shall appoint another member to record said minutes.

Part 3 - Board of Directors

a. Shall be responsible for protecting the reputation and dignity of the IRCA, and promote the affairs of the club to the best of their ability.
b. Shall have the final power in ruling on any club affairs, suggestions, proposals, recommendations, or findings submitted by the President; the Board shall have the power to present legislation and findings as well as make rulings.
c. Shall not have the power to appoint chairmen of the various committees, contest managers, publishers, or editors, but shall have the power to confirm their appointment.
d. Can conduct most of their business by mail, but if five are present during an annual convention, a quorum for business shall be said to exist.
e. Shall have the power, if they deem it necessary, to call for a special election to submit a major issue to the membership-at-large; the Election Committee then will handle all aspects of the special election.
f. Shall have the power to submit a question to the vote of those present at the annual business meeting with a simply majority of those voting prevailing.
g. All decisions of the Board of Directors, including the name of the Directors voting for and against each proposal, must be published in the DX Monitor as soon as possible after the decision is made. No member shall be held responsible for such decisions until they are made public through the DX Monitor.
h. All members of the Board shall submit to the President their votes on all proposals no later than 3 weeks after the mailing of the proposals to them by the President. All votes not received within the 3 week period will be considered abstentions from voting by the member(s) in question.

Section 3 - Replacements

Part 1 - If an IRCA officer's membership in the IRCA expires during the current term and he fails to renew it within two weeks, he will be deemed to have resigned his position.

Part 2 - Should a Director on the Board fail on two successive occasions to communicate to the President his vote on club business within the period prescribed in Article V, Section 2, Part 3 of these Bylaws, he will be deemed to have resigned his position.

Part 3 - Should the President resign, or the office become vacant for any reason, the Chairman of the Board will immediately assume the Presidency for the remainder of the current term.

Part 4 - Should the Secretary-Treasurer or any Director on the Board resign, a specila election shall be conducted as soon as possible in accordance with the procedures outlined in Article III of these Bylaws, provided at least six months remain in the current term. In the event the Secretary-Treasurer resigns, the Chairman of the Board shall assume his duties on a temporary basis until the new officer is elected by regular or specila election.

Part 5 - Should the Chairman of the Board resign, or the office become vacant for any reason, a special election among the Board of Directors shall be conducted immediately in accordance with the procedures outlined in Article III of these Bylaws.

ARTICLE VI - PUBLICATION

The official publication of the IRCA shall be known as DX Monitor. It shall be issued 34 times each year, except in cases of emergency. With the permission of the Board the number of issues may be changed. DX Monitor will normally be published beginning with the first Saturday in October, up to and including the last Saturday in March, twice in April and September, once in May, June, July, and August.

ARTICLE VII - COMMITTEES

The Board of Directors may, from time to time, establish various committees to carry on the activities of the IRCA. The Board shall have the power to establish guidelines and policies relative to the functions, operations, and authorities of any committee, but, in all other respects, committee chairmen shall have complete authority over the operations of their committees. For purposes of these Bylaws, the editors and publishers of the DX Monitor and any official agents of the IRCA are considered to be committee chairmen.

ARTICLE VIII - CONVENTIONS

Section 1 - Annual Meeting

The annual meeting of the IRCA shall be held in conjunction with the annual convention for purpose of presenting the reports of officers, committees and boards, and such other business as may lawfully come before the meeting.

Section 2 - Special Meetings

Special meetings of the IRCA may be called at any time by the Board of Directors on its own motion, and must be called by the Board of Directors on petition of at least 10% of the membership. Such meetings shall be held at such times and places, either within or outside the state of Colorado, as the Board of Directors or petition herein specified shall determine.

Section 3 - Convention Location

The Board of Directors shall solicit during September of each calendar year bids submitted by those wishing to host the annual convention. The Board shall subsequently cause a special election to be held among the members to select the convention site and date. Such special election shall be conducted during the final third of each calendar year. The Board may, on its own motion, determine any bid made as unqualified prior to the special election. Each site deemed qualified by the Board of Directors shall be allowed to print a statement of thirty lines in the DX Monitor promoting their bid. Such statements shall be printed in the issue which contains the ballots for the election of the convention site.

Section 4 - Voting

Each member shall have one vote on each and every matter submitted to a vote of the members. At all meetings, except as otherwise provided by law, the members entitled to vote who are present shall constitute a quorum. All action except as otherwise provided by law, by the IRCA's Constitution or Bylaws, shall be by majority of those members present and voting. Presence and voting by proxy may be allowed at the discretion of and in accordance with rules prescirbed by the Board of Directors.

ARTICLE IX - SUGGESTIONS AND PROPOSALS

All suggestions and proposals shall be submitted to the President in written form, who will then submit them to the Board for action (along with any specific recommendations he may care to make). The final decision as to any action to be taken rests with the Board of Directors. A proposal that receives more "yes" votes than "no" votes will be considered passed. A proposal which is related to the activities of an IRCA committee or the club Treasury will first be submitted to the respective Committee Chairman or the Secretary-Treasurer for his recommendations, which will be subsequently be submitted to the Board along with the primary proposal.

ARTICLE X - IRREGULARITIES, REPRIMANDS, DISMISSALS

Section 1 - Irregularities

Any irregularity of club policy must be brought to the attention of the Board of Directors and the President. A statement of the irregularity and the member or members charged must be made in writeen form and must bear the signature or signatures of the members making such charges, and shall be submitted directly to each Director and the President; all shall determine any action which shall be taken.

Section 2 - Reprimands

In case of irregularities, the IRCA President must, with the approval of the Board, issue a letter of reprimand, to be sent by registered mail, to any officer or member of the IRCA, clearly stating the nature of the offense and the proper means of rectifying said offense.

Section 3 - Dismissals

If the nature of the offense is serious enough to cause further action than a reprimand the Presidnet must, with the final approval of the Board, issue a letter or letters clearly stating the nature of the offense and that dismissal proceedings are being taken.

The aforementioned letter(s) are to be sent by registered mail, return receipt requested. A sufficient amount of time must be allowed for the accused to answer the serious charges. If the reply is not forthcoming or if it does not meet with the satisfaction of the President, a letter or letters of dismissal may be sent with the final approval of the Board of Directors, removing the membership fo the accused.

ARTICLE XI - REFERENDUM/INITATIVE

If a member cannot get action on a proposal in the prescribed manner, he can submit a petition bearing the signature of 20% of the club membership to the Election Committee to effect a special election on the matter. This pertains to matters other than those concerning the contents of these documents.

ARTICLE XII - RECALL

If a petition is presented to the Election Committee bearing the signatures of 20% of the club membership asking for the removal from office of the President, Secretary-Treasurer, or a member of the Board of Directors, the Committee shall call a special election at which the membership will be able to vote for or against such removal. If the removal of the officer is approved by 75% of the members voting, the office shall be declared vacant.

ARTICLE XIII - AMENDMENTS AND CHANGES

These bylaws may be amended by the submission of a By-Law amendment in written form to the President. He, in turn, must submit the proposal to the Board for consideration. With the approval of the Board, the proposal is then submitted to the Election Committee who shall arrange a special election. A proposed By-Law amendment petition containing the signatures of 20% or more of the membership must be presented by the Election Committee to a vote before the entire membership. To be enacted as an amendment, the proposal must receive a simply majority of those members voting. An amendment to the Bylaws goes into effect immediately after its adoption, unless the proposal specifies a date for its going into effect.

ARTICLE XIV - RATIFICATION

The ratification of a 2/3 majority of those members voting shall be sufficient to establish these Bylaws and Constitution as the official documents of the International Radio Club of America, Inc.

Certified correct with all amendments to August 19, 1973.
Percy R. Kesteven, President

Guidelines for Submitting Proposals

I. The IRCA government has jurisdiction over the following matters, to which proposals may refer:
   - A. Initiation of additions, changes or deletions to the IRCA Constitution and Bylaws.
   - B. The IRCA Editorial Policy.
   - C. The IRCA Bulletin, DX Monitor.
   - D. Club policies.
   - E. Club activities.
   - F. Charges of irregularities.
   - G. Actions performed by a member that involve the club, or reflect upon the club name, other than those reasonably expected in the normal activites of membership.
   - H. Appointments or removals by the President.
   - I. Creation or dissolution of committees.

II. Requirements of proposals submitted to the President:
   - A. Name of the member submitting the proposal.
   - B. Date of submission of the proposal to the President.
   - C. A proposal must not violate procedures established by the IRCA Constitution, the IRCA Bylaws, or the incorporation laws under which the IRCA is organized.

D. A proposal may be accompanied by comments of explanation or justification.

III. Procedure for submitting proposals:

A. Eight copies of each proposal should be submitted in written form to the President. (Only seven copies are necessary when Board members submit proposals.)

B. Upon receipt of the proposals, the President will send one copy to each Board member as soon as feasible, with his own comments and recommendations if he wishes. Board members will communicate their decisions to the President within three weeks.

C. (Exception to the above.) Proposals concerning certain special areas for which committees exist will be sent to the appropriate committee chairman by the President for recommendations. Then the proposal, together with the committee's recommendations, will be sent by the President to the Board for action.

D. After the Board's decision is obtained, the President will have the results published in the club bulletin as soon as possible. If the member who submitted the proposal desires to know the outcome immediately, he may sent the President a self-addressed stamped envelope.

E. A proposal that is passed by the Board becomes effective immediately, unless otherwise specified in the body of the proposal. Exception: proposals dealing with additions, changes or deletions to the IRCA Bylaws, which must be approved by the club membership as well as by the Board. (Note: Proposals amending the Constitution are not sent to the Board of Directors.)

F. A proposal that is defeated by the Board may not be resubmitted in identical form for a period of one year from the date of announcement of the Board's decision.

Certified correct with all amendments to August 19, 1973.
Percy R. Kesteven, President

IRCA EDITORIAL POLICY (Revised to 8/73)

I. PURPOSE: The purpose of this policy is to specify the content of the DX Monitor and the authorities of the IRCA Editorial Staff.

II. CONTENT: The DX Monitor shall consist of the following sections:

A. Administrative and General Feature Section
1. The cover page, prepared by the Publishing Committee Chairman, to includ announcements of club interest such as DX program schedules.
2. The IRCA President's reports, to include results of voting by the Board of Directors.
3. Club membership and financial reports, prepared by the Secretary-Treasurer.
4. Reports from the IRCA Committee Chairmen (including the Contest Manager).
5. DX Records, a listing of member's verification and/or reception achievements.
6. Additional feature columns as approved by the Board of Directors.

