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Federal Communications Commission
445 12th Street, SW,
Washington, D.C. 20554

Re: DA 13-2224 MB Docket No. 13-249

Dear FCC:

Please accept the attached document as a Comment pertinent to the Notice of Proposed Rule Making in the Matter of Revitalization of the AM Radio Service. Thank you.

Sincerely,

James B. Potter

Document submitted via the FCC ECFS Website

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**Before the
Federal Communications Commission
Washington, D.C. 20554**

In the matter of)
)
Revitalization of the AM Radio Service)

MB Docket No. 13-249

To: The Commission

I. Acknowledgment

James B. Potter, *et.al.*, (“We” “Our”) welcomes the opportunity provided by the Federal Communications Commission (“FCC” “Commission”) to submit our comments concerning MB Docket No. 13-249 NPRM *Revitalization of the AM Radio Service*. We are particularly grateful for the efforts put forth by Commissioner Ajit Peij and others in support of this undertaking.

II. Our Perspective on AM Revitalization

Please note that a portion of the observations and assertions of fact in this submittal are based on anecdotal exchanges among industry colleagues and/or direct experiences over a period of decades, and accordingly may not be subject to reference verification or authentication. To the best of our knowledge, however, the material presented herein is factually accurate.

We concur with the general industry colloquy that AMRadio Broadcasting Service (“AM”) is in a state of decline relative to its heyday decades ago. This decline is characterized by a material reduction in overall listenership, resulting in lower advertising revenues, contributing in turn to reduced station profitability, and risk of enterprise mortality.

A. OUR UNDERSTANDING

We believe the said decline in AM listenership derives from at least five major reasons, including: (1) Competition from other sources of news and entertainment; (2) Difficulty with AM reception resultant of spectrum noise pollution masking desired signals; (3) Difficulty with AM reception resultant of apparently reduced field strength of some AM stations; (4) Difficulty with AM reception caused by sub-optimal designs of late-model AM radios; (5) Public indifference to non-locally originated and oriented programming.

The text which follows includes Our Analysis; Our Conclusions; and Our Recommendations on a per-issue basis.

B. OUR ANALYSIS

We examined the five major reasons listed above to discern their root causes, and to determine whether practical remedies exist in the amelioration thereof.

1. Competition with other media.

AM monopolized wireless entertainment until encroached upon by television, FM radio, satellite radio, internet streaming, and personal appliances ranging originally from wax cylinders to vinyl

records, tape cassettes, CDs, *et.al.*, through 'smart phones' and beyond. Emergence of competing technologies and channels resulted in dilution of AM's audience and concomitant advertising channel appeal. AM trended away from music to speech programming, e.g., news, sports, politics, further narrowing AM's audience appeal. Today's sophisticated advertising buyers face an diversified variety of media outlet choices, placing AM in the running with a wide field of alternatives

2. Spectrum Noise Pollution

AM reception has been made difficult and unpleasant by spectrum noise pollution masking the desired signal, causing listener frustration, and leading to abandonment of AM in favor of other media perceived as more qualitative and easily accessed. The plethora of pollution sources create a cacophony of whistles, squeaks, burbles, and hash across the AM tuning range, often obliterating stations. These sources consist of incidental and unintentional radiators having broad-spectrum RF components, including (a) spark-ignition engines; computers and appliances containing microprocessors; electroluminescent information displays, plasma video monitors, fluorescent lighting and neon signage; household lighting dimmer controls, cellphone chargers, electric motors having brushes, *et. al*; (b) high-voltage leakage across cable support insulators caused by increased utility transmission line voltages exceeding the original specifications of said insulators; (c) wideband sideband noise (colloquially 'iBUZZ') contributed by digital (HD) transmissions often causing interference to first-, second-, and sometimes third-adjacent stations hitherto satisfactorily receivable at a distance, prior to the digital transmission initiation.

3. Decreased Area Coverage

AM reception has been made difficult by apparently reduced effective field strength from AM stations, also leading to abandonment of AM in favor of other media perceived as more qualitative and easily accessed. Discounting spectrum noise interference, some AM stations licensed decades ago and in continuous operation since have apparently suffered reductions in usable coverage despite good condition of their transmission system and technical parameters being within licensed values. Anecdotal and experiential evidence suggests the earth in the Continental US (CONUS) may be drying out, resulting in reduced earth electrical conductivity and concomitant reduction in AM signal propagation.

