

# DX MONITOR

THE OFFICIAL PUBLICATION OF THE **IRCA** INTERNATIONAL RADIO CLUB OF AMERICA

DEVOTED EXCLUSIVELY TO BROADCAST BAND DXING

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## DX Get-togethers

Paul Swearingen will host an Easter weekend get-together on Saturday, April 2, beginning at 2 pm, at 3132 SE Irvingham Street in Topeka, KS 66605. Paul will provide munchies and soft drinks. If you're still there at dinnertime, he'll send out for food. If you're still around Sunday AM, he'll arrange to get together for breakfast. There's a possibility of setting up a Beverage antenna at a long narrow park near his house. He can also provide information on motels in the area. Send an SASE for more details and a map, and let him know ASAP so he can make plans.

The ANARC Convention will be held in Orange County, CA July 13-16. We'll have more info on it, and our own convention, in the weeks to come.

## News from Headquarters

A couple of columns are missing this week, but we've managed to make up for it with an updater to the reprint list and an interesting article on Beverage Antennas. The reprint list includes all the articles which have appeared in DX Monitor since the last reprint list was compiled. Which was around January 1985. Happy perusing!

The Beverage article was taken from the FCV publication called "Antennas for Standard Broadcast Reception". It's actually an appendix to the article which appeared in last week's DX Monitor. The paper, considered a "classic" work on Beverage antennas, was published in 1958 and is now rather hard to find. Our thanks to Glenn Kippel for submitting it.

Speaking of last week's antenna article: you may have found it a little confusing. This was because two of the pages were out of order. If you read page 14 before you read page 13, it makes a lot more sense, hi. We'd be interested in knowing the results anyone has with the noise reduction antenna in the article.

See Bill Hardy's forum for a status report on the Almanac. It is now slated for publication in the spring. Bill is interested in receiving detailed station listings from your local newspaper to corroborate program times, network affiliations, etc. His address is 2301 Pacific Ave., Aberdeen, WA 98520.

Don't forget the upcoming anniversary issue. It's a club tradition to send in a forum reintroducing yourself to the rest of the club. See the editors' columns for deadlines. Another club tradition is the April Fool's issue of DX Monitor, a time for DX fun, games, parodies, and satire. If you have any funny contributions buzzing around in your head, commit them to paper and send them in to HQ.

**THE TED BROWN SHOW**  
with **NOLA ROEPER** **WNEW 1130**  
**MON-FRI 5:30-10AM AM**



# WESTERN DX ROUNDUP

2301 PACIFIC AVE., ABERDEEN WA 98520

DEADLINES: Anniversary issue Mon. March 14, Mon. March 21, Mon. May 4

REPORTERS FOR THIS ISSUE:

- (TRH) Tim Hall-350 G St. #F-1-Chula Vista, CA 92010  
 Sony ICF-2010, Radio West loop
- (BH) Bill Hardy-2301 Pacific Ave.-Aberdeen, WA 98520  
 FRG-7, Radio West loop
- (DL) Doug Lamerson-1777 E. West Road-Honolulu, HI 96848  
 (DL-HI1) DX'ing from Kane'ohe, HI  
 Superadio II & unamp. spiral loop
- (DP) Doug Pifer-4786 Macadamia Ct.-Oceanside, CA 92056  
 FRG-7000, MW-1
- (SR) Skip Robb-23701 Western #12-Torrance, CA 90501  
 FRG-7, Radio West loop  
 (SR-NV) DX'ing at Lake Mead, NV w/Sony Air 8 (scanner radio)
- (RW) Robert Wien-1309 Dentwood Dr.-San Jose, CA 95118  
 GE Superadio, GE long-range portable, SM-2

- \*\*\*\*\*
- 530 WNAG556 CA, Coronado 2/2 poor with "This FCC station operates from Police Headquarters. Gave address as Coronado Police Dept., 578 Orange Ave., Coronado, CA 92118. (DP-CA)
- 600 \*KKLQ\* CA, San Diego MM 2/1 0335 brief OC. Seemed to be putting spurs slightly below 590 & slightly above 610 (which would explain how they put out so much slop!). Soon returned to regular program, then turned the FM (106.5) off. Can't they do anything right? Hi. (TRH-CA)
- 620 KCLQ CA, Hanford 2/1 "KCLQ 107.5" fair signal with some fading over KTAR. ID at 2356 "Classic Rock 107.5 and 620 AM, KCLQ Hanford & Fresno." (SR-CA)
- 730 KSVN UT, Ogden This must be John Wilkins' unID. They're still Spanish format & definitely carry UP Radionoticias. Slogan is "Radio Mexicana." No call change yet, still KSVN as of mid-January. (TRH)
- 850 KMDY CA, Thousand Oaks 2/2 1845 "Comedy Radio" with Lilly Tomlin skit. "America's only comedy radio 850 KMDY." (SR-CA)
- KOA CO, Denver 1/22 "Newsradio 85 KOA," good in Boulder City, NV. (SR-NV)
- 870 KROL NV, Laughlin very good signal on car radio while driving in Las Vegas. In Torrance all I can hear is KIEV with something in background...maybe it's KROL Talkradio? (SR-NV)
- 1000 KVSD CA, San Diego 2/2 1858 fair daytime signal with Sonia Freedman, "Newstalk Radio." (SR-CA)
- KOMO WA, Seattle 1/27 0100 fair signal from Lake Mead. (SR-NV)
- 1070 KNX CA, Los Angeles 1/26 2220 "Newsradio" sounds like a local here in Boulder City from sunset to sunrise. Nothing at all from KNX during daytime. (SR-NV)
- 1110 \*KRLA\* CA, Pasadena MM 2/1 0422 loud TTs over KFAB. (TRH-CA)
- 1140 KGEM ID, Boise 2/1 0515 "K-Gem" IDs and Neil Diamond's "Holly Holy" o/u KRAK during what NRC Log shows as SP. Now an NSPer? (DL-HI) (Doug, KGEM is a country station. Could you have had someone else?--NH)
- 1170 KVOO OK, Tulsa 1/27 0116 fair signal into Lake Mead Lodge, with C&W music. (SR-NV)
- KPUG WA, Bellingham 1/18 0730 ID & into local newsmakers program in midst of KLOK/KVOO mess during usual futile hunt for WVA. (DL-HI1)
- 1180 KOPI MT, Kalispell 2/2 0130 Larry King Show, good with KERI nulled. (SR-CA)

- 1190 KEX OR, Portland 2/2 0200 very good signal with news, KPZE nulled. (SR-CA)
- 1220 (KDFC) CA, Palo Alto MM 2/1 0600 apparently off; not heard until after 0900. (TRH-CA)
- KBNO CO, Denver MM 2/1 0902-0922 weak under KDFC. Spanish with UP Radionoticias, then into English with man reading job openings and discussing at length how to get the most out of your voice. Finally enough for a report. (TRH-CA)
- WSLM IN, Salem MM 2/1 0611-0635 poor-fair on 436w PSA! Over XEB & WGAR. Male DJ with C&W, lots of "WSLM AM & FM" IDs, Indiana Hoosiers BKB promo, and what sounded like a farm feature & news/weather/sports. New, IN #1, state #37! Thanks to Robert Wien for several tips on this one! (TRH-CA)
- WGAR OH, Cleveland MM 2/1 0621-0626 poor under XEB, WSLM with C&W, male DJ IDs "Good morning from FM 99.5, WGAR." Not needed, but rare here. Good EC conditions today. (TRH-CA)
- 1230 KATO AZ, Safford MM 2/1 0723-0738 poor under KLAY. C&W music, IDs "12-30 AM, KATO." Ad for Johnson Motors (Nissan dealer) on U.S. Hwy. 666. New, AZ #64. (TRH-CA)
- 1250 KHIL AZ, Willcox MM 2/1 0759 s/on by man, over KTMS, KCIW. PSA on nite power grant? No PSA listed in NRC Log. (TRH-CA)
- KIKZ TX, Seminole MM 2/1 0746-0756 250w PSA poor & fady under KTMS in KSON-1240 null. C&W music, male DJ with CST TC, ID, and talk about Super Bowl. New, TX #39. (TRH-CA)
- 1400 KBCH OR, Lincoln City 2/6 0725 atop in CKRP null running SMN Stardust nostalgia music // KDON-1460 and KKMO-1360. After a pause 0732, local break included PSA's, novice announcer saying "Hello, Oregon coast" and doing weather, ID, promo for ABC Radio coverage of Calgary Olympics with local KBCH ending, back to Stardust. Still there 0800 with legal ID and ABC-I News. Has this been 24 hours for long? Certainly dominates. (BH-WA)
- 1410 KERN CA, Bakersfield 1/28 0000 "Home of CSU-Bakersfield Roadrunners basketball" ID then into Ray Briem, in CFUN null. (DL-HI1)
- KFMS NV, Las Vegas 2/1 1000 faded up with ID as "KFM 102," so even though had been scheduled to change calls on 2/1, apparently still KFMS, though no legal ID heard, maybe FM is KFMS and AM KRAM??? (RW-CA)
- 1450 KCLX WA, Colfax 2/6 0859 good atop KBPS & others, local KAYO s/on was quite late at 0936 today. SSB, full-data KCLX s/on, "latest local and Mutual news," into 0900 Mutual news. Also noted 0921 with country music, local bank ad. Seems to be stronger than in past years, is semi-regular when KAYO breaks down. (BH-WA)
- 1530 KFBK CA, Sacramento 1/27 0130 fair at Lake Mead Lodge. Neal Myers Talknet. (SR-NV)
- (KFBK)+MM 2/1 0350 OC, leaving WCKY. (TRH-CA)
- 1540 KSKQ CA, Los Angeles 1/28 0600 EE ID then back into Spanish. A real bomb. How long has this been going on? KNZS used to rule this roost. (DL-HI1)
- 1560 WQXR NY, New York MM 2/1 0555 fair-good over unID AdCon station. Both Mexicans off tonight. Classical music, still uses slogan "The Stereo Stations of the NY Times." (TRH-CA)
- 1580 KLOQ CA, Merced MM 2/1 0655-0705 SS songs, male DJ with ID "Desde Merced California, K-L-O-Q, Radio Gallito," rooster crow after each ID. New, CA #2001 (TRH-CA)
- KDAY CA, Santa Monica 1/27 fading in & out 0145 with KNIX. KDAY with rap music, KNIX with C&W music. (SR-NV)
- (KDAY)+MM 2/1 0655 totally off. (TRH-CA)
- 1600 KUBA CA Yuba City 1/28 0050 40th anniversary IDs & modern country format (not indicated in log) briefly atop KMNY/KGST. Probably the unID C&W noted on other SRS/SSS occasions. (DL-HI1)