B. DX Sections
1. Domestic DX sections, to include all reports from members in the U.S. and Canada concerning stations located in these two countries.
a. Each member will report to the editor(s) representing his own section of the continent, as follows:
1. Eastern Section -- east of 85 degrees longitude
2. Central Section -- 85 degrees longitude to 110 degrees longitude
3. Western Section -- west of 110 degrees longitude
4. Members living on or adjacent to the boundary lines will be permitted to report to the section they feel more closely represents their conditions, subject to provision 5.
5. Provision 4 is not to be interpreted to permit a member to switch back and forth between sections. In that event, such member's permanent section will be decided by the two editors involved. Their judgment will be final.
b. There will be two columns for each reporting area, a DX Forum (DXF) and a DX Roundup (DXR).
c. DX Forum
1. The DXF columns will contain reports from individual members with information or comment about their DX activity and equipment, the IRCA and its policies, and any other relevant and allowable discussion that cannot be fitted into another column. Members may mention call letters, frequency and location only of selected new catches in the DXF, but no long lists of stations will be permitted.
2. Recent verifications may be mentioned in the DXF.
3. Members may include in their DXF reports any reasonable and prudent mention of non-DX information, provided it does not jeopardize the column's size.
4. DXF editors shall have the authority to limit reports to 15 lines in the interest of conserving space for other reports or of eliminating non-pertinent information.
5. DXF editors may rephrase any report or portion thereof if they deem such rephrasing to be in the best interests of their columns, this Policy or the IRCA. Any such rephrasing must, however, be indicated as such by the editor, with the knowledge that the reporting member assumes no responsibility for the rephrased text.
6. DXF editors may omit from reports any statements made in a language other than English which, in the editor's judgment, would not be understood by or of interest to the general membership.
7. If a member submits more than one DXF report per issue without instructions to destroy those previously submitted, the editor may disregard the earlier reports, unless they have already been stencilled; in that case, the editor may defer or disregard the later reports.
d. DX Roundup
1. Each DXR column will contain reports of domestic loggings and tips such as sign-on and sign-off times, frequency checks, any any other useful station schedule or reception information.
2. Reports shall be listed by frequency and should include call letters, location, date and time of reception, type of programming, and any other concise and useful comments, e.g., signal strength, interference encountered, and whether a regular or uncommon catch.
3. Certain high-powered Mexican "border" stations, and certain other clear-channel foreign stations which provide substantial QRM to domestic stations, may be listed in the DXR at the editor's discretion.
4. DXR editors may omit from their columns tips that, in their opinion, would not be of interest to the majority of the readers.
e. Preferably, the DXF editor will also compile the DXR for the same section of the continent. However, if necessary, one editor may be appointed for each column from a particular area.
f. All times in the domestic sections of DX Monitor shall be in Eastern Local Time.

2. Foreign DX Section, called DX World Wide (DXWW), to include all reports of stations located outside the U.S. and Canada and, separately, all reports of domestic stations heard by foreign members and all DXF reports from foreign members.
a. DXWW shall contain reports of loggings, schedules, addresses, and verification information concerning foreign stations.
b. Reports will be listed by frequency and should include call letters (if any), slogan (if applicable), location, date and time of reception, type of programming, and any other concise and useful comments, e.g., signal strength, interference encountered, and whether a regular or uncommon catch.
c. DXWW may also contain any other information deemed helpful to foreign DXing by the editor.
d. There will be only one editor for DXWW.
e. All times in the Foreign section of DX Monitor shall be in Greenwich Mean Time.

C. The DX Monitor will normally consist of twenty pages (ten sheets) per issue, but may be larger at the discretion of the Publishing Committee Chairman, provided that it is financially possible to publish a larger issue. Each bulletin in excess of ten sheets will be published to take advantage of postal rate break points, in increments of one ounce.

III. GENERAL

A. Reports to the DX Monitor should deal with reception of and comment concerning stations in the medium-wave band as opposed to short wave, FM, TV, etc.

B. Editors shall have sole authority over the content of their columns, including filler material, subject to the provisions of the IRCA Bylaws dealing with irregularities.

C. Ediotrs may determine the individual formats of their particular columns, and methods by which reports are to be submitted, within the specific provisions of this Policy.

D. Editors may omit portions of reports to comply with size regulations, provided such omission does not remove pertinent DX information or detract from the effectiveness of included

III. D. (cont'd) portions.

E. Editors may omit any report or portion thereof that they deem would:

1. Violate any applicable portion of this Policy;
2. Be likely to result in payment of damages against the IRCA or its personnel responsible for the insertion of the submtted material;
3. Be interpreted as profane or otherwise improper as to language;
4. Violate any federal, state or local law;
5. Be detrimental to the ANARC, its members, or its policies.

However, editors must state that an omission was made to the report or the report itself was omitted. In the case of an entire report being omitted, the editor will notify the member via personal letter that the report has been omitted but will not list the member's name in the column.

F. Editors may omit reports submitted by other than IRCA members in good standing; however, interesting reports from non-members may be included as the editor's discretion if they comply with this Policy.

G. Editors may omit illegible reports.

H. Editors may add to columns or reports only if such additions do not violate size restrictions and if their comments are both pertient and in accord with this Policy.

I. Editors may incorporate into their columns material from other clubs or publishers provided that the source of this information is cited and/or advance permission is secured from the source or holder of the copyright.

J. No advance publicity will be given to any station broadcasting in violation of the rules of its specific nation's radio regulatory agency. However, reports concerning reception of such stations may appear in applicable DX columns.

K. The IRCA Board of Directors shall have sole authority over the passage, amendment, interpretation and enforcement of this Policy.

L. Any violations of this Policy will be dealt with in accordance with the IRCA Bylaws.

M. The Publishing Committee shall not have the authority to edit or erase material from stencils sent for publication, except when such material is in clear violation of the IRCA Constituion, Bylaws, or Editorial Policy.

N. Provided that the Standby Editorship and/or Typing Pool is filled, that the Publisher of the DX Monitor be forbidden to edit or type a regular section for more than one consecutive week.

O. Provided that the Typing Pool is filled, that the Publisher of the DX Monitor be permitted to only type the front page, DX Calendar, and page fillers, and further that he be forbidden to type full-page material which could be handled by either the Special Features Editor (if the post is filled) or by the Typing Pool.

P. The Editor-In-Chief is charged with the responsibility of examining all material submitted for publication. The Editor-In-Chief may omit any report or portion therof using the provisions in III-E of this Policy. The Editor-In-Chief has complete authority to add such filler material as is necessary to complete bulletin pages.

Certified correct with all amendments to August 19, 1973.
Percy R. Kesteven, President

Q&A

BRUCE PORTZER
14056 5th Ave. South, Seattle, WA 98168

THE HAMMARLUND HQ-200 - A NOT TOO TECHNICAL REPORT
by Tom Garcia

This report is going to be a little one-sided as I have had very little experience with any quality receivers other than the old tube models of the 50's. Three years ago when I decided to buy a communications receiver I made my choice based on published specifications as that was all that was available to me in central Alaska. Before any readers get the wrong idea, let me tell you that I do like my HQ-200. If the report seems to be mostly "gigs" against the receiver it's because of my lack of a comparison item and knowledge of other various makes.

The HQ-200 was in the $250 price range when I purchased it new in 1970. It's in an attractive grey metal case and rather large and heavy due to its design as a conventional tube-type receiver. There is no built-in speaker and I am using the Radio Shack communications speaker which comes in a grey case that somewhat matches the HQ-200 style. An instruction manual with the receiver was written up as being excellent in one of the hobby magazines but I did not find this to be the case. Concerning IF alignment the manual refers to the wrong drawings several times. Four figures concerning antenna types look as though they were drawn by three different people and leave much to be desired considering antenna connection should be such a simple matter. Another item in the manual concerns the hook-up of a signal generator. You are told to attach it to the "bus lead of the 6BE6 mixer grid" when "pin 7 of the 6BE6 would have been much more to the point for those of us who don't know a bus lead from a control grid.

The receiver tunes in the range between 540 kHz and 30 MHz in four bands. Dial markings are at 50 kHz spacings on the broadcast band which is a poor setup for this important area of reception. Band-spread markings are available for ham bands only, markings of 0-100 must be used for other frequencies. Calibration on the BCB cannot be set up as if 1200 kHz is correct, both ends of the band will be off (up to 30 kHz) etc. Dial calibration instructions refer to "slugs and trimmers" but I haven't found the trimmers yet. A bank of slugs is used, one for each band. The cabinet top needs holes, or an access door, to enable you to pass tuning wands down to the RF coil slugs. It is very inconvenient to have to remove the receiver from its case for adjustments. Every time you move to a different section of the BCB you must calibrate against a frequency standard as mentioned above.

Local stations put the S-meter to 25 over S-9 and it has a total range of 60 over S-9. Strange as it may be, the S-meter is inoperative during SSB reception. The instruction manual directs the user to adjust volume during SSB reception by setting the volume control at maximum and using the sensitivity control as required for audio. The problem here is that movement of the sensitivity control causes a very slight frequency shift which causes you to lose the SSB signal or at least to shift it enough to make it sound like Donald Duck. SSB tuning with this receiver is very difficult on the higher frequencies. Ten meters is almost impossible as is 15 meters. This may be a combination of my tuning technique and my antenna but in three years I haven't been able to improve the situation so I am inclined to think that the receiver is partly at fault due to insufficient bandspread width at higher frequencies.

Two other comments...I don't like the position of the phone jack which is on the rear of the receiver. It would be better to have it on the front. And the noise limiter doesn't seem to have much effect on noise. All it does is reduce total audio volume. The reduction is so great that distant stations become unreadable when the noise limiter is selected.

I hope that these comments will be of use to the membership and once again I ask that you remember that I do not have other equipment available to compare with the HQ-200. Because of that I haven't attempted to report on sensitivity or selectivity and will leave that to other reporters. The major faults of the receiver are in connection with the dial calibration and the reception of SSB signals. The best feature is the Q-multiplier system which works very well on the BCB.

(CDXF continued from Pg. 10)

Convention was great, except the dressing at the banquet. Chopped up cardboard is a poor substitute, right John?! (Thought it was pretty good myself-jz) 73's

Tom Christian-107 N. Euclid-Villa Park, IL 60181

Well onward! I guess I'll start with a brief intro. I'm 14 and have been DXing for over 2 years. I enjoy my radio work immensely. My totals are 130/68, 27/24, 4/4, 4/3. Recent veries: v/l: WOC-1420 w/CM, WLAC-1510, WKTY-580, v/q: KSTP-1500, CKLW-800, CBK-540 w/CM, WHB-710, KXOK-630, WKYX-570 w/CM, CBE-1550 and WONE-980. I sent for the NRC Pattern Book and log. I saw a copy of the Pattern Book and it is interesting. It will help me with my DXing. I won't be able to make the Hammond Convention this year. Well, that's about it. 73s.

Gene Martin-3303 E. Evans-Denver, CO 80210

If a DXer is the sort who wants to cheat on his claims, then he can do it with either tape or with verification letters. Neither one would be acceptable in any court of law as proof of reception, but it is infinitely easier to cheat with verification letters than with tape. The written verie can be questioned on many grounds, but for all practical purposes, tape reception is subject to being questioned on only one ground: What frequency were you tuned to? I say this is the only valid shortcoming of tape. But in many cases the tape answers the question. For example, I have a tape of WABC IDing itself along with 3LO. I have WSB and the Japanese pips together on the same tape. I have lots of KGU and 1YA together. I have hundreds of feet of XEQR and LS10 together, both easily recognizeable, and I can assure one and all, it was much easier to receive that, than it would have been to fake it. Finally, even those DXers who rate written verifications above tape, invariable use tape to tell themselves what they had.

Anthony Markewicz-1394 Elgin Ave. W.-Winnipeg, MB R3E 1B6

Out of nowhere, KSJB-600 Jamestown made a surprise move by changing from their Top 40 rock format to country music, yet they are still using their old rock SID's, etc. This means that KFYR-550 doesn't have too much competition so maybe KILO-1440 planned to go rock and change their calls? (as of 5/21, they still are KILO). KGPC-1340 (better known as "CAGE") was off the air for a few days last week- KGPC still s/offs at 1757 every Sunday. KBOM-1270 sked is 0700-0200 on week days and 0800-1200 on Sundays. CKY-580 has had xmtr trouble for the past few days and has been going off for up to 30 minutes during the day or nite. CFRW-1470 has been going off the air at 0100 and conducting a series of tests w/OC and tones so maybe 10Kw soon.

