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FEATURE

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Gene Martin's Forum report on page 98 of the current volume of DXM, pertaining to possible ECNA reception of Australia, New Zealand and Japan after November, 1978 and the implementation of a 9 khz bandplan, made interesting reading. This would afford "split-frequency" reception of these stations in North America. Martin prophesizes that these signals will arrive with enough volume to "drive you out of the house". However, before we rush out to buy a new alarm clock for the shack to help us partake of these treats, I believe a few points may be worth consideration and hopefully, discussion among ourselves.

(1). Most periods of DU reception ("DU" = "Down Under, i.e. Australia, New Zealand) that is consistently noted with reasonable frequency occurs during periods of sunspot minima which typically last for only several years out of the 11 year solar activity cycle. The historically fascinating reports of many DUs heard in the Eastern U.S. that DXers are fond of quoting from Radex magazine occurred around 1933-34 and are reported in such detail because during those years there were literally hundreds of aspiring listeners for DUs. Similar favorable conditions prevailed during the War years of 1944 but because the novelty of DXing had worn off for the common man, and because of conscription of many potential DX hobbyists, reports are less widely known. However, DXers reporting good DU conditions note a peak in receptions during these years. Examination of back issues of DX News for 1944 carry reports of "easy" DU reception over the U.S. (One such page was reprinted as a nostalgia item in DX News several years ago). During the following solar activity minima in the 1953-55 period, domestic QRM problems were finally becoming significant. Nonetheless, veteran EC DXers such as John Tweedie and Ron Schiller were able to hear stations such as 2 kw Australians on the high end of the band on Sunday mornings around local sunrise in the winter months, as then, stations here did not sign on until 7 AM or even later on Sundays. Schiller tells of being able to listen to "Hopalong Cassidy" on 2WL-1430 Wollongong, N.S.W. back then. However, again these favorable ex seemed to taper off again and the next time a solar minima occurred, in 1964, favorable QRM conditions did not prevail. The only chance of hearing a DU then was on Monday morning when most all-nighters were down for maintenance or to give the all-night disc jockey a night off. Only a few open frequencies were available, in 1964. Then, 1510 was probably the best bet, with 2NA Newcastle, N.S.W. being an occasional visitor to the N.Y. area for those patient and lucky enough to be there at the right time. Reception seemed to be correlated to the 27-day solar rotational cycle and might be noted for several MM's in the Spring, March being favored, during a window of about a half hour, representing the time between the 2NA fade-in and the first OC from WLAC or an ET from one of the several daytimers on 1510 who were already operating. CJRS in Sherbrooke, P.Q. did not yet exist. Reception of other Australians was even more problematical. 740 produced 2BL in Sydney for Ben Dangerfield (near Phila, Pa.) once, though it was heard in the midwest several times. This, again was before the days of all-night Latins and was before CBNM in Marystown, Nfld. came along with its 0930Z s/on which would block the channel. The only other reasonable possibilities for Australia back East were 2UE on 950 and 4QD on 1550 in Emerald, Qsld. This station was not on the air in 1964 which makes comparison of reception cycles difficult. Today it operates mainly as a "relay" station, carrying ABC feeds. The door finally slammed on 4QD around 1973 when fulltimers on 1550 such as WAAY, WOKJ along with a swarm of new daytimers testing their hearts out began filling 1550 with signals on Mondays. Even before this turning point, in 1971 and 1972, ECNA DXers were given the near-ideal situation of a high-power (50 kw) station on a very nearly "open" frequency during a window of about an hour per week, generally 0815-0915 Z. (At 0915 WKFE, Yauco, P.R. would s/on and block the channel). The best results that could be obtained using adequate (Hammarlund communications) receiving equipment and either outdoor random-length wire antennas or 4-foot air core indoor box loops (both of which were standard, competitive antennas in the DXing community) would be to detect a carrier with the BFO on that "looped correctly" or to detect traces of audio, music or voice, that strained the imagination and were nowhere near adequate in detail for even a tentative reception report. It's instructive