UNIDS

- 540 "KWNC"??? Quincy, WA? 2/1 0323 strange unID on 540 coming in fairly well looping N-S. ID during MCRN as "54, KWNC," promo for ??? Eagle program, back to MCRN, faded out. Thought KWNC-1370 WA moved to 540, though didn't list existing CP for it. Per call, KWNC said they were still on 1370, don't carry MCRN, and are daytime only, and hadn't been performing any ET'ing on 540!!! The stumper of the decade!!! IDEAS? HELP!!! ID was very clear. (RW-CA) (Robert, KWMT, Fort Dodge, IA went 24 hours over a year ago, has been reported with MCRN and is on the latest MCRN list.--NH)
- 1550 2/1 TTer looping NE. Seemed to be KZQQ or KRGO, or whatever their calls are this week, hi. (TRH-CA)
- Out of room--see you all next week! ♥





Nancy tries to DX sunset during Billy's afternoon naps. But our local on 1450 (we have only three locals) was hit by lightning in January and we didn't know they were off until four days later, and if it hadn't been in the local paper we might never have known! Too tired to turn on a radio, I guess. And I try to stay rested as there are many colds, flu, etc. going around here. In 1985 I worked on the Almanac until 0300 one night. I caught the flu the next day, then gave it to Nancy, who miscarried. This is a hobby, and as much as I enjoy working on the Almanac, I can't sit in a cold garage at 0200 nightly and get so tired that I get sick. My family and our health is top priority, then comes hearing Alberta graveyarders, hi. See you around Anniversary issue time. 73 and good DX.

RIC HEALD, 8539 BELLAMY WAY, SACRAMENTO, CA 95828 (916) 386-8677

Greetings and all that. Bill, you're absolutely correct. Family, health and for our younger members, school comes first, then the hobby. Not to be preaching (but will probably sound like it anyway, hi), I flunked out of college in more second year because DU and TP openings from Sitka, Alaska were more important than Sheldon Jackson J.C. I've regretted not finishing school ever since. Like Bill points out, this is a hobby and if you can make a comfortable living from it, please contact me immediately with details, hi.

Have a mystery SS station on 820. Heard it driving home from work last night (09 February) from 1805 to 1826 PLT, and now listening to it as I type this at 0620 the following morning. Cannot get any city mentions during the spot breaks, have heard Baja California (but sounded like a promo for a vacation destination), and did hear a spot for a music store on Av. Reforma, but in Mexico, that's like saying Main St. or Broadway, hi. This morning I heard them mention Guerrero, another holiday spot (Acapulco). Music is a mix of MoR and ranchera. When I rechecked at 1930 last night they were gone. Mexican daytimers are notorious for going off much later than local sunset, and am guessing the same is true for stations that power down.

Can't catch their slogan, it's a jingle and short. I think 0630 PLT would be too late for Guadalajara. Is there a new border or Baja station on 820?

Interesting article regarding ratings in the Los Angeles area. Yes indeed, all sorts of tricks can be used to make your station look good, I know, I've done it, hi. At KPLS, we used the 25-54 age demographics as that is the majority listenership to a C&W station with 18-35 used second. If I was to say, pitch a women's clothing store, I'd simply flip the Arbitron page to the page that looked best for us among women 25-54. I can still remember one merchant dryly asking me, "OK, which page are you going to show me," hi. And frequently a CHR station that's number 1, is not number 1 financially. They appeal to the 12-24 crowd, the upper end of that scale just starting out in the job market. I would speculate that the highest priced ads in this market are on KFBK, news/talk. But everyone uses Arbitron to their advantage, of course. In radio advertising, everything is fair in love and war, and it sure ain't love, hi.

With President's Day weekend approaching, am taking advantage of it with a run up to Eureka. Hoping to hook up with Tomer at some point for some serious DX, whatever that is, hi.

As this hits your mailbox, you have less than two weeks until the Anniversary issue deadline. Remember, this is the one time I don't make comments in your forums, so if you've been shy before, now's the time to forum.

Santa Ana winds are commonplace in SoCal, but 350 miles to the north we get a taste of those winds about once every five years or so and this morning is it. Great, it'll wipe all our smog out and replace that with dust kicked up from the valley floor. Someday I'll see the Sierras, hi.

Hope your DX has been better than mine. Until next week, 73 de Rth. .

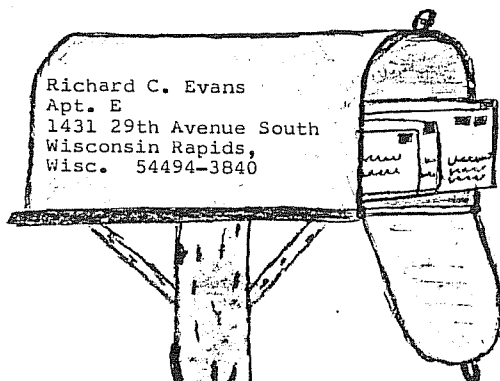
BRUCE PORTZER - 6546 19th Avenue Northeast - Seattle, WA 98115

This has been a pretty good week around here, highlighted by a DX Get-together, and my first non-Tijuana foreign DX in months. The latter came in the form of several TP signals noted the mornings of 2/10-12. Nothing spectacular in the way of audio (just 747 Japan, 1476 Russia, et al), but it was at least enough to get the adrenalin going, and to reassure me that the ionosphere wasn't completely broken (I was beginning to have my doubts). Some interesting hets/carriers noted as well. See DXWWW next week for details. The get-together was fun, too. The average age of the attendees was slightly less than for previous GTGs, but that was mainly because two of them were under two years old, hi.

Ric, you've probably gotten several cards and letters about this by now but KYW in Cleveland was on 1100 (later became WKYC, then WWWE), not 1220. Also, your SS stn on 820 is probably XEYX in Mexicali. See recent DXWWW's.

In the February 6 DXM, we printed a short article on a proposed pre-emphasis standard for AM stations. Could one of the broadcasters in the group explain what the standard might mean in terms of adjacent channel splatter. Especially for major market stations (like in Seattle), which tend to put as much "punch" as they can into their audio.

That does it for this week. Hope everyone else's DX is improving. 73.



## EASTERN DX FORUM

Reports from members living east  
of the Mississippi River

Deadlines: Fridays  
Anniv. issue: 3/11

This column typed: 2/7/88

Tom Laskowski, 223 Hawkins Graduate House,  
West Lafayette, Indiana 47906

Conditions here on the 17th to the 21st were quite good with almost all of the Eastern clears blocked or missing at sunset. I've been getting almost nightly reception of Radio Taino-1160 and Radio Moscow-1040 around sunset also. Since the beginning of the year I've added 33 new logs to my totals which now stand at exactly 800! Thanks to

RW for help with my unID 640 WJTZ. I saw a few other reports of this in EDXR and CDXR also. My unID in CDXR Vol. 25 #15 is CKO, Pointe Claire, PQ. I overlooked this one in the WRTH and seeing CKO listed as being in many cities on FM threw me. I really need a new domestic log. To answer TK's question about the next edition of the Vane Jones NARTVSG, I heard that it is no longer going to be published. I heard this on World of Radio as Glenn Hauser mentioned that news about this is in RIB. Also, Tim, I believe the call on your 1180 - MS is actually WJNT in Pearl. They are 50 kw D and usually show up here around sunset before WHAM. I heard them last year using these calls and again a few nights ago for the first time this season. I found a few of the comments regarding the Superadio that have appeared in recent forums interesting. When I bought mine a few months ago, I had to return it as there was a problem with the power supply as I was getting a weak but annoying hum from the speaker when listening to locals. I had a hard time convincing the people at the store that the radio was defective since trying to demonstrate the problem in a showroom full of fluorescent lights with an AM radio is impossible. But they did give me another one. Till next time in the anniversary issue when hopefully by then the #2 ranked Boilermakers will have won the NCAA! 73's.

