From holiday greetings; I appreciate your bп. The period from now through New Year's weekend, as I try to match them up with stations' appearances on the same page, and going through my files takes time. And Wilfred Rilayk writes to say that after his quadruple bypass surgery in Jan., 1987, he finds it almost impossible to get out of bed in the middle of the night to DX. I know how you feel. I almost need surgery to separate myself from my bed weekdays at 5:30 am just to get up and go to work! Wilfred wanted me to thank all the "hard workers" for their contributions to DXN. And so as 1988 draws to a close, I'll do just that. Thanks, guys and gals! And now ... on with it!

Inside ... 12 - The Sky
2 - AM Switch 15 - Sunspots
3 - DXDX-E 20 - Musings
7 - DXDX-W 22 - Ray Briem Special
10 - Formats 23 - FCC Rules

DX Time Machine
From the pages of DX News

Ten years ago ... From the Dec. 28, 1978 issue of DXN: New members included Robert Rucknau, Kettering, OH; Steve D. Miller, Boston, MA; William J. Lam, Columbus, OH; William R. Bartels, Fox Lake, IL; and Henry Strumman, Jr., East Carondelet, IL. CFC tests numbered only two.

Twenty-five years ago ... From the Dec. 28, 1963 issue of DXN: 23 tests were arranged, 11 by the NRC ... John Howard Harding, Akron, OH, rejoined and verified YNOL-825, Managua, Nicaragua; CFCY-630, Charlotte, PIt.; and ZNS-1540 Nassau, Bahamas ... 11-year-old George Janis, Pasadena, CA checked in with 3 new veries, from KOJO-1000, WMAQ-670, and KBAT-680 ... Bernie Duffy, Staten Island, NY, recommended trying for WPYW-1330 at their 4 am weekday slot.

Forty years ago ... From the December 24, 1948 issue of DXN: 46 tests were listed ... Ray Edge mentioned sending a report to WKIN covering a time span from 1:16 to 5 am. He had a letter arrive in two days ... Stan Morss said he was down to his last 50 reel forms - of course, the club was out of them at the moment ... Bernie Duffy, Staten Island, NY, reported hearing the I/O of WKBK-1340, Mayaguez, PR.
CALL LETTER CHANGES
APPLICATIONS FROM EXISTING FACILITIES
APPLICATIONS/GRANTS
This application is totally separate from the existing CP for WONS-1040
GRANTS TO EXISTING FACILITIES
in Pleasure Ridge Park
1600 KWHA AR West Helena KJIW
1020 BC Terrace:
1160 AB Vegreville:
1200...
been cancelled making 1200 kHz available again in the Louisville area.
1110
1030 AB Edson:
1100
1180 PQ Perce:
491x336 PQ Baie-Comeau:
10000/1000
10000/250
U2 station on these available freqs
10000/2000
50000/20000
U2 are available. Prospective
Canadian/american agreement
of several years. These are
not actual applications but are
frequency/power allocations that
are available. Prospective
licensees still have to make
formal application for a new
station on these available freqs.
U2 are available. Prospective
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Note: These represent more of
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Canadian stations resulting from
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DOMESTIC DX DIGEST - WEST

Nancy Hardy

2301 Pacific Avenue, Aberdeen, WA 98520

Time for another DX Digest!

**SPECIAL**

1010 KPSL CA THOUSAND PALMS - 1/25/16 0230-0259 new station on, apparently on RS already. Non-stop classical music 0230-0257, then slogan/id: "We're the all new classical KPSL, bringing the classical airwaves to all of Palm Springs." Asked for suggestions on what kind of programming listeners would like to hear. Gave a Palm Springs mailing address, but signal at 0259 said they'd return at 0900. New, CA #206. (TRH-CA)

1680 KYVJ CA HUNTSVILLE - 1/26/16 1900 called KFM 102 under KSEI slogan, AM-FM ID. "Colors" slogan noted also. (JW-OR)

1530 KSMY NY MT POY PARK - 11/28/16 mentioned AM-FM ID, no call ID heard, many mentions of K-99 FM invitation. (RD-IA)

**KILDAY TO MIDNIGHT**

- 900 NWGK CA SANTA CRUZ - 1/26/16 1700 fair in FF with local mids including one for a Montevideo restaurant, usual to be able to pull local CFOR 1570. (KJF-CA)

- 980 KWFQ OR YORK - 11/29/16 1620 -1600 called off by AM-FM ID. Good (EM-NC)

- 1050 KQBD CA SAN DIEGO - 11/29/16 1900 poor with sign-off. GM-CT Saturday. (JW-OR)


- 1140 KFIU CA HUNTSVILLE - 11/29/16 2000-2005 good (EM-NC)

- 1150 KMWK CA FRESNO - 11/29/16 2100 "Welcome to KBFS." Asked for suggestions on what kind of programming listeners would like to hear. (DA-CO)

- 1200 KGFX CA SPARR - 1/26/16 1800 weak but steady with male anncr. "The new AM-FM ID. " (GKJ-CA)

- 1230 KEM Pig SIOUX FALLS - 11/29/16 2100 "KEM Sports" spot on local HS BKB. (JW-OR)

- 1230 KQCB CA SANTA CRUZ - 1/26/16 1900 weak, but steady with male anncr. "The new AM-FM ID. " (GKJ-CA)

- 1240 KSWX CA BAKERSFIELD - 11/29/16 2100 fair in FF with local mids including one for a Montevideo restaurant, usual to be able to pull local CFOR 1570. (KJF-CA)

Need to renew? Expired? The mailing label will tell you.

CITY QUIZ

John S. Bowker, Valparaiso, IN

Quiz # 16

Only one city in the United States has stations operating at the same frequencies in the five dial positions shown below. Of course, there may be other stations in this city too! Can you spot the city?