to note that these years were near solar maxima, slowly coming down from high activity points. During those two years, in the most favorable vernal equinox period, this writer missed checking 1550 only 3 MM's. On one of those MM's in March, 1973, 4QD made a respectable showing over much of the U.S. and DXing opportunity was lost here due to illness. Minnesota DXer George Sherman reported definite audio, so they might have been heard here, too. So, therefore, the best this listener got from 4QD over two seasons were several highly tentative bits of carrier and highly tentative brief bits of audio that did not warrant sending reception reports, plus the probable catch we missed due to the flu. Extrapolating the availability of a clear channel from one morning per week to 7 per week as the new 9 khz bandplan would provide us with, we could assume that in years of similarly high solar activity counts, total yearly receptions (enough reception during a season with enough signal to produce reportable audio) would fall between 10 and 30. This is admittedly an inexact figure, as one would expect from lack of a more adequate data base in the 1 night/week case. Now, this brings us to the point of this paragraph. We are currently (late 1977) heading into a period of rapidly rising solar activity. In past decades, reported receptions of DUs on ECNA have been sparse, even with favorable "open channel" conditions. This is because of often unfavorable propagation. We see no reason to feel that the years ahead, lying outside the solar minima years, will be different. The currently beginning cycle is expected to peak in 1982 and current opinion is that peak will be pretty high after all. This will make long distance MW signals heard, most likely, only on rare occasional days & will require either a daily monitoring regimen during the favorable predawn hours, or construction of some sort of fix-tuned carrier detection receiver that would trip an alarm and/or start a tape recorder when signal levels in a narrow bandwidth receiver tuned to a desired carrier frequency exceeded a set level. A sophisticated noise integration circuit circuit would be needed to differentiate between a weak, fading carrier and local sideband splash. Use of a synthesized broadband receiver with a microprocessor controlled tuning plan, to repetitively sample a range of "split" frequencies, would probably be required to make this type of plan successful. Alternatively, the DXer can trust to luck and hope he will be on frequency during the predawn hours when the "right" morning comes along. Which after all is the essence of the true International DXer! Although the situation as it pertains to New Zealand is a bit simpler, the major problems remain. Fade in times will be a bit earlier for the Zedders. This writer logged both 1YC-880 and 1ZD-1000 around 0830 Z in 1964 from New Jersey. For reference, the path from North Island to N.Y. passes over Baja California Sur, the Big Bend area of Texas and western Tennessee. Australian signals from Qsld. arrive over southern California. Unproven speculation has it that signals crossing the Equator at something like a 45° angle for some reason seem to produce the best levels. If this is so, it would seem to favor N.Z., in the sense that European DXers easily log deep South Americans. More work is needed on this problem. So it will be interesting to compare DU reception of the late 1970's with that in the late 1980's when, again, the solar cycle can be expected to bottom out. Finally, dealing with Martin's comments about hearing Japan in Boston, Gordon Nelson did have a tentative logging of JOIB-750 in the early 1960's, during a period of what was certainly extended geomagnetic quiet. The odds of Japanese reception on ECNA are even more difficult due to auroral absorption zone geography. The path from Japan to N.Am. just grazes the edge of the absorption zone over Alaska, effectively shadowing the Eastern part of the country. How much is shadowed seems to be partly dependent on solar activity. Long periods of geomagnetic quiet are necessary but not sufficient, according to Nelson and others, to produce such high latitude reception. Already in 1977 such conditions have been notably diminished, compared with the past two seasons. It is difficult to compare what lies ahead with geomagnetic conditions prevailing during the 1964 minima as not enough was then known about the mechanisms involved, and records needed do not go back far enough. However we believe it is fair to say that the extended solar and geomagnetic quiet needed to raise the possibility of Japanese reception on the ECNA will be quite scarce for the next decade. This will require the highest diligence and patience on the part of the DX'er.