Rich Eddie-152 W. Rose-St. Louis, MO 63119

Welcome to all new IRCA members! It was great seeing a lot of you at Hammond- a job well done by John Zondlo and his crew (thankya kindly-jz). Not much new AM wise but wait until September comes. AM totals now 1110/677, 48/47, 6/5, 22/14. I am willing to trade SC of KXOK, KIRL, WIL and KSLQ-FM and once in a while some others for your locals. Also pen-pals welcome- no guarantee of fast reply but it would be within a months time (hi). Must be nearing 13 lines or the limit so I'll make room for somebody else to say something. Good DX and Peace and 73's de Rich Eddie.

John Zondlo-Shales Hall-Muncie, IN 47306

Greetings all- note the new address. I'm back at beautiful Ball State University here in Muncie, but at a different location. I'm a student staff here at Shales and that will take up a good bit of my DX time. Hammond 73 was great, but their was one major disappointment to me. It really is sad that so many of the members in the Chicago area missed the convention. Just too bad that so many of you just don't give a damn about the club, and passed up a great chance to really learn about the hobby. You'll probably not have a convention come that close to you for a long time, and you blew your chance to attend. It was really great to see the devoted Chicagoland people attend; too bad that so many inactive people can give the area a bad image. A recap of the convention activities is located elsewhere in this issue. 73 and Good DX.....

WESTERN

Michael G. Worst, 3608 Phinney Ave. N., Seattle, WA 98103

Next deadline September 12 and 26, 1973

Albert S. Lobel, P.O. Box 1818, El Cajon, CA 92022

Greetings! It has been a long time since I have sent a report to the forum. But I have not lost my interest in club affairs. I too, would like to extend my personal thanks to DEE for a job well done. Only those who have been to Toyland to see DEE hard at work on IRCA affairs can really understand what he had to contend with. His impact on IRCA will never be forgotten! THANX DEE FOR A JOB WELL DONE!!! In the past few months, I have been corresponding with many IRCA members. I am interested in hearing from more of you. It is alright to phone PREPAID ONLY PLEASE (714) 440-2544 between the hours of 1830-2200 Pacific Time any evening except Friday and each F/MM from the hours of 0300-0600 Pacific Time. If I don't answer on a F/MM, the phones are off and I'm sleeping; try again another time! Well I've about used up my alloted space, so 73's and good DX to all!

Credo A. Bisquera vacationing in California

August 1, 1973 - vacationing in Santa Barbara, CA. DXing with a Sony Portable, IDed the following out of state: Oregon - KPNW-1120, KEX-1190, Utah - KSL-1160, Arizona - KOOL-960, Idaho - KBOI-670. Unable to pick up KOOL in Hawaii. Aloha.

Wayne Coombs, Jr., P.O. Box 1956, San Jose, CA 95109

Hi. As I renew for my tenth year in IRCA, I thought I would contribute to DXF. I am 26 and currently manage a large oldies record store. I have been inactive for several years, due to my work load, lack of a decent RX, and a major interest in REACT (monitoring Ch. 9 on CB radio for emergency calls). However, I am still interested in the hobby and will eventually be active again. I think a vote of thanks should be given to those members who have supported the club with their time in the past 9 years. In addition, I would like to give special thnx to DEE for his efforts. Unless you have been to a publishing session and HELPED, you have no idea of the work involved and have no right to complain. The time I was there we worked until 6am at which time DEE went to bed, to arise at 9am (late for work). His whole house (and life) was devoted to IRCA. I hope that he will continue to make contributions in other areas, and not let the few children in the club get to him. I don't think the bulletin should be published offset. The main reason for a regular bulletin is to QUICKLY disseminate information and offset, by necessity, is slower, especially for last minute info. With mimeo, the last page can be printed just before the bulletin in assembled, allowing for any last minute info. Enuf said, 73.

Brian M. Scully, 1301 Wardman Dr., Brea, CA 92621

Hello people. Thanks to school, summer school, and a historical research expedition back east, I am back in the world of active DX. I lost track so much, after I sent in my entry fee and token entry to the Domestic contest, I forgot about the entire contest! Can't win 'em all. Anyway, KKAR-1220 Pomona was sold probably because the new C&W format flopped. Rumor has it that they will go R&B but anything can happen. KFAC-1330 seems to have gone SP on MM. One last note, has anyone ever veried KLOA-1240 Ridgecrest, CA? Has anyone ever heard it? Advice on how to receive it other than move to Ridgecrest needed desparately, MOST WANTED! So long for now and remember that the Dodgers will dismember your hometown team in '73. 73.

Paul R. Daplyn, P.C.S.P., Tuktoyaktuk, N.W.T.

DX here hasn't been too good. Best catch so far has been WMEE-1380. The sun is finally setting briefly here. Rx here is a National NC-183 w/150' LW. LAFAYETTE HA-230 OWNERS: please write me if your set has drift problems (continues drifting hours after turn-on for about 25khz on BCB). I want to know if this is a common problem as I had to modify one of these rxs to correct this. If it is, I'll send modification plans to Bill Hardy.

Bill Hardy, 303 West 10th St., Aberdeen, WA 98520

As many of you know, I've belonged to IRCA since mid-1964, just months after its founding. And yet I've never belonged to the NRC. I have nothing against the NRC; I just never got around to joining, and the value of the tips didn't seem to justify to me the cost of joining. Well, I think I've found a relatively painless way to join NRC: a joint membership with Nancy Gantzer, who is already an NRC member. You see, Nancy and I will be getting married next May. The wedding will be somewhere near Fredonia, N.Y., and DXers will be invited. There will be more details later, such as location and time, but the date is firm for Sat. afternoon May 18, 1974.

DX MATHEMATICS ! de Ghoti, Ph.Dx

There are three functions related to SIN, COS, and TAN that will also be required in the applications, viz: inverse sine, inverse cosine and inverse tangent whose algebraic names (here) will be ASIN, ACOS, and ATAN respectively. Evaluation of these requires using the tables "backwards" -i.e., locating an INSIDE value and then reading the corresponding ANGLE. For example: let X be a number twixt -1.0 and +1.0. Then W = ACOS(X) means "find the angle W whose COS is X". That is, W = ACOS(X) is equivalent to X = COS(W). Analogous remarks apply to ASIN and ATAN. Note: the arguments of ACOS and ASIN are numbers from -1.0 to +1.0 and the argument of ATAN can be any number. The values ("angles") of ACOS range from 0° to 180° while the values of ASIN and ATAN range from -90° to +90°. Now, use your tables to verify all the following: ACOS(0.82462)= 34°27' ; ASIN(0.57667)=35°13' ; ATAN(0.49278)=26°14' ; ASIN(0.80576)=53°41' ; ACOS(0.18681)=79°14' ; ATAN(1.84561)=61°33' ; ASIN(0.12345)=7°5' ; ACOS(0.24687) =75°42' and ATAN(0.54321)=28°31'. Note that the last three have arguments that do not appear exactly INSIDE the tables --merely pick the inside table value nearest the argument and then read out the corresponding angle!

We now state those equations necessary for some of the applications below but will show their use in the illustrative examples that follow.

(E1) --- Let M and P be any numbers: (M+P) means add M and P; (M-P) means subtract P from M; (M)(P) means multiply M and P; (M/P) means divide M by P; -M = -(M) = (-1)(M); (-1)(-1) = +1; and -(-M) = +M. Examples of the last several items: -3.42 = -(3.42) = (-1)(3.42) and -(-5.2) = +5.2 and -(-(-2.6)) = -2.6.

Let A be any angle:

(E2)	COS(-A) = COS(A)	USE:	when angle is negative
(E3)	SIN(-A) = -SIN(A)	USE:	when angle is negative
(E4)	COS(A) = -SIN(A-90°)	USE:	A between 90° and 180°
(E5)	SIN(A) = COS(A-90°)	USE:	A between 90° and 180°
(E6)	COS(A) = -COS(A-180°)	USE:	A between 180° and 270°
(E7)	SIN(A) = -SIN(A-180°)	USE:	A between 180° and 270°
(E8)	COS(A) = SIN(A-270°)	USE:	A between 270° and 360°
(E9)	SIN(A) = -COS(A-270°)	USE:	A between 270° and 360°

Let B be a number between -1.0 and +1.0 (inclusive):

(E10)	ACOS(B) = 90° + ASIN(-B)	USE:	B negative
(E11)	ASIN(B) = -ASIN(-B)	USE:	B negative

Note: (E4-E9), USE: .... between means inclusive of the limits listed
Note: (E10-E11): If B is negative (-) then -B is positive (+); see (E1).
Now use tables to verify: COS(-36°)=0.80902; SIN(-42°)= -0.66913; COS(94°)= -0.06976; SIN(117°)=0.89101; COS(187°)= -.99255; SIN(211°)= -0.51504; COS(314°)=0.69466; SIN(296°)= -0.89879; ASIN(-0.78776)= -(51°59') and ACOS(-0.12345)=97°5'. Now to the first application!

GREAT CIRCLE CALCULATIONS of distance and azimuth bearings have proven very valuable to many DXers. But, an even larger number of DXhounds are presently without the simple knowledge as to how to generate these data.

GREAT CIRCLE DISTANCE: GCD. The GCD is the shortest distance on the surface between two points on a sphere and is necessarily an arc of the great circle passing thru these points. On the BCB the signals propagate between the Earth's surface and the ionosphere above the great circle path. Only under adverse auroral conditions does the signal deviate from the direction taken by this great circle path and even then to a very minor extent! Thus, GCD calculations between transmitters (TX) and the receiver (RX) are of value and interest!

Each point on the Earth's surface has assigned to it geographical coordinates of latitude and longitude. The coordinates are given in degree measure --degrees, minutes, seconds (°,',"). The Earth's Equator is the

(Continued)

dividing line between North and South Latitude and thus any point on the Equator has 0° Latitude. The True Geographic North Pole has latitude 90°N, and the True Geographic South Pole has latitude 90°S. The Prime Meridian of Longitude passes thru Greenwich Observatory in England and is the dividing line between East and West Longitude. Thus, any point on the Prime Meridian has 0° Longitude. Algebraically, latitude varies from -90° to +90° and longitude varies from -180° to +180°. To obtain Geographical Coordinates of TX and (your) RX, again check your local library, bookstore, etc., for reference materials. Numerous atlases have this information and for North American BCB, the NARBA listing show precise coordinates of every transmitter. To take coordinates from a map is to be avoided unlesss low accuracy of GCD (or GCB, Part II) is acceptable!