4. Sub-optimal radio designs

Difficulties with AM reception resultant of poor designs of recent-vintage home entertainment and vehicle radios may also cause listener frustration, leading to abandonment of AM in favor of other media. We have not conducted rigorous evaluations of recent receiver designs. However, anecdotal reports of household and new vehicle radio AM performance range from marginally acceptable to virtually useless. Recent models appear to have low RF sensitivity and selectivity relative to models produced in prior years, including vacuum tube designs. Evidence points to inadequate circuitry for AM band operation in some recent models.

5. Listener indifference to program content

We believe over-reliance on automation, voice tracking, and syndicated programming has alienated many AM listeners. However, this topic is outside FCC jurisdiction and this NPRM.

C. OUR CONCLUSIONS

1. Competition with other media.

We believe marketplace competition stimulates product improvement when enterprise management seeks to survive and thrive. Scarce advertising dollars force cost-constricted radio business plans to sharply focus on narrowly-defined audiences, *i.e.*, 'niche markets'. We do not believe AM has suffered irreparable harm from stiff competition. Rather, we believe AM enterprises can be profitably operated with realistic business plans scaled to their market potential.

2. Spectrum Noise Pollution

With few exceptions, we believe many sources of AM spectrum pollution fall under FCC jurisdiction for control of unintended and/or incidental radiation, but many appear non-compliant. The electronic

device sources are ubiquitous and hugely numerous, and thus beyond practical recall and remediation. The trend toward higher utility power voltages carried cross-country by unimproved legacy transmission lines and the concomitant AM spectrum noise caused by corona discharge (voltage leakage) across old insulators is technically correctable by replacing the insulators with higher breakdown voltages, but apparently only accomplished with the force of authority applied to the utility companies. Digital radio noise (iBUZZ) far removed from the digital station's carrier frequency is the consequence of mixed-modes (analog sharing space with digital) in a legacy system and is, in our opinion highly objectionable. There is a growing body of anecdotal evidence suggesting that listeners are no longer able to enjoy distant stations as a consequence of digital transmission noise interference. Regrettably, we believe the relevant authorities lack both the resources and political will to address the unintended and incidental radiator and digital noise problems. Therefore, AM spectrum noise interference appears permanent and likely worsening over time, and remains a force to be reckoned with for AM to succeed.

3. Decreased Area Coverage

We believe the Commission's acceptance of the Method of Moments (MoM) Proof of Performance is a boon to station engineering cost control and improved directional array functionality. Some engineering practitioners have petitioned the Commission for station power increases subsequent to MoM conversions. Increased effective radiated power can achieve improved area coverage reminiscent of earlier station performance, having the potential to recover listeners once lost. Although this recent development holds forth a bright prospect for coverage improvement, the cost of such an undertaking may be prohibitive for the average station.

4. Sub-optimal radio designs

Marginally adequate AM radio reception is repellant to listeners, and serves to diminish the overall stature of AM as a viable competitive source of news and entertainment. We are aware of speculation as to causality, one of which may be cost minimization for a radio band regarded as attracting only minimal listener attention. While we do not intend to amplify this speculation in this document, we nevertheless express our grave concern on record in the event the speculation is founded in truth.

5. Listener indifference to program content

We believe impersonal programming is anathema to listener appeal, and has contributed to the demise of AM as much as any other competitive or technical factor. However, this topic is outside FCC jurisdiction and this NPRM.

6. Overall Conclusions

We believe historically possible medium- and long-distance AM reception has been seriously and perhaps irreparably impaired by spectrum noise pollution and natural changes in the earth causing degraded signal propagation. Short-range reception is relatively unaffected, except in extreme cases. We believe poor modern AM radio designs may be addressed in the future either by consumer demand for higher performance radios, or by government prescription, or combination thereof. We believe competition from other media is beneficial and a welcome component of American enterprise.

Therefore, It is our considered opinion that AM as presently constituted is not viable going forward; that it will continue in decline and eventual abandonment as a popular medium unless strategic changes are undertaken.

D. OUR RECOMMENDATIONS

In this section we present supporting data and arguments leading to a call for a Strategic Initiative to add a new class of AM service and for changes to the Rules to enable this initiative. We believe this action will lead to the revitalization of AM broadcasting from its present malaise.

