

BEFORE THE
Federal Communications Commission
WASHINGTON, DC 20554

In the Matter of)
)
Revitalization of the AM Radio Service) MB Docket No. 13-249
)
)

To: The Commission

**COMMENTS OF THE
CRAWFORD BROADCASTING COMPANY**

Crawford Broadcasting Company (“Crawford”) and its affiliates are licensees of 23 AM and FM commercial broadcast stations¹. As an established licensee and operator of AM stations, Crawford has a great interest in the Commission’s efforts to revitalize the senior broadcast band.

I. Introduction

In the more than four decades that Crawford has owned and operated AM stations, we have seen a steady erosion of the listenability and quality of AM signals. This began as increasing interference levels from other AM stations, particularly at night. Receiver manufacturers responded with tighter filters that resulted in reduced demodulated audio quality, taking AM from what had been a relatively high-fidelity service to a voice-grade service in a short span of years.

Efforts by the Commission to deal with interference met with varying degrees of success. Implementation of NRSC audio filtering in the 1980s, for example, had a great positive impact for second-adjacent channel stations. We experienced this firsthand in Southern California where one of our stations was heavily overlapped with a second-adjacency. Both we and our neighbor benefited from the band limiting of NRSC filtering.

Other measures, however, particularly those that were implemented in 1991², served to hamstring AM licensees in terms of the ability to relocate or upgrade their facilities, particularly at night. Our options for relocation, collocation and upgrade were hampered by the rules adopted as part of that effort.

As a result of the 1990 rule revisions, except for the benefits afforded by what little attrition has taken place, we find that the interference picture on the AM broadcast band remains much as it was two

¹ Crawford affiliates include KBRT, Costa Mesa, CA; KCBC, Manteca, CA; KSTL, St. Louis, MO; KKPZ, Portland, OR; KLZ/KLDC, Denver, CO; KLTT, Commerce City, CO; KLVZ, Brighton, CO; WDCX-FM/WDCZ, Buffalo, NY; WDJC-FM/WYDE/WXJC, Birmingham, AL; WXJC-FM, Cordova, AL; WYDE-FM, Cullman, AL; WMUZ, Detroit, MI; WEXL, Royal Oak, MI; WRDT, Monroe, MI; WDCX, Rochester, NY; WPWX, Hammond, IN; WSRB, Lansing, IL; WYRB, Genoa, IL; WYCA, Crete, IL

² AM Technical Standards, 69 RR 2d 1395 [1991]

decades ago as it involves co- and adjacent-channel stations; there has certainly been no improvement.

Perhaps worse because it is so pervasive is the reduction in AM service areas due to the rise in the noise floor. The resulting increase in E_{MIN} has come from many sources local, regional and global.

It has been our experience that there is now considerably more radiation of broadband low-frequency noise radiated from power lines than in decades past. The reasons for this are not entirely clear, but we have observed widespread corona on high-voltage insulators that produces “hash” on medium-wave frequencies, and we have found certain regulators, switchgear and other distribution apparatus producing broadband noise or harmonic energy that is well propagated over large areas through overhead power lines. Perhaps it is a sign of the economic times that public utility companies and electric cooperatives are no longer as diligent as they once were at inspecting their distribution grids for such issues. Whatever the case, power line propagated noise is, in our experience, considerably elevated in many geographic areas.

Of particular note is noise emitted from personal computers and devices which employ microprocessors or microcontrollers. Such devices are often connected to the infrastructures within homes and businesses, and such infrastructures often function as radiators. In recent years, devices such as compact fluorescent lights (CFLs) have begun to proliferate, each lamp or fixture adding a small amount to the noise floor in and around its location. We must often advise listeners who contact us with signal problems that the issue is likely coming from an electronic device or CFL within his home or business.

In our experience, it takes a considerably more signal from AM stations, which operate in a frequency band where noise levels are highest, to overcome the increased noise floor and produce an acceptable demodulated signal-to-noise ratio.

For the above reasons and more, including those noted by the Commission in the Notice³, the AM Radio Service has inarguably become technically degraded. Listenership has become eroded and continues to decline at least partially because of this degradation, reduced fidelity and signal issues.