800 WCFR VT SPRINGFIELD - 11/21 1050-1700 with CW ax, ID; gone 1058; stop frequency (TF-CT)

1500 KEGT MN ST PAUL - 11/21 1828 ID, ad for smowplows (BB-NE)

1510 WKNH IL GLEN ELlyn - 11/21 1828 over/under WWC with yesterday's The Beatles short sign-off (RD-IA)

1520 WKNH IL GLEN ELlyn - 11/21 1728 poor with sign-off (RD-IL)

1530 KLRN AR ENGLEWOOD - 12/4 1738 bluegrass ax, The All-New KLRN (KJF-CA)

1550 KSX NORTON - 11/22 0830-0900 way under WONY with "Get Around by The Beach Wave" sign-off FM 108.7 KNRT invite (RD-IA)

1600 XKJO MO ST JOSEPH - 12/1 1800 with Full ID, ABC-1 Mx, good (EM-NC)

1600 WCKQ IL ST CHARLES - 11/27 1700 poor with sign-off (KJF-CA)

1570 WEFP MS TAUNTON - 12/2 1622 with Police report, lost by 1625 to the nearest (TF-CT)

1590 CKLM PQ MONTREAL - 11/30 2020 fair in FF with local mids including one for a Montreal restaurant; unusual to be able to pull local CFOR 1570. (KJF-CA)

1600 WPMO MS PASCOAGUA-MOSS POINT - 10/1 1816 CW ax, K-99 FM, Your New Country Connection; ads for Kroger & Sams; did not hear AM Clubs (JW-OR)

1600 WSEP AL MONTGOMERY - 11/30 2008 with Magic 16 Jackpot promo. Phone # 827-1800 called stn! (EM-NC)

1550 WZQQ NC RENDEZVOUSVILLE - 11/21 1716 EZL ax, ads, sign-off @ 1700 (TF-CT)

1600 WQJZ WI CHICAGO - 11/10 1845-1840 XLR null in WRL null with AC mx, local ads, full-time sign-off with Goodnight, Sweetheart. Goodnight (BN-NC)

1800 WSEP AL MONTGOMERY - 11/30 2008 with Magic 16 Jackpot promo. Phone # 827-1800 called stn! (EM-NC)

1600 WZQQ NC RENDEZVOUSVILLE - 11/21 1716 EZL ax, ads, sign-off @ 1700 (TF-CT)

Lucky Reporters for Lucky Issue 16:

- RK-IL Robert Kraemer/Chicago, IL/R-1000, HQ-109X + RL Loop, Kowalski Loop
- BS-NJ Bob Snolaker/Whitehouse Jct, NJ/R-2000 + Kowalski Loop
- MS-ON Morris Sorensen/Parlin, NJ/QH-1450 + SM-2
- KJF-NC Robert Traha/Renovellville, NC/QF-6000 + many Lx + SW Amplified Ferrite Loop
- TF-CT Tony Fletcher/Fairfield, CT/Superaadio
- KJF-SA Jari Eloranta/Chevy, NJ/KD-2000, KEMAX, "served up July's "4th of July" specials" (BN-NC)
- HH-PA Harri Mays/Kithe, PA/Ferrite Loop, Tape Loop
- HH-PA Gary Mitchell/Fairfield, CT/Sony BP920A portable
- AB-TX Art Biggley/Tampa, FL/TH-7700
- NC-IA Rick Dav/Oakland, IA/
- WRH-NY Bill Hal/Nashville, TN/Deloar ETR

Here is a hint: it is one of these: Miami, Shreveport, New York City

The answer will appear at the end of the next City Quiz in DX News.

The answer to City Quiz # 15: Los Angeles
MIDNIGHT TO MIDDAY

6:00 KXLY-FL LOGAN - 11/29 1006 "KYUV Community Events," o/s KSPN. (DA-CO)

6:30 KCOL HANFORD - Tu 12/6 0659 still using these calls, but was
calling KZUP-550 Bakerfield! Every few minutes a man would
come on to give a bilingual KCOL ID on top of the KZUP Feed.
Strangely (TRH-CA)

6:00 KYAK AK ANCHORAGE - 11/21 0148 DX on "G-50 KYAK" running phone-in
and show. 0600 "talkback" only 1 country music station and
SID. Fair, o/s (CISL). (SP-HI)

8:00 CKNW SAUK ATLAS - 11/28 0715 fair with CISL nullled. ID, OAW.
Slogan "Super station CKW." (JW-OR)

8:00 KXLC HI ELELE - 11/4 0539 on with GM Bill Dahle over military
band playing "Hawai'i Ponoi" (the ex-natl. anthem), Mutual
needed KDKA. Returned to

8:00 KFAC-1330 CA SAN MATEO - 11/28 0705 totally off (they were on earlier
at 0340). Nothing noted, except new megastation KXEN (ex-270).

9:00 KORT CA LOS ANGELES - NM 12/5 0310 loud TDs, but off later. This was
an excellent night for S. Calif. The next -- see 1070/1000/1110/
1130 below! (TRH-CA)

10:00 KCWO WA SEATTLE - 11/3 0338 noted with KCW. OAW.
Slogan "Super station CKW." (JW-OR)

10:00 KCRM NW MCKENZIE - Tu 12/6 0505 loud TRD. Off at times.
Could hear traces of what I thought were unneeded KXQ & much-
needed KX2A. Returned to reg. programming by the end of
the hour. (TRH-CA)

10:00 KNX CA LOS ANGELES - NM 12/5 0050 most of the night, but off at times
leaving KXAC & needed KXBA. Can't remember the last
time I caught this station off. XEPRS, OWOA, KLAN-110 and
KXGO-1130 were also off! Too bad the DX conditions were

11:00 CFXS DC VICTORIA - NM 12/4 0459 or 0539 with KGFK, and
KCNX-1020 were off! Too bad the DX conditions were

12:00 KXWJ HI HONOLULU - 11/7 0550 ID, then abruptly off. I found out
that XWJX had to go on his station xit, quickly switching
the shutdown for an hour of several other stations sharing
the tower, including KXLY. (SP-HI)

11:00 KFXS SA SACRAMENTO - 11/21 0628 PSA, and for Christian Counseling
Centers, station promo, ID "M4: California's Leader, KFXS
Fair, o/s. (TRH-CA)

11:00 KDLR CA PASADENA - NM 12/5 0350 totally off at first, but had a few
TRDs. Back later in the morning. Fairly loud, off strong
leaving KFXS/KROQ and poor-fair KNDN. (TRH-CA)

12:00 KXCR CO ROSEVILLE - NM 12/5 0211 best signal ever with female SS
Fair, o/s. (TRH-CA)

12:00 KNES HI KIRKLAND - 12/1 still off the air, was supposed to return 11/29
under new ownership. (SP-HI)

12:00 KNUR CA ENTRUST - 11/24 0046 generally poor but faded up at
12:00. Best of King, network add, ID & Mutual News on the
hour. Now, OAW! (TRH-CA)

12:00 CHMY AB SASKATCHEWAN - Per letter from Paul Preston, Promotions Mgr.,
CKST will move to 1200 with new call "by January 1, 1959 at
the latest." Will be 25kw, "processing AM Digital Stereo."
Yep! It was bound to happen. In November, WACT - 1420, in Tuscaloosa, went to an all Christmas music format. They will return to their country format after the holidays, according to the M Street Journal, one of our contributors for this edition of formats.