Ernest Cooper, 5 Anthony Street, Provincetown, Massachusetts 02657  
617-487-9337.

Reading about how so many American children are unable to find the United States on a world map with country names missing, and how some don't know what country borders on Texas, or can't find their home town on the map, makes me realize how this could never happen to a DXer! The moral of the story, then, to you parents in the IRCA - teach your kids to DX! I'm intrigued by the designation of Dale Park, in Central DX Roundup, as "5P" - there must be a story there - let us in on it, Dale? Tom Lasowski's CKO on 1470 is CKO, the all-news station serving Montreal from suburban Pointe Claire. They've been there for many years, and are the only one of the several CKO NX network stations on the AM band. Tom Jasinski - a verie from WFAW-1050? How did you do it, hi? To Rick Evans, I make my changes in the NRC Log week by week as they are listed in AM Switch in NRC and in Broadcasting Information in IRCA. (OK, but at that time of the forum report, I had gone back thru all the AM Switches for a year and found nothing. By knowing the old frequency of the station, then I could trace it backwards--rce) And, in my Forum in the 1/16 issue (#807) the frequency for WRN<sup>s</sup> was 1580. (Sorry, you typed it as 158p, just the way I copied it--a photocopy is on its way to you--rce) And 'twas u/WABC I heard WLWL-770, not WQBC. (Again, check the photocopy. Looks like you need to make carbon copies of the reports you send me, hi--rce) And Karl Forth, your mystery 1470 w/Canadian news is, as above, CKO, Pointe Claire, PQ. Latest veries here are Hannover-828, Germany; WKOS-930, and WJBQ-1590, bringing my total ro 4,330, in 55 years in this fascinating pursuit.

Reports have gone out to tentatives WREY-1440-NJ and WCFB-1260-CT. On a recent Auroral morning, I noted a fairly strong SS fading in and out on 1430 - or could this possibly be WNJR-NJ with a new format? I've got a new problem now with a neighbor's fluorescent light. It goes on about a half hour before sunset and stays on till he goes to bed. This man lives next door; lives alone, and is 92 years old, and quite crotchety and distant, and I'm still trying to figure out how to approach him on this matter. The wrong way, and I blow it altogether! I'm hearing one of those "Tizzies" on 1610 these days - seems to be two weak carriers, of which only one is modulated, and occasionally a word or two will filter through - like "snowmobiles", "restaurants" and "Route 202". It is possibly Acadia State Park in Maine, but things have been rather Auroral the last week or so, and this signal hasn't been able to cut it. One or two more key words and I'll send them a tentative. Some interesting FM veries have come in to swell my total there to 466, from 33 states and five provinces. Forward - March!

Rick Evans, 1431-E 29th Avenue South, Wisconsin Rapids, Wisconsin 54494  
My comment to ERC about making carbon copies of club reports is only a little in jest. I've done it for almost 20 years now, and kept them all! They're interesting to look back thru, and see how I've changed, and how the clubs and the hobby itself have changed. Veries this week: v/1 CFOS-560 WRFD-880, v/q WNOE-1080 (state #18). WNOE also sent a copy of log sheet for that hour. One glance at it confirmed what I had heard without looking back my carbon of the reception report. That's it for this week. 73.

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## President's Report

Karl J. Zuk, 154 Old Post Road North, Croton-on-Hudson, NY 10520-1932

Here's what has been going on in the last month or so: I get so much mail, it's hard to keep up, but I'm glad that everyone is involved with what is going on with the club. First, the updater to the LWCA Aero/Marine Beacon Guide is now available. \$4 for US and Canada, \$6 for overseas. This is a "White's Log" for longwave stations. Write to: Ken Stryker, 2856-C West Touhy, Chicago, IL 60645. We are still looking into the Zip+4 system of addressing DXM to you to save money. I understand the NRC uses this method, and you might see it in the future to keep our rates down. Other fund raisers suggested have been IRCA T-Shirts, auctioning bumperstickers, QSLs, or other BCB collector's items. Why not try and get some mail them off to the club, and we'll put together another fundraising auction, like the one we recently floated for commemorative T-shirts? So far, I have gotten nothing but positive mail on limited ads in DXM as a fund raiser. I could see no more than one page an issue, and a limited amount of issues. Please let me, or one of the board members, know how you feel about this. I will propose the idea to the board soon. Also, the idea of barter ads has surfaced. We have done this in the past by advertising other club's activities and publications in our DXM, and they do the same for ours in their publication. Should we do more of this in the future to make IRCA more known and popular? Let us know. Unwanted equipment could be another way of raising money for us. I realize that we have a yearly auction at our convention of such things, but maybe a full-membership auction of things you donate could be tried. This way, everyone could have a chance to bid on items, instead of the 30 or so people who come to the convention. I've received several letters saying that the delivery of DXMs to Canada are slow and obnoxious. Well, I doubt this will make you feel better, but I live on the East Coast, and have had some wierd results myself. I often get two DXMs on one day, and sometimes miss them altogether. They are sent by first class mail to the US and Canada, and we can only hope that they are treated like any other piece of first class mail, but we are at the mercy of the postal authorities, and life goes on. My regrets to any of you who are experiencing poor delivery. I wish I could wave a magic wand and make it better. If you have severe problems, send me a specific list of what happened, and we will try to pressure the powers that be to improve service. Until then, hang tight, and our deepest regrets. ANARCON 1988, the convention of the Association of North American Radio Clubs, of which we are a member, will be held July 13-16, 1988 at the Holiday Inn at Irvine, California. It will be hosted this year by The American Shortwave Listeners Club and the Southern California Area Dxers (ASWLC and SCADS.) The guest speaker is Ray Briem of KABC Talkradio. Irvine is on the outskirts of Los Angeles. Registration is \$22 per person, \$30 for families, or \$10 per day, before May 1. The banquet fee is \$25 and rooms are \$60 for a single and \$70 for a double. Contact Stuart Mackenzie, 16182 Ballad Lane, Huntington Beach, CA 92649-2204 for information. Speaking of ANARC, Al Lobel, our Anarc representative is screaming for help with the IRCA presentation for this convention. If you plan to attend, or you would just like to help, get in touch with Al! Al Lobel, POB 26762, San Diego, CA 92126. The 1989 Anarc convention has been offered to IRCA! Ted



Fleischaker is trying to become the sponsor, for IRCA, of the ANARC convention of 1989. Should he succeed, the convention will be in Louisville, KY. This could be quite a feather in our cap if we can pull it off. IRCA has recently placed ads in The Monitoring Times and Popular Communications to try to inspire people to join us. Many thanks to Bill Harms for seeing this project through! We hope to get some results from this idea. Again, if you happen to have cable television, and you can place free ads on it, for non-profit organizations, please write in about the IRCA! All you need is to give them our address in Seattle, and that we are a club devoted to long distance BCB reception and techniques. I had an ad run for a week or so, and suddenly I am the neighborhood expert on DX! Try it, it could be a big help to the club! Does anyone out there belong to the AARP? The American Association of Retired Persons? We are looking for an AARP member to write an article about IRCA and BCB DX for the AARP newsletter. If you are a member, and would like to take on this project, please let me know. I think this might bring our club to an entire new audience of people. Everyone likes a little controversy, or do we? Rob Harrington raises the question of the boundary between CDXR and WDXR land, that is, who should report to Nancy or John's column with their tips. Well... Although the latest copy of IRCA editorial policy that I own, dated September 14, 1979 states that the boundary is 110 degrees longitude, it has since been changed to 104 degrees longitude, with Board of Directors approval. But honestly folks, if your sextant doesn't work, or you don't have an accurate map, or you don't want to look at your mortgage papers to see exactly where you live, in my opinion, within reason, you can report to either Nancy or John, as you prefer, if you are having an identity crisis. A provision of vagueness of this type was made when the line was changed. Remember our club is for having fun, and I would be truly glad that you reported to a roundup column at all! Rob wishes to have the board vote on returning the line back to 104, but it is already there! John Johnson and I were both not up on this fact point of IRCA law, so please accept our apologies and our wishes that you report to the column of your choice. Thank you, everyone, for all your comments and suggestions! Please keep them coming. I will try to answer all of your questions personally, but it might take some time. This week alone has been the preparation for Super Tuesday and the Iowa Caucuses coverage, A remote broadcast week of Good Morning America from The Virgin Islands, and preparation for the Calgary Olympics. Time is a premium for ABC employees, and the last 6 weeks or so have been very busy. Best of DX to you all, and keep those cards and letters coming! 73 de KZ

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STRAY THOUGHTS AFTER A SHORT TRIP TO LATIN AMERICA Arctic Radio Club 10/10/87

Ecuador, Peru and Bolivia are the three Latin American countries where sw still retains a certain commercial value. The number of Peruvian and Bolivian sw stations may not yet have reached saturation point, whereas in Ecuador there is a marked downward tendency.

One good reason for curtailing operation on sw may indeed be the hopeless congestion of the bands. As we already know, numerous stations in Peru and Bolivia, operate outside of the allocated sw AM bands. Lawabiding stations, operating within the 49 mb for example, may find that their signals are blotted out by the European powerhouses soon after local sunset.