1. Pertinent Demographic Statistics

Key demographic statistics guide our recommendations: (1) Ninety-nine percent of American households in 1999 had at least one radio; the average is five per household.ⁱ There are approximately 115 million households in the US as of 2010.ⁱⁱ Therefore, there are more than one-half billion radios in the US according to various estimates. This is an impressive 'installed base' for any consumer appliance, and outranks the number of cellphones estimated to be 328 million in 2011.ⁱⁱⁱ (2) There are 4,781 AM stations in the US as of this writing.^{iv} (3) There are approximately 65,000 'small towns' in America with populations ranging from 10,000 to 25,000 people.^v These figures derive from various reference sources and are not precisely synchronized as to year, but we nevertheless believe they are reasonably accurate and overlapping, and are therefore persuasive in support of our recommendations.

2. Service Opportunity Presented

We have not attempted to categorize the Communities of License (CoL) of the 4,781 AM stations in the US as to urban, suburban, or rural. Regardless, on a gross basis the 65,000 small towns cited above exceed the number of licensed AM stations by 13.6:1, yielding the result that approximately 60,000 small American towns may not be served by their own AM radio station. We realize, of course, that a number of those 60,000 small towns may already be served by other stations nearby, cable TV and satellite radio as well. However, even if the residue is one-half or one-quarter of 60,000, *the remainder of small American towns not served by their own radio station is remarkable.*

3. Our Basic Thesis

Given the apparently insurmountable obstacles posed by spectrum noise pollution and diminished earth conductivity leading to reception difficulties at medium- and long-distances from transmitter to receiver, *it is our considered opinion that relatively low-power stations can be superimposed upon existing stations without material negative consequence to either incumbents or new starts.* Current transmitter designs possess frequency determining components of sufficient stability and setability to avoid carrier beat frequencies resultant of many signals occupying one channel. Although there is no 'capture effect' as with FM reception, nevertheless a nearby AM transmitter of even modest power and sufficient modulation can effectively obliterate co-channel signals originating at some distance to provide satisfactory reception with relatively minor interference realized from the co-channel stations. Furthermore, we believe local AM signals are capable of over-riding typical spectrum noise pollution, and are not materially affected by chronic reduction in earth conductivity. We believe this scenario to be technically valid and would be demonstrable in a test situation devised for the purpose.

4. Strategic Initiative

We believe the revitalization of AM requires a *Strategic Initiative* to restructure the service from the current regime of station classes and contour protections to include a scheme titled Low Power AM (LPAM) in which potentially thousands of additional AM stations can be added throughout the Continental US, co-existing and co-sited on the radio dial with existing stations producing minimal but acceptable mutual interference. We realize codified (Rules) obstacles exist to this proposition, and make thus recommendations below for alterations thereto to enable the LPAM class.

We believe transmitter power outputs (TPO) ranging from 150 to 300 Watts would be adequate to meet the needs of small American towns, and should be authorized in proportion to the coverage area or population encompassed within the CoLs.

5. Business Considerations

We applaud the Commission for adopting measures contributing to the economical construction and operation of AM stations, notably the MoM Proof of Performance regime, Modulation Dependent Carrier Level (MDCL), and approval of the Valcom™ antenna. Given the competitive marketplace for state-of-art audio and transmission equipment, we believe an LPAM station can be constructed

for a modest investment relative to decades ago using vacuum tube equipment and a guyed, lattice tower. We furthermore believe that such an investment might be comparable to a restaurant or other retail establishment, thereby being attractive to entrepreneurs contemplating local investments. We believe many small towns across the US would find the prospect of their own local AM radio station attractive and desirable. Part of that attraction, we believe, would be coverage of town council meetings, school sports events, and a host of other activities generally confined to the CoL which are not otherwise covered by existing media.

6. Rules Considerations

In order to implement a Strategic Initiative for LPAM stations and to enhance the economic viability of such new enterprises, we recommend the following changes to the Rules:

- a) Define a Station Class for LPAM stations for TPO ranging from 150 to 300 Watts unlimited operation, non-directional or simple two-tower directional arrays.
- b) Open the Filing Window for LPAM stations to all year-round.
- c) Devise preventive measures to discourage speculating and trafficking in LPAM licenses. Licensees should be required to construct and operate their stations until the expiration before transfer would be considered by the Commission.
- d) Reduce the signal service contour protections for all existing station Classes by a factor of 3 or 4. Reason: medium- and long-distance AM reception has been so degraded by spectrum noise pollution and reduced field strength as to render current contour protections excessive and unnecessary. We believe coverage claims made by many AM stations are delusional.
- e) Set the license renewal period for LPAM stations to 2 years with requirement for *bona fide* justification for periodic renewal. We believe such a short license term would encourage LPAM licensees to develop their stations in the interest of enterprise continuity. By contrast, we believe the current longer license periods inculcate a 'squatter's rights' mentality, leading some licensees to adopt a phlegmatic approach to their operations.
- f) Eliminate the EEOC appurtenances for LPAM license renewals. We believe EEO requirements to reach out to minority applicants are highly laudable *where applicable*. However, LPAM stations as conceived would require relatively few personnel, and the existing EEOC record-keeping and advertising requirements would be unduly burdensome in a case where job opportunities would not multiply beyond a stable, core number of personnel.
- g) Streamline the license application procedure for LPAM stations.
- h) Permit simple 2-tower directional arrays (only) for simple patterns (cardioid or figure-eight) to protect co-channel stations or to enhance signal strength in a desired direction.
- i) Devise simple software models made available on the Commission's website (alongside the other useful existing software tools) for predicting coverage of omni-directional and two-tower directional cardioid and figure-eight patterns for ease of application preparation.
- j) Given the simplicity of LPAM station's antenna system and low power, take simplifying measures to eliminate the need for engaging a consulting engineer and Washington DC attorney to complete the engineering and legal details of the application. The purpose is to minimize cost for simple stations, thus encouraging station start-ups without unnecessary initial financial burdens.
- k) Relax the requirement for the presence of two full-time station employees needing to be physically present during regular business hours, substituting instead reasonable access to authoritative station personnel via phone or other comparable means with reasonable advance notice. This change would free scarce station personnel for other duties, for

example, local event live coverage, sales, etc., without risking Rules infraction during an unannounced station inspection, but without compromising public access to stations.

- l) Simplify the record-keeping requirements of the Public File and Issues-Programs without sacrificing the *bona fide* intent of such requirements.
- m) Raise the maximum positive modulation percentage above the existing Rule of 125% to a significantly higher figure, for example, 250%, to maximize RF sideband audio output, providing greater coverage and improved desired-signal-to-spectrum-noise ratio..
- n) Please review the Valcom (or competitor) antenna for use in a 2-tower phased array. Please also consider the firm's expanded line of products which cover the entire AM band. Please also consider the vendor's latter-day deployment of ground radial systems having length proportional to operating frequency.
- o) Disallow FM translators for LPAM service.
- p) Eliminate required power reduction sunset through sunrise.
- q) Standardize Sunrise as 6 AM and Sunset as 6 PM local time, including 'advanced' time. This would eliminate the very short days during the winter months.
- r) Permit signoff between 6 PM through 6 AM as local management deems appropriate and necessary for the CoL served.

III. Our Response to the NPRM

The following narrative uses outline numbering A-F to correspond directly to the NPRM narrative.

A. OPEN FM TRANSLATOR FILING WINDOW EXCLUSIVELY FOR AM LICENSEES AND PERMITTEES

Although we applaud the Commission's efforts to aid AM licensees toward successful enterprise operation and longevity, we nevertheless believe FM translators for AM stations are anathema to AM. While FM translators may enhance the revenue prospects for AM station enterprise profitability, and in some cases provide *bona fide* fill-in coverage, we nevertheless believe FM translators subvert and corrode the AM service by luring listeners to the FM band with some probability of not returning to the AM band for a variety of reasons, including superior quality of FM reception and fidelity. Accordingly therefore, we decline to express an opinion with respect to this proposal element.

B. MODIFY DAYTIME COMMUNITY COVERAGE STANDARDS FOR EXISTING AM STATIONS

We agree with the Commission's proposal 'to require that the station cover either 50 percent of the population or 50 percent of the area of the community of license with a daytime 5 mV/m principal community signal.' We note that this new standard places a reasonable, in our opinion, burden upon stations to monitor changes in their CoL populations for the duration of their license term to ensure compliance with the new rule in light of possible demographic shifts, etc.

C. MODIFY NIGHTTIME COMMUNITY COVERAGE STANDARDS FOR EXISTING AM STATIONS

As expressed in our earlier narrative, we believe AM reception has been so degraded by interference and other factors as to render AM nighttime service of relatively minor interest to the general public outside the CoL. We therefore agree with the Commission's tentative conclusion 'that nighttime coverage requirement should be eliminated for existing AM stations...' and to apply the proposed 50 / 50 5 mV/m *daytime* rule (above) to new stations or stations seeking modifications. We furthermore believe stations of all classes should accept co- and adjacent-channel interference during nighttime operation from LPAM stations which we herein proposed, above.