Seconds (") of coordinates will be neglected here. The reasoning follows: On the Earth, whose mean radius R* is about 3957 statude (land) miles or 6368 kilometers (km.), the total distance around (circumference of) any great circle is $2\pi R^*$ or 24862.56 statute miles or 40011.32 kilometers. Since there are 360° in any circle, on Earth, 1° = (24862.56/360)=69.06 miles or (40011.32/360)=111.14 km. Since also, 1°=60', we find 1' = 69.06/60 = 1.151 miles or 111.14/60 = 1.85 km. Furthermore, 1' = 60" so that 1" = 1.151/60 = 0.0192 miles = 101.3 feet or 1.85/60 = 0.0308 km = 30.8 meters. Also, for interest, 1' = 1.0 nautical miles. Hence, if we neglect (") of arc then our GCD can be in error at most 2.3 miles or 3.7 km -- provided the calculations themselves carry the necessary accuracy! Using five-place trig tables affects the accuracy to only a very minor degree and the values so obtained are still highly accurate for DXing purposes. For examples: North Central Greenland (40°N,80°W) to Tasmania (42°S,145°E), GCD = 10108.8 miles (5-place accuracy) and GCD = 10108.46 miles (10-place accuracy), and Oregon to Florida (43°N, 122°W to 30°N,80°W), GCD=2467.74 miles (5-places) and GCD=2468.14 miles (10-places). Thus, we shall simply omit (") whenever specified in coordinates --for example: 43°37'47" can either be rounded to 43°38' or truncated to 43°37' by simply dropping (47") --the resulted GCD error no greater than 2.3 miles.

Latitudes are given as N-Latitude or S-Latitude indicating that the location is North or South of the Equator respectively. Similarly, longitudes are given as E-Longitude or W-Longitude indication the location is East or West of the Prime Meridian respectively. We shall adhere to the following STANDARD conventions on the assignmnt of algebraic sign (+ or -) to coordinates: viz,

North-Latitude and W-Longitude are positive (+)
South-Latitude and E-Longitude are negative (-).

Note the table for TX and RX below assumes the algebraic signs are properly assigned!

With the above understood, we now present the trig formulas that compute GCD:

	LATITUDE	LONGITUDE
TX:	T1° T2'	F1° F2'
RX:	R1° R2'	H1° H2'

Δ = (H1°H2') - (F1°F2')
A = SIN(T1°T2')SIN(R1°R2') + COS(T1°T2')COS(R1°R2')COS(Δ)
B = B1° B2' = ACOS(A) = _____°_____'

GCD = (69.06)B1 + (1.15)B2 = _____ statute miles
= (111.14)B1 + (1.85)B2 = _____ kilometers
= (60.00)B1 + B2 = _____ nautical miles

The trig equations required in this application are (E1)-(E4),(E6),(E8),(E10):

(E2):	COS(-A) = COS(A)	USE:	when angle negative
(E3):	SIN(-A) = -SIN(A)	USE:	when angle negative
(E4):	COS(Δ) = -SIN(Δ -90°)	USE:	90° ≤ Δ ≤ 180°
(E6):	COS(Δ) = -COS(Δ -180°)	USE:	180° ≤ Δ ≤ 270°
(E8):	COS(Δ) = SIN(Δ -270°)	USE:	270° ≤ Δ ≤ 360°
(E10):	ACOS(A) = 90° + ASIN(-A)	USE:	when A is negative

Note: for GCD calculations, A is a value between -1.0 and +1.0; B is an angle between 0° and 180° and in (E10), observe if A is negative, then -A is positive.

EXAMPLE (I):
TX: (16QR-WCWC, Ripon, WI): 43°49'N;88°51'W: T1°T2'=43°49'; F1°F2'=88°51'
RX: (Asheville, NC) @ 35°38'N, 82°35'W : R1°R2'=35°38' ; H1°H2' =82°35'
Δ = 82°35' - 88°51' = -(88°51'-82°35') = -(6°16')
A = SIN(43°49')SIN(35°38') + COS(43°49')COS(35°38')COS(6°16')
= (0.69235)(0.58260) + (0.72156)(0.81276)(0.99402) =
= (0.40336) + (0.58295) = 0.98631 so that
B = B1° B2' = ACOS(0.98631) = 9°29' and finally,
GCD = (69.06)(9) + (1.15)(29) = 654.92 statute miles.
NOTE: COS(-(6°16')) = COS(6°16') by use of (E2)

EXAMPLE (II):
TX: (Dakar, Senegal)@ 14°39'N; 17°28'W; T1°T2'=14°39'; F1°F2'=17°28'
RX: (San Diego, CA) @ 32°45'N; 117°10'W; R1°R2'=32°45'; H1°H2'=117°10'
Δ = 117°10' - 17°28' = 116° 70' - 17°28' = 99°42'
A =SIN(14°39')SIN(32°45') + COS(14°39')COS(32°45')COS(99°42')
= (0.25291)(0.54097) + (0.96749)(0.84104)(-0.16849) =
= (0.13682) + (-0.13710) = -0.00028 so that
B = B1°B2' = ACOS(-0.00028) = 90° + ASIN(0.00028)=90°+0°1'=90°1'
GCD = (69.06)(90) + (1.15)(1) = 6216.55 miles
NOTE: COS(99°42')= -SIN(99°42'-90°) = -SIN(9°42') by (E4) and by (E10)
ACOS(-0.00028) = 90° + ASIN(0.00028).

EXAMPLE (III):
TX: (Lima, Peru)@ 12°6'S; 76°55'W : T1°T2'= -(12°6'); F1°F2'=76°55'
RX: (Boston, MA)@ 42°15'N; 71°7'W : R1°R2'= 42°15' ; H1°H2'=71° 7'
Δ = 71°7'-76°55' = -(76°55'-71°7') = -(5°48')
A = SIN(-(12°6'))SIN(42°15') + COS(12°6')COS(42°15')COS(5°48')
= (-0.20962)(0.67237) + (0.97778)(0.74022)(0.99488) =
= (-0.14094) + (0.72007) = 0.57913 so that
B = B1°B2' = ACOS(0.57913) = 54°37' and finally,
GCD = (69.06)(54) + (1.15)(37) = 3771.83 miles
NOTE: by (E2) COS(-(5°48'))=COS(5°48'); COS(-(12°6'))=COS(12°6') and by
(E3) SIN(-(12°6')) = -SIN(12°6')

EXAMPLE (IV):
TX: (Munich, W. Germ)@48°8'N; 11°35'E : T1°T2'=48°8' ; F1°F2'= -(11°35')
RX: (Ft. Worth, TX)@32°45'N; 97°20'W: R1°R2'=32°45'; H1°H2'= 97°20'
Δ = 97°20' - (-(11°35')) =97°20' + 11°35' = 108°55'
A = SIN(48°8')SIN(32°45') + COS(48°8')COS(32°45')COS(108°55')
= (0.74470)(0.54097) + (0.66740)(0.84104)(-0.32419) =
= (0.40286) - (0.18197) = 0.22089
B = B1°B2' = ACOS(0.22089) = 77°14' so that
GCD = (69.06)(77) + (1.15)(14) = 5333.73 miles
NOTE: COS(108°55') = -SIN(108°55'-90°) = -SIN(18°55') by use of (E4)

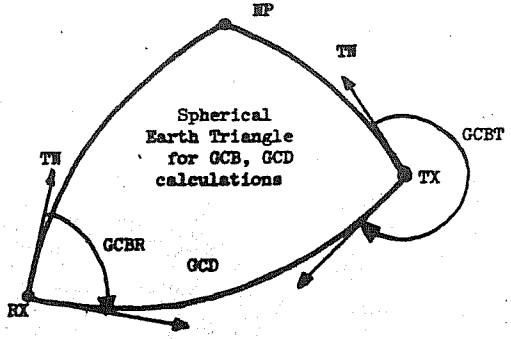
EXAMPLE (V):
TX: (Cape Town, S.Af.)@33°48'S; 18°28'E : T1°T2'= -(33°48'); F1°F2'=-(18°28')
RX: (Youngstown, Ohio)@41° 5'N; 80°40'W : R1°R2'=41°5' ; H1°H2'=80°40'
Δ = 80°40' -(-(18°28')) = 80°40' +18°28' = 99°8'
A = SIN(-(33°48'))SIN(41°5') + COS(33°48')COS(41°5')COS(99°8')
= (-0.55630)(0.65716) + (0.83098)(0.75375)(-0.15873) =
= (-0.36558) + (-0.09942) = -0.46500 so that
B = B1°B2'= ACOS(-0.46500) =90°+ASIN(0.46500)=90°+27°43'=117°43'
GCD = (69.06)(117) + (1.15)(43) = 8129.51 miles
NOTE: SIN(-(33°48'))= -SIN(33°48') by (E4); COS(-(33°48'))=COS(33°48') by (E2)
and ACOS(-0.46500) = 90° + ASIN(0.46500) by (E10)

EXAMPLE (VI):
TX:(Tokyo, Japan)@35°41'N; 139°44'E : T1°T2'=35°41' ; F1°F2'=-(139°44')
RX:(Houston, TX)@29°46'N; 95°21'W : R1°R2'=29°46' ; H1°H2'= 95°21'
Δ = 95°21' - (-(139°44')) =95°21'+139°44'= 234°65'=235°5'
A = SIN(35°41')SIN(29°46') + COS(35°41')COS(29°46')COS(235°5')
= (0.58330)(0.49647) + (0.81225)(0.86805)(-0.57238) =
= 0.28959 + (-0.40357) = -0.11390 so that
B = B1°B2' = ACOS(-0.11390) = 90° + ASIN(0.11390) =90°+6°32'=96°32'
GCD = (69.06)(96) + (1.15)(32) = 6666.60 miles
NOTE: COS(235°5')= -COS(235°5'-180°) = -COS(55°5') by (E6)

EXAMPLE (VII):
TX: (Melbourne, Au)@ 37°52'S; 145°8'E : T1°T2'= -(37°52'); F1°F2'= -(145°8')
RX: (Wahoo, Nebr.)@ 41°14'N; 96°39'W : R1°R2'=41°14' ; H1°H2'=96°39'
Δ = 96°39' -(-(145°8')) = 96°39' + 145°8' = 241°47'
A = SIN(-(37°52'))SIN(41°14') + COS(37°52')COS(41°14')COS(241°47')
= (-0.61383)(0.65913) + (0.78944)(0.75203)(-0.47281) =
= (-0.40459) + (-0.28070) = -0.68529 so that
B = B1°B2' = ACOS(-0.68529) = 90°+ASIN(0.68529) =90°+43°16'=133°16'
GCD = (69.06)(133) + (1.15)(16) = 9203.40 miles

PART II: Great Circle Bearings

In Part I of this Series, the essentials of trigonometry relevant to the application of computing GCD, great circle distance, was discussed and developed. Below are the trigonometric equations that allow evaluation of the great circle azimuth bearing of the TX as measured at the RX which is termed GCBR and the great circle ("back" or "reciprocal") azimuth bearing of RX as measured at TX and termed GCBT.