All that being said, we find that AM is still a viable broadcast medium and it still has a lot to offer. Its unique propagation characteristics provide for over-the-horizon coverage and service areas that FM stations cannot match without high antenna elevations and clear lines of sight. AM stations remain top rated in many markets, including the nation’s largest, proving the viability of the service.

Crawford applauds the Commission’s efforts herein to revitalize the AM Radio Service and offers the following comments.

II. Open FM Translator Filing Window Exclusively for AM Licensees and Permittees

While Crawford has no direct experience with the use of FM translators to rebroadcast the signals of its AM stations, we are familiar with the concept and agree that it has, in many cases, provided a means by which AM stations can provide 24-hour high-fidelity service to the communities they serve. As such, we support the concept and agree that measures should be implemented that would expand the opportunities for AM licensees to obtain and use FM translators for that specific purpose.

³ Notice at 5.

Crawford supports the idea of an FM translator filing window exclusively for AM licensees and permittees. We agree that the filing should be limited to one FM translator per AM station. We also agree with the existing fill-in coverage area technical restrictions, which serve to maintain the use of such translators within the defined purpose and thus prevent abuse.

We do support the concept of permanently linking “AM on FM” translators with the parent AM station. This will serve to prevent the trafficking of such translators and will, to some degree, preserve opportunities for other AM licensees to obtain FM translators.

We do not support limiting eligibility for such translators to certain classes of AM stations. There may be circumstances wherein even class A or senior class B AM stations could significantly benefit from the fill-in service provided by such a translator.

We also do not support limiting eligibility to stand-alone AM stations. We believe that the addition of an FM signal to many otherwise simulcast AM signals will afford opportunities for licensees to provide new, unique programming that may not be otherwise viable under the current circumstances, thus increasing the public benefit from those stations.

One item that the Commission does not deal with in this proposal is major changes to existing translators in the proposed filing window. Crawford believes that there are many circumstances where AM licensees could move existing FM translators, in frequency, siting or both, so that they meet the fill-in coverage area technical restrictions but are prevented from doing so because such would constitute a major change. We propose that the window include such major changes to existing translators with the restriction that the existing translator would thereafter be permanently linked with the parent AM⁴.

The inclusion in the window of such major change applications for the specific purpose of making existing translators compliant with AM fill-in service requirements would likely reduce the number of new translators authorized and preserve available spectrum for other applicants. Further, we believe that it would make unnecessary the grants of Mattoon Waivers in those cases since 60 dBu overlap of existing and proposed facilities is not required for major changes.

There are situations, however, wherein Mattoon Waivers would still come into play, and we believe the Commission should address this. Consider the case, not in connection with the proposed window, where an AM station may at some point need to relocate its linked translator from one side of its 25-mile radius or 2 mV/m contour to the other and would file a minor change application to that effect. Even a 250 watt translator may have a 60 dBu contour distance of only 8-9 km, so a move from one side of the contour or radius to the other could easily result in a situation with no overlap of the existing and proposed 60 dBu contours, which would normally require a Mattoon Waiver. To address this, we propose that the Commission permanently exempt AM-linked translators from this overlap requirement as long as such relocations result in no part of the 60 dBu contour of the translator extending beyond the smaller of a 25-mile radius from the parent AM station’s transmitter site, or the parent AM station’s daytime 2 mV/m contour.

III. Modify Daytime Community Coverage Standards for Existing AM Stations

In our experience, the issue of community coverage standards is twofold. In many cases, the communities served by senior AM stations have outgrown the provided contours. Where a station did at one time provide either full or 80% community coverage, the boundaries of the community may

⁴ Notice at 14c. All of the restrictions that would apply to new “AM on FM” translators granted in the window should also apply to existing translators with major change filings granted for the purpose of AM fill-in service.

have expanded such that although the contour areas remain the same, the expanded community boundaries extend well beyond the contours. In those cases even minor changes to a facility, such as augmentation of a directional pattern, will result in filings that do not show compliance with §73.24(i) of the Rules.

In other cases, for any number of reasons – many of which may be beyond the licensee’s control – it may be necessary for an AM station to relocate its antenna site. Available land of sufficient area to construct an AM antenna array, zoning restrictions and environmental concerns and regulations are a few of the factors that often prevent stations in this situation from siting their facilities in a location from which full or even 80% of the principle community will be served. As time goes on, these factors are increasing as impediments, and AM licensees can easily find themselves in a corner from which there is no compliant solution.