D. ELIMINATE THE AM "RATCHET RULE"

We understand and appreciate the original intent of the Ratchet Rule. However, as we expressed in our earlier narrative, we believe interference-free nighttime AM coverage no longer materially exists outside the CoL regardless of station class, power, or antenna pattern characteristics, be that a small town or major metropolitan area, and that expectations of relatively interference-free nighttime coverage outside the CoL boundaries are delusional. We believe stations of all classes should accept co- and adjacent-channel interference up to the geographical boundaries of their CoL or as is proposed 50/50 5 mV/m contours as appropriate. We believe smaller daytime or reduced power and / or directional nighttime stations could benefit by full-time, higher-power and less sharply directional coverage for their CoLs by removing the nighttime skywave interference protection restrictions. We therefore believe the Ratchet Rule is irrelevant in light of present-day AM circumstances and ought to be eliminated.

E. PERMIT WIDER IMPLEMENTATION OF MODULATION DEPENDENT CARRIER LEVEL CONTROL TECHNOLOGIES

We applaud the Commission's encouragement of creative technological modifications to AM transmission systems, particularly MDCL. We understand MDCL is of interest to stations mainly for the purpose of reducing utility bills by reduction in electricity consumption of transmitters. We furthermore understand the amount of reduction is highly dependent upon the program content being transmitted, and the audio processing thereof – i.e., moderate talk vs. hard rock. We believe station engineers ought to be permitted to experiment with various MDCL schemes, either established and defined, or of their own devising, to accomplish MDCL for their transmitters according to their own local requirements. For the vast majority of existing AM radios using simple diode detection, insufficient carrier is immediately evident by distortion of the recovered audio, and is therefore highly objectionable. We believe prudent engineers can monitor the effect of their experiments with MDCL and arrive at circuits and levels of carrier reduction consistent with their station's program content for adequate and acceptable reception and satisfactory listener experience for a given level of MDCL arrived at experimentally.

F. MODIFY AM ANTENNA EFFICIENCY STANDARDS

We agree with the spirit of the efficiency standards inasmuch as the intent is to ensure adequate signal coverage from stations in due respect of the scarce spectrum allocation entrusted to licensees in their Instruments of Authorization. We understand the tradeoff between antenna efficiency and transmitter output power (TPO), and that at first brush, higher TPO can compensate for lower antenna efficiency. However, short, simple, inefficient antennas will inevitably be electrically unstable owing to seasonal temperature and earth moisture fluctuations, and produce high takeoff-angles, exacerbating nighttime skywave interference. But properly designed short antennas can be made to be efficient. We note from Public Notice DA 08-448 *Media Bureau Adopts Simplified Applications Procedures for AM Non-Directional Valcom Antennas*: "The January 2007 field test report included in Attachment A establishes radiation efficiency values for the 75- and 85-foot Valcom antennas within specified frequency ranges. Figure 9 in Attachment A shows *the calculated efficiencies, all of which meet or exceed the minimum efficiency for Class B, C, and D AM stations* [emphasis ours]." Our purpose for including this quotation is to underscore the fact that even non-lattice 'traditional' antennas can meet existing Rules efficiency standards. We therefore believe current efficiency standards ought to be retained without modification for *The Good of the Order*.

End of our Comments.

/J

Comments Re: DA 13-2224 FCC NPRM MB Docket No. 13-249
Revitalization of the AM Radio Service

ⁱ http://en.wikipedia.org/wiki/Radio_in_the_United_States

ⁱⁱ <http://www.statisticbrain.com/u-s-household-statistics/>

ⁱⁱⁱ http://www.washingtonpost.com/blogs/post-tech/post/number-of-cell-phones-exceeds-us-population-ctia-trade-group/2011/10/11/gIQARNcEeL_blog.html

^{iv} <http://radio.about.com/cs/radiodatabases/qt/blhowmanvstatio.htm>

^v <http://www.newgeography.com/content/00242-america-more-small-town-we-think>. “In 2000, slightly more than one-half of the nation’s population lived in jurisdictions --- cities, towns, boroughs, villages and townships --- with fewer than 25,000 people or in rural areas... According to the 2002 U.S. Census of Governments, there were more than 34,000 local general-purpose governments with less than 25,000 residents and 31,000 local general-purpose governments with less than 10,000 residents (accounting, with rural areas, for 38 percent of the nation’s 2000 population). With so many “small towns,” the average local jurisdiction population in the United States is 6,200.” Although this citation is now 13 years old, it is reasonable to believe the overall purport is similar throughout the USA today.