(2). When comparing reception of the 1934 era to what may be expected in the 1970's we must remember that, although powers used were not much different (i.e., tens of kilowatts, typically), the antennas used then were much more favorable. Many stations used the "flat-top" which is a horizontal wire strung between two towers and which gave excellent sky wave radiation characteristics. On the other hand, today, stations are using antennas which are designed to curtail sky wave output. Quoting from a veri letter Rick Heald received from station 2GL, Glen Innes, N.S.W. in 1964, heard in the San Fran Bay area, "We rarely receive reports from outside Australia mainly due to the fact that the antenna has been designed to produce minimum skywave. During periods when the antenna is not operating as designed i.e. top hat down for maintenance, or loading coil short-circuited, reports from North America, Japan and the Pacific have been received" and the letter was written by the Supv. Technician so can be assumed to be

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authoritative. With increasing numbers of stations being placed on the air, we can assume use of these restrictive antennas will increase, with bad results for the LXer, unless the very low angle skip can make it into space off the surrounding terrain adequately well.

(3). It should be remembered that in all previous decades the amount of man-made noise was much lower. The increase in decorative sign lighting, use of SCR light dimmers and motor control devices with very potent 120 Hz spike radiation and other nonsense create a steady state "floor" or "bed" of noise that just did not exist in the 1930 and 1940 era. This weak, ever-present noise can effectively mask weak DX signals or make them unreadable. Even the FCC Monitoring Station at Laurel, Md. had to seek new, more rural location several years ago, following development of new suburbs several miles away - the manmade noise increase was cited as the reason! DXers who talk about hearing DX signals on simple radios in the 1930's should examine what the s/n ratio was then and compare it to what they experience today.

(4). When listening for openings from DU stations in the 1930 and 1940's it was possible to tune the entire BCB and look for signals with essentially no interference from domestics. Reports from those years tell us that there were no more than a handful of "all-nighters" active then. This meant that, when an opening of relatively narrow geographic dimensions occurred, with just a few signals making it in, it was possible to find them as 100% or maybe 98% of the BCB was available for reception of weak signals in ECNA. Since 1973, as we pointed out in Para. (1) it is zero % (and maybe 10 - 15% on the WC today?). However, as was pointed out by Martin, in 1978 when the DU's change frequencies to the new 9 kHz bandplan, some of those freqs will become available to ECNA DXers. Assuming a moderately selective receiver, every frequency ending in 3,4,5,6 and 7 will become viable. Every frequency ending in 8,9, zero, 1 and 2 will be close enough to a North American domestic channel to make reception difficult. This alone makes the "availability" not 100% as in 1934, but only 50%. To a first approximation, the DXer will have to hunt twice as hard for a narrowly defined opening than he would have in 1934. Although 50% is a lot better than zero %! Now, assuming a better IF strip in the receiver, frequencies ending in 2 and 8 become available as well as the 3 through 7 ones. This gives us a 70% band availability. Pretty good! The moral is that good, narrow IF selectivity with steep selectivity skirts and a deep notch filter operating at IF (forget your QF-1's here) will be de rigeur. Frequencies ending in 9, zero or 1 will be pretty hopeless as the expected level will be so far below that of the interfering domestic that separation probably will be impossible. Hope for an unsked silent period or auroral blackout for those even-frequency channels.