Local propagation on the tropical bands (and on mw) is at its best in the morning and during the day until sunset, local time. (In the Andean region there is still a good chance of getting semi-locals up to 9 o'clock in the morning, and also from 4:30 p.m. onwards, whereas between 2 and 4 p.m. approx., there is a strange daily dip in propagation on a 1 l bands).

Much unwanted QRM may, in addition, appear on the 60 mb, since many stations operate on "split" fq's, which accounts for a good deal of the hash. Two stations working on exactly the same fq will not interfere in their primary target area. Such is the case on 4B40 kHz, where in Venezuela, Ecuador and Peru reception of Valera, Interoceánica and Andahuaylas, respectively, is known to be troublefree.

So now that high fidelity FM broadcasting is an alternative, at least in metropolitan areas, there is an increased tendency towards an early sign on and an early close down, not only on sw, but also on mw; in particular if the station is unfortunate enough to broadcast in the range between 1400 and 1600 kHz, which is a segment of the mw band that is very prone to long-distance QRM.

There is one country, however, where the FM band still is all but silent, and that is Venezuela. The Venezuelan Association of Broadcasters is very reluctant to allow their members to go FM, which, they fear, would undermine the whole broadcasting industry, splitting advertisement revenue between an increasing number of unwanted competitors. So in Venezuela there is no way out except adjusting to the exact mw fq and fight it out right there, sw being reduced to very few, albeit reasonably stable, operations.

# DX Worldwide - West



PAT MARTIN

P.O. BOX 843

SEASIDE, OR 97138

Time: UTC phone (503) 861-3185

DEADLINES: 2/23, 3/1,  
3/8, 3/15.

DX this week continues to be slow, with only a few Hawaiians present as usual. I had heard that Armed Forces Radio and Television Service was going off the air, so I phoned them and was told only their U.S. Shortwave Service was going off about the end of the year. Their Overseas Services and Satellite feeds on both Radio and TV will stay on. Their reasons for going off SW in the U.S. is the old story of no money, and VOFA is raising their transmitter time, as AFRTS does not use their own transmitters. In checking the new 1988 WRTH, I find that AFRTS is using less frequencies than they were years back. DXing MW, I do very little tuning around on SW, so I was quite surprised. It looks like it is an end to an era. On with a few tips.

## TRANS-PACIFIC DX ROUNDUP

- 670 HAWAII, Hilo-KPua-stronger than normal with continuous Pop mx and many IDs. Normally on top of KBOI at night, but at this time hardly a sign of KBOI at 0645 on 2/8. (PM-OR)
- 1575 THAILAND, Ayuttaya VOA-1/31 1500 YL with "Good evening from the Voice of America". Not much else intelligible. This being a Sunday, no VOFA sked at this hour 88 WRTH. Taped report off to Washington D.C. This location (said WRTH) is further West than Sakon-Nakhon (verified on 843 KHZ) my most Westerly verie. (RHM-WA)

## THANKS TO THESE REPORTERS:

RHM-WA ROY H. MILLAR-13714 30TH AVENUE, NORTHWEST-MARRYSVILLE, WA. 98270  
ICF-2010/longwire  
PM-OR YER EDITOR  
SP-600JX, 200 foot Terminated LW, Ground System.

## ADJUSTABLE NOISE BLANKER FOR R70

by Guy Atkins (via Cascade Mountain DX Club)

Here's a simple modification for the popular ICOM R70 receiver that increases the usefulness of the noise blanker. This circuit idea was seen in the *ICOM Newsletter*.

As it comes from the factory, the ICOM's N.B. only works on some kinds of impulse noise (since it has a fixed threshold value. This mod allows the seldom-used "Monitor Gain" rotary control to be used as a variable threshold control; the end result is a N.B. with the same flexibility as the R71A's noise blanker (which comes with a variable threshold control).

Locate resistor R13 on the main board. Replace it with a 150K resistor; but instead of grounding one end of R13, connect a 6" length of insulated wire to the free end of R13. (Note that the other side of R13 goes to the wiper of potentiometer R104.)

Find location P2 on the ICOM's Switch Board. There should be a blue wire coming from this spot. Strip back some insulation from this blue wire and solder the free end of the 6" wire to it.

**INITIAL ADJUSTMENT:** Set the monitor knob at the 9 o'clock position. Then adjust pot R104 to the point where a shortwave signal just begins to sound distorted and garbled. This adjustment works best when listening to a SSB signal in a crowded ham band. This means you are getting enough N.B. sensitivity to detect signals. It also means the N.B. is set too high under normal circumstances, but it's a good test to check the performance of the noise blanker.

You'll find that the monitor control now functions as a threshold control. However, the N.B. sensitivity increases in a counterclockwise direction. Keep this in mind since it is the opposite direction from what you'd expect.

I've used this mod on my receiver for the last couple of months, and found it particularly helpful in getting rid of some powerline noise that was destroying signals on the tropical bands. It is not a cure-all, but this modification helps knock down more noise sources than is possible with the R70's stock noise blanker.

# REPRINT LIST UPDATER

The following is a list of articles which have appeared in IRCA's DX Monitor since the last Goodie Factory publication list was compiled. These articles are now available to members and nonmembers. Consult the order form at the end of the list for costs.

## ANTENNAS

- A68 MWDX-2B & 2C Phasing Units (2) Mark Connelly. Improvements and changes to the MWDX-2A unit for phasing longwire antennas. 9/85
- A69 A Simple Passive Longwire Tuner (1) Mark Connelly. Describes a simple unit for tuning a longwire for BCB reception.
- A70 The Mitchell Lee Loop Amplifier (6) Mark Connelly. Two versions are described, one for use with loops, the other with tuned circuits for LW,BCB, Tropical Band DXing. 3/85 & 9/85.
- A71 Hotrodding the Mini-MWDX3 Phasing Unit (2) Mark Connelly. Describes some improvements to Mark's phasing unit.
- A72 MWDX4 and Mini-MWDX4 Phasing Units. (9) Mark Connelly. Describes two devices for phase-cancelling a dominant station, allowing you to receive signals which would otherwise be inaudible. 11/85
- A73 The Phase One, A Delay Line Phasing Unit (2) Gerry Thomas. Describes an active phasing unit for eliminating unwanted interference.
- A74 Active Shortwire Phasing System Using Modified Hagan Loop (1) Mark Connelly. Describes a modification to a loop antenna amplifier to make it useable with short antennas (such as rabbit ears). 12/85
- A75 The MWT-1: A MW Tuner/Preselector With Regeneration Capability (6) Construction plans and theory of operation for a highly selective longwire tuner/amplifier. 12/85
- A76 The Mini-MWT-1C: A Simple Yet Versatile MW Tuner (3) Mark Connelly. Self-explanatory title! 2/86
- A77 Additional Tuners in the MWT-1 Family (5) Mark Connelly. Detailed instructions on building more MW Tuners. 3/86
- A78 A Loop Antenna Bibliography (3) Ben Peters. A list of patent disclosures and articles from professional publications, all pertaining to loop antennas, from 1920 to 1982. 2/86
- A79 A New(?) Aid: The Receiver Multicoupler (1) Matt Stutterheim. Describes surplus multicouplers and their use in BCB DXing. 11/86
- A80 Heathkit Model HD-1424 Active Antenna (1) Karl Zuk. Product Review.2/87
- A81 Sloping Random Wire Antennas (1) Jim Herkimer and Nick Hall-Patch. Discusses the use of random wire antennas sloped down to ground level.
- A82 The Mini MWDX-3 (9) Mark Connelly. Describes a simple, effective phasing unit for longwires. Includes detailed wiring instructions.
- A83 RT1 and RT2 Remotely Controlled Antenna Tuners, Articles 2 & 3 (5) Mark Connelly. Continuation of reprint A66.
- A84 The Micro MWDX4 Phasing Unit (3) Mark Connelly. A highly compact phasing unit for longwires. 2/86
- A85 Phasing Network for Beverage Antennas (1) Reprint of an FCC paper describing a phasing network for Beverage antennas at their Powder Springs, GA monitoring station.