NP: True Geographical North Pole
TN: True Geographical North

LATITUDE
TX: T1°T2'
RX: R1°R2'

LONGITUDE
TX: F1°F2'
RX: H1°H2'

Δ = (H1°H2') - (F1°F2') = ____° ____'
A = SIN(T1°T2')SIN(R1°R2') + COS(T1°T2')COS(R1°R2')COS(Δ)
B = B1°B2' = ACOS(A) = ____° ____'
GCD = (69.06)B1 + (1.15)B2 = _____ statute miles
= (111.14)B1 + (1.85)B2 = _____ kilometers
J = SIN(B1°B2') = SQRT(1.0 - A²) = _____
V1 = SIN(T1°T2') - (A)SIN(R1°R2')
V2 = (J)COS(R1°R2')
V = (V1/V2)
W1 = SIN(R1°R2') - (A)SIN(T1°T2')
W2 = (J)COS(T1°T2')
W = (W1/W2)
RAZ = ACOS(V) = ____° ____'
TAZ = ACOS(W) = ____° ____'
If (0° ≤ Δ ≤ 180°), then GCBR = RAZ and GCBT = 360° - TAZ
If (Δ < 0°, or, Δ > 180°), then GCBR = 360 - RAZ and GCBT = TAZ

The trig function equations required in this application are (E1-E6), (E8), (E10):

(E2)	COS(-X) = COS(X)	USE: when angle is negative
(E3)	SIN(-X) = -SIN(X)	USE: when angle is negative
(E4)	COS(Δ) = -SIN(Δ -90°)	USE: 90° ≤ Δ ≤ 180°
(E5)	SIN(X) = COS(X-90°)	USE: 90° ≤ X ≤ 180°
(E6)	COS(Δ) = -COS(Δ -180°)	USE: 180° ≤ Δ ≤ 270°
(E8)	COS(Δ) = SIN(Δ -270°)	USE: 270° ≤ Δ ≤ 360°
(E10)	ACOS(X) = 90° + ASIN(-X)	USE: when angle is negative

Note: this algorithm is valid for GCB and GCD between any two points on the Earth's surface save for the Poles where the analysis is straightforward algebraic computation. Also: -1 ≤ A ≤ +1; 0° ≤ B ≤ 180°; -1 ≤ J ≤ +1;

$-1 \leq V \leq +1$; $-1 \leq W \leq +1$; $0° \leq RAZ \leq 180°$; $0° \leq TAZ \leq 180°$; $0° \leq GCBR \leq 360°$ and $0° \leq GCBT \leq 360°$. Also: in the examples which follow: T = T1°T2', R = R1°R2', H = H1°H2' and F = F1°F2' .

Verify each detail of the following examples!

EXAMPLE (I):
TX: (16R WCWC, Ripon, WI) @ 43°49'N, 88°51'W so that T = 43°49' and F =88°51'
RX: (Asheville, NC) @ 35°38'N , 82°35' W so that R = 35°38' and H = 82°35'
Δ = 82°35' - 88°51' = -(88°51' - 82°35') = -(6°16') NOTE: $\Delta < 0°$
A = (0.69235)(0.58260) + (0.72156)(0.81276)(0.99403) = 0.98631
B = ACOS(0.98631) = 9°29' so that GCD = 654.9 miles
J = SIN(9°29') = 0.16476 and V2 = (0.16476)COS(35°38') = 0.13391
V1 = SIN(43°49') - (0.98631)SIN(35°28') = 0.11773 and V = V1/V2 = 0.87917
W1 = SIN(35°38') - (0.98631)SIN(43°49') = -(0.10028) , W2=(0.16476)COS(43°49')
W = W1/W2 = -(0.84354) RAZ = ACOS(0.87917) = 28°27' = 0.11888
TAZ = ACOS(-0.84354) = 90° + ASIN(0.84354) = 90° + 57°31' = 147°31'
and ($\Delta < 0°$) so that GCBR = 360°-28°27' = 359°60'-28°27'= 331°33'; and
GCBT = 147°31'

EXAMPLE (II):
TX: (Dakar) @ 14°39'N, 17°28'W so that T = 14°39' and F = 17°28'
RX: (Kansas City) @ 39°5'N , 94°35'W so that R = 39°5' and H = 94°35'
Δ = 94°35' - 17°28' = 77°7' NOTE: ($0° \leq \Delta \leq 180°$)
A = (0.63045)(0.25291) + (0.77623)(0.96749)(0.22297) = 0.32690
B = ACOS(0.32690) = 70°55' so that GCD = 4897.5 miles
J = SIN(70°55') = 0.94504, V1 = SIN(14°49') - (0.32690)(SIN(39°5'))=0.04682
V2 = (0.94504)COS(39°5') = 0.73357 and V = V1/V2 = 0.06382
W1 = SIN(39°5') -(0.32690)SIN(14°39') = 0.54777, W2=(0.94504)COS(14°39') =
W = W1/W2 = 0.59910; RAZ = ACOS(0.06382) = 86°20' =0.91432
TAZ = ACOS(0.59910) = 53°12' and ($0° \leq \Delta \leq 180°$) so that GCBR = 86°20'
and GCBT = 360° - 53°12' = 359°60' - 53°12' = 306°48'

EXAMPLE (III):
TX: (South Magnetic Pole) @ 68°12'S ; 145°24' E so that T=-(68°12') & F=-(145°24')
RX: (North Magnetic Pole) @ 76° N ; 102° W so that R = 76° and H = 102°
Δ = 102° - (-(145°24')) = 247°24' NOTE: $\Delta > 180°$
A = (-0.92849)(0.97030) + (0.37137)(0.24192)(-0.38430) = -0.93544
B = ACOS(-0.93544) = 90° + 69°18' = 159°18' so that GCD= 11001,3 miles
J = SIN(159°18') = COS(159°18' - 90°) = COS(69°48') = 0.35347
V1 = -SIN(68°12') -(-0.93544)SIN(76°) = -0.02083 and
V2 = (0.35347)COS(76°) = 0.08551 and V = V1/V2 = -0.24360
W1 = SIN(76°) -(-0.93544)SIN(-68°12') =0.10175, W2=(0.35347)COS(68°12')=0.13127
W = W1/W2 = 0.77512; RAZ = ACOS(-0.24360) = 90° + 14°6' = 104°6' and
TAZ = ACOS(0.77512) = 39°11' and ($\Delta > 180°$) gives GCBT = 39°11' and GCBR=255°54'

EXAMPLE (IV):
TX: (Montevideo, Uru) @ 34°50'S , 56°10'W so T = -(34°50') and F = 56°10'
RX: (Orlando, FL) @ 28°32'N , 81°22'W so that R = 28°32' and H = 81°22'
Δ = 81°22' - 56°10' = 25°10' NOTE: ($0° \leq \Delta \leq 180°$)
A = (-0.57119)(0.47767) + (0.82082)(0.87854)(0.90508) = 0.37983
B = ACOS(0.37983) = 67°41' so that GCD = 4674.2 miles, J = SIN(67°41')=0.92510
V1 = -SIN(34°50') - (0.37983)SIN(28°32') = -0.75262, V2=(0.9251)COS(28°32')=
W1 = SIN(28°32') - (0.37983)(-SIN(34°50'))=0.69462 and =0.81274
W2 = (0.92510)COS(34°50') = 0.75934 so V = V1/V2 = -0.92603 , W =W1/W2=0.91477
RAZ = ACOS(-0.92603) = 157°49' and TAZ = ACOS(0.91477) = 23°50'
so ($0° \leq \Delta \leq 180°$) gives GCBT = 336°10' and GCBR = 157°49'

EXAMPLE (V):
TX: (Lvov, USSR) @ 49°51'N, 28°31'E so T = 49°51' and F = -(28°31')
RX: (McCook, NE) @ 40°13'N, 100°37'W so that R=40°13' and H = 100°37'
Δ = 100°37' - (-28°31')) = 128°68' = 129° 8' NOTE: $0° \leq \Delta \leq 180°$
A = (0.76436)(0.64568)+ (0.64479)(0.76361)(-0.63113) = 0.18278
B = ACOS(0.18278) = 79°28' so that GCD = 5488.0 miles, J=SIN(79°28')=0.98315
V1 = SIN(49°51') -(0.18278)SIN(40°13') = 0.64634, V2=(0.98315)COS(40°13')=
W1 = SIN(40°13') -(0.18278)SIN(49°51') = 0.50597 =0.75074

W2 = (0.98315)COS(49°51')=0.63393; V=V1/V2=0.86093 & W=W1/W2=0.79815 so
RAZ = ACOS(0.86093)=30°35' and TAZ = ACOS(0.79815) = 37°3' and
($0° \leq \Delta \leq 180°$) gives GCBT = 322°57' and GCBR = 30°55'

EXAMPLE (VI):
TX: (Blantyre, Mala) @ 15°48'S, 35°7'E so that T = -(15°48') and F= -(35°7')
RX: (Riverside, CA) @ 33°59'N, 117°21'W so R = 33°59' and H = 117°21'
Δ = 117°21' - (-(35°7')) = 152°28' NOTE: $0° \leq \Delta \leq 180°$
A = (-0.27228)(0.55895) + (0.96222)(0.82902)(-0.88674) = -0.85970
B = ACOS(-0.85970) = 149°17' so that GCD = 10309.5 miles
J = SIN(149°17') = 0.51079, V1=SIN(-15°48') -(-0.85970)SIN(33°59')=0.20825
V2 = (0.51079)COS(33°59') = 0.42355 and v = V1/V2 = 0.49168
W1 = (0.51079)COS(15°48') = 0.32487, W2 = (0.51079)COS(15°48') = 0.49149
W = W1/W2 = 0.66099 and RAZ = ACOS(0.49168) = 60°33' while
TAZ = ACOS(0.66099) = 48°37' and ($0° \leq \Delta \leq 180°$) gives the bearings
GCBT = 311°23' and GCBR = 60°33'

EXAMPLE (VII):
TX: (Dunedin, NZ) @ 45°48'S, 141°6'E so T = -(45°48') and F = -(141°6')
RX: (Watertown, MA) @ 42°23'N, 71°7'W so R = 42°23' and H = 71°7'
A = (-0.71691)(0.67409) + (0.69716)(0.73865)(-0.84604) = -0.91894
Δ = 71°7' - (-(141°6')) = 212°13' and NOTE: ($\Delta > 180°$)
B = ACOS(-0.91894) = 156°46' so that GCD = 10826.3 statute miles
J = SIN(156°46') = 0.39448, V1 = SIN(-45°48')-(-0.91894)SIN(42°23') =
V2 = (0.39448)COS(42°43')=0.29138, V=V1/V2= -0.33448 =-0.09746
W1 = SIN(42°23')-(-0.91894)SIN(-45°48') = 0.01529, W = W1/W2 = 0.05560
W2 = (0.39448)COS(45°48') = 0.27502 and RAZ = ACOS(-0.33448) = 109°32'
and TAZ = ACOS(0.05560) = 86°49' and since we have that ($\Delta > 180°$) we
find: GcBT= 86°49' and GCBR = 360° - 109°32' = 250°28'

For those interested in working other examples, the following are based upon a RX location of 18°30'N and 69°55'W (near Santo Domingo, Dominican Republic)

LOCATION	LATITUDE	LONGITUDE	GCBR	MILES	GCBT
Bogota, Columbia	4°38'N	74°6'W	196°56'	998.3	16°6'
Vladivostok, ASSR	43° 6'N	131°47'E	342°38'	7958.7	22°49'
Kingston, Jamaica	18°21'N	77°31'W	270° 6'	498.0	87°37'
Blantyre, Mala	15°48'S	35°7'E	100°54'	7516.8	284°35'
Lima, Peru	12° 6'S	76°55'W	193°14'	2166.3	12°50'
Honolulu, HI	23° 8'N	157°28'W	287°26'	5485.4	109°23'
Wellington, NZ	41°25'S	174°45'E	232°25'	8352.4	91°56'

PART III: Radio Direction Finding

Some time ago an article titled "Radio Direction Finding: A practical approach on the BCB with an algorithm for manual or computer evaluation" appeared in both DXN and DXM. In that writing, two receiver locations RA and RB took loop bearings (by nulls) on a distant transmitter (TX) and the calculations that followed allowed computation of the great circle distances RA to TX and RB to TX. The method is rather limited since there are restrictions on the input parameters to that algorithm not mentioned in the article.