(5). Those domestic stations that did operate in the earlier periods of favorable DU/TP reception generally used lower modulation that stations use today, making adjacent channel interference problems not significant. A number of unfavorable developments have hurt DXers in the last decade. Manufacturers are selling broadcast transmitters that are rated flat audio modulation to 15 kHz. This means that these transmitters can faithfully generate RF to match a lot of audio "junk" that is rammed into them by contemporary rock stations broadcasting 45's that are cut (recorded) with extensive audio processing and electronically generated music containing and causing high harmonic energy. Many stations, especially in major markets and being scheduled NSP, have switched from telephone lines to feed audio to the transmitter site to use of microwave STL (Studio-Transmitter Link) operating in the 960 mHz area. These STL's have essentially flat audio response, whereas older phone line service was sold as being "flat" to 15 kHz but in fact had rolloff above that figure. This kept higher frequency "splash" to a more tolerable level as the audio components did not make the trip to the transmitter over phone lines. Also, modern transmitters are capable of greater than 100% positive peak modulation, and the asymmetrical wave (negative peaks cannot hit 100% or the carrier is biased off) seems to generate more splash than otherwise. Modern radio program directors are making greater use of audio processing to increase the apparent loudness of their signal, especially as it is heard on car and portable radios which typify their audience. These procedures greatly increase the amount of sideband "splash" that is generated, especially greater than 20 kHz above and below the carrier. Sometimes splash is heard 40 kHz away! This radiation severely hampers not only the DX enthusiast, but the casual listener as well who has a legitimate interest in listening to (and not DXing) a distant nighttime signal. The need for such drastic processing is debatable, and is not proven in our opinion, and the splash question is one that the FCC, in our personal opinion, has not adequately addressed itself to. It is a byproduct of competitive pressures in contemporary broadcasting. If the FCC continues to feel that there are nighttime "white areas" it will have to look at how much of the problem is caused by adjacent channel interference vis-a-vis co-channel QRM, among other factors. It is instructive to compare modulation envelopes of stations such as WKBW-1520, CKLW-1570 and WNBC-660 (after Sept., 1977 when they changed format to rock music) on a spectrum analyzer, with stations that use older transmitters and relatively little processing, or for example, CBC stations in Canada who maintain slightly lower modulation levels and do not transmit out-of channel splash while yet maintaining a very "clean" sound with good level. Whether the slight difference in apparent loudness warrants generating such large amounts of sideband splash, which is in actuality an infringement on the rights of other listeners is an undecided question. However it remains that this splash will make DXing on adjacent "split" channels inordinately difficult compared to the way it was in previous years.

(6). "Psychological Reinforcement" may not be the most apt title, but it should convey the concept of what happens to a DXer who (a) logs and listens to a weak DX signal, and (b) tapes it and plays back the tape at some point later in time. The DXer will have a "fix" or an impression in his mind of how good the quality the signal was, which is often better than the actual reception. Upon replaying the tape, noise, fading, hetrodynes etc which were not recallable in the mind's recollection, are heard on the tape. In other words, it is common behavior to remember the good (the wanted signal) and block the bad (interference) from memory. So it seems to be reasonable to suggest that these receptions from the 1930's of stations with "good" volume which unfortunately could not have been taped, have been "embellished" by memory over the years and may not have been really as strong or clear as one might tend to recall. Lacking the recordings of the 1933-era signals that would be needed to prove or disprove the contention, all we can do is speculate. But the effect has been observed in many people, including this writer, so must be considered. It does make a case for taping one's DX - just in case your reception of a rare signal really WAS strong and clear!

In conclusion, in December, 1977, the FCC, recognizing some concern over the effects of having DU's switch to a 9-kHz bandplan, conducted tests with KFI and 1ZB moving off frequency to see what interference would result. The FCC and NAB, however, ignore a better source of data - the Europeans have been on a 9-khz plan for years. While the Commission's talented engineers are concerned about the effects of hetrodyne interference that may be noted next year, we are curious as to how many interference complaints have already been lodged with WGN over interference from Portugal-719, or with KYW over 1061 QRM, or with WGNG over Algeria-548 or even for that matter, how many listeners complain about Caribbean signals on 545 and 1265. This is of concern as there seem to be groundswells of interest in adopting the reduced spacing in the Western Hemisphere, too, to increase the number of channels available. This would of course make us go back to Base 1 re the DUs and kill off TA DXing as well! Still unexplained is who would pay the massive conversion costs for the hundreds of stations with tightly tuned DAs etc. etc. in the US and Canada if the 9-kHz plan were adopted here, and what the ramifications would be for the hundreds of marginally profitable stations in the U.S. that might be forced into bankruptcy by the competition that would arise if the new frequencies were created. This may just be a dream of some communications lawyers and consulting engineers who would reap windfall profits at everyone else's expense. But it can't hurt to keep aware of what's happening.

So, we've tried to explain how we feel that there is not all that much to look forward to after the 1978 bandplan takes effect, although the opportunity will be greater, problems will remain. It remains to be seen if the ECNA International DXer can rise to the challenge and opportunity the new allocations will provide us. -30-

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