## DOMESTIC

- D24 AM-Azing Wisconsin (2) John Rieger. Discusses the programming, history, and other information on many Wisconsin stations. 2/87
- D25 Western Wisconsin (3) John Rieger. Similar to D24 but concentrates on the western part of the state. 10/87
- D26 Alaskan Radio (1) Rod O'Conner. Map, list, and short article on all the stations in Alaska. 3/85
- D27 The Alaskan Forces Radio Network (1) Rod O'Conner. Discusses the history and function of AFRN and lists current outlets. 2/86
- D28 The KTRC Antenna System (1) Cary Simpson. Describes this New Mexico station's unusual antenna installation. 11/86

## FOREIGN

- F78 Introduction of the Stations in the Range 1600-1700 kHz (1) Yoshinori Kato (via FERC). Lists low powered Japanese weather and coastal stations just above the BCB.
- F79 Korean Broadcasting System Station List (2) Bill Harms. Lists the power, network, frequency, address, etc of all KBS stations. 11/85
- F80 Australian Radio Slogan List (2) David Headland & Chris Rogers. Lists the on-air slogans used by Aussie stations. 2/86
- F81 Caribbean MW DX Guide (2) Mark Connelly. Best Bets for hearing the Caribbean countries in the northeastern US.
- F82 Trans-Pacific Shortwave Parallels (3) Nick Hall-Patch & Paul Routenberg. Lists all TransPacific BCB stations with known shortwave parallels, and their frequencies. 10/86
- F83 Radio Reloj (1) Jim Hall. Describes this Cuban network and how to hear it. 10/87
- F84 Cuban Frequency Roster (1) Jim Hall. Lists Cuban stations and their network affiliation. 1/88
- F85 Christian Broadcasting System (Korea) (1) Bill Harms. List of outlets, with frequency, power, schedule, and address for each. 3/85.
- F86 South American Reception in Hawaii (2) Richard Wood. Discusses reception of S. American stations in Hawaii (surprise!surprise!) 3/85
- F87 Best Bets for Latin America (2) Mark Connelly. Discusses reception of Latin America in the Northeastern US, with probable targets for each country. 3/85
- F88 A Look at Radio Rebelde (2) Jim Hall. Discusses the programming, locations & frequencies of outlets, and QSL policies of this Cuban network. 11/86
- F89 American Forces Network Europe(1) Bill Harms. Affiliates & program schedule. 2/87

## GENERAL

- G43 Fifty US States in Finland (4) Richard Wood. Summary of US stations heard in Finland.
- G44 Several DX Computer Programs (6) Mark Connelly. Discussion and program listing for computer programs to calculate sunrise/sunset times, Great Circle Bearing/Distance, and Sort by Frequency for loggings. 4/85.
- G45 Formatology Explained (2) Greg Monti. Describes the various formats used by American radio stations. 2/86
- G46 How I DX (1) Phil Bytheway. Five club members describe their DX strategies. 5/87

## HISTORY

- H39 The Mystique of the Three Letter Callsigns: Revisited (4) Thomas White. Update of reprint H32. 12/87
- H40 Broadcast Pioneers: Policies and Stations (5) Thomas White. Discusses licensing practices and call letter assignments in the early 1920's
- H41 Amateur Broadcasting Station 10BQ (1) Gardner Smith. Describes a low-powered Canadian station which operated in the 1920's & 30's/

## LISTS

- L42 DX Report from El Paso (5) Mark Connelly. Lists domestic & Foreign stations heard on an extended trip to El Paso. 12/86
- L43 Focus on the Family Schedule (1) Glen Kippel. Lists of stations carrying this program. 2/87
- L44 Albuquerque Daytime Bandscan (1) Jef Jaisun. Comments on stations in the Albuquerque area. 3/87
- L45 Alaskan AM Broadcast Stations (1) Rod O'Conner. List of stations 4/87
- L46 NBC Talknet (1) List of affiliates. 9/87
- L47 DXing in Fairbanks, Alaska (4) Frank Merrill. List of stations heard during an August 86 vacation trip.

## RECEIVER MODIFICATIONS

- M41 Icom R-70 Mods (2) Laurens Engel. Describes a number of improvements to the receiver. 9/85
- M42 Schottky Diode Detectors (1) Nick Hall-Patch et al. Discusses the use of schottky diodes in the detector stage of AM receivers.
- M43 ESKAB PLAM Option for the Icom R-71 (1) Don Moman. Discusses a commercially available detector stage for the R-71. 1/87
- M44 Icom R-71 Mods, Tricks, and Tips (1). Describes some simple modifications and operating techniques for the R-71. 11/87 (via Cascade Mountain DX Club)
- M45 Kenwood R-5000 Modifications (1) Don Moman. Several simple modification to the receiver. 12/87
- M46 Replacing the R70's PBT Filter (2) Gerry Thomas. Describes how to replace the ceramic filter in the R70/71 passband tuner circuit to improve selectivity

## RECEIVER REVIEWS

- R53 Two Easy-to-Build AM Radio Kits (2) Karl Zuk. Reviews the Radio Shack 28-4029 & Heathkit GR-1009 AM radio kits. 3/86
- R54 Kenwood R-5000 (3) Don Moman. Receiver review, with additional comments by Nick Hall-Patch. 2/87
- R55 Delco ETR AM-FM Stereo Radio (1) Karl Zuk. Review. 8/86. and, GE Superradio II, reviewed by Doug Pifer.
- R56 A Comparison of Five Receivers (1) Glen Kippel. Compares the SP-600, HQ-180, R-388, RAX-1, and GE Superradio. 12/86
- R57 Sony 2010 (2) Don Moman. Review.

## TECHNICAL

- T59 Noise and Signal Levels on the BCB (5) Marc Bergman. Actual measurements of radio signals and noise levels in southern California, and comparisons with published performance of several receivers 10/85.
- T60 Ceramic Filters (5) Marc Bergman. Discusses the performance of several commercially available filters. Includes actual lab measurements of their performance. 11/85
- T61 A Survey of Available Medium Wave Field Strength Prediction Methods. (5) Randy Seaver. Describes several methods of calculating signal strength of medium wave skywave signals, and compares the results with actual measured values. 12/85
- T62 Sea Gain (5) Randy Seaver. Explains why transoceanic signals are heard exceptionally well near the coast. 1/87
- T63 Medium Wave - A Practical Approach (11) Graham Maynard. Describes the authors receiving setup, including antenna and grounding system, receiver modifications, and equipment interconnections (originally from Medium Wave News).
- T64 Relationships Between Solar Activity, The Earth's Magnetic Field, and Medium Wave DXing (8) Randy Seaver. Discusses the factors affecting medium wave propagation and presents a statistical analysis of solar and ionospheric data from 1956 to 1986. 11/87
- T65 Computer-aided Tuner Design (4) Mark Connelly. Describes a computer program for designing antenna tuners. 2/85
- T66 Q-Demystified (4) Mark Connelly. Explains what "Q" is and presents a computer program for simulating tuned circuits. 2/85.
- T67 Suppliers of Radio Tubes (1) Nick Hall-Patch. List of mail-order sources of tubes for older radios. 3/85
- T68 Surplus Mechanical Filters (2) Marc Bergman. Describes the performance of several commercially available mechanical filters for i.f. stages in receivers. 3/85

OTHER PUBLICATIONS

Foreign DX Reference, Volume 23: a listing of all the stations reported to DX Worldwide between September 1985 and August 1986. Organized into three sections: Trans-atlantic, Pan American, and Trans-Pacific. Each section includes a frequency listing (countries heard for each frequency) and a country listing (frequencies reported for each country). The list also shows the DX Monitor issues each station was reported in. \$2.50.

Foreign DX Reference, Volume 24: same as above except covers volume 24 (September 1986 to August 1987). Both lists compiled by Phil Bytheway.

The TIS/HAR Guide, by Wilhelm Herbst. An extensive listing of Travellers Information Stations and Highway Advisory Radio Stations. The book lists the frequency, call sign, location, descriptions of the stations, addresses, texts of transmissions, QSL policies, and much more. TIS and HAR stations are low-powered stations which broadcast continuous loop messages to motorists and tourists, generally on 530 and 1610 kHz. 168 pages. \$10.00

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# DX WORLDWIDE II

Paul Swearingen  
3132 SE Irvingham St.  
Topeka, KS 66605-2948

Two columns in two months? This has to be a new record! But enough changes have taken place to warrant another column now, and so here we go ...



## Trans-Pacific

Afghanistan - The Soviet-built megawatt is heard on 1107, carrying HS-1. (OA in ARC, Y. Kato, via FERC)  
PR China - Linyi PBS now 873, ex-1566. (T. Gima, ABI, via FERC)

Malaysia - The Government has decided not to privatise radio stations and has rejected all applications to set up such stations, Deputy Information Minister Railey Jeffrey said.

He said radio stations were not only a mode of entertainment but also provided a means of communication of Government plans and ideas to the people.

He said existing Government radio services covered 90 per cent of the populations and there was no need to set up a private station.

Encik Railey was replying to Mr. James Jimbun Pungga (BN-Kapit) who had asked when the Ministry would allow private radio stations to be set up.

Encik Railey said radio currently provided programmes for district and State levels and FM was now broadcast nationwide.