SNM Business news is being picked up by more stations as they make business gambles! And motivational talk continues to be a format - amazing how some people need a format to get them turned on.

Eric Bueneman (E) is one of our contributors this issue. Eric, late of Georgia, with three friends is endeavoring to buy Eric!!! Other contributers are Mark Strickert (S), of Chicago, Al Holtz, of Conrail, in Philadelphia, and WTEJ-1050 operations manager Chris Roberts, and ye editor updates Indianapolis radio after spending a week there at a conference. Stay tuned for profiles. Here we go...

540 WSTC GA Columbus - Ex-WDAK, now CWM // FM (M).
550 KOY AZ Phoenix - Adult standards, talk (M).
550 KUSB CA Bakersfield - CWM // FM (S).
550 WKHO NC Pinehurst - CWM (M).
570 WAAX AL Gadsden - CWM (E).
600 WCVP NC Murphy - CWM (E).
630 WAVU AL Albertville - CWM // FM (E).
700 KSEV TX Tumball - To be business news and sports (E).
710 KFPI CO Denver - Metal rock nights (E).
720 KUZZ CA Bakersfield - Variety (E).
760 WRLN TN Knoxville - "New, to be non commercial religion. - Now to be non commercial religion."
770 WVNN AL Athens - Ex-KWNN, now all news "Valley News Network" (E).
780 W2XX AL Lineville - CWM/WASZ (M).
790 WLRM MS Ridgeland - 4th station in the US to go to motivational talk (M).
790 WTSK AL Tuscaloosa - R & B oldies (M).
810 WQRT IN Indianapolis - Black, gospel, lots of congregation noises and "Amen", rooftop antenna, I believe (TP). - "New FM Breeze, new age(M). Was BNN/Eliz when I was there in 1964-65, and on 900 kHz (TF).
830 WRFF FL Hialeah - New station, Spanish (M).
840 KJIN TX Pharr - New, WMK (M).
850 WYDE AL Birmingham - Southern gospel, "Wide 85" (E).
850 WUTK TN Knoxville - University of Tenn., Knoxville Campus, news and information (M).
900 WYCT GA Calhoun - CWM (E).
900 WYOM WI Wisconsin Dells - CHR//FM (M).
910 KFLN TX Shofersan - Ex-KFAM, now Spanish (M).
910 WRNL VA Richmond - Rock oldies, L. King (E).
950 WXLW IN Indianapolis - All paid religion, "All sold out" according to the GM, hours 0600-2200 (TF).
960 kWVX OH Wooster - SNM oldies (M).
960 WYKS AL Centre - Satellite fed oldies (S).
990 WEIS AL Centre - CWM (E).
990 KBQQ CA Santa Barbara - CWM (M).
990 WANT VA Richmond - Black AC (E).
1000 WNRV IL Vernon Hills - Drops news and talk for BNN business news.
1000 TWGK OH Tallagoo - CWM "Country King" (E).
1000 WBDC IN Indianapolis - Full service AC, News, NBC feed, "Radio Indiana" lots of sports, Talknet at night. (TF).
1030 KJLS CA Santa Cruz - New age // FM (M).
1100 WLAB GA Carrollton - CWM (E).
These technical notes are a continuation of my "Collins 5154 Review" which appeared in DXN 56, 1 (Oct. 3, 1988). Its purpose is to provide J4 users with technical information which can assist them in overhauling, aligning, and maintaining their J4, and to provide potential J4 owners with additional technical information about the J4.

I was as surprised as Fritz was when our J4 reviews appeared in the same DXN issue. I should add that I was also pleased. Two opinions are always better than one, and together we covered the J4's basics thoroughly. I managed to get the audio output impedances wrong (3.2 and 560 ohms). Fritz got them right (4 and 600 ohms).

I don’t use my J4 as a backup for a solid state RX as Fritz does because I don’t own any solid state communications receivers at present. I have temporarily owned or used some very good solid state RXes, including a SSB-4 with 5-NB noise blanker, and a NRD-515 with Collins mechanical filter mod. But none of them had quite as good weak signal performance as the top of the line tube receivers. So it doesn’t surprise me that a J4 would outperform an ICOM R-71A in some difficult listening situations as Fritz observed. Fritz mentions that performance figures may prove the R-71A is a better RX than the J4. But performance figures often do not tell the complete story. For example, several years ago as part of their catalog Sherwood Engineering included a large number of laboratory measurements for many top RXes. There it was pointed out that receiver manufacturers typically measure dynamic range with two signals spaced 2 kHz apart. However, in difficult AM listening situations the carriers are much closer together, sometimes as little as 2 kHz apart. So Sherwood Engineering measured dynamic range twice for each receiver, once at 20 kHz and a second time at 2 kHz test signal separations, and called these measurements wide and narrow dynamic ranges. The results were revealing. For a R-390A the wide and narrow dynamic ranges were 85 and 78 db respectively, while for a R-515 they were 95 and 77 db respectively. Both a R-70 and a R-71A measured 86 and 62 db respectively. The J4 was not included in Sherwood’s list. But in any case, I agree with Fritz that a J4 is generally the equal of any solid state RX, and perhaps slightly superior to any solid state RX for good solid state foreign splits. Similar comparisons have been made with other receivers, such as Chuck Hutton's comparison of a Drake R7 and R390A in DXV 47, 1 (Oct. 8, 1970), with similar conclusions.

Several years ago I mentioned that many J4 users, including myself, have gotten their audio output impedances wrong. Fritz comments, correctly, that the BFO frequency is at one or the other edge of the mechanical filter passband in the Collins 5154, but the BFO was quite effective in not only delivering a suitable audio output to the headphones, but also in not desensitizing the receiver. Fritz got the BFO frequency wrong (600 and 560 ohms). I got them right (4 and 600 ohms). Fritz got the BFO frequency wrong (600 and 560 ohms). I got them right (4 and 600 ohms).