At some point, many AM licensees will find themselves in this unenviable situation, unable to comply with community coverage requirements from any available, buildable site. The choices for such licensees are few. We agree that the proposal to modify the daytime community coverage requirement contained in §73.24(i) of the Rules, for licensed AM stations only, to require 50% community area or population coverage with a daytime 5 mV/m signal. New stations should be required to provide full community coverage.

In addition to providing the needed flexibility, the relaxed community coverage requirement would likely result in reduced site development costs to licensees as well. Sites for which acquisition and development costs would be lower could be chosen. As a rule, such sites are situated at a distance from the urbanized area. The flexibility would also permit in some cases siting decisions that maximize service to a particular audience segment.

Relaxation of daytime community coverage standards would undoubtedly result in some reduction in signal strengths to portions of the principle communities of some stations, this would in many cases be an acceptable alternative to a station going dark or moving to a site at an even greater distance, likely with a new principle community, and removing that service altogether.

IV. Modify Nighttime Community Coverage Standards for Existing AM Stations

Many if not all the factors discussed with regard to daytime principle community coverage standards also apply to nighttime community coverage. The difference, in many cases, is that nighttime powers tend to be lower and nighttime directional patterns tend to have narrower lobes and deeper nulls than daytime patterns, making nighttime community coverage much more of a challenge than exists during daytime operation.

We thus agree with the Commission’s proposal that nighttime community coverage standards be eliminated for existing AM stations.

With regard to new AM stations, we propose that the FCC require 50% area or population nighttime principle community coverage with the greater of the 5 mV/m or 50% interference-free contour (which is 8 dB lower in value than the 90% interference-free contour value). This would, in our view, result in a “50, 50” situation where at least 50% of the principle community would receive service that is interference-free at least 50% of the time. For example, if a proposed new station’s 50% exclusion RSS night limit is calculated to be 15.0 mV/m, at least 50% of the area or population of the principle community should receive coverage with a signal that is at least 5.97 mV/m (8 dB below the calculated NIF contour value).

V. Eliminate the AM “Ratchet Rule”

Crawford has on numerous occasions since the AM “Ratchet Rule” was enacted had to reconsider facility improvements because of the net loss in power, service area or both that would result from the change as a consequence of the rule. In essence, the “Ratchet Rule” hamstrings those licensees who wish to improve their night facilities and prevents them from even maintaining the status quo in some cases. This is particularly true for senior stations, which likely enter the night limits of multiple junior stations on co- and adjacent-channel frequencies.

We agree with the conclusions of DLR, H&D and the commenters to the *Ratchet Rule Petition* that the AM “Ratchet Rule” should be eliminated altogether. It has not achieved its stated purpose and remains as a serious impediment to stations wishing to improve or modify their nighttime facilities.

VI. Permit Wider Implementation of Modulation Dependent Carrier Level Control Technologies

Crawford first implemented Modulation Dependent Carrier Level Control (MDCL) in December of 2011 on 50 kW KCBC in Manteca, California. From those very earliest days we found great benefit with no discernible effect on the demodulated signal. Since then, we have implemented MDCL on all our 50 kW stations and two of our 5 kW stations⁵.

We quickly determined that the Amplitude Modulation Companding (AMC) algorithm worked the best for our talk formatted stations. AMC has the advantage of restoring full carrier during periods of low modulation or silence, which has the effect of preventing receiver automatic gain controls from ramping up as they would were carrier to be reduced during low modulation or silence. Maintaining desired receiver AGC function effectively masks the decrease in signal-to-noise that results from the reduced peak envelope power.

Power cost savings resulting from MDCL operation were immediately apparent in all our 50 kW operations. KCBC showed an initial power savings of over 20% compared to the same month in the previous year. We saw a 40% savings at WXJC, some of which was undoubtedly LED tower lighting which was retrofitted at roughly the same time. KLTT realized over 30% savings over the same months in pre-MDCL years, and we consider this to be typical. KCBC employs a collocated studio and transmitter, which makes the transmitter itself a smaller portion of the overall electric load than at a transmitter-only facility. We have no non-MDCL baseline on KBRT since that station’s 50 kW facility has operated with MDCL from the outset.