Below a complete algorithm is presented which not only allows the computation of the distances involved but also the geographical coordinates of the distant station.

An introduction to the techniques of measuring such bearings (azimuth angles) of a distant transmitter by use of a loop antenna at the receiving site are discussed in the above named article and thus will be omitted here.

Figure I is fundament to this development. NP denotes the geographic North Pole, RA is the location of Receiver "A", RB is the location of Receiver "B", TN denotes True Geographical North, GCAB is the great circle passing thru RA and RB, DAB is the great circle distance between RA and RB, AB is the azimuth bearing of RB as measured at RA, BA is the azimuth bearing of RA as measured at RB, DAF is the great circle distance between RA and Transmitter "F" (TXF), DBF is the great circle distance between RB and TXF, DAG is the great circle distance between RA and Transmitter "G" (TXG), and

DBG is the great circle distance between RB and TXG. DAF+DAG=DBF+DBG=π R. (π R = 12430.8 miles for Earth radius R=3956 to 3957 miles and is thus one-half the circumference of the Earth) TXF and TXG are thus "endpoints" of a diameter of the sphere of radius R (i.e., they lie at opposite "ends" of the Earth).

Since measurement of a loop bearing of a distant transmitter is inherently ambigious by 180°, one cannot be certain which transmitter (TXF or TXG) is being heard. For this development, we introduce the terms "Half A" and "Half B" which are determined by the great circle GCAB passing thru RA and RB. This great circle divides the Earth into two halves and the two DXers at RA and RB simply agree which half will be designated Half A, the other half then called Half B. The important fact is that loop bearings taken on a TX at both RA and RB must "point" into the same Half. With this understood, A denotes the bearing of the distant TX as measured at RA and B denotes the bearing of the distant TX as measured at RB. (Figure I merely shows A and B in the Half B) The most probably Half in which the station is to be found is thus decided by the DXers at RA and RB by their own experience with propagation conditions, time of day, program language, etc. Furthermore, due to the nature of the BCB, DAB is not likely to exceed several thousand miles. Also, for practical reasons, DAB should not be less than several hundred miles for RDFing stations more distant than a thousand miles or so.

Also, in almost every instance, one of the possible transmitter locations will be nearer to RA or RB than the other. For this discussion, we assume that TXF is the nearer--that is, DAF $\leq$ DAG or DBF $\leq$ DBG. There is a simple determination of which TX is being heard (the "short haul" path, TXF or the "long haul" path to TXG), namely: if J3 = J1 + J2 $\leq$ 180°, then TXF is the distant transmitter and if J3 $>$ 180°, then TXG is the DX. If J3 = 180°, the DX could be either TXF or TXG.

For the following: All trigonometric functions have arguments in degree measure, values in radian measure and all inverse trigometric functions have arguments in radian measure and values in degree measure. The trigonometric functions used are sine (SIN) and cosine (COS) and the inverse trigonometric functions used are arcsine (ASIN) and arccos (ACOS). Also, ABS(X) denotes the absolute value of the number X, i.e., if X is negative (-), ignore the "minus" sign. For example: ABS(+3)=ABS(-3)=3, ABS(-7.98)=7.98, etc.

Let the coordinates of RA be Latitude (A1°A2'A3"), Longitude (A4°A5'A6") and coordinates of RB be Latitude (B1°B2'B3"), and Longitude (B4°B5'B6"). The standard convention of algebraic sign for coordinates is used, viz: N-Latitude and W-Longitude are positive (+) and S-Latitude and E-Longitude are negative (-).

We now present the necessary trigonometry: For notational convenience, let A* denote A1°A2'A3", A** denote A4°A5'A6", B* denote B1°B2'B3" and B** denote B4°B5'B6".

T° = A** - B**
D° = ACOS[(SIN(A*)SIN(B*)) + (COS(A*)COS(B*)COS(T°))]
M = COS(D°)
N = SIN(D°)
E° = ACOS[(SIN(B*) - (M)SIN(A*))/(N)COS(A*)]
V° = ACOS[(SIN(A*) - (M)SIN(B*))/(N)COS(B*)]
DAB = (69.06)D° ... statute miles
IF(0° $\leq$ T° $\leq$ 180°), THEN: AB = E° and BA = 360° - V°
IF(T° $<$ 0° or T° $>$ 180°), THEN: AB = 360° - E° and BA = V°

J1 = ABS(AB-A)
J2 = ABS(BA-B)
IF(J1 $>$ 180°), REPLACE J1 by 360° - J1
IF(J2 $>$ 180°), REPLACE J2 by 360° - J2
J3 = J1 + J2
IF(J3 $>$ 180°), REPLACE J1 by 180° - J1
IF(J3 $>$ 180°), REPLACE J2 by 180° - J2
P° = ACOS[(COS(D°)SIN(J1)SIN(J2)) - (COS(J1)COS(J2))]
J4 = SIN(D°)/SIN(P°)
J5° = ASIN[(J4)SIN(J2)]
J6° = ASIN[(J4)SIN(J1)]
J7 = SIN(A*)COS(J5)

J8 = COS(A*)SIN(J5)COS(A)
J9 = J7 + J8
IF(J3 $>$ 180°), REPLACE J9 by J7 - J8
J10° = ACOS[J9]
J11 = 90° - J10
J12° = ACOS[(COS(J5) - (SIN(A*)SIN(J11)))/(COS(A*)COS(J11))]
IF(J3 $\leq$ 180°), then
(a) IF(0° $\leq$ A $\leq$ 180°), THEN J13 = A** - J12
(b) IF(180° $<$ A $<$ 360°), THEN J13 = A** + J12
IF(J3 $>$ 180°), then
(a) IF(0° $\leq$ A $\leq$ 180°), THEN J13 = A** + J12
(b) IF(180° $<$ A $<$ 360°), THEN J13 = A** - J12
IF(J3 $<$ 180°), then TXF is the transmitter logged, and
Latitude TXF: J11
Longitude TXF: J13
Distance DAF = (69.06)J5° ... statute miles
Distance DBF = (69.06)J6° ... statute miles

IF(J3 $>$ 180°), then TXG is the transmitter logged, and
Latitude TXG: -J11
Longitude TXG: (a) IF(J13 $\geq$ 0°),Long(TXG)=J13-180°
(b) IF(J13 $<$ 0°),Long(TXG)=J13+180°
Distance DAG = (69.06)(180° - J5°) .. statute miles
Distance DBG = (69.06)(180° - J6°) .. statute miles

Several Examples follow: In each case RA and RB have coordinates A* = 41°0'0", A** = 97°0'0", B* = 38°0'0" and B** = 92°0'0". Thus, for all examples:

T° = 97° - 92° = 5° D° = 4.886° = 4°53'09"
M = 0.99637 N = 0.08517
E° = 126.256° = 126°15'21" V° = 50.562° = 50°33'43"
DAB = 337.43 miles and since T°=5°, we have
AB = E° = 126.256° BA = 360°-V° = 309.438° =309°26'18"

	EXAMPLE (I)	EXAMPLE (II)
Loop Bearing: A°	102°	282°
Loop Bearing: B°	63°	243°
J1 =	24.256°	155.744°
J2 =	113.562°	66.438°
J3 =	137.818° $<$ 180°	222.182° $>$ 180°
P° =	42.299°	42.299°
J4 =	0.12655	0.12655
J5 =	6.662°	6.662°
J6 =	2.980°	2.980°
J7 =	0.65163	0.65163
J8 =	-0.01820	0.01820
J9 =	0.63343 (=J7+J8)	0.63343 (=J7-J8)
J10 =	50.696°	50.696°
J11 =	39.304°=39°18'14"	39.304°=39°18'14"
J12 =	8.433°	8.433°
J13 =	88.567° = 88°34'01" =(A** - J12)	88.567° = 88°34'01" =(A** - J12)
	[J3 $<$ 180°] so TXF is the DX TX and	[J3 $>$ 180°] so TXG is the DX TX and
	Lat(TXF): 39°18'14" (N)	Lat(TXG): 39°18'14" (S)
	Long(TXF): 88°34'01" (W)	Long(TXG): 91°25'59" (E)
	DAF = 460.08 miles	DAG = 11970.72 miles
	DBF = 205.80 miles	DBG = 12225.00 miles

A study of Examples (I) and (II) will show that in either case, J3 $\leq$ 180° or J3 $>$ 180°, that one always computes the coordinates of TXF, namely Lat(J11) and Long(J13). If J3 $>$ 180°, then TXG is the transmitter of interest, but since TXF and TXG are "endpoints" of a spherical diameter, the coordinates of one follows quickly from knowledge of the coordinates of the other. To wit: if Lat(TXF)=J11 and Long(TXF)=J13, then Lat(TXG)= -J11 and Long(TXG) = J13+180° or J13 - 180°.

The large agreement in computed values for Examples (I) and (II) follows from the fact that the loop bearings in one example are reciprocal loop bearings of the other example, to wit: 282° = 102° + 180° and 243° = 63° + 180°. In Example (I): J2 = 246.438°, but J2 > 180° requires J2 replacement by 360° - J2 = 113.562°. In Example (II), J1 = ABS(-155.744°) = 155.744° and J2 = 66.438° so that J3 = 222.182° > 180°. Now, in this case J1 is replaced by 180° - J1 = 24.256° and J2 is replaced by 180° - J2 = 113.562° which are identical with the J1, J2 values in Example (I). Thus, the values used for J1 and J2 are the same for both Example (I) and Example (II).

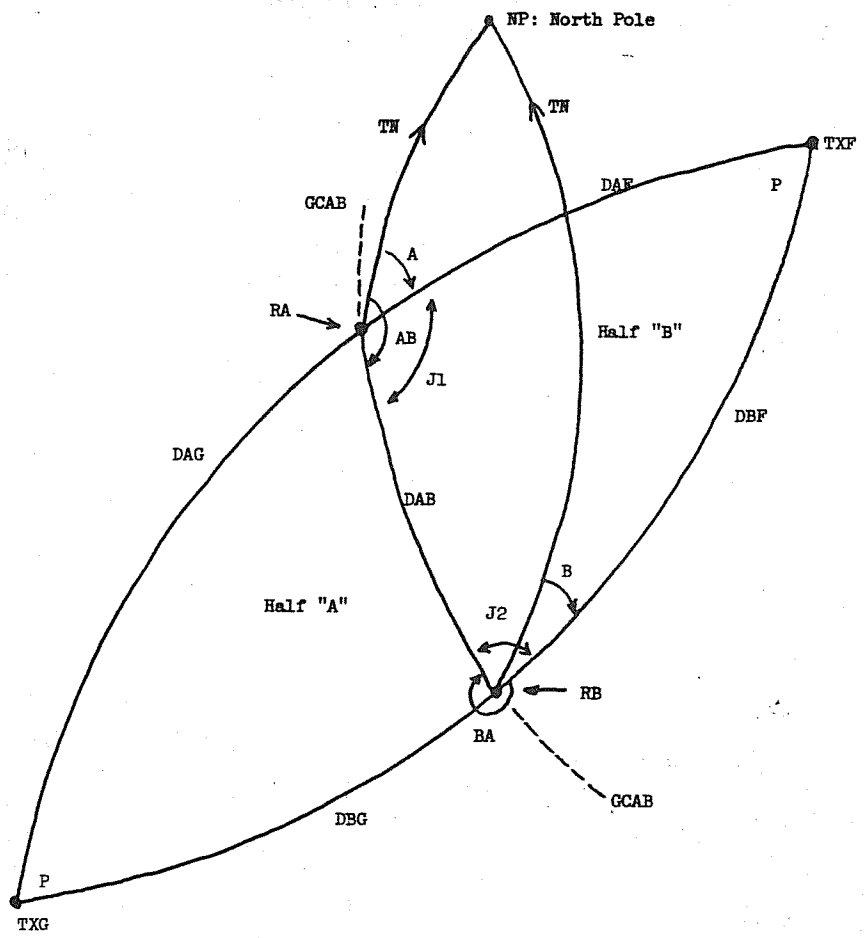
In the remaining examples, J1 and J2 will be listed as their "final" values as computed by lines 10-16 of the algorithm.