Perhaps others made the same mistake I made and did not align band 1 as well as possible, or perhaps they did not use an antenna which is suitable for the J4. The manual states that the J4 is designed for use with a single wire or whip antenna, and that the J4 has a high impedance antenna input. J4’s do give lower S-meter readings on band 1 as compared to band 2 on the same signals where comparisons can be made in the frequency range overlap for bands 1 and 2. But this merely suggests that J4’s are more sensitive than necessary on band 2.

To confirm what my ears already told me, I remeasured the dynamic ranges of both J4’s on band 1. The J4’s were calibrated using a two tone dynamic range test at 12 kHz with test signals spaced 20 kHz apart gave 80 db for one J4 and 83 db for the other. Most of the dynamic range reduction appears to have been caused by the R149 mod, but I would still recommend against the band 1 mod because it is simply not necessary or desirable. On band 1 a J4 is triple conversion, with a 20 kHz IF, and a second IF which is 50% down in the IF filter at the file point. Therefore, the band 1 mod should be only necessary to reduce the band 2 dynamic range. I would then recommend adding a band 1 mod, as Fritz has. The band 2 dynamic range was 82 db for my J4, and slightly lower for Fritz’s J4.

Therefore, I would like to retract my previous words. Collins did not do a terrible thing and desensitize band 1. I did a stupid thing and reduced band 1 dynamic ranges of my J4’s by more than 10 dB with the band 1 mod and R149 mods. Of course, Orr and other hams who did the R149 mod reduced the dynamic ranges of their J1’s. Fortunately, it is relatively simple to undo the band 1 and R149 mods. These mods do improve J5 sensitivity. But in my opinion there is no need to desensitize J5’s provided they are aligned to the specifications of the manual. The price you pay for improved sensitivity is significantly reduced dynamic range, especially on band 1 (the BCB). The price seems unacceptable to me.

As Fritz pointed out, the J4 was not designed as a SSB or CW receiver, but rather as a premier AM receiver (which it still is). Nevertheless, the J4 can be used effectively for SSB or CW reception if you are willing to turn down the RF gain, turn up the audio gain, and use the RF gain control to adjust the signal levels of SSB or CW signals. For best SSB reception you should adjust the BFO pitch so that the BFO frequency is at one or the other edge of the mechanical filter passband, depending on whether you are listening to USB or LSB. The J4’s AC coupling with a J4-5, is, of course, inconvenient because you must constantly adjust controls as you tune around. Or is it? The J4 has a 500 kHz IF output jack which can be used to feed SSB converters, such as the Harmonarad HC-10. The first time I used a HC-10 with a J4 the resulting SSB performance was disappointing. SSB signal quality could at best be described as poor, and at worse, unusable. I disconnected the HC-10, put it away, and did not again use it for several years. Recently, one evening as I was reading the J4 manual I noticed that the J4 IF output impedance was specified (as 50 ohms), but the IF output level was not specified. So I borrowed a scope and measured it. The IF output measured a whopping 12 volts peak-to-peak! No wonder the HC-10 sound was distasteful to my J4. It was being overloaded. I determined that a 2.7 K ohm half watt resistor in series with the HC-10 input dropped the voltage to an acceptable level, namely 200 millivolts at the input of the HC-10. With the dropping resistor in place the J4 and HC-10 combination was excellent for SSB and CW, not to mention AM. For those of you who are not familiar with the HC-10, it is essentially the IF of the harmonarad HC-180, and includes a notch filter, bandwidths of 6, 4, 3, 2, 1, and 0.5 kHz, three AGC release times, IF vernier fine tuning, and a product detector.

Owning a classic tube receiver like the J4 is not for everyone. For openers, you will have to overhaul, repair, align, and maintain a tube RX because there is virtually no one who does this kind of work any more as a business. Consequently, you must be a ham. Next, you need parts.

"Modifying the Collins 5154 receiver for SSB reception." I began to have doubts about these mods several weeks ago when I noticed that both of my J4’s had cross modulation from KRUS 1490 on WKAC 1510. To learn more about the J4 cross modulation problem, I built a hybrid coupler so that I could measure the dynamic ranges of my receivers. The definitive article on measuring dynamic range is Wes Hayward’s July 1975 QST article, “Defining and measuring dynamic range.” The hybrid coupler which I built is described in Hayward’s article, except I used an Avidom FT-82-61 ferrite torroid core with 17 bilinear turns to extend the coupler frequency range to include the BCB. One of my R-390A’s measured 82 db (which is within 1 db of the value reported by Sherwood), one J4 (with only the R149 mod) measured 72 db and the other J4 (R-149 and mod) measured 67 db, and my HQ-180A (the surprise winner) measured 88 db dynamic range. I used a pair of URM-25D signal generators with test signals at 1200 kHz and 1220 kHz for these measurements. Curiously, I got much lower narrow dynamic range measurements for my R-390A than reported by Sherwood. Perhaps my home made hybrid coupler does not have the required isolation required for narrow dynamic range measurements.

Next, I removed the band 1 mod from one J4 (the other J4 did not have the band 1 mod) and restored R149 to the original 800 ohm half watt resistor in both J4’s. The measured resistances of the R149 mods were 705 and 715 ohms, and the measured ACO-3 resistance was about 1.80 VDC in both cases. After carefully realigning band 1 of the J4 which had previously been insensitive on band 1 (see my comments on band 1 alignment below), I measured the sensitivity of both J4’s as better than 3 microvolts for a 10 dB S-meter indication. This was quite encouraging, and not at all what I expected. Apparently I was not careful enough the first time I aligned band 1 in the "insensitive" J4. Several hours of nighttime listening on the BCB with an anenna revealed no cross modulation, and sensitivity was excellent, with man-made and man-made signals sometimes as little as 2 kHz apart. So Sherwood Engineering measured dynamic range twice for each receiver, once at 20 kHz and a second time at 2 kHz test signal separations, and called these measurements wide and narrow dynamic ranges. The results were revealing. For a R-390A the wide and narrow dynamic ranges were 85 and 78 db respectively, while for a R-515 they were 95 and 77 db respectively. Both a R-70 and a R-71A measured 86 and 62 db respectively. The J4 was not included in Sherwood’s list. But in any case, I agree with Fritz that a J4 is generally the equal of any solid state RX, and perhaps slightly superior to any solid state RX for good solid state foreign splits. Similar comparisons have been made with other receivers, such as Chuck Hutton’s comparison of a Drake R7 and R390A in DXV 47, 1 (Oct. 8, 1970), with similar conclusions.