He said there was sufficient air time for programmes in the various local languages. (New Straits Times)

New Zealand - Radio Ngati is on 1125 with 900 watts from now until August 1988. Hours are 1900-1200; address c/o: Mr. Bob Kaa - 22 Mangahareai St. - Ruatoria, NZ. (NZRDXL via ARDX)

Taiwan - ICRT-1570, Taichung, was not heard here in mid-November. (H. Fujita in FERC)

## Trans Atlantic

Algeria - The 693 RTA tx at Ain-El-Haman has shifted from 697 kHz. (EBU via MWC)

Cyprus - Cyprus BC is now on 693. R. Batyrak (2) has been heard from 1000 hrs // 6176v. (Y. Sakagami at Cairo via T. Tachibana, FERC)

Denmark - Denmark's Radio program 3 uses 1062 kHz. (DX-Editor via SCDX)

Egypt - 918 Bawiti with 10 kW is new (EBU via SDXL via ARC via DXA, and I missed 3 out of 4) Middle East radio, based in Cairo, has been heard with test broadcasts on 1062 at 1200-2315 in parallel with old 774 kHz. Transmitter of 1062 kHz is under control of R. Cairo and is made for emergency use in wartime. (Y. Sakagami at Cairo via M. Oikawa)

Finland - The new 963 kHz tx at Pori is now in regular 24-hour service. It is used by the national networks 1 and 2 as well as by the external service. SCDX via ARC via FERC)

Germany, DDR - 657 kHz is used by "Jugend-radio" from three different transmitters. The earlier-used 1602 kHz is no longer in operation. DDR-1 is on 1431 kHz, and "Stimmer der DDR" uses new 1431 kHz. Berliner Rundfunk is on 1089, 1170, 1188, and 1200 kHz. (Bengt Ericsson, Dieter Lippmann, B. Pahl in FERC)

Ireland - R. Telefis Eireann has a new RTÉ TV tx, using 891, possibly at Bundoran, carrying RTÉ program 1. (Bengt Ericsson, ARC, via SCDX)

Italy - R. Milano Int. is still on 1301 but not in SW. (Dario Monferini in MWC) R. Uomiaz Nouvi, Marchirolo-1611 now inactive. (Play-DX via MWC)

Lebanon - The Voice of Lebanon has been heard on 873 // 6550. R. Lebanon-989 is on the air at 215 // 6800, // 837, seemed to use two txers. (Y. Sakagami at Cairo via M. Oikawa)

Spain - RNE Pais Valenciano-801 Castellón is new with 10 kW. (Play-DX via MWC) R. Lies-1602 nominal has been reported off-channel on 1635.5. (SDXL via MWC)

Syria - A new QSY or tx'er heard on 612. 828 has gone inactive. (Y. Sakagami at Cairo via M. Oikawa)

## Pan Americana

Brazil - R. Globo-1220 is now verifying. V. Cesar Luiz Calmon (Chefe de Operacoes & Producao de Audio SGR) - Sistema Globo de Radio - Rua do Russel 434 - 22213 Rio de Janeiro Rd. (Play-DX via MWC)

Honduras - LV del Atlantico is now on 1160, ex 1150. (Distance-R via MWC)

Panama - R. Suave-1100 San Francisco is new with 10 kW. R. Rook-1160 is new with 3 kW. R. America-1380 El Dorado is new with 10 kW. (WRTH LA-NL via MWC)

Puerto Rico - WKVM-810, "AM-81", is on nights now with 50 kW, and they occasionally simulcast on weekends // co-owned WORO-92.5. WRSJ-1560, "Radio San Juan" no longer REL, now AC/EZL. WMDD-1480 is no longer part of NotiUno net. WNEL-1430 granted 5kW nights ND, many reception reports in from Europe and Scandinavia. (David F. Gleason, NRC)

## International

International Waters - R. Monique and Viewpoint services now on 819 kHz. (ARC)

R. Caroline is back on the air on 558 with much reduced power after the collapse of their antenna tower. (Henry van Landschoot, SCDX)

V. of Peace not observed on 1539 in late December. (Y. Sakagami at Cairo via M. Oikawa)

## IRCA Foreign DX Reference, Volume 24

Phil Bytheway is completing the cross reference listing of all the stations reported to DXWW-W and DXWW-E during volume 24 of "DX Monitor" (9/86-8/87). There are three sections available: Trans-Atlantic, Pan American, and Trans-Pacific. Each section contains a frequency listing (countries reported for each frequency) and a country listing (frequencies reported for each country) showing the "DX Monitor" issue number in which they were reported. These guides are a valuable reference to what was heard last year, and where to look to find specific information about the receptions.

Each listing is 5 or 6 pages long. You can order any one of the three (TA, PA or TP) for \$1.00 each, or all three for \$2.50. Make checks out to Phil Bytheway and send them to: 9705 Mary N.W., Seattle, WA 98117.

MEMORANDUM ON THE BEVERAGE WAVE ANTENNA  
FOR RECEPTION OF FREQUENCIES IN THE  
550 - 1500 KILOCYCLE BAND

B Y

*Benjamin Wolf*  
and  
*Adolph Andersen*

The theory of the Beverage Wave Antenna is covered in a paper entitled "The Wave Antenna" by H. H. Beverage, O. W. Rice, and F. W. Kellogg, presented at the Midwinter Convention of the American Institute of Electrical Engineers at New York, February 14-17, 1923.

This memorandum is intended to outline some of the practical problems experienced in the erection and operation of this type of antenna for service in the Broadcast 550-1500 kilocycle band, at the Federal Communications Commission Central Monitoring Station at Grand Island, Nebraska.

Among the desirable properties of the Wave Antenna for monitoring purposes are:

- (a) Delivers a stronger signal over the entire band than a good simple antenna.
- (b) Unidirectional.
- (c) Atmospherics and industrial electrical interference considerably reduced especially when the source is in a direction other than that of the received signal.
- (d) Low cost, long life, and unlikely obsolescence.

#### LENGTH

The optimum length for a broadcast band wave antenna is approximately 1800 feet. This length delivers peak signal strength at closely 550 kilocycles and again at one-half its wave length in meters, or about 1100 kilocycles. The peaks are, however, rather broad and the signal delivered is considerably stronger than that from a good simple antenna throughout the entire band. Near the antenna peaks the increase in microvolts to receiver may reach more than 400 percent.

Where space is a consideration, the length can be reduced to 1400 or even 1000 feet, but the signal strength delivery and directivity will be proportionately reduced, and at less than 1000 feet the slight advantage of a wave antenna for the broadcast band over a good simple antenna does not warrant its erection.

#### CONDUCTOR HEIGHT

The surge impedance of the wave antenna is determined by its height above the ground, and by soil conditions with regard to moisture, etc. By erecting the conductors at a minimum of ten feet above the ground, the surge impedance remains more nearly constant during all seasons than when erected at a lower height. If erected at a height greater than fifteen feet the pickup of the vertical leads at the far and near terminals may considerably reduce directive properties. If a greater height is required at gaps or other passages, the higher poles should be erected at the sides of the opening and the conductors brought down vertically, proceeding at the selected height after the high point has been bridged. Reasonably uniform height of the conductors throughout their length is, of course, preferable.



## POLE ERECTION

The standard practice of telephone line construction is followed. The poles should be spaced approximately one hundred feet apart and for mechanical strength the conductors should be #12 B & S hard drawn copper. The line should generally follow the earth's contour, but small knolls are disregarded and the tops of the poles after planted may be trimmed for general or even grading of the conductors.

For single, uni-directional reception or single conductor antennas, the conductor can be mounted on ordinary pole brackets attached to the poles.

For uni-directional reception from front or rear, or both, the two-conductor type of construction is required. The conductors are mounted on short, standard cross arms without braces with the locust insulator pins spaced 16" between centers. This with ordinary telephone line glass insulator gives the desired or adopted 18" spacing of conductors of the finished antenna.

## GROUND

For maximum efficiency the resistance of the ground system at both the far and near ends of the antenna should approach zero, or at least be less than thirty ohms. The ground resistance is best determined by the voltmeter-ammeter, alternating current method, but reasonably satisfactory results can be obtained by the use of the battery and voltmeter voltage drop method.

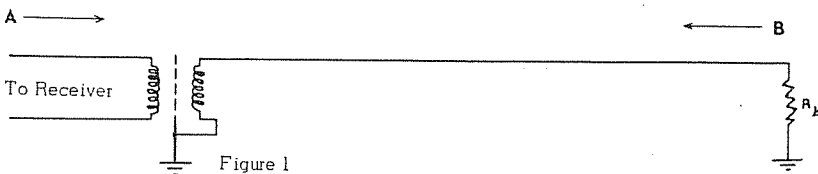
For measurement of a single ground the planted conductors are divided into equal halves and measured, and the result divided by two, or the far and near terminal resistances measured through the antenna conductors for the combined resistance of the two terminals or the series resistance of the entire system.

If the voltage drop method of measurement is used and should polarization or other direct current effects produce absurd readings such as negative resistance, a resistance of 100 ohms or more may be placed in series with the circuit and two measurements taken with changed polarity. The average of the two recorded values divided by two in the case of a divided system, less the added external resistance may then be considered a reasonable approach to the actual resistance. Due to polarization, readings of instruments should be taken at the moment of contact.

If difficulty is experienced in obtaining proper ground resistance values, the constructor is referred to U. S. Bureau of Standards' Technological Paper #108, issued June 20, 1918.

## TERMINAL CONNECTIONS

### Single Conductor for Forward Reception



A. Signals from A direction are dissipated either completely or partially in  $R_b$ .

B. Direction of reception.

Removal of  $R_b$  permits the antenna to be used bi-directionally or forward and rear.

### Two Conductors for Forward Reception

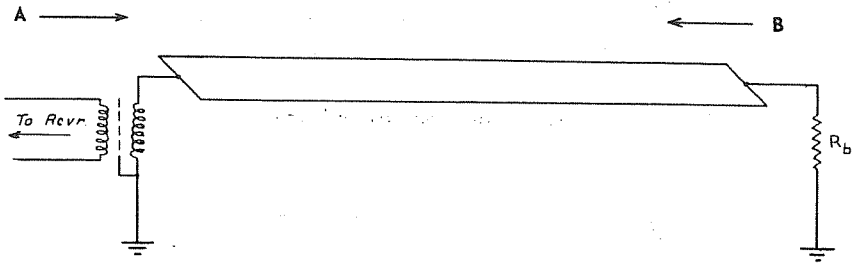


Figure 2

All factors are the same as the single conductor type except that the surge impedance will be lower as a result of the two conductors in parallel.