Return on investment at the 50 kW level is very short, provided that the transmitter is capable of being adapted for MDCL operation. In all our cases where MDCL was added to existing transmitters, costs were under \$5,000. With energy cost savings of over \$1,000 per month most months in our experience, this investment began paying off in short order.

Our 5 kW stations have realized much smaller savings, but we still realize a benefit because the peak envelope powers of those stations are reduced along with stress voltages in power amplifiers, networks and antenna components. With no discernible reduction in coverage or fidelity, we consider continued MDCL operation even at the 5 kW power level worthwhile.

⁵ Crawford’s 50 kW stations employing MDCL are: KBRT, Costa Mesa, CA; KCBC, Manteca, CA; KLTT, Commerce City, CO and WXJC, Birmingham, AL. 5 kW stations employing MDCL are KLZ, Denver, CO and WYDE, Birmingham, AL.

While the Media Bureau has a straightforward path for licensees to request a waiver of §73.1560(a) to permit MDCL operation, some effort on the part of licensees and FCC staff is required, there are often costs involved for the licensee, and the process takes some time. We agree that simply amending §73.1560(a) to permit all stations to employ MDCL technology would completely eliminate the impediments, costs and delays. We support such an amendment and recommend MDCL operation to all higher-power AM stations with compatible transmitters as a means of reducing costs and energy usage.

The requirements established by the Media Bureau in the Public Notice dealing with MDCL authorization procedures⁶ should be codified in the amendment to require disabling of MDCL during field strength measurements. This implies that the transmitter must be capable of producing the full licensed output power, and that should also be a codified requirement.

We agree that there should be some notification mechanism through CDBS wherein a station's record indicates that MDCL operation has been implemented. This would alert personnel making field measurements, such as Enforcement Bureau personnel and those evaluating the effect of nearby antenna structures on AM radiation patterns, that MDCL may be in use and that the station should be contacted to disable MDCL during those field measurements.

All of Crawford's stations that employ MDCL also broadcast in the hybrid AM digital mode. We have observed no issues whatsoever on the occupied bandwidth or spectral purity of these stations as a result of MDCL operations.

VII. Modify AM Antenna Efficiency Standards

In the past two decades and likely having much to do with the cellular infrastructure buildout, local communities and counties have become increasingly sensitive to the presence of towers and to their heights. Towers arguably have a negative visual impact, particularly those that are marked and lighted. Many local jurisdictions have enacted very restrictive height limits and even outright bans on new towers. Crawford recently went through a very arduous process in Southern California to obtain a waiver of Orange County's 30-foot height limit on towers. Fortunately we were successful, but that likely will not be the case in every jurisdiction.

Up to a point, there is a direct relationship between AM antenna efficiency and antenna height. Because of the long wavelengths throughout the AM band and particularly at lower frequencies, it requires a relatively tall tower to produce sufficient radiated field to comply with the minimum antenna efficiency requirements in the FCC rules.

This problem ties in to the discussion in III and IV above regarding day and night principle community coverage in that a station may be forced to locate its antenna site well away from a community or in a neighboring (and likely more rural) county to get the antenna height needed to meet minimum efficiency.

Clearly stations could benefit in this regard from the ability to use shorter radiators that do not meet the current minimum efficiency standard. Antenna input power could simply be adjusted to produce the required field. Crawford supports a 25% reduction in the codified minimum efficiency values. We believe that some minimum value should be retained to force some degree of uniformity in antenna

⁶ Public Notice, DA-11-1535, 09/13/2011

design and construction, which of course impacts daytime allocation and night limit studies. A 25% reduction would not be so great that vertical radiation patterns would cease to be easily calculated.

We do not believe reducing minimum antenna efficiency would have any effect on the listening public. A receive antenna would provide the same signal level to the first RF amplifier of the receiver whether a given value of antenna inverse distance field (IDF) is produced by greater antenna efficiency or more antenna input power.

Of course short antennas do have bandwidth restrictions and as such, steps would have to be taken by the licensee to insure sufficient bandwidth for good quality in the demodulated audio, but we feel these would be taken care of by market forces – few would want to listen to a bad sounding radio station.