Several years ago I mentioned that many J4 users, including myself, have gotten their audio output impedances wrong. Fritz comments, correctly, that the BFO frequency is at one or the other edge of the mechanical filter passband in the Collins 5154, but the BFO was quite effective in not only delivering a suitable audio output to the headphones, but also in not desensitizing the receiver. Fritz got the BFO frequency wrong (600 and 560 ohms). I got them right (4 and 600 ohms). Fritz got the BFO frequency wrong (600 and 560 ohms). I got them right (4 and 600 ohms).

Perhaps others made the same mistake I made and did not align band 1 as well as possible, or
One of the problems with aligning a J4 is that the manual makes alignment seem very difficult, and it is vague on some points. For example, as part of the front end alignment description the manual says, "Adjust the core in L14 so that it is in approximately the same position as the core in L18." This really makes no sense if you think about it. It is printed beside L14 on the chassis, suggesting that it should be aligned at 1.0 mHz. After studying my copy of a R-388 manual which contains a much better explanation of the band 1 conversion scheme, I decided that L14 should be peaked at 1.0 mHz. In the process of realigning this tube, I found that the dynamic range and sensitivity measurements held that the center of the 6 kHz filter was about 3 kHz lower than the specified value. I suspect that this was due to the ceramic trimmer capacitor with "6" printed beside it on the chassis is very delicate in some J4's, and you can easily loose 10 db or more S-meter indication by carelessness. Misalignment of L14 and L14 could be contributing factors to the J4 reputation for band 1 insensitivity.

You can make the J4 front end alignment difficult by following the manual procedure, or you can do it the easy way by using the 100 kHz calibrator and S-meter. I have done it both ways and gotten virtually identical results. The alignment frequency of each inductor and trimmer capacitor is printed beside it on the chassis, so you do not even need a manual if you do the front end alignment the easy way. Before you begin the front end alignment, you should look at the antenna trimmer capacitor and verify that the plates are fully meshed when the pointer is at 12 o'clock, and the plates are completely unmeshed when the pointer is at 3 o'clock. If these conditions are not met, loosen the set screws on the antenna trimmer knob and adjust the knob. Front end alignment should be done with the antenna trimmer plates half meshed (knob pointer at 12 o'clock). As with any front end alignment, you may need to adjust each inductor and trimmer capacitor several times until there is little or no change.

After you finish the front end alignment, turn the J4 on its side, tune to about 1250 kHz, find the greatest attenuation on the spurious signal, and adjust L124 (on a bracket beside the long IF transformer) for maximum attenuation on the spurious signal. I found it helpful to turn on the BFO to locate and adjust the IF alignment. You can use two screwdrivers. One screwdriver should have a larger blade which fits into the slots in the bottom dust cover for access to the core in L14 which comes out the bottom of the IF transformer. The BFO coil adjustment is about 12 o'clock. The BFO calibration is on a small hole in the bottom dust cover.

If you don't have the original J4 alignment tools (which should be in the holder on the side panel), you can use two screwdrivers. One screwdriver should have a larger blade which fits into the slots in the circular metal rings just inside the holes of the IF transformer tops. Turning the metal rings aligns the top IF transformer core. The bottom cores of the IF transformers can be adjusted with a screwdriver having a small blade. The bottom cores are attached to threaded metal shafts which come out the bottom of the IF transformer and are accessible underneath the chassis (after you remove the bottom dust cover). You should tap the shaft of the small screwdriver to locate the threaded metal shafts so that the metal shaft does not contact with bare wires near the alignment shafts. If you don't like that approach, you can use a plastic adjustment tool with a small plastic blade tip and adjust the bottom cores by inserting the tool into the top of the IF transformer. Radio Shack sells a suitable tool as part of their TV Alignment Tools, catalog number 74-269.

You will need to readjust the S-meter zero position. The S-meter zero adjustment is the greater attenuation on the spurious signal. After adjusting the IF gain and meter zero you should tune the strongest signals you can find and readjust the IF gain and meter zero if necessary. A R-388 with a mechanical filter conversion kit may not be aligned correctly.

To adjust the crystal phasing I suggest that you use the alternate manual procedure. I was not entirely satisfied with the results of the alternate manual procedure, and after some trial and error I arrived at the following variation. With the phasing control at 12 o'clock, set the crystal selectivity to position 1 and tune a calibrator marker for maximum S-meter reading. This will generally not be exactly at the center of the 6 kHz filter bandpass, but should be nearby. Adjust the kilocycle dial hairline to the nearest kilocycle dial mark and observe this frequency, which is in the center of the 4 bandpass. Reset the crystal selectivity to position 1. For the remainder of the phasing alignment the crystal filter selectivity will remain in position 1, although I will often refer to the frequency that corresponds to the center of the 4 bandpass. Adjust the kilocycle dial upward by 1 kHz and turn the phasing control 90 degrees each side of 12 o'clock. You should observe a deep null at some position of the phasing control. Remember the position of the (first) null. Adjust the kilocycle dial downward by 2 kHz (1 kHz below the crystal filter position 4 bandpass center) and turn the phasing control 90 degrees each side of 12 o'clock. Again you should observe a deep null, but at a different position than the first null. Remember the position of the second null. Rotate the phasing control so that the indicator (white line) is halfway between the two nulls. Loosen the set screws on the phasing knob without changing the position of the phasing control, and reset the knob so that the pointer is at 12 o'clock and the kilocycle dial upward 1 kHz (to the crystal filter position 4 bandpass center). Finally, TI02 is adjusted with the non-metallic blade end of the small J4 alignment tool. Adjust the kilocycle dial upward 3 kHz and peak the core of TI02. Readjust the kilocycle dial downward 6 kHz and recheck the core of TI02. If the second peak of the TK02 core should require little or no movement, you have good phasing. If the change is substantial, readjust the kilocycle dial upward 6 kHz and recheck the core of TI02 while observing the approximate number of degrees the alignment tool rotated. Then reverse the rotation of the alignment tool by half that amount. In other words, set the core of TI02 to half the adjustments which correspond to the two peaks, and the crystal phasing is now complete. The manual states that with the phasing control set at 12 o'clock the phasing plates should be half meshed. With my procedure I found this not to be the case. The plates are about 20 degrees from half meshed. I do not consider this unusual because it is possible to get stability and the phasing plates do not exactly align with the original design. In any case, the symmetry criterion: I have used gives good results.