### Two Conductors for Rear Reception

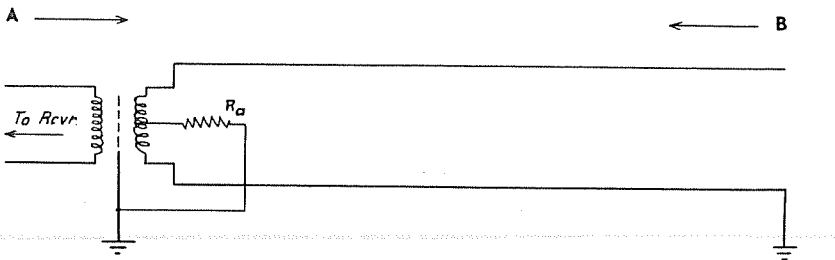


Figure 3

#### A. Direction reception.

The signal builds up until it reaches B where the phase is reversed by grounding one of the conductors and leaving the other free after which it is reflected back to T using the antenna conductors as an untransposed transmission line. The signals from B direction are dissipated either completely or partially in impedance R connected from the center tap of T to ground. It will be noted that Figures 2 and 3 are the same except with respect to far and near terminal connections. When it is changed as shown, the antenna can be made uni-directional for either forward or rear reception, but not for both forward and rear reception simultaneously.

When the wave length of the signal to be rejected is a multiple of one-half wave of the length of the antenna, it is either completely or largely absorbed in resistances  $R_b$  or  $R_a$ . Odd multiple frequencies of one-quarter wave length of the antenna length deliver a greater residual or undesired signal to the receiver.

In order to balance out an undesired signal originating at an angle of more than ninety degree from the source of a desired signal originating in direction of maximum reception of the antenna, part of the undesired signal is reflected back to T in proper phase and magnitude to cancel it out. This is accomplished by the insertion of a tuned circuit in series with a variable resistor at the far terminal, as in Figure 4 for rear signal rejection, and as in Figure 5 for forward signal rejection.

Two Conductors for Forward Reception

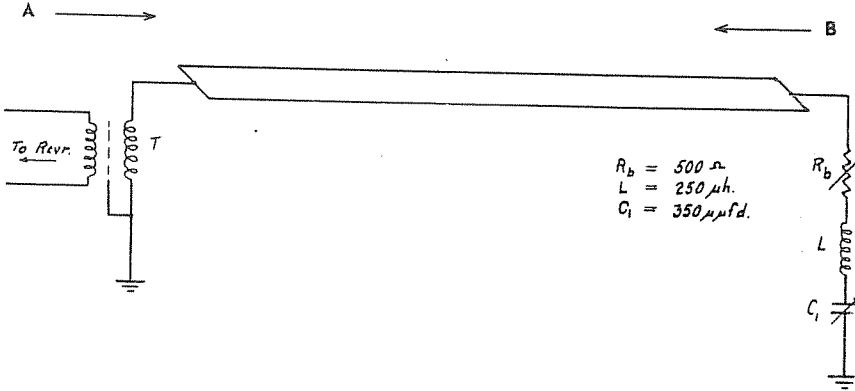


Figure 4

Two Conductors for Rear Reception with Rejector Circuit

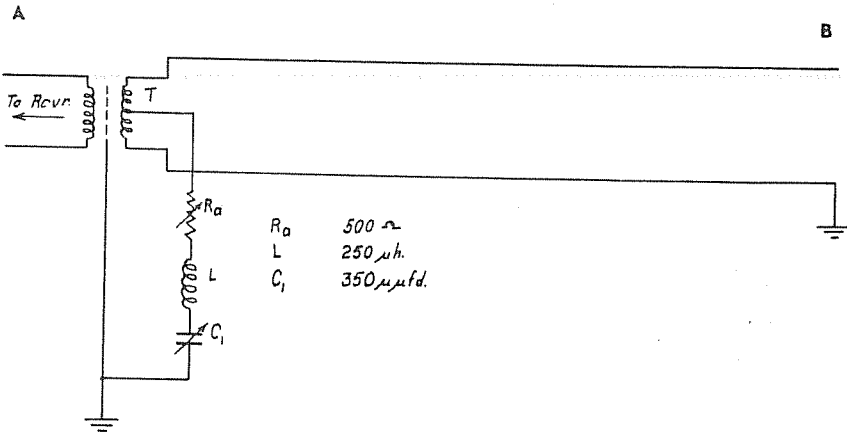


Figure 5

The system of changing directivity of the antennas and remote erasure adjustments as outlined is somewhat inconvenient because of required travel, terrain condition, time consumption and the fact that the antenna when made directive in one direction is not available for service in the opposite direction.

To overcome these undesirable features, a modified arrangement of the terminal coupling units and rejection system may be employed which permits the use of a two-conductor wave antenna for uni-directional reception both forward and rear simultaneously on the same or different frequencies within the band for which the antennas are designed, and with all variable factors under control at the receiver. The circuit is shown in Figure 6.

## Two Conductors for Simultaneous Forward and Rear Unidirectional Reception

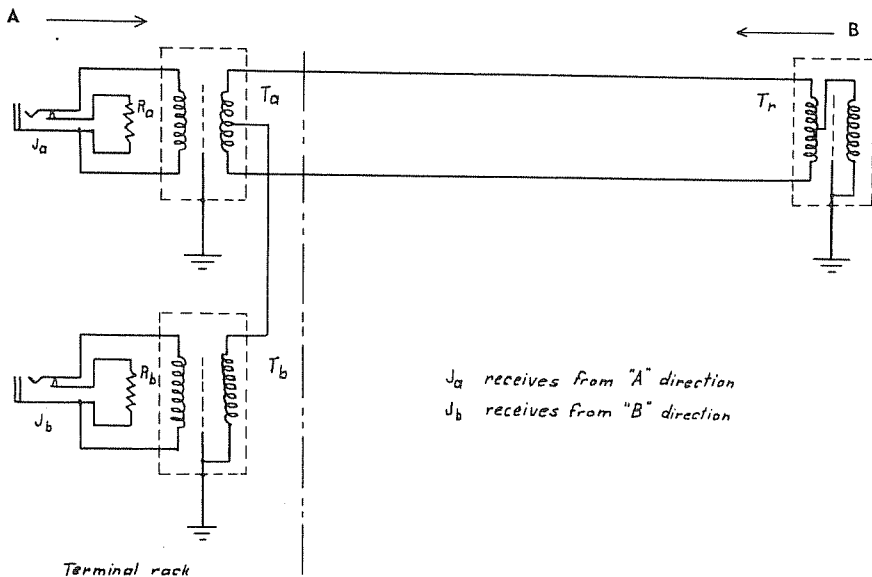


Figure 6

The signals are delivered from the near antenna terminal coupling transformers to a terminal rack through two 400-ohm transmission lines connected to a Graybar #223-A, three-point, switchboard jack. The receiver input lead connects to the terminating jack through a short length of good quality lamp cord and a Graybar 3-A phone cord plug. A fixed one-watt resistance unit of proper value is connected across points 1 and 2 of the Graybar jack which automatically connects across the transmission lines when the receiver plug is out.

### INTER-ANTENNA COUPLING

In the event the erection of more than one wave antenna may be contemplated, the question of inter-coupling may arise. Tests covering this feature at Grand Island using a standard signal generator indicate that broadcast band wave antennas may be crossed within a few feet of one another at angles of sixty degrees or more without detrimental coupling effects or may be safely paralleled when spaced four hundred feet or more; in either case without noticeable or excess coupling.

When the antenna conductors run parallel over wire fences with non-conducting supports, the fence wires, to avoid interaction, should be broken with insulators at even lengths of about seventy-five feet.

Conductors such as fence wires and metal posts rubbing against one another within a hundred feet or so of the antennas, may be assumed to be a source of noise generation in the antennas.

### LIGHTNING PROTECTION

During some weather conditions such as snow or dust storms, or summer electrical storms, voltages sufficiently high to break down unprotected coupling coil insulation are developed in the antenna system. To prevent transformer damage from all but direct lightning strikes, L. S. Braasch #270 neon-argon tube arresters or their equivalent with breakdown range of 200 to 300 volts may be connected to the two antenna terminals and ground at both far and near ends of the antenna; also to both terminals of the transmission line from antenna to receivers when the length exceeds two hundred feet. The ordinary 1-watt I.R.C. metallized resistance units as used at Grand Island for terminal impedances will almost always be found open circuited after each electrical storm occurring in the vicinity of the antennas whether or not protected by arresters.