	Example(III)	Example(IV)	Example(V)	Example(VI)
Loop Bearing:A°	200	300	235	235
Loop Bearing:B°	300	300	234	235
J1° =	73.744	6.256	71.256	71.256
J2° =	9.438	170.562	104.562	105.562
J3° =	83.182 < 180	183.182 > 180	184.182 > 180	183.182 > 180
P° =	96.851	3.248	6.276	5.649
J4 =	0.08579	1.50329	0.77913	0.86528
J5° =	0.806	14.271	48.947	56.466
J6° =	4.724	9.428	47.545	55.024
J7 =	0.65599	0.63581	0.43087	0.36243
J8 =	-0.00997	0.09302	-0.32644	-0.36083
J9 =	0.64602	0.54279	0.75731	0.72326
J10° =	49.758	57.126	40.772	43.676
J11° =	40.242	32.874	49.228	46.324
J12° =	0.361	14.725	71.067	81.400
J13° =	97.361	82.275	25.933	15.600
TX logged :	TXF	TXG	TXG	TXG
Latitude :	40°14'31"(N)	32°52'26"(S)	49°13'41"(S)	46°19'26"(S)
Longitude :	97°21'40"(W)	97°43'30"(E)	154°04'01"(E)	164°24'00"(E)
Distance DA- :	55.67	11445.24	9050.52	8531.26
Distance DB- :	326.24	11779.70	9147.34	8630.84

Note Examples (V) & (VI) indicate the extreme sensitivity of the algorithm to very small changes in A° and B° [1° in these Examples] with the resulting transmitters being different by some 1000 miles. Thus, RDF work must be done with as great an effort as is possible to achieve the "best" loop bearing of a station--especially on the long haul paths!!!

The author has great interest in this matter of RDF work on the BCB and would welcome any comments from all parties so interested. Should there warrant a need for analysis of considerable data with this algorithm, the author would consider the job of computing the resulting RDF data and send the results to all concerned. Certainly on the BCB there are numerous instances where RDF work can be used: unId testers, clandestine stations, split frequency stations and the like. If DXers would want, the author would be willing to act as a "clearing house" for all such activities, and would be willing to correspond with those requesting RDF analysis on transmitters they have logged. The accuracy is best achieved with numerous DXers reading bearings on the same stations and the analysis carried out between all pairs of such DXers to ascertain the transmitter location!

RDF de Ghoti, Ph. Dx



********** FIGURE I **********

RADIO DIRECTION FINDING MODEL

Note: All bearings A, AB, BA, B are measured clockwise positive (0° - 360°) from True Geographic North (TN) at the respective receiver locations RA and RB.

THE LOOP-SENSE CARDIOID ARRAY

Part I - Introduction and Orientation

For as long as the DX'er of the medium waves has enjoyed the blessings of the loop antenna, he has dreamed of the unidirectional loop - one free of the superfluous null that otherwise limits its ideal capabilities. Then it is no surprise that, when we introduced the Loop-Sense Cardioid Array to North-American DX'ers in 1971, a storm of controversy swept the continent. To dare to claim "invention" of the "unidirectional loop" means anxiety for the masses, glory for its designer, and jealousy from his peers; and we have undergone the experience of all three!

Now it is time to end the controversy, first by stating some strong facts:

1) The "unidirectional loop" is a technical impossibility; anyone who claims to invent one is either a fraud or has misnamed something else.

2) The Loop-Sense Cardioid Array (hereafter referred to as the LSCA) is not a unidirectional loop but a "cardioid array".

3) Cardioid arrays, better known to navigators as "DF" antennas, have been in use on ships and aircraft for many decades!

So the LSCA is not the long-awaited unidirectional loop of DX'ers' dreams, rather it is something different - an entity in itself to be judged by its own merits. The LSCA may resemble a modified loop, which is its loudest component, but its performance is like no loop, nor like any other antenna or array in common use. Therefore, the reader who insists upon classifying the LSCA as a "loop" and compares its operation to one is prejudiced and will do this article, the device, and himself a disservice.

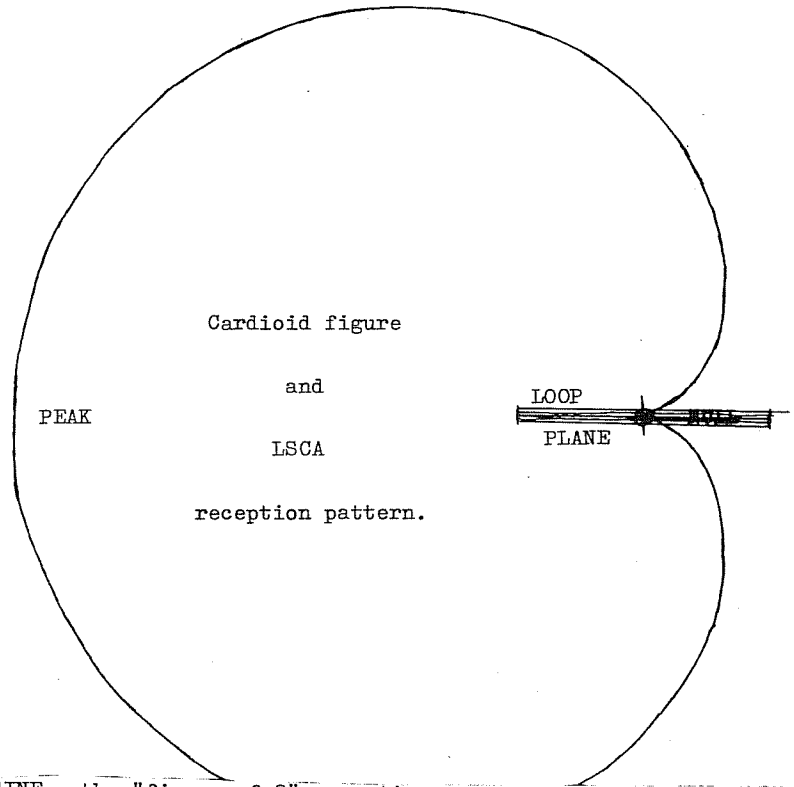
This article is the end result of tens of hours of theoretical study and research into cardioid arrays and hundreds of hours of empirical experience that has surpassed the experimental stage. Invaluable data was contributed by Richard Clark of Fort Lauderdale, whose largely independent and extensive empirical results with a LSCA of his own design were a useful check on our own. In addition, various comments and criticisms, many valid - some irresponsible, were directed to our efforts; their effect can only have a beneficial influence on the quality and standards of this article.

Unfortunately, expediency requires sacrafice: This article assumes that the reader possesses basic knowledge and experience with both loops and vertical, omnidirectional antennas. This is not just a space saver; it has been our experience to note that individuals who are poorly adept at basic antenna theory find it all but impossible to grasp cardioid theory, regardless of how simply we explain it. And they will be even less successful getting their newly-built LSCA's to work, the nature of the beast being what it is. If we may draw a line, the DX'er who regularly uses a tunable loop but has minimal technical background should survive this article.

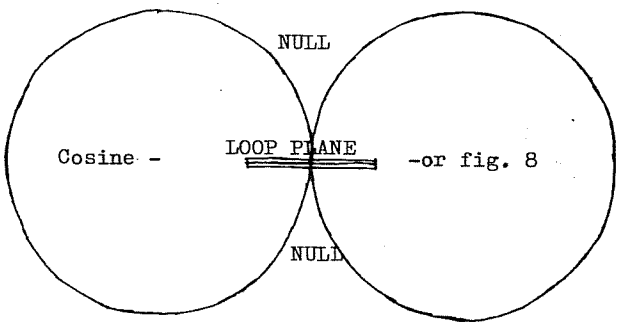
As rapid progress in the cardioid field has created its own jargon, we present a brief glossary of common terms for the reader's benefit in comprehending the rest of the article:

CARDIOID - the heart-shaped geometric figure here illustrated. It is the polar graph of the function "1 - cosΘ", and the shape of the basic reception pattern of the LSCA. Also, short for "cardioid array", especially when used as an adjective.

CARDIOID ARRAY - in this article, a loop and vertical antenna combined equal in signal strength and 90^{0} out of phase to effect the cardioid reception pattern.



COSINE - the "figure-of-8" reception pattern of loop antennas (Note illustration); the polar graph of the cosine function.



DF ANTENNA - the common name for the cardioid array as used in navigation. It normally appears as part of a multi-band receiver, on top of which are mounted a rotatable ferrite loop over a setting circle, a vertical whip antenna, and a control for matching their signals for determining the bearing of a measured station without ambiguity. Receivers so equipped are sold in most good marine electronic stores at a price of US$150 and better.

K-POT - on the LSCA, a control matching the signals of the loop and the sense antenna.

LOOP - an antenna in the shape of a coil. To the layman it is the ferrite rod of portable receivers. For most DX'ers, a kite-shaped rotatable device oriented vertically, consisting of a "tank" circuit of some 8-10 turns of wire connected to a variable capacitor, and a parallel 1-2 turn winding connected to the receiver. It features two opposing nulls perpendicular to the plane of the windings; the nulls are useful for direction finding and eliminating interference.

LSCA - (pron. "LESS-ca"), the cardioid array designed for the DX'er as developed by Ronald F. Schatz. Its correct name should be "melonoid array", but popular usage retains "LSCA".

MELONOID - meaning "apple-shaped", describing the true, three-dimensional reception pattern of the LSCA.

180° AMBIGUITY - that undesirable feature of loop antennas that renders them unable to determine which of two opposing bearings is the correct one.

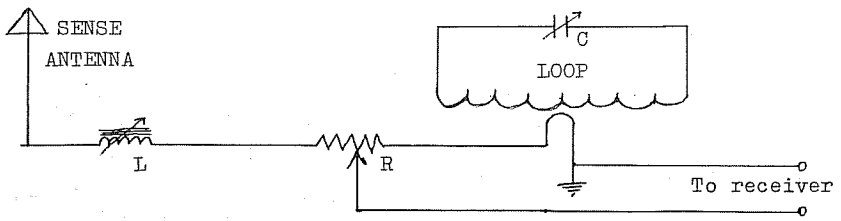
PATTERN-CONTROLLED LOOP - PCL (pron. "pickle"), the primitive loop-sense array as expounded by Gordon P. Nelson. It is basically identical to the prototype LSCA, but Nelson stresses its use in other than the cardioid mode.