The mechanical filters are plug-in style (as opposed to soldered-in style) and are held in place with a metal bracket. If you must remove a mechanical filter, remove the bracket and then use your fingers (not a screwdriver or other metal lever) to pry it out. Do not drop a mechanical filter or break the filter while handling it. They may look sturdy, but mechanical filters contain small ferrite transducers attached to the end discs with small wires. Ferrite is a ceramic, much like glass, which can be broken by the shock of a sharp blow. Currently Yellow Sheets J4 filter prices vary from $45 to $75, usually at the high end. The manual specifies the filters as type F5M and F5M-31, and F500-60, part numbers 522 9000, and 522 9009 002 respectively, but many J4's come with filters having 526 xxxxx 00 part numbers. The one 522 xxxx 0xx filter I have seen was painted gray, and had shorter pins than the shiny 526 xxxx 0 filters. I presume that the 520 xxxxx 0 filters are a later model production change.

The dial cords (there are two) in 513 and R-388 receivers are stranded steel, nylon coated wire, generally about 18 gauge. The only reason I can think of for the outside diameter is that it is for use as miniature cable clamps. It is possible to tie knots in the ends of the Steelon wire as suggested in the J4 manual, but I suspect this would be unsatisfactory for the MCS dial cord because the overall length is extremely critical (as I will explain below). For this reason I would recommend
that you use crimp sleeves to form the loops in the ends of the MCS dial cord. The 0.040" inside diameter crimp sleeves which come with the Berkley leader line kit are much larger than the crimp sleeves used by Collins to fabricate the dial cords, so I used Mason catalog no. 1D, 0.033" inside diameter by 1/4" long black crimp sleeves which are slightly larger than the original Collins sleeves. I also make it a habit to make a suitable crimp sleeve catalog no. 1D, 0.033" inside diameter, copper, but I have not been able to obtain any of them yet. Berkley products are available at some specialty fishing stores, or write to Berkley, Outdoor Technologies Group, One Berkley Drive, Spirit Lake, IA 51360 for information.

The reason I replaced the dial cords is that the nylon coating had cracked in several places which allowed the jacketed coating to work its way through and eventually reduced the spring loaded tension of the MCS dial cord to nil. If the MCS dial cord has already stretched so far that there is no tension on the spring, a satisfactory temporary fix is to tie a knot in one end of the dial cord just behind the crimp sleeve which attaches directly to the pulley tab. If you go to the trouble to replace the MCS dial cord, you may as well replace the MCS dial drum cord at the same time.

To replace either dial cord you will need to remove the front panel. The J4 manual instructions for front panel removal are inadequate (which screws must be removed are not specified) and incomplete (because the instructions are actually for removing a J3 front panel). When removing the knobs be sure to use a multiple spline wrench, not an Allen wrench. Otherwise, you may strip the setscrew socket head and then you can't just pull the knob off the KCS tuning shaft with an Allen socket because threads of pin inches are not the same. The knobs which must be removed are the large KCS (tuning) and MCS (band change) knobs, the small antenna trimmer knob, and the selectivity, phasing, and BFO pitch knobs. Remove the collar, tension washer, and flat washer from the MCS tuning shaft and store them in a secure place for safekeeping. Remove the BFO pitch shaft by loosening the two front set screws in the flexible coupling and sliding the shaft out the front. If the shaft adapter remains in the flexible coupling, try to remove it and keep it with the BFO pitch shaft (if you lose it you will have difficulty finding or making a replacement). Remove the mechanical filter selector lever by loosening the spline set screw in the non-mar clamp and sliding the shaft out the front. Slide the clip-on #47 lamp holders off the metal strips they are clipped to, gently extract the lamps and their wiring harness, and lay them on top of the chassis. Place pieces of wood or folded newspaper under the side panels so that they do not gouge the front panel. Pull the front panel face down in front of the 54 mainframe. Place the lamps and their wiring harness temporarily aside to restore the 54 to a safe working condition. You may find that the MCS dial cord again has no tension.

By careful measurement, and possibly making several dial cords, each longer or shorter than the length specified by the manual seems impossible. And if you try to follow the specifications to the letter, you may be able to use the original tension spring. But you may be disappointed with the results because the dial cord will stretch as it ages, and sooner than you might like you may find that the 27" length specified by the manual seems fine to me. I used about 1" at one end to make a loop, and cut off about 1" at the other end after tying the required knot. This made a finished cord about 25" long, and provided about 1/2" on the dial drum pulley with the J4 set to band 30. The cord I removed from one J4 was only 14" long, so there is excess cord length in case you make a mistake.

The manual makes an end point alignment seem virtually impossible. And if you try to follow the J4 manual instructions for an end point alignment, which the J4 manual calls a temporary PTO alignment. Based on my experience with R-390A PTO's I would not expect a permanent alignment. Unfortunately, Collins no longer supports the PTO manual. I have seen. The 36 1/2" stretch before deformation. I consider that unacceptable, and in any case I had already performed the original tension spring. So I fabricated another spring from a Century Spring Corp. stock no. C-5 spring which I bought at my local True Value Hardware. I used 12 turns not counting the hooks (partial turns) on each end. A type C-5 spring would also suffice. It is the same diameter and material, just shorter.

The PTO's (VFO's) in J4's I have worked on have not required an end point alignment because the end points had expanded less than 1 kHz for the entire 1 MHz tuning range. This seems remarkable for receivers which are about 30 years old because R-390A PTO's frequently have only 6.3 kHz to 12 kHz or sometimes more. Perhaps some cautious previous owner had already done an end point alignment on the J4 before I obtained it.

The J4 manual states that a PTO with substantial end point spread should be sent back to the factory for permanent alignment. Unfortunately, Collins no longer supports J4's, and most hobbyists would probably not pay the high price for a new or permanently realigned J4 PTO. So you must make do with an end point alignment, which the J4 manual calls a temporary PTO alignment. Based on my experience with R-390A PTO's I would not expect a J4 PTO to spread at a rate greater than about 0.5 kHz per year, so you should not need to do an end point alignment more often than once every 5 years or so. That is not bad for a so-called temporary PTO alignment.