There very likely is a point below which operation would become unstable. Below that point, ground and other losses would become a significant part of the overall antenna resistance, and small changes resulting from environmental variations (such as from wet to dry, frozen to thawed, etc.) would produce instability in both antenna resistance and the radiated field. Again, a 25% reduction would seem a good compromise that would keep stations out of high-loss, unstable situations.

A 25% reduction in minimum antenna efficiency would also seem a good compromise that would prevent excessive RF radiation in the vicinity of the antenna at ground level. The effects of any elevated E- and H-fields resulting from such reduced-aperture antennas would be measurable and manageable, easily dealt with under existing Rules.

VIII. Further Proposals

Crawford believe that the Commission should, in a separate Notice of Inquiry or Rulemaking, visit the idea of eliminating skywave service area protection for class A AM stations.

Clearly at this late date, skywave service serves little purpose. “White areas” containing any population are few, and listeners generally have numerous free, over-the-air options in even the most remote locations. While there likely are a few listeners that continue to listen to skywave signals of class A stations, that listening comes at the expense of huge numbers of listeners that are excluded from the night interference-free contours of class B and class D stations that must reduce power, employ deeply-nulled directional patterns or go off the air altogether to protect those class A skywave contours. Eliminating class A skywave service protection would have the potential to eliminate the daytime-only status of many AM stations, allowing those stations to provide 24-hour service to their communities.

Crawford also believes that some level of interference protection should be afforded to translators permanently linked to AM stations. Under the current translator rules, a full-power FM station could make a site move, increase antenna height or change frequency and force a linked translator off the air. This uncertainty produces hardship for the licensee, who must, in essence, roll the dice and hope the considerable investment he will make in the translator license, antenna and transmitter equipment will not all be lost without warning if such occurs, not to mention the impact on the station’s audience. We encourage the Commission to give this matter some consideration.

We also encourage the Commission to review its rules and policies as they pertain to radiation from power lines and other unintentional radiators. Power lines in particular pose a threat because of their ubiquitous nature and their lengths, where the long insulated wires serve as very efficient radiators at long wavelengths. The rules that have historically been applied in cases of power line interference are

those that deal with unintentional or incidental radiators, specifically §15.5(b), §15.5(c), §15.13 and §15.15(c). While these rules deal with the issue in a general sense, they are not specific to the issue, and they do not deal with the cumulative nature of such interference. A small amount of incidental radiation, below Part 15 limits, from many different power lines in a geographic area can and does add up to a high noise floor in that area, particularly at low frequencies. That has a significant negative impact on the listenability of AM stations serving that area.

Along those same lines, we urge the Commission to revisit its rules as they concern radiation of RF energy by compact fluorescent light bulbs (CFLs). While we recognize that the radiation from each bulb is quite low, the cumulative effect of many such bulbs operating in a small space, such as a business or residence, significantly raises the noise floor, making an otherwise good AM signal unlistenable in many cases. Again, we do not believe that Part 15 rules adequately deal with this issue, and we encourage the Commission to study the situation.

IX. Conclusions

Crawford generally applauds the Commission's initiative in working to revitalize broadcasting's senior service, and we support the proposals offered. This includes:

- An AM-only FM translator filing window that would include major changes to existing translators for the purpose of converting them to AM-linked status
- Modifying daytime community coverage standards for incumbent stations to 50% area or population with a 5 mV/m or greater signal
- Eliminating nighttime community coverage standards for existing stations
- Changing nighttime community coverage standards for new stations to 50% area or population by the 50% night interference-free contour or 5 mV/m, whichever is greater
- Eliminating the AM "Ratchet Rule"
- Providing for MDCL operation by all AM stations with notice
- Reducing minimum antenna efficiency standards by 25%
- Eliminating skywave service protection for class A stations
- Providing some minimal level of protection for AM-linked translators
- Revisiting Part 15 rules as they concern incidental and unintended radiation from power lines, compact fluorescent light bulbs and other ubiquitous devices that cumulatively raise the noise floor

Finally, we would encourage the Commission to continue seeking ways to revitalize the service and ease the way for AM broadcasters to remain viable.

Respectfully submitted,
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