## TRANSMISSION LINES

Where it is not practical to erect the antenna with the near terminal direct to receiver location, it can be located at any distance up to a half-mile or more from receiver location and the signals brought to the receiver by transmission lines without noticeable loss. For long stretches the four parallel #14 B & S conductor type of transmission line is preferred. For distances of 100 feet or less requiring no intermediate supports the two conductor transposed line may be employed. Two or more transmission lines may be mounted on the same poles or other non-conducting supports when the separation equals or exceeds ten times the spacing of the transmission line conductors.

A coupling transformer with astatic shield is required at the receiver to keep the transmission line balanced and prevent possible pickup of the transmission line getting into the receiver.

When this resistance unit does not itself absorb or reject undesired interfering signals delivered to the receiver while the antenna is in service in the opposite direction, a shielded L.C.R. circuit, Figure 7, also terminated with a short length of lamp cord and Graybar 3-A plug is inserted in the opposite reception jack of the antenna and by manipulation of C and R the interfering signal can generally be largely or completely erased without reduction in strength of the desired signal, when the interfering signal is more than  $90^\circ$  from the direction of maximum reception of the antenna. It is not as effective for signals predominately sky wave because of their varying phase and intensity.

Rejector Circuit

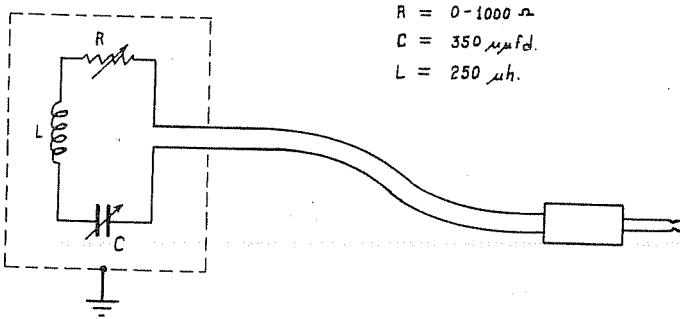


Figure 7

Some casual experiments and observations in service indicate that by disconnecting and grounding one or the other of the conductors of a two-conductor antenna at the station terminal, the forward reception pattern can be changed sufficiently to permit partial or complete erasure of interfering signals originating thirty or more degrees from either side of the antenna, depending upon which conductor is grounded and without noticeably affecting the strength of the desired signal originating more nearly directly forward or from an angle opposite the grounded conductor.

This seemingly unreasonable circuit connection is, apparently, more effective during afternoon hours or for several hours before local sunset. It is frequently not effective at all.

In some instances forward interfering strong signals can be more completely balanced out by connecting a simple or general purpose antenna to one of the terminals of the signal rejector for clear reception of weak signals on the same frequency originating in the rear.

In order to obtain a better balance at the far end, and to partially or completely eliminate pickup by the vertical ground lead at both far and near terminals, a beverage reflection transformer,  $T_T$ , Figure 6, is employed and a lead covered #12 B & S conductor used as a shielded vertical ground connection. The conductor with lead shield is made water tight at the bottom by soldering conductor and shield together and connecting the whole to the underground radials. The transformer housing is grounded to the upper end of the lead shielding and the coil terminal to the shielded conductor. This arrangement is an apparent improvement in directivity over the exposed, directly grounded, vertical section of the antenna conductor.

## TEST FOR TRANSMISSION LINE BALANCE

The transmission line may be checked for signal pickup or unbalance by disconnecting the two antenna wires and connecting a resistance across the transformer in place of the antenna and equal to the surge impedance of the two antenna conductors. Very little pickup of signal or noise should register in the receiver from a well-balanced line.

## TEST FOR TRANSFORMER BALANCE

The center-tapped coupling transformers may be tested for balance by the use of a signal generator and receiver connected as shown in Figure 8. When properly balanced the receiver will indicate nearly zero input or a very small transfer of energy to the secondary of the transformer.

### Circuit for Testing Transformer Balance

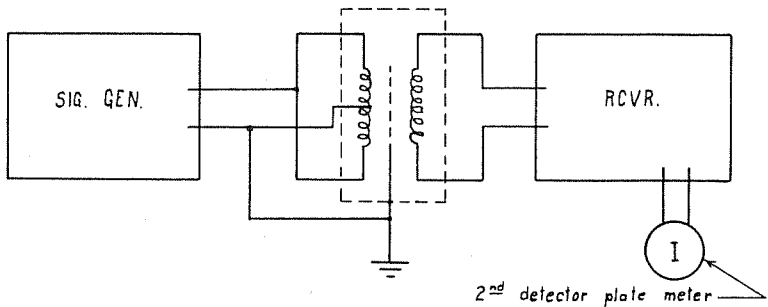


Figure 8

## TERMINATIONS

Impedances  $R_a$  and  $R_b$  in Figure 6 should be equal to the surge impedance of the transmission line as calculated from:

$$Z_o = 277 \log_{10} \frac{2s}{d} \text{ ohms}$$

(s equals spacing from center of wires)  
(d equals diameter of wire [d and s in same units])

The transformer  $T_a$  couples the transmission line to the two-conductor antenna and the two wires are now acting only as transmission line to carry the reflected signal from A direction to the receiver. The impedance of the two-conductor antenna serving as a transmission line is calculated from the same formula. The Grand Island transmission lines are approximately 400 ohms and the antenna conductors 700 ohms.

The transformer  $T_b$  couples the transmission line to the antenna with the two wires acting as if they were in parallel, because the primary of  $T_a$  has practically no effect on signals arriving in phase at A from B direction. Therefore it is necessary to know the surge impedance of the two wires in parallel with respect to the ground.

The transformer  $T_r$  reverses the phase and sends the signal which arrives from A direction back over the two-wire line now acting only as a transmission line. The primary coil is designated to match the surge impedance of the two-conductor antenna line in parallel with respect to ground and the secondary to match the same two-conductor antenna as a transmission line back to the station.

Circuit for Determining Surge Impedance Forward Reception

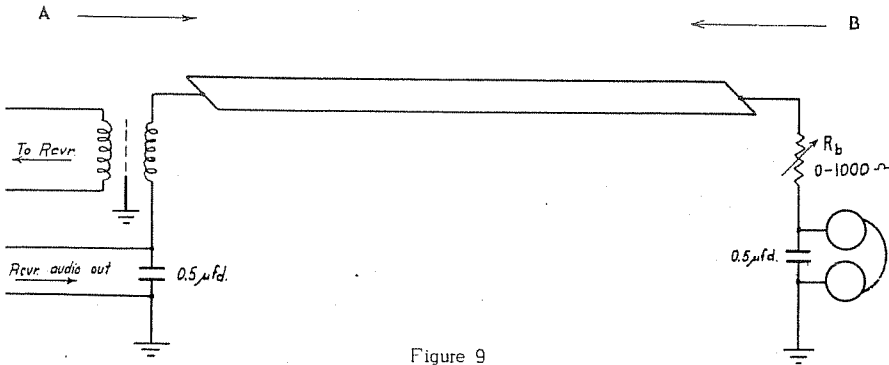


Figure 9

A signal is tuned in from A direction on the receiver. Frequencies of multiples of one-half wavelength are preferred as they are more completely balanced when the proper resistance value is used at  $R_b$ . The resistance  $R_b$  is adjusted for minimum signal in the phones and this value used as the antenna surge impedance. The surge impedance may also be determined by adjusting the resistance at the opposite end of the antenna.

Circuit for Determining Surge Impedance Rear Reception

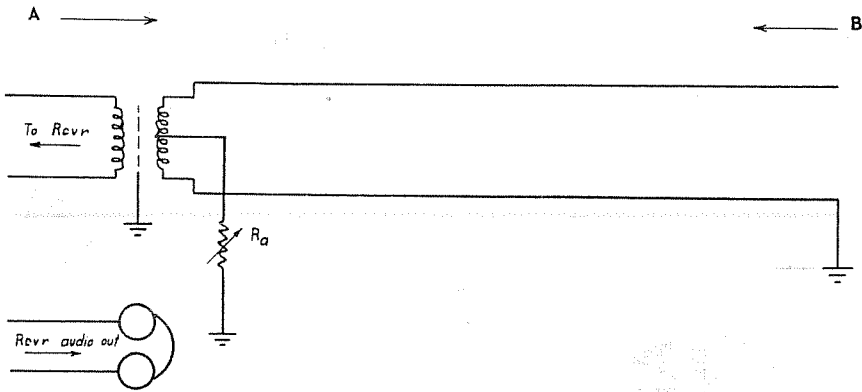


Figure 10

In this case signals from B direction are tuned in to the receiver and balanced out by varying  $R_a$ . This method will usually give a lower value of  $R_a$  than that recorded for  $R_b$  in the other case. The difference is due to the R.F. resistance of the primary of the transformer and some residual inductive reactance, as unity coupling between turns is not possible. If the recorded value of resistance is low it is an indication of high ground resistance. Values at Grand Island for two wires in parallel are approximately 300 ohms.

Another and more simple method which has been employed is to make the resistance  $R_a$ ,  $R_b$  variable in steps of 20 ohms from 230-440 ohms. With an observer at the receiver, the readings are recorded as changed at the antenna terminal and as indicated on a meter in the second detector circuit of the receiver for each changed step of the resistance. The observer at the receiver hears a click when the resistance is switched to the next step. Its value is known according to a shifting antenna as prearranged with the antenna terminal collaborator and the proper impedance value thus determined.

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