The manual makes an end point alignment seem virtually impossible. And if you try to follow
Sunspot activity could cause disruptions on Earth

Some scientists believe the peak of the cycle might be between 1995 and 1996. The next peak of the sunspot cycle could be as much as 10 years later than expected, which would mean that the Earth could be subjected to more solar storms for a longer period of time. The Sun is very active, and this activity is related to the sunspot cycle, which is a 11-year cycle of solar activity. The cycle is characterized by the appearance and disappearance of sunspots, which are dark spots on the surface of the Sun.

In the past, solar storms have caused disruptions on Earth, such as blackouts, communication failures, and even changes in the weather. The Earth's magnetic field is protected by the solar wind, which is a stream of charged particles that flows from the Sun. However, during solar storms, the solar wind can become more intense and can therefore disrupt the Earth's magnetic field.

Solar storms can also cause problems for spacecraft and satellites. The solar wind can increase the radiation dose for astronauts and can also interfere with communication systems. In addition, solar storms can cause problems for power grids, leading to blackouts.

The sunspot cycle is currently in a relatively quiet phase, but this does not mean that solar storms are not a concern. In fact, the next cycle is expected to be one of the most active in recent history. This means that the Earth could be subjected to more solar storms for a longer period of time.

In summary, solar storms are a concern for the Earth, and the sunspot cycle is one of the factors that can influence these storms. As the cycle progresses, it is important to monitor the solar activity and to be prepared for any potential disruptions.

R. F., especially harmonics of the 500 kHz IF, from causing spurious responses in the J4. Before you remove the dust covers, tune to 0.5, 1.0, and 1.5 mHz without an antenna connected and look for spurs. There should be a weak one at 0.5 mHz, a weaker one at 1.0 mHz (you may have to use the BFO to find this one), and maybe a still weaker one at 1.5 mHz. With both dust covers removed you should find a strong spur at 0.5, and spurs with decreasing intensity up to about 4.5 mHz. Obviously it is not a good idea to J4 with the dust covers removed, especially on the lower bands.

The most common cause of anomalous performance for a tube type receiver such as the J4, is bad tubes. I've said it before and I'll say it again, tube testers are notoriously for indicating that bad tubes are good. For example, I fixed a drift and low reading S-meter in one of my J4's by replacing all of the 6BA6's in the IF with new 6BA6's even though all of the old 6BA6's tested perfectly good on my tube tester. Situations like this are not surprising because the tube tester measures transconductance, a parameter directly related to tube gain. Other parameters, such as AGC action, noise, and hum, usually have nothing to do with transconductance. I can usually identify a bad tube by rotating the receiver and putting the old tubes back in to the receiver once the problem returns. But in this case the drift and low reading S-meter apparently was caused by multiple bad tubes, and I have been unable to determine which are responsible. I hate to toss several otherwise good tubes in the trash, but there seems to be no other acceptable course of action in a situation like this.

It is curious that J4's have not been more popular with BCB DXers. One reason may be R. S. Moore's book Communications Receivers a price of $1099 is stated, but no year is given. In any case, that is well over twice the price of a 10-80A and the period both were produced. Even today a J4 often commands a premium price, especially if it is complete and in good physical and electrical condition. I understand that on the East coast prices are typically in the $300 to $400 range for a J4 in good condition with all three mechanical filters, but without the matching cabinet. Prices tend to be less in other regions, and considerably less for J4's in below average condition or missing mechanical filters.

The 100 kHz calibrator is, of course, used for tuning. It measures transconductance, a parameter directly related to tube gain. Other parameters, such as AGC action, noise, and hum, usually have nothing to do with transconductance. I can usually identify a bad tube by rotating the receiver and putting the old tubes back in to the receiver once the problem returns. But in this case the drift and low reading S-meter apparently was caused by multiple bad tubes, and I have been unable to determine which are responsible. I hate to toss several otherwise good tubes in the trash, but there seems to be no other acceptable course of action in a situation like this.
Hi, I haven't mused for a while, and have done relatively little DX because of other activities - PTA president, soccer coach and have just one verie, from WBIS-1120, Who began the family went to Nova Scotia in July and I did manage to visit some facilities, although no Machlas, but what a great country station - old records, and real down east announces. Next - St. John - CHSJ-700 has an interesting two tower array - a huge tower, easily 500 feet high and a smaller one immediately next to it. CFRC-930 is located in an old brickhouse in downtown St. John - and 11-100 CBD, of course is located in the ultra modern CBC complex - 4 tower array (two big, two short) located next to the St. John River. After leaving Bay of Fundy National Park, we drove through Moncton and saw CBM Tower, a typical huge tower and the two tower array of CKCW-1220, both along the bay outside Moncton. At dusk, by the way, WLBL-1190 is as audacious as any here. Truly interesting is the CBC Shortwave Station in Sackville, on the marshes before Nova Scotia and in nearby Amherst, the two towers for CKOH-900, on the same marsh. I would have loved to visit these stations, but this is a family vacation and the rest of the family doesn't want to. Next day, while staying in Truro, I found WBCM-920, and its two huge towers overlooking a marsh and the Salmon River. The studios are in the basement of a two story building housing law offices. Down in the Annapolis valley, four AM stations, CKDY-1420, Bigby, CKAD-1350, Middleton, CKER-1490, Kentville, and CAFB-1450, Windsor, all simulcast and all ID as “AVR”, for Annapolis Valley Radio. I heard no legal IDs, except occasionally on the hour. Overseas, I did stop at the studios, in a downtown office building, and three tower array for the 5000 watt CJS, the Array is in a quagmire atop a sand dune overlooking the Atlantic, interesting photographs. By the way, at some NRC Convention in the future, I would quite a slide show. CJS is the only 5000 watt station on 1340 in the New World, very tight signal. The tower is off the air in the Atlantic. I listened at noon. WCBS news from NY, at local central. U.S. stations rolling in here out in the Atlantic were WNBC, WEZ, WDEA, WLOB, Portland, WHDH-B50, as well as WCBS. WLOB comes in there better than it does 15 miles north of Portland. If you look a look north of Portland, you can see the two towers for CBM-900, and two more for CHNS-900. Next to the highway, 5 miles south of Halifax is the transmitter antennas quarter and three tower triangular array for CJCH-920. Four miles west is the array, four 600 foot towers for CDRF-600, Dartmouth. CJDR’s studio are located in the penthouse of the tallest building in Dartmouth. On a Sunday, a local bear distributor buys the 24 hours. Next station I saw was the two towers for CJFX-580, Antigonish, this a real variety station - everything from Rock to Country. Also noted the facilities, two towers for CKCM-1320, New Glasgow, and they were advertising a power increase, and a move to a new location. Nova Scotia stations are mostly variety, as they serve remote areas and offer something for everyone. The Halifax market is the only area where stations really format. One is oldies, the other CHR, and CBM, of course, is the local CBM outlet. In Bangor, Maine, on route, I noted WKT’s two towers, 10000 watts, mostly central, and they totally simulcast FM, they do not mention the AM. WBLZ-Z20, in Bangor. A 500 foot plus tower, and a very short one, Station is all AOR, and Stephen King does not have to worry - he makes his money on books. I understand that he wants to operate this station on a commercial-free basis! It is off the air from 0000-0600 nightly! WABT-910 is also off the air at night. WKT is the only station that is 24 hours a day, an intense power of driving, and an interesting trip. The stations would have been interesting to visit, but I had no time for profiles - something I hope to change on an upcoming trip to Indianapolis. Good DX To All. TONY