PR-SWITCH - (pattern reversal), on some LSCA's and all MPA's, a switch that reverses the cardioid pattern electrically 180°, without the need to turn the loop by hand. Useful for checking MPA balance in the cosine mode.

SENSE ANTENNA - usually a vertical whip antenna used in conjunction with a loop to resolve the 180° ambiguity.

MULTI-PATTERN ARRAY - or MPA, a LSCA in which both the loop and the vertical antenna may be used separately for selection between cardioid, cosine, and omnidirectional modes.

For the reader who is too impatient to wait for Part III of this series, we begin by offering the above design for a simple, but practical, cardioid array. Any regular loop will serve (NRC "AA" loop, SM-1, etc.). Just add a 2-k potentiometer for R and, say, an old IF can for L. And we will forgive the reader if he decides to use his "long wire" in place of a vertical whip - at least this time.



Basic Cardioid Array (Schematic diagram)

The above is experimental only; the components should be left loose on the work-bench. Save the buzz-saw and hammer for better designs to come.

Building the experimental array is easy; operating it is not. To operate:

1) Tune in a station, preferably a strong one.

2) Rotate and tune the loop for maximum signal (as normally done with a plain loop).

3) Detune the loop slightly; on one side of the peak a null should be found (This null is a characteristic malady of poorly-designed loops but the sign of a healthy cardioid array).

4) Adjust the potentiometer for minimum signal (Be careful; this is a very sharp, delicate adjustment).

5) Continue to adjust all controls (C, R, L) for minimum signal. If unsuccessful, rotate the loop 180° and try from scratch (The loop-tuned null will then appear on the opposite side of the peak).

6) Rotate the loop to check the pattern.

If the reader is still unsuccessful, other stations should be tried and the circuit checked for errors in construction, etc.

Once we have the cardioid pattern we can make some empirical observations:

1) The cardioid has a single, WIDE null, compared to the two sharp nulls of the loop. Here a comparison between cardioid and loop nulls is unavoidable, and we offer a table of relative null widths for given values of signal attenuation from peak:

-dB:	0	-10	-20	-30	-40	-50	-60	-70
∞:	180°	37°	11°	4°	1°	.5°	...	...
∩:	360°	137°	74°	41°	23°	13°	7°	4°

This null is of tremendous size indeed. While the loop null is normally effective against only one station at a time, the cardioid null can wipe out tens of stations in a wide sector. Our classic example is 1340 kHz from Miami: With the pattern aimed SE, all that can be heard on the receiver are AFRS in Guantánamo Bay, Radio Olímpica in Barranquilla, and Reloj Nacional in Colón, Cuba. All North American graveyarders are too weak to be detected!

2) The nature of the cardioid permits reception of stations lying opposite strong, interfering stations. The superfluous null of the loop, of course, will either knock out both at once or neither, but the cardioid will not. Needless to say, the cardioid user has a host of "opposite" stations available to him that he could never hear before with a loop. CKLW-800 from Miami and Limoges-710 from Boston are prime examples.

3) And will wonders never cease? The LSCA will null out a super-local to reveal the station behind it - in the same direction! Our classic example is 940 kHz in Miami: If we aim the cardioid SE as before, we null out super-local WINZ, permitting a strong, dominant signal from Radio Punto Fijo, lying in the opposite direction. When RPF closes down at 2300, the dominant station then becomes WMAZ in Macon, Georgia. WINZ's tower, only 4 miles from our location, lies right between ourselves and Macon!

While this "transparent tower" effect may seem to be incredible, note that the LSCA's reception pattern is really a three-dimensional, apple-shaped melonoid, with a single null where the "stem" would be. In a way, WMAZ's signal "skips over" WINZ's tower at an angle that missis the melonoid null. This will be explained in full in Part II.

4) Other possibilities exist for the LSCA. For example, a strong, local noise source will paralyze any loop, but not the LSCA, which can tune out the noise in any position.

But every blessing has its equity, and the LSCA is no exception. There must be a reason why such a wonderful device has not been widely used in spite of its relative simplicity, and this is why:

Cardiod arrays are extremely delicate instruments. The slightest change in their environment (people, switches, metallic furniture, swaying palm trees, etc.) will upset the loop-sense balance and destroy the null. Moving one between rooms may render it useless without compensating modifications. Just tuning one can make a minister swear. Yes, the proud owner of a LSCA must have the patience of Job.

Fortunately, advanced LSCA and MPA designs tend to overcome these adverse effects with ample shielding and fine adjustments. While that still doesn't make them as simple to operate as a loop, the improvement in performance is very notable. Cardioid arrays owe their former obscurity to past experimenters who tore their hair rather than improve the product.

In conclusion, we see that the LSCA is not really the legendary "unidirectional loop", but to think of it as a loop-like device with a single, super-wide null and "X-ray vision" would not be grossly abstract. But it's quite an uncooperative beast!

MODIFICATIONS TO THE IRCA SPIRAL LOOP PLANS
Keith Birlingmair

While listening to the jumble on 1280 kHz, with CJMS dominant, I began thinking about building a larger spiral loop. (Mine is 2' square.)

But then I reflected on what a long grueling job stringing that wire was. I told myself, "There's no way I'm going to do that again."

And thereby came up with the following modifications:

First of all, forget about using dowels. Use 1" square pieces of hardwood (such as oak) cut the required lengths, 2' and 3' in the original plans.

Next, instead of drilling holes at the indicated spacing, cut 1/4" deep grooves at a slight angle toward center. (See Figure 1).

And third, cut 1/2" deep grooves 1" wide one foot from the end of each piece. The drill a hole through the two and bolt them together. (See Figure 2).

These modifications should lessen construction time considerably, and eliminate the precision drilling necessary when using the dowels.

figure 1

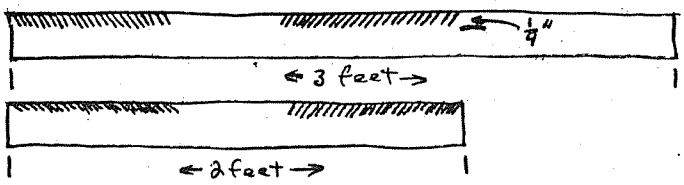
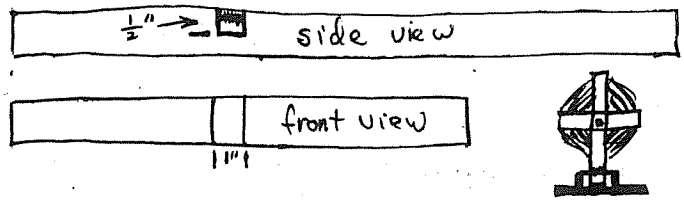


figure 2



MORE ON THE BARLOW-WADLEY XCR-30
J.A. Worcester

In a recent issue the above receiver was reviewed by Michael S. Hardester and he included the information that the receiver, sensitivity-wise, was useful for casual listening only on MW with the built-in whip but became satisfactory when employed in conjunction with a Space Magnet loop antenna. This is only the second experience I have seen reported of this combination and since the other directly contradicts Mr. Hardester's experience, I thought perhaps I had better describe it and possibly flush out some additional experiences "to break the tie."

On May 24, 1972 I received a letter from a New York customer and I will quote directly the first two sentences. "About a year ago I purchased from you a SPACE MAGNET loop and have used it successfully with a Grundig Satellite radio. I have since acquired a Barlow-Wadley XCR-30 radio and find that the loop is completely worthless with this unit." In following up this complaint with the customer, he sent a schematic and considerable technical material which included the refreshingly candid statement that the radio would not work with an inductive antenna. I point this out to the customer with the speculation that probably the digital oscillator information derived from the quartz crystal reference produced harmonics in the MW band which were picked up by the loop and interference with proper operation. In view of Mr. Hardester's positive experience, however, I am wondering if I advised the customer correctly. If there are other members with this combination I feel their experiences in this regard would be very helpful not only to me but to the membership in general.

Having gone this far, I find it difficult to stop without giving my views, for what they are worth, on the value of this receiver as a serious tool for the MW DXer. I find it hard to envision a more unlikely prospect for this purpose than the circuit employed. In the old days it was referred to as the "single span" circuit and I recall building one in the early 30's. It is basically a cheap way to cover a lot of megahertz. The modus operandi is simple. If you wish to cover say 500 kHz to 30 mHz you make the I.F. frequency slightly higher, say 31 kHz, and then an oscillator covering 31.5 to 61 kHz will produce the necessary conversion. Since the oscillator is covering less than a 2 to 1 frequency range it is simply produced by a variable capacitance of modest size and completely avoided are multiple coils, trimmers, switching, etc. The fact that the circuit has been all but forgotten all these years is not without justification. One little problem is how do you tune the signal over the required range without getting back to multiple coils, trimmers, switching, etc. In the receiver under discussion, a single tuned circuit using simultaneous inductive and capacitance variation is employed in an attempt to provide some signal selectivity. High "Q" over such a wide frequency range is quite impossible and this is the only pre-mixer selectivity provided. In view of this, the panel graphics for this control "antenna trimmer" seem a bit inadequate. Bear in mind that for MW use the whole MW spectrum has to be tuned in a very small part of the total coverage of this control and for all these reasons the antenna tuning device cannot be counted as more than 1/2 tuned circuit and in no way can compare with the Realistic TRF having 2 good tuned circuits preceding the mixer and priced in the $30 odd price range. I am sure it is not necessary to remind the membership of the importance of pre-mixer selectivity from the standpoints of minimizing spurious response, cross modulation, desensitization, etc.

Another problem with the circuit used in this receiver is the fact that adequate selectivity cannot be realized practically in the high frequency amplifier. A second conversion to a low I.F. is necessary and therefore we reach the end of the block diagram before any meaningful selectivity is encountered. This means that not only is the premixer stage broad but the first I.F. amplifier is broad as well, with additional cross-modulation, desensitization, etc.

Mr. Hardester's selectivity information may cause some confusion and as a matter of fact, writers in popular radio magazines are increasinglyguilty of such statements as this from S9- "this receiver has a selectivity of 5 kHz at 6 db and that ain't bad." I subscribe that bandwidth measurement at 3 db and 6 db do not, in any manner, describe the selectivity of the amplifier. Their purpose is to indicate the capability of the amplifier as far as sideband response is concerned. In other words, 5 kHz at 6 db means that 2.5 kHz audio signals will get through the amplifier with only 6 db attenuation. It is perfectly possible to build a crystal diode receiver with just a tuned loop that would measure 5 kHz at 6 db but its selectivity would be negligible. For selectivity purposes the bandwidth should be measured with an input signal 60 db above normal input. Since it is unlikely that the dynamic range of the receiver exceeds 60 db, Mr. Hardester's observation that the bandwidth under strong AVC totals 60 kHz probably indicates that the 60 db bandwidth is not much less than 60 kHz which is, of course, inadequate for serious MW DXing.

To sum up, it is hard to fault Mr. Hardester's observations. He reports that the cross modulation is bad, the selectivity is poor and the S meter doesn't work either. My point of disagreement is when he puts all these things together and comes up with a positive recommendation. Remember, I am speaking of MW reception only--it may be great for SW.

EDITOR'S NOTE: Pages 17 through 23 were printed in the format in which you see them because the copy arrived here before we went offset. In the future, expect a few articles to appear in this format as we use up the backlog of articles. Budding authors are asked to see the note on Pg. 2.