William T. Farmerie - 62 Sunrise Avenue - Grafton, MA 01519

I recently came across an article of interest to anyone interested in Medium Wave propagation. It is Low Frequency Radio Astronomy in Antarctica by A. Fant, and it appeared in the December 1980 issue of SKY & TELESCOPE. The author, while stationed in McMurdo, rigged up a 50 uhm termination Beverage Antenna, 160 meters long (1/2 wave at around 10000kHz) which was fed into an AM/BC portable and Russak rf recorder monitoring 10000Hz. Author activated this Medium Wave Radio Telescope in Antarctic winter of 1978. Basic outcome was a radio "noise" that commonly came on at least once per day, variously in the 330 and 390 kHz range, and was especially high on weekends, and reduced "blackouts", i.e. Auroral conditions. This article is worth reading in your nearest big library. Author did not determine the minimum detectable frequency for the phenomena nor whether it was caused directly by the sun or indirectly came from the Auroral Plasma. I tend to think the latter was the same. Send to a Geol Scientist if you are reading this. Have you ever considered using your Arctic Beverages for such monitoring?

John Malicky - 995 Shadycrest Road - Pittsburgh, PA 15216-3023

The 1988 Convention Report from Michigan City, Indiana or

(How I Got My First Lesson In Diaper Duty)

The following tale that you are about to read seems almost unbelievable, maybe great material for a sitcom as I can now think of how Fred Vobbe can produce an ad for WNRC at next year's convention(s), but it wasn't so funny then. For those who are mechanically inclined, bear with me.

With this year's convention in Milwaukee, I again decided to visit stations before northwest Pennsylvania, northern Ohio, and possibly1 or 2 in Indiana (highlights in next musing). Around 4PM Friday, September 2nd, because of gaining an hour from Eastern to Central Time and of the easy access, I decided one more stop was available at WMS-1420 (9/1 October '85) Michigan City, Indiana (60 minutes from Michigan City, Lake Michigan). The week before, courteous directions to IDS.

Now it's BAM Saturday morning, September 3rd, and because its late. I'm offered a chance to sleep on the couch inside Greg's mobile trailer (How I Got My First Lesson In Diaper Duty). The following tale that you are about to read seems almost unbelievable, maybe great material for a sitcom as I can now think of how Fred Vobbe can produce an ad for WNRC at next year's convention(s), but it wasn't so funny then. For those who are mechanically inclined, bear with me.

While I don't really have much time to kill, went for the ride. Later, Greg said he'd drop me off at a motel. Anyway.

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Why it's Greg's sister-in-law whose given the details of why I'm here and now leaving! After 10AM, a pay phone, across the street from the garage next to the closed motel, is used to call Mike Knitter and end the APS!(Iypress we were starting to wonder where you were?) and then home again. Meanwhile, I can see my car being driven, it's fixed! No it isn't says the mechanic who finally figures out the relay switch on the firewall is halfway out and pushes it back in? I am lucky (?) as the bill is only for $16, no other problems, ha! At least I'm thankful (in the form of $5) to Greg for allowing me to stay (babysitting charge waived), I'm off and free! With about 150-160 miles of driving ahead, I'm obliged to stop and see Roger Wissmer at work at the Iron Skillet Restaurant in the Petra Truck Plaza 15 miles west of Michigan City, so I'm a few hours late! - hi!

Finally, I reach Milwaukee around 3PM.

Believe what you want, the previous 18 hours was no dream, it happened, a "day that will live (or be forgotten) in DXing infamy!" (PS - I must give some credit to Sue Knitter who urged me to relate this story as I had my doubts given the embarrassment.) 73's

ABC Talkradio Ray Briem Show - "DX Special"

Saturday, January 7, 1989 - 0806 UTC

Once again, the airwaves come alive with news and views from our panel of DXperts! Join Ray and our guests, Steve Miller of Radio West; Stewart Mackenzie of the American Shortwave Listeners' Club; George Jacobs, world-renowned shortwave engineering consultant; Tom Kneitel, editor of Popular Communications; and Larry Magne, publisher of the Passport to World-Band Radio. Call in and ask questions, or tell tales about your experiences in any area of DX'ing, whether it's longwave, medium wave, shortwave, utes, FM/TV/VHF/UHF; Microwave (sorry, no ovens included!), or satellite DX'ing. Listeners from outside the Los Angeles area may dial 1-(213) 879-8255 to join in - just let the connection ring, until we answer. Then it's your turn to go on the air, with Ray and the panel. Remember, we want to hear from you! (Starting times may vary - check local stations.)

Prime Affiliates

WABC-770
WSB-750
WKOK-1200
WIOD-610
WERC-960
WBO-1150
KPRC-950

KABC-790
WNIR-100.1 mHz
WSIN-1130
WJNT-1180
KSTP-1500
WPTF-680
KZIA-FM-101